

Bárðarbunga update 23082014

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Bárðarbunga update

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Based on

Seismic, GPS, water samples

Eruption plume

Height (a.s.l.)

Subglacial eruption, no eruption cloud.

Heading

Subglacial eruption, no eruption cloud.

Colour

Subglacial eruption, no eruption cloud.

Tephra fallout

Subglacial eruption, no eruption cloud.

Lightning

Subglacial eruption, no eruption cloud.

Noise

Subglacial eruption, no eruption cloud.

Meltwater

Hydrological measurements at Jökulsá Á Fjöllum, Upptýpingar do not indicate a contribution of geothermal/volcanic gases to the hydrological system that is outside of the typical range observed in the last decade until now. Water melting from the glacier/lava interactions could reach this station after 0-20 hours.

Seismic tremor

Starting at 11:18, seismic tremor was observed at 1 and 1.5 Hz. This is consistent with lava/ice interaction. and is similar to the tremor observed during the Fimmvörðuháls eruption and the lava flowing phase of the Eyjafjallajökull eruption. We are not observing explosions in the tremor data, which suggests it is a relatively small volume of lava in contact with the ice.

Earthquakes

The frequency of earthquakes is so high, that the events are overlapping in time, and it is difficult to discern individual events. We are currently interpreting the depth of the majority of earthquakes

(5-10 km) as the depth of the base of the dyke. The dyke has propagated about 5 km to the north since yesterday.

GPS deformation

Most recent GPS data shows that magma flow is continuing. Since the start of unrest on August 16th, the total displacement across the dyke intrusion has been over 20 cm. A model to fit the GPS data suggests that the volume of magma contained within the dyke is approximately 250 million cubic meters. The Dyngjuháls and Kverkfjöll GPS stations show continuing deformation

Overall assessment

The aviation color code has been raised to "red" as the data is currently interpreted as a subglacial eruption. Both the thickness of the ice at the possible contact point (100-400 m) and the volume of lava in possible contact with the ice are highly uncertain. It could be 0-20 hours before lava reaches the surface of the ice. It is also possible that the lava will not break through the ice, and the eruption could remain subglacial.