

## HotVolc: A satellite-data-driven Web Map Service for real-time monitoring of active volcanoes

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We have developed a web-based, satellite-data-driven, system (named HotVolc, <http://www.obs.univ-bpclermont.fr/SO/televolc/hotvolc/>) for real-time tracking of volcanic events (both explosive and effusive). For detection of volcanic hot spots (associated with effusive eruptions) and clouds (associated with explosive eruptions) the system uses mid- and thermal-infrared data provided by the Eumetcast broadcast system. Our system relies mainly on SEVIRI/MSG sensor but could be extended to other sensors flown on both geostationary satellites and polar orbiters, the system uses data acquired in real-time (at rates of up to 1 image every 5 minutes), to process and convert satellite-sensor hot spot data to products of use to the volcanological and hazard response community. HotVolc is thus designed to provide higher-order products (such as maps and derived quantitative parameters) of use to the scientific community, observatories, and decision makers. These products are either routinely calculated, or processed on demand. We currently provide: (1) an ash-index map that uses a three-band method that allows ash cloud with minimisation of artefacts, (2) a thermal-index allowing detection of thermal anomalies associated with lava flows, lakes and domes, (3) an SO<sub>2</sub>-index to assess sulphur dioxide loads associated with thin gas-ash clouds, and (4) a three-channel colour composition that allows discrimination between meteorological and volcanic clouds.

HotVolc is operated by the Laboratoire Magmas et Volcans (LMV) at the University of Blaise Pascal (Clermont Ferrand, France), as a part of a wider remote sensing project initiated in 2006 by the Observatoire de Physique du Globe de Clermont-Ferrand (OPGC). It was subsequently used to track ash clouds during the Eyjafjallajokull eruption in 2010, as well as a number of other explosive events in Iceland and Italy between 2008 and 2013.

We present an overview of the system, with an emphasis on new features recently implemented through integration of HotVolc products with the Web Map Service (WMS). WMS was developed by the Open Geospatial Consortium (OGC) and is now a standard protocol for serving geo-referenced data. It is widely supported by most GIS clients. WMS is particularly well adapted to ingestion of geo-referenced satellite-data-derived products.