

Grímsvötn volcano

Status Report: 17:00 GMT, 22 May 2011

Icelandic Meteorological Office and Institute of Earth Sciences, University of Iceland

Compiled by: Steinunn S. Jakobsdóttir, Gunnar Sigurðsson, Óli Þór Árnason, Magnús Tumi Guðmundsson, Ingibjörg Jónsdóttir, Þórdís Högnadóttir, Björn Oddsson and Bergþóra S. Þorbjarnardóttir.

Based on: IMO seismic monitoring; IES-IMO GPS monitoring; IMO hydrological data; information from flights 9-11h; weather radar; ashfall reports; UK Met Office ATDnet; MODIS satellite images.

Eruption plume:

Height (a.s.l.): The ash plume reached heights of 15 to 19 km last night and this morning. In the last two hours, the plume has reached heights of 14 to 15 km, but from noon until 15:00 hrs (GMT), the plume reached heights closer to 10 kilometers.

Heading: Most of the ash cloud heads to the south. Lower and scattered clouds head southwest and travel over the eastern part of the South Iceland Lowlands. The plume forms a 60 km long circular cloud around the eruption site with its lower boundary at a height of about 5 km. Out from this cloud, a scattered cloud lies to the north reaching about 450 km north of the eruption site at 14:54 hrs.

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

Tephra fallout: The amount of fallout is massive east from Kirkjubæjarklaustur west to the center of Mýrdalssandur. The visibility is virtually zero. The fallout is most concentrated south of the volcano, but less dense to the north and east.

Lightning: This afternoon, lightning strikes have been 60 to 70 per hour, most frequent in the ash plume south of the eruption site.

Noise: No noise from the volcano has been reported.

Meltwater: No changes in water level have been recorded in the rivers Gígja and Núpsvötn. A heightened conductivity pulse was recorded in Núpsvötn, peaking at around 11h. This pulse is probably due to the ash fall. Since the eruption now is practically at the same site inside the Grímsvötn caldera as the site of 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 place 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 reached a peak at 19h last night. The tremor fluctuated somewhat till past 22h, but levels decreased thereafter. The tremor levels were at a minimum from 9 to 11h this morning but have increased slightly since.

Earthquakes: At around 17:30 hrs yesterday, earthquake activity began in Grímsvötn. The largest earthquakes were of magnitude 3 and several were larger than magnitude 2.5. As the tremor levels increased, it became more difficult to detect the earthquakes. After 19h, the seismicity decreased at the same time that the tremor reached a maximum.

GPS deformation: No significant changes have yet been observed. However, there are indications of a displacement to the west and north after the onset of the eruption.

Overall assessment: The intensity of the eruption has decreased slightly since its climax last night when the magma flow have exceeded 10,000 tons per second. The magma flow this afternoon is estimated of the order of 2-5,000 tons per second. No effusion of lava has been observed.