Geophysical Research Abstracts
Vol. 20, EGU2018-18637, 2018
EGU General Assembly 2018

Operational WRF-Chem prediction of volcanic events

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We have developed near-real time WRF-Chem modeled volcanic ash alerts in an operational-like setting. We have created a routine for automatic domain generation, which allows creating a modeling domain (area of interest) centered around an active volcano 'on the fly'. Volcanic activity alerts are provided by the U.S. Geological Survey (USGS) Volcano Notification Service (VNS) (http://volcanoes.usgs.gov/vns); the alerts automatically 'trigger' a WRF-Chem domain generation and model run. Volcano Observatories of Alaska, the Cascades, Hawaii, California, and Yellowstone issue the VNS alerts for the U.S. We created WRF-Chem alerts whenever the VNS indicates volcanic activity (color codes red or orange). To date the model runs at least once daily. Typically WRF-Chem runs are generated within 5 to 10 minutes after the automatic reception of the volcanic activity alert. The automatic modeling domain generation removes regional restrictions, allows to use domains of smaller extent resulting in reduced computing resources necessary to complete a WRF-Chem simulation in timely manner, and the routine accounts for the possibility to run WRF-Chem anywhere worldwide (where volcanic activity are available). We will present on our WRF-Chem modeling setup and demonstrate how real-time ash cloud dispersion simulations can be generated for volcanoes at alert levels that can then be used in evaluating the future location of the ash clouds.