

Grímsvötn volcano

Status Report: 17:00 GMT, 1 November 2010

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Based on: IMO seismic monitoring; IES-IMO GPS monitoring; IMO hydrological data.

- Meltwater:** On 29 October, water began to drain from Grímsvötn, a subglacial lake near the centre of the Vatnajökull ice cap. Discharge from the lake is draining via the glacier Skeiðarárjökull, on the southern flank of the ice cap. The outburst flood (jökulhlaup) is affecting the Gígja river, with discharge increasing progressively since 30 October. Discharge was measured at 144 m³/s on 30 October. A discharge measurement this morning gave 455 m³/s, and another measurement, around 16:00 GMT, showed an increase to 627 m³/s. Electrical conductivity has increased since the beginning of the outburst from 180 µS/cm to 320 µS/cm.
- Seismic tremor:** Seismic tremor has been increasing at seismic station 'grf', located near Grímsvötn, since late on 27 October 2010. This tremor is similar in character to the tremor that accompanied the jökulhlaup in November 2004. Presently, there is no sign of volcanic tremor.
- Earthquakes:** An earthquake of about magnitude three occurred at the Grímsvötn volcano early yesterday morning. Three earthquakes have occurred beneath Grímsvötn today: 02:47 GMT, size 0.9; 03:12 GMT, size 1.7; and 16.56 GMT, size 2.8. Several 'icequakes' have been recorded in Skeiðarárjökull; this is an indication that floodwater is propagating beneath the glacier.
- GPS deformation:** The GPS time-series has been showing signs of a relatively stable pressure increase since the eruption in 2004. The vertical signal is difficult to estimate, as the decrease in load due to glacial thinning contributes a large part in the signal. However, horizontal movements indicate that the pressure level may be comparable to the situation before the 2004 eruption. The horizontal displacement rate has increased in recent months.
- Overall assessment:** On 29 October it was verified that a glacial outburst flood (jökulhlaup) had begun from the Grímsvötn volcano. The Gígja river, south of the

volcano, shows a considerable increase in water-level and electrical conductivity. Presently, there are no detectable signs of the beginning of a volcanic eruption at Grimsvötn.