

The Icelandic Volcanoes Supersite: The contribution of InSAR to improved understanding of ground deformation and natural hazards

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The Icelandic Volcanoes Supersite initiative has provided important results since its acceptance in 2013, both with new scientific results as well as societal benefits. Results have been communicated actively to the Iceland Civil Protection, including information on new unrest at Öræfajökull volcano, where re-tasking of COSMO-SkyMed satellites has allowed formation of one-day interferogram to constrain ice flow in an area of elevated subglacial geothermal activity. Scientific results include a series of studies on the gradual collapse at Bárðarbunga volcano 2014-2015 and the associated eruption and rifting activity, both during and after the eruption. The most important satellite data that have been used by the science teams are from the COSMO-SkyMed and TerraSAR-X satellites (several hundred images from each), in addition to Sentinel-1 data. A challenge for the science teams has been the end of the European FutureVolc project in early 2016. That project provided direct funding to work with the supersite data, but after its end the science teams have used alternate sources to carry out research and monitoring. Considerable efforts have been devoted to study geothermal processes, both natural and also the effects of geothermal utilization. The icelandicvolcanoes.is website operated by the Icelandic Meteorological Office provides access to online catalogue of Icelandic volcanoes, an important resource with information on geology and eruptive history of Icelandic volcanoes, as well as alert levels of volcanoes and activity status based on seismic activity. A website dedicated to the Icelandic Volcanoes supersite is also hosted at University of Iceland: icelandsupersite.hi.is. A continuation of the Icelandic Volcanoes Supersite initiative, with commitment from space agencies and a continuing active research group working with the supersite data, including those contributing in situ data, has the potential to provide important social benefits and new findings in the future.