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## Abstract: **Volcanic Ash Forecasts using HYSPLIT and Satellite Observations**

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NOAA/ARL provides support to Volcanic Ash Advisory Centers (VAACs) in Washington and Anchorage which run HYSPLIT operationally to help produce ash forecasts for aviation. Because many volcanoes are located in remote areas, forecasters rely heavily on space-based instruments to observe eruptions and the resultant ash clouds. Improved algorithms which use data from passive imaging sensors on satellites to identify the spectral signature of ash and then retrieve properties of the ash cloud such as mass loading have been developed at NESDIS as well as other organizations. In this study, satellite observations from passive infrared sensors (MODIS) were used both to construct an initialization term for HYSPLIT and for verification of model output. Space-based lidar observations (CALIOP) were also used for verification. Satellite measurements of column mass loading were more helpful in constraining the mass eruption rate than an empirical equation relating mass eruption rate and plume height above the vent. Output from a 'hot start' in which the model particles were released at the location of the satellite observation compared favorably to output from model runs with simple source terms such as uniform line or cylinder above the vent.