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News Release

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Ash cloud study clears way for better flight safety forecasts

Predictions of where planes can safely fly following volcanic eruptions could be improved, thanks to fresh discoveries about ash clouds.

Scientists have studied ash grains recovered from recent and previous Icelandic eruptions to compare satellite-based measurements of ash clouds with ash deposits on the ground. Their findings will help improve methods of mapping ash concentration, in order to identify zones where it is safe to fly, during future eruptions.

Hundreds of flights were cancelled in 2010 and 2011 following volcanic activity in Iceland, because of the danger that volcanic ash posed to aircraft and their engines.

Researchers studied volcanic ash recovered in the UK from the recent Eyjafjallajökull and Grímsvötn eruptions, as well as prehistoric samples from peat bogs in Scotland, Ireland and Yorkshire. Another sample, from an 1875 eruption, had been in a museum for 140 years.

They hoped to understand the range of sizes of grains and how far they had travelled. Ash grains were found to be much larger than typically estimated by satellites. Calculations showed that even moderately sized eruptions could disperse large grains as far as the UK.

The group also used computer models to simulate how clouds of various ash particle sizes would appear to satellite sensors. They found that sensors can underestimate the size of larger particles.

The study, published in *Atmospheric Measurement Techniques*, was done in collaboration with the Met Office, the University of Leeds and the University of Iceland. It was supported by the Scottish Government and Marie Curie Actions via the Royal Society of Edinburgh.

Dr John Stevenson, of the University of Edinburgh's School of GeoSciences, who led the study, said: "Mapping volcanic ash clouds and their risk to aircraft is hard. Large regions of airspace can be contaminated by particles that are invisible to the naked eye. Combining the expertise of volcanologists and atmospheric scientists should help improve forecasts."

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