

National Air Quality Forecast System (AQFS) Smoke Forecast Graphic Display Product Description Document (PDD)

Part I - Mission Connection

a. Description of Product - The National Weather Service's National Air Quality Forecast System (AQFS) Wildland Fire Smoke Forecast (WFSF) Graphic [Display](#) is a web-based presentation of gridded forecast smoke dispersion guidance produced by NOAA's [Air Resources Laboratory](#) and [Environmental Modeling Center](#) (EMC) of the National Environmental Prediction (NCEP) and using the [HYSPLIT](#) dispersion model. The dispersion model is preconfigured to run over the entire country once-a-day using the 0600 UTC NAM meteorological forecast. Hourly average output maps of primary PM_{2.5} air concentration are produced using the actual fire locations from the previous day obtained from NOAA's [NESDIS Hazard Mapping System](#). The dispersion simulation consists of two parts: 1) a 24 h analysis simulation run for the previous day, and 2) a 48 h forecast simulation, which assumes that yesterday's fires will continue to burn for the next two days. The smoke particle positions at the end of each analysis period are used to initialize the next day's analysis simulation. Additional information on the WFSF is available [here](#).

b. Purpose – SMFS has been developed as an expansion of the [AQFS](#) in support of a Congressional mandate (H.R. Energy Policy Act of 2002 Senate Amendment) to implement an operational air quality forecast system to benefit public health. DOC/NOAA and EPA formed a partnership to transfer scientific advances in air quality monitoring and forecasting into NCEP's world class modeling realm. AQFS guidance is used by state and local agency forecasters, as well as the media, private sector meteorologists, and land management agencies as input to their AQ forecasts and land management activities. The general public health will benefit from improved forecasts and mitigation of harmful impacts.

c. Intended Audience - NWS graphical AQ guidance including the WFSF products are intended for use by federal, state and local agency forecasters, as well as the media and private sector meteorologists. The general public who may be adversely impacted by pollutants will also have access to the data via graphical output on multi-agency web sites.

d. Presentation Method - The data are presented as web-based graphic images. The WSFS provides near ground level PM 2.5 concentrations (ppb) for the continental US.

e. Feedback Mechanism - We are always seeking to improve our products based on user feedback. For general questions regarding the WSFS, please email: paul.stokols@noaa.gov

Part II - Technical Description

a. Format & Science Basis – A description of the Smoke Forecast Product is provided [here](#).

- b. Product Availability – The AQFS O₃ graphics are produced once daily based on the 0600 UTC model cycle and is available at 13 UTC (8am EST). Smoke graphics are posted to the [NWS](#) site.
- c. Other Details – The smoke forecast product will be included in the update of Directive 10-516 in Summer 2006.