Bárðarbunga update 22082014

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Bárðarbunga update

Compiled by

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Based on

Seismic, GPS, water samples

Eruption plume

Height (a.s.l.)

No eruption and no eruption cloud.

Heading

No eruption and no eruption cloud.

Colour

No eruption and no eruption cloud.

Tephra fallout

No eruption and no eruption cloud.

Lightning

No eruption and no eruption cloud.

Noise

No eruption and no eruption cloud.

Meltwater

No eruption. Three new continuous conductivity meters have been installed in the rivers around Barðarbunga: Skjálfandafljót (Rjúpnabrekkukvísl), Kaldakvísl (measuring 113 ■microSiemens/cm), and Jökulsá á Fjöllum at Upptyppingar (measuring 165-210 ■microSiemens/cm). We cannot yet draw conclusions about possible changes in the contribution of gases from the volcanic/geothermal system to the hydrological system.

Conditions at eruption site

No eruption.

Seismic tremor

No sign of harmonic (volcanic) tremor detected.

Earthquakes

Intense earthquake activity continues at the Bárðarbunga volcano – a situation that has persisted since 16 August. There are no signs that the seismicity is decreasing. A 25 km long dyke has formed in the crust under the Dyngjujökull glacier at 5-10 km depth. Interpretation of the latest data suggests that the magma continues to move along the dyke and the front of the dyke is not now advancing. One earthquake of magnitude 4.7 was measured in the Bárðarbunga caldera at 4 km depth yesterday evening at 23:50. This large event was at a similar location as the earthquakes of magnitude larger than three that were seen yesterday. The large seismic events in the Bárðarbunga caldera are interpreted as adjustments due to decreasing magma pressure within the caldera since the beginning of the unrest – they are not assumed to be the precursor to an imminent eruption. Four new seismic instruments have been installed in the region: near Kverkfjöll and Hamarinn which are transmitting data and two seismic stations set up in Dyngjujökull are collecting data on site. This work is done by IMO, the Institute of Earth Sciences and collaborators in the European FutureVolc research project.

GPS deformation

GPS stations in the region have shown displacements on the surface of up to 12 cm at Dyngjuháls and Kverkfjöll. In comparison, Iceland on the whole is spreading at the rate of about 2 cm / year. The GPS measurements indicate a decrease in pressure in the magma chamber below the Bárðarbunga caldera and an increase in pressure east of Bárðarbunga, related to the dike intrusion.

Overall assessment

There are no measurements to suggest that an eruption is imminent. Previous intrusion events in Iceland have lasted for several days or weeks, often not resulting in an eruption. However an eruption of Bárðarbunga cannot presently be excluded, hence the intense monitoring and preparation efforts. The ongoing monitoring and assessment effort is necessary in case a volcanic eruption occurs. Hazards in the event of an eruption are being assessed, including a glacial outburst flood and dispersal of volcanic ash. Additional seismic, GPS and hydrological stations have been installed in the Bárðarbunga region. Likewise, mobile radars capable of monitoring ash dispersal have been moved to the region. The aviation colour-code for the Bárðarbunga volcano remains unchanged at ‘orange’, signifying that the volcano is exhibiting heightened levels of unrest.