Recent Updates to the SMOKE Modeling System

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BlueSky compatibility

- BlueSky uses EPM/CONSUME to predict emissions from fires
- Created new utility program BlueSky2Inv
- Convert BlueSky output to inventories used by SMOKE
- Inventories include annual IDA file (fire event inventory) and daily emissions inventory

Plume rise calculations

- New fire-specific plume rise calculations
- Uses area burned and heat flux to estimate plumes
- Must process fire emissions separately from traditional plume rise sources

Revised CEM approach

- New CEM format provides NOx emissions mass (rather than rate)
- Uses temporal variation of NOx emissions to calculate hourly emissions for all inventory pollutants
- CEMScan utility program calculates summed annual heat input
- Hourly emissions = annual emissions * (hourly heat input / annual heat input)

Better CAMx support

- New utility Mrgelev merges ASCII elevated files
- Mrgelev can output binary PTSOURCE file
- Also handles PinG matching
- Aggwndw utility aggregates and/or windows output emissions data (create coarse and fine grid emissions)
  - Does not change grid projection or interpolate values

Improved reporting

- BY MACT [NAME], BY NAICS [NAME] and BY SRCTYPE options
- Prints latitude and longitude coordinates for point sources
- Support for reporting by SCC level

Other new features

- New criterion for grouping point sources by percentage
- Grid domain taken into account when using top emissions criterion
- Support for comments in all input text files
- Temporal can process multiple disjoint time periods in the same execution
- Custom mapping and aggregation of MOBILE6 vehicle types to inventory types

Outside SMOKE

- New program beld2smk part of MIMS Spatial Allocator
  - Create SMOKE-ready BELD3 input for any grid
- New surrogate tool using Spatial Allocator
  - Automates creation of suite of surrogates
  - SMOKE will be updated to support multiple input files for surrogates
- Spatial Allocator handles I/O API files

Release information

- Code and Linux executables available from CMAS website on September 30
  - Will include basic documentation of new features
- SMOKE v2.2 User's Manual available in early October
- Reviewing best way to provide updated input files (inventories, profiles, cross-references, etc.)