NOAA's National Air Quality Forecast Capability for ozone and fine particulate matter

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The NOAA National Air Quality Forecast Capability, NAQFC, is designed to provide 2 day model forecasts of ozone and fine particulate matter surface concentrations twice per day at the 06 and 12 UTC cycles. The NAQFC operational forecast for O_3 for the nation was implemented in September 2007 and for particulate matter in January 2015. The NAQFC is made up of the North American Non-Hydrostatic Multiscale Model (NAM-NMMB) 12 km numerical weather prediction model and the EPA Community Model for Air Quality (CMAQ) using Carbon Bond-V (CB-V) gas phase chemistry and AERO-IV particulate processing. Predictions are available in real-time for the continental U.S., Alaska and Hawaii.

Offline coupling between NAM and CMAQ is achieved at hourly intervals by interpolation from the NAM to CMAQ horizontal and vertical grids. Anthropogenic emissions are updated monthly from the EPA National Emission Inventory for the base year 2011. Wild fire smoke emissions were included in 2015 and based upon the U.S. Forest Service BlueSky smoke emission system and the NESDIS Hazardous Mapping System (HMS) fire locations updated daily. Dust emissions were also included in 2015 using a friction velocity and soil moisture criteria based approach. Lateral boundary conditions for dust are provided by the NCEP NEMS Global Aerosol Capability (NGAC) with climatological values for other species provided by NASA GEOS-Chem. Predictions are available to U.S. state air quality forecasters and the public from the NWS National Digital Guidance Database (NDGD) at http://airquality.weather.gov/ with experimental model predictions at http://www.emc.ncep.noaa.gov/mmb/aq/.