

Further information regarding the Grímsvötn eruption

Background

Grímsvötn is the most active volcano in Iceland. There have been approximately 70 recorded eruptions in the Grímsvötn volcanic system. Over the last 20 years there have been four eruptions in 2004, 1998, 1996, and 1983. These eruptions occurred in the Grímsvötn depression with the exception of the eruption in 1996 known as Gjálp. The volcano has a caldera complex, the most recent one hosting the Grímsvötn sub glacial caldera lake that is sustained by extensive geothermal activity. The volcano is almost fully ice covered and interaction of magma and melt water from the ice causes some explosive activity.



Comparison with the 2011 Eyjafjallajökull event

In terms of the volume of the eruption Grímsvötn started out significantly larger than the Eyjafjallajökull eruption last year but has since scaled down considerably. The most important difference however, is the nature of the magma that it is projecting. The magma from Eyjafjallajökull was explosive in nature and created very fine ash particles, 90% of which was in grains less than 1mm. Grímsvötn on the other hand erupts basalt magma which is rarely explosive. The fragmentation is therefore less efficient, and the ash particles it projects are much coarser and not likely to stay airborne for as long. This appears to be borne out by the greater concentrations at lower altitudes and flight levels as well as the reports of ash deposits at ground level across Scotland. Earlier in the event, there was glacial melt water flowing into the crater and the interaction of magma and water caused phreato-magmatic explosive activity, but that has ceased as lava walls of the crater have built up. Latest information from the Icelandic Meteorological Office (IMO) indicates that the volcano is no longer emitting ash, only minor steam plumes from the crater up to an altitude of around 1,000ft. This is borne out by other reports that state that the volcano is still active with low-level seismic activity this continues to decrease.

Weather difference

The weather pattern presently is very different from that prevailing at the time of the Eyjafjallajökull eruption in 2010. During last year's event a central Atlantic extension to the Azores high dominated the picture resulting in a northwesterly airflow that dispersed the ash over Europe.

Expected length of event.

It is difficult to predict how long an eruption can last. The last eruption in this area (2004) lasted for a week. Most of the volcano's recent eruptions have been of a short duration although one in 1873 lasted for several months albeit at very low intensity. As noted above, this event has subsided a great deal since the initial eruption and at present, volcanologists expect that this particular event is winding down.

Current situation

The forecast by VACC London for 0600UTC on the 26 May calls for most ash contamination in the high traffic areas of western and north central Europe from SFC to FL200 to be low to medium (200 to 4000 microgrammes per metre³). The exception being

and area of high (>4000 microgrammes per metre³) stretching to the high arctic from around 64N between 5W and 20E. Above FL200 this area of contamination is confined to a small area around the Lofoten Islands. The only other areas of high contamination are to be found from SFC to FL350 from Iceland northwestwards to Greenland. With ash emissions largely ceased it is expected that these areas will gradually disperse over the coming days.

European regulator response

Over the last few days a number of teleconferences of the European Aviation Crisis Coordination Cell (EACCC) have taken place from the discussions it was apparent that two responses have been adopted with one camp keen to avoid the criticism levelled at them following last year's blanket closure of airspace. They have adopted the stance where areas of high contamination would be designated "temporary danger areas" and flights only accepted with an approved Strategic Risk Assessment (SRA). Since approval will require support from airframe and engine manufacturer – in effect this proviso rendered these areas closed to traffic with out the potentially damaging official "closure" of airspace.

The other camp has remained firm in its resolve to adhere to present ICAO advice that calls for mandatory closure of airspace with high levels of contamination while allowing flights in low contamination areas supported by an SRA. In both cases however the states seem to have disregarded the advice of the IACO Volcanic Ash Task Force (IVATF) which cautions against flight in areas of medium contamination (2000 to 4000 microgrammes per metre³).

Reporting Countries adopting the full SRA approach

France
Ireland
Netherlands
Norway
Spain
United Kingdom

It is worth noting that only two of these reporting National Aviation Authorities (NAAs) have received SRA for operations in high contamination areas although at the time of writing one had been rejected and the other still under consideration.

Countries retaining the ICAO definition

Belgium
Denmark
Germany
Portugal
Switzerland

All of the reporting nations said that they have received SRAs for operation in low to medium contamination areas and these had been approved.

IFALPA Advice

As always the IFALPA position is to err on the side of safety. At present there has been no quantified testing of the effects of exposure to volcanic ash on aircraft and engines. Accordingly IFALPA recommends that pilots flight plan to avoid areas of contamination at any level and if this is not possible to remain clear of airspace where medium levels of contamination are forecast.

Areas of where high contamination is forecast should be avoided at all costs.

Flight into any airspace NOTAMed as a danger area should be avoided.

Further information

The latest VACC London forecast can be found by clicking [here](#)

IFALPA's position on operations in the vicinity of volcanic ash can be found by clicking [here](#)

Airbus advice for operation near volcanic ash can be found by clicking [here](#)

Boeing advice for operation near volcanic ash can be found by clicking [here](#)

Bombardier advice for operation near volcanic ash can be found by clicking [here](#)