Geophysical Research Abstracts
Vol. 13, EGU2011-11538, 2011
EGU General Assembly 2011

Telesonic infrasound from Eyjafjallajökull, Iceland: a unique opportunity to understand infrasonic network detection capability of volcanic eruptions

Julien Vergoz (1), Robin S. Matoza (1), Alexis Le Pichon (1), Pierre Gaillard (1), Lars Ceranna (2), David N. Green (3), Läslo G. Evers (4), Emanuele Marchetti (5), Maurizio Ripepe (5), and Paola Campus (5)

(1) CEA/DAM/DIF, F-91297 Arpajon, France (julien.vergoz@cea.fr), (2) Federal Institute for Geosciences and Natural Resources (BGR), 30655 Hannover, Germany, (3) AWE Blacknest, UK, (4) Royal Netherlands Meteorological Institute (KNMI), 3730 AE De Bilt, The Netherlands, (5) Dipartimento Scienze della Terra, Università di Firenze, 50121-Firenze, Italy

Volcanic ash from the eruption of Eyjafjallajökull, Iceland, during April-May 2010, had a significant societal impact, highlighting the need for effective ash cloud monitoring. Despite its modest-size, the eruption was recorded across at least 17 atmospheric infrasound stations distributed across Europe, Russia, Greenland, Canada and Alaska at ranges of up to 5000 km. Among these stations, some are part of the International Monitoring System (IMS), the others are operated by various European institutions for basic research (France, Germany, England, the Netherlands, Sweden, Finland and Norway).

Iceland is located at the heart of the North Atlantic Ocean, a well-known microbarom source region, which makes the identification of detections associated to the volcano non-trivial. As a consequence, a simple empirical procedure based on detection parameters at each station has been developed to discriminate between the volcanic and microbarom detections. Selected detections exhibit very clear periodic variations in amplitudes, back-azimuths, trace-velocities and frequencies, which can be attributed to propagation effects, source effects or station effects (such as signal to noise ratio). Comparison with atmospheric specifications from the European Centre for Medium Range Weather Forecasts (ECMWF), local volcanic seismic tremor data will be made to investigate their effects on detections.

Such a sustained volcanic signal is a unique opportunity to measure the European infrasonic network detection capability and to compare observations with theoretical detection capability models.