

# Development of a GOES-R Automated Volcanic Cloud Alert System

NOAA Satellite Science Week  
Kansas City, MO  
April 30 – May 4, 2012

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The GOES-R volcanic ash and SO<sub>2</sub> products developed by the Algorithm Working Group (AWG) provide valuable information on volcanic ash cloud height and mass loading, as well as information on the presence of SO<sub>2</sub> clouds. However, the products are not designed (or required) to issue text alerts to forecasters. Text alerts are critical for ensuring that the GOES-R capabilities are fully utilized in the effort to address the 5-minute volcanic cloud warning criteria established by the international aviation community, as forecasters cannot consistently manually analyze GOES-R imagery and products in real-time. As such, we are developing an automated volcanic cloud alert system for GOES-R. More specifically, a sophisticated, but computationally efficient, cloud object based probabilistic scheme is used to accurately identify volcanic clouds. When a volcanic cloud is identified, a text alert with quantitative information on the physical properties of the cloud (including if lightning was detected), along with a quick-look product image, will be issued. The Spinning Enhanced Visible/Infrared Imager (SEVIRI) and the Moderate Resolution Imaging Spectroradiometer (MODIS) will be used as proxies for the GOES-R Advanced Baseline Imager (ABI), and ground-based lightning detection networks will be used as proxies for the GOES-R Lightning Mapper (GLM). The Anchorage and Washington Volcanic Ash Advisory Centers support this project and will evaluate the alert system.