

## Geochemical characterization of subglacial pillow lavas from vicinity and base of the Bárðarbunga volcano

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The Bárðarbunga volcano represents one of the largest and most productive volcanic systems in Iceland. It is located in central Iceland and it is thought to be situated directly above the Iceland mantle plume. Several studies have been conducted on early postglacial and Holocene lavas of Bárðarbunga volcano system (BVS), however, due to the hardly accessible location of the partly ice-covered Bárðarbunga volcanic center, studies of lavas in the nearest vicinity to the volcano are scarce. We present a detailed geochemical characterization of subglacial pillow lavas from ice-free areas in the western and northwestern flanks of the volcano.

Major elements of the glassy pillow rims indicate their affiliation to two different groups of basaltic magma – more primitive (MgO~8.5wt.%) and more evolved (MgO~6.7wt.%), both of which fall on a liquid line of descent defined by Holocene lava units from the BVS. The more evolved melts also reveal slight enrichment in the incompatible trace elements when compared to the more primitive group (e.g. Zr/Y~3.3 and ~2.8; La/Yb ~2.4 and ~1.8, respectively).

In contrast to major and trace elements, there is no significant variability in <sup>87</sup>Sr/<sup>86</sup>Sr ratios, which display values in good agreement with published data from the region (e.g. Kistufell [1] and few basement rock samples from the BVS of unknown age [2]). However, previous studies of lavas from the BVS have observed significant variability in Pb isotopes, suggesting subtle variation in mantle sources contributing melts to the BVS in different time and space [2]. Thus, this detailed geochemical and isotopic analysis of basement rocks of the BVS, may facilitate a better understanding of the complexity and heterogeneity of the mantle underlying the BVS and how it is reflected in its eruptive products.

[1] Breddam, (2002). *Journal of Petrology* 43(2), 345-373.

[2] Svavarsdóttir *et al*, (2017). *Jökull* 67, 17-42.