

## ***Interactive comment on “Support to Aviation Control Service (SACS): an online service for near real-time satellite monitoring of volcanic plumes” by H. Brenot et al.***

**Anonymous Referee #1**

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The manuscript reports on a web-based service for near real time monitoring of SO<sub>2</sub> and ash volcanic plumes, based on UV-Vis and IR satellite sensors. The different satellite sensors are described and their respective capabilities are discussed, in terms of sampling time, resolution, accuracy and sensitivity. Some results based on historical datasets are also presented in order to illustrate the work of the service. The data set is well presented and carefully discussed, and the methodology is properly addressed and referenced, so I think the paper is adequate for publication in NHESS after minor revisions. In particular, I would encourage the authors to address in more detail the potentials and drawbacks of such monitoring service. More specifically, although the

C2249

alert system uses both NRT ash and SO<sub>2</sub> data products, they state that, as the detection of volcanic ash is difficult and exposed to false detection (e.g. in the case of dust) the alerting system at present only uses SO<sub>2</sub> data products to trigger and issue plume notifications. They do acknowledge the fact that SO<sub>2</sub>, although a good proxy for the presence of volcanic ash, may result in false or even misleading alarms due to different ash and SO<sub>2</sub> trajectories, different residence times, different intensities of emission from the volcanic sources. Although the effects of these drawback are documented in some of the case studies presented (see as instance fig. 21 to 23), I think the authors should discuss more this particular topic. As I understand, the SO<sub>2</sub> alert reduces the number of false positives. It would be interesting, if available, to have figures for false positives for an “ash oriented” alert, and more important, to report the number of ash events that the SO<sub>2</sub> alert did not capture, at all or in their geographical location. In the outlook, the author quote a possible improvement due to the availability of superior satellite data products for ash that may be used to operate a new notification system selective for the detection of ash. This should deserve a lengthier discussion. After such minor revision, I think the paper is ready for publication, as the alerting system as the one described provides an important contribution to the early warning and mitigation of such natural hazards as volcanic eruptions, and the paper is effective in providing a well written and exhaustive description of the system, to be used as future reference.

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