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# A multi-sensor alert system for volcanic emissions using satellite SO2 and ash measurements

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Hosted by the Belgian Institute for Space Aeronomy, the "*Support to Aviation Control Service"* (SACS) is an ESA-funded project aiming at providing Volcanic Ash Advisory Centers (VAACs) with near real-time global $SO_2$ and volcanic ash data derived from current atmospheric chemistry space sensors. SACS relies on the combined use of UV-visible (SCIAMACHY, OMI, GOME-2) and infrared (AIRS, IASI) satellite instruments which are used to monitor and detect gas and ash emissions from volcanoes worldwide. Whenever unusually high emissions are detected, the service issues an alert that takes the form of a notification sent by e-mail to interested parties. This notification also points to a dedicated web page where all relevant information is available.

In synergy with activities developed in the ESA SAVAA project where the transport of the volcanic plume is characterised using dispersion modeling, the SACS alert service is primarily designed to support the VAACs in their mandate to gather information on volcanic clouds and provide advice to airline and air traffic control organisations. SACS also serves other users that subscribe to the service, in particular local volcano observatories that are interested to have access to satellite data sets.

The presentation will give a description of the near real time service and the status of the multi-sensor alert system recently developed for SACS. Alerts are driven by observations from the SCIAMACHY, OMI, GOME-2, IASI and AIRS instruments. The strength of a multi-sensor approach that relies on several sun-synchronous satellites flying at different local times is to minimise the time-lag for event detection and at the same time to enhance the reliability of the detection. Likewise the simultaneous measurement of $SO_2$ and ash indicators is used to reinforce the selectivity of the alert system for volcanic emissions.