
**Current & Future WLF Emission
Calculations and EPA / RPO Submission
Issues**

“Yesterday, Now & Next Year”

(Session T2PL1)

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Overview of Wildland Fire in the NEI

“Yesterday’s Approach”

- **EPA’s wildland burning emissions inventory includes:**
 - Wildfires, Managed (Prescribed) Burns
 - Federal, State, Tribal, Private burners
 - Coverage incomplete, inconsistent for State, Tribal, Private burners
- **Current methodology is *very, very* basic:**
 - **PM₁₀, PM_{2.5}, NO_x, CO, VOC, SO₂, ~ 30 HAPS**
 - Spatial & temporal ~ Fires treated as nonpoint sources
 - Acres burned ~ 5 federal agencies, some private & State
 - State-to-county allocation by “forested area”
 - **Emissions**
 - Fuel consumption ~ regional averages only (AP-42)
 - Emission Factors (AP-42)
 - Annual emissions ~ statewide (monthly) & diurnal profiles in EP
 - Note: EPA DOES take emission estimates submitted by States & Tribes
 - **Plume rise ~ EPA treats all fires as ground level; WRAP est. plume rise**
 - **Data Flow**
 - Spreadsheet calculations >> NEI “area source EI” >> EP >> CMAQ

What Needs to Change?

- **Fire Events: area burned, when, where**
 - Including State, Tribal & Private is essential
 - Locate fires in time & space (daily movement ??)
 - **Remote Sensing:**
 - Define appropriate role(s) for remote sensing
 - **Fuels Databases:**
 - FCC's (default map) vs Site-specific FCC's
 - Note special fuel conditions (e.g., insects, storms, prior fires)
 - **Fuel consumption models:**
 - Refine, clarify roles of FOFEM & Consume
 - **Emission Factors:**
 - Update factors used by models, esp. smoldering phase & Mercury
 - Base emission estimates on appropriate met/climatology
 - **Plume Rise:** Develop consistent approach
 - **Mitigation measures:**
 - Provide guidance on estimating impact of on emissions
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Works-in-Progress

- *Fire events database development projects*
 - *Investigating the use of satellites / remote sensing*
 - *Emission estimation tools & inventories*
 - *RPO-led 2002 Wildland Fire EI development*
 - *Nat'l FCC coverage @ 1 km² resolution*
 - *Emissions model interface with grid model – CMAQ*
 - *International collaboration*
 - *Nat'l Fire Emissions Technical Workshop*
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Wildland Fire (WLF) Emissions Module

“Next year’s approach”

- **User Inputs:** Fire locations, duration, size
- **Model Components (Modules from the BlueSky system)**
 - Fuel loading default: NFDRS / FCC map
 - Fuel Moisture: Calculates using MM5 met data
 - Fuel Consumption: Consume / FOFEM
 - Emissions, Heat Release & Plume Rise: EPM & Briggs (modified)
- **Outputs:** Gridded hourly emissions, plume characteristics
- **Integrate, Test & Release Module (late 2004)**
- **Data Flow**
 - **“Inputs File” >> WLF EM >> NIF format >> Emiss. Processor >> CMAQ**

What about the 2002 Emission Inventory ?

“What do we do NOW?”

(Today > April 30, 2005 ... latest scheduled opportunity to revise 2002 NEI)

□ Data Flow

- Improved Emission Estimate >> NIF >> Emissions Processor >> AQM
- NIF 3.0 input strategy – MWRPO has done this

□ Interim decisions

- Spatial, temporal, plume characteristics

□ Prepare to use WLF Emissions Model

- Define/develop “**Inputs File**” (Supplemental to NIF)
 - Compatible with the new WLF Emissions Model
 - Submit along with NIF files to EPA
 - “9th RPO Protocol” ? Stand alone or map to NIF ?
- Hopefully, apply the WLF EM prior to May, 2005

Spatial / Temporal Considerations & NIF Issues

- **Data Issues When Treating Fires as “Point Sources”**
 - Locating very large fires w/ multiple fronts
 - Movement of the fire over time
 - Plume rise differences (diurnal & day-to-day)
 - Differing data needs as fire size increases
 - Are there practical limitations of input data base size?
 - **NIF Issues**
 - NIF is flexible ~ key is deciding on spatial & temporal resolution desired and whether to satisfy “transparency” in NIF or in a supplemental “inputs file” (or both)
 - **Consistency ~ across agencies, RPOs, Regions**
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Thank You... Any Questions ?

