



Support for Aviation for Volcanic Ash Avoidance: SAVAA

S. Eckhardt (1), A. J. Prata (1), A. Stohl (1), A. Richter (2), F. Buongiorno (3), P. Seibert (4), and C. Zehner (5)

(1) Norwegian Institute for Air Research (NILU), Kjeller, Norway (sec@nilu.no), (2) University of Bremen, Germany, (3) INGV, Roma, Italy, (4) BOKU, Wien, Austria, (5) ESA, ESRI, Frascati, Italy

A new ESA project is described that is aimed at delivering earth observation (EO) data products as a service to the aviation industry for the avoidance of hazardous volcanic ash and SO₂ clouds. Recognizing some of the more urgent needs of the Volcanic Ash Advisory Centres (VAACs) the project will provide a series of standard EO products based on existing algorithms and also extend these using new algorithms that have been peer reviewed and tested. The proposed algorithms use both ultra-violet and infrared radiation, thus providing uninterrupted 24 hour volcanic cloud surveillance, and addressing the need for nighttime hazards monitoring. We propose the use of ash and SO₂ products derived from the geosynchronous SEVIRI sensor—with a capability of delivering data at a peak temporal resolution of 15 min, thus addressing the need for timeliness. We will use two classes of algorithm: Identify and Discriminate and Quantify and Retrieve. The first class is aimed at fast delivery of map products from multiple sources of satellite data, specifically for the use by VAACs for guidance in defining the airspace affected by the volcanic hazard, while the second class provides quantitative information (e.g. ash concentrations and SO₂ abundances) that can be used with an inverse model and an atmospheric dispersion model to objectively predict the subsequent movement of the hazardous volcanic cloud. These products, algorithms and retrieval schemes will be delivered through a webportal and a demonstration system (Volcanic Ash and SO₂ Support Service—VAS³) using the Eumetcast system to ingest multiple sources of satellite data with a state-of-the-art volcanic ash and gas dispersion model coupled to a transport and inverse modelling scheme (FLEXVOL) to provide objective forecasts of volcanic ash and SO₂ movement. The system includes the capability to link with and utilise products from existing services (e.g. SACS) and therefore reduces duplication while providing a cost effective use of resources. VAS³ is unique in its ability to provide a single set of volcanic ash and SO₂ products and predictions in a standardised form specifically for aviation hazards.