



# DATA SUPPORT SYSTEM UPDATE – FETS

September 30, 2008

## STATUS

### KEY FUNCTIONS

- Acquire and provide a stable storage repository for fire activity data for all fire types within the WRAP region.
- Make data available in near-real time to be used for regional coordination by agencies making burn/no-burn decisions.
- Perform QA/QC tasks in the form of automated routines and by allowing for manual inspection, review, and altering of data.
- Report data for QA/QC purposes, and in the form of comprehensive, QC'd inventories of fire activity and emissions.

The FETS was developed by WRAP, the Fire Emissions Joint Forum (FEJF), Air Sciences Inc. and Wingate Designs, and became operable in mid-2007. The basic features and functions include:

- Web-based manual data entry pages.
- Several options for automated data upload, including: FTP, Web Services, and e-mail.
- A web-based map tool displaying planned and accomplished fire events for all fire types and showing the locations of satellite fire detections for the previous 48 hours.
- A pop-up table showing the current status of fire data submittals to the FETS.
- Two draft report functions.
- Critical documentation and metadata.

**29 registered users / 20-25 hits per day**

System Users	WRAP Association	Purpose	Frequency
<i>State &amp; Tribe</i>			
Smoke Management Programs	FEJF	Regional Coordination; Burn decisions	Daily
Air Quality Planners	TAF Emissions IWG	EIs; SIPs; AQ episodes	Periodic
<i>Land Managers</i>	FEJF	Regional Coordination; Burn plans	Daily
<i>Public</i>	None	Interest; AQ advisories	Periodic

## WORK COMPLETED IN THE LAST 12 MONTHS

Since the FETS came online, development has focused data acquisition to build a comprehensive data set of fire activity in the WRAP region, enhancing data quality control routines, and augmenting regional coordination tools.

- **Data Acquisition.** Collecting fire activity data from Alaska, Montana, Idaho, Oregon, Washington, New Mexico, Nez Perce Tribe, and federal wildland fire data. Establishing data handshake with California, Colorado, Arizona, Utah, and Wyoming.
- **Quality Control.** Established QC levels to build toward comprehensive, gap-filled historical emission inventories.
- **Regional Coordination.** Enhanced the map tool to include satellite fire detections, and greater control over data layers including Class I areas and Tribal lands.

*More details:* <http://www.wrapfets.org/resources.cfm>

### Regional Haze Plan Support

- Satisfies Regional Haze Rule §309 requirement for states and Tribes to develop a tracking system for fire activity and emissions.
- Classifies fires as “Natural” or “Anthropogenic.”
- Tracks and stores data pertaining to application of Emission Reduction Techniques (ERTs) including estimates of emissions averted.
- Provides data for states and Tribes to track progress toward meeting Annual Emission Goals (AEG).
- Provides regional coordination support for smoke management programs (SMPs) by mapping events real-time along with Class I area boundaries, and providing contact information for neighboring SMPs.
- Provides export functions for emission inventory reports and summary statistics.

### Current Processes



## NEXT STEPS

Future development of the FETS will seek to integrate with other WRAP data and decision support systems, provide the most complete and comprehensive data set possible, and augment the system to estimate emissions from additional pollutants. The intent is to develop a sequence of analyses that include data and knowledge gained from the operation of air quality and smoke forecasting efforts by others.

### SATELLITE FIRE DETECTS

**Deliverable:** Utilize satellite-based fire data in the FETS  
**Relevant Projects:** BlueSky/SMARTFIRE; NCAR/NOAA fire emission inventory development; USFS RSAC

Currently, the FETS displays the latest fire detections in North America on the map tool as a visual reference – data do not persist in the database. Satellite-based data stored in the FETS may serve as a more rigorous QC of ground-based activity data or a supplemental data source for areas where ground-based data are not available.

### LEVEL 3 QC FIRE EMISSIONS DATA

**Deliverable:** 3-dimensional gridded emission inventories  
**Relevant Projects:** SMOKE emissions input to the Regional Modeling Center for modeling support

Several levels of QC for fire activity and emissions data are being developed for the FETS, identified by QC Levels 0-3. The culmination at Level 3 is to build a highly refined, chemically-specified, 3-dimensional gridded fire emissions inventory product with hourly resolution suitable for regional air quality historical and prospective modeling and other air quality planning analyses.

### ADDITIONAL POLLUTANT SPECIES

**Deliverable:** Emissions estimates for mercury, nitrogen compounds, ozone  
**Relevant Projects:** Mercury and nitrogen deposition studies; ozone SIP development

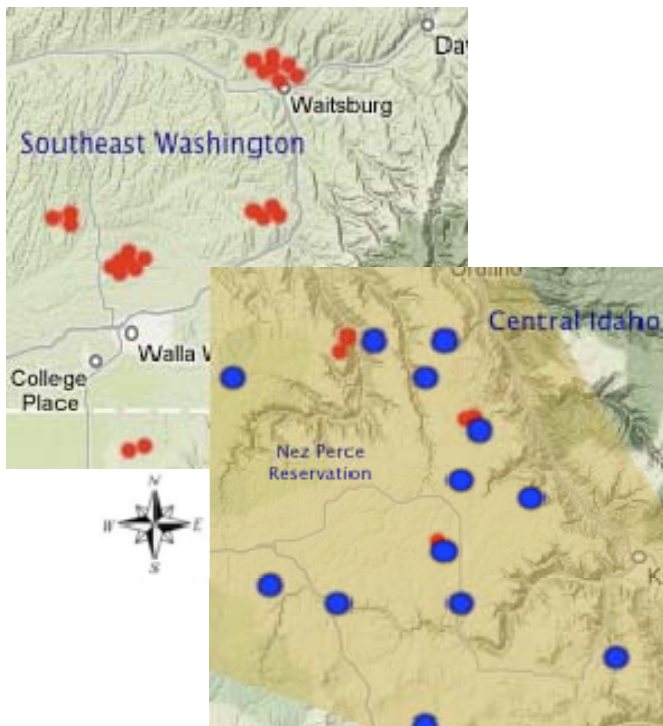
Currently, the FETS estimates emissions for pollutants relevant to tracking regional haze. The FETS will be augmented to include pollutants relevant to other transport issues, consistent with WRAP's goal to provide enhance regional analysis support.

### Cross Application

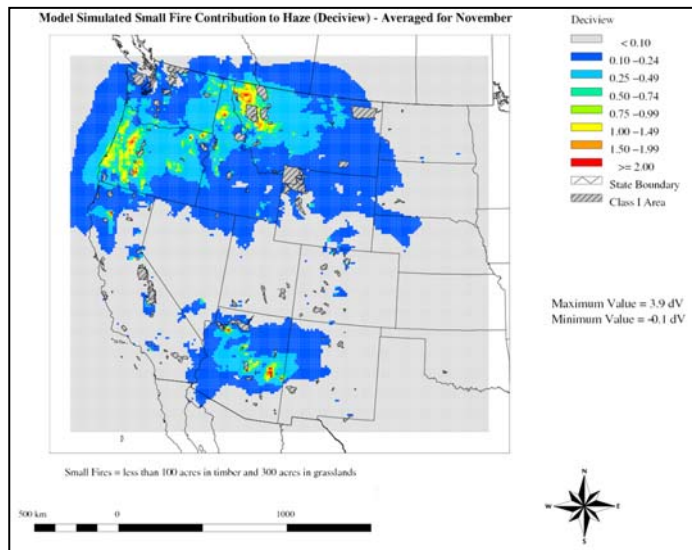
The current and planned products of the FETS may be directly applied to other important and emerging regional and global air quality issues. Tracking daily emissions and annual emission reductions, augmenting emissions estimation options, and development of 3D gridded inventories will aid air quality management and planning required in the federal Clean Air Act.

### Connections with RMC and EPA Systems

The Level 3 EI product could be a free-standing replacement for the SMOKE emissions modeling currently used to process fire EIs for air quality modeling. The FETS will in some way provide data for states and Tribes to submit to EPA's future National Emission Inventory (NEI).



Satellite fire detections (red shapes in figure) currently displayed only as a visual tool on the FETS map page. The lower right figure depicts agricultural burning (blue circles) on the Nez Perce Reservation (beige area); fire detections may help QC ground-based data. The upper left figure depicts rangeland burning in southeast Washington; these fire detections may help gap-fill missing activity and area burned data.



Augmenting the FETS with additional pollutants and developing Level 3 gridded emission inventories may be used for Regional Modeling Center applications, such as regional haze contribution from small fires depicted in this example.

### Future Processes

Fill Spatial/Temporal Gaps, Build Annual EI [Level 2]

Build 3D Gridded EI, Chemical Speciation [Level 3]