



Networking of Icelandic Earth Infrastructures - Natural laboratories and Volcano Supersites

K. S. Vogfjörð (1), F. Sigmundsson (2), S. Hjaltadóttir (1), H. Björnsson (1), Þ. Arason (1), S. Hreinsdóttir (2), E. Kjartansson (1), R. Sigbjörnsson (3), B. Halldórsson (3), and G. Valsson (4)

(1) Icelandic Meteorological Office, Reykjavik, Iceland (vogfjord@vedur.is), (2) Institute of Earth Sciences, Reykjavik, Iceland, (3) Earthquake Engineering Research Centre, Selfoss, Iceland, (4) National Land Survey of Iceland, Akranes, Iceland

The back-bone of Icelandic geoscientific research infrastructure is the country's permanent monitoring networks, which have been built up to monitor seismic and volcanic hazard and deformation of the Earth's surface. The networks are mainly focussed around the plate boundary in Iceland, particularly the two seismic zones, where earthquakes of up to M7.3 have occurred in centuries past, and the rift zones with over 30 active volcanic systems where a large number of powerful eruptions have occurred, including highly explosive ones. The main observational systems are seismic, strong motion, GPS and bore-hole strain networks, with the addition of more recent systems like hydrological stations, permanent and portable radars, ash-particle counters and gas monitoring systems. Most of the networks are owned by a handful of Icelandic institutions, but some are operated in collaboration with international institutions and universities. The networks have been in operation for years to decades and have recorded large volumes of research quality data. The main Icelandic infrastructures will be networked in the European Plate Observing System (EPOS).

The plate boundary in the South Iceland seismic zone (SISZ) with its book-shelf tectonics and repeating major earthquakes sequences of up to M7 events, has the potential to be defined a natural laboratory within EPOS. Work towards integrating multidisciplinary data and technologies from the monitoring infrastructures in the SISZ with other fault regions has started in the FP7 project NERA, under the heading of Networking of Near-Fault Observatories. The purpose is to make research-quality data from near-fault observatories available to the research community, as well as to promote transfer of knowledge and technical know-how between the different observatories of Europe, in order to create a network of fault-monitoring networks. The seismic and strong-motion systems in the SISZ are also, to some degree, being networked nationally to strengthen their early warning capabilities.

In response to the far-reaching dispersion of ash from the 2010 Eyjafjallajökull eruption and subsequent disturbance to European air-space, the instrumentation of the Icelandic volcano observatory was greatly improved in number and capability to better monitor sub-surface volcanic processes as well as the air-borne products of eruptions. This infrastructure will also be networked with other European volcano observatories in EPOS. Finally the Icelandic EPOS team, together with other European collaborators, has responded to an FP7 call for the establishment of an Icelandic volcano supersite, where land- and space-based data will be made available to researchers and hazard managers, in line with the implementation plan of the GEO. The focus of the Icelandic volcano supersite are the active volcanoes in Iceland's Eastern volcanic zone.