The generation and evolution of silicic magma and juvenile crust: Insight from the Icelandic zircon record

By

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Dissertation

Submitted to the Faculty of the

Graduate School of Vanderbilt University

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

in

Environmental Engineering

August, 2014

Nashville, Tennessee

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To my family, with love.

ACKNOWLEDGEMENTS

This work was made possible by generous funding provided by the following: National Science Foundation (NSF) Graduate Research Fellowship Program; NSF-EAR-1220523 (Icelandic Zircon), NSF-EAR-0635922 (Mount St. Helens), NSF-ANT-07-39496 (Peach Spring Tuff); National Geographic New Directions Research Grant; IBM Student Fellowship, and the Vera G. Koefoot Endowed P.E.O. Scholar Award. Thank you.

I thank Calvin Miller for the opportunity to explore the world (inside and out), and for teaching me how to live in it, too.

A strong team of collaborators contributed their skills, talents and time to this work. I give special thanks to Joe Wooden and Matt Coble (Stanford-USGS), Olgeir Sigmarsson and Erla Vogler (Clermont-Ferrand, U. of Iceland), Ilya Bindeman (U. of Oregon), Axel Schmitt and Rita Economos (UCLA), John Hanchar (Memorial U.), and Chris Fisher (Washington State).

My Vanderbilt support system was unparalleled. I thank Aaron Covey, who found ways to make the impossible possible. I thank my committee, Guil Gualda, David Furbish, Jim Clarke and Gene LeBoeuf, for their guidance and support. I have a great deal of gratitude for Teri Pugh and Jewell Beasley-Stanley for keeping the department running smoothly. I thank the MESSY research group, particularly Lily Claiborne and Danny Flanagan who were mentors from the beginning, and Ayla Pamukcu and Susanne McDowell who stayed with me through the end. I thank Tenley Banik and Abraham Padilla; it was an honor and a privilege to be a member of Team Iceland. I also thank the women of Book Club for their love, support and friendship.

Finally, I thank Whitman College for helping me to find this path, and Lafayette College for shining the light at the end of the graduate school tunnel.

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CHAPTER 1

Introduction

Iceland is recognized as an extraordinary geologic setting that is unique on modern Earth. It is Earth's largest oceanic island, atop one of Earth's largest oceanic plateaus (Thordarson and Hoskuldsson 2002), a result of voluminous magma production occurring at the junction of a hotspot and an actively-spreading mid-ocean ridge (Vink 1984; Thordarson and Larsen 2007; Bjarnason 2008). Iceland's remarkably thick crust (averaging 25 km and reaching 40 km; Bjarnason 2008) provides a unique subaerial view of young oceanic crust formed at an active mid-ocean ridge. Only 2% of Earth's mid-ocean ridge system is exposed in this way (Wright et al. 2012).

Approximately 10-13% of the rocks exposed at the surface of Iceland are silicic (Walker 1964, 1966; Saemundsson 1979; Gunnarsson et al. 1998), making Iceland home to the greatest-known concentration of silicic material in the modern ocean (Jonasson 2007). This great abundance of silicic crust, coupled with the unusual thickness of the island, hints at juvenile continental nucleation and permanent crust construction in an oceanic environment (Kröner and Layer 1992; Cloos 1993; Gunnarsson et al. 1998). This phenomenon has not been recognized elsewhere in the geologic record. However, it is often postulated that Iceland is a modern analogue for ancient crustal construction (e.g., Hadean Earth: Valley et al. 2002; Martin & Sigmarsson 2005; early Earth: Marsh et al. 1991; Sigmarsson et al. 1991; Gunnarsson et al. 1998; Bindeman et al. 2012; cf. Harrison et al. 2008; Hopkins et al. 2008; Harrison 2009, 2013). If this is indeed the case, a better understanding of Icelandic felsic petrogenesis will clarify the origins of Earth's earliest continental crust (cf. Maas et al. 1992).

1. Significance and Rationale

Understanding the processes forming abundant, juvenile, silicic magma (and thus rhyolite and granite, rock types associated with the continental crust) in oceanic Iceland has important implications for understanding Earth's early, and ongoing, history. In many ways, the Icelandic investigation into silicic magmatism is much more focused than the global approach of the issue. The crust formed in Iceland is truly juvenile (cf. Foulger et al. 2005; Foulger 2006); there is neither ancient nor appreciable felsic crust nor sedimentary component to complicate the magmatic history (Johannesson and Saemundsson 2009; Thordarson and Hoskuldsson 2002). Though the debate surrounding the mechanisms of Icelandic silicic petrogenesis is relatively focused, the issue has traditionally been, and remains, contentious. Two dominant end-member explanations have been championed: closed-system fractional crystallization of mafic magma (e.g., Carmichael 1964; Wood 1978; Macdonald et al. 1990; Furman et al. 1992b; Prestvik et al. 2001), and partial melting of mafic, hydrothermally-altered crust (e.g., Nicholson et al. 1991; Sigmarsson et al. 1991; Jonasson 1994; Bindeman et al. 2012). Some studies point to a combination of melting and fractional crystallization processes to explain silicic magmas in Iceland (e.g., Sigurdsson and Sparks 1981; Macdonald et al. 1987). A compelling hypothesis suggests that the regional tectonic setting and thermal condition of the crust controls petrogenetic process (Martin and Sigmarsson 2007, 2010). In this model, fractional crystallization dominates in off-rift systems where magma is injected into a cooler environment, and partial melting dominates at on-rift volcanoes where abundant injected magma provides sufficient heat to melt the already-warm country rock.

Historically lacking in the extensive studies of Icelandic geology are investigations of zircon. This durable mineral has elsewhere provided the underpinnings for much of the geologic community's understanding of magmatic (particularly silicic) processes, and the history and evolution of the crust. Multiple lines of evidence can be drawn from zircon crystals to reconstruct magmatic histories. Cathodoluminescence (CL) images of zircon can reveal a history of closed-system, monotonic growth, or one of open-system recycling and rejuvenation (Hanchar and Miller 1993; Corfu et al. 2003). High-spatial resolution analyses of trace elements can tell similar stories in greater detail (Claiborne et al. 2006; Schmitt and Vazquez 2006; du Bray et al. 2010; Fohey-Breting et al. 2010), and can provide information about other facets of the magmatic environment such as the temperature of zircon growth (Watson and Harrison 2005; Claiborne et al. 2006, 2010b; Ferry and Watson 2007; Harrison et al. 2007). The timing of zircon growth can be determined and the longevity of magmatic systems can be explored using *in situ* radiometric dating (Davis et al. 2003 and references cited therein; Claiborne et al. 2010; Carley et al. 2011; Stelten and Cooper 2012). Oxygen isotopes can provide information regarding the recycling of surface material that have interacted with surface waters to create new magma (Valley et al. 2002; Valley 2003 and references cited therein; Cavosie et al. 2005; Bindeman 2008; Bindeman et al. 2012). Hafnium isotopes can distinguish mantle contributions to the magma from which the zircon grew (Patchett et al. 1982; Kinny and Maas 2003 and references cited therein; Kemp et al. 2007). Zircon-based studies (i.e., this dissertation work, associated work by collaborators, and future work growing from this dissertation) will add critical detail to the histories of silicic magmas in Iceland and provide valuable tests of their origins.

2. Icelandic Geologic Background

Icelandic magmatism and volcanism is controlled by the spatial coincidence of a major hotspot with the actively-spreading Mid-Atlantic Ridge (Fig. 1). The Iceland hotspot has a 60 million year history, with an origin roughly coinciding with the initiation of opening of the North

Atlantic (Lawver and Muller 1994; Muller et al. 2001; Bjarnason 2008). The last ~18 million years of the hotspot's activity are recorded at Iceland's surface (Thordarson and Hoskuldsson 2002); the oldest rocks are preserved in the northwest and southeast (Johannesson and Saemundsson 2009). Iceland's construction has been relatively consistent throughout this interval, with rapid accumulation of intruded and extruded magma keeping pace with the 1.8 (~2) cm/yr spreading, though marked variations in crustal thickness attest to variability in time and space (Thordarson and Larsen 2007).

The thickness of Icelandic crust averages at least 25 km and probably exceeds 40 km in places; a thickness commonly associated with continental crust yet extraordinary for oceanic crust (Bjarnason 2008). This thickened crust, in conjunction with the influence of the hotspot, leads to rifting that is far more complex (Einarsson 2008; Hey et al. 2010), and magmatism that is far more diverse and voluminous, than is typical of mid-ocean ridge environments. The Mid-Atlantic Rift is prone to shifts in location as it bisects Iceland, as demonstrated by its current segmented geometry (Fig. 1) and by abandoned rifts. The Eastern and Northern Volcanic Zone (Fig. 2) are establishing its new position, through the current center of the hot spot, as the Western Volcanic Zone diminishes in tectonovolcanic activity.

Icelandic volcanism is manifested in magmatic systems consisting of central volcanoes and fissure swarms (Fig. 3). Central volcanoes – long-lived, mountainous features that form on and off the rifting axes – yield intermediate and silicic products as well as basalt (Walker 1963, 1966; Thordarson and Hoskuldsson 2002; Jonasson 2007; Jakobsson et al. 2008). Fissures, which can extend hundreds of kilometers from their associated central volcanoes, are dominated by basaltic lava flows.

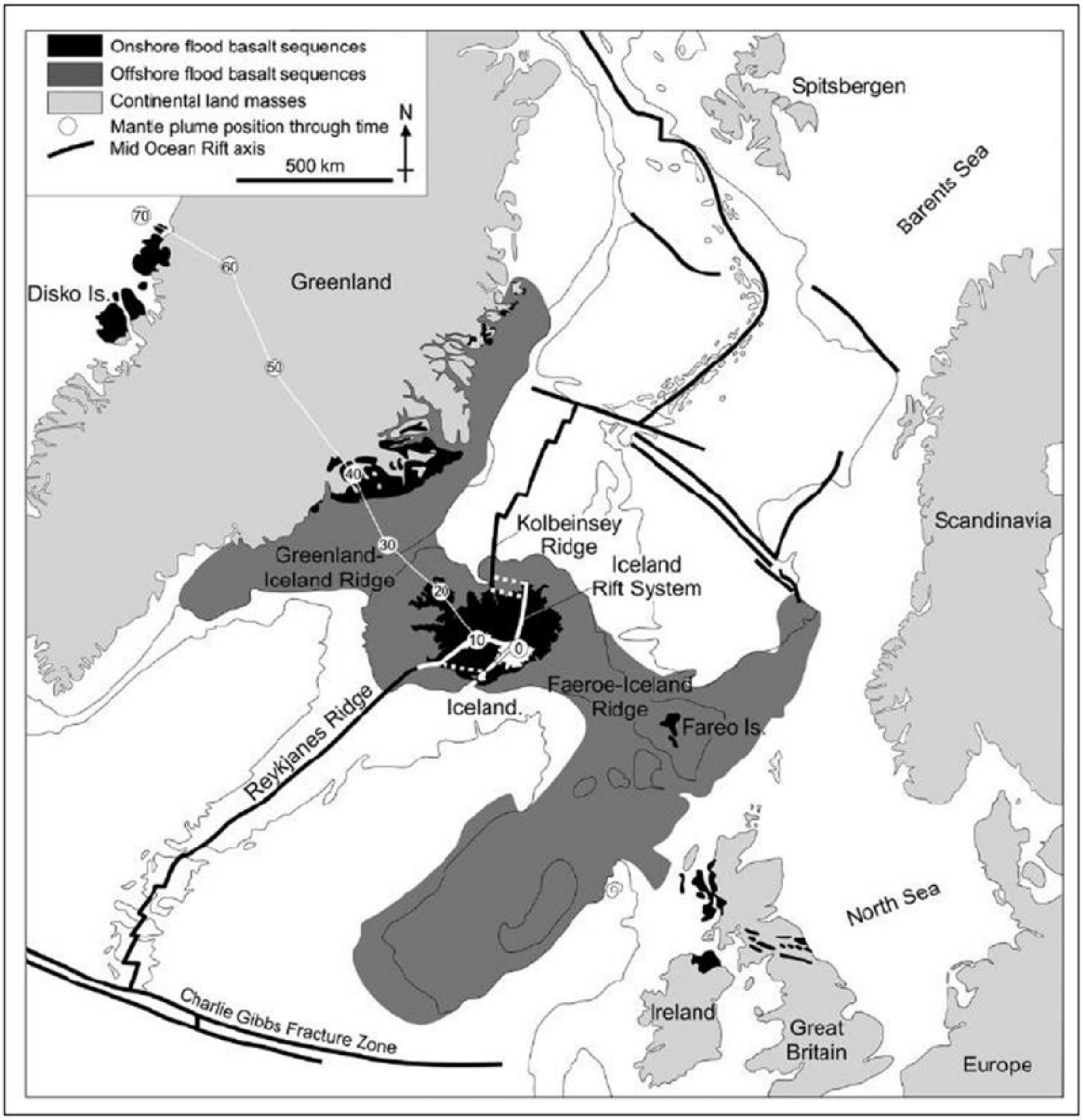


Figure 1: Tectonic-magmatic setting of Iceland, from Thordarson and Larsen 2007.

Although dikes and sills are common, more substantial intrusions are sparsely exposed, in large part because of Iceland's shallow level of erosion (no more than a few km). Exposed intrusions are commonly composite, providing evidence of molten interaction of mafic and felsic magmas (Walker 1966; Furman et al. 1992a, 1992b; Padilla 2011).

Icelandic igneous rocks share compositional characteristics, such as being enriched in Ti and Zr (Jonasson 2007; Carley et al. 2011) and carrying extremely low (by global standards) $\delta^{18}O$ signatures (Muehlenbach et al. 1972; Muehlenbachs et al. 1974; Hattori and Muehlenbachs 1982; Condomines et al. 1983a; Thirlwall et al. 2006; Sigmarsson and Steinthórsson 2007). There are, however, clear distinctions between magmas originating in different settings (Fig. 3b). On-rift (axial) systems produce tholeiitic magmas; off-rift (flank) systems produce alkali magmas; transitional tectonic settings, as found proximal to rift zones or at propagating rift tips, produce magmas with compositions that are transitional between the two end members (Sigmarsson and Steinthórsson 2007; Jakobsson et al. 2008). The tholeiites range from N-MORB-like to more enriched elemental compositions. The most extreme alkalic (peralkaline) rocks are enriched in Na, less so in K. Lead, Nd, Hf, and Sr isotopic data reveal contributions from both depleted and enriched mantle sources, with relative proportions generally correlating with the elemental signatures; radiogenic isotopic signatures vary in both time and space (Kempton et al. 2000; Kitagawa et al. 2008; Peate et al. 2010). Silicic magmatism has accompanied mafic magmatism at and beneath the central volcanoes throughout Iceland's history. Because they are very much subordinate to, are always associated with, and owe their existence to mafic magma, Iceland's silicic magmas are viewed as the end members of the mafic rock series (Jonasson 2007). The silicic rocks, like their mafic associates, are distinguishable from tectonic setting to setting, forming the end points of geochemical continua (Jakobsson et al. 2008).

Iceland's stratigraphy and geologic history are divided into three major divisions: Tertiary (~17-3.3 Ma), Plio-Pleistocene (3.3-0.7 Ma), and Upper Pleistocene-present (<0.7 Ma Thordarson and Hoskuldsson 2002; Fig. 2 and 3). The divisions are based on characteristics of eruption products, which are a consequence of eruption style, which is closely linked to climate conditions. Icelandic climate was temperate-to-warm in the Tertiary (Denk et al. 2005, 2011a, 2011b; Grímsson and Denk 2007). Tertiary strata document volcanotectonic activity generally similar to that of today, with dominant basalt and subordinate silicic volcanics and sedimentary rocks, and both central volcanoes and eruptive fissures. The key difference is that, because of the warmer climate, glaciated topography and the products of volcano-ice interactions were absent. Tertiary rocks dominate the periphery of Iceland, in the NW and SE, and host all of the larger exposed intrusions. The Plio-Pleistocene marks the transition to the Ice Age, and strata of this age are associated with glaciovolcanic features, such as hyaloclastite (highly fractured and permeable basaltic glass, erupted under ice) and table mountains (formed by subglacial-lake eruptions) though major fluctuations in climate and ice cover (partial to total) during this time resulted in shifts back and forth between subglacial- and subaerial-dominated deposits. The Plio-Pleistocene Formation is exposed closer to the active zones of rifting and reveals similar tectonics and volcanism to the Tertiary. The Upper Pleistocene Formation is similar to the Plio-Pleistocene, with alternating subglacial and subaerial eruptive deposits, but it is largely restricted to the general vicinity of present-day active volcanic zones (mostly at and near rifts), and the deposits are less eroded.

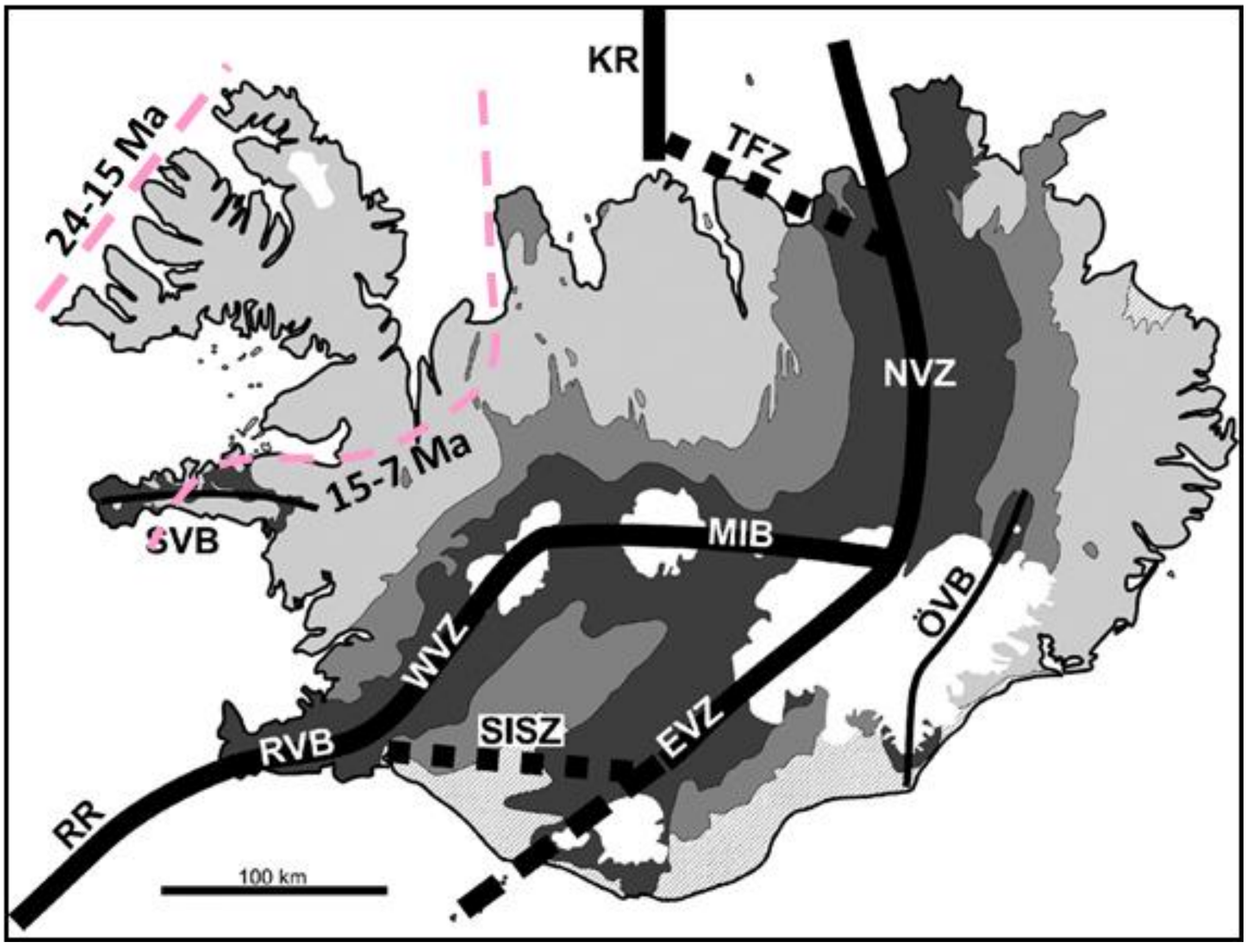


Figure 2: Major tectonovolcanic features: RVB, Reykjanes Volcanic Belt; WVZ, EVZ, NVZ: Northern, Eastern and Western Volcanic Zones (rifts); OVB, Oraefi Volcanic Belt; SVB, Snaefellsnes Volcanic Belt; MIB, Mid-Icelandic Belt; TFZ, Tjornes Fracture Zone; SISZ: South Iceland Seismic Zone; RR, Reykjanes Ridge; KR, Kolbeinsey Ridge. Pink dashed lines are extinct rifts (from Martin et al. 2011). Age divisions: dark gray = Tertiary (17-3.3 Ma), medium gray = Plio-Pleistocene (3.3-0.7 Ma), light gray = upper Pleistocene-present (0.7-0 Ma). White = ice caps. Figure modified from Thordarson and Hoskuldsson, 2002.

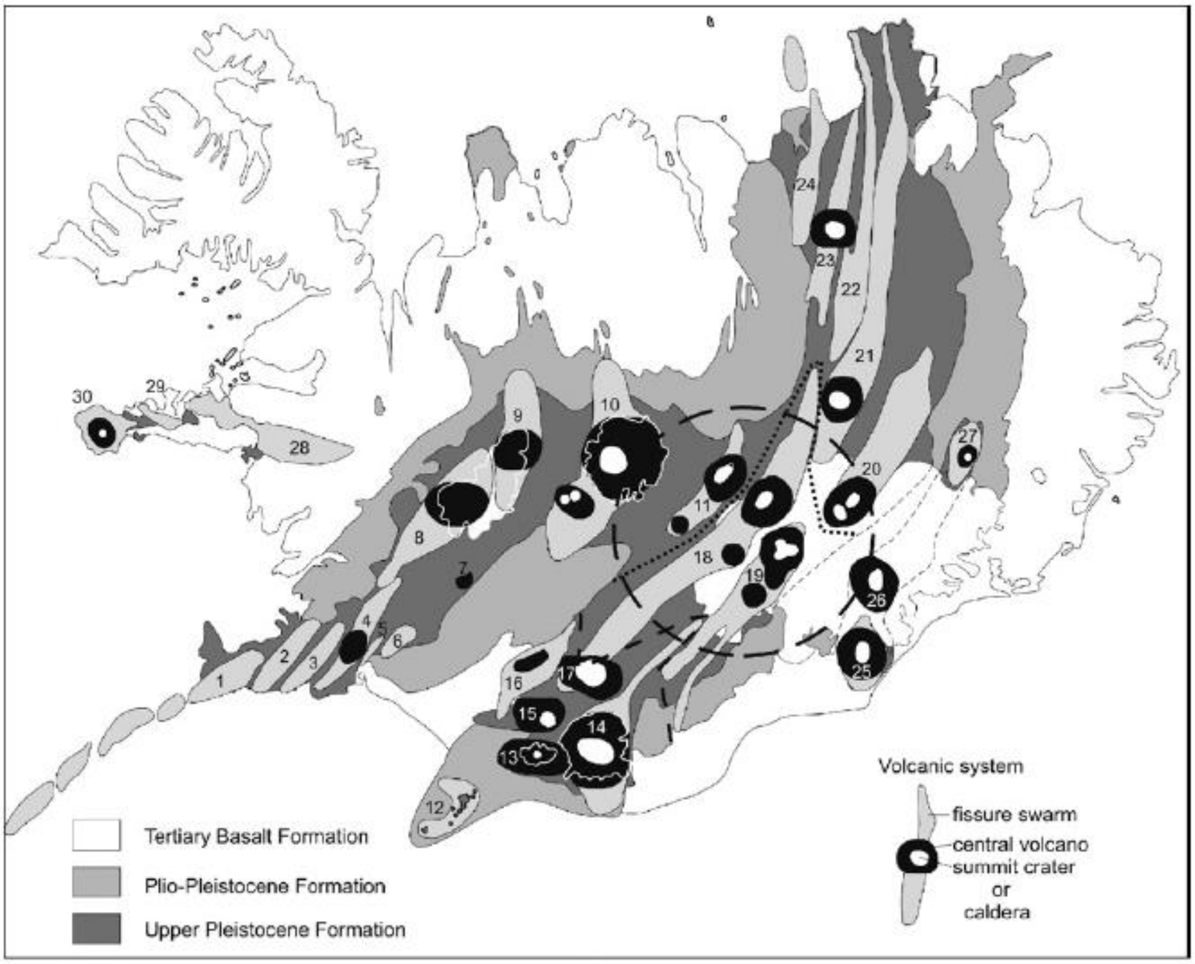


Figure 3: Distributions of volcanic systems (fissure swarms plus associated central volcanoes) in modern Iceland. Major age divisions, same as in Figure 2, are indicated by grayscale. Figure from Thordarson and Larsen, 2007.

3. Zircon Sampling Scheme

Collecting zircon from a diversity of reservoirs is an intentional part of my strategy for characterizing the Icelandic zircon population. Zircons in intrusive rocks record the history of a magma body from the point of zircon saturation (dependent upon magma chemistry) through sub-solidus conditions. This protracted history provides more opportunities for zircon growth, but may also include unusual (non-representative) examples of zircon precipitated from hydrothermal fluids, or grown from near-solidus magmas with highly elevated concentrations of incompatible elements (e.g., Padilla Ph.D. research). Zircons collected from extrusive (lava, pumice) deposits provide a different "snapshot" view of magmatism. Zircons in extrusive rocks may represent a single growth episode (erupted with the magma from which it grew), may contain evidence of magmatic rejuvenation following storage in a mushy state, and may also include zircon scavenged from subsolidus intrusions. Zircons in extrusive rocks will help in efforts to reconstruct magmatic histories, without (necessarily) the layers of complexity that come with crystallization to the solidus. Ancient sandstones and modern sands provide access to an amalgamation of zircon brought together from broad swaths of countryside (much of which is too rugged for access, or hidden beneath ice caps). With this detrital approach, I gain a broader view of the Icelandic zircon record with this detrital approach, as well as the ability to identify gaps created by more-targeted sampling efforts of specific igneous units.

The specific locations from which I collect these samples are strategically selected to collectively represent the Icelandic geologic record through space (the full range of tectonic-magmatic settings in Iceland) and time (changing climate, regional tectonics, crustal construction). Please refer to Figure 1 in Chapter 2, as well as Figure 1 in Chapter 3, for maps of sampling locations.

The spatial distribution of zircon-bearing samples is quite important to this research, as the local tectonic setting in which magmas are generated (and zircon are grown) may have a strong influence on the origin and evolution of the magma body. One compelling hypothesis suggests that partial melting dominates felsic petrogenesis at on-rift locations where hot magma is injected into already-hot and potentially altered crust, while fractional crystallization is a more prevalent process at off-rift environments where magma stagnates in cooler, unaltered, crust (Martin and Sigmarsson 2007, 2010). The temporal distribution of zircon-bearing samples (ancient rocks through modern-day) is also quite important. It is likely that the point in Icelandic history at which magma formed and evolved has important petrogenetic implications, due to variables like glaciation (e.g., crustal loading and unloading influencing decompression melting and eruption) and crustal thickness (thicker crust leading to more complicated rifting geometry and transitions, and opportunities for magma to stall in the crust; Einarsson 2008, Willbold et al. 2009, Hey et al. 2010). By considering data from the full range of tectonic and temporal conditions in Iceland, I will have an opportunity to critically evaluate these compelling petrogenetic hypothesis while simultaneously pursuing my own research questions.

4. Components of this dissertation

This dissertation work, and the master's thesis work that preceded it (Carley 2010; Carley et al. 2011), has pioneered zircon work in Iceland. Now, zircon-based investigations are becoming a more-popular approach used by collaborators (e.g., Martin et al. 2011; Bindeman et al. 2012), Vanderbilt colleagues (Padilla 2011; Padilla and Banik Ph.D. research), and beyond (e.g., Berg et al. 2012, 2013, 2014). Because this work represents the first major contribution to this area of study, most of it is broad in nature, creating a frame of reference and establishing a foundation for future studies (see “Conclusions and Future Directions” at the end of this document). The three substantive chapters of this dissertation are:

2. Iceland is not a magmatic analogue for the Hadean Earth: Evidence from the zircon record”

3. “Isotopes through time: Using zircon to add critical detail to Iceland’s silicic past”

4. “Using detrital zircon to resolve the origin and long-lived lifetime of abundant silicic magmatism at Breiðuvík volcano, East-Iceland”

Chapter 2 is an in-depth investigation of the hypothesis that Iceland may be a proto-continent in the making, and that by better understanding Icelandic silicic petrogenesis, we may better understand the origins of Earth’s earliest continents. To do this, I compare trace elements and oxygen isotopes from the Icelandic zircon record to trace elements and oxygen isotopes from published literature about the Hadean (> 4.0 Ga) Earth. Upon discovering that Iceland and the Hadean zircons are, in fact, very different in many fundamental ways, I seek more-appropriate modern analogues for both the Icelandic and Hadean magmatic environments. To do this, I compare Hadean and Icelandic zircon compositions with a large dataset of zircon trace element compositions from modern oceanic crust, continental arcs, continental hot spots, and evolving rift environments.

In Chapter 3, I investigate temporal and spatial trends in the Icelandic zircon record. It becomes apparent that oxygen isotopes are not correlated with time throughout the last 16 million years of Iceland’s history (which accounts for the vast majority of the island’s short subaerial past). This is significant, because it provides strong evidence for the uniformity of mechanisms generating silicic magmas in Iceland throughout space and time. Hafnium isotopes, unlike oxygen isotopes, are correlated with time. Increased diversity of hafnium isotope ratios, trending towards lower values, become apparent approximately 7 Ma, indicating contributions of a new mantle source to Icelandic magmatism. In the course of conducting this study, I add significant chronologic detail to the Icelandic geologic record (something that has, in the past, been severely limited). I also present evidence that contradicts hypotheses suggesting that Iceland is underlain by a unique low-O mantle, as well as slivers of ancient continental crust.

In Chapter 4, I move from broad studies of Icelandic zircons and Icelandic silicic magmas, to a focused investigation of silicic magmatism at an individual volcanic center. Breiðuvík, an extinct volcano in the Eastfjords of Iceland, is home to the island's second-greatest abundance of silicic material (second only to Torfajökull, a well-studied volcano that is active today). In this study, I present the value of using detrital zircons to construct a comprehensive view of a volcano's history, throughout its lifetime. In doing so, I demonstrate that the silicic-magma system at Breiðuvík has a longer lifespan than has ever been reported for an Icelandic central volcano, a finding that may have important implications for better understanding and monitoring volcanoes that are active, and potentially hazardous, in modern Iceland. This detrital zircon study also reveals that the silicic magmas at Breiðuvík are remarkably homogeneous in trace element, oxygen isotope, and hafnium isotope signatures. This homogeneity indicates a uniformity of petrogenesis and subsequent evolution that is unusual (particularly in O isotopes) for Icelandic silicic magmas at modern central volcanoes. The ability to compare Breiðuvík to the Icelandic zircon database to come out of this dissertation work was invaluable in drawing these kinds of comparisons and conclusions.

CHAPTER 2

Iceland is not a Magmatic Analog for the Hadean: Evidence from the Zircon Record

Abstract

Tangible evidence of Earth's earliest (Hadean; > 4.0 Ga) crust, and the processes and materials that contributed to its formation, exists almost entirely in a record of detrital zircon from Jack Hills, Western Australia, and a few other locations. Iceland, with its thick, juvenile, basaltic crust and relatively abundant silicic rocks, is considered a potential modern analog for the Hadean magmatic environment where > 4 Ga zircon formed. We present the first extensive dataset for Icelandic zircon, with trace element and oxygen isotope compositions from samples that span the island's history and full range of tectonic settings. This zircon-based comparison between Iceland and the early Earth reveals distinctions in chemistry that suggest fundamental differences in magmatic environments. Whereas the $\delta^{18}O$ signature of Hadean zircons generally exceed that of zircons equilibrated with mantle-derived magma (85% ≥ 5.3‰; median 6‰), almost all Icelandic zircons are characterized by a "light" oxygen signature (98% ≤ 5.3‰; median 3‰). Deviations from "juvenile" oxygen values indicate that many Hadean zircons and almost all Icelandic zircons grew from magmas with substantial contributions from materials that had interacted with surface waters. In the Hadean case, the interaction occurred at low temperatures, while in Iceland, it was a high-temperature interaction. Icelandic and Hadean zircons are also distinct in their Ti concentrations (Icelandic median concentration 12 ppm, Hadean median 5 ppm). Titanium in zircon correlates positively with temperature of crystallization, and this difference in median Ti concentration suggests a temperature difference

of at least 50 °C. Other differences in trace elements compositions are consistent with the interpretation that Icelandic and Hadean zircons grew in magmas with very different origins and histories (e.g., the heavy rare earth element Yb is almost an order of magnitude higher in Icelandic zircon). A comparison with elemental data for Phanerozoic zircon from different environments demonstrates that the Hadean population is unusually depleted in Ti, but otherwise similar to zircons from continental arc settings. Zircons from Iceland, and from modern evolving rift environments where oceanic lithosphere and upwelling asthenosphere are replacing continental lithosphere, are compositionally intermediate between mid-ocean ridge and continental arc zircon populations. The elemental distinctions are consistent with fractionation of zircon-bearing magmas under hotter and drier conditions in Icelandic, mid-ocean ridge, and evolving rift environments and cooler and wetter conditions in arc and, especially, Hadean environments.

1. Introduction

Iceland is Earth's largest oceanic island, atop one of Earth's largest oceanic plateaus (Thordarson and Hoskuldsson 2002), a product of voluminous magma production at the junction of a hotspot and an actively-spreading mid-ocean ridge (Vink 1984; Thordarson and Larsen 2007). With only 2% of Earth's mid-ocean ridge system subaerially exposed (Wright et al. 2012), Iceland's remarkably thick crust (averaging 25 km, reaching 40 km; Bjarnason 2008) provides rare subaerial access to young oceanic crust. The basalts that comprise the majority of the Icelandic plateau are interpreted to have been derived from both depleted (MORB-like) and enriched (OIB-like) mantle (e.g., Sigmarsson & Steinthórsson 2007).

Approximately 10% of the rocks exposed at the surface of Iceland are silicic, making the island host to the greatest known concentration of silicic rock in the modern ocean (Jonasson 2007). This abundance of silicic material, coupled with the unusual thickness of the crust, hints at juvenile continental nucleation and permanent crust construction in an oceanic environment (Kröner and Layer 1992; Cloos 1993). This phenomenon has not been recognized elsewhere in the recent geologic record, but it is often postulated that Iceland is a modern analogue for ancient crustal construction (e.g., Hadean Earth: Valley et al. 2002; Martin & Sigmarsson 2005; early Earth: Marsh et al. 1991; Sigmarsson et al. 1991; Gunnarsson et al. 1998; Bindeman et al. 2012; cf. Harrison et al. 2008; Hopkins et al. 2008; Harrison 2009, 2013), and that a better understanding of Icelandic felsic petrogenesis will clarify the origins of Earth's earliest continental crust (cf. Maas et al. 1992).

There are a number of similarities between Iceland and what is envisioned for the Hadean crust-building setting that suggest petrogenetic parallels. Both are or were (presumably) dominantly mafic environments with thickened crust, elevated geothermal gradients and magma production rates, and silicic components generated in the absence of significant pre-existing felsic material (e.g., Rapp et al. 1991; Condie & Pease 2008; Martin et al. 2008; Bindeman et al. 2012; cf . Harrison et al. 2008; Hopkins et al. 2008; Harrison 2009, 2013). These features we recognize in Iceland from direct observation and interpretation; our direct knowledge of the Hadean comes from zircon, the only tangible evidence that remains of crust older than 4 billion years (e.g., Mojzsis et al. 2001; Wilde et al. 2001; Valley et al. 2002; Harrison et al. 2008; Hopkins et al. 2008), with the possible exception of the Nuvvuagittuq lava sequence in Quebec (O'Neil et al. 2011; O'Neil et al. 2012; Turner et al. 2014; c.f. Cates et al. 2013). Evaluating the Hadean-Iceland analogy therefore requires a comparison of zircon from the two settings, but very few data have been reported for Icelandic zircon (Carley et al. 2011; Martin et al. 2011; Padilla 2011; Siler 2011; Bindeman et al. 2012). In this paper, we present a greatly expanded study of zircon in Iceland as a basis for comparison with the Hadean record, providing a powerful test of the "Iceland as a Hadean analogue" hypothesis.

2. Materials and Methods

2.1: Icelandic samples and mineral separation

Icelandic zircons analyzed in this study were collected from eight volcanic localities (pumice, lava, near-surface subvolcanics); six intrusions; eight modern river sediments; and three sedimentary rock units. Sample names, geographic locations, and number of zircon analyses per sample are tabulated in Table 1. As demonstrated by Figure 1, samples were collected with the intention to survey the diversity of ages, locations and tectonic environments that exist in subaerial Iceland, in an attempt to fully capture compositional and petrogenetic diversity in this dynamic setting.

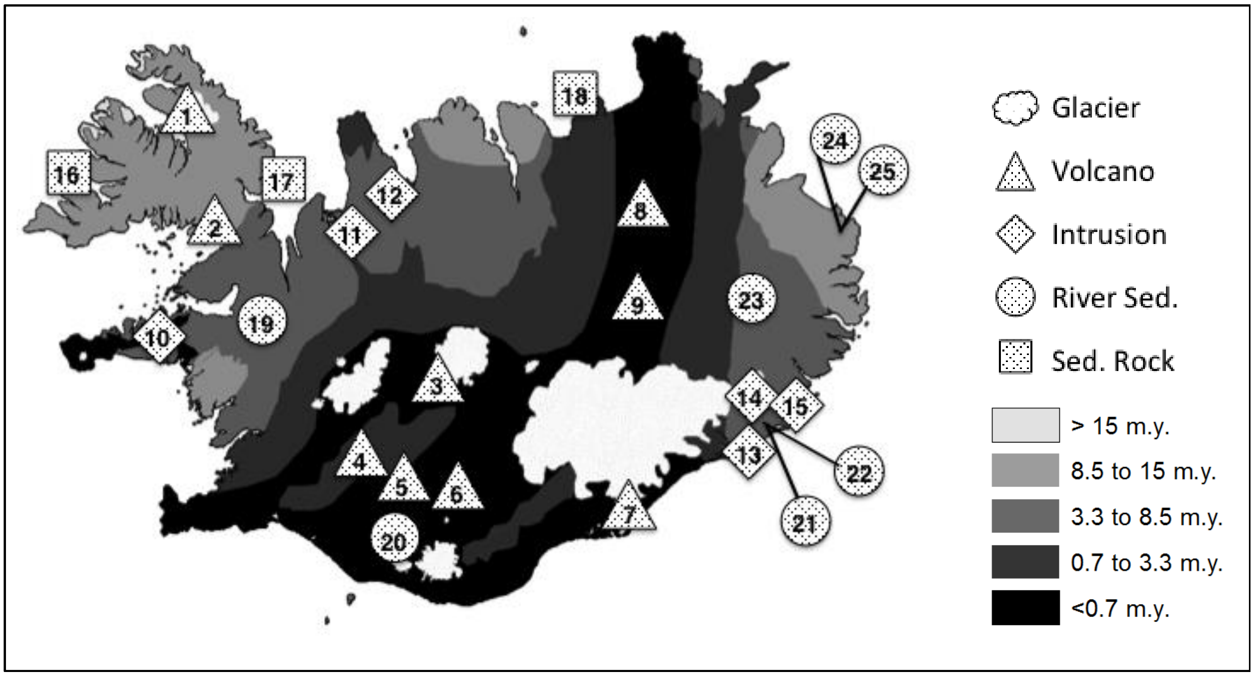


Figure 1: Schematic map of Iceland showing ages of strata (modified from Thordarson and Hoskuldsson 2002) and sample lithologies and locations for this study. *Volcanic Samples*: [1] Hrafnfjörđur; [2] Króksfjördur; [3] Kerlingarfjöll; [4] Stóra-Laxa; [5] Hekla; [6] Torfajökull; [7] Öræfajökull; [8] Krafla; [9] Askja. *Intrusive Samples*: [10] Snæfellsness-Knörr; [11] Viđidalsfjall; [12] Laxárdalsfjöll; [13] Vesturhorn; [14] Slaufurdalur; [15] Austurhorn. *Sedimentary Rock Samples*: [16] Selardalur; [17] Husavikurkleif; [18] Tjörnes. *River Sediment Samples*: [19] Miđá; [20] Markarfljót; [21] Fjardarsá; [22] Jökulsá í Lóni; [23] Lagarfljót; [24] Stóraá; [25] Krossá-Kækjudalsá.

Table 1: Sample Names and Locations

System Name	Sample Type	Map Number	Sample Name	Location (coordinates)[1]	TE Analyses[2,3]	O Analyses[4]
Hrafnfjörður	Volcanic	1	KK-24	27W 552230, 7279551*	14	12
Króksfjördur	Volcanic	2	IIKK	27W 455836, 7264252	9	8
Kerlingarfjöll	Volcanic	3	IEKlM	27W 580732, 7169302	3	0
Kerlingarfjöll	Volcanic	3	IEKlT	27W 576956, 7169439	18	7
Stóra-Laxa	Volcanic	4	IEFS-1a	27W 535438, 7109774	27	25
Hekla	Volcanic	5	IHB	27W 558938, 7106903*	26^{α}	43^{γ}
Torfajökull	Volcanic	6	IETR	27W 576365, 7095290	19	38
Torfajökull	Volcanic	6	5A03	Unavailable	33^{α}	0
Torfajökull	Volcanic	6	3A03	Unavailable	19^{α}	0
Torfajökull	Volcanic	6	ITHn	27W 584358, 7093649*	16^{α}	0
Torfajökull	Volcanic	6	ITN	27W 595113, 7099846*	17^{α}	9
Torfajökull	Volcanic	6	Lauf	Unavailable	0	18^{γ}
Öræfajökull	Volcanic	7	IOHn	28W 420478, 7086216*	23^{α}	16
Krafla	Volcanic	8	IEKG-1a	28W 410640, 7292179	30	25
Askja	Volcanic	9	IC45	28W 419661, 7214591*	16^{α}	27^{γ}
Snæfellsness-Knörr	Intrusive	10	IISK	27W 383104, 7191705	20	24
Viđidalsfjall	Intrusive	11	IIM	27W 521634, 7256525	23	23
Laxárdalsfjöll	Intrusive	12	LS-11	27W 439559, 7348977	19	36
Vesturhorn	Intrusive	13	IIV	28W 500765, 7126998	13	15
Slaufrudalur	Intrusive	14	IISlau	28W 498493, 7132374	5	5
Austurhorn	Intrusive	15	Mafic AIC-G	28W 522402, 7142368	34^{β}	18
Austurhorn	Intrusive	15	Silicic AIC-NS	28W 524122, 7146308	84^{β}	62
Austurhorn	Intrusive	15	Hval-1a	28W 523914, 7146660	0	22^{γ}
Selardalur	Sed. Rock	16	IXSd-1	26W 635504, 7296772	17	13
Husavikurkleif	Sed. Rock	17	IXH	27W 470820, 7280239	22	27
Tjörnes	Sed. Rock	18	IXT	28W 397693, 7334527	27	30
Miđá	River Sed.	19	ISMi	28W 464561, 7211545*	48	23
Markarfljót	River Sed.	20	ISM	27W 552381, 7059713*	52	33
Fjardarsá	River Sed.	21	ISFjar	28W 500225, 7131316*	39	17
Jökulsá í Lóni	River Sed.	22	ISJL	28W 505478, 7144079*	57	18
Lagarfljót	River Sed.	23	ISLF	28W 506732, 7216451	25	43
Stóraá	River Sed.	24	ISS	28W 561363, 7260665	31	39
Krossá-Kækjudalsá.	River Sed.	25	ISKK	28W 553667, 7260140	33	83

[1] All coordinates presented in this dissertation were measured using the WGS 1984 datum, unless marked by "*" which indicates the Hjorsey 1955 datum.
[2] The symbol "α" indicates that data have previously been published in Carley et al. 2011; included here to create a more comprehensive Icelandic dataset.
[3] The symbol "β" indicates that data have been previously presented in Padilla 2011.
[4] The symbol "γ" indicates that the data have been previously published in Bindeman et al. 2012.

2.2: Analytical Methods

We separated zircons from samples using standard crushing, sieving, density (water and heavy-liquid LST), magnetic, and hand-picking techniques. Once zircons were separated from their host, we mounted them in epoxy and polished them to expose grain interiors. Grain interiors were imaged by cathodoluminescence (CL) using the JEOL JSM 5600 scanning electron microscope (SEM) at the Microanalysis Center shared by the US Geological Survey and Stanford University or the Tescan Vega 3 LM Variable Pressure SEM at Vanderbilt University. We used reflected light and CL images to strategically place high-precision, high-resolution, oxygen and trace element analytical spots.

We measured oxygen isotope ratios with high spatial resolution using the CAMECA ims1270 microprobe at UCLA-NSF facilities and a Cs^+ beam with a diameter of approximately 15 μm and sputter depth of approximately 1 μm, following methods described by Trail et al. (2007). In total, we analyzed 653 spots over five analytical sessions (Appendix A.1). Instrumental mass fractionation was determined using analyses of R33 standard zircons that were mounted in close spatial proximity to our grains. The standard deviation of R33 in each mount was also used as an estimate for the uncertainty of individual spot analyses on unknowns. Oxygen data are reported as $\delta^{18}O$ permil (‰) values, calculated relative to Vienna Mean Standard Ocean Water (VSMOW; Baertschi 1976). Results can be found in Section 3.1.1 and Figure 2, with more complete data tabulated in Appendix A.1.

We measured trace element concentrations with high spatial resolution using the Sensitive High Resolution Ion Microprobe, Reverse Geometry (SHRIMP-RG) and an ~1.5 – 2.5 nA O_2^- beam with a diameter of ~15 μm and sputter depth of approximately 1 μm at the Stanford-USGS Microanalytical Facility. In total, we analyzed 671 spots over the course of six analytical sessions (Appendix B.1 and B.2). Trace element abundances were calculated relative to those on in-house standard MAD (Barth and Wooden 2010). We typically used methods following those described in Mazdab and Wooden (2006), Claiborne et al. (2006; 2010) and Barth and Wooden (2010). In a small subset of the dataset (refer to Appendices B.2 and D.1), a limited set of trace elements was measured simultaneously with the U-Pb age routine.

Trace element compositions are presented in Section 3.1.3 and Figure 3 (Ti); Section 3.1.3 and Figures 4 and 5 (Rare Earth Elements: REE); Section 3.1.4 and Figure 6 (Y, Yb, Hf, U). Appendices B.1 and B.2 contain the full data set.

2.3: Data Compilations from Literature

Hadean data used in this comparison (Figures 2-9) are from published literature (Maas et al. 1992; Mojzsis et al. 2001; Peck et al. 2001; Wilde et al. 2001; Cavosie et al. 2004, 2005, 2006; Watson and Harrison 2005; Crowley et al. 2005; Nemchin et al. 2006; Pidgeon and Nemchin 2006; Valley et al. 2006; Trail et al. 2007, 2011; Harrison and Schmitt 2007; Fu et al. 2008; Harrison et al. 2008; Kemp et al. 2010; Bell et al. 2011). We compiled data for zircon grains with ages reported to be ≥ 4 Ga.

We have also compiled a database of zircon trace element compositions from (1) mid-ocean ridge basalt (MORB; Grimes et al. 2007); (2) a continental hotspot (post-caldera rhyolites, Yellowstone caldera, USA: Stelten et al. 2013); (3) continental arcs (Aucanquilcha volcanic cluster [Ti only]:Walker et al. 2010; Mount Saint Helens volcano, USA: (Claiborne et al. 2010; Claiborne 2011; Flanagan 2009); South Sister volcano, USA: Stelten & Cooper 2012; detrital zircons from the McCoy Mountain formation, USA: Barth et al. 2013); and (4) rifts that are evolving from continental to oceanic, where continental lithosphere is being replaced by ascending asthenosphere and newly-formed oceanic lithosphere (hereafter referred to as “evolving rifts,” with examples from Alid, Eritrea: Lowenstern et al. 1997; Lowenstern et al. 2006; Flanagan et al. 2010, and Salton Sea Trough, CA: Schmitt & Vazquez 2006; Schmitt et al. 2013). These data are used as standards of comparison for the Icelandic and Hadean datasets (Sections 3.2.1-3.2.3; Figures 7, 8, 9; Appendix B.3).

Zircon analyses for the global comparison were all conducted at the SHRIMP-RG, and calibrated to in-house standard MAD. The Hadean data, however, represent a variety of analytical sources and calibration standards. Thus, analytical biases may exist between the SHRIMP-RG data and the Hadean sets. Furthermore, Hadean zircons are likely to have undergone alteration over the course of the last > 4.0 Ga. We therefore exercise caution when conducting the data comparison. Because light rare earth element (LREE) concentrations in zircon are the most susceptible to substantial relative modification during alteration, we exclude them from our comparisons. We place greatest confidence in the heavy REE (HREE), which are most abundant, easiest to measure accurately and precisely, and least susceptible to alteration. We are confident that observations and conclusions based on HREE concentrations are reflections of zircon compositions and not the product of alteration or analytical bias.

2.4: Treatment of Ti-in-Zircon Data

Watson and Harrison (2005) demonstrated a close correlation between Ti content of zircon and crystallization temperature, and presented an initial calibration of a Ti-in-zircon geothermometer. Ferry and Watson (2007) subsequently calibrated the geothermometer to take into account the influence of activities of SiO_2 and TiO_2. Many papers on Hadean zircon report only Ti-in-zircon temperatures rather than concentrations (e.g., Watson & Harrison 2005; Valley et al. 2006; Trail et al. 2007; Trail et al. 2011; Harrison et al. 2008; Bell et al. 2011). In these cases, we recast temperature data as Ti concentrations, using the appropriate equations (Watson and Harrison 2005; Ferry and Watson 2007) and unit TiO_2 and SiO_2 activities as in the published papers.

As the Hadean (and many Icelandic) samples are detrital, we cannot confidently constrain activities of TiO_2 and SiO_2. This uncertainty, along with inconsistencies in approach to estimating activities in different studies, makes direct comparison of calculated Ti-in-zircon temperatures problematic. We therefore simply compare Ti concentrations in this paper (Sections 3.1.3 and 3.2.1; Figures 3 and 7). To make conservative, semiquantitative, comparisons of temperatures between Hadean and Icelandic zircons, we use the Ferry and Watson (2007) equation and assign activities of unity for SiO_2 and TiO_2, unless otherwise indicated in the text. Given the many issues that affect the calculation of Ti in zircon temperatures, it should be stressed that all absolute temperature values are model dependent and should be treated as estimates of a probable temperature range.

3. Results and Discussion

3.1: Comparing Hadean and Icelandic Zircon Populations

3.1.1: Oxygen Isotopes

We collected 653 new oxygen isotope measurements in Icelandic zircons, and supplement our new dataset with 100 oxygen isotope measurements previously reported by Bindeman et al. (2012). Together, these analyses yield a mean $\delta^{18}O$ value of +3.0 ‰ and a median of +3.2 ‰. Ninety percent of the analyses fall between +0.2 ‰ and +4.7 ‰ (the 5^{th} and 95^{th} percentiles of the dataset, respectively). Outliers extend down to -2.3‰ and up to +7.8 ‰. The lowest 5% of the dataset is composed almost exclusively of zircons from the Torfajökull central volcano (19 of 38 analyses) and a small intrusion that we call Snæfellsness-Knörr on the Snæfellsness Peninsula (18 of 38 analyses). The highest 5% comprises zircons from multiple intrusions, lavas and tephra, and sands and sandstones.

Ninety percent of the 355 reported Hadean $\delta^{18}O$ values fall between 4.6‰ and 7.6‰ (Mojzsis et al. 2001; Peck et al. 2001; Wilde et al. 2001; Cavosie et al. 2005, 2006; Nemchin et al. 2006; Trail et al. 2007, 2011; Harrison et al. 2008; Bell et al. 2011), with outliers extending from 2.9‰ (Trail et al. 2007) to 10.6 ‰ (Cavosie et al. 2006). This dataset has both a mean and median of 6.1 ‰. Although 64% of the Icelandic oxygen dataset overlaps with the Hadean, with values ≥2.9 ‰, the difference in distribution of values between the two populations is striking. As shown in Figure 2, the Icelandic zircon population is highly depleted in ^{18}O relative to the Hadean.

The generally accepted range of $\delta^{18}O$ values for zircons derived from a closed-system mantle-derived melt (5.3 ± 0.3 ‰; Valley 2003) creates an effective boundary between the two populations (Figure 2, inset). Of 763 in situ analyses of oxygen in Icelandic zircon, 750 (98%) analyses fall below 5.3 ‰; of 355 published Hadean analyses, only 54 (15%) fall below 5.3 ‰.

Deviation of $\delta^{18}O$ away from 5.3 ‰ is evidence that neither Icelandic zircons, nor most (i.e., 283 of 355) Hadean zircons, grew in closed-system mantle-derived melts. Instead, the deviation suggests that both the ancient and the Icelandic zircons grew in magmas whose sources (or major assimilants) were influenced by meteoric or seawater. However, this is where the similarities end; the fact that the Icelandic oxygen isotope signatures are low in $\delta^{18}O$ and the Hadean is high suggests that the nature of the contributing material and the processes at work were distinctly different.

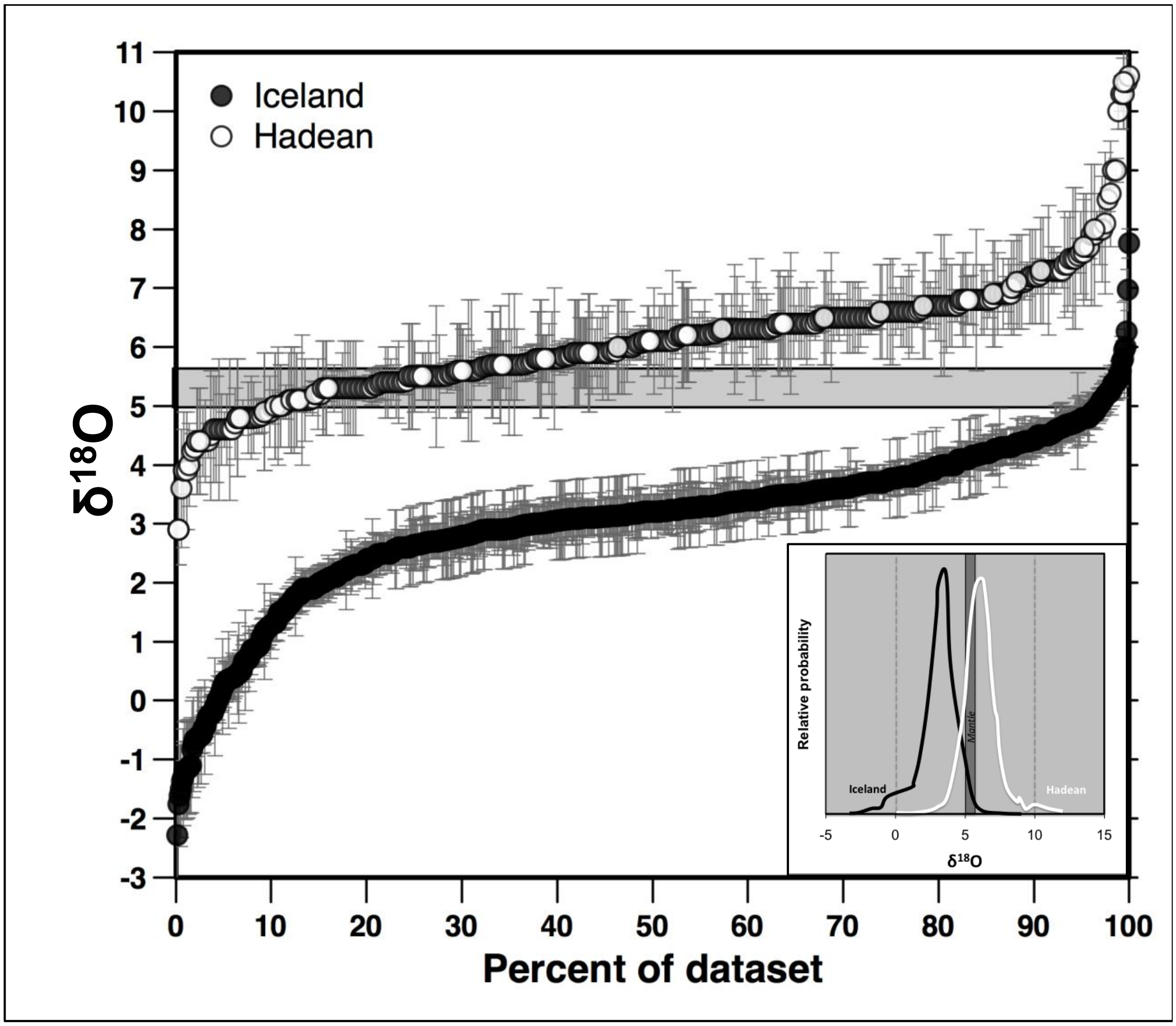


Figure 2: Comparison of Icelandic and Hadean zircon oxygen isotope values. Icelandic (n=763) and Hadean (n=356) zircon $\delta^{18}O$ values, with analytical uncertainties. See Appendices (Reduced O data and Hadean O compilation) for detail. The estimated range of $\delta^{18}O$ for zircons that equilibrated with mantle-derived magmas (5.3 ± 0.3‰ (Valley 2003)) is indicated by the gray bar. Icelandic and Hadean oxygen datasets were sorted in order of increasing value before plotting. The inset shows probability density plots of Icelandic (black) and Hadean (white) zircon $\delta^{18}O$ values, with mantle values (dark gray bar) for reference.

In order to elevate ^{18}O relative to ^{16}O in magmas and zircons that crystallize from them, source material (or major assimilant) must have undergone low temperature alteration by sea or meteoric water. For example, at 50°C, $\Delta^{18}O_{Ab-H2O}$ fractionation is ~20‰ (Matsuhisa et al. 1979; Ab is used as a proxy for silicic rock). Therefore, any normal $\delta^{18}O$ rock (i.e.+6‰) will be shifted upward even by typically low- $\delta^{18}O$ Icelandic meteoric water (that is, if the water is heavier than -14‰). Strong low-temperature fractionation results in high $\delta^{18}O$ in the solid products of such a reaction; that is, minerals formed or chemically modified during weathering or sedimentary processes, or low temperature hydrothermal exchange. Conversely, to decrease $\delta^{18}O$ in magmas and zircons, contributing material (or major assimilant) must have undergone high temperature alteration by liquid water with the low-^{18}O signature of surface water. This is easiest to achieve by low delO18 meteoric waters, or even by 0‰ seawater, if temperatures exceed ~250-350 °C, where fractionation ($\Delta^{18}O_{Ab-H2O}$) is less than 6‰ and delO18 for the rocks are shifted downward. At still higher temperatures, fractionation becomes minimal and the solid products more closely reflect the low-$\delta^{18}O$ composition of the surface waters that induced alteration.

The distinction in $\delta^{18}O$ appears to indicate substantial differences between petrogenesis of zircon-bearing Hadean and Icelandic magmas, but is it conceivable that these differences are less fundamental than they appear. For example, could the difference be attributed to general changes in the oxygen isotopic composition of the mantle or surface waters through time (i.e., higher values in the Hadean)? Alternatively, could universal depletion of ^{18}O in Icelandic zircon be the consequence of an unusual, low $\delta^{18}O$ mantle source for Icelandic magmas, and not of an otherwise distinctive petrogenetic process? Or, finally, could Iceland's near-polar environment, with resulting low-$\delta^{18}O$ surface water, greatly amplify the isotopic influence of relatively modest contributions from hydrothermally altered rock?

The first possibility suggested above – substantially heavier typical mantle or seawater oxygen in ancient Earth– has no basis in data for either modern or ancient rocks (e.g., Burdett et al. 1990; Valley et al. 2005). The second possibility – a mantle source beneath Iceland that is anomalously low in $\delta^{18}O$ – has indeed been suggested, but it has only been seriously applied to basalts (e.g., Muehlenbachs et al. 1974; Skovgaard et al. 2001; Maclennan et al. 2003; Burnard & Harrison 2005; Macpherson et al. 2005; Thirlwall et al. 2006). However, analyses of olivine phenocrysts, including those from low $\delta^{18}O$ basalts, invariably return normal $\delta^{18}O$ values (Bindeman et al. 2008). This suggests that the Icelandic plume is normal in $\delta^{18}O$ and that the basalts acquire their low $\delta^{18}O$ in the crust. Furthermore, even the strongest proponents of a low-$\delta^{18}O$ mantle plume suggest values no lower than ~4‰ (Thirlwall et al. 2006). Generation of silicic magmas through either fractional crystallization of such basalts or partial melting of their unaltered equivalents would yield silicic magmas and zircons only slightly below typical mantle values; our zircon dataset includes values consistent with this origin, but they are in the minority (cf. Bindeman et al. 2008; Bindeman et al. 2012).

The final explanation for the ^{18}O-depleted signature of Icelandic zircon– hydrothermal alteration by glacial-climate, extremely-low $\delta^{18}O$ surface water – is not supported either by our dataset or by measured and estimated past values of Icelandic waters. Our analyzed zircons span the past ~15 m.y. of Icelandic history, a period that encompasses climate ranging from warm-temperate through cooling to full glaciation (e.g., Thordarson & Hoskuldsson 2002). More specifically, 182 of the 763 oxygen analyses considered here are from systems that were active > 8.5 Ma (Figure 1), from a time when Iceland's climate was warm (e.g.,Denk et al. 2011) and presumably surface waters did not have unusually low $\delta^{18}O$. Despite this, no systematic change in $\delta^{18}O$ is observed through time. These oldest Icelandic zircons have an average (and median)

$\delta^{18}O$ of 3.2 ‰, compared to an average of 3.0 ‰ (median 3.2 ‰) for zircons from systems < 8.5Ma, and an average of 2.4‰ (median of 2.3 ‰) for the young, active volcanoes in this dataset (Askja, Krafla, Öræfajökull, Kerlingarfjöll, Torfajökull, Hekla). Modest variability is consistent with the muting effect of maritime location on $\delta^{18}O$ of Icelandic surface waters and absence of evidence for extremely low $\delta^{18}O$ meteoric waters in Iceland's past (cf. Bindeman et al. 2006). Thus, we argue that the strong signature of the contribution of hydrothermally altered material to zircon-bearing silicic magma is not simply a reflection of the altering fluids having unusually low $\delta^{18}O$.

3.1.2: Titanium Concentrations

As with oxygen isotopic compositions, Ti concentrations divide Hadean and Icelandic zircons into two overlapping but distinct populations (Fig. 3). The Icelandic population (mean Ti: 13.6 ppm, median: 11.9 ppm) is shifted towards higher Ti concentrations than the Hadean (mean: 7.1 ppm, median: 5.4 ppm).

The distinct distributions of Hadean and Icelandic Ti concentrations imply a noteworthy difference between the histories of the magmas from which the two populations of zircons grew. As the Hadean (and many Icelandic) samples are detrital, we cannot tightly constrain activities of TiO_2 and SiO_2, and we acknowledge that there will be significant uncertainty in any quantitative estimates of temperature. In any case, Icelandic Ti concentrations that are roughly twice as high as those of Hadean zircons and require either: (1) systematically higher temperatures during growth of Icelandic compared to Hadean zircons; (2) a_{TiO2} that is far higher in Icelandic magmas or a_{SiO2} that is far lower; or (3) both.

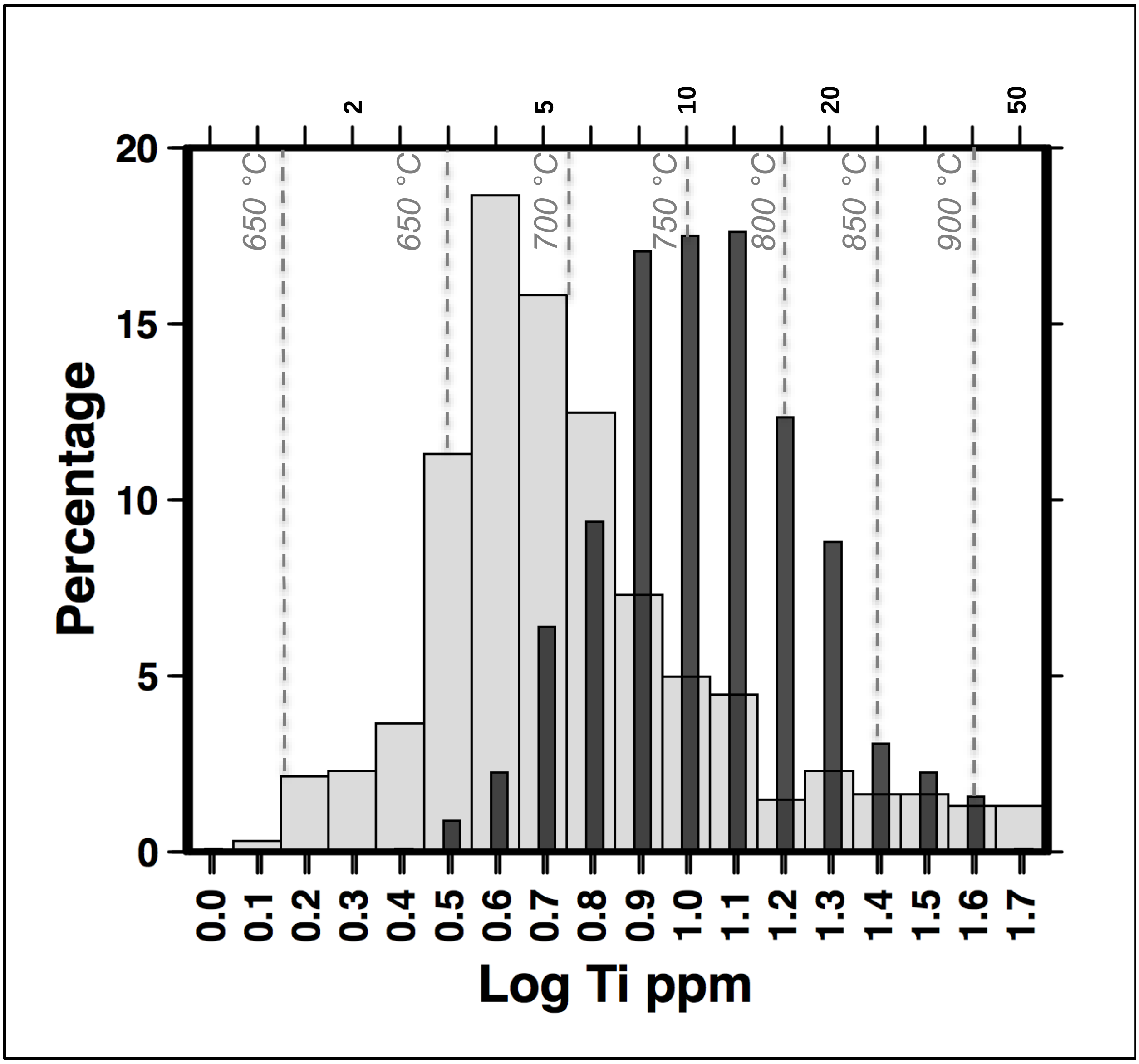


Figure 3: Comparison of Icelandic (n=820) and Hadean (n=600) Ti-in-zircon. Log Ti ppm labels (x-axis) are placed at the start of each bin; for reference, Ti concentrations (ppm) are shown above the top x-axis. We only present Ti concentrations up to 50 ppm, but percentages are calculated using full data set (see Appendices: Iceland SHRIMP TE data and Hadean Ti compilation). Estimated temperatures, provided as a general reference, are calculated using the methods of Ferry and Watson (2007) and Ti and Si activities of 1.0.

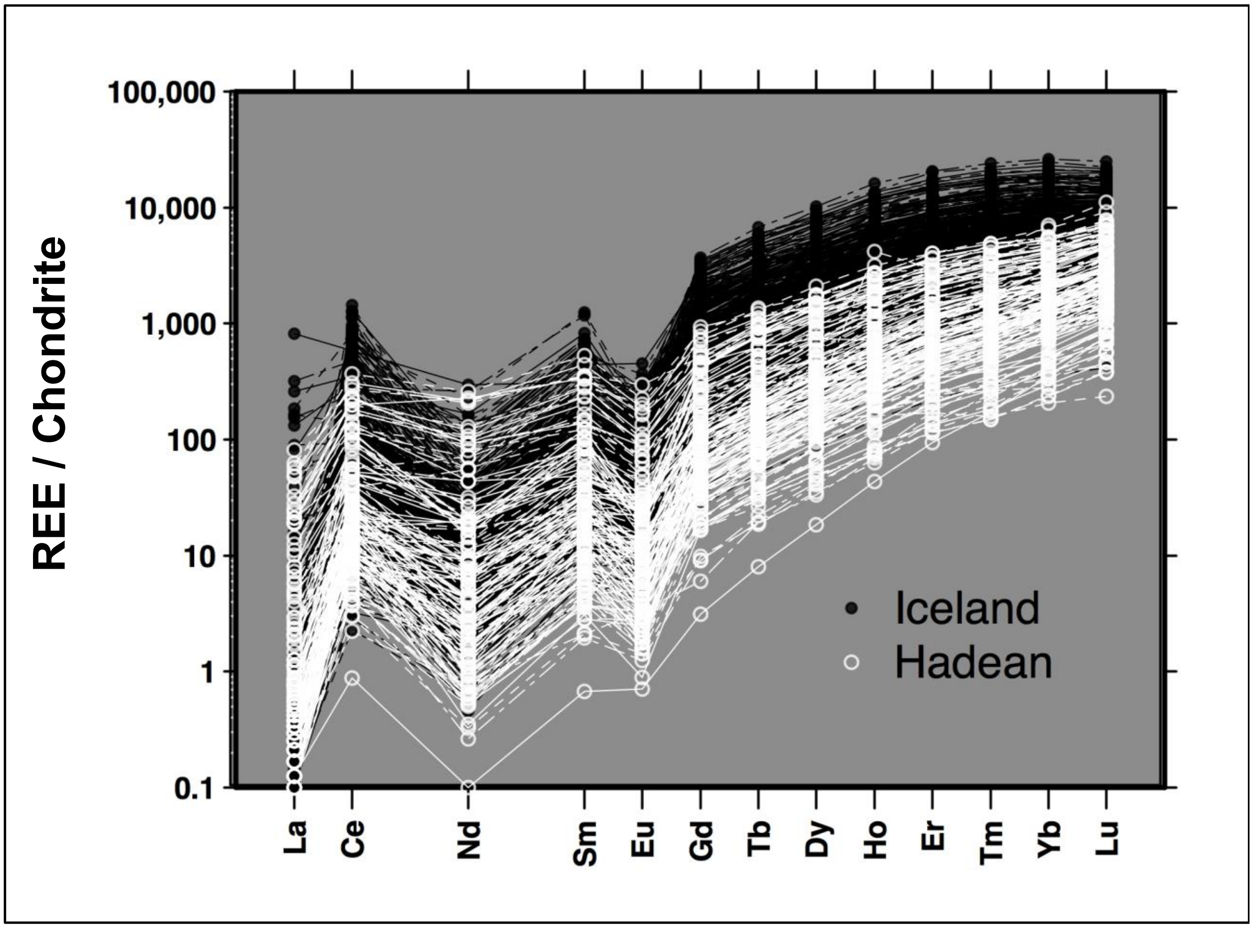
Consider the following examples. If we assume a_{TiO2} and a_{SiO2} of unity, the median calculated Icelandic growth temperature (Ti = 12 ppm) is 763 °C; the average for the Hadean (Ti = 5 ppm), calculated using the same activities, is 685 °C. Assuming a_{TiO2} = 0.5 and a_{SiO2} =1, the Icelandic median is 835 °C and the Hadean is 746 °C. To make the average temperatures match, a_{TiO2} would have to be far lower (approximately half of the Icelandic value) in the Hadean magmas, or a_{SiO2} would have to be much higher (a factor of almost 2). Much higher a_{TiO2} for Icelandic magmas is very unlikely: it has been argued that a_{TiO2} in melts from which Hadean zircons crystallized was relatively high (>~0.6; e.g. Harrison 2009, in part on the basis of rutile inclusions in some zircon crystals). There is also no reason to believe that a_{SiO2} is especially low in zircon-bearing magmas from Iceland (whole-rock analyses of our zircon-bearing samples approach or exceed 70 wt. % SiO_2, and glass when present invariably exceeds 70 wt. %). We therefore suggest that growth of Hadean zircons did indeed take place at much lower temperatures than growth of Icelandic zircons.

3.1.3: Rare Earth Elements (REE)

Chondrite-normalized REE patterns for Icelandic zircons are typical of zircon from felsic igneous rocks (Fig. 4): heavy (H) REE are enriched relative to light (L) REE, and positive Ce and negative Eu anomalies are ubiquitous. Similar trends are observed for the Hadean, and the range of LREE is similar, but there is one noteworthy distinction: HREE concentrations are much lower in Hadean zircons (see lower overall HREE in Fig. 4 and lower Yb in Fig. 5). Ytterbium concentrations in Hadean zircons range from ~55-840 ppm (excluding lowest and highest 5%) for the Hadean zircons, with a median of 240 ppm; the Icelandic Yb concentrations are much higher, spanning a range from ~240-2100 ppm with a median of 820 ppm.

The ratio Gd/Sm effectively distinguishes Icelandic from Hadean zircon populations (Fig. 5). The range of Gd/Sm for the Hadean (excluding the lowest and highest 5%) is ~2-8; for Iceland, it is~7 -11. For a given Sm concentration, the Gd/Sm of Iceland is consistently higher; at ~8 ppm Sm, the Gd/Sm of the Hadean ranges from ~2-6, while for Iceland the Gd/Sm ranges from ~7-11. Another ratio that highlights distinctions in between the Icelandic and Hadean zircon populations is Gd/Yb. Excluding what appear to be outliers in the Hadean dataset, Icelandic and Hadean zircons overlap considerably but define distinct, coherent groups in plots of Gd/Yb vs REE concentrations (e.g. Fig. 5c.d). The median Hadean Gd/Yb is 0.07, whereas that of Icelandic zircon is 0.12. The minimum (5^{th} percentile) value of the Hadean cluster is also substantially lower at 0.03, compared to 0.07 for Iceland.

Europium anomalies are similar for Hadean and Icelandic zircons, ranging upward to negligible (~0.95) and downward to deep anomalies, below 0.10 (Fig. 5). The deepest anomalies are deeper in Icelandic zircons than in Hadean (0.03 vs 0.06), but these are in grains that are far richer in REE than any from the Hadean. At similar Yb concentrations, there is no discernible difference in Eu/Eu*.



4: Comparison of chondrite normalized REE compositions in Hadean (n=167) and Icelandic (n=781) zircons. Chondrite values from McDonough and Sun (1995).

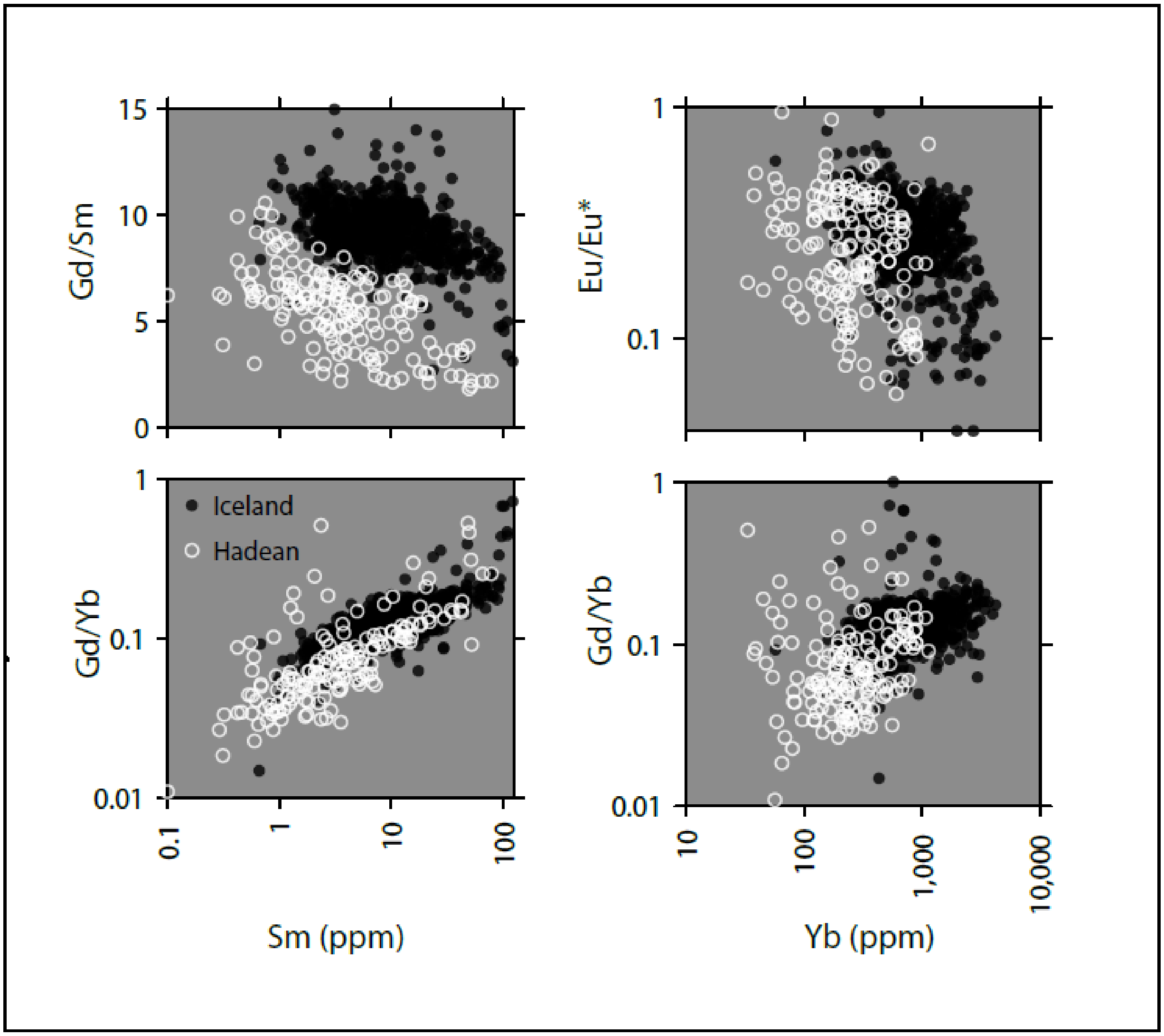


Figure 5: Comparison of Icelandic (n=781) and Hadean (n=167) HREE (Yb) and MREE (Sm, Gd) concentrations, ratios, and Eu anomalies.

3.1.4: Trace Element Discrimination

Grimes et al. (2007) demonstrated that zircons that have crystallized from magmas in continental and oceanic settings could generally be distinguished based on concentrations of Yb, U, Y and Hf. We plot our Icelandic and Hadean zircon data sets on the diagrams that they developed in Figure 6.

On a plot of Yb vs U (Fig. 6a), the Icelandic zircon population defines a narrow field that parallels the continental-oceanic boundary established by Grimes et al. (2007); the Icelandic data lie close to the oceanic boundary, but almost exclusively within the continental field (higher U/Yb than oceanic zircon). Hadean zircons are also exclusively "continental," but in a less well-defined field that stretches much farther from the boundary into the continental field (lower Yb for a given U concentration for the Hadean vs. Iceland). Ytterbium concentrations are substantially higher in Icelandic zircons (~150 ppm to ~4,000 ppm) than in Hadean zircons (~30 ppm to ~1000). Icelandic zircons have U contents that span a far broader range – almost three orders of magnitude, from ~20 ppm to ~3000 ppm – than Hadean, which have U concentrations that span only a little more than an order of magnitude, from ~40 ppm to ~700 ppm. It is possible that difference at the upper end of the ranges is the result of high-U zircons from the Hadean being lost as a consequence of metamictization and subsequent mechanical and chemical breakdown during the last >4 Ga. Regardless, Hadean zircons clearly range to compositions not seen in Iceland, notably in terms of their low Y, Yb and HREE in general, higher average U/Yb and negative U/Yb vs Y trend, and higher Hf (Fig. 6). Hadean zircons all plot well within established continental fields in Fig. 6, whereas Icelandic zircons tend to plot on the continental side of the oceanic-continental boundary and extend slightly into the oceanic field.

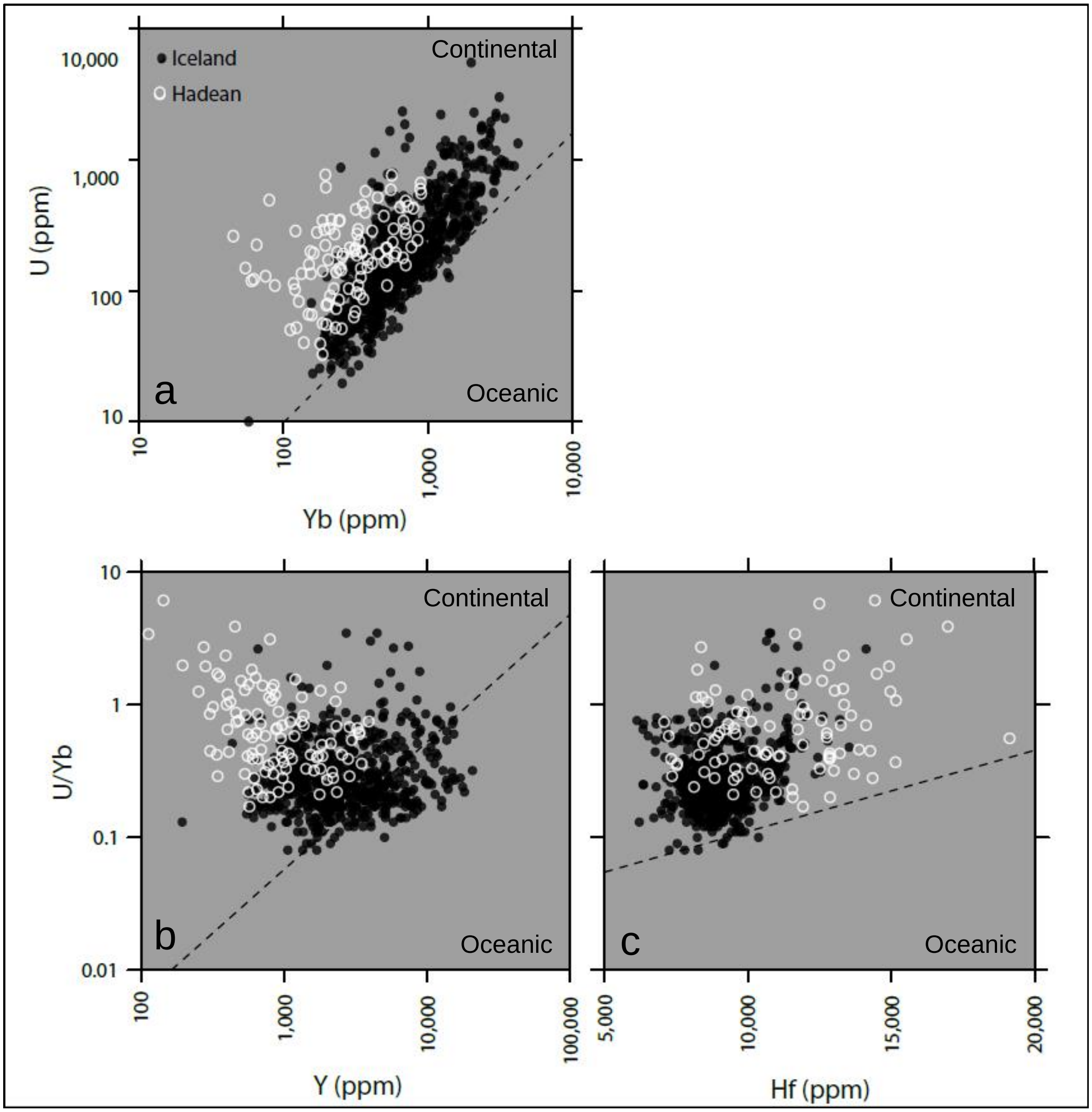


Figure 6: Comparison of Icelandic (n=700) and Hadean (n=108) trace element compositions presented on discrimination diagrams in the style of Grimes et al. (2007). Dashed lines delineate “continental” (above the line) and “oceanic” (MORB) compositional fields. A: Yb (ppm) vs U (ppm); B: Y (ppm) vs U/Yb; C: Hf (ppm) vs U/Yb.

3.2: Hadean and Icelandic Zircon Trace Element Compositions in a Global Context

As noted in the previous sections, oxygen isotopes and trace element compositions reveal significant differences between Icelandic and Hadean zircon populations: most notably, Icelandic zircons have much lower $\delta^{18}O$ and higher Ti concentrations (suggesting higher crystallization temperatures) and are more strongly enriched in HREE. In this section, we assess how trace element compositions of both zircon populations compare to those from other Phanerozoic magmatic-tectonic settings.

In the following sections and figures we compare the Ti concentrations (Fig. 7), and discriminatory elemental concentrations and ratios (Gd/Yb, Sm, Yb; Fig. 8 [cf. Fig. 5] and U, U/Yb, Y, Hf; Fig. 9 [cf. Fig. 6]) of Icelandic and Hadean zircons to zircons within our global database (see section 2.3). Chondrite-normalized REE patterns (for zircon and available bulk-rock examples) are presented in Appendix C.3.

3.2.1: Titanium

Zircons from different environments have widely varying distributions of Ti concentration, from narrow to broad and simple to complex (Fig. 7), but distinctions between Ti-richer and -poorer populations are evident. Median concentrations, less susceptible to the effects of outliers than means, reflect these differences best: MORB (15 ppm) and Iceland (12 ppm) are distinctly higher, Yellowstone, continental-oceanic rifts, and continental arcs (8 ppm) have intermediate values, and Hadean Ti concentrations (5 ppm) are demonstrably lower than the other populations. This comparison further highlights the disparity between Icelandic and Hadean zircon.

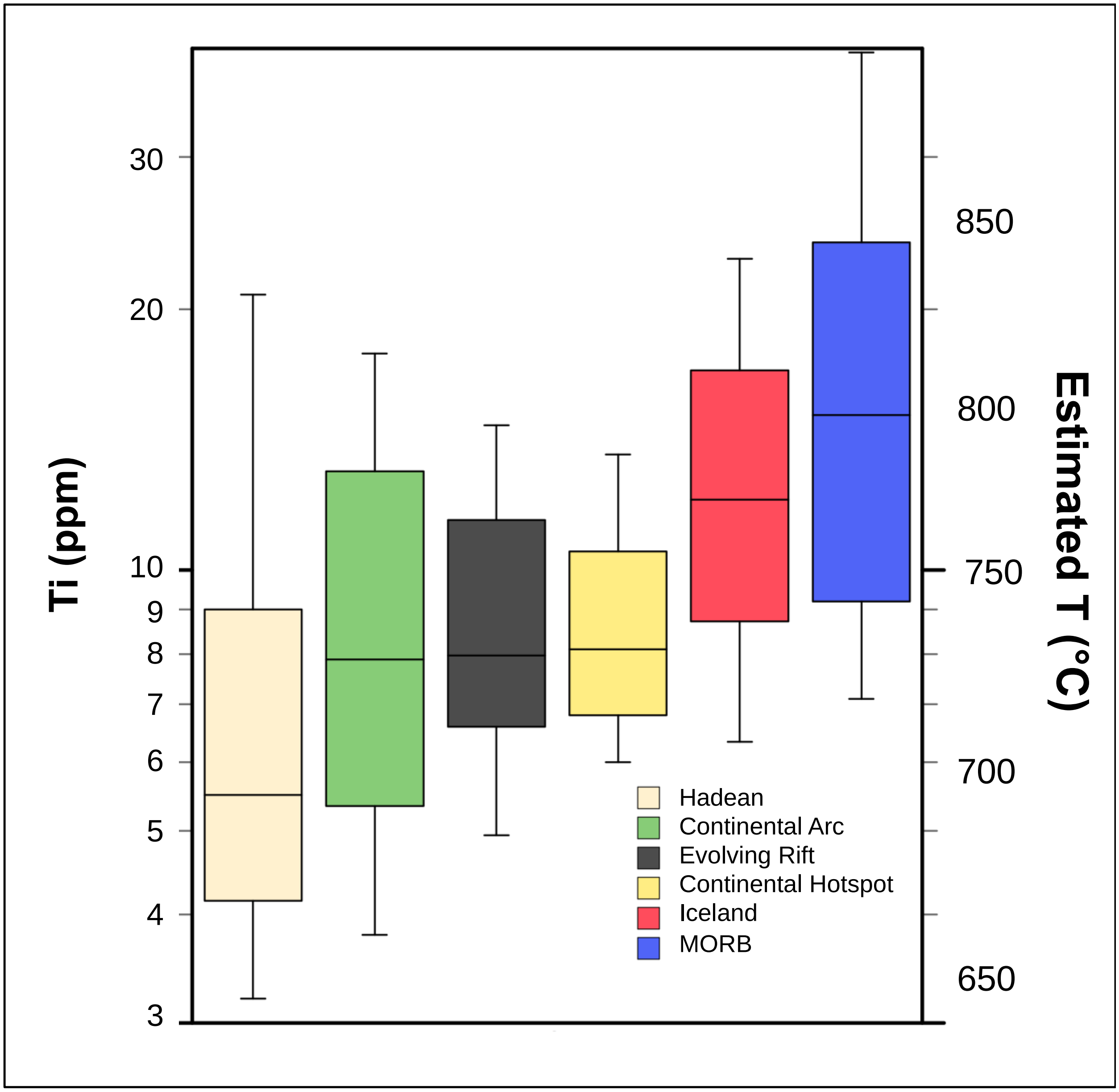


Figure 7: Global comparison of Ti-in-Zircon compositions. Whiskers extend to the 10th and the 90th percentile. The lower boundary of each box represents the 25th percentile and the upper boundary represents the 75th percentile (i.e., box represents middle 50% of zircon compositions for each population). The line bisecting each box represents the median composition of the population. Calculations were made with complete datasets, capped at 100 ppm (all published values above 100 ppm were assumed to be from analytical spots that overlapped inclusions or Ti-rich cracks). Y axis is log-scale, values presented in ppm. Compiled data is as follows: MORB (n=198; Grimes et al. 2007); continental hotspot (n=152; Yellowstone: Stelten et al. 2013); continental arc (n=817; Aucanquilcha: Walker et al. 2010; Mount Saint Helens: (Claiborne et al. 2010; Claiborne 2011; Flanagan 2009); Three Sisters: Stelten and Cooper 2012; McCoy Mountain Complex detrital: Barth et al. 2013); continental-oceanic rift (n=158; Alid: Lowenstern, Smith, et al. 2006; Lowenstern et al. 1997; Flanagan et al. 2010; Salton Sea: Schmitt and Vazquez 2006; Schmitt et al. 2013). Iceland and Hadean as in Figure 3.

3.2.2: Rare Earth Elements (REE)

The Gd/Yb ratio discussed in section 3.1.3 and Figure 5 highlights differences in our global zircon database (Fig. 8). Most notable is the observation that zircons from both the Hadean and Phanerozoic continental arcs are quite variable in Gd/Yb, ranging downward to values not observed in other environments. Iceland, evolving rifts and MORB extend to very high Yb concentrations (up to ~6,000-10,000 ppm), while the Hadean, continental arcs and the continental hotspot are less enriched (maxima near 1,000 ppm).

Chondrite-normalized REE plots comparing Iceland and Hadean zircons to those from the global dataset are compiled in Appendix B.3, and a plot of chondrite-normalized REE plot for Icelandic felsic rocks and well-established global rock compositions (primitive mantle, E-MORB, N-MORB, OIB, Andean arc rocks) is presented in Appendix C.3. These plots confirm that REE compositions in zircons do indeed reflect differences in magma compositions (as expected), giving confidence that our zircons are robust, and telling us what we should expect when whole-rock compositions are known.

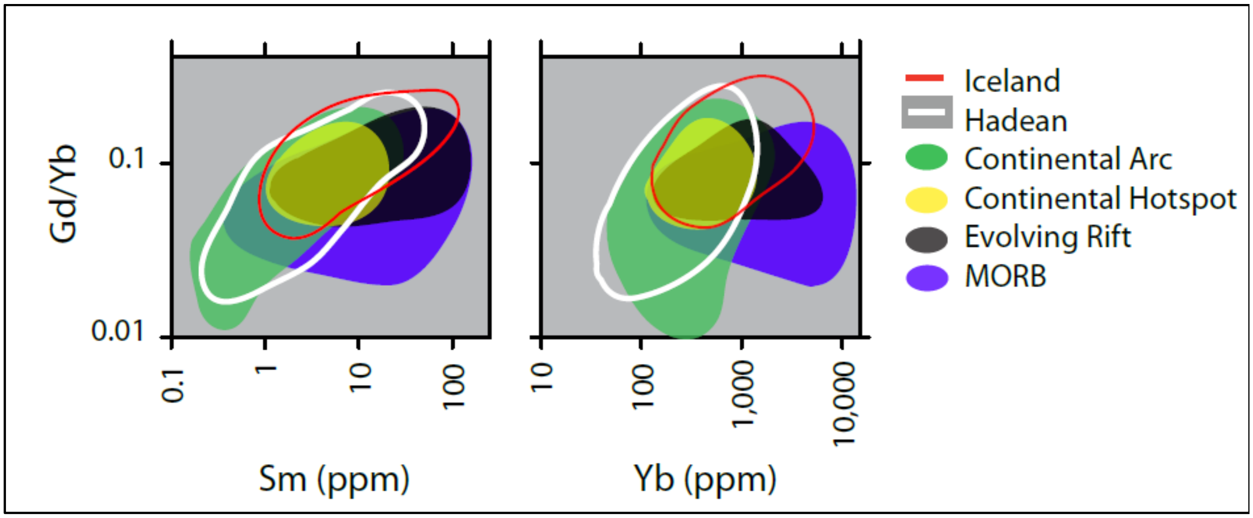


Figure 8: A global comparison MREE and HREE zircon compositions. Fields were drawn using the following: MORB (n=302; Grimes et al. 2007); continental hotspot (n=153; Yellowstone: Stelten et al. 2013); continental arc (n=944; Mount Saint Helens: (Flanagan 2009; Claiborne 2011); Three Sisters: Stelten and Cooper 2012; McCoy Mountain Complex detrital: Barth et al. 2013); continental-oceanic rift (n=147; Alid: Lowenstern, Smith, et al. 2006; Lowenstern et al. 1997; Flanagan et al. 2010; Salton Sea: Schmitt and Vazquez 2006; Schmitt et al. 2013). Iceland and Hadean are as in Figure 5. Fields were drawn excluding < 10% of data points (outliers) for each population. Figures with individual data points (including outliers excluded here) can be found in Appendix B.3.

3.2.3: Trace Element Discrimination

Trace element compositions of zircons from our global database, when plotted in Grimes et al. (2007) discrimination diagrams, define similar fields to those initially shown by those authors (Fig. 9). Most but not all MORB zircons fall in their "oceanic crust fields" on U/Yb vs Y and Hf and U vs Yb diagrams, and almost 100% of Hadean, continental arc, and continental hotspot (Yellowstone) zircons lie above the defining boundaries of Grimes et al. (2007), within the continental field (Fig. 9). The Hadean and continental arc fields are almost indistinguishable; particularly in U/Yb vs. Y space, with low Y values and a negative correlation typifying the U/Yb vs. Y space.

Icelandic and continental-oceanic rift zircons are mostly within the continental fields, but a few analyses (notably, Salton Sea zircons in the plot of Y vs U/Yb; compare Fig. 9 to Fig. 2 in Appendix B.3) extend into the "oceanic" field. Thus, Icelandic and evolving-rift zircons define a field that overlaps with but is clearly intermediate between the more continental populations (arcs, Yellowstone, Hadean) and MORB.

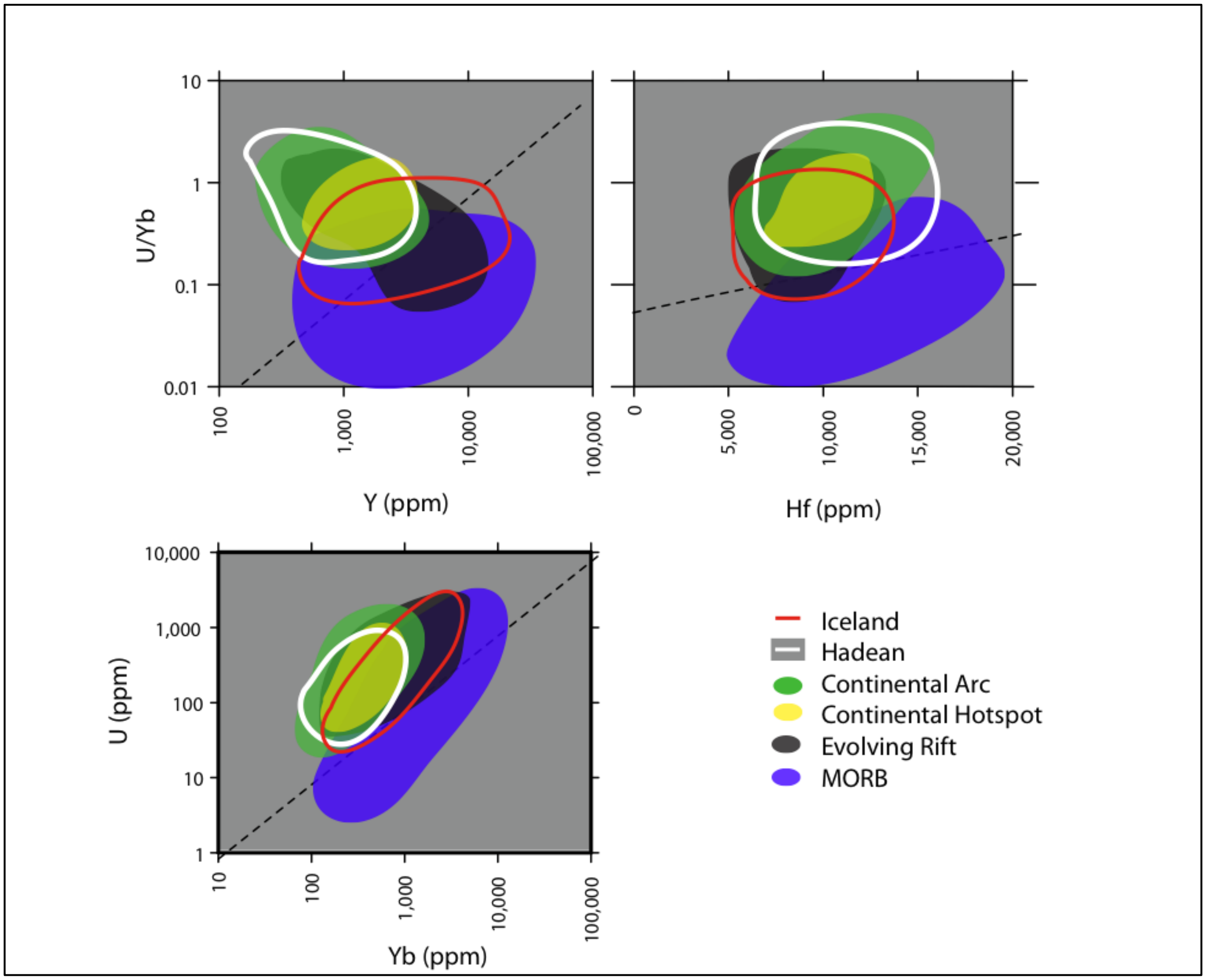


Figure 9: Global zircon compositions presented on discrimination diagrams in the style of Grimes et al. 2007. *[Top Left]:* Y (ppm) vs (U/Yb); *[Top Right]*: Hf (ppm) vs U/Yb); *[Bottom Left]*: Yb (ppm) vs U (ppm). Fields were drawn using the same datasets as in Figure 8. Fewer than 10% of data points (outliers) were excluded from each population when drawing fields. Figures with individual data points (including outliers excluded here) can be found in Appendix B.3.

3.3: Elemental Contrasts: Possible Petrogenetic Implications

It is plausible that the mantle from which Hadean magmas were ultimately derived was essentially primordial (undepleted). If this were the case, zircons will reflect the significant elemental differences between the Hadean mantle and the mantle from which modern Icelandic and other magmas are derived. However, the distinguishing characteristics of Hadean zircon - low MREE and HREE, Ti, and U– cannot be explained by derivation from a less depleted mantle source. We therefore conclude that the compositions of zircon-bearing Hadean magmas differed fundamentally from zircon-bearing Icelandic magmas, and that the petrogenetic processes that yielded the Hadean zircon signature had little to do with a unique mantle composition. We therefore include them below in a discussion to consider general petrogenetic implications of the compositions of zircon from different settings.

Zircons from settings where there is no subduction influence and little or no continental lithosphere – those from Iceland, as well as MORB and evolving continental-oceanic rift settings – are distinct in composition from those from Phanerozoic arcs and even more so from Hadean zircons. The former group is most notably distinguished by higher Ti (in Icelandic and MORB zircons) and middle to heavy REE concentrations. This probably reflects differences that relate to magma genesis and evolution in the contrasting Phanerozoic settings: hotter, drier magmas in juvenile rift and plume environments, cooler and wetter magmas in subduction environments. This leads directly to the higher Ti in zircons from rift/plume settings.

Trace element abundances evolve very differently in the contrasting settings as a consequence of the different coexisting crystalline assemblages and resulting differences in trace element partitioning (e.g. Bachmann et al. 2005; Rollinson 1993; GERM database). The REE and Y are incompatible with major minerals that coexist with higher-T melts (olivine, pyroxenes, feldspar, mostly plagioclase, oxides ± quartz; except where clinopyroxene is unusually abundant); thus, silicic melts produced by the extensive fractionation of these minerals will have high concentrations of these elements. In contrast, amphibole and REE-rich accessories commonly join the crystalline assemblage in cooler, wetter magmas in subduction environments; therefore MREE, HREE, and in some cases LREE are low in silicic melts. Saturation in key accessory minerals is insensitive to water content of melts, and hence they appear earlier relative to major silicates in cool wet magmas than in hot dry magmas (cf. Watson and Harrison 1983; Harrison and Watson 1984; Boehnke et al. 2013). This distinction is consistent with the contrasts in elemental compositions of Phanerozoic silicic magmas from different tectonic environments (e.g. Pearce, Harris, and Tindle 1984). By implication, Hadean zircon compositions suggest magmas that were dramatically different from those of modern Iceland: similar to but perhaps even cooler and wetter than modern subduction zone magmas (cf. Harrison, 2009, 2013) and appear to refute interpretations that the magmas from which Hadean zircon grew were products of impact melting (Darling et al. 2009) or fractional crystallization of MORB-like basalt (Coogan and Hinton 2006).

4. Conclusions

Zircon provides the only concrete record of the Hadean that is available to geoscientists today. Therefore, inferences about the Hadean are best built upon comparisons with zircon from well-constrained modern environments. In this paper, we have presented a new data set for the elemental and oxygen isotopic compositions of Icelandic zircon, compared these data with those that have been published for Hadean zircon, and finally compared both of those data sets to elemental data for zircon from other well-established Phanerozoic environments.

The $\delta^{18}O$ signatures of Icelandic and Hadean zircon populations are dramatically different. Almost all (~98%) analyzed Icelandic zircons have $\delta^{18}O$ below the expected mantle value of ~5.3‰, whereas only 15% of Hadean zircons fall below this value. The mean and median for Iceland zircon is ~3‰, in contrast to ~6‰ for Hadean zircon. This dichotomy strongly suggests an important difference in source materials for melts from which the zircons grew. The low $\delta^{18}O$ of Icelandic zircon appears to require that the source material, or a volumetrically very important contaminant, of silicic magmas in Iceland is crustal material that has been hydrothermally altered by surface waters (e.g., Bindeman et al. 2012). In contrast, there is little evidence for appreciable contributions from such material to the Hadean magmas from which zircon grew. The range of $\delta^{18}O$ of Hadean zircon is more compatible with normal mantle and minor sedimentary contributors, similar to Phanerozoic continental and island arc magmas (Harrison 2009).

Concentrations of Ti clearly distinguish Icelandic (median 12 ppm) from Hadean (median 5 ppm) zircons. This suggests a substantially higher-temperature magmatic growth environment for Icelandic than for Hadean zircons, probably by 50-100 ºC. Among populations that we have compiled for this investigation, only MORB zircon matches or exceeds Ti in Icelandic zircon. Hadean zircon, in contrast, has generally lower Ti than any of the other populations, implying unusually low-temperature silicic magmatism (Harrison 2013).

Other trace elements provide informative comparisons among Icelandic and Hadean zircons and zircons from other environments. In REE, Hf, U, and ratios of these elements, Hadean zircons are closely aligned with continental zircons (arc, and in part with a continental hotspot [Yellowstone]), whereas Icelandic zircons are generally intermediate in composition between continental and MORB zircons. Iceland, MORB, and Yellowstone zircons share distinctly higher

HREE concentrations than arc and Hadean zircons; Iceland and Yellowstone have higher U/HREE than MORB and lower ratios than continental arcs and the Hadean.

The comparisons presented in this paper support the following conclusions:

(1) The environment in which silicic magmas are generated in Iceland is distinctly different from that in which Hadean zircon-bearing magmas were generated.

(2) Magmatic environments in which Hadean zircon grew appear to have more in common with Phanerozoic continental settings than with Iceland or more typical mid-ocean ridge environments.

(3) Elemental compositions of Icelandic zircon occupy a distinct field, overlapping with both continental and oceanic zircon. The Icelandic field roughly coincides with that of modern rifts where continental lithosphere is being replaced by upwelling asthenosphere and new oceanic lithosphere.

(4) The high Ti and middle and heavy REE of Icelandic, MORB, and evolving rifts (in M-HREE, less-so in Ti) stand in contrast to lower Ti and M-HREE in arc settings. The lower concentrations of these key elements are probably a consequence of cooler and wetter magmas in arc settings. Following this reasoning, Hadean zircons may reflect even cooler and wetter magmatism than Phanerozoic arcs.

CHAPTER 3

Isotopes through Time: Using Zircon to Add Critical Detail to Iceland's Silicic Past

Abstract

Iceland's abundant (~10%) felsic rocks have been the focus of extensive study, but until recently, there has been a paucity of zircon-based investigations. Zircon is a robust geochronometer and recorder of magmatic evolution; its chemical durability is especially valuable in Iceland where high heat flux and hydrothermal alteration are major considerations. Using high spatial resolution measurements of U-Pb and U-Th ages, O isotopes, and Hf isotopes, we have analyzed >1000 zircons from nine volcanic, six intrusive, and nine detrital samples. To assess spatial and temporal trends, samples span Iceland's history (~16 Ma to the present) and tectonomagmatic settings (e.g. on vs. off rift environments). Multiple analyses are performed on individual zircon crystals, resulting in a high-resolution view of magmatism through time. Paired age and isotope analyses reveal that oxygen isotopes are not correlated with time; partial melting of hydrothermally altered crust has been a primary driver in silicic petrogenesis throughout Iceland's history. There is, however, a correlation between hafnium isotopes and time, with contributions from a less depleted mantle source that became evident approximately 7 Ma. This development led to an isotopic heterogeneity not observed earlier in Iceland's history (~8 to 16 Ma). This broad survey of zircon, which adds critical age data to Iceland's geologic record, also reveals important insight into processes and sources influencing the island's silicic evolution.

1. Introduction and Background Motivation

Iceland is unique on modern earth. It is Earth's largest oceanic island, atop one of Earth's largest oceanic plateaus (Thordarson and Hoskuldsson 2002), a result of voluminous magma production occurring at the junction of a hotspot and an actively-spreading mid-ocean ridge (Vink 1984; Thordarson and Larsen 2007; Bjarnason 2008). The island of Iceland is far larger than seems possible, given its ~18 million year subaerial history and ~1 cm/ year half-spreading rate (Martin et al. 2011). Furthermore, crustal thickness averages 25 km in Iceland and extends up to 40 km, making it far thicker than the typical 10 km thickness of oceanic crust (Bjarnason 2008). This remarkable thickness hints at the possible construction of permanent, unsubductable, crust and thus continental nucleation in an oceanic setting (Kröner and Layer 1992; Cloos 1993; Gunnarsson et al. 1998). It also raises many questions about magmatic processes, rates of magma generation, and duration of magmatic system longevity.

Adding to the idea of Iceland as a proto-continent is the abundance of silicic material that can be found on the island: ~10-13% of the total exposure of Icelandic crust (Walker 1963, 1966; Jonasson 2007). This abundance of silicic crust, which seems out of place in an oceanic environment, has been the focus of intensive and highly-debated study (Carmichael 1964; Wood 1978; Sigurdsson and Sparks 1981; Macdonald et al. 1987; Macdonald et al. 1990; Nicholson et al. 1991; Sigmarsson et al. 1991;Furman et al. 1992b; Jonasson 1994; Prestvik et al. 2001; Martin and Sigmarsson 2007, 2010; Carley et al. 2011; Bindeman et al. 2012). Many are motivated to understand silicic petrogenesis in Iceland because they believe Iceland can shed light on the origins of Earth's earliest continental crust (Marsh et al. 1991; Sigmarsson et al. 1991; Gunnarsson et al. 1998; Valley et al. 2002; Martin and Sigmarsson 2005; Bindeman et al. 2012). While we have demonstrated that Iceland is not a magmatic analogue for the Hadean

(Chapter 2), we maintain that resolving Iceland's magmatic processes has important implications for understanding silicic petrogenesis globally, as this juvenile environment lacks many of the distractions and complications (i.e., significant presence and recycling of sedimentary materials or pre-existing silicic crust) of older, better established, continental settings.

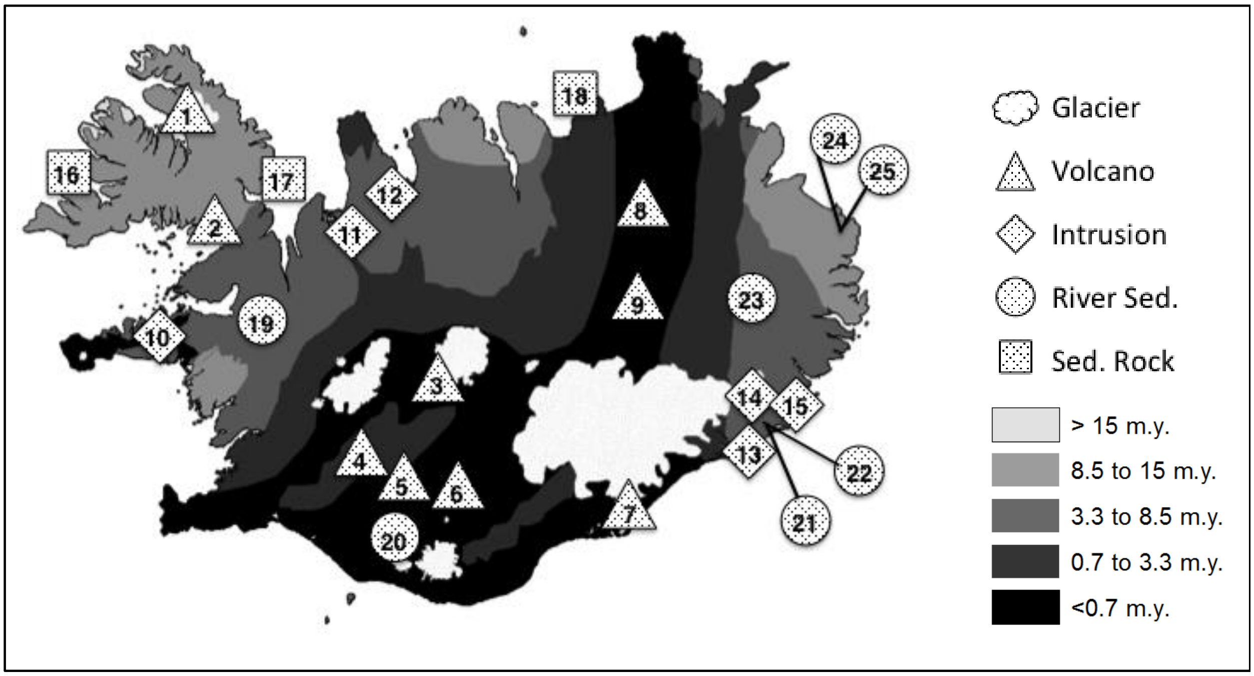
Zircon-based research, which has elsewhere been fundamental to studies of magmatic origins and evolution, has been lacking in studies of Icelandic geology (cf. recent work by Carley et al., 2011; Martin et al., 2011; Bindeman et al., 2012). Zircon is well known as a precise and robust geochronological tool, as well as for its value for elemental and isotopic investigations of the magmas from which it crystallized. This is particularly true for Hf isotopes, which can illuminate contributions of distinct mantle and crustal materials to magmas (Patchett et al. 1982; Kinny and Maas 2003 and references cited therein; Hawkesworth and Kemp 2006; Kemp et al. 2007), and oxygen isotopes, which reveal evidence of surface contributions to magmas (Valley et al. 2002; Valley 2003 and references cited therein; Cavosie et al. 2005; Bindeman 2008; Bindeman et al. 2012). Zircon is particularly well suited for studies into these two isotopic systems; Hf and O are very abundant in zircon, as oxygen is an essential structural constituent of zircon ($ZrSiO_4$) and Hf is highly compatible in zircon. Furthermore, the diffusivity of these elements in zircon is extremely low, so the crystallization record is preserved, without diffusive blurring or re-equilibration.

2. Goals and contributions of this work:

In this study, we conduct a temporal and isotopic survey of Icelandic zircon, and the (primarily) silicic melts from which it has crystallized. We seek correlations between isotope compositions and age. With oxygen isotopes specifically, we aim to determine if the mechanism producing Icelandic silicic melt has been (generally) the same throughout the last ~16 million years of Iceland's history (i.e., has partial melting of hydrothermally altered crust played a prominent role). We analyzed zircons that span Iceland's climate history, from pre-cooling to full glaciation through the present day, to see if we can uncover any evidence of glaciation on the zircon record (be it the direct effects of glacial loading and unloading on shallow magmatic systems, or imprinting of distinctly light $\delta^{18}O$ glacial waters on magmatic systems). With Hf isotopes, we directly address issues of silicic petrogenesis through space and time in Iceland. While pursuing the issue of juvenile silicic petrogenesis, we were also able to use the generated O, Hf and U-Pb isotope data to evaluate the controversial hypothesis that slivers of ancient crust that may underlie Iceland (Foulger and Anderson 2005b; Foulger et al. 2005a; Foulger 2006a; Paquette et al. 2006b, 2007; Breivik et al. 2012b).

3. Approach and Methods

In our sampling scheme, we attempt to fully capture any diversity present in the Icelandic zircon record (and thus diverse histories of petrogenesis and magmatic evolution preserved therein). To do this, we collected samples of intermediate and rhyolitic lavas and tephras; intrusive samples ranging from gabbros to high silica granites; detrital samples from ancient sedimentary rocks and modern river systems. Our sample collection covers the full range of tectonic settings recognized in Iceland, and includes volcanic and detrital samples dating back ~16 million years, through volcanic samples deposited during historical times (Fig. 1).



1: Schematic map of zircon bearing sample locations within Iceland. Symbol numbers correspond to system numbers and names in Table 1. Base map modeled after Thordarson and Hoskuldsson, 2002.

Table 1: Sample Names, Locations, and Ages

Map Number	System	Min. (Ma)	Max. (Ma)	Median (Ma)	Mean (Ma)	n Ages	Std. Dev.
			Volcanic Samples				
1	Hrafnfjörður	13.7	14.6	14.1	14.1	14	0.3
2	Króksfjördur	10.2	12.2	11.2	11.3	8	0.7
3	Kerlingarfjöll	0	0.6	0.13	0.14	27	0.12
4	Stóra-Laxa	1.9	2.4	2.2	2.2	11	0.1
5	Hekla[5]	0	0.04	0.02	0.02	8	0.01
6	Torfajökull[1]	0	0.05	0	0.005	27	0.01
7	Öræfajökull[1]	0	0.03	0.006	0.01	11	0.01
8	Krafla	0.10	0.21	0.14	0.21	12	0.03
9	Askja[1]	.	.	0	.	.	.
			Intrusive Samples				
10	Snæfellsness-Knörr	4.5	5.8	5.1	5.1	14	0.3
11	Viđidalsfjall	6.4	7.2	6.9	6.8	15	0.3
12	Laxárdalsfjöll	7.3	8.3	7.5	7.6	19	0.3
13	Vesturhorn[6]	.	.	6.5	.	.	.
14	Slaufurdalur[2]	.	.	6.5	.	.	.
15	Austurhorn[2]	.	.	6.5	.	.	.
			Sedimentary Rocks				
16	Selardalur	12.5	15.6	13.9	14.0	14	0.9
17	Husavikurkleif	9.5	12.4	10.8	10.7	31	0.7
18	Tjörnes	4.4	11.1	5.9	6.3	30	1.5
			Modern River Sediments				
19	Miđá	4.3	6.9	5.7	5.6	36	0.7
20	Markarfljót	0.03	0.07	0.04	0.04	8	0.02
21	Fjardarsá	5.0	7.6	6.1	6.1	27	0.7
22	Jökulsá í Lóni	1.7	6.2	3.9	3.9	15	1.3
23	Lagarfljót	0.02	2.2	1.7	1.4	24	0.7
24	Breiðuvík[7]	10.9	15.0	12.9	12.9	247	0.7

[5] Ages previously published in Carley et al. 2011.
[6] Representative age from Padilla 2011
[7] This sample is a focused detrital investigation into the Breiðuvík volcanic center. It is composed of zircons from the Stóraá and Krossá-Kækjudalsá Rivers. More detail on this sample can be found in Chapter 4.

Zircons were separated from their host-samples using standard crushing, sieving, density and magnetic separation techniques. Zircons were mounted in epoxy, polished to expose grain interiors, and analyzed using cathodoluminescence (CL) imagery to reveal compositional zoning and to guide analytical spot placement. High-spatial resolution analyses of oxygen isotopes were conducted using the CAMECA ims1270 microprobe at UCLA-NSF facilities (methods closely following Trail et al., 2007; see also Chapter 2). Ages were determined using the Sensitive High Resolution Ion Microprobe-Reverse Geometry (SHRIMP-RG), co-operated by the US Geological Survey and Stanford University. Ages for young zircons (> 300 ka) were determined using U-Th disequilibrium dating methods (following Lowenstern et al., 2000; Charlier et al., 2005; see also Carley et al., 2011). Older zircons were dating using a variety of U-Pb routines (standard 5-6 scans per analysis; "short" 3-scan survey mode for detrital zircons; simultaneous collection of ages and critical trace elements, etc.; see Chapter 4 methods for further details). We measured Hf isotope ratios in zircons using a Geolas 193nm excimer laser ablation system coupled to a Thermo-Scientific NEPTUNE multi-collector inductively coupled plasma mass spectrometer (LA-MC-ICPMS) at Memorial University (Newfoundland, Canada), following methods described by Fisher et al. (2011); see also Chapter 3 methods for further detail. Whole-rock Hf and Nd isotope analyses were conducted for a selected subset of lava and granite samples. These analyses were carried out at the Radiogenic Isotope and Geochronology Laboratory at Washington State University, using a Thermo-Finnigan MC-ICP-MS, following dissolution and analytical methods described by McDowell et al. (in prep; also, see methods in Chapter 4). Further details (e.g., analytical session, order in which analyses were conducted on zircons, etc.) can be found in Appendices E (bulk rock isotopes) and F (Hf isotopes in zircon).

4. Results

The zircons dated in this study (n = 599) span a window of time from ~0 Ma (near-eruption age from historical eruptions), to 15.6 ± 0.4 Ma (Selardalur sandstone in the West Fjords). The oldest zircon dated from an in-place igneous sample is 14.6 ± 0.2 Ma, from Hrafnfjörđur volcano (West Fjords). Age results are summarized in Table 1, with a more complete record available in the supplementary material.

Hafnium isotope compositions of Icelandic zircons (n = 336) range from approximately ε_{Hf} 9 to 17. For igneous samples where we have Hf isotope analyses for both zircon and their host rocks, we see evidence for isotopic equilibrium; whole-rock compositions are approximately equal to the average ε_{Hf} composition of zircons from the same sample (Fig. 2a). As expected, ε_{Hf} and ε_{Nd} are positively correlated (Fig. 2a). Whole-rock ε_{Hf} and ε_{Nd} compositions, along with their corresponding zircon ε_{Hf} compositions, fall within an isotopic range previously defined for Icelandic basalts, albeit on the lower-end of the spectrum (see Fig. 2a and data compilation from Peate et al., 2010).

Oxygen isotope compositions for Icelandic zircons (n = 750, Chapter 2 and Appendix A.1) range in δ^{18}O from ~-1.5 to ~5.5 ‰, with a median of 3.0 and a mean of 3.2‰. Approximately 98% of these analyses fall below the δ^{18}O range of mantle zircon (5.3 ± 0.3 ‰; Valley et al., 1998; Valley, 2003). Many of the same grains analyzed to collect this data were also analyzed for ε_{Hf} (n=275). When plotted as a whole population, there is not observable correlation between δ^{18}O and ε_{Hf} in Icelandic zircon (Fig. 2c). However, we see a striking negative correlation when we extract data for the following volcanic centers from the greater population: Krafla active on-rift volcano in the Northern Volcanic Zone), Króksfjördur (extinct volcano that produces rare calc-alkaline magmas), Kerlingarfjöll (active on rift volcano in the

Western Volcanic Zone), Viđidalsfjall (intrusion associated with the extinct Snæfellsness-Skagi rift), and Öræfajökull (active off-rift volcano; Fig. 2d). Notably, the on-rift volcano forms the high ε_{Hf} and low $\delta^{18}O$ end of the spectrum, while the off-rift volcano forms the low ε_{Hf} and high $\delta^{18}O$ ends of the spectrum.

Two anomalous zircons were discovered in this cross-country survey: one from a sandstone at Husavikurkleif in the west (427 Ma, $\delta^{18}O$ ~ +7 ‰, ε_{Hf} ~ -16) and the other from a mafic dike at Breiðuvík in the east (320 Ma, $\delta^{18}O$ ~+10, ε_{Hf} ~ -21). Data from these two zircons are not included in Table 1, figures, or general statements about ages and isotopes in Icelandic zircons.

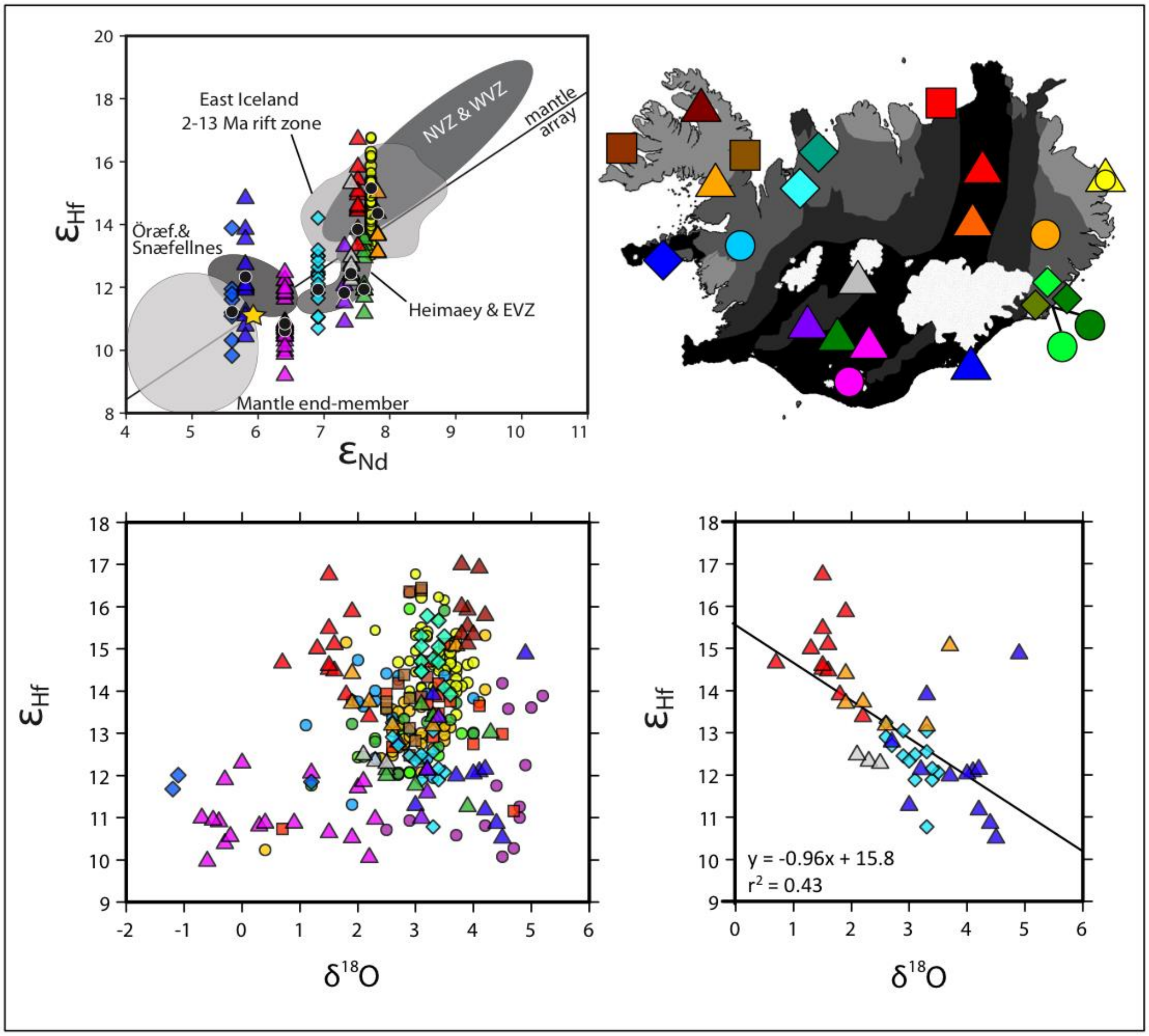


Figure 2: Isotope compilation plots. *[Top Left]:* Hafnium and Nd isotope compositions from this study overlain on an Icelandic compilation modified from Peate et al. 2010 (data for compilation is from (Hanan and Graham 1996; Stracke et al. 2003; Andres et al. 2004; Blichert-Toft et al. 2005; Kitagawa et al. 2008; Peate et al. 2010). Bulk-rock isotope compositions are indicated by black circles. Zircon ε_{Hf} values are indicated by colored symbols, which correspond to symbols on the locator map in the top right panel. Average analytical errors (2 s.e. for Hf, 1 s.e. for O) are presented as crosses in this and subsequent figure panels. *[Top Right]:* Sample locator map, which acts as a key for this figure and Figure 3a and 3b. *[Bottom Left]:* Hafnium vs. O isotope compositions in Icelandic zircon. *[Bottom Right]:* Isotopic compositions extracted from the bottom left panel for samples that show a negative correlation between Hf and O.

5. Discussion

Oxygen is not correlated with time in the Icelandic zircon record (Fig. 3a). Regardless of the timing of zircon growth—be it ~16 Ma when Iceland was an island in its infancy in a temperate climate (Denk et al. 2011b), to the onset of cooling climate conditions ~7 Ma through full glaciation ~2.5 Ma (Thordarson and Hoskuldsson 2002), on to the current day—the average $\delta^{18}O$ has been ~3.0 ‰. This lack of correlation is remarkably interesting. It reveals that Icelandic magmas have been low in $\delta^{18}O$ throughout the last ~16 Ma of its history. Meteoric water—more specifically, crust hydrothermally altered by meteoric water—has played an important role in magmatic processes for the last 16 Ma. While this does not preclude the involvement of processes like fractional crystallization or assimilation-fractional crystallization, it does strongly suggest that partial melting has been the primary driver of silicic magma generation throughout the entirety of Iceland's subaerial history.

Hafnium isotopes, unlike oxygen, do show a correlation with time (Fig. 2b). There is clear evidence for increasing diversification of ε_{Hf} (and thus, a diversification of mantle source contributions) throughout Iceland's history. The ε_{Hf} values of Icelandic zircons trend towards lower values with time. Between 16 and 11 Ma, the ε_{Hf} of Icelandic zircons was restricted to ~13 to 17, and then down to ~12 ε_{Hf} by ~10 Ma. At approximately 7 Ma, ε_{Hf} began a pronounced descent to even lower values ε_{Hf}, without losing the higher values that typified the earlier years. The last million years of Iceland's history is characterized by ε_{Hf} that ranges from ~16 ε_{Hf} at Krafla in the Northern Volcanic Zone, down to ~10 ε_{Hf} at systems like Stóra-Laxa (Western Volcanic Zone), Torfajökull and Krafla in the propagating Eastern Volcanic Zone, and the off-rift Oræfajökull volcano. It seems that an entirely new mantle source began contributing, or contributing in a more significant way, to Icelandic magmatism around 7 Ma. The lowest extreme of this Hf signature, captured by zircons in young felsic magmas, has not been previously observed in the basaltic record. Previous studies of Hf isotopes in Icelandic basalts do not extend below ~ 11 ε_{Hf} (Peate et al., 2010 and references compiled therein).

In addition to the increasing diversity of ε_{Hf} with time, we observe interesting patterns in the spatial distribution of ε_{Hf} across Iceland (Fig. 4). Zircons from Krafla and Breiðuvík, separated by ~150 km and ~12 Ma, are nearly identical in ε_{Hf}. They both originated at the Northern Volcanic Zone, atop the same mantle source, though Breiðuvík has since moved off-rift to its current location (Martin et al. 2011). Likewise, Stóra-Laxa, Hekla, and Torfajökull (as well as the Markarfljót River draining the region) together define the lower end of the ε_{Hf} spectrum. They are all young systems, and all located in relatively close spatial proximity (Stóra-Laxa being slightly farther afield both spatially and temporally).

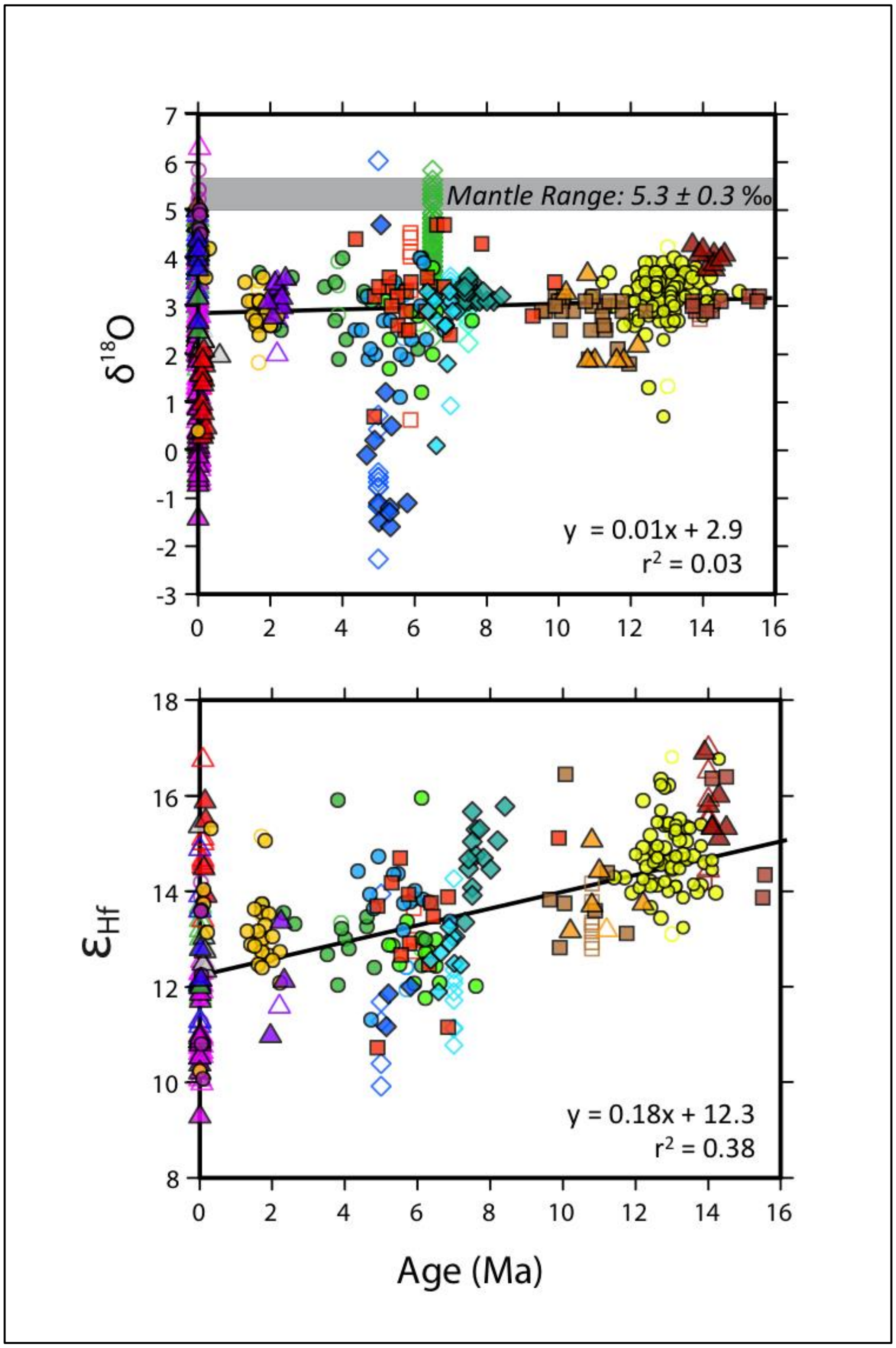


Figure 3:Oxygen and Hafnium isotopes through time. *[Top]:* Oxygen isotopes in zircons vs. time. The mantle range shown in gray is from Valley et al. 1998 and Valley 2003. *[Bottom]:* Hafnium isotopes in zircons vs. time. For both panels A and B, symbol shapes and colors correspond to those shown in Figures 1 and 2b. Filled symbols represent zircon crystals that were analyzed for both isotopes and ages. Open symbols represent grains that were analyzed for only isotopes. In this case, the assigned age is the median age for the sample (see Table 1). In both cases, the linear regression was calculated using Excel. Average analytical errors (1 s.e. for O, 2 s.e. for Hf, 1σ for age) are presented as crosses in both Figure 3a and 3b.

The systems that are located along the abandoned Snæfellsness-Skagi rift (active ~15-7 Ma), however, present a more complicated picture (Fig. 4). For systems that presumably all originated at the same spreading center, in reasonably close proximity and in a contiguous span of time, they demonstrate remarkable diversity in ε_{Hf}. While there is a spatial pattern with age (younger in the north, progressively younger moving south and west along the rift), we observe neither spatial nor temporal patterns in ε_{Hf}. This heterogeneity at the extinct Snæfellsness-Skagi, compared to reasonable homogeneity at active rifts today, emphasizes the need to conduct further study into the systems (and systematics) of Iceland's abandoned rifts.

In this broad survey of Icelandic zircon, we sought evidence for or against the presence of an unusual low $\delta^{18}O$ mantle source beneath Iceland, as well as evidence for or against the existence of ancient crust slivers hypothesized to be beneath Iceland. The uniformity of $\delta^{18}O$ in Icelandic zircon is low, and remarkably consistent through space and time (in a population wide sense, overlooking intra-sample variation). The degree of heterogeneity that we observe in the ε_{Hf} record in zircon, and that other researchers (e.g., Kempton et al. 2000, Kitagawa et al. 2008, Peate et al. 2010 and many references therein) observe in other isotope systems, is absent in the O isotope record, as averaged through time. We argue that this homogeneity, in a setting that is otherwise known for its mantle heterogeneity, is strong evidence against one unusual-oxygen mantle source for Icelandic magmatic systems. As for the existence of ancient crustal slivers trapped beneath Iceland, the findings of this study leave us skeptical. Evidence of ancient crust would be preserved in the zircon record in the form of high oxygen isotope signatures ($\delta^{18}O >$ 5.3 ‰), low hafnium isotope signatures ($\varepsilon_{Hf} < 0$), and old zircon ages (>> 20 Ma). In this survey of > 1,000 zircons, we found only two crystals that meet these criteria.

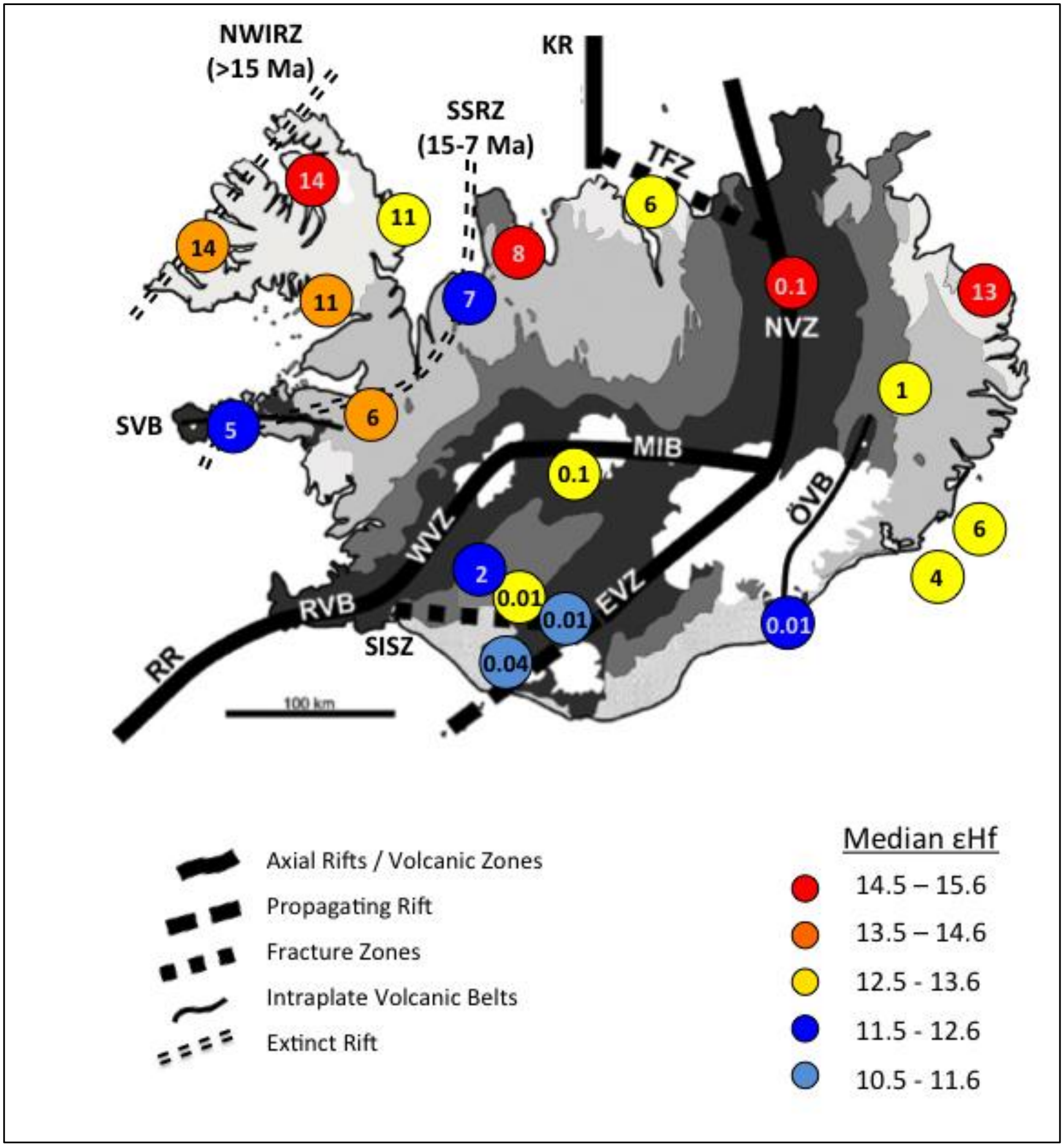


Figure 4: Spatial and temporal distribution of hafnium isotopes. Sample locations are as in Figure 1. Symbols are color coded by median ε_{Hf} value. Median zircon age (Ma) for each sample is indicated inside each symbol. Major tectonovolcanic features of Iceland are included for reference (modified from Thordarson and Hoskuldsson 2002, extinct rifts from Martin et al. 2011): RVB, Reykjanes Volcanic Belt; WVZ, EVZ, NVZ: Northern, Eastern and Western Volcanic Zones (rifts); OVB, Oraefi Volcanic Belt; SVB, Snaefellsnes Volcanic Belt; MIB, Mid-Icelandic Belt; TFZ, Tjornes Fracture Zone; SISZ: South Iceland Seismic Zone; RR, Reykjanes Ridge; KR, Kolbeinsey Ridge, NWIRZ: Northwest Iceland Rift Zone; SSRZ: Snæfellsness-Skagi Rift Zone.

6. Conclusion

In this isotopic survey of Icelandic zircon through space and time, we detect no correlation between oxygen isotopes and age. There is, however, a correlation between hafnium isotopes and age, with increased diversity in a downwards-direction in Iceland's youngest zircons. The uniformity of O suggests that partial melting of hydrothermally altered crust has been a primary driver of silicic petrogenesis throughout the last 16 million years of Iceland's history. The homogeneity of the oxygen record through space and time, in an otherwise heterogeneous environment, is also evidence against the hypothesized presence of an unusual, low ^{18}O mantle source beneath Iceland. The increased heterogeneity of Hf with time suggests that an entirely new mantle source began contributing, or contributing in a more significant way, to Icelandic silicic magmatism around 7 Ma. Extreme Hf heterogeneity observed between systems along the Snæfellsness-Skagi rift highlights the need to conduct focused investigations into this extinct rift system. Throughout the course of this survey, we found only two anomalous zircons that support the hypothesis slivers of ancient crust pinned beneath Iceland; a scarcity of evidence that we find uncompelling.

CHAPTER 4

Using Detrital Zircon to Resolve the Origin and Longevity of Abundant Silicic Magmatism at Breiðuvík Volcano, East Iceland

Abstract

The extinct Breiðuvík volcano, together with its neighboring volcanoes in the Borgarfjörður eystri region of Iceland's East Fjords, generated the second greatest volume of erupted silicic material preserved in Iceland (after Torfajökull, an active volcano in the south). We have conducted a focused detrital study of the origins and longevity of these silicic magmas, using high spatial resolution analyses of zircon: oxygen isotopes to evaluate the influence of crustal materials (e.g., crust altered by meteoric water) on magma generation; trace elements to elucidate magmatic compositions and conditions; U-Pb ages to investigate the longevity of the magmatic system; and hafnium isotopes to assess mantle source contributions. A coherency in zircon ages, isotopes, and trace element composition indicates that a great volume of relatively uniform silicic magma was primarily produced by partial melting between 11.2 ± 0.7 Ma and 15.0 ± 0.9 Ma (zircon age span: 3.8 ± 1.6 My, 2σ error). We use Monte Carlo statistical modeling to gain a sense of confidence in the age span represented by our sample of detrital zircons. We determine that the magma generating system had a lifespan of at least two, and more likely three, million years. This duration—the longest ever reported for an Icelandic central volcano—is a conservative estimate, because it only accounts for the zircon-saturated period of the volcano's lifecycle. The true lifespan of the Breiðuvík volcano may be significantly longer. We speculate that such a long duration of silicic magma production is related to a fracture zone tectonic setting. Our study demonstrates that detrital zircons are an effective, powerful, tool for

assessing the history of zircon-saturated magmas at targeted volcanic complexes, and our findings have important implications for interpreting and predicting magmatic activity at active Icelandic central volcanoes.

1. Introduction

The Icelandic crust contains an appreciable amount of silicic material, despite its position at the junction of a mid-ocean ridge and a hotspot (two magmatic-tectonic settings volumetrically dominated by basalt). Silicic rocks in Iceland are generally confined to central volcanoes (Jonasson 2007), which are the loci of dense basaltic dike and fissure swarms, intense geothermal activity, high magmatic output, and production of volcanic edifices and caldera structures (Walker 1966; Saemundsson 1978, 1979; Thordarson and Larsen 2007 and references therein). A fissure swarm and its associated central volcano form a volcanic system; when added together, these volcanic systems comprise the Neovolcanic zones of Iceland.

The relative abundances of basalt, rhyolite and intermediate materials in the Icelandic crust are estimated to be 85%, 13% and 3%, respectively (Walker 1966), and the relative proportion of silicic and intermediate rocks at central volcanoes can climb to 20 to 30% (Walker 1963). There are rare examples of voluminous silicic material at central volcanoes with even greater concentrations of rhyolite. Torfajökull, a well-studied, active volcano (e.g., McGarvie 1984; McGarvie et al. 2006; Mcgarvie et al. 1990; Macdonald et al. 1990; Gunnarsson et al. 1998; Zellmer et al. 2008) located at the junction of the South Iceland Seismic Zone, Southern Flank Zone, and rifting Eastern Volcanic Zone, is the prime example of this. With approximately 80% of its exposure composed of silicic material, accounting for approximately 225 km^3 of erupted material, it is the location of Iceland’s greatest abundance of silicic material (Gunnarsson et al. 1998). The Borgarfjörður eystri area in the East Fjords of Iceland, is home to many extinct volcanic centers which together account for Iceland's second-greatest abundance of silicic material (Gustafsson et al. 1989; Johannesson and Saemundsson 2009; Berg et al. 2012). These extinct volcanoes have traditionally received less attention than Iceland's active volcanoes (cf. Gustafsson et al. 1990), but recently they have been the focus of much rigorous study (Martin and Sigmarsson 2010; Burchardt et al. 2011; Martin et al. 2011; Berg et al. 2012, 2013, 2014, Vogler 2014).

All Icelandic silicic magmas, but especially at Torfajökull and Borgarfjörður eystri (the largest silicic centers in Iceland and thus the modern ocean; Jonasson, 2007) raise a number of questions:

(1) How is this silicic magma generated;

(2) Does local tectonic setting affect its generation;

(3) What is the longevity of a silicic system in Iceland?

Several studies have addressed these questions (e.g., [1]: Carmichael 1964; O'Nions and Gronvold 1973; Sigurdsson and Sparks 1981; Macdonald et al. 1987, 1990; Sigmarsson et al. 1991; Gunnarsson et al. 1998; Jonasson 2007; Carley et al. 2011; Bindeman et al. 2012; [2] Martin and Sigmarsson 2007; Martin and Sigmarsson 2010; [3] Saemundsson 1978, 1979; Flude et al. 2010; Berg et al. 2014, but these controversial issues continue to be debated.

Driven by the questions enumerated above, we use a zircon-based approach to investigate the origins and longevity of the extinct Breiðuvík central volcano, one of the most prominent eruptive centers in the Borgarfjörður eystri area. Specifically, we analyze trace elements to uncover magmatic compositions and provide insight into magmatic processes; U-Pb ages to date the timing of zircon growth and the longevity of the system that produced the magmas in which the zircons grew; O isotopes to evaluate the influence of crustal materials (e.g., meteoric water and crust it interacted with) on magma generation; and Hf isotope analyses to understand the nature of mantle material contributed to the magmatic system. We use detrital zircons from drainages that cover wide swaths of the system (Fig. 1), rather than zircons separated from individual eruptive units, in order to capture a broad, comprehensive view of the extinct central volcano.

2. Geologic setting

Several Neogene volcanic systems in east Iceland are aligned in a north-south direction, with their ages spanning from 4 Ma in the very south to 15 Ma farthest north (Martin et al. 2011). The Borgarfjörður eystri region in the northernmost part of the East Fjords in Iceland is home to several such volcanoes, which were active ~12-13 Ma (Martin et al. 2011; Berg et al. 2013, 2014). This region is characterized by unusually large volumes of silicic and intermediate rocks, comprising the second largest exposure of silicic rocks on the island (Johannesson and Saemundsson 2009). The bedrock map of Breiðuvík (Fig. 1), which is the most prominent site of silicic formations in this region, covers approximately 30 km^2 and comprises a down-sag caldera, which is approximately 10 km in diameter with estimated subsidence of at least 600 m (Vogler, 2014). Within the mapped area, silicic rocks constitute up to 35% of bedrock, intermediate rocks 15%, and the remaining 50% being basalt. This is a high proportion of evolved rock compositions compared to other Neogene volcanoes in Iceland (Walker 1958, 1966). However, the concepts of central volcano and volcanic systems as proposed by Walker for other silicic centers from the Neogene are perhaps non-applicable for Breiðuvík and surroundings. The size of the silicic complex, the overabundance of differentiated rocks and the absence of an associated fissure swarm, which characterize volcanic systems elsewhere, suggest a unique tectonic setting for this area. While the volcanic systems described by Walker and colleagues (Walker 1958, 1963, 1964, 1966; Gibson and Walker 1963; Carmichael 1964) further south along the East Fjords were principally formed in divergent tectonic regime, the Breiðuvík area may well be related to a fracture zone and a propagating rift segment as suggested by Martin et al. (2011), not much different from what is observed in the Torfajökull area today.

3. Methods

3.1: Sampling Approach

Rocks in the Borgarfjörður eystri region are extensively hydrothermally altered with abundant secondary mineralization (Vogler, 2014). Analyses of whole-rock samples will thus be severely affected by post-magmatic elemental and isotope redistribution and thus poorly reflect the processes and conditions at which the rocks originated. We thus use zircon (a mineral that is resilient to hydrothermal alteration) collected from modern rivers to representatively sample and study the magmatic history of Breiðuvík. This detrital approach provides us with unique insights into silicic petrogenesis at this extinct and intensively altered volcano. Rather than restricting our studies to zircons separated from individual, handpicked igneous rocks, we have an amalgamation of zircon representing the majority of the volcanic system, concentrated in two samples (Fig. 1). While we lose the resolution that more-targeted sampling of individual units provides (cf. Berg et al. 2013; Vogler 2014), we gain a representative view of the entire volcano in just two samples. Furthermore, because we are conducting this detrital zircon study at an extinct volcano, we are capturing a complete, comprehensive view of the behavior of a volcano throughout its lifetime (minus any non-zircon saturated magmas and parts of the system lost to glaciations and erosion), rather than a snapshot of what it looked like at a given time.

3.1.1: Samples

Samples were collected from two significant drainages in the Breiðuvík area (Fig. 1, Fig. 2). Sample ISS comes from the Stóraá River, a braided stream whose catchment falls entirely within the margins of the Breiðuvík caldera. The drainage area upstream of our sampling location, from which our zircons were derived, accounts for the southern, western and northwestern sectors of the caldera (>30% of the mapped caldera extent). Approximately 50% of the catchment area is composed of silicic material (Fig. 1, Fig. 2). This is reflected in the composition of the sample that we collected, which was a poorly sorted mixture of sand and gravel.

Sample ISKK was collected at the confluence of the Krossá and Kækjudalsá Rivers. The catchment area from which detrital zircons were sourced includes prominent peaks associated with Breiðuvík, including Hvítserkur and Hvítuhnjúkar. The drainage also extends beyond Breiðuvík to incorporate other silicic material in the region, sourced from the extinct Kækjuskörð volcano. We collected sand, composed predominantly of rhyolitic rock fragments, from a poorly sorted bank on the point-bar side of the stream.

In addition to river sands collected for the detrital zircon component of this study, we collected samples of pumice-rich ignimbrite from Hvítserkur. We separated one relatively fresh, white piece of pumice from this ignimbrite deposit, to represent the type of magma from which these detrital zircons may have been originally derived.

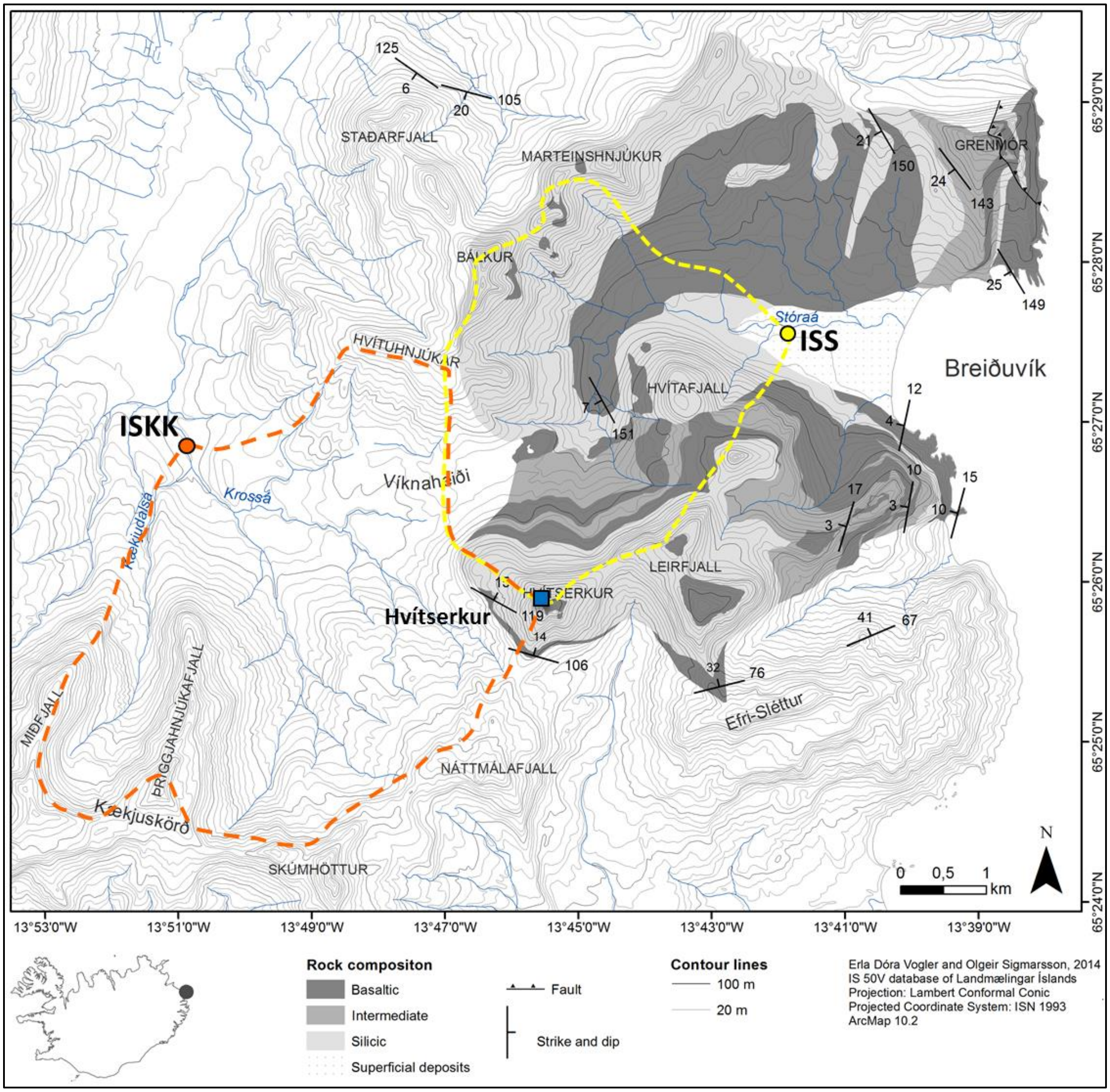


Figure 1: Geologic map of Breiðuvík. Rock types and important are indicated on the map, as well as sample locations. The catchment area for sample ISS (location: 65°27'45" N, 13°40'32" W) falls entirely within the Breiðuvík volcano. The catchment for sample ISKK (65°27'35" N, 13° 50' 31" W*)* includes prominent peaks from the western edge of the Breiðuvík volcano, such as Hvítuhnjúkar and Hvítserkur (65°25'51" N, 13°45'23" W). The ISKK catchment also extends west to include silicic material from neighboring Kækjuskörð volcano (the area has not yet been mapped). The base map is modified from modified from Vogler, 2014.

Figure 2: Field area photographs. *[Top]:* ISKK sample location indicated with white box. *[Center Left]:* ISS sample location indicated with white box. *[Center Upper Right]:* An in situ view of material collected for sample ISS, from the Stóraá River. *[Center Lower Right]:* A down-stream view of the Stóraá River and the ISS sample site (white box); photo taken standing near Brunkolla (see map). *[Bottom]:* Mount Hvítserkur, an ignimbrite peak cross-cut by basaltic dikes and capped by basalt, lies within catchments for both samples ISS and ISKK (see Fig. 1). An individual piece of pumice was separated from this ignimbrite deposit.

3.2: Sample Preparation

We sieved river sands to separate material that was < 500 μm in size from the rest of the sample. We then underwent a standard procedure of zircon separation, which included magnetic separation (hand magnets and a Frantz magnetic separator), density separation (LST heavy liquid), and hand picking a representative survey of grains. We mounted zircon grains in epoxy, and polished mounts to expose grain interiors. We obtained cathodoluminescence (CL) images of sectioned zircons using a Tescan Vega 3 LM Variable Pressure Scanning Electron Microscope at Vanderbilt University to guide placement for all subsequent ion microprobe and laser ablation spot analyses.

We separated an individual piece of pumice from the Hvítserkur ignimbrite. A small portion of this pumice (~ 20 g) was powdered using an agate mortar and pestle for whole rock isotope analysis. Another small portion (~ 20 g) was coarsely crushed using an agate mortar and pestle, and glass was dissolved in hydrofluoric acid (HF). The residual material was put through the standard density, magnetic, and handpicking zircon separation regime.

3.3: Analytical Methods

We analyzed Breiðuvík zircons (samples ISS and ISKK) for oxygen isotopes, trace elements, U-Pb ages and hafnium isotopes (in that order). Two zircons recovered from the Hvítserkur pumice were only analyzed for oxygen isotopes and trace elements, because crystals were too small for further analysis. Trace elements and oxygen isotopes from zircons from active volcanoes (Torfajökull, Krafla), as well as from other volcanoes, intrusions, river sediments and sedimentary rocks from across Iceland (hereafter referred to as the “greater-Iceland” dataset), are used as comparisons to Breiðuvík zircons (see Chapter 2 and Appendix B.2).

3.3.1: Oxygen Isotopes

We measured oxygen isotope ratios with high spatial resolution using the CAMECA ims1270 microprobe at UCLA-NSF facilities and a Cs^+ beam with a diameter of approximately 15 μm and sputter depth of approximately 1 μm, following methods described by Trail et al. (2007). Instrumental mass fractionation was determined using analyses of R33 standard zircons that were mounted in close spatial proximity to our grains. The standard deviation of R33 in each mount was also used as an estimate for the uncertainty of individual spot analyses on unknowns. Oxygen data are reported as $\delta^{18}O$ permil (‰) values, calculated relative to Vienna Mean Standard Ocean Water (VSMOW; Baertschi 1976). Oxygen isotope ratios for Breiðuvík area zircons (ISS and ISKK) are presented in Table 1; results and analytical details for these zircons, as well as for Torfajökull, Krafla and "greater-Iceland," are also tabulated in Chapter 2 and Appendix A.1.

3.3.2: Trace Elements

We measured trace element concentrations with high spatial resolution using the Sensitive High Resolution Ion Microprobe, Reverse Geometry (SHRIMP-RG) co-operated by U.S. Geological Survey and Stanford University in the SUMAC facility at Stanford University. The primary beam energy ranged from ~1.5 – 2.5 nA O_2^- and the analytical spots had a diameter of ~15 μm and sputter depth of ~1 μm. Trace element abundances were calculated relative to those on in-house standard MAD (Barth and Wooden 2010). We used methods following those described in Mazdab and Wooden (2006), Claiborne et al. (2006 and 2010) and Barth and Wooden (2010). The trace elements that we present in this paper are tabulated in Table 2 and in Appendices B.1 and B.2.

3.3.3: U-Pb geochronology:

We performed zircon U-Pb analyses using the SHRIMP-RG in the SUMAC facility at Stanford University. Analyses were conducted using an O_2^- primary ion beam accelerated at 10 kV, with an intensity varying from 5.0 to 6.8 nA. The primary ion beam spot had a diameter between 25-28 microns and a depth of ~2-3 microns. This high spatial resolution of the beam allowed us to target specific zones within zircon grains, guided by CL images. The acquisition routine includes analysis of $^{172}Yb^{16}O^+$, $^{90}Zr_2{}^{16}O^+$, $^{180}Hf^{16}O^+$, $^{204}Pb^+$, a background measured at 0.045 mass units above the $^{204}Pb^+$ peak, $^{206}Pb^+$, $^{207}Pb^+$, $^{208}Pb^+$, $^{238}U^+$, $^{232}Th^{16}O^+$, and $^{238}U^{16}O^+$. Trace element measurements (Yb and Hf) are measured briefly (typically 1 sec/mass) immediately before the geochronology peaks, and in mass order. All peaks are measured on a single EPT® discrete-dynode electron multiplier operated in pulse counting mode. Calculated analytical ages for zircon are standardized relative to R33 (419 Ma; Black et al. 2004), which was analyzed repeatedly throughout the duration of the analytical session. Data reduction for geochronology follows the methods described by Williams (1997), and Ireland and Williams (2003) and uses the Microsoft Excel add-in programs Squid2.51 and Isoplot3.764 of Ludwig (2009; 2012). The measured $^{206}Pb/^{238}U$ was corrected for common Pb using ^{207}Pb. The common-Pb correction was based on a model Pb composition from Stacey and Kramers (1975).

The majority of ages in this detrital study were collected using three scans (peak hopping cycles from mass 188 through 254) per analysis (“short”). A subset of ages was collected with five or six scans through the acquisition routine (“long”). Analyses of U-Pb age standards (R33) were performed every 4th analysis for 5 scan data, and every 6th or 7th for the 3 scan data. The number of scans through the mass sequence and counting times on each peak are varied according to the sample age and the U and Th concentrations to improve counting statistics and age precision. More details can be found in Table 1 and Appendix D.1.

3.3.4: Hafnium Isotopes in zircon

We measured hafnium isotope ratios in zircons using laser ablation and a Thermo-Scientific NEPTUNE multi-collector inductively coupled plasma mass spectrometer (LA-MC-ICPMS) and a ~50 µm spot diameter at Memorial University (Newfoundland, Canada). We conducted Hf isotope analyses last in the analytical sequence because the ~50 µm spot affected most of the analyzable space on grains, and often destroyed entire zircons. The methods we used closely followed those previously described by Fisher et al. (2011) and Souders et al. (2012), the only modification being the addition of 4 ml/min of nitrogen gas. One reference zircon (cycled between Plesovice, R33, 142 and FC1) was analyzed from an in-house standard mount after every eight unknowns. We present results as ε_{Hf} values, which were calculated using the present-day CHUR $^{176}Hf/^{177}Hf$ ratio of 0.282785 (Bouvier et al. 2008), in Table 1. A more complete report of output data is available in Appendix F. We analyzed all zircons from the Breiðuvík area (ISS and ISKK) in one analytical session (June 2013); zircons from active central volcanoes (Krafla, Torfajökull) and bulk Iceland were analyzed over three separate sessions (October 2011, June 2013, December 2013; see Appendix F for details).

3.3.5: Hafnium isotopes in bulk pumice

We measured hafnium isotope ratios in the pumice from Hvítserkur at the Radiogenic Isotope and Geochronology Laboratory (RIGL) at Washington State University, following methods described in detail in McDowell et al. (in prep.). We placed ~0.25 g of our powdered samples in a Teflon bomb and initially dissolved it in ~7 mL 10:1 $HF:HNO_3$, in order to eliminate the bulk of the silica. Following this, we added an additional ~7 mL 10:1 $HF:HNO_3$ to the beaker and placed it in a steel-jacketed Parr bomb at 150°C for 5-7 days. Following dissolution, we dried down the sample and redissolved it in a mixture of 6M HCl/boric acid, in order to minimize the production of fluoride species.

Once we obtained a clear solution, we dissolved the sample in a mixture of 1M HCl and 0.1M HF, and Hf was separated using cation exchange columns loaded with AG 50W-X12 resin (200-400 mesh). Following the method of Patchett and Tatsumoto 1981, we eluted Hf at the beginning of the procedure in 1M HCl/0.1M HF. Titanium was removed from the Hf fraction in a second stage chemistry. This is important, as excess Ti has been shown to alter measured Hf isotopic compositions (e.g., Munker et al., 2001). We used a final column to remove any remaining Yb and Lu in the Hf aliquot. Finally, the aliquot of the purified sample was redissolved in 2% HNO_3. We determined the isotopic composition of this purified solution using the RIGL-WSU Thermo-Finnigan MC-ICP-MS. We corrected the analytical results for mass fractionation using $^{179}Hf/^{177}Hf$ = 0.7325 and normalized using Hf standard JMC475 ($^{176}Hf/^{177}Hf$ = 0.282160). Results are presented in Table 1, with more specific analytical outputs presented in Appendix E.

4. Results

4.1: Zircon Model Ages

Zircons from sample ISS (n = 83) have a minimum measured age of 11.2 ± 0.8 Ma and a maximum of 14.5 Ma ± 0.4 (age errors are 1σ). The median age for ISS zircons is 12.9 Ma. The ISS zircon population has a weighted mean of 13.0 Ma, a standard error of 0.08, and a mean square weighted deviation equal to 3.4 (MSWD, calculated using 1σ absolute errors and Isoplot 3.75; Ludwig 2012; Fig. 3a and 3b). Zircons ages from sample ISKK (n = 164) range from 11.2 ± 0.7 Ma to 15.0 Ma ±0.9, with a median age of 12.9 Ma. The age population has a weighted mean of 12.9 Ma, a standard error of 0.05, and a MSWD of 3.1 (Fig. 3c and 3d). These age results are presented in Table 1.

4.2: Oxygen Isotopes

The ISS zircon population (n = 50) has $\delta^{18}O$ values that range from 0.7 ± 0.6 to 3.7 ± 0.4‰ (oxygen errors are 1 s.e.), with a median value of 3.1‰ and a weighted mean of 3.1 ‰ (Fig. 4a: Oxygen; Table 1). The $\delta^{18}O$ of ISKK zircon (n = 83) ranges from 1.3 ± 0.6‰ to 4.2 ± 0.4‰, with a median value of 3.3 ‰ and a weighted mean of 3.5 ‰ (Fig. 4b). These oxygen isotope ratios are consistent with a range of 1.1 to 4.7 ‰ reported by Berg et al. (2013) and are significantly lower than whole-rocks analyses of devitrified ignimbrite from the Borgarfjörður eystri region (see Martin & Sigmarsson 2010 and Berg et al. 2013). The higher oxygen signature in the bulk rock sample can be explained by post-eruption low temperature alteration of the devitrified ignimbrite. The discrepancy in oxygen values demonstrates the inherent complications in O-isotope analysis of altered whole-rock samples, and emphasizes the robustness of zircon in recording the magmatic conditions.

4.3: Hafnium Isotopes

The range of ε_{Hf} for the ISS zircon population (n = 30) is +12.2 ± 0.9 to 16.8 ± 1.9 (errors are 2 s.e.), with a median value of 14.7. The population has a weighted mean of 14.8 ε_{Hf}, with a standard deviation of 0.8, a standard error of 0.15, and a MSDW of 2.8 (Fig. 5a: Hafnium; Table 1). The ε_{Hf} of the ISKK zircon population (n = 41) ranges to slightly higher values, from 13.1 ± 0.8 to 16.3 ± 1.6, but otherwise has a very similar distribution, with a median of 14.7, weighted mean of 14.6, standard deviation of 0.7, a standard error of 0.11, and a MSWD of 1.9 (Fig. 5b). Two high-precision solution analyses of the Hvítserkur pumice yielded ε_{Hf} of 15.1 ± 0.2 and 15.2 ± 0.1 (error is 2 s.e.).

Table 1: Zircon Age, Oxygen Isotope, and Hafnium Isotope Results

Sample[8]	Age Ma	Age error 1σ	Age method	$\delta^{18}O$	$\delta^{18}O$ error 1 s.e.	ε_{Hf}	ε_{Hf} error 2 s.e.
Hvítserkur Location: 28W 557692, 7257066							
Pumice	.	.	.	.	.	15.2[9]	0.1
1 (6)	.	.	.	3.56	0.32	.	.
Stóraá River Location: 28W 561363, 7260665							
2.1 (2)	14.1	0.9	long	3.05	0.41	.	.
2.2 (2)	12.6	0.3	short	.	.	.	.
3.1 (2)	12.7	0.1	long	.	.	.	.
3.2 (2)	12.7	0.5	short	.	.	.	.
4 (2)	12.0	0.8	short	3.08	0.44	.	.
5.1 (2)	12.7	0.2	long	3.37	0.42	15.69	1.13
5.2 (2)	12.8	0.3	short	.	.	.	.
7.1 (2)	13.1	0.3	long	3.17	0.45	15.28	0.68
7.2 (2)	12.0	0.3	short	.	.	.	.
8 (2)	14.1	0.3	short	3.28	0.41	.	.
9 (2)	14.0	1.3	short	2.8	0.41	.	.
10.1 (2)	13.2	0.2	long	2.73	0.44	.	.
10.2 (2)	12.7	0.9	short	.	.	.	.
11 (2)	12.8	0.3	short	3.5	0.41	16.16	0.86
12.1 (2)	12.5	0.5	long	3.2	0.43	.	.
12.2 (2)	11.9	0.5	short	.	.	.	.
13 (2)	13.3	0.5	short	3.36	0.42	13.24	0.87
14.1 (2)	12.5	0.9	long	.	.	14.61	0.88
14.2 (2)	12.2	0.9	short	3.34	0.42	.	.
15.1 (2)	13.1	0.1	long	3.11	0.42	14.10	1.36
15.2 (2)	12.7	0.3	short	.	.	.	.
16 (2)	13.1	0.6	short	3.3	0.4	14.10	1.68
17 (2)	11.2	0.8	short	3.48	0.41	.	.
18.1 (2)	12.5	0.3	long	3.26	0.41	.	.
18.2 (2)	14.0	0.4	short	.	.	.	.
19.1 (2)	12.6	0.6	short	.	.	.	.
19.2 (2)	.	.	.	3.37	0.41	.	.
20 (2)	13.1	0.3	short	3.65	0.41	.	.
21 (2)	12.4	0.5	short	3.22	0.4	.	.
22 (2)	12.7	0.3	short	3.49	0.42	.	.
23 (2)	13.2	0.3	short	3.43	0.39	14.48	0.60
24 (2)	12.4	0.5	short	3.48	0.42		
25 (2)	.	.	.	3.49	0.41	.	.
26 (2)	12.7	0.6	short	3.44	0.44	.	.
27.1 (2)	13.0	0.4	long	.	.	.	.
27.2 (2)	14.3	0.5	short	3.02	0.43	.	.
28 (2)	11.9	0.3	short	3.28	0.43	.	.

[8] Sample names are as follows: Grain. Specified spot. (mount); so, 1.2 (4) translates to grain 1, spot 2, mount 4. "Spots" are only indicated where necessary for distinguishing different analyses, otherwise only grain and mount are reported.
[9] The ε_{Hf} value reported for Hvitserkur pumice is for a whole-rock isotope analysis. All other data reported in this table are zircon based.

Sample	Age Ma	Age error 1σ	Age method	$\delta^{18}O$	$\delta^{18}O$ error 1 s.e.	ε_{Hf}	ε_{Hf} error 2 s.e.
29 (2)	12.7	0.4	long	3.44	0.42	16.23	1.53
29 (2)	11.6	0.5	short	.	.	.	.
30.1 (2)	12.5	0.2	long	.	.	.	.
30.2 (2)	13.3	0.4	short	2.77	0.42		
31.1 (2)	12.6	1.5	short	.	.	.	.
31.2 (2)	.	.	.	2.9	0.43	14.71	1.33
32.1 (2)	12.3	0.4	long	3.01	0.41	.	.
32.2 (2)	12.3	0.6	short	.	.	.	.
34.1 (2)	12.8	0.3	long	3.08	0.43	.	.
34.2 (2)	13.0	0.3	short	.	.	.	.
35 (2)	12.9	0.4	short	0.71	0.55	.	.
36.1 (2)	12.9	0.9	short	2.33	0.43	.	.
36.2 (2)	.	.	.	.	.	15.44	0.54
37.1 (2)	14.5	0.4	long	3.23	0.42	.	.
37.2 (2)	13.6	0.5	short	.	.	.	.
38.1 (2)	12.7	0.4	long	.	.	.	.
38.2 (2)	13.0	0.4	short	3.28	0.4	.	.
39.1 (2)	13.1	0.1	long	3.02	0.43	15.38	0.69
39.2 (2)	12.7	0.3	short	.	.	.	.
40 (2)	13.1	0.4	short	3.34	0.42	.	.
41 (2)	13.3	0.6	short	3.13	0.43	.	.
43 (2)	12.4	0.6	short	.	.	.	.
45 (2)	13.3	0.3	short	.	.	13.87	1.12
46 (2)	13.4	0.9	short	.	.	.	.
47 (2)	12.9	0.4	short	.	.	.	.
48 (2)	12.4	0.5	short	.	.	.	.
1 (3)	.	.	.	4.53	0.42	.	.
10 (3)	14.1	0.3	short	.	.	14.5	0.7
11 (3)	12.1	0.2	short	3.07	0.42	14.1	0.6
12 (3)	13.5	0.4	short	3.21	0.42	15.3	1.0
13 (3)	14.1	0.4	short	3.07	0.42	14.7	0.7
14 (3)	.	.	.	3.05	0.42	15.3	2.0
15(3)	13.4	0.4	short	.	.	.	.
16 (3)	12.6	0.5	short	.	.	15.5	0.8
18 (3)	13.8	0.6	short	.	.	15.4	0.9
19 (3)	12.0	0.4	short	.	.	14.8	0.9
2 (3)	12.2	0.2	short	2.81	0.42	.	.
20.1 (3)	13.6	0.8	short	.	.	14.1	0.8
20.2 (3)	12.5	0.2	short	.	.	.	.
21.1 (3)	12.8	0.3	short	.	.	14.2	0.9
21.2 (3)	13.7	0.6	short	.	.	.	.
22 (3)	13.5	0.8	short	.	.	.	.
23 (3)	13.8	0.2	short	.	.	15.0	0.7
3 (3)	12.6	0.2	short	3.03	0.42	15.0	0.8
4 (3)	13.1	0.6	short	3.15	0.42	14.7	1.4
6 (3)	13.2	0.8	short	3.00	0.42	.	.
7 (3)	12.9	1.0	short	2.92	0.42	14.0	1.0
8 (3)	12.2	0.4	short	2.66	0.42	14.3	0.6
9 (3)	14.3	0.2	short	3.02	0.42	16.8	1.9
30 (3)	.	.	.	.	.	14.4	0.8

Sample	Age Ma	Age error 1σ	Age method	$\delta^{18}O$	$\delta^{18}O$ error 1 s.e.	ε_{Hf}	ε_{Hf} error 2 s.e.
Krossá and Kækjudalsá Rivers Location: 28W 553667, 7260140							
1.1 (2)	11.8	0.3	long	.	.	.	.
1.2 (2)	12.8	0.5	short	3.18	0.41	.	.
2 (2)	15.0	0.9	short	3.27	0.41	.	.
3.1 (2)	13.7	0.6	long	.	.	.	.
3.2 (2)	13.0	0.5	short	3.28	0.44	.	.
4 (2)	.	.	.	4.16	0.43	.	.
5.1 (2)	11.5	0.3	long	.	.	.	.
5.2 (2)	14.0	0.7	short	2.98	0.42	.	.
6 (2)	12.5	0.7	short	3.18	0.43	.	.
7 (2)	10.9	1.8	short	3.17	0.41	.	.
8.1 (2)	12.5	0.1	long	.	.	.	.
8.2 (2)	13.1	0.3	short	1.27	0.56	.	.
9 (2)	12.4	0.6	short	2.41	0.44	.	.
10 (2)	13.4	0.3	short	3.24	0.42	.	.
11.1 (2)	.	.	.	3.2	0.45	.	.
11.2 (2)	.	.	.	.	.	.	.
12 (2)	12.9	0.6	short	3.24	0.41	.	.
13.1 (2)	12.9	0.1	long	.	.	16.2	1.3
13.2 (2)	12.3	0.2	short	.	.	.	.
13.3 (2)	.	.	.	3.07	0.42	.	.
14.1 (2)	13.1	0.3	long	.	.	.	.
14.2 (2)	13.2	0.3	short	3.09	0.43	.	.
15.1 (2)	13.2	0.5	long	.	.	.	.
15.2 (2)	12.8	0.6	short	2.9	0.42	.	.
16 (2)	14.9	0.4	short	1.28	0.42	.	.
17 (2)	13.5	0.3	short	2.65	0.41	.	.
18.1 (2)	12.0	0.2	long	.	.	.	.
18.2 (2)	12.2	0.4	short	2.69	0.44	.	.
19 (2)	12.1	0.3	short	2.64	0.44	.	.
20.1 (2)	12.8	0.2	long	.	.	.	.
20.2 (2)	13.0	0.3	short	2.69	0.42	.	.
21.1 (2)	13.1	0.1	long	.	.	.	.
21.2 (2)	13.2	0.3	short	2.64	0.44	.	.
22 (2)	11.8	1.5	short	2.63	0.42	.	.
23 (2)	13.3	0.3	short	2.68	0.41	.	.
24.1 (2)	13.0	0.2	long	.	.	14.7	1.8
24.2 (2)	12.4	0.3	short	2.66	0.45	.	.
25.1 (2)	12.7	0.4	long			16.3	1.6
25.2 (2)	12.7	1.0	short	2.89	0.4	.	.
26 (2)	12.6	1.0	short	2.96	0.43	.	.
53 (2)	13.0	0.5	short	.	.	.	.
54.1 (2)	13.1	0.3	long	.	.	.	.
54.2 (2)	12.8	0.5	short	.	.	.	.
56.1 (2)	13.7	0.3	short	.	.	.	.
56.2 (2)	.	.	.	.	.	.	.
57 (2)	13.4	0.4	short	.	.	.	.
58 (2)	13.0	0.7	short	.	.	.	.
59 (2)	13.2	0.9	short	.	.	.	.
60 (2)	13.0	0.4	short	.	.	.	.
61.1 (2)	12.8	0.4	long	.	.	.	.

Sample	Age Ma	Age error 1σ	Age method	$\delta^{18}O$	$\delta^{18}O$ error 1 s.e.	ε_{Hf}	ε_{Hf} error 2 s.e.
61.2 (2)	12.0	0.7	short	.	.	.	.
62 (2)	13.3	1.1	short	.	.	.	.
63 (2)	11.8	0.5	short	.	.	.	.
64 (2)	12.3	0.5	short	.	.	.	.
65.1 (2)	13.4	0.8	long	.	.	.	.
65 (2)	13.3	0.3	short	.	.	.	.
66 (2)	13.1	0.3	short	.	.	.	.
67.1 (2)	12.6	0.3	long	.	.	.	.
67.2 (2)	12.0	0.8	short	.	.	.	.
68 (2)	12.5	1.1	short	.	.	.	.
69 (2)	13.5	0.3	short	.	.	.	.
70.1 (2)	12.9	0.2	long	.	.	.	.
70.2 (2)	13.7	0.7	short	.	.	.	.
71 (2)	11.4	0.8	short	.	.	.	.
72 (2)	11.8	0.5	short	.	.	.	.
73 (2)	12.6	0.3	short	.	.	.	.
74 (2)	13.5	0.6	short	.	.	.	.
75 (2)	13.0	0.3	short	.	.	.	.
76 (2)	11.2	0.7	short	.	.	.	.
77 (2)	12.5	0.4	short	.	.	.	.
78 (2)	12.6	1.5	short	.	.	15.2	1.5
80 (2)	12.1	1.1	short	.	.	.	.
81 (2)	12.0	0.4	short	.	.	.	.
82 (2)	14.3	1.0	short	.	.	.	.
83 (2)	12.2	0.9	short	.	.	.	.
84 (2)	12.6	0.5	short	.	.	.	.
10 (6)	.	.	.	3.41	0.32	.	.
11 (6)	.	.	.	3.01	0.33	.	.
12 (6)	.	.	.	3.34	0.31	.	.
13 (6)	.	.	.	3.02	0.36	.	.
14 (6)	.	.	.	3.13	0.32	.	.
15 (6)	.	.	.	3.59	0.31	.	.
16 (6)	.	.	.	3.12	0.34	.	.
17 (6)	.	.	.	3.04	0.32	.	.
18 (6)	.	.	.	2.91	0.33	.	.
19 (6)	.	.	.	3	0.31	.	.
2 (6)	.	.	.	3.28	0.33	.	.
3 (6)	.	.	.	2.65	0.34	.	.
4 (6)	.	.	.	3.25	0.33	.	.
5 (6)	.	.	.	3.38	0.32	.	.
6 (6)	.	.	.	3.33	0.32	.	.
7 (6)	.	.	.	3.04	0.32	.	.
8 (6)	.	.	.	3.12	0.33	.	.
9 (6)	.	.	.	2.81	0.34	.	.
1 (4)	12.9	0.2	short	3.37	0.19	14.58	1.28
10 (4)	13.4	1.1	short	3.68	0.19	15.35	1.47
11 (4)	12.2	0.2	short	3.64	0.19	14.70	0.72
12 (4)	14.3	0.7	short	3.17	0.19	.	.
15 (4)	12.6	0.7	short	3.86	0.19	14.62	0.83
13 (4)	12.4	0.4	short	3.7	0.18	15.17	0.69
14 (4)	13.0	0.5	short	3.69	0.18	14.47	0.67
16 (4)	12.9	0.3	short	3.89	0.16	14.51	0.77

Sample	Age Ma	Age error 1σ	Age method	$\delta^{18}O$	$\delta^{18}O$ error 1 s.e.	ε_{Hf}	ε_{Hf} error 2 s.e.
17 (4)	12.3	0.6	short	3.53	0.18	14.56	0.84
18 (4)	13.0	0.7	short	3.73	0.17	14.29	1.27
19 (4)	12.7	0.2	short	3.7	0.19	14.67	1.12
2 (4)	11.4	0.8	short	3.66	0.2	15.05	0.81
20 (4)	13.2	0.7	short	4	0.2	.	.
21 (4)	13.4	1.2	short	3.66	0.17	.	.
22.1 (4)	12.4	0.4	short	.	.	.	.
22.2 (4)	.	.	.	3.91	0.19	14.20	1.08
23 (4)	13.8	1.5	short	3.75	0.19	14.12	0.86
24 (4)	13.4	1.1	short	3.85	0.2	.	.
25 (4)	13.2	0.3	short	3.12	0.19	15.50	1.41
26 (4)	13.2	0.1	short	3.59	0.16	15.07	0.82
27 (4)	13.4	1.0	short	3.58	0.18	14.68	0.91
28 (4)	13.6	0.4	short	3.52	0.2	14.74	0.83
29 (4)	12.6	0.4	short	3.61	0.18	14.14	0.67
3 (4)	12.9	0.7	short	3.24	0.17	15.40	1.17
30 (4)	13.7	0.2	short	3.7	0.2	13.99	0.85
31 (4)	13.9	0.2	short	3.46	0.14	14.61	0.92
32.1 (4)	13.3	0.5	short	.	.	.	.
32.2 (4)	.	.	.	3.61	0.17	14.77	0.70
33 (4)	12.2	0.7	short	3.42	0.18	14.92	0.76
34 (4)	13.5	0.5	short	3.69	0.17	.	.
35 (4)	13.0	0.2	short	3.42	0.19	.	.
36 (4)	13.7	0.2	short	3.62	0.18	.	.
37 (4)	12.6	0.5	short	3.55	0.2	14.65	1.05
38 (4)	13.2	0.5	short	3.49	0.19	.	.
39 (4)	13.0	0.9	short	3.49	0.18	14.50	0.76
4 (4)	.	.		3.48	0.19	13.10	0.79
5 (4)	12.8	0.3	short	3.58	0.18	14.91	0.94
6 (4)	12.4	0.8	short	3.66	0.15	14.12	0.84
7 (4)	14.2	1.7	short	3.56	0.16	13.97	0.76
8 (4)	13.3	1.5	short	3.53	0.17	.	.
9 (4)	12.7	0.4	short	3.68	0.17	13.44	0.67

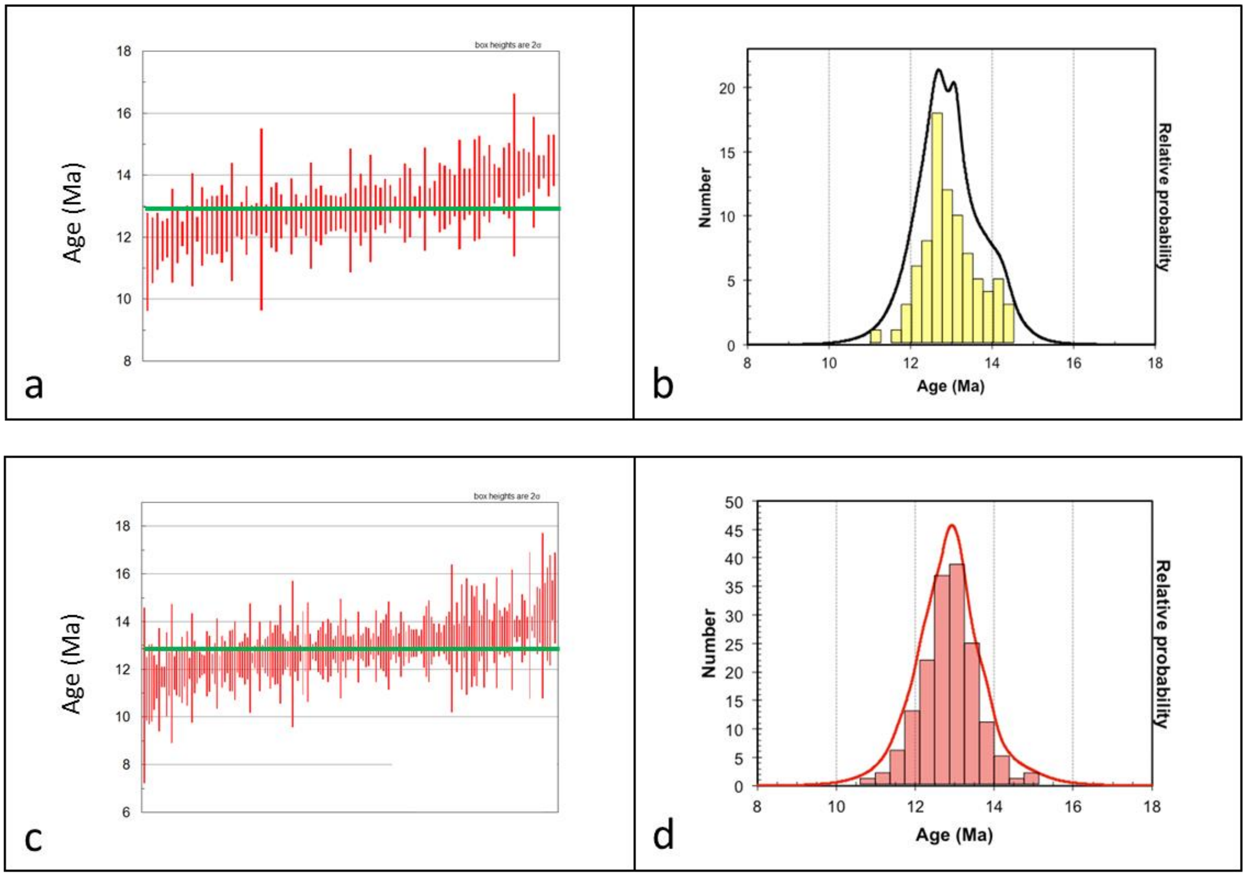


Figure 3: Zircon age results. (A) ISS (Breiðuvík only) weighted mean ages. The weighted mean (indicated by green line) is 13.0 Ma (MSWD = 3.4, 0 rejected), with a standard deviation of 0.7 Ma and standard error of 0.08 ± 0.12. Box heights are 2σ. (B) ISS (Breiðuvík only) histogram and age probability density plot; n = 83. (C) ISKK (Breiðuvík + Kaekjuskord) weighted mean ages. Weighted mean (indicated by green line) = 12.9 Ma (MSWD = 3.1, n=164, 0 rejected), with a standard deviation of 0.7 Ma and standard error of 0.05. Box heights are 2σ. (D) ISKK (Breiðuvík + Kaekjuskord) histogram and age probability density plot; n=164.

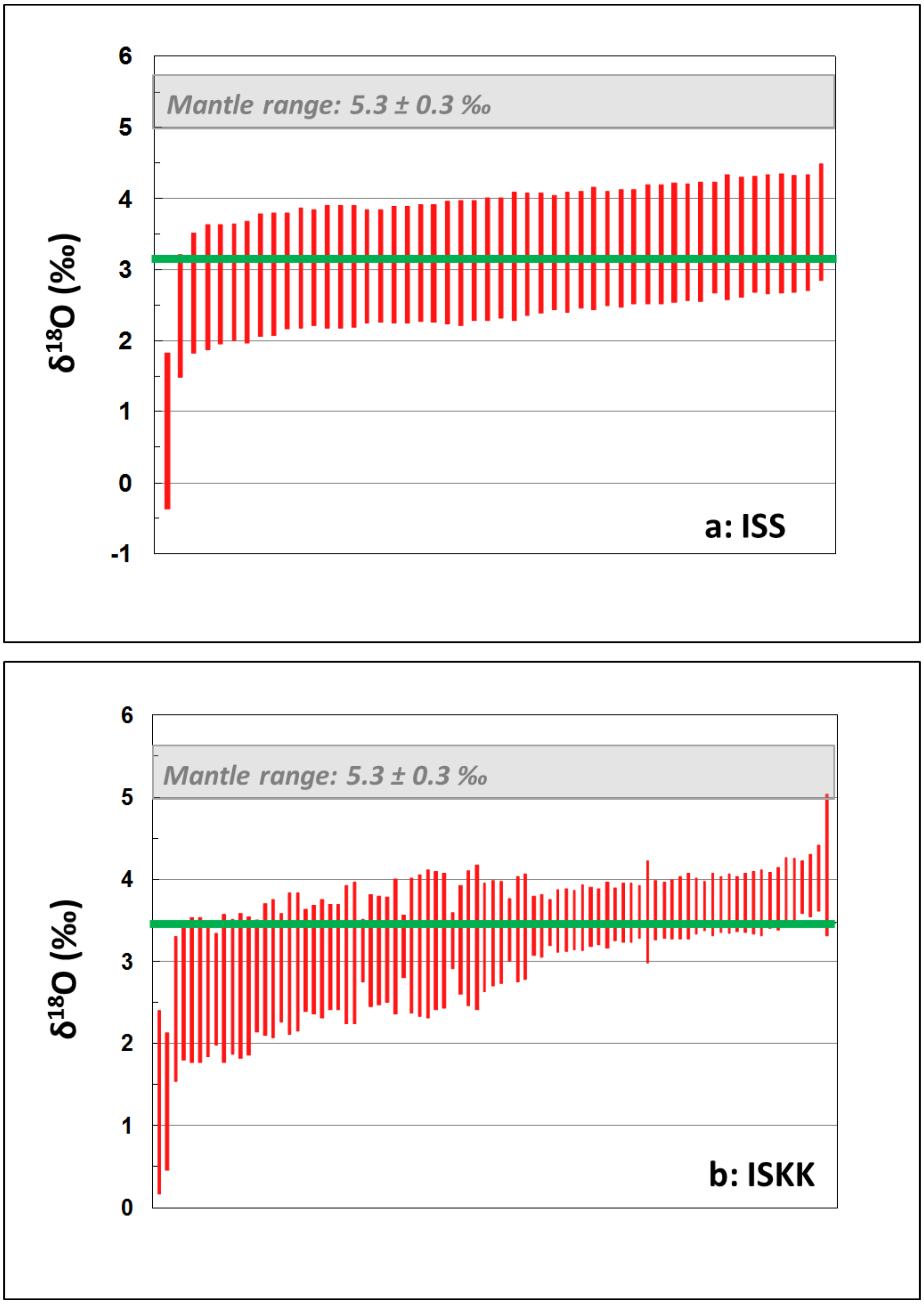
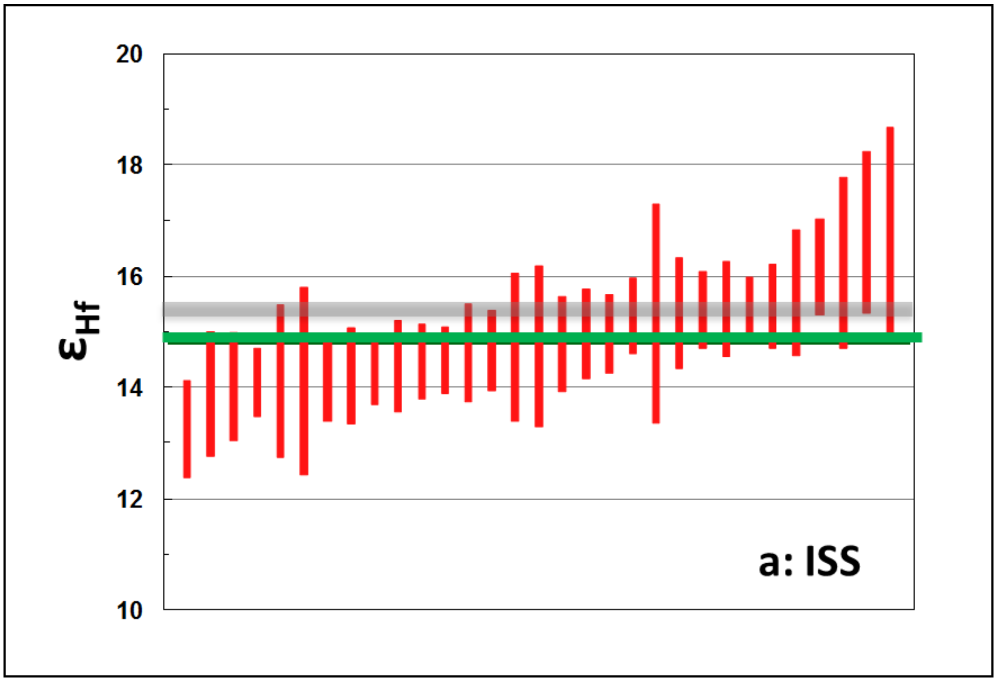


Figure 4: Oxygen isotope results. (A) ISS (n=50) presented on a weighted mean plot. These zircons have a weighted mean (indicated by green line) of 3.1 ‰, with a standard deviation of 0.42, a standard error of 0.06 and a MSWD of 0.77. (B) Sample ISKK has a weighted mean of 3.5 ‰, with a standard deviation of 0.49, a standard error equal to 0.05, an a MSWD of 2.1. In both plots, Error box heights are 2σ.



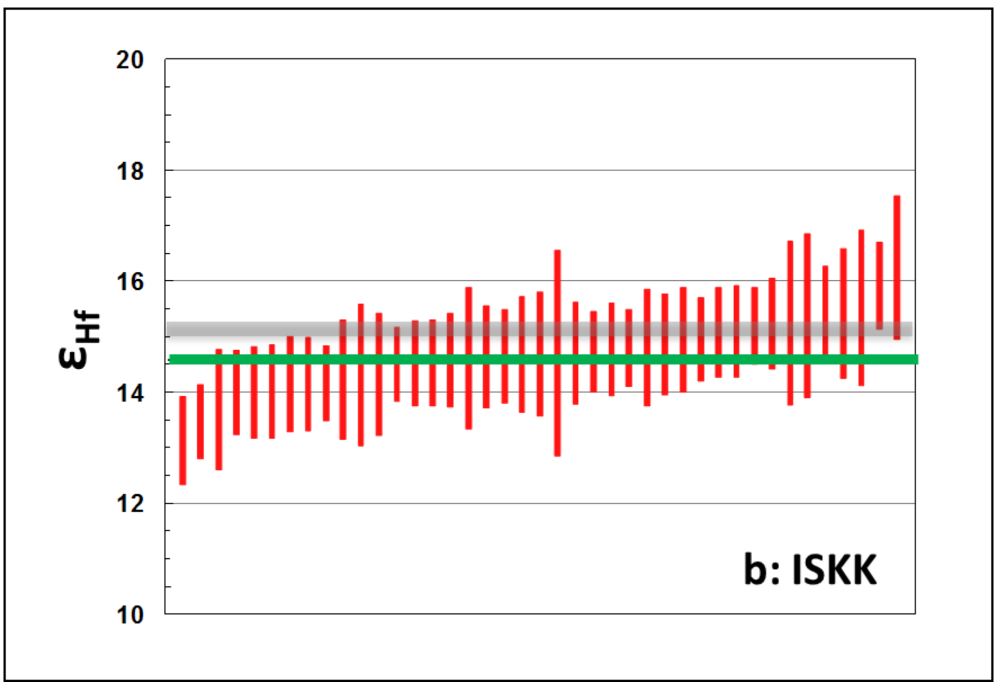


Figure 5: Hafnium isotope (ε_{Hf}) result. (A) ISS (n = 30) are presented on a weighted mean plot. These zircons have a weighted mean of 14.8 ε_{Hf}, (indicated by the green line), a standard deviation of 0.8 and a standard error equal to 0.15. The MSWD is 2.8. (B) Sample ISKK (n=41) has a weighted mean of 14.6 ε_{Hf}, standard deviation of 0.7, a standard error of 0.11 and a MSWD equal to 1.9. The ε_{Hf} of Hvítserkur pumice (15.2 ± 0.1) is presented as a gray box, for reference. The error box height on both plots is 2σ.

4.5: Trace Elements

4.5.1: Rare Earth Elements (REE)

Zircons from both ISS and ISKK have chondrite-normalized REE patterns (Fig. 6) that are typical of Iceland zircon compositions (Fig. 6; see also Chapter 2). Positive Ce anomalies and negative Eu anomalies are ubiquitous (indicative of oxidatidation fugacity of magma, and zircon growth in magmas saturated by feldspars, respectively; Murali et al. 1983; Hoskin and Schaltegger 2003). Heavy REE (HREE) are greatly enriched relative to chondrite, spanning more than an order of magnitude, from ~1,000 to >10,000. Compositions are presented in Table 2.

4.5.2: Ti vs Hf

The Ti content of ISS zircons ranges from ~4 to ~35 ppm, with a mean concentration of 10.5 ppm and a median of 7.5 ppm (Table 2). The Ti in ISKK is very similar, ranging from ~4 to ~40 ppm, with a mean of 10.8 ppm and a median of 8.2 ppm. Hafnium in ISS spans a range from ~8,200 ppm to 11,700 ppm. The mean Hf concentration is ~10,300 ppm, with the median slightly lower at ~10,000 ppm. The Hf concentration of ISKK zircons is similar, ranging from ~8,000 ppm to ~13,500 ppm, with a mean of ~10,300 ppm and median of ~10,600 ppm.

Together, ISS and ISKK form a coherent population within the greater-Iceland dataset (Fig. 7). Both ISS and ISKK tend to have high Ti concentrations for given Hf concentrations. Ti concentrations for ISS and ISKK span all but the highest ~5% of the greater-Icelandic dataset; Hf concentrations are typical of the upper 70% of the greater-Iceland dataset. Zircons from sample ISKK have a striking negative correlation between Ti and Hf; ISS zircons do as well, though the relationship is less pronounced. For both populations, a large proportion of analyses (ISKK: 19/32 analyses; ISS: 14/31 analyses) cluster in a confined range of Ti (~5-10 ppm) and Hf (~10,000-11,000 ppm).

Table 2: Zircon Trace Element Compositions

Sample[10]	Ti ppm	Hf ppm	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Gd ppm	Tb ppm	Dy ppm	Ho ppm	Er ppm	Tm ppm	Yb ppm
Hvítserkur Location: 28W 557692, 7257066														
2.2 (6)	5	10,986	0.11	40	4	11	3	103	34	382	152	597	113	832
3.1 (6)	8	10,021	0.10	33	7	18	5	173	55	572	220	846	158	1,199
Stóraá River Location: 28W 561363, 7260665														
2.1 (2)	6	10,872	0.02	21	1	4	1	38	14	157	59	258	50	386
3.1 (2)	4	9,843	0.08	100	8	23	8	206	67	683	239	910	167	1,214
5.1 (2)	10	8,395	0.06	34	4	9	3	87	32	346	129	515	100	756
7.1 (2)	25	10,356	0.17	92	9	22	6	206	72	773	278	1119	217	1,607
8 (2)	14	9,640	0.08	93	7	20	8	193	62	647	230	879	163	1,177
9 (2)	17	8,913	0.01	5	1	2	1	20	7	79	30	131	27	213
10.1 (2)	6	10,775	0.03	31	2	5	2	50	17	199	78	321	61	475
11 (2)	22	11,741	1.98	86	22	46	1	302	108	1078	381	1423	278	1,986
12.1 (2)	6	11,136	0.01	21	1	4	1	36	13	155	60	248	49	379
13 (2)	5	10,657	0.06	37	6	15	4	153	53	585	217	876	162	1,195
14.1 (2)	6	10,841	0.19	21	1	4	1	38	14	161	62	256	50	378
15.1 (2)	13	9,087	0.22	127	18	45	17	389	118	1189	427	1610	294	2,125
16 (2)	7	9,412	0.26	128	12	24	3	193	67	710	255	1029	200	1,485
18.1 (2)	6	11,011	0.01	24	1	4	1	42	15	173	67	282	55	417
19.2 (2)	7	10,137	0.01	18	2	4	1	40	14	159	62	255	51	398
20 (2)	16	8,226	0.14	25	15	35	14	274	83	838	294	1168	221	1,651
21 (2)	36	8,670	0.32	110	24	54	19	438	132	1302	462	1720	314	2,269
23 (2)	15	9,571	0.78	81	6	18	7	165	56	565	204	795	148	1,078
27.1 (2)	6	11,071	0.15	36	2	5	2	51	19	211	83	348	67	518
27.2 (2)	6	10,772	0.02	27	2	4	1	48	16	189	72	302	58	443
28 (2)	9	10,835	0.02	60	3	10	3	97	33	372	143	563	104	756
29 (2)	5	11,111	0.02	18	2	6	2	58	20	217	86	346	67	502
30.2 (2)	12	9,356	0.06	61	5	14	5	150	50	524	191	750	142	1,055
31.2 (2)	8	10,806	0.03	52	3	8	3	82	26	273	104	395	75	542
32.1 (2)	7	9,576	0.37	129	30	65	26	494	147	1458	526	1903	339	2,400
34.1 (2)	12	9,321	0.03	66	5	15	5	153	46	476	181	679	126	910
37.1 (2)	8	8,983	0.1	101	9	26	10	247	82	820	289	1115	208	1,512
38.2 (2)	14	8,573	0.23	57	19	42	15	311	104	1019	361	1375	252	1,823
39.1 (2)	6	10,918	0.02	34	2	5	2	54	20	222	83	350	68	512
41 (2)	6	10,775	0.02	21	1	4	1	37	13	153	59	242	48	369
47 (2)	7	10,696	0.38	32	3	7	2	63	21	242	95	381	73	558
48 (2)	5	10,798	193.6	357	135	46	7	150	39	408	153	597	111	808
Krossá and Kækjudalsá Rivers Location: 28W 553667, 7260140														
1.2 (2)	7	10,704	0.02	12	2	6	2	57	19	214	80	331	64	492
3.2 (2)	7	10,808	0.02	12	3	6	2	57	20	224	86	351	69	532
8.2 (2)	5	10,514	0.09	48	6	16	4	163	56	608	234	926	173	1,266
9 (2)	13	9,115	0.48	6	1	2	0	20	8	89	37	166	34	2,91
10 (2)	11	11,285	1.22	24	2	5	2	43	16	178	74	316	63	500

[10] Sample names are the same as those in Table 1

Sample	Ti ppm	Hf ppm	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Gd ppm	Tb ppm	Dy ppm	Ho ppm	Er ppm	Tm ppm	Yb ppm
12 (2)	6	10,882	0.01	30	2	5	1	46	17	189	75	309	61	452
13.2 (2)	5	12,794	0.02	52	2	7	2	85	34	392	156	643	127	953
14.2 (2)	9	11,028	61.4	215	64	40	5	231	67	701	285	1026	192	1,415
15.2 (2)	7	10,542	0.01	17	1	3	1	32	12	138	55	239	48	379
16 (2)	17	9,183	0.03	13	2	4	1	35	12	129	51	209	42	317
18.1 (2)	10	10,613	0.44	18	2	5	2	48	17	190	76	311	62	483
18.2 (2)	12	8,770	0.23	61	20	42	14	341	102	1055	361	1391	261	1,896
19 (2)	13	9,682	0.01	5	1	2	1	18	6	73	29	127	26	203
20.2 (2)	24	8,906	0.11	230	16	47	16	422	125	1215	411	1519	272	1,940
21.2 (2)	8	10,629	0.01	15	1	4	1	37	13	147	57	244	50	393
22 (2)	7	10,579	0.01	17	1	4	1	33	13	146	56	238	47	364
24.2 (2)	21	8,914	0.06	51	5	14	4	140	47	490	179	712	133	988
25.2 (2)	7	10,763	0.03	13	1	2	1	25	10	111	43	197	41	326
26 (2)	6	10,615	0.02	15	3	7	3	68	23	260	98	399	75	562
54.1 (2)	6	10,866	0.06	51	3	9	3	91	32	356	133	552	104	779
56.2 (2)	14	9,354	0.11	122	10	26	9	243	77	802	287	1104	208	1,514
61.1 (2)	5	11,097	0.02	25	2	5	2	49	18	194	77	315	61	460
64 (2)	7	11,069	0	15	1	3	1	28	11	126	48	214	43	347
67.1 (2)	7	11,139	0.58	17	3	8	3	73	25	287	108	444	86	635
69 (2)	11	13,552	0.21	688	10	32	9	342	120	1275	473	1875	351	2631
70.1 (2)	5	10,052	0.11	100	10	27	7	250	85	922	325	1323	256	1896
75 (2)	8	10,792	0.04	52	3	8	3	83	29	323	123	492	94	700
76 (2)	11	9,438	0.08	13	1	4	1	38	13	141	60	247	49	381
15 (6)	23	9,073	0.06	5	2	6	2	52	17	181	71	295	60	478
16 (6)	30	7,981	0.08	112	11	31	12	261	85	832	298	1112	202	1478
17 (6)	8	10,879	0.18	14	1	3	1	27	10	119	47	204	42	340
20 (6)	24	8,490	0.12	190	17	46	16	372	111	1103	383	1420	255	1850

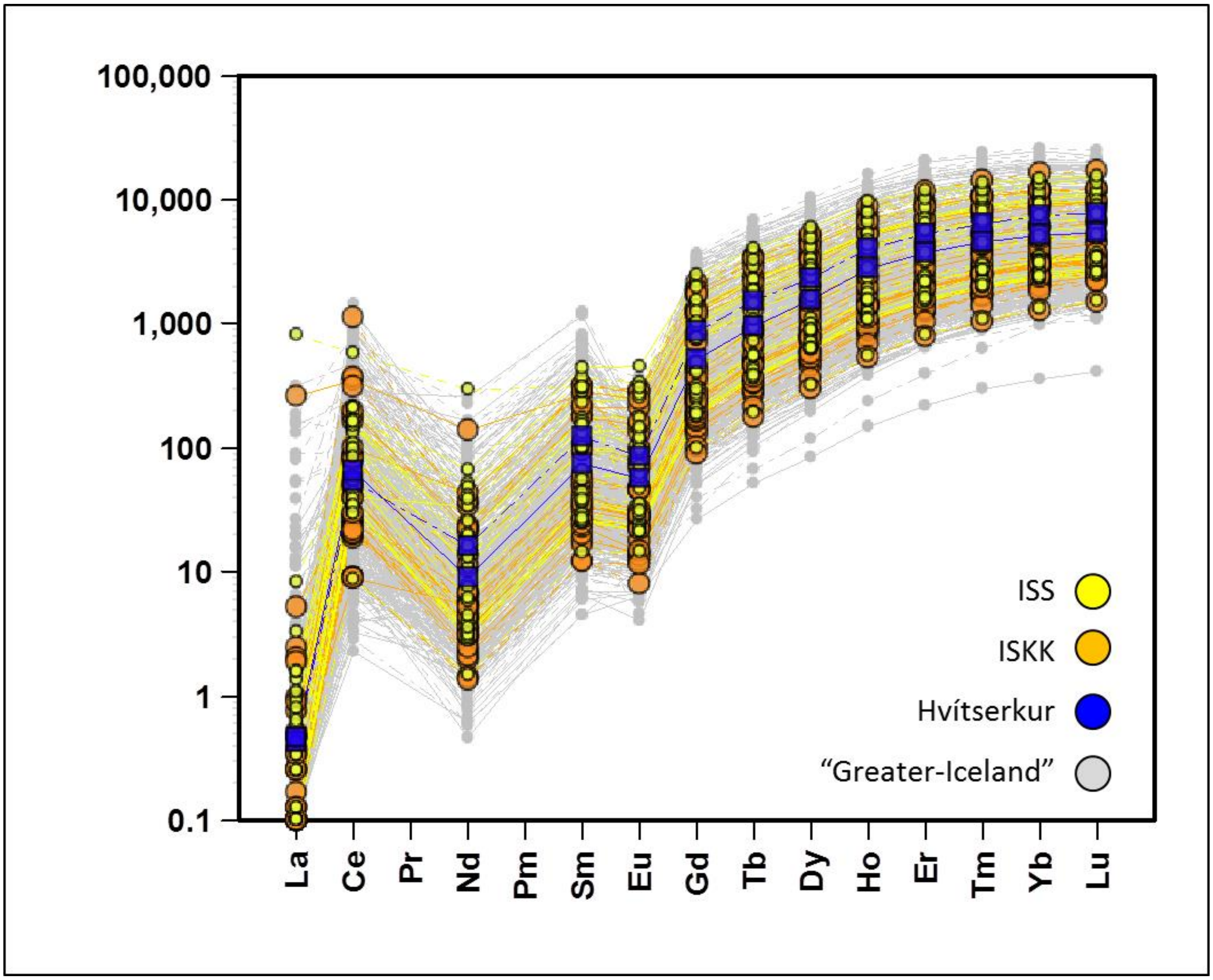


Figure 6: Chondrite normalized REE compositions for ISS (n=31; yellow) and ISKK (n=33; orange) and Hvítserkur (n=2; blue) compared to a larger Iceland-zircon compositional dataset, shown in gray, from Chapter 2 and Appendix B.2 (n=715, not including Breiðuvík data). Values from McDonough and Sun (1995) were used to normalize data.

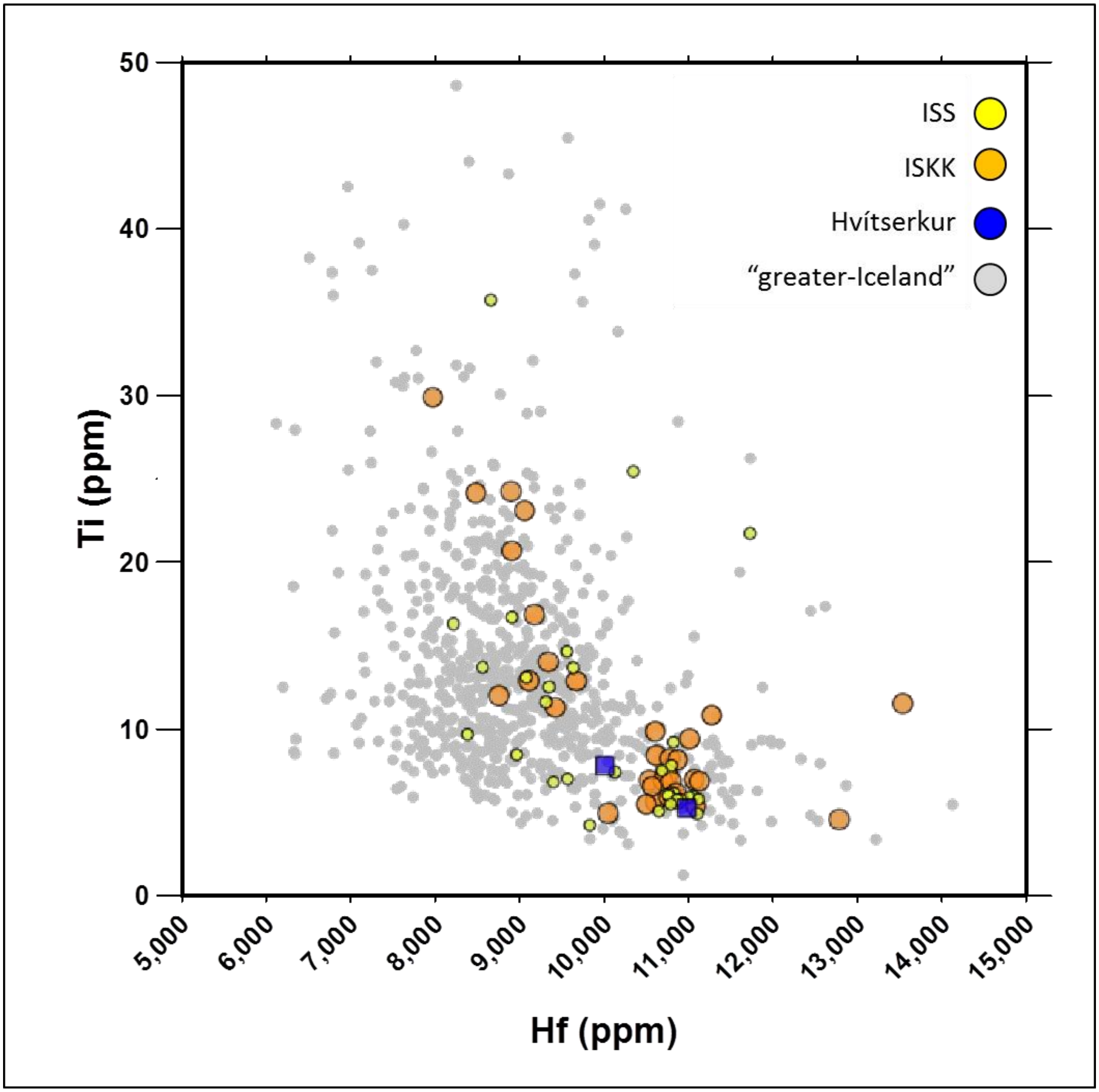


Figure 7: Ti (ppm) vs Hf (ppm) compositions for ISS (n=31; yellow), ISKK (n=33; orange), and Hvítserkur (n=2; blue) compared to the greater-Iceland dataset shown in gray from Chapter 2 and Appendix B.2 (n=756, not including Breiðuvík).

5. Discussion

5.1: The similarities between ISS and ISKK

Hafnium isotopes in zircon reflect the materials (crustal and mantle) form which host magmas were derived. Oxygen isotopes provide evidence of crustal contributions that influenced the ultimate composition of the magmas. Uranium-lead ages reveal the timing of zircon crystallization and thus the longevity of the magma-producing systems in which they grew. In all of these fundamentally important categories, detrital zircons from sample ISS (catchment entirely within the Breiðuvík caldera) and ISKK (catchment includes Breiðuvík and Kækjuskörð volcano) are indistinguishable (Fig. 8). Furthermore, the weighted ε_{Hf} means for both populations are essentially identical to the ε_{Hf} of Hvítserkur pumice. We assert that these detrital zircons record evidence of great volumes of silicic material, with the same mantle source (based on Hf isotope ratios), generated by the same fundamental magmatic process (based on O isotope ratios) during the same prolonged duration of silicic magma production (based on U-Pb evidence) in two large eruptive centers in close spatial proximity (Fig. 1).

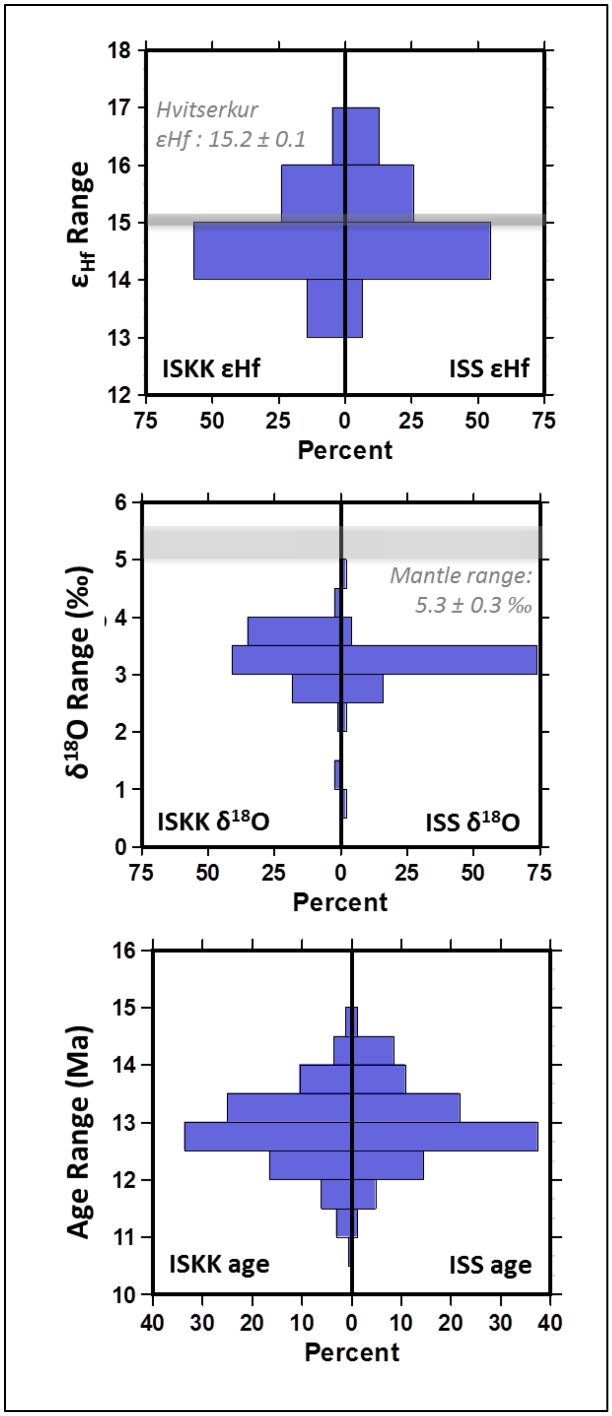


Figure 8: Comparison of ISS and ISKK ages and isotopes. We present results for ISS and ISKK hafnium isotopes (cf. Fig. 5a and b), oxygen isotopes (cf. Fig. 4a and b), and ages (cf. Fig. 3a and b) side by side, to emphasize the remarkable similarities between these two zircon samples. In all cases, bin width is approximately equal to the average analytical error for each type of analysis: ε_{Hf} bin width is ~1 ε unit, O and age bin widths are ~ 0.5 ‰ and Ma, respectively). The ε_{Hf} composition of Hvítserkur pumice, as well as the typical range for mantle-zircon composition (Valley et al. 1998; Valley et al. 2003), are included for comparison.

5.2: Oxygen Isotopes and Partial Melting

The oxygen isotope ratios in Breiðuvík-area zircons are uniformly depleted: ISS has a median and weighted mean of 3.1 ‰ and ISKK has a median of 3.3 ‰ and weighted mean 3.5 ‰. Even the highest values for the area (ISS and ISKK combined) are low compared to mantle values, with a maximum value of 4.2 ‰, and 3.7 ‰ for the 95th percentile (a more-conservative view of the population range, de-emphasizing the role played by any outliers).

Zircons grown from magma that evolved in a closed-system from mantle derived melt (i.e., fractionally crystallized) have $\delta^{18}O$ values of 5.3 ± 0.3‰ (Valley et al. 1998; Valley 2003). To decrease $\delta\ ^{18}O$ in magma (and zircon growing in that magma) below mantle values, source material or major assimilants must have undergone high temperature alteration by low-^{18}O surface water (e.g. Hattori and Muelhenbachs, 1982). Therefore, The ^{18}O depleted zircon compositions at Breiðuvík strongly support partial melting of (or major contamination by) hydrothermally-altered material as the origin of silicic magmas in this volcanic complex. There is no observable correlation between age and oxygen isotopic composition in the Breiðuvík-area zircon record (Fig. 9). We therefore infer that partial melting of altered crust played a major role in silicic petrogenesis throughout the entire (zircon-saturated) history of this volcanic complex.

5.3: Comparing Breiðuvík to the modern central volcanoes Torfajökull and Krafla

In this section, we compare detrital zircons from the extinct Breiðuvík central volcano (and neighboring Kækjuskorð) to zircons from silicic lavas at well known, active, central volcanoes. Torfajökull, the only modern or ancient volcanic center in Iceland with a greater abundance of silicic material than at Borgarfjörður eystri, is one obvious choice. Notably, the tectonic setting at Torfajökull (the intersection of a propagating rift and a fracture zone) matches the proposed tectonic setting of Breiðuvík while it was active (Martin et al. 2011).

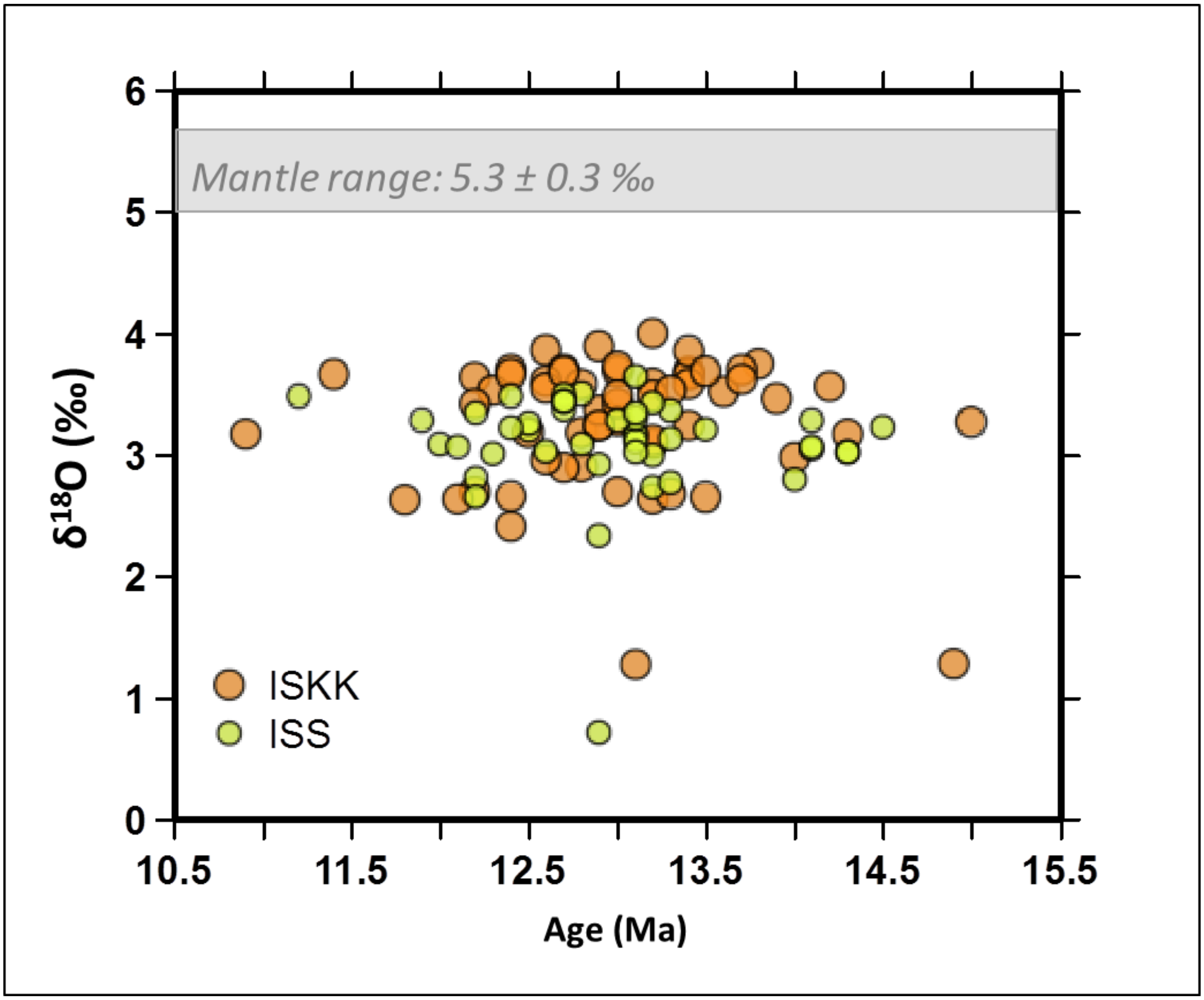


Figure 9: Oxygen isotopes through time. There are 44 zircon crystals from sample ISS, and 59 from sample ISKK, that were both age dated and analyzed for oxygen isotopes. These results are plotted against each other, and determine that age and oxygen are not correlated in the Breiðuvík zircon record.

We also compare Breiðuvík to Krafla, a rift-zone volcanic center in the active Northern Volcanic Zone. The Borgarfjörður eystri region, which includes Breiðuvík, originated at this same rift zone 12-13 Ma ago (Martin et al. 2011), making Krafla another natural choice for comparison.

5.3.1: ε_{Hf} comparison

It is well established that Iceland sits atop a heterogeneous mantle as recorded by variable Sr, Nd, Hf, Pb, Os isotope ratios (e.g.,Peate et al. 2010 and references therein). Hafnium isotopes (particularly in zircon, where they are effectively immobile and can be measured with high spatial resolution) are reliable tracers of the mantle sources of magmas from which zircons eventually grew ((Patchett and Tatsumoto 1981; Kinny and Maas 2003; Hawkesworth and Kemp 2006; and references therein).

Hafnium isotopes in zircons from across Iceland span ε_{Hf} ~ 9 to 17 (Fig. 10), with a median and mean of ~13 εHf (n=337 analyses). All hafnium isotope analyses from Torfajökull (from two lava samples) fall in the lower 30% of the bulk Iceland range, with values spanning from ~9 to ~12 ε_{Hf}. Krafla (one lava sample) and Breiðuvík zircons appear to have a common mantle source, with their Hf isotope signatures overlapping in a range spanning ~13 to ~16. Together, the Krafla and Breiðuvík ε_{Hf} (excluding the lowest 5%, to protect against the effect of outliers) fall in the upper 40% of the greater Icelandic range, distinct from the Torfajökull zircon population.

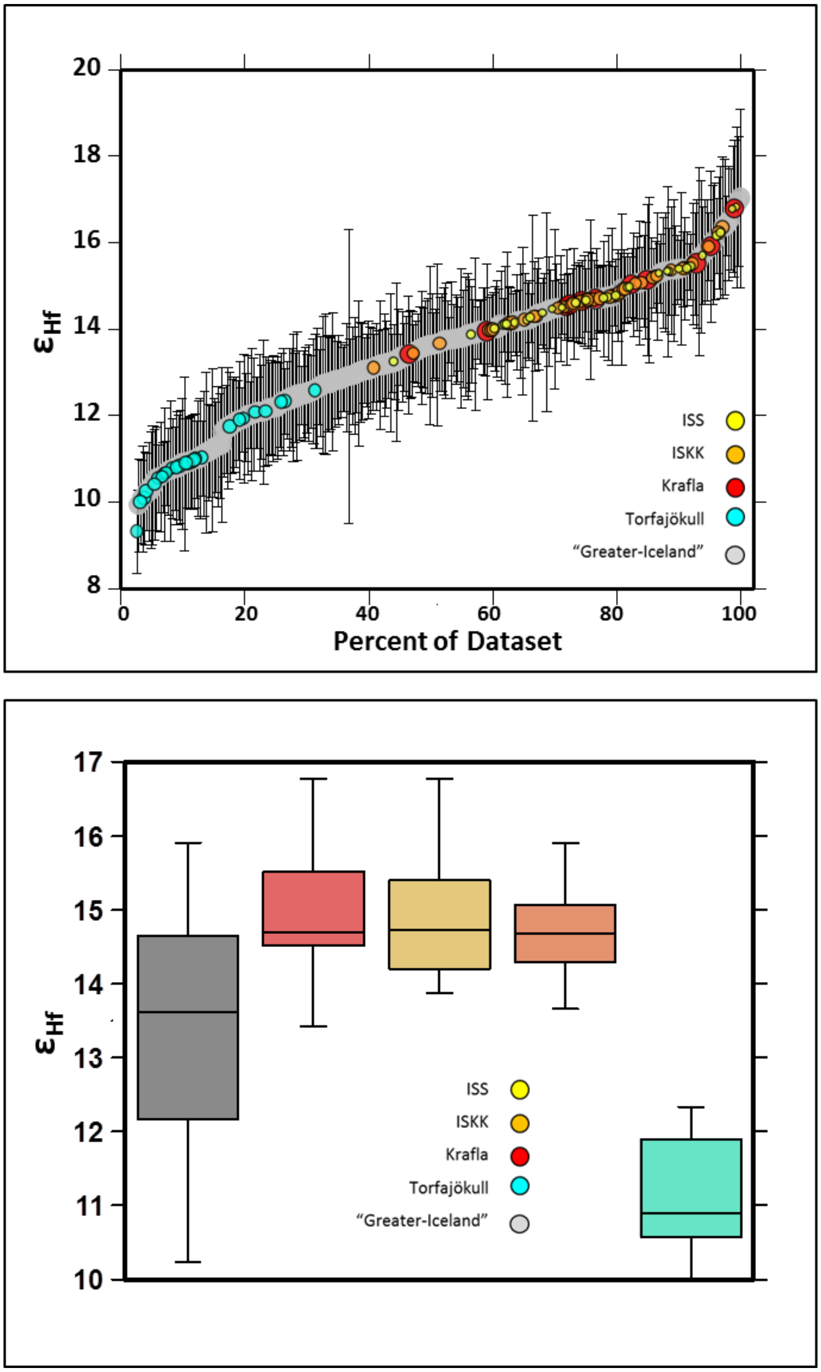


Figure 10: Comparing Breiðuvík ε_{Hf} to modern systems Torfajökull (n=25), Krafla (n=10), and the greater-Iceland (n=337) database (Appendix F). The top panel shows individual analyses with their associated errors. The lower panel is a box-and-whisker representation of the same data. Boxes represent the middle 50% (25^{th} to 75^{th} percentile) of data for each population. The line bisecting each box represents the median value. Whiskers extend to the 5^{th} and 95^{th} percentiles (excluding outliers). The bulk Iceland database includes Breiðuvík, Krafla and Torfajökull values; the low whisker of Bulk Iceland does not extend as far as the upper limits of the Krafla and Breiðuvík distributions, because these populations make up the highest 5% of the Bulk Iceland compilation.

In recognizing the source similarity between Krafla and Breiðuvík, we can directly compare zircon-derived evidence at Krafla and Breiðuvík (ISS+ISKK) and assume that similarities or differences in the zircon record reflect true similarities or differences in petrogenesis and magmatic histories. Care must be taken in directly comparing Breiðuvík and Torfajökull due to their different source materials.

5.3.2: $\delta^{18}O$ comparison

While the oxygen isotope ratio recorded by zircons at Breiðuvík is low (a combined ISS and ISKK mean and median of 3.2‰, nearly identical to the average signature for "greater-Iceland;" Chapter 2, Appendix A.1), the oxygen isotope composition of Torfajökull (three lava samples) and Krafla (one lava) zircons are more strongly depleted (Fig. 11). The median value at Torfajökull is 1.2 ‰, and 1.3 ‰ at Krafla. Oxygen isotope ratios are also significantly more variable at Torfajökull (zircons from three lava flows) and Krafla (zircons from one lava flow), compared to the detrital zircon from Breiðuvík. When comparing the span between the 5th and 95th percentiles (Fig. 11), Torfajökull (n = 65, from three lavas) covers 3.8 ‰, from -0.7 to +3.1‰ and Krafla (n=25, from one lava) covers 1.8‰, from 0.3 to 2.1 %. Breiðuvík zircons (ISS and ISKK combined, n=133) only span 1.1 ‰, from 2.6 to 3.7 ‰.

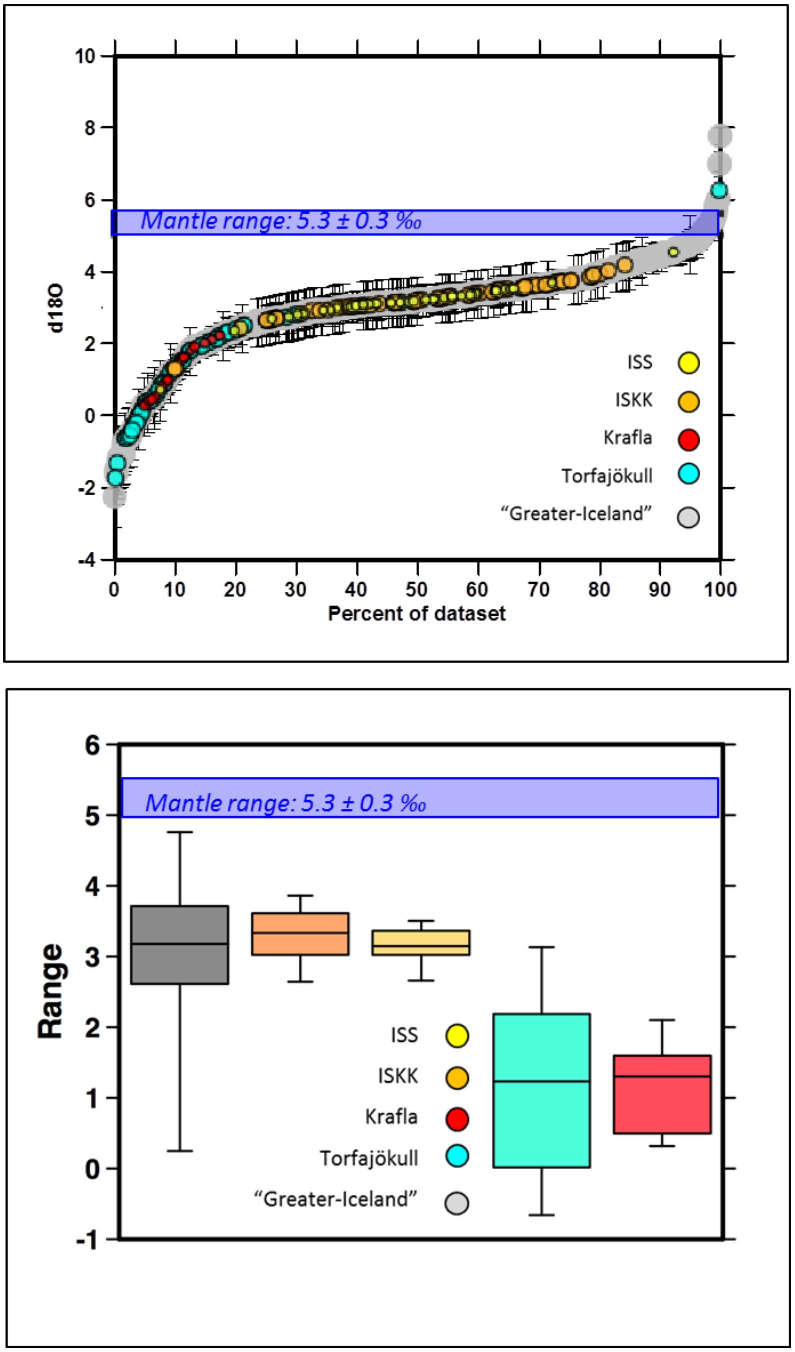


Figure 11: Comparing Breiðuvík- $\delta^{18}O$ to modern systems: Torfajökull (n=65), Krafla (n=25), and the greater Iceland database (Chapter 2, Appendix A.1; n=774). The top panel shows individual analyses with their associated errors. The lower panel is a box-and-whisker presentation of the same data. Boxes represent the middle 50% (25th to 75th percentile) of data for each population. The line bisecting each box represents the median value. Whiskers extend to the 5th and 95th percentiles (excluding outliers). The greater-Iceland database includes Breiðuvík, Krafla and Torfajökull values; the low whisker of the greater-Iceland dataset does not extend as far as the Torfajökull distribution, because Torfajökull makes up the lowest 5% of the dataset. The range of $\delta^{18}O$ for mantle-zircons (Valley et al. 1998, Valley 2003) is included for reference.

Silicic magma at all three volcanic complexes, like the vast majority of zircon-saturated silicic magmas in Iceland, appear to be the products (in large part) of partial melting of hydrothermally altered crust. It is quite likely that assimilation—fractional crystallization (AFC) processes may also be partially responsible for silicic petrogenesis at these, and other, Icelandic volcanoes. It is also possible that some of the melted basaltic crust could have been altered to a different (lesser) degree. The magnitude of ^{18}O depletion, as well as the variability of oxygen ratios within the zircon population, can be used to gain further insight into the nature of the altered crust and specifics of partial-melting processes.

Crustal δ^{18}O is determined by the fractionation factors between the basalt, alteration minerals and the fluid phase (plus the water/rock ratio during alteration; e.g., Hattori and Muehlenbachs 1982). High temperature alteration phases impose low δ^{18}O on metabasalt whereas low temperature alteration leads to high δ^{18}O of metabasalt; both low and high δ^{18}O rocks have been reported in Borgarfjörður eystri (Martin & Sigmarsson 2010; Berg et al. 2013). This means that the crust beneath Breiðuvík, Torfajökull and Krafla may have experienced different thermal regimes during alteration: hotter and more variable at Krafla and Torfajökull, cooler and more uniform at Breiðuvík. This is consistent with relationships observed in other studies (e.g., lower δ^{18}O at Krafla than Reyðarfjörður, due to cooler temperatures at the latter locality; Hattori & Muehlenbachs 1982). Another explanation for the greater depletion at Torfajökull and Krafla relative to Breiðuvík may be related to the permeability of the rock and amount of water involved in the alteration process (the water : rock ratio). Minor depletion (of 1 or 2 ‰) can be achieved with hydrothermal alteration by small amounts of meteoric water, but rocks must interact with far greater amounts of meteoric water during alteration, likely in a system with high rates of circulation of low δ^{18}O surface waters, in order to achieve very low

$\delta^{18}O$ (and the resultant magma and zircon; e.g., >10 ‰ depletion; Hattori & Muehlenbachs 1982).

To summarize, there are three general possibilities to explain the observed variations in oxygen signatures between zircons from these three volcanic systems: (1) hydrothermal alteration of basaltic crust occurred at cooler, more constrained temperatures at Breiðuvík compared to higher and more variable temperatures at Krafla and Torfajökull. Alternatively, (2) hydrothermal alteration of basaltic crust took place with less meteoric water and/or lower permeability at Breiðuvík, whereas hydrothermal alteration of crust at Krafla and Torfajökull developed with higher water : rock ratios. Or perhaps (3) varying amounts of hydrothermally altered crust was involved in the genesis of the magmas; not all of the material involved was extensively altered. All of these effects (temperature, water:rock ratio, contributions of variably-altered crust) are likely to have influenced the crustal source rock that later partially melted and imprinted its oxygen signature to the silicic magmas in which these zircons grew.

5.3:3: Ti vs Hf comparison

Titanium in zircon is a useful indicator of relative temperature of crystallization, with higher Ti concentrations corresponding to higher crystallization temperatures (Watson and Harrison 2005; Ferry and Watson 2007). Hafnium in zircon acts as a proxy for fractionation (Claiborne et al. 2006). Hafnium is highly compatible in zircon, which in fact can be considered as a zircon-hafnon ($HfSiO_4$) solid solution. However, Zr is favored over Hf in the zircon structure, and hence Hf/Zr in melt rises during growth of zircon crystals, leading to increasing Hf concentration in as fractionation progresses. Zircons growing in a cooling, increasingly fractionated system are therefore expected to display a negative correlation between Ti and Hf.

As previously discussed (section 4.5.2), zircons from Breiðuvík (n= 64 for ISS and ISKK combined) generally show a negative correlation between Ti and Hf, with a significant clustering at Hf concentrations of ~10,500-11,000 ppm and Ti of ~5-10 ppm. These Breiðuvík-area zircons fall among the highest Hf and lowest Ti concentrations for the greater-Iceland dataset (Fig. 7; Fig. 12; Chapter 2; Appendix B.2). Krafla zircons (n=30) show a well-defined negative correlation between Ti and Hf, falling in a narrow range of both Ti (~10-20 ppm) and Hf (~8,500 - 10,500 ppm). These concentrations are very typical of the greater-Iceland dataset (Fig. 12; Chapter 2, Appendix B.2). Zircon compositions at Torfajökull (n=104) are significantly more scattered, revealing no clear relationship between Ti and Hf. This scatter is largely a product of combining zircons from several distinct eruptive units that, individually, show negative Ti an Hf trends (Carley et al. 2011). Torfajökull zircons are among the lowest in Hf of any Icelandic zircons, a subset of their compositions falling in the < 7,000 - ~ 8,500 ppm range.

The Ti-Hf relationships discussed above and illustrated in Figure 12 indicate petrogenetic distinctions among the volcanic centers Krafla, Torfajökull, and Breiðuvík. Krafla, probably in part because all data are from a single sample, has the most coherent trend, exhibiting very typical Icelandic compositions (moderate fractionation at typical temperatures). Torfajökull data reveal less post-zircon-saturation fractionation than the other centers or to the total Iceland array (Hf restricted to relatively low concentrations) and little coherency (wide diversity) in Ti-Hf trends. Breiðuvík zircons are distinct in that they reveal a strong trend toward lower Ti and Hf, much more pronounced than either Krafla or Torfajökull and more than most Icelandic zircon. This indicates substantial fractionation extending to relatively low temperatures, after magmas became zircon-saturated. This may, in turn, suggest a cooler environment for the terminal magma differentiation at Breiðuvík.

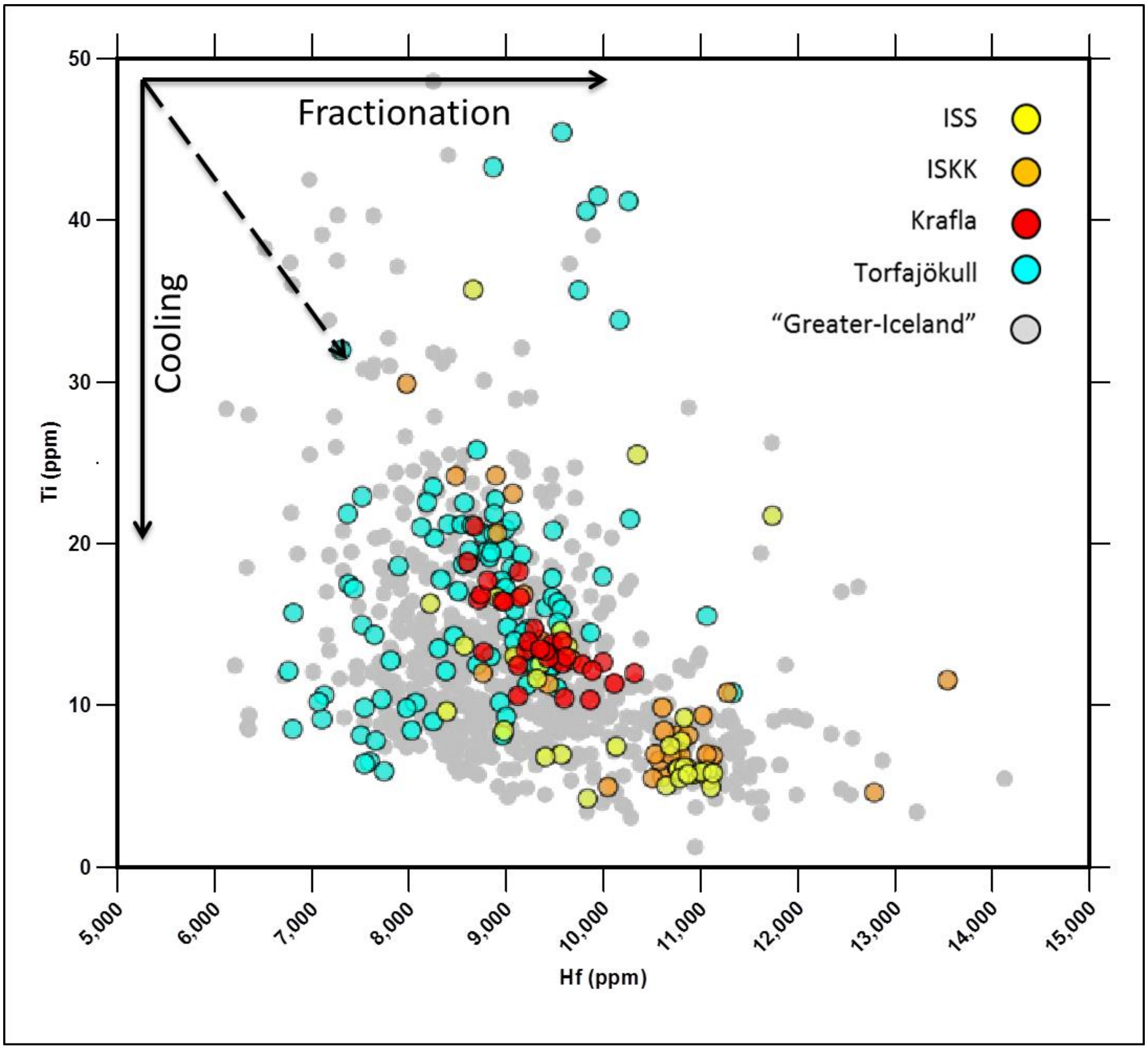


Figure 12: Comparing Breiðuvík- Ti and Hf compositions (ppm) with modern systems: Torfajökull (n=65), Krafla (n=25), and the greater Iceland database (Chapter 2; Appendix B.2; n=774).

5.4: Breiðuvík: A long-lived silicic center

The MSWD for weighted mean 206Pb/238U ages calculated for both ISS (within the Breiðuvík caldera) and ISKK (Breiðuvík and Kækjuskorð) are higher than expected for a normal distribution of ages (3.4 and 3.1) based on Monte Carlo Simulations (e.g., Mahon, 1996). This statistic indicates that the ages we measured do not represent a single population, and the variability cannot be attributable to analytical uncertainty of individual analyses. Thus, we infer that the range of detrital zircons ages reflects a prolonged history of multiple episodes of zircon growth (and thus multiple episodes of magmatic activity). Though the MSWD of the detrital zircon record suggest multiple ages, the distribution of measured ages reveals a well-defined peak at ~13 Ma (Fig. 13a). This relatively-narrow peak, in contrast to a broader, flatter curve that would result from a truly-uniform distribution of ages (Fig. 13b), might represent a peak in silicic magma activity, as recorded by zircon crystallization. To test this hypothesis, we combine ISS and ISKK measured ages (refer to section 5.1 for justification), then divide the population into 0.5 million year bins. We create a probability density curve for each bin of data and present them on the same x-axis, in chronological order, to see if any patterns emerge (Fig. 13). Together, these probability density plots together form a muted peak, supporting the notion that zircon growth was at a maximum around 13 Ma but also indicating that the Breiðuvík magma-generating system was fairly active for a prolonged period of time.

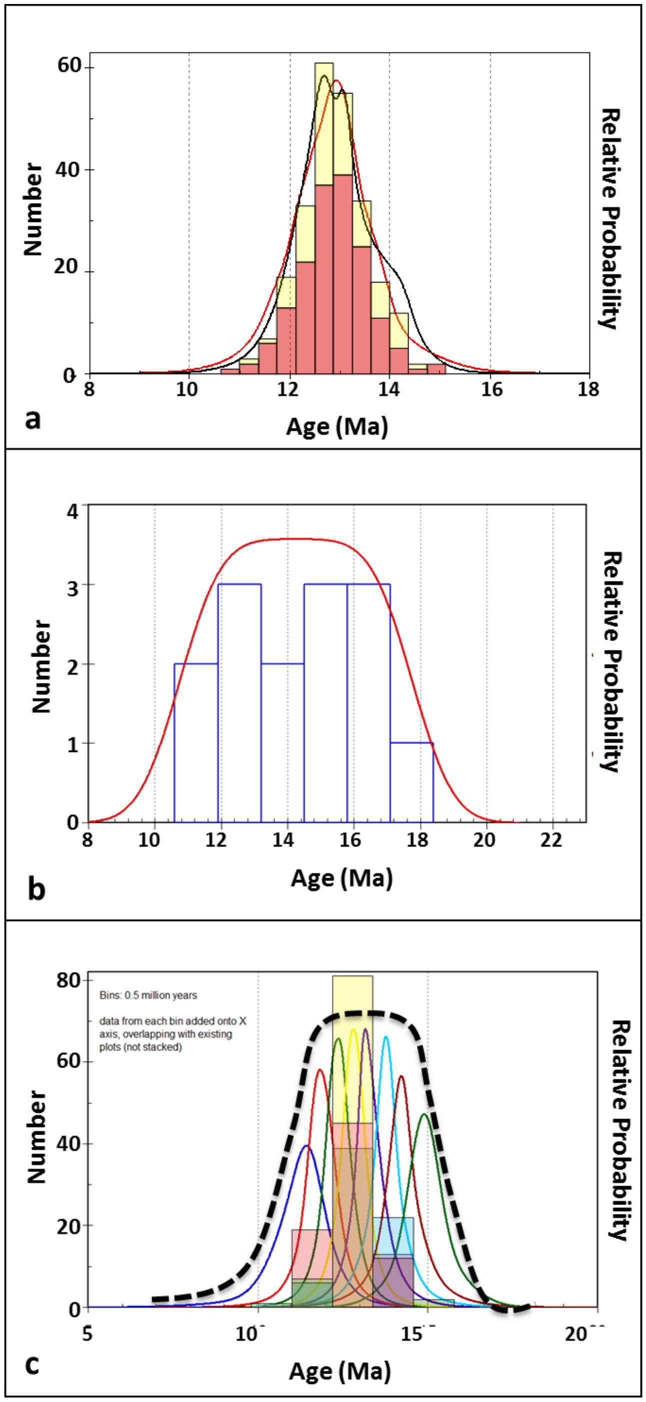


Figure 13: Age distributions in real and idealized systems. (A) We create stacked histograms and probability density plots for measured ISS (yellow; N=83) and ISKK (red; N=164) ages, emphasizing the prominent peak at 12.9 Ma. (B) A histogram and probability density plot created using Isoplot and a hypothetical, uniformly-distributed dataset: ages range from 10.5 to 17.5 million years, in 0.5 million year increments, with 1σ errors of 1 million years. Note the broad, flat-topped nature of the curve. (C) Measured ages from ISS and their associated analytical errors) are binned in 0.5 Ma year increments then plotted as probability density diagrams on the same X axis. The dashed curve was drawn by hand, to emphasize the overall shape suggested by the series of peaks.

A recent study of the Borgarfjörður eystri area (described in an abstract: Berg et al. 2014) suggests an interval of silicic volcanism of one million years, from 13.5 to 12.4 Ma, based on SIMS ages of zircons from individual volcanic samples. This estimate of volcanic longevity is consistent with previous determinations that Icelandic volcanic systems have a typical lifespan 0.5 to 1.5 million years (Jakobsson et al. 1978; Saemundsson 1978, 1979; Jakobsson 1979; Thordarson and Larsen 2007). Our detrital study reveals a substantially longer period of activity at Breiðuvík, perhaps capturing the true lifespan for the overall silicic-magma generating system (distinct from episodes of volcanism).

There are several ways to estimate magma system longevity at Breiðuvík:

- The difference between the minimum (11.2 ± 0.7 Ma) and maximum (15.0 ± 0.9 Ma) ages determined for individual grains: 3.8 ± 1.6 million years
- The difference between high precision (errors < 0.5 M.y.) minimum (11.5 ± 0.3 Ma) and maximum (14.9 ± 0.4 Ma) ages: 3.4 ± 0.7 million years
- The difference between the 5th (11.7 ± 0.2 Ma) and 95th (14.9 ± 0.3 Ma) percentile ages: 3.2 million years
- The window of time represented by two standard deviations (1.4 Ma) from the mean (12.9 Ma), which captures 95% of the detrital zircon age span: 2.8 million years

To gain a sense of confidence in the age span represented by our sample of zircon (n = 83 for ISS, n = 247 for ISS + ISKK), we turn to Monte Carlo statistical analysis. In our analysis, we use the mean and standard deviation of our analytical ages, and we use a Q-Q plot (Appendix G.1) to verify that a normal distribution is an appropriate way to model these data. We also determine the mean and shape and scale factors for the 1σ analytical errors (which have a gamma distribution) associated with the measured ages. We then replicate our detrital zircon sampling and dating by randomly selecting ages and errors from within their respective distributions a realistic number of times (e.g., we measured 83 ages from sample ISS, so we might select 83 random ages and errors in our Monte Carlo analysis). We repeat this sampling exercise many times (e.g., x 100; x 1,000). A more complete explanation of the development of this Monte Carlo analysis can be found in Appendix G.2. Examples of model inputs and outputs are presented in Table 3.

This multi-method approach to constraining longevity leaves little doubt that the system producing silicic magmas at Breiðuvík was active for at least two million years (to be very conservative), and very likely was active for three million years. While activity (at least as captured by the zircon record) may not have been very lively in a window of time exceeding 1.4 million years (one standard deviation from the mean age), Monte Carlo statistical modeling gives us confidence that the full span of measured ages (even those that suggest a lifespan of > 3 million years) are plausible based on our sample size. We conclude that the Breiðuvík detrital zircons represent a significant length of time—longer than has ever been reported for any other Icelandic central volcano.

Table 3.

Window of time (centered on the mean)	Number of times sampling exercise repeated (NN)	Probability of not finding an age exceeding the defined age window	Statement of outcome: "if we were to repeat the exercise of collecting and analyzing n zircons NN times…"
Sample size(n) = 83, the ISS sample size			
10 million years (unreasonably long; test)	100 100	1 1	100% chance that we would not find a zircon with a measured age outside the mean ± 5 million years
5.6 million years (4 standard deviations)	100 100 1000	0.7 0.7 0.75	75% chance that we would not find a zircon with a measured age outside the mean ± 2.8 million years
4.2 million years (3 standard deviations)	100 100 100 100 100 1000	0.34 0.33 0.3 0.27 0.31 0.29	30% chance that we would not find a zircon with a measured age greater than the mean ± 2.1 million years (3σ); 70% chance that we would find zircons with a measured age exceeding a 4.2 million year window about the mean
3 million years	100 100 100	0.04 0.02 0.2	2% chance that we would not find a zircon with a measured age greater than the mean + 1.5 million years; 98% chance that we would find zircons with an age exceeding the 3 million year window about the mean age
Sample size(n) = 247, the ISS + ISKK sample size			
10 million years (unreasonably long; test)	100 100 100	1 0.98 0.99	100% chance that we would not find a zircon with a measured age outside the mean ± 5 million years
5.6 million years (4 standard deviations)	100 100 1000	0.48 0.41 0.41	42% chance that we would not find a zircon with a measured age outside the mean ± 2.8 million years
4.2 million years (3 standard deviations)	100 100 100 1000	0.01 0.05 0 0.03	3% chance that we would not find a zircon with a measured age greater than the mean + 2.1 million years (3 σ); 97% chance that we would find zircons with a measured age exceeding the 4.2 million year window about the mean

6. Implications:

6.1: The value of detrital studies

Through our work at Breiðuvík, we demonstrate that a targeted detrital zircon study is a powerful approach for illuminating a comprehensive history of silicic magmatism at individual volcanic centers. This is particularly true when nuanced details provided by individual units and their relationships are not critical to the regional-scale story. Furthermore, this detrital approach combats sampling bias (i.e., limiting numbers of samples for analytical practicalities, selecting samples that are easily-accessible, etc.) that might otherwise obscure important chapters of a system's history. In addition to having widespread applicability for silicic systems around the globe (particularly those in remote locations where accessibility is a barrier for detailed characterization), we assert that this targeted-detrital approach will be extremely valuable for investigating silicic activity of Iceland's subglacial volcanoes.

6.2: Great concentrations of silicic material:

The great volume of silicic material at Breiðuvík appears to be the product of partial crustal melting, based on the lower-than-mantle $\delta^{18}O$ values recorded by zircon. While Breiðuvík-area zircons are characterized by low $\delta^{18}O$ signatures, zircons from Torfajökull and Krafla record even greater, and more variable, depletions in ^{18}O. The lower $\delta^{18}O$ signatures suggest that hydrothermal alteration of source rocks (or assimilants) happened at higher temperatures and/or with greater water : rock ratios at Torfajökull and Krafla. It is conceivable that alteration at Breiðuvík occurred at cooler temperatures, as might be expected at a system located at a fracture zone. To extend this line of reasoning further, it is conceivable that fracture zones intersecting with active or propagating rifts (a feature shared by Breiðuvík and Torfajökull, albeit with apparently different thermal regimes, possibly due to the different distances to the upwelling mantle plume) are crucial for the generation of large volumes of silicic material. Perhaps fracture zones allow for greater access to fertile crust available for partial melting, relative to systems that lack a fracture zone. Lower geothermal gradients at fracture zones are also expected to enhance the cooling-induced crystallization of crustal melts, thus prolonging the duration of magma differentiation (Martin and Sigmarsson 2007, 2010).

6.3: Never-before evidenced longevity of an Icelandic central volcano:

Constraining the longevity of Icelandic volcanoes has important implications for better understanding rhyolitic centers that are active, and potentially hazardous, today. Before now, the approximated lifetime of Icelandic volcanic systems has been 0.5-1.5 million years (Saemundsson 1978, 1979), based on K/Ar dating and correlation with the paleomagnetic timescale. More recently, Ar-Ar dating has been used to determine the duration of silicic activity at Kerlingarfjöll (~300 ka; Flude et al. 2012), Torfajökull, (~400 ka, Ar-Ar; MGarvie 2006) and Ljósusfjöll (>600 ka; Flude et al. 2008).

Zircon geochronology adds precise, robust, age data to Iceland's geologic record that was not achievable by earlier methods. With a zircon record that captures 3 million years of silicic activity, we demonstrate that Breiðuvík has a longer lifespan than has ever been reported for an Icelandic volcano. This finding of extreme longevity of silicic-magma generating activity at Breiðuvík has important implications for better understanding silicic magmatism at Icelandic central volcanoes in general, and perhaps for anticipating prolonged magmatism at modern systems.

CHAPTER 5

Conclusions

The objectives driving my dissertation research have been to: (1) contribute evidence to the debate over fractional crystallization vs. partial melting dominating felsic petrogenesis in Iceland; (2) explore spatial and temporal trends in zircon trace element and isotopic signatures to assess the influences of local tectonic setting and climate regimes on felsic petrogenesis; (3) critically evaluate whether Iceland is indeed an appropriate modern analogue for Hadean crust construction; (4) critically evaluate the hypothesis that slivers of ancient continental crust are trapped beneath Iceland and influence it's evolution; (5) provide constraints for the longevity of Icelandic central volcano activity; (6) determine if Icelandic zircons, like Icelandic rhyolites, are unique or distinct in a global sense.

To meet these objectives, I attempted to capture the full range of diversity present in the Icelandic zircon record. I collected samples from volcanic lavas and tephras; intrusive granites and gabbros; modern river sediments (to sample wide swaths of countryside and inaccessible ice-capped regions); and ancient sedimentary rock units (detrital remnants of volcanoes and intrusions that have been lost to glaciation). My samples, from which I have separated and analyzed thousands of zircons, were strategically chosen to address hypotheses that felsic petrogenetic processes in Iceland may vary depending on location (e.g., proximity to active spreading centers) and time of formation (e.g., pre-, syn- and post-glaciation). My primary zircon-centric methods were: cathodoluminescence (CL) imaging (zoning, resorption, inheritance); *in situ* trace element analysis (magmatic composition and temperature); U-Pb dating of older zircon and U-Th disequilibrium dating of young zircon (longevity of systems, duration of individual magmatic events), and isotopic analysis of zircon (O: surface water contributions to magma; Hf: mantle contributions to magma). I also have supporting evidence (petrography, bulk rock geochemistry and isotopes) from both zircon bearing and zircon-free samples.

Some of the most significant findings from my dissertation include: (1) very low $^{18}O/^{16}O$ strongly supports partial melting of crust altered by meteoric water as a primary driver in Icelandic felsic petrogenesis; (2) increased variability in Hf isotopes suggest changes to Iceland's mantle source with time, but uniformity of O isotopes indicates neither changes in processes nor influence of climate change on magmatism throughout Iceland's history; (3) Icelandic zircons are quite distinct from Hadean zircons; Iceland is not an appropriate analogue for the Early Earth; (4) there is extremely sparse evidence in support for ancient crust influencing regions of Iceland; (5) zircons reflect tens of thousands of years of activity preceding individual rhyolitic eruptions, and suggest a lifespan of a central volcano extending up to three million years in some cases; (6) trace elements in Icelandic zircons are globally unique, forming a compositional category that is distinguishable from typical continental and oceanic zircon populations.

APPENDIX A: Oxygen Isotopes

Appendix A.1: Oxygen Isotopes in Icelandic Zircon

UCLA ims1270 *in situ* Measurements

Sample Name	Map[11] #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
Hrafnfjörður: KK11[12] 27W 552230, 7279551[13]													
TLC7_KK11@1	1	May '13	2.51E+09	1.40E+06	5.03E+06	2.93E+03	0.002001	1.24E-07	0.00201069	1.24E-07	4.09	0.06	0.67
TLC7_KK11@10	1	May '13	2.58E+09	1.90E+06	5.16E+06	3.88E+03	0.002001	1.66E-07	0.002010216	1.67E-07	3.85	0.08	0.67
TLC7_KK11@11	1	May '13	2.58E+09	1.26E+06	5.16E+06	2.58E+03	0.002001	1.17E-07	0.002010297	1.17E-07	3.89	0.06	0.67
TLC7_KK11@12	1	May '13	2.57E+09	1.58E+06	5.15E+06	3.22E+03	0.002001	1.43E-07	0.00201002	1.43E-07	3.76	0.07	0.67
TLC7_KK11@2	1	May '13	2.56E+09	1.02E+06	5.13E+06	2.16E+03	0.002001	1.85E-07	0.002010693	1.85E-07	4.09	0.09	0.67
TLC7_KK11@3	1	May '13	2.60E+09	1.74E+06	5.20E+06	3.75E+03	0.002002	1.99E-07	0.002011095	2.00E-07	4.29	0.10	0.67
TLC7_KK11@4	1	May '13	2.47E+09	3.24E+07	4.93E+06	6.49E+04	0.002001	1.86E-07	0.002010056	1.87E-07	3.77	0.09	0.67
TLC7_KK11@5	1	May '13	2.58E+09	1.74E+06	5.15E+06	3.51E+03	0.002001	1.29E-07	0.002010082	1.30E-07	3.79	0.06	0.67
TLC7_KK11@6	1	May '13	2.58E+09	1.06E+06	5.17E+06	2.16E+03	0.002001	1.10E-07	0.002010773	1.10E-07	4.13	0.05	0.67
TLC7_KK11@7	1	May '13	2.58E+09	1.13E+06	5.17E+06	2.54E+03	0.002001	1.48E-07	0.002010318	1.49E-07	3.90	0.07	0.67
TLC7_KK11@8	1	May '13	2.56E+09	1.96E+06	5.13E+06	3.85E+03	0.002001	1.48E-07	0.002010866	1.49E-07	4.18	0.07	0.67
TLC7_KK11@9	1	May '13	2.58E+09	1.78E+06	5.16E+06	3.72E+03	0.002001	1.35E-07	0.002010435	1.36E-07	3.96	0.07	0.67
Króksfjördur: IIKK 27W 455836, 7264252													
JW529_IIKK_1_1	2	Oct. '11	2.10E+09		4.20E+06		0.0020010	1.06E-07			3.26		0.30
JW529_IIKK_1_3	2	Oct. '11	2.10E+09		4.21E+06		0.0020019	1.07E-07			3.71		0.30
JW529_IIKK_2_1	2	Oct. '11	2.08E+09		4.16E+06		0.0019988	1.31E-07			2.15		0.30
JW529_IIKK_2_2	2	Oct. '11	2.09E+09		4.18E+06		0.0019983	1.90E-07			1.92		0.30
JW529_IIKK_3_1	2	Oct. '11	2.08E+09		4.15E+06		0.0019982	1.66E-07			1.85		0.30
JW529_IIKK_3_2	2	Oct. '11	2.09E+09		4.17E+06		0.0019983	1.96E-07			1.94		0.30
JW529_IIKK_4_1	2	Oct. '11	2.06E+09		4.13E+06		0.0019999	1.76E-07			2.62		0.30
JW529_IIKK_4_2	2	Oct. '11	2.04E+09		4.07E+06		0.0019983	1.65E-07			1.85		0.30
Kerlingarfjöll: IEKlM 27W 580732, 7169302													
TLC6_IEKlM@1	3	Jan '13	2.77E+09	3.25E+06	5.57E+06	6.49E+03	0.002010	1.33E-07	0.002010	1.33E-07	3.79	0.07	0.26

[11] Refer to Chapter 2, Figure 1
[12] Sample provided by Brennan Jordan
[13] All coordinates are UTM WGS 1984 except for samples with "*" which indicates Hjorsey 1955

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
Kerlingarfjöll: IEKlT 27W 576956, 7169439													
IEKLT_g1	3	Aug. '13	3.78E+09	2.04E+06	7.58E+06	4.11E+03	9.75E-01	5.74E-02	2.0071E-03	1.15E-07	2.31	0.06	0.23
IEKLT_g16	3	Aug. '13	3.49E+09	1.44E+07	7.00E+06	2.89E+04	6.32E-01	9.09E-02	2.0064E-03	1.82E-07	1.96	0.09	0.23
IEKLT_g2	3	Aug. '13	3.65E+09	2.80E+06	7.32E+06	5.88E+03	7.41E-01	1.02E-01	2.0066E-03	2.04E-07	2.07	0.10	0.23
IEKLT_g31	3	Aug. '13	3.78E+09	4.12E+06	7.58E+06	8.26E+03	9.70E-01	4.22E-02	2.0071E-03	8.48E-08	2.30	0.04	0.23
IEKLT_g36	3	Aug. '13	3.76E+09	1.38E+06	7.55E+06	2.64E+03	2.89E-01	8.84E-02	2.0057E-03	1.77E-07	1.62	0.09	0.23
IEKLT_g8	3	Aug. '13	3.37E+09	7.43E+05	6.76E+06	9.65E+02	1.16E+00	1.32E-01	2.0075E-03	2.65E-07	2.49	0.13	0.23
IEKLT_g9	3	Aug. '13	3.41E+09	8.02E+06	6.84E+06	1.61E+04	5.64E-01	8.08E-02	2.0063E-03	1.62E-07	1.90	0.08	0.23
TLC6_IEKlT@1	3	Jan '13	2.78E+09	1.16E+06	5.58E+06	2.28E+03	0.002008	1.42E-07	0.002008	1.42E-07	2.86	0.07	0.26
TLC6_IEKlT@3	3	Jan '13	2.71E+09	3.31E+06	5.44E+06	6.43E+03	0.002008	1.47E-07	0.002008	1.47E-07	2.72	0.07	0.26
TLC6_IEKlT@4	3	Jan '13	2.66E+09	1.57E+06	5.35E+06	3.17E+03	0.002007	1.00E-07	0.002007	1.00E-07	2.15	0.05	0.26
TLC6_IEKlT@5	3	Jan '13	2.64E+09	9.20E+05	5.30E+06	1.84E+03	0.002008	1.59E-07	0.002008	1.59E-07	2.58	0.08	0.26
TLC6_IEKlT@6	3	Jan '13	2.73E+09	1.79E+06	5.47E+06	3.49E+03	0.002007	1.04E-07	0.002007	1.04E-07	2.23	0.05	0.26
TLC6_IEKlT@7	3	Jan '13	2.72E+09	3.70E+05	5.46E+06	9.68E+02	0.002008	1.82E-07	0.002008	1.82E-07	2.74	0.09	0.26
TLC6_IEKlT@8	3	Jan '13	2.70E+09	1.42E+06	5.42E+06	2.98E+03	0.002009	1.21E-07	0.002009	1.21E-07	3.35	0.06	0.26
TLC6_IEKlT@9	3	Jan '13	2.73E+09	2.04E+06	5.48E+06	3.93E+03	0.002008	1.37E-07	0.002008	1.37E-07	2.68	0.07	0.26
Stóraa-Laxa: IEFS 27W 535438, 7109774													
TLC1_IEFS@1	4	Jan '13	2.42E+09	1.34E+06	4.86E+06	2.91E+03	0.002008	1.85E-07	0.002009	1.85E-07	3.39	0.09	0.21
TLC1_IEFS@10	4	Jan '13	2.17E+09	2.52E+06	4.37E+06	5.04E+03	0.002007	1.42E-07	0.002009	1.43E-07	3.11	0.07	0.21
TLC1_IEFS@11	4	Jan '13	2.24E+09	8.14E+05	4.51E+06	1.86E+03	0.002008	1.91E-07	0.002009	1.91E-07	3.47	0.10	0.21
TLC1_IEFS@12	4	Jan '13	2.22E+09	1.72E+06	4.46E+06	3.56E+03	0.002007	1.23E-07	0.002008	1.23E-07	2.91	0.06	0.21
TLC1_IEFS@13	4	Jan '13	2.20E+09	1.38E+06	4.42E+06	2.69E+03	0.002008	1.89E-07	0.002010	1.89E-07	3.58	0.09	0.21
TLC1_IEFS@14	4	Jan '13	2.22E+09	1.61E+06	4.45E+06	3.37E+03	0.002008	2.24E-07	0.002009	2.24E-07	3.10	0.11	0.21
TLC1_IEFS@15	4	Jan '13	2.23E+09	1.61E+06	4.48E+06	3.22E+03	0.002008	1.94E-07	0.002009	1.94E-07	3.13	0.10	0.21
TLC1_IEFS@16	4	Jan '13	1.49E+09	3.98E+06	3.00E+06	8.01E+03	0.002005	1.44E-07	0.002006	1.44E-07	1.96	0.07	0.21
TLC1_IEFS@17	4	Jan '13	2.20E+09	1.04E+06	4.42E+06	2.13E+03	0.002008	1.59E-07	0.002009	1.59E-07	3.14	0.08	0.21
TLC1_IEFS@18	4	Jan '13	2.22E+09	7.46E+05	4.46E+06	1.71E+03	0.002008	1.75E-07	0.002009	1.75E-07	3.26	0.09	0.21
TLC1_IEFS@2	4	Jan '13	2.37E+09	2.59E+06	4.75E+06	5.29E+03	0.002007	1.74E-07	0.002009	1.74E-07	3.21	0.09	0.21
TLC1_IEFS@21	4	Jan '13	2.14E+09	3.92E+06	4.30E+06	7.87E+03	0.002008	1.31E-07	0.002008	1.31E-07	2.86	0.07	0.21
TLC1_IEFS@22	4	Jan '13	2.28E+09	2.70E+06	4.58E+06	5.29E+03	0.002008	1.44E-07	0.002009	1.44E-07	3.00	0.07	0.21
TLC1_IEFS@23	4	Jan '13	2.22E+09	3.97E+06	4.47E+06	8.16E+03	0.002008	1.42E-07	0.002008	1.42E-07	2.91	0.07	0.21
TLC1_IEFS@24	4	Jan '13	2.29E+09	1.95E+06	4.60E+06	4.03E+03	0.002007	1.73E-07	0.002008	1.73E-07	2.67	0.09	0.21

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
TLC1_IEFS@25	4	Jan '13	2.34E+09	3.50E+06	4.70E+06	6.84E+03	0.002007	1.46E-07	0.002008	1.46E-07	2.77	0.07	0.21
TLC1_IEFS@3	4	Jan '13	2.35E+09	6.51E+05	4.72E+06	1.39E+03	0.002008	1.27E-07	0.002009	1.27E-07	3.47	0.06	0.21
TLC1_IEFS@4	4	Jan '13	2.32E+09	7.51E+05	4.69E+06	1.60E+03	0.002016	8.02E-08	0.002018	8.03E-08	7.76	0.04	0.21
TLC1_IEFS@5	4	Jan '13	2.31E+09	1.41E+06	4.64E+06	3.03E+03	0.002007	1.72E-07	0.002009	1.73E-07	3.20	0.09	0.21
TLC1_IEFS@6	4	Jan '13	2.29E+09	1.20E+06	4.59E+06	2.28E+03	0.002007	1.70E-07	0.002009	1.70E-07	3.08	0.08	0.21
TLC1_IEFS_19	4	Jan '13	2.19E+09	1.63E+06	4.39E+06	3.21E+03	0.002008	1.81E-07	0.002009	1.81E-07	3.08	0.09	0.21
TLC1_IEFS_20	4	Jan '13	2.19E+09	7.61E+05	4.39E+06	1.46E+03	0.002008	1.45E-07	0.002009	1.45E-07	3.09	0.07	0.21
TLC1_IEFS_26	4	Jan '13	2.21E+09	9.04E+05	4.43E+06	1.80E+03	0.002008	1.29E-07	0.002009	1.29E-07	3.15	0.06	0.21
Hekla: IHB[14]* 27W 558938, 7106903													
IHBzrn1_17.1l_pt.40	5	Mar. '11									4.31		0.18
IHBzrn1_17.1l_pt.41	5	Mar. '11									3.96		0.18
IHBzrn1_rim_pt.42	5	Mar. '11									4.3		0.18
IHBzrn10_7.1l_pt.71	5	Mar. '11									3.85		0.3
IHBzrn10_7.1l_pt.72	5	Mar. '11									4.34		0.3
IHBzrn11_6.1c_pt.73	5	Mar. '11									4.21		0.3
IHBzrn11_6.1c_pt.74	5	Mar. '11									3.86		0.3
IHBzrn12_5.1l_pt.75	5	Mar. '11									3.08		0.3
IHBzrn12_5.1l_pt.76	5	Mar. '11									4.43		0.3
IHBzrn13_3.1l_pt.77	5	Mar. '11									2.95		0.3
IHBzrn13_3.1l_pt.78	5	Mar. '11									2.86		0.3
IHBzrn14_2.1l_pt.86	5	Mar. '11									3.6		0.3
IHBzrn14_2.1l_pt.86	5	Mar. '11									4.1		0.3
IHBzrn15_1.1l_pt.88	5	Mar. '11									4.67		0.3
IHBzrn15_1.1l_pt.89	5	Mar. '11									3.76		0.3
IHBzrn16_18.1l_pt.5	5	Mar. '11									3.31		0.13
IHBzrn16_18.1l_pt.6	5	Mar. '11									2.54		0.13
IHBzrn17_20.1l_pt.7	5	Mar. '11									2.99		0.13
IHBzrn17_20.1l_pt.8	5	Mar. '11									3.1		0.13
IHBzrn18_21.1l_pt.10	5	Mar. '11									2.65		0.13

[14] Data previously published in Bindeman et al. 2012; data collected at the Centre de Recherches Petrographiques et Geochimiques (Nancy, France)

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
IHBzrn18_21.1l_pt.11	5	Mar. '11									2.15		0.13
IHBzrn18_21.1l_pt.9	5	Mar. '11									2.04		0.13
IHBzrn19_22.1l_pt.12	5	Mar. '11									1.65		0.13
IHBzrn19_22.1l_pt.13	5	Mar. '11									2.49		0.13
IHBzrn2_16.1l_pt.43	5	Mar. '11									4.05		0.18
IHBzrn2_16.1l_pt.44	5	Mar. '11									3.77		0.18
IHBzrn3_15.1l_pt.47	5	Mar. '11									3.8		0.18
IHBzrn3_core_pt.46	5	Mar. '11									4.43		0.18
IHBzrn4_14.1l_pt.48	5	Mar. '11									4.3		0.18
IHBzrn5_13.1l_pt.50	5	Mar. '11									2.1		0.18
IHBzrn5_13.1l_pt.51	5	Mar. '11									3.16		0.18
IHBzrn5_13.1l_pt.52	5	Mar. '11									3.38		0.18
IHBzrn6_12.1R_pt.54	5	Mar. '11									4.55		0.18
IHBzrn6_12.2C_pt.55	5	Mar. '11									4.16		0.18
IHBzrn6_12.2C_pt.56	5	Mar. '11									4.26		0.18
IHBzrn7_9.1l_pt.65	5	Mar. '11									3.41		0.3
IHBzrn7_9.1l_pt.65	5	Mar. '11									4.32		0.3
IHBzrn8_8.1T_pt.67	5	Mar. '11									3.77		0.3
IHBzrn8_8.1T_pt.68	5	Mar. '11									3.96		0.3
IHBzrn9_11.1l_pt.69	5	Mar. '11									4.8		0.3
IHBzrn9_11.1l_pt.70	5	Mar. '11									4.22		0.3
Torfajökull: IETR 27W 576365, 7095290													
IETR_g10	6	Aug. '13	3.75E+09	2.44E+06	7.51E+06	4.68E+03	-1.98E+00	5.53E-02	2.0012E-03	1.11E-07	-0.66	0.06	0.23
IETR_g11	6	Aug. '13	3.70E+09	2.81E+06	7.40E+06	5.74E+03	-1.54E+00	9.54E-02	2.0021E-03	1.91E-07	-0.22	0.10	0.23
IETR_g12	6	Aug. '13	3.72E+09	1.19E+06	7.45E+06	2.34E+03	-1.58E+00	6.54E-02	2.0020E-03	1.31E-07	-0.25	0.07	0.23
IETR_g14	6	Aug. '13	3.63E+09	2.18E+06	7.27E+06	4.18E+03	-1.89E+00	8.81E-02	2.0014E-03	1.76E-07	-0.57	0.09	0.23
IETR_g16	6	Aug. '13	3.60E+09	1.04E+07	7.22E+06	2.15E+04	-1.17E+00	1.02E-01	2.0028E-03	2.05E-07	0.16	0.10	0.23
IETR_g17_s1	6	Aug. '13	3.73E+09	2.62E+06	7.48E+06	6.12E+03	8.51E-01	1.50E-01	2.0069E-03	3.01E-07	2.18	0.15	0.23
IETR_g17_s2	6	Aug. '13	3.74E+09	1.74E+06	7.50E+06	3.44E+03	-8.31E-02	7.32E-02	2.0050E-03	1.47E-07	1.25	0.07	0.23
IETR_g18_s1	6	Aug. '13	3.59E+09	2.81E+06	7.20E+06	5.60E+03	-4.53E-01	7.91E-02	2.0043E-03	1.59E-07	0.88	0.08	0.23
IETR_g18_s2	6	Aug. '13	3.52E+09	1.97E+06	7.05E+06	4.06E+03	1.79E-01	5.66E-02	2.0055E-03	1.13E-07	1.51	0.06	0.23

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
IETR_g19	6	Aug. '13	3.65E+09	1.45E+06	7.33E+06	2.76E+03	9.87E-01	8.60E-02	2.0071E-03	1.73E-07	2.32	0.09	0.23
IETR_g1big	6	Aug. '13	3.80E+09	2.12E+06	7.60E+06	4.17E+03	-1.99E+00	5.86E-02	2.0012E-03	1.17E-07	-0.66	0.06	0.23
IETR_g1small	6	Aug. '13	3.80E+09	2.39E+06	7.63E+06	5.04E+03	5.84E-01	9.08E-02	2.0063E-03	1.82E-07	1.91	0.09	0.23
IETR_g21	6	Aug. '13	3.45E+09	2.37E+07	6.92E+06	4.71E+04	-1.00E+00	9.32E-02	2.0032E-03	1.87E-07	0.33	0.09	0.23
IETR_g22	6	Aug. '13	3.58E+09	1.42E+06	7.18E+06	3.02E+03	-1.75E+00	8.23E-02	2.0017E-03	1.65E-07	-0.42	0.08	0.23
IETR_g3_s1	6	Aug. '13	3.36E+09	4.02E+06	6.75E+06	8.38E+03	9.54E-01	8.66E-02	2.0071E-03	1.74E-07	2.29	0.09	0.23
IETR_g3_s2	6	Aug. '13	3.75E+09	3.20E+06	7.51E+06	6.62E+03	-1.34E-01	7.40E-02	2.0049E-03	1.48E-07	1.20	0.07	0.23
IETR_g40	6	Aug. '13	3.80E+09	7.91E+06	7.63E+06	1.63E+04	1.43E+00	1.19E-01	2.0080E-03	2.39E-07	2.77	0.12	0.23
IETR_g43	6	Aug. '13	3.82E+09	1.36E+06	7.64E+06	3.03E+03	-1.92E+00	7.52E-02	2.0013E-03	1.50E-07	-0.59	0.08	0.23
IETR_g44	6	Aug. '13	3.79E+09	2.85E+06	7.58E+06	6.11E+03	-9.83E-01	8.14E-02	2.0032E-03	1.63E-07	0.35	0.08	0.23
IETR_g45	6	Aug. '13	3.59E+09	1.72E+07	7.20E+06	3.41E+04	-9.40E-01	1.75E-01	2.0033E-03	3.51E-07	0.39	0.18	0.23
IETR_g46	6	Aug. '13	3.80E+09	2.39E+06	7.62E+06	4.46E+03	-4.46E-01	7.63E-02	2.0043E-03	1.53E-07	0.88	0.08	0.23
IETR_g48	6	Aug. '13	3.55E+09	3.14E+07	7.12E+06	6.20E+04	-1.31E+00	1.64E-01	2.0025E-03	3.28E-07	0.02	0.16	0.23
IETR_g49	6	Aug. '13	3.74E+09	4.02E+06	7.49E+06	8.58E+03	-1.33E+00	1.01E-01	2.0025E-03	2.03E-07	0.00	0.10	0.23
IETR_g5	6	Aug. '13	3.62E+09	2.79E+06	7.26E+06	5.87E+03	6.13E-01	5.43E-02	2.0064E-03	1.09E-07	1.94	0.05	0.23
IETR_g52	6	Aug. '13	3.75E+09	2.38E+06	7.51E+06	3.99E+03	-6.45E-01	1.32E-01	2.0039E-03	2.65E-07	0.68	0.13	0.23
IETR_g53	6	Aug. '13	3.74E+09	2.18E+06	7.51E+06	4.68E+03	9.35E-01	2.37E-01	2.0070E-03	4.76E-07	2.27	0.24	0.23
IETR_g54	6	Aug. '13	3.72E+09	3.29E+06	7.44E+06	6.55E+03	-1.79E+00	5.79E-02	2.0016E-03	1.16E-07	-0.47	0.06	0.23
IETR_g55	6	Aug. '13	3.45E+09	3.89E+06	6.92E+06	7.80E+03	-2.56E-01	7.51E-02	2.0046E-03	1.51E-07	1.07	0.08	0.23
IETR_g56	6	Aug. '13	3.05E+09	1.43E+06	6.09E+06	3.39E+03	-3.08E+00	1.78E-01	1.9990E-03	3.56E-07	-1.76	0.18	0.23
IETR_g57	6	Aug. '13	3.66E+09	1.68E+06	7.37E+06	5.37E+03	4.92E+00	3.02E-01	2.0150E-03	6.09E-07	6.26	0.30	0.23
IETR_g58	6	Aug. '13	3.48E+09	1.12E+07	6.97E+06	2.28E+04	-9.47E-01	8.44E-02	2.0033E-03	1.69E-07	0.38	0.08	0.23
IETR_g59	6	Aug. '13	3.26E+09	5.17E+06	6.53E+06	1.02E+04	-1.55E+00	7.60E-02	2.0021E-03	1.52E-07	-0.22	0.08	0.23
IETR_g6	6	Aug. '13	3.80E+09	2.66E+06	7.61E+06	5.25E+03	-4.67E-01	6.14E-02	2.0042E-03	1.23E-07	0.86	0.06	0.23
IETR_g60	6	Aug. '13	3.39E+09	1.55E+07	6.77E+06	3.07E+04	-2.68E+00	1.05E-01	1.9998E-03	2.09E-07	-1.36	0.10	0.23
IETR_g7	6	Aug. '13	3.72E+09	1.76E+07	7.44E+06	3.52E+04	-1.49E+00	9.89E-02	2.0022E-03	1.98E-07	-0.17	0.10	0.23
IETR_g8	6	Aug. '13	3.75E+09	1.83E+07	7.50E+06	3.64E+04	-1.40E+00	6.62E-02	2.0023E-03	1.33E-07	-0.08	0.07	0.23
IETR_g9	6	Aug. '13	3.71E+09	2.05E+06	7.43E+06	4.06E+03	-1.65E+00	5.79E-02	2.0019E-03	1.16E-07	-0.32	0.06	0.23
Torfajökull: Lauf[15] coordinates not available													
Lauf_zrn1_pt.12	6	Mar. '11									1.76		0.29
Lauf_zrn1_pt.5	6	Mar. '11									3.45		0.29

[15] Data previously published in Bindeman et al. 2012; data collected at the Centre de Recherches Petrographiques et Geochimiques (Nancy, France)

Sample Name	Map #	Date	^{16}O/^{16}O	^{16}O/^{16}O Error (1σ)	^{18}O/^{18}O	^{18}O/^{18}O Error (1σ)	^{18}O/^{16}O	^{18}O/^{16}O Error (1σ)	Corrected ^{18}O/^{16}O	Corrected Error	Corrected δ^{18}O	δ^{18}O Error (Internal, 1σ)	δ^{18}O Error (External, 1σ)
Lauf_zrn1_pt.6	6	Mar. ‘11									3.05		0.29
Lauf_zrn2_pt.7	6	Mar. ‘11									2.79		0.29
Lauf_zrn2_pt.8	6	Mar. ‘11									0.43		0.29
Lauf_zrn2_pt.9	6	Mar. ‘11									3.85		0.29
Lauf_zrn3_pt.10	6	Mar. ‘11									0.85		0.29
Lauf_zrn3_pt.11	6	Mar. ‘11									1.44		0.29
Lauf_zrn4_pt.13	6	Mar. ‘11									2.19		0.29
Lauf_zrn4_pt.14	6	Mar. ‘11									1.53		0.29
Lauf_zrn5_pt.15	6	Mar. ‘11									1.32		0.29
Lauf_zrn6_pt.20	6	Mar. ‘11									1.78		0.29
Lauf_zrn6_pt.21	6	Mar. ‘11									2.11		0.29
Lauf_zrn7_pt.23	6	Mar. ‘11									2.04		0.29
Lauf_zrn7_pt.26	6	Mar. ‘11									3.13		0.29
Lauf_zrn8_pt.24	6	Mar. ‘11									2.72		0.29
Lauf_zrn8_pt.25	6	Mar. ‘11									1.23		0.29
Torfajökull: ITN* 27W 595113, 7099846													
JW444_ITN_1_2	6	Oct. ‘11	2.19E+09		4.37E+06		0.0019971	2.56E-07			2.01		0.30
JW444_ITN_10_1	6	Oct. ‘11	2.21E+09		4.41E+06		0.0019971	2.27E-07			2.12		0.30
JW444_ITN_11_1	6	Oct. ‘11	2.19E+09		4.38E+06		0.0019978	1.83E-07			2.47		0.30
JW444_ITN_12_1	6	Oct. ‘11	2.20E+09		4.39E+06		0.0019978	1.70E-07			2.48		0.30
JW444_ITN_14_2	6	Oct. ‘11	2.20E+09		4.39E+06		0.0019976	1.41E-07			2.38		0.30
JW444_ITN_2_1	6	Oct. ‘11	2.19E+09		4.37E+06		0.0019991	1.06E-07			3.01		0.30
JW444_ITN_6_1	6	Oct. ‘11	2.25E+09		4.49E+06		0.0019942	1.78E-07			0.57		0.30
JW444_ITN_7_1	6	Oct. ‘11	2.19E+09		4.37E+06		0.0019975	1.77E-07			2.22		0.30
JW444_ITN_9_1	6	Oct. ‘11	2.10E+09		4.19E+06		0.0019932	2.65E-07			0.06		0.30
Öræfajökull: IOHn* 27W 595113, 7099846													
JW444_IOHn_1_2	7	Oct. ‘11	2.19E+09		4.39E+06		0.0020017	1.45E-07			4.45		0.30
JW444_IOHn_12_1	7	Oct. ‘11	2.19E+09		4.38E+06		0.0019999	1.72E-07			3.23		0.30
JW444_IOHn_13_1	7	Oct. ‘11	2.19E+09		4.39E+06		0.0020010	2.52E-07			3.78		0.30
JW444_IOHn_14_1	7	Oct. ‘11	2.20E+09		4.41E+06		0.0020014	1.45E-07			4.08		0.30
JW444_IOHn_15_1	7	Oct. ‘11	2.23E+09		4.47E+06		0.0020030	1.11E-07			4.86		0.30

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
JW444_IOHn_15_3	7	Oct. '11	2.24E+09		4.48E+06		0.0020013	1.56E-07			4.04		0.30
JW444_IOHn_17_2	7	Oct. '11	2.27E+09		4.53E+06		0.0019993	1.96E-07			3.04		0.30
JW444_IOHn_2_1	7	Oct. '11	2.20E+09		4.40E+06		0.0020013	2.16E-07			3.96		0.30
JW444_IOHn_21_1	7	Oct. '11	2.25E+09		4.51E+06		0.0019999	1.59E-07			3.31		0.30
JW444_IOHn_3_1	7	Oct. '11	2.20E+09		4.40E+06		0.0020023	1.83E-07			4.44		0.30
JW444_IOHn_3_2	7	Oct. '11	2.19E+09		4.39E+06		0.0020017	1.09E-07			4.15		0.30
JW444_IOHn_5_2	7	Oct. '11	2.22E+09		4.44E+06		0.0020007	1.65E-07			3.66		0.30
JW444_IOHn_6_1	7	Oct. '11	2.20E+09		4.40E+06		0.0020024	2.53E-07			4.49		0.30
JW444_IOHn_7_2	7	Oct. '11	2.22E+09		4.44E+06		0.0020011	1.40E-07			3.84		0.30
JW444_IOHn_8_1	7	Oct. '11	2.20E+09		4.40E+06		0.0019988	2.00E-07			2.65		0.30
JW444_IOHn_9_1	7	Oct. '11	2.20E+09		4.40E+06		0.0020019	1.71E-07			4.24		0.30
Krafla: IEKG 28W 410640, 7292179													
JW529_IEKG_1_1	8	Oct. '11	2.02E+09		4.04E+06		0.0019964	1.75E-07			1.49		0.30
JW529_IEKG_1_2	8	Oct. '11	2.03E+09		4.06E+06		0.0019974	1.84E-07			2.00		0.30
JW529_IEKG_10_1	8	Oct. '11	2.04E+09		4.07E+06		0.0019973	3.41E-07			2.06		0.30
JW529_IEKG_2_1	8	Oct. '11	2.04E+09		4.06E+06		0.0019961	1.98E-07			1.35		0.30
JW529_IEKG_3_1	8	Oct. '11	2.04E+09		4.08E+06		0.0019965	1.20E-07			1.54		0.30
JW529_IEKG_4_1	8	Oct. '11	1.98E+09		3.96E+06		0.0019968	1.64E-07			1.80		0.30
JW529_IEKG_5_1	8	Oct. '11	2.04E+09		4.08E+06		0.0019976	1.78E-07			2.19		0.30
JW529_IEKG_6_1	8	Oct. '11	2.03E+09		4.05E+06		0.0019965	2.08E-07			1.64		0.30
JW529_IEKG_7_1	8	Oct. '11	2.03E+09		4.05E+06		0.0019970	1.66E-07			1.91		0.30
JW529_IEKG_7_2	8	Oct. '11	2.03E+09		4.06E+06		0.0019969	1.48E-07			1.62		0.30
JW529_IEKG_8_1	8	Oct. '11	2.03E+09		4.04E+06		0.0019966	2.21E-07			1.46		0.30
JW529_IEKG_9	8	Oct. '11	2.03E+09		4.06E+06		0.0019963	1.64E-07			1.46		0.30
JW530_IEKG_11	8	Jan '13	3.06E+09	1.27E+06	6.14E+06	2.37E+03	0.002006	1.42E-07	0.002003	1.42E-07	0.39	0.07	0.28
JW530_IEKG_12	8	Jan '13	3.07E+09	1.55E+06	6.16E+06	3.19E+03	0.002007	6.72E-08	0.002004	6.71E-08	0.96	0.03	0.28
JW530_IEKG_13	8	Jan '13	3.11E+09	2.78E+06	6.24E+06	5.47E+03	0.002006	1.62E-07	0.002003	1.62E-07	0.25	0.08	0.28
JW530_IEKG_14	8	Jan '13	3.18E+09	8.78E+05	6.38E+06	1.82E+03	0.002006	1.30E-07	0.002003	1.30E-07	0.42	0.06	0.28
JW530_IEKG_15	8	Jan '13	3.16E+09	4.73E+06	6.33E+06	9.20E+03	0.002006	1.27E-07	0.002004	1.27E-07	0.50	0.06	0.28
JW530_IEKG_16	8	Jan '13	3.10E+09	3.64E+06	6.22E+06	7.11E+03	0.002007	1.39E-07	0.002004	1.39E-07	0.79	0.07	0.28
JW530_IEKG_18	8	Jan '13	3.08E+09	3.26E+06	6.19E+06	6.65E+03	0.002008	1.07E-07	0.002005	1.07E-07	1.35	0.05	0.28
JW530_IEKG_19	8	Jan '13	3.02E+09	1.50E+06	6.07E+06	3.00E+03	0.002007	6.62E-08	0.002004	6.61E-08	0.93	0.03	0.28

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
JW530_IEKG_20	8	Jan ‘13	3.04E+09	3.62E+06	6.09E+06	7.49E+03	0.002006	1.25E-07	0.002004	1.24E-07	0.50	0.06	0.28
JW530_IEKG_21	8	Jan ‘13	3.04E+09	2.89E+06	6.11E+06	5.90E+03	0.002007	1.30E-07	0.002004	1.30E-07	0.93	0.06	0.28
JW530_IEKG_22	8	Jan ‘13	3.01E+09	3.64E+06	6.04E+06	7.06E+03	0.002006	1.33E-07	0.002003	1.33E-07	0.32	0.07	0.28
JW530_IEKG_23	8	Jan ‘13	3.06E+09	1.92E+06	6.14E+06	3.87E+03	0.002006	1.49E-07	0.002003	1.49E-07	0.37	0.07	0.28
JW530_IEKG_24	8	Jan ‘13	3.02E+09	8.22E+05	6.06E+06	1.63E+03	0.002006	1.01E-07	0.002004	1.01E-07	0.69	0.05	0.28
Askja: IC45[16]* 28W 419661, 7214591													
IC45zrn10_9.1l_pt.24	9	Mar. ‘11									4.84		0.21
IC45zrn10_9.1l_pt.25	9	Mar. ‘11									2.74		0.21
IC45zrn10_9.1l_pt.26	9	Mar. ‘11									4.95		0.21
IC45zrn2_1.1l_pt.70	9	Mar. ‘11									3.65		0.28
IC45zrn2_1.1l_pt.70	9	Mar. ‘11									3.65		0.28
IC45zrn2_1.1l_pt.71	9	Mar. ‘11									3.77		0.28
IC45zrn3_3.1C_pt.73	9	Mar. ‘11									4.68		0.28
IC45zrn3_3.1C_pt.73	9	Mar. ‘11									4.68		0.28
IC45zrn3_3.2R_pt.72	9	Mar. ‘11									2.26		0.28
IC45zrn3_3.2R_pt.72	9	Mar. ‘11									2.26		0.28
IC45zrn4_2.1l_pt.69	9	Mar. ‘11									3.56		0.28
IC45zrn4_2.1l_pt.69	9	Mar. ‘11									3.56		0.28
IC45zrn4_2.2R_pt.68	9	Mar. ‘11									3.52		0.28
IC45zrn5_4.1R_pt.5	9	Mar. ‘11									2.04		0.27
IC45zrn5_4.2I_pt.4	9	Mar. ‘11									4.01		0.27
IC45zrn5_4.2l_pt.66	9	Mar. ‘11									3.02		0.28
IC45zrn5_4.2l_pt.67	9	Mar. ‘11									2.4		0.28
IC45zrn6_5.1l_pt.7	9	Mar. ‘11									5.01		0.27
IC45zrn6_5.1l_pt.8	9	Mar. ‘11									5.04		0.27
IC45zrn7_5.2l_pt.9	9	Mar. ‘11									2.56		0.27
IC45zrn7_5.2l-b_pt.11	9	Mar. ‘11									2.39		0.27
IC45zrn7_6.2l_pt.10	9	Mar. ‘11									5.1		0.27
IC45zrn8_7.1E_pt.13	9	Mar. ‘11									4.18		0.27

[16] Data previously published in Bindeman et al. 2012; data collected at the Centre de Recherches Petrographiques et Geochimiques (Nancy, France)

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
IC45zrn8_7.2l_pt.12	9	Mar. ‘11									2.23		0.27
IC45zrn9_8.1l_pt.22	9	Mar. ‘11									3.79		0.21
IC45zrn9_8.1l_pt.23	9	Mar. ‘11									3.51		0.21
Snæfellsness-Knörr: IISK 27W 383104, 7191705													
TLC1_IISK@1	10	Jan ‘13	2.72E+09	9.09E+05	5.49E+06	1.93E+03	0.002014	1.19E-07	0.002014	1.19E-07	5.95	0.06	0.75
TLC1_IISK@11	10	Jan ‘13	2.38E+09	2.43E+06	4.77E+06	4.91E+03	0.002003	1.36E-07	0.002001	1.36E-07	-0.83	0.07	0.75
TLC1_IISK@12	10	Jan ‘13	2.37E+09	2.99E+06	4.75E+06	5.80E+03	0.002002	1.72E-07	0.002000	1.72E-07	-1.27	0.09	0.75
TLC1_IISK@13	10	Jan ‘13	2.33E+09	2.32E+06	4.66E+06	4.72E+03	0.002001	1.29E-07	0.001999	1.29E-07	-1.51	0.06	0.75
TLC1_IISK@14	10	Jan ‘13	2.41E+09	3.40E+06	4.83E+06	6.64E+03	0.002005	1.22E-07	0.002003	1.22E-07	0.24	0.06	0.75
TLC1_IISK@16	10	Jan ‘13	2.51E+09	6.65E+05	5.03E+06	1.51E+03	0.002004	2.02E-07	0.002003	2.02E-07	0.47	0.10	0.75
TLC1_IISK@17	10	Jan ‘13	2.53E+09	2.11E+06	5.06E+06	4.32E+03	0.002001	1.12E-07	0.002000	1.12E-07	-1.10	0.06	0.75
TLC1_IISK@18	10	Jan ‘13	2.51E+09	2.47E+06	5.02E+06	4.90E+03	0.002001	4.84E-08	0.002000	4.84E-08	-1.15	0.02	0.75
TLC1_IISK@19	10	Jan ‘13	2.55E+09	3.34E+06	5.10E+06	6.64E+03	0.002000	2.05E-07	0.001999	2.05E-07	-1.62	0.10	0.75
TLC1_IISK@2	10	Jan ‘13	2.63E+09	2.00E+06	5.26E+06	4.00E+03	0.002002	1.42E-07	0.002003	1.42E-07	0.35	0.07	0.75
TLC1_IISK@20	10	Jan ‘13	2.66E+09	3.92E+06	5.33E+06	7.82E+03	0.002001	8.53E-08	0.002002	8.53E-08	-0.45	0.04	0.75
TLC1_IISK@22	10	Jan ‘13	2.83E+09	8.64E+06	5.66E+06	1.71E+04	0.002000	1.52E-07	0.002000	1.53E-07	-1.19	0.08	0.75
TLC1_IISK@23	10	Jan ‘13	2.99E+09	9.19E+06	6.00E+06	1.85E+04	0.002004	1.16E-07	0.002005	1.16E-07	1.17	0.06	0.75
TLC1_IISK@24	10	Jan ‘13	3.14E+09	1.29E+07	6.28E+06	2.58E+04	0.002001	9.29E-08	0.002001	9.29E-08	-0.75	0.05	0.75
TLC1_IISK@25	10	Jan ‘13	3.36E+09	7.98E+06	6.73E+06	1.61E+04	0.002000	8.30E-08	0.002000	8.31E-08	-1.11	0.04	0.75
TLC1_IISK@26	10	Jan ‘13	3.31E+09	3.20E+06	6.63E+06	6.61E+03	0.002001	1.32E-07	0.002001	1.32E-07	-0.65	0.07	0.75
TLC1_IISK@3	10	Jan ‘13	2.57E+09	7.15E+05	5.14E+06	1.42E+03	0.002000	1.32E-07	0.002001	1.32E-07	-0.59	0.07	0.75
TLC1_IISK@4	10	Jan ‘13	2.53E+09	1.53E+06	5.07E+06	3.00E+03	0.002000	1.14E-07	0.002001	1.14E-07	-0.60	0.06	0.75
TLC1_IISK@5	10	Jan ‘13	2.49E+09	7.69E+05	4.98E+06	1.36E+03	0.001999	1.51E-07	0.002000	1.51E-07	-1.18	0.08	0.75
TLC1_IISK@6	10	Jan ‘13	2.42E+09	9.74E+05	4.84E+06	1.96E+03	0.002001	1.62E-07	0.002000	1.62E-07	-1.16	0.08	0.75
TLC1_IISK@7	10	Jan ‘13	1.00E+08	2.60E+05	1.97E+05	5.38E+02	0.001968	2.23E-06	0.001968	2.23E-06	-17.39	1.13	0.75
TLC1_IISK@8	10	Jan ‘13	2.39E+09	1.20E+06	4.77E+06	2.50E+03	0.002000	1.39E-07	0.002000	1.39E-07	-1.30	0.07	0.75
TLC1_IISK_10	10	Jan ‘13	2.37E+09	1.26E+06	4.78E+06	2.46E+03	0.002012	1.41E-07	0.002012	1.41E-07	4.74	0.07	0.75
TLC1_IISK_8	10	Jan ‘13	2.39E+09	1.82E+06	4.78E+06	3.91E+03	0.002004	1.96E-07	0.002004	1.96E-07	0.68	0.10	0.75
TLC1_IISK_9	10	Jan ‘13	2.39E+09	6.07E+05	4.77E+06	1.26E+03	0.002000	1.18E-07	0.001998	1.18E-07	-2.29	0.06	0.75
Viđidalsfjall: IIM 27W 521634, 7256525													
JW529_IIM_10-1	11	Oct. ‘11	2.03E+09		4.07E+06		0.0020006	2.30E-07			3.18		0.30
JW529_IIM_1-1	11	Oct. ‘11	1.96E+09		3.93E+06		0.0020000	9.18E-08			3.28		0.30

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
JW529_IIM_1-2	11	Oct. '11	1.97E+09		3.93E+06		0.0019996	1.59E-07			3.08		0.30
JW529_IIM_13-1	11	Oct. '11	1.98E+09		3.96E+06		0.0019997	2.33E-07			2.91		0.30
JW529_IIM_14-1	11	Oct. '11	1.98E+09		3.95E+06		0.0019992	2.05E-07			2.68		0.30
JW529_IIM_15-1	11	Oct. '11	2.02E+09		4.04E+06		0.0019978	1.39E-07			1.81		0.30
JW529_IIM_2-1	11	Oct. '11	1.87E+09		3.74E+06		0.0019993	2.11E-07			2.92		0.30
JW529_IIM_3	11	Oct. '11	1.97E+09		3.94E+06		0.0020000	1.76E-07			3.29		0.30
JW529_IIM_4-1	11	Oct. '11	1.97E+09		3.93E+06		0.0019996	1.02E-07			3.08		0.30
JW529_IIM_5-1	11	Oct. '11	1.97E+09		3.94E+06		0.0019990	1.16E-07			2.55		0.30
JW529_IIM_6-1	11	Oct. '11	2.04E+09		4.08E+06		0.0020001	1.39E-07			2.95		0.30
JW529_IIM_7-1	11	Oct. '11	1.98E+09		3.96E+06		0.0019990	2.53E-07			2.55		0.30
JW529_IIM_8-1	11	Oct. '11	1.98E+09		3.96E+06		0.0019997	1.70E-07			2.89		0.30
JW529_IIM_9-1	11	Oct. '11	2.03E+09		4.04E+06		0.0019945	2.10E-07			0.10		0.30
JW529_IIM_9-2	11	Oct. '11	2.03E+09		4.05E+06		0.0019960	1.90E-07			0.86		0.30
JW530_IIM_10	11	Jan '13	3.13E+09	4.24E+06	6.30E+06	8.65E+03	0.002012	1.06E-07	0.002009	1.06E-07	3.38	0.05	0.28
JW530_IIM_11	11	Jan '13	3.13E+09	2.44E+06	6.30E+06	5.04E+03	0.002012	1.23E-07	0.002009	1.23E-07	3.46	0.06	0.28
JW530_IIM_2	11	Jan '13	2.92E+09	1.71E+06	5.88E+06	3.51E+03	0.002012	6.78E-08	0.002009	6.78E-08	3.38	0.03	0.28
JW530_IIM_3	11	Jan '13	2.93E+09	2.07E+06	5.89E+06	4.11E+03	0.002011	1.45E-07	0.002008	1.45E-07	2.98	0.07	0.28
JW530_IIM_5	11	Jan '13	2.93E+09	8.49E+05	5.89E+06	2.01E+03	0.002012	1.82E-07	0.002009	1.81E-07	3.32	0.09	0.28
JW530_IIM_6	11	Jan '13	2.96E+09	1.41E+06	5.95E+06	2.94E+03	0.002012	9.04E-08	0.002010	9.03E-08	3.57	0.04	0.28
JW530_IIM_9	11	Jan '13	3.08E+09	3.79E+06	6.19E+06	7.47E+03	0.002012	1.31E-07	0.002009	1.31E-07	3.27	0.07	0.28
Laxárdalsfjöll: LS11[17] 27W 439559, 7348977													
TLC7_LS11@1	12	May '13	2.67E+09	1.39E+06	5.33E+06	2.88E+03	0.002000	1.41E-07	0.002009245	1.42E-07	3.37	0.07	0.67
TLC7_LS11@10	12	May '13	2.50E+09	1.07E+07	5.00E+06	2.12E+04	0.002000	2.29E-07	0.002009419	2.30E-07	3.46	0.11	0.67
TLC7_LS11@11	12	May '13	2.55E+09	8.62E+05	5.10E+06	1.80E+03	0.002000	1.08E-07	0.002009125	1.09E-07	3.31	0.05	0.67
TLC7_LS11@12	12	May '13	2.54E+09	6.94E+05	5.08E+06	1.31E+03	0.002000	1.13E-07	0.002009304	1.13E-07	3.40	0.06	0.67
TLC7_LS11@13	12	May '13	2.55E+09	2.08E+06	5.10E+06	4.23E+03	0.001999	1.45E-07	0.002008787	1.45E-07	3.14	0.07	0.67
TLC7_LS11@14	12	May '13	2.54E+09	1.32E+06	5.09E+06	2.53E+03	0.002000	9.25E-08	0.002009046	9.30E-08	3.27	0.05	0.67
TLC7_LS11@15	12	May '13	2.52E+09	1.46E+06	5.04E+06	2.81E+03	0.001999	1.36E-07	0.002008736	1.36E-07	3.11	0.07	0.67
TLC7_LS11@16	12	May '13	2.54E+09	1.27E+06	5.08E+06	2.83E+03	0.001999	1.35E-07	0.002008639	1.36E-07	3.07	0.07	0.67
TLC7_LS11@17	12	May '13	2.53E+09	1.83E+06	5.06E+06	3.82E+03	0.002000	1.36E-07	0.002009268	1.36E-07	3.38	0.07	0.67

[17] Sample provided by Brennan Jordan

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
TLC7_LS11@18	12	May '13	2.53E+09	2.05E+06	5.06E+06	4.09E+03	0.002000	1.40E-07	0.002009022	1.41E-07	3.26	0.07	0.67
TLC7_LS11@19	12	May '13	2.53E+09	2.03E+06	5.06E+06	4.15E+03	0.002000	1.53E-07	0.00200956	1.53E-07	3.53	0.08	0.67
TLC7_LS11@2	12	May '13	2.65E+09	9.50E+05	5.31E+06	1.97E+03	0.002000	1.59E-07	0.002009615	1.60E-07	3.55	0.08	0.67
TLC7_LS11@20	12	May '13	2.53E+09	2.17E+06	5.06E+06	4.51E+03	0.002000	1.69E-07	0.002009326	1.70E-07	3.41	0.08	0.67
TLC7_LS11@21	12	May '13	2.42E+09	2.51E+07	4.83E+06	5.03E+04	0.002000	1.86E-07	0.002009654	1.87E-07	3.57	0.09	0.67
TLC7_LS11@22	12	May '13	2.54E+09	1.11E+06	5.08E+06	2.48E+03	0.001999	1.61E-07	0.002008824	1.62E-07	3.16	0.08	0.67
TLC7_LS11@23	12	May '13	2.49E+09	1.70E+07	4.97E+06	3.41E+04	0.001999	2.08E-07	0.002008297	2.09E-07	2.89	0.10	0.67
TLC7_LS11@24	12	May '13	2.51E+09	1.45E+06	5.01E+06	3.10E+03	0.001999	1.27E-07	0.002008458	1.28E-07	2.98	0.06	0.67
TLC7_LS11@25	12	May '13	2.52E+09	1.53E+06	5.03E+06	3.18E+03	0.001999	1.37E-07	0.00200877	1.38E-07	3.13	0.07	0.67
TLC7_LS11@26	12	May '13	2.50E+09	1.51E+06	5.01E+06	3.08E+03	0.001999	1.35E-07	0.002008785	1.35E-07	3.14	0.07	0.67
TLC7_LS11@27	12	May '13	2.47E+09	2.10E+06	4.95E+06	4.33E+03	0.001999	1.63E-07	0.002008356	1.63E-07	2.92	0.08	0.67
TLC7_LS11@28	12	May '13	2.49E+09	2.37E+06	4.97E+06	4.82E+03	0.001999	1.30E-07	0.002008292	1.31E-07	2.89	0.07	0.67
TLC7_LS11@29	12	May '13	2.51E+09	2.09E+06	5.02E+06	4.36E+03	0.001999	2.34E-07	0.002008627	2.35E-07	3.06	0.12	0.67
TLC7_LS11@30	12	May '13	2.48E+09	1.84E+06	4.96E+06	3.71E+03	0.001999	9.82E-08	0.00200868	9.86E-08	3.09	0.05	0.67
TLC7_LS11@31	12	May '13	2.23E+09	2.91E+07	4.45E+06	5.84E+04	0.001999	3.36E-07	0.002007997	3.37E-07	2.74	0.17	0.67
TLC7_LS11@32	12	May '13	2.12E+09	6.46E+06	4.24E+06	1.31E+04	0.001998	1.68E-07	0.002007638	1.69E-07	2.57	0.08	0.67
TLC7_LS11@33	12	May '13	2.52E+09	2.34E+06	5.03E+06	4.78E+03	0.001999	1.07E-07	0.002008616	1.07E-07	3.05	0.05	0.67
TLC7_LS11@34	12	May '13	2.51E+09	2.40E+06	5.02E+06	4.83E+03	0.002000	1.64E-07	0.002009224	1.65E-07	3.36	0.08	0.67
TLC7_LS11@35	12	May '13	2.54E+09	4.55E+06	5.08E+06	8.98E+03	0.001998	1.35E-07	0.00200692	1.35E-07	2.21	0.07	0.67
TLC7_LS11@6	12	May '13	2.59E+09	1.60E+06	5.18E+06	3.30E+03	0.001999	1.62E-07	0.002008619	1.63E-07	3.06	0.08	0.67
TLC7_LS11@7	12	May '13	2.59E+09	1.48E+06	5.18E+06	2.89E+03	0.001999	1.41E-07	0.002008732	1.42E-07	3.11	0.07	0.67
TLC7_LS11@8	12	May '13	2.59E+09	1.40E+06	5.19E+06	3.02E+03	0.002000	1.52E-07	0.002009238	1.52E-07	3.36	0.08	0.67
TLC7_LS11@9	12	May '13	2.59E+09	2.21E+06	5.17E+06	4.64E+03	0.001999	1.24E-07	0.002008777	1.25E-07	3.13	0.06	0.67
TLC7_LS11_3A	12	May '13	2.64E+09	1.56E+06	5.29E+06	3.24E+03	0.001999	2.41E-07	0.002008854	2.42E-07	3.17	0.12	0.67
TLC7_LS11_3B	12	May '13	2.62E+09	1.28E+06	5.24E+06	2.70E+03	0.002000	1.37E-07	0.002008996	1.37E-07	3.24	0.07	0.67
TLC7_LS11_4	12	May '13	2.66E+09	3.21E+06	5.33E+06	6.48E+03	0.002000	1.10E-07	0.002009041	1.10E-07	3.27	0.05	0.67
Vesturhorn: IIV[18] 28W 500765, 7126998													
AJP01_IIV-03A@10	13	May '13	2.44E+09	1.47E+06	4.88E+06	3.14E+03	0.002001	1.54E-07	0.002011748	1.55E-07	4.62	0.08	0.42
AJP01_IIV-03A@11	13	May '13	2.44E+09	1.81E+07	4.88E+06	3.55E+04	0.002001	3.97E-07	0.002011229	3.99E-07	4.36	0.20	0.42
AJP01_IIV-03A@12	13	May '13	2.44E+09	1.30E+06	4.88E+06	2.72E+03	0.002003	1.33E-07	0.002013057	1.34E-07	5.27	0.07	0.42
AJP01_IIV-03A@13	13	May '13	2.18E+09	1.42E+07	4.36E+06	2.87E+04	0.002001	3.10E-07	0.002011043	3.12E-07	4.27	0.16	0.42

[18] Data collected and shared by Abraham Padilla

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
AJP01_IIV-03A@14	13	May '13	2.48E+09	7.68E+05	4.97E+06	1.84E+03	0.002001	2.15E-07	0.002011937	2.16E-07	4.71	0.11	0.42
AJP01_IIV-03A@15	13	May '13	2.45E+09	2.53E+06	4.91E+06	5.06E+03	0.002002	1.14E-07	0.002012141	1.15E-07	4.81	0.06	0.42
AJP01_IIV-03A@16	13	May '13	2.47E+09	1.56E+06	4.95E+06	3.20E+03	0.002001	1.28E-07	0.002011999	1.29E-07	4.74	0.06	0.42
AJP01_IIV-03A@17	13	May '13	2.49E+09	2.15E+06	4.99E+06	4.28E+03	0.002004	1.41E-07	0.002014041	1.42E-07	5.76	0.07	0.42
AJP01_IIV-03A@3	13	May '13	2.30E+09	3.16E+06	4.59E+06	6.24E+03	0.001998	1.67E-07	0.002008864	1.68E-07	3.18	0.08	0.42
AJP01_IIV-03A@4	13	May '13	2.43E+09	1.43E+06	4.85E+06	2.97E+03	0.001999	1.65E-07	0.002009816	1.66E-07	3.65	0.08	0.42
AJP01_IIV-03A@5	13	May '13	2.38E+09	9.13E+05	4.77E+06	1.99E+03	0.002001	1.83E-07	0.002011327	1.84E-07	4.41	0.09	0.42
AJP01_IIV-03A@6	13	May '13	2.37E+09	1.03E+06	4.73E+06	2.20E+03	0.002000	1.58E-07	0.002010973	1.59E-07	4.23	0.08	0.42
AJP01_IIV-03A@7	13	May '13	2.40E+09	5.35E+06	4.80E+06	1.06E+04	0.001998	1.58E-07	0.00200897	1.58E-07	3.23	0.08	0.42
AJP01_IIV-03A@8	13	May '13	2.45E+09	1.51E+06	4.91E+06	3.14E+03	0.002002	1.08E-07	0.002012034	1.09E-07	4.76	0.05	0.42
AJP01_IIV-03A@9	13	May '13	2.46E+09	7.38E+05	4.92E+06	1.44E+03	0.002001	1.05E-07	0.002011764	1.06E-07	4.63	0.05	0.42
Slafrudalur: IISLAU[19] 28W 498493, 7132374													
AJP01_IISLAU-12@1	14	May '13	2.51E+09	9.29E+05	5.02E+06	1.86E+03	0.002001	1.52E-07	0.002011234	1.52E-07	4.36	0.08	0.42
AJP01_IISLAU-12@2	14	May '13	2.48E+09	1.18E+06	4.97E+06	2.55E+03	0.002001	1.86E-07	0.002011308	1.87E-07	4.40	0.09	0.42
AJP01_IISLAU-12@4	14	May '13	2.48E+09	1.33E+06	4.96E+06	2.86E+03	0.002001	1.34E-07	0.00201167	1.34E-07	4.58	0.07	0.42
AJP01_IISLAU-12@5	14	May '13	2.33E+09	4.96E+07	4.65E+06	9.92E+04	0.001999	5.16E-07	0.002009477	5.19E-07	3.48	0.26	0.42
AJP01_IISLAU-12@7	14	May '13	2.47E+09	1.71E+06	4.94E+06	3.46E+03	0.002000	1.20E-07	0.002011009	1.21E-07	4.25	0.06	0.42
Austurhorn: Mafic AIC[20] 28W 522402, 7142368													
AJP_IA-G-5@2	15	May '13	2.47E+09	7.38E+05	4.93E+06	1.62E+03	0.001998	1.56E-07	0.002008254	1.57E-07	2.87	0.08	0.42
AJP_IA-G-5@3	15	May '13	1.17E+09	1.07E+07	2.33E+06	2.18E+04	0.002001	5.15E-07	0.00201169	5.18E-07	4.59	0.26	0.42
AJP_IA-G-5@4	15	May '13	2.48E+09	4.17E+06	4.94E+06	8.60E+03	0.001997	2.38E-07	0.002007056	2.39E-07	2.28	0.12	0.42
AJP01_IA-G-5@6	15	May '13	2.51E+09	1.54E+06	5.02E+06	3.24E+03	0.001999	1.60E-07	0.002009059	1.61E-07	3.28	0.08	0.42
AJP01_IA-G-5@7	15	May '13	2.53E+09	6.33E+06	5.06E+06	1.27E+04	0.002002	1.37E-07	0.002012128	1.37E-07	4.81	0.07	0.42
Austurhorn: Hval[21] 28W 523914, 7146660													
Hval1a_zrn1_pt.34	15	Mar. '11									4.8		0.27
Hval1a_zrn1_pt.35	15	Mar. '11									4.36		0.27
Hval1a_zrn2_pt.36	15	Mar. '11									5.13		0.27
Hval1a_zrn2_pt.37	15	Mar. '11									4.73		0.27
Hval1a_zrn2_pt.38	15	Mar. '11									4.49		0.27

[19] Data collected and shared by Abraham Padilla
[20] Data collected and shared by Abraham Padilla
[21] Data previously published in Bindeman et al. 2012; data collected at the Centre de Recherches Petrographiques et Geochimiques (Nancy, France)

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
Hval1a_zrn3_pt.39	15	Mar. '11									5.49		0.27
Hval1a_zrn3_pt.40	15	Mar. '11									5.6		0.27
Hval1a_zrn4_pt.41	15	Mar. '11									4.43		0.27
Hval1a_zrn4_pt.42	15	Mar. '11									4.52		0.27
Hval1a_zrn5_pt.43	15	Mar. '11									4.61		0.27
Hval1a_zrn5_pt.44	15	Mar. '11									4.9		0.27
Hval1a_zrn6_pt.48	15	Mar. '11									4.42		0.27
Hval1a_zrn6_pt.49	15	Mar. '11									5.1		0.27
Hval1a_zrn7_pt.50	15	Mar. '11									5.22		0.27
Hval1a_zrn7_pt.51	15	Mar. '11									5.16		0.27
Hval1a_zrn8core_pt.52	15	Mar. '11									5.37		0.27
Hval1a_zrn8core_pt.53	15	Mar. '11									4.77		0.27
Hval1a_zrn8rim_pt.54	15	Mar. '11									5.39		0.27
Hval1a_zrn8rim_pt.55	15	Mar. '11									4.87		0.27
Hval1a_zrn9_pt.57	15	Mar. '11									4.39		0.27
Hval1a_zrn9_pt.58	15	Mar. '11									5.27		0.27
Austurhorn: Silicic AIC[22] 28W 524122, 7146308													
JW498_IA-NS-2_10-1	15	Oct. '11	1.92E+09		3.84E+06		0.0020000	2.86E-07			3.48		0.30
JW498_IA-NS-2_10-2	15	Oct. '11	1.90E+09		3.80E+06		0.0020007	1.52E-07			3.78		0.30
JW498_IA-NS-2_1-1	15	Oct. '11	1.94E+09		3.88E+06		0.0020012	2.40E-07			3.89		0.30
JW498_IA-NS-2_11-1	15	Oct. '11	1.93E+09		3.86E+06		0.0020000	1.79E-07			3.47		0.30
JW498_IA-NS-2_12-1	15	Oct. '11	1.89E+09		3.78E+06		0.0020004	1.77E-07			3.59		0.30
JW498_IA-NS-2_12-2	15	Oct. '11	1.92E+09		3.83E+06		0.0020006	1.70E-07			3.71		0.30
JW498_IA-NS-2_13-1	15	Oct. '11	1.92E+09		3.85E+06		0.0020003	2.18E-07			3.57		0.30
JW498_IA-NS-2_14-1	15	Oct. '11	1.93E+09		3.85E+06		0.0019994	2.31E-07			3.17		0.30
JW498_IA-NS-2_15-1	15	Oct. '11	1.94E+09		3.88E+06		0.0020003	3.27E-07			3.61		0.30
JW498_IA-NS-2_17-2	15	Oct. '11	1.95E+09		3.90E+06		0.0020004	1.87E-07			3.68		0.30
JW498_IA-NS-2_18-1	15	Oct. '11	1.91E+09		3.83E+06		0.0020017	2.15E-07			4.27		0.30
JW498_IA-NS-2_20-1	15	Oct. '11	1.88E+09		3.75E+06		0.0020014	1.36E-07			4.08		0.30
JW498_IA-NS-2_2-1	15	Oct. '11	1.92E+09		3.85E+06		0.0020010	1.49E-07			3.78		0.30

[22] Data collected and shared by Abraham Padilla

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
JW498_IA-NS-2_23-1	15	Oct. '11	1.93E+09		3.87E+06		0.0020000	2.43E-07			3.48		0.30
JW498_IA-NS-2_24-1	15	Oct. '11	1.90E+09		3.81E+06		0.0020004	8.94E-08			3.67		0.30
JW498_IA-NS-2_25-1	15	Oct. '11	1.94E+09		3.87E+06		0.0019999	1.42E-07			3.41		0.30
JW498_IA-NS-2_3-1	15	Oct. '11	1.93E+09		3.87E+06		0.0020012	2.05E-07			3.87		0.30
JW498_IA-NS-2_4-1	15	Oct. '11	1.95E+09		3.90E+06		0.0019997	2.79E-07			3.10		0.30
JW498_IA-NS-2_4-2	15	Oct. '11	1.95E+09		3.91E+06		0.0020006	1.88E-07			3.57		0.30
JW498_IA-NS-2_5-1	15	Oct. '11	1.94E+09		3.89E+06		0.0020015	1.99E-07			4.27		0.30
JW498_IA-NS-2_5-2	15	Oct. '11	1.93E+09		3.86E+06		0.0020019	2.29E-07			4.50		0.30
JW498_IA-NS-2_6-1	15	Oct. '11	1.95E+09		3.91E+06		0.0020016	1.98E-07			4.31		0.30
JW498_IA-NS-2_7-1	15	Oct. '11	1.96E+09		3.92E+06		0.0020011	1.66E-07			4.09		0.30
JW498_IA-NS-2_8-1	15	Oct. '11	1.94E+09		3.89E+06		0.0020009	1.62E-07			3.98		0.30
JW498_IA-NS-2_9-1	15	Oct. '11	1.86E+09		3.72E+06		0.0019991	1.99E-07			3.01		0.30
JW498_IA-NS-6_10-1	15	Oct. '11	1.93E+09		3.86E+06		0.0020003	2.15E-07			3.92		0.30
JW498_IA-NS-6_1-1	15	Oct. '11	1.92E+09		3.84E+06		0.0019999	2.00E-07			3.21		0.30
JW498_IA-NS-6_11-1	15	Oct. '11	1.89E+09		3.79E+06		0.0020020	2.19E-07			4.34		0.30
JW498_IA-NS-6_12-1	15	Oct. '11	1.91E+09		3.81E+06		0.0019997	2.98E-07			3.65		0.30
JW498_IA-NS-6_13-1	15	Oct. '11	1.94E+09		3.88E+06		0.0020011	1.70E-07			4.12		0.30
JW498_IA-NS-6_14-1	15	Oct. '11	1.89E+09		3.78E+06		0.0019995	1.20E-07			3.12		0.30
JW498_IA-NS-6_15-1	15	Oct. '11	1.94E+09		3.87E+06		0.0020014	1.38E-07			4.23		0.30
JW498_IA-NS-6_17-1	15	Oct. '11	1.93E+09		3.85E+06		0.0019999	1.84E-07			3.51		0.30
JW498_IA-NS-6_17-2	15	Oct. '11	1.90E+09		3.81E+06		0.0020015	1.79E-07			4.28		0.30
JW498_IA-NS-6_18-1	15	Oct. '11	1.90E+09		3.80E+06		0.0020009	1.26E-07			3.81		0.30
JW498_IA-NS-6_19-1	15	Oct. '11	1.92E+09		3.84E+06		0.0020015	1.79E-07			4.25		0.30
JW498_IA-NS-6_2-1	15	Oct. '11	1.90E+09		3.79E+06		0.0019996	2.34E-07			3.03		0.30
JW498_IA-NS-6_21-1	15	Oct. '11	1.89E+09		3.78E+06		0.0020002	1.32E-07			3.45		0.30
JW498_IA-NS-6_22-1	15	Oct. '11	1.88E+09		3.76E+06		0.0020004	2.22E-07			3.73		0.30
JW498_IA-NS-6_23-1	15	Oct. '11	1.87E+09		3.73E+06		0.0019998	1.33E-07			3.19		0.30
JW498_IA-NS-6_24-1	15	Oct. '11	1.93E+09		3.86E+06		0.0020006	2.52E-07			3.79		0.30
JW498_IA-NS-6_24-2	15	Oct. '11	1.93E+09		3.86E+06		0.0019996	1.62E-07			3.32		0.30
JW498_IA-NS-6_26-1	15	Oct. '11	1.94E+09		3.87E+06		0.0020007	2.09E-07			3.84		0.30
JW498_IA-NS-6_3-1	15	Oct. '11	1.91E+09		3.82E+06		0.0020009	2.50E-07			3.71		0.30
JW498_IA-NS-6_4-1	15	Oct. '11	1.93E+09		3.86E+06		0.0020006	3.00E-07			3.55		0.30
JW498_IA-NS-6_5-1	15	Oct. '11	1.94E+09		3.87E+06		0.0020004	1.63E-07			3.42		0.30

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
JW498_IA-NS-6_6-1	15	Oct. '11	1.92E+09		3.83E+06		0.0020000	1.90E-07			3.80		0.30
JW498_IA-NS-6_7-1	15	Oct. '11	1.93E+09		3.86E+06		0.0019998	1.44E-07			3.69		0.30
JW498_IA-NS-6_8-1	15	Oct. '11	1.82E+09		3.64E+06		0.0020000	1.38E-07			3.38		0.30
JW498_IA-NS-6_9-1	15	Oct. '11	1.91E+09		3.83E+06		0.0020004	1.83E-07			4.01		0.30
Selardalur: IXSD 26W 635504, 7296772													
TLC2_IXSD@2	16	Jan '13	2.78E+09	4.85E+06	5.59E+06	9.68E+03	0.002009	1.51E-07	0.002008	1.51E-07	2.84	0.08	0.36
TLC2_IXSD@2	16	Jan '13	2.78E+09	4.85E+06	5.59E+06	9.68E+03	0.002009	1.51E-07	0.002008	1.51E-07	2.84	0.08	0.36
TLC2_IXSD@3	16	Jan '13	2.64E+09	9.12E+06	5.31E+06	1.82E+04	0.002009	1.87E-07	0.002008	1.87E-07	2.92	0.09	0.36
TLC2_IXSD@4	16	Jan '13	2.79E+09	4.73E+06	5.61E+06	9.74E+03	0.002009	1.11E-07	0.002009	1.11E-07	3.17	0.06	0.36
TLC2_IXSD@5	16	Jan '13	2.77E+09	7.08E+05	5.57E+06	1.31E+03	0.002010	1.79E-07	0.002009	1.79E-07	3.24	0.09	0.36
TLC7_IXSD@2	16	May '13	2.60E+09	1.77E+06	5.19E+06	3.72E+03	0.001999	2.02E-07	0.002007883	2.03E-07	2.69	0.10	0.67
TLC7_IXSD@3	16	May '13	2.57E+09	1.49E+06	5.14E+06	3.06E+03	0.001999	1.83E-07	0.002008229	1.84E-07	2.86	0.09	0.67
TLC7_IXSD@4	16	May '13	2.55E+09	9.90E+05	5.10E+06	2.11E+03	0.001999	1.70E-07	0.002008787	1.71E-07	3.14	0.08	0.67
TLC7_IXSD@5	16	May '13	2.56E+09	8.67E+05	5.12E+06	1.77E+03	0.001999	1.09E-07	0.00200845	1.10E-07	2.97	0.05	0.67
TLC7_IXSD@6	16	May '13	2.55E+09	7.44E+05	5.09E+06	1.54E+03	0.001999	1.79E-07	0.002008619	1.80E-07	3.06	0.09	0.67
TLC7_IXSD@7	16	May '13	2.55E+09	2.46E+06	5.09E+06	4.97E+03	0.001999	1.85E-07	0.002008391	1.86E-07	2.94	0.09	0.67
TLC7_IXSD@8	16	May '13	2.54E+09	1.76E+06	5.08E+06	3.67E+03	0.001999	1.41E-07	0.002008774	1.42E-07	3.13	0.07	0.67
TLC7_IXSD@9	16	May '13	2.51E+09	1.21E+06	5.02E+06	2.61E+03	0.002000	2.04E-07	0.002009128	2.05E-07	3.31	0.10	0.67
TLC6_IXSd@1	16	Jan. '13	2.68E+09	4.33E+06	5.39E+06	8.67E+03	0.002009	1.04E-07	0.002009	1.04E-07	3.46	0.05	0.26
Hvítserkur : IEHv-1c 28W 557692, 7257066													
TLC6_IEHv@1		Jan '13	2.76E+09	7.63E+05	5.55E+06	1.59E+03	0.002009	1.26E-07	0.002010	1.26E-07	3.56	0.06	0.26
TLC6_IEHv@2		Jan '13	2.58E+09	1.45E+06	5.20E+06	3.04E+03	0.002013	1.21E-07	0.002013	1.21E-07	5.45	0.06	0.26
Hvítserkur : Erla 28W 558485, 7259506													
TLC2_ERLA139		Jan '13	2.82E+09	1.33E+06	5.71E+06	2.51E+03	0.002024	1.29E-07	0.002023	1.29E-07	10.27	0.06	0.36
Husavikurkleif: IXH 27W 470820, 7280239													
JW530_IXH_10	17	Jan '13	2.89E+09	1.65E+06	5.82E+06	3.38E+03	0.002011	9.38E-08	0.002009	9.37E-08	3.22	0.05	0.28
JW530_IXH_14	17	Jan '13	2.88E+09	2.24E+06	5.79E+06	4.58E+03	0.002011	1.28E-07	0.002008	1.28E-07	2.97	0.06	0.28
JW530_IXH_16	17	Jan '13	2.88E+09	2.85E+06	5.79E+06	5.65E+03	0.002011	1.08E-07	0.002008	1.08E-07	2.98	0.05	0.28
JW530_IXH_2	17	Jan '13	2.86E+09	2.88E+06	5.74E+06	5.88E+03	0.002010	1.43E-07	0.002008	1.42E-07	2.89	0.07	0.28

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
JW530_IXH_22	17	Jan '13	2.91E+09	1.36E+06	5.86E+06	2.81E+03	0.002011	1.48E-07	0.002009	1.47E-07	3.07	0.07	0.28
JW530_IXH_23	17	Jan '13	2.90E+09	1.32E+06	5.83E+06	2.83E+03	0.002011	1.17E-07	0.002008	1.17E-07	2.91	0.06	0.28
JW530_IXH_24	17	Jan '13	2.91E+09	2.00E+06	5.86E+06	4.08E+03	0.002011	9.09E-08	0.002008	9.07E-08	2.82	0.05	0.28
JW530_IXH_25	17	Jan '13	2.94E+09	2.64E+06	5.91E+06	5.23E+03	0.002010	1.21E-07	0.002007	1.21E-07	2.47	0.06	0.28
JW530_IXH_26	17	Jan '13	2.86E+09	6.74E+06	5.75E+06	1.30E+04	0.002009	2.31E-07	0.002007	2.31E-07	2.07	0.11	0.28
JW530_IXH_27	17	Jan '13	2.88E+09	1.43E+06	5.80E+06	2.92E+03	0.002011	1.11E-07	0.002009	1.11E-07	3.07	0.06	0.28
JW530_IXH_28	17	Jan '13	2.92E+09	2.61E+06	5.88E+06	5.46E+03	0.002011	1.43E-07	0.002008	1.43E-07	2.94	0.07	0.28
JW530_IXH_29	17	Jan '13	2.91E+09	8.36E+05	5.85E+06	1.81E+03	0.002011	1.15E-07	0.002008	1.15E-07	2.93	0.06	0.28
JW530_IXH_3	17	Jan '13	2.90E+09	3.73E+06	5.83E+06	7.57E+03	0.002010	1.36E-07	0.002008	1.36E-07	2.51	0.07	0.28
JW530_IXH_30	17	Jan '13	2.92E+09	8.91E+05	5.87E+06	1.87E+03	0.002012	9.17E-08	0.002009	9.16E-08	3.24	0.05	0.28
JW530_IXH_31	17	Jan '13	2.90E+09	7.19E+05	5.84E+06	1.52E+03	0.002011	1.59E-07	0.002009	1.58E-07	3.08	0.08	0.28
JW530_IXH_32	17	Jan '13	2.87E+09	1.20E+06	5.78E+06	2.33E+03	0.002011	1.19E-07	0.002009	1.19E-07	3.12	0.06	0.28
JW530_IXH_33	17	Jan '13	2.86E+09	2.49E+06	5.75E+06	5.01E+03	0.002011	1.15E-07	0.002008	1.15E-07	2.92	0.06	0.28
JW530_IXH_34	17	Jan '13	2.91E+09	7.85E+05	5.85E+06	1.73E+03	0.002011	1.44E-07	0.002009	1.44E-07	3.21	0.07	0.28
JW530_IXH_35	17	Jan '13	2.88E+09	5.80E+05	5.79E+06	1.23E+03	0.002011	1.09E-07	0.002009	1.09E-07	3.14	0.05	0.28
JW530_IXH_36	17	Jan '13	3.03E+09	2.91E+06	6.09E+06	6.10E+03	0.002009	1.40E-07	0.002006	1.40E-07	1.81	0.07	0.28
JW530_IXH_37	17	Jan '13	2.88E+09	7.95E+05	5.79E+06	1.56E+03	0.002011	6.75E-08	0.002009	6.74E-08	3.14	0.03	0.28
JW530_IXH_4	17	Jan '13	2.92E+09	1.68E+06	5.87E+06	3.51E+03	0.002011	1.33E-07	0.002008	1.33E-07	2.90	0.07	0.28
JW530_IXH_5	17	Jan '13	2.90E+09	1.23E+06	5.84E+06	2.47E+03	0.002011	1.07E-07	0.002009	1.07E-07	3.04	0.05	0.28
JW530_IXH_6	17	Jan '13	2.91E+09	3.36E+06	5.85E+06	6.68E+03	0.002009	1.53E-07	0.002006	1.53E-07	1.88	0.08	0.28
JW530_IXH_7	17	Jan '13	2.92E+09	5.64E+06	5.87E+06	1.14E+04	0.002011	1.42E-07	0.002008	1.42E-07	2.60	0.07	0.28
JW530_IXH_8	17	Jan '13	2.89E+09	4.28E+06	5.82E+06	8.39E+03	0.002010	1.10E-07	0.002007	1.09E-07	2.49	0.05	0.28
Tjörnes: IXT 28W 397693, 7334527													
JW529_IXT_1_1	18	Oct. '11	2.04E+09		4.09E+06		0.0020005	2.02E-07			3.45		0.30
JW529_IXT_2_2	18	Oct. '11	2.04E+09		4.09E+06		0.0020000	2.14E-07			3.20		0.30
JW529_IXT_21_1	18	Oct. '11	2.08E+09		4.16E+06		0.0020005	1.67E-07			3.40		0.30
JW529_IXT_22_1	18	Oct. '11	2.08E+09		4.16E+06		0.0020005	1.51E-07			3.41		0.30
JW529_IXT_23_1	18	Oct. '11	2.07E+09		4.14E+06		0.0020028	1.11E-07			4.66		0.30
JW529_IXT_24_1	18	Oct. '11	2.07E+09		4.15E+06		0.0020003	1.88E-07			3.33		0.30
JW529_IXT_25_1	18	Oct. '11	2.05E+09		4.09E+06		0.0019992	1.31E-07			2.52		0.30
JW529_IXT_27_1	18	Oct. '11	2.06E+09		4.12E+06		0.0019998	2.12E-07			2.85		0.30
JW529_IXT_28_1	18	Oct. '11	2.06E+09		4.13E+06		0.0020012	1.82E-07			3.56		0.30

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
JW529_IXT_3_1	18	Oct. '11	2.05E+09		4.10E+06		0.0020018	1.79E-07			4.09		0.30
JW529_IXT_3_2	18	Oct. '11	2.02E+09		4.04E+06		0.0020022	1.40E-07			4.28		0.30
JW529_IXT_30_1	18	Oct. '11	2.05E+09		4.11E+06		0.0020005	1.22E-07			3.16		0.30
JW529_IXT_31_1	18	Oct. '11	2.09E+09		4.18E+06		0.0020003	2.15E-07			2.88		0.30
JW529_IXT_4_1	18	Oct. '11	2.06E+09		4.11E+06		0.0019986	1.48E-07			2.43		0.30
JW529_IXT_5_1	18	Oct. '11	2.04E+09		4.09E+06		0.0020025	2.21E-07			4.49		0.30
JW529_IXT_5_2	18	Oct. '11	2.04E+09		4.09E+06		0.0020029	1.61E-07			4.69		0.30
JW529_IXT_6_1	18	Oct. '11	2.07E+09		4.14E+06		0.0020006	1.32E-07			3.52		0.30
JW529_IXT_6_2	18	Oct. '11	2.07E+09		4.14E+06		0.0020023	2.04E-07			4.39		0.30
JW529_IXT_7_1	18	Oct. '11	2.06E+09		4.12E+06		0.0020024	1.66E-07			3.95		0.30
JW529_IXT_8_1	18	Oct. '11	2.06E+09		4.12E+06		0.0019998	1.71E-07			2.63		0.30
JW530_IXT_12	18	Jan '13	2.88E+09	4.78E+06	5.78E+06	9.49E+03	0.002010	1.65E-07	0.002007	1.65E-07	2.46	0.08	0.28
JW530_IXT_13	18	Jan '13	2.87E+09	1.18E+06	5.77E+06	2.51E+03	0.002013	1.72E-07	0.002011	1.72E-07	4.38	0.09	0.28
JW530_IXT_14	18	Jan '13	2.90E+09	2.73E+06	5.82E+06	5.70E+03	0.002010	1.38E-07	0.002008	1.38E-07	2.76	0.07	0.28
JW530_IXT_15	18	Jan '13	2.95E+09	2.82E+06	5.91E+06	5.89E+03	0.002005	1.27E-07	0.002004	1.27E-07	0.67	0.06	0.28
JW530_IXT_17	18	Jan '13	2.96E+09	1.80E+06	5.96E+06	3.69E+03	0.002011	1.03E-07	0.002009	1.03E-07	3.35	0.05	0.28
JW530_IXT_18	18	Jan '13	2.84E+09	2.18E+06	5.70E+06	4.60E+03	0.002005	1.55E-07	0.002004	1.54E-07	0.59	0.08	0.28
JW530_IXT_19	18	Jan '13	2.95E+09	1.90E+06	5.94E+06	3.81E+03	0.002011	1.45E-07	0.002010	1.45E-07	3.60	0.07	0.28
JW530_IXT_20	18	Jan '13	3.00E+09	7.97E+05	6.03E+06	1.69E+03	0.002010	1.25E-07	0.002008	1.25E-07	2.98	0.06	0.28
JW529_IXT_8_2	18	Oct. '11	2.05E+09		4.11E+06		0.0020011	2.46E-07			3.30		0.30
Miđá: ISMi* 28W 464561, 7211545													
JW508_MI_1_1	19	Oct. '11	2.03E+09		4.06E+06		0.0020023	2.31E-07			3.96		0.30
JW508_MI_10_1	19	Oct. '11	2.02E+09		4.03E+06		0.0019981	1.37E-07			1.88		0.30
JW508_MI_12_1	19	Oct. '11	2.01E+09		4.02E+06		0.0020008	1.74E-07			3.23		0.30
JW508_MI_14_1	19	Oct. '11	2.02E+09		4.04E+06		0.0019994	2.22E-07			2.50		0.30
JW508_MI_15_1	19	Oct. '11	2.03E+09		4.06E+06		0.0020022	1.71E-07			3.89		0.30
JW508_MI_17_1	19	Oct. '11	2.01E+09		4.02E+06		0.0020019	1.73E-07			3.53		0.30
JW508_MI_18_1	19	Oct. '11	2.03E+09		4.06E+06		0.0019989	1.53E-07			2.01		0.30
JW508_MI_19_1	19	Oct. '11	1.93E+09		3.85E+06		0.0019995	2.48E-07			2.29		0.30
JW508_MI_2_1	19	Oct. '11	2.03E+09		4.06E+06		0.0020008	1.24E-07			3.19		0.30
JW508_MI_20_1	19	Oct. '11	2.02E+09		4.04E+06		0.0020014	1.46E-07			3.27		0.30
JW508_MI_23_1@6	19	Oct. '11	1.71E+09		3.41E+06		0.0020006	2.54E-07			2.74		0.30

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
JW508_MI_24_2	19	Oct. '11	2.00E+09		4.01E+06		0.0020001	1.48E-07			2.61		0.30
JW508_MI_3_1	19	Oct. '11	2.03E+09		4.06E+06		0.0020009	1.46E-07			3.23		0.30
JW508_MI_5_1	19	Oct. '11	2.01E+09		4.02E+06		0.0019987	2.06E-07			2.13		0.30
JW508_MI_56_1	19	Oct. '11	2.02E+09		4.03E+06		0.0019999	1.82E-07			2.73		0.30
JW508_MI_58_1	19	Oct. '11	2.02E+09		4.04E+06		0.0019990	1.57E-07			2.30		0.30
JW508_MI_59_1	19	Oct. '11	2.02E+09		4.03E+06		0.0019990	1.35E-07			2.29		0.30
JW508_MI_6_1	19	Oct. '11	2.01E+09		4.03E+06		0.0019984	1.88E-07			2.03		0.30
JW508_MI_7_1	19	Oct. '11	2.00E+09		4.01E+06		0.0019994	2.00E-07			2.51		0.30
JW508_MI_75_1@5	19	Oct. '11	1.71E+09		3.43E+06		0.0020021	2.67E-07			2.51		0.30
JW508_MI_8_1	19	Oct. '11	2.01E+09		4.01E+06		0.0019966	1.88E-07			1.11		0.30
JW508_MI_9_1	19	Oct. '11	2.01E+09		4.03E+06		0.0020005	1.20E-07			3.05		0.30
Markarfljót ISM* 27W 552381, 7059713													
JW499_ISM_1_1	20	Oct. '11	2.02E+09		4.03E+06		0.0020003	1.45E-07			2.45		0.30
JW499_ISM_1_2	20	Oct. '11	1.98E+09		3.96E+06		0.0019998	1.43E-07			2.18		0.30
JW499_ISM_2_1	20	Oct. '11	2.01E+09		4.02E+06		0.0019998	1.67E-07			2.16		0.30
JW499_ISM_3_1	20	Oct. '11	2.01E+09		4.02E+06		0.0019998	1.91E-07			2.47		0.30
JW499_ISM_5_1	20	Oct. '11	2.00E+09		3.99E+06		0.0019983	2.14E-07			1.70		0.30
JW499_ISM_5_2	20	Oct. '11	1.99E+09		3.99E+06		0.0019997	2.96E-07			2.40		0.30
JW499_ISM_7_1	20	Oct. '11	2.03E+09		4.06E+06		0.0019991	9.86E-08			2.09		0.30
JW499_ISM_8_1	20	Oct. '11	2.02E+09		4.04E+06		0.0019998	1.56E-07			2.44		0.30
JW499_ISM_9_1	20	Oct. '11	2.02E+09		4.03E+06		0.0020012	2.57E-07			3.17		0.30
JW499_M_2_3	20	Oct. '11	1.76E+09		3.52E+06		0.0020027	2.20E-07			5.80		0.30
JW499_M_3_3	20	Oct. '11	1.74E+09		3.48E+06		0.0020032	2.35E-07			6.05		0.30
JW499_M_7_3	20	Oct. '11	1.76E+09		3.52E+06		0.0020002	1.76E-07			4.53		0.30
JW499_M_8_3	20	Oct. '11	1.76E+09		3.52E+06		0.0020019	1.88E-07			5.39		0.30
JW499_M_9_3	20	Oct. '11	1.76E+09		3.52E+06		0.0020018	2.64E-07			5.36		0.30
JW508_M_11_1	20	Oct. '11	1.97E+09		3.96E+06		0.0020044	2.38E-07			4.83		0.30
JW508_M_12_1	20	Oct. '11	1.99E+09		3.98E+06		0.0020047	2.24E-07			5.00		0.30
JW508_M_13_1	20	Oct. '11	1.81E+09		3.64E+06		0.0020048	2.55E-07			4.71		0.30
JW508_M_16_2	20	Oct. '11	1.97E+09		3.95E+06		0.0020044	1.88E-07			4.84		0.30
JW508_M_16_3	20	Oct. '11	1.80E+09		3.61E+06		0.0020043	2.33E-07			4.47		0.30
JW508_M_17_1	20	Oct. '11	1.77E+09		3.56E+06		0.0020044	1.91E-07			4.53		0.30

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
JW508_M_17_2	20	Oct. '11	1.95E+09		3.92E+06		0.0020051	2.42E-07			5.18		0.30
JW508_M_18_2	20	Oct. '11	1.96E+09		3.93E+06		0.0020031	1.07E-07			4.20		0.30
JW508_M_20_2	20	Oct. '11	1.70E+09		3.41E+06		0.0020022	1.65E-07			2.74		0.30
JW508_M_21_1	20	Oct. '11	1.98E+09		3.96E+06		0.0020037	1.52E-07			4.57		0.30
JW508_M_21_2	20	Oct. '11	1.79E+09		3.60E+06		0.0020043	1.65E-07			4.49		0.30
JW508_M_22_1@1	20	Oct. '11	1.71E+09		3.43E+06		0.0020016	2.66E-07			2.54		0.30
JW508_M_23_1	20	Oct. '11	1.97E+09		3.94E+06		0.0020036	1.90E-07			4.52		0.30
JW508_M_23_2	20	Oct. '11	1.71E+09		3.42E+06		0.0020015	1.69E-07			2.58		0.30
JW508_M_24_1	20	Oct. '11	1.98E+09		3.97E+06		0.0020025	2.01E-07			3.97		0.30
JW508_M_24_1@1	20	Oct. '11	1.70E+09		3.40E+06		0.0020010	2.12E-07			2.92		0.30
JW508_M_26_1	20	Oct. '11	1.95E+09		3.90E+06		0.0020043	1.36E-07			4.89		0.30
JW508_M_27_1@2	20	Oct. '11	1.70E+09		3.41E+06		0.0020014	3.12E-07			2.82		0.30
JW508_M_28_1	20	Oct. '11	1.97E+09		3.96E+06		0.0020033	1.90E-07			4.35		0.30
Fjardarsá: ISFjar* 28W 500225, 7131316[b]													
JW499_ISFJAR_1_1	21	Oct. '11	2.04E+09		4.09E+06		0.0019996	2.46E-07			2.01		0.30
JW499_ISFJAR_10_1	21	Oct. '11	2.05E+09		4.10E+06		0.0019987	1.38E-07			1.69		0.30
JW499_ISFJAR_11_2	21	Oct. '11	2.06E+09		4.12E+06		0.0020018	2.46E-07			3.13		0.30
JW499_ISFJAR_12_1	21	Oct. '11	2.08E+09		4.15E+06		0.0020001	1.92E-07			2.27		0.30
JW499_ISFJAR_13_2	21	Oct. '11	2.08E+09		4.17E+06		0.0020012	1.57E-07			2.81		0.30
JW499_ISFJAR_14_1	21	Oct. '11	2.08E+09		4.17E+06		0.0020013	1.86E-07			2.87		0.30
JW499_ISFJAR_18_2	21	Oct. '11	2.06E+09		4.13E+06		0.0020028	2.39E-07			3.44		0.30
JW499_ISFJAR_20_1	21	Oct. '11	2.07E+09		4.14E+06		0.0020012	1.83E-07			2.87		0.30
JW499_ISFJAR_21_1	21	Oct. '11	2.07E+09		4.15E+06		0.0020013	1.94E-07			2.95		0.30
JW499_ISFJAR_22_1	21	Oct. '11	2.07E+09		4.15E+06		0.0020022	1.37E-07			3.13		0.30
JW499_ISFJAR_23_1	21	Oct. '11	2.08E+09		4.16E+06		0.0020013	2.36E-07			2.70		0.30
JW499_ISFJAR_24_2	21	Oct. '11	2.07E+09		4.15E+06		0.0020022	1.36E-07			3.14		0.30
JW499_ISFJAR_26_2	21	Oct. '11	2.09E+09		4.19E+06		0.0020032	1.88E-07			3.65		0.30
JW499_ISFJAR_27_1	21	Oct. '11	2.08E+09		4.16E+06		0.0020031	1.50E-07			3.76		0.30
JW499_ISFJAR_6_2	21	Oct. '11	2.07E+09		4.14E+06		0.0020018	1.34E-07			3.12		0.30
JW499_ISFJAR_7_2	21	Oct. '11	2.04E+09		4.08E+06		0.0019978	2.37E-07			1.24		0.30
JW499_ISFJAR_8_1	21	Oct. '11	2.07E+09		4.15E+06		0.0020020	1.01E-07			3.31		0.30

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
JW499_ISFJAR_8_2	21	Oct. '11	2.06E+09		4.12E+06		0.0020006	1.61E-07			2.63		0.30
JW499_ISFJAR_9_3	21	Oct. '11	2.08E+09		4.17E+06		0.0020012	1.37E-07			2.91		0.30
Jökulsá í Lóni: ISJL* 28W 505478, 7144079													
JW499_ISJL_1_1	22	Oct. '11	2.03E+09		4.07E+06		0.0020023	8.49E-08			3.36		0.30
JW499_ISJL_10_1	22	Oct. '11	2.06E+09		4.12E+06		0.0020009	1.81E-07			3.73		0.30
JW499_ISJL_11_1	22	Oct. '11	2.06E+09		4.12E+06		0.0020016	1.43E-07			3.07		0.30
JW499_ISJL_12_1	22	Oct. '11	2.04E+09		4.08E+06		0.0020036	1.75E-07			4.03		0.30
JW499_ISJL_13_1	22	Oct. '11	2.07E+09		4.13E+06		0.0020019	1.50E-07			3.17		0.30
JW499_ISJL_14_1	22	Oct. '11	2.08E+09		4.16E+06		0.0020026	1.91E-07			3.50		0.30
JW499_ISJL_14_2	22	Oct. '11	2.07E+09		4.15E+06		0.0020023	1.72E-07			3.36		0.30
JW499_ISJL_15_1	22	Oct. '11	2.05E+09		4.11E+06		0.0020021	2.50E-07			3.26		0.30
JW499_ISJL_2_1	22	Oct. '11	2.01E+09		4.03E+06		0.0020001	2.82E-07			2.25		0.30
JW499_ISJL_3_1	22	Oct. '11	2.03E+09		4.06E+06		0.0019993	1.50E-07			1.86		0.30
JW499_ISJL_4_1	22	Oct. '11	2.04E+09		4.08E+06		0.0020007	1.61E-07			2.48		0.30
JW499_ISJL_5_1	22	Oct. '11	2.02E+09		4.05E+06		0.0020011	1.33E-07			2.69		0.30
JW499_ISJL_6_1	22	Oct. '11	2.01E+09		4.02E+06		0.0020010	1.64E-07			2.62		0.30
JW499_ISJL_6_2	22	Oct. '11	2.03E+09		4.05E+06		0.0020014	1.14E-07			2.82		0.30
JW499_ISJL_7_1	22	Oct. '11	2.03E+09		4.07E+06		0.0020000	1.74E-07			2.10		0.30
JW499_ISJL_8_1	22	Oct. '11	2.06E+09		4.12E+06		0.0020014	1.88E-07			4.01		0.30
JW499_ISJL_9_1	22	Oct. '11	2.05E+09		4.10E+06		0.0020006	1.30E-07			3.59		0.30
Lagarfljót: ISLF 28W 506732, 7216451													
TLC7_ISLF@1	23	May '13	2.62E+09	8.81E+05	5.22E+06	1.91E+03	0.001997	1.15E-07	0.002006041	1.15E-07	1.77	0.06	0.67
TLC7_ISLF@10	23	May '13	2.65E+09	2.72E+06	5.29E+06	5.37E+03	0.001999	1.12E-07	0.002008091	1.12E-07	2.79	0.06	0.67
TLC7_ISLF@11	23	May '13	2.63E+09	2.05E+06	5.27E+06	4.45E+03	0.001999	1.76E-07	0.002008617	1.77E-07	3.05	0.09	0.67
TLC7_ISLF@12	23	May '13	2.64E+09	2.18E+06	5.28E+06	4.35E+03	0.002000	9.04E-08	0.002009737	9.08E-08	3.61	0.05	0.67
TLC7_ISLF@13	23	May '13	2.65E+09	1.34E+06	5.28E+06	2.88E+03	0.001994	1.55E-07	0.002003372	1.55E-07	0.44	0.08	0.67
TLC7_ISLF@14	23	May '13	2.63E+09	2.11E+06	5.25E+06	4.26E+03	0.001999	1.17E-07	0.00200798	1.17E-07	2.74	0.06	0.67
TLC7_ISLF@15	23	May '13	2.64E+09	1.69E+06	5.28E+06	3.51E+03	0.001998	1.12E-07	0.002007778	1.13E-07	2.64	0.06	0.67
TLC7_ISLF@16	23	May '13	2.64E+09	2.84E+06	5.28E+06	5.96E+03	0.001999	1.41E-07	0.002008739	1.42E-07	3.12	0.07	0.67
TLC7_ISLF@17	23	May '13	2.64E+09	1.43E+06	5.27E+06	2.77E+03	0.001999	1.63E-07	0.002008309	1.64E-07	2.90	0.08	0.67
TLC7_ISLF@18	23	May '13	2.63E+09	1.18E+06	5.27E+06	2.57E+03	0.002001	8.99E-08	0.002010877	9.03E-08	4.18	0.04	0.67
TLC7_ISLF@19	23	May '13	2.54E+09	4.98E+07	5.09E+06	9.94E+04	0.002001	2.91E-07	0.002010835	2.92E-07	4.16	0.15	0.67

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
TLC7_ISLF@2	23	May '13	2.63E+09	7.55E+05	5.26E+06	1.42E+03	0.001999	1.15E-07	0.002007957	1.15E-07	2.72	0.06	0.67
TLC7_ISLF@20	23	May '13	2.66E+09	2.39E+06	5.32E+06	4.81E+03	0.002001	1.00E-07	0.002010724	1.01E-07	4.11	0.05	0.67
TLC7_ISLF@21	23	May '13	2.71E+09	3.45E+06	5.42E+06	7.13E+03	0.001999	1.90E-07	0.002008181	1.91E-07	2.84	0.10	0.67
TLC7_ISLF@22	23	May '13	2.74E+09	2.29E+06	5.47E+06	4.71E+03	0.002000	2.05E-07	0.002009752	2.06E-07	3.62	0.10	0.67
TLC7_ISLF@23	23	May '13	2.69E+09	7.99E+05	5.39E+06	1.60E+03	0.001999	1.43E-07	0.002008775	1.44E-07	3.13	0.07	0.67
TLC7_ISLF@24	23	May '13	2.71E+09	3.86E+06	5.41E+06	7.76E+03	0.001999	1.57E-07	0.002008756	1.58E-07	3.12	0.08	0.67
TLC7_ISLF@25	23	May '13	2.70E+09	2.59E+06	5.39E+06	5.58E+03	0.001999	1.96E-07	0.002008702	1.97E-07	3.10	0.10	0.67
TLC7_ISLF@27	23	May '13	2.69E+09	1.83E+06	5.37E+06	3.95E+03	0.001999	2.00E-07	0.002008	2.01E-07	2.75	0.10	0.67
TLC7_ISLF@28	23	May '13	2.70E+09	1.79E+06	5.40E+06	3.79E+03	0.002000	1.41E-07	0.002009549	1.42E-07	3.52	0.07	0.67
TLC7_ISLF@29	23	May '13	2.69E+09	2.24E+06	5.37E+06	4.71E+03	0.001998	1.69E-07	0.002007848	1.70E-07	2.67	0.08	0.67
TLC7_ISLF@3	23	May '13	2.63E+09	1.60E+06	5.25E+06	3.46E+03	0.001999	1.38E-07	0.002008053	1.39E-07	2.77	0.07	0.67
TLC7_ISLF@30	23	May '13	2.68E+09	1.36E+06	5.35E+06	2.70E+03	0.001999	8.61E-08	0.002008311	8.65E-08	2.90	0.04	0.67
TLC7_ISLF@31	23	May '13	2.60E+09	3.94E+06	5.25E+06	7.99E+03	0.002018	1.68E-07	0.002027583	1.69E-07	12.53	0.08	0.67
TLC7_ISLF@32	23	May '13	2.69E+09	2.07E+06	5.38E+06	4.16E+03	0.002000	1.41E-07	0.002009056	1.42E-07	3.27	0.07	0.67
TLC7_ISLF@33	23	May '13	2.71E+09	1.62E+06	5.41E+06	3.23E+03	0.001999	1.00E-07	0.002008148	1.01E-07	2.82	0.05	0.67
TLC7_ISLF@34	23	May '13	2.70E+09	1.31E+06	5.39E+06	2.87E+03	0.001999	1.98E-07	0.002008674	1.99E-07	3.08	0.10	0.67
TLC7_ISLF@35	23	May '13	2.71E+09	1.75E+06	5.41E+06	3.34E+03	0.001999	1.64E-07	0.002007975	1.65E-07	2.73	0.08	0.67
TLC7_ISLF@4	23	May '13	2.63E+09	1.69E+06	5.25E+06	3.65E+03	0.001998	1.97E-07	0.002007642	1.98E-07	2.57	0.10	0.67
TLC7_ISLF@5	23	May '13	2.62E+09	2.08E+06	5.24E+06	4.37E+03	0.001999	1.68E-07	0.002007951	1.69E-07	2.72	0.08	0.67
TLC7_ISLF@6	23	May '13	2.36E+09	5.05E+07	4.72E+06	1.01E+05	0.001998	3.99E-07	0.002007727	4.01E-07	2.61	0.20	0.67
TLC7_ISLF@7	23	May '13	2.64E+09	2.53E+06	5.27E+06	5.01E+03	0.001998	1.29E-07	0.002007317	1.30E-07	2.41	0.06	0.67
TLC7_ISLF@8	23	May '13	2.63E+09	2.12E+06	5.25E+06	4.49E+03	0.001998	1.91E-07	0.002007716	1.92E-07	2.60	0.10	0.67
TLC7_ISLF@9	23	May '13	2.63E+09	3.25E+06	5.27E+06	6.67E+03	0.002000	1.04E-07	0.002009493	1.05E-07	3.49	0.05	0.67
Krossá-Kækjudalsá: ISKK 28W 553667, 7260140													
TLC2_ISKK@1	24	Jan '13	2.83E+09	2.70E+06	5.69E+06	5.55E+03	0.002009	9.00E-08	0.002009	9.00E-08	3.18	0.04	0.36
TLC2_ISKK@10	24	Jan '13	2.97E+09	2.68E+06	5.97E+06	5.39E+03	0.002010	1.13E-07	0.002009	1.13E-07	3.24	0.06	0.36
TLC2_ISKK@11	24	Jan '13	2.94E+09	1.55E+06	5.92E+06	3.08E+03	0.002010	1.79E-07	0.002009	1.79E-07	3.20	0.09	0.36
TLC2_ISKK@12	24	Jan '13	2.96E+09	1.01E+06	5.96E+06	2.27E+03	0.002010	1.06E-07	0.002009	1.06E-07	3.24	0.05	0.36
TLC2_ISKK@13	24	Jan '13	2.93E+09	9.18E+05	5.88E+06	1.80E+03	0.002009	1.23E-07	0.002009	1.22E-07	3.07	0.06	0.36
TLC2_ISKK@14	24	Jan '13	2.91E+09	4.32E+06	5.85E+06	8.98E+03	0.002009	1.28E-07	0.002009	1.28E-07	3.09	0.06	0.36
TLC2_ISKK@15	24	Jan '13	2.92E+09	4.35E+06	5.88E+06	8.82E+03	0.002010	1.21E-07	0.002008	1.21E-07	2.90	0.06	0.36
TLC2_ISKK@16	24	Jan '13	2.99E+09	3.25E+06	5.99E+06	6.49E+03	0.002007	1.19E-07	0.002005	1.19E-07	1.28	0.06	0.36

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
TLC2_ISKK@17	24	Jan '13	2.75E+09	5.96E+06	5.52E+06	1.20E+04	0.002009	9.08E-08	0.002008	9.07E-08	2.65	0.05	0.36
TLC2_ISKK@18	24	Jan '13	2.89E+09	4.13E+06	5.81E+06	8.37E+03	0.002009	1.55E-07	0.002008	1.55E-07	2.69	0.08	0.36
TLC2_ISKK@19	24	Jan '13	2.98E+09	9.22E+05	5.99E+06	2.06E+03	0.002009	1.47E-07	0.002008	1.47E-07	2.64	0.07	0.36
TLC2_ISKK@2	24	Jan '13	2.88E+09	3.24E+06	5.79E+06	6.58E+03	0.002010	1.04E-07	0.002009	1.04E-07	3.27	0.05	0.36
TLC2_ISKK@20	24	Jan '13	2.95E+09	8.90E+05	5.93E+06	1.82E+03	0.002010	1.21E-07	0.002008	1.21E-07	2.69	0.06	0.36
TLC2_ISKK@21	24	Jan '13	2.94E+09	6.69E+05	5.92E+06	1.42E+03	0.002010	1.47E-07	0.002008	1.47E-07	2.64	0.07	0.36
TLC2_ISKK@22	24	Jan '13	2.93E+09	8.89E+05	5.90E+06	1.66E+03	0.002010	1.24E-07	0.002008	1.24E-07	2.63	0.06	0.36
TLC2_ISKK@23	24	Jan '13	2.91E+09	2.80E+06	5.84E+06	5.74E+03	0.002010	8.86E-08	0.002008	8.85E-08	2.68	0.04	0.36
TLC2_ISKK@24	24	Jan '13	2.97E+09	4.10E+06	5.97E+06	8.52E+03	0.002010	1.79E-07	0.002008	1.78E-07	2.66	0.09	0.36
TLC2_ISKK@26	24	Jan '13	2.91E+09	1.01E+07	5.84E+06	2.03E+04	0.002010	1.46E-07	0.002008	1.46E-07	2.96	0.07	0.36
TLC2_ISKK@3	24	Jan '13	2.87E+09	2.35E+06	5.77E+06	4.61E+03	0.002010	1.64E-07	0.002009	1.64E-07	3.28	0.08	0.36
TLC2_ISKK@4	24	Jan '13	2.65E+09	1.21E+06	5.32E+06	2.39E+03	0.002011	1.33E-07	0.002011	1.33E-07	4.16	0.07	0.36
TLC2_ISKK@5	24	Jan '13	2.87E+09	6.71E+06	5.76E+06	1.37E+04	0.002009	1.20E-07	0.002008	1.20E-07	2.98	0.06	0.36
TLC2_ISKK@6	24	Jan '13	2.91E+09	9.40E+05	5.84E+06	2.06E+03	0.002010	1.37E-07	0.002009	1.37E-07	3.18	0.07	0.36
TLC2_ISKK@7	24	Jan '13	2.93E+09	5.18E+06	5.88E+06	1.05E+04	0.002010	9.33E-08	0.002009	9.33E-08	3.17	0.05	0.36
TLC2_ISKK@8	24	Jan '13	1.15E+09	7.32E+06	2.31E+06	1.46E+04	0.002006	4.02E-07	0.002005	4.02E-07	1.27	0.20	0.36
TLC2_ISKK@9	24	Jan '13	2.74E+09	2.84E+06	5.50E+06	5.88E+03	0.002008	1.50E-07	0.002007	1.50E-07	2.41	0.07	0.36
TLC4_ISKK@1	24	Jan '13	2.43E+09	1.78E+06	4.89E+06	3.54E+03	0.002009	1.64E-07	0.002009	1.64E-07	3.37	0.08	0.11
TLC4_ISKK@10	24	Jan '13	2.49E+09	1.01E+06	5.01E+06	2.22E+03	0.002010	1.63E-07	0.002010	1.63E-07	3.68	0.08	0.11
TLC4_ISKK@11	24	Jan '13	2.46E+09	2.33E+06	4.94E+06	4.73E+03	0.002010	1.61E-07	0.002010	1.60E-07	3.64	0.08	0.11
TLC4_ISKK@12	24	Jan '13	2.50E+09	2.11E+06	5.03E+06	4.29E+03	0.002009	1.62E-07	0.002009	1.62E-07	3.17	0.08	0.11
TLC4_ISKK@13	24	Jan '13	2.52E+09	1.28E+06	5.06E+06	2.68E+03	0.002011	1.43E-07	0.002010	1.43E-07	3.70	0.07	0.11
TLC4_ISKK@14	24	Jan '13	2.53E+09	8.79E+05	5.09E+06	1.80E+03	0.002011	1.33E-07	0.002010	1.32E-07	3.69	0.07	0.11
TLC4_ISKK@15	24	Jan '13	2.53E+09	6.89E+05	5.08E+06	1.37E+03	0.002011	1.48E-07	0.002010	1.47E-07	3.86	0.07	0.11
TLC4_ISKK@16	24	Jan '13	2.54E+09	4.37E+05	5.11E+06	1.05E+03	0.002011	9.08E-08	0.002010	9.08E-08	3.89	0.05	0.11
TLC4_ISKK@17	24	Jan '13	2.56E+09	8.24E+05	5.14E+06	1.47E+03	0.002010	1.46E-07	0.002010	1.46E-07	3.53	0.07	0.11
TLC4_ISKK@18	24	Jan '13	2.56E+09	9.98E+05	5.15E+06	2.16E+03	0.002011	1.20E-07	0.002010	1.20E-07	3.73	0.06	0.11
TLC4_ISKK@19	24	Jan '13	2.58E+09	3.84E+05	5.18E+06	1.01E+03	0.002011	1.66E-07	0.002010	1.66E-07	3.70	0.08	0.11
TLC4_ISKK@2	24	Jan '13	2.45E+09	2.26E+06	4.93E+06	4.48E+03	0.002010	1.77E-07	0.002010	1.77E-07	3.66	0.09	0.11
TLC4_ISKK@20	24	Jan '13	2.56E+09	8.03E+05	5.14E+06	1.74E+03	0.002011	1.81E-07	0.002011	1.81E-07	4.00	0.09	0.11
TLC4_ISKK@21	24	Jan '13	2.58E+09	9.76E+05	5.18E+06	1.86E+03	0.002011	1.20E-07	0.002010	1.20E-07	3.66	0.06	0.11
TLC4_ISKK@22	24	Jan '13	2.57E+09	7.93E+05	5.17E+06	1.68E+03	0.002011	1.58E-07	0.002010	1.58E-07	3.91	0.08	0.11
TLC4_ISKK@23	24	Jan '13	2.55E+09	4.91E+05	5.14E+06	8.46E+02	0.002011	1.51E-07	0.002010	1.51E-07	3.75	0.08	0.11

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
TLC4_ISKK@24	24	Jan '13	2.54E+09	7.00E+05	5.10E+06	1.64E+03	0.002011	1.86E-07	0.002010	1.86E-07	3.85	0.09	0.11
TLC4_ISKK@25	24	Jan '13	2.53E+09	9.93E+05	5.09E+06	1.81E+03	0.002010	1.66E-07	0.002009	1.66E-07	3.12	0.08	0.11
TLC4_ISKK@26	24	Jan '13	2.52E+09	1.75E+06	5.07E+06	3.51E+03	0.002011	1.01E-07	0.002010	1.01E-07	3.59	0.05	0.11
TLC4_ISKK@27	24	Jan '13	2.55E+09	6.20E+05	5.14E+06	1.31E+03	0.002011	1.36E-07	0.002010	1.36E-07	3.58	0.07	0.11
TLC4_ISKK@28	24	Jan '13	2.59E+09	1.30E+06	5.20E+06	2.76E+03	0.002011	1.75E-07	0.002010	1.75E-07	3.52	0.09	0.11
TLC4_ISKK@29	24	Jan '13	2.57E+09	1.30E+06	5.18E+06	2.61E+03	0.002011	1.28E-07	0.002010	1.28E-07	3.61	0.06	0.11
TLC4_ISKK@3	24	Jan '13	2.45E+09	1.20E+06	4.92E+06	2.39E+03	0.002009	1.24E-07	0.002009	1.24E-07	3.24	0.06	0.11
TLC4_ISKK@30	24	Jan '13	2.58E+09	1.31E+06	5.19E+06	2.61E+03	0.002011	1.74E-07	0.002010	1.73E-07	3.70	0.09	0.11
TLC4_ISKK@31	24	Jan '13	2.61E+09	4.16E+05	5.25E+06	8.78E+02	0.002011	6.20E-08	0.002009	6.20E-08	3.46	0.03	0.11
TLC4_ISKK@32	24	Jan '13	2.58E+09	1.10E+06	5.19E+06	2.24E+03	0.002011	1.22E-07	0.002010	1.22E-07	3.61	0.06	0.11
TLC4_ISKK@33	24	Jan '13	2.62E+09	1.07E+06	5.26E+06	2.19E+03	0.002011	1.29E-07	0.002009	1.29E-07	3.42	0.06	0.11
TLC4_ISKK@35	24	Jan '13	2.60E+09	1.69E+06	5.23E+06	3.49E+03	0.002011	1.49E-07	0.002009	1.49E-07	3.42	0.07	0.11
TLC4_ISKK@36	24	Jan '13	2.63E+09	1.33E+06	5.29E+06	2.66E+03	0.002011	1.33E-07	0.002010	1.33E-07	3.62	0.07	0.11
TLC4_ISKK@37	24	Jan '13	2.62E+09	1.28E+06	5.27E+06	2.74E+03	0.002011	1.83E-07	0.002010	1.83E-07	3.55	0.09	0.11
TLC4_ISKK@38	24	Jan '13	2.64E+09	3.51E+05	5.31E+06	9.22E+02	0.002011	1.61E-07	0.002009	1.61E-07	3.49	0.08	0.11
TLC4_ISKK@39	24	Jan '13	2.62E+09	5.51E+05	5.27E+06	1.20E+03	0.002011	1.47E-07	0.002009	1.47E-07	3.49	0.07	0.11
TLC4_ISKK@4	24	Jan '13	2.43E+09	3.41E+05	4.89E+06	6.85E+02	0.002010	1.47E-07	0.002009	1.47E-07	3.48	0.07	0.11
TLC4_ISKK@5	24	Jan '13	2.44E+09	9.42E+05	4.90E+06	2.03E+03	0.002010	1.41E-07	0.002010	1.41E-07	3.58	0.07	0.11
TLC4_ISKK@6	24	Jan '13	2.53E+09	1.21E+06	5.08E+06	2.38E+03	0.002010	8.19E-08	0.002010	8.19E-08	3.66	0.04	0.11
TLC4_ISKK@7	24	Jan '13	2.55E+09	7.44E+05	5.12E+06	1.43E+03	0.002010	1.06E-07	0.002010	1.06E-07	3.56	0.05	0.11
TLC4_ISKK@8	24	Jan '13	2.55E+09	4.50E+05	5.12E+06	9.43E+02	0.002010	1.25E-07	0.002010	1.25E-07	3.53	0.06	0.11
TLC4_ISKK@9	24	Jan '13	2.52E+09	3.03E+05	5.06E+06	7.14E+02	0.002010	1.17E-07	0.002010	1.17E-07	3.68	0.06	0.11
TLC6_ISKK@1	24	Jan '13	2.87E+09	9.21E+05	5.77E+06	2.00E+03	0.002008	1.04E-07	0.002008	1.04E-07	2.71	0.05	0.26
TLC6_ISKK@10	24	Jan '13	2.87E+09	1.86E+06	5.76E+06	3.76E+03	0.002010	1.17E-07	0.002009	1.17E-07	3.41	0.06	0.26
TLC6_ISKK@11	24	Jan '13	2.88E+09	1.19E+06	5.78E+06	2.25E+03	0.002009	1.34E-07	0.002009	1.34E-07	3.01	0.07	0.26
TLC6_ISKK@12	24	Jan '13	2.88E+09	9.38E+05	5.78E+06	2.00E+03	0.002010	9.54E-08	0.002009	9.54E-08	3.34	0.05	0.26
TLC6_ISKK@13	24	Jan '13	2.87E+09	1.33E+06	5.77E+06	2.95E+03	0.002009	1.90E-07	0.002009	1.89E-07	3.02	0.09	0.26
TLC6_ISKK@14	24	Jan '13	2.88E+09	1.04E+06	5.80E+06	2.25E+03	0.002009	1.16E-07	0.002009	1.16E-07	3.13	0.06	0.26
TLC6_ISKK@15	24	Jan '13	2.87E+09	8.13E+05	5.77E+06	1.70E+03	0.002010	9.41E-08	0.002010	9.41E-08	3.59	0.05	0.26
TLC6_ISKK@16	24	Jan '13	2.88E+09	1.37E+06	5.79E+06	2.50E+03	0.002009	1.54E-07	0.002009	1.54E-07	3.12	0.08	0.26
TLC6_ISKK@17	24	Jan '13	2.92E+09	2.01E+06	5.87E+06	4.01E+03	0.002009	1.18E-07	0.002009	1.17E-07	3.04	0.06	0.26
TLC6_ISKK@18	24	Jan '13	2.93E+09	2.02E+06	5.89E+06	4.11E+03	0.002009	1.32E-07	0.002008	1.32E-07	2.91	0.07	0.26
TLC6_ISKK@19	24	Jan '13	2.95E+09	1.38E+06	5.93E+06	2.84E+03	0.002009	9.12E-08	0.002009	9.12E-08	3.00	0.05	0.26

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
TLC6_ISKK@2	24	Jan '13	2.87E+09	1.24E+06	5.76E+06	2.75E+03	0.002009	1.27E-07	0.002009	1.27E-07	3.28	0.06	0.26
TLC6_ISKK@3	24	Jan '13	2.77E+09	4.89E+06	5.57E+06	9.63E+03	0.002008	1.52E-07	0.002008	1.52E-07	2.65	0.08	0.26
TLC6_ISKK@4	24	Jan '13	2.87E+09	5.73E+05	5.77E+06	1.15E+03	0.002009	1.31E-07	0.002009	1.31E-07	3.25	0.07	0.26
TLC6_ISKK@5	24	Jan '13	2.85E+09	6.77E+05	5.72E+06	1.38E+03	0.002009	1.15E-07	0.002009	1.15E-07	3.38	0.06	0.26
TLC6_ISKK@6	24	Jan '13	2.88E+09	1.60E+06	5.78E+06	3.18E+03	0.002009	1.11E-07	0.002009	1.11E-07	3.33	0.06	0.26
TLC6_ISKK@7	24	Jan '13	2.71E+09	1.81E+06	5.44E+06	3.79E+03	0.002009	1.11E-07	0.002009	1.11E-07	3.04	0.06	0.26
TLC6_ISKK@8	24	Jan '13	2.75E+09	2.18E+06	5.52E+06	4.57E+03	0.002009	1.28E-07	0.002009	1.28E-07	3.12	0.06	0.26
TLC6_ISKK@9	24	Jan '13	2.76E+09	3.28E+06	5.53E+06	6.62E+03	0.002008	1.49E-07	0.002008	1.49E-07	2.81	0.07	0.26
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TLC2_ISS@1	25	Jan '13	2.75E+09	1.35E+06	5.54E+06	2.58E+03	0.002012	1.32E-07	0.002012	1.32E-07	4.63	0.07	0.36
TLC2_ISS@10	25	Jan '13	3.19E+09	5.19E+06	6.41E+06	1.07E+04	0.002008	1.58E-07	0.002008	1.58E-07	2.73	0.08	0.36
TLC2_ISS@11	25	Jan '13	3.18E+09	4.38E+06	6.38E+06	8.80E+03	0.002010	1.02E-07	0.002010	1.02E-07	3.50	0.05	0.36
TLC2_ISS@13	25	Jan '13	3.25E+09	4.15E+06	6.53E+06	8.50E+03	0.002010	1.10E-07	0.002009	1.10E-07	3.36	0.05	0.36
TLC2_ISS@14	25	Jan '13	3.28E+09	3.88E+06	6.59E+06	7.79E+03	0.002009	1.14E-07	0.002009	1.14E-07	3.34	0.06	0.36
TLC2_ISS@15	25	Jan '13	3.34E+09	2.49E+06	6.71E+06	5.20E+03	0.002009	1.13E-07	0.002009	1.12E-07	3.11	0.06	0.36
TLC2_ISS@16	25	Jan '13	3.34E+09	1.92E+06	6.71E+06	4.00E+03	0.002010	7.62E-08	0.002009	7.62E-08	3.30	0.04	0.36
TLC2_ISS@17	25	Jan '13	3.28E+09	1.10E+07	6.59E+06	2.20E+04	0.002010	9.80E-08	0.002009	9.80E-08	3.48	0.05	0.36
TLC2_ISS@18	25	Jan '13	3.16E+09	1.97E+06	6.34E+06	4.04E+03	0.002009	1.01E-07	0.002009	1.01E-07	3.26	0.05	0.36
TLC2_ISS@19	25	Jan '13	3.24E+09	1.99E+06	6.51E+06	4.01E+03	0.002010	8.82E-08	0.002009	8.82E-08	3.37	0.04	0.36
TLC2_ISS@2	25	Jan '13	2.98E+09	1.51E+06	5.99E+06	3.19E+03	0.002009	1.01E-07	0.002009	1.01E-07	3.05	0.05	0.36
TLC2_ISS@20	25	Jan '13	3.29E+09	3.67E+06	6.60E+06	7.41E+03	0.002010	1.03E-07	0.002010	1.03E-07	3.65	0.05	0.36
TLC2_ISS@21	25	Jan '13	3.34E+09	3.57E+06	6.71E+06	7.22E+03	0.002009	7.70E-08	0.002009	7.70E-08	3.22	0.04	0.36
TLC2_ISS@22	25	Jan '13	3.33E+09	3.83E+06	6.70E+06	7.78E+03	0.002010	1.19E-07	0.002009	1.19E-07	3.49	0.06	0.36
TLC2_ISS@23	25	Jan '13	3.36E+09	5.65E+06	6.74E+06	1.14E+04	0.002010	5.47E-08	0.002009	5.46E-08	3.43	0.03	0.36
TLC2_ISS@24	25	Jan '13	3.41E+09	3.35E+06	6.86E+06	7.07E+03	0.002010	1.25E-07	0.002009	1.24E-07	3.48	0.06	0.36
TLC2_ISS@25	25	Jan '13	3.54E+09	5.35E+06	7.11E+06	1.09E+04	0.002010	1.00E-07	0.002009	1.00E-07	3.49	0.05	0.36
TLC2_ISS@26	25	Jan '13	3.38E+09	2.83E+06	6.80E+06	5.94E+03	0.002010	1.51E-07	0.002009	1.51E-07	3.44	0.08	0.36
TLC2_ISS@27	25	Jan '13	3.40E+09	7.63E+06	6.83E+06	1.57E+04	0.002009	1.39E-07	0.002009	1.38E-07	3.02	0.07	0.36
TLC2_ISS@28	25	Jan '13	3.43E+09	1.02E+06	6.89E+06	1.98E+03	0.002010	1.30E-07	0.002009	1.30E-07	3.28	0.06	0.36
TLC2_ISS@29	25	Jan '13	3.42E+09	1.98E+06	6.87E+06	4.14E+03	0.002010	1.21E-07	0.002009	1.21E-07	3.44	0.06	0.36
TLC2_ISS@3	25	Jan '13	2.97E+09	2.40E+06	5.97E+06	4.99E+03	0.002008	1.03E-07	0.002008	1.03E-07	2.96	0.05	0.36
TLC2_ISS@30	25	Jan '13	3.21E+09	5.71E+06	6.44E+06	1.15E+04	0.002009	1.08E-07	0.002008	1.08E-07	2.77	0.05	0.36

Sample Name	Map #	Date	$^{16}O/^{16}O$	$^{16}O/^{16}O$ Error (1σ)	$^{18}O/^{18}O$	$^{18}O/^{18}O$ Error (1σ)	$^{18}O/^{16}O$	$^{18}O/^{16}O$ Error (1σ)	Corrected $^{18}O/^{16}O$	Corrected Error	Corrected $\delta^{18}O$	$\delta^{18}O$ Error (Internal, 1σ)	$\delta^{18}O$ Error (External, 1σ)
TLC2_ISS@31	25	Jan '13	3.41E+09	3.50E+06	6.85E+06	7.25E+03	0.002010	1.34E-07	0.002008	1.34E-07	2.90	0.07	0.36
TLC2_ISS@32	25	Jan '13	3.42E+09	1.79E+06	6.87E+06	3.68E+03	0.002010	9.88E-08	0.002009	9.87E-08	3.01	0.05	0.36
TLC2_ISS@34	25	Jan '13	3.39E+09	3.63E+06	6.80E+06	7.33E+03	0.002010	1.34E-07	0.002009	1.33E-07	3.08	0.07	0.36
TLC2_ISS@35	25	Jan '13	2.06E+09	9.69E+06	4.13E+06	1.88E+04	0.002005	3.80E-07	0.002004	3.80E-07	0.71	0.19	0.36
TLC2_ISS@36	25	Jan '13	3.52E+09	4.77E+06	7.07E+06	9.88E+03	0.002009	1.28E-07	0.002007	1.28E-07	2.33	0.06	0.36
TLC2_ISS@37	25	Jan '13	3.48E+09	3.29E+06	6.99E+06	6.67E+03	0.002010	1.26E-07	0.002009	1.25E-07	3.23	0.06	0.36
TLC2_ISS@38	25	Jan '13	3.46E+09	5.11E+06	6.95E+06	1.03E+04	0.002011	7.13E-08	0.002009	7.13E-08	3.28	0.04	0.36
TLC2_ISS@39	25	Jan '13	3.52E+09	4.39E+06	7.08E+06	8.93E+03	0.002010	1.40E-07	0.002009	1.40E-07	3.02	0.07	0.36
TLC2_ISS@4	25	Jan '13	2.96E+09	2.83E+06	5.95E+06	5.81E+03	0.002009	1.65E-07	0.002009	1.65E-07	3.08	0.08	0.36
TLC2_ISS@40	25	Jan '13	3.20E+09	4.96E+06	6.43E+06	9.86E+03	0.002010	1.07E-07	0.002009	1.07E-07	3.34	0.05	0.36
TLC2_ISS@41	25	Jan '13	3.13E+09	1.33E+06	6.30E+06	2.55E+03	0.002010	1.29E-07	0.002009	1.29E-07	3.13	0.06	0.36
TLC2_ISS@5	25	Jan '13	2.95E+09	1.58E+06	5.93E+06	3.33E+03	0.002009	1.08E-07	0.002009	1.08E-07	3.37	0.05	0.36
TLC2_ISS@7	25	Jan '13	2.95E+09	1.89E+06	5.92E+06	4.03E+03	0.002009	1.73E-07	0.002009	1.73E-07	3.17	0.09	0.36
TLC2_ISS@9	25	Jan '13	2.93E+09	3.40E+06	5.89E+06	6.74E+03	0.002008	1.01E-07	0.002008	1.01E-07	2.80	0.05	0.36
TLC3_ISS@1	25	Jan '13	3.28E+09	2.54E+06	6.60E+06	5.07E+03	0.002012	9.75E-08	0.002012	9.75E-08	4.53	0.05	0.37
TLC3_ISS@10	25	Jan '13	3.57E+09	1.94E+06	7.18E+06	3.94E+03	0.002009	5.79E-08	0.002009	5.79E-08	3.03	0.03	0.37
TLC3_ISS@11	25	Jan '13	3.62E+09	2.31E+06	7.27E+06	4.79E+03	0.002010	9.22E-08	0.002009	9.22E-08	3.07	0.05	0.37
TLC3_ISS@12	25	Jan '13	3.63E+09	2.61E+06	7.30E+06	5.26E+03	0.002010	1.02E-07	0.002009	1.02E-07	3.21	0.05	0.37
TLC3_ISS@13	25	Jan '13	3.66E+09	3.20E+06	7.35E+06	6.55E+03	0.002010	8.44E-08	0.002009	8.43E-08	3.07	0.04	0.37
TLC3_ISS@14	25	Jan '13	3.63E+09	1.15E+06	7.30E+06	2.26E+03	0.002010	8.60E-08	0.002009	8.59E-08	3.05	0.04	0.37
TLC3_ISS@2	25	Jan '13	3.62E+09	1.19E+06	7.27E+06	2.47E+03	0.002008	1.15E-07	0.002008	1.15E-07	2.81	0.06	0.37
TLC3_ISS@3	25	Jan '13	3.59E+09	1.46E+06	7.22E+06	2.98E+03	0.002009	5.62E-08	0.002009	5.62E-08	3.03	0.03	0.37
TLC3_ISS@4	25	Jan '13	3.56E+09	3.00E+06	7.15E+06	6.17E+03	0.002009	1.07E-07	0.002009	1.07E-07	3.15	0.05	0.37
TLC3_ISS@6	25	Jan '13	3.55E+09	1.94E+06	7.13E+06	3.91E+03	0.002009	1.06E-07	0.002009	1.06E-07	3.00	0.05	0.37
TLC3_ISS@7	25	Jan '13	3.56E+09	1.87E+06	7.16E+06	3.92E+03	0.002009	1.28E-07	0.002008	1.28E-07	2.92	0.06	0.37
TLC3_ISS@8	25	Jan '13	3.24E+09	2.06E+06	6.51E+06	4.12E+03	0.002009	1.09E-07	0.002008	1.09E-07	2.66	0.05	0.37
TLC3_ISS@9	25	Jan '13	3.57E+09	1.52E+06	7.16E+06	3.23E+03	0.002009	1.14E-07	0.002009	1.14E-07	3.02	0.06	0.37
Hvítserkur : IEHv-1c 28W 557692, 7257066													
TLC6_IEHv@1		Jan '13	2.76E+09	7.63E+05	5.55E+06	1.59E+03	0.002009	1.26E-07	0.002010	1.26E-07	3.56	0.06	0.26
TLC6_IEHv@2		Jan '13	2.58E+09	1.45E+06	5.20E+06	3.04E+03	0.002013	1.21E-07	0.002013	1.21E-07	5.45	0.06	0.26
Hvítserkur : Erla 28W 558485, 7259506													
TLC2_ERLA139		Jan '13	2.82E+09	1.33E+06	5.71E+06	2.51E+03	0.002024	1.29E-07	0.002023	1.29E-07	10.27	0.06	0.36

Appendix A.2: Oxygen Isotopes in Bulk Phases

University of Oregon Laser Fluorination Mass Spectrometry Analyses

System	Sample	Analysis Date	Phase	yield (μmols/mg)	δ $^{13}C/^{12}C$ Mean	δ $^{18}O/^{16}O$ Mean	corrected δ^{18}O, SMOW	Note
Króksfjördur	IIKK	Oct. '11.	Pyroxene	13.76	-23.94	3.44	**3.40**	
Króksfjördur	IIKK	Oct. '11.	Pyroxene	14.65	-23.96	3.33	**3.29**	
Króksfjördur	IIKK	Oct. '11.	Amphibole	14.23	-23.92	3.41	**3.37**	
Króksfjördur	IIKK	Oct. '11.	Amphibole	14.35	-23.92	3.49	**3.45**	
Króksfjördur	IIKK	Oct. '11.	Plagioclase	14.1	23.92	4.18	**4.04**	
Viđidalsfjall	IIM	Oct. '11.	Quartz	13.52	-23.92	5.44	**5.40**	
Viđidalsfjall	IIM	Oct. '11.	Amphibole	9.10	-23.97	2.52	**2.48**	
Viđidalsfjall	IIM	Oct. '11.	Plagioclase	9.1	23.98	-0.29	**-0.43**	
Öræfajökull	IOHn	Oct. '11.	Pyroxene	8.60	-23.95	4.30	**4.26**	
Öræfajökull	IOHn	Oct. '11.	Pyroxene	11.82	-23.95	4.09	**4.05**	low yield
Öræfajökull	IOHn	2010	Pyroxene				3.76	
Öræfajökull	IOHn	Oct. '11.	Olivine	9.48	-23.93	3.54	**3.50**	
Öræfajökull	IOHn	Oct. '11.	Olivine	9.46	-23.95	3.48	**3.44**	
Öræfajökull	IOHn	Oct. '11.	Plagioclase	15.0	23.95	5.28	**5.14**	
Öræfajökull	IOHn	2010	Plagioclase				5.17	
Krafla	IEKG	Oct. '11.	Plagioclase	6.6	23.97	3.011	**2.87**	low yield
Krafla	IEKG	Oct. '11.	Glass	8.1	23.96	2.93	**2.79**	low yield
Hekla	IHB	2010	Plagioclase				5.08	
Hekla	IHB	2010	Pyroxene				4.14	
Austurhorn	IANS7	Oct. '11.	Quartz	16.29	-23.98	5.83	**5.79**	
Austurhorn	IANS7	Oct. '11.	Pyroxene	12.59	-23.93	3.39	**3.35**	
Austurhorn	IANS2	Oct. '11.	Amphibole	12.07	-23.95	3.73	**3.69**	
Austurhorn	IANS2	Oct. '11.	Quartz	15.03	-23.97	6.07	**6.03**	

System	Sample	Analysis Date	Phase	yield (µmols/mg)	δ $^{13}C/^{12}C$ Mean	δ $^{18}O/^{16}O$ Mean	corrected δ^{18}O, SMOW	Note
Torfajökull	ITHn	Oct. '11.	Olivine	14.05	-23.96	4.55	**4.51**	
Torfajökull	ITHn	Oct. '11.	Olivine	13.35	-23.95	4.53	**4.49**	
Torfajökull	ITHn	Oct. '11.	Plagioclase	11.9	23.97	4.34	**4.20**	
Torfajökull	ITHn	Oct. '11.	Amphibole	13.66	-23.90	4.51	**4.47**	
Torfajökull	ITHn	Oct. '11.	Pyroxene	12.80	-23.96	3.19	**3.15**	
Torfajökull	ITHn	Oct. '11.	Pyroxene	12.94	-23.96	2.84	**2.80**	
Torfajökull	ITHn	Oct. '11.	Glass	8.2	23.94	4.33	**4.19**	low yield
Torfajökull	ITN	Oct. '11.	Glass	11.3	23.97	4.01	**3.87**	
Torfajökull	ITN	2010	Glass				4.02	
Torfajökull	ITN	2010	Glass				3.96	
Torfajökull	ITN	Oct. '11.	Plagioclase	8.2	23.93	4.23	**4.09**	low yield
Torfajökull	ITN	Oct. '11.	Pyroxene	12.97	-23.92	2.88	**2.84**	
Torfajökull	ITN	Oct. '11.	Pyroxene	12.78	-23.97	3.21	**3.17**	
Torfajökull	ITN	Oct. '11.	Olivine	10.03	-23.92	3.36	**3.32**	
Torfajökull	ITN	Oct. '11.	Olivine	11.63	-23.92	3.58	**3.54**	

APPENDIX B: Zircon Trace Element Compositions

Appendix B.1: Zircon Trace Element Concentrations (Atomic Number < 22)

Stanford-USGS SHRIMP-RG *in situ* Measurements (ppm)

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Askja	IC45.	JW444.	IC45-7.1E	Aug. '09.	0.02	0.15	0.1	34.57	7.01	27.25	260.36	1.35	6.03	4.3
Askja	IC45.	JW444.	IC45-4.2I	Aug. '09.	0.02	0.06	0.12	23.96	6.41	29.02	176.72	1.52	5.41	4.6
Askja	IC45.	JW444.	IC45-8.1I	Aug. '09.	0.02	0.06	0.12	25.16	6.69	23.13	195.03	1.4	5.42	3.64
Askja	IC45.	JW444.	IC45-1.2E	Aug. '09.	0.01	0.06	0.12	42.25	5.1	22.05	172.89	1.12	3.41	5.21
Askja	IC45.	JW444.	IC45-3.1C	Aug. '09.	0.02	0.03	0.08	36.99	6.52	23.37	160.3	1.59	4.72	4.15
Askja	IC45.	JW444.	IC45-9.1I	Aug. '09.	0.02	0.06	0.11	34.51	7.6	26.65	198.95	1.33	6.33	7.95
Askja	IC45.	JW444.	IC45-6.2I	Aug. '09.	0.01	0.06	0.1	21.04	4.32	16.33	156.09	0.84	2.91	6.96
Askja	IC45.	JW444.	IC45-5.2I	Aug. '09.	0.02	0.15	0.11	22.08	6.84	28.31	307.96	1.36	6.01	9.55
Askja	IC45.	JW444.	IC45-4.1R	Aug. '09.	0.03	0.35	0.06	43.76	8.53	33.14	306.29	2	7.67	4.58
Askja	IC45.	JW444.	IC45-1.1I	Aug. '09.	0.05	0.19	0.17	88.19	4.71	21.54	278.42	0.95	3.59	8.48
Askja	IC45.	JW444.	IC45-4.3R	Aug. '09.	0.03	0.04	0.07	39.21	7.09	23.54	240.89	1.29	5.18	4.48
Askja	IC45.	JW444.	IC45-3.2R	Aug. '09.	0.03	0.04	0.06	22.15	6.5	24.31	311.63	1.28	5.16	4.93
Askja	IC45.	JW444.	IC45-2.2R	Aug. '09.	0.01	0	0.12	17.09	7.38	26.37	153.32	1.71	5.52	8.97
Askja	IC45.	JW444.	IC45-5.1I	Aug. '09.	0.02	0.07	0.17	39.38	7.18	27	176.22	1.52	5.2	10.05
Askja	IC45.	JW444.	IC45-2.1I	Aug. '09.	0.02	0.07	0.09	38.2	5.77	21.42	192.54	1.44	5.16	13.61
Askja	IC45.	JW444.	IC45-7.2I	Aug. '09.	0.02	0.1	0.18	61.56	6.01	23.55	174.07	1.25	3.9	13.27
Austurhorn[23]	Mafic AIC-G	JW510.	IA-G1-25.1	Feb. '11.	0.03	0.03	0.12	12.91	13.23	7.63	317.57	3.49	5.84	23.22
Austurhorn	Mafic AIC-G	JW510.	IA-G1-24.2_D	Feb. '11.	0.11	0.06	0.14	12.21	7.16	1.63	897.45	1.52	2.73	55.95
Austurhorn	Mafic AIC-G	JW510.	IA-G1-6.1_C	Feb. '11.	0	0	0.05	7.18	6.81	9.92	249.73	1.6	5.21	23.28
Austurhorn	Mafic AIC-G	JW510.	IA-G1-22.2_SZ	Feb. '11.	0.14	0.21	0.13	23.01	8.49	3.01	919.21	1.81	3.6	57.75
Austurhorn	Mafic AIC-G	JW510.	IA-G1-24.1_B	Feb. '11.	0.01	0.01	0.09	10.04	7.85	3.39	284.63	1.55	2.51	18.73
Austurhorn	Mafic AIC-G	JW510.	IA-G1-6.2_I	Feb. '11.	0.01	0	0.08	7.63	6.96	3	209.13	1.81	3.05	19.02
Austurhorn	Mafic AIC-G	JW510.	IA-G1-15.1	Feb. '11.	0	0	0.03	3.68	1.47	0.88	250.19	0.47	0.74	18.57
Austurhorn	Mafic AIC-G	JW510.	IA-G1-2.1	Feb. '11.	0	0	0.05	8.06	7.15	3.99	302.69	1.85	6	18.29
Austurhorn	Mafic AIC-G	JW510.	IA-G1-20.1	Feb. '11.	0	0	0.11	8.31	8.37	3.18	242.79	1.84	2.69	20.22

[23] All Austurhorn data collected and shared by Abraham Padilla

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Austurhorn	Mafic AIC-G	JW510.	IA-G1-10.1	Feb. '11.	0.03	0	0.07	12.09	7.32	2.19	328.17	2.13	3.89	19.15
Austurhorn	Mafic AIC-G	JW510.	IA-G1-27.1_B	Feb. '11.	0.02	0.04	0.15	12.56	11.58	5.68	288.56	2.1	3.97	23.96
Austurhorn	Mafic AIC-G	JW510.	IA-G1-7.1	Feb. '11.	0.01	0	0.11	10.51	6.32	2.05	300.65	1.9	4.28	20.1
Austurhorn	Mafic AIC-G	JW510.	IA-G1-1.1	Feb. '11.	0.01	0	0.03	7.37	7.5	5.06	297.66	1.72	3.77	22.7
Austurhorn	Mafic AIC-G	JW510.	IA-G1-22.1_SZ	Feb. '11.	0.16	0.04	0.09	7.7	5.57	6.98	891.07	1.31	1.8	77.94
Austurhorn	Mafic AIC-G	JW510.	IA-G1-13.1	Feb. '11.	0	0.01	0.11	7.71	6.29	2.22	229.18	1.77	3.73	20.48
Austurhorn	Mafic AIC-G	JW510.	IA-G1-3.1	Feb. '11.	0	0	0.11	10.6	8.25	2.52	321.36	1.79	2.5	36.99
Austurhorn	Mafic AIC-G	JW510.	IA-G1-21.1	Feb. '11.	0.02	0	0.13	9.96	10.31	3.88	283.74	2.45	2.37	20.71
Austurhorn	Mafic AIC-G	JW510.	IA-G1-16.1	Feb. '11.	0	0.01	0	7.78	7.27	21.74	217.35	1.75	2.66	25.44
Austurhorn	Mafic AIC-G	JW510.	IA-G1-8.1	Feb. '11.	0.01	0.01	0.09	9.8	8.66	3.54	314.84	2.17	11.87	21.06
Austurhorn	Mafic AIC-G	JW510.	IA-G1-11.1	Feb. '11.	0	0.05	0.07	10.21	5.66	4.88	390.14	1.66	3.55	20.63
Austurhorn	Mafic AIC-G	JW510.	IA-G1-19.1_C	Feb. '11.	0	0	0.07	9.36	11.34	7.18	349.53	4	2.93	19.64
Austurhorn	Mafic AIC-G	JW510.	IA-G1-9.1	Feb. '11.	0	0	0.06	9.75	5.92	2.34	298.07	1.45	2.78	28.51
Austurhorn	Mafic AIC-G	JW510.	IA-G1-5.1	Feb. '11.	0.02	0	0.08	8.53	8.47	4.44	270.12	1.94	3.69	23.94
Austurhorn	Mafic AIC-G	JW510.	IA-G1-12.1	Feb. '11.	0	0	0.05	11.73	6.6	2.86	693.2	1.93	4.91	28.33
Austurhorn	Mafic AIC-G	JW510.	IA-G1-18.1_C	Feb. '11.	0	0	0.02	21.46	2.62	1.02	680.31	0.71	1.32	19.02
Austurhorn	Mafic AIC-G	JW510.	IA-G1-4.1	Feb. '11.	0.04	0.01	0.15	25.77	7.24	2.36	513.57	2.11	3.8	17.63
Austurhorn	Mafic AIC-G	JW510.	IA-G1-23.1_B	Feb. '11.	0.06	0.02	0.17	16	5.93	3.35	608.41	1.57	3.06	20.73
Austurhorn	Mafic AIC-G	JW510.	IA-G1-17.1	Feb. '11.	0.01	0	0.1	11.77	8.62	2.28	746.58	1.63	3.03	31.42
Austurhorn	Mafic AIC-G	JW510.	IA-G1-14.1_C	Feb. '11.	0.01	0.01	0.08	9.06	7.06	5.51	601.93	2.16	3.69	44.32
Austurhorn	Mafic AIC-G	JW510.	IA-G1-26.1	Feb. '11.	0.03	0	0.16	10.11	10.23	1.53	676.61	2.23	3.46	53.15
Austurhorn	Silicic AIC-NS	jw498.	IANS2-11.1T_I	Dec. '10.	0.01	0.4	0.04	52.16	0.9	9.09	297.09	0.51	1.95	1.57
Austurhorn	Silicic AIC-NS	jw498.	IANS2-19.2T_C	Dec. '10.	0.02	2.95	0.09	103.36	3.67	20.87	490.95	3.99	3.89	1.68
Austurhorn	Silicic AIC-NS	jw498.	IANS2-18.1T_C	Dec. '10.	0.01	1.42	0.09	56.01	1.86	12.96	385.54	0.72	2.58	1.93
Austurhorn	Silicic AIC-NS	jw498.	IANS2-10.2T_I	Dec. '10.	0.06	1.84	0.1	28.04	2.09	16.31	917.69	1.13	2.69	9.45
Austurhorn	Silicic AIC-NS	jw498.	IANS2-5.2T_Rb	Dec. '10.	0.01	0.66	0.06	31.73	2.57	16.9	332.78	1	4.72	2.68
Austurhorn	Silicic AIC-NS	jw498.	IANS2-14.2T_C	Dec. '10.	0.04	0.74	0.2	102.12	3.47	21.05	607.26	1.12	5.53	2.33
Austurhorn	Silicic AIC-NS	jw498.	IANS2-4.2T_I	Dec. '10.	0	0.1	0.08	47.6	2.32	14.35	266.02	0.88	3.56	1.95
Austurhorn	Silicic AIC-NS	jw498.	IANS2-24.1T_C	Dec. '10.	0.01	0.65	0.11	53.64	5.24	26.75	283.27	9.52	3.6	1.84
Austurhorn	Silicic AIC-NS	jw498.	IANS2-18.2T_E	Dec. '10.	0.01	0.15	0.05	35.08	1.7	14.69	489.42	0.73	3.09	2.67
Austurhorn	Silicic AIC-NS	jw498.	IANS2-15.2T_E	Dec. '10.	0.01	0.07	0.16	22.75	2.64	18.13	354.5	0.97	3.81	2.77

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Austurhorn	Silicic AIC-NS	jw498.	IANS2-19.1T_E	Dec. '10.	0.02	0.04	0.12	38.53	1.91	16.72	419.06	0.72	2.77	2.8
Austurhorn	Silicic AIC-NS	jw498.	IANS2-16.1T_E	Dec. '10.	0.01	0.03	0.05	16.35	3.29	13.52	240.19	0.9	4.92	2.1
Austurhorn	Silicic AIC-NS	jw498.	IANS2-12.2T_I	Dec. '10.	0.01	0.47	0.06	66.58	1.94	14.79	386.97	0.99	3.97	1.91
Austurhorn	Silicic AIC-NS	jw498.	IANS2-17.1T_E	Dec. '10.	0	0.11	0.14	18.81	1.89	15.21	362.87	0.76	3.07	1.99
Austurhorn	Silicic AIC-NS	jw498.	IANS2-4.3T_E	Dec. '10.	0.02	0.04	0.08	31.35	2.79	17.66	482.26	0.93	3.72	2.26
Austurhorn	Silicic AIC-NS	jw498.	IANS2-20.1T_I	Dec. '10.	0.02	0.21	0.04	49.58	4.05	27.07	359.74	14.98	3.64	1.97
Austurhorn	Silicic AIC-NS	jw498.	IANS2-12.12T_I	Dec. '10.	0.02	0.32	0.1	44.61	2.6	13.58	351.37	1.08	4.83	3.32
Austurhorn	Silicic AIC-NS	jw498.	IANS2-17.2T_C	Dec. '10.	0.03	40.49	0.48	189.1	2.15	16.32	1,293.14	0.87	4.13	13.81
Austurhorn	Silicic AIC-NS	jw498.	IANS2-3.1T_Iz	Dec. '10.	0.02	4.14	0.12	38.16	2.33	13.98	1,660.58	0.85	4	17.5
Austurhorn	Silicic AIC-NS	jw498.	IANS2-14.1T_E	Dec. '10.	0.07	0.18	0.38	49.45	3.91	59.73	645.96	3.56	12.74	4.05
Austurhorn	Silicic AIC-NS	jw498.	IANS2-23.1T_E	Dec. '10.	0	0.13	0.05	17.58	1.85	13.81	289.93	0.71	3.05	2.52
Austurhorn	Silicic AIC-NS	jw498.	IANS2-4.1T_I	Dec. '10.	0	0.07	0.06	23.73	1.71	12.28	272.09	0.76	2.92	1.67
Austurhorn	Silicic AIC-NS	jw498.	IANS2-22.1T_I	Dec. '10.	0	0.03	0.04	30.29	2	15.66	151.43	0.99	4.3	1.92
Austurhorn	Silicic AIC-NS	jw498.	IANS2-21.2T_I	Dec. '10.	0	1.84	0.04	50.36	2.35	15.74	425.29	18.02	4.32	2.32
Austurhorn	Silicic AIC-NS	jw498.	IANS2-1.1T_I	Dec. '10.	0	0.02	0.03	15.39	1.66	15.2	191.97	0.66	3.05	7.88
Austurhorn	Silicic AIC-NS	jw498.	IANS2-10.1T_Ed	Dec. '10.	0.09	0.74	0.12	23.17	2.51	14.86	888.56	1.38	3.76	17.57
Austurhorn	Silicic AIC-NS	jw498.	IANS2-21.1T_E	Dec. '10.	0.03	0.05	0.02	51.52	8.32	16.84	628.32	0.97	276.76	3.38
Austurhorn	Silicic AIC-NS	jw498.	IANS2-16.2T_C	Dec. '10.	0.01	0.47	0.13	66.64	17.05	52.83	290.45	27.85	7.85	0.91
Austurhorn	Silicic AIC-NS	jw498.	IANS2-15.1T_I	Dec. '10.	0.01	1.57	0.06	44.17	2.08	17.52	441.05	0.81	2.95	2.52
Austurhorn	Silicic AIC-NS	jw498.	IANS2-6.1T_Ez	Dec. '10.	0.05	0.67	0.08	54.42	2.03	15.25	984.58	0.74	2.95	9.14
Austurhorn	Silicic AIC-NS	jw498.	IANS2-24.2T_E	Dec. '10.	0.04	1.04	0.08	48.75	2.05	17.24	1,022.29	0.85	3.47	11.28
Austurhorn	Silicic AIC-NS	jw498.	IANS2-13.1T_C	Dec. '10.	0	2.96	0.16	126.96	6.3	26.62	712.27	3.78	4.43	4.53
Austurhorn	Silicic AIC-NS	jw498.	IANS2-9.1T_E	Dec. '10.	0.01	0.19	0.11	21.24	2.06	10.73	1,262.81	0.85	3.92	21.28
Austurhorn	Silicic AIC-NS	jw498.	IANS2-23.2T_C	Dec. '10.	0.09	31.78	0.07	406.99	4.35	14.59	1,451.75	1.43	414.21	8.08
Austurhorn	Silicic AIC-NS	jw498.	IANS2-5.1T_Cd	Dec. '10.	0.06	26.31	0.1	87	2.19	17.77	1,275.92	0.76	4.46	62
Austurhorn	Silicic AIC-NS	jw498.	IANS2-7.1T_I	Dec. '10.	0	0.02	0.03	15.71	1.89	15.32	290.36	0.68	2.4	9.18
Austurhorn	Silicic AIC-NS	jw498.	IANS2-2.1T_I	Dec. '10.	0	0.21	0.08	18.37	2.48	14.91	389.3	0.75	4.57	13.12
Austurhorn	Silicic AIC-NS	jw498.	IANS6-12.1T_I	Dec. '10.	0	0.02	0.05	33.47	2.41	15.47	205.83	1.11	5.78	1.18
Austurhorn	Silicic AIC-NS	jw498.	IANS6-18.2T_C	Dec. '10.	0	0.03	0.06	27.61	1.97	16.9	213.31	0.96	3.77	1.82
Austurhorn	Silicic AIC-NS	jw498.	IANS6-7.1T_I	Dec. '10.	0	0.02	0.04	16.75	2.06	14.19	210.66	1.05	4	2.23
Austurhorn	Silicic AIC-NS	jw498.	IANS6-22.1T_C	Dec. '10.	0	0.05	0.07	21.83	3.55	19.44	165.13	3.22	3.54	2.05

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Austurhorn	Silicic AIC-NS	jw498.	IANS6-21.1T_I	Dec. '10.	0	0	0.03	8.83	2.71	15.28	218.6	1.18	4.37	2.39
Austurhorn	Silicic AIC-NS	jw498.	IANS6-24.3T_I	Dec. '10.	0	0.02	0.01	13.93	1.68	13.58	259.43	0.74	2.96	2.46
Austurhorn	Silicic AIC-NS	jw498.	IANS6-1.1T_C	Dec. '10.	0.01	0.05	0.08	28.69	1.65	15.96	417.12	0.7	3.27	3.18
Austurhorn	Silicic AIC-NS	jw498.	IANS6-6.1T_Cz	Dec. '10.	0.01	0.14	0.07	36.64	1.77	10.16	440.77	0.78	3.62	2.12
Austurhorn	Silicic AIC-NS	jw498.	IANS6-3.1T_Id	Dec. '10.	0.05	0.4	0.26	72.95	2.16	15.25	2,498.41	1.09	4.31	60.78
Austurhorn	Silicic AIC-NS	jw498.	IANS6-26.1T_I	Dec. '10.	0.03	1.48	0.01	62.44	1.87	13.16	1,692.65	0.97	4	47.76
Austurhorn	Silicic AIC-NS	jw498.	IANS6-15.1T_Iz	Dec. '10.	0.03	0.15	0.07	18.61	1.54	11.5	1,348.76	0.69	2.04	46.36
Austurhorn	Silicic AIC-NS	jw498.	IANS6-2.1T_Id	Dec. '10.	0.04	0.5	0.71	42.81	1.8	14.99	2,308.57	0.87	4.02	63.3
Austurhorn	Silicic AIC-NS	jw498.	IANS6-5.1T_Cd	Dec. '10.	0.04	4.36	0.04	115.7	2.83	11.92	1,422.91	1.08	5.08	40.77
Austurhorn	Silicic AIC-NS	jw498.	IANS6-9.1T_Id	Dec. '10.	0.05	0.84	0.35	40.74	2.5	14.18	2,149.82	1.01	5.19	53.03
Austurhorn	Silicic AIC-NS	jw498.	IANS6-17.2T_Id	Dec. '10.	0.02	0.22	0.05	27.41	1.74	14.56	1,845.50	0.86	3.08	61.56
Austurhorn	Silicic AIC-NS	jw498.	IANS6-10.1T_Cd	Dec. '10.	0.03	0.21	0.05	16.81	1.75	11.54	812.85	0.93	3.33	29.66
Austurhorn	Silicic AIC-NS	jw498.	IANS6-17.1T_I	Dec. '10.	0.01	0.01	0.06	12.04	1.92	13.12	561.76	1.53	3.06	26.1
Austurhorn	Silicic AIC-NS	jw498.	IANS6-23.1T_Ib	Dec. '10.	0	0.01	0.04	22.44	2.08	16.35	273.77	0.99	148.87	4.21
Austurhorn	Silicic AIC-NS	jw498.	IANS6-24.1T_R	Dec. '10.	0	0	0.01	7.35	0.7	11.35	305.26	0.84	0.82	18.91
Austurhorn	Silicic AIC-NS	jw498.	IANS6-19.1T_Id	Dec. '10.	0.02	0.38	0.14	26.33	1.77	13.77	1,917.62	0.95	4.22	66.27
Austurhorn	Silicic AIC-NS	jw498.	IANS6-18.1T_R	Dec. '10.	0.02	0.02	0.08	11.36	3.17	27.17	578.14	17.41	8.42	33.49
Austurhorn	Silicic AIC-NS	jw498.	IANS6-22.2T_R	Dec. '10.	0.01	0.02	0.1	14.61	2.53	15.67	453.69	1.23	4.02	35.22
Austurhorn	Silicic AIC-NS	jw498.	IANS6-16.1t_Iz	Dec. '10.	0.02	0.1	0.05	19	1.5	12.28	901.92	0.95	2.86	47.94
Austurhorn	Silicic AIC-NS	jw498.	IANS6-4.1T_Id	Dec. '10.	0.01	0.33	0.08	26.3	2.11	13.59	1,616.66	0.99	4.6	85.87
Austurhorn	Silicic AIC-NS	jw498.	IANS6-13.1T_Ed	Dec. '10.	0.07	0.31	0.16	28.58	1.84	13.79	2,187.03	0.65	2.92	68.4
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-9.1	Feb. '11.	0.11	2.4	0.32	221.09	32.79	58.16	1,587.05	7.42	3.35	56.09
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-17.2_I	Feb. '11.	0.06	3.19	0.3	30.78	4.2	1.62	1,193.46	1.18	2.26	61.29
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-13.1	Feb. '11.	0.16	0.44	0.46	130.96	23.29	18.75	1,179.09	17.46	6.55	34.14
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-15.1_D	Feb. '11.	0.56	5.45	0.81	244.45	16.17	3.21	2,585.88	3.35	12.5	50.9
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-4.2_E	Feb. '11.	0.15	0.26	0.12	24.8	8.89	2.46	1,302.23	3.09	2.89	40.04
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-4.1_C	Feb. '11.	0.02	0.03	0.14	7.23	6.96	1.79	266.83	1.59	3.16	35.13
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-8.1_LC	Feb. '11.	0.02	0.3	0.69	12.13	7.53	2.11	476.29	1.99	3.18	43.44
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-16.1_LC	Feb. '11.	0.01	0.15	0.11	10.02	9.2	5.4	422.94	2.16	4	41.72
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-8.2_DE	Feb. '11.	0.12	2.44	0.49	33.44	8.54	1.98	1,472.03	2.04	6.22	85.65

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-14.1	Feb. '11.	0.02	0.08	0.48	15.06	7.8	1.92	474.46	1.5	3.49	26.27
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-2.1_D	Feb. '11.	0.23	6.05	0.23	126.33	5.69	3.92	2,062.62	1.54	4.38	45.65
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-1.1_C	Feb. '11.	0.01	0.13	0.16	12.6	4.7	1.1	508.64	1.29	2.64	36.31
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-16.2_DE	Feb. '11.	0.22	0.67	0.32	179.59	9.46	4.1	2,255.50	1.63	4.27	70.43
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-19.2_I	Feb. '11.	0.03	0.4	0.09	53.09	9.57	2.58	841.17	2.3	5	79.62
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-5.1_C	Feb. '11.	0.04	5.4	0.37	64.18	6.97	2.05	764.51	1.72	3.33	89.37
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-13.2	Feb. '11.	0.05	0.27	0.37	47.93	7.78	2.35	953.69	1.46	4.15	42.49
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-3.1_D	Feb. '11.	0.83	0.64	0.59	56.15	9.05	30.83	1,936.97	2.48	5.51	66.18
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-12.2	Feb. '11.	0.45	0.75	0.9	71.46	11.35	15.32	1,830.11	5.91	4.69	77.96
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-17.1_DE	Feb. '11.	0.17	29.02	0.25	108.56	8.38	2.39	2,312.83	2.76	7.89	99.79
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-10.1	Feb. '11.	0.6	5.76	3.31	111.35	10.16	2.74	2,350.44	2.38	3.51	83.79
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-12.1_LC	Feb. '11.	0.4	1.5	0.33	81.57	10.65	2.35	1,860.68	2.53	5.74	103.54
Austurhorn	Silicic AIC-NS	JW510.	IA-NS7-18.1	Feb. '11.	0.06	0.4	0.44	17.97	9.65	9.34	977.43	4.31	4.65	98.35
Austurhorn	Mafic AIC-G	AJP01.	IA-G-5-2.1	May '13.										87.94774102
Austurhorn	Mafic AIC-G	AJP01.	IA-G-5-4.1	May '13.										91.28915949
Austurhorn	Mafic AIC-G	AJP01.	IA-G-5-6.1	May '13.										75.48526113
Austurhorn	Mafic AIC-G	AJP01.	IA-G-5-7.1	May '13.										44.81154182
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T5.2_Id	Dec. '10.	0	1.5	0.06	172.43	1.73	14.65	1,272.68	0.92	3.19	2.56
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T19.1_I	Dec. '10.	0	0.21	0.17	46.77	1.62	9.87	494.35	1.24	2.27	3.97
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T2.1_Id	Dec. '10.	0	1.92	2.66	309.8	1.37	12.78	468.18	0.66	3.15	2.87
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T1.2_I	Dec. '10.	0	0.13	0.14	68.61	1.4	8.56	376.95	0.85	3.64	6.1
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T22.1_I	Dec. '10.	0	0.03	0.03	18.39	2.05	12.19	217.94	1.37	1.92	2.47
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T11.2_I	Dec. '10.	0	0.28	0.03	56.39	1.61	13.94	406.15	0.91	2.24	3.1
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T11.1_T	Dec. '10.	0	0.08	0.02	23.81	1.31	11.86	416.3	0.79	2.36	2.93
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T1.1_E	Dec. '10.	0	0.03	0.02	19.6	1.81	11.96	279.17	1.01	3.16	6.16
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T26.1_I	Dec. '10.	0	1.49	0.04	93.54	2.9	14.08	758.85	2.81	4.47	10.02
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T23.1_I	Dec. '10.	0	0.15	0.1	50.63	3.38	13.8	378.7	2.39	2.03	5.88
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T25.1_I	Dec. '10.	0	0.1	0.07	46.18	2.27	13.14	414.62	1.75	3.34	10.99
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T12.1_Ez	Dec. '10.	0	0.01	0.07	19.18	1.5	13.01	276.18	1.04	2.42	6.18
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T4.2_E	Dec. '10.	0	0.01	0.02	11.6	2.29	22.22	310.67	1.5	4.65	19.38

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T9.1_I	Dec. '10.	0	0.01	0.05	12.94	1.79	14.38	178.78	0.94	9.17	2.79
Fjardarsá	ISFjar.	jw499.	IS-FJAR-7.2_Ez	Dec. '10.	0.01	0.07	0.11	28.21	1.96	12.8	497.37	1.18	3.28	7.87
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T27.1_I	Dec. '10.	0	0.06	0.05	31.47	2.1	12.99	439.06	1.5	2.21	10.32
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T15.1_Id	Dec. '10.	0.13	7.3	0.09	156.73	1.92	14.72	1,437.28	1.35	2.82	3.2
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T4.1_I	Dec. '10.	0	0.07	0.14	17.32	2.16	14.42	269.54	2.73	4.56	22.87
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T17.1_Ed	Dec. '10.	0.23	0.83	0.05	148.66	2.08	12.07	1,071.05	1.9	2.82	3.48
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T14.1_Ez	Dec. '10.	0	0.13	0.04	35.42	1.37	11.12	291.93	1.05	2.36	8.56
Fjardarsá	ISFjar.	jw499.	IS-FJAR-7.1_I	Dec. '10.	0	0.08	0.04	33.63	1.87	12.48	401.49	0.85	2.62	10.96
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T28.2_E	Dec. '10.	0	0.05	0.05	19.51	1.83	12.53	353.03	1.21	1.69	9.02
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T29.2_E	Dec. '10.	0	0.07	0.05	28.64	1.9	12.97	482.34	1.47	19.52	4.98
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T5.1_Ed	Dec. '10.	0	1.25	0.07	129.39	2.77	16.95	1,416.44	4.57	3.53	3.96
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T21.1_I	Dec. '10.	0	0.01	0.04	16.1	2.58	12.1	309.36	2.93	2.09	8.75
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T29.1_I	Dec. '10.	0.09	5.21	0.08	468.64	5.15	59.7	1,149.01	3.42	63.4	10.75
Fjardarsá	ISFjar.	jw499.	IS-FJAR-8.2_Id	Dec. '10.	0	3.71	0.07	41.23	1.7	12.59	472.1	0.95	3.05	6.23
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T24.1_I	Dec. '10.	0	0.04	0.06	40.79	3.5	14.52	309.19	3.79	4.29	16.73
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T12.1_Ez	Dec. '10.	0	0.16	0.04	47.43	1.88	14.25	520.1	1.02	3.36	14.51
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T20.1_I	Dec. '10.	0	0.04	0.03	32.13	2.18	9.56	463.98	1.32	1.66	19.65
Fjardarsá	ISFjar.	jw499.	IS-FJAR-8.1_Ez	Dec. '10.	0	0.03	0.03	9.66	1.83	12.37	279.54	1.05	3.16	5.01
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T10.2_I	Dec. '10.	0	0.04	0.01	27.74	1.58	12.57	299.29	0.94	2.19	18.9
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T13.1_I	Dec. '10.	0	0.15	0.06	19.63	1.29	11.33	324.21	0.81	2.18	17.4
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T18.1_Ib	Dec. '10.	0.01	0.18	0.11	20.79	2.38	13.49	305.56	1.45	2.2	13.67
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T14.2_Id	Dec. '10.	0	0.14	0.05	25.76	1.71	12.95	290.3	1.03	2.77	12.14
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T6.2_Id	Dec. '10.	0	0.16	0.04	33.53	4.32	15.23	502.71	0.84	2.7	15.17
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T6.1_Eb	Dec. '10.	0	0.01	0.02	7.24	1.74	12.5	178.64	0.96	2.53	11.22
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T3.1_I	Dec. '10.	0	0.04	0.05	29.86	1.85	12.86	337.91	0.87	4.03	23.56
Fjardarsá	ISFjar.	jw499.	IS-FJAR-T16.1_Ib	Dec. '10.	0.01	0.03	0.17	16.05	3.01	15.73	347.93	5.52	3.74	25.56
Hekla	IHB.	JW444.	IHB1-14.1I	Aug. '09.	0.15	0.03	0.26	31.97	8.61	46.68	131.03	2.49	5.85	1.44
Hekla	IHB.	JW444.	IHB1-13.1I	Aug. '09.	0.16	0.05	0.08	25.65	7.08	29.51	188.35	1.41	4.1	49.91
Hekla	IHB.	JW444.	IHB1-19.1I	Aug. '09.	0.15	0.01	0.14	34.95	8.14	28.99	183.8	1.44	15.92	39.21
Hekla	IHB.	JW444.	IHB1-7.1I	Aug. '09.	0.04	0.02	0.08	13.78	9.01	49.12	193.85	1.86	8.1	47.32

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Hekla	IHB.	JW444.	IHB1-2.1I	Aug. '09.	0.12	0.01	0.1	23.11	7	27.36	169.95	1.17	4.49	39.17
Hekla	IHB.	JW444.	IHB1-10.1I	Aug. '09.	0.06	0.01	0.15	15.32	8.21	43.69	200.26	1.48	6.4	41.55
Hekla	IHB.	JW444.	IHB1-18.1I	Aug. '09.	0.11	0.06	0.21	23.25	7.45	36.54	167.5	1.24	5.07	37.72
Hekla	IHB.	JW444.	IHB1-21.2T	Aug. '09.	0.1	0.07	0.2	34.02	8.99	30.24	158.07	2.2	5.49	37.46
Hekla	IHB.	JW444.	IHB1-17.1I	Aug. '09.	0.06	0.02	0.18	27.73	7.7	40.42	176.95	1.12	3.8	38.61
Hekla	IHB.	JW444.	IHB1-5.1I	Aug. '09.	0.12	0.06	0.12	18.79	7.23	30.02	169.9	1.31	4.84	36.87
Hekla	IHB.	JW444.	IHB1-21.1I	Aug. '09.	0.17	0.07	0.15	37.96	11.25	34.93	176.35	2.94	7.71	40
Hekla	IHB.	JW444.	IHB1-3.1I	Aug. '09.	0.08	0.03	0.09	20.22	7.09	29.2	198.57	1.21	4.78	40.6
Hekla	IHB.	JW444.	IHB1-6.2R	Aug. '09.	0.01	0	0.16	18.14	8.71	29.55	200.8	1.31	5.57	39.74
Hekla	IHB.	JW444.	IHB1-12.1R	Aug. '09.	0.02	0.03	0.2	12.25	7.39	35.04	210.47	1.61	5.29	41.98
Hekla	IHB.	JW444.	IHB1-9.1I	Aug. '09.	0.08	0.09	0.2	11.62	7.1	34.02	247.16	1.43	5.07	46.91
Hekla	IHB.	JW444.	IHB1-8.1T	Aug. '09.	0.09	0.06	0.16	37.78	11.5	46.72	373.32	3.68	97.73	59.42
Hekla	IHB.	JW444.	IHB1-12.2C	Aug. '09.	0.63	0.31	0.13	49.53	6.5	35.4	795.18	1.21	5.3	180.87
Hekla	IHB.	JW444.	IHB1-6.1C	Aug. '09.	0	0	0.13	12.03	7.68	40.77	219.25	1.26	5.67	9.19
Hekla	IHB.	JW444.	IHB1-22.2I	Aug. '09.	0.24	0.04	0.15	19.8	8.11	34.94	198.33	1.58	5.1	77.32
Hekla	IHB.	JW444.	IHB1-23.1I	Aug. '09.	1.24	0.15	0.18	35.4	7.33	24.58	488.22	1.11	5.51	78.54
Hekla	IHB.	JW444.	IHB1-4.1I	Aug. '09.	0.13	0.06	0.07	19.8	12.49	47.39	267.42	9.62	6.1	93.33
Hekla	IHB.	JW444.	IHB1-9.2R	Aug. '09.	0.1	0.09	0.13	18.04	7.58	28.72	266.82	1.22	5.42	80.05
Hekla	IHB.	JW444.	IHB1-16.1I	Aug. '09.	0.2	0.27	0.14	30.22	15.05	40.93	454.92	1.66	5.73	181.17
Hekla	IHB.	JW444.	IHB1-1.1I	Aug. '09.	0.44	0.08	0.15	22.96	5.47	28.77	347.87	0.94	4.5	118.64
Hekla	IHB.	JW444.	IHB1-22.1I	Aug. '09.	0.03	0.31	0.22	35.34	7.91	29.5	570.53	1.29	5.64	176.09
Hekla	IHB.	JW444.	IHB1-24.1I	Aug. '09.	0.1	0.08	0.22	44.64	11.04	33.75	286.76	1.84	30.85	112.56
Hrafnfjörður	KK-24.	TLC7.	KK24-11.1	May '13.										50.13
Hrafnfjörður	KK-24.	TLC7.	KK24-12.1	May '13.										32.19
Hrafnfjörður	KK-24.	TLC7.	KK24-13.1	May '13.										13.48
Hrafnfjörður	KK-24.	TLC7.	KK24-8.1	May '13.										73.03
Hrafnfjörður	KK-24.	TLC7.	KK24-4.1	May '13.										34.27
Hrafnfjörður	KK-24.	TLC7.	KK24-6.1	May '13.										137.38
Hrafnfjörður	KK-24.	TLC7.	KK24-2.1	May '13.										35.29
Hrafnfjörður	KK-24.	TLC7.	KK24-1.1	May '13.										51.03

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Hrafnfjörður	KK-24.	TLC7.	KK24-10.1	May '13.										41.79
Hrafnfjörður	KK-24.	TLC7.	KK24-5.1	May '13.										38.68
Hrafnfjörður	KK-24.	TLC7.	KK24-9.1	May '13.										47.11
Hrafnfjörður	KK-24.	TLC7.	KK24-3.1	May '13.										150.45
Hrafnfjörður	KK-24.	TLC7.	KK24-7.1	May '13.										28.49
Hrafnfjörður	KK-24.	TLC7.	KK24-14.1	May '13.										233.18
Husavikurkleif	IXH.	jw530.	IXH_6.1I	Aug. '11.	0	0.05	0.03	19.24	2.52	9.03	302.72	1.76	2.79	30.39
Husavikurkleif	IXH.	jw530.	IXH_2.1C	Aug. '11.	0.03	0.04	0.03	19	4.5	11.73	377.16	2.96	3.72	65.93
Husavikurkleif	IXH.	jw530.	IXH_9.1E	Aug. '11.	0	0.09	0.05	14.82	2.9	11.34	219.27	2.13	3.09	42.98
Husavikurkleif	IXH.	jw530.	IXH_3.1I	Aug. '11.	0	0	0.09	9.53	2.72	11.94	170.38	2.28	3.79	46.15
Husavikurkleif	IXH.	jw530.	IXH_16.1I	Aug. '11.	0	0.06	0.06	12.49	2.99	12.07	216.91	1.99	3.22	43.43
Husavikurkleif	IXH.	jw530.	IXH_1.1I	Aug. '11.	0	0.02	0.06	18.51	3.41	11.09	311.98	2.6	3.57	34.56
Husavikurkleif	IXH.	jw530.	IXH_18.2I	Aug. '11.	0.38	1.12	0.05	53.01	3.6	13.64	887.83	4.06	4.14	173.81
Husavikurkleif	IXH.	jw530.	IXH_2.2E	Aug. '11.	0	0	0.04	8.05	3.75	12.99	270.96	2.93	3.72	52.55
Husavikurkleif	IXH.	jw530.	IXH_15.1I	Aug. '11.	0	0.04	0.06	10.87	2.5	10.02	244.44	1.53	2.96	54.18
Husavikurkleif	IXH.	jw530.	IXH_7.1I	Aug. '11.	0	0.05	0.02	12.13	2.75	10.88	256.39	2.3	3.53	59.1
Husavikurkleif	IXH.	jw530.	IXH_21.1I	Aug. '11.	0	0.01	0.04	7.2	2.05	9.28	260.81	1.16	2.09	55.67
Husavikurkleif	IXH.	jw530.	IXH_5.1I	Aug. '11.	0	0.05	0.05	12.61	3.23	12.37	252.91	2.29	3.5	53.65
Husavikurkleif	IXH.	jw530.	IXH_18.1E	Aug. '11.	0	0.02	0.03	8.4	2.85	10.9	264.13	2.2	2.86	56.93
Husavikurkleif	IXH.	jw530.	IXH_11.1I	Aug. '11.	0	0.02	0.03	10.15	3.02	11.74	311.89	1.8	2.8	62.32
Husavikurkleif	IXH.	jw530.	IXH_17.1I	Aug. '11.	0.08	0.04	0.06	14.91	5.65	14.61	236.94	6.25	7.54	59.87
Husavikurkleif	IXH.	jw530.	IXH_14.1I	Aug. '11.	0.01	0.01	0.05	9.33	13.91	13.61	250.1	2.37	3.55	59.09
Husavikurkleif	IXH.	jw530.	IXH_13.1I	Aug. '11.	0	0.07	0.05	9.76	2.7	11.46	211.75	1.84	3.23	46.61
Husavikurkleif	IXH.	jw530.	IXH_4.1I	Aug. '11.	0	0.1	0.04	7.21	3.05	11.36	324.07	2.05	3.55	146.91
Husavikurkleif	IXH.	jw530.	IXH_8.1I	Aug. '11.	0	0.01	0.04	9.36	2.53	11.29	251.86	1.31	2.93	94.96
Husavikurkleif	IXH.	jw530.	IXH_12.1I	Aug. '11.	0	0.01	0.02	10.86	2.79	11.18	326.52	1.79	2.94	101.04
Husavikurkleif	IXH.	jw530.	IXH_10.1I	Aug. '11.	0	0.08	0.06	10.12	2.49	11.24	340.99	1.56	2.83	112.17
Husavikurkleif	IXH.	jw530.	IXH_19.1I	Aug. '11.	0	0.02	0.01	7.66	2.16	10.36	306.69	1.52	2.42	83.69
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T20.1_I	Dec. '10.	0	0.1	0.04	33.93	1.69	12.39	233.85	1.86	2.46	5.96
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T7.1_I	Dec. '10.	0	5.47	0.05	41.46	1.67	12.89	356	1.33	2.24	5.39

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T29.1_I	Dec. '10.	0	0.06	0.03	25.42	1.67	12.09	216.48	1.41	2.17	3.83
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T9.2_E	Dec. '10.	0.01	10.94	0.04	32.46	3.26	11.27	461.68	1.62	2.32	4.32
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T9.1_I	Dec. '10.	0	1.83	0.03	27.77	1.52	13.39	200	1.19	2.32	4.91
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T17.1_I	Dec. '10.	0	28.28	0.23	26.81	1.92	8.93	186.41	2.13	2.21	9.38
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T22.1_Id	Dec. '10.	0	0.09	0.07	20.22	3.26	11.69	298.7	1.84	5.78	6.14
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T3.1_Di	Dec. '10.	0	43.87	0.05	22.75	1.06	38.5	194.58	0.63	2.35	5.16
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T26.1_I	Dec. '10.	0	0.59	0.06	40.22	1.62	12.9	241.22	1.44	2.31	5.72
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T14.1_T	Dec. '10.	0.01	12.44	0.13	16.59	1.87	14.46	187	1.47	2.33	2.58
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T34.1_I	Dec. '10.	0	0.14	0.06	38.53	2.31	13.13	254.89	1.26	2.41	5.29
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T4.1_Id	Dec. '10.	0	12.3	0.04	22.05	1.47	12.27	346.68	1.06	2.83	18.58
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T12.1_I	Dec. '10.	0.05	0.03	0.06	28.78	1.4	12.2	187.95	1.97	2.72	9.31
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T38.1B_I	Dec. '10.	0	56.94	0.01	47.95	0.56	6.61	294.79	0.51	0.72	5.87
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T32.1_I	Dec. '10.	0.01	0.01	0.05	19.21	1.56	12.26	253.07	1.16	1.84	10.56
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T11.1_I	Dec. '10.	0.01	0.21	0.04	16.91	1.89	12.36	157.54	1.12	2.63	4.27
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T2.1_E	Dec. '10.	0	0.16	0.14	14.38	1.62	12.93	177.24	0.69	2.59	5.44
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T4.2_Ed	Dec. '10.	0	1.19	0.03	11.23	1.52	11.77	354.19	1.06	2.72	15.47
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T36.1_E	Dec. '10.	0.01	0.66	0.08	168.59	10.89	17.89	582.02	1.55	2.38	11.32
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T23.1_I	Dec. '10.	0	3.02	0.07	22.47	2.5	12.64	155.55	1.66	3.42	8.4
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T3.2_E	Dec. '10.	0.01	25.79	0.16	14.99	2.03	22.03	226.61	1.12	4.1	6.19
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T27.1_C	Dec. '10.	0	0.02	0.05	24.66	2.33	12.07	203.7	1.51	3.04	9.88
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T40.1_E	Dec. '10.	0.01	0.01	0.05	14.49	2.05	13.27	234.06	1.2	2.53	10.52
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T25.1_I	Dec. '10.	0	0.13	0.02	18.35	1.55	11.82	180.16	1.4	2.57	5.61
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T30.1_I	Dec. '10.	0	164.98	0.16	63.89	3.13	14.9	361.18	1.62	2.66	6.06
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T14.2_Id	Dec. '10.	0.83	150.69	0.24	75.03	3.1	17.01	454.72	2.25	105.5	2.85
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T33.1_E	Dec. '10.	0.11	0.5	0.06	59.54	1.94	46.45	577	2.59	13.98	6.01
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T41.1_I	Dec. '10.	0	0.93	0.06	108.13	2.42	16.9	464.02	2.25	2.38	3.54
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T42.1_I	Dec. '10.	0	9.6	0.07	18.83	2.5	13.44	420.49	1.29	3.1	32.3
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T35.1_I	Dec. '10.	0.08	74.54	0.1	20.61	2.2	13.78	281.87	1.05	1.59	13.41
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T24.1_C	Dec. '10.	0	29.78	0.04	16.97	2.34	13.08	530.74	1.5	3.3	24.87
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T16.1_I	Dec. '10.	0	0.62	0.08	22.49	1.8	9.43	377.05	1.82	1.93	26.21

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T37.1_I	Dec. '10.	0	25.52	0.17	10.03	2.09	11.76	187.96	1.38	2.56	23.5
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T24.2_R	Dec. '10.	0	2.22	0.01	10.64	2.13	12	512.8	1.76	2.99	30.98
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T6.2_Id	Dec. '10.	0	0.49	0.03	10.88	1.72	15.64	251.98	1.11	2.61	38.87
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T10.1_C	Dec. '10.	0.01	36.76	0.07	17.65	2.21	27.92	304.56	1.39	3.02	35.08
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T43.1_I	Dec. '10.	0	0.18	0.07	12.03	6.76	22.13	164.33	1.78	2.5	43.3
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T10.2_E	Dec. '10.	0	3.14	0.1	10.24	2.04	15.72	182.71	1.45	2.92	42.08
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T21.1_Id	Dec. '10.	0	0.2	0.03	15.06	2.91	12.71	183.25	2	3.72	27.95
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T28.1_Id	Dec. '10.	0	5.76	0.04	8.14	2.4	15.08	258.63	1.63	2.7	34.23
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T13.1_C	Dec. '10.	0	6.46	0.03	10.44	1.83	17.8	349.66	1.75	2.46	48.26
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T39.1_I	Dec. '10.	0.01	0.09	0.08	7.69	1.72	13.73	382.54	0.98	2.34	49.64
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T13.3_E	Dec. '10.	0.01	21.59	0.04	16.17	2.05	22.36	444.31	1.53	2.57	59.82
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T6.1_E	Dec. '10.	0	0.01	0.07	8.47	1.66	26.21	248.35	1.25	2.54	48.88
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T31.1_E	Dec. '10.	0.01	0	0.01	5.75	1.5	12.73	129.8	1.13	1.81	26.72
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T15.1_I	Dec. '10.	0	0.04	0.08	19.42	2.65	13.67	205.81	1.9	2.86	39.63
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T39.2_E	Dec. '10.	0.01	0.02	0.05	7.72	1.59	14.03	397.11	1.16	1.78	45.43
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T18.2_E	Dec. '10.	0	0	0.03	8.05	2.86	23.19	85.7	4.71	2.92	18.66
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T8.1_I	Dec. '10.	0.01	0.03	0.08	14.55	2.41	15.87	174.98	1.5	2.94	30.1
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T18.1_Id	Dec. '10.	0	0.29	0.05	15.06	1.64	11.43	212.98	1.94	2.88	32.3
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T1.1_I	Dec. '10.	0	4.94	0.04	12.95	2.15	35.31	192.68	0.96	3.98	43.22
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T31.2_I	Dec. '10.	0	0.08	0.04	11.53	1.72	13.15	199.72	7.09	3.02	46.49
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T27.2_E	Dec. '10.	0	0	0.03	6.65	2.54	29.02	108.5	1.74	3.93	34.51
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T5.1_Id	Dec. '10.	0	0.11	0.07	11.86	1.74	13.39	246.45	1.37	3.38	56.73
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T5.2_E	Dec. '10.	0	0.01	0.01	10.08	1.53	27	285.54	1.23	2.4	48.69
Jökulsá í Lóni	ISJL.	jw499.	IS-JL_T21.2_Eb	Dec. '10.	0.02	0.01	0.04	9.13	2.03	35.31	208.36	1.65	4.02	50.31
Jökulsá í Lóni	ISJL.	jw499.	IS-JL-T13.2_Tb	Dec. '10.	0	1.69	0.05	10.03	2.25	36.75	312.31	1.55	2.7	61.44
Kerlingarfjöll	IEKlM.	TLC6.	IEKLM-3.1	Jan. '13.	0	0.49	0.11	33	5.84	10.84	272.27	1.02	4.9	4.25
Kerlingarfjöll	IEKlM.	TLC6.	IEKLM-2.1	Jan. '13.	0	0.11	0.08	14.46	6.26	11.52	286.13	1.15	4.76	4.02
Kerlingarfjöll	IEKlM.	TLC6.	IEKLM-1.1	Jan. '13.	0.05	0.11	0.06	15.44	6.77	12.64	253.16	1.09	4.6	5.05
Kerlingarfjöll	IEKlT.	TLC6.	IEKLT-3.1	Jan. '13.	0	0.48	0.09	29	7.53	10.67	261.21	1.12	6.36	18.12
Kerlingarfjöll	IEKlT.	TLC6.	IEKLT-5.1	Jan. '13.	0	0.26	0.07	30	5.03	9.43	291.28	1.06	5.47	18.96
Kerlingarfjöll	IEKlT.	TLC6.	IEKLT-4.1	Jan. '13.	0.01	0.52	0.07	22.3	22.56	13.98	169.82	2.77	12.87	16.29

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Kerlingarfjöll	IEKlT.	TLC6.	IEKLT-7.1	Jan. '13.	0	0.06	0.24	17.14	16.07	13.53	293.93	2.2	17.73	18.49
Kerlingarfjöll	IEKlT.	TLC6.	IEKLT-10.1	Jan. '13.	0	0.13	0.1	47.8	6.33	13.39	236.7	1.19	6.94	16.29
Kerlingarfjöll	IEKlT.	TLC6.	IEKLT-1.1	Jan. '13.	0	0.08	0.09	16.1	6.27	9.03	333.75	1.03	5.84	21.46
Kerlingarfjöll	IEKlT.	TLC6.	IEKLT-11.1	Jan. '13.	0.01	3.56	0.13	42.91	6.25	11.37	364.64	1.03	6.79	22.95
Kerlingerfjoll	IEKLT	TLC8.	IEKLT-6.1	May '13.					28.12	34.21	646.68	5.16	50.79	26.49
Kerlingerfjoll	IEKLT	TLC8.	IEKLT-15.1	May '13.				21.2	0.02	26.78	542.32	7.48	105.79	25.36
Kerlingerfjoll	IEKLT	TLC8.	IEKLT-COL-5.1	May '13.				2.3	50.16	34.13	300.91	15.37	144.07	15.51
Kerlingerfjoll	IEKLT	TLC8.	IEKLT-COL-12.1	May '13.					44	32.05	372.17	4.95	50.1	19.68
Kerlingerfjoll	IEKLT	TLC8.	IEKLT-COL-13.1	May '13.				28.59	1.49	28.55	502.01	6.31	60.12	23.13
Kerlingerfjoll	IEKLT	TLC8.	IEKLT-COL-3.1	May '13.				4.67	9.17	31.68	377.44	6.64	44.94	19.75
Kerlingerfjoll	IEKLT	TLC8.	IEKLT-11.1	May '13.					79.25	36.94	385.85	5.4	38.5	20.91
Kerlingerfjoll	IEKLT	TLC8.	IEKLT-COL-9.1	May '13.					64.4	38.98	331.48	7.51	85.59	18.98
Kerlingerfjoll	IEKLT	TLC8.	IEKLT-10.1	May '13.				10.49	85.35	101.66	275.83	386.34	111.18	17.83
Kerlingerfjoll	IEKLT	TLC8.	IEKLT-2.1	May '13.				4.05	11.02	29.56	255.13	8.74	24.35	20.55
Kerlingerfjoll	IEKLT	TLC8.	IEKLT-1.1	May '13.				2.51	25.65	30.85	1,650.33	3.82	21.52	37.54
Krafla	IEKG.	jw529.	IEKG_7.1E	Aug. '11.	0.01	0.03	0.02	10.56	2.05	9.63	214.02	1.82	1.52	18.73
Krafla	IEKG.	jw529.	IEKG_8.1I	Aug. '11.	0	0.03	0.07	11.41	2.65	11.33	269.3	2.59	1.55	22.45
Krafla	IEKG.	jw529.	IEKG_1.2E	Aug. '11.	0	0.02	0.08	11.9	2	9.74	210.46	1.2	1.27	21.76
Krafla	IEKG.	jw529.	IEKG_4.2E	Aug. '11.	0.01	0.13	0.12	33.08	3.16	11.98	263.88	2.02	1.92	27.17
Krafla	IEKG.	jw529.	IEKG_4.1C	Aug. '11.	0.06	2.31	0.09	78.71	3.11	13.5	806.39	1.99	2.28	32.64
Krafla	IEKG.	jw529.	IEKG_1.1C	Aug. '11.	0	0.12	0	7.68	1.08	6.6	514.94	0.62	0.76	32.4
Krafla	IEKG.	jw529.	IEKG_6.1I	Aug. '11.	0.51	4.01	0.04	52.12	2.64	13.37	785.44	1.64	2.19	26.59
Krafla	IEKG.	jw529.	IEKG_7.2C	Aug. '11.	0.63	7.78	0.08	98.2	4.46	13.92	864.24	1.54	2.32	41.18
Krafla	IEKG.	jw529.	IEKG_5.1I	Aug. '11.	0.11	0.54	0.01	17.25	2.61	10.68	253.63	1.9	2.3	29.9
Krafla	IEKG.	jw529.	IEKG_2.1I	Aug. '11.	0	0.43	0.02	13.65	1.56	10.5	597.81	1.14	1.47	37.42
Krafla	IEKG.	jw529.	IEKG_3.1SZ	Aug. '11.	0	1.33	0.04	17.7	2.08	9.82	767	1.41	2.06	43.77
Krafla	IEKG.	jw530.	IEKG_20.2C	Aug. '11.	0.05	7.51	0.01	62.41	3.68	12.66	1,615.77	2.63	4.12	63.23
Krafla	IEKG.	jw530.	IEKG_16.2C	Aug. '11.	0	1.91	0.05	34.76	3.08	11.59	427.78	2.77	3.16	24.35
Krafla	IEKG.	jw530.	IEKG_18.1C	Aug. '11.	0	0.64	0.04	25.83	3.05	11.05	421.86	2.73	4.39	22.85
Krafla	IEKG.	jw530.	IEKG_22.1C	Aug. '11.	0.05	0.2	0.03	41.48	10.02	20.12	760.15	10.54	5.25	37.34
Krafla	IEKG.	jw530.	IEKG_20.1E	Aug. '11.	0	0.14	0.04	10.17	3.34	10.53	264.3	2.35	3.33	23.67

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Krafla	IEKG.	jw530.	IEKG_12.1I	Aug. '11.	0.01	0.79	0.01	24.17	2.88	10.52	293.86	2.36	3.21	25.68
Krafla	IEKG.	jw530.	IEKG_22.2E	Aug. '11.	0	0	0.03	11.94	3.71	11.6	273.39	2.67	3.85	25.77
Krafla	IEKG.	jw530.	IEKG_10.1I	Aug. '11.	0	0.13	0.04	16.92	2.89	11.34	204.7	2.49	2.66	21.91
Krafla	IEKG.	jw530.	IEKG_16.1E	Aug. '11.	0	0.01	0.01	13.53	2.65	11.2	259.95	2.57	2.99	24.37
Krafla	IEKG.	jw530.	IEKG_15.1E	Aug. '11.	0	0.02	0.05	12.77	3.43	11.29	283.23	2.37	3.1	27.57
Krafla	IEKG.	jw530.	IEKG_24.2E	Aug. '11.	0	0.01	0.01	7.86	3.02	10.3	360.19	2.3	3.7	30.46
Krafla	IEKG.	jw530.	IEKG_11.1E	Aug. '11.	0	0.04	0.01	11.68	3.23	12.15	385.75	2.74	3.33	29.9
Krafla	IEKG.	jw530.	IEKG_21.1I	Aug. '11.	0	2.29	0.05	25.29	4.1	12.57	623.67	2.79	3.89	31.93
Krafla	IEKG.	jw530.	IEKG_23.1I	Aug. '11.	0	0.07	0.04	13.96	8.7	19.24	319.76	2.62	4.47	32.24
Krafla	IEKG.	jw530.	IEKG_24.1I	Aug. '11.	0	0.96	0	28.21	3.3	11.04	820.27	2.78	4.29	36.65
Krafla	IEKG.	jw530.	IEKG_19.1SZ	Aug. '11.	0	0.21	0.03	18.2	3.6	12.19	569.2	2.52	3.66	33.4
Krafla	IEKG.	jw530.	IEKG_9.1I	Aug. '11.	0.02	0.07	0.05	24.14	3.42	12.03	546.84	2.26	3.48	38.66
Krafla	IEKG.	jw530.	IEKG_14.1I	Aug. '11.	0.01	3.45	0.06	103.47	2.97	13.52	1,685.57	2.41	2.91	77.46
Krafla	IEKG.	jw530.	IEKG_17.1I	Aug. '11.	0	1.06	0.01	15.49	6.68	21.59	919.74	32.3	6.54	56.26
Króksfjördur	IIKK.	jw529.	IIKK_2.1E	Aug. '11.	0	1.81	0.04	9.42	1.04	9.03	157.83	1.02	1.19	24.89
Króksfjördur	IIKK.	jw529.	IIKK_2.2I	Aug. '11.	0	1.13	0.05	7.29	2.01	9.12	145.65	1.07	1.93	29.96
Króksfjördur	IIKK.	jw529.	IIKK_3.1E	Aug. '11.	0	7.21	0.06	7.39	1.97	14.72	196.48	1.31	1.83	36.89
Króksfjördur	IIKK.	jw529.	IIKK_4.2E	Aug. '11.	0	1.55	0.04	5.76	2.15	10.26	245.19	2.03	2.08	37.19
Króksfjördur	IIKK.	jw529.	IIKK_4.1I	Aug. '11.	0	3.67	0.02	7.88	1.93	9.9	164.75	1.41	1.8	30.84
Króksfjördur	IIKK.	jw529.	IIKK_3.2I	Aug. '11.	0	0.16	0.04	7.13	2.04	28.15	141.96	1.39	1.92	23.59
Króksfjördur	IIKK.	jw529.	IIKK_1.1C	Aug. '11.	0	0.3	0.04	10.64	1.24	9.23	505.35	0.94	1.22	42.08
Króksfjördur	IIKK.	jw529.	IIKK_1.3E	Aug. '11.	0	0.02	0.03	9.93	1.17	8.24	477.73	0.86	1	79.83
Króksfjördur	IIKK.	jw529.	IIKK_1.2E	Aug. '11.	0.01	0.36	0.02	6.9	1.9	14.75	482.48	1.08	1.42	51.74
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_13.1	Jan. '13.	0.07	144.82	0.32	22.9	1.79	5.56	686.22	0.38	2.25	30.1
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_70.1	Jan. '13.	0.01	2.32	0.09	69.86	2.94	7.29	562.74	0.49	2.84	7.5
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_61.1	Jan. '13.	0	0.13	0.03	21.45	1.38	3.43	179.27	0.32	1.66	5.43
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_8.1	Jan. '13.	0.01	0.55	0.03	63.44	1.62	5.24	376.41	0.37	1.95	6.12
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_26.1	Jan. '13.	0.01	48.1	0.09	24.86	2.94	7.42	179.19	0.57	3.01	4.01
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_12.1	Jan. '13.	0	0.03	0.03	13.47	2.01	4.49	239.53	0.42	1.94	5.3
Krossá-Kækjudalsá	ISKK.	TLC2.	ISS_10.1	Jan. '13.	0.01	103.77	0.04	17.53	1.86	4.79	234.32	0.38	2.32	6.19
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_54.1	Jan. '13.	0.01	0.09	0.04	31.81	2.05	7.66	321.61	0.44	2.01	6.66

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_22.1	Jan. '13.	0	27.41	0.15	8.92	2.81	6.8	174.48	0.6	2.83	5.49
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_67.1	Jan. '13.	0.06	0.17	0.11	34.35	32.58	75.93	176.02	32.36	10.12	3.97
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_3.1	Jan. '13.	0	44.98	0.06	21.86	1.6	4.97	232.65	0.38	2.11	21.88
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_1.1	Jan. '13.	0	0.03	0.02	16.32	1.07	3.69	193.58	0.32	1.26	18.42
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_15.1	Jan. '13.	0.01	2.59	0.08	9.2	3.24	5.75	254.88	0.58	2.61	20.21
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_64.1	Jan. '13.	0.12	6.98	0.15	11.08	2.65	6.86	224.62	0.53	2.7	20.18
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_25.1	Jan. '13.	0	8.95	0.03	7.19	2.73	6.87	254.35	0.53	3.06	19.29
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_75.1	Jan. '13.	0	0.21	0.07	25.28	3.27	7.42	362.86	2.45	2.4	3.3
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_21.1	Jan. '13.	0	8.09	0.07	11.75	2.87	7.2	244.99	0.58	3.29	26.06
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_14.1	Jan. '13.	0.02	2.16	0.07	157.48	8.98	22.57	801.88	29.34	625.42	38.77
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_17.1	Jan. '13.	0.06	45.01	0.37	62.65	5.53	58.1	253.81	5.9	13.59	26.64
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_10.1	Jan. '13.	0.01	11.53	0.19	9.45	1.36	2.94	132.62	1.52	4.25	8.23
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_76.1	Jan. '13.	0.01	0.01	0.1	51.04	23.52	18.55	234.47	10.07	20.95	23.27
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_69.1	Jan. '13.	0.91	2.04	0.06	135.13	32.96	17.95	1,868.35	9.92	3.47	40.97
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_18.1	Jan. '13.	0.01	1.03	0.06	34.08	2.64	6.33	521.79	0.59	2.54	25.17
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_19.1	Jan. '13.	0	0.03	0.05	11.23	1.81	5.46	145.61	0.39	2.19	19.04
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_9.1	Jan. '13.	0.01	0.02	0.06	9.02	3.07	12.75	314.37	0.71	3.85	32.84
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_56.1	Jan. '13.	0.01	0.79	0.04	44.36	1.22	4.11	526.92	0.33	1.66	11.19
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_16.1	Jan. '13.	0	2.76	0.12	11.45	1.88	5.01	369.63	0.35	1.92	21.95
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_24.1	Jan. '13.	0.01	135.36	0.09	11.8	2.62	10.92	548.41	0.52	2.75	81.99
Krossá-Kækjudalsá	ISKK.	TLC2.	ISKK_20.1	Jan. '13.	0.08	0.5	0.03	24.46	1.82	5.72	795.53	0.39	2.94	20.06
Krossá-Kækjudalsá	ISKK.	TLC6.	ISKK-17.1	Jan. '13.	0	4.3	0.06	8.9	6.47	12.1	254.49	0.96	8.27	21.63
Krossá-Kækjudalsá	ISKK.	TLC6.	ISKK-15.1	Jan. '13.	0	63.71	0.14	10.49	7.68	15.01	296.41	1.12	5.93	43.44
Krossá-Kækjudalsá	ISKK.	TLC6.	ISKK-20.1	Jan. '13.	0.27	0.82	0.11	37.43	7.88	12.72	779.66	1.32	6.99	23.25
Krossá-Kækjudalsá	ISKK.	TLC6.	ISKK-16.1	Jan. '13.	0.02	0.95	0.08	11.81	10.21	12.19	751.68	1.36	7.82	40.88
Lagarfljót	ISLF	TLC7.	ISLF-12.1	May '13.										19.45
Lagarfljót	ISLF	TLC7.	ISLF-10.1	May '13.										8.42
Lagarfljót	ISLF	TLC7.	ISLF-6.1	May '13.										12.22
Lagarfljót	ISLF	TLC7.	ISLF-8.1	May '13.										9.76
Lagarfljót	ISLF	TLC7.	ISLF-2.1	May '13.										14.89
Lagarfljót	ISLF	TLC7.	ISLF-24.1	May '13.										8.35

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Lagarfljót	ISLF	TLC7.	ISLF-17.1	May '13.										13.8
Lagarfljót	ISLF	TLC7.	ISLF-20.1	May '13.										17.71
Lagarfljót	ISLF	TLC7.	ISLF-4.1	May '13.										10.44
Lagarfljót	ISLF	TLC7.	ISLF-16.1	May '13.										9.8
Lagarfljót	ISLF	TLC7.	ISLF-18.1	May '13.										12.08
Lagarfljót	ISLF	TLC7.	ISLF-11.1	May '13.										12.1
Lagarfljót	ISLF	TLC7.	ISLF-3.1	May '13.										14.58
Lagarfljót	ISLF	TLC7.	ISLF-5.1	May '13.										18.17
Lagarfljót	ISLF	TLC7.	ISLF-1.1	May '13.										38.26
Lagarfljót	ISLF	TLC7.	ISLF-13.1	May '13.										6.26
Lagarfljót	ISLF	TLC7.	ISLF-25.1	May '13.										18.08
Lagarfljót	ISLF	TLC7.	ISLF-19.1	May '13.										44.41
Lagarfljót	ISLF	TLC7.	ISLF-14.1	May '13.										18.74
Lagarfljót	ISLF	TLC7.	ISLF-21.1	May '13.										19.74
Lagarfljót	ISLF	TLC7.	ISLF-23.1	May '13.										23.12
Lagarfljót	ISLF	TLC7.	ISLF-9.1	May '13.										36.12
Lagarfljót	ISLF	TLC7.	ISLF-22.1	May '13.										48.48
Lagarfljót	ISLF	TLC7.	ISLF-15.1	May '13.										11.35
Lagarfljót	ISLF	TLC7.	ISLF-7.1	May '13.										14.24
Laxárdalsfjöll	LS-11.	TLC7.	LS11-12.1	May '13.										6.09
Laxárdalsfjöll	LS-11.	TLC7.	LS11-7.1	May '13.										5.87
Laxárdalsfjöll	LS-11.	TLC7.	LS11-9	May '13.										3.72
Laxárdalsfjöll	LS-11.	TLC7.	LS11-8.1	May '13.										8.23
Laxárdalsfjöll	LS-11.	TLC7.	LS11-2.1	May '13.										7.75
Laxárdalsfjöll	LS-11.	TLC7.	LS11-1.1	May '13.										10.19
Laxárdalsfjöll	LS-11.	TLC7.	LS11-6.1	May '13.										10.11
Laxárdalsfjöll	LS-11.	TLC7.	LS11-4.1	May '13.										12.95
Laxárdalsfjöll	LS-11.	TLC7.	LS11-14.1	May '13.										6.26
Laxárdalsfjöll	LS-11.	TLC7.	LS11-10.1	May '13.										6.12
Laxárdalsfjöll	LS-11.	TLC7.	LS11-18.1	May '13.										8.28
Laxárdalsfjöll	LS-11.	TLC7.	LS11-5.1	May '13.										3.98

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Laxárdalsfjöll	LS-11.	TLC7.	LS11-16.1	May '13.										9.31
Laxárdalsfjöll	LS-11.	TLC7.	LS11-11.1	May '13.										10.41
Laxárdalsfjöll	LS-11.	TLC7.	LS11-15.1	May '13.										12.88
Laxárdalsfjöll	LS-11.	TLC7.	LS11-13.1	May '13.										9.91
Laxárdalsfjöll	LS-11.	TLC7.	LS11-17.1	May '13.										9.32
Laxárdalsfjöll	LS-11.	TLC7.	LS11-19.1	May '13.										17.16
Laxárdalsfjöll	LS-11.	TLC7.	LS11-3.1B	May '13.										6.04
Markarfljót	ISM.	jw499.	IS-M-T1.2._Id	Dec. '10.	2.31	1.48	0.06	39.17	12.14	16.06	229.28	8.11	5.42	2.05
Markarfljót	ISM.	jw499.	IS-M-T1.3_Id	Dec. '10.	2.68	1.61	0.03	31.43	2.35	14.67	189.28	0.82	3.8	2.55
Markarfljót	ISM.	jw499.	IS-M_T9.2_T	Dec. '10.	0.08	1.89	0.01	21.22	1.48	8.56	169.55	0.61	2.4	3.49
Markarfljót	ISM.	jw499.	IS-M-T5.2_E	Dec. '10.	0	0.03	0.05	12.52	2.15	10.5	86.58	0.8	3.55	1.33
Markarfljót	ISM.	jw499.	IS-M-T3.1_I	Dec. '10.	0	0.05	0.08	24.28	2	11.7	152.17	1.03	3.49	1.51
Markarfljót	ISM.	jw499.	IS-M-T8.1_I	Dec. '10.	0	0.07	0.07	31.18	2.41	13.2	152.1	0.67	3.77	1.23
Markarfljót	ISM.	jw499.	IS-M-T1.1_E	Dec. '10.	2.6	1.76	0.06	20.24	2.32	13.18	209.25	0.81	3.52	5.21
Markarfljót	ISM.	jw499.	IS-M-T4.1_E	Dec. '10.	0	0.04	0.08	33.92	2.17	10.35	147.28	0.68	3.55	1.29
Markarfljót	ISM.	jw499.	IS-M-T8.2_E	Dec. '10.	0	0.03	0.03	14.64	2.52	12.91	210.99	0.78	4.04	1.29
Markarfljót	ISM.	jw499.	IS-M-T2.1_I	Dec. '10.	0.01	0	0.08	12.85	2.45	14.56	135.74	1.11	4.67	2.28
Markarfljót	ISM.	jw499.	IS-M-T6.1_Iz	Dec. '10.	0	1.49	0.02	39.11	2.1	12	465.56	0.6	2.85	12.71
Markarfljót	ISM.	jw499.	IS-M-T7.1_I	Dec. '10.	0	0.07	0.04	32.94	2.38	11.84	130.21	0.79	4	3.74
Markarfljót	ISM.	jw508.	IS-M-33.2_I	Feb. '11.	1.76	13.95	0.02	36.32	4.23	1.48	185.59	1.04	3.29	1.38
Markarfljót	ISM.	jw508.	IS-M-29.2_I	Feb. '11.	0	1.08	0.15	35.8	8.48	17.28	203.49	2.37	3.91	2.72
Markarfljót	ISM.	jw508.	IS-M-12.1_I	Feb. '11.	0	1.62	0.05	31.21	4.27	9.53	246.74	4.16	2.46	3.66
Markarfljót	ISM.	jw508.	IS-M-35.2_DC	Feb. '11.	0.17	11.21	0.12	115.95	12.42	22.7	412.37	2.69	5.75	2.82
Markarfljót	ISM.	jw508.	IS-M-38.1	Feb. '11.	0.47	3.57	0.12	36.66	6.13	4.29	225.16	1.26	4.98	6.45
Markarfljót	ISM.	jw508.	IS-M-22.1	Feb. '11.	0	0.01	0.06	13.94	4.45	2.25	159.11	0.96	3.69	1.18
Markarfljót	ISM.	jw508.	IS-M-40.1	Feb. '11.	0	5.96	0.05	29.46	5.03	2.74	248.5	1.15	4.55	8.41
Markarfljót	ISM.	jw508.	IS-M-39.1	Feb. '11.	0	0.03	0.04	32.22	4.12	2.4	150.79	0.92	4.22	1.36
Markarfljót	ISM.	jw508.	IS-M-37.1_E	Feb. '11.	0	1.62	0.05	21.64	4.12	1.47	192.66	1.02	3.93	6.06
Markarfljót	ISM.	jw508.	IS-M-24.2_I	Feb. '11.	0	0.09	0.11	40.1	11.32	18.2	261.49	1.43	4.54	1.41
Markarfljót	ISM.	jw508.	IS-M-11.1_I	Feb. '11.	0	0.6	0.12	18.75	6.84	18.82	283.17	3.05	2.93	4.95
Markarfljót	ISM.	jw508.	IS-M-16.1_E	Feb. '11.	0	0.43	0.07	13.69	5.15	3.06	196.27	1.07	4.64	6

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Markarfljót	ISM.	jw508.	IS-M-20.1_I	Feb. '11.	0	0.05	0.07	16.22	4.97	2.25	143.93	0.99	3.2	2.16
Markarfljót	ISM.	jw508.	IS-M-21.2_E	Feb. '11.	0	0.23	0.06	10.49	5.23	6.69	208.03	2.81	3.54	5.72
Markarfljót	ISM.	jw508.	IS-M-19.1	Feb. '11.	0.04	1.39	0.09	11.97	5.8	2.05	158.02	1.06	4.06	2.18
Markarfljót	ISM.	jw508.	IS-M-13.1	Feb. '11.	0	0	0.07	16.02	4.72	2.41	159.84	1.14	3.43	2.08
Markarfljót	ISM.	jw508.	IS-M-25.1_I	Feb. '11.	0	0.05	0.11	21.72	5.15	1.59	150.04	1.03	3.33	2.25
Markarfljót	ISM.	jw508.	IS-M-24.1_E	Feb. '11.	0	0	0.07	11.56	4.49	2.59	179.89	0.95	3.57	2.57
Markarfljót	ISM.	jw508.	IS-M-16.2_I	Feb. '11.	0	1.42	0.07	19.15	4.84	3.11	351.48	1.06	3.92	5.96
Markarfljót	ISM.	jw508.	IS-M-17.2_E	Feb. '11.	0	0.24	0.12	11.8	5.46	2.54	208.94	1	5.41	6.31
Markarfljót	ISM.	jw508.	IS-M-31.1_I	Feb. '11.	0.06	0.59	0.01	20.31	3.58	1.9	232.83	0.79	3.87	6.86
Markarfljót	ISM.	jw508.	IS-M-33.1_E	Feb. '11.	0.02	1.11	0.06	25.68	4.78	1.55	185.24	0.86	3.14	2.31
Markarfljót	ISM.	jw508.	IS-M-35.1_E	Feb. '11.	0.13	1.27	0.08	29.79	4.76	1.8	245.21	1.01	3.87	8.23
Markarfljót	ISM.	jw508.	IS-M-15.1	Feb. '11.	0	0.03	0.12	21.36	5.75	3.13	195.02	1.2	7.76	2.39
Markarfljót	ISM.	jw508.	IS-M-27.1	Feb. '11.	0	0.03	0.12	19.84	4.73	2.91	233.85	1.08	2.56	1.59
Markarfljót	ISM.	jw508.	IS-M-17.1_I	Feb. '11.	0	6.76	0.16	70.54	16.86	45.06	583.36	3.48	6.48	3.46
Markarfljót	ISM.	jw508.	IS-M-10.1	Feb. '11.	0.06	3.25	0.04	12.7	3.71	1.47	175.13	0.92	2.18	2.81
Markarfljót	ISM.	jw508.	IS-M-37.2_I	Feb. '11.	0	26.5	0.09	82.68	4.61	2.22	575.19	1.24	4.43	4.9
Markarfljót	ISM.	jw508.	IS-M-18.2_E	Feb. '11.	0	0.49	0.06	11.94	5.31	1.53	258.5	0.83	4.77	7.63
Markarfljót	ISM.	jw508.	IS-M-34.1	Feb. '11.	0.03	0.01	0.08	21.03	5.06	1.27	189.47	1.5	4.93	3.02
Markarfljót	ISM.	jw508.	IS-M-21.1_I	Feb. '11.	0	1.21	0.11	66.49	9.18	6.88	544.84	2.42	86.36	4.21
Markarfljót	ISM.	jw508.	IS-M-29.1_E	Feb. '11.	0	0.9	0.13	15.28	3.8	6.52	282.89	1.03	4.27	8.01
Markarfljót	ISM.	jw508.	IS-M-14.1	Feb. '11.	0	0.02	0.1	19.39	4.98	2.58	189.07	0.94	2.98	4.88
Markarfljót	ISM.	jw508.	IS-M-28.1	Feb. '11.	0	0.03	0.17	9.57	3.47	31.01	242.04	0.85	2.19	11.77
Markarfljót	ISM.	jw508.	IS-M-32.1_I	Feb. '11.	0	1.14	0.06	44.31	4.35	3.75	237.42	0.93	3.93	13.19
Markarfljót	ISM.	jw508.	IS-M-23.1	Feb. '11.	0	0.09	0.1	12.66	4.74	1.89	286.69	1.13	4.02	2.65
Markarfljót	ISM.	jw508.	IS-M-26.1	Feb. '11.	0	0.68	0.08	20.09	3.63	2.67	335.6	0.89	2.71	20.04
Markarfljót	ISM.	jw508.	IS-M-36.1	Feb. '11.	0.09	0.03	0.06	35.85	8.45	4.22	285.48	1.61	5.48	12.92
Markarfljót	ISM.	jw508.	IS-M-30.2_E	Feb. '11.	0	0.05	0.21	22.15	4.86	17.16	305.48	1.06	4.42	9.15
Markarfljót	ISM.	jw508.	IS-M-41.1	Feb. '11.	0	14.37	0.52	18.49	4.36	6.32	411.42	1.03	4.2	22.08
Miđá	ISMi.	jw508.	IS-MI_25.1	Feb. '11.	0	0.12	0.03	28.94	4.35	2.79	175.99	0.95	4.08	6
Miđá	ISMi.	jw508.	IS-MI_32.1	Feb. '11.	0	0.52	0.06	58.35	6.62	4.13	750.42	1.44	4.45	12.15
Miđá	ISMi.	jw508.	IS-Mi-24.2_DC	Feb. '11.	0	0.09	0.05	51.07	4.67	7.63	1,140.54	1	4.97	87.9

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Miđá	ISMi.	jw508.	IS-MI_39.1	Feb. '11.	0	94.48	0.17	78.07	4.39	2.44	268.17	5.66	3.4	10.93
Miđá	ISMi.	jw508.	IS-MI_40.1	Feb. '11.	0	0.03	0.08	35.07	5.75	3.38	170.49	1.29	3.75	6.51
Miđá	ISMi.	jw508.	IS-MI_30.1_C	Feb. '11.	0	0.6	0.04	51.44	5.6	4.15	598.65	1.15	4.66	23.9
Miđá	ISMi.	jw508.	IS-Mi-23.1_C	Feb. '11.	0	0.02	0.02	15.44	4.82	3.31	247.46	1.09	5.14	10.37
Miđá	ISMi.	jw508.	IS-Mi-24.1_4	Feb. '11.	0	0.06	0.06	12.75	5.21	4.92	216.44	0.97	5.02	20.6
Miđá	ISMi.	jw508.	IS-Mi-18.1	Feb. '11.	0	19.49	0.07	16.73	3.88	2.07	235.83	0.94	4.08	7.43
Miđá	ISMi.	jw508.	IS-Mi-9.1_DC	Feb. '11.	0	0.65	0.04	19.93	3.51	3.2	510	0.93	3.35	25.38
Miđá	ISMi.	jw508.	IS-Mi-13.1	Feb. '11.	0	0.76	0.16	10.04	4.57	9.29	192.52	1.05	4.29	26.8
Miđá	ISMi.	jw508.	IS-Mi-22.2_E	Feb. '11.	0	0.01	0.01	37.59	4.66	21.28	283.62	1.18	124.11	5.38
Miđá	ISMi.	jw508.	IS-MI_38.1	Feb. '11.	0	0.5	0.07	72.63	9.59	6.45	300.16	1.57	6.72	6.57
Miđá	ISMi.	jw508.	IS-Mi-1.1_I	Feb. '11.	0	0.27	0	10.05	1.66	1.69	358.67	0.39	2.01	10.22
Miđá	ISMi.	jw508.	IS-MI_33.1	Feb. '11.	0	0.19	0.09	33.94	5.91	3.73	368.24	1.33	4.35	32.42
Miđá	ISMi.	jw508.	IS-Mi-10.2_I	Feb. '11.	0	0.01	0.08	8.14	4	2.38	244.69	0.97	4.15	8.85
Miđá	ISMi.	jw508.	IS-MI_34.1	Feb. '11.	0	50.68	0.08	37.03	7.37	5.28	296.2	1.32	6.71	24.78
Miđá	ISMi.	jw508.	IS-Mi-15.1	Feb. '11.	0	0	0.08	15.62	3.95	3.78	162.02	0.93	4.14	3.38
Miđá	ISMi.	jw508.	IS-MI_27.1	Feb. '11.	0	0.35	0.04	47.5	22.37	99.54	525.88	18.58	5.87	35.84
Miđá	ISMi.	jw508.	IS-Mi-2.1	Feb. '11.	0	0.01	0.03	12.74	2.82	19.51	362.32	0.64	3.09	31.54
Miđá	ISMi.	jw508.	IS-Mi-5.1	Feb. '11.	0	0.15	0.05	23.76	17.75	93.91	310.57	1.41	4.34	9.88
Miđá	ISMi.	jw508.	IS-Mi-1.2_E	Feb. '11.	0	0	0.05	9.27	2.92	2.79	283.62	0.7	3.81	9.19
Miđá	ISMi.	jw508.	IS-Mi-21.2_C	Feb. '11.	0	0.24	0.04	42.15	5.04	4.07	382.56	1.08	5.6	13.59
Miđá	ISMi.	jw508.	IS-Mi-22.1_C	Feb. '11.	0	0.37	0.04	129.79	4.61	4.18	548.24	1.08	5.64	8.35
Miđá	ISMi.	jw508.	IS-Mi-23.2_I	Feb. '11.	0	0	0.02	11.95	4.69	3.7	182.17	1.05	5.75	10.43
Miđá	ISMi.	jw508.	IS-Mi-7.1	Feb. '11.	0	0.17	0.08	33.03	3.53	3.34	187.17	0.98	3.91	11.53
Miđá	ISMi.	jw508.	IS-Mi-12.1	Feb. '11.	0	0.01	0.03	10.37	4.7	3.97	297	1.09	4.97	7.94
Miđá	ISMi.	jw508.	IS-Mi-3.1	Feb. '11.	0	1.05	0.07	7.6	3.45	17.23	315.18	1.49	3.52	30.12
Miđá	ISMi.	jw508.	IS-MI_41.1	Feb. '11.	0	0.02	0.06	31.12	5.59	3.88	250.93	1.27	2.89	9.09
Miđá	ISMi.	jw508.	IS-Mi-17.1	Feb. '11.	0	0.98	0.01	74.5	4.45	5.01	1,055.03	1.19	4.39	46.48
Miđá	ISMi.	jw508.	IS-Mi-19.1_B	Feb. '11.	0	0.02	0.07	12.73	4.53	3.11	325.81	1.05	5.31	7.91
Miđá	ISMi.	jw508.	IS-MI_37.1	Feb. '11.	0	0.14	0.05	61.61	13.48	26.4	316.16	1.47	7.97	22.95
Miđá	ISMi.	jw508.	IS-Mi-4.1	Feb. '11.	0	0.25	0.02	20.53	3.73	10.11	238.55	0.99	2.86	13.48
Miđá	ISMi.	jw508.	IS-MI_26.2_E	Feb. '11.	0	0.02	0.06	17.4	4.84	4.77	311.27	1.09	4.35	30.41

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Miđá	ISMi.	jw508.	IS-MI_42.1	Feb. '11.	0.01	1.35	0.07	43.76	6.41	3.01	520.09	1.07	3.75	19.53
Miđá	ISMi.	jw508.	IS-MI_28.2_E	Feb. '11.	0	0.02	0.09	26.95	5.47	4.26	183.2	1.33	4.27	12.94
Miđá	ISMi.	jw508.	IS-Mi-6.1	Feb. '11.	0	0	0.07	14.08	4.4	4.64	238.29	1.13	4.94	15.16
Miđá	ISMi.	jw508.	IS-MI_36.1	Feb. '11.	0	0.02	0.09	25.95	5.81	2.9	214.57	1.19	4.72	17.14
Miđá	ISMi.	jw508.	IS-Mi-11.1_I	Feb. '11.	0	0.48	0.09	13.24	3.61	4.48	323.8	0.92	3.83	53.23
Miđá	ISMi.	jw508.	IS-Mi-21.1_E	Feb. '11.	0	0.01	0.03	13.21	6.54	3.45	145.05	1.37	5.87	15.84
Miđá	ISMi.	jw508.	IS-MI_26.1_I	Feb. '11.	0	0.22	0.07	26.98	4.26	3.46	508.92	0.87	3.39	33.76
Miđá	ISMi.	jw508.	IS-MI_29.1_I	Feb. '11.	0	0.07	0.09	23.1	5.34	3.72	271.64	1.16	4.8	32.57
Miđá	ISMi.	jw508.	IS-Mi-14.1	Feb. '11.	0	0.01	0.06	10.93	4.19	2.36	246.78	1.05	4.22	17.27
Miđá	ISMi.	jw508.	IS-MI_31.1	Feb. '11.	0	0.03	0.1	28	6.88	3.87	253.45	1.6	5.17	13.55
Miđá	ISMi.	jw508.	IS-Mi-10.1_C	Feb. '11.	0	0.24	0.13	20.43	3.77	2.58	220.46	1.02	4.31	16.28
Miđá	ISMi.	jw508.	IS-Mi-11.2_E	Feb. '11.	0	0.17	0.06	10.77	3.64	4.93	316.53	0.85	3.73	63.9
Miđá	ISMi.	jw508.	IS-Mi-8.1	Feb. '11.	0	0.07	0.03	22.39	4.23	4.47	323.62	1.09	3.72	20.72
Miđá	ISMi.	jw508.	IS-MI_28.1_I	Feb. '11.	0.01	0.26	0.06	37.42	5.45	3.31	451.89	1.28	5.49	32.23
Öræfajökull	IOHn.	JW444.	IOHN1-10.1I	Aug. '09.	1.36	0.04	0.14	20.21	10.59	29.07	90.43	1.86	4.3	3.6
Öræfajökull	IOHn.	JW444.	IOHN1-14.1I	Aug. '09.	0.15	0.02	0.19	20.22	10.74	43.5	139.97	1.83	5.58	4
Öræfajökull	IOHn.	JW444.	IOHN1-16.1I	Aug. '09.	6.34	0.67	0.18	31.96	11.76	39.67	420.34	2.15	5.47	3.47
Öræfajökull	IOHn.	JW444.	IOHN1-17.2C	Aug. '09.	15.36	1.4	0.2	85.32	7.82	40.86	489.79	1.01	4.7	4.25
Öræfajökull	IOHn.	JW444.	IOHN1-11.1I	Aug. '09.	0.93	0.07	0.2	29.44	8.64	28.06	143.47	1.33	4.02	3.83
Öræfajökull	IOHn.	JW444.	IOHN1-13.1I	Aug. '09.	5.26	0.03	0.18	24.91	7.5	28.34	124.53	1.08	3.61	4.13
Öræfajökull	IOHn.	JW444.	IOHN1-19.1C	Aug. '09.	11.37	0.37	0.21	70.99	16.31	54.04	431.13	7.15	9.18	3.01
Öræfajökull	IOHn.	JW444.	IOHN1-3.1T	Aug. '09.	7.99	0.72	0.17	59.81	8.69	31.57	366.86	1.7	5.36	2.46
Öræfajökull	IOHn.	JW444.	IOHN1-14.2E	Aug. '09.	0.53	0	0.13	20.68	7.93	29.21	122.41	1.81	4.65	4.97
Öræfajökull	IOHn.	JW444.	IOHN1-2.1R	Aug. '09.	0.12	0.01	0.21	12.63	9.76	35.37	155.96	1.93	6.65	4.38
Öræfajökull	IOHn.	JW444.	IOHN1-17.1E	Aug. '09.	0.49	0.01	0.21	22.21	8.47	34.42	148.33	1.26	3.85	4.05
Öræfajökull	IOHn.	JW444.	IOHN1-9.1E	Aug. '09.	0.96	0.36	0.1	19.53	9.74	36.61	258.58	1.95	3.37	1.94
Öræfajökull	IOHn.	JW444.	IOHN1-19.2T2	Aug. '09.	2.02	0.01	0.1	21.56	4.13	12	138.97	0.88	1.18	5.21
Öræfajökull	IOHn.	JW444.	IOHN1-3.2I	Aug. '09.	15.04	0.79	0.22	51.82	10.1	40.93	398.37	2.43	6.86	2.75
Öræfajökull	IOHn.	JW444.	IOHN1-7.2C	Aug. '09.	2	2.16	0.16	86.94	7.82	34.24	861.62	1.35	6.12	6.93
Öræfajökull	IOHn.	JW444.	IOHN1-1.2E	Aug. '09.	1.79	0.37	0.13	28.71	14.91	31.2	279.37	10.95	5.42	2.04
Öræfajökull	IOHn.	JW444.	IOHN1-8.1I	Aug. '09.	0.7	0.05	0.12	30.69	7.43	29.32	111.76	1.13	4.57	4.61

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Öræfajökull	IOHn.	JW444.	IOHN1-7.1T	Aug. '09.	0.07	0.02	0.14	14.88	8.64	23.03	163.52	1.84	6.96	4.76
Öræfajökull	IOHn.	JW444.	IOHN1-4.2R	Aug. '09.	0.31	0.04	0.28	15.27	15.08	44.75	251.23	2.25	6.09	6.04
Öræfajökull	IOHn.	JW444.	IOHN1-5.2T	Aug. '09.	0.15	0.02	0.26	22.34	12.26	33.99	165.76	2.21	6.28	3.94
Öræfajökull	IOHn.	JW444.	IOHN1-15.2I	Aug. '09.	0.04	0.01	0.17	16.08	12.02	35.66	149.23	2.16	5.85	4.85
Öræfajökull	IOHn.	JW444.	IOHN1-18.1E	Aug. '09.	0.33	0.02	0.16	26.73	8.84	31.86	164.91	1.56	3.7	4.98
Öræfajökull	IOHn.	JW444.	IOHN1-15.3C	Aug. '09.	1.77	4.37	0.24	302.79	10.57	40.99	1,231.84	1.78	4.74	5.4
Selardalur	IXSD	TLC7.	IXSD1B-7.1	May '13.										15.29
Selardalur	IXSD	TLC7.	IXSD1B-12.1	May '13.										17.86
Selardalur	IXSD	TLC7.	IXSD1B-8.1	May '13.										2.4
Selardalur	IXSD	TLC7.	IXSD1B-6.1	May '13.										19.72
Selardalur	IXSD	TLC7.	IXSD1B-3.1	May '13.										25.22
Selardalur	IXSD	TLC7.	IXSD1B-5.1	May '13.										25.28
Selardalur	IXSD	TLC7.	IXSD1B-10.1	May '13.										30.33
Selardalur	IXSD	TLC7.	IXSD1B-11.1	May '13.										3.03
Selardalur	IXSD	TLC7.	IXSD1B-4.1	May '13.										2.6
Selardalur	IXSD	TLC7.	IXSD1B-1.1	May '13.										4.15
Selardalur	IXSD	TLC7.	IXSD1B-2.1	May '13.										3.74
Selardalur.	IXSD1b.	TLC2.	IXSD_1B_3.1	Jan. '13.	0.32	2.27	0.09	147.25	2.13	7.23	451.67	0.42	2.2	1.85
Selardalur.	IXSD1b.	TLC2.	IXSD_1B_5.1	Jan. '13.	0.04	0.27	0.03	21.7	1.86	6.48	228.66	0.42	1.92	12.09
Selardalur.	IXSD1b.	TLC2.	IXSD_1B_6.1	Jan. '13.	0.21	0.63	0.07	69.74	6.48	89.22	463.83	2.74	12.75	1.53
Selardalur.	IXSD1b.	TLC2.	IXSD_1B_1.1	Jan. '13.	0.02	0.14	0.05	21.57	2.94	7.18	237.4	0.51	2.88	2.84
Selardalur.	IXSD1b.	TLC2.	IXSD_1B_4.1	Jan. '13.	0.01	0.04	0.06	13.58	2.4	5.43	234.6	0.36	2.38	2.28
Selardalur.	IXSD1b.	TLC2.	IXSD_1B_2.1	Jan. '13.	0.1	0.23	0.07	47.51	22.45	13.08	237.21	4.84	6.11	3.44
Slaufurdalur[24]	IISLau*	AJP01.	IISLAU-12-9.1	May '13.										43.87
Slaufurdalur	IISLau*	AJP01.	IISLAU-12-5.1	May '13.										27.04
Slaufurdalur	IISLau*	AJP01.	IISLAU-12-4.1	May '13.										33.22
Slaufurdalur	IISLau*	AJP01.	IISLAU-12-1.1	May '13.										52.16
Slaufurdalur	IISLau*	AJP01.	IISLAU-12-7.1	May '13.										50.62
Slaufurdalur	IISLau*	AJP01.	IISLAU-12-2.1	May '13.										57.76
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-23.1	Apr. '12.	0	10.98	0.09	8.33	6	12.35	123.77	4.2	5.54	38.36

[24] All Slafrudalur data collected and shared by Abraham Padilla

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-8.1	Apr. '12.	0	0.7	0.17	83.99	21.72	31.41	39.87	5.57	11.48	29.55
Snæfellsness-Knörr	IISK.	TLC1.	IIKS-9.1	Apr. '12.	0	11.94	0.1	13.32	4.65	12.2	145.21	2.18	5.24	55.13
Snæfellsness-Knörr	IISK.	TLC1.	IIKS-10.1	Apr. '12.	0.03	1.98	0.16	113.52	7.36	13.9	135.38	1.37	4.28	7.26
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-19.1	Apr. '12.	0.01	17.88	0.06	19.85	4.75	10.8	174.1	1.19	5.56	49.27
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-5.2	Apr. '12.	0.04	71.07	0.19	90.15	8.23	19.59	357.99	1.46	6.53	15.25
Snæfellsness-Knörr	IISK.	TLC1.	IIKS-15.1	Apr. '12.	0	14.69	0.15	23.12	2.76	10.61	234.17	0.76	3.13	4.78
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-25.1	Apr. '12.	0	1.89	0.04	110.56	1.88	9.31	109.9	0.7	2.72	105.73
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-23.2	Apr. '12.	0.01	0.14	0.05	35.36	18.03	9.97	156.57	1.26	3.33	7.27
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-16.1	Apr. '12.	0.01	3.15	0.22	110.86	12.7	29.13	177.21	20.15	6.13	14.85
Snæfellsness-Knörr	IISK.	TLC1.	IIKS-13.1	Apr. '12.	0.07	8.5	0.09	1,271.70	21.97	24.23	340.89	10.13	9.6	35.41
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-18.2	Apr. '12.	0.01	3.33	0.08	18.44	3.26	10.15	271.37	0.99	4.7	25.82
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-26.1	Apr. '12.	0	0.1	0.05	26.35	5.44	12.5	204.33	2.51	20.49	7.38
Snæfellsness-Knörr	IISK.	TLC1.	IIKS-14.1	Apr. '12.	0.01	0.37	0.1	45.01	3.55	10.4	269.2	2.85	4.22	13.41
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-7.1	Apr. '12.	0.01	0.15	0.13	28.81	17.32	26.41	237.76	7.18	15.95	6.1
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-1.1	Apr. '12.	0	14.31	0.12	15.16	7.75	14.66	170.91	1.44	5.24	25.77
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-2.1	Apr. '12.	0.12	4.02	0.18	929.66	24.77	35.55	258.2	16.93	8.6	48.92
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-24.1	Apr. '12.	0.11	27.34	0.3	32.63	12.94	25.95	216.9	9.44	4.58	57.58
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-18.1	Apr. '12.	0.05	12.05	0.32	272.22	13	26.49	136.18	1.61	16.42	51.3
Snæfellsness-Knörr	IISK.	TLC1.	IISK1-22.1	Apr. '12.	0.06	33.52	0.58	263.2	8.15	24.9	196.94	2.17	5.61	28.65
Stóraá	ISS.	TLC2.	ISS_3.1	Jan. '13.	0.01	186.71	0.37	37.01	3.16	8.06	469.82	0.68	3.37	14.16
Stóraá	ISS.	TLC2.	ISS_29.1	Jan. '13.	0.01	28.73	0.12	24.82	2.92	5.44	147.72	0.43	2.28	4.67
Stóraá	ISS.	TLC2.	ISS_13.1	Jan. '13.	0.01	264.37	0.62	58.41	2.03	5.1	343.7	0.39	2.35	5.17
Stóraá	ISS.	TLC2.	ISS_48.1	Jan. '13.	0.01	156.43	0.19	36.79	2.05	5.21	445.35	0.67	1,275.61	6
Stóraá	ISS.	TLC2.	ISS_2.1	Jan. '13.	0.01	5.25	0.11	14.69	2.94	7.01	206.31	0.54	3.21	4.4
Stóraá	ISS.	TLC2.	ISS_39.1	Jan. '13.	0.01	45.43	0.2	17.51	1.87	5.3	260.66	0.45	2.25	5.78
Stóraá	ISS.	TLC2.	ISS_12.1	Jan. '13.	0	43.16	0.22	12.73	2.42	5.42	199.84	0.44	2.68	4.22
Stóraá	ISS.	TLC2.	ISS_18.1	Jan. '13.	0.01	3.44	0.07	11.5	2.61	6.71	214.11	0.43	2.58	5.01
Stóraá	ISS.	TLC2.	ISS_26.1	Jan. '13.	0.01	22.61	0.27	21.03	2.03	4.83	244.78	1.08	2.37	5.75
Stóraá	ISS.	TLC2.	ISS_27.1	Jan. '13.	0.01	44.22	0.09	17.97	1.91	4.18	232.64	0.36	2.03	5.24
Stóraá	ISS.	TLC2.	ISS_41.1	Jan. '13.	0	15.45	0.11	11.01	1.86	4.82	207.72	0.47	2.17	4.44
Stóraá	ISS.	TLC2.	ISS_14.1	Jan. '13.	0.01	2.38	0.13	18.96	1.95	5.61	158.82	1.13	2.52	4.98

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Stóraá	ISS.	TLC2.	ISS_16.1	Jan. '13.	0.02	403.03	0.98	53.33	2.11	6.09	271.5	0.42	2.4	3.8
Stóraá	ISS.	TLC2.	ISS_32.1	Jan. '13.	0.12	844.7	1.16	80.76	2.33	8.15	881.16	0.43	2.7	8.47
Stóraá	ISS.	TLC2.	ISS_19.1	Jan. '13.	0	27.61	0.08	12.59	1.84	5.06	213.34	0.45	2.41	6.5
Stóraá	ISS.	TLC2.	ISS_47.1	Jan. '13.	0.01	0.11	0.07	24.49	4.87	6.78	238.74	0.48	3.41	5.98
Stóraá	ISS.	TLC2.	ISS_31.1	Jan. '13.	0.01	3.95	0.1	17.8	2.27	7.12	261.87	0.43	2.25	6.08
Stóraá	ISS.	TLC2.	ISS_37.1	Jan. '13.	0.02	337.53	0.38	48.09	2.62	7.62	525.1	0.58	2.94	11.07
Stóraá	ISS.	TLC2.	ISS_28.1	Jan. '13.	0	0.37	0.07	27.5	2.04	6.1	450	0.38	2.3	3.37
Stóraá	ISS.	TLC2.	ISS_5.1	Jan. '13.	0	42.38	0.13	6.73	1.86	5.69	427.01	0.38	2.51	44.1
Stóraá	ISS.	TLC2.	ISS_34.1	Jan. '13.	0.56	273.63	0.64	16.83	2.43	6.52	411.77	0.43	2.5	18.76
Stóraá	ISS.	TLC2.	ISS_30.1	Jan. '13.	0.01	199.89	0.6	16.16	2.69	6.21	412.46	0.51	2.83	19.68
Stóraá	ISS.	TLC2.	ISS_15.1	Jan. '13.	0.02	807.01	2.36	63.34	1.92	5.45	669.56	0.42	2.42	11.52
Stóraá	ISS.	TLC2.	ISS_8.1	Jan. '13.	0.01	19.26	0.04	30.26	2.09	8.68	503.93	0.41	2.63	10.83
Stóraá	ISS.	TLC2.	ISS_38.1	Jan. '13.	0.01	215.64	0.36	34.4	1.65	7.55	473.94	0.4	2.82	20.75
Stóraá	ISS.	TLC2.	ISS_23.1	Jan. '13.	0.07	218.48	0.39	150.87	7.46	9.9	483.92	4.31	8.16	11.99
Stóraá	ISS.	TLC2.	ISS_20.1	Jan. '13.	0.01	131.91	0.6	16.42	1.94	15.99	364.49	0.36	2.38	25.95
Stóraá	ISS.	TLC2.	ISS_9.1	Jan. '13.	0	0.04	0.08	10.71	2.99	6.16	238.72	0.55	2.97	29.39
Stóraá	ISS.	TLC2.	ISS_11.1	Jan. '13.	0.15	145.36	1	117.73	5.19	41.48	2,087.16	16.33	44.03	129.28
Stóraá	ISS.	TLC2.	ISS_7.1	Jan. '13.	0.01	202.27	2.06	32.21	2.18	11.39	1,098.94	0.43	2.47	64.78
Stóraá	ISS.	TLC2.	ISS_21.1	Jan. '13.	0.01	289.98	7.69	136.93	5.91	28.2	722.56	0.51	4.59	20.56
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-17.2	Apr. '12.	0	29.88	1.5	4.64	2.78	18.6	215.18	1	91.61	23.93
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-4.1	Apr. '12.	4.69	0.4	0.47	4.67	8.21	78.65	487.89	6	6.55	108.13
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-15.2	Apr. '12.	0	12.33	0.01	2.13	4.09	11.13	203.7	1.62	7.16	25.81
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-9.1	Apr. '12.	0	13.7	0.11	5.42	4.66	14.46	202.88	1.18	67.76	19.43
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-23.2	Apr. '12.	0	17.21	0.08	6.36	4.91	10.58	225.9	3.38	8.83	27.47
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-11.1	Apr. '12.	0	18.03	0.07	3	2.82	11.04	196.67	0.77	2.91	41.36
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-21.1	Apr. '12.	0	79.79	0.13	2.25	3.5	11.3	325.78	1.26	4.98	69.86
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-13.1	Apr. '12.	0	9.31	0.15	4.37	5.25	17.11	193.18	1.58	6.97	21.61
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-25.1	Apr. '12.	0	25.92	0.07	17.06	15.73	40.22	249.27	34.57	25.28	23.33
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-17.1	Apr. '12.	0	182.05	0.22	18.91	9.35	94.04	386.43	4.77	6.22	77.46
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-1.1	Apr. '12.	0	39.91	0.08	3.44	7.38	15.56	435.58	2.42	13.94	115.37
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-18.1	Apr. '12.	0	2.24	0.08	2.19	12.36	17.14	198.45	26.63	9.11	23.83
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-2.1	Apr. '12.	0	20.63	0.03	1.04	3.6	11.12	165.42	1.97	4.15	48.41

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-10.1	Apr. '12.	0	137.23	0.21	9.48	7.1	14.21	299.17	2.13	8.74	68.89
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-20.1	Apr. '12.	0	165.9	0.09	16.7	10.97	17.03	295.75	3.75	5.32	62.28
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-15.1	Apr. '12.	0	153.54	0.05	7.29	3.47	12.5	363	1.08	4.16	51.12
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-6.1	Apr. '12.	0	83.13	0.09	4.18	5.93	11.25	246.07	3.3	11.97	43.02
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-13.2	Apr. '12.	0	98.2	0.42	14.18	32.9	60.79	328.06	4.09	10.88	35.28
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-5.1	Apr. '12.	0.01	456.77	0.15	14.47	4.18	12.6	433.29	1.14	5.63	89.08
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-8.1	Apr. '12.	0	67.45	0.29	6.99	6.16	34.62	392.15	4.45	67.19	81.66
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-23.1	Apr. '12.	0.01	488.51	0.02	21.84	5.51	22.99	435.89	3.98	5.62	84.19
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-3.1	Apr. '12.	0	17.07	0.1	2.05	3.2	10.11	216.67	0.79	2.9	47.98
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-22.1	Apr. '12.	0	167.86	0.1	14.16	3.51	11.98	487.23	1.27	9.01	69.84
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-14.1	Apr. '12.	0	12.65	0.07	11.57	5.58	30.78	534.73	10.14	18.76	82.46
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-16.1	Apr. '12.	0.01	68.47	0.19	1.99	4.62	50.34	343.95	1.14	3.71	138.54
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-19.1	Apr. '12.	0	53.94	0.08	22.62	38.89	49.9	315.12	6.66	164.87	71.9
Stóra-Laxá	IEFS1a.	TLC1.	IEFS1A-24.1	Apr. '12.	0.01	139.41	0.21	3.53	9.55	15.13	452.36	4.11	11.45	152.01
Tjörnes.	IXT.	jw529.	IXT_4.2E	Aug. '11.	0.01	0.01	0.03	15.07	2.01	8.88	257.57	1.51	1.39	3.12
Tjörnes.	IXT.	jw529.	IXT_6.1I	Aug. '11.	0.03	0.06	0.05	39.3	13.74	22.78	154.94	17.46	3.43	4.86
Tjörnes.	IXT.	jw529.	IXT_1.1I	Aug. '11.	0.14	0.07	0.05	15.61	2.31	10.29	330.84	1.36	1.23	21.38
Tjörnes.	IXT.	jw529.	IXT_6.2E	Aug. '11.	0	0.02	0.03	11.05	1.24	9.19	126.85	0.88	0.9	4.08
Tjörnes.	IXT.	jw529.	IXT_2.2I	Aug. '11.	0.04	0.38	0.05	29.1	1.98	9.51	350.41	1.45	1.53	3.37
Tjörnes.	IXT.	jw529.	IXT_4.1I	Aug. '11.	0.09	0.19	0.05	27.15	2.12	9.89	623.46	1.15	1.1	8.48
Tjörnes.	IXT.	jw529.	IXT_5.1E	Aug. '11.	0.01	0.01	0.05	11.48	1.79	9.76	171.88	0.98	1.04	2.66
Tjörnes.	IXT.	jw529.	IXT_2.1E	Aug. '11.	0	0.03	0.07	11.6	1.96	8.9	211.42	1.64	1.08	4.06
Tjörnes.	IXT.	jw529.	IXT_8.2E	Aug. '11.	0	0.02	0.03	13.79	2.08	10.03	233.87	1.66	1.66	3.2
Tjörnes.	IXT.	jw529.	IXT_5.2I	Aug. '11.	0.26	0.61	0.05	35.37	2.35	9.79	293.16	1.3	1.2	6.99
Tjörnes.	IXT.	jw529.	IXT_8.1C	Aug. '11.	0.01	0.13	0.1	60.19	7.47	17.74	228.32	2.49	2.1	2.5
Tjörnes.	IXT.	jw529.	IXT_9.1SZ	Aug. '11.	0	25.93	0.1	14.66	1.79	10.94	313.94	1.15	1.46	5.03
Tjörnes.	IXT.	jw529.	IXT_3.1E	Aug. '11.	0	0	0.02	10.24	2.18	10.41	207.35	1.47	1.34	24.19
Tjörnes.	IXT.	jw529.	IXT_3.2C	Aug. '11.	0.06	0.74	0.06	28.11	2.33	11.45	648.96	1.63	1.6	112.11
Tjörnes.	IXT.	jw529.	IXT_7.1I	Aug. '11.	0	0.06	0.04	8.52	1.47	17.01	362.18	1.18	1.51	53.02
Tjörnes.	IXT.	jw530.	IXT10.1I	Aug. '11.	0	14.68	0.02	25.1	3.16	11.99	403.64	2.42	3.88	6.66
Tjörnes.	IXT.	jw530.	IXT12.2E	Aug. '11.	0	0.03	0.06	20.43	3.64	11.71	222.39	2.52	3.08	2.94

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Tjörnes.	IXT.	jw530.	IXT16.2E	Aug. '11.	0.02	0.03	0.01	12.27	3.13	12.54	263.19	2.37	3.15	5.37
Tjörnes.	IXT.	jw530.	IXT11.1I	Aug. '11.	0.05	0.04	0.04	24.5	4.04	13.46	348.78	2.86	3	1.79
Tjörnes.	IXT.	jw530.	IXT20.2C	Aug. '11.	0	0.59	0.05	62.36	8.74	19.69	330.96	8.2	3.46	11.07
Tjörnes.	IXT.	jw530.	IXT14.1I	Aug. '11.	0	1.2	0.08	48.45	4.19	14.27	219.02	6.66	3.09	8.55
Tjörnes.	IXT.	jw530.	IXT12.1C	Aug. '11.	0	0.32	0.04	67.7	3.49	12.44	524.88	2.55	2.92	5.13
Tjörnes.	IXT.	jw530.	IXT17.1E	Aug. '11.	0	0.04	0.03	14.73	1.96	10.32	445.25	1.26	2.13	16.86
Tjörnes.	IXT.	jw530.	IXT13.1I	Aug. '11.	0	0.02	0.06	11.83	3.75	12.43	214.41	2.71	3.22	18.96
Tjörnes.	IXT.	jw530.	IXT20.1E	Aug. '11.	0	0.01	0.04	13.71	2.16	9.21	180.14	2.38	1.85	5.45
Tjörnes.	IXT.	jw530.	IXT18.1I	Aug. '11.	0	0	0.01	10.11	2.3	12.24	364.54	1.44	2.59	32.54
Tjörnes.	IXT.	jw530.	IXT15.1E	Aug. '11.	0	0	0.01	13.66	2.9	11.59	682.24	1.96	2.84	32.69
Torfajökull	3A03.	jw181.	3A03TE-18.1I	Dec. '09.	0.03	0.77	0.05	14.93	1.39	11.53	381.25	0.37	1.96	12.01
Torfajökull	3A03.	jw181.	3A03TE-4.1E	Dec. '09.	0.01	0.08	0.04	20.37	1.52	12.91	364.09	0.36	1.84	19.56
Torfajökull	3A03.	jw181.	3A03TE-11.1E	Dec. '09.	0.26	0.41	0.01	14.47	1.33	11.95	307.65	0.4	1.77	19.78
Torfajökull	3A03.	jw181.	3A03TE-16.1C	Dec. '09.	0.05	0.23	0.08	12.07	1.62	12.17	420.59	0.39	1.79	12.96
Torfajökull	3A03.	jw181.	3A03TE-17.1C	Dec. '09.	0	3.21	0.03	15.31	1.43	12.83	357.01	0.38	1.93	16.83
Torfajökull	3A03.	jw181.	3A03TE-1.2T	Dec. '09.	0.01	0.01	0.08	14.02	1.69	13.15	353.92	0.39	1.66	14.16
Torfajökull	3A03.	jw181.	3A03TE-12.1I	Dec. '09.	0.02	0.04	0.06	10.1	1.53	13.37	333.13	0.4	2	14.08
Torfajökull	3A03.	jw181.	3A03TE-8.1I	Dec. '09.	0.08	1.1	0.05	21.42	1.39	13.16	491.63	0.41	1.61	20.18
Torfajökull	3A03.	jw181.	3A03TE-6.1E	Dec. '09.	0	0.4	0.05	24.4	1.61	14.17	432.84	0.42	1.99	15.24
Torfajökull	3A03.	jw181.	3A03TE-1.1I	Dec. '09.	0.08	0.08	0.02	11.83	1.71	13.63	348.62	0.41	1.83	17.34
Torfajökull	3A03.	jw181.	3A03TE-7.1E	Dec. '09.	0.02	0.07	0.05	14.77	1.7	19.62	507.97	0.48	2.22	17.93
Torfajökull	3A03.	jw181.	3A03TE-10.1I	Dec. '09.	0	7.53	0.04	15.96	1.39	13.23	413.59	0.4	1.72	29.75
Torfajökull	3A03.	jw181.	3A03TE-13.1E	Dec. '09.	0	1.26	0.04	18.5	1.7	12.83	414.63	0.38	1.99	18.67
Torfajökull	3A03.	jw181.	3A03TE-15.1E	Dec. '09.	0	6.17	0.04	11.18	1.61	10.78	449.88	0.38	1.68	16.83
Torfajökull	3A03.	jw181.	3A03TE-14.1E	Dec. '09.	0.03	0.15	0.06	18.33	1.76	13.17	463.86	0.43	1.82	18.94
Torfajökull	3A03.	jw181.	3A03TE-3.1I	Dec. '09.	0.09	3.3	0.05	26.2	1.63	16.03	519.57	0.55	1.79	31.37
Torfajökull	3A03.	jw181.	3A03TE-9.1C	Dec. '09.	10.81	2.27	0.06	20.73	1.81	14.89	545.08	0.42	2.04	19.94
Torfajökull	3A03.	jw181.	3A03TE-2.1I	Dec. '09.	0.14	0.13	0.06	18.7	1.46	11.69	497.97	0.35	1.65	23.92
Torfajökull	3A03.	jw181.	3A03TE-5.1E	Dec. '09.	0.11	0.02	0.03	15.02	1.71	12.94	451.6	0.38	2.09	20.02
Torfajökull	5A03.	jw181.	5A03TE-2.1I	Dec. '09.	0	1.93	0.07	49.29	1.61	14.21	353.77	0.36	2.01	2.17
Torfajökull	5A03.	jw181.	5A03TE-7.2I	Dec. '09.	0	2.01	0.07	37.36	1.86	14.82	180.79	0.41	2.2	1.98

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Torfajökull	5A03.	jw181.	5A03TE-3.1I	Dec. '09.	0	3.63	0.07	54.4	1.8	13.53	305.35	0.4	1.9	2.57
Torfajökull	5A03.	jw181.	5A03TE-15.1I	Dec. '09.	0	1.62	0.06	51.55	2.05	14.58	192.17	0.48	2.12	2.64
Torfajökull	5A03.	jw181.	5A03TE-15.2E	Dec. '09.	0	0.3	0.09	15.19	1.79	14.02	268.78	0.48	2.2	3.78
Torfajökull	5A03.	jw181.	5A03TE-24.1C	Dec. '09.	0	1.01	0.07	46.19	1.76	14.07	311.29	0.36	2.22	3.24
Torfajökull	5A03.	jw181.	5A03TE-25.2C	Dec. '09.	0	0.71	0.04	81.32	3.6	16.21	189.07	1.02	2.4	2.69
Torfajökull	5A03.	jw181.	5A03TE-16.1C	Dec. '09.	0.01	1.52	0.05	37.72	1.8	14.9	242.16	0.51	2.01	3.89
Torfajökull	5A03.	jw181.	5A03TE-21.1E	Dec. '09.	0.37	0.21	0.03	18.25	1.76	14.15	359.12	0.44	2.06	4.32
Torfajökull	5A03.	jw181.	5A03TE-11.1I	Dec. '09.	0	0.16	0.08	19.46	1.6	15.52	220.57	0.46	2.05	3.12
Torfajökull	5A03.	jw181.	5A03TE-8.2E	Dec. '09.	0.38	0	0.05	21.66	1.82	14.64	231.13	0.44	1.89	5.91
Torfajökull	5A03.	jw181.	5A03TE-24.2E	Dec. '09.	0.17	0.26	0.02	18.71	1.63	12.35	394.61	0.34	2.1	5.09
Torfajökull	5A03.	jw181.	5A03TE-25.1E	Dec. '09.	0	0.13	0.04	16.13	1.73	11.95	231.05	0.35	1.73	3.39
Torfajökull	5A03.	jw181.	5A03TE-9.1E	Dec. '09.	3.07	1.35	0.06	33.08	2.32	16.09	404.95	0.48	2.71	5
Torfajökull	5A03.	jw181.	5A03TE-6.1I	Dec. '09.	0.03	0.64	0.08	29.52	1.6	13.34	279.55	0.39	2.14	3.51
Torfajökull	5A03.	jw181.	5A03TE-18.1I	Dec. '09.	0.1	0.47	0.05	20.45	1.5	14.46	269.74	0.44	1.68	3.61
Torfajökull	5A03.	jw181.	5A03TE-4.1C	Dec. '09.	0.01	0.9	0.03	39.05	1.58	14.01	334.32	0.39	1.89	4.2
Torfajökull	5A03.	jw181.	5A03TE-2.2E	Dec. '09.	0	0.22	0.05	35.75	5.34	19.9	175.35	1.34	2.36	1.98
Torfajökull	5A03.	jw181.	5A03TE-7.1E	Dec. '09.	0	0.17	0.02	15.52	1.66	13.22	333.28	0.35	2.08	7.26
Torfajökull	5A03.	jw181.	5A03TE-22.2E	Dec. '09.	0	0.06	0.07	17.84	1.62	13.31	323.61	0.38	1.9	5.78
Torfajökull	5A03.	jw181.	5A03TE-4.1C	Dec. '09.	9.75	4.52	0.09	184.08	10.24	26.05	708.33	2.03	2.25	4.83
Torfajökull	5A03.	jw181.	5A03TE-19.1I	Dec. '09.	0.05	0.46	0.07	11.62	2.16	14.24	180.61	0.47	2.11	10.5
Torfajökull	5A03.	jw181.	5A03TE-7.1C	Dec. '09.	0.1	0.84	0.13	37.95	1.79	15.49	326.01	0.45	2.35	7.65
Torfajökull	5A03.	jw181.	5A03TE-17.1C	Dec. '09.	2.65	1.78	0.05	198.11	9.93	35.35	755.52	6.8	2.55	15.88
Torfajökull	5A03.	jw181.	5A03TE-12.1C	Dec. '09.	0	0.39	0.08	25.52	1.42	14.82	369.98	0.42	1.98	7.92
Torfajökull	5A03.	jw181.	5A03TE-13.1I	Dec. '09.	0	3.21	0.04	35.13	1.3	14.64	312.84	0.4	1.91	7.25
Torfajökull	5A03.	jw181.	5A03TE-21.2C	Dec. '09.	0.99	0.15	0.01	52.09	8.96	24.29	360.73	1.62	4.79	4.3
Torfajökull	5A03.	jw181.	5A03TE-1.1	Dec. '09.	3.67	2.48	0.06	55.24	1.7	14.54	525.16	0.45	2.19	5.16
Torfajökull	5A03.	jw181.	5A03TE-22.1C	Dec. '09.	0.01	3.21	0.07	216.67	16.36	41.86	288.88	7.28	5.12	3.34
Torfajökull	5A03.	jw181.	5A03TE-14.1I	Dec. '09.	0.09	2.37	0.08	13.94	1.63	14.21	438.11	0.4	2.3	31.31
Torfajökull	5A03.	jw181.	5A03TE-23.1E	Dec. '09.	0.03	1.26	0.05	11.01	1.69	13.44	406.82	0.39	2.05	58.77
Torfajökull	5A03.	jw181.	5A03TE-20.1I	Dec. '09.	0.55	1.52	0.07	13.48	1.77	13.49	461.19	0.38	1.92	33.09
Torfajökull	5A03.	jw181.	5A03TE-10.1I	Dec. '09.	0.08	0.43	0.04	13.77	1.65	13.72	474.75	0.37	2.39	47.96

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Torfajökull	IETR	TLC8.	IETR-3.1	May '13.				33.69	15.67	23.09	349.11	3.15	71.48	0.03
Torfajökull	IETR	TLC8.	IETR-COL-6.1	May '13.						28.04	303.01	3.46	31.85	2.18
Torfajökull	IETR	TLC8.	IETR-5.2	May '13.				5.44	22.45	23.42	189.82	8.85	96.4	0.49
Torfajökull	IETR	TLC8.	IETR-31.1	May '13.					24.46	25.75	299.1	6.5	88.28	3.82
Torfajökull	IETR	TLC8.	IETR-5.1	May '13.				45.25	17.9	18.51	393.81	7.62	72.52	4.05
Torfajökull	IETR	TLC8.	IETR-33.1	May '13.					7.41	28.7	216.1	3.52	36.77	6.43
Torfajökull	IETR	TLC8.	IETR-3.2	May '13.				58.98	8.57	22.89	256.22	3.3	29.27	4.87
Torfajökull	IETR	TLC8.	IETR-34.1	May '13.					19.33	31.17	333.55	2.98	10.4	5.47
Torfajökull	IETR	TLC8.	IETR-32.1	May '13.					72.86	49.61	774.1	27.15	315.02	0.85
Torfajökull	IETR	TLC8.	IETR-35.1	May '13.					0.07	33.32	328.38	8.84	82.32	4.73
Torfajökull	IETR	TLC8.	IETR-7.2	May '13.						36.98	360.93	4.01	48.05	7.44
Torfajökull	IETR	TLC8.	IETR-8.1	May '13.					2.16	37.11	0.24	5.89	30.25	8.34
Torfajökull	IETR	TLC8.	IETR-COL-10.1	May '13.						25.43	399.62	1.02	57.02	10.75
Torfajökull	IETR	TLC8.	IETR-1.1	May '13.				17.18	6.78	10.63	407.15	1.22	8.89	11.15
Torfajökull	IETR	TLC8.	IETR-7.1	May '13.					3.5	32.17	379.55	6.67	69.59	9.54
Torfajökull	IETR	TLC8.	IETR-COL-9.1	May '13.						26.31	468.11	2.48	64.62	11.16
Torfajökull	IETR	TLC8.	IETR-COL-4.1	May '13.				16.41	8.1	32.33	456.85	4.59	31.65	10.52
Torfajökull	IETR	TLC8.	IETR-COL-12.1	May '13.				2.92	0.16	56.21	467.62	6.04	392.67	13.31
Torfajökull	IETR	TLC8.	IETR-COL-11.1	May '13.					41.57	63.18	337.5	96.2	235.49	11.54
Torfajökull	ITHn.	jw461.	ITHN1-3.1I	Dec. '09.	0.46	0.92	0.06	24.58	2.51	16.08	282.05	0.38	5.69	9.4
Torfajökull	ITHn.	jw461.	ITHN1-3.2DZ	Dec. '09.	1.09	3.67	0.04	46.83	2.18	18.41	586.83	0.37	4.33	21.68
Torfajökull	ITHn.	jw461.	ITHN1-1.1E	Dec. '09.	2.17	6.06	0.04	24.91	2.19	15.98	384.89	0.33	4.09	10.66
Torfajökull	ITHn.	jw461.	ITHN1-6.2E	Dec. '09.	0.91	14.89	0.04	29.32	2.55	16.53	447.5	0.36	4.51	10.9
Torfajökull	ITHn.	jw461.	ITHN1-7.1I	Dec. '09.	0.21	10.89	0.04	36.01	2.4	16.11	325.47	0.37	6.03	10.14
Torfajökull	ITHn.	jw461.	ITHN1-4.1C	Dec. '09.	1.55	72.24	0.06	131.53	4.49	49.29	856.39	0.81	4.43	22.54
Torfajökull	ITHn.	jw461.	ITHN1-9.2I	Dec. '09.	0.04	3.3	0.03	26.96	2.19	13.62	491.51	0.38	4.3	16.76
Torfajökull	ITHn.	jw461.	ITHN1-9.1C	Dec. '09.	0.26	37.86	0.05	107.69	16.7	42.91	542.89	1.19	7.55	12.18
Torfajökull	ITHn.	jw461.	ITHN1-9.4I	Dec. '09.	0.03	1.3	0.01	15.69	2.48	14.18	392.91	0.38	4.6	14.13
Torfajökull	ITHn.	jw461.	ITHN1-5.1I	Dec. '09.	0.3	2.28	0.04	34.9	2.58	16.49	434.25	0.4	4.22	14.33
Torfajökull	ITHn.	jw461.	ITHN1-4.2E	Dec. '09.	0.26	5.16	0.06	22.64	3.97	14.79	459.69	0.44	4.78	18.91
Torfajökull	ITHn.	jw461.	ITHN1-9.3T	Dec. '09.	0.01	2.32	0.05	14.93	2.32	14.46	469.29	0.34	4.92	17.21

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Torfajökull	ITHn.	jw461.	ITHN1-1.2I	Dec. '09.	0.42	0.54	0.07	13.78	2.18	14.58	506.23	0.37	4.04	18.23
Torfajökull	ITHn.	jw461.	ITHN1-2.2E	Dec. '09.	0.68	0.09	0.03	12.9	2.12	12.64	455.98	0.34	4.34	19.35
Torfajökull	ITHn.	jw461.	ITHN1-6.1I	Dec. '09.	0.34	2.4	0.09	16.8	2.38	14.54	569.66	0.36	4.26	21.21
Torfajökull	ITHn.	jw461.	ITHN1-2.1C	Dec. '09.	4.2	1.89	0.14	153.07	4.55	34.87	1,012.35	0.39	529.53	22.09
Torfajökull	ITN.	JW444.	ITN1-5.2C	Aug. '09.	9.14	2.33	0.15	212.41	15.69	55.51	521.91	7.02	4.71	17.06
Torfajökull	ITN.	JW444.	ITN1-10.1I	Aug. '09.	0.74	0.72	0.18	52.15	5.9	37.03	329.65	1.23	4.63	10.33
Torfajökull	ITN.	JW444.	ITN1-6.1C	Aug. '09.	0.51	1.21	0.19	23.39	6.31	32.96	373.33	1.14	3.77	10.98
Torfajökull	ITN.	JW444.	ITN1-8.2I	Aug. '09.	0.11	0.19	0.17	24.56	5.8	33	383.17	1.26	4.36	16.44
Torfajökull	ITN.	JW444.	ITN1-6.2E	Aug. '09.	0.03	0.03	0.18	12.72	6.09	30.94	236.04	1.1	3.52	10.72
Torfajökull	ITN.	JW444.	ITN1-5.1E	Aug. '09.	0.62	0.03	0.12	18.52	7.68	29.21	356.64	1.72	5.2	13.7
Torfajökull	ITN.	JW444.	ITN1-11.1I	Aug. '09.	84.84	3.12	0.18	14.95	5.12	32.62	253.82	1.39	3.46	12.1
Torfajökull	ITN.	JW444.	ITN1-14.1E	Aug. '09.	0.16	0.11	0.08	27.02	6.47	33.16	267	1.35	2.62	13.77
Torfajökull	ITN.	JW444.	ITN1-7.1I	Aug. '09.	20.5	3.58	0.18	26.78	8.93	37.91	478.32	1.76	7.77	16.1
Torfajökull	ITN.	JW444.	ITN1-9.2E	Aug. '09.	0.35	0.42	0.06	16.56	3.22	15.41	295.13	1	2.26	15.55
Torfajökull	ITN.	JW444.	ITN1-8.1E	Aug. '09.	0.15	0.09	0.15	25.89	6.55	35.94	428.18	1.17	4.16	18.22
Torfajökull	ITN.	JW444.	ITN1-2.1I	Aug. '09.	1.2	3.14	0.11	30.09	5	25.15	461.32	0.93	3.62	29.88
Torfajökull	ITN.	JW444.	ITN1-12.1I	Aug. '09.	1.99	0.72	0.15	33.1	5.7	27.98	366.34	1.18	3.22	12.6
Torfajökull	ITN.	JW444.	ITN1-1.1I	Aug. '09.	0.05	0.28	0.16	21.4	9.43	28.04	288.07	1.76	13.42	12.73
Torfajökull	ITN.	JW444.	ITN1-14.2I	Aug. '09.	0.62	1.35	0.16	36.57	8.39	33.81	359.27	1.82	3.82	15.99
Torfajökull	ITN.	JW444.	ITN1-3.1T	Aug. '09.	0.13	0.04	0.23	17.51	7.9	32.39	572.12	1.54	6.79	19.66
Torfajökull	ITN.	JW444.	ITN1-4.1T	Aug. '09.	0.35	0.61	0.2	15.88	5.66	27.98	388.08	0.85	3.53	16.84
Vesturhorn[25]	IIV	AJP01.	IIV-03A-2.1	May '13.										5.4
Vesturhorn	IIV	AJP01.	IIV-03A-5.1	May '13.										6.24
Vesturhorn	IIV	AJP01.	IIV-03A-8.1	May '13.										6.92
Vesturhorn	IIV	AJP01.	IIV-03A-12.1	May '13.										7.42
Vesturhorn	IIV	AJP01.	IIV-03A-6.1	May '13.										8.95
Vesturhorn	IIV	AJP01.	IIV-03A-11.1	May '13.										6.44
Vesturhorn	IIV	AJP01.	IIV-03A-16.1	May '13.										9.88
Vesturhorn	IIV	AJP01.	IIV-03A-14.1	May '13.										10.54

[25] All Vesturhorn data collected and shared by Abraham Padilla

System	Sample	Mount	Spot	Date	Li	Be	B	F	Na	Al	P	K	Ca	Sc
Vesturhorn	IIV	AJP01.	IIV-03A-15.1	May '13.										9.02
Vesturhorn	IIV	AJP01.	IIV-03A-9.1	May '13.										13.47
Vesturhorn	IIV	AJP01.	IIV-03A-13.1	May '13.										8.17
Vesturhorn	IIV	AJP01.	IIV-03A-10.1	May '13.										19.93
Vesturhorn	IIV	AJP01.	IIV-03A-17.1	May '13.										22.25
Viđidalsfjall	IIM.	jw529.	IIM_7.1C	Aug. '11.	0	1.55	0.03	162.08	1.92	8.36	599.84	1.6	1.45	2.38
Viđidalsfjall	IIM.	jw529.	IIM_1.1I	Aug. '11.	0	0.06	0.03	17.15	2.03	8.07	169.75	1.45	2.03	2.74
Viđidalsfjall	IIM.	jw529.	IIM_9.2E	Aug. '11.	0	0.01	0.08	11.67	2.43	7.92	171.35	2.11	1.88	2.34
Viđidalsfjall	IIM.	jw529.	IIM_6.1I	Aug. '11.	0	0.04	0.08	18.64	2.83	10.08	157.77	2	2.09	2.76
Viđidalsfjall	IIM.	jw529.	IIM_8.1I	Aug. '11.	0	0.57	0.03	29.62	2	9.53	287.89	1.57	1.66	2.31
Viđidalsfjall	IIM.	jw529.	IIM_5.1C	Aug. '11.	0	28.99	0.06	206.91	2.14	9.02	688.89	1.4	2.21	5.3
Viđidalsfjall	IIM.	jw529.	IIM_1.2E	Aug. '11.	0	0.02	0.02	15.13	2.34	8.92	267.11	2.02	1.95	2.99
Viđidalsfjall	IIM.	jw529.	IIM_4.1I	Aug. '11.	0	0.24	0.03	25.11	2.64	9.77	189.88	1.92	2.23	3.25
Viđidalsfjall	IIM.	jw529.	IIM_3.1SZ	Aug. '11.	0	0.41	0.07	37.79	2.89	11.57	382.34	2.41	2.34	5.26
Viđidalsfjall	IIM.	jw529.	IIM_2.1I	Aug. '11.	0.01	0.07	0.05	27.33	2.21	8.85	244.71	1.83	2.12	5.06
Viđidalsfjall	IIM.	jw529.	IIM_10.1SZ	Aug. '11.	0	0.03	0.07	17.3	2.32	10.53	329.43	2.07	1.85	7.94
Viđidalsfjall	IIM.	jw530.	IIM_12.2C	Aug. '11.	0	0.13	0.01	75.93	1.38	7.65	324.21	1.25	2.01	2.59
Viđidalsfjall	IIM.	jw530.	IIM_16.1I	Aug. '11.	0	0.15	0.02	43.37	3.1	10.18	232.82	2.15	3.23	2.38
Viđidalsfjall	IIM.	jw530.	IIM_18.1I	Aug. '11.	0	0.12	0.04	45.81	2.7	8.8	242.35	2.38	2.83	2.36
Viđidalsfjall	IIM.	jw530.	IIM_15.1C	Aug. '11.	0.01	0.19	0.01	68.19	2.08	7.03	507.98	1.69	2.49	4.07
Viđidalsfjall	IIM.	jw530.	IIM_11.2E	Aug. '11.	0	0.03	0.05	15.7	2.75	8.93	240.26	2.03	2.59	2.28
Viđidalsfjall	IIM.	jw530.	IIM_19.1SZ	Aug. '11.	0	0.12	0.03	37.56	2.22	7.51	272.74	1.63	2.32	2.92
Viđidalsfjall	IIM.	jw530.	IIM_17.1E	Aug. '11.	0	0.03	0.03	20.17	2.91	7.83	316.93	2.14	2.82	3.18
Viđidalsfjall	IIM.	jw530.	IIM_14.1I	Aug. '11.	0	0.12	0.06	30.14	2.42	7.87	277.15	1.91	2.44	3.91
Viđidalsfjall	IIM.	jw530.	IIM_17.2C	Aug. '11.	0	0.35	0.05	67.8	2.88	8.2	386.99	2.29	2.82	3.44
Viđidalsfjall	IIM.	jw530.	IIM_13.1SZ	Aug. '11.	0.01	0.33	0.03	32.66	3.47	14.09	314.26	2.87	8.4	4.5
Viđidalsfjall	IIM.	jw530.	IIM_12.1E	Aug. '11.	0	0.01	0.01	10.76	2.62	6.29	212.81	1.73	2.36	2.78
Viđidalsfjall	IIM.	jw530.	IIM_11.1C	Aug. '11.	0.01	3.1	0.03	98.55	1.79	9.51	837.83	1.93	2.65	7.35

Appendix B.2: Zircon Trace Element Concentrations (Atomic Number ≥ 22)

Stanford-USGS SHRIMP-RG *in situ* Measurements (ppm) [26]

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Askja	IC45.	IC45-2.2R	25.28	1.31	549	5.5	0.04	3.34	0.51	1.57	0.53	17.02			67	106		159	27	9101	10	23
Askja	IC45.	IC45-7.2I	32.06	1.18	1432	3.83	0.04	4.11	3.64	7.89	2.22	58.35			217	286		388	59	9167	20	34
Askja	IC45.	IC45-6.2I	22.81	0.85	1244	4.92	0.03	4.43	1.88	4.74	1.57	45.48			165	227		318	51	9715	18	35
Askja	IC45.	IC45-5.1I	28.87	1.34	1551	4.32	0.07	4.68	3.62	8.63	2.38	64.22			221	290		384	60	9105	21	36
Askja	IC45.	IC45-2.1I	28.99	1.33	1700	4.34	0.05	5.39	4.51	8.74	2.42	66.18			238	309		406	62	9260	26	40
Askja	IC45.	IC45-8.1I	20.33	1.1	813	9.96	0.03	7.46	0.6	2.3	0.69	23.2			107	160		246	38	10094	19	41
Askja	IC45.	IC45-1.2E	20.75	1.26	1658	5.6	0.04	6.09	2.83	7.7	2.09	64.08			222	301		398	61	9909	26	43
Askja	IC45.	IC45-3.1C	21.29	1.42	1359	5.33	0.04	5.53	2.63	6.68	1.89	56.59			211	289		378	60	9569	26	43
Askja	IC45.	IC45-4.3R	24.25	1.11	928	8.33	0.03	5.97	0.91	3.45	0.87	28.36			121	179		270	42	9470	23	46
Askja	IC45.	IC45-9.1I	22.56	1.18	1850	5.37	0.07	6.47	4.43	9.94	2.35	71.15			246	334		434	66	9427	29	47
Askja	IC45.	IC45-4.2I	19.76	1.15	1748	5.92	0.04	6.43	3.18	8.84	2.17	69.51			237	321		417	65	9684	29	49
Askja	IC45.	IC45-1.1I	23.24	0.94	2109	7.21	0.05	7.51	3.94	8.67	1.92	66.95			243	332		421	63	9494	33	53
Askja	IC45.	IC45-4.1R	23.16	11.56	1102	10.31	0.04	7.74	1.45	3.58	1.11	34.1			133	195		287	49	9371	40	65
Askja	IC45.	IC45-3.2R	24.41	1.27	1086	8.94	0.03	7.04	1.49	4.13	1.1	33.81			146	215		317	51	9178	40	68
Askja	IC45.	IC45-5.2I	23.01	1.39	2809	11.79	0.06	10.26	6.18	14.5	3.52	113.77			374	481		635	96	8827	56	75
Askja	IC45.	IC45-7.1E	18.96	1.79	2476	10.09	0.08	11.11	5.42	11.19	2.63	90.67			311	425		544	82	9824	52	82
Austurhorn[27]	AIC-G	IA-G1-16.1	17.89	3.6	1278	0.63	0.02	4.62	2.32	5.05	2.57	41.96	53.2	14.4	152	223	42	334	57	9026	31	51
Austurhorn	AIC-G	IA-G1-13.1	16.9	3.71	1467	0.76	0.03	6.91	2.44	5.39	2.43	46.12	62.5	15.8	170	255	50	379	61	9640	36	61
Austurhorn	AIC-G	IA-G1-20.1	13.57	2.98	1572	1.14	0.01	8.89	2.23	5.2	2.14	46.1	61.2	15.3	162	243	48	355	57	10002	41	72
Austurhorn	AIC-G	IA-G1-9.1	19.77	3.72	1980	1.44	0.02	9.49	3.82	8.31	3.71	69.19	82.0	22.5	229	326	63	470	77	8733	48	74
Austurhorn	AIC-G	IA-G1-6.2_I	11.45	3.98	1350	1.08	0.01	8.44	1.58	4.99	1.75	36.02	52.3	12.7	139	211	42	321	54	10347	44	77
Austurhorn	AIC-G	IA-G1-5.1	19.79	3.82	1900	0.89	0.04	5.6	2.75	6.1	3.41	60.88	81.7	21.9	229	348	65	512	84	9059	59	92
Austurhorn	AIC-G	IA-G1-21.1	17.48	2.93	1981	1.13	0.06	8.9	3.19	6.62	3.04	60.33	83.3	21.5	232	342	65	496	81	9301	59	93
Austurhorn	AIC-G	IA-G1-3.1	17.15	3.76	1119	2.28	0.01	8.88	0.9	2.53	1.07	24.02	45.2	8.9	105	208	44	358	66	9393	33	100

[26] Please refer to Appendix B.1, Zircon Trace Element Concentrations (Atomic Number <22), for mount name and analytical date

[27] All Austurhorn data collected and shared by Abraham Padilla

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Austurhorn	AIC-G	IA-G1-8.1	18.42	3.98	2261	1.45	0.05	10.02	3.68	7.66	3.53	77.4	93.8	25.3	263	393	72	531	87	9155	73	106
Austurhorn	AIC-G	IA-G1-19.1_C	19.41	3.6	2446	1.57	0.05	9.15	3.8	7.9	3.69	80.89	105.5	27.6	297	431	81	606	101	9078	82	115
Austurhorn	AIC-G	IA-G1-7.1	14.7	3.64	2072	1.05	0.02	10.56	3.22	6.39	2.52	61.36	84.8	21.5	239	365	69	527	85	9728	76	119
Austurhorn	AIC-G	IA-G1-6.1_C	9.37	3.56	1735	0.96	0.01	13.18	2.7	6.58	1.73	55.86	74.9	19.8	209	319	59	446	70	9917	85	137
Austurhorn	AIC-G	IA-G1-10.1	13.98	3.57	2440	1.44	0.03	11.6	3.52	6.97	2.71	69.53	100.4	23.8	262	414	79	591	94	9781	93	139
Austurhorn	AIC-G	IA-G1-15.1	12.14	2.85	2157	1.43	0.05	11.41	3.46	7.46	2.95	62.69	89.9	20.9	237	370	69	512	85	9573	95	143
Austurhorn	AIC-G	IA-G1-11.1	19.08	4.06	2863	1.68	0.08	11.34	3.98	8.98	4.2	88.11	122.5	31.1	334	508	96	726	118	9269	108	144
Austurhorn	AIC-G	IA-G1-1.1	14.94	4.28	2178	1.38	0.03	10.52	3.69	7.58	3.14	70.26	90.5	24.1	257	392	75	558	91	9519	97	144
Austurhorn	AIC-G	IA-G1-24.1_B	11.24	3.47	2152	1.42	0.05	11.77	3.08	6.28	2.48	63.48	89.2	22.0	233	371	70	527	86	9797	100	150
Austurhorn	AIC-G	IA-G1-27.1_B	14.25	2.88	2288	1.29	0.03	7.84	2.6	6.8	3.27	68.83	91.5	23.2	249	383	72	564	92	9837	101	155
Austurhorn	AIC-G	IA-G1-2.1	12.81	3.98	2445	1.72	0.04	12.32	3.5	7.43	3.11	70.41	101.8	25.4	278	425	81	615	102	9767	108	158
Austurhorn	AIC-G	IA-G1-23.1_B	23.7	3.48	3976	2.38	0.08	13.13	4.36	12.43	5.87	125.59	154.5	42.0	432	643	116	880	139	8656	131	160
Austurhorn	AIC-G	IA-G1-14.1_C	31.6	3.68	2273	2.57	0.03	20.14	3.06	7.39	3.63	70.38	94.2	24.0	253	390	72	548	89	8418	222	187
Austurhorn	AIC-G	IA-G1-26.1	31.75	2.71	2455	3.17	0.03	25.85	2.67	7	3.72	74.62	101.5	26.4	282	424	79	588	96	8256	231	197
Austurhorn	AIC-G	IA-G1-25.1	8.84	3.73	2061	1.03	0.15	10.87	2.7	6.62	2.29	59.17	87.1	21.7	236	385	72	561	91	10938	129	204
Austurhorn	AIC-G	IA-G1-17.1	24.56	3.63	5197	4.24	0.08	21.88	7.61	21.11	9.79	190.33	217.8	61.9	634	870	162	1184	190	8536	198	204
Austurhorn	AIC-G	IA-G1-12.1	20.99	3.93	5003	3.71	0.13	20.19	6.46	17.77	7.9	175.19	214.6	58.3	606	862	159	1177	186	8823	197	216
Austurhorn	AIC-G	IA-G1-4.1	21.48	3.78	4000	3.18	0.09	13.24	4.52	8.52	3.97	103.81	183.1	40.1	474	788	147	1097	177	8629	220	237
Austurhorn	AIC-G	IA-G1-18.1_C	21.29	2.33	5227	3.76	0.09	17.14	5.33	11.57	6	152.04	222.2	55.1	602	914	167	1227	196	8592	234	242
Austurhorn	AIC-G	IA-G1-22.2_SZ	10.38	3.36	7450	4.87	0.14	56.42	11	28.47	9.23	251.71	316.2	86.1	903	1298	244	1815	276	10149	798	755
Austurhorn	AIC-G	IA-G1-22.1_SZ	15.62	3.26	5021	9.05	0.05	88.61	3.9	13.34	4.3	142.06	210.0	53.5	569	888	170	1297	206	9973	1143	1123
Austurhorn	AIC-G	IA-G1-24.2_D	9.29	3.56	4731	10.8	0.04	116.25	3.88	11.55	1.8	120.85	192.5	45.2	514	836	166	1224	186	11878	846	1247
Austurhorn	AIC-NS	IANS2-1.1T_I	9.22	0.36	851	5.03	0.02	11.76	0.53	1.92	0.5	20.61	35.8	7.9	90	165	33	259	45	11074	17	50
Austurhorn	AIC-NS	IANS2-7.1T_I	14.05	0.37	945	10.27	0.01	12.04	1.05	2.7	1.18	26.47	40.5	9.4	101	172	34	256	44	9107	28	55
Austurhorn	AIC-NS	IANS2-2.1T_I	24.03	0.27	2260	5.87	0.06	9.04	4.03	10.25	3.97	86.55	97.7	27.6	282	392	73	566	95	8236	34	59
Austurhorn	AIC-NS	IANS2-22.1T_I	8.9	0.25	1829	6.56	0.02	11.91	3.75	8.22	2.88	68.39	84.3	21.7	229	332	59	413	67	8245	32	69
Austurhorn	AIC-NS	IANS6-18.1T_R	21.09	5.57	1372	8.86	0.03	15.61	0.94	2.82	0.97	31.29	53.6	11.2	135	236	48	382	67	8772	34	72
Austurhorn	AIC-NS	IANS6-24.1T_R	18.32	0.2	1779	8.23	0.01	17.97	2.73	6.26	1.79	55.21	76.9	18.3	201	312	61	458	77	8668	43	80
Austurhorn	AIC-NS	IANS6-18.2T_C	6.95	0.45	2156	9.93	0.02	16.86	3.4	8.65	2.56	77.14	97.9	26.0	277	382	71	501	79	8665	42	80

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Austurhorn	AIC-NS	IANS6-24.3T_I	9.82	1.24	1410	19.22	0.15	23.6	1.85	4.34	1.37	43.6	61.5	14.8	164	253	47	346	58	8627	35	81
Austurhorn	AIC-NS	IANS6-12.1T_I	6.73	0.55	2326	12.11	0.02	17.54	3.49	8.69	2.55	78.98	102.2	26.5	286	404	71	513	81	8730	40	87
Austurhorn	AIC-NS	IANS6-22.1T_C	8.19	0.37	1430	11.94	0.03	16.06	1.68	4.71	1.57	49.54	67.8	16.4	187	269	51	377	62	8719	40	89
Austurhorn	AIC-NS	IANS6-22.2T_R	21.2	0.35	1635	11.58	0.02	19.69	1.39	3.64	1.25	37.09	68.3	14.4	165	303	61	505	87	8476	49	94
Austurhorn	AIC-NS	IANS2-23.1T_E	8.75	0.26	1729	28.19	0.04	31.8	2.02	5.14	1.53	51.2	76.8	17.9	198	307	57	414	68	8792	40	94
Austurhorn	AIC-NS	IANS6-7.1T_I	7.77	0.34	1473	39.07	0.02	17.53	1.31	3.4	1.14	36.21	64.1	13.8	160	276	56	423	72	8431	24	95
Austurhorn	AIC-NS	IANS2-16.1T_E	6.98	0.58	1398	40.45	0.23	25.16	1.41	3.68	0.86	38.11	59.2	13.6	156	260	51	384	64	9307	31	99
Austurhorn	AIC-NS	IANS6-21.1T_I	9.73	0.35	1409	28.13	0.02	17.68	1.36	3.91	1.48	39.43	60.3	14.0	159	260	51	371	62	8218	50	107
Austurhorn	AIC-NS	IANS2-4.1T_I	8.88	0.86	1849	27.98	0.04	31.13	2.26	5.91	1.98	59.23	80.0	19.9	220	318	61	433	68	8384	53	107
Austurhorn	AIC-NS	IANS2-4.2T_I	6.74	0.43	2888	15.14	0.04	21.31	4.82	10.19	2.78	94.82	126.7	32.1	346	512	90	651	104	8863	58	114
Austurhorn	AIC-NS	IANS6-23.1T_Ib	15.75	2.79	1693	17.63	12.31	49.77	13.48	7.62	2.65	52.87	74.3	17.9	198	280	57	415	65	7702	79	114
Austurhorn	AIC-NS	IANS2-24.1T_C	6.83	0.46	2990	16.03	0.07	22.23	4.84	10.31	2.83	96.31	132.2	32.5	355	519	94	669	105	8829	62	119
Austurhorn	AIC-NS	IANS2-12.12T_I	7.74	0.35	3277	24.47	0.06	28.59	4.33	10.44	2.92	106.86	141.2	35.0	374	560	101	695	111	8552	75	136
Austurhorn	AIC-NS	IANS2-17.1T_E	7.2	0.33	1942	46	0.02	43.03	2.1	5.61	1.31	56.43	84.2	20.0	226	343	65	470	73	9409	68	145
Austurhorn	AIC-NS	IANS2-5.2T_Rb	6.42	0.33	2826	36.15	0.02	46.44	2.68	7.56	1.84	79.87	115.7	28.4	311	477	89	626	99	9633	62	147
Austurhorn	AIC-NS	IANS2-15.2T_E	6.95	0.39	1652	40	0.03	36.15	1.68	4.58	1.11	47.37	70.7	16.7	186	287	56	408	66	9744	93	159
Austurhorn	AIC-NS	IANS6-1.1T_C	10.04	0.37	2098	35.21	0.02	37.56	2.37	6.48	1.96	65.89	87.9	22.2	238	355	68	486	76	8638	108	162
Austurhorn	AIC-NS	IANS2-16.2T_C	9.72	4.3	3570	28.7	0.57	34.01	5.47	12.19	3.42	122.65	158.6	41.3	436	632	113	786	120	8676	94	166
Austurhorn	AIC-NS	IANS2-19.1T_E	6.96	0.45	2701	63.4	0.03	61.59	2.94	7.47	1.78	74.19	115.0	26.9	305	463	88	627	96	9149	76	166
Austurhorn	AIC-NS	IANS2-20.1T_I	7.42	6.89	4165	26.55	0.1	33.38	6.15	14.51	3.9	142.23	184.2	48.6	518	727	131	920	144	8762	100	167
Austurhorn	AIC-NS	IANS2-11.1T_I	5.69	0.28	4072	27.26	0.06	35.71	5.77	13.85	3.47	136.93	182.0	45.9	495	715	126	885	139	8720	101	177
Austurhorn	AIC-NS	IANS2-12.2T_I	7.09	2.62	4548	30.84	0.07	39.07	6.31	15.94	4.28	161.3	202.9	51.8	557	792	141	1003	154	8809	119	200
Austurhorn	AIC-NS	IANS2-21.2T_I	9.01	10.34	4490	36.47	0.08	50.33	6.57	16.09	4.19	158.9	199.5	51.3	556	765	138	972	151	8650	135	211
Austurhorn	AIC-NS	IANS2-18.1T_C	6.01	0.27	4383	32.01	0.03	45.1	6.62	14.32	3.73	150.68	198.5	49.7	533	769	138	955	151	9094	131	212
Austurhorn	AIC-NS	IANS2-18.2T_E	6.87	0.31	2989	77.89	0.03	74.21	3.02	8.18	1.88	87.15	130.3	31.7	358	537	98	726	112	9713	113	221
Austurhorn	AIC-NS	IANS2-15.1T_I	9.79	0.41	4519	66.75	0.04	85.18	6.83	16.44	4.88	160.45	198.8	54.7	548	781	137	965	145	8069	156	263
Austurhorn	AIC-NS	IANS2-4.3T_E	7.21	0.48	2743	86.91	0.02	56.12	1.89	7.09	1.38	71.54	115.4	27.5	309	482	91	649	98	10129	158	290
Austurhorn	AIC-NS	IANS2-21.1T_E	9.54	2.13	3478	88.9	31.28	183.72	44.79	20.6	2.71	116.32	144.2	37.9	404	580	107	761	117	9680	184	299
Austurhorn	AIC-NS	IANS6-16.1t_Iz	22.33	0.31	6125	18.15	0.12	75.5	14.76	32.07	8.83	247.46	275.6	78.3	787	1077	203	1491	241	8466	294	302

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Austurhorn	AIC-NS	IANS2-19.2T_C	5.99	0.86	5784	49.38	0.25	64.5	7.86	18.8	4.24	189.79	256.5	65.3	704	1009	180	1232	190	8995	185	308
Austurhorn	AIC-NS	IANS6-6.1T_Cz	10.39	0.35	3628	88.84	0.03	95.86	4.39	11.78	3.52	122.1	161.0	42.4	444	611	111	751	114	8191	324	367
Austurhorn	AIC-NS	IANS6-17.1T_I	15.33	6.61	4265	15.31	0.11	80.97	10.29	22.84	4.99	181.37	215.4	59.3	599	854	160	1178	183	8158	320	374
Austurhorn	AIC-NS	IANS2-14.2T_C	6.65	0.5	7361	77.6	0.08	116.68	10.18	28.33	5.84	268.4	349.3	90.2	960	1371	244	1698	253	8469	263	381
Austurhorn	AIC-NS	IANS2-3.1T_Iz	8.12	0.34	7733	107.71	0.09	149.82	9.01	22.64	3.66	217.15	320.8	75.6	836	1334	256	1954	312	10636	351	439
Austurhorn	AIC-NS	IANS6-4.1T_Id	27.79	0.38	11322	39.76	0.3	183.92	40.88	77.74	20.65	548.98	489.9	160.1	1522	1761	309	2120	299	7240	500	449
Austurhorn	AIC-NS	IANS2-13.1T_C	12.1	19.37	7074	105.55	0.86	140.97	11.66	28.76	8.38	266.78	304.8	83.2	859	1146	201	1423	215	9548	436	454
Austurhorn	AIC-NS	IANS2-9.1T_E	12.45	0.21	4419	95.39	0.02	151.13	4.17	12.75	2.66	129.31	187.2	45.9	505	763	147	1083	175	11882	552	508
Austurhorn	AIC-NS	IANS6-15.1T_Iz	13.3	0.45	9679	42.26	0.17	222.39	25.03	47.22	8.17	372.37	413.9	116.5	1174	1568	288	2051	306	7834	512	526
Austurhorn	AIC-NS	IANS2-14.1T_E	8.24	8.68	3713	129.57	0.22	96.36	3.06	9.9	1.86	99.52	156.9	36.0	410	615	119	844	128	9749	406	529
Austurhorn	AIC-NS	IANS6-10.1T_Cd	14.92	0.28	4097	57.88	0.04	86.9	4.58	13.47	1.86	130.99	167.4	42.7	463	693	135	970	159	9056	497	554
Austurhorn	AIC-NS	IANS2-24.2T_E	11.29	0.23	5570	151.21	0.04	170.82	5.93	16.3	2.54	171.43	242.2	63.1	684	998	184	1338	209	10043	513	606
Austurhorn	AIC-NS	IANS6-17.2T_Id	14.81	0.27	13992	60.48	0.32	328.08	36.63	73.29	13.21	564.84	603.5	174.2	1723	2279	415	2922	440	7880	793	686
Austurhorn	AIC-NS	IANS2-6.1T_Ez	11.24	0.37	5963	223.6	0.04	290.05	6.72	18.67	3.82	193.58	261.6	65.1	693	1002	189	1347	211	10204	887	719
Austurhorn	AIC-NS	IANS2-17.2T_C	8.02	0.44	13749	144.54	0.18	301.43	25.51	59.9	9.21	532.87	625.3	170.4	1775	2362	421	2920	432	10055	740	774
Austurhorn	AIC-NS	IANS6-19.1T_Id	18.37	0.38	14369	59.57	0.48	375.66	49.95	90.88	15.6	642.42	649.0	195.9	1888	2366	433	3006	442	7728	964	777
Austurhorn	AIC-NS	IANS2-5.1T_Cd	13.36	0.41	12914	51.18	0.27	200.67	30.82	69.68	7.44	537.36	539.7	165.5	1613	2020	370	2602	393	8339	1042	841
Austurhorn	AIC-NS	IANS2-10.2T_I	6.27	0.3	6891	24.49	0.08	99.74	9.22	19.62	2.43	188.78	281.8	65.0	742	1224	246	1878	311	11551	656	878
Austurhorn	AIC-NS	IANS6-3.1T_Id	12.68	0.5	17707	82.21	0.37	495.15	39.14	82.53	11.81	669.6	733.3	209.1	2121	2796	520	3667	530	7708	1082	898
Austurhorn	AIC-NS	IANS6-9.1T_Id	14.66	0.42	15701	74.03	0.37	451.1	38.78	79.7	11.17	624.96	683.8	194.4	1970	2606	476	3391	500	8501	1182	906
Austurhorn	AIC-NS	IANS6-2.1T_Id	14.28	0.56	17041	83.28	0.37	528.18	45.56	92.48	13.94	697.32	730.5	213.7	2122	2741	493	3405	507	7161	1072	956
Austurhorn	AIC-NS	IANS2-23.2T_C	12.47	3.35	11495	312.47	43.75	502.01	73.37	62.86	11.95	463.04	507.5	144.1	1449	1898	333	2308	341	8828	1290	988
Austurhorn	AIC-NS	IANS6-26.1T_I	12.88	0.37	14934	72.81	0.33	292.97	37.27	74.18	6.17	585.92	647.1	185.9	1876	2454	450	3204	486	8056	1088	993
Austurhorn	AIC-NS	IANS2-10.1T_Ed	9.29	4.19	4905	64.46	0.02	178.49	4.3	11.83	1.46	120.42	196.1	43.2	488	849	175	1372	224	11984	862	1118
Austurhorn	AIC-NS	IANS6-5.1T_Cd	14.32	0.74	11160	208.09	0.13	299.97	16.58	42.9	2.96	383.5	475.0	124.9	1296	1801	333	2364	366	9165	1590	1306
Austurhorn	AIC-NS	IANS6-13.1T_Ed	40.24	0.32	11708	207.39	0.13	593.98	29.39	69.27	11.35	509.07	504.2	152.6	1461	1881	341	2365	353	7641	3199	1810
Austurhorn	AIC-NS	IA-NS7-4.1_C	13.73	2.97	1899	4.57	0.02	11.75	3.44	7.68	2.37	60.14	79.1	20.5	217	313	62	455	78	8196	35	73
Austurhorn	AIC-NS	IA-NS7-8.1_LC	15.1	3	4291	8.88	0.07	21.18	8.85	20.42	6.62	161.25	173.9	50.6	510	669	125	942	151	8146	108	163
Austurhorn	AIC-NS	IA-NS7-16.1_LC	15.82	3.37	3982	7.4	0.1	21.67	9.6	20.4	6.31	159.67	177.0	50.5	508	688	125	928	150	7969	116	175

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Austurhorn	AIC-NS	IA-NS7-14.1	17.14	2.95	4247	9.42	0.08	15.06	6.49	17.87	6.46	154.82	184.5	50.7	525	746	138	1030	170	7923	117	178
Austurhorn	AIC-NS	IA-NS7-1.1_C	17.89	3	4901	11.92	0.08	23.97	8.99	22.99	7.99	186.69	212.7	59.3	592	810	150	1136	182	7926	133	190
Austurhorn	AIC-NS	IA-NS7-19.2_I	19.22	3.78	7941	22.74	0.2	57.13	23.73	50.6	16.45	363.58	347.6	111.2	1070	1252	218	1528	228	7181	242	283
Austurhorn	AIC-NS	IA-NS7-5.1_C	19.45	3.13	7789	21.88	0.22	58.44	25.67	48.26	15.14	346.42	342.1	107.0	1044	1275	226	1643	251	7411	258	284
Austurhorn	AIC-NS	IA-NS7-13.2	20.74	2.91	8564	24.41	0.13	47.71	18.89	45.99	15.69	371.67	381.7	116.3	1145	1464	266	1952	301	7323	306	316
Austurhorn	AIC-NS	IA-NS7-17.2_I	8.59	3.27	10735	64.14	0.2	204.34	22.54	48.76	3.79	396.96	469.8	128.9	1326	1772	320	2304	348	6342	457	579
Austurhorn	AIC-NS	IA-NS7-13.1	8.96	4.06	9942	57.82	0.89	150.16	13.53	35.63	3.46	340.84	434.1	112.6	1223	1694	319	2309	359	7550	482	606
Austurhorn	AIC-NS	IA-NS7-18.1	38.22	3.36	6067	58.96	0.09	104.62	12.28	38.29	11.14	298.06	264.9	89.8	846	954	162	1126	158	6523	697	650
Austurhorn	AIC-NS	IA-NS7-9.1	8.45	3.5	13451	82.32	0.26	290.49	28.29	62.22	5.46	499.17	569.0	162.5	1662	2210	397	2847	428	6353	523	704
Austurhorn	AIC-NS	IA-NS7-4.2_E	13.34	3.04	6497	152.77	0.02	217.31	9.74	25.72	2.38	222.33	273.1	76.7	792	1082	203	1465	230	7180	1000	1093
Austurhorn	AIC-NS	IA-NS7-8.2_DE	16.97	3.07	8984	239.35	0.08	338.98	13.91	37.59	3.3	331.07	387.8	108.4	1110	1467	272	1954	295	7162	1305	1270
Austurhorn	AIC-NS	IA-NS7-15.1_D	9.25	3.76	20787	106.85	0.42	461.91	40.18	88.82	8.56	732.3	875.2	244.0	2518	3300	590	4183	610	8825	1444	1331
Austurhorn	AIC-NS	IA-NS7-3.1_D	21.84	4.58	11321	279.05	0.14	450.51	18.52	47.31	3.96	403.31	481.5	135.0	1401	1901	348	2488	370	6789	1098	1342
Austurhorn	AIC-NS	IA-NS7-12.1_LC	35.97	3.48	12385	298.93	0.15	538.99	30.1	77.89	7.59	587.95	532.4	174.7	1652	1978	338	2349	344	6807	2247	1684
Austurhorn	AIC-NS	IA-NS7-12.2	25.49	4.63	11714	254.31	0.14	524.62	22.94	60.7	5.68	501.34	496.9	155.5	1524	1888	332	2354	345	6986	2430	1763
Austurhorn	AIC-NS	IA-NS7-16.2_DE	19.22	3.65	15396	341.88	0.14	700.11	21.03	61.04	5.51	559.8	680.6	188.9	1949	2634	475	3410	503	9135	3190	2057
Austurhorn	AIC-NS	IA-NS7-17.1_DE	27.9	3.64	15022	434.74	0.11	769.37	30.67	77.52	6.24	655.11	637.7	201.5	1941	2375	422	2953	426	6355	2428	2117
Austurhorn	AIC-NS	IA-NS7-10.1	28.31	3.63	15246	393.63	0.2	787.47	37.22	93.72	7.55	693.78	657.9	214.2	2028	2410	409	2952	421	6127	2682	2243
Austurhorn	AIC-NS	IA-NS7-2.1_D	17.64	3.8	14503	453.47	0.08	558.83	14.31	46.24	3.08	439.67	597.5	157.1	1673	2352	434	3123	455	10290	3769	2992
Austurhorn	AIC-G	IA-G-5-7.1	19.33	0.07	6244	11.51	0.15	83.65	12.42	26.77	7.73	205.97	245.0		629	898		1252	192	6860	276	316
Austurhorn	AIC-G	IA-G-5-6.1	23.18	1.53	9149	26.26	0.17	189.37	16.08	36.87	11.43	320.46	384.8		1082	1370		1769	270	7712	893	651
Austurhorn	AIC-G	IA-G-5-4.1	30.97	2.75	8302	49.87	0.13	303.98	11.09	30.67	6.34	279.44	337.2		921	1229		1645	242	7813	1516	1072
Austurhorn	AIC-G	IA-G-5-2.1	37.34	5.28	7919	36.17	0.07	273.11	13.80	34.96	9.27	292.95	312.0		868	1165		1503	217	6786	1768	1232
Fjardarsá	ISFjar.	IS-FJAR-T9.1_I	7.53	1.28	740	15.38	0.25	12.66	0.8	1.66	0.53	18.56	29.5	6.9	78	131	26	195	33	11254	17	51
Fjardarsá	ISFjar.	IS-FJAR-T16.1_Ib	18.23	0.59	968	7.46	0.02	8.02	1.12	2.57	0.91	27.88	39.1	9.5	104	165	34	256	44	9526	23	52
Fjardarsá	ISFjar.	IS-FJAR-T3.1_I	18.1	0.22	2086	5.96	0.04	9.84	4.06	8.96	2.42	74.73	88.4	23.2	239	339	65	469	77	9763	43	75
Fjardarsá	ISFjar.	IS-FJAR-T6.1_Eb	13.06	0.27	1283	12.86	0.01	9.18	1.33	4.02	1.36	35.5	54.4	13.4	146	223	43	322	53	8475	34	77
Fjardarsá	ISFjar.	IS-FJAR-T10.2_I	11.55	0.27	2022	7.28	0.04	12	3.81	8.55	2.1	70.76	87.2	22.2	235	345	64	472	78	9919	50	92
Fjardarsá	ISFjar.	IS-FJAR-T24.1_I	10.66	0.29	2136	7.29	0.02				2.23	71.62	87.0	22.8	238	342	65	476	78	10124	49	94

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Fjardarsá	ISFjar.	IS-FJAR-T4.2_E	7.33	0.53	1375	22.93	0.02	15.44	0.91	2.95	0.86	33.17	57.4	11.9	139	242	49	377	63	10664	40	105
Fjardarsá	ISFjar.	IS-FJAR-T22.1_I	5.37	0.26	2163	12.26	0.01				2.33	74.98	97.5	25.6	274	383	68	497	79	11373	57	115
Fjardarsá	ISFjar.	IS-FJAR-T13.1_I	11.63	0.28	3657	15.22	0.04	13.32	4.97	13.87	3.92	120.22	130.5	35.7	358	488	92	662	104	9155	76	127
Fjardarsá	ISFjar.	IS-FJAR-T12.1_Ez	6.99	0.36	1410	26.92	0.02	22.05	1.23	3.58	0.81	37.73	59.5	13.9	153	250	46	358	58	11311	62	141
Fjardarsá	ISFjar.	IS-FJAR-8.1_Ez	11.44	0.3	1522	23.15	0.01	16.08	1.55	4.56	1.49	48.46	63.5	16.1	171	260	49	360	57	10106	89	145
Fjardarsá	ISFjar.	IS-FJAR-T18.1_Ib	12.63	0.21	3651	12.89	0.04	14	7.33	17.41	5.75	140.76	158.1	45.3	456	624	112	801	129	8732	93	153
Fjardarsá	ISFjar.	IS-FJAR-T1.1_E	5.86	0.24	1799	38.59	0.02	31.26	1.75	4.98	1.09	50.32	77.2	18.2	198	313	60	443	71	11207	72	158
Fjardarsá	ISFjar.	IS-FJAR-T14.1_Ez	8.19	0.79	2817	13.88	0.05	19.09	4.28	10.35	2.36	94.77	117.4	31.2	329	468	86	606	96	10331	92	162
Fjardarsá	ISFjar.	IS-FJAR-T20.1_I	11.37	0.2	2928	10.13	0.04				2.28	93.53	128.2	31.8	336	520	97	722	117	10332	113	163
Fjardarsá	ISFjar.	IS-FJAR-T6.2_Id	12.99	0.28	4975	22.56	0.06	17.2	7.13	18.97	5.88	151.5	169.2	46.0	459	620	113	817	131	9006	101	166
Fjardarsá	ISFjar.	IS-FJAR-T28.2_E	8.95	0.3	1618	28.59	0.01				0.98	45.11	67.3	15.8	177	278	54	407	64	11070	98	177
Fjardarsá	ISFjar.	IS-FJAR-7.1_I	8.64	0.23	2361	29.02	0.02	29.85	2.71	7.83	1.44	70.46	97.5	24.0	263	381	73	536	84	10512	102	181
Fjardarsá	ISFjar.	IS-FJAR-T11.2_I	5.45	0.28	4302	33	0.04	30.07	5.01	12.3	3.63	126.28	170.8	41.1	446	627	112	782	120	10962	97	182
Fjardarsá	ISFjar.	IS-FJAR-T14.2_Id	12.71	0.49	4060	17	0.06	20.04	8.77	19.3	5.24	158.69	182.5	50.7	513	701	125	888	138	8859	120	195
Fjardarsá	ISFjar.	IS-FJAR-T21.1_I	9.31	0.25	2843	6.66	0.02				3.06	91.59	111.5	29.6	307	466	90	646	107	8952	131	207
Fjardarsá	ISFjar.	IS-FJAR-T4.1_I	8.02	2.26	2274	36.21	0.07	13.13	4.16	10.11	3.23	90.05	111.6	31.1	334	482	94	714	117	8935	104	218
Fjardarsá	ISFjar.	IS-FJAR-T25.1_I	6.54	0.19	3390	21.61	0.03				1.74	102.01	138.6	34.8	365	560	106	761	121	10823	124	219
Fjardarsá	ISFjar.	IS-FJAR-T23.1_I	6.53	0.49	3373	18.2	0.02				2.38	107.85	142.4	35.8	392	579	102	745	117	11052	140	238
Fjardarsá	ISFjar.	IS-FJAR-T27.1_I	7.82	0.39	3738	27.93	0.03				2.29	118.48	158.2	40.9	443	638	116	863	133	10574	146	244
Fjardarsá	ISFjar.	IS-FJAR-T12.1_Ez	11.04	1.53	3092	37.59	0.33	40.59	4.24	10.02	2	98.97	133.7	34.1	366	541	101	718	114	10264	159	254
Fjardarsá	ISFjar.	IS-FJAR-T1.2_I	5.26	0.27	3945	24.78	0.05	32.24	5.03	12.76	2.37	124.99	167.7	40.8	454	670	122	862	134	10936	153	256
Fjardarsá	ISFjar.	IS-FJAR-T29.2_E	8.99	0.75	3423	66.47	0.61				3.63	114.57	148.2	38.8	412	588	106	763	114	10463	195	280
Fjardarsá	ISFjar.	IS-FJAR-T11.1_T	5.51	0.43	2872	80.89	0.02	51.7	2.07	7.38	2.06	82.32	125.3	28.8	322	491	88	621	97	11510	147	291
Fjardarsá	ISFjar.	IS-FJAR-8.2_Id	10.37	0.3	6883	44.4	0.08	46.39	10.76	28.98	9.56	278.27	310.1	86.3	892	1186	211	1497	229	9045	237	317
Fjardarsá	ISFjar.	IS-FJAR-7.2_Ez	7.78	0.31	2492	60.94	0.01	41.96	1.87	6.15	1.21	67.09	101.6	24.9	276	419	79	577	89	11284	212	332
Fjardarsá	ISFjar.	IS-FJAR-T29.1_I	10.1	23.06	10444	53.51	0.85				20.64	427.74	469.7	134.0	1331	1628	289	2008	294	9156	292	375
Fjardarsá	ISFjar.	IS-FJAR-T19.1_I	4.31	0.21	5969	62.6	0.05				2.47	175.33	276.4	67.5	791	1196	226	1631	247	11630	394	590
Fjardarsá	ISFjar.	IS-FJAR-T26.1_I	5.97	0.39	8436	107.31	0.06				2.06	242.65	389.9	91.4	1040	1596	294	2108	319	10743	500	791
Fjardarsá	ISFjar.	IS-FJAR-T5.2_Id	3.67	0.39	15272	152.65	0.04	189.27	9.62	34.62	5.69	405.39	651.1	156.5	1778	2479	447	2950	420	10952	544	829

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Fjardarsá	ISFjar.	IS-FJAR-T17.1_Ed	8.18	0.34	11748	730.64	0	236.68	3.17	16.59	2.76	231.91	462.7	97.8	1183	1855	344	2391	337	11018	516	971
Fjardarsá	ISFjar.	IS-FJAR-T2.1_Id	4.79	1.84	10567	340.38	0.05	245.68	6.46	17.52	1.59	184.18	403.5	78.6	987	1811	379	2955	476	12455	877	1173
Fjardarsá	ISFjar.	IS-FJAR-T5.1_Ed	9.03	0.47	13727	754.95	0.01	316.75	5.28	26.81	4.45	348.53	576.5	137.3	1572	2215	395	2677	369	11234	1088	1448
Fjardarsá	ISFjar.	IS-FJAR-T15.1_Id	7.98	0.44	13679	847.91	0.02	339.43	4.8	25.41	3.97	348.55	554.9	139.7	1570	2210	398	2665	363	11485	1521	1687
Hekla	IHB.	IHB1-6.1C	14.79	1.54	677	7.73	0.04	7.65	0.79	2.33	0.7	19.64			79	133		212	37	8454	15	38
Hekla	IHB.	IHB1-6.2R	12.95	1.32	625	5.49	0.03	4.76	0.42	1.83	0.62	15.64			78	138		246	42	9794	22	70
Hekla	IHB.	IHB1-21.2T	10.93	1.75	1323	5.13	0.03	5.21	1.56	4.67	1.57	39.84			175	281		447	74	9329	38	83
Hekla	IHB.	IHB1-19.1I	9.96	1.14	1643	5.28	0.1	5.83	2.03	5.83	1.96	50.12			195	298		469	74	9421	41	83
Hekla	IHB.	IHB1-7.1I	9.99	2.64	1762	6.42	0.05	6.27	2.46	6.22	2.13	57.72			216	324		503	86	10553	43	86
Hekla	IHB.	IHB1-18.1I	10.3	1.4	1759	4.98	0.03	5.2	2.17	6.16	2.03	52.81			209	319		491	80	9477	42	86
Hekla	IHB.	IHB1-21.1I	11.23	1.51	1571	4.31	0.04	5.3	2	5.27	1.79	44.05			194	304		474	79	9363	43	87
Hekla	IHB.	IHB1-10.1I	10.26	1.67	1527	7.51	0.04	5.79	1.97	5.4	1.63	46.76			183	288		453	79	9533	41	93
Hekla	IHB.	IHB1-17.1I	10.99	1.34	1781	5.34	0.05	5.7	2.32	6.29	2.19	53.63			223	348		539	87	9293	46	94
Hekla	IHB.	IHB1-2.1I	10.23	1.36	1741	5.45	0.03	5.79	2.22	6.21	2.18	52.16			226	349		542	88	9479	48	97
Hekla	IHB.	IHB1-14.1I	7.44	2.09	1972	8.94	0.06	9.7	3.31	7.49	2.27	65.9			258	379		512	77	8502	46	101
Hekla	IHB.	IHB1-5.1I	11.06	1.86	1786	5.73	0.05	6.08	2.58	6.08	1.92	53.23			228	354		530	89	9389	51	105
Hekla	IHB.	IHB1-12.1R	13.02	1.46	988	9.94	0.02	7.22	0.81	2.39	0.86	22.66			109	186		314	54	9468	47	110
Hekla	IHB.	IHB1-9.2R	17.78	1.56	2467	7.47	0.07	7.25	4.55	11.27	4.09	87.59			326	464		724	120	8387	68	113
Hekla	IHB.	IHB1-9.1I	13.04	1.39	2301	7.64	0.05	6.21	2.85	8.61	3.22	75.75			281	433		674	113	8883	74	124
Hekla	IHB.	IHB1-24.1I	22.13	1.77	2199	15.17	0.1	8.67	2.37	7.28	2.69	63.06			278	431		690	116	8185	70	131
Hekla	IHB.	IHB1-22.2I	14.84	2.45	2523	8.5	0.06	7.96	4.54	11.63	4.08	89.92			359	508		771	123	8666	73	134
Hekla	IHB.	IHB1-4.1I	17.18	4.87	2999	10.7	0.08	8.51	6.1	14.08	4.63	109.26			379	549		816	137	8636	86	143
Hekla	IHB.	IHB1-13.1I	8.4	1.34	1669	10.39	0.04	16.64	2.58	6.93	3.11	68.24			319	495		779	129	9712	104	143
Hekla	IHB.	IHB1-3.1I	12.72	1.11	2367	7.88	0.05	6.35	2.94	9.43	3.41	85.96			347	518		794	129	9058	92	145
Hekla	IHB.	IHB1-1.1I	18.92	0.99	3573	12.63	0.05	12.29	6.97	17.67	6.36	130.66			493	712		1067	171	8129	118	176
Hekla	IHB.	IHB1-16.1I	18.55	14.01	5123	26.27	0.15	20.7	10.28	23.69	7.46	165.2			591	815		1184	190	8088	136	194
Hekla	IHB.	IHB1-8.1T	14	4.8	1403	18.98	1.9	17.94	4.06	4.7	1.57	42.25			199	337		571	96	9763	199	271
Hekla	IHB.	IHB1-12.2C	14.57	4.45	6523	30.12	0.15	40.72	15.2	37.88	13.11	272.36			919	1229		1735	282	8207	309	313
Hekla	IHB.	IHB1-22.1I	19.69	1.37	7090	36.12	0.09	28.74	15.09	38.93	13.08	288.13			1016	1359		1902	298	7889	298	319

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Hekla	IHB.	IHB1-23.1I	15.06	1.07	5032	23.76	0.08	18.98	7.28	20.86	6.84	176.54			719	1016		1521	243	8522	240	324
Hrafnfjörður	KK-24.	KK24-6.1	11.59	58.62	1628	6.66	0.49	3.69	1.34	2.97	1	27.8	66.3		137	311		550	103	7470	12	50
Hrafnfjörður	KK-24.	KK24-3.1	16.09	66.59	1907	5.3	0.03	2.78	0.95	3.43	1.37	36.94	80.1		170	365		623	115	7487	17	52
Hrafnfjörður	KK-24.	KK24-14.1	25.91	281.33	5972	3.42	1.99	17.74	12.44	25.8	8.99	196.92	239.1		633	977		1408	236	7252	91	126
Hrafnfjörður	KK-24.	KK24-8.1	10.05	86.81	3284	14.78	0.04	14.28	2.14	9.24	2.66	92.34	138.1		339	580		863	149	8541	150	176
Hrafnfjörður	KK-24.	KK24-9.1	15.4	2,909.88	6645	5.15	2.84	30.02	11.04	21.27	5.33	180.8	254.5		651	1055		1550	257	7990	145	206
Hrafnfjörður	KK-24.	KK24-11.1	7.54	71.71	3379	4.94	0.16	22.11	2.66	9.15	2.73	94.88	142.3		356	579		859	145	8677	221	245
Hrafnfjörður	KK-24.	KK24-5.1	14.59	110.56	3301	25.4	1.19	27.75	3.07	8.76	2.54	91.8	141.5		339	577		859	148	9037	234	245
Hrafnfjörður	KK-24.	KK24-13.1	9.04	74.79	3042	18.74	0.2	11.71	0.78	3.08	1.01	45.97	123.0		269	550		936	161	12090	91	331
Hrafnfjörður	KK-24.	KK24-10.1	13.3	229.12	9495	6.36	0.11	34.8	8.94	26.23	6.87	243.2	346.6		893	1497		2184	371	9413	247	338
Hrafnfjörður	KK-24.	KK24-4.1	11.37	186.94	4556	34.68	0.87	39.61	4.52	13.49	3.76	132.57	199.9		485	768		1137	192	9058	361	342
Hrafnfjörður	KK-24.	KK24-1.1	12	142.35	6389	53.57	0.89	49.3	5.03	17.38	4.48	155.89	214.7		543	1015		1524	259	9242	421	418
Hrafnfjörður	KK-24.	KK24-2.1	11.71	245.5	8038	55.71	0.61	62.3	7.35	23.55	5.96	213.95	294.0		742	1317		1921	321	9330	525	498
Hrafnfjörður	KK-24.	KK24-12.1	7.85	204.12	6773	21.39	0.08	68.6	4.19	17.25	4.89	180.22	271.8		675	1074		1588	262	9349	678	599
Hrafnfjörður	KK-24.	KK24-7.1	17.14	144.74	6421	86.42	0.59	49.9	3.18	11.22	3.2	138.38	239.8		560	1092		1706	285	10235	542	655
Husavikurkleif	IXH.	IXH_13.1I	15.16	0.41	1593	2.61	0.01	3.52	2.22	5.01	1.96	47.33	65.5	15.7	175	273	54	425	74	8458	29	52
Husavikurkleif	IXH.	IXH_3.1I	10.82	0.4	1510	2.99	0.02	4.07	1.98	4.97	1.84	47.48	63.0	15.4	170	267	51	409	70	9028	31	57
Husavikurkleif	IXH.	IXH_8.1I	16.56	0.43	1219	8.67	0.01	4.97	0.83	2.26	0.85	23.45	48.3	8.9	112	228	50	412	75	8665	23	67
Husavikurkleif	IXH.	IXH_14.1I	14.91	0.46	1052	6.21	0.01	5.28	0.91	2.35	0.92	23.02	40.9	8.6	102	184	38	305	55	8908	32	68
Husavikurkleif	IXH.	IXH_19.1I	22.84	0.42	1268	6.44	0.01	4.76	1.16	3.18	1.3	29.22	50.6	10.4	126	233	50	400	74	7983	32	73
Husavikurkleif	IXH.	IXH_16.1I	12.14	0.59	1992	4.25	0.02	4.52	2.54	5.92	2.13	60.48	84.3	19.9	227	356	70	550	95	8849	46	78
Husavikurkleif	IXH.	IXH_15.1I	13.87	0.41	2257	4.64	0.02	5.04	2.83	7.41	2.75	69.08	93.2	23.3	248	381	75	582	100	8723	49	81
Husavikurkleif	IXH.	IXH_12.1I	20.44	0.42	1362	9.61	0	5.57	0.97	2.87	1.17	28.03	53.7	10.3	128	249	52	437	80	8257	38	83
Husavikurkleif	IXH.	IXH_17.1I	14.65	5.45	1906	7.01	0.04	5.16	2.27	5.52	2.09	53.25	79.2	18.4	207	339	68	536	94	8862	45	83
Husavikurkleif	IXH.	IXH_21.1I	14.18	0.25	973	5.96	0.01	5.24	0.88	2.08	0.8	21.59	39.2	8.0	96	177	37	304	55	8867	36	84
Husavikurkleif	IXH.	IXH_9.1E	10.47	0.85	2051	4.46	0.04	5.07	2.59	5.62	2.02	58.11	83.9	20.5	224	365	70	564	96	9048	47	84
Husavikurkleif	IXH.	IXH_10.1I	21.82	0.42	1953	8.25	0.01	6.28	1.73	4.74	2	46.67	76.6	16.4	189	338	69	549	97	7948	46	84
Husavikurkleif	IXH.	IXH_5.1I	14.21	0.31	1997	5.01	0.02	4.84	2.33	5.8	2.32	58	84.1	20.2	220	359	72	560	99	8605	46	84
Husavikurkleif	IXH.	IXH_7.1I	14.05	0.43	2097	6.17	0.02	5.22	2.39	5.72	2.22	60.08	88.3	20.9	232	373	76	597	106	8723	51	94

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Husavikurkleif	IXH.	IXH_18.1E	14.4	0.35	1069	7.85	0.01	6.73	0.87	2.46	0.93	25.88	45.8	9.3	113	207	43	353	64	8803	53	99
Husavikurkleif	IXH.	IXH_2.2E	13.41	0.38	977	6.21	0.01	5.95	0.81	2.3	0.83	23.36	41.2	8.2	98	179	38	307	55	9028	47	104
Husavikurkleif	IXH.	IXH_1.1I	12.36	0.45	1491	2.2	0.02	17.02	2.72	6	1.1	46.62	59.0	15.2	161	247	48	376	65	9727	150	117
Husavikurkleif	IXH.	IXH_11.1I	14.42	0.44	1141	7.73	0.01	6.72	0.94	2.59	0.92	25.19	45.2	9.5	112	209	44	355	63	8994	66	126
Husavikurkleif	IXH.	IXH_4.1I	16.36	0.45	3746	11.27	0.03	10.61	7.19	16.83	5.87	137.75	166.1	43.5	461	673	129	1026	176	8040	117	161
Husavikurkleif	IXH.	IXH_6.1I	8.38	0.32	1911	23.39	0.03	19.84	1.86	5.22	1.4	54.2	82.5	18.6	211	351	70	549	93	10188	179	228
Husavikurkleif	IXH.	IXH_18.2I	12.56	5.64	10379	72.22	0.15	105.7	19.07	43.99	10.23	358.55	436.5	111.1	1145	1609	303	2191	349	9752	644	578
Husavikurkleif	IXH.	IXH_2.1C	9.32	9.44	5172	32.93	0.1	63.31	11.16	26.62	6.36	261.1	330.2	87.2	941	1347	246	1875	297	11300	586	636
Jökulsá í Lóni	ISJL.	IS-JL_T27.2_E	37.1	0.26	173	0.87	0				0.32	4.75	7.4	1.6	18	30	7	55	10	7889	1	5
Jökulsá í Lóni	ISJL.	IS-JL_T18.2_E	25.85	3.2	194	1.12	0.03	1.4	0.28	0.67	0.36	5.29	8.1	1.9	21	35	7	57	10	8699	2	7
Jökulsá í Lóni	ISJL.	IS-JL_T21.2_Eb	40.27	1.74	358	1.36	0.06				0.87	11.88	15.0	3.8	41	63	13	100	19	7271	4	11
Jökulsá í Lóni	ISJL.	IS-JL_T31.1_E	24.45	0.21	320	1.38	0.01				0.6	10.32	13.9	3.4	37	62	12	96	17	8053	4	12
Jökulsá í Lóni	ISJL.	IS-JL-T8.1_I	27.79	0.4	1060	1.46	0.01	2.47	2.03	4.39	2.83	41.64	45.0	12.3	125	179	34	256	42	8271	9	20
Jökulsá í Lóni	ISJL.	IS-JL-T1.1_I	32.67	0.32	1355	2.21	0.03	2.38	3.02	6.67	4.17	57.76	57.3	16.8	170	229	42	330	56	7792	14	27
Jökulsá í Lóni	ISJL.	IS-JL_T31.2_I	33.76	0.3	1649	2.35	0.03				5.16	68.26	71.4	20.6	204	285	54	409	72	7189	18	33
Jökulsá í Lóni	ISJL.	IS-JL-T5.1_Id	37.46	0.31	1700	2.62	0.04	2.52	4.07	8.65	5.51	70.49	74.1	21.4	211	293	55	409	72	7263	19	33
Jökulsá í Lóni	ISJL.	IS-JL-T5.2_E	39.08	0.31	656	3	0.01	1.99	0.87	2.25	1.33	18.68	26.9	6.4	70	115	23	188	35	7114	12	34
Jökulsá í Lóni	ISJL.	IS-JL-T10.2_E	19.87	17.11	592	4.39	0	2.43	0.63	1.56	0.58	14.97	24.6	5.2	60	109	23	192	34	8435	11	35
Jökulsá í Lóni	ISJL.	IS-JL_T21.1_Id	20.15	0.2	1062	4.41	0.01				1.71	34.92	43.8	11.3	119	178	33	245	41	8929	16	35
Jökulsá í Lóni	ISJL.	IS-JL-T13.2_Tb	42.44	9.31	798	2.77	0.01	2.1	0.99	2.28	1.09	19.16	30.8	6.8	75	135	28	221	42	6981	13	35
Jökulsá í Lóni	ISJL.	IS-JL-T6.1_E	24.38	0.33	629	4.38	0.01	2.43	0.64	1.8	0.8	16.63	25.5	6.2	68	113	24	198	37	7868	13	43
Jökulsá í Lóni	ISJL.	IS-JL_T18.1_Id	30.73	0.2	2102	3.01	0.04	2.73	3.94	10.09	6.18	87.23	94.3	26.0	263	358	67	491	85	7539	26	45
Jökulsá í Lóni	ISJL.	IS-JL-T2.1_E	9.15	0.27	875	9.53	0	6.62	0.82	2.44	0.96	26.02	37.3	9.1	98	155	29	228	38	8971	14	45
Jökulsá í Lóni	ISJL.	IS-JL_T37.1_I	16.54	0.24	1701	4.37	0.01				1.91	61.28	73.0	18.9	199	300	59	438	72	9107	24	48
Jökulsá í Lóni	ISJL.	IS-JL-T15.1_I	25.22	0.37	1683	3.11	0.04	3.55	3.22	8.11	3.28	65.23	71.5	20.1	203	286	54	411	66	8202	26	48
Jökulsá í Lóni	ISJL.	IS-JL_T23.1_I	9.5	0.36	1697	4.72	0.02				2.67	61.86	74.6	19.4	205	289	53	385	61	9250	24	50
Jökulsá í Lóni	ISJL.	IS-JL_T43.1_I	19.16	3.15	1592	3.75	0.04				2.31	56.78	68.8	18.3	190	276	55	411	69	8546	27	53
Jökulsá í Lóni	ISJL.	IS-JL_T28.1_Id	20.98	37.23	1762	2.94	0.02				2.35	63.97	73.9	20.9	211	297	56	422	68	8649	30	57
Jökulsá í Lóni	ISJL.	IS-JL-T3.2_E	9.53	14.1	1061	15.49	0	8.76	0.73	2.42	0.98	28.56	43.7	10.1	115	190	37	288	50	9363	17	59

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Jökulsá í Lóni	ISJL.	IS-JL-T14.1_T	8.18	0.29	774	17.46	0.01	8.28	0.51	1.81	0.51	18.32	31.3	6.7	79	132	27	200	35	12347	21	59
Jökulsá í Lóni	ISJL.	IS-JL_T40.1_E	10.02	0.23	1055	11.14	0.01				1.06	30.56	43.9	10.5	117	186	37	280	47	9804	25	61
Jökulsá í Lóni	ISJL.	IS-JL-T11.1_I	8.99	0.29	954	12.27	0.01	11.22	1.03	2.84	0.88	28.48	39.2	9.6	109	174	34	249	41	9454	24	62
Jökulsá í Lóni	ISJL.	IS-JL_T17.1_I	7.49	0.22	1862	6.2	0.02	10.36	3.45	7.81	2.53	66.84	78.4	21.1	215	305	56	409	66	9402	32	67
Jökulsá í Lóni	ISJL.	IS-JL-T12.1_I	8.49	1.4	1927	7.28	0.06	10.5	3.46	8.33	2.73	69.81	84.6	22.0	232	331	61	436	71	9932	36	69
Jökulsá í Lóni	ISJL.	IS-JL_T27.1_C	9.59	0.26	1884	6.65	0.01				2.32	65.29	79.9	20.7	217	318	61	425	69	9648	33	69
Jökulsá í Lóni	ISJL.	IS-JL_T32.1_I	8.91	0.22	1388	12.14	0.01				1.42	41.63	57.9	14.3	155	240	46	342	57	9735	34	73
Jökulsá í Lóni	ISJL.	IS-JL_T25.1_I	10.3	0.58	2225	8.12	0.04				2.51	73.48	96.7	24.4	267	387	72	538	88	9194	42	82
Jökulsá í Lóni	ISJL.	IS-JL-T3.1_Di	7.9	126.94	2310	9.04	0.03	10.28	3.93	7.98	2.77	76.43	97.9	24.7	264	385	70	504	82	9151	41	84
Jökulsá í Lóni	ISJL.	IS-JL_T39.2_E	25.38	0.25	1307	5.23	0.02				1.45	34.48	53.7	12.8	143	236	48	359	64	8572	55	87
Jökulsá í Lóni	ISJL.	IS-JL_T39.1_I	23.18	0.28	2920	5.21	0.03				4.9	109.93	124.3	35.0	355	507	94	704	115	8305	56	91
Jökulsá í Lóni	ISJL.	IS-JL-T13.3_E	24.3	119.1	3156	6.28	0.03	8.73	5.13	14.07	5.68	116.69	128.9	35.1	352	499	93	695	114	7864	68	92
Jökulsá í Lóni	ISJL.	IS-JL-T6.2_Id	18.15	0.26	2504	6.55	0.05	4.45	3.55	9.95	3.78	88.78	107.9	29.3	296	428	85	640	108	8232	49	92
Jökulsá í Lóni	ISJL.	IS-JL_T29.1_I	7.08	0.27	1913	12.74	0.01				2	69.06	87.3	21.9	229	348	67	490	76	10805	55	104
Jökulsá í Lóni	ISJL.	IS-JL_T16.1_I	14.79	0.3	2559	6.22	0.04	10.55	4.03	8.43	2.3	78.29	106.9	26.3	292	434	82	616	101	9815	62	105
Jökulsá í Lóni	ISJL.	IS-JL_T35.1_I	14.12	0.28	2573	9.39	0.04				2.6	92.52	116.5	30.8	323	496	94	714	115	9539	58	106
Jökulsá í Lóni	ISJL.	IS-JL_T22.1_Id	7.77	0.33	1489	24.26	0.01				1.35	44.42	61.7	15.3	166	262	49	367	58	10586	50	116
Jökulsá í Lóni	ISJL.	IS-JL-T13.1_C	22.94	103.81	2967	5.5	0.04	7.77	4.96	13.59	5.29	117.36	131.7	36.8	376	532	99	751	121	8190	78	116
Jökulsá í Lóni	ISJL.	IS-JL_T34.1_I	8.25	0.25	2939	13.93	0.02				2.88	88.91	119.0	29.5	312	463	85	605	97	9568	60	117
Jökulsá í Lóni	ISJL.	IS-JL_T26.1_I	8.04	0.53	2961	12.54	0.03				3.15	100.26	128.1	33.8	360	521	94	673	107	9422	64	118
Jökulsá í Lóni	ISJL.	IS-JL-T9.1_I	7.48	64.8	1998	13.08	0.01	15.62	3.28	8.51	2.17	74.6	99.7	24.9	271	415	77	566	90	10872	65	122
Jökulsá í Lóni	ISJL.	IS-JL-T10.1_C	18.42	228.27	3675	11.71	0.03	5.9	4.87	15.16	5.24	136.41	158.7	42.6	439	631	117	920	150	8423	78	129
Jökulsá í Lóni	ISJL.	IS-JL_T24.2_R	16.72	0.21	1461	10.4	0.02				0.98	38.66	61.7	14.1	154	254	51	387	65	9872	89	133
Jökulsá í Lóni	ISJL.	IS-JL_T20.1_I	6.16	0.27	2151	9.44	0.02				1.52	60.91	84.6	20.6	230	348	64	469	74	11200	68	142
Jökulsá í Lóni	ISJL.	IS-JL_T42.1_I	13.49	0.21	4864	20.99	0.05				5.21	169.08	201.8	53.8	558	800	149	1107	181	8758	108	160
Jökulsá í Lóni	ISJL.	IS-JL-T9.2_E	7.38	0.25	2426	62.43	0.01	41.13	2.31	6.71	1.77	68.18	101.0	24.2	271	427	79	602	93	10838	78	164
Jökulsá í Lóni	ISJL.	IS-JL_T38.1B_I	8.67	0.68	3476	22.43	0.03				3.22	123.01	153.2	39.8	424	601	108	783	125	9462	102	173
Jökulsá í Lóni	ISJL.	IS-JL_T24.1_C	14.62	0.27	3561	12.15	0.04				3.14	116.8	152.4	40.1	420	605	115	853	137	9788	130	183
Jökulsá í Lóni	ISJL.	IS-JL_T30.1_I	11.09	7.75	4379	29.17	0.08				4.85	161.99	204.0	51.3	554	813	149	1085	174	10301	116	192

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Jökulsá í Lóni	ISJL.	IS-JL-T7.1_I	6.37	0.27	4429	26.47	0.04	29.42	5.91	14.31	3.7	149.98	189.6	48.9	528	756	136	950	150	9673	131	216
Jökulsá í Lóni	ISJL.	IS-JL-T4.2_Ed	9.2	0.94	1836	35.06	0.02	24.72	1.88	5.25	1.36	54.91	80.5	19.1	208	333	66	489	81	10050	150	261
Jökulsá í Lóni	ISJL.	IS-JL_T41.1_I	12.11	0.8	5731	45.65	0.07				5.84	203.19	252.4	66.0	697	1013	187	1328	213	10881	176	277
Jökulsá í Lóni	ISJL.	IS-JL-T14.2_Id	11.31	0.81	4856	35.72	3.68	42.37	15.13	23.05	5.52	184.79	222.1	59.5	616	874	162	1156	184	10643	168	283
Jökulsá í Lóni	ISJL.	IS-JL_T33.1_E	11.38	10.59	3778	73.54	0.34				3.49	122.84	164.4	42.0	453	669	123	876	139	10609	219	292
Jökulsá í Lóni	ISJL.	IS-JL-T4.1_Id	8.31	0.8	4901	27.95	0.05	28.36	7.57	20.6	5.49	181.48	220.2	57.7	603	858	158	1159	189	9537	189	293
Jökulsá í Lóni	ISJL.	IS-JL_T36.1_E	9.37	5.45	4549	186.8	0.02				1.76	116.86	197.2	45.7	528	846	166	1224	189	11094	285	599
Kerlingarfjöll	IEKlM.	IEKLM-1.1	13.01	1.07	1729	44.01	0.02	19.6	2.06	4.67	1.62	44.51	74.4	16.2	187	305	60	466	77	8684	143	193
Kerlingarfjöll	IEKlM.	IEKLM-3.1	10.21	1.29	3208	56.91	0.07	29.04	4.3	11.21	3.41	111.29	156.1	36.7	413	643	120	901	147	8785	118	194
Kerlingarfjöll	IEKlM.	IEKLM-2.1	11.06	1.2	2139	65.9	0.03	31.47	2.6	6.21	1.89	61.57	95.4	21.1	247	402	78	590	93	8972	194	249
Kerlingarfjöll	IEKlT.	IEKLT-7.1	10.66	5.97	988	12.59	0.38	9.43	0.98	2.44	0.75	24.66	42.5	9.2	103	184	37	297	53	9776	30	68
Kerlingarfjöll	IEKlT.	IEKLT-10.1	11.07	7.1	1299	9.72	0.44	10.69	1.8	3.58	0.89	30.54	48.7	10.9	123	212	42	330	60	10443	41	73
Kerlingarfjöll	IEKlT.	IEKLT-3.1	9.24	2.13	2082	9.64	0.1	12.43	3.77	7.55	1.88	51.41	76.3	16.7	174	292	58	444	75	10250	48	88
Kerlingarfjöll	IEKlT.	IEKLT-5.1	9.25	0.92	2097	10.84	0.05	12.93	3.17	5.99	1.65	50.45	77.7	16.3	180	305	60	457	80	10012	52	96
Kerlingarfjöll	IEKlT.	IEKLT-4.1	10.53	3.65	1832	9.94	0.05	10.13	2.73	6.43	1.7	58.03	79.3	19.1	207	331	64	503	84	9945	54	98
Kerlingarfjöll	IEKlT.	IEKLT-1.1	12.6	0.82	1261	14.79	0.02	14.73	1.33	3.34	1.03	32.59	54.6	11.5	137	237	48	382	68	9641	64	115
Kerlingarfjöll	IEKlT.	IEKLT-11.1	13.96	0.96	4395	24.72	0.11	15.13	6.12	15.73	4.51	153.11	193.5	47.4	511	782	149	1125	189	8720	153	222
Kerlingerfjoll	IEKLT	IEKLT-COL-9.1	10.55	3.62	1185	16.56	0.53	12.77	1.43	3.43	1	30.84	51.7	10.3	120	209	43	369	61	9562	32	82
Kerlingerfjoll	IEKLT	IEKLT-COL-5.1	9.06	2.15	886	13.53	0.08	11.47	0.78	2.11	0.57	20.37	37.5	7.7	95	173	36	314	50	10381	34	86
Kerlingerfjoll	IEKLT	IEKLT-2.1	13.58	1.5	859	10.87	0.02	6.47	0.84	2.45	0.64	21.66	37.3	8.7	105	183	39	331	53	9159	44	92
Kerlingerfjoll	IEKLT	IEKLT-11.1	9.76	0.7	1111	15.76	0.02	11.96	1.11	2.98	0.84	24.6	46.9	9.9	114	210	43	384	62	10052	48	105
Kerlingerfjoll	IEKLT	IEKLT-COL-12.1	9.21	1.22	1161	16.05	0.04	15.01	1.19	2.94	0.98	28.74	48.8	10.7	133	235	48	406	68	10318	57	119
Kerlingerfjoll	IEKLT	IEKLT-10.1	12.66	12.27	2394	11.1	0.1	12.29	4.17	8.15	2.2	73.54	106.7	24.0	273	440	86	686	111	9593	70	132
Kerlingerfjoll	IEKLT	IEKLT-COL-3.1	9.4	0.53	1191	17.32	0.03	15.14	1.29	3.18	0.94	31.78	50.2	11.8	138	241	49	432	70	10536	66	133
Kerlingerfjoll	IEKLT	IEKLT-COL-13.1	9.38	0.99	1876	31.65	0.04	31.37	2.34	4.95	1.51	51.35	81.8	19.2	219	363	74	609	97	9600	167	197
Kerlingerfjoll	IEKLT	IEKLT-15.1	8.87	2.11	2369	62.16	0.07	48.15	2.61	6.25	1.52	68.2	103.3	24.1	280	457	90	744	115	10444	268	362
Kerlingerfjoll	IEKLT	IEKLT-6.1	8.8	4.01	2435	59.06	0.06	41.55	2.79	6.66	1.59	69.97	106.3	24.3	294	475	95	774	122	10644	279	380
Kerlingerfjoll	IEKLT	IEKLT-1.1	17.01	0.63	10173	287.29	0.15	295.2	12.8	29.2	4.07	262.16	416.7	100.5	1173	1877	375	3041	437	12458	753	929
Krafla	IEKG.	IEKG_7.1E	11.33	1.46	578	6.41	0	5.29	0.21	0.97	0.23	10.91	23.1	4.4	55	110	24	206	38	10119	12	33

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Krafla	IEKG.	IEKG_1.2E	12.62	0.21	640	6.74	0	5.07	0.26	1.01	0.33	12.69	25.8	5.2	62	122	26	219	41	10002	13	35
Krafla	IEKG.	IEKG_8.1I	12.49	0.3	735	6.91	0	5.31	0.48	1.35	0.39	14.74	29.8	5.8	73	138	30	251	46	9791	16	42
Krafla	IEKG.	IEKG_4.2E	12.96	6.11	1761	4.78	0.01	5.48	2.18	4.76	1.33	45.82	70.0	15.4	175	294	57	460	81	9622	29	55
Krafla	IEKG.	IEKG_5.1I	16.79	0.48	2439	4.99	0.03	4.24	2.69	6.33	1.99	67.47	103.2	23.5	266	443	87	665	115	8754	39	72
Krafla	IEKG.	IEKG_2.1I	17.65	0.45	2080	11.18	0.02	10.15	2.09	5.26	1.54	53.62	87.2	19.2	217	380	74	599	110	8816	78	100
Krafla	IEKG.	IEKG_3.1SZ	18.83	0.69	4043	13.27	0.05	8.83	4.21	11.73	3.18	115.68	165.6	38.3	430	704	136	1072	186	8603	96	132
Krafla	IEKG.	IEKG_1.1C	13.36	0.35	2209	29.98	0.02	19.12	1.64	4.77	1.07	50.63	89.8	18.1	220	378	77	608	106	9212	111	167
Krafla	IEKG.	IEKG_7.2C	16.52	4.99	6610	34.45	0.04	20.11	6.71	19.22	4.43	193.36	279.8	65.9	730	1174	226	1810	307	8723	198	259
Krafla	IEKG.	IEKG_6.1I	13.43	1.25	5722	34.76	0.06	18.64	5.25	11.91	2.74	140.12	234.2	49.3	585	1011	196	1468	254	9358	226	298
Krafla	IEKG.	IEKG_4.1C	13.23	2.97	7103	50.99	0.06	39.21	7.47	19.44	3.88	196.97	293.0	66.9	746	1233	236	1815	305	8776	262	341
Krafla	IEKG.	IEKG_16.1E	12.87	0.45	828	7.27	0.01	5.17	0.47	1.65	0.45	17.46	34.5	6.4	81	155	33	273	51	9438	18	46
Krafla	IEKG.	IEKG_15.1E	13.3	0.38	922	7.59	0	5.43	0.58	1.83	0.52	18.94	36.3	7.2	88	167	36	296	54	9411	20	49
Krafla	IEKG.	IEKG_11.1E	13.92	0.48	1000	7.89	0.01	6.38	0.69	1.99	0.59	21.72	40.4	8.0	98	184	38	319	58	9584	24	52
Krafla	IEKG.	IEKG_10.1I	12.81	0.48	1265	4.51	0	4.43	0.88	2.63	0.78	30.33	50.6	11.6	134	239	49	406	74	9522	26	53
Krafla	IEKG.	IEKG_22.2E	12.57	0.39	899	8.66	0.02	5.85	0.51	1.8	0.48	19.83	36.4	7.1	91	168	36	295	53	9585	23	53
Krafla	IEKG.	IEKG_23.1I	14.69	5.55	1094	9.11	0.05	6.01	0.86	2.29	0.69	25.99	47.0	9.7	116	218	46	378	70	9295	27	55
Krafla	IEKG.	IEKG_24.2E	13.76	0.32	1030	8.41	0.01	6.62	0.77	2.11	0.58	22.6	41.4	8.4	102	191	40	336	62	9477	28	61
Krafla	IEKG.	IEKG_12.1I	12.45	0.44	1977	6.57	0.02	6.34	2.5	5.96	1.5	58.47	94.2	20.6	239	410	81	645	112	9127	47	81
Krafla	IEKG.	IEKG_20.1E	12.09	0.41	1094	31.26	0.01	14.71	0.51	1.86	0.38	24.2	44.8	8.5	106	194	41	330	58	9890	70	100
Krafla	IEKG.	IEKG_19.1SZ	16.42	0.52	3074	10.68	0.03	8.9	3.21	8.5	2.36	83.68	127.2	28.7	327	540	108	843	147	8962	67	102
Krafla	IEKG.	IEKG_9.1I	16.63	41.64	1690	16.05	0.05	10.64	1.29	3.23	1	36.77	67.8	13.7	165	310	63	521	92	9152	71	109
Krafla	IEKG.	IEKG_21.1I	13.94	0.58	3510	15.33	0.04	12.42	3.54	8.94	2.22	90.01	139.2	31.3	354	591	117	925	158	9238	84	126
Krafla	IEKG.	IEKG_18.1C	10.53	1.44	3496	14.67	0.03	12.26	3.71	9.01	2.38	96.1	146.9	32.7	371	611	121	921	158	9126	89	137
Krafla	IEKG.	IEKG_24.1I	16.36	0.81	4036	15.24	0.04	12.12	4.33	11.2	3.02	112.05	164.6	38.4	433	703	140	1084	186	8980	99	138
Krafla	IEKG.	IEKG_16.2C	10.41	0.91	3618	15.73	0.09	12.6	4.01	8.53	2.13	96.41	154.2	34.1	393	671	133	1044	181	9603	129	196
Krafla	IEKG.	IEKG_17.1I	21.03	6.54	3871	28.96	0.05	19.41	4.02	10.12	2.63	107.15	163.3	36.5	416	692	138	1082	187	8683	216	228
Krafla	IEKG.	IEKG_22.1C	11.94	7.36	3134	59.91	0.02	38.44	2.2	6.65	1.27	73.68	128.1	27.2	319	559	112	882	151	10323	252	325
Krafla	IEKG.	IEKG_20.2C	10.28	7.07	8573	68.63	0.07	99.58	10.89	25.44	5.12	248.11	362.5	83.1	926	1463	284	2147	359	9874	390	385
Krafla	IEKG.	IEKG_14.1I	18.19	5.77	10921	520.21	0.04	277.51	9.03	29.25	3.9	315.24	453.2	108.5	1194	1863	360	2721	433	9132	2576	1585
Króksfjördur	IIKK.	IIKK_1.2E	16.14	2.42	1052	8.95	0.01	22.09	0.7	2.25	0.72	21.73	40.6	8.1	98	189	41	355	68	10049	20	46

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Króksfjördur	IIKK.	IIKK_1.1C	14.57	0.34	1737	6.58	0.02	31.72	2.12	5.34	1.67	46.34	66.8	15.7	175	285	59	469	85	9792	37	54
Króksfjördur	IIKK.	IIKK_4.1I	7.12	0.34	687	1.92	0.01	8.61	0.48	1.43	0.55	13.35	23.8	4.8	58	112	25	216	40	10260	27	62
Króksfjördur	IIKK.	IIKK_3.2I	8.54	3.57	433	1.23	0.31	10.17	1.2	1.34	0.84	7.86	13.0	2.4	29	63	16	156	35	8252	44	80
Króksfjördur	IIKK.	IIKK_4.2E	5.9	0.3	626	3.77	0.01	10.42	0.31	0.88	0.38	10.06	23.6	4.3	54	120	27	253	53	10899	37	96
Króksfjördur	IIKK.	IIKK_1.3E	15.47	0.29	1527	11.89	0.01	23.92	1.14	2.84	1.05	27.52	58.0	10.9	134	280	63	547	109	8863	52	131
Króksfjördur	IIKK.	IIKK_2.1E	3.34	0.28	575	1.76	0.01	15.06	0.35	1.03	0.39	10.07	20.8	3.7	48	102	25	229	48	13227	80	176
Króksfjördur	IIKK.	IIKK_2.2I	4.52	0.29	690	1.22	0.02	12.91	0.79	1.87	0.95	16.13	25.3	5.3	61	119	27	253	52	11387	116	199
Króksfjördur	IIKK.	IIKK_3.1E	5.6	0.22	1125	2.1	0.05	26.79	3.16	3.83	2.11	27.07	39.4	9.2	97	195	47	445	93	10699	308	426
Krossá-Kækjudalsá	ISKK.	ISKK_19.1	12.82	0.33	683	5.65	0.01	5.49	0.62	1.77	0.65	17.72	29.3	6.4	73	127	26	203	37	9682	13	34
Krossá-Kækjudalsá	ISKK.	ISKK_9.1	12.86	5.26	882	5.38	0.48	5.54	0.65	1.81	0.45	20.39	37.3	7.7	89	166	34	291	53	9115	23	48
Krossá-Kækjudalsá	ISKK.	ISKK_22.1	6.53	0.44	1260	21.89	0.01	17.41	1.4	3.54	1.26	33.46	55.9	12.9	146	238	47	364	62	10579	35	90
Krossá-Kækjudalsá	ISKK.	ISKK_16.1	16.82	141.34	1198	11.79	0.03	12.58	1.59	3.98	1.31	35.35	51.0	12.1	129	209	42	317	55	9183	55	93
Krossá-Kækjudalsá	ISKK.	ISKK_64.1	6.93	0.41	1136	16.21	0	14.52	0.95	2.98	0.76	28.45	48.3	10.5	126	214	43	347	59	11069	40	103
Krossá-Kækjudalsá	ISKK.	ISKK_26.1	5.58	0.47	2130	10.53	0.02	15.13	2.66	7.21	2.58	68.18	97.6	23.4	260	399	75	562	90	10615	54	111
Krossá-Kækjudalsá	ISKK.	ISKK_1.1	6.87	0.51	1913	7.59	0.02	11.51	2.2	5.76	1.64	56.78	80.4	18.6	214	331	64	492	81	10704	55	115
Krossá-Kækjudalsá	ISKK.	ISKK_67.1	6.84	14.75	2431	31.94	0.58	16.7	3.09	8.22	2.57	73.49	107.7	25.2	287	444	86	635	108	11139	60	121
Krossá-Kækjudalsá	ISKK.	ISKK_3.1	6.84	6.06	2002	10.23	0.02	12.23	2.5	6.25	1.66	56.5	86.2	19.6	224	351	69	532	90	10808	61	121
Krossá-Kækjudalsá	ISKK.	ISKK_76.1	11.25	15.37	1377	17.94	0.08	13.43	1.4	4.09	1.24	38.32	60.4	13.3	141	247	49	381	65	9438	62	122
Krossá-Kækjudalsá	ISKK.	ISKK_21.1	8.35	0.47	1366	19.28	0.01	14.64	1.33	3.86	1	36.81	57.2	12.5	147	244	50	393	67	10629	58	126
Krossá-Kækjudalsá	ISKK.	ISKK_17.1	9.84	22.82	1698	20.01	0.44	18.29	2.36	5.26	1.58	47.83	76.3	16.5	190	311	62	483	79	10613	104	127
Krossá-Kækjudalsá	ISKK.	ISKK_25.1	7.26	0.4	1080	17.67	0.03	13.38	0.9	2.46	0.69	25.25	43.2	9.6	111	197	41	326	56	10763	54	130
Krossá-Kækjudalsá	ISKK.	ISKK_10.1	10.77	6.13	1610	42.74	1.22	24.38	1.99	4.82	1.68	43.07	74.3	16.4	178	316	63	500	91	11285	46	135
Krossá-Kækjudalsá	ISKK.	ISKK_15.1	6.91	0.36	1282	19.91	0.01	17.26	1.13	3.41	0.83	32.23	55.4	11.9	138	239	48	379	64	10542	61	142
Krossá-Kækjudalsá	ISKK.	ISKK_61.1	5.36	0.26	1794	24.1	0.02	24.63	1.67	5.01	1.55	48.9	77.3	17.9	194	315	61	460	77	11097	67	146
Krossá-Kækjudalsá	ISKK.	ISS_10.1	5.87	0.36	1845	41.91	0.03	31.3	1.86	5.2	1.53	49.6	78.2	17.4	199	321	61	475	78	10775	70	158
Krossá-Kækjudalsá	ISKK.	ISKK_12.1	5.79	0.4	1685	40.74	0.01	29.61	1.55	4.65	1.47	46.17	75.3	17.0	189	309	61	452	74	10882	92	176
Krossá-Kækjudalsá	ISKK.	ISKK_75.1	8.16	1.78	2699	78.29	0.04	52.48	2.94	7.98	2.69	82.6	123.0	29.4	323	492	94	700	110	10792	189	244
Krossá-Kækjudalsá	ISKK.	ISKK_54.1	6.09	1.04	2993	68.48	0.06	51.2	3.09	8.84	2.57	90.74	133.3	32.0	356	552	104	779	128	10866	174	287

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Krossá-Kækjudalsá	ISKK.	ISKK_8.1	5.44	0.83	5232	55.27	0.09	47.81	6.26	15.73	4.44	162.54	234.5	56.3	608	926	173	1266	202	10514	198	328
Krossá-Kækjudalsá	ISKK.	ISKK_18.1	11.94	3.73	8380	48.33	0.23	61.22	19.72	42.33	13.75	341.03	361.2	102.5	1055	1391	261	1896	301	8770	267	354
Krossá-Kækjudalsá	ISKK.	ISKK_70.1	4.92	2.1	7106	69.74	0.11	100.14	10.08	26.84	7.44	250.2	325.2	85.0	922	1323	256	1896	294	10052	307	423
Krossá-Kækjudalsá	ISKK.	ISKK_14.1	9.35	94.88	7511	74.13	61.4	214.98	63.59	40.31	5.49	230.96	285.2	67.2	701	1026	192	1415	229	11028	361	442
Krossá-Kækjudalsá	ISKK.	ISKK_13.1	4.53	64.56	3514	97.39	0.02	51.74	1.96	7.37	1.59	85.09	155.9	33.8	392	643	127	953	158	12794	256	500
Krossá-Kækjudalsá	ISKK.	ISKK_24.1	20.62	1.23	4135	62.91	0.06	50.8	5.07	14	3.89	140.16	179.2	47.1	490	712	133	988	167	8914	697	550
Krossá-Kækjudalsá	ISKK.	ISKK_56.1	13.99	0.58	6593	131.31	0.11	122.31	9.55	26.13	8.58	243.43	286.7	77.3	802	1104	208	1514	243	9354	418	565
Krossá-Kækjudalsá	ISKK.	ISKK_20.1	24.18	1.16	8849	263.5	0.11	229.89	15.55	46.94	16.4	422.16	411.2	124.9	1215	1519	272	1940	295	8906	1836	1199
Krossá-Kækjudalsá	ISKK.	ISKK_69.1	11.49	7	10583	538.91	0.21	688.4	10.23	32.49	9.16	342.49	472.9	120.3	1275	1875	351	2631	416	13552	1917	1273
Krossá-Kækjudalsá	ISKK.	ISKK-15.1	23.03	0.8	1658	6.77	0.06	5.47	2.48	5.6	1.8	51.61	71.2	16.8	181	295	60	478	82	9073	28	65
Krossá-Kækjudalsá	ISKK.	ISKK-17.1	8.09	6.98	1121	15.84	0.18	14.46	1.04	2.71	0.8	27.35	47.5	10.3	119	204	42	340	60	10879	45	103
Krossá-Kækjudalsá	ISKK.	ISKK-16.1	29.82	7.55	6591	142.65	0.08	112.25	10.78	31.26	11.85	260.89	298.2	85.0	832	1112	202	1478	235	7981	1147	777
Krossá-Kækjudalsá	ISKK.	ISKK-20.1	24.13	1.26	8503	275.75	0.12	189.79	17.02	46.41	15.71	371.56	383.2	111.5	1103	1420	255	1850	284	8490	1336	951
Lagarfljót	ISLF	ISLF-9.1	26.56	1.31	1137	5.66	0.06	2.53	2.18	4.74	2.34	42.48			143	201		291	51	7971	12	24
Lagarfljót	ISLF	ISLF-23.1	25.07	0.38	742	7.67	0.03	6.09	0.78	2.3	0.95	21.29			83	131		213	38	9165	11	25
Lagarfljót	ISLF	ISLF-21.1	20.96	0.41	1530	7.55	0.03	5.93	3.22	6.25	2.24	54.32			186	263		382	63	9109	23	43
Lagarfljót	ISLF	ISLF-6.1	7.31	0.74	1518	2.01	0.03	10.93	1.93	5.37	1.9	52.45	63.5		177	261		373	62	9482	31	60
Lagarfljót	ISLF	ISLF-16.1	9.72	2.65	1783	12.46	0.06	13.23	2.79	6.82	2.05	58.85			215	317		449	75	10462	34	63
Lagarfljót	ISLF	ISLF-11.1	10.19	0.35	953	17.7	0.03	15.41	1.01	2.4	0.83	26.36			98	161		245	41	9601	42	72
Lagarfljót	ISLF	ISLF-2.1	7.54	0.23	1627	11.73	0.03	17.58	2.47	5.76	1.64	49.21	69.6		182	294		416	70	9261	45	86
Lagarfljót	ISLF	ISLF-18.1	9.96	0.17	1125	17.75	0.11	14.25	1.4	3.38	1.22	33.93			132	204		296	50	8536	59	104
Lagarfljót	ISLF	ISLF-13.1	15.76	0.98	1021	23.48	0.07	20.18	1.43	3.76	1.05	28.03			114	177		264	44	8784	54	104
Lagarfljót	ISLF	ISLF-24.1	8.86	0.26	3014	15.95	0.07	17.91	4.58	10.81	3.11	96.32			345	503		702	113	9748	65	112
Lagarfljót	ISLF	ISLF-3.1	10.42	0.1	3624	11.54	0.08	12.14	5.16	13.88	5.21	129.34	155.5		415	598		811	135	8712	82	127
Lagarfljót	ISLF	ISLF-10.1	7.11	0.08	2993	19	0.05	21.18	4.26	10.09	2.64	90.18			333	500		681	111	10319	75	132
Lagarfljót	ISLF	ISLF-8.1	7.38	0.31	3906	5	0.09	16.74	5.73	15.43	5.41	131.9	159.1		416	593		783	130	8480	100	153
Lagarfljót	ISLF	ISLF-20.1	9.17	0.78	2450	40.9	0.04	30.81	2.66	6.71	1.85	71.44			294	446		632	104	8991	88	159
Lagarfljót	ISLF	ISLF-4.1	9.39	58.08	2684	20.14	0.5	29.62	4	10.24	2.61	93.16	116.2		316	473		634	103	9403	128	170
Lagarfljót	ISLF	ISLF-15.1	38.98	580.19	2753	40.13	4.55	34.22	5.85	10.45	2.74	91.55			327	494		727	118	9896	113	180

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Lagarfljót	ISLF	ISLF-12.1	6.75	2.82	3405	22.2	0.05	23.26	4.92	12.64	3.24	112.24			416	584		793	128	8649	106	182
Lagarfljót	ISLF	ISLF-22.1	30.02	0.21	6354	19.52	0.13	27.07	10.27	26.72	8.43	217.51			687	968		1351	222	8779	184	201
Lagarfljót	ISLF	ISLF-25.1	16.74	3.24	5012	34.9	0.56	33.27	10.58	23.23	7.17	180.58			578	795		1048	171	8586	176	207
Lagarfljót	ISLF	ISLF-17.1	8.92	6.58	2708	50.94	0.08	44.65	2.82	8.09	2.1	81.58			317	490		705	114	11331	122	209
Lagarfljót	ISLF	ISLF-14.1	19.59	8.52	5697	44.2	5.41	80.66	18.45	25.61	5.54	196.67			645	910		1224	198	8878	229	242
Lagarfljót	ISLF	ISLF-1.1	12.34	0.35	9540	27.15	0.16	39.54	17.81	42.4	12.32	332.65	381.2		1010	1446		1906	308	8563	284	306
Lagarfljót	ISLF	ISLF-19.1	18.26	100.11	8298	103.77	0.18	111.57	17.36	41.56	12.32	308.43			915	1229		1595	250	7323	520	454
Lagarfljót	ISLF	ISLF-5.1	11.06	298.4	6716	27.49	75.23	291.89	63.01	33.17	4.05	203.02	261.1		686	1084		1528	247	9895	344	476
Lagarfljót	ISLF	ISLF-7.1	48.54	654.88	8023	30.51	2.65	147.23	13.07	24.49	3.11	202.36	278.3		733	1253		1785	281	8256	414	552
Laxárdalsfjöll	LS-11.	LS11-3.1B	28.38	142.71	2705	65.56	6.3	455.8	21.71	21.89	3.35	105.52			305	415		564	95	10885	65	127
Laxárdalsfjöll	LS-11.	LS11-12.1	5.04	0.93	2424	18.96	0.05	13.99	1.86	5.99	1.68	60.52	99.8		237	421		624	106	11260	65	135
Laxárdalsfjöll	LS-11.	LS11-8.1	6.19	0.07	1504	23.95	0.02	16.61	1.08	3.27	0.82	33.72	64.7		154	280		446	75	11148	61	135
Laxárdalsfjöll	LS-11.	LS11-2.1	6.26	0.56	2598	18.96	0.06	15.44	2.2	7.22	1.65	67.54			276	462		686	116	11823	74	144
Laxárdalsfjöll	LS-11.	LS11-7.1	5.15	4.13	2672	15.73	21.23	57.57	19.77	12.74	2.36	78.77	109.1		279	488		699	116	10923	85	157
Laxárdalsfjöll	LS-11.	LS11-14.1	8.34	0.38	1871	41.8	0.43	23.82	1.62	3.9	1.21	44.15			199	336		533	90	11374	86	164
Laxárdalsfjöll	LS-11.	LS11-18.1	8.98	5.54	1682	36.18	0.25	19.01	1.19	3.57	0.92	37.62			167	284		452	78	11758	87	174
Laxárdalsfjöll	LS-11.	LS11-6.1	6.6	1.62	1723	28.74	0.05	20.34	1.19	3.74	0.93	39.99	72.3		179	325		502	86	11039	107	191
Laxárdalsfjöll	LS-11.	LS11-5.1	9.45	22.61	4871	30.37	0.28	27.69	5.98	15.55	5.3	143.15	204.1		519	840		1191	198	9034	131	210
Laxárdalsfjöll	LS-11.	LS11-1.1	6.56	0.11	3074	32.36	0.04	26.32	2.33	7.18	1.46	72.48			311	540		817	138	12874	127	225
Laxárdalsfjöll	LS-11.	LS11-9	6.06	-1	3340	52.07	3.73	43.82	8.59	9.8	3.48	90.25	142.6		366	592		861	141	9907	187	258
Laxárdalsfjöll	LS-11.	LS11-16.1	12.71	1.97	3258	75.74	2.93	71.37	9.8	11.2	3.38	98.51			349	554		802	134	10974	206	295
Laxárdalsfjöll	LS-11.	LS11-4.1	7.88	0.19	3862	66.41	0.03	47.99	2.48	8.3	1.8	85.21			391	669		1026	169	12571	212	313
Laxárdalsfjöll	LS-11.	LS11-13.1	14.06	0.21	4567	107.88	0.04	61.6	3.43	10.53	3.59	119.67			450	705		1020	168	10396	369	440
Laxárdalsfjöll	LS-11.	LS11-10.1	8.4	0.18	6604	85.76	0.08	63.98	6.36	18.68	6.06	187.08	273.3		697	1101		1497	238	9797	375	448
Laxárdalsfjöll	LS-11.	LS11-17.1	16.3	16.56	4914	107.2	1.55	67.63	5.09	11.96	4.17	135.02			502	796		1137	182	10052	485	472
Laxárdalsfjöll	LS-11.	LS11-11.1	13.38	1.7	6194	110.77	0.32	90.88	6.04	17.42	5.61	182.16	256.7		696	1071		1463	231	9679	620	513
Laxárdalsfjöll	LS-11.	LS11-19.1	18.56	0.69	7626	161.92	0.59	97.6	6.15	18.04	6.64	203.32			781	1186		1706	282	9469	412	523
Laxárdalsfjöll	LS-11.	LS11-15.1	13.91	1.58	10082	133.15	0.24	93.04	10.25	29.25	8.99	282.08			960	1520		2098	341	10041	538	548
Markarfljót	ISM.	IS-M-T5.2_E	6.95	0.36	885	10.92	0.02	10.91	1.25	3.68	1.45	33.78	43.9	12.2	126	176	34	247	38	8365	22	53

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Markarfljót	ISM.	IS-M-T7.1_I	12.04	0.35	1571	5.35	0.03	8.5	4.19	7.95	2.98	60.93	68.4	19.1	191	263	48	340	53	8102	30	57
Markarfljót	ISM.	IS-M-T2.1_I	9.25	0.32	840	18.33	0.01	9.99	0.94	2.74	1.01	24.88	36.2	8.5	95	149	30	233	39	7861	18	60
Markarfljót	ISM.	IS-M-T3.1_I	7.32	0.27	2334	13.08	0.05	14.51	4.68	10.05	3.71	94.64	103.9	29.2	292	402	70	501	76	7982	59	106
Markarfljót	ISM.	IS-M-T8.1_I	7.39	0.4	2555	16.13	0.03	17.25	4.79	9.91	3.52	95.15	113.1	30.7	319	433	76	538	81	7758	64	114
Markarfljót	ISM.	IS-M-T4.1_E	8.32	0.24	2438	15.59	0.04	16.16	5.03	10	3.45	92.35	108.4	29.6	300	405	73	513	80	8018	64	119
Markarfljót	ISM.	IS-M-T8.2_E	8.73	0.36	1913	45.62	0.03	47.3	3.03	7.36	2.44	69.08	83.9	22.5	240	324	59	416	64	7712	68	137
Markarfljót	ISM.	IS-M_T9.2_T	6.09	0.28	3678	18.91	0.04	22.09	5.99	15.39	4.02	142.8	162.5	44.8	459	614	113	800	125	8484	127	212
Markarfljót	ISM.	IS-M-T1.1_E	8.16	1.46	2651	40.91	0.03	50.57	3.42	9.27	2.17	89.67	113.9	30.2	325	447	82	594	93	8912	121	228
Markarfljót	ISM.	IS-M-T6.1_Iz	9.44	0.31	4026	29.48	0.05	29.65	5.79	12.92	2.6	135.27	175.0	44.3	476	695	127	921	145	10087	171	259
Markarfljót	ISM.	IS-M-T1.3_Id	4.74	3.81	4022	39.08	0.06	43.52	5.26	15.06	3.25	158.05	214.5	57.7	627	875	157	1105	162	9081	230	405
Markarfljót	ISM.	IS-M-T1.2._Id	4.31	7.44	5152	52.05	0.09	60.14	7	19.3	4.29	197.14	255.0	69.2	743	1018	182	1249	183	9024	272	438
Markarfljót	ISM.	IS-M-30.2_E	37.23	3.29	613	10.47	0.01	35.19	0.7	1.64	0.81	14.75	24.8	5.6	67	109	22	179	31	9661	19	25
Markarfljót	ISM.	IS-M-36.1	20.71	3.44	719	6.57	0.01	8.06	1.1	2.71	0.98	21.87	30.3	7.9	83	126	25	195	33	8482	24	49
Markarfljót	ISM.	IS-M-32.1_I	18.4	3.12	1321	7.35	0.06	8.88	3.38	6.2	2.59	51.67	58.8	15.6	163	231	43	324	53	8240	32	61
Markarfljót	ISM.	IS-M-14.1	13.47	2.95	898	16.95	0	11.89	1.02	2.69	0.9	25.82	35.7	9.1	100	156	31	237	39	8837	32	74
Markarfljót	ISM.	IS-M-20.1_I	8.63	2.65	1823	11.35	0.03	11.05	3.69	7.74	3.31	72.71	79.0	22.0	224	303	54	406	64	7913	42	86
Markarfljót	ISM.	IS-M-34.1	11.66	2.92	1297	21.47	0.02	19.44	2.12	5.17	2	41.48	55.7	14.8	155	228	43	317	49	7761	45	87
Markarfljót	ISM.	IS-M-24.1_E	9.76	3.39	967	13.94	0.02	13.1	1.37	3.81	1.41	29.75	40.0	10.4	115	175	32	258	41	7984	46	90
Markarfljót	ISM.	IS-M-10.1	11.55	3.12	942	13.01	0.02	13.08	1.68	3.24	1.48	30.99	41.9	10.6	114	168	33	237	39	8140	52	91
Markarfljót	ISM.	IS-M-25.1_I	9.61	2.86	2235	10.76	0.04	11.21	4.58	10.86	4.51	87.75	97.3	28.7	293	384	69	500	77	7764	51	92
Markarfljót	ISM.	IS-M-33.1_E	10.4	2.61	1268	23.18	0.01	21.19	2	4.72	1.8	41.11	54.3	14.2	149	218	41	297	47	7833	48	95
Markarfljót	ISM.	IS-M-13.1	9.03	3.09	1049	27.7	0.02	12.7	1.31	3.46	1.34	30.95	43.7	10.6	119	189	35	294	51	7819	25	102
Markarfljót	ISM.	IS-M-22.1	7.47	3.31	1129	23.55	0.03	21.35	1.67	4.4	1.47	38.22	49.5	13.0	140	206	37	284	45	8118	57	106
Markarfljót	ISM.	IS-M-19.1	8.72	3.21	1048	28.11	0.01	12.77	1.31	3.33	1.3	31.19	44.0	11.2	122	194	38	294	49	7885	29	106
Markarfljót	ISM.	IS-M-15.1	10.72	3.32	1500	28.09	0.04	23.3	2.24	5.46	2.15	49.93	65.7	17.1	184	262	49	364	58	7834	58	111
Markarfljót	ISM.	IS-M-39.1	7.77	3.07	2508	14.83	0.06	15.65	4.98	10.68	3.98	97.31	113.4	30.8	318	431	73	536	83	7924	65	120
Markarfljót	ISM.	IS-M-24.2_I	8.31	3.35	2704	17.42	0.03	20.88	7.7	16.77	5.99	117.06	130.4	39.3	403	533	96	676	107	7843	103	168
Markarfljót	ISM.	IS-M-27.1	11.03	3.11	1682	38.77	0.01	33.61	2.69	6.78	2.32	56.49	73.9	19.9	208	292	53	390	58	7899	125	178
Markarfljót	ISM.	IS-M-16.1_E	8.56	2.98	2101	33.57	0.02	34.32	2.62	7.1	2.03	65.42	90.9	23.7	262	375	67	502	79	8571	90	187

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Markarfljót	ISM.	IS-M-41.1	64.59	2.96	1176	9.73	0.04	8.1	1.99	3.8	0.96	29.17	44.8	10.9	121	203	42	344	56	7481	171	188
Markarfljót	ISM.	IS-M-33.2_I	4.87	4.46	3392	49.39	0.07	80.06	7.93	15.98	3.72	123.59	149.5	41.6	430	569	101	728	105	9215	142	216
Markarfljót	ISM.	IS-M-37.1_E	7.97	2.68	2469	44.39	0.04	43.39	2.81	8.42	2.36	82.42	110.8	28.0	302	432	78	566	91	8341	109	224
Markarfljót	ISM.	IS-M-38.1	7.17	3.32	4025	39.75	0.05	35.54	5.53	16.39	4.36	145.37	171.3	48.8	507	685	127	912	142	8518	161	247
Markarfljót	ISM.	IS-M-21.2_E	8.67	3.33	1969	35.83	0.02	32.43	2.36	6.72	1.83	72.34	88.0	22.2	239	349	62	465	74	8504	157	251
Markarfljót	ISM.	IS-M-29.2_I	4.94	3.58	4041	24.69	0.11	31.26	6.47	17.26	4.09	154.55	181.3	52.6	549	742	134	934	143	8921	182	287
Markarfljót	ISM.	IS-M-35.1_E	10.61	2.92	3080	58.72	0.04	58.98	3.98	10.13	2.77	107.72	134.9	35.3	372	531	96	698	109	8225	170	304
Markarfljót	ISM.	IS-M-28.1	15.57	3.58	2463	35.15	0.06	31.87	3.39	10.44	3.29	87.75	105.4	30.2	307	418	79	588	93	7912	258	315
Markarfljót	ISM.	IS-M-40.1	7.57	3.08	5405	34.89	0.07	44.42	11.56	26.98	7.02	208.97	237.6	68.2	696	923	166	1198	181	8322	210	321
Markarfljót	ISM.	IS-M-23.1	18.5	3.41	2721	48.77	0.02	52.18	5.26	13.2	7.35	125.77	121.5	38.2	371	453	77	539	84	6337	480	348
Markarfljót	ISM.	IS-M-11.1_I	8.42	3.41	2888	65.98	0.05	72.26	3.74	9.98	2.38	100.26	127.5	34.4	365	490	90	643	97	8962	230	352
Markarfljót	ISM.	IS-M-17.2_E	9.84	3.13	2276	44.98	0.02	38.66	3.07	7.8	2.42	81.85	99.5	27.0	277	391	70	522	81	8443	317	364
Markarfljót	ISM.	IS-M-12.1_I	5.79	2.89	5664	40.27	0.08	46.13	9.25	26.15	6.34	221.75	253.6	70.3	725	970	176	1254	193	8517	243	370
Markarfljót	ISM.	IS-M-31.1_I	10.28	2.65	2605	51.83	0.02	46.63	3.26	9.37	2.8	94.38	114.6	30.8	324	441	81	583	92	8342	299	375
Markarfljót	ISM.	IS-M-29.1_E	12.23	3.14	3159	60.51	0.03	62.93	4.81	12.66	3.67	118.81	140.3	39.5	414	529	98	721	109	8432	514	502
Markarfljót	ISM.	IS-M-18.2_E	11.65	3.1	3187	66.17	0.05	65.28	4.48	12.27	3.62	122.96	143.0	39.2	405	545	97	677	106	8164	561	529
Markarfljót	ISM.	IS-M-35.2_DC	6.13	5.11	8220	96.55	0.13	108.4	11.72	31.59	6.77	296.12	362.2	98.0	1018	1321	233	1567	231	8522	396	550
Markarfljót	ISM.	IS-M-16.2_I	9.79	3.17	4009	102.69	0.02	95.04	5.15	14.32	3.85	148.37	174.2	49.2	510	694	127	890	137	8619	482	584
Markarfljót	ISM.	IS-M-26.1	18.54	3.05	4686	101.88	0.06	98.76	6.92	19.51	6.21	185.66	202.9	60.7	606	777	141	1007	154	7713	803	615
Markarfljót	ISM.	IS-M-37.2_I	11.59	3.28	8339	349.5	0.05	248.71	8.34	28.32	6.98	293.63	358.0	100.8	1052	1423	255	1774	259	8190	757	1045
Markarfljót	ISM.	IS-M-17.1_I	11.5	4.62	8346	424	0.14	250.59	8.44	30.55	6.99	300.48	360.7	104.1	1080	1414	244	1685	239	8492	1347	1241
Markarfljót	ISM.	IS-M-21.1_I	11.89	4	7152	292.98	18.86	281.14	30.09	36.37	6.83	283.96	311.8	94.2	940	1200	207	1428	203	8422	1534	1261
Miđá	ISMi.	IS-Mi-21.1_E	17.22	3.2	563	6.41	0	4.01	0.38	1.08	0.32	13.11	23.4	4.8	59	109	22	183	34	9245	16	38
Miđá	ISMi.	IS-Mi-13.1	10.86	3.29	676	6.81	0.01	4.75	0.4	1.47	0.46	13.88	27.2	5.6	69	129	27	233	42	9638	15	40
Miđá	ISMi.	IS-Mi-24.1_4	9.95	7.83	767	9.71	0.01	7.55	0.54	1.42	0.47	15.21	32.2	6.2	75	150	31	263	46	10058	22	53
Miđá	ISMi.	IS-Mi-15.1	11.37	2.87	873	12.8	0.01	8.06	0.86	2.26	0.82	20.63	36.5	8.2	94	166	33	265	46	9176	25	61
Miđá	ISMi.	IS-Mi-1.2_E	12.35	2.65	956	11.32	0.02	8.65	0.66	2.33	0.66	21.12	39.2	8.5	102	185	39	307	53	9213	35	65
Miđá	ISMi.	IS-MI_41.1	13.55	3.21	827	12.49	0.01	10.62	1.35	2.92	1.34	26.14	34.0	8.6	95	145	29	237	40	7819	19	66
Miđá	ISMi.	IS-MI_28.2_E	15.61	2.89	889	11.08	0	6.78	0.76	2	0.57	21.96	37.1	7.5	93	171	34	274	48	9312	33	72

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Miđá	ISMi.	IS-Mi-23.2_I	12.7	3.55	955	16.34	0.01	6.62	0.82	2.52	0.62	22.29	41.2	8.8	101	188	39	314	57	9219	25	74
Miđá	ISMi.	IS-MI_26.2_E	15.45	3.02	1134	9.95	0.01	7.45	0.96	2.46	0.85	26.37	45.6	9.8	113	212	45	360	66	9112	39	77
Miđá	ISMi.	IS-Mi-8.1	22.31	3.6	1932	8.49	0.05	7.77	3.28	6.46	2.23	57.04	78.9	20.0	214	328	66	508	88	8657	44	80
Miđá	ISMi.	IS-MI_29.1_I	17.85	3.25	1286	6.01	0.01	4.6	1.51	3.75	1.33	33.95	53.3	12.4	141	252	53	422	77	8185	44	86
Miđá	ISMi.	IS-MI_36.1	16.59	3.09	1112	13.97	0.01	7.57	0.99	2.8	0.84	26.46	45.6	10.3	116	205	42	352	61	8928	49	92
Miđá	ISMi.	IS-MI_40.1	9.23	3.47	1912	9.14	0	10.85	2.34	6.88	1.73	57.04	81.5	19.9	225	347	67	517	84	9765	49	95
Miđá	ISMi.	IS-MI_34.1	11.36	3.44	2725	7.57	0.02	6.09	2.79	6.87	2.35	68.62	110.7	25.4	289	489	95	762	126	9150	56	96
Miđá	ISMi.	IS-MI_33.1	11.1	3.03	3098	10.41	0.02	10.25	4.47	10.01	2.9	87.85	122.6	29.5	318	509	99	767	128	8936	61	101
Miđá	ISMi.	IS-MI_39.1	9.16	2.8	2166	15.26	0.01	13.4	2.97	6.77	1.68	56.8	87.0	20.5	233	373	74	562	98	9523	60	103
Miđá	ISMi.	IS-Mi-11.2_E	21.56	3.01	1795	13.85	0.01	8.96	1.92	4.28	1.39	40.95	74.5	15.5	185	335	71	588	104	8794	55	109
Miđá	ISMi.	IS-Mi-12.1	13.29	3.48	1289	22.03	0.02	19.63	2.13	4.59	1.4	37.94	53.9	13.9	154	217	44	335	55	8654	61	109
Miđá	ISMi.	IS-MI_25.1	8.41	2.91	2199	11.66	0.01	10.97	2.86	6.8	1.65	62.35	93.7	21.8	237	373	74	557	90	9813	62	111
Miđá	ISMi.	IS-Mi-7.1	13.13	3.54	2321	10.3	0.02	7.89	3.21	6.81	1.76	62.56	97.2	23.1	253	415	82	622	104	9271	60	111
Miđá	ISMi.	IS-Mi-10.1_C	19.31	3.36	2968	13.63	0.05	6.16	3.66	10.44	3.04	91.94	124.7	31.4	339	528	101	796	133	8038	76	116
Miđá	ISMi.	IS-Mi-2.1	11.87	3.2	1426	22.84	0.03	11.3	1.04	2.84	0.78	30.55	58.7	11.7	144	273	59	499	91	9610	57	119
Miđá	ISMi.	IS-Mi-10.2_I	11.29	3.26	1457	27.23	0.02	16.83	1.37	3.76	0.83	38.89	61.1	13.9	158	271	55	430	71	9534	54	119
Miđá	ISMi.	IS-MI_37.1	14.64	5.46	2394	12.6	0.7	11.09	3.33	6.18	1.7	57.75	103.9	21.8	255	434	89	682	119	9544	77	121
Miđá	ISMi.	IS-Mi-14.1	18.37	3.05	1205	14.78	0.02	8.42	1.29	3.48	0.91	31.26	50.4	11.0	129	226	48	374	65	8825	83	122
Miđá	ISMi.	IS-Mi-6.1	16.51	3.32	1186	18	0.01	9.74	1.17	3.02	0.91	29.56	50.6	11.1	126	225	47	368	65	9277	78	124
Miđá	ISMi.	IS-Mi-3.1	13.46	3.44	3565	11.09	0.04	6.44	3.48	11.03	3.99	101.22	151.7	36.6	410	670	130	1019	168	8717	82	127
Miđá	ISMi.	IS-MI_31.1	18.43	3.15	1264	16.9	0	9.29	1.28	3.43	1	29.37	53.2	11.6	135	236	46	369	65	8568	86	128
Miđá	ISMi.	IS-Mi-4.1	14.98	2.85	3133	16.4	0.07	7.8	3.79	10.99	2.83	94.48	135.0	32.9	352	560	108	846	137	8453	83	131
Miđá	ISMi.	IS-Mi-18.1	10.04	3.04	1520	33.1	0.02	18.02	1.78	3.83	1.07	37.83	64.6	13.9	160	291	56	448	75	9395	72	137
Miđá	ISMi.	IS-Mi-19.1_B	14.08	3.28	1215	18.33	0.02	20.23	1.71	4.28	1.46	38.24	52.2	13.1	140	213	41	317	51	8315	102	138
Miđá	ISMi.	IS-Mi-11.1_I	17.13	3.24	3210	13.02	0.05	13.13	5.43	11.92	2.94	99.74	133.2	33.2	358	570	108	849	144	8463	95	144
Miđá	ISMi.	IS-Mi-1.1_I	11.02	2.7	3877	18.73	0.08	13.35	4.06	11.96	3.33	115.7	165.5	38.7	431	688	131	991	166	8045	105	148
Miđá	ISMi.	IS-Mi-22.2_E	10.92	3.32	1395	33.21	12.72	55.61	14.74	6.8	1.21	41.85	59.1	13.8	153	258	51	403	66	9905	83	148
Miđá	ISMi.	IS-MI_26.1_I	17.7	2.78	3219	16.61	0.04	13.57	3.75	9.79	2.92	94.56	136.0	33.0	362	590	119	908	157	8926	116	156
Miđá	ISMi.	IS-Mi-23.1_C	9.61	3.17	2935	22.24	0.04	17.38	3.96	10	2.01	90.41	121.3	30.9	345	528	103	798	132	9309	95	166

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Miđá	ISMi.	IS-MI_42.1	15.6	3.09	3387	35.87	0.04	21.35	3.86	10.08	3.26	96.08	144.6	33.7	385	629	120	933	159	8442	185	199
Miđá	ISMi.	IS-MI_27.1	11.38	4.56	5165	34.01	0.12	25.26	6.18	16.86	4.12	147.85	214.7	51.1	550	886	171	1333	216	9164	159	206
Miđá	ISMi.	IS-MI_38.1	10.97	3.22	3737	25.51	0.08	15.31	4.5	10.72	2.96	107.99	163.3	38.1	424	680	127	961	158	9036	134	209
Miđá	ISMi.	IS-Mi-5.1	12.03	3.64	4178	27.91	0.07	17.32	6.09	15.73	3.87	132.73	184.3	45.0	495	750	141	1078	178	8585	147	212
Miđá	ISMi.	IS-Mi-9.1_DC	10.52	6.61	5358	26.19	0.07	21.81	5.61	16.2	4.96	160.09	223.4	54.6	617	948	184	1407	228	9694	186	255
Miđá	ISMi.	IS-MI_30.1_C	9.58	3.54	5762	34.62	0.06	22.22	5.55	16.64	4.29	163.21	237.5	56.0	628	1006	195	1498	254	9385	194	267
Miđá	ISMi.	IS-MI_32.1	8.59	3.66	5624	44.67	0.09	25.39	7.76	20.04	4.95	174.62	238.5	59.6	649	1005	188	1449	239	8577	208	275
Miđá	ISMi.	IS-Mi-21.2_C	12.38	3.29	4678	39.75	0.05	26.56	6.53	16.65	3.17	141.42	202.6	50.4	554	870	166	1281	203	8636	182	282
Miđá	ISMi.	IS-MI_28.1_I	25.47	3.48	2865	54.45	0.13	27.05	3.64	8.21	2.25	77.31	121.3	28.9	325	514	99	738	124	8423	470	362
Miđá	ISMi.	IS-Mi-17.1	13.89	4.51	4966	85.72	0.07	86.82	5.71	14.35	3.47	140.05	218.0	52.4	578	906	179	1376	223	9595	551	434
Miđá	ISMi.	IS-Mi-22.1_C	12.45	3.58	8048	92.6	0.13	65.43	10.82	28.28	6.61	257.8	345.4	87.4	948	1419	268	1949	311	8504	386	442
Miđá	ISMi.	IS-Mi-24.2_DC	8.73	254.37	7195	267.84	0.05	163.59	5.22	17.5	3.81	187.37	308.1	70.4	815	1356	267	2091	338	10675	689	874
Öræfajökull	IOHn.	IOHN1-10.1I	8.84	1.37	1032	5.02	0.04	5.2	0.96	3.16	1.17	28.52			121	193		292	47	8663	17	38
Öræfajökull	IOHn.	IOHN1-14.2E	11.61	1.27	741	6.27	0.04	4.36	0.55	2.01	0.62	17.42			87	145		240	39	7723	14	43
Öræfajökull	IOHn.	IOHN1-8.1I	12.59	4	1140	5.58	0.11	6.46	1.02	3.23	1.04	31.73			132	206		342	54	8985	28	51
Öræfajökull	IOHn.	IOHN1-15.2I	12.98	1.52	820	7.33	0.05	5.73	0.67	2.24	0.73	19.9			90	152		236	41	8396	24	58
Öræfajökull	IOHn.	IOHN1-2.1R	11.61	1.59	921	7.95	0.04	6.44	0.66	2	0.88	20.98			97	172		269	44	8567	24	59
Öræfajökull	IOHn.	IOHN1-14.1I	8.9	1.74	1757	6.89	0.04	6.42	2.06	6.14	1.98	59.81			216	329		472	76	8133	33	62
Öræfajökull	IOHn.	IOHN1-17.1E	11.72	1.42	824	6.94	0.04	6.63	0.71	2.27	0.82	21.62			103	167		267	43	8150	30	63
Öræfajökull	IOHn.	IOHN1-5.2T	12.82	2.59	914	8.2	0.03	6.79	0.7	2.07	0.81	22.72			104	177		279	45	8183	29	63
Öræfajökull	IOHn.	IOHN1-19.2T2	11.98	1.15	1027	8.39	0.04	7.66	0.95	2.95	0.97	25.2			119	192		298	49	7627	30	65
Öræfajökull	IOHn.	IOHN1-13.1I	9.78	2.63	1684	5.17	0.05	6.28	2.16	6.58	2.16	55.07			229	332		480	73	8309	35	67
Öræfajökull	IOHn.	IOHN1-7.1T	12.74	0.97	978	8.66	0.02	7.31	0.91	2.62	0.88	23.95			113	185		295	47	7908	34	71
Öræfajökull	IOHn.	IOHN1-18.1E	14.61	1.71	991	9.03	0.02	7.53	0.77	2.76	0.97	25.49			124	202		322	50	8047	40	79
Öræfajökull	IOHn.	IOHN1-11.1I	9.47	1.95	1369	15.22	0.03	16.82	1.43	4.64	1.07	39.45			177	269		390	59	8127	46	89
Öræfajökull	IOHn.	IOHN1-4.2R	12.78	2.1	1558	22.75	0.04	16.31	1.17	4.27	1.23	41.51			171	263		391	65	8982	120	147
Öræfajökull	IOHn.	IOHN1-9.1E	11.77	1.73	5106	20.65	0.08	22.28	8.21	22.5	8.67	188.2			656	890		1204	189	6718	127	174
Öræfajökull	IOHn.	IOHN1-1.2E	12.43	4.32	5832	24.2	0.07	25.28	9.82	26.74	10.65	219.1			773	1044		1378	211	6211	135	174
Öræfajökull	IOHn.	IOHN1-3.1T	11.59	10.12	7104	40.37	0.08	37.03	9.32	30.17	9.87	252.6			946	1283		1697	255	7294	204	241

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Öræfajökull	IOHn.	IOHN1-3.2I	12.02	3.12	8016	44.77	0.13	50.09	13.3	36.05	11.96	315.35			1071	1449		1852	280	7019	258	277
Öræfajökull	IOHn.	IOHN1-16.1I	9.19	2.28	6952	44.83	0.12	60.16	9.92	28.84	6.17	251.61			877	1212		1597	237	7868	275	322
Öræfajökull	IOHn.	IOHN1-17.2C	9.22	2.31	9131	56.52	0.12	87.97	14.52	40.06	10.04	326.58			1239	1705		2207	321	7339	309	371
Öræfajökull	IOHn.	IOHN1-19.1C	10.57	6.94	5234	62.3	0.38	69.57	6.17	18.87	3.79	176.54			694	985		1286	194	8110	368	390
Öræfajökull	IOHn.	IOHN1-7.2C	12.39	2.49	12592	88.22	0.18	104.52	22.48	59.39	12.11	487.02			1684	2242		2842	423	7471	583	554
Öræfajökull	IOHn.	IOHN1-15.3C	16.87	12.18	18199	203.78	0.24	326.59	26.25	70.05	9.8	608.86			2331	3191		3966	550	7744	1040	887
Selardalur	IXSD	IXSD1B-4.1	15.27	42.4	700	7.24	0.12	6.44	0.51	1.65	0.59	17.07	30.1		69	132		213	38	8209	17	41
Selardalur	IXSD	IXSD1B-2.1	19.79	17.29	1456	15.6	4.61	19.41	5.21	5.14	1.63	40.48	66.1		149	270		412	71	8384	32	57
Selardalur	IXSD	IXSD1B-11.1	13.68	1.19	1215	14.43	1.42	13.67	2.88	3.75	1.12	30.87	52.3		127	229		360	62	8404	41	72
Selardalur	IXSD	IXSD1B-1.1	16.09	13.17	2238	20.4	0.17	11.62	2.62	5.64	2.15	61.33	96.6		220	384		544	94	7987	59	93
Selardalur	IXSD	IXSD1B-8.1	11.99	0.16	2292	17.74	0.07	13.93	2.35	6.27	1.88	63.53	99.8		247	429		612	102	8059	76	117
Selardalur	IXSD	IXSD1B-12.1	10.1	0.22	2261	12.29	0.07	12.53	2.53	6.72	1.7	57.8	80.1		193	355		546	89	8429	91	147
Selardalur	IXSD	IXSD1B-7.1	9.16	3.83	3108	15.39	1.12	26.61	5.54	10.13	2.72	98.32	141.4		350	537		761	125	9359	111	176
Selardalur	IXSD	IXSD1B-10.1	13.45	15.8	3651	22.32	38.72	83.98	21.86	16.46	3.52	115.19	148.7		383	628		911	153	8881	176	197
Selardalur	IXSD	IXSD1B-6.1	12.39	0.29	2639	19.06	0.06	21.36	2.95	7.23	2.34	80.8	108.9		282	467		673	111	8271	178	230
Selardalur	IXSD	IXSD1B-5.1	13.37	0.18	2570	31.59	0.04	35.21	2.7	7.56	1.97	74.67	111.6		283	463		661	110	8279	320	303
Selardalur	IXSD	IXSD1B-3.1	13.03	2.41	6176	49.99	3.05	74.49	11.06	23.05	5.2	203.16	257.1		683	1035		1392	225	8319	494	477
Selardalur.	IXSD1b.	IXSD_1B_1.1	13.5	0.53	1461	12.97	0.02	7.46	1.68	3.86	1.3	38.72	63.8	13.6	156	274	55	422	74	8141	34	70
Selardalur.	IXSD1b.	IXSD_1B_2.1	23.04	16.81	1473	21.26	0.16	16.24	1.27	3.38	1.03	31.4	56.6	12.0	140	246	50	394	67	7928	49	75
Selardalur.	IXSD1b.	IXSD_1B_4.1	14.35	0.39	1170	16.57	0.02	10.29	1.06	2.89	0.95	27.4	50.4	10.9	123	217	44	349	59	8409	42	78
Selardalur.	IXSD1b.	IXSD_1B_5.1	10.62	0.64	2646	10.48	0.08	8.8	3.38	8.02	2.42	80.53	117.1	28.5	311	473	90	675	116	8611	88	141
Selardalur.	IXSD1b.	IXSD_1B_6.1	11.8	7.9	4441	123.09	0.43	83.38	3.86	10.29	2.27	111.68	189.3	42.6	469	804	155	1145	174	9151	231	315
Selardalur.	IXSD1b.	IXSD_1B_3.1	9.22	1.45	7248	89.42	0.21	128.56	9.24	21.43	5.32	204.24	321.9	73.6	827	1323	250	1808	283	8735	288	333
Slaufurdalur[28]	IISLau*	IISLAU-12-4.1	17.32	0.78	943	4.99	0.02	4	1.32	3.46	1.16	30.86	39.4		101	157		227	39	8446	15	37
Slaufurdalur	IISLau*	IISLAU-12-1.1	20.29	0.37	2086	8.83	0.16	8.27	2.82	7.59	2.14	64.53	79.8		190	322		461	77	7665	70	118
Slaufurdalur	IISLau*	IISLAU-12-2.1	31.01	0.06	2066	10.39	0.04	14.22	2.39	5.76	2.15	56.61	81.4		208	336		482	80	7648	118	141
Slaufurdalur	IISLau*	IISLAU-12-7.1	30.52	0.94	2102	11.66	0.02	22.61	2.51	5.76	2.16	59.75	84.9		209	330		475	79	7630	276	236
Slaufurdalur	IISLau*	IISLAU-12-9.1	11.7	0.07	3990	14.96	0.04	34.17	5.24	12.8	3.3	134.57	167.9		463	635		903	144	8402	220	268

[28] All Slaufurdalur data collected and shared by Abraham Padilla

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Slaufurdalur	IISLau*	IISLAU-12-5.1	13.17		5854	20.2	0.07	115.35	8.2	17.24	3.38	166.84	229.0		602	899		1289	204	11002	439	390
Snæfellsness-Knörr	IISK.	IISK1-16.1	6.28	16.95	2176	155.03	0.41	49.56	1.61	3.69	0.26	39.1	71.0	14.0	165	315	69	554	95	9316	104	101
Snæfellsness-Knörr	IISK.	IISK1-8.1	3.04	8.58	1239	65.3	0.27	88.71	19.92	23.75	1.51	64.35	36.8	17.8	141	131	25	199	28	10294	83	128
Snæfellsness-Knörr	IISK.	IIKS-13.1	6.32	8.36	5032	207.74	0.25	119.28	4.61	11.24	0.75	103.99	160.5	35.4	395	755	167	1359	228	10383	231	136
Snæfellsness-Knörr	IISK.	IIKS-10.1	3.38	0.39	1151	242.88	0.01	22.65	0.88	2.24	0.35	17.65	34.9	6.9	81	187	49	436	75	9841	242	351
Snæfellsness-Knörr	IISK.	IISK1-1.1	9.13	8.19	5383	692.35	0.44	156.77	64.26	108.36	5.23	370.13	189.9	93.8	731	628	116	802	101	12000	335	406
Snæfellsness-Knörr	IISK.	IISK1-26.1	7.54	0.62	1329	156.35	0.02	53.98	1.58	3.08	0.39	26.35	52.6	10.3	125	245	55	450	77	11088	302	615
Snæfellsness-Knörr	IISK.	IISK1-7.1	8	4.51	1497	167.59	0.03	60.43	1.86	3.66	0.5	31.65	59.2	12.1	136	273	59	462	77	10638	306	616
Snæfellsness-Knörr	IISK.	IISK1-23.2	6.27	0.54	1112	102.29	0.17	42.03	1.17	2.49	0.33	21.38	43.5	8.1	99	206	48	412	73	11602	214	661
Snæfellsness-Knörr	IISK.	IIKS-9.1	3.26	0.43	4611	763.81	0.5	174.78	75.64	121.8	8.66	378.72	148.4	92.6	639	449	79	526	61	11630	401	771
Snæfellsness-Knörr	IISK.	IISK1-18.1	19.36	74.35	6440	596.86	0.62	392.55	104.12	184.27	10.05	575.62	180.5	132.6	881	510	88	572	61	11622	670	784
Snæfellsness-Knörr	IISK.	IISK1-25.1	4.91	2.91	2712	444.86	0.66	175.93	118.32	173.5	7.99	317.43	81.8	69.7	416	230	38	250	27	10745	402	869
Snæfellsness-Knörr	IISK.	IISK1-24.1	17.29	63.64	7760	845.3	0.34	222.25	46.29	91.62	5.99	433.86	260.8	127.5	1018	910	175	1314	176	12628	620	1082
Snæfellsness-Knörr	IISK.	IISK1-5.2	4.39	21.48	9764	758.74	0.13	178.09	38.64	96.26	5.28	556.71	367.6	163.0	1357	1185	203	1290	144	11995	486	1092
Snæfellsness-Knörr	IISK.	IISK1-19.1	4.16	3.16	5579	733.8	0.34	202.66	50.41	102.95	5.01	467.55	199.8	120.7	899	609	105	699	82	11159	922	1230
Snæfellsness-Knörr	IISK.	IIKS-15.1	4.61	4.8	4971	389.81	0.06	108.25	5.15	11.81	0.96	93.56	185.1	37.5	453	815	174	1323	200	10132	646	1392
Snæfellsness-Knörr	IISK.	IIKS-14.1	7.56	0.27	2000	230.36	0.04	93.91	2.32	4.66	0.62	40.17	80.3	16.1	192	383	88	744	129	8835	521	1472
Snæfellsness-Knörr	IISK.	IISK1-18.2	7.42	0.32	4009	820.83	0.03	314.87	8.78	27.65	1.92	193.37	125.0	57.1	474	416	78	546	67	10659	1870	1654
Snæfellsness-Knörr	IISK.	IISK1-23.1	1.18	0.4	5831	273.93	0.18	236.36	45.43	97.06	4.43	464.55	211.5	126.6	935	639	109	690	75	10949	1091	1850
Snæfellsness-Knörr	IISK.	IISK1-22.1	26.18	74.86	8857	574.67	0.36	414.69	55.97	109.14	6.66	542	298.3	158.8	1242	951	176	1231	151	11739	1973	2198
Snæfellsness-Knörr	IISK.	IISK1-2.1	12.38	10.31	4469	1,051.28	0.51	381.57	16.71	47.85	3.05	258.93	147.3	71.6	580	497	96	668	87	10797	1950	2334
Stóraá	ISS.	ISS_9.1	16.64	8.78	718	4.98	0.01	5.38	0.68	2.11	0.81	19.61	30.2	6.9	79	131	27	213	38	8913	13	32
Stóraá	ISS.	ISS_14.1	6.13	1.91	1417	25.48	0.19	20.68	1.42	3.89	1.23	38.42	62.3	14.2	161	256	50	378	64	10841	40	104
Stóraá	ISS.	ISS_19.1	7.4	0.37	1405	24.32	0.01	18.46	1.54	3.85	1.38	39.91	62.3	13.8	159	255	51	398	67	10137	46	107
Stóraá	ISS.	ISS_29.1	4.88	0.3	1885	14.94	0.02	18.21	1.63	5.63	1.75	58.44	85.7	19.8	217	346	67	502	84	11111	46	108
Stóraá	ISS.	ISS_12.1	5.73	0.37	1341	28.16	0.01	20.64	1.35	3.77	1.22	35.85	60.5	13.4	155	248	49	379	63	11136	55	127
Stóraá	ISS.	ISS_41.1	6.01	0.33	1333	27.18	0.02	20.75	1.29	3.75	1.22	36.85	58.9	13.0	153	242	48	369	61	10775	58	128
Stóraá	ISS.	ISS_2.1	5.68	0.57	1358	30.52	0.02	21.15	1.42	3.96	1.19	37.72	58.8	13.7	157	258	50	386	64	10872	62	138

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Stóraá	ISS.	ISS_18.1	5.85	0.35	1505	30.68	0.01	23.74	1.45	4.31	1.28	41.51	66.8	15.3	173	282	55	417	69	11011	72	149
Stóraá	ISS.	ISS_47.1	7.45	8.15	2140	38.85	0.38	31.95	2.85	6.53	1.97	62.55	95.3	20.6	242	381	73	558	91	10696	77	157
Stóraá	ISS.	ISS_39.1	5.68	0.32	1908	44.99	0.02	33.84	2.04	5.39	1.64	53.71	83.5	19.6	222	350	68	512	84	10918	86	175
Stóraá	ISS.	ISS_27.1	5.99	0.34	1660	35.96	0.02	26.73	1.61	4.44	1.45	48.2	72.2	16.4	189	302	58	443	73	10772	100	184
Stóraá	ISS.	ISS_26.1	5.93	0.6	1851	44.91	0.15	35.62	1.84	5.35	1.64	50.78	83.2	19.2	211	348	67	518	84	11071	97	185
Stóraá	ISS.	ISS_5.1	9.59	1.25	2917	36.64	0.06	33.64	3.63	8.91	3.3	86.85	129.1	31.6	346	515	100	756	125	8395	158	193
Stóraá	ISS.	ISS_48.1	5.44	20.54	3530	59.82	193.6	356.52	135.15	46.01	6.79	150.4	153.5	39.0	408	597	111	808	129	10798	142	234
Stóraá	ISS.	ISS_20.1	16.25	5.57	6460	27.63	0.14	24.8	15.43	34.54	14.26	274.45	294.3	82.8	838	1168	221	1651	276	8226	168	238
Stóraá	ISS.	ISS_31.1	7.73	0.63	2332	61.06	0.03	52.06	2.68	8.26	2.63	81.68	104.2	26.0	273	395	75	542	87	10806	287	282
Stóraá	ISS.	ISS_13.1	5.02	0.29	4978	36.6	0.06	36.65	5.97	14.95	4.03	153.31	217.1	53.0	585	876	162	1195	192	10657	163	290
Stóraá	ISS.	ISS_38.1	13.65	0.57	7770	41.66	0.23	57.11	18.86	41.63	15.14	311.11	360.9	103.5	1019	1375	252	1823	284	8573	262	317
Stóraá	ISS.	ISS_28.1	9.16	0.4	3069	93.8	0.02	60.36	3.42	9.58	3.2	97.48	142.7	33.4	372	563	104	756	122	10835	264	334
Stóraá	ISS.	ISS_30.1	12.47	1.21	4148	74.63	0.06	61.03	5.23	14.17	5.16	150.03	191.3	49.8	524	750	142	1055	172	9356	299	393
Stóraá	ISS.	ISS_7.1	25.44	449.55	6111	54.9	0.17	92.08	9.3	21.77	5.74	205.51	278.0	71.6	773	1119	217	1607	265	10356	418	407
Stóraá	ISS.	ISS_32.1	6.96	2.42	12601	114.12	0.37	129.1	30.21	65.08	25.61	493.99	526.1	146.7	1458	1903	339	2400	380	9576	334	407
Stóraá	ISS.	ISS_16.1	6.75	0.31	6392	123.06	0.26	127.94	11.68	24.33	3.47	193.19	255.4	66.8	710	1029	200	1485	219	9412	289	420
Stóraá	ISS.	ISS_37.1	8.4	3.31	6438	110.13	0.1	100.54	9.04	25.71	9.69	246.88	289.0	81.7	820	1115	208	1512	241	8983	363	461
Stóraá	ISS.	ISS_34.1	11.56	0.37	3986	78.92	0.03	66.26	5.02	14.65	5.45	153.43	180.6	46.4	476	679	126	910	149	9321	487	485
Stóraá	ISS.	ISS_21.1	35.67	92.36	10058	95.06	0.32	110.04	23.76	53.87	18.85	438.46	462.3	132.1	1302	1720	314	2269	359	8670	643	559
Stóraá	ISS.	ISS_8.1	13.6	21.16	5044	118.54	0.08	92.51	6.86	19.6	7.91	192.63	230.5	62.2	647	879	163	1177	191	9640	585	585
Stóraá	ISS.	ISS_3.1	4.2	3.77	5226	123.75	0.08	99.8	7.5	22.78	8.18	205.97	239.4	66.6	683	910	167	1214	188	9843	657	585
Stóraá	ISS.	ISS_23.1	14.58	8.22	4468	103.96	0.78	81.26	6.09	17.94	6.66	164.89	204.3	55.6	565	795	148	1078	173	9571	608	599
Stóraá	ISS.	ISS_15.1	13.03	0.34	9252	127.41	0.22	126.87	17.65	45.34	17.21	388.79	427.0	118.3	1189	1610	294	2125	335	9087	627	628
Stóraá	ISS.	ISS_11.1	21.66	4,450.47	7383	128.79	1.98	86.04	22.04	46.04	1.31	301.52	380.9	107.9	1078	1423	278	1986	290	11741	1859	5510
Stóra-Laxá	IEFS1a.	IEFS1A-3.1	13.09	8.83	955	4.48	0.01	5.45	0.68	2	0.84	22.16	41.7	8.7	102	193	41	350	63	8579	42	90
Stóra-Laxá	IEFS1a.	IEFS1A-2.1	8.23	0.36	1071	4.71	0.01	5.57	0.97	2.87	0.85	26.92	45.2	9.5	114	204	42	355	67	8305	40	101
Stóra-Laxá	IEFS1a.	IEFS1A-19.1	18.7	37.21	2371	10.98	0.88	12.51	5.79	10.81	3.37	83.12	101.9	26.3	277	410	80	618	108	8667	82	137
Stóra-Laxá	IEFS1a.	IEFS1A-18.1	7.99	15.2	951	19.09	0.4	13.58	1.02	2.35	0.67	23.97	40.5	8.7	103	178	36	299	52	11467	61	144
Stóra-Laxá	IEFS1a.	IEFS1A-17.2	5.21	33.59	985	19.12	2.63	24.62	5.45	3.99	0.89	27.49	42.9	9.3	105	181	36	294	53	11151	66	152
Stóra-Laxá	IEFS1a.	IEFS1A-21.1	6.75	0.32	2247	12.83	0.03	11.82	3.3	7.51	2.08	63.64	89.5	21.7	241	385	77	604	102	9768	74	152

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Stóra-Laxá	IEFS1a.	IEFS1A-15.2	5.73	0.59	1096	22.16	0.01	14.16	0.8	2.47	0.78	28.3	46.5	10.2	117	206	43	338	58	11481	76	161
Stóra-Laxá	IEFS1a.	IEFS1A-9.1	5.89	5.95	1125	24.76	4.68	30.03	6.49	4.16	0.87	29.69	48.5	10.4	119	200	41	325	57	11089	78	166
Stóra-Laxá	IEFS1a.	IEFS1A-13.1	7	1.29	1161	25.56	0.13	15.16	1.18	2.97	0.8	28.74	49.4	10.7	122	211	43	346	60	11401	84	176
Stóra-Laxá	IEFS1a.	IEFS1A-24.1	24.87	1.52	3225	10.97	0.04	11.45	5.15	12.33	4.9	109.62	142.7	36.4	389	592	116	904	159	8265	142	189
Stóra-Laxá	IEFS1a.	IEFS1A-11.1	6.54	1.38	1535	41.03	0.01	15.24	0.96	3.06	0.92	33.32	65.1	13.0	158	298	62	510	94	10825	73	200
Stóra-Laxá	IEFS1a.	IEFS1A-23.2	6.17	0.68	1242	31.52	0	18.04	1.06	3.3	0.89	33.44	53.9	12.1	139	239	48	383	67	11414	128	209
Stóra-Laxá	IEFS1a.	IEFS1A-16.1	17.86	203.24	2266	23.51	0.01	12.52	1.48	4.23	1.5	47.21	91.1	18.6	223	423	86	687	124	8895	111	211
Stóra-Laxá	IEFS1a.	IEFS1A-6.1	9.68	0.32	3090	12.72	0.03	10.52	4.35	12.38	3.8	108.89	139.1	36.9	384	585	114	861	149	9989	124	219
Stóra-Laxá	IEFS1a.	IEFS1A-10.1	8.51	0.94	3046	20.74	0.04	13.02	5.69	12.85	3.35	109.03	137.5	35.4	371	582	112	870	151	9060	147	246
Stóra-Laxá	IEFS1a.	IEFS1A-8.1	10.12	14.52	3869	17.86	0.22	17.61	6.08	15.74	4.91	138.65	175.1	45.7	480	712	136	1056	178	9640	170	262
Stóra-Laxá	IEFS1a.	IEFS1A-17.1	7.87	717.24	5938	34.82	0.09	34.56	14.24	28.87	8.07	211.54	233.9	64.9	649	906	171	1243	206	9271	201	297
Stóra-Laxá	IEFS1a.	IEFS1A-1.1	7.91	1.26	4018	17.68	0.05	27.05	7.84	18.58	5.56	150.17	181.2	46.5	491	742	141	1097	190	8501	218	297
Stóra-Laxá	IEFS1a.	IEFS1A-25.1	7.87	6.36	1623	44.48	0.18	25.64	1.68	4.69	1.23	45.67	72.8	16.5	192	311	61	462	80	11420	206	308
Stóra-Laxá	IEFS1a.	IEFS1A-15.1	9.33	0.39	5558	39.55	0.05	34.57	12.21	26.87	8.03	221.29	253.1	72.9	741	1046	196	1508	244	9781	250	321
Stóra-Laxá	IEFS1a.	IEFS1A-20.1	8.86	12.77	4936	30.4	0.06	26.3	8.97	23.47	7.02	203.16	248.6	69.2	714	1039	199	1510	252	9632	284	377
Stóra-Laxá	IEFS1a.	IEFS1A-13.2	10.05	11.86	3857	64.56	0.05	39.7	5.13	13.83	4.44	138.64	172.4	47.2	498	713	129	1026	167	10676	465	425
Stóra-Laxá	IEFS1a.	IEFS1A-23.1	11.29	3.79	6893	45.71	0.08	41.88	13.63	31.73	9.4	260.76	300.7	82.2	834	1230	233	1747	287	9380	346	439
Stóra-Laxá	IEFS1a.	IEFS1A-5.1	10.1	0.39	8261	61.64	0.07	59.92	17.35	40.34	10.96	317.84	374.0	103.1	1025	1492	280	2079	340	9469	471	574
Stóra-Laxá	IEFS1a.	IEFS1A-14.1	16	8.11	6060	114.5	0.29	78.63	9.61	25.16	7.29	228.55	270.6	74.9	765	1080	203	1514	247	9653	750	705
Stóra-Laxá	IEFS1a.	IEFS1A-22.1	15.74	2.04	4877	97.61	0.16	68.88	6.35	18.46	5.44	175.87	217.5	59.5	624	890	167	1244	202	9665	857	748
Stóra-Laxá	IEFS1a.	IEFS1A-4.1	5.44	11.36	656	1.68	0.03	1.75	0.28	0.66	0.64	6.34	26.0	3.4	55	152	41	428	87	14135	28	1131
Tjörnes.	IXT.	IXT_3.1E	13.69	0.31	610	4.69	0.01	4.99	0.38	1.27	0.42	14.24	24.8	5.4	61	111	23	192	34	9794	16	44
Tjörnes.	IXT.	IXT_5.1E	9.81	0.28	877	9.16	0	8.03	0.68	2.21	0.94	23.47	36.6	8.5	93	156	30	239	41	8806	24	57
Tjörnes.	IXT.	IXT_7.1I	31.08	0.51	2101	3.29	0.06	8.88	5.22	10.22	4.6	75.18	82.7	22.9	229	314	58	440	75	8349	36	58
Tjörnes.	IXT.	IXT_6.2E	7.11	0.26	729	22.88	0.01	8.86	0.61	1.68	0.62	16.93	30.0	6.3	75	138	28	237	42	10114	24	72
Tjörnes.	IXT.	IXT_2.1E	9.93	0.27	1166	23.07	0.02	13.2	0.96	2.98	1	27.62	49.2	10.8	123	210	43	328	55	9555	46	95
Tjörnes.	IXT.	IXT_8.2E	11.17	0.41	1292	22.56	0.01	15.71	1.37	3.46	1.31	32.83	54.5	11.9	140	233	46	355	60	8879	58	104
Tjörnes.	IXT.	IXT_4.2E	4.43	0.24	1301	36.18	0.01	17.39	0.73	2.66	0.85	29.95	55.5	11.8	137	247	50	390	66	12548	50	121
Tjörnes.	IXT.	IXT_8.1C	12.38	11.99	3183	22.07	0.12	20.18	4.76	11.47	4.22	101.64	133.1	33.6	368	546	104	777	126	9007	83	132

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Tjörnes.	IXT.	IXT_9.1SZ	13.09	0.26	2022	35.11	0.02	27	2.46	5.49	2.35	55.03	86.5	20.1	228	363	72	536	89	8525	89	134
Tjörnes.	IXT.	IXT_6.1I	6.2	2.43	1466	22.43	0.03	12.99	1.32	3.44	1.07	36.47	62.7	13.5	157	284	57	470	79	10739	71	150
Tjörnes.	IXT.	IXT_5.2I	11.45	0.81	4891	20.34	0.06	19.32	8.52	20.73	8.07	176.99	206.4	56.4	577	805	147	1072	168	7756	109	162
Tjörnes.	IXT.	IXT_1.1I	6.96	0.46	3599	19.08	0.03	19.6	4.35	11.04	2.76	110.25	158.1	37.9	420	657	128	944	158	9873	132	210
Tjörnes.	IXT.	IXT_2.2I	8.54	0.32	5040	42.14	0.05	28.08	6.2	16.36	5.17	160.84	220.3	52.8	582	884	168	1212	196	8963	164	237
Tjörnes.	IXT.	IXT_3.2C	14.51	0.57	6998	28.09	0.09	42.07	14.38	33.3	9.7	272.93	321.3	84.7	866	1177	217	1558	247	8698	250	298
Tjörnes.	IXT.	IXT_4.1I	9.43	0.37	4736	144.01	0.02	85.29	4.26	12.46	3.75	137.24	203.8	48.0	547	828	158	1170	190	10891	447	536
Tjörnes.	IXT.	IXT18.1I	24.67	0.37	815	5.06	0.01	7.51	0.82	2	0.82	21.36	32.9	7.4	86	145	31	245	44	9717	14	29
Tjörnes.	IXT.	IXT15.1E	43.97	0.26	1532	13.29	0.01	39.4	2.05	4.9	2.35	40.29	60.6	14.1	159	265	55	436	75	8414	63	57
Tjörnes.	IXT.	IXT20.1E	14.63	0.67	1192	19.38	0.02	8.34	1.15	2.92	1.03	28.39	50.7	10.6	123	218	46	362	65	8510	41	86
Tjörnes.	IXT.	IXT12.2E	9.83	0.38	1228	22.58	0.01	15.79	1.43	3.36	1.25	30.84	51.7	11.2	131	215	43	328	55	8861	44	86
Tjörnes.	IXT.	IXT16.2E	10.44	0.39	1306	24.15	0.01	15.36	1.12	2.93	0.85	30.51	53.9	11.2	135	242	49	391	67	9140	47	93
Tjörnes.	IXT.	IXT14.1I	12.86	1.03	2423	11.13	0.04	9.53	3.77	8.72	2.79	79.09	103.9	26.5	285	416	78	567	93	8927	55	94
Tjörnes.	IXT.	IXT13.1I	14.52	0.36	929	10.65	0.01	11.77	1.42	2.83	0.82	23.33	37.5	8.6	97	167	34	274	48	8824	46	96
Tjörnes.	IXT.	IXT17.1E	13.95	0.26	1681	27.4	0.01	26.55	2.02	5.15	1.51	48.11	70.2	16.7	188	294	57	437	72	9107	76	114
Tjörnes.	IXT.	IXT11.1I	11.01	0.43	2327	48.83	0.01	37.29	2.59	6.73	2.56	64.68	99.0	23.6	264	415	78	577	94	8443	130	172
Tjörnes.	IXT.	IXT20.2C	12.8	4.08	2940	54.14	0.05	32.32	4.26	9.34	2.24	88.55	122.6	28.1	301	472	89	655	110	8905	256	194
Tjörnes.	IXT.	IXT10.1I	5.85	1.08	3022	30.33	0.01	20.14	2.94	7.91	2.01	75.13	128.1	27.4	317	554	110	823	140	10843	114	201
Tjörnes.	IXT.	IXT12.1C	13.35	0.37	4446	127.84	0.04	101.4	5.27	14.22	4.75	143.53	192.1	48.0	524	760	142	1033	165	8215	452	443
Torfajökull	3A03.	3A03TE-12.1I	19.61	0.9	979	22.08	0.03	20.71	1.51	2.7	0.71	27.4	40.4	9.8	106	174	34	266	46	8997	97	131
Torfajökull	3A03.	3A03TE-1.2T	19.53	0.69	940	22.45	0.03	19.53	1.15	3.27	0.79	26.93	38.8	9.2	100	168	33	260	45	8627	98	132
Torfajökull	3A03.	3A03TE-4.1E	17.75	0.79	1237	21.49	0.03	21.88	1.53	3.33	0.87	31.83	47.9	11.3	122	212	43	335	59	8334	100	142
Torfajökull	3A03.	3A03TE-17.1C	19.39	0.72	1195	24.98	0.02	24.89	1.76	4.05	0.96	34.08	48.9	11.4	127	210	42	320	55	8794	150	156
Torfajökull	3A03.	3A03TE-1.1I	20.83	0.7	1340	30.55	0.06	26.37	2.28	4.29	1.15	36.26	55.9	13.1	146	235	46	362	62	8993	129	159
Torfajökull	3A03.	3A03TE-11.1E	18.61	9.77	1099	16.18	0.03	16.19	1.64	3.29	0.93	29.47	44.6	10.4	118	192	37	292	49	7899	126	162
Torfajökull	3A03.	3A03TE-13.1E	21.14	0.82	1307	24.52	0.02	25.79	1.95	3.49	0.94	31.99	53.4	11.9	133	232	47	374	66	8546	144	183
Torfajökull	3A03.	3A03TE-15.1E	21.16	0.47	1343	26.12	0.04	28.94	2.03	4.29	1.1	37.17	54.8	13.5	142	227	44	342	58	8413	202	193
Torfajökull	3A03.	3A03TE-2.1I	23.42	0.58	2030	35.1	0.07	36.22	3.18	6.24	1.54	53.8	80.9	18.1	203	356	71	572	97	8250	156	199
Torfajökull	3A03.	3A03TE-18.1I	16.99	0.89	2869	23.33	0.14	23.58	5.24	10.9	2.79	98.67	119.8	32.4	331	481	93	689	114	8517	176	207

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Torfajökull	3A03.	3A03TE-7.1E	20.96	2.45	2387	31.32	0.13	39.56	4.48	8.75	2.17	75.01	98.5	25.8	271	414	78	606	100	8135	231	220
Torfajökull	3A03.	3A03TE-16.1C	18.68	0.49	3240	28.07	0.15	30.83	6.68	14.03	3.33	110.76	136.6	36.0	375	529	102	774	122	8560	203	221
Torfajökull	3A03.	3A03TE-8.1I	20.29	1	2970	36.61	0.12	37.21	4.76	10.86	2.74	95.18	124.5	31.3	332	516	101	763	126	8263	210	236
Torfajökull	3A03.	3A03TE-6.1E	20.55	1.76	3272	32.59	0.17	34.43	6.18	13.32	3.31	114.25	138.1	37.9	386	560	109	807	131	8873	226	246
Torfajökull	3A03.	3A03TE-14.1E	22.47	0.68	1413	28.67	0.03	28.35	2.33	4.61	1.05	37.94	56.2	14.4	153	247	49	371	61	8574	275	249
Torfajökull	3A03.	3A03TE-3.1I	22.5	2.45	2493	47.68	0.08	40.72	3.24	6.14	1.48	56.56	96.4	20.3	235	426	86	661	113	8195	192	254
Torfajökull	3A03.	3A03TE-10.1I	21.08	0.81	2102	40.6	0.04	32.73	2.61	5.55	1.46	51.1	83.8	18.6	212	386	77	615	106	8659	189	254
Torfajökull	3A03.	3A03TE-5.1E	25.71	0.88	1546	28.95	0.04	32.58	2.6	4.87	1.2	43.05	62.9	14.9	165	269	53	416	70	8709	359	284
Torfajökull	3A03.	3A03TE-9.1C	22.69	30.93	2607	40.44	0.1	49.24	4.58	9.83	2.12	84.03	108.1	28.4	298	445	85	615	101	8899	392	318
Torfajökull	5A03.	5A03TE-19.1I	12.5	0.73	1256	22.6	0.03	16.44	2.49	4.78	1.46	45.79	55.3	14.6	160	232	44	338	55	8710	56	86
Torfajökull	5A03.	5A03TE-8.2E	9.26	5.36	1016	26.2	0.05	28.01	1.31	3.19	0.69	27.6	42.3	10.4	116	183	37	286	45	9008	60	119
Torfajökull	5A03.	5A03TE-13.1I	14.31	0.94	2380	37.85	0.14	79.39	4.64	10.06	2.81	79.73	101.7	28.1	284	422	77	566	95	7655	147	144
Torfajökull	5A03.	5A03TE-25.2C	8.42	7.69	2241	33.31	0.4	39.8	4.6	9.52	2.13	85.67	99.6	26.9	273	386	71	519	80	8031	106	146
Torfajökull	5A03.	5A03TE-11.1I	9.11	0.8	1479	38.72	0.01	56.94	2.37	5.03	1.29	49.75	66.4	16.8	178	271	50	364	57	7111	111	147
Torfajökull	5A03.	5A03TE-7.2I	6.33	1.27	2727	36.23	0.08	35.27	5.54	10.65	2.78	103.7	122.5	32.7	343	485	91	640	97	7550	105	158
Torfajökull	5A03.	5A03TE-15.1I	7.75	1.56	3197	33.32	0.14	45.24	5.66	13.03	3.2	117.62	142.2	39.1	400	555	101	696	113	7666	120	165
Torfajökull	5A03.	5A03TE-16.1C	8.51	1.16	3103	52	0.1	59.01	5.36	11.81	3.09	105.74	131.7	34.5	367	525	96	712	112	6808	122	170
Torfajökull	5A03.	5A03TE-25.1E	9.84	0.61	1503	34.98	0.04	57.72	2.3	5.48	1.31	50.26	64.5	16.1	174	262	48	350	56	7545	180	198
Torfajökull	5A03.	5A03TE-7.1E	11.05	0.65	1462	36.58	0.03	43.85	1.8	4.64	0.92	40.92	61.1	14.8	171	259	50	379	60	9533	170	222
Torfajökull	5A03.	5A03TE-15.2E	8.06	0.68	1438	41.05	0.04	51.13	2.03	4.73	0.86	41.37	61.4	15.3	162	259	50	363	58	8967	145	223
Torfajökull	5A03.	5A03TE-18.1I	10.34	0.72	1837	46.88	0.04	74.83	2.63	6.18	1.51	61.13	78.9	21.3	223	318	60	432	68	7723	201	230
Torfajökull	5A03.	5A03TE-12.1C	14.26	0.76	1883	38.61	0.06	55.41	3.16	6.27	1.87	61.2	81.0	21.0	226	340	64	479	79	8470	301	254
Torfajökull	5A03.	5A03TE-24.1C	8.11	0.69	3909	49.83	0.14	87.46	6.49	17.77	4.09	155.12	177.0	49.8	509	696	128	892	139	7514	221	264
Torfajökull	5A03.	5A03TE-6.1I	10.2	0.78	2063	55.66	0.06	91.66	3.22	7.58	1.81	72.08	91.0	24.9	256	365	67	472	74	7080	269	268
Torfajökull	5A03.	5A03TE-10.1I	31.94	0.65	4528	31.47	0.23	29.66	15.43	27.92	10.05	191.32	192.0	56.2	545	754	146	1076	179	7310	297	280
Torfajökull	5A03.	5A03TE-3.1I	6.49	2.13	4479	43.87	0.12	68.4	7.96	18.68	4.15	161.08	194.1	54.5	549	757	139	980	152	7606	219	285
Torfajökull	5A03.	5A03TE-7.1C	13.47	2.95	2838	65.32	0.06	73.51	3.95	9.74	2.07	88.9	121.3	30.4	331	503	96	739	120	8313	261	291
Torfajökull	5A03.	5A03TE-4.1C	10.58	0.74	2471	62.04	0.05	117.85	4.45	8.7	2.45	83.76	107.4	28.8	299	417	76	533	85	7137	344	304
Torfajökull	5A03.	5A03TE-22.2E	12.06	1.3	1893	52.37	0.03	67.57	2.88	6.54	1.63	60.87	81.7	21.2	218	325	60	442	71	8389	327	313

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Torfajökull	5A03.	5A03TE-2.1I	5.88	7.35	5397	63.96	0.11	92.16	10.97	24.92	6.94	206.34	246.9	69.6	720	967	174	1211	185	7753	231	314
Torfajökull	5A03.	5A03TE-20.1I	22.87	0.69	2511	34.31	0.09	30.9	4.14	8.83	2.81	74.74	103.6	26.4	265	417	80	593	100	7521	347	317
Torfajökull	5A03.	5A03TE-2.2E	10.71	20.38	1404	115.13	0.11	55.24	2.22	5.23	1.24	41.59	63.2	16.9	184	282	56	438	65	11335	339	321
Torfajökull	5A03.	5A03TE-23.1E	21.79	1.32	4555	36.44	0.24	31.91	14.99	27.88	8.53	192.86	199.8	58.8	575	782	150	1079	179	7374	303	327
Torfajökull	5A03.	5A03TE-21.1E	8.95	0.67	2112	60.47	0.05	84.95	3.19	6.81	1.47	66.59	92.3	22.7	244	354	68	487	76	8253	313	345
Torfajökull	5A03.	5A03TE-24.2E	9.78	1.2	2680	70.93	0.04	114.14	3.68	8.39	1.82	93.17	115.4	30.2	322	453	83	609	96	7982	366	387
Torfajökull	5A03.	5A03TE-21.2C	14.91	31.63	2348	65.04	1.05	101.81	4.15	8.53	1.95	75.57	99.5	27.2	279	395	73	513	83	7525	384	393
Torfajökull	5A03.	5A03TE-14.1I	17.46	0.76	3689	29.16	0.16	27.55	10.35	18.99	4.75	133.71	151.0	42.5	431	626	125	978	161	7382	464	498
Torfajökull	5A03.	5A03TE-22.1C	17.18	17.68	6587	220.3	0.67	886.12	16.01	34.05	7.67	268.43	295.8	82.9	833	1105	196	1364	199	7442	1134	502
Torfajökull	5A03.	5A03TE-9.1E	10.11	0.93	2694	78.28	0.05	119.7	4.1	9.66	2.16	87.99	115.1	31.7	332	466	85	595	95	8075	620	521
Torfajökull	5A03.	5A03TE-1.1	15.69	2	4927	146.6	0.11	342.74	8.71	22.41	5.77	208.97	218.3	67.0	658	837	146	1014	149	6815	1414	812
Torfajökull	5A03.	5A03TE-4.1C	12.08	7.89	9983	210.1	0.31	405.52	20.31	47.57	9.1	386.08	450.8	127.2	1285	1698	300	2094	313	6775	1095	928
Torfajökull	5A03.	5A03TE-17.1C	13.89	61.23	6652	126.64	0.37	223.41	13.98	29.16	5.36	251.61	310.5	86.7	892	1264	238	1732	266	9084	2166	1404
Torfajökull	IETR	IETR-COL-11.1	51.09	4.58	728	12.85	0.06	36.34	0.61	2.03	0.95	21.4	32.3	6.6	78	140	28	215	38	12719	16	27
Torfajökull	IETR	IETR-8.1	35.61	1.86	965	7.32	0.01	29.87	0.76	2.98	1.43	29.75	39.3	9.7	105	176	35	263	44	9750	22	27
Torfajökull	IETR	IETR-1.1	41.13	0.44	921	15.51	0.02	37.81	0.74	2.48	1.17	24.92	39.1	8.9	90	171	35	272	47	10267	23	32
Torfajökull	IETR	IETR-7.1	41.44	0.58	733	12.7	0.04	38.48	0.71	2.44	1.15	23.3	32.1	8.4	84	151	29	234	39	9951	23	32
Torfajökull	IETR	IETR-COL-9.1	43.23	2.35	879	11.87	0.02	34.83	1.01	3.03	1.52	25.95	36.7	8.8	90	154	32	241	42	8876	25	34
Torfajökull	IETR	IETR-COL-12.1	45.38	1.59	979	11.67	0.03	37.87	1.08	3.45	1.7	32.69	43.4	11.3	123	192	39	300	51	9580	27	34
Torfajökull	IETR	IETR-COL-10.1	40.51	1.18	839	12.84	0.02	40.2	0.7	2.93	1.5	26.12	36.7	8.9	96	160	33	248	42	9830	25	34
Torfajökull	IETR	IETR-COL-4.1	43.99	53.51	898	14.28	0.03	41.74	1.33	2.77	1.34	25.94	38.4	9.3	99	172	34	266	45		27	39
Torfajökull	IETR	IETR-7.2	33.78	0.78	800	18.67	0.02	49.31	0.71	2.22	0.96	23.05	35.0	7.7	73	154	33	260	42	10174	28	43
Torfajökull	IETR	IETR-31.1	12.71	0.68	836	17.73	0.02	17.8	1.32	2.99	1.03	27.24	36.1	8.7	99	158	30	253	42	7819	20	51
Torfajökull	IETR	IETR-34.1	17.96	1.52	1085	21.02	0.03	43.04	1.64	2.72	1.18	32.73	46.4	11.3	125	204	42	339	52	9997	37	60
Torfajökull	IETR	IETR-35.1	21.47	1.08	803	24.89	0.02	47.77	1.09	2.24	0.7	20.71	34.3	7.6	93	154	31	252	39	10278	38	63
Torfajökull	IETR	IETR-3.2	16.91	0.56	1351	15.4	0.05	16.49	2.05	5.55	1.22	41.61	55.5	13.6	130	219	43	316	52		33	72
Torfajökull	IETR	IETR-3.1	0.03	0.58	954	27.62	0.02	49.39	1	2.51	0.84	26.34	41.3	9.1	97	178	37	278	47		37	73
Torfajökull	IETR	IETR-5.1	14.73	0.49	1068	32.1	0.05	44.95	1.49	3.1	0.87	32.31	46.7	10.8	115	201	41	319	52		45	91
Torfajökull	IETR	IETR-COL-6.1	9.49	0.82	1064	32.02	0.06	30.34	1.63	3.99	1.26	35.63	47.9	10.8	114	202	40	302	49		47	99

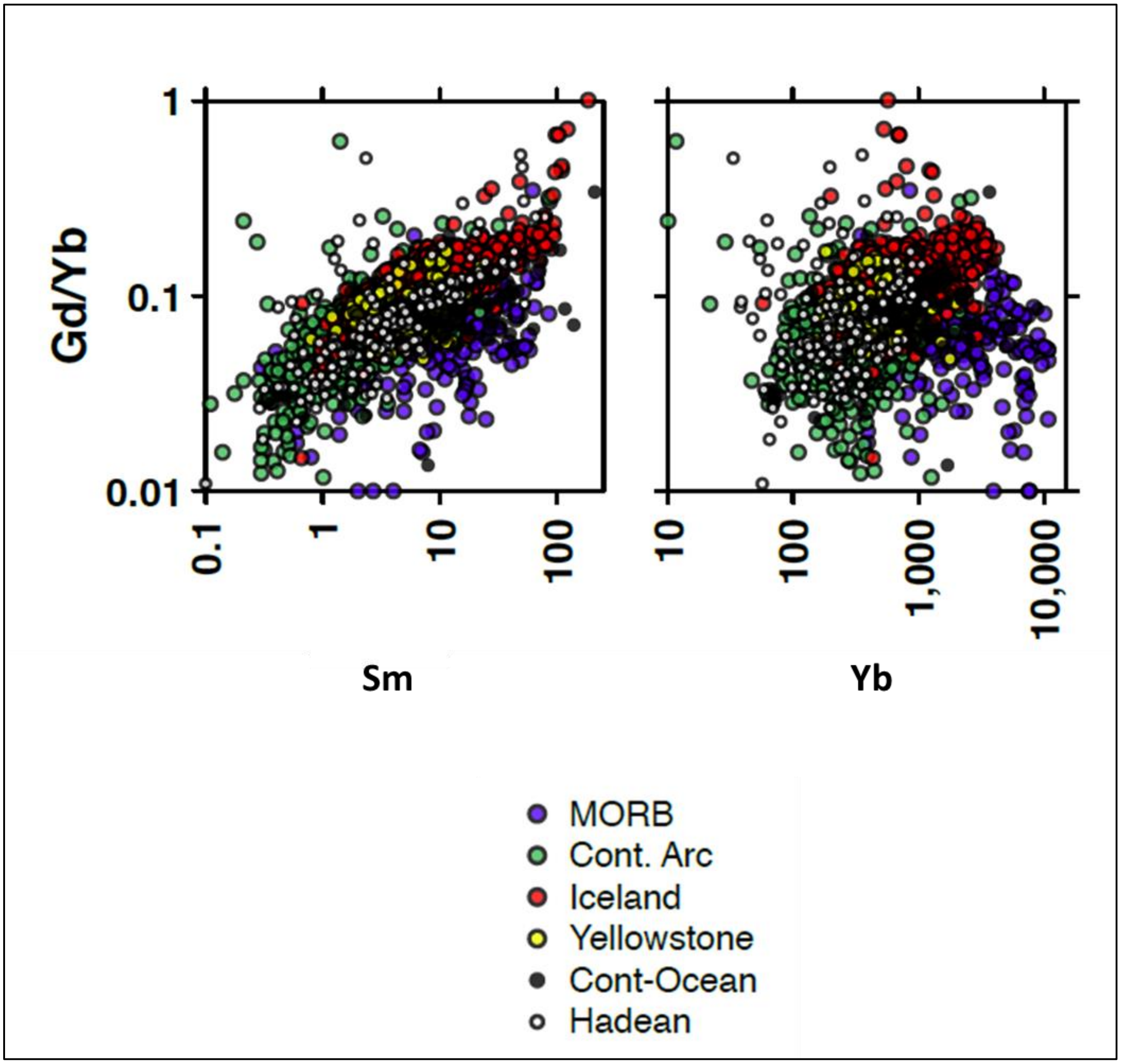
System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Torfajökull	IETR	IETR-33.1	15.5	0.74	2024	33.36	0.05	87.55	3.8	6.07	1.87	51.01	83.9	16.7	197	373	81	694	113	11074	98	112
Torfajökull	IETR	IETR-5.2	11.45	0.94	2716	27.08	0.06	40.66	3.97	10.87	3.88	94.85	127.5	32.0	296	525	95	647	100		70	140
Torfajökull	IETR	IETR-32.1	20.74	10.99	5195	340.46	0.13	225.18	7.06	17.34	3.45	174.55	236.1	61.9	692	1002	188	1434	202	9491	501	735
Torfajökull	ITHn.	ITHN1-3.1I	11.23	2.41	2012	17.46	0.06	23.33	4.2	8.15	1.49	67.99	83.7	21.5	231	334	65	485	78	9220	114	97
Torfajökull	ITHn.	ITHN1-7.1I	13.08	5.66	2303	22.57	0.37	27.82	5.19	8.85	1.59	72.78	96.6	24.5	261	398	76	574	93	9276	150	202
Torfajökull	ITHn.	ITHN1-9.4I	14.66	0.69	1419	29.99	0.04	34.48	1.88	4.56	0.67	39	58.3	13.8	151	240	48	370	62	9233	192	247
Torfajökull	ITHn.	ITHN1-2.2E	17.81	0.69	1878	34.69	0.04	46.7	2.68	6.22	1.17	57.74	79.2	19.8	213	331	66	498	83	9482	212	262
Torfajökull	ITHn.	ITHN1-1.1E	12.75	0.58	3136	23.61	0.14	29.6	6.45	11.94	2.18	104.05	136.4	34.7	368	552	106	787	128	9151	219	263
Torfajökull	ITHn.	ITHN1-5.1I	14.81	0.81	3012	31.99	0.12	37.81	5.32	10.89	2.12	101.17	129.6	32.1	350	525	101	766	123	9020	235	278
Torfajökull	ITHn.	ITHN1-1.2I	17.65	0.68	1845	34.03	0.04	42.93	2.66	6.04	1.15	53.67	75.3	18.8	208	321	63	475	77	8964	293	295
Torfajökull	ITHn.	ITHN1-6.2E	12.99	1.08	3441	28.56	0.11	33.69	6.48	12.66	2.55	117.35	147.7	39.5	413	603	113	852	137	8854	259	300
Torfajökull	ITHn.	ITHN1-4.2E	15.83	1.42	1859	37.37	0.07	45.72	2.7	6.01	1.05	53.37	76.9	18.9	203	315	63	471	75	9096	318	321
Torfajökull	ITHn.	ITHN1-9.3T	16.02	0.79	1886	40.1	0.06	48.15	2.58	5.86	1.02	54.65	77.9	19.4	208	321	63	488	79	9408	416	404
Torfajökull	ITHn.	ITHN1-9.1C	14.51	17.35	4990	53.01	0.36	66.7	9.33	19.75	1.72	168.23	212.1	56.6	585	854	162	1208	195	9194	406	475
Torfajökull	ITHn.	ITHN1-9.2I	14.35	0.78	2094	49.15	0.06	59.35	3.03	7.46	0.86	65.78	88.8	22.3	243	371	71	558	89	9565	457	477
Torfajökull	ITHn.	ITHN1-6.1I	18.84	0.57	2125	41.39	0.03	53.75	3.4	6.67	1.26	62.36	90.1	21.9	238	372	70	539	87	8615	731	503
Torfajökull	ITHn.	ITHN1-2.1C	20.59	16.16	6651	62.01	9.13	116.95	19.14	33.5	4.21	256.55	290.4	80.6	828	1143	217	1577	250	8763	613	599
Torfajökull	ITHn.	ITHN1-3.2DZ	12.33	1.12	3981	170.85	0.11	142.42	5.01	12.26	1.18	119.62	169.4	43.0	461	708	139	1069	168	9481	801	909
Torfajökull	ITHn.	ITHN1-4.1C	13.7	117.41	8457	391.27	0.26	380.37	13.88	31.48	2.14	281.15	364.5	102.2	1067	1499	278	2082	296	9379	3829	2278
Torfajökull	ITN.	ITN1-1.1I	19.25	4.47	801	9.49	0.06	20.84	0.88	2.38	0.69	20.84			88	145		244	40	9168	56	85
Torfajökull	ITN.	ITN1-6.2E	14.43	1.36	852	10.67	0.03	18.94	0.88	2.17	0.51	20.33			94	157		265	43	9879	75	107
Torfajökull	ITN.	ITN1-11.1I	15.87	4.01	1727	8.19	0.07	17.96	3.41	7.03	1.66	55.46			198	293		431	71	9579	83	112
Torfajökull	ITN.	ITN1-14.1E	16.33	1.37	915	9.66	0.03	18.37	1.11	3.05	0.77	22.63			109	176		295	47	9535	64	113
Torfajökull	ITN.	ITN1-9.2E	16.82	0.97	1109	12.29	0.04	24.91	1.44	2.97	0.91	28.43			130	202		324	52	8955	73	115
Torfajökull	ITN.	ITN1-14.2I	19.44	1.48	1631	12.92	0.03	26.1	3.11	6.24	1.6	45.8			216	335		501	81	8858	109	153
Torfajökull	ITN.	ITN1-12.1I	19.08	4.84	2578	12.93	0.09	26.67	4.94	11.01	2.8	86.66			342	494		729	112	8832	151	178
Torfajökull	ITN.	ITN1-4.1T	21.82	1.14	1191	14.13	0.04	25.23	1.67	3.92	0.98	30.62			144	230		376	59	8882	149	184
Torfajökull	ITN.	ITN1-5.1E	15.11	0.97	1217	17.04	0.03	25.63	1.5	3.38	0.7	30.1			138	224		359	57	9541	133	196
Torfajökull	ITN.	ITN1-10.1I	12.17	1.54	2588	13.92	0.04	23.31	5.13	10.16	1.59	74.73			326	484		729	109	9310	160	221

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Torfajökull	ITN.	ITN1-6.1C	12.42	2	3135	17.65	0.09	26.6	5.46	11.79	2.11	96.81			363	520		741	116	9472	172	225
Torfajökull	ITN.	ITN1-8.2I	12.45	1.41	2085	29.74	0.04	30.09	2.47	5.95	1.1	57.26			219	368		599	98	9318	144	234
Torfajökull	ITN.	ITN1-7.1I	16.65	3.38	3086	28.14	0.08	38.07	5.01	11.19	2.37	95.32			381	573		854	137	9482	204	267
Torfajökull	ITN.	ITN1-3.1T	21.35	1.44	1741	22.64	0.04	39.12	2.56	5.61	1.3	50.16			212	331		520	83	9064	309	278
Torfajökull	ITN.	ITN1-8.1E	17.23	1.24	1741	27.17	0.06	37.33	2.33	5.65	1.03	46.1			215	335		519	82	9003	245	286
Torfajökull	ITN.	ITN1-2.1I	18.4	2.52	2376	43.89	0.05	46.68	2.69	6.08	1.32	54.8			261	468		785	130	9058	180	301
Torfajökull	ITN.	ITN1-5.2C	10.15	1.95	8213	184.16	0.13	166.91	12.37	29.27	0.84	238.01			1170	1813		2718	392	8942	1683	1943
Vesturhorn[29]	IIV	IIV-03A-8.1	3.96	0.95	1860	30.14	0.03	32.41	0.98	3.32	0.84	45.9	77.1		183	300		418	67	9997	57	129
Vesturhorn	IIV	IIV-03A-15.1	5.51	6.31	3147	49.82	36.4	149.18	40.13	18.79	2.6	105.95	135.3		357	500		679	106	9904	102	198
Vesturhorn	IIV	IIV-03A-2.1	3.71	1.62	4414	45.04	0.13	45.76	2.96	10.22	2.04	116.26	180.1		430	676		884	136	10230	128	255
Vesturhorn	IIV	IIV-03A-12.1	4.26	2.24	2591	90.45	0.03	60.21	1.4	5.34	0.85	60.18	101.1		245	410		575	93	11544	168	326
Vesturhorn	IIV	IIV-03A-17.1	9.34	0.26	4847	22.39	0.14	42.03	11.22	23.25	3.82	182.53	197.3		536	707		920	142	6362	284	331
Vesturhorn	IIV	IIV-03A-6.1	4.42	0.07	3585	78.07	0.02	69.44	2.05	7.62	1.34	88.21	143.7		350	561		749	118	10106	155	333
Vesturhorn	IIV	IIV-03A-14.1	5.34	0.4	3463	99.8	0.03	89.21	2.24	7.16	1.61	91.77	148.4		401	576		792	123	10102	252	361
Vesturhorn	IIV	IIV-03A-5.1	3.84	8.2	5168	48.81	3.79	69.97	7.88	13.59	2	126.59	191.7		456	743		981	152	10194	214	367
Vesturhorn	IIV	IIV-03A-11.1	4.45	0.34	3604	132.58	0.05	70.48	1.91	7.33	1.84	97.48	151.4		381	571		726	110	9405	255	435
Vesturhorn	IIV	IIV-03A-16.1	5.28	1.24	5539	232.51	0.23	279.34	3.44	11.95	2.53	131.21	210.7		501	839		1166	176	9677	471	509
Vesturhorn	IIV	IIV-03A-9.1	5.62	0.23	5581	168.26	0.03	130.05	3.19	12.34	1.96	138.66	205.6		494	846		1151	176	10212	297	533
Vesturhorn	IIV	IIV-03A-10.1	8.2	0.29	6296	31.36	0.14	112.13	9.21	20.8	5.27	170.21	235.8		573	954		1492	241	8464	542	572
Vesturhorn	IIV	IIV-03A-13.1	5.79	0.14	6693	252.98	0.04	170.2	3.38	14.67	3.26	179.4	256.1		664	1006		1219	177	8690	457	681
Viđidalsfjall	IIM.	IIM_9.2E	7.37	0.28	1127	35.43	0.02	13.83	0.75	2.44	0.76	26.49	48.1	9.9	116	212	44	346	61	9077	28	85
Viđidalsfjall	IIM.	IIM_6.1I	9.33	0.26	2161	11.02	0.01	10.89	3.81	9.37	3.15	75.65	93.8	24.2	259	379	73	536	87	8657	49	89
Viđidalsfjall	IIM.	IIM_4.1I	11.86	0.21	2772	15.36	0.03	11.44	4.57	10.96	3.99	99.24	121.1	31.2	331	487	92	682	112	8326	68	114
Viđidalsfjall	IIM.	IIM_2.1I	14.47	0.26	2727	31.03	0.03	17.3	3.69	9.4	3.28	85.1	116.4	28.3	308	476	91	682	113	7930	105	146
Viđidalsfjall	IIM.	IIM_1.2E	10.61	0.23	1571	35.42	0.02	21.23	1.93	4.6	1.49	41.83	66.8	15.1	171	276	53	407	66	8554	98	156
Viđidalsfjall	IIM.	IIM_1.1I	6.87	0.37	2688	30.1	0.01	33.99	4.69	10.66	3.04	92.75	124.7	31.8	342	512	96	695	111	8393	104	171
Viđidalsfjall	IIM.	IIM_8.1I	10.14	0.27	4369	33.14	0.05	21.85	6.68	17.96	6.26	162.91	200.8	52.0	543	785	145	1070	174	7939	132	195
Viđidalsfjall	IIM.	IIM_3.1SZ	14.18	0.25	4495	46.12	0.06	30.69	7.18	17.12	5.58	157.93	194.4	50.6	536	784	145	1087	176	8121	168	236

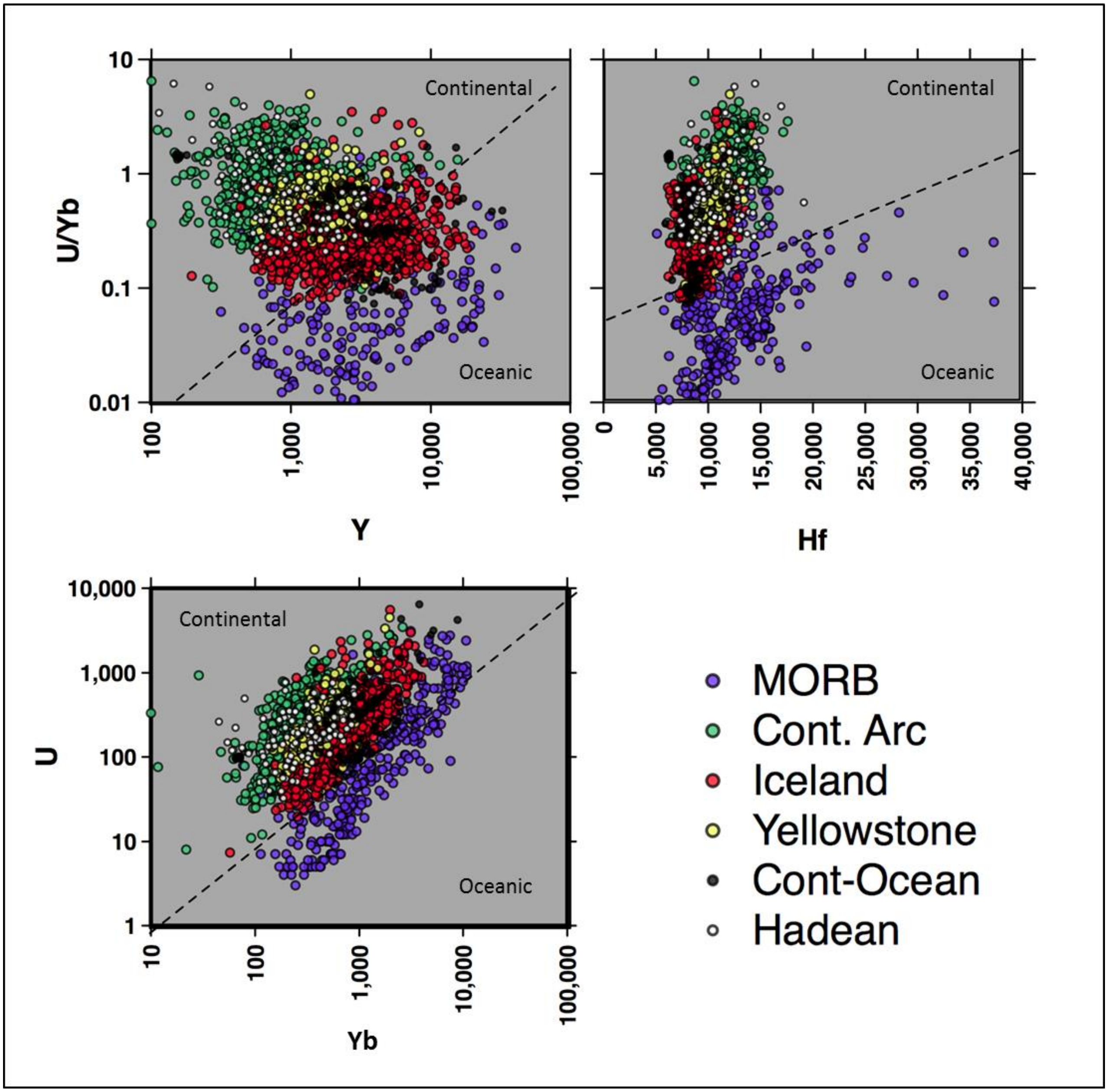
[29] All Vesturhorn data collected and shared by Abraham Padilla

System	Sample	Spot	Ti	Fe	Y	Nb	La	Ce	Nd	Sm	Eu	Gd	Ho	Tb	Dy	Er	Tm	Yb	Lu	Hf	Th	U
Viđidalsfjall	IIM.	IIM_10.1SZ	20.4	0.26	2495	39.13	0.02	21.58	3.46	8.03	2.96	72.41	107.5	25.5	281	448	86	643	107	7750	280	249
Viđidalsfjall	IIM.	IIM_7.1C	5.98	0.3	9878	131.48	0.09	134.68	12.07	30.88	7.9	298.59	429.9	104.4	1153	1742	315	2315	355	8606	511	623
Viđidalsfjall	IIM.	IIM_5.1C	10.4	0.27	11275	263.43	0.13	218.41	16.73	39.44	10.27	354.37	472.8	118.3	1262	1825	331	2382	358	8354	971	862
Viđidalsfjall	IIM.	IIM_12.1E	12.61	0.29	1394	25.15	0.02	15.03	1.83	4.3	1.66	39.66	59.5	14.0	161	249	49	372	65	8077	69	113
Viđidalsfjall	IIM.	IIM_11.2E	9.95	0.27	1423	33.51	0.01	20.72	1.5	3.9	1.21	37.33	60.4	13.8	155	255	50	380	62	8879	71	130
Viđidalsfjall	IIM.	IIM_16.1I	8.67	0.33	3271	21.94	0.03	17.99	4.68	11	3.38	104.46	141.3	34.9	385	578	106	796	129	8682	101	162
Viđidalsfjall	IIM.	IIM_14.1I	11.39	0.52	2811	49.11	0.11	32.42	3.82	8.74	2.59	85.71	122.5	28.0	319	489	93	687	112	8392	102	165
Viđidalsfjall	IIM.	IIM_18.1I	8.94	0.29	3552	25.87	0.04	18.81	5.14	11.89	3.64	116.97	156.5	39.0	426	633	119	862	140	8440	113	179
Viđidalsfjall	IIM.	IIM_19.1SZ	10	15.58	3473	34.17	0.08	22.96	4.54	10.72	3.38	112.58	151.8	36.5	400	607	115	830	137	8490	123	189
Viđidalsfjall	IIM.	IIM_17.1E	11.2	0.27	2073	53.14	0.02	33.07	2.62	6.36	1.78	59.64	88.9	20.5	231	367	71	524	85	8859	178	228
Viđidalsfjall	IIM.	IIM_13.1SZ	12.24	4.93	2799	47.41	0.2	27.86	3.78	8.79	2.63	85.7	124.5	30.0	326	508	96	708	115	8398	198	230
Viđidalsfjall	IIM.	IIM_12.2C	8.21	0.27	4492	52.54	0.06	40.86	6.5	15.39	4.22	149.38	204.0	50.5	541	801	150	1068	169	8743	173	253
Viđidalsfjall	IIM.	IIM_17.2C	11.48	0.28	5979	49.76	0.09	32.77	9.41	23.93	8.19	214.94	258.6	68.0	715	1023	187	1392	222	7848	209	267
Viđidalsfjall	IIM.	IIM_15.1C	9.63	0.29	4319	201.08	0.02	118.86	3.85	11.24	3.09	121.96	188.7	44.0	498	757	140	1024	158	9132	716	647
Viđidalsfjall	IIM.	IIM_11.1C	17.61	0.34	7780	186.92	0.1	156.64	13.36	31.76	8.69	287.46	343.1	92.7	969	1347	240	1745	269	7796	833	672

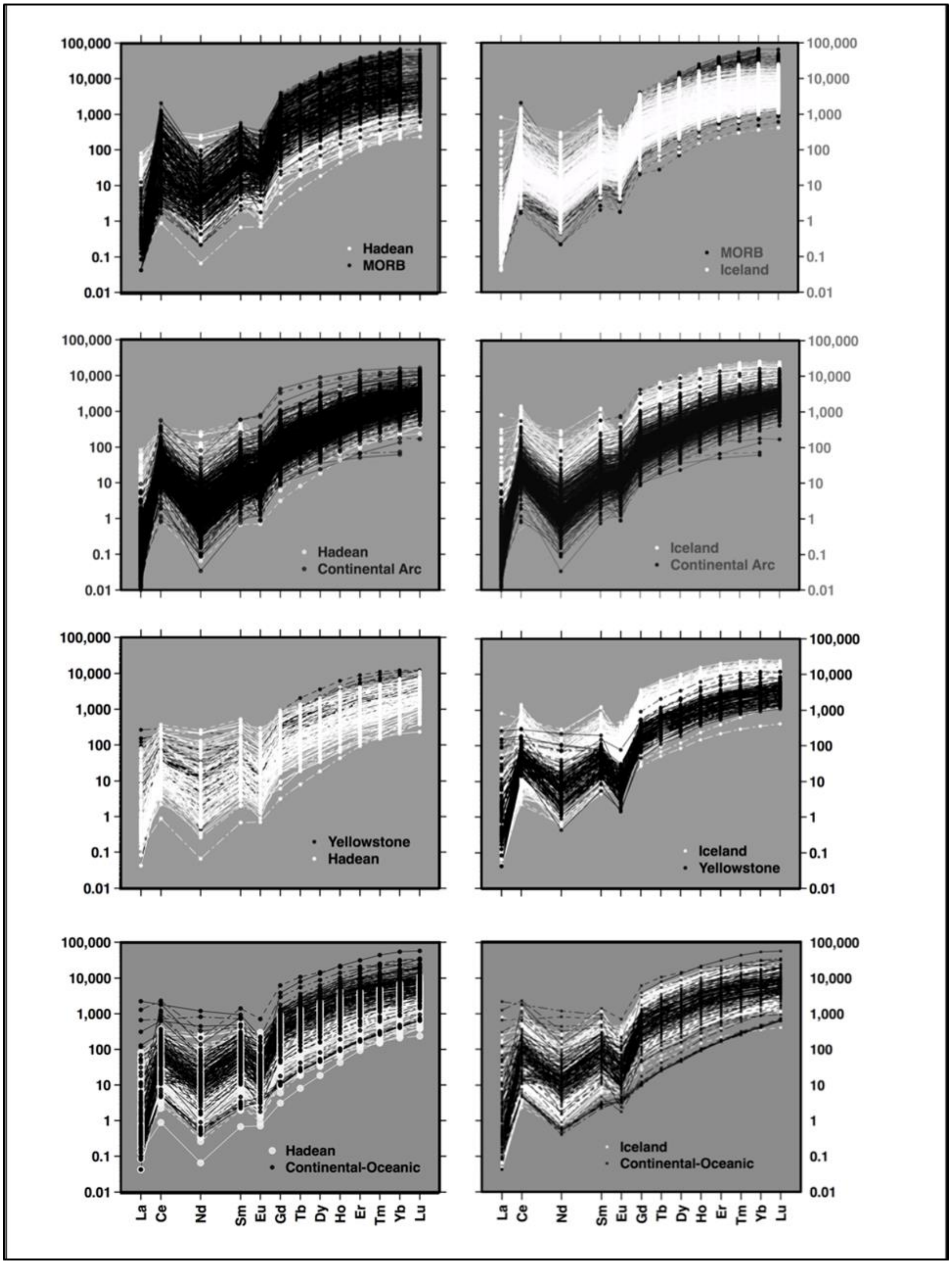
Appendix B.3: Global Zircon Comparison Figures



Appendix B.3, Figure 1: Comparing global zircon compositions: individual data points used to draw fields in Chapter 2 (Hadean-Iceland comparison), Figure 8.



Appendix B.3, Figure 2: Comparing global zircon compositions: individual data points used to draw fields in Chapter 2 (Hadean-Iceland comparison), Figure 9.



Appendix B.3, Figure 3: Comparing global zircon compositions. Compilation of chondrite normalized REE plots for global zircon populations, compared to Iceland and Hadean REE patterns. [a] MORB vs. Hadean (Grimes et al. 2007; n=302); [b] MORB v. Iceland; [c] Continental Arc v. Hadean (Claiborne et al. 2011; Stelten and Cooper 2012; Barth et al. 2013; n=951); [d] Continental Arc v. Iceland; [e] Yellowstone v. Hadean (Stelten et al. 2013; n=147); [f] Yellowstone v. Iceland; [g] Continental-Oceanic Rift v. Hadean (Lowenstern et al. 1997, 2006; Schmitt and Vazquez 2006; Schmitt et al. 2013; n=147); [h] Continental-Oceanic Rift v. Iceland. Iceland and Hadean as in Chapter 2, Figure 4.

APPENDIX C: Bulk Rock Geochemistry

Appendix C.1: Bulk Rock Major Element Compositions (percent)

Analyses conducted by Actlabs[30]

System	Sample	Location[31]	Date	SiO_2	Al_2O_3	Fe_2O_3(T)	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5	Total[32]	LOI[33]	Total (o)[34]
Askja	IEAX-2a	28W 418855, 7214458	Feb. '13.	76.32	12.00	3.88	0.06	0.14	1.87	3.55	1.98	0.18	0.02	100	0.45	100.20
Askja	IANE-1	28W 419661, 7214591*	Mar. '10.	71.87	12.59	4.63	0.11	0.86	2.79	3.78	2.28	0.89	0.20	100	1.23	100.60
Hekla	IHB-1	27W 558938, 7106903*	Mar. '10.	68.73	14.57	5.95	0.15	0.30	2.78	4.69	2.37	0.40	0.07	100	1.03	100.80
Hvitserkur	Erla-139	28W 557692, 7257066	Feb. '13.	42.71	17.42	15.63	0.22	7.43	10.59	2.60	0.15	2.79	0.49	100	16.62	98.61
Kerlingarfjöll	IEKLM	27W 580732, 7169302	Feb. '13.	73.12	13.11	3.87	0.10	0.02	1.17	5.00	3.39	0.22	0.01	100	0.56	99.19
Kerlingarfjöll	IEKLT	27W 576956, 7169439	Feb. '13.	74.90	12.68	3.14	0.08	0.03	1.05	4.54	3.36	0.21	0.01	100	1.24	98.36
Krafla	IEKHr	28W 421133, 7287736	Feb. '13.	75.71	11.53	3.70	0.10	0.11	1.68	4.26	2.65	0.23	0.03	100	0.12	98.34
Krafla	IEKJ	28W 424102, 7285758	Feb. '13.	74.36	11.85	4.72	0.10	0.14	1.78	4.10	2.61	0.30	0.05	100	0.8	99.35
Krafla	IEKG-1A	28W 410640, 7292179	Jan. '12.	74.18	12.07	4.39	0.10	0.25	1.91	4.09	2.64	0.32	0.04	100	1.24	100.50
Króksfjördur	IIKK-1a	27W 455836, 7264252	Jan. '12.	70.07	14.62	3.67	0.06	1.34	4.11	3.86	1.75	0.41	0.10	100	1.21	99.89
Öræfajökull	IOHN-1	27W 595113, 7099846*	Mar. '10.	72.42	13.28	3.97	0.10	0.04	1.10	5.40	3.40	0.27	0.02	100	1.97	100.50
Snæfellsness-Knörr	IISK	27W 383104, 7191705	Feb. '13.	71.43	12.95	5.40	0.14	0.18	1.68	4.15	3.66	0.37	0.05	100	1.07	97.99
Stóraa-Laxa	IEFS-1a	27W 535438, 7109774	Feb. '13.	78.66	12.22	2.51	0.04	0.15	0.57	2.89	2.78	0.16	0.01	100	1.62	98.71
Torfajökull	IETHb	27W 600092, 7094232	Feb. '13.	75.28	10.81	4.45	0.07		0.19	4.85	4.01	0.29	0.04	100	1.04	99.24
Torfajökull	IETG-1	27W 597859, 7097451	Feb. '13.	74.99	11.35	3.89	0.06	0.02	0.11	4.93	4.35	0.29		100	0.47	98.43
Torfajökull	IETR	27W 576365, 7095290	Feb. '13.	72.00	13.71	3.07	0.12	0.29	1.00	5.40	3.83	0.53	0.05	100	0.69	100.50
Torfajökull	ITN-1	27W 595113, 7099846*	Mar. '10.	66.33	14.86	5.79	0.12	0.96	2.51	5.20	3.60	0.54	0.08	100	0.17	100.70
Torfajökull	ITH-1	27W 584358, 7093649*	Mar. '10.	66.89	14.37	4.97	0.10	1.85	2.43	4.75	3.86	0.69	0.10	100	0.24	100.40
Viđidalsfjall	IIM-1	27W 521634, 7256525	Jan. '12.	75.71	12.30	3.19	0.09	0.17	0.60	4.59	3.12	0.22	0.01	100	0.96	100.90

[30] All compositions were determined using FUS-ICP
[31] All UTM coordinates are WGS 1984 unless marked using "*" which indicates Hjorsey 1955
[32] Data normalized to 100
[33] Loss on ignition (LOI) excluded from the normalization
[34] Total (o) was the total presented in data report presented Actlabs (including LOI, major elements not normalized to 100)

Appendix C.2: Bulk Rock Dispersed Element Compositions (ppm)

Analyses conducted by Actlabs

(Part 1: Atomic Number <57)[35]

System	Sample	Date	Be	S[36]	Sc[37]	V	Cr[38]	Ni[39]	Cu[40]	Zn[41]	Ga	Ge	Rb	Sr	Y	Zr	Nb	Mo	Sn	Cs	Ba
Askja	IEAX-2a	Feb. '13.	3	110	2.22	8	137	10	25	87	21	1.1	51	97	108	327	50.7	< 2	2	0.1	442
Askja	IANE-1	Mar. '10.	2	120	11.6	27	< 0.5	2	10	67	17	1.6	52	107	57	388	40	2	4	0.3	372
Hekla	IHB-1	Mar. '10.	4	80	9.84	< 5	9.8	5	17	122	26	2	48	219	76	718	91.9	5	6	0.4	578
Hvitserkur	Erla-139	Feb. '13.	10	690	33.6	300	420	131	114	77	20	0.6	2	710	25	134	13.9	< 2	1	0.3	519
Kerlingarfjöll	IEKLM	Feb. '13.	5	50	1.3	< 5	51.5	4	11	201	37	2.9	90	87	116	617	134	6	8	1	854
Kerlingarfjöll	IEKLT	Feb. '13.	4	30	4.19	< 5	36.2	2	13	113	24	2	76	79	84	450	66.3	4	7	0.8	659
Krafla	IEKHr	Feb. '13.	3	70	5.42	9	26.2	2	14	132	23	1.8	63	93	91	516	56.7	3	8	0.7	555
Krafla	IEKJ	Feb. '13.	3	70	8.06	8	71.8	4	28	111	21	1.2	73	90	89	532	48.6	3	7	0.8	512
Krafla	IEKG-1a	Jan. '12.	3	60	7.05	7	< 0.5	8	18	117	21	2.2	65	94	91	546	46.8	5	10	0.9	572
Króksfjördur	IIKK-1a	Jan. '12.	2	40	5.99	56	23.7	26	43	53	18	1.6	42	284	15	180	10.2	3	2	0.2	340
Öræfajökull	IOHN-1	Mar. '10.	5	80	1.43	< 5	7.1	2	7	161	30	2	71	64	102	813	94	4	8	0.6	669
Snæfellsness-Knörr	IISK	Feb. '13.	3	60	8.11	< 5	74.3	5	12	117	25	2.2	90	122	68	565	85	5	4	0.9	815
Stóraa-Laxa	IEFS-1a	Feb. '13.	4	600	4.84	6	31.8	3	13	51	19	1.1	57	116	72	294	48	< 2	4	0.4	560
Torfajökull	IETHb	Feb. '13.	7	170	0.42	10	66.2	5	11	202	40	2.2	96	16	70	1230	165	< 2	12	0.4	413
Torfajökull	IETG-1	Feb. '13.	6	40	0.57	8	27	2	7	178	43	1.8	76	14	63	1470	186	2	13	0.5	372
Torfajökull	IETR	Feb. '13.	8	70	3.7	6	45	3	12	171	33	2.5	92	133	87	923	139	6	10	0.9	538
Torfajökull	ITN-1	Mar. '10.	6	60	6.88	39	8.4	8	23	108	27	1.8	81	140	59	668	114	6	8	0.6	483
Torfajökull	ITHn-1	Mar. '10.	7	110	6.12	54	72	45	56	89	27	1.8	94	115	56	605	127	6	9	0.8	418
Viđidalsfjall	IIM-1	Jan. '12.	6	550	0.76	5	46.5	10	3	242	30	1.8	60	76	111	669	101	8	11	0.6	595

[35] All analyses were conducted by FUS-MS unless otherwise specified
[36] Method: TD-ICP
[37] Method: INAA
[38] Method: INAA
[39] Method: TD-ICP
[40] Method: TD-ICP
[41] Method: mult. INAA/TD-ICP

Appendix C.2: Bulk Rock Dispersed Element Compositions (ppm)

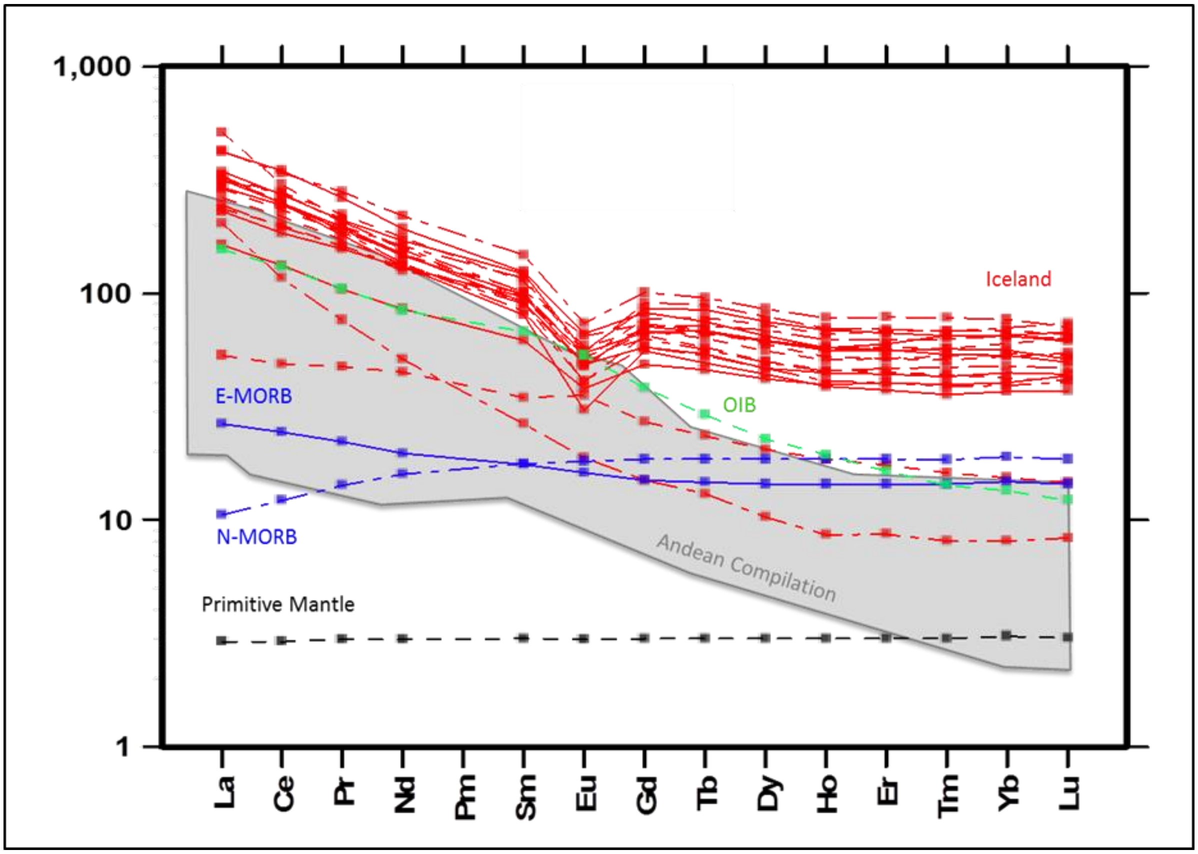
Analyses conducted by Actlabs

(Part 2: Atomic Number >57)

System	Sample	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W[42]	Tl	Pb[43]	Th	U
Askja	IEAX-2a	55.6	123	14.9	57.3	14.8	2.85	15.4	2.81	17.8	3.59	10.9	1.69	11	1.62	10	3.77	< 1	< 0.05	6	7.82	2.22
Askja	IANE-1	38.7	81.2	9.67	39	9.14	2.13	9.63	1.66	10.3	2.15	6.45	0.978	6.5	1.06	10.7	2.28	< 1	< 0.05	< 5	7.46	2.19
Hekla	IHB-1	68.3	143	17.3	68.2	15.1	3.65	14.6	2.48	14.6	2.86	8.27	1.25	8.48	1.34	18.2	4.47	< 1	< 0.05	< 5	9.81	2.92
Hvitserkur	Erla-139	12.6	29.9	4.39	20.6	5.12	1.99	5.39	0.85	5.05	1.01	2.79	0.399	2.47	0.36	3.2	0.9	< 1	0.11	< 5	0.73	0.5
Kerlingarfjöll	IEKLM	99.9	208	25.9	100	21.8	4.15	20	3.46	21	4.26	12.5	1.92	12.3	1.74	17.1	7.63	< 1	0.1	< 5	11.8	3.6
Kerlingarfjöll	IEKLT	69.3	150	17.8	67	14.6	2.7	14.2	2.43	15.1	3.06	8.87	1.41	9.04	1.26	11.7	5.15	< 1	0.07	< 5	11.3	3.19
Krafla	IEKHr	58	120	15	59.6	13.3	2.67	14.2	2.6	16.9	3.41	9.94	1.55	10.4	1.56	12.4	3.53	< 1	0.09	< 5	7.48	2.33
Krafla	IEKJ	54.3	113	14.6	59.4	14.2	3.05	13.4	2.46	15.2	3.12	9.5	1.61	10.4	1.51	12.4	3.15	< 1	0.07	< 5	6.76	2.12
Krafla	IEKG-1A	121	185	19.5	71.4	14.2	2.77	13.4	2.39	15	3.11	9.22	1.41	9.69	1.56	14.4	3.25	< 1	0.16	< 5	8.15	2.45
Króksfjördur	IIKK-1a	48.3	71.6	7.04	23.4	3.92	1.06	2.97	0.47	2.54	0.47	1.38	0.199	1.3	0.205	4.6	1.08	< 1	0.15	< 5	7.67	2.02
Öræfajökull	IOHN-1	69.7	150	18.3	73.9	17.2	3.06	18	3.23	19.4	3.82	11.1	1.67	11.3	1.81	21.1	4.74	< 1	< 0.05	< 5	10.3	3.07
Snæfellsness-Knörr	IISK	75	153	18.2	67.8	13.5	2.73	11.5	1.95	11.5	2.43	7.02	1.06	7.2	1.08	13.5	5.22	< 1	< 0.05	< 5	10.3	3.08
Stóraa-Laxa	IEFS-1a	62.3	134	15.9	61	13.6	2.29	13	2.08	12.3	2.51	7.21	1.08	6.8	1.01	8.5	3.63	< 1	< 0.05	< 5	9.53	2.67
Torfajökull	IETHb	76.3	170	20.6	80.3	16.7	3.28	13.6	2.28	13.7	2.78	8.26	1.3	8.77	1.3	25.6	11.6	< 1	0.06	< 5	13.7	1.87
Torfajökull	IETG-1	74.6	169	19.1	72.7	14.9	2.96	12.5	2.04	12.2	2.47	7.44	1.16	7.7	1.15	29.9	12.6	< 1	0.11	6	15.9	3.14
Torfajökull	IETR	99.1	213	24.5	88.2	18.3	3.73	16.3	2.7	15.9	3.13	9.02	1.32	8.58	1.22	20.6	9.65	< 1	0.05	7	14.8	4.5
Torfajökull	ITN-1	77.7	154	17.3	61.9	12.3	2.3	11.5	1.92	11.5	2.23	6.48	0.958	6.3	1	17.7	6.34	< 1	< 0.05	< 5	14.1	4.3
Torfajökull	ITH-1	77.8	152	16.7	60.3	11.9	1.72	11.1	1.77	10.8	2.12	5.98	0.883	5.91	0.911	16.2	6.3	< 1	< 0.05	7	15.2	4.58
Viđidalsfjall	IIM-1	81.4	167	19.4	77.8	18	3.14	16.9	3.05	18.4	3.76	10.7	1.6	10.5	1.65	18.1	6.89	< 1	0.17	< 5	12.8	3.51

[42] Method: INAA
[43] Method: TD-ICP

Appendix C.3: Global Bulk Rock Comparison Figure



Appendix C.3, Figure 1: Bulk-rock REE comparison. Chondrite normalized (McDonough and Sun 1995) REE patterns for Icelandic samples (bulk-rock, mostly silicic samples; see Appendix B.2), as well as REE data for Primitive mantle, N- and E-type MORBS and OIB from Sun and McDonough (1989) and Andean volcanics (compilation from (Winter 2009), Figure 17.4).

APPENDIX D: Zircon Geochronology

Appendix D.1: Zircon U-Pb Ages

Stanford-USGS SHRIMP-RG *in situ* Measurements (millions of years) [44]

Spot	Mount	Date	7corr ^{206}Pb/^{238}U Age[45]	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	7corr ^{204}Pb/^{206}Pb	7corr % ^{206}c	^{232}Th/^{238}U	% err	Total 238 /206	% err	Total 207 /206	% err	4corr 207* /235[46]	% err	4corr 206* /238[47]	% err	err corr
Króksfjördur: IIKK 27W 455836, 7264252																									
IIKKU-1.1C	JW529	Aug '11	10.2	0.6			1.7E-2	50	0.0390	21	0.00270	4.5	-4.9E-4	-0.92	0.644	0.44	635	5.4	0.0390	21	0.0504	70	1.1E-3	24.7	0.4
IIKKU-1.3E	JW529	Aug '11	10.8	0.6			8.1E-3	50	0.0372	17	0.00352	5.0	-6.2E-4	-1.15	0.441	0.84	606	5.8	0.0372	17	0.0203	40	1.4E-3	10.7	0.3
IIKKU-2.1E	JW529	Aug '11	12.2	0.2			----	---	0.0469	7	0.00413	2.4	4.1E-5	0.08	0.848	0.94	528	1.8	0.0469	7	0.0122	7	1.9E-3	1.8	0.2
IIKKU-2.2I	JW529	Aug '11	11.8	0.2			2.4E-3	45	0.0416	7	0.00411	1.5	-3.2E-4	-0.60	0.870	2.48	548	2.0	0.0416	7	0.0012	345	1.7E-3	2.9	0.0
IIKKU-3.1E	JW529	Aug '11	11.0	0.2			2.9E-3	41	0.0574	6	0.00398	1.5	7.6E-4	1.41	0.888	0.43	579	1.4	0.0574	6	0.0030	146	1.6E-3	2.7	0.0
IIKKU-3.2I	JW529	Aug '11	11.6	0.3			2.3E-3	71	0.0446	12	0.00357	2.3	-1.1E-4	-0.21	0.666	0.42	558	2.1	0.0446	12	0.0021	302	1.7E-3	3.8	0.0
IIKKU-3.3E	JW529	Aug '11	12.2	0.4			----	---	0.0381	11	0.00395	3.5	-5.6E-4	-1.04	0.701	0.22	531	2.9	0.0381	11	0.0099	12	1.9E-3	2.9	0.2
IIKKU-4.2E	JW529	Aug '11	10.8	0.4			5.9E-3	58	0.0532	14	0.00305	3.0	4.7E-4	0.88	0.418	0.36	589	3.4	0.0532	14	0.0090	26	1.5E-3	7.9	0.3
Stóraa-Laxa: IEFS 27W 535438, 7109774																									
IEFS-1.1B	TLC1	May '12	2.2	0.2	3275	4206	3.0E-3	100	0.0521	19.6	0.00064	4.2	4.0E-4	0.76	0.80	2.77	2867	6.9	0.0521	19.6	0.0002	1045	3.3E-4	9.1	0.0
IEFS-11.1B	TLC1	May '12	2.1	0.1	1139	2211	2.8E-2	45	0.1165	17.4	0.00066	5.6	4.8E-3	8.91	0.53	1.01	2756	6.3	0.1165	17.4	0.0160	92	1.7E-4	49.6	0.5
IEFS-13.1B	TLC1	May '12	2.4	0.09	2252	3417	6.6E-3	71	0.0546	19.3	0.00071	4.3	5.8E-4	1.08	0.68	0.41	2631	3.3	0.0546	19.3	0.0025	24	3.3E-4	10.5	0.4
IEFS-15.1B	TLC1	May '12	2.2	0.08	4676	5806	1.2E-2	38	0.2461	6.8	0.00082	3.1	1.4E-2	25.32	0.83	0.71	2182	2.4	0.2461	6.8	0.0035	123	3.5E-4	11.4	0.1
IEFS-15.2B	TLC1	May '12	2.3	0.2	1896	3289	3.6E-2	30	0.1893	21.3	0.00078	4.2	9.7E-3	18.13	0.60	0.23	2255	4.9	0.1893	21.3	0.0226	99	1.5E-4	61.8	0.6
IEFS-22.1B	TLC1	May '12	2.3	0.08	9675	9010	-1.4E-3	100	0.0390	15.2	0.00064	2.8	-4.8E-4	-0.90	1.11	1.04	2782	3.3	0.0390	15.2	0.0030	36	3.7E-4	4.2	0.1
IEFS-25.2B	TLC1	May '12	2.1	0.1	1311	2688	---	100	0.0512	22.9	0.00055	5.5	3.5E-4	0.65	0.50	0.41	3094	5.9	0.0512	22.9	0.0023	24	3.2E-4	5.9	0.2
IEFS-26.1	TLC1	May '12	2.3	0.2	1090	1987	2.5E-2	50	0.0887	19.7	0.00066	6.0	2.9E-3	5.40	0.57	1.10	2694	8.7	0.0887	19.7	0.0157	94	2.0E-4	46.2	0.5
IEFS-27.1	TLC1	May '12	2.2	0.1	2931	4361	2.9E-3	100	0.0592	17.9	0.00062	6.7	8.9E-4	1.66	0.69	0.19	2897	4.6	0.0592	17.9	0.0006	352	3.3E-4	7.4	0.0
IEFS-5.1B	TLC1	May '12	2.3	0.1	5612	7194	---	100	0.0534	13.9	0.00067	5.5	5.0E-4	0.93	0.81	0.42	2749	5.1	0.0534	13.9	0.0027	15	3.6E-4	5.1	0.3
IEFS-6.1B	TLC1	May '12	1.9	0.09	1486	2675	5.5E-3	100	0.0858	18.7	0.00057	5.6	2.7E-3	5.03	0.57	2.26	3163	3.9	0.0858	18.7	0.0000	12050	2.8E-4	12.2	0.0
Snæfellsness-Knörr: IISK 27W 383104, 7191705																									
IISK-10.1B	TLC1	May '12	5.1	0.2	21587	17314	1.7E-3	41	0.0637	8.4	0.00145	6.2	1.2E-3	2.23	1.29	12	1241	4.1	0.0637	8.4	0.0041	32	7.8E-4	4.3	0.1
IISK-13.1B	TLC1	May '12	5.0	0.2	7437	4451	7.6E-3	41	0.0600	10.8	0.00146	4.4	9.4E-4	1.75	1.73	0.76	1262	4.8	0.0600	10.8	0.0065	15	6.8E-4	8.3	0.6
IISK-14.1B	TLC1	May '12	4.9	0.07	4500	14873	---	100	0.0455	6.9	0.00139	1.4	-4.6E-5	-0.09	0.31	0.24	1319	1.5	0.0455	6.9	0.0048	7	7.6E-4	1.5	0.2

[44] Errors are all 1σ; Pb_c and Pb* indicate the common and radiogeneic proportions, respectively
[45] Common Pb corrected by assuming ^{206}Pb/^{238}U-^{207}Pb/^{235}U age concordance
[46] Common Pb corrected using measured ^{204}Pb
[47] Common Pb corrected using measured ^{204}Pb

Spot	Mount	Date	7corr $^{206}Pb/^{238}U$ Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	7corr $^{204}Pb/^{206}Pb$	7corr % ^{206}c	$^{232}Th/^{238}U$	% err	Total 238 /206	% err	Total 207 /206	% err	4corr 207* /235	% err	4corr 206* /238	% err	err corr
IISK-16.1B	TLC1	May '12	5.4	0.1	9061	10082	4.5E-3	33	0.0703	12.2	0.00163	1.6	1.6E-3	3.05	0.93	1.00	1163	2.0	0.0703	12.2	0.0000	36757	7.9E-4	3.6	0.0
IISK-19.1B	TLC1	May '12	5.3	0.1	9809	9051	-1.0E-3	71	0.0496	7.8	0.00162	1.7	2.4E-4	0.44	1.12	0.34	1204	2.0	0.0496	7.8	0.0075	17	8.5E-4	2.4	0.1
IISK-21.1B	TLC1	May '12	4.7	0.10	9896	16934	7.3E-4	71	0.0486	6.4	0.00130	1.6	1.7E-4	0.31	0.60	0.10	1374	2.1	0.0486	6.4	0.0037	23	7.2E-4	2.3	0.1
IISK-23.1B	TLC1	May '12	4.8	0.08	9810	19629	6.4E-4	71	0.0449	6.4	0.00133	1.3	-8.8E-5	-0.16	0.52	1.47	1349	1.6	0.0449	6.4	0.0036	21	7.3E-4	1.8	0.1
IISK-5.1B	TLC1	May '12	5.3	0.1	19681	27706	-9.6E-4	45	0.0522	4.5	0.00154	3.4	4.1E-4	0.77	0.73	2.52	1204	2.3	0.0522	4.5	0.0077	10	8.5E-4	2.4	0.2
IISK-7.1B	TLC1	May '12	4.5	0.2	2201	6279	2.4E-3	58	0.0521	9.4	0.00126	4.7	4.0E-4	0.75	0.36	1.51	1430	4.4	0.0521	9.4	0.0014	154	6.7E-4	5.2	0.0
IISK-8.1B	TLC1	May '12	5.3	0.1	6175	6679	7.5E-4	100	0.0467	9.3	0.00156	2.0	3.8E-5	0.07	0.96	0.31	1213	1.9	0.0467	9.3	0.0040	35	8.1E-4	2.4	0.1
IISK-9.1B	TLC1	May '12	5.1	0.1	4851	9925	5.4E-4	100	0.0555	7.5	0.00146	1.7	6.3E-4	1.18	0.50	0.23	1241	2.5	0.0555	7.5	0.0052	19	8.0E-4	2.7	0.1
IISK-25.1B	TLC1	May '12	5.0	0.1	5349	15754	---	100	0.0447	6.6	0.00146	3.0	-9.6E-5	-0.18	0.35	0.25	1290	2.8	0.0447	6.6	0.0048	7	7.7E-4	2.8	0.4
Vididalsfjall: IIM 27W 521634, 7256525																									
IIMU-1.1I	JW529	Aug '11	6.4	0.3			1.1E-2	41	0.0671	11	0.00175	5.1	1.4E-3	2.65	0.667	1.33	986	4.9	0.0671	11	0.0151	30	8.0E-4	11.9	0.4
IIMU-1.2E	JW529	Aug '11	7.0	0.3			-5.9E-3	71	0.0467	19	0.00191	3.6	3.2E-5	0.06	0.574	0.56	919	4.1	0.0467	19	0.0207	41	1.2E-3	8.1	0.2
IIMU-10.1SZ	JW529	Aug '11	6.5	0.2			5.8E-3	58	0.0408	16	0.00209	3.0	-3.7E-4	-0.68	0.961	0.86	994	3.6	0.0408	16	0.0070	23	9.0E-4	7.9	0.3
IIMU-11.1I	JW529	Aug '11	6.7	0.2			1.4E-2	45	0.0585	15	0.00223	3.5	8.3E-4	1.55	0.617	0.30	941	3.1	0.0585	15	0.0236	48	7.8E-4	16.3	0.3
IIMU-12.1I	JW529	Aug '11	6.9	0.3			2.0E-3	100	0.0449	15	0.00230	3.0	-9.0E-5	-0.17	0.664	0.25	929	4.9	0.0449	15	0.0021	215	1.0E-3	6.2	0.0
IIMU-13.1I	JW529	Aug '11	7.2	0.4			4.6E-3	71	0.0416	16	0.00239	5.9	-3.1E-4	-0.59	0.663	0.28	902	5.4	0.0416	16	0.0047	30	1.0E-3	8.6	0.3
IIMU-14.1I	JW529	Aug '11	6.6	0.1			7.3E-3	50	0.0446	14	0.00215	2.9	-1.1E-4	-0.20	0.726	0.54	973	1.6	0.0446	14	0.0099	29	8.9E-4	8.1	0.3
IIMU-15.1C	JW529	Aug '11	6.9	0.2			6.2E-3	41	0.0476	10	0.00216	2.1	9.5E-5	0.18	0.675	0.18	931	2.9	0.0476	10	0.0074	14	9.5E-4	6.1	0.4
IIMU-2.1I	JW529	Aug '11	7.1	0.3			1.5E-2	45	0.0504	17	0.00197	3.7	2.8E-4	0.53	0.655	0.57	909	4.4	0.0504	17	0.0283	54	7.9E-4	18.3	0.3
IIMU-3.1SZ	JW529	Aug '11	7.0	0.2			1.3E-2	38	0.0514	13	0.00199	2.9	3.5E-4	0.66	0.657	0.24	919	3.4	0.0514	13	0.0239	41	8.1E-4	13.2	0.3
IIMU-4.1I	JW529	Aug '11	6.6	0.3			3.4E-3	100	0.0438	18	0.00173	3.9	-1.6E-4	-0.30	0.603	0.31	985	5.1	0.0438	18	0.0014	347	9.5E-4	8.6	0.0
IIMU-5.1C	JW529	Aug '11	6.9	0.1			1.4E-3	58	0.0428	7	0.00214	1.4	-2.3E-4	-0.43	1.195	1.76	942	1.9	0.0428	7	0.0032	57	1.0E-3	2.4	0.0
IIMU-7.1C	JW529	Aug '11	6.9	0.1			3.9E-3	41	0.0422	9	0.00188	1.7	-2.7E-4	-0.51	0.797	0.13	944	2.1	0.0422	9	0.0028	49	9.8E-4	3.8	0.1
IIMU-8.1I	JW529	Aug '11	6.4	0.3			1.5E-2	41	0.0380	20	0.00178	3.3	-5.5E-4	-1.03	0.660	0.26	1022	4.0	0.0380	20	0.0266	52	7.0E-4	16.5	0.3
IIMU-9.1C	JW529	Aug '11	6.6	0.7			1.8E-2	15	0.2950	5	0.00255	8.4	1.7E-2	31.50	0.522	1.90	668	10.0	0.2950	5	0.0028	312	9.9E-4	12.5	0.0
Husavikurkleif: IXH 27W 470820, 7280239																									
IXHU-1.1I	JW530	Aug '11	427	4			-1.7E-4	71	0.0602	3	0.12263	0.8	3.3E-4	0.59	1.25	0.36	15	1.0	0.0602	3	0.597	4	0.06909	1	0.3
IXHU-10.1I	JW530	Aug '11	9.9	0.5			7.8E-3	71	0.0630	18	0.00293	4.4	1.1E-3	2.12	0.52	0.48	636	4.6	0.0630	18	0.013	24	0.00134	13	0.5
IXHU-14.1I	JW530	Aug '11	10.9	0.5			1.4E-2	58	0.0298	26	0.00298	5.0	-1.1E-3	-2.08	0.43	0.59	601	4.8	0.0298	26	0.045	74	0.00121	22	0.3
IXHU-15.1I	JW530	Aug '11	10.9	0.9			-2.6E-2	41	0.0191	30	0.00293	4.7	-1.8E-3	-3.44	0.59	0.49	610	7.8	0.0191	30	0.095	30	0.00243	15	0.5
IXHU-16.1I	JW530	Aug '11	11.3	0.4			3.3E-2	38	0.0484	20	0.00339	4.7	1.4E-4	0.26	0.57	0.53	570	3.1	0.0484	20	0.111	110	0.00069	59	0.5
IXHU-17.1I	JW530	Aug '11	10.3	0.9			9.1E-3	71	0.0349	23	0.00308	4.8	-7.7E-4	-1.44	0.49	0.54	632	8.3	0.0349	23	0.023	65	0.00131	17	0.3
IXHU-18.2I	JW530	Aug '11	10.9	0.2			3.7E-3	45	0.0531	8	0.00379	4.6	4.6E-4	0.87	1.04	0.58	587	2.0	0.0531	8	0.001	438	0.00159	4	0.0
IXHU-19.1I	JW530	Aug '11	10.1	0.2			2.1E-2	50	0.0781	19	0.00277	5.1	2.2E-3	4.03	0.58	0.53	611	1.1	0.0781	19	0.057	75	0.00099	33	0.4
IXHU-2.1C	JW530	Aug '11	10.7	0.08			7.1E-4	100	0.0397	9	0.00301	1.9	-4.4E-4	-0.83	0.94	0.85	604	0.6	0.0397	9	0.007	40	0.00163	1	0.0

Spot	Mount	Date	7corr $^{206}Pb/^{238}U$ Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	7corr $^{204}Pb/^{206}Pb$	7corr % ^{206}c	$^{232}Th/^{238}U$	% err	Total 238 /206	% err	Total 207 /206	% err	4corr 207* /235	% err	4corr 206* /238	% err	err corr
IXHU-2.2E	JW530	Aug '11	9.6	0.3			4.2E-3	100	0.0481	19	0.00270	4.6	1.3E-4	0.24	0.45	0.51	667	2.8	0.0481	19	0.004	164	0.00138	9	0.1
IXHU-22.1I	JW530	Aug '11	10.1	1			2.9E-2	45	0.0598	20	0.00328	5.5	9.2E-4	1.72	0.59	1.36	629	11.4	0.0598	20	0.088	109	0.00071	56	0.5
IXHU-23.1I	JW530	Aug '11	11.8	0.2			6.2E-3	100	0.0292	30	0.00372	5.5	-1.2E-3	-2.16	0.61	0.62	560	1.4	0.0292	30	0.017	72	0.00158	13	0.2
IXHU-24.1I	JW530	Aug '11	11.2	0.4			1.2E-2	58	0.0589	18	0.00362	4.4	8.5E-4	1.60	0.51	0.52	565	3.6	0.0589	18	0.031	52	0.00137	17	0.3
IXHU-25.1I	JW530	Aug '11	11.3	0.2			-2.9E-3	100	0.0451	20	0.00362	3.9	-8.3E-5	-0.16	0.61	6.39	571	1.0	0.0451	20	0.022	46	0.00185	5	0.1
IXHU-26.1I	JW530	Aug '11	11.6	0.5			4.7E-3	100	0.0327	24	0.00365	4.9	-9.2E-4	-1.72	0.61	1.52	563	3.8	0.0327	24	0.010	38	0.00162	10	0.3
IXHU-27.1I	JW530	Aug '11	11.8	0.6			1.6E-2	50	0.0443	52	0.00378	4.4	-1.4E-4	-0.26	0.47	0.55	549	4.5	0.0443	52	0.051	65	0.00128	22	0.3
IXHU-28.1I	JW530	Aug '11	10.4	0.5			-9.1E-3	71	0.0448	21	0.00331	4.9	-9.6E-5	-0.18	0.59	0.53	620	4.7	0.0448	21	0.042	45	0.00189	11	0.2
IXHU-29.1SZ	JW530	Aug '11	12.4	0.2			4.2E-3	100	0.0518	21	0.00404	4.6	3.7E-4	0.69	0.42	0.62	516	1.2	0.0518	21	0.004	284	0.00179	9	0.0
IXHU-3.1I	JW530	Aug '11	10.9	0.9			1.3E-2	71	0.0251	33	0.00279	5.8	-1.4E-3	-2.69	0.53	1.68	608	8.6	0.0251	33	0.041	88	0.00124	25	0.3
IXHU-30.1I	JW530	Aug '11	10.9	0.2			1.7E-2	50	0.0740	18	0.00370	4.6	1.9E-3	3.50	0.48	1.59	568	1.2	0.0740	18	0.048	61	0.00118	24	0.4
IXHU-31.1I	JW530	Aug '11	10.7	0.4			8.4E-3	71	0.0772	17	0.00344	4.6	2.1E-3	3.91	0.65	0.49	576	3.6	0.0772	17	0.013	33	0.00146	14	0.4
IXHU-32.1I	JW530	Aug '11	11.4	0.2			-4.2E-3	100	0.0306	24	0.00354	4.6	-1.1E-3	-1.98	0.54	0.53	577	1.1	0.0306	24	0.023	62	0.00187	7	0.1
IXHU-33.1I	JW530	Aug '11	9.5	1			6.7E-2	28	0.0422	22	0.00299	5.2	-2.7E-4	-0.51	0.39	0.61	680	12.1	0.0422	22	-0.203	183	-0.00036	144	0.8
IXHU-34.1I	JW530	Aug '11	10.1	0.2			6.4E-3	100	0.0482	24	0.00313	5.7	1.3E-4	0.24	0.37	0.73	634	1.3	0.0482	24	0.011	33	0.00139	14	0.4
IXHU-35.1I	JW530	Aug '11	10.1	0.3			----	---	0.0318	24	0.00311	4.8	-9.8E-4	-1.83	0.59	0.50	649	2.7	0.0318	24	0.007	25	0.00154	3	0.1
IXHU-36.1I	JW530	Aug '11	11.9	0.2			2.8E-2	38	0.0320	23	0.00378	4.4	-9.7E-4	-1.81	0.61	0.51	549	1.2	0.0320	23	0.102	87	0.00087	42	0.5
IXHU-37.1I	JW530	Aug '11	10.0	0.4			1.4E-2	58	0.0455	20	0.00339	4.8	-4.8E-5	-0.09	0.42	0.59	646	3.8	0.0455	20	0.035	65	0.00116	20	0.3
IXHU-4.4I	JW530	Aug '11	10.1	0.5			----	---	0.0427	17	0.00325	3.4	-2.4E-4	-0.45	0.72	1.25	642	5.2	0.0427	17	0.009	18	0.00156	5	0.3
IXHU-5.1I	JW530	Aug '11	9.9	0.6			2.0E-2	50	0.0492	20	0.00288	4.9	2.0E-4	0.38	0.51	0.53	648	5.6	0.0492	20	0.055	76	0.00098	29	0.4
IXHU-6.1I	JW530	Aug '11	10.8	0.1			2.6E-3	71	0.0547	11	0.00370	2.5	5.7E-4	1.07	0.84	1.36	589	0.8	0.0547	11	0.003	191	0.00162	4	0.0
IXHU-7.1I	JW530	Aug '11	11.2	0.3			7.9E-3	71	0.0392	20	0.00342	4.4	-4.8E-4	-0.90	0.56	0.50	578	2.1	0.0392	20	0.020	52	0.00148	12	0.2
IXHU-8.1I	JW530	Aug '11	10.0	0.5			1.1E-2	71	0.0583	20	0.00283	5.3	8.1E-4	1.52	0.35	0.66	632	4.4	0.0583	20	0.025	57	0.00126	19	0.3
Tjörnes: IXT 28W 397693, 7334527																									
IXT-1.1I	JW529	Aug '11	9.9	0.4			5.2E-3	71	0.0522	16	0.00285	3.6	4.0E-4	0.75	0.631	0.36	647	4.3	0.0522	16	0.0062	57	1.4E-3	8.7	0.2
IXT-2.2I	JW529	Aug '11	4.9	0.5			1.3E-2	58	0.0680	18	0.00147	4.7	1.5E-3	2.77	0.681	0.33	1282	11.0	0.0680	18	0.0152	55	5.9E-4	22.2	0.4
IXT-21.1I	JW529	Aug '11	6.8	0.4			1.7E-2	71	0.0576	25	0.00214	6.4	7.7E-4	1.44	0.420	0.63	930	5.4	0.0576	25	0.0319	93	7.2E-4	34.8	0.4
IXT-22.1I	JW529	Aug '11	6.4	0.2			----	---	0.0616	21	0.00213	5.5	1.0E-3	1.95	0.571	0.49	984	2.4	0.0616	21	0.0086	21	1.0E-3	2.4	0.1
IXTU-23.1I	JW529	Aug '11	6.6	0.7			6.3E-2	29	0.3006	10	0.00323	11.3	1.7E-2	32.21	0.942	1.18	660	8.6	0.3006	10	-0.1414	258	-2.6E-4	202.3	0.8
IXTU-24.1I	JW529	Aug '11	5.8	0.2			----	---	0.0428	25	0.00189	5.7	-2.3E-4	-0.43	0.541	0.98	1121	4.0	0.0428	25	0.0053	25	8.9E-4	4.0	0.2
IXTU-25.1I	JW529	Aug '11	5.7	0.7			4.0E-2	36	0.0567	19	0.00226	10.4	7.2E-4	1.34	0.623	0.96	1107	12.5	0.0567	19	0.0705	171	2.3E-4	104.5	0.6
IXTU-26.1I	JW529	Aug '11	5.3	0.1			1.9E-2	58	0.0616	21	0.00174	5.6	1.0E-3	1.96	0.638	0.42	1198	1.0	0.0616	21	0.0268	81	5.4E-4	31.6	0.4

Spot	Mount	Date	^{7}corr ^{206}Pb/^{238}U Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	^{7}corr ^{204}Pb/^{206}Pb	^{7}corr % ^{206}c	^{232}Th/^{238}U	% err	Total 238 /206	% err	Total 207 /206	% err	^{4}corr 207* /235	% err	^{4}corr 206* /238	% err	err corr
IXTU-27.1I	JW529	Aug '11	6.3	0.10			----	---	0.0462	21	0.00203	4.8	-2.2E-6	0.00	0.582	0.41	1020	1.0	0.0462	21	0.0062	21	9.8E-4	1.0	0.0
IXTU-28.1I	JW529	Aug '11	6.4	0.1			2.5E-2	32	0.0487	17	0.00220	3.5	1.7E-4	0.32	0.762	0.29	1010	1.5	0.0487	17	0.0471	62	5.2E-4	28.4	0.5
IXTU-29.1I	JW529	Aug '11	5.9	0.4			7.1E-3	100	0.0942	52	0.00203	5.9	3.3E-3	6.08	0.612	0.49	1025	3.1	0.0942	52	0.0022	543	8.5E-4	15.6	0.0
IXTU-3.2C	JW529	Aug '11	7.9	0.3			---	---	0.0551	19	0.00219	4.0	6.0E-4	1.13	0.739	1.84	810	3.0	0.0551	19	0.0094	19	1.2E-3	3.0	0.2
IXTU-30.1I	JW529	Aug '11	5.5	0.4			2.9E-2	41	0.0630	20	0.00178	4.9	1.1E-3	2.13	0.464	0.42	1143	6.9	0.0630	20	0.0470	96	4.0E-4	49.0	0.5
IXTU-31.1I	JW529	Aug '11	5.8	0.2			-3.9E-3	100	0.0584	19	0.00181	4.4	8.3E-4	1.55	0.873	2.60	1100	3.3	0.0584	19	0.0150	46	9.8E-4	7.6	0.2
IXTU-32.1I	JW529	Aug '11	11.2	0.6			-7.2E-3	71	0.0273	23	0.00357	4.3	-1.3E-3	-2.40	0.551	0.49	591	5.1	0.0273	23	0.0328	50	1.9E-3	9.8	0.2
IXTU-4.1I	JW529	Aug '11	7.0	0.3			5.1E-3	45	0.0515	10	0.00217	2.2	3.6E-4	0.67	0.910	0.81	915	4.0	0.0515	10	0.0042	38	9.9E-4	6.2	0.2
IXTU-5.2I	JW529	Aug '11	6.8	0.6			8.3E-3	71	0.0626	20	0.00216	4.6	1.1E-3	2.08	0.702	0.85	924	8.0	0.0626	20	0.0100	30	9.2E-4	15.2	0.5
IXTU-6.1I	JW529	Aug '11	5.9	0.3			8.6E-3	71	0.0602	19	0.00200	4.7	9.5E-4	1.78	0.525	2.01	1072	5.6	0.0602	19	0.0095	34	7.8E-4	14.6	0.4
IXTU-8.1C	JW529	Aug '11	5.5	0.5			1.9E-2	58	0.0768	19	0.00180	5.7	2.1E-3	3.87	0.626	0.45	1118	9.4	0.0768	19	0.0263	75	5.8E-4	32.2	0.4
IXTU-9.1SZ	JW529	Aug '11	5.9	0.10			2.5E-2	50	0.0378	26	0.00174	5.6	-5.7E-4	-1.06	0.660	0.43	1100	1.0	0.0378	26	0.0447	100	4.8E-4	44.8	0.4
IXTU-10.1I	JW530	Aug '11	7.1	0.09			1.0E-2	50	0.0570	15	0.00196	3.5	7.3E-4	1.37	0.58	0.31	898	0.8	0.0570	15	0.016	37	0.00090	12	0.3
IXTU-11.1I	JW530	Aug '11	5.6	0.2			2.1E-2	58	0.0528	23	0.00154	5.9	4.5E-4	0.84	0.62	3.63	1141	4.2	0.0528	23	0.032	90	0.00054	36	0.4
IXTU-12.1C	JW530	Aug '11	5.8	0.2			1.8E-3	100	0.0511	35	0.00178	3.0	3.3E-4	0.62	0.93	0.21	1096	1.8	0.0511	35	0.003	141	0.00088	4	0.0
IXTU-13.1I	JW530	Aug '11	4.4	0.2			1.6E-2	71	0.0848	21	0.00138	6.3	2.6E-3	4.89	0.47	0.49	1402	2.6	0.0848	21	0.017	75	0.00049	32	0.4
IXTU-14.1I	JW530	Aug '11	9.3	0.2			4.0E-3	100	0.0676	18	0.00284	4.4	1.4E-3	2.71	0.58	0.46	676	1.0	0.0676	18	0.001	1094	0.00137	8	0.0
IXTU-15.1I	JW530	Aug '11	4.9	0.4			5.4E-2	45	0.0717	25	0.00157	7.5	1.7E-3	3.23	1.10	1.53	1277	8.6	0.0717	25	-0.084	4332	-0.00001	3088	0.7
IXTU-16.1C	JW530	Aug '11	6.0	0.1			1.1E-2	32	0.1929	6	0.00195	5.4	9.9E-3	18.57	1.45	6.38	881	1.5	0.1929	6	0.004	180	0.00091	8	0.0
IXTU-17.1E	JW530	Aug '11	5.0	0.2			6.7E-3	100	0.0581	22	0.00178	5.7	8.1E-4	1.51	0.78	0.41	1267	3.2	0.0581	22	0.005	33	0.00069	15	0.4
IXTU-19.1I	JW530	Aug '11	5.3	0.08			4.8E-3	38	0.0566	8	0.00160	1.8	7.1E-4	1.32	1.00	12	1199	1.4	0.0566	8	0.002	74	0.00076	4	0.1
IXTU-20.2C	JW530	Aug '11	5.4	0.07			1.0E-2	50	0.0528	16	0.00118	3.6	4.5E-4	0.83	1.17	3.25	1190	0.7	0.0528	16	0.013	41	0.00068	12	0.3
Midá: ISMi* 28W 464561, 7211545																									
IS-MI-1.1_I_UPB	JW508	Feb '11	6.1	0.3	36896	52932	5.9E-3	100	0.059	21	0.00261	5.4	8.4E-4	1.57	0.72	0.44	1032	5.1	0.059	21	0.0045	72	8.6E-4	13	0.2
IS-MI-10.1_C_UPB	JW508	Feb '11	4.7	0.1	19985	32467	2.1E-2	71	0.062	27	0.00169	7.0	1.1E-3	2.03	0.64	1.05	1338	1.7	0.062	27	0.0272	110	4.6E-4	45	0.4
IS-MI-11.1_I_UPB	JW508	Feb '11	5.0	0.8	40099	59468	5.5E-3	100	0.049	22	0.00165	5.6	1.8E-4	0.33	0.70	0.40	1296	16.4	0.049	22	0.0040	39	6.9E-4	20	0.5
IS-MI-14.1_UPB	JW508	Feb '11	4.4	1	20892	29353	6.7E-3	100	0.147	16	0.00189	25.1	6.9E-3	12.83	0.74	0.44	1290	29.1	0.147	16	0.0045	242	6.8E-4	32	0.1
IS-MI-15.1_UPB	JW508	Feb '11	6.3	0.8	13387	29381	-1.7E-2	71	0.044	28	0.00226	6.8	-1.4E-4	-0.26	0.47	1.42	1033	12.3	0.044	28	0.0413	49	1.3E-3	21	0.4
IS-MI-16.1_UPB	JW508	Feb '11	5.6	0.2	311702	292259	1.1E-3	100	0.031	13	0.00196	2.3	-1.0E-3	-1.90	1.10	0.15	1171	2.9	0.031	13	0.0017	123	8.4E-4	4	0.0
IS-MI-17.1_UPB	JW508	Feb '11	5.4	0.1	98741	94696	3.4E-3	100	0.051	19	0.00199	4.1	3.6E-4	0.67	1.08	1.11	1174	1.5	0.051	19	0.0002	3087	8.0E-4	7	0.0

Spot	Mount	Date	7corr $^{206}Pb/^{238}U$ Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	7corr $^{204}Pb/^{206}Pb$	7corr % ^{206}c	$^{232}Th/^{238}U$	% err	Total 238 /206	% err	Total 207 /206	% err	4corr 207* /235	% err	4corr 206* /238	% err	err corr
IS-MI-18.1_UPB	JW508	Feb '11	4.9	0.5	24910	46536	---	100	0.047	26	0.00172	6.4	4.1E-5	0.08	0.55	0.49	1311	9.5	0.047	26	0.0049	28	7.6E-4	9	0.3
IS-MI-2.1_UPB	JW508	Feb '11	4.7	0.5	13097	37869	---	100	0.069	27	0.00180	7.6	1.5E-3	2.86	0.36	0.70	1335	9.7	0.069	27	0.0071	28	7.5E-4	10	0.3
IS-MI-21.3_UPB	JW508	Feb '11	6.3	0.2	104826	147137	4.9E-3	71	0.041	17	0.00238	3.5	-3.4E-4	-0.63	0.74	0.28	1024	3.3	0.041	17	0.0047	22	8.9E-4	8	0.4
IS-MI-22.1_C_UPB	JW508	Feb '11	5.4	0.5	137604	162515	-2.1E-3	100	0.039	17	0.00182	9.0	-5.0E-4	-0.93	0.87	0.45	1201	9.7	0.039	17	0.0083	44	8.7E-4	10	0.2
IS-MI-23.1_C_UPB	JW508	Feb '11	5.1	0.3	18601	35915	7.9E-3	100	0.063	23	0.00183	6.2	1.2E-3	2.17	0.53	0.50	1227	5.0	0.063	23	0.0068	33	6.9E-4	18	0.6
IS-MI-23.2_I_UPB	JW508	Feb '11	5.8	0.7	14300	32646	2.8E-2	58	0.074	23	0.00216	6.9	1.9E-3	3.53	0.45	0.64	1073	11.0	0.074	23	0.0463	126	4.5E-4	64	0.5
IS-MI-24.2_DC_UPB	JW508	Feb '11	6.9	0.3	520161	446862	6.1E-4	100	0.055	7	0.00281	6.0	5.9E-4	1.11	1.20	0.65	925	4.5	0.055	7	0.0068	22	1.1E-3	5	0.2
IS-MI-5.1_UPB	JW508	Feb '11	4.8	0.09	46915	71630	----	---	0.053	21	0.00160	5.2	4.9E-4	0.91	0.68	0.37	1336	1.3	0.053	21	0.0055	21	7.5E-4	1	0.1
IS-MI-56.1_UPB	JW508	Feb '11	5.3	0.3	29389	53181	-8.2E-3	100	0.021	40	0.00182	6.4	-1.7E-3	-3.16	0.57	0.51	1247	4.7	0.021	40	0.0164	74	9.2E-4	14	0.2
IS-MI-57.1_UPB	JW508	Feb '11	6.1	0.2	22623	41478	---	100	0.053	26	0.00220	6.3	4.4E-4	0.82	0.56	0.54	1041	3.6	0.053	26	0.0070	26	9.6E-4	4	0.1
IS-MI-58.1_UPB	JW508	Feb '11	6.3	0.1	57957	70287	-1.5E-2	58	0.033	25	0.00239	5.0	-9.0E-4	-1.68	0.85	0.38	1036	1.4	0.033	25	0.0355	40	1.2E-3	13	0.3
IS-MI-59.1_UPB	JW508	Feb '11	5.9	0.6	34138	54669	5.8E-3	100	0.044	24	0.00220	5.4	-1.8E-4	-0.33	0.65	0.44	1092	9.2	0.044	24	0.0059	33	8.2E-4	15	0.5
IS-MI-6.1_UPB	JW508	Feb '11	5.6	0.8	8716	19817	---	100	0.063	27	0.00210	7.4	1.1E-3	2.13	0.45	0.67	1123	13.6	0.063	27	0.0077	30	8.9E-4	14	0.5
IS-MI-60.1_UPB	JW508	Feb '11	0.1	0.09	346381	555992	2.5E+0	100	2.000	87	-0.00001	70.7	1.3E-1	247.45	0.64	0.47	-170063	77.5	2.000	87	0.0301	128	2.7E-4	128	1.0
IS-MI-61.1_UPB	JW508	Feb '11	6.7	0.08	189425	190044	1.5E-3	100	0.054	12	0.00267	2.7	5.5E-4	1.03	1.03	1.15	949	0.9	0.054	12	0.0044	80	1.0E-3	3	0.0
IS-MI-63.1_UPB	JW508	Feb '11	4.6	0.6	28988	48015	-9.3E-3	100	0.061	25	0.00170	7.0	1.0E-3	1.90	0.62	0.50	1369	12.9	0.061	25	0.0207	59	8.6E-4	20	0.3
IS-MI-64.1_UPB	JW508	Feb '11	6.3	0.3	76977	94697	3.2E-3	100	0.059	17	0.00236	4.0	8.7E-4	1.63	0.84	0.62	1008	5.4	0.059	17	0.0011	611	9.3E-4	8	0.0
IS-MI-64.2_E_UPB	JW508	Feb '11	5.5	0.4	3688	9571	---	100	0.096	29	0.00213	9.7	3.4E-3	6.37	0.40	0.93	1094	5.8	0.096	29	0.0122	30	9.1E-4	6	0.2
IS-MI-65.1_UPB	JW508	Feb '11	5.4	0.2	18651	34270	-9.8E-3	100	0.033	35	0.00192	7.0	-8.6E-4	-1.61	0.56	0.56	1206	3.2	0.033	35	0.0214	69	9.8E-4	16	0.2
IS-MI-66.1_UPB	JW508	Feb '11	5.9	0.5	22818	41593	7.3E-3	100	0.038	28	0.00214	6.1	-5.4E-4	-1.02	0.57	1.08	1098	8.0	0.038	28	0.0096	70	7.9E-4	18	0.3
IS-MI-67.1_UPB	JW508	Feb '11	5.8	0.2	36468	65873	5.1E-3	100	0.058	19	0.00220	5.0	8.0E-4	1.50	0.57	0.43	1093	3.0	0.058	19	0.0028	162	8.3E-4	11	0.1
IS-MI-69.1_UPB	JW508	Feb '11	5.8	0.07	67678	94418	-7.3E-3	71	0.035	21	0.00209	4.2	-7.7E-4	-1.44	0.74	0.74	1118	0.7	0.035	21	0.0183	47	1.0E-3	9	0.2
IS-MI-7.1_UPB	JW508	Feb '11	4.5	0.5	17863	33167	2.2E-2	71	0.054	29	0.00169	7.6	5.2E-4	0.97	0.56	0.57	1411	11.0	0.054	29	0.0276	116	4.2E-4	49	0.4
IS-MI-70.1_UPB	JW508	Feb '11	6.1	0.4	100885	103061	4.9E-3	71	0.073	64	0.00229	3.5	1.8E-3	3.43	1.01	0.25	1018	3.0	0.073	64	0.0005	2041	8.9E-4	8	0.0
IS-MI-71.1_UPB	JW508	Feb '11	4.5	0.3	10239	23054	1.6E-2	100	0.062	33	0.00168	8.8	1.1E-3	2.05	0.46	0.72	1417	5.3	0.062	33	0.0176	115	5.0E-4	42	0.4
IS-MI-72.1_UPB	JW508	Feb '11	6.2	0.4	30460	53473	---	100	0.044	25	0.00232	5.7	-1.5E-4	-0.29	0.59	0.48	1034	6.1	0.044	25	0.0059	26	9.7E-4	6	0.2
IS-MI-73.1_UPB	JW508	Feb '11	6.5	0.7	111694	113171	3.1E-3	100	0.025	22	0.00235	7.9	-1.4E-3	-2.65	1.02	1.27	1025	10.2	0.025	22	0.0030	28	9.2E-4	12	0.4
IS-MI-74.1_UPB	JW508	Feb '11	5.1	0.7	8649	18053	1.3E-2	100	0.080	26	0.00195	8.2	2.3E-3	4.33	0.49	0.70	1201	12.4	0.080	26	0.0133	72	6.4E-4	33	0.5
IS-MI-75.1_UPB	JW508	Feb '11	6.8	0.1	139752	198753	---	100	0.056	11	0.00257	2.7	6.9E-4	1.28	0.73	0.22	930	1.5	0.056	11	0.0083	12	1.1E-3	2	0.1
IS-MI-8.1_UPB	JW508	Feb '11	5.6	0.2	6571	13776	---	100	0.064	30	0.00199	8.3	1.2E-3	2.25	0.49	0.74	1126	1.1	0.064	30	0.0078	30	8.9E-4	1	0.0
IS-MI-9.1_DC_UPB	JW508	Feb '11	6.2	0.06	69719	97225	-6.8E-3	71	0.027	23	0.00200	4.1	-1.3E-3	-2.44	0.74	0.89	1071	0.7	0.027	23	0.0172	49	1.1E-3	8	0.2

Spot	Mount	Date	^7corr $^{206}Pb/^{238}U$ Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	^7corr $^{204}Pb/^{206}Pb$	^7corr % ^{206}c	$^{232}Th/^{238}U$	% err	Total 238 /206	% err	Total 207 /206	% err	^4corr 207* /235	% err	^4corr 206* /238	% err	err corr
Markarfljót ISM* 27W 552381, 7059713																									
IS-M499-2.1BPb	JW499	Dec '10	0.1	0.07	3084	10069	---	100	0.400	84	0.00006	44.7	0.0240	44.82	0.316	0.88	41381	36.2	0.400	84	0.0013	91	2.4E-5	36	0.4
IS-M499-3.1BPb	JW499	Dec '10	0.1	0.05	4646	16719	----	---	0.273	92	0.00003	42.6	0.0153	28.71	0.287	0.70	56231	33.5	0.273	92	0.0007	98	1.8E-5	33	0.3
Fjardarsá: ISFjar* 28W 500225, 7131316																									
IS-FJAR-1.1Pb	JW499	Dec '10	6.5	0.5	18025	35777	----	---	0.054	19	0.00132	4.7	0.0005	1.02	0.520	0.36	976	7.8	0.054	19	0.0077	20	1.0E-3	8	0.4
IS-FJAR-10.1Pb	JW499	Dec '10	5.3	0.2	3426	9551	----	---	0.064	29	0.00154	8.1	0.0012	2.23	0.371	2.34	1190	2.2	0.064	29	0.0074	29	8.4E-4	2	0.1
IS-FJAR-11.1Pb	JW499	Dec '10	7.3	0.4	55972	109778	2.0E-3	100	0.037	18	0.00160	8.2	-0.0007	-1.23	0.527	0.26	893	5.2	0.037	18	0.0007	722	1.1E-3	7	0.0
IS-FJAR-12.1Pb	JW499	Dec '10	5.3	0.2	18036	32976	---	100	0.066	19	0.00155	5.2	0.0014	2.55	0.565	0.40	1185	4.3	0.066	19	0.0077	19	8.4E-4	4	0.2
IS-FJAR-13.1Pb	JW499	Dec '10	6.1	0.6	12884	23440	8.8E-3	100	0.060	25	0.00150	6.6	0.0009	1.69	0.568	1.30	1043	10.0	0.060	25	0.0102	52	8.0E-4	22	0.4
IS-FJAR-14.1Pb	JW499	Dec '10	6.1	0.7	28428	42796	8.6E-3	71	0.074	45	0.00170	4.6	0.0019	3.53	0.686	0.75	1015	10.5	0.074	45	0.0083	57	8.3E-4	17	0.3
IS-FJAR-15.1Pb	JW499	Dec '10	5.0	0.2	380697	469267	1.4E-3	71	0.045	9	0.00145	4.2	-0.0001	-0.13	0.838	0.12	1303	3.2	0.045	9	0.0024	69	7.5E-4	4	0.1
IS-FJAR-16.2Pb	JW499	Dec '10	6.3	0.5	232534	294319	2.5E-3	58	0.071	8	0.00199	2.1	0.0017	3.15	0.816	0.16	986	8.5	0.071	8	0.0045	70	9.7E-4	9	0.1
IS-FJAR-17.1Pb	JW499	Dec '10	5.2	0.09	174101	332315	2.2E-3	71	0.042	12	0.00165	2.3	-0.0003	-0.53	0.541	0.49	1255	1.5	0.042	12	0.0009	302	7.6E-4	3	0.0
IS-FJAR-18.1Pb	JW499	Dec '10	5.5	0.3	30448	47462	1.1E-2	71	0.050	22	0.00196	5.3	0.0003	0.48	0.663	0.41	1164	5.0	0.050	22	0.0150	65	6.8E-4	20	0.3
IS-FJAR-19.1Pb	JW499	Dec '10	5.1	0.1	151445	273191	3.7E-3	58	0.057	10	0.00150	6.6	0.0007	1.37	0.573	0.92	1248	2.0	0.057	10	0.0000	7973	7.5E-4	5	0.0
IS-FJAR-2.1Pb	JW499	Dec '10	6.3	0.3	193329	262223	1.7E-3	71	0.053	9	0.00164	5.3	0.0004	0.81	0.762	1.67	1019	5.4	0.053	9	0.0036	68	9.5E-4	6	0.1
IS-FJAR-20.1Pb	JW499	Dec '10	5.9	0.2	16952	30915	---	100	0.070	20	0.00177	5.6	0.0016	2.99	0.566	0.45	1063	1.9	0.070	20	0.0091	20	9.4E-4	2	0.1
IS-FJAR-21.1Pb	JW499	Dec '10	6.6	0.1	25710	47364	3.8E-3	100	0.041	20	0.00196	4.4	-0.0004	-0.71	0.561	1.82	987	1.8	0.041	20	0.0027	114	9.4E-4	8	0.1
IS-FJAR-22.1Pb	JW499	Dec '10	7.6	1	1106	4277	---	100	0.054	36	0.00213	9.4	0.0005	1.01	0.267	2.39	837	19.2	0.054	36	0.0089	41	1.2E-3	19	0.5
IS-FJAR-23.1Pb	JW499	Dec '10	7.6	0.8	10138	19417	-5.3E-3	100	0.093	63	0.00195	5.1	0.0031	5.87	0.539	0.95	796	6.6	0.093	63	0.0303	52	1.4E-3	11	0.2
IS-FJAR-24.1Pb	JW499	Dec '10	6.2	0.6	32456	65336	9.4E-3	71	0.042	22	0.00168	14.5	-0.0003	-0.49	0.513	1.03	1040	9.7	0.042	22	0.0139	61	7.9E-4	18	0.3
IS-FJAR-25.1Pb	JW499	Dec '10	6.5	0.2	39807	58648	---	100	0.066	19	0.00173	10.9	0.0013	2.52	0.701	0.35	963	1.8	0.066	19	0.0095	19	1.0E-3	2	0.1
IS-FJAR-26.1Pb	JW499	Dec '10	5.4	0.7	8495	20572	2.1E-2	71	0.051	30	0.00163	19.2	0.0003	0.64	0.427	0.63	1187	13.4	0.051	30	0.0328	116	5.1E-4	49	0.4
IS-FJAR-27.1Pb	JW499	Dec '10	6.5	0.2	16674	29399	-8.2E-3	100	0.047	27	0.00191	6.4	0.0000	0.07	0.586	0.52	997	2.1	0.047	27	0.0243	62	1.2E-3	14	0.2
IS-FJAR-3.1Pb	JW499	Dec '10	5.9	0.6	5585	9864	2.8E-2	71	0.036	40	0.00164	8.4	-0.0007	-1.30	0.585	0.64	1097	10.7	0.036	40	0.0498	160	4.4E-4	77	0.5
IS-FJAR-4.1Pb	JW499	Dec '10	6.5	1	12873	25628	8.1E-3	71	0.172	70	0.00210	12.6	0.0085	15.92	0.519	4.50	831	9.3	0.172	70	0.0076	323	1.0E-3	16	0.0
IS-FJAR-5.1Pb	JW499	Dec '10	5.7	0.1	17986	32937	7.1E-3	100	0.035	29	0.00178	6.0	-0.0008	-1.41	0.564	1.22	1138	2.0	0.035	29	0.0093	73	7.6E-4	16	0.2
IS-FJAR-6.1Pb	JW499	Dec '10	5.2	0.2	130424	212906	7.8E-3	45	0.045	13	0.00131	2.8	-0.0001	-0.16	0.633	0.59	1235	4.0	0.045	13	0.0087	29	6.9E-4	9	0.3
IS-FJAR-7.1Pb	JW499	Dec '10	6.2	0.4	10226	24418	---	100	0.066	24	0.00156	6.7	0.0014	2.54	0.433	0.56	1007	6.6	0.066	24	0.0091	25	9.9E-4	7	0.3
IS-FJAR-8.1Pb	JW499	Dec '10	5.7	0.2	56061	76141	6.7E-3	71	0.059	17	0.00170	4.1	0.0009	1.68	0.761	0.29	1119	2.8	0.059	17	0.0056	27	7.8E-4	11	0.4
IS-FJAR-9.2Pb	JW499	Dec '10	5.9	0.2	20210	46148	-4.1E-3	100	0.041	20	0.00173	4.6	-0.0003	-0.63	0.452	0.40	1094	2.6	0.041	20	0.0133	55	9.8E-4	8	0.1
Jökulsá í Lóni: ISJL* 28W 505478, 7144079																									
IS-JL499-1.1Pb	JW499	Dec '10	3.5	2	837	1660	2.4E-1	47	0.049	65	0.00113	49.1	0.0002	0.33	0.521	1.07	1813	67.8	0.049	65	-0.2861	91	-2.0E-3	91	1.0
IS-JL499-10.1Pb	JW499	Dec '10	1.7	0.2	12231	20799	----	---	0.119	34	0.00048	13.0	0.0049	9.21	0.607	0.53	3496	7.4	0.119	34	0.0047	35	2.9E-4	7	0.2

Spot	Mount	Date	^{7}corr ^{206}Pb/^{238}U Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	^{7}corr ^{204}Pb/^{206}Pb	^{7}corr % ^{206}c	^{232}Th/^{238}U	% err	Total 238 /206	% err	Total 207 /206	% err	^{4}corr 207* /235	% err	^{4}corr 206* /238	% err	err corr
IS-JL499-11.1Pb	JW499	Dec '10	4.8	0.3	2017	5410	-2.2E-2	100	0.048	44	0.00139	10.5	0.0001	0.24	0.385	0.85	1326	6.0	0.048	44	0.0405	66	1.1E-3	30	0.4
IS-JL499-12.1Pb	JW499	Dec '10	4.0	0.3	3983	8040	-2.3E-2	100	0.078	36	0.00123	10.9	0.0021	3.99	0.512	2.17	1555	7.2	0.078	36	0.0385	61	9.2E-4	31	0.5
IS-JL499-13.1Pb	JW499	Dec '10	4.6	0.5	11804	18417	2.4E-2	71	0.072	27	0.00135	7.9	0.0017	3.24	0.662	1.79	1360	9.7	0.072	27	0.0306	126	4.1E-4	58	0.5
IS-JL499-14.1Pb	JW499	Dec '10	3.8	0.3	79427	126661	4.3E-3	100	0.056	20	0.00155	4.7	0.0007	1.30	0.648	1.29	1659	7.8	0.056	20	0.0009	426	5.5E-4	12	0.0
IS-JL499-15.1Pb	JW499	Dec '10	4.6	1	2546	4909	2.5E-2	101	0.061	42	0.00147	11.5	0.0010	1.86	0.536	2.29	1376	23.4	0.061	42	0.0336	197	3.8E-4	94	0.5
IS-JL499-2.1Pb	JW499	Dec '10	4.1	2	1721	5524	2.6E-2	101	0.084	37	0.00163	33.6	0.0025	4.76	0.322	1.05	1490	45.6	0.084	37	0.0301	202	3.4E-4	106	0.5
IS-JL499-3.1Pb	JW499	Dec '10	3.9	1	5219	11017	---	100	0.081	31	0.00118	9.9	0.0024	4.40	0.489	0.66	1566	27.7	0.081	31	0.0071	42	6.4E-4	28	0.7
IS-JL499-4.1Pb	JW499	Dec '10	2.3	0.2	53049	83676	---	100	0.078	23	0.00063	6.8	0.0021	4.01	0.655	0.31	2688	10.1	0.078	23	0.0040	25	3.7E-4	10	0.4
IS-JL499-5.1Pb	JW499	Dec '10	3.8	0.2	4011	7180	----	---	0.081	44	0.00132	14.5	0.0024	4.47	0.577	0.96	1600	3.1	0.081	44	0.0070	44	6.2E-4	3	0.1
IS-JL499-6.1Pb	JW499	Dec '10	2.1	0.1	6732	12650	----	---	0.085	41	0.00061	12.8	0.0027	4.98	0.550	0.61	2943	2.2	0.085	41	0.0040	41	3.4E-4	2	0.1
IS-JL499-7.1Pb	JW499	Dec '10	6.1	0.2	49756	83183	-1.0E-2	71	0.030	26	0.00143	5.0	-0.0011	-2.01	0.618	0.36	1069	3.9	0.030	26	0.0243	50	1.1E-3	12	0.2
IS-JL499-8.1Pb	JW499	Dec '10	6.2	2	545	1217	5.5E-2	101	0.153	41	0.00177	16.8	0.0073	13.56	0.463	1.47	899	28.3	0.153	41	-0.1077	6168	-2.6E-5	4423	0.7
IS-JL499-9.2Pb	JW499	Dec '10	2.6	0.2	20216	43062	4.4E-2	71	0.070	37	0.00052	10.2	0.0016	3.01	0.485	1.39	2432	5.5	0.070	37	0.0348	497	7.5E-5	318	0.6
Krossá-Kækjudalsá: ISKK 28W 553667, 7260140																									
ISKK-1.1	TLC2	Jan '13	12.8	0.5	146	192	-2.9E-3	71	0.0555	15	0.00415	3.4	6.2E-4	1.17	0.70	1.41	499	3.8	0.0555	15	0.0277	30	0.00211	5.2	0.18
ISKK-10.1	TLC2	Jan '13	13.4	0.3	61	119	---	100	0.0414	20	0.00396	4.4	-3.3E-4	-0.62	0.46	0.52	482	2.1	0.0414	20	0.0118	20	0.00207	2.1	0.11
ISKK-11.1	TLC2	Jan '13	13.0	2	1082	1260	9.1E-3	16	0.2656	32	0.00619	6.2	1.5E-2	27.75	0.79	0.55	359	2.6	0.2656	32	0.0476	71	0.00231	4.2	0.06
ISKK-12.1	TLC2	Jan '13	12.9	0.6	378	464	2.7E-3	50	0.0502	10	0.00403	5.5	2.7E-4	0.50	0.74	1.28	498	4.7	0.0502	10	0.0024	251	0.00191	5.4	0.02
ISKK-13.1	TLC2	Jan '13	12.3	0.2	320	697	1.7E-3	50	0.0479	9	0.00409	1.9	1.1E-4	0.20	0.42	0.23	521	1.9	0.0479	9	0.0055	67	0.00186	2.6	0.04
ISKK-14.1	TLC2	Jan '13	13.2	0.3	1250	1085	5.3E-4	71	0.0500	7	0.00482	4.8	2.5E-4	0.46	1.07	0.78	485	2.6	0.0500	7	0.0119	16	0.00204	2.6	0.17
ISKK-15.1	TLC2	Jan '13	12.8	0.6	71	139	9.0E-3	50	0.0423	19	0.00411	4.3	-2.7E-4	-0.51	0.47	0.50	506	4.6	0.0423	19	0.0267	41	0.00164	11.1	0.27
ISKK-16.1	TLC2	Jan '13	14.9	0.4	43	71	3.5E-3	100	0.0616	20	0.00473	5.3	1.0E-3	1.93	0.56	0.62	424	2.3	0.0616	20	0.0023	780	0.00220	7.3	0.01
ISKK-17.1	TLC2	Jan '13	13.5	0.3	53	108	2.7E-3	100	0.0502	19	0.00388	4.6	2.6E-4	0.49	0.45	0.55	473	2.2	0.0502	19	0.0023	550	0.00201	5.8	0.01
ISKK-18.1	TLC2	Jan '13	12.2	0.4	197	249	---	100	0.0593	13	0.00433	3.1	8.8E-4	1.65	0.74	1.20	518	3.3	0.0593	13	0.0158	13	0.00193	3.3	0.25
ISKK-19.1	TLC2	Jan '13	12.1	0.3	37	67	8.7E-3	71	0.0491	25	0.00381	5.9	1.9E-4	0.35	0.52	1.90	531	2.3	0.0491	25	0.0224	49	0.00158	13.9	0.29
ISKK-2.1	TLC2	Jan '13	15.0	0.9	19	51	2.6E-2	34	0.3056	10	0.00742	5.0	1.8E-2	32.81	0.35	0.87	289	2.4	0.3056	10	0.0503	54	0.00176	32.5	0.60
ISKK-20.1	TLC2	Jan '13	13.0	0.3	1642	1048	---	100	0.0446	7	0.00411	3.1	-1.1E-4	-0.21	1.44	0.53	496	2.4	0.0446	7	0.0124	8	0.00202	2.4	0.31
ISKK-21.1	TLC2	Jan '13	13.2	0.3	130	197	1.3E-3	100	0.0456	16	0.00429	3.3	-4.7E-5	-0.09	0.61	0.36	487	2.0	0.0456	16	0.0071	85	0.00200	3.2	0.04
ISKK-22.1	TLC2	Jan '13	11.8	1	34	81	-7.3E-3	71	0.0367	26	0.00343	14.0	-6.5E-4	-1.21	0.38	0.65	552	12.3	0.0367	26	0.0379	48	0.00206	15.0	0.31

Spot	Mount	Date	^{7}corr $^{206}Pb/^{238}U$ Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	^{7}corr $^{204}Pb/^{206}Pb$	^{7}corr % ^{206}c	$^{232}Th/^{238}U$	% err	Total 238 /206	% err	Total 207 /206	% err	^{4}corr 207* /235	% err	^{4}corr 206* /238	% err	err corr
ISKK-23.1	TLC2	Jan '13	13.3	0.3	957	1257	1.1E-3	45	0.0580	6	0.00429	1.4	7.9E-4	1.48	0.70	0.14	476	1.9	0.0580	6	0.0116	21	0.00206	2.1	0.10
ISKK-24.1	TLC2	Jan '13	12.4	0.3	421	421	3.6E-3	45	0.0494	11	0.00393	2.4	2.1E-4	0.39	0.93	1.27	519	2.0	0.0494	11	0.0018	289	0.00180	3.8	0.01
ISKK-25.1	TLC2	Jan '13	12.7	1	53	113	7.6E-3	58	0.0514	19	0.00381	4.5	3.4E-4	0.64	0.43	0.53	503	8.1	0.0514	19	0.0187	30	0.00170	12.6	0.41
ISKK-26.1	TLC2	Jan '13	12.6	1	48	91	-3.3E-3	100	0.0471	22	0.00373	5.2	5.3E-5	0.10	0.48	0.57	510	8.1	0.0471	22	0.0267	49	0.00208	10.0	0.20
ISKK-3.1	TLC2	Jan '13	13.0	0.5	64	120	---	---	0.0433	19	0.00386	4.4	-2.0E-4	-0.38	0.49	0.50	498	3.5	0.0433	19	0.0120	20	0.00201	3.5	0.18
ISKK-5.1	TLC2	Jan '13	14.0	0.7	208	224	1.1E-3	100	0.0517	14	0.00463	3.1	3.6E-4	0.67	1.09	17	456	4.9	0.0517	14	0.0106	50	0.00215	5.3	0.11
ISKK-53.1	TLC2	Jan '13	13.0	0.5	793	587	5.5E-3	28	0.1269	5	0.00482	1.8	5.5E-3	10.20	1.24	0.17	445	4.0	0.1269	5	0.0128	57	0.00202	5.1	0.09
ISKK-54.1	TLC2	Jan '13	12.8	0.5	248	380	---	100	0.0430	12	0.00424	2.5	-2.2E-4	-0.42	0.60	0.27	503	3.8	0.0430	12	0.0118	13	0.00199	3.8	0.30
ISKK-56.1	TLC2	Jan '13	13.7	0.3	567	577	4.9E-4	100	0.0392	10	0.00417	2.0	-4.9E-4	-0.91	0.91	1.01	475	1.9	0.0392	10	0.0091	27	0.00209	2.1	0.08
ISKK-57.1	TLC2	Jan '13	13.4	0.4	104	176	4.5E-3	58	0.1092	11	0.00468	3.5	4.3E-3	7.96	0.54	0.41	442	2.7	0.1092	11	0.0122	103	0.00207	6.0	0.06
ISKK-58.1	TLC2	Jan '13	13.0	0.7	49	99	4.9E-3	71	0.1150	14	0.00462	4.4	4.6E-3	8.69	0.45	0.56	453	4.5	0.1150	14	0.0118	139	0.00201	8.4	0.06
ISKK-59.1	TLC2	Jan '13	13.2	0.9	109	206	4.4E-3	58	0.0406	17	0.00397	3.4	-3.9E-4	-0.72	0.49	0.39	492	6.4	0.0406	17	0.0077	35	0.00187	8.2	0.24
ISKK-6.1	TLC2	Jan '13	12.5	0.7	77	142	2.1E-3	100	0.0611	18	0.00397	4.2	1.0E-3	1.87	0.50	0.47	505	5.6	0.0611	18	0.0077	119	0.00190	6.9	0.06
ISKK-60.1	TLC2	Jan '13	13.0	0.4	234	316	2.6E-3	58	0.0626	25	0.00426	2.6	1.1E-3	2.06	0.69	1.36	484	2.0	0.0626	25	0.0062	128	0.00196	3.6	0.03
ISKK-61.1	TLC2	Jan '13	12.0	0.7	234	331	3.5E-3	50	0.0576	26	0.00406	2.6	7.7E-4	1.43	0.65	0.27	531	5.4	0.0576	26	0.0009	941	0.00176	6.4	0.01
ISKK-62.1	TLC2	Jan '13	13.3	1	82	127	-1.9E-3	100	0.0907	14	0.00406	11.0	3.0E-3	5.61	0.58	1.85	456	8.1	0.0907	14	0.0363	25	0.00227	8.8	0.35
ISKK-63.1	TLC2	Jan '13	11.8	0.5	74	134	2.4E-3	100	0.0467	19	0.00346	4.4	2.8E-5	0.05	0.51	0.92	545	3.7	0.0467	19	0.0024	409	0.00175	6.0	0.01
ISKK-64.1	TLC2	Jan '13	12.3	0.5	216	289	2.1E-3	71	0.0570	43	0.00383	2.9	7.2E-4	1.35	0.68	0.29	516	3.0	0.0570	43	0.0065	137	0.00186	4.2	0.03
ISKK-65.1	TLC2	Jan '13	13.3	0.3	353	290	---	---	0.0513	13	0.00407	2.8	3.4E-4	0.63	1.12	0.91	480	2.0	0.0513	13	0.0147	13	0.00208	2.0	0.15
ISKK-66.1	TLC2	Jan '13	13.1	0.3	249	302	9.8E-3	30	0.0790	10	0.00425	2.7	2.2E-3	4.14	0.76	1.06	472	2.0	0.0790	10	0.0216	14	0.00173	7.1	0.52
ISKK-67.1	TLC2	Jan '13	12.0	0.8	140	236	2.4E-3	71	0.0400	16	0.00343	10.3	-4.3E-4	-0.80	0.54	0.79	539	6.4	0.0400	16	0.0007	1024	0.00177	7.2	0.01
ISKK-68.1	TLC2	Jan '13	12.5	1	101	142	1.8E-3	100	0.0521	45	0.00389	12.1	3.9E-4	0.73	0.65	0.40	513	8.7	0.0521	45	0.0063	157	0.00188	9.4	0.06
ISKK-69.1	TLC2	Jan '13	13.5	0.3	1837	1099	-2.5E-4	100	0.0520	6	0.00450	3.2	3.9E-4	0.72	1.53	0.52	474	1.9	0.0520	6	0.0163	9	0.00212	2.0	0.22
ISKK-7.1	TLC2	Jan '13	10.9	2	52	72	-4.9E-3	100	0.0708	22	0.00377	6.4	1.7E-3	3.11	0.67	1.48	573	16.8	0.0708	22	0.0355	49	0.00191	18.8	0.39
ISKK-70.1	TLC2	Jan '13	13.7	0.7	212	250	3.2E-3	58	0.0502	35	0.00428	2.9	2.6E-4	0.49	0.78	0.98	467	4.7	0.0502	35	0.0002	4027	0.00201	5.9	0.00
ISKK-71.1	TLC2	Jan '13	11.4	0.8	129	209	1.1E-2	33	0.2053	18	0.00461	3.2	1.1E-2	20.13	0.57	1.19	450	3.9	0.2053	18	0.0097	211	0.00176	9.6	0.05

Spot	Mount	Date	^{7}corr $^{206}Pb/^{238}U$ Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	^{7}corr $^{204}Pb/^{206}Pb$	^{7}corr % ^{206}c	$^{232}Th/^{238}U$	% err	Total 238 /206	% err	Total 207 /206	% err	^{4}corr 207* /235	% err	^{4}corr 206* /238	% err	err corr
ISKK-72.1	TLC2	Jan '13	11.8	0.5	45	94	---	100	0.0742	19	0.00370	5.1	1.9E-3	3.53	0.44	0.59	525	3.5	0.0742	19	0.0195	19	0.00191	3.5	0.18
ISKK-73.1	TLC2	Jan '13	12.6	0.3	178	271	1.1E-3	100	0.0370	16	0.00386	2.9	-6.3E-4	-1.18	0.60	0.31	516	2.0	0.0370	16	0.0054	86	0.00190	2.9	0.03
ISKK-74.1	TLC2	Jan '13	13.5	0.6	105	173	-3.2E-3	71	0.0318	19	0.00415	3.6	-9.8E-4	-1.83	0.56	0.40	485	4.6	0.0318	19	0.0232	40	0.00218	6.1	0.15
ISKK-75.1	TLC2	Jan '13	13.0	0.3	220	283	3.0E-3	58	0.0410	14	0.00407	2.8	-3.6E-4	-0.67	0.72	1.39	500	2.0	0.0410	14	0.0017	331	0.00189	4.0	0.01
ISKK-76.1	TLC2	Jan '13	11.2	0.7	55	96	1.2E-2	50	0.0675	19	0.00328	5.0	1.4E-3	2.69	0.52	0.51	561	5.7	0.0675	19	0.0297	41	0.00138	15.7	0.38
ISKK-77.1	TLC2	Jan '13	12.5	0.4	182	289	7.2E-3	35	0.1145	8	0.00401	2.7	4.6E-3	8.63	0.57	0.30	470	2.6	0.1145	8	0.0004	3437	0.00184	6.1	0.00
ISKK-78.1	TLC2	Jan '13	12.6	2	124	141	1.8E-3	100	0.0617	16	0.00442	10.1	1.0E-3	1.95	0.84	5.10	500	12.0	0.0617	16	0.0092	88	0.00193	12.5	0.14
ISKK-79.1	TLC2	Jan '13	~~17.5~~	~~5~~	69	125	3.2E-2	12	0.6694	3	0.02525	32.0	4.2E-2	78.82	0.51	1.24	78	26.6	0.6694	3	0.2906	39	0.00509	32.5	0.83
ISKK-8.1	TLC2	Jan '13	13.1	0.3	191	279	3.4E-3	58	0.0522	14	0.00407	3.0	4.0E-4	0.74	0.63	0.32	488	2.0	0.0522	14	0.0004	1923	0.00192	4.4	0.00
ISKK-80.1	TLC2	Jan '13	12.1	1	64	125	9.3E-3	50	0.0493	21	0.00362	9.3	2.0E-4	0.38	0.47	0.48	532	9.4	0.0493	21	0.0247	39	0.00155	14.1	0.36
ISKK-81.1	TLC2	Jan '13	12.0	0.4	160	255	2.1E-3	71	0.0571	27	0.00394	3.0	7.3E-4	1.37	0.58	1.26	529	2.4	0.0571	27	0.0062	117	0.00182	3.8	0.03
ISKK-82.1	TLC2	Jan '13	14.3	1.0	68	124	2.7E-2	23	0.3245	7	0.00614	3.4	1.9E-2	35.20	0.49	1.00	292	5.4	0.3245	7	0.0432	49	0.00172	23.5	0.48
ISKK-83.1	TLC2	Jan '13	12.2	0.9	146	224	5.1E-3	45	0.1980	23	0.00473	2.9	1.0E-2	19.19	0.60	0.33	425	3.0	0.1980	23	0.0384	46	0.00213	5.6	0.12
ISKK-84.1	TLC2	Jan '13	12.6	0.5	429	505	1.1E-3	71	0.0531	9	0.00372	7.8	4.6E-4	0.86	0.78	0.68	505	3.7	0.0531	9	0.0100	33	0.00194	3.9	0.12
ISKK-9.1	TLC2	Jan '13	12.4	0.6	125	143	1.9E-3	100	0.1281	11	0.00442	3.9	5.5E-3	10.36	0.80	0.39	467	4.8	0.1281	11	0.0290	31	0.00206	6.0	0.19
ISKK_1.1	TLC2	Jan '13	11.8	0.3			5.2E-4	100	0.0454	8.2	0.00368	3.5	-6.4E-5	-0.12	0.78	0.91	545	2.9	0.0454	8.2	0.0094	23	0.001817	3.0	0.13
ISKK_13.1	TLC2	Jan '13	12.9	0.1			2.5E-4	58	0.0474	3.1	0.00367	3.6	7.6E-5	0.14	1.23	0.79	498	1.1	0.0474	3.1	0.0121	6	0.001999	1.2	0.20
ISKK_14.1	TLC2	Jan '13	13.1	0.3			1.3E-3	45	0.0637	8.4	0.00294	6.8	1.2E-3	2.20	0.83	1.97	482	1.9	0.0637	8.4	0.0126	23	0.002024	2.2	0.10
ISKK_15.1	TLC2	Jan '13	13.2	0.5			----	---	0.0448	10.7	0.00347	5.4	-1.0E-4	-0.19	0.49	0.29	490	4.0	0.0448	10.7	0.0126	11	0.002039	4.0	0.35
ISKK_18.1	TLC2	Jan '13	12.0	0.2			---	---	0.0450	7.2	0.00401	3.5	-9.0E-5	-0.17	0.77	1.00	536	1.7	0.0450	7.2	0.0116	7	0.001866	1.7	0.23
ISKK_20.1	TLC2	Jan '13	12.8	0.2			4.1E-4	71	0.0477	4.9	0.00385	2.8	9.3E-5	0.17	1.17	0.10	501	1.6	0.0477	4.9	0.0114	12	0.001980	1.7	0.14
ISKK_21.1	TLC2	Jan '13	13.1	0.1			4.3E-3	45	0.0438	10.4	0.00357	2.2	-1.7E-4	-0.32	0.55	1.16	493	0.9	0.0438	10.4	0.0065	41	0.001865	4.0	0.10
ISKK_24.1	TLC2	Jan '13	13.0	0.2			----	---	0.0448	7.0	0.00397	3.4	-1.1E-4	-0.20	0.83	0.46	496	1.4	0.0448	7.0	0.0124	7	0.002017	1.4	0.19
ISKK_25.1	TLC2	Jan '13	12.7	0.4			----	---	0.0757	8.7	0.00381	4.5	2.0E-3	3.72	0.46	0.31	488	3.0	0.0757	8.7	0.0214	9	0.002047	3.0	0.32
ISKK_3.1	TLC2	Jan '13	13.7	0.6			-1.0E-3	100	0.0362	13.0	0.00355	6.5	-6.9E-4	-1.29	0.47	0.30	475	4.1	0.0362	13.0	0.0150	30	0.002143	4.5	0.15
ISKK_5.1	TLC2	Jan '13	11.5	0.3			4.7E-3	29	0.1187	4.4	0.00463	3.1	4.9E-3	9.16	1.03	1.24	509	3.0	0.1187	4.4	0.0124	45	0.001792	4.0	0.09
ISKK_54.1	TLC2	Jan '13	13.1	0.3			-6.6E-4	71	0.0421	10.6	0.00345	3.7	-2.9E-4	-0.53	0.59	0.70	493	1.8	0.0421	10.6	0.0147	16	0.002055	2.0	0.13

Spot	Mount	Date	^{7}corr ^{206}Pb/^{238}U Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	^{7}corr ^{204}Pb/^{206}Pb	^{7}corr % ^{206}c	^{232}Th/^{238}U	% err	Total 238 /206	% err	Total 207 /206	% err	^{4}corr 207*/235	% err	^{4}corr 206*/238	% err	err corr
ISKK_61.1	TLC2	Jan '13	12.8	0.4			1.7E-3	58	0.0574	7.9	0.00372	6.4	7.5E-4	1.40	0.53	0.53	498	3.4	0.0574	7.9	0.0085	51	0.001944	3.9	0.08
ISKK_65.1	TLC2	Jan '13	13.4	0.8			7.3E-3	41	0.2070	6.3	0.00527	6.4	1.1E-2	20.33	0.64	0.78	383	5.2	0.2070	6.3	0.0334	47	0.002256	8.3	0.18
ISKK_67.1	TLC2	Jan '13	12.6	0.3			1.4E-3	71	0.0567	8.8	0.00321	6.3	7.1E-4	1.32	0.54	0.23	503	2.4	0.0567	8.8	0.0095	45	0.001935	3.1	0.07
ISKK_70.1	TLC2	Jan '13	12.9	0.2			6.8E-4	71	0.0486	6.1	0.00365	3.0	1.6E-4	0.29	0.85	0.39	498	1.9	0.0486	6.1	0.0105	20	0.001982	2.1	0.10
ISKK_8.1	TLC2	Jan '13	12.5	0.1			1.2E-3	50	0.0645	5.3	0.00368	3.7	1.2E-3	2.30	0.70	0.26	504	0.7	0.0645	5.3	0.0124	21	0.001938	1.4	0.06
ISKK_1.1	TLC3	Jan '13	12.3	0.4	241	304	1.0E-3	100	0.0531	13	0.00384	2.8	4.6E-4	0.86	0.697	0.28	518	3.4	0.0531	13	0.0099	44	0.001893	3.9	0.09
ISKK_10.1	TLC3	Jan '13	11.7	0.2	109	168	3.2E-3	71	0.0536	17	0.00375	3.7	4.9E-4	0.92	0.576	0.38	546	1.4	0.0536	17	0.0008	1173	0.001721	4.7	0.00
ISKK_11.1	TLC3	Jan '13	12.9	0.3	46	83	1.0E-2	58	0.0421	24	0.00388	5.2	-2.8E-4	-0.53	0.486	2.27	503	1.7	0.0421	24	0.0319	53	0.001611	13.7	0.26
ISKK_12.1	TLC3	Jan '13	12.6	0.4	233	337	8.7E-4	100	0.0466	12	0.00368	2.6	1.9E-5	0.04	0.605	0.27	510	3.3	0.0466	12	0.0089	43	0.001929	3.7	0.09
ISKK_13.1	TLC3	Jan '13	12.9	0.4	113	159	5.6E-3	58	0.0432	19	0.00393	3.9	-2.1E-4	-0.39	0.625	0.41	500	2.8	0.0432	19	0.0124	22	0.001789	7.4	0.34
ISKK_14.1	TLC3	Jan '13	13.0	0.7	66	125	4.4E-3	71	0.0998	14	0.00424	4.2	3.6E-3	6.77	0.461	0.51	463	5.4	0.0998	14	0.0094	153	0.001983	8.3	0.05
ISKK_15.1	TLC3	Jan '13	13.3	0.5	446	498	5.7E-4	100	0.0508	9	0.00385	4.6	3.0E-4	0.56	0.790	1.16	482	4.1	0.0508	9	0.0120	24	0.002054	4.2	0.18
ISKK_16.1	TLC3	Jan '13	12.8	0.6	184	265	---	100	0.0397	15	0.00376	3.0	-4.5E-4	-0.83	0.611	0.31	507	4.3	0.0397	15	0.0108	16	0.001974	4.3	0.27
ISKK_17.1	TLC3	Jan '13	12.6	0.6	134	235	-2.3E-3	71	0.0515	14	0.00386	3.1	3.5E-4	0.65	0.499	0.85	507	4.8	0.0515	14	0.0238	28	0.002057	5.6	0.20
ISKK_17.2	TLC3	Jan '13	13.4	0.2	79	147	-5.7E-3	58	0.0328	20	0.00378	3.9	-9.2E-4	-1.72	0.475	0.45	490	1.4	0.0328	20	0.0344	38	0.002259	5.8	0.15
ISKK_18.1	TLC3	Jan '13	13.4	0.8	189	307	9.1E-4	100	0.0430	14	0.00375	2.7	-2.3E-4	-0.42	0.541	0.30	483	6.2	0.0430	14	0.0082	53	0.002033	6.4	0.12
ISKK_19.1	TLC3	Jan '13	14.0	0.3	315	353	2.9E-3	50	0.0493	11	0.00444	2.4	2.0E-4	0.37	0.792	1.06	458	2.3	0.0493	11	0.0010	739	0.002061	3.7	0.01
ISKK_2.1	TLC3	Jan '13	12.5	0.2	57	106	-2.7E-3	100	0.0392	22	0.00376	4.7	-4.8E-4	-0.90	0.472	0.53	519	1.6	0.0392	22	0.0218	49	0.002025	5.1	0.10
ISKK_20.1	TLC3	Jan '13	12.2	0.3	37	84	----	---	0.0466	24	0.00355	5.5	1.7E-5	0.03	0.386	0.66	529	1.7	0.0466	24	0.0121	24	0.001891	1.7	0.07
ISKK_21.1	TLC3	Jan '13	13.6	1	193	261	1.1E-3	100	0.0392	15	0.00387	9.7	-4.8E-4	-0.90	0.646	0.31	476	9.2	0.0392	15	0.0063	85	0.002056	9.5	0.11
ISKK_22.1	TLC3	Jan '13	13.6	0.5	182	190	2.9E-3	71	0.0433	17	0.00409	3.4	-2.0E-4	-0.38	0.835	0.34	474	3.9	0.0433	17	0.0005	1628	0.001996	5.6	0.00
ISKK_23.1	TLC3	Jan '13	12.7	0.6	67	120	7.8E-3	58	0.0719	19	0.00373	4.6	1.7E-3	3.24	0.490	0.51	492	4.3	0.0719	19	0.0141	32	0.001736	10.8	0.33
ISKK_24.1	TLC3	Jan '13	12.6	0.6	125	185	---	100	0.0514	17	0.00367	3.8	3.5E-4	0.65	0.591	0.39	508	4.8	0.0514	17	0.0140	17	0.001970	4.8	0.28
ISKK_25.1	TLC3	Jan '13	12.9	0.4	44	99	2.9E-3	100	0.0371	23	0.00391	4.8	-6.3E-4	-1.17	0.397	0.60	504	3.0	0.0371	23	0.0024	324	0.001875	6.5	0.02
ISKK_26.1	TLC3	Jan '13	12.5	0.4	106	168	-1.9E-3	100	0.0577	18	0.00349	4.0	7.7E-4	1.44	0.558	1.24	506	2.6	0.0577	18	0.0240	33	0.002048	4.3	0.13
ISKK_27.1	TLC3	Jan '13	12.9	1	80	120	-5.2E-3	71	0.0710	18	0.00435	4.6	1.7E-3	3.12	0.595	0.49	485	7.9	0.0710	18	0.0434	34	0.002263	10.1	0.30
ISKK_3.1	TLC3	Jan '13	12.1	0.5	41	74	-4.0E-3	100	0.0544	23	0.00341	5.7	5.5E-4	1.03	0.486	1.20	527	4.3	0.0544	23	0.0305	48	0.002037	8.1	0.17

Spot	Mount	Date	7corr ^{206}Pb/^{238}U Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	7corr ^{204}Pb/^{206}Pb	7corr % ^{206}c	^{232}Th/^{238}U	% err	Total 238 /206	% err	Total 207 /206	% err	4corr 207* /235	% err	4corr 206* /238	% err	err corr
ISKK_4.1	TLC3	Jan '13	13.0	0.2	53	110	-2.6E-3	100	0.0447	20	0.00356	4.5	-1.1E-4	-0.20	0.418	0.53	496	1.5	0.0447	20	0.0235	44	0.002114	4.8	0.11
ISKK_5.1	TLC3	Jan '13	13.1	0.3	231	303	1.9E-3	71	0.0505	27	0.00375	2.7	2.8E-4	0.53	0.672	1.27	490	1.2	0.0505	27	0.0059	115	0.001971	2.8	0.02
ISKK_6.1	TLC3	Jan '13	12.3	0.2	682	604	5.3E-4	100	0.0539	9	0.00377	2.1	5.2E-4	0.96	0.993	0.18	521	1.1	0.0539	9	0.0121	20	0.001902	1.5	0.07
ISKK_7.1	TLC3	Jan '13	13.2	0.2	407	579	5.1E-4	100	0.0438	10	0.00352	5.0	-1.7E-4	-0.32	0.613	0.21	489	1.1	0.0438	10	0.0101	25	0.002026	1.5	0.06
ISKK_8.1	TLC3	Jan '13	13.4	0.4	1008	1479	2.5E-3	26	0.0824	10	0.00439	1.1	2.4E-3	4.57	0.631	8.33	460	3.1	0.0824	10	0.0132	28	0.002073	3.3	0.12
ISKK_9.1	TLC3	Jan '13	11.4	0.6	389	623	2.1E-3	45	0.0760	7	0.00312	1.9	2.0E-3	3.77	0.535	2.48	542	4.9	0.0760	7	0.0108	36	0.001771	5.3	0.15
ISKK_LOW_1.1	TLC3	Jan '13	13.3	0.7	238	279	1.1E-3	100	0.0409	15	0.00417	6.3	-3.7E-4	-0.69	0.751	0.30	486	5.4	0.0409	15	0.0066	77	0.002013	5.8	0.08
ISKK_LOW_2.1	TLC3	Jan '13	14.5	1	265	290	-1.0E-3	100	0.0313	18	0.00415	5.9	-1.0E-3	-1.90	0.810	1.42	453	8.0	0.0313	18	0.0144	35	0.002248	8.2	0.23
ISKK_LOW_3.1	TLC3	Jan '13	13.4	0.5	661	580	3.4E-3	41	0.0533	9	0.00438	5.7	4.8E-4	0.89	1.006	0.20	476	3.9	0.0533	9	0.0002	4060	0.001965	4.8	0.00
ISKK_LOW_4.1	TLC3	Jan '13	12.9	0.3	354	305	3.0E-3	58	0.0829	10	0.00392	2.8	2.5E-3	4.63	1.008	0.90	476	1.8	0.0829	10	0.0104	76	0.001983	3.9	0.05
ISKK_LOW_5.1	TLC3	Jan '13	12.4	0.4	66	116	8.9E-3	58	0.0436	22	0.00373	4.9	-1.8E-4	-0.34	0.509	0.53	521	2.8	0.0436	22	0.0251	45	0.001600	11.8	0.26
ISKK_LOW_6.1	TLC3	Jan '13	12.7	0.9	887	989	6.1E-3	26	0.0781	7	0.00455	6.0	2.2E-3	4.03	0.791	0.61	487	6.8	0.0781	7	0.0050	91	0.001817	7.6	0.08
ISKK_LOW_7.1	TLC3	Jan '13	12.9	0.2	613	682	---	---	0.0423	10	0.00417	2.0	-2.7E-4	-0.51	0.796	0.20	501	1.1	0.0423	10	0.0117	10	0.001998	1.1	0.11
ISKK_LOW_8.1	TLC3	Jan '13	13.7	0.2	220	289	9.9E-4	100	0.0755	11	0.00443	2.8	2.0E-3	3.70	0.670	0.30	451	1.3	0.0755	11	0.0183	28	0.002175	2.3	0.08
ISKK-28.1	TLC3	Jan '13	12.2	0.2	91	158	-4.0E-3	71	0.0363	20	0.00358	4.0	-6.8E-4	-1.27	0.502	0.44	533	1.4	0.0363	20	0.0257	41	0.002017	5.2	0.13
ISKK-29.1	TLC3	Jan '13	11.8	0.9	67	131	-2.5E-3	100	0.0586	21	0.00367	4.5	8.3E-4	1.55	0.453	1.03	538	7.2	0.0586	21	0.0251	39	0.001946	8.5	0.22
ISKK-30.1	TLC3	Jan '13	13.5	0.5	300	340	1.8E-3	71	0.0563	11	0.00407	2.7	6.8E-4	1.27	0.771	0.27	470	3.3	0.0563	11	0.0084	71	0.002059	4.1	0.06
ISKK-31.1	TLC3	Jan '13	11.9	0.5	77	136	6.7E-3	58	0.0525	19	0.00378	4.3	4.2E-4	0.79	0.505	0.98	539	4.0	0.0525	19	0.0135	23	0.001622	9.3	0.41
ISKK-32.1	TLC3	Jan '13	12.5	0.2	74	127	2.5E-3	100	0.0422	20	0.00384	4.5	-2.8E-4	-0.52	0.511	0.49	516	1.5	0.0422	20	0.0008	1389	0.001846	5.2	0.00
ISKK-33.1	TLC3	Jan '13	12.4	0.5	92	153	2.0E-3	100	0.0614	17	0.00367	4.0	1.0E-3	1.91	0.525	0.44	508	4.1	0.0614	17	0.0082	106	0.001895	5.7	0.05
ISKK-34.1	TLC3	Jan '13	11.7	0.2	118	190	1.9E-3	100	0.0514	17	0.00356	3.9	3.4E-4	0.64	0.548	0.40	548	1.4	0.0514	17	0.0055	138	0.001760	3.9	0.03
ISKK-35.1	TLC3	Jan '13	12.8	0.3	114	127	---	100	0.0779	15	0.00423	4.2	2.1E-3	4.00	0.791	0.42	482	1.5	0.0779	15	0.0223	15	0.002075	1.5	0.10
ISKK-36.1	TLC3	Jan '13	12.2	0.2	64	135	2.4E-3	100	0.0356	22	0.00363	4.4	-7.2E-4	-1.35	0.420	1.23	536	1.5	0.0356	22	0.0006	1458	0.001782	5.0	0.00
ISKK-37.1	TLC3	Jan '13	12.7	0.2	260	325	-1.9E-3	71	0.0557	12	0.00411	2.7	6.3E-4	1.19	0.704	0.28	500	1.2	0.0557	12	0.0234	24	0.002071	2.7	0.11
ISKK-38.1	TLC3	Jan '13	12.2	0.6	85	142	----	---	0.0584	19	0.00396	4.3	8.2E-4	1.53	0.528	0.47	519	4.6	0.0584	19	0.0155	19	0.001926	4.6	0.24
ISKK-39.1	TLC3	Jan '13	11.6	1	116	202	2.8E-2	21	0.4968	4	0.00768	5.6	3.1E-2	57.01	0.507	0.95	240	6.7	0.4968	4	0.0334	141	0.001984	23.7	0.17
ISKK-40.1	TLC3	Jan '13	12.8	0.7	69	103	3.0E-3	100	0.0521	20	0.00400	4.9	3.9E-4	0.73	0.586	0.52	500	4.9	0.0521	20	0.0014	935	0.001889	7.7	0.01

Spot	Mount	Date	7corr $^{206}Pb/^{238}U$ Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	7corr $^{204}Pb/^{206}Pb$	7corr % ^{206}c	$^{232}Th/^{238}U$	% err	Total 238 /206	% err	Total 207 /206	% err	4corr 207*/235	% err	4corr 206*/238	% err	err corr
ISKK-41.1	TLC3	Jan '13	13.5	1	173	226	-1.4E-3	100	0.0581	15	0.00419	12.8	8.0E-4	1.49	0.664	2.40	469	8.5	0.0581	15	0.0236	29	0.002188	8.9	0.31
ISKK-42.1	TLC3	Jan '13	12.5	0.4	177	300	2.2E-3	71	0.0441	15	0.00400	3.0	-1.5E-4	-0.28	0.520	0.33	515	3.2	0.0441	15	0.0026	256	0.001862	4.4	0.02
ISKK-43.1	TLC3	Jan '13	12.9	0.2	122	196	3.4E-3	71	0.0664	15	0.00388	3.7	1.4E-3	2.54	0.549	0.40	487	1.4	0.0664	15	0.0038	288	0.001923	5.0	0.02
ISKK-44.1	TLC3	Jan '13	13.1	0.4	382	644	1.0E-3	71	0.0430	10	0.00377	5.1	-2.3E-4	-0.42	0.518	0.22	495	3.0	0.0430	10	0.0076	42	0.001982	3.3	0.08
ISKK-45.1	TLC3	Jan '13	14.2	0.6	245	235	1.2E-2	32	0.1561	8	0.00468	3.1	7.4E-3	13.89	0.925	2.02	389	3.5	0.1561	8	0.0114	120	0.001989	9.9	0.08
ISKK-46.1	TLC3	Jan '13	12.7	0.2	565	657	9.5E-4	71	0.0443	10	0.00407	2.0	-1.4E-4	-0.26	0.761	0.57	507	1.1	0.0443	10	0.0080	38	0.001936	1.7	0.05
ISKK-1.1	TLC4	Jan '13	12.9	0.2	256	468	6.3E-4	100	0.0507	10	0.00383	2.3	2.9E-4	0.55	0.535	0.25	496	1.7	0.0507	10	0.0113	27	0.00199	2.1	0.1
ISKK-10.1	TLC4	Jan '13	13.4	1	53	123	-4.4E-3	71	0.0434	19	0.00378	4.3	-2.0E-4	-0.37	0.423	0.50	483	7.9	0.0434	19	0.0322	40	0.00224	9.6	0.2
ISKK-11.1	TLC4	Jan '13	12.2	0.2	75	151	----	---	0.0619	17	0.00353	4.0	1.1E-3	1.98	0.482	0.44	518	0.7	0.0619	17	0.0165	17	0.00193	0.7	0.0
ISKK-12.1	TLC4	Jan '13	14.3	0.7	135	177	8.9E-3	41	0.0296	20	0.00427	3.5	-1.1E-3	-2.12	0.753	0.34	461	4.7	0.0296	20	0.0328	40	0.00181	9.4	0.2
ISKK-13.1	TLC4	Jan '13	12.4	0.4	48	109	5.3E-3	71	0.0366	22	0.00351	4.6	-6.6E-4	-1.23	0.431	0.53	526	2.7	0.0366	22	0.0122	30	0.00171	8.3	0.3
ISKK-14.1	TLC4	Jan '13	13.0	0.5	19	59	8.9E-3	71	0.0556	24	0.00381	6.1	6.3E-4	1.17	0.316	0.81	488	3.1	0.0556	24	0.0238	44	0.00171	14.5	0.3
ISKK-15.1	TLC4	Jan '13	12.6	0.7	108	193	2.8E-3	71	0.0512	16	0.00366	7.3	3.3E-4	0.62	0.544	0.37	508	5.5	0.0512	16	0.0019	458	0.00186	6.8	0.0
ISKK-16.1	TLC4	Jan '13	12.9	0.3	32	82	-3.4E-3	100	0.0567	21	0.00395	5.2	7.1E-4	1.32	0.391	0.64	492	1.6	0.0567	21	0.0308	44	0.00216	6.2	0.1
ISKK-17.1	TLC4	Jan '13	12.3	0.6	157	278	3.3E-3	58	0.0442	34	0.00348	7.4	-1.4E-4	-0.27	0.558	1.09	523	4.8	0.0442	34	0.0018	387	0.00179	6.1	0.0
ISKK-18.1	TLC4	Jan '13	13.0	0.7	98	174	-1.6E-3	100	0.0549	16	0.00375	3.6	5.8E-4	1.09	0.550	0.39	488	5.1	0.0549	16	0.0225	31	0.00211	5.8	0.2
ISKK-19.1	TLC4	Jan '13	12.7	0.2	47	101	-1.1E-2	50	0.0365	23	0.00360	4.8	-6.6E-4	-1.24	0.456	0.54	514	0.8	0.0365	23	0.0568	34	0.00235	8.7	0.3
ISKK-2.1	TLC4	Jan '13	11.4	0.8	21	37	8.6E-3	100	0.0545	33	0.00333	8.4	5.6E-4	1.05	0.561	0.84	561	6.9	0.0545	33	0.0197	60	0.00150	20.5	0.3
ISKK-20.1	TLC4	Jan '13	13.2	0.7	73	136	6.2E-3	58	0.0520	18	0.00386	4.0	3.8E-4	0.71	0.524	0.45	486	5.5	0.0520	18	0.0128	23	0.00182	9.4	0.4
ISKK-21.1	TLC4	Jan '13	13.4	1	68	129	-2.2E-3	100	0.0393	20	0.00387	9.3	-4.7E-4	-0.88	0.519	0.46	486	9.0	0.0393	20	0.0208	45	0.00214	9.9	0.2
ISKK-22.1	TLC4	Jan '13	12.4	0.4	251	310	2.3E-2	19	0.3721	4	0.00599	2.2	2.2E-2	41.23	0.787	0.27	304	1.2	0.3721	4	0.0037	837	0.00186	14.4	0.0
ISKK-23.1	TLC4	Jan '13	13.8	2	57	111	----	---	0.0463	19	0.00389	11.6	-5.1E-6	-0.01	0.507	0.50	466	11.1	0.0463	19	0.0137	22	0.00215	11.1	0.5
ISKK-24.1	TLC4	Jan '13	13.4	1	95	160	8.4E-3	45	0.0945	12	0.00413	8.0	3.3E-3	6.10	0.579	0.40	451	8.0	0.0945	12	0.0111	71	0.00187	11.5	0.2
ISKK-25.1	TLC4	Jan '13	13.2	0.3	839	948	----	---	0.0455	7	0.00388	4.3	-5.5E-5	-0.10	0.879	2.28	488	2.5	0.0455	7	0.0129	8	0.00205	2.5	0.3
ISKK-26.1	TLC4	Jan '13	13.2	0.1	135	235	3.6E-3	58	0.0477	14	0.00382	3.1	9.6E-5	0.18	0.553	1.18	486	0.7	0.0477	14	0.0024	283	0.00192	4.2	0.0
ISKK-27.1	TLC4	Jan '13	13.4	1	68	131	-2.1E-3	100	0.0422	19	0.00387	10.2	-2.8E-4	-0.53	0.518	0.92	484	7.7	0.0422	19	0.0216	43	0.00215	8.6	0.2
ISKK-28.1	TLC4	Jan '13	13.6	0.4	69	144	1.8E-3	100	0.0352	19	0.00384	3.8	-7.6E-4	-1.41	0.468	1.12	482	3.1	0.0352	19	0.0018	468	0.00200	4.7	0.0

Spot	Mount	Date	[7]corr $^{206}Pb/^{238}U$ Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	[7]corr $^{204}Pb/^{206}Pb$	[7]corr % ^{206}c	$^{232}Th/^{238}U$	% err	Total 238 /206	% err	Total 207 /206	% err	[4]corr 207* /235	% err	[4]corr 206* /238	% err	err corr
ISKK-29.1	TLC4	Jan '13	12.6	0.4	511	681	8.6E-4	71	0.0488	9	0.00374	5.1	1.7E-4	0.31	0.730	0.89	508	2.9	0.0488	9	0.0096	29	0.00194	3.1	0.1
ISKK-3.1	TLC4	Jan '13	12.9	0.7	161	318	1.8E-3	71	0.0625	11	0.00374	6.0	1.1E-3	2.04	0.490	1.48	488	5.7	0.0625	11	0.0095	62	0.00198	6.2	0.1
ISKK-30.1	TLC4	Jan '13	13.7	0.2	32	80	3.4E-3	100	0.0245	31	0.00392	5.3	-1.5E-3	-2.77	0.392	0.65	483	0.9	0.0245	31	0.0084	36	0.00194	6.9	0.2
ISKK-31.1	TLC4	Jan '13	13.9	0.2	241	354	---	100	0.0289	15	0.00395	2.5	-1.2E-3	-2.20	0.662	0.26	473	0.9	0.0289	15	0.0084	15	0.00211	0.9	0.1
ISKK-32.1	TLC4	Jan '13	13.3	0.5	42	106	-2.7E-3	100	0.0257	27	0.00379	4.6	-1.4E-3	-2.61	0.391	0.57	497	3.4	0.0257	27	0.0186	58	0.00211	5.8	0.1
ISKK-33.1	TLC4	Jan '13	12.2	0.7	36	90	-3.2E-3	100	0.0784	19	0.00371	5.1	2.2E-3	4.06	0.394	0.61	506	5.2	0.0784	19	0.0350	36	0.00210	7.7	0.2
ISKK-34.1	TLC4	Jan '13	13.5	0.5	99	135	-3.9E-3	71	0.0543	18	0.00412	4.0	5.4E-4	1.00	0.720	0.40	471	3.7	0.0543	18	0.0339	34	0.00228	6.1	0.2
ISKK-35.1	TLC4	Jan '13	13.0	0.2	35	88	---	100	0.0438	22	0.00380	5.0	-1.7E-4	-0.31	0.392	1.25	498	0.9	0.0438	22	0.0121	22	0.00201	0.9	0.0
ISKK-36.1	TLC4	Jan '13	13.7	0.2	57	129	2.2E-3	100	0.0402	20	0.00393	4.2	-4.2E-4	-0.78	0.431	0.50	473	0.8	0.0402	20	0.0015	672	0.00202	4.4	0.0
ISKK-37.1	TLC4	Jan '13	12.6	0.5	136	241	2.5E-3	71	0.0321	19	0.00360	3.2	-9.6E-4	-1.79	0.550	0.33	520	3.6	0.0321	19	0.0018	273	0.00183	5.0	0.0
ISKK-38.1	TLC4	Jan '13	13.2	0.5	126	206	2.7E-3	71	0.0448	16	0.00376	6.9	-1.0E-4	-0.20	0.600	0.34	489	3.7	0.0448	16	0.0008	1141	0.00194	5.2	0.0
ISKK-39.1	TLC4	Jan '13	13.0	0.9	41	92	2.3E-2	34	0.1819	12	0.00449	4.6	9.2E-3	17.16	0.426	3.25	410	6.3	0.1819	12	0.0613	39	0.00137	26.7	0.7
ISKK-4.1	TLC4	Jan '13	10.4	3	79	94	4.8E-2	12	0.7379	3	0.02430	12.2	4.7E-2	87.54	0.811	0.52	77	11.6	0.7379	3	0.0169	872	0.00138	101.7	0.1
ISKK-5.2	TLC4	Jan '13	12.8	0.3	5245	2533	-1.1E-4	100	0.0470	4	0.00368	4.6	4.6E-5	0.09	2.027	0.68	503	2.6	0.0470	4	0.0134	6	0.00199	2.6	0.4
ISKK-6.1	TLC4	Jan '13	12.4	0.8	58	116	-2.6E-3	100	0.0453	20	0.00356	4.6	-7.1E-5	-0.13	0.490	0.49	522	6.5	0.0453	20	0.0225	44	0.00201	8.0	0.2
ISKK-7.1	TLC4	Jan '13	14.2	2	27	66	---	100	0.0561	22	0.00404	11.6	6.6E-4	1.23	0.400	0.71	447	12.0	0.0561	22	0.0173	25	0.00224	12.0	0.5
ISKK-8.1	TLC4	Jan '13	13.3	2	57	138	3.9E-3	71	0.0480	20	0.00398	11.4	1.1E-4	0.21	0.399	0.49	483	11.6	0.0480	20	0.0039	187	0.00192	12.9	0.1
ISKK-9.1	TLC4	Jan '13	12.7	0.4	36	94	---	100	0.0603	18	0.00379	4.9	9.4E-4	1.77	0.373	0.61	497	2.6	0.0603	18	0.0167	19	0.00201	2.6	0.1
ISKK-1.1	TLC4	Jan '13	12.9	0.2	256	468	6.3E-4	100	0.0507	10	0.00383	2.3	2.9E-4	0.55	0.535	0.25	496	1.7	0.0507	10	0.0113	27	0.00199	2.1	0.1
ISKK-10.1	TLC4	Jan '13	13.4	1	53	123	-4.4E-3	71	0.0434	19	0.00378	4.3	-2.0E-4	-0.37	0.423	0.50	483	7.9	0.0434	19	0.0322	40	0.00224	9.6	0.2
ISKK-11.1	TLC4	Jan '13	12.2	0.2	75	151	----	---	0.0619	17	0.00353	4.0	1.1E-3	1.98	0.482	0.44	518	0.7	0.0619	17	0.0165	17	0.00193	0.7	0.0
ISKK-12.1	TLC4	Jan '13	14.3	0.7	135	177	8.9E-3	41	0.0296	20	0.00427	3.5	-1.1E-3	-2.12	0.753	0.34	461	4.7	0.0296	20	0.0328	40	0.00181	9.4	0.2
ISKK-13.1	TLC4	Jan '13	12.4	0.4	48	109	5.3E-3	71	0.0366	22	0.00351	4.6	-6.6E-4	-1.23	0.431	0.53	526	2.7	0.0366	22	0.0122	30	0.00171	8.3	0.3
ISKK-14.1	TLC4	Jan '13	13.0	0.5	19	59	8.9E-3	71	0.0556	24	0.00381	6.1	6.3E-4	1.17	0.316	0.81	488	3.1	0.0556	24	0.0238	44	0.00171	14.5	0.3
ISKK-15.1	TLC4	Jan '13	12.6	0.7	108	193	2.8E-3	71	0.0512	16	0.00366	7.3	3.3E-4	0.62	0.544	0.37	508	5.5	0.0512	16	0.0019	458	0.00186	6.8	0.0
ISKK-16.1	TLC4	Jan '13	12.9	0.3	32	82	-3.4E-3	100	0.0567	21	0.00395	5.2	7.1E-4	1.32	0.391	0.64	492	1.6	0.0567	21	0.0308	44	0.00216	6.2	0.1
ISKK-17.1	TLC4	Jan '13	12.3	0.6	157	278	3.3E-3	58	0.0442	34	0.00348	7.4	-1.4E-4	-0.27	0.558	1.09	523	4.8	0.0442	34	0.0018	387	0.00179	6.1	0.0

Spot	Mount	Date	7corr $^{206}Pb/^{238}U$ Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	7corr $^{204}Pb/^{206}Pb$	7corr % ^{206}c	$^{232}Th/^{238}U$	% err	Total 238 /206	% err	Total 207 /206	% err	4corr 207* /235	% err	4corr 206* /238	% err	err corr
ISKK-18.1	TLC4	Jan '13	13.0	0.7	98	174	-1.6E-3	100	0.0549	16	0.00375	3.6	5.8E-4	1.09	0.550	0.39	488	5.1	0.0549	16	0.0225	31	0.00211	5.8	0.2
ISKK-19.1	TLC4	Jan '13	12.7	0.2	47	101	-1.1E-2	50	0.0365	23	0.00360	4.8	-6.6E-4	-1.24	0.456	0.54	514	0.8	0.0365	23	0.0568	34	0.00235	8.7	0.3
ISKK-2.1	TLC4	Jan '13	11.4	0.8	21	37	8.6E-3	100	0.0545	33	0.00333	8.4	5.6E-4	1.05	0.561	0.84	561	6.9	0.0545	33	0.0197	60	0.00150	20.5	0.3
ISKK-20.1	TLC4	Jan '13	13.2	0.7	73	136	6.2E-3	58	0.0520	18	0.00386	4.0	3.8E-4	0.71	0.524	0.45	486	5.5	0.0520	18	0.0128	23	0.00182	9.4	0.4
ISKK-21.1	TLC4	Jan '13	13.4	1	68	129	-2.2E-3	100	0.0393	20	0.00387	9.3	-4.7E-4	-0.88	0.519	0.46	486	9.0	0.0393	20	0.0208	45	0.00214	9.9	0.2
ISKK-22.1	TLC4	Jan '13	12.4	0.4	251	310	2.3E-2	19	0.3721	4	0.00599	2.2	2.2E-2	41.23	0.787	0.27	304	1.2	0.3721	4	0.0037	837	0.00186	14.4	0.0
ISKK-23.1	TLC4	Jan '13	13.8	2	57	111	----	---	0.0463	19	0.00389	11.6	-5.1E-6	-0.01	0.507	0.50	466	11.1	0.0463	19	0.0137	22	0.00215	11.1	0.5
ISKK-24.1	TLC4	Jan '13	13.4	1	95	160	8.4E-3	45	0.0945	12	0.00413	8.0	3.3E-3	6.10	0.579	0.40	451	8.0	0.0945	12	0.0111	71	0.00187	11.5	0.2
ISKK-25.1	TLC4	Jan '13	13.2	0.3	839	948	----	---	0.0455	7	0.00388	4.3	-5.5E-5	-0.10	0.879	2.28	488	2.5	0.0455	7	0.0129	8	0.00205	2.5	0.3
ISKK-26.1	TLC4	Jan '13	13.2	0.1	135	235	3.6E-3	58	0.0477	14	0.00382	3.1	9.6E-5	0.18	0.553	1.18	486	0.7	0.0477	14	0.0024	283	0.00192	4.2	0.0
ISKK-27.1	TLC4	Jan '13	13.4	1	68	131	-2.1E-3	100	0.0422	19	0.00387	10.2	-2.8E-4	-0.53	0.518	0.92	484	7.7	0.0422	19	0.0216	43	0.00215	8.6	0.2
ISKK-28.1	TLC4	Jan '13	13.6	0.4	69	144	1.8E-3	100	0.0352	19	0.00384	3.8	-7.6E-4	-1.41	0.468	1.12	482	3.1	0.0352	19	0.0018	468	0.00200	4.7	0.0
ISKK-29.1	TLC4	Jan '13	12.6	0.4	511	681	8.6E-4	71	0.0488	9	0.00374	5.1	1.7E-4	0.31	0.730	0.89	508	2.9	0.0488	9	0.0096	29	0.00194	3.1	0.1
ISKK-3.1	TLC4	Jan '13	12.9	0.7	161	318	1.8E-3	71	0.0625	11	0.00374	6.0	1.1E-3	2.04	0.490	1.48	488	5.7	0.0625	11	0.0095	62	0.00198	6.2	0.1
ISKK-30.1	TLC4	Jan '13	13.7	0.2	32	80	3.4E-3	100	0.0245	31	0.00392	5.3	-1.5E-3	-2.77	0.392	0.65	483	0.9	0.0245	31	0.0084	36	0.00194	6.9	0.2
ISKK-31.1	TLC4	Jan '13	13.9	0.2	241	354	---	100	0.0289	15	0.00395	2.5	-1.2E-3	-2.20	0.662	0.26	473	0.9	0.0289	15	0.0084	15	0.00211	0.9	0.1
ISKK-32.1	TLC4	Jan '13	13.3	0.5	42	106	-2.7E-3	100	0.0257	27	0.00379	4.6	-1.4E-3	-2.61	0.391	0.57	497	3.4	0.0257	27	0.0186	58	0.00211	5.8	0.1
ISKK-33.1	TLC4	Jan '13	12.2	0.7	36	90	-3.2E-3	100	0.0784	19	0.00371	5.1	2.2E-3	4.06	0.394	0.61	506	5.2	0.0784	19	0.0350	36	0.00210	7.7	0.2
ISKK-34.1	TLC4	Jan '13	13.5	0.5	99	135	-3.9E-3	71	0.0543	18	0.00412	4.0	5.4E-4	1.00	0.720	0.40	471	3.7	0.0543	18	0.0339	34	0.00228	6.1	0.2
ISKK-35.1	TLC4	Jan '13	13.0	0.2	35	88	---	100	0.0438	22	0.00380	5.0	-1.7E-4	-0.31	0.392	1.25	498	0.9	0.0438	22	0.0121	22	0.00201	0.9	0.0
ISKK-36.1	TLC4	Jan '13	13.7	0.2	57	129	2.2E-3	100	0.0402	20	0.00393	4.2	-4.2E-4	-0.78	0.431	0.50	473	0.8	0.0402	20	0.0015	672	0.00202	4.4	0.0
ISKK-37.1	TLC4	Jan '13	12.6	0.5	136	241	2.5E-3	71	0.0321	19	0.00360	3.2	-9.6E-4	-1.79	0.550	0.33	520	3.6	0.0321	19	0.0018	273	0.00183	5.0	0.0
ISKK-38.1	TLC4	Jan '13	13.2	0.5	126	206	2.7E-3	71	0.0448	16	0.00376	6.9	-1.0E-4	-0.20	0.600	0.34	489	3.7	0.0448	16	0.0008	1141	0.00194	5.2	0.0
ISKK-39.1	TLC4	Jan '13	13.0	0.9	41	92	2.3E-2	34	0.1819	12	0.00449	4.6	9.2E-3	17.16	0.426	3.25	410	6.3	0.1819	12	0.0613	39	0.00137	26.7	0.7
ISKK-4.1	TLC4	Jan '13	10.4	3	79	94	4.8E-2	12	0.7379	3	0.02430	12.2	4.7E-2	87.54	0.811	0.52	77	11.6	0.7379	3	0.0169	872	0.00138	101.7	0.1
ISKK-5.2	TLC4	Jan '13	12.8	0.3	5245	2533	-1.1E-4	100	0.0470	4	0.00368	4.6	4.6E-5	0.09	2.027	0.68	503	2.6	0.0470	4	0.0134	6	0.00199	2.6	0.4
ISKK-6.1	TLC4	Jan '13	12.4	0.8	58	116	-2.6E-3	100	0.0453	20	0.00356	4.6	-7.1E-5	-0.13	0.490	0.49	522	6.5	0.0453	20	0.0225	44	0.00201	8.0	0.2
ISKK-7.1	TLC4	Jan '13	14.2	2	27	66	---	100	0.0561	22	0.00404	11.6	6.6E-4	1.23	0.400	0.71	447	12.0	0.0561	22	0.0173	25	0.00224	12.0	0.5

Spot	Mount	Date	^{7}corr ^{206}Pb/^{238}U Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	^{7}corr ^{204}Pb/^{206}Pb	^{7}corr % ^{206}c	^{232}Th/^{238}U	% err	Total 238 /206	% err	Total 207 /206	% err	^{4}corr 207* /235	% err	^{4}corr 206* /238	% err	err corr
ISKK-8.1	TLC4	Jan '13	13.3	2	57	138	3.9E-3	71	0.0480	20	0.00398	11.4	1.1E-4	0.21	0.399	0.49	483	11.6	0.0480	20	0.0039	187	0.00192	12.9	0.1
ISKK-9.1	TLC4	Jan '13	12.7	0.4	36	94	---	100	0.0603	18	0.00379	4.9	9.4E-4	1.77	0.373	0.61	497	2.6	0.0603	18	0.0167	19	0.00201	2.6	0.1
Stóraá: ISS 28W 561363, 7260665																									
ISS_10.1	TLC2	Jan '13	13.2	0.2			1.2E-3	58	0.0468	7.0	0.00371	1.5	3.0E-5	0.06	0.62	0.54	486	1.2	0.0468	7.0	0.0079	40	0.002009	1.8	0.04
ISS_12.1	TLC2	Jan '13	12.5	0.5			4.2E-3	50	0.0463	11.5	0.00371	6.3	-1.0E-6	0.00	0.46	0.31	514	4.3	0.0463	11.5	0.0051	74	0.001794	6.0	0.08
ISS_14.1	TLC2	Jan '13	12.5	0.9			2.4E-3	71	0.0617	10.9	0.00330	8.2	1.0E-3	1.95	0.41	0.69	506	7.6	0.0617	10.9	0.0066	110	0.001887	8.3	0.07
ISS_15.1	TLC2	Jan '13	13.1	0.10			2.4E-3	35	0.0508	5.9	0.00321	3.6	3.1E-4	0.57	0.97	0.56	489	0.7	0.0508	5.9	0.0036	107	0.001953	1.8	0.02
ISS_18.1	TLC2	Jan '13	12.5	0.3			6.3E-4	100	0.0510	8.4	0.00340	2.1	3.2E-4	0.59	0.47	0.24	512	2.3	0.0510	8.4	0.0111	25	0.001932	2.6	0.10
ISS_2.1	TLC2	Jan '13	14.1	0.9			1.2E-2	18	0.2745	8.3	0.00566	1.4	1.5E-2	28.87	1.23	3.91	325	4.9	0.2745	8.3	0.0360	45	0.002379	7.2	0.16
ISS_27.1	TLC2	Jan '13	13.0	0.4			---	---	0.0470	10.2	0.00401	2.3	4.6E-5	0.09	0.55	0.26	497	2.7	0.0470	10.2	0.0130	11	0.002013	2.7	0.26
ISS_29.1	TLC2	Jan '13	12.7	0.4			2.0E-3	71	0.0562	10.6	0.00375	3.9	6.7E-4	1.25	0.48	0.30	501	3.2	0.0562	10.6	0.0067	94	0.001921	4.3	0.05
ISS_3.1	TLC2	Jan '13	12.7	0.1			2.5E-3	25	0.0687	3.6	0.00438	3.1	1.5E-3	2.83	1.28	0.14	494	1.0	0.0687	3.6	0.0083	33	0.001929	1.6	0.05
ISS_30.1	TLC2	Jan '13	12.5	0.2			3.8E-4	71	0.0515	7.6	0.00401	2.9	3.5E-4	0.66	1.14	1.12	512	1.8	0.0515	7.6	0.0123	12	0.001939	1.9	0.15
ISS_32.1	TLC2	Jan '13	12.3	0.4			4.9E-3	28	0.0863	8.5	0.00435	3.1	2.7E-3	5.06	0.86	0.58	495	3.4	0.0863	8.5	0.0029	212	0.001836	4.4	0.02
ISS_34.1	TLC2	Jan '13	12.8	0.3			1.9E-3	35	0.0490	5.2	0.00435	3.1	1.8E-4	0.34	1.20	1.22	502	2.0	0.0490	5.2	0.0053	55	0.001921	2.4	0.04
ISS_37.1	TLC2	Jan '13	14.5	0.4			6.0E-3	38	0.0537	9.7	0.00371	4.0	5.0E-4	0.92	0.58	0.26	441	2.7	0.0537	9.7	0.0128	16	0.002013	5.5	0.35
ISS_38.1	TLC2	Jan '13	12.7	0.4			3.7E-3	30	0.0549	6.0	0.00421	3.9	5.8E-4	1.09	1.19	0.13	503	2.8	0.0549	6.0	0.0008	566	0.001850	3.6	0.01
ISS_39.1	TLC2	Jan '13	13.1	0.1			4.0E-3	32	0.0489	7.0	0.00372	3.4	1.8E-4	0.33	0.67	0.17	491	0.7	0.0489	7.0	0.0040	78	0.001883	2.7	0.03
ISS_5.1	TLC2	Jan '13	12.7	0.2			9.5E-4	71	0.0467	7.8	0.00357	3.4	2.5E-5	0.05	1.22	1.49	507	1.6	0.0467	7.8	0.0086	34	0.001936	2.0	0.06
ISS_7.1	TLC2	Jan '13	13.1	0.3			7.5E-4	71	0.0457	11.8	0.00395	1.4	-4.5E-5	-0.08	0.97	0.39	491	1.8	0.0457	11.8	0.0095	28	0.002008	2.1	0.07
ISS-10.1	TLC2	Jan '13	12.7	0.9	84	154	7.3E-3	50	0.0409	40	0.00397	3.9	-3.6E-4	-0.68	0.50	0.43	511	6.4	0.0409	40	0.0198	39	0.00169	10.2	0.26
ISS-11.1	TLC2	Jan '13	12.8	0.3	414	481	1.8E-3	58	0.0389	11	0.00393	4.9	-5.0E-4	-0.94	0.79	0.54	510	2.2	0.0389	11	0.0030	147	0.00190	3.0	0.02
ISS-12.1	TLC2	Jan '13	11.9	0.5	69	135	4.2E-3	71	0.0534	18	0.00366	4.1	4.8E-4	0.90	0.47	0.46	538	3.6	0.0534	18	0.0030	256	0.00171	7.0	0.03
ISS-13.1	TLC2	Jan '13	13.3	0.5	140	228	2.4E-3	71	0.0488	14	0.00405	3.1	1.7E-4	0.31	0.56	0.34	483	3.7	0.0488	14	0.0034	221	0.00198	5.0	0.02
ISS-14.1	TLC2	Jan '13	12.2	0.9	50	111	---	100	0.0430	21	0.00370	4.6	-2.3E-4	-0.42	0.42	1.34	529	7.3	0.0430	21	0.0112	22	0.00189	7.3	0.34
ISS-15.1	TLC2	Jan '13	12.7	0.3	496	521	2.2E-3	50	0.0533	9	0.00393	2.1	4.7E-4	0.88	0.88	1.09	503	2.5	0.0533	9	0.0052	93	0.00191	3.3	0.04
ISS-16.1	TLC2	Jan '13	13.1	0.6	717	697	8.3E-4	71	0.0452	8	0.00393	6.2	-7.3E-5	-0.14	0.94	0.17	492	4.2	0.0452	8	0.0090	30	0.00200	4.4	0.15

Spot	Mount	Date	[7]corr $^{206}Pb/^{238}U$ Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	[7]corr $^{204}Pb/^{206}Pb$	[7]corr % ^{206}c	$^{232}Th/^{238}U$	% err	Total 238 /206	% err	Total 207 /206	% err	[4]corr 207* /235	% err	[4]corr 206* /238	% err	err corr
ISS-17.1	TLC2	Jan '13	11.2	0.8	67	118	2.8E-2	24	0.3993	6	0.00609	3.5	2.4E-2	44.68	0.53	0.49	318	3.8	0.3993	6	0.0146	245	0.00151	25.8	0.11
ISS-18.1	TLC2	Jan '13	14.0	0.4	103	187	----	---	0.0348	19	0.00409	3.5	-7.8E-4	-1.46	0.50	0.40	467	2.6	0.0348	19	0.0103	19	0.00214	2.6	0.14
ISS-19.1	TLC2	Jan '13	12.6	0.6	273	240	1.1E-3	100	0.0539	14	0.00428	3.0	5.1E-4	0.96	1.05	0.27	505	4.3	0.0539	14	0.0100	50	0.00194	4.8	0.10
ISS-2.1	TLC2	Jan '13	12.6	0.3	251	350	4.4E-3	41	0.0444	12	0.00410	2.4	-1.3E-4	-0.24	0.66	0.25	514	2.0	0.0444	12	0.0065	37	0.00179	4.2	0.11
ISS-20.1	TLC2	Jan '13	13.1	0.3	96	154	----	---	0.0443	19	0.00384	3.8	-1.4E-4	-0.25	0.57	0.41	494	2.1	0.0443	19	0.0124	20	0.00202	2.1	0.11
ISS-21.1	TLC2	Jan '13	12.4	0.5	743	593	4.7E-4	100	0.0573	8	0.00391	6.4	7.4E-4	1.39	1.15	0.58	510	3.6	0.0573	8	0.0135	17	0.00194	3.7	0.22
ISS-22.1	TLC2	Jan '13	12.7	0.3	179	208	1.0E-2	33	0.1530	8	0.00497	3.0	7.2E-3	13.51	0.81	2.27	439	2.0	0.1530	8	0.0027	573	0.00184	8.3	0.01
ISS-23.1	TLC2	Jan '13	13.2	0.3	343	398	1.9E-3	58	0.0694	9	0.00423	2.2	1.6E-3	2.93	0.79	0.22	472	1.9	0.0694	9	0.0118	42	0.00204	2.8	0.07
ISS-24.1	TLC2	Jan '13	12.4	0.5	46	95	---	100	0.0761	18	0.00386	4.7	2.0E-3	3.77	0.44	0.55	500	3.3	0.0761	18	0.0210	18	0.00200	3.3	0.18
ISS-26.1	TLC2	Jan '13	12.7	0.6	94	154	----	---	0.0427	18	0.00362	7.5	-2.5E-4	-0.46	0.56	0.39	511	4.7	0.0427	18	0.0115	19	0.00196	4.7	0.25
ISS-27.1	TLC2	Jan '13	14.3	0.5	51	102	1.0E-2	50	0.0605	18	0.00444	4.5	9.6E-4	1.80	0.45	0.56	442	3.1	0.0605	18	0.0303	35	0.00184	12.1	0.35
ISS-28.1	TLC2	Jan '13	11.9	0.3	164	251	1.2E-3	100	0.0446	16	0.00360	3.1	-1.1E-4	-0.21	0.60	0.31	544	2.6	0.0446	16	0.0067	73	0.00180	3.4	0.05
ISS-29.1	TLC2	Jan '13	11.6	0.5	50	105	---	100	0.0658	19	0.00374	4.8	1.3E-3	2.47	0.43	0.55	543	4.2	0.0658	19	0.0167	19	0.00184	4.2	0.22
ISS-3.1	TLC2	Jan '13	12.7	0.5	969	721	2.3E-3	41	0.0760	14	0.00391	1.8	2.0E-3	3.76	1.23	0.96	488	3.5	0.0760	14	0.0113	44	0.00196	3.9	0.09
ISS-30.1	TLC2	Jan '13	13.3	0.4	668	566	1.4E-3	58	0.0427	9	0.00421	1.9	-2.5E-4	-0.46	1.09	0.48	487	3.3	0.0427	9	0.0058	64	0.00200	3.7	0.06
ISS-31.1	TLC2	Jan '13	12.6	1	37	87	6.1E-3	71	0.0511	21	0.00386	13.4	3.2E-4	0.61	0.39	0.61	509	11.5	0.0511	21	0.0121	28	0.00174	14.7	0.53
ISS-32.1	TLC2	Jan '13	12.3	0.6	539	451	1.4E-3	71	0.0472	11	0.00381	7.1	6.1E-5	0.11	1.07	3.17	521	5.1	0.0472	11	0.0069	59	0.00187	5.4	0.09
ISS-34.1	TLC2	Jan '13	13.0	0.3	1036	702	3.9E-4	100	0.0501	8	0.00407	1.8	2.6E-4	0.48	1.35	0.15	493	2.2	0.0501	8	0.0123	16	0.00201	2.4	0.15
ISS-35.1	TLC2	Jan '13	12.9	0.4	485	466	1.2E-3	71	0.0537	23	0.00423	5.7	5.0E-4	0.93	0.93	3.86	496	2.3	0.0537	23	0.0099	49	0.00197	2.8	0.06
ISS-36.1	TLC2	Jan '13	12.9	0.9	796	565	1.2E-2	19	0.3138	9	0.00477	1.6	1.8E-2	33.86	1.24	3.73	330	3.5	0.3138	9	0.0558	31	0.00238	6.4	0.20
ISS-37.1	TLC2	Jan '13	13.6	0.5	409	411	1.2E-3	71	0.0409	11	0.00467	2.2	-3.7E-4	-0.68	0.92	0.21	475	3.5	0.0409	11	0.0065	62	0.00206	3.9	0.06
ISS-38.1	TLC2	Jan '13	13.0	0.4	239	284	3.9E-3	50	0.0434	14	0.00403	2.8	-1.9E-4	-0.36	0.77	0.86	497	3.3	0.0434	14	0.0048	80	0.00187	5.1	0.06
ISS-39.1	TLC2	Jan '13	12.7	0.3	199	302	1.9E-3	71	0.0422	14	0.00371	2.8	-2.8E-4	-0.51	0.60	0.28	509	2.4	0.0422	14	0.0035	166	0.00190	3.5	0.02
ISS-4.1	TLC2	Jan '13	12.0	0.8	205	282	1.6E-2	22	0.2869	5	0.00535	7.5	1.6E-2	30.45	0.66	0.29	372	5.6	0.2869	5	0.0133	149	0.00188	10.8	0.07
ISS-40.1	TLC2	Jan '13	13.1	0.4	82	150	4.5E-3	58	0.1729	9	0.00444	3.5	8.6E-3	16.02	0.50	0.42	413	2.1	0.1729	9	0.0340	38	0.00221	5.7	0.15
ISS-41.1	TLC2	Jan '13	13.3	0.6	132	196	4.9E-3	50	0.0973	10	0.00450	3.1	3.5E-3	6.45	0.61	0.35	454	4.0	0.0973	10	0.0064	183	0.00200	6.4	0.04
ISS-42.1	TLC2	Jan '13	12.4	0.6	192	287	4.1E-3	50	0.0523	13	0.00368	2.9	4.0E-4	0.76	0.61	0.29	515	4.9	0.0523	13	0.0031	184	0.00180	6.4	0.03

Spot	Mount	Date	⁷corr ^{206}Pb/^{238}U Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	⁷corr ^{204}Pb/^{206}Pb	⁷corr % ^{206}c	^{232}Th/^{238}U	% err	Total 238 /206	% err	Total 207 /206	% err	⁴corr 207* /235	% err	⁴corr 206* /238	% err	err corr
ISS-43	TLC2	Jan '13	13.8	0.5	38	72	1.8E-2	45	0.1498	14	0.00502	5.3	7.0E-3	13.10	0.48	0.68	405	2.3	0.1498	14	0.0449	33	0.00164	23.0	0.70
ISS-45.1	TLC2	Jan '13	13.3	0.3	246	277	-9.6E-4	100	0.0533	13	0.00417	2.8	4.8E-4	0.89	0.81	0.27	479	2.4	0.0533	13	0.0197	23	0.00213	3.0	0.13
ISS-46.1	TLC2	Jan '13	13.4	0.9	565	472	4.4E-2	7	0.6286	2	0.01722	2.6	3.9E-2	73.68	1.11	0.58	127	3.9	0.6286	2	0.0621	52	0.00142	30.7	0.60
ISS-47.1	TLC2	Jan '13	12.9	0.4	445	555	-5.0E-4	100	0.0484	9	0.00375	6.0	1.4E-4	0.27	0.72	1.55	497	2.8	0.0484	9	0.0156	15	0.00203	3.0	0.19
ISS-48.1	TLC2	Jan '13	12.4	0.5	173	257	----	---	0.0696	32	0.00350	3.0	1.6E-3	2.95	0.61	0.30	505	2.5	0.0696	32	0.0190	32	0.00198	2.5	0.08
ISS-5.1	TLC2	Jan '13	12.8	0.3	359	264	1.0E-3	100	0.0549	13	0.00383	2.9	5.8E-4	1.09	1.25	0.74	499	2.0	0.0549	13	0.0107	43	0.00197	2.8	0.06
ISS-7.1	TLC2	Jan '13	12.0	0.3	224	261	4.5E-3	50	0.0427	15	0.00378	3.0	-2.4E-4	-0.45	0.79	0.66	540	2.5	0.0427	15	0.0071	33	0.00170	5.2	0.16
ISS-8.1	TLC2	Jan '13	14.1	0.3	723	600	----	---	0.0376	10	0.00443	1.9	-5.9E-4	-1.11	1.11	0.17	462	2.2	0.0376	10	0.0112	10	0.00216	2.2	0.22
ISS-9.1	TLC2	Jan '13	14.0	1	25	44	----	---	0.0380	33	0.00427	7.1	-5.6E-4	-1.05	0.53	0.79	465	9.2	0.0380	33	0.0113	34	0.00215	9.2	0.27
ISS_X-1.1	TLC3	Jan '13	12.9	0.6	221	287	3.3E-3	58	0.0489	14	0.00394	3.0	1.8E-4	0.33	0.676	0.30	498	4.4	0.0489	14	0.0008	915	0.001882	5.8	0.01
ISS_X-1.2	TLC3	Jan '13	13.7	0.3	59	113	6.3E-3	71	0.0631	19	0.00447	5.0	1.1E-3	2.12	0.466	0.62	459	1.7	0.0631	19	0.0104	60	0.001922	9.5	0.16
ISS-10.1	TLC3	Jan '13	14.1	0.3	48	102	4.7E-3	71	0.0455	19	0.00411	4.4	-5.4E-5	-0.10	0.415	0.55	457	1.6	0.0455	19	0.0086	48	0.001994	7.0	0.15
ISS-11.1	TLC3	Jan '13	12.1	0.2	158	232	3.7E-3	58	0.0530	14	0.00370	3.2	4.5E-4	0.84	0.599	0.33	528	1.3	0.0530	14	0.0011	661	0.001764	4.4	0.01
ISS-12.1	TLC3	Jan '13	13.5	0.4	153	231	1.2E-3	100	0.0370	16	0.00397	3.1	-6.3E-4	-1.18	0.583	0.33	484	2.6	0.0370	16	0.0053	103	0.002019	3.5	0.03
ISS-13.1	TLC3	Jan '13	14.1	0.4	136	221	2.4E-3	71	0.0438	15	0.00412	3.1	-1.7E-4	-0.31	0.543	0.35	459	2.5	0.0438	15	0.0018	469	0.002082	4.2	0.01
ISS-15.1	TLC3	Jan '13	13.4	0.4	356	402	2.0E-3	58	0.0397	12	0.00413	2.3	-4.5E-4	-0.84	0.786	1.72	485	3.0	0.0397	12	0.0022	241	0.001982	3.8	0.02
ISS-16.1	TLC3	Jan '13	12.6	0.5	108	179	1.5E-3	100	0.0602	15	0.00387	3.5	9.4E-4	1.76	0.533	0.38	501	3.7	0.0602	15	0.0100	68	0.001939	4.7	0.07
ISS-18.1	TLC3	Jan '13	13.8	0.6	89	157	1.4E-2	33	0.0788	13	0.00433	3.5	2.2E-3	4.11	0.501	0.90	447	4.2	0.0788	13	0.0414	29	0.001667	12.2	0.42
ISS-19.1	TLC3	Jan '13	12.0	0.4	67	120	-2.4E-3	100	0.0438	19	0.00369	4.4	-1.7E-4	-0.31	0.492	0.48	536	3.5	0.0438	19	0.0207	43	0.001946	5.5	0.13
ISS-2.1	TLC3	Jan '13	12.2	0.2	147	222	-1.3E-3	100	0.0509	15	0.00366	3.2	3.1E-4	0.58	0.579	0.34	523	1.3	0.0509	15	0.0187	28	0.001959	2.7	0.09
ISS-20.1	TLC3	Jan '13	13.6	0.8	72	130	2.0E-3	100	0.0468	18	0.00396	4.0	3.3E-5	0.06	0.487	0.46	473	6.0	0.0468	18	0.0045	206	0.002034	7.1	0.03
ISS-20.1…dup1	TLC3	Jan '13	12.5	0.2	62	112	2.3E-3	100	0.0476	20	0.00309	4.2	8.9E-5	0.17	0.481	0.45	512	1.4	0.0476	20	0.0032	303	0.001868	4.7	0.02
ISS-21.1	TLC3	Jan '13	12.8	0.3	47	68	---	100	0.0574	22	0.00370	5.8	7.5E-4	1.40	0.606	0.60	496	1.8	0.0574	22	0.0159	23	0.002014	1.8	0.08
ISS-21.1…dup1	TLC3	Jan '13	13.7	0.6	48	68	---	100	0.0391	28	0.00323	5.9	-4.9E-4	-0.92	0.608	0.58	474	4.3	0.0391	28	0.0114	29	0.002111	4.3	0.15
ISS-22.1	TLC3	Jan '13	13.5	0.8	110	198	2.8E-3	71	0.0467	16	0.00403	6.7	2.8E-5	0.05	0.489	0.38	476	6.0	0.0467	16	0.0010	886	0.001991	7.1	0.01
ISS-23.1	TLC3	Jan '13	13.8	0.2	115	180	---	---	0.0558	15	0.00423	3.4	6.4E-4	1.20	0.563	0.38	463	1.4	0.0558	15	0.0166	15	0.002162	1.4	0.09
ISS-3.1	TLC3	Jan '13	12.6	0.2	83	141	6.0E-3	58	0.0446	19	0.00355	4.0	-1.2E-4	-0.22	0.515	0.43	513	1.4	0.0446	19	0.0134	23	0.001730	7.5	0.32

Spot	Mount	Date	7corr $^{206}Pb/^{238}U$ Age	1σ err	Th (ppm)	U (ppm)	204 /206	% err	207/206	% err	206/238	% err	7corr $^{204}Pb/^{206}Pb$	7corr % ^{206}c	$^{232}Th/^{238}U$	% err	Total 238 /206	% err	Total 207 /206	% err	4corr 207* /235	% err	4corr 206* /238	% err	err corr
ISS-4.1	TLC3	Jan '13	13.1	0.6	86	155	----	---	0.0363	18	0.00392	3.8	-6.8E-4	-1.27	0.491	0.42	498	4.8	0.0363	18	0.0101	19	0.002008	4.8	0.25
ISS-6.1	TLC3	Jan '13	13.2	0.8	57	113	----	---	0.0382	21	0.00389	4.5	-5.5E-4	-1.02	0.444	0.52	492	6.2	0.0382	21	0.0107	22	0.002031	6.2	0.29
ISS-7.1	TLC3	Jan '13	12.9	1.0	78	137	6.0E-3	58	0.0420	21	0.00388	4.0	-2.9E-4	-0.55	0.502	0.44	504	7.7	0.0420	21	0.0140	27	0.001765	10.5	0.39
ISS-8.1	TLC3	Jan '13	12.2	0.4	315	347	2.4E-3	58	0.0444	13	0.00330	5.2	-1.3E-4	-0.24	0.795	0.83	528	3.1	0.0444	13	0.0019	307	0.001809	4.1	0.01
ISS-9.1	TLC3	Jan '13	14.3	0.2	386	478	1.6E-3	58	0.0414	10	0.00424	2.1	-3.4E-4	-0.63	0.710	0.22	454	1.2	0.0414	10	0.0049	93	0.002135	2.1	0.02
Selardalur: IXSD 26W 635504, 7296772																									
IXSD_1.1	TLC2	Jan '13	14.7	0.5	32	78	3.1E-2	27	0.089	12.0	0.00416	3.5	2.9E-3	5.41	0.46	0.88	413	2.7	0.089	12.0	0.1298	67	0.00104	36.0	0.5
IXSD_3.1	TLC2	Jan '13	14.2	0.4	622	557	7.2E-4	58	0.046	5.5	0.00381	5.3	-3.4E-5	-0.06	1.25	1.47	452	2.7	0.046	5.5	0.0105	20	0.00218	2.8	0.1
IXSD_4.1	TLC2	Jan '13	15.3	0.2	101	134	6.3E-3	38	0.061	10.3	0.00418	2.3	9.9E-4	1.84	0.85	0.66	414	0.7	0.061	10.3	0.0127	24	0.00213	5.1	0.2
IXSD_5.1	TLC2	Jan '13	15.6	0.4	1286	815	2.8E-4	71	0.048	4.1	0.00472	3.9	1.0E-4	0.19	1.77	2.06	413	2.3	0.048	4.1	0.0145	8	0.00241	2.3	0.3

Appendix D.2: Zircon U-Th Disequilibrium Model Ages

Stanford-USGS SHRIMP-RG *in situ* Measurements (years) [48]

Spot	Mount	Date	Cor (238/232)	± (238/232)	(230/232)	± (230/232)	Model Age (yr)	Error Model (+ yrs)	Error Model (-yrs)	Intercept Equiline	Error Intercept	Slope	Error Slope
Hekla: IHB[49]* 27W 558938, 7106903													
IHB1-12.2C	JW444	Aug. ‘09	2.93	0.09	1.36	0.06	27888	8239	7658	0.9	0.09	0.226	0.056
IHB-22.1I-B	JW444	Aug. ‘09	4.52	0.14	1.06	0.07	4805	3711	3589	0.9	0.09	0.043	0.032
IHB-16.1I-B	JW444	Aug. ‘09	4.80	0.15	1.56	0.10	20152	4668	4476	0.9	0.09	0.169	0.035
IHB-13.1I-B	JW444	Aug. ‘09	3.85	0.12	1.15	0.08	9694	4877	4668	0.9	0.09	0.085	0.040
IHB-12.2C-B	JW444	Aug. ‘09	4.45	0.14	1.76	0.12	30168	6498	6131	0.9	0.09	0.242	0.044
IHB-10.1I-B	JW444	Aug. ‘09	8.06	0.25	0.18	0.01	-10381	1315	1300	0.9	0.09	-0.100	0.013
IHB-1.3I-B	JW444	Aug. ‘09	4.78	0.15	2.22	0.13	45212	7509	7024	0.9	0.09	0.340	0.044
IHB-1.1I-B	JW444	Aug. ‘09	5.65	0.17	1.68	0.12	19401	4235	4076	0.9	0.09	0.163	0.032
Krafla: IEKG 28W 410640, 7292179													
IEKGUTh-9.1E	JW529	Aug. ‘11	2.72	0.09	2.32	0.17	161162	84231	46892	0.95	0.095	0.773	0.122
IEKGUTH-7.1I	JW529.	Aug. ‘11	3.19	0.10	2.35	0.17	106483	32114	24761	0.95	0.095	0.624	0.096
IEKGUTH-6.1I	JW529.	Aug. ‘11	4.15	0.13	2.98	0.21	110123	26193	21093	0.95	0.095	0.637	0.078
IEKGUTh-4.1C	JW529.	Aug. ‘11	3.51	0.11	2.83	0.23	144717	56084	36819	0.95	0.095	0.736	0.106
IEKGUTH-19.1I	JW529.	Aug. ‘11	3.74	0.12	3.35	0.22	213634	130473	57625	0.95	0.095	0.860	0.098
IEKGUTH-18.1I	JW529.	Aug. ‘11	3.81	0.12	2.98	0.28	134831	51794	34940	0.95	0.095	0.711	0.110
IEKGUTH-16.1I	JW529.	Aug. ‘11	3.94	0.12	3.10	0.40	137734	76027	44310	0.95	0.095	0.718	0.142
IEKGUTH-15.1I	JW529.	Aug. ‘11	4.28	0.14	3.75	0.50	200187	#NUM!	75730	0.95	0.095	0.841	0.160
IEKGUTH-14.1I	JW529.	Aug. ‘11	1.96	0.06	1.57	0.05	104105	44454	31465	0.95	0.095	0.616	0.129
IEKGUTH-13.1I	JW529.	Aug. ‘11	4.19	0.13	2.99	0.22	108131	26564	21333	0.95	0.095	0.630	0.080
IEKGUTH-12.1I	JW529.	Aug. ‘11	4.34	0.14	3.46	0.45	146613	84686	47028	0.95	0.095	0.740	0.141
IEKGUTH-11.1I	JW529.	Aug. ‘11	3.91	0.12	2.65	0.21	93091	24000	19649	0.95	0.095	0.575	0.084
IEKGUTH-10.1I	JW529.	Aug. ‘11	4.01	0.13	3.39	0.25	173725	69381	42019	0.95	0.095	0.798	0.095
IEKGUTh-1.1I	JW529.	Aug. ‘11	4.69	0.15	3.71	0.56	145156	96454	50300	0.95	0.095	0.737	0.155

[48] Errors are all 1σ; Pb_c and Pb* indicate the common and radiogeneic proportions, respectively

[49] All UTM coordinates are WGS 1984 unless marked by “*” which indicates Hjorsey 1955

Spot	Mount	Date	Cor (238/232)	± (238/232)	(230/232)	± (230/232)	Model Age (yr)	Error Model (+ yrs)	Error Model (-yrs)	Intercept Equiline	Error Intercept	Slope	Error Slope
Markarfljót ISM* 27W 552381, 7059713													
IS-M-29.1-TH	JW508.	Feb. ‘11	3.04	0.10	1.68	0.06	48808	9993	9152	0.9	0.09	0.362	0.056
IS-M-26.1-TH	JW508.	Feb. ‘11	3.15	0.10	1.64	0.06	43532	8894	8221	0.9	0.09	0.330	0.053
IS-M-23.1-TH	JW508.	Feb. ‘11	2.53	0.08	1.74	0.07	78021	19307	16391	0.9	0.09	0.512	0.079
IS-M-21.1-TH	JW508.	Feb. ‘11	2.55	0.08	1.29	0.04	29474	9144	8435	0.9	0.09	0.237	0.062
IS-M-18.2-TH	JW508.	Feb. ‘11	2.94	0.10	1.45	0.05	33983	8413	7809	0.9	0.09	0.268	0.054
IS-M-17.1-TH	JW508.	Feb. ‘11	3.48	0.12	1.74	0.07	42851	7887	7353	0.9	0.09	0.326	0.047
IS-M-16.3-TH	JW508.	Feb. ‘11	2.77	0.09	1.39	0.04	32793	8460	7849	0.9	0.09	0.260	0.055
IS-M-12.1-TH	JW508.	Feb. ‘11	4.64	0.15	2.13	0.09	43491	6303	5958	0.9	0.09	0.330	0.038
Öræfajökull: IOHn* 27W 595113, 7099846													
IONH1-7.2C	JW444	Aug. ‘09	2.53	0.08	0.95	0.03	3617	6834	6430	0.9	0.09	0.033	0.059
IONH1-4.1C	JW444	Aug. ‘09	2.46	0.08	1.12	0.04	16956	8648	8011	0.9	0.09	0.144	0.065
IOHN1-7.1T	JW444	Aug. ‘09	2.50	0.08	1.40	0.07	40552	12398	11128	0.9	0.09	0.311	0.074
IOHN1-16.1I	JW444	Aug. ‘09	2.29	0.07	1.14	0.05	20344	10221	9342	0.9	0.09	0.171	0.074
IOHN1-15.3C	JW444	Aug. ‘09	3.24	0.10	1.09	0.05	9273	5263	5020	0.9	0.09	0.082	0.043
IOHN-9.1E-B	JW444	Aug. ‘09	4.09	0.12	1.47	0.08	21539	5386	5132	0.9	0.09	0.180	0.040
IOHN-7.2C-B	JW444	Aug. ‘09	2.96	0.09	1.08	0.04	9981	5976	5664	0.9	0.09	0.088	0.049
IOHN-3.1T-B	JW444	Aug. ‘09	2.66	0.08	1.09	0.06	12641	7631	7131	0.9	0.09	0.110	0.060
IOHN-20.1C-B	JW444	Aug. ‘09	1.17	0.04	1.00	0.02	50120	97565	50587	0.9	0.09	0.369	0.374
IOHN-15.3C-B	JW444	Aug. ‘09	2.68	0.08	1.08	0.04	11350	6905	6492	0.9	0.09	0.099	0.055
Torfajökull: 3A03 and 5A03 Locations not available													
3A03-7	JW181.	Aug. ‘09	3.66	0.11	1.19	0.06	12111	5016	4795	0.9	0.09	0.105	0.040
3A03-6	JW181.	Aug. ‘09	3.41	0.10	1.08	0.06	8104	5165	4931	0.9	0.09	0.072	0.043
3A03-5	JW181.	Aug. ‘09	2.92	0.09	1.51	0.07	38649	9661	8872	0.9	0.09	0.299	0.060
3A03-4	JW181.	Aug. ‘09	3.66	0.11	1.10	0.06	8354	4838	4632	0.9	0.09	0.074	0.040
3A03-3.1	JW181.	Aug. ‘09	3.00	0.09	1.19	0.06	16219	6873	6464	0.9	0.09	0.139	0.053
3A03-2	JW181.	Aug. ‘09	2.94	0.09	1.49	0.07	37119	9376	8631	0.9	0.09	0.289	0.059
3A03-1	JW181.	Aug. ‘09	3.98	0.12	1.31	0.07	15550	4945	4730	0.9	0.09	0.133	0.039
5A03-7	JW181.	Aug. ‘09	3.63	0.11	1.50	0.07	26727	6054	5735	0.9	0.09	0.218	0.042

Spot	Mount	Date	Cor (238/232)	± (238/232)	(230/232)	± (230/232)	Model Age (yr)	Error Model (+ yrs)	Error Model (-yrs)	Intercept Equiline	Error Intercept	Slope	Error Slope
5A03-6	JW181.	Aug. ‘09	3.13	0.09	1.21	0.06	16089	6250	5911	0.9	0.09	0.138	0.048
5A03-5	JW181.	Aug. ‘09	3.65	0.11	1.77	0.09	41624	8275	7689	0.9	0.09	0.318	0.050
5A03-4	JW181.	Aug. ‘09	1.90	0.06	1.15	0.03	31008	15073	13236	0.9	0.09	0.248	0.097
5A03-3	JW181.	Aug. ‘09	3.54	0.11	1.40	0.07	22773	6062	5742	0.9	0.09	0.189	0.044
5A03-2	JW181.	Aug. ‘09	4.55	0.14	1.87	0.08	33596	5349	5098	0.9	0.09	0.266	0.035
5A03-1	JW181.	Aug. ‘09	2.51	0.08	1.14	0.05	17667	8525	7905	0.9	0.09	0.150	0.064
Torfajökull: IETR 27W 576365, 7095290													
IETR-8.1	TLC8.	May ‘13	2.50	6.79	1.53	12.02	55	25	20	0.9	0.005	0.395	0.123
IETR-60.1	TLC8.	May ‘13	1.45	2.28	1.17	3.36	72	18	15	0.9	0.005	0.485	0.077
IETR-6.1	TLC8.	May ‘13	5.42	2.68	3.04	23.14	70	39	28	0.9	0.005	0.474	0.157
IETR-54.2	TLC8.	May ‘13	3.89	0.23	1.97	16.85	48	21	17	0.9	0.005	0.359	0.111
IETR-52.1	TLC8.	May ‘13	3.40	2.27	2.03	13.87	66	25	21	0.9	0.005	0.453	0.114
IETR-5.2	TLC8.	May ‘13	4.11	0.21	2.56	12.32	80	25	20	0.9	0.005	0.517	0.098
IETR-49.1	TLC8.	May ‘13	4.12	0.88	2.60	12.58	82	26	21	0.9	0.005	0.527	0.102
IETR-45.1	TLC8.	May ‘13	3.07	0.79	1.97	15.70	74	36	27	0.9	0.005	0.494	0.143
IETR-44.1	TLC8.	May ‘13	2.85	1.31	1.56	11.88	45	17	15	0.9	0.005	0.338	0.095
IETR-43.1	TLC8.	May ‘13	12.53	2.66	5.34	6.35	53	6	5	0.9	0.005	0.382	0.031
IETR-42.1	TLC8.	May ‘13	4.18	1.61	2.12	18.76	51	24	19	0.9	0.005	0.374	0.122
IETR-41.1	TLC8.	May ‘13	4.31	0.22	2.52	13.52	70	23	19	0.9	0.005	0.474	0.100
IETR-40.1	TLC8.	May ‘13	4.91	2.46	4.90	11.88	603	#NUM!	398	0.9	0.005	0.996	0.148
IETR-3.2	TLC8.	May ‘13	4.46	0.90	1.90	12.87	36	11	10	0.9	0.005	0.280	0.069
IETR-21.1	TLC8.	May ‘13	4.84	0.92	3.12	10.36	91	23	19	0.9	0.005	0.564	0.082
IETR-18.1	TLC8.	May ‘13	4.37	0.52	3.27	10.71	126	42	30	0.9	0.005	0.684	0.101
IETR-16.1	TLC8.	May ‘13	3.49	2.00	2.77	8.85	140	47	33	0.9	0.005	0.722	0.097
IETR-15.2	TLC8.	May ‘13	3.66	0.16	2.44	9.12	89	22	18	0.9	0.005	0.559	0.081
IETR-13.1	TLC8.	May ‘13	4.25	0.59	3.07	9.92	114	33	25	0.9	0.005	0.648	0.091
IETR-1.1	TLC8.	May ‘13	6.29	1.14	4.90	10.41	148	50	34	0.9	0.005	0.743	0.095

Spot	Mount	Date	Cor (238/232)	± (238/232)	(230/232)	± (230/232)	Model Age (yr)	Error Model (+ yrs)	Error Model (-yrs)	Intercept Equiline	Error Intercept	Slope	Error Slope
Torfajökull: ITHn* 27W 584358, 7093649*													
ITHN1-5.1U	JW461	Dec. ‘09	4.10	0.12	1.36	0.07	16920	4658	4466	0.9	0.09	0.144	0.036
ITHN1-4.1U	JW461	Dec. ‘09	2.10	0.06	1.10	0.02	20332	10809	9831	0.9	0.09	0.171	0.078
ITHN-9-4.1U	JW461	Dec. ‘09	4.50	0.13	1.37	0.07	15182	4101	3952	0.9	0.09	0.130	0.032
ITHN-9-1.1U	JW461	Dec. ‘09	3.65	0.11	1.37	0.06	20472	5318	5070	0.9	0.09	0.172	0.040
ITHN-8.1U	JW461	Dec. ‘09	3.14	0.09	1.38	0.06	26263	7023	6597	0.9	0.09	0.215	0.049
ITHN-7.1U	JW461	Dec. ‘09	4.25	0.13	1.64	0.08	26926	5329	5080	0.9	0.09	0.219	0.037
ITHN-6.1U	JW461	Dec. ‘09	2.85	0.09	1.19	0.05	17715	7069	6638	0.9	0.09	0.150	0.053
ITHN-3.2U	JW461	Dec. ‘09	4.07	0.12	1.22	0.06	11431	4246	4087	0.9	0.09	0.100	0.034
ITHN-3.1U	JW461	Dec. ‘09	4.95	0.15	1.78	0.09	26521	4675	4482	0.9	0.09	0.216	0.033
ITHN-2.1U	JW461	Dec. ‘09	2.95	0.09	1.37	0.05	28198	7771	7253	0.9	0.09	0.228	0.053
ITHN-1.1U	JW461	Dec. ‘09	3.77	0.11	1.42	0.07	21862	5469	5207	0.9	0.09	0.182	0.040
Torfajökull: ITN* 27W 595113, 7099846													
ITN1-9.1C-B	JW444	Aug. ‘09	4.84	0.15	1.29	0.06	11294	3370	3269	0.9	0.09	0.099	0.028
ITN1-8.2I-B	JW444	Aug. ‘09	3.73	0.11	1.42	0.07	22264	5672	5391	0.9	0.09	0.185	0.041
ITN1-5.2C-B	JW444	Aug. ‘09	2.82	0.09	1.10	0.03	12284	6202	5867	0.9	0.09	0.107	0.050
ITN1-3.1I-B	JW444	Aug. ‘09	2.61	0.08	1.49	0.07	45639	12331	11074	0.9	0.09	0.343	0.070
ITN1-14.21-B	JW444	Aug. ‘09	4.61	0.14	1.01	0.06	3372	3326	3228	0.9	0.09	0.031	0.029
ITN1-13.1C-B	JW444	Aug. ‘09	2.84	0.09	1.10	0.04	12025	6279	5937	0.9	0.09	0.105	0.050
ITN1-10.1I-B	JW444	Aug. ‘09	4.38	0.13	1.25	0.07	11484	4057	3911	0.9	0.09	0.100	0.033
ITN1-1.1I-B	JW444	Aug. ‘09	5.49	0.17	1.28	0.09	9281	3271	3175	0.9	0.09	0.082	0.027

APPENDIX E: Bulk Rock Isotopes

Appendix E: Bulk Rock Isotopes

WSU Radiogenic Isotope and Geochronology Laboratory, ThermoFinnigan Neptune MC-ICPMS

System	Sample	Map #	Location[50]	Pb[51]						Nd[52]				Hf[53]			
				$^{206}Pb/^{204}Pb$	±	$^{207}Pb/^{204}Pb$	±	$^{208}Pb/^{204}Pb$	±	$^{143}Nd/^{144}Nd$	±	ε_{Nd}[54]	2SE	$^{176}Hf/^{177}Hf$	±	ε_{Hf}[55]	2SE
Króksfjördur	IIKK	2	27W 455836, 7264252	18.5112	0.0022	15.4814	0.0021	38.1338	0.0051	0.513039	13	7.8	0.2	0.283192	2	14.4	0.1
Kerlingarfjöll	IEKlT	3	27W 576956, 7169439	18.8822	0.0022	15.5083	0.0021	38.5049	0.0051	0.513020	12	7.4	0.2	0.283139	2	12.5	0.1
Kerlingarfjöll	IEKlM	3	27W 580732, 7169302	18.9892	0.0022	15.5193	0.0021	38.5748	0.0054	0.513007	12	7.2	0.2	0.283129	3	12.2	0.1
Stóraa-Laxa	IEFS-1a	4	27W 535438, 7109774	19.0418	0.0029	15.5131	0.0027	38.6131	0.0064	0.513012	12	7.3	0.2	0.283122	2	11.9	0.1
Hekla	IHB	5	27W 558938, 7106903*	19.0305	0.0014	15.5274	0.0014	38.6170	0.0027	0.513026	21	7.6	0.4	0.283125	2	12.0	0.1
Torfajökull	IETR	6	27W 576365, 7095290	19.2291	0.0015	15.5513	0.0014	38.8714	0.0029	0.512964	21	6.4	0.4	0.283089	3	10.7	0.1
Torfajökull	IETHb	6	27W 600092, 7094232	19.2129	0.0015	15.5525	0.0014	38.8822	0.0029	0.512972	21	6.5	0.4	0.283087	2	10.7	0.1
Torfajökull	IETG	6	27W 597859, 7097451	19.2400	0.0015	15.5543	0.0014	38.9049	0.0030	0.512979	21	6.7	0.4	0.283089	2	10.8	0.1
Torfajökull	ITN	6	27W 595113, 7099846*	19.2953	0.0015	15.5554	0.0014	38.9172	0.0030	0.512966	21	6.4	0.4	0.283092	2	10.8	0.1
Oraefajokull	IOHn	7	27W 595113, 7099846*	18.5423	0.0023	15.5225	0.0022	38.4551	0.0054	0.512934	12	5.8	0.2	0.283135	2	12.4	0.1
Krafla	IEKG	8	28W 410640, 7292179	18.3415	0.0015	15.4593	0.0015	38.0557	0.0029	0.513024	± 12	7.5	0.2	0.283177	2	13.9	0.1
Krafla	IEKHr	8	28W 421133, 7287736	18.4078	0.0014	15.4698	0.0014	38.1250	0.0027	0.513025	21	7.5	0.4	0.283172	3	13.7	0.1

[50] All coordinates are UTM WGS 1984 except for samples with "*" which indicates Hjorsey 1955
[51] Mass bias corrected; normalized to standard
[52] Mass bias and interference corrected; normalized to standard
[53] Normalized to standard
[54] $\varepsilon_{Nd} = ([^{143}Nd/^{144}Nd_{sample}]/[^{143}Nd/^{144}Nd_{CHUR}]-1) * 10000$; CHUR = 0.512638
[55] $\varepsilon_{Hf} = ([^{176}Hf/^{177}Hf_{sample}]/[^{176}Hf/^{177}Hf_{CHUR}]-1) * 10000$; CHUR = 0.282785

System	Sample	Map #	Location	$^{206}Pb/^{204}Pb$	±	$^{207}Pb/^{204}Pb$	±	$^{208}Pb/^{204}Pb$	±	$^{143}Nd/^{144}Nd$	±	ε_{Nd}	2SE	$^{176}Hf/^{177}Hf$	±	ε_{Hf}	2SE
Askja	IEAX-2a	9	28W 418855, 7214458	18.5204	0.0014	15.4761	0.0014	38.2268	0.0029	0.513043	21	7.9	0.4	0.283174	2	13.7	0.1
Snæfellsness-Knörr	IISK	10	27W 383104, 7191705	19.0046	0.0023	15.5169	0.0021	38.5886	0.0052	0.512924	21	5.6	0.4	0.283104	3	11.3	0.1
Viđidalsfjall	IIM	11	27W 521634, 7256525	19.1471	0.0015	15.5283	0.0014	38.8029	0.0029	0.512990	± 21	6.9	0.4	0.283126	3	12.0	0.1
Hvítserkur	IEHv-1c-1	--	28W 557692, 7257066	18.4726	0.0025	15.5113	0.0023	38.1226	0.0060	0.513032	13	7.7	0.2	0.283215	3	15.2	0.1

APPENDIX F: Hafnium Isotopes in Zircon

Appendix F: Hafnium Isotopes in Zircon

Memorial University, ThermoFinnigan Neptune LA-MC-ICPMS, *in situ* measurements

File name	Mount	Sample ID	$^{176}Hf/^{177}Hf$	2SE	$^{176}Lu/^{177}Hf$	2SE	$^{176}Yb/^{177}Hf$	2SE	$^{178}Hf/^{177}Hf$	2SE	Total Hf signal (V)	e(Hf)[a]	2SE	interf. corr[b]
Fjardarsá: ISFjar*[56] 28W 500225, 7131316														
13de17a34	JW499.	IS_Fjar_12	0.283149	0.000027	0.00191	0.00010	0.0577	0.0030	1.467206	0.000029	14.6	12.9	1.0	2131
13de17a35	JW499.	IS_Fjar_13	0.283153	0.000028	0.00217	0.00010	0.0651	0.0031	1.467234	0.000045	13.0	13.0	1.0	2403
13de17a36	JW499.	IS_Fjar_14	0.283236	0.000066	0.00386	0.00064	0.1197	0.0213	1.467244	0.000080	13.8	16.0	2.3	4412
13de17a38	JW499.	IS_Fjar_16	0.283145	0.000024	0.00083	0.00001	0.0239	0.0003	1.467256	0.000036	14.8	12.7	0.9	883
13de17a40	JW499.	IS_Fjar_18	0.283138	0.000028	0.00227	0.00012	0.0723	0.0045	1.467190	0.000033	13.9	12.5	1.0	2664
13de17a46	JW499.	IS_Fjar_20	0.283177	0.000026	0.00169	0.00007	0.0526	0.0021	1.467235	0.000032	12.2	13.8	0.9	1939
13de17a47	JW499.	IS_Fjar_21	0.283127	0.000034	0.00308	0.00006	0.0976	0.0021	1.467224	0.000041	11.4	12.1	1.2	3596
13de17a44	JW499.	IS_Fjar_23	0.283125	0.000024	0.00111	0.00002	0.0344	0.0008	1.467246	0.000039	14.7	12.0	0.8	1267
13de17a39	JW499.	IS_Fjar_24	0.283144	0.000029	0.00176	0.00015	0.0575	0.0057	1.467210	0.000046	14.1	12.7	1.0	2116
13de17a45	JW499.	IS_Fjar_24	0.283147	0.000046	0.00320	0.00024	0.1073	0.0078	1.467226	0.000060	16.3	12.8	1.6	3946
13de17a37	JW499.	IS_Fjar_27	0.283152	0.000039	0.00289	0.00021	0.0945	0.0075	1.467220	0.000043	11.3	13.0	1.4	3478
13de17a27	JW499.	IS_Fjar_6	0.283149	0.000024	0.00223	0.00010	0.0670	0.0028	1.467252	0.000032	15.3	12.9	0.9	2474
13de17a28	JW499.	IS_Fjar_7	0.283118	0.000018	0.00086	0.00002	0.0250	0.0004	1.467234	0.000034	15.6	11.8	0.6	923
13de17a29	JW499.	IS_Fjar_8	0.283163	0.000028	0.00259	0.00030	0.0793	0.0102	1.467240	0.000041	13.4	13.4	1.0	2924
13de17a30	JW499.	IS_Fjar_9	0.283126	0.000024	0.00139	0.00008	0.0415	0.0021	1.467203	0.000032	16.2	12.1	0.8	1533
13de17a25	JW499.	IS-FJar_1	0.283137	0.000031	0.00187	0.00015	0.0577	0.0049	1.467237	0.000029	17.0	12.4	1.1	2129
Hrafnfjörður: KK24[57] 27W 552230, 7279551														
13je11a16	TLC7.	kk24_10	0.283225	0.000061	0.00595	0.00007	0.1702	0.0018	1.467266	0.000045	19.1	15.6	2.2	6291
13je11a17	TLC7.	kk24_11	0.283236	0.000039	0.00456	0.00023	0.1300	0.0063	1.467241	0.000052	12.4	15.9	1.4	4806
13je11a18	TLC7.	kk24_11b	0.283219	0.000029	0.00347	0.00015	0.0970	0.0041	1.467250	0.000057	14.8	15.4	1.0	3587
13je11a19	TLC7.	kk24_12	0.283266	0.000059	0.00556	0.00033	0.1613	0.0098	1.467190	0.000050	14.3	17.0	2.1	5960
13je11a06	TLC7.	kk24_4	0.283238	0.000038	0.00554	0.00021	0.1545	0.0066	1.467276	0.000071	13.6	16.0	1.3	5714
13je11a07	TLC7.	kk24_4b	0.283194	0.000052	0.00422	0.00010	0.1170	0.0031	1.467210	0.000073	15.7	14.5	1.8	4330
13je11a08	TLC7.	kk24_5	0.283220	0.000022	0.00460	0.00004	0.1261	0.0013	1.467217	0.000050	21.7	15.4	0.8	4667
13je11a09	TLC7.	kk24_6	0.283264	0.000042	0.00267	0.00008	0.0720	0.0026	1.467215	0.000060	13.7	16.9	1.5	2667
13je11a10	TLC7.	kk24_7	0.283213	0.000054	0.00473	0.00020	0.1302	0.0059	1.467203	0.000050	20.6	15.1	1.9	4817
13je11a12	TLC7.	kk24_8	0.283232	0.000033	0.00397	0.00007	0.1089	0.0021	1.467234	0.000042	15.6	15.8	1.2	4031
13je11a13	TLC7.	kk24_8b	0.283223	0.000033	0.00250	0.00008	0.0679	0.0027	1.467212	0.000042	14.5	15.5	1.2	2512
13je11a14	TLC7.	kk24_9	0.283219	0.000046	0.00561	0.00010	0.1557	0.0029	1.467241	0.000033	15.8	15.4	1.6	5761
13je11a15	TLC7.	kk24_9b	0.283253	0.000033	0.00437	0.00023	0.1252	0.0078	1.467221	0.000042	12.9	16.5	1.2	4626

[56] All coordinates are UTM WGS 1984 except for samples with "*" which indicates Hjorsey 1955
[57] Sample provided by Brennan Jordan

File name	Mount	Sample ID	$^{176}Hf/^{177}Hf$	2SE	$^{176}Lu/^{177}Hf$	2SE	$^{176}Yb/^{177}Hf$	2SE	$^{178}Hf/^{177}Hf$	2SE	Total Hf signal (V)	e(Hf)	2SE	interf. corr
Hekla: IHB* 27W 558938, 7106903														
13je10a21	JW444.	IHB	0.283159	0.000045	0.00212	0.00010	0.0580	0.0031	1.467243	0.000071	13.0	13.2	1.6	2147
13je10a23	JW444.	IHB	0.283170	0.000051	0.00195	0.00030	0.0551	0.0089	1.467166	0.000059	17.0	13.6	1.8	2036
13je10a11	JW444.	IHB_14	0.283125	0.000022	0.00117	0.00002	0.0341	0.0007	1.467192	0.000061	16.1	12.0	0.8	1260
13je10a13	JW444.	IHB_14b	0.283154	0.000021	0.00159	0.00010	0.0477	0.0034	1.467240	0.000067	17.8	13.0	0.7	1762
13je10a09	JW444.	IHB_18.1	0.283165	0.000028	0.00301	0.00041	0.0851	0.0118	1.467207	0.000040	14.4	13.4	1.0	3147
13je10a08	JW444.	IHB_18.2	0.283129	0.000034	0.00099	0.00008	0.0266	0.0022	1.467235	0.000044	15.6	12.2	1.2	987
13je10a06	JW444.	IHB_20	0.283119	0.000031	0.00122	0.00002	0.0329	0.0003	1.467193	0.000051	14.8	11.8	1.1	1217
13je10a07	JW444.	IHB_20b	0.283173	0.000035	0.00127	0.00002	0.0348	0.0007	1.467228	0.000053	13.5	13.7	1.2	1288
13je10a22	JW444.	IHB_22	0.283125	0.000037	0.00216	0.00018	0.0606	0.0053	1.467230	0.000050	12.1	12.0	1.3	2242
13je10a16	JW444.	IHB_6	0.283104	0.000039	0.00104	0.00004	0.0280	0.0011	1.467232	0.000044	17.1	11.3	1.4	1038
Husavikurkleif: IXH 27W 470820, 7280239														
13je13b03	JW530.	IHX-1	0.282341	0.000020	0.00034	0.00007	0.0085	0.0020	1.467261	0.000042	14.5	-15.7	0.7	315
13je13b08	JW530.	IHX-1b	0.282334	0.000021	0.00085	0.00012	0.0225	0.0032	1.467231	0.000037	15.5	-16.0	0.7	833
13je13b04	JW530.	IHX-2	0.283176	0.000039	0.00134	0.00005	0.0344	0.0014	1.467299	0.000041	15.0	13.8	1.4	1277
13je13b07	JW530.	IHX-22	0.283250	0.000037	0.00159	0.00012	0.0421	0.0033	1.467236	0.000071	11.3	16.5	1.3	1560
13je13b05	JW530.	IHX-3	0.283169	0.000030	0.00171	0.00006	0.0458	0.0017	1.467221	0.000043	12.2	13.6	1.1	1696
13je13b06	JW530.	IHX-5	0.283147	0.000029	0.00143	0.00002	0.0371	0.0005	1.467217	0.000065	15.3	12.8	1.0	1377
13je13b09	JW530.	IXH	0.283163	0.000030	0.00183	0.00005	0.0497	0.0014	1.467244	0.000053	12.9	13.4	1.1	1840
13je13b25	JW530.	IXH	0.283151	0.000038	0.00134	0.00005	0.0342	0.0013	1.467181	0.000048	12.3	12.9	1.3	1269
13je13b14	JW530.	IXH no prior	0.283147	0.000030	0.00180	0.00020	0.0491	0.0056	1.467231	0.000032	15.8	12.8	1.1	1818
13je13b30	JW530.	IXH no prior	0.283157	0.000042	0.00154	0.00002	0.0407	0.0007	1.467197	0.000065	16.4	13.2	1.5	1510
13je13b21	JW530.	IXH-13	0.283185	0.000031	0.00188	0.00006	0.0494	0.0016	1.467240	0.000047	11.7	14.2	1.1	1830
13je13b13	JW530.	IXH-23	0.283156	0.000028	0.00133	0.00006	0.0351	0.0017	1.467276	0.000047	11.5	13.1	1.0	1301
13je13b12	JW530.	IXH-24	0.283192	0.000065	0.00171	0.00004	0.0448	0.0010	1.467238	0.000053	12.6	14.4	2.3	1661
13je13b22	JW530.	IXH-35	0.283161	0.000033	0.00176	0.00006	0.0464	0.0018	1.467232	0.000052	16.4	13.3	1.2	1721
13je13b16	JW530.	IXH-8	0.283174	0.000038	0.00196	0.00014	0.0532	0.0043	1.467228	0.000056	15.9	13.7	1.4	1969
13je13b19	JW530.	IXH-no prior	0.283175	0.000046	0.00154	0.00005	0.0396	0.0015	1.467233	0.000053	16.1	13.8	1.6	1470
Hvítserkur : Erla 28W 558485, 7259506														
13je12a33	TLC2.	Erla	0.282202	0.000032	0.00068	0.00018	0.0179	0.0047	1.467215	0.000055	24.8	-20.6	1.1	664
Jökulsá í Lóni: ISJL* 28W 505478, 7144079														
13de17a06	JW499.	IS-JL_1	0.283144	0.000023	0.00187	0.00004	0.0556	0.0012	1.467176	0.000038	11.0	12.7	0.8	2051
13de17a17	JW499.	IS-JL_10	0.283173	0.000023	0.00233	0.00001	0.0663	0.0007	1.467209	0.000038	13.9	13.7	0.8	2451
13de17a18	JW499.	IS-JL_11	0.283136	0.000020	0.00076	0.00001	0.0223	0.0006	1.467244	0.000034	16.4	12.4	0.7	824
13de17a19	JW499.	IS-JL_12	0.283153	0.000023	0.00107	0.00001	0.0331	0.0006	1.467204	0.000055	15.3	13.0	0.8	1221
13de17a20	JW499.	IS-JL_13	0.283160	0.000030	0.00203	0.00015	0.0593	0.0050	1.467254	0.000051	14.2	13.3	1.1	2191
13de17a21	JW499.	IS-JL_14	0.283235	0.000031	0.00234	0.00045	0.0718	0.0146	1.467264	0.000049	20.0	15.9	1.1	2649
13de17a22	JW499.	IS-JL_15	0.283166	0.000027	0.00187	0.00010	0.0535	0.0031	1.467231	0.000034	12.0	13.5	1.0	1978
13de17a07	JW499.	IS-JL_2	0.283147	0.000020	0.00074	0.00000	0.0222	0.0001	1.467233	0.000036	15.1	12.8	0.7	819

File name	Mount	Sample ID	^{176}Hf/^{177}Hf	2SE	^{176}Lu/^{177}Hf	2SE	^{176}Yb/^{177}Hf	2SE	^{178}Hf/^{177}Hf	2SE	Total Hf signal (V)	e(Hf)	2SE	interf. corr
13de17a08	JW499.	IS-JL_3	0.283159	0.000024	0.00114	0.00005	0.0352	0.0018	1.467218	0.000034	14.7	13.2	0.9	1296
13de17a09	JW499.	IS-JL_4	0.283168	0.000031	0.00373	0.00007	0.1147	0.0020	1.467242	0.000032	14.6	13.6	1.1	4231
13de17a10	JW499.	IS-JL_5	0.283125	0.000025	0.00087	0.00003	0.0255	0.0012	1.467222	0.000039	13.8	12.0	0.9	941
13de17a11	JW499.	IS-JL_6	0.283162	0.000025	0.00146	0.00011	0.0410	0.0034	1.467281	0.000036	12.9	13.3	0.9	1518
13de17a12	JW499.	IS-JL_7	0.283137	0.000024	0.00176	0.00006	0.0547	0.0020	1.467241	0.000028	15.1	12.4	0.8	2018
13de17a13	JW499.	IS-JL_8	0.283152	0.000023	0.00124	0.00007	0.0349	0.0021	1.467180	0.000040	12.2	13.0	0.8	1292
13de17a16	JW499.	IS-JL_9	0.283162	0.000029	0.00193	0.00010	0.0591	0.0034	1.467270	0.000037	17.8	13.3	1.0	2178
Kerlingarfjöll: IEKlT 27W 576956, 7169439														
13je13a15	TLC8.	IEKTLT- no prior	0.283148	0.000021	0.00167	0.00005	0.0441	0.0013	1.467260	0.000058	16.6	12.8	0.7	1635
13je13a05	TLC8.	IEKTLT-1.1	0.283135	0.000034	0.00512	0.00013	0.1453	0.0041	1.467228	0.000044	21.0	12.4	1.2	5374
13je13a10	TLC8.	IEKTLT-10.1	0.283155	0.000027	0.00150	0.00004	0.0396	0.0009	1.467208	0.000054	13.1	13.1	0.9	1467
13je13a14	TLC8.	IEKTLT-14	0.283138	0.000030	0.00143	0.00002	0.0371	0.0006	1.467250	0.000040	14.4	12.5	1.1	1375
13je13a17	TLC8.	IEKTLT-18	0.283139	0.000032	0.00175	0.00014	0.0463	0.0041	1.467262	0.000058	16.0	12.5	1.1	1715
13je13a06	TLC8.	IEKTLT-2.1	0.283139	0.000025	0.00182	0.00005	0.0487	0.0015	1.467256	0.000046	15.9	12.5	0.9	1805
13je13a13	TLC8.	IEKTLT-23.1	0.283147	0.000045	0.00210	0.00010	0.0566	0.0029	1.467173	0.000075	11.9	12.8	1.6	2095
13je13a07	TLC8.	IEKTLT-6.1	0.283220	0.000050	0.00174	0.00016	0.0472	0.0045	1.467203	0.000053	15.7	15.4	1.8	1748
13je13a09	TLC8.	IEKTLT-8.1	0.283133	0.000035	0.00151	0.00006	0.0406	0.0017	1.467247	0.000041	17.0	12.3	1.2	1504
Krafla: IEKG 28W 410640, 7292179														
11no08a37	JW529.	IEKG_1.1	0.283224	0.000042	0.00368	0.00021	0.1021	0.0057	1.467285	0.000058	36.5	15.5	1.5	3779
11no08a36	JW529.	IEKG_2.1	0.283210	0.000024	0.00177	0.00004	0.0483	0.0012	1.467325	0.000046	54.8	15.0	0.8	1788
11no08a35	JW529.	IEKG_3.1	0.283197	0.000021	0.00203	0.00006	0.0553	0.0015	1.467239	0.000045	56.2	14.6	0.7	2046
11no08a39	JW529.	IEKG_4.1	0.283179	0.000044	0.00338	0.00029	0.0937	0.0081	1.467180	0.000057	32.3	13.9	1.6	3467
11no08a38	JW529.	IEKG_5.1	0.283164	0.000029	0.00251	0.00017	0.0696	0.0050	1.467214	0.000044	48.1	13.4	1.0	2576
11no08a40	JW529.	IEKG_6.1	0.283195	0.000038	0.00181	0.00016	0.0499	0.0047	1.467252	0.000062	51.2	14.5	1.3	1846
11no08a34	JW529.	IEKG_9.1	0.283199	0.000027	0.00185	0.00010	0.0511	0.0028	1.467255	0.000030	52.3	14.6	1.0	1893
13je13b41	JW530.	IEKG-24	0.283200	0.000034	0.00241	0.00005	0.0640	0.0016	1.467285	0.000062	11.8	14.7	1.2	2373
11no08a41	JW529.	IEKG-7.1	0.283235	0.000049	0.00303	0.00017	0.0836	0.0046	1.467281	0.000058	36.9	15.9	1.7	3094
11no08a42	JW529.	IEKG-7.2	0.283213	0.000049	0.00124	0.00012	0.0338	0.0035	1.467228	0.000067	36.7	15.1	1.7	1251
11no08a43	JW529.	IEKG-8.1	0.283259	0.000045	0.00117	0.00005	0.0324	0.0019	1.467281	0.000070	27.2	16.8	1.6	1199
Króksfjördur: IIKK 27W 455836, 7264252														
11no08a28	JW529.	IIKK_1.1	0.283158	0.000023	0.00162	0.00009	0.0399	0.0025	1.467252	0.000043	50.7	13.2	0.8	1482
11no08a29	JW529.	IIKK_1.2	0.283212	0.000030	0.00099	0.00004	0.0244	0.0010	1.467271	0.000063	58.0	15.1	1.1	907
11no08a27	JW529.	IIKK_2.1	0.283175	0.000021	0.00222	0.00022	0.0493	0.0052	1.467255	0.000031	56.9	13.8	0.7	1842
11no08a26	JW529.	IIKK_3.1	0.283194	0.000026	0.00156	0.00008	0.0327	0.0017	1.467252	0.000037	50.0	14.4	0.9	1225
11no08a25	JW529.	IIKK_4.1	0.283159	0.000019	0.00103	0.00003	0.0240	0.0006	1.467242	0.000032	55.3	13.2	0.7	893
11no08a24	JW529.	IIKK_4.2	0.283174	0.000015	0.00067	0.00002	0.0157	0.0004	1.467242	0.000035	61.4	13.7	0.5	583
Krossá-Kækjudalsá: ISKK 28W 553667, 7260140														
13je11b06	TLC4.	ISKK_1	0.283197	0.000036	0.00357	0.00011	0.1010	0.0033	1.467218	0.000044	14.1	14.6	1.3	3735
13je11b13	TLC4.	ISKK_10	0.283219	0.000042	0.00182	0.00002	0.0534	0.0008	1.467180	0.000046	11.4	15.4	1.5	1973
13je11b15	TLC4.	ISKK_11	0.283201	0.000020	0.00158	0.00002	0.0452	0.0005	1.467259	0.000038	14.4	14.7	0.7	1671
13je12b37	TLC3.	iskk_12	0.283203	0.000030	0.00201	0.00010	0.0570	0.0029	1.467217	0.000034	16.7	14.8	1.0	2107

File name	Mount	Sample ID	$^{176}Hf/^{177}Hf$	2SE	$^{176}Lu/^{177}Hf$	2SE	$^{176}Yb/^{177}Hf$	2SE	$^{178}Hf/^{177}Hf$	2SE	Total Hf signal (V)	e(Hf)	2SE	interf. corr
13je11b16	TLC4.	ISKK_13	0.283214	0.000020	0.00099	0.00005	0.0270	0.0016	1.467201	0.000037	13.9	15.2	0.7	999
13je12a44	TLC2.	ISKK_13	0.283244	0.000037	0.00379	0.00016	0.1080	0.0048	1.467235	0.000045	21.7	16.2	1.3	3993
13je11b17	TLC4.	ISKK_14	0.283194	0.000019	0.00135	0.00001	0.0379	0.0003	1.467239	0.000038	14.8	14.5	0.7	1402
13je11b19	TLC4.	ISKK_16	0.283198	0.000024	0.00204	0.00009	0.0577	0.0027	1.467208	0.000038	18.1	14.6	0.8	2132
13je12b36	TLC3.	iskk_16	0.283220	0.000024	0.00255	0.00007	0.0722	0.0019	1.467269	0.000038	15.9	15.4	0.9	2670
13je11b18	TLC4.	ISKK_17	0.283195	0.000022	0.00182	0.00009	0.0500	0.0025	1.467212	0.000039	14.1	14.5	0.8	1851
13je11b20	TLC4.	ISKK_19	0.283197	0.000024	0.00096	0.00002	0.0265	0.0006	1.467200	0.000045	17.6	14.6	0.8	981
13je11b05	TLC4.	ISKK_2	0.283189	0.000036	0.00388	0.00055	0.1203	0.0174	1.467220	0.000038	12.9	14.3	1.3	4435
13je11b21	TLC4.	ISKK_20	0.283200	0.000032	0.00474	0.00020	0.1372	0.0060	1.467248	0.000032	14.5	14.7	1.1	5071
13je11b23	TLC4.	ISKK_21	0.283211	0.000023	0.00172	0.00009	0.0482	0.0025	1.467220	0.000029	14.1	15.1	0.8	1784
13je11b24	TLC4.	ISKK_22	0.283187	0.000031	0.00195	0.00015	0.0538	0.0041	1.467202	0.000033	12.9	14.2	1.1	1991
13je11b25	TLC4.	ISKK_23	0.283184	0.000024	0.00103	0.00003	0.0296	0.0008	1.467259	0.000034	15.5	14.1	0.9	1094
13je12a39	TLC2.	ISKK_24	0.283200	0.000052	0.00412	0.00031	0.1161	0.0092	1.467235	0.000062	14.0	14.7	1.8	4294
13je11b26	TLC4.	ISKK_25	0.283223	0.000040	0.00408	0.00016	0.1242	0.0052	1.467242	0.000024	13.6	15.5	1.4	4582
13je12a38	TLC2.	ISKK_25	0.283247	0.000046	0.00122	0.00006	0.0341	0.0020	1.467220	0.000050	14.1	16.3	1.6	1260
13je11b27	TLC4.	ISKK_26	0.283211	0.000023	0.00336	0.00008	0.0946	0.0025	1.467200	0.000047	13.5	15.1	0.8	3498
13je11b28	TLC4.	ISKK_27	0.283200	0.000026	0.00251	0.00026	0.0717	0.0075	1.467215	0.000038	13.3	14.7	0.9	2649
13je11b30	TLC4.	ISKK_28	0.283202	0.000024	0.00134	0.00001	0.0384	0.0006	1.467244	0.000036	14.7	14.7	0.8	1420
13je11b29	TLC4.	ISKK_29	0.283185	0.000019	0.00290	0.00009	0.0827	0.0025	1.467224	0.000037	16.0	14.1	0.7	3057
13je11b07	TLC4.	ISKK_3	0.283220	0.000033	0.00356	0.00006	0.1024	0.0018	1.467200	0.000043	14.5	15.4	1.2	3785
13je11b32	TLC4.	ISKK_30	0.283181	0.000024	0.00095	0.00001	0.0264	0.0002	1.467227	0.000040	16.6	14.0	0.8	976
13je11b33	TLC4.	ISKK_31	0.283198	0.000026	0.00253	0.00010	0.0718	0.0031	1.467252	0.000038	14.8	14.6	0.9	2656
13je12b34	TLC3.	iskk_31	0.283180	0.000023	0.00121	0.00002	0.0334	0.0004	1.467214	0.000041	14.9	14.0	0.8	1236
13je11b34	TLC4.	ISKK_32	0.283203	0.000020	0.00118	0.00006	0.0317	0.0014	1.467232	0.000032	14.1	14.8	0.7	1173
13je12b33	TLC3.	iskk_32	0.283205	0.000026	0.00161	0.00006	0.0470	0.0022	1.467229	0.000045	15.4	14.8	0.9	1735
13je11b35	TLC4.	ISKK_33	0.283207	0.000021	0.00118	0.00001	0.0336	0.0003	1.467248	0.000036	14.2	14.9	0.8	1242
13je12b32	TLC3.	iskk_33	0.283171	0.000031	0.00233	0.00018	0.0651	0.0052	1.467220	0.000034	16.1	13.7	1.1	2408
13je12b31	TLC3.	iskk_34	0.283189	0.000031	0.00241	0.00017	0.0667	0.0048	1.467180	0.000043	12.1	14.3	1.1	2468
13je11b36	TLC4.	ISKK_37	0.283199	0.000030	0.00193	0.00005	0.0545	0.0016	1.467232	0.000041	15.6	14.6	1.0	2014
13je12b30	TLC3.	iskk_38	0.283235	0.000022	0.00150	0.00004	0.0411	0.0011	1.467213	0.000043	15.1	15.9	0.8	1520
13je11b37	TLC4.	ISKK_39	0.283195	0.000021	0.00120	0.00001	0.0329	0.0005	1.467220	0.000038	14.1	14.5	0.8	1217
13je11b08	TLC4.	ISKK_4	0.283156	0.000022	0.00265	0.00010	0.0726	0.0029	1.467246	0.000036	11.8	13.1	0.8	2686
13je12b29	TLC3.	iskk_44	0.283215	0.000023	0.00296	0.00004	0.0848	0.0011	1.467265	0.000040	19.5	15.2	0.8	3133
13je11b09	TLC4.	ISKK_5	0.283207	0.000027	0.00494	0.00013	0.1540	0.0044	1.467248	0.000030	13.4	14.9	0.9	5678
13je11b10	TLC4.	ISKK_6	0.283184	0.000024	0.00112	0.00002	0.0315	0.0007	1.467191	0.000041	16.4	14.1	0.8	1164
13je11b11	TLC4.	ISKK_7	0.283180	0.000021	0.00133	0.00004	0.0384	0.0014	1.467226	0.000034	16.5	14.0	0.8	1419
13je12a36	TLC2.	ISKK_78	0.283215	0.000042	0.00166	0.00003	0.0471	0.0011	1.467088	0.000057	15.5	15.2	1.5	1740
13je11b12	TLC4.	ISKK_9	0.283165	0.000019	0.00114	0.00002	0.0319	0.0004	1.467241	0.000038	15.6	13.4	0.7	1180
Lagarfljót: ISLF 28W 506732, 7216451														
13je11a94	TLC7.	ISLF_	0.283153	0.000032	0.00095	0.00001	0.0261	0.0004	1.467239	0.000047	15.7	13.0	1.1	968
13je11a56	TLC7.	ISLF_1	0.283213	0.000027	0.00368	0.00033	0.1055	0.0094	1.467199	0.000046	18.5	15.1	1.0	3900
13je11a66	TLC7.	ISLF_10	0.283174	0.000026	0.00171	0.00005	0.0483	0.0015	1.467255	0.000040	18.5	13.7	0.9	1787

File name	Mount	Sample ID	$^{176}Hf/^{177}Hf$	2SE	$^{176}Lu/^{177}Hf$	2SE	$^{176}Yb/^{177}Hf$	2SE	$^{178}Hf/^{177}Hf$	2SE	Total Hf signal (V)	e(Hf)	2SE	interf. corr
13je11a71	TLC7.	ISLF_11	0.283127	0.000031	0.00137	0.00009	0.0385	0.0025	1.467224	0.000059	16.7	12.1	1.1	1423
13je11a70	TLC7.	ISLF_12	0.283156	0.000024	0.00220	0.00002	0.0627	0.0005	1.467221	0.000047	12.8	13.1	0.8	2318
13je11a67	TLC7.	ISLF_13	0.283075	0.000032	0.00103	0.00002	0.0289	0.0008	1.467228	0.000039	14.7	10.2	1.1	1070
13je11a72	TLC7.	ISLF_14	0.283143	0.000024	0.00141	0.00020	0.0403	0.0057	1.467221	0.000047	10.7	12.7	0.9	1488
13je11a68	TLC7.	ISLF_15	0.283168	0.000037	0.00211	0.00016	0.0605	0.0047	1.467189	0.000047	17.2	13.6	1.3	2235
13je11a73	TLC7.	ISLF_16	0.283170	0.000021	0.00115	0.00003	0.0322	0.0010	1.467233	0.000036	12.9	13.6	0.8	1192
13je11a74	TLC7.	ISLF_17	0.283168	0.000028	0.00198	0.00028	0.0576	0.0081	1.467240	0.000050	18.0	13.5	1.0	2126
13je11a75	TLC7.	ISLF_18	0.283182	0.000025	0.00108	0.00001	0.0307	0.0004	1.467225	0.000048	13.7	14.0	0.9	1135
13je11a76	TLC7.	ISLF_19	0.283218	0.000039	0.00344	0.00043	0.1034	0.0131	1.467252	0.000045	13.5	15.3	1.4	3816
13je11a58	TLC7.	ISLF_2	0.283161	0.000017	0.00109	0.00005	0.0310	0.0016	1.467231	0.000034	14.2	13.3	0.6	1146
13je11a77	TLC7.	ISLF_20	0.283173	0.000038	0.00228	0.00007	0.0663	0.0021	1.467198	0.000042	13.8	13.7	1.3	2448
13je11a82	TLC7.	ISLF_21	0.283145	0.000045	0.00210	0.00031	0.0601	0.0087	1.467190	0.000056	12.9	12.7	1.6	2221
13je11a83	TLC7.	ISLF_22	0.283211	0.000041	0.00277	0.00028	0.0785	0.0077	1.467264	0.000048	13.3	15.1	1.4	2901
13je11a84	TLC7.	ISLF_23	0.283150	0.000035	0.00108	0.00007	0.0305	0.0021	1.467204	0.000053	11.8	12.9	1.3	1129
13je11a85	TLC7.	ISLF_24	0.283153	0.000033	0.00163	0.00003	0.0456	0.0008	1.467213	0.000041	15.2	13.0	1.2	1687
13je11a86	TLC7.	ISLF_25	0.283145	0.000031	0.00199	0.00008	0.0565	0.0023	1.467215	0.000040	11.8	12.7	1.1	2090
13je11a87	TLC7.	ISLF_26	0.283147	0.000025	0.00169	0.00002	0.0498	0.0006	1.467221	0.000032	14.0	12.8	0.9	1839
13je11a88	TLC7.	ISLF_27	0.283145	0.000030	0.00212	0.00008	0.0593	0.0021	1.467247	0.000038	11.9	12.7	1.1	2192
13je11a89	TLC7.	ISLF_28	0.283152	0.000025	0.00238	0.00007	0.0661	0.0019	1.467239	0.000041	12.6	13.0	0.9	2447
13je11a91	TLC7.	ISLF_29	0.283167	0.000024	0.00249	0.00002	0.0811	0.0006	1.467200	0.000030	24.9	13.5	0.8	2985
13je11a57	TLC7.	ISLF_3	0.283149	0.000021	0.00220	0.00005	0.0625	0.0014	1.467208	0.000040	12.5	12.9	0.8	2311
13je11a92	TLC7.	ISLF_30	0.283150	0.000032	0.00168	0.00012	0.0489	0.0035	1.467224	0.000039	11.8	12.9	1.1	1806
13je11a93	TLC7.	ISLF_32	0.283142	0.000039	0.00262	0.00026	0.0757	0.0074	1.467278	0.000065	13.6	12.6	1.4	2798
13je11a59	TLC7.	ISLF_4	0.283138	0.000030	0.00145	0.00008	0.0417	0.0023	1.467235	0.000048	14.8	12.5	1.0	1542
13je11a60	TLC7.	ISLF_5	0.283157	0.000023	0.00254	0.00025	0.0738	0.0068	1.467253	0.000052	18.1	13.2	0.8	2725
13je11a62	TLC7.	ISLF_6	0.283140	0.000024	0.00117	0.00003	0.0330	0.0009	1.467269	0.000039	12.5	12.6	0.8	1222
13je11a63	TLC7.	ISLF_7	0.283136	0.000042	0.00609	0.00077	0.1828	0.0235	1.467227	0.000063	17.5	12.4	1.5	6747
13je11a65	TLC7.	ISLF_8	0.283154	0.000024	0.00136	0.00009	0.0383	0.0026	1.467269	0.000043	11.6	13.0	0.9	1416
13je11a64	TLC7.	ISLF_9	0.283158	0.000034	0.00102	0.00007	0.0277	0.0020	1.467188	0.000059	10.9	13.2	1.2	1027
Laxárdalsfjöll: LS11[58] 27W 439559, 7348977														
13je11a43	TLC7.	LS11_1	0.283163	0.000022	0.00144	0.00007	0.0400	0.0020	1.467222	0.000033	15.3	13.4	0.8	1480
13je11a31	TLC7.	LS11_10	0.283217	0.000026	0.00256	0.00026	0.0758	0.0077	1.467223	0.000044	15.0	15.3	0.9	2798
13je11a30	TLC7.	LS11_12	0.283210	0.000034	0.00168	0.00005	0.0487	0.0013	1.467223	0.000055	17.9	15.0	1.2	1798
13je11a27	TLC7.	LS11_14	0.283202	0.000045	0.00253	0.00005	0.0750	0.0017	1.467245	0.000058	16.9	14.7	1.6	2768
13je11a26	TLC7.	LS11_15	0.283218	0.000036	0.00334	0.00038	0.0991	0.0116	1.467219	0.000044	16.1	15.3	1.3	3660

[58] Sample provided by Brennan Jordan

File name	Mount	Sample ID	$^{176}Hf/^{177}Hf$	2SE	$^{176}Lu/^{177}Hf$	2SE	$^{176}Yb/^{177}Hf$	2SE	$^{178}Hf/^{177}Hf$	2SE	Total Hf signal (V)	e(Hf)	2SE	interf. corr
13je11a25	TLC7.	ls11_16	0.283194	0.000035	0.00496	0.00013	0.1477	0.0041	1.467247	0.000041	14.4	14.5	1.2	5453
13je11a23	TLC7.	ls11_17	0.283228	0.000050	0.00305	0.00008	0.0899	0.0026	1.467236	0.000059	17.0	15.7	1.8	3319
13je11a22	TLC7.	ls11_19	0.283183	0.000036	0.00536	0.00013	0.1600	0.0041	1.467253	0.000055	16.1	14.1	1.3	5906
13je11a40	TLC7.	LS11_2	0.283179	0.000017	0.00117	0.00001	0.0325	0.0003	1.467219	0.000035	15.7	13.9	0.6	1202
13je11a36	TLC7.	LS11_6	0.283211	0.000031	0.00141	0.00005	0.0402	0.0013	1.467196	0.000038	14.9	15.1	1.1	1487
13je11a33	TLC7.	LS11_7	0.283201	0.000021	0.00161	0.00002	0.0461	0.0006	1.467234	0.000035	15.5	14.7	0.7	1703
13je11a35	TLC7.	LS11_8	0.283200	0.000030	0.00144	0.00004	0.0413	0.0012	1.467186	0.000043	18.5	14.7	1.1	1526
13je11a32	TLC7.	LS11_9	0.283194	0.000029	0.00258	0.00003	0.0758	0.0009	1.467207	0.000034	13.1	14.5	1.0	2798
13je11a42	TLC7.	LS11-3b	0.283231	0.000034	0.00319	0.00029	0.0918	0.0087	1.467228	0.000042	12.7	15.8	1.2	3393
Markarfljót ISM* 27W 552381, 7059713														
11no08a71	JW508.	ISM-11.1	0.283103	0.000033	0.00141	0.00003	0.0428	0.0013	1.467263	0.000041	45.1	11.3	1.2	1578
11no08a72	JW508.	ISM-12.1	0.283170	0.000031	0.00257	0.00008	0.0800	0.0022	1.467307	0.000052	51.0	13.6	1.1	2950
11no08a73	JW508.	ISM-13.1	0.283076	0.000038	0.00102	0.00004	0.0304	0.0015	1.467263	0.000042	40.3	10.3	1.3	1120
11no08a74	JW508.	ISM-16.1	0.283096	0.000038	0.00371	0.00021	0.1155	0.0064	1.467305	0.000059	35.7	11.0	1.3	4257
11no08a75	JW508.	ISM-17.1	0.283178	0.000049	0.00196	0.00014	0.0598	0.0039	1.467276	0.000075	51.0	13.9	1.7	2206
11no08a76	JW508.	ISM-18.1	0.283091	0.000034	0.00171	0.00003	0.0518	0.0013	1.467240	0.000040	44.3	10.8	1.2	1911
11no08a77	JW508.	ISM-19.1	0.283084	0.000036	0.00160	0.00015	0.0476	0.0045	1.467238	0.000049	37.1	10.6	1.3	1756
11no08a78	JW508.	ISM-20.1	0.283126	0.000039	0.00086	0.00001	0.0248	0.0004	1.467243	0.000057	37.4	12.1	1.4	918
11no08a79	JW508.	ISM-21.1	0.283169	0.000026	0.00507	0.00035	0.1637	0.0104	1.467236	0.000096	37.6	13.6	0.9	6029
11no08a80	JW508.	ISM-21.2	0.283186	0.000048	0.00173	0.00013	0.0527	0.0039	1.467284	0.000053	26.1	14.2	1.7	1944
11no08a81	JW508.	ISM-22.1	0.283088	0.000028	0.00099	0.00006	0.0296	0.0018	1.467277	0.000044	42.4	10.7	1.0	1092
11no08a82	JW508.	ISM-23.1	0.283070	0.000035	0.00229	0.00004	0.0699	0.0013	1.467227	0.000053	37.8	10.1	1.2	2577
11no08a83	JW508.	ISM-24.1	0.283094	0.000030	0.00092	0.00003	0.0273	0.0010	1.467222	0.000039	40.6	10.9	1.1	1009
11no08a84	JW508.	ISM-26.1	0.283132	0.000027	0.00414	0.00021	0.1265	0.0053	1.467348	0.000097	44.9	12.3	1.0	4665
11no08a85	JW508.	ISM-28.1	0.283117	0.000031	0.00158	0.00003	0.0457	0.0012	1.467290	0.000046	38.9	11.8	1.1	1689
11no08a86	JW508.	ISM-29.1	0.283093	0.000043	0.00170	0.00004	0.0519	0.0017	1.467283	0.000056	41.8	10.9	1.5	1915
Miðá: ISMi* 28W 464561, 7211545														
11no08b05	JW508.	ISMi-1.1	0.283176	0.000041	0.00284	0.00007	0.0795	0.0020	1.467255	0.000060	30.7	13.8	1.5	2941
11no08b12	JW508.	ISMi-10.1	0.283105	0.000034	0.00290	0.00013	0.0823	0.0040	1.467250	0.000045	52.3	11.3	1.2	3043
11no08b13	JW508.	ISMi-12.1	0.283136	0.000029	0.00074	0.00003	0.0209	0.0009	1.467312	0.000037	38.2	12.4	1.0	774
11no08b15	JW508.	ISMi-14.1	0.283193	0.000036	0.00180	0.00024	0.0517	0.0072	1.467281	0.000046	44.6	14.4	1.3	1912
11no08b16	JW508.	ISMi-17.1	0.283191	0.000026	0.00246	0.00009	0.0690	0.0028	1.467246	0.000041	58.6	14.4	0.9	2552
11no08b17	JW508.	ISMi-18.1	0.283202	0.000021	0.00163	0.00006	0.0457	0.0015	1.467238	0.000041	49.0	14.7	0.8	1690
11no08b18	JW508.	ISMi-19.1	0.283136	0.000032	0.00117	0.00008	0.0336	0.0025	1.467248	0.000051	34.1	12.4	1.1	1241
11no08b07	JW508.	ISMi-2.1	0.283179	0.000021	0.00153	0.00005	0.0412	0.0015	1.467249	0.000033	47.3	13.9	0.7	1527
11no08b19	JW508.	ISMi-20.1	0.283123	0.000029	0.00396	0.00013	0.1211	0.0036	1.467237	0.000045	39.5	11.9	1.0	4467

File name	Mount	Sample ID	$^{176}Hf/^{177}Hf$	2SE	$^{176}Lu/^{177}Hf$	2SE	$^{176}Yb/^{177}Hf$	2SE	$^{178}Hf/^{177}Hf$	2SE	Total Hf signal (V)	e(Hf)	2SE	interf. corr
11no08b20	JW508.	ISMi-23.1	0.283175	0.000032	0.00107	0.00002	0.0297	0.0005	1.467249	0.000045	47.1	13.8	1.1	1099
11no08b21	JW508.	ISMi-24.1	0.283163	0.000026	0.00467	0.00017	0.1305	0.0047	1.467239	0.000056	37.3	13.4	0.9	4826
11no08b08	JW508.	ISMi-5.6	0.283171	0.000023	0.00144	0.00009	0.0407	0.0028	1.467229	0.000049	45.1	13.6	0.8	1504
11no08b06	JW508.	ISMi-56.1	0.283191	0.000020	0.00183	0.00004	0.0499	0.0013	1.467257	0.000028	55.6	14.4	0.7	1848
11no08b10	JW508.	ISMi-58.1	0.283174	0.000028	0.00208	0.00008	0.0592	0.0022	1.467243	0.000042	44.3	13.8	1.0	2189
11no08b14	JW508.	ISMi-59.1	0.283181	0.000032	0.00148	0.00001	0.0422	0.0002	1.467273	0.000052	53.3	14.0	1.1	1559
11no08b09	JW508.	ISMi-6.1	0.283174	0.000023	0.00119	0.00003	0.0333	0.0008	1.467282	0.000039	54.3	13.8	0.8	1231
11no08b11	JW508.	ISMi-8.1	0.283158	0.000028	0.00134	0.00004	0.0369	0.0011	1.467206	0.000056	48.1	13.2	1.0	1365
Öræfajökull: IOHn* 27W 595113, 7099846														
13je10a42	JW444.	10Hn_1.2	0.283093	0.000057	0.00864	0.00025	0.2966	0.0096	1.467261	0.000047	8.5	10.9	2.0	10901
13je10a48	JW444.	10Hn_12	0.283129	0.000031	0.00082	0.00004	0.0226	0.0011	1.467236	0.000044	11.3	12.2	1.1	836
13je10a51	JW444.	10Hn_14	0.283128	0.000035	0.00127	0.00004	0.0367	0.0011	1.467232	0.000064	12.0	12.1	1.3	1355
13je10a52	JW444.	10Hn_15	0.283207	0.000049	0.00232	0.00025	0.0712	0.0084	1.467212	0.000064	16.1	14.9	1.7	2627
13je10a54	JW444.	10Hn_17	0.283105	0.000051	0.00640	0.00025	0.1892	0.0076	1.467215	0.000069	14.8	11.3	1.8	6985
13je10a53	JW444.	10Hn_53	0.283179	0.000028	0.00134	0.00010	0.0387	0.0033	1.467206	0.000057	16.4	13.9	1.0	1430
13je10a46	JW444.	10Hn_9	0.283129	0.000034	0.00463	0.00014	0.1379	0.0045	1.467280	0.000037	9.2	12.2	1.2	5090
13je10a55	JW444.	10Hn_no prior	0.283170	0.000034	0.00106	0.00013	0.0286	0.0035	1.467240	0.000043	11.0	13.6	1.2	1059
11no08b81	JW444.	IOHN-2.1	0.283126	0.000024	0.00157	0.00020	0.0482	0.0065	1.467278	0.000043	48.8	12.1	0.8	1778
11no08b82	JW444.	IOHN-3.2	0.283102	0.000053	0.00506	0.00097	0.1546	0.0304	1.467239	0.000053	39.2	11.2	1.9	5704
11no08b84	JW444.	IOHN-5.2	0.283125	0.000043	0.00200	0.00049	0.0677	0.0190	1.467179	0.000068	44.2	12.0	1.5	2488
11no08b83	JW444.	IOHN-6.1	0.283083	0.000034	0.00213	0.00045	0.0710	0.0165	1.467297	0.000045	49.2	10.5	1.2	2612
11no08b85	JW444.	IOHN-8.1	0.283148	0.000025	0.00239	0.00026	0.0777	0.0096	1.467232	0.000038	52.0	12.8	0.9	2862
Selardalur: IXSD 26W 635504, 7296772														
13je11a46	TLC7.	IXSd_2	0.283186	0.000037	0.00145	0.00003	0.0392	0.0007	1.467207	0.000037	16.6	14.2	1.3	1451
13je12a32	TLC2.	IXSd_5	0.283191	0.000037	0.00165	0.00005	0.0455	0.0013	1.467183	0.000039	16.0	14.3	1.3	1685
13je11a49	TLC7.	IXSd_6	0.283248	0.000019	0.00149	0.00024	0.0415	0.0067	1.467258	0.000065	13.5	16.4	0.7	1535
13je11a53	TLC7.	IXSd_7	0.283248	0.000044	0.00339	0.00036	0.0972	0.0101	1.467210	0.000053	13.4	16.4	1.6	3592
13je11a51	TLC7.	IXSd_8	0.283177	0.000036	0.00189	0.00016	0.0529	0.0047	1.467200	0.000048	13.5	13.9	1.3	1957
13je11a52	TLC7.	IXSd_8b	0.283187	0.000026	0.00157	0.00007	0.0437	0.0019	1.467207	0.000058	13.8	14.2	0.9	1616
Snæfellsness-Knörr: IISK 27W 383104, 7191705														
13je12c19	TLC1.	IISK no prior	0.283065	0.000030	0.00134	0.00012	0.0504	0.0035	1.467179	0.000044	16.7	9.9	1.1	1848
13je12c20	TLC1.	IISK no prior	0.283104	0.000030	0.00230	0.00004	0.0654	0.0007	1.467211	0.000042	19.3	11.3	1.1	2419
13je12c25	TLC1.	IISK_17	0.283125	0.000039	0.00281	0.00010	0.0955	0.0020	1.467213	0.000064	16.5	12.0	1.4	3512
13je12c23	TLC1.	IISK_18	0.283115	0.000029	0.00119	0.00006	0.0399	0.0021	1.467230	0.000030	18.2	11.7	1.0	1466
13je12c29	TLC1.	IISK_9	0.283101	0.000030	0.00134	0.00022	0.0450	0.0050	1.467212	0.000051	18.6	11.2	1.1	1656

File name	Mount	Sample ID	$^{176}Hf/^{177}Hf$	2SE	$^{176}Lu/^{177}Hf$	2SE	$^{176}Yb/^{177}Hf$	2SE	$^{178}Hf/^{177}Hf$	2SE	Total Hf signal (V)	e(Hf)	2SE	interf. corr
13je12c26	TLC1.	IISK_no prior	0.283079	0.000039	0.00319	0.00045	0.0983	0.0144	1.467198	0.000041	18.0	10.4	1.4	3626
13je12c30	TLC1.	IISK_no prior	0.283179	0.000029	0.00172	0.00002	0.0601	0.0008	1.467206	0.000052	16.8	13.9	1.0	2208
13je12c18	TLC1.	IISK-23	0.283120	0.000029	0.00232	0.00019	0.0768	0.0060	1.467235	0.000032	14.5	11.9	1.0	2827
Stóraá: ISS 28W 561363, 7260665														
13je12b04	TLC3.	ISS_ (no prior)	0.283191	0.000023	0.00200	0.00015	0.0522	0.0041	1.467238	0.000057	18.5	14.4	0.8	1937
13je12b12	TLC3.	ISS_10	0.283194	0.000019	0.00166	0.00005	0.0474	0.0016	1.467244	0.000033	15.4	14.5	0.7	1751
13je12a08	TLC2.	ISS_11	0.283242	0.000024	0.00388	0.00015	0.1203	0.0057	1.467233	0.000044	16.2	16.2	0.9	4436
13je12b13	TLC3.	ISS_11	0.283183	0.000018	0.00129	0.00008	0.0366	0.0024	1.467221	0.000032	15.4	14.1	0.6	1353
13je12b14	TLC3.	ISS_12	0.283218	0.000028	0.00217	0.00007	0.0631	0.0021	1.467246	0.000031	18.6	15.3	1.0	2331
13je12a10	TLC2.	ISS_13	0.283160	0.000025	0.00183	0.00008	0.0564	0.0026	1.467202	0.000048	17.9	13.2	0.9	2080
13je12b15	TLC3.	ISS_13	0.283199	0.000021	0.00110	0.00001	0.0305	0.0002	1.467226	0.000033	18.3	14.7	0.7	1128
13je12a09	TLC2.	ISS_14	0.283198	0.000025	0.00149	0.00005	0.0424	0.0015	1.467209	0.000037	21.9	14.6	0.9	1567
13je12b16	TLC3.	ISS_14	0.283218	0.000056	0.00490	0.00059	0.1427	0.0178	1.467234	0.000044	17.9	15.3	2.0	5272
13je12a13	TLC2.	ISS_15	0.283184	0.000039	0.00539	0.00013	0.1585	0.0045	1.467256	0.000049	18.3	14.1	1.4	5852
13je12a14	TLC2.	ISS_16	0.283184	0.000048	0.00533	0.00028	0.1722	0.0114	1.467220	0.000036	22.9	14.1	1.7	6342
13je12b17	TLC3.	ISS_16	0.283222	0.000021	0.00187	0.00011	0.0523	0.0032	1.467229	0.000036	13.7	15.5	0.8	1934
13je12b22	TLC3.	ISS_18	0.283221	0.000024	0.00104	0.00002	0.0295	0.0006	1.467193	0.000041	17.9	15.4	0.9	1089
13je12b20	TLC3.	ISS_19	0.283203	0.000024	0.00306	0.00013	0.0869	0.0036	1.467244	0.000032	14.4	14.8	0.9	3214
13je12b21	TLC3.	ISS_20	0.283185	0.000021	0.00100	0.00002	0.0272	0.0004	1.467251	0.000039	15.8	14.1	0.8	1007
13je12b23	TLC3.	ISS_21	0.283187	0.000024	0.00199	0.00022	0.0533	0.0058	1.467210	0.000042	12.0	14.2	0.9	1974
13je12a17	TLC2.	ISS_23	0.283194	0.000017	0.00308	0.00006	0.0874	0.0018	1.467213	0.000047	19.6	14.5	0.6	3233
13je12b24	TLC3.	ISS_23	0.283208	0.000020	0.00264	0.00014	0.0754	0.0044	1.467180	0.000041	19.2	15.0	0.7	2786
13je12a21	TLC2.	ISS_29	0.283244	0.000043	0.00223	0.00010	0.0697	0.0038	1.467265	0.000062	12.8	16.2	1.5	2570
13je12b05	TLC3.	ISS_3	0.283208	0.000023	0.00195	0.00002	0.0565	0.0007	1.467197	0.000044	19.8	15.0	0.8	2087
13je12a22	TLC2.	ISS_31	0.283201	0.000038	0.00448	0.00003	0.1299	0.0008	1.467250	0.000050	18.4	14.7	1.3	4798
13je12a24	TLC2.	ISS_36	0.283222	0.000015	0.00113	0.00005	0.0316	0.0016	1.467232	0.000046	22.0	15.4	0.5	1168
13je12a26	TLC2.	ISS_39	0.283220	0.000019	0.00212	0.00006	0.0613	0.0018	1.467206	0.000036	20.1	15.4	0.7	2263
13je12b06	TLC3.	ISS_4	0.283202	0.000041	0.00223	0.00027	0.0703	0.0105	1.467205	0.000043	18.3	14.7	1.4	2589
13je12a23	TLC2.	ISS_45	0.283177	0.000032	0.00239	0.00015	0.0725	0.0061	1.467208	0.000037	16.9	13.9	1.1	2674
13je12a06	TLC2.	ISS_5	0.283229	0.000032	0.00309	0.00005	0.0862	0.0015	1.467245	0.000038	14.5	15.7	1.1	3188
13je12a07	TLC2.	ISS_7	0.283217	0.000019	0.00176	0.00004	0.0500	0.0013	1.467215	0.000029	19.6	15.3	0.7	1850
13je12b07	TLC3.	ISS_7	0.283181	0.000028	0.00163	0.00009	0.0455	0.0027	1.467231	0.000039	19.2	14.0	1.0	1682
13je12b08	TLC3.	ISS_8	0.283188	0.000016	0.00148	0.00005	0.0419	0.0015	1.467238	0.000041	16.3	14.3	0.6	1551
13je12b09	TLC3.	ISS_9	0.283259	0.000041	0.00457	0.00052	0.1304	0.0147	1.467202	0.000046	16.2	16.8	1.5	4820
13je12b11	TLC3.	ISS_9	0.283260	0.000052	0.00385	0.00026	0.1200	0.0088	1.467289	0.000050	12.2	16.8	1.9	4422

File name	Mount	Sample ID	$^{176}Hf/^{177}Hf$	2SE	$^{176}Lu/^{177}Hf$	2SE	$^{176}Yb/^{177}Hf$	2SE	$^{178}Hf/^{177}Hf$	2SE	Total Hf signal (V)	e(Hf)	2SE	interf. corr
Stóraa-Laxa: IEFS 27W 535438, 7109774														
13je12c03	TLC1.	IEFS_1	0.283164	0.000039	0.00104	0.00031	0.0273	0.0082	1.467170	0.000060	14.4	13.4	1.4	1011
13je12c04	TLC1.	IEFS_2	0.283114	0.000029	0.00139	0.00012	0.0383	0.0047	1.467234	0.000035	12.0	11.6	1.0	1418
13je12c06	TLC1.	IEFS_5	0.283129	0.000030	0.00260	0.00005	0.0704	0.0014	1.467238	0.000065	11.2	12.2	1.1	2606
13je12c07	TLC1.	IEFS_6	0.283096	0.000039	0.00279	0.00006	0.0756	0.0016	1.467237	0.000059	13.9	11.0	1.4	2801
Tjörnes: IXT 28W 397693, 7334527														
13je13b47	JW530.	IXT-15	0.283089	0.000046	0.00160	0.00006	0.0433	0.0014	1.467288	0.000055	14.9	10.7	1.6	1604
11no08a48	JW529.	IXT-1b-1.1	0.283212	0.000038	0.00372	0.00021	0.1070	0.0058	1.467264	0.000045	52.6	15.1	1.3	3956
11no08a49	JW529.	IXT-1b-2.1	0.283172	0.000032	0.00252	0.00008	0.0744	0.0023	1.467237	0.000048	29.6	13.7	1.1	2748
11no08a50	JW529.	IXT-1b-21.1	0.283177	0.000023	0.00126	0.00007	0.0370	0.0020	1.467230	0.000041	49.4	13.9	0.8	1365
11no08a51	JW529.	IXT-1b-22.1	0.283166	0.000020	0.00244	0.00008	0.0739	0.0025	1.467234	0.000048	42.8	13.5	0.7	2726
11no08a52	JW529.	IXT-1b-24.1	0.283150	0.000024	0.00196	0.00007	0.0589	0.0022	1.467242	0.000036	51.8	12.9	0.9	2174
11no08a56	JW529.	IXT-1b-25.1	0.283179	0.000021	0.00140	0.00008	0.0410	0.0022	1.467278	0.000036	48.3	13.9	0.7	1516
11no08a57	JW529.	IXT-1b-26.1	0.283186	0.000020	0.00151	0.00008	0.0428	0.0023	1.467259	0.000033	47.5	14.2	0.7	1581
11no08a58	JW529.	IXT-1b-27.1	0.283138	0.000019	0.00137	0.00010	0.0405	0.0031	1.467262	0.000028	52.5	12.5	0.7	1494
11no08a59	JW529.	IXT-1b-28.1	0.283174	0.000029	0.00226	0.00010	0.0625	0.0031	1.467275	0.000056	29.7	13.8	1.0	2312
11no08a53	JW529.	IXT-1b-3.1	0.283171	0.000053	0.00340	0.00026	0.0973	0.0076	1.467261	0.000057	24.2	13.6	1.9	3596
11no08a60	JW529.	IXT-1b-30.1	0.283201	0.000022	0.00229	0.00009	0.0672	0.0024	1.467248	0.000036	61.1	14.7	0.8	2480
11no08a55	JW529.	IXT-1b-5.1	0.283101	0.000031	0.00098	0.00001	0.0281	0.0002	1.467234	0.000046	27.3	11.2	1.1	1040
11no08a54	JW529.	IXT-1b-5.12	0.283152	0.000047	0.00327	0.00030	0.0972	0.0092	1.467266	0.000060	23.1	13.0	1.7	3590
11no08a63	JW529.	IXT-1b-7.1	0.283145	0.000032	0.00128	0.00006	0.0365	0.0019	1.467225	0.000044	53.8	12.7	1.1	1348
11no08a62	JW529.	IXT-1b-8.1	0.283143	0.000033	0.00214	0.00015	0.0619	0.0044	1.467208	0.000047	32.1	12.7	1.2	2287
Torfajökull: IETR 27W 576365, 7095290														
13je13a32	TLC8.	IETR no prior	0.283140	0.000037	0.00069	0.00002	0.0187	0.0006	1.467228	0.000053	15.1	12.6	1.3	692
13je13a21	TLC8.	IETR-1	0.283097	0.000025	0.00089	0.00004	0.0294	0.0015	1.467227	0.000038	14.8	11.0	0.9	1082
13je13a35	TLC8.	IETR-13	0.283048	0.000027	0.00133	0.00009	0.0388	0.0028	1.467249	0.000033	10.0	9.3	1.0	1433
13je13a37	TLC8.	IETR-14	0.283068	0.000027	0.00066	0.00001	0.0176	0.0003	1.467238	0.000048	13.8	10.0	1.0	651
13je13a36	TLC8.	IETR-15	0.283074	0.000025	0.00162	0.00009	0.0471	0.0028	1.467179	0.000047	12.3	10.2	0.9	1740
13je13a41	TLC8.	IETR-18.1	0.283093	0.000029	0.00145	0.00006	0.0420	0.0018	1.467182	0.000040	9.6	10.9	1.0	1553
13je13a42	TLC8.	IETR-18.2	0.283087	0.000021	0.00096	0.00008	0.0276	0.0025	1.467217	0.000036	13.8	10.7	0.7	1021
13je13a23	TLC8.	IETR-2	0.283090	0.000037	0.00189	0.00010	0.0548	0.0032	1.467296	0.000053	15.4	10.8	1.3	2024
13je13a43	TLC8.	IETR-21	0.283091	0.000037	0.00138	0.00001	0.0416	0.0005	1.467198	0.000055	11.2	10.8	1.3	1537
13je13a44	TLC8.	IETR-22.2	0.283094	0.000030	0.00074	0.00003	0.0203	0.0010	1.467192	0.000055	15.9	10.9	1.1	752
13je13a25	TLC8.	IETR-3.1	0.283096	0.000025	0.00078	0.00001	0.0212	0.0002	1.467268	0.000073	14.9	11.0	0.9	783
13je13a24	TLC8.	IETR-3.2	0.283127	0.000036	0.00142	0.00014	0.0406	0.0043	1.467194	0.000046	14.2	12.1	1.3	1500
13je13a22	TLC8.	IETR-41	0.283079	0.000036	0.00121	0.00009	0.0338	0.0027	1.467256	0.000045	16.6	10.4	1.3	1249
13je13a26	TLC8.	IETR-45	0.283093	0.000030	0.00128	0.00002	0.0340	0.0008	1.467192	0.000050	12.1	10.9	1.1	1261
13je13a34	TLC8.	IETR-48	0.283134	0.000022	0.00094	0.00003	0.0254	0.0010	1.467236	0.000040	14.4	12.3	0.8	940
13je13a27	TLC8.	IETR-5.1	0.283083	0.000022	0.00077	0.00001	0.0212	0.0002	1.467234	0.000042	15.5	10.5	0.8	785
13je13a39	TLC8.	IETR-54	0.283095	0.000031	0.00172	0.00004	0.0496	0.0011	1.467229	0.000036	10.8	11.0	1.1	1834

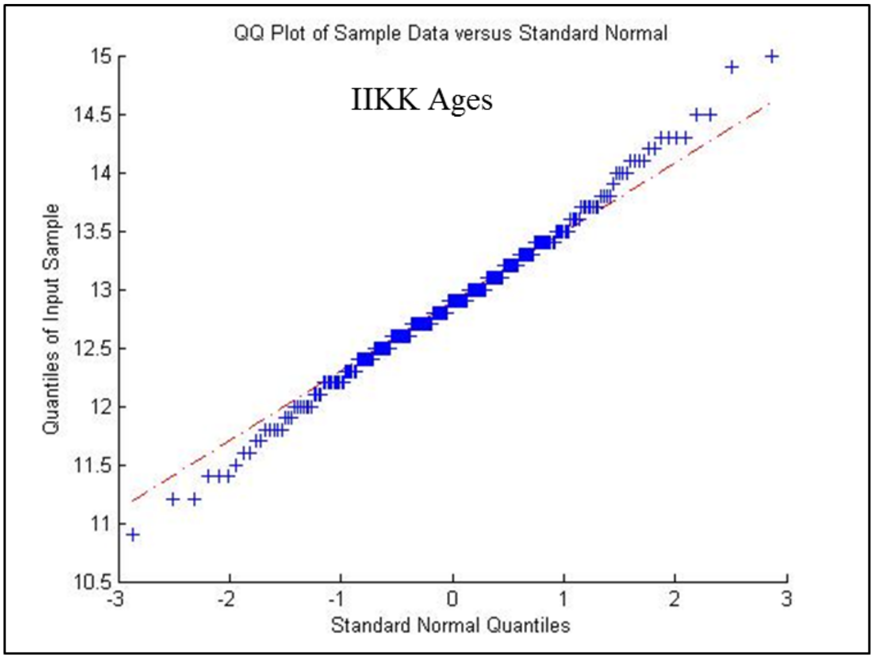
File name	Mount	Sample ID	^{176}Hf/^{177}Hf	2SE	^{176}Lu/^{177}Hf	2SE	^{176}Yb/^{177}Hf	2SE	^{178}Hf/^{177}Hf	2SE	Total Hf signal (V)	e(Hf)	2SE	interf. corr
13je13a45	TLC8.	IETR-61	0.283126	0.000023	0.00178	0.00004	0.0539	0.0014	1.467201	0.000041	11.2	12.1	0.8	1987
13je13a31	TLC8.	IETR-7	0.283084	0.000023	0.00111	0.00004	0.0310	0.0011	1.467227	0.000048	13.6	10.6	0.8	1145
13je13a33	TLC8.	IETR-9	0.283122	0.000042	0.00505	0.00022	0.1568	0.0069	1.467182	0.000061	13.7	11.9	1.5	5780
Torfajökull: ITN* 27W 595113, 7099846														
13je10a32	JW444.	ITN no prior	0.283086	0.000043	0.00154	0.00005	0.0415	0.0012	1.467202	0.000060	20.1	10.6	1.5	1538
13je10a34	JW444.	ITN no prior	0.283133	0.000032	0.00163	0.00005	0.0455	0.0014	1.467204	0.000045	15.0	12.3	1.1	1682
13je10a29	JW444.	ITN_10	0.283121	0.000039	0.00192	0.00008	0.0558	0.0025	1.467203	0.000043	14.9	11.9	1.4	2061
13je10a30	JW444.	ITN_10b	0.283089	0.000032	0.00201	0.00005	0.0594	0.0017	1.467269	0.000033	13.7	10.8	1.1	2192
13je10a27	JW444.	ITN_7	0.283070	0.000030	0.00155	0.00006	0.0425	0.0014	1.467241	0.000059	16.1	10.1	1.1	1572
11no08b74	JW444.	ITN-1-2.1	0.283117	0.000036	0.00121	0.00007	0.0333	0.0021	1.467236	0.000056	37.8	11.7	1.3	1232
Viðidalsfjall: IIM 27W 521634, 7256525														
13je13b36	JW530.	IIM-10	0.283121	0.000021	0.00195	0.00007	0.0551	0.0023	1.467184	0.000051	14.3	11.9	0.7	2037
13je13b38	JW530.	IIM-11	0.283127	0.000047	0.00298	0.00012	0.0853	0.0034	1.467227	0.000049	13.0	12.1	1.7	3153
11no08a10	JW529.	IIM-1a-1.1	0.283140	0.000034	0.00553	0.00029	0.1704	0.0090	1.467202	0.000060	50.8	12.6	1.2	6284
11no08a09	JW529.	IIM-1a-1.2	0.283138	0.000029	0.00150	0.00003	0.0438	0.0009	1.467271	0.000040	49.7	12.5	1.0	1618
11no08a14	JW529.	IIM-1a-13.1	0.283137	0.000042	0.00247	0.00010	0.0718	0.0028	1.467281	0.000077	51.7	12.5	1.5	2653
11no08a17	JW529.	IIM-1a-14.1	0.283144	0.000045	0.00173	0.00013	0.0506	0.0036	1.467291	0.000054	30.9	12.7	1.6	1868
11no08a11	JW529.	IIM-1a-2.1	0.283154	0.000028	0.00130	0.00002	0.0384	0.0007	1.467239	0.000044	46.3	13.1	1.0	1418
11no08a12	JW529.	IIM-1a-3.1	0.283154	0.000032	0.00290	0.00012	0.0857	0.0035	1.467267	0.000051	48.1	13.0	1.1	3165
11no08a13	JW529.	IIM-1a-4.1	0.283121	0.000026	0.00245	0.00003	0.0708	0.0009	1.467257	0.000042	44.0	11.9	0.9	2615
11no08a15	JW529.	IIM-1a-5.1	0.283150	0.000096	0.00960	0.00068	0.3016	0.0207	1.467256	0.000071	25.3	12.9	3.4	11115
11no08a16	JW529.	IIM-1a-5.1b	0.283188	0.000067	0.00586	0.00023	0.1867	0.0055	1.467091	0.000204	42.2	14.3	2.4	6879
11no08a18	JW529.	IIM-1a-6.1	0.283134	0.000025	0.00157	0.00006	0.0446	0.0019	1.467256	0.000041	42.3	12.4	0.9	1650
11no08a19	JW529.	IIM-1a-7.1	0.283160	0.000052	0.00680	0.00021	0.2117	0.0060	1.467237	0.000065	57.5	13.2	1.8	7802
13je13b31	JW530.	IIM-2	0.283129	0.000031	0.00265	0.00013	0.0762	0.0037	1.467252	0.000040	14.3	12.2	1.1	2816
13je13b33	JW530.	IIM-4	0.283090	0.000027	0.00205	0.00005	0.0583	0.0015	1.467174	0.000051	13.3	10.8	1.0	2154
13je13b32	JW530.	IIM-6	0.283099	0.000041	0.00208	0.00006	0.0591	0.0018	1.467209	0.000051	13.1	11.1	1.4	2186
13je13b34	JW530.	IIM-7.2	0.283100	0.000053	0.00340	0.00008	0.0965	0.0024	1.467235	0.000042	13.0	11.1	1.9	3567
13je13b37	JW530.	IIM-9	0.283117	0.000040	0.00240	0.00007	0.0684	0.0023	1.467245	0.000038	14.5	11.7	1.4	2529
Askja: 1C45[59]														
13je10a37	JW444.	IC45_2	0.282893	0.000036	0.00106	0.00002	0.0315	0.0007	1.467234	0.000063	15.8	3.8	1.3	1163
13je10a40	JW444.	IC45_2b	0.282891	0.000034	0.00086	0.00004	0.0248	0.0011	1.467264	0.000059	16.0	3.7	1.2	917
13je10a39	JW444.	IC45_5	0.282861	0.000040	0.00109	0.00003	0.0325	0.0009	1.467219	0.000064	18.4	2.7	1.4	1201
11no08b77	JW444.	IC45-2.1	0.282934	0.000035	0.00097	0.00006	0.0271	0.0018	1.467199	0.000061	35.1	5.3	1.2	1002
11no08b76	JW444.	IC45-3.1	0.282911	0.000030	0.00086	0.00002	0.0241	0.0007	1.467274	0.000064	52.1	4.4	1.1	890
11no08b78	JW444.	IC45-4.1	0.282926	0.000026	0.00063	0.00005	0.0169	0.0012	1.467194	0.000053	57.9	5.0	0.9	626
11no08b80	JW444.	IC45-5.2	0.282901	0.000045	0.00112	0.00005	0.0320	0.0015	1.467299	0.000043	56.5	4.1	1.6	1183

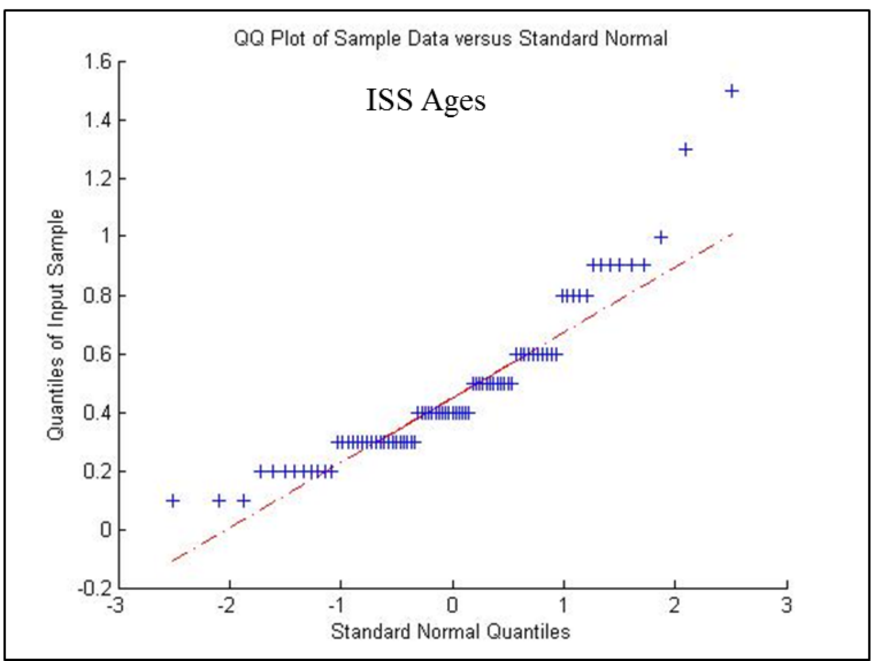
[59] Sample provided by Ilya Bindeman; this data not presented in dissertation text or resultant manuscripts.

APPENDIX G: Monte Carlo Modeling

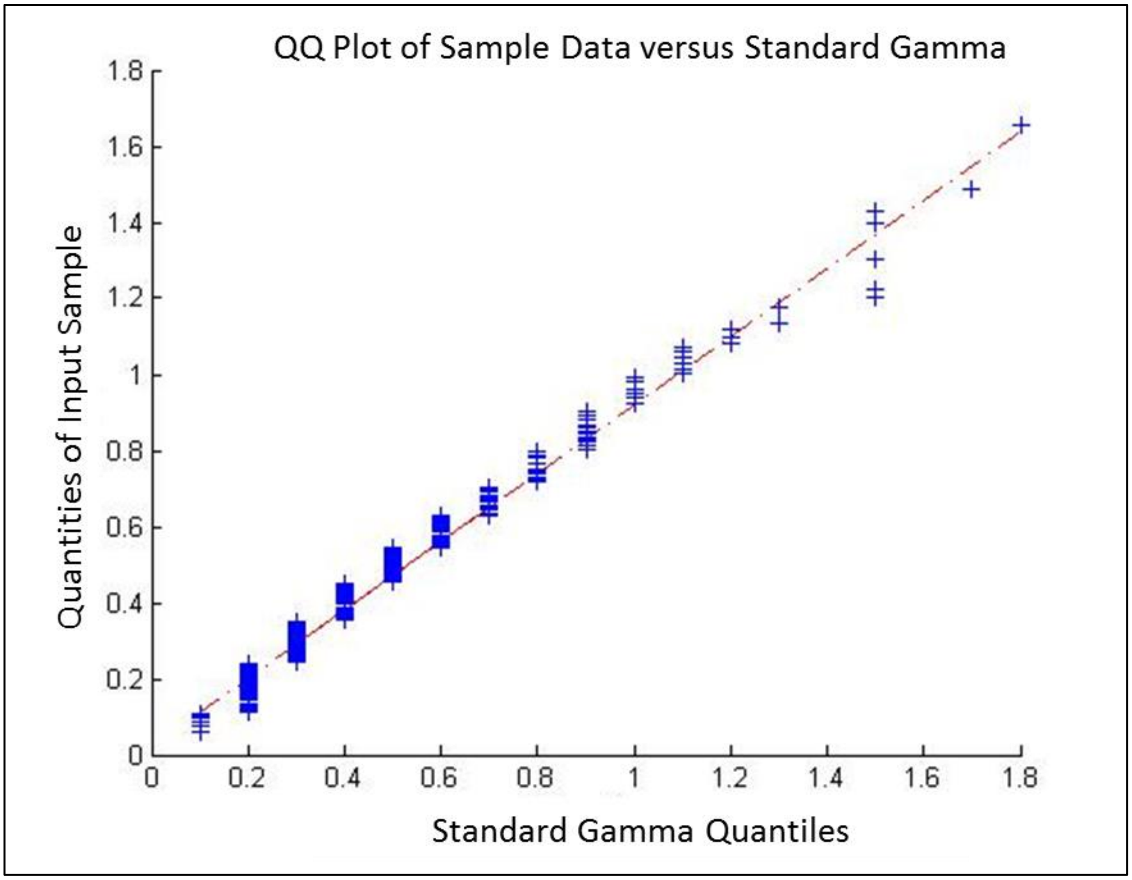
Appendix G.1: Figures used in Monte Carlo Code Development

Matlab





Appendix G.1, Figure 1: QQ plots used to verify that a normal distribution is an appropriate way to characterize our analytical age data for the purposes of Monte Carlo modeling.



Appendix G.1, Figure 2: QQ plots used to verify that a gamma distribution is an appropriate way to characterize our analytical errors associated with age data for the purposes of Monte Carlo modeling.

Appendix G.2: The Monte Carlo Code Explained

Preliminary work:

- First, we ensure that there is no systematic correlation between age and analytical error; a simple plot of age vs. error demonstrates that there is not (plot not shown; see Appendix D.1 for data).
    - o We plot our measured ages as a histogram, and determine that a normal, Gaussian distribution is a fair approximation of our data. We confirm our assertion by making a QQ plot in MATLAB (see Appendix G.1, Figure 1)
        - o We then calculate the mean, standard deviation and standard error for our ages.
            - We plot our analytical errors as a histogram, and determine that a gamma distribution best describes the data. We confirm our assertion with a gamma QQ plot (see Appendix G.1, Figure 2).
        - o We then use MATLAB to calculate the shape and scale factors (which describe the gamma distribution) of our analytical errors.

The code, explained:

- The first step in our MATLAB code is to designate a mean age by taking our true population mean (12.9 My) and then randomly selecting an age from a normal distribution with mean of zero and a standard deviation equal to the standard error of our true population (0.07 My).
    - o The first for-loop in our code directs MATLAB to:
        - ▪ Select a random age from a normal distribution about the selected mean (see step 1; true mean with standard error accounted for) and a standard deviation of 0.66 (our standard deviation for sample ISS).
        - ▪ Select a random analytical error from a gamma distribution with the shape and scale factors determined from the actual dataset;
        - ▪ Add the randomly selected age to an error randomly selected from a normal distribution with a mean of zero and a standard deviation equal to the error selected from the standard deviation (to account for the error to being positive or negative)
    - o In our second for-loop, we instruct MATLAB to tally up each of the times the randomly selected age+error is greater than some maximum age-point that we specify (the "exceedence" tally)
    - o We repeat all steps up to this point N number of times, equal to the number of analyses in our real-world dataset (83 times if only considering ISS ages, or 247 considering the our entire Breiðuvík zircon population).
        - ▪ If, in each of N runs, the randomly selected age+error never exceeds the maximum age cut that we specify, we start a second tally (the "non-exceedence" tally)
    - o We call this collection of N random selections and subsequent tallies a "set;" We repeat a set NN times (e.g., 10, 100, 1000 times), and call that a "cycle"
        - ▪ After completing a cycle, we can repeat the process (optional) but consider a minimum age cut instead of a maximum age cut, to ensure symmetry in our random distribution
    - o At the end of each cycle, we take the count from the "non-exceedence" tally, and divide it by the number of sets (NN) that we ran. This gives us a "non-exceedence probability"
        - ▪ This non-exceedence probability allows us to make statements like "in a Monte Carlo simulation based off of a sample size of 83, with a maximum age cut off of the mean + 2.64 My, we found no ages older than the cut-off 750 times out of 1000. That is to say, there is a 75% chance that we would NOT find a zircon with an age greater than the mean + 2.64 My, and 75% chance that Breiðuvík does NOT have an age range > 5.28 My"

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