Grímsvötn volcano

Status Report: 17:00 GMT, 23 May 2011

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Based on: IMO seismic monitoring; IES-IMO GPS monitoring; IMO hydrological data; weather radar; ashfall reports; UK Met Office ATDnet; MODIS satellite images.

Eruption plume:

Height (a.s.l.): The ash plume reached heights of 8 to 10 km last night and this morning. In the last hours, the plume has reached heights of 5 to 9 km, but northerly winds have been very strong which can effect the height.

Heading: Most of the ash cloud heads to the south. At altitudes of 8 km and higher, part of the plume heads to the west.

Colour: Brown- or grayish and sometimes black close to the eruption site.

Tephra fallout: The amount of fallout is great from Vík in the west to the east of Öræfajökull. The amount of ash fall is the greatest close to the village Kirkjubæjarklaustur. Ash has been detected in several areas throughout the country, except in the northwest.
A sample from Kirkjubæjarklaustur has been analyzed, which was taken around 1h on 22 May. The grains are glassy with micro crystals of plagioclase. Samples well sorted.
Whole rock analysis: Basalt, with 50-51 Wt% SiO_2
Leachate results: 5-10 mg/kg of waterdissolvable flour
Grain size distribution: about 10% of the volume of the analyzed samples is finer than 10 micrometers

Lightning: From 17-18h yesterday, about 300 lightning strikes were detected but much less thereafter. The strikes were most frequent south of Grímsvötn.

Noise: No noise from the volcano has been reported.

Meltwater: No changes in water level have been recorded in the rivers Gígja and Núpsvötn. Since the eruption is practically at the same site inside the Grímsvötn caldera as the last eruption, ice-melt is not expected to be great and therefore swelling of rivers in the next few days is not expected.

Conditions at eruption site: The eruption site is in the southwest corner of the Grímsvötn caldera, in the same site as the 2004 eruption. The basaltic magma is fragmented into tephra in violent magma-water interaction. Very powerful explosions occur at the eruption site.

Seismic tremor: Seismic tremor at the Grímsfjall station was fairly stable last night. After midnight andtoday, the tremor levels have been fluctuating and decreasing slightly.

Earthquakes: No earthquakes have been recorded in the volcano since yesterday afternoon.

GPS deformation: Rapid deformation was detected at the CGPS station Grimsvotn (GFUM) in the first hours of the eruption. GFUM is located 5 km east of the eruption site. In the first four hours the site moved ~ 20 cm in the north direction, 15 cm towards west and subsided 10 cm. The deformation rate has since slowed down, with the total displacement in the first two days of the eruption about 50 cm to the northwest, with 25 cm subsidence. These displacements are ~60% larger than comparable measurements made after the 1998 and 2004 eruptions of Grímsvötn.

Overall assessment: The eruption has abated slightly since yesterday. No effusion of lava has been observed.