



WRAP Regional Modeling Center - Simulation Specifications

Scenario Name: 2002 Plan b PSAT Simulation

RMC Code: "plan02b_PSAT"

Date Specifications Prepared: April 25, 2006

Time Window for Modeling/Analysis: emissions modeling start date, targeted tech memo publication date, start simulation April 28, complete results analysis by May ??

Description: 2002 Annual 36-km CAMx PSAT air quality model simulation using typical 2002 emissions

Purpose/Objective: Evaluate the source apportionment contribution to regional haze air quality for typical 2002 conditions.

Expected Analysis Methods: Specific analysis methods will generally be determined based on the nature of the simulation and the stated purpose and objectives. These typically involve a number of standard post-processing products used to elucidate relevant modeling results and analyses and aid in summarizing and interpreting the simulation results. For the present simulation these would include:

- Standard PSAT displays of source region and emissions source category contributions to Class I Areas and IMPROVE monitors
- Stacked-bar charts of source region contributions to light extinction for the 20% best and 20% worst days at each IMPROVE site
- Stacked-bar charts of emissions source category contributions to light extinction for the 20% best and 20% worst days at each IMPROVE site
- Others ...???

Input Data:

Emissions – emission data and QA found at: <http://pah.cert.ucr.edu/aqm/308/emissions/???.shtml>

- Derived from Basoe02b emission inventory
- BEIS3 biogenic emissions (includes soil NO emissions)
- Typical 2002 fire emissions from all fire types
- Windblown fugitive PM dust emissions – all components from WRAP WB Dust model
- All NH3 emissions from WRAP NH3 model
- Stationary point source emissions based on temporal profiles (No CEM data)
- Documentation on input data, model settings, and modeling/QA procedures provided through standard reporting products: [WRAP 2005-06 Emissions Workplan \\$mmddy.xls](#)
 - Simulation schedule and input files
 - SMOKE configuration information/settings
 - Documentation of problems encountered with corrections, outstanding issues, and other important information about simulation clean02a
 - Parent EI and maps/tables of changes for this run
 - Detail dependent on purpose/objective and results analysis methods

Other Inputs and Model Settings

- Initial and Boundary Conditions based on GEOS-CHEM simulation
- Model version, settings and configuration same as for 2002 Base B (“base02b”) with PSAT
- Time period simulated – annual, typical year, meteorology for 2002 used

PSAT Model Configuration

Tracers - run SO_x, NO_x PSAT tracers, *74?* source regions total, emissions processing steps and file formats are shown below

6 Emissions Categories

- Point (including stationary offshore)
 - All inland point sources + Pacific point
 - Gulf point
- Anthropogenic Fires (WRAP only)
 - WRAP agricultural fires and anthropogenic prescribed fires
- Total mobile (on-road, off-road, including planes, trains, ships in/near port, off-shore shipping)
 - WRAP on road
 - CENRAP on road
 - Eastern RPOs on road
 - Non US on road mobile
 - All Off road mobile with monthly or seasonal inventory
 - All Off road mobile with annual inventory
- Natural emissions (natural fire, WRAP only, biogenics)
 - WRAP wild fires
 - WRAP non federal rangeland and natural prescribed fires
 - WRAP wildland fire use
 - All biogenics
- Elevated fire sources in other RPOs
 - VISTAS and CENRAP fires
 - Canada fires
- Everything else (area, all dust, fugitive ammonia, non-elevated fire sources in other RPOs)
 - CENRAP area fires
 - Windblown dust
 - CENRAP ammonia
 - WRAP ammonia
 - All area sources
 - All road dust
 - All fugitive dust
 - Gulf offshore area
 - Pacific offshore marine
 - WRAP oil and gas

Families:

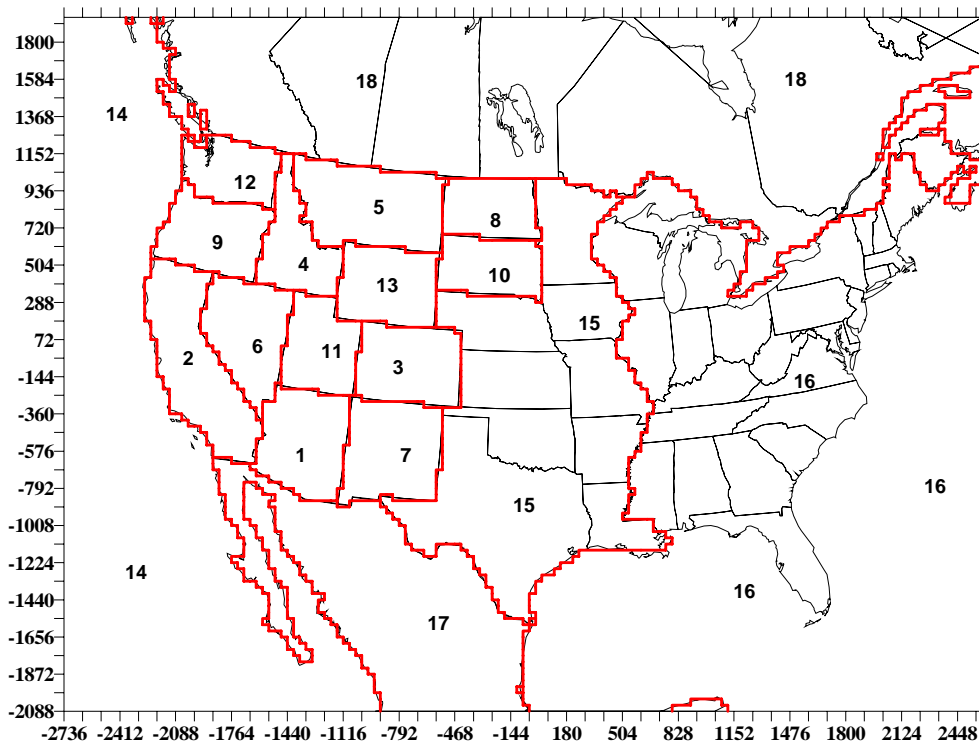
Sulfur – 2 tracers [SO₂_i Primary SO₂ emissions; and PS4_i Particulate sulfate ion from primary emissions plus secondarily formed sulfate]

Nitrogen – 7 tracers [RGN_i Reactive gaseous nitrogen including primary NO_x (NO + NO₂) emissions plus nitrate radical (NO₃), nitrous acid (HONO) and dinitrogen pentoxide (N₂O₅); TPN_i Gaseous peroxy acetyl nitrate (PAN) plus peroxy nitric acid (PNA); NTR_i Organic nitrates (RNO₃); HN3_i Gaseous nitric acid (HNO₃); PN3_i Particulate nitrate ion from primary emissions plus secondarily formed nitrate; NH3_i Gaseous ammonia (NH₃); and PN4_i Particulate ammonium (NH₄)

Areas:

- Each WRAP state
- Pacific Off-shore Region (Gerry to use/get grid cells from Chris/Alison)
- The group of CENRAP states touching WRAP
- Remaining contiguous US East, including Gulf of Mexico
- Mexico
- Canada

WRAP PSAT Source Regions



Source Region ID	Source Region Description	Source Region ID	Source Region Description
1	Arizona	10	South Dakota
2	California	11	Utah
3	Colorado	12	Washington
4	Idaho	13	Wyoming
5	Montana	14	Pacific Off-shore & Sea of Cortez
6	Nevada	15	CENRAP States
7	New Mexico	16	Eastern US, Gulf of Mexico & Atlantic Ocean
8	North Dakota	17	Mexico
9	Oregon	18	Canada

Results

Summary tables and maps

Relevant Output Products – data displays found at: <http://pah.cert.ucr.edu/aqm/308/cmaq/???.shtml>

- Relevant model output products include daily, seasonal and annual spatial distributions of Regional Haze contributing pollutants.
- Model output concentrations will serve as indication typical (baseline) 2002 conditions
- Results of this simulation will be compared with previous 2002 base case version b (“base02b”).
- Comparisons with other simulations as appropriate

Summary of Key Findings

TBD

Interpretation/Recommendations – report found at: <http://pah.cert.ucr.edu/aqm/308/docs/???.shtml>

TBD