Bárðarbunga update 21082014

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Bárðarbunga update

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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. Daily measurements of water samples from Upptyppingar on Jökulsá á Fjöllum have shown a stable conductivity of ~200 µS/cm since Sunday.

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. Since midnight, over 900 earthquakes have been detected in Bárðarbunga. There are no signs that the seismicity is decreasing. Seismic and GPS measurements reveal a 25 km
long dyke being formed in the crust under the Dyngjujökull glacier at 5 - 10 km depth. The dyke has
not propagated to the north-east, nor has it progressed to shallower depth. Today three
earthquakes exceeding three in magnitude have occurred on the caldera rim of Bárðarbunga (M
3.7 at 10:29, M 4.0 at 10:58 and M 3.4 at 13:02). These earthquakes were at depths around 2 - 5
km. They are interpreted as possible adjustments of the caldera due to changing magma pressure –
they are not assumed to be the precursor to an imminent eruption.

GPS deformation
Seismic and GPS measurements reveal an approximately 25 km long dyke being formed in the
crust under the Dyngjujökull glacier east of Bárðarbunga. The results of the GPS measurements
also indicate a decrease in pressure in the magma chamber below the Bárðarbunga caldera, which
might suggest migration of melt from the Bárðarbunga magma chamber to the dike intrusion east of
Bárðarbunga. A new GPS station was installed in Kverkfjöll on the 21st of August 2014. This
station will measure continuously and transmit data automatically to scientists of the Icelandic
Meteorological Office and of the Institute of Earth Sciences at the University of Iceland, in a similar
manner as other continuos GPS stations do near Bárðarbunga. The new GPS measurements will
provide scientists with an improved understanding of how the magma is moving within the crust.

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.