



## **Monitoring of plume height during the Grímsvötn 2011 eruption in Iceland**

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The eruption of Grímsvötn volcano in 2011 lasted for 7 days, 21-28 May. The eruption was explosive and peaked during the first hours when the eruption plume reached up to 25 km altitude, far above the tropopause. After the first night the eruption strength decreased rapidly. The eruption was of much shorter duration but more powerful than the eruption of Eyjafjallajökull in 2010 that lasted for 39 days when little of the eruptive material was transported into the stratosphere.

The volcanic plume was monitored with two weather radars; a fixed C-band radar located at Keflavík International Airport and a mobile X-band radar, located 257 km and 75 km from the eruption site, respectively. The C-band radar gave a continuous time series of the plume height from the first hour of the eruption until the eruption plume was below detection limit on 23 May. However, the X-band radar started operating 8.5 hours into the eruption and unfortunately includes data gaps due to the difficult operational environment. Therefore, while the vertical resolution of the data from the C-band radar is rather crude due to the distance from the eruption site, the radar was crucial for operational monitoring. On the other hand the X-band radar data has a higher vertical resolution and potential for giving information on the particle distribution in the eruptive plume. Furthermore, photographs taken of the eruptive plume have been used to time the initial rise.