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Satellite Derived Volcanic Ash Product Inter-Comparison in Support to SCOPE-Nowcasting

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In support of aeronautical meteorological services, WMO organized a satellite-based volcanic ash retrieval algorithm inter-comparison activity, to improve the consistency of quantitative volcanic ash products from satellites, under the Sustained, Coordinated Processing of Environmental Satellite Data for Nowcasting (SCOPEe Nowcasting) initiative (http:/ jwww.wmo.int/pagesjprogjsatjscopee nowcasting_en.php). The aims of the inter-comparison were as follows:

1. Select cases (Sarychev Peak 2009, Eyjafyallajökull 2010, Grimsvötn 2011, Puyehue-Cordón Caulle 2011, Kirishimayama 2011, Kelut 2014), and quantify the differences between satellite-derived volcanic ash cloud properties derived from different techniques and sensors;
2. Establish a basic validation protocol for satellite-derived volcanic ash cloud properties;
3. Document the strengths and weaknesses of different remote sensing approaches as a function of satellite sensor;
4. Standardize the units and quality flags associated with volcanic cloud geophysical parameters;
5. Provide recommendations to Volcanic Ash Advisory Centers (VAACs) and other users on how to best to utilize quantitative satellite products in operations;
6. Create a “road map” for future volcanic ash related scientific developments and inter-comparison/validation activities that can also be applied to SO_2 clouds and emergent volcanic clouds.

Volcanic ash satellite remote sensing experts from operational and research organizations were encouraged to participate in the inter-comparison activity, to establish the plans for the inter-comparison and to submit data sets. RAL was contracted by EUMETSAT to perform a systematic inter-comparison of all submitted datasets and results were reported at the WMO International
Volcanic Ash Inter-comparison Meeting to held on 29 June - 2 July 2015 in Madison, WI, USA (http:/ /cimss.ssec.wisc.edujmeetings/vol_ash14). 26 different data sets were submitted, from a range of passive imagers and spectrometers and these were inter-compared against each other and against validation data such as CALIPSO lidar, ground-based lidar and aircraft observations. Results of the comparison exercise will be presented together with the conclusions and recommendations arising from the activity.