PRESS RELEASE

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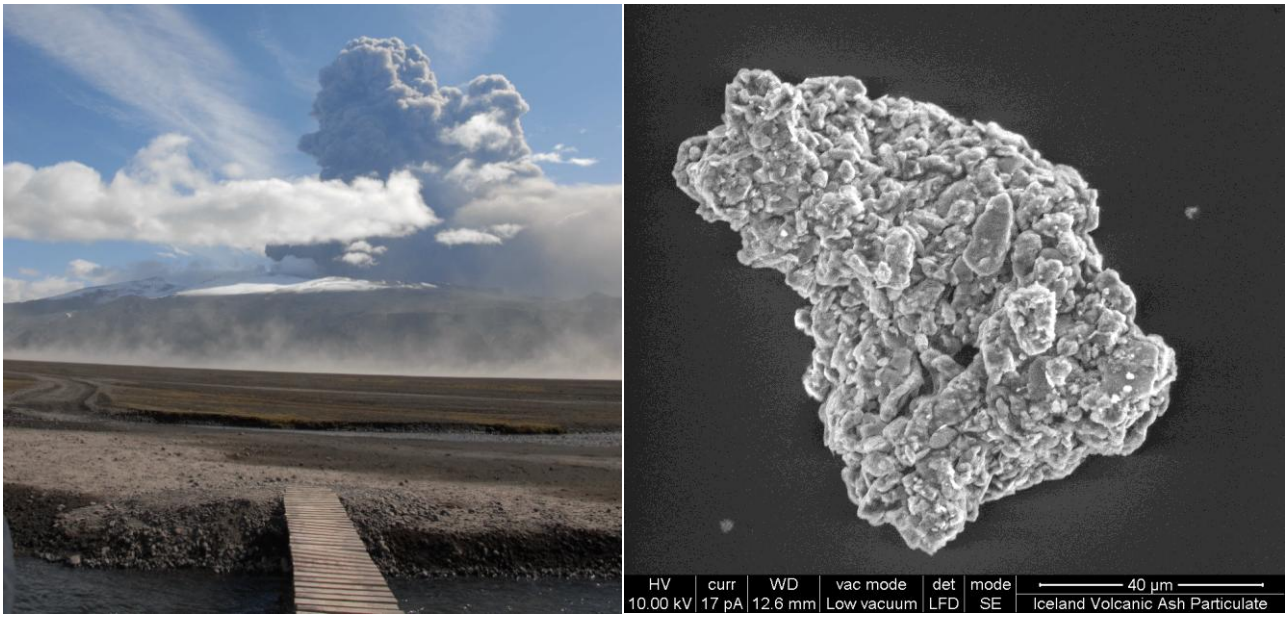
British Geological Survey discovers large Icelandic volcanic ash particles in the UK

Scientists at the British Geological Survey (BGS) have found evidence in the UK of large ash particles from the Icelandic volcanic eruption in April 2010. This discovery will help refine the modelling of ash plume dispersal for future eruptions.

Most of the very small ash particles in volcanic plumes fall as clusters of particles known as 'aggregates'. The particles may stick together due to a number of mechanisms including electrostatic attraction, particle collisions, condensation of liquid films and secondary mineralisation. The process of aggregation effectively removes very small particles from the plume and is therefore one control on how long ash particles stay in the atmosphere.



Eruption of the Eyjafjallajökull volcano in April 2010 and an 'aggregate' of volcanic ash particles BGS©NERC

The BGS is working with university partners in Lancaster, Edinburgh and Iceland, and the UK and Icelandic Meteorological Offices, to better understand aggregation processes to support continued improvements in ash plume dispersal models. The work will feed into further international collaborative science initiatives on eruption dynamics and the observation and modelling of volcanic ash plumes.

During the recent Icelandic eruption, the BGS worked with schools across Wales, the English Midlands and Scotland to collect ash fall samples in rain gauges and on sticky tape. Collaboration with the UK Met Office was key for predicting where the ash was and therefore where ash may fall.

Knowing the extent of ash fall and total mass/ volume of ash is essential for accurate assessment of the main eruption parameters. The samples on sticky tape retain the structure of the ash particles. Some particles are single grains but others are aggregates that would otherwise have broken up on impact.

Dr Sue Loughlin, Head of Volcanology at BGS said "The characteristics of the ash, such as particle size and shape, can tell us about processes taking place in the ash plume. We can learn how the aggregation process evolves by comparing aggregates that fell near to the volcano with those that fell from the plume 12 hours later in the UK."

Preliminary analysis of the samples shows that single grains of ash are formed of both glass and crystal fragments. These range in size from less than 1 µm (a micron is one thousandth of a millimetre) up to 60 µm. The particle aggregates have an average size of 85 µm and the largest are up to 200 µm in diameter, twice the thickness of human hair.

Dr Sue Loughlin continues "In collaboration with the Icelandic Meteorological Office (IMO), we are installing new seismic monitoring stations in areas of highest volcanic risk. These instruments will detect small earthquakes caused by magma forcing its way to the Earth's surface and once an eruption has started can warn us of escalating activity."

The seismic recordings, combined with data from other monitoring networks run by the IMO, such as GPS measurements of ground deformation, will give Iceland and the UK an effective early warning system for future volcanic eruptions.

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Notes for Editors

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The British Geological Survey

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