



The NOAA-NASA Operational System for Near-Real-Time Volcanic Eruption Detection via Satellite Observations

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The Ozone Monitoring Instrument (OMI) on the NASA EOS/Aura research satellite allows measurement of SO₂ concentrations at UV wavelengths with daily global coverage. SO₂ is detected from space using its strong absorption band structure in the near UV (300–320 nm) as well as in IR bands near 7.3 and 8.6 μm. UV SO₂ measurements are very robust and are insensitive to the factors that confound IR data. SO₂ and ash can be detected in a very fresh volcanic eruption cloud due to sunlight backscattering and ash presence can be confirmed by UV derived aerosol index measurements. This will provide aviation alerts to the Federal Aviation Administration (FAA) with reduced false alarm ratios and permit more robust detection and tracking of volcanic clouds, and includes the development of an eruption alarm system, and potential recognition of pre-eruptive volcanic degassing. Near real-time (NRT) observations of SO₂ and volcanic ash can therefore be incorporated into data products compatible with Decision Support Tools (DSTs) in use at Volcanic Ash Advisory Centers (VAACs) in Washington and Anchorage, and the USGS Volcano Observatories.

In this presentation we show the latest NOAA Office of Satellite Data Processing and Distribution (OSDPD) development of an online NRT image and data product distribution system that generates eruption alarms, allows the extraction of volcanic cloud subsets for special processing, and provides access to analysis tools and graphical products derived from the OMI and the Atmospheric Infrared Sounder (AIRS) and MODIS Instrument. Products are infused into DSTs including the Volcanic Ash Coordination Tool (VACT), under development by the NOAA Forecast Systems Laboratory and the FAA's Oceanic Weather Product Development Team (OWPDT), to monitor and track, drifting volcanic clouds and aerosol index.

More details: <http://satepsanone.nesdis.noaa.gov/pub/OMI/OMISO2/index.html>