VOLCANIC ERUPTION IN GRÍMSVÖTN 2011

www.iceland.is

PROMOTE ICELAND
PROMOTEICELAND.COM

Many questions have come up following the recent eruption in Grímsvötn, Vatnajökull. How does the eruption affect Iceland and air travel? Are tourists safe in Iceland? We hope to answer most of your questions here in this document, but if you seek further information feel free to visit us online at www.iceland.is, where you will find all the links and the latest updates that you need.

Bottom line: Travelers are safe and secure in Iceland – and can enjoy all the same activities as before and even more!

Who are we?

Geologically speaking, Iceland is a very young country and still forming before our eyes. Icelanders are a resilient people and have learned to live in harmony with the geological wonders of the island. These very same forces of nature create the natural hot pools, the geysers, and the geo-thermal energy that make Iceland unique.

The Department of Civil Protection and emergency management authorities in Iceland are always prepared to cope with natural hazards. Emergency response teams are extremely well trained and on the alert when nature decides to show its force. Preparedness is the key to safety in the face of any danger. This includes understanding the situation, its consequences, and having a plan of action. The Department of Civil protection, in cooperation with emergency teams has the situation well under hand.

About Grímsvötn

Grímsvötn is a basaltic volcano, located near the centre of the Vatnajökull ice cap, the largest ice cap in Europe. It is the most active volcano in Iceland. There have been approx. 70 eruptions in the Grímsvötn volcanic system in historical times. This is the fifth eruption since 1983, the last eruptions through glacier occurred in 2004, 1998, 1996, 1983 and 1934. 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 subglacial caldera lake that is sustained by extensive geothermal activity. The volcano is almost fully ice covered and interaction of magma and meltwater from the ice causes phreatomagmatic explosive activity.

How does this eruption compare to the eruption in Eyjafjallajökull in 2010?

In volume, the volcanic eruption in Grímsvötn started out with great force in the beginning, but has since scaled down considerably. The plume has held steady at about 10 km lately, which is slightly more than the plume from Eyjafjallajökull.

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 1 mm. 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 long. At the moment, there is melt water flowing into the crater, and the interaction of magma and meltwater from the ice causes phreatomagmatic explosive activity, but according to predictions, that should cease soon as the lava walls of the crater build up. This should greatly reduce explosions, resulting in a flowing stream of magma, and greatly reduced ash particles

The dominating weather system at the moment is also quite different. During the Eyjafjallajökull eruption, there was a high-pressure system over Northern-Atlantic, which dispersed the ash over Europe.

Will other volcanoes erupt?

There is nothing to indicate increased activity in other volcanoes.

How long will the eruption last?

It is difficult to predict how long an eruption can last. The last eruption in this area was in 2004 and lasted for a week. There have been several eruptions in Grímsvötn in the last decades, and they have all been relatively short lived. An eruption in 1873 lasted seven months, but intensity was relatively low during that time. After a forceful start to this eruption, it started to show reduced activity on day two.

How does this affect inhabitants?

Falling ash has been reported in most parts of the country, but most of the effects of the eruption are felt in the area surrounding the site of the eruption, a scarcely populated area in the southern-part of Iceland. The eruption itself is taking place in Vatnajökull, which is the largest glacier in Europe, far from populated parts of the country. Considerable ash has fallen in to the south of the eruption, and inhabitants in these areas are advised to stay indoors and wear masks if they need to go outside. Tests conducted on samples from the ash in the area have shown very low levels of fluoride and other toxins, so no special measures have been taken regarding toxicity of any kind.
Day-to-day life continues as usual in Iceland, businesses are open and society functions normally. As before, there is plenty to see and do while in Iceland!

Is it safe?

It is safe to say that injuries or fatalities due to volcanic eruptions in Iceland are extremely rare. Since 1947 there have been two deaths related to volcanic eruptions. In that time there have been 12 volcanic eruptions. The first death involved a scientist who was killed by rocks falling from the front of a lava stream where he was collecting samples, this was during the eruption of Hekla in 1947. The second instance involved a person who entered the basement of a building in a low-lying area where volcanic gases had gathered during the eruption of Heimaey in 1973. In both instances these people were in areas where no access would be allowed today.

Preparedness is the key to safety in the face of any hazard. Preparedness includes understanding the hazard and it´s consequences and having a plan of action. Injuries or fatalities due to volcanic eruptions in Iceland are extremely rare, and there have been no such cases due to the volcanic eruption. The Grímsvötn volcano is located to the south of Iceland, and only covers a tiny part of the large island. It poses no safety threat to the general population.

Can floods be expected?

Floods will often follow an eruption in this area. These are glacier outburst flood, as the area of activity is subglacial, and a caldera lake rest under the icecap above. The area is closely monitored by online gauges in several rivers around the volcanoes, The water levels in the caldera area above the volcano were low to begin with. Large or damaging floods are therefore not expected in connection to this event unless changes occur in the eruption pattern.

How is the eruption monitored?

The Icelandic Meteorological Office (IMO) monitors earth movements, water conditions and weather and issues warnings. Many kinds of measurements are carried out by the IMO and other agencies that provide valuable information used to warn of impending danger, for example potential eruptions and floods. The IMO’s weather radar on the southwest tip of the country and the mobile radar, which is located in Kirkjubaejarklaustur, shows the height of the ash plume, which is important for calculating the distribution of the ash. There is a 24/7 watch at the IMO, where a meteorologist is present and a seismologist and hydrologist are on call. The IMO works closely with the National Emergency Agency, the University of Iceland and the British Meteorological Office, where the London VAAC (Volcanic Ash Advisory Centre) is stationed. The London office gives information on ash which are based on information from the Icelandic Met Office.

How are eruptions forecast and monitored in Iceland?

To forecast and monitor seismic and volcanic activity in Iceland, IMO operates a nationwide digital network of seismic stations and continuous GPS stations. Subglacial eruptions often co-incide with glacial floods. To monitor the glacial floods, IMO uses water-level gauges and electrical conductivity meters.

How do I find weather forecasts for Iceland?

Information on the weather conditions near the volcano can be viewed on the weather pages of the IMO-web. The text forecast is most reliable but maps with specific wind-, temperature- and precipitation forecasts are automatic. The difference between the weather in the lowland and in the mountains can be considerable. Wind-chill and wetness (rain, snow or blowing snow) are always a potential hazard, as sudden weather changes are more common on higher ground than in the lowland.

Can I fly?

The Grímsvötn eruption has not caused wide-spread disturbances to flight schedules. There have been local disturbances, with Icelandic airports, including Keflavík International Airport, closing down for about 24 hours. Based on weather predictions and ash dispersion models, wide-ranging disturbances to flight schedules are not considered likely.

As a precaution, passengers are asked to monitor flight schedules closely on travel industry web sites. Even if volcanic ash might still affect air travel, there are four international airports in Iceland, and if one were to close down, air traffic would be directed to one of the others.

Clean and safe!

Iceland ranks as the cleanest country in the world, according to Forbes magazine. We are used to the geothermal activity of all kinds and have learned to make the most of them. As a result Iceland is one of the world's leaders in green energy and sustainable development. It is also the only Western country that produces all its electricity from emission-free and sustainable natural resources in the form of geothermal and hydro power.

For further information visit

www.iceland.is - The Official Gateway to Iceland

www.almannavarnir.is - The Department of Civil Protection

www.imo.is - Iceland Meteorological Service

www.earthice.hi.is - Institute of Earth Sciences - University of Iceland