CALPUFF Modeling for BART

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Outline

- Purpose of the CALPUFF protocol
- Class I areas
- CALPUFF modeling system
- Reporting
- Questions?

Purpose

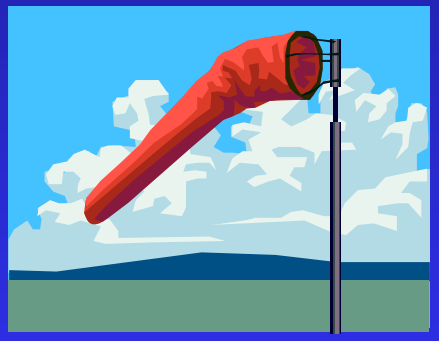
- Single-source modeling guidance
  - Exemption modeling of BART eligible units
  - Starting point for sources subject to BART
- Note – Draft guidance

Class I Areas

- Depends on TCEQ CAMx modeling
  - If source group ≥ 0.5 dv, then yes
  - If source group < 0.5 dv, then no
- List of source group impacts for each Class I area

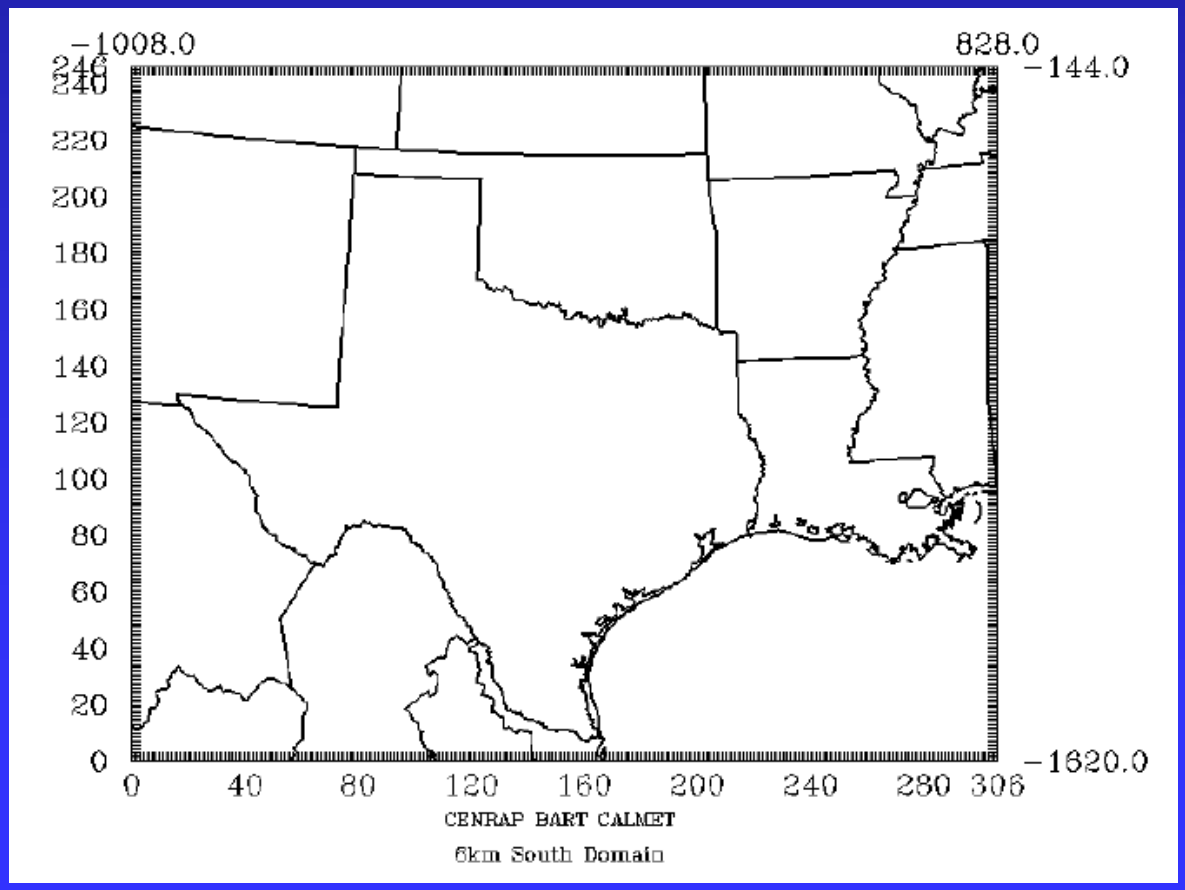
CALPUFF Modeling System

- CALMET
- CENRAP processed data
  - 3 yrs of MM5 data
  - "No Obs" mode
- CENRAP BART Modeling Guidelines



CALPUFF Modeling System

- Modeling domain



CALPUFF Modeling System

- Modeling domain
- Increase parameter value for the number of cells in the x direction
- Re-compile for using CENRAP data
  - CALPUFF
  - POSTUTIL
  - CALPOST

CALPUFF Modeling System

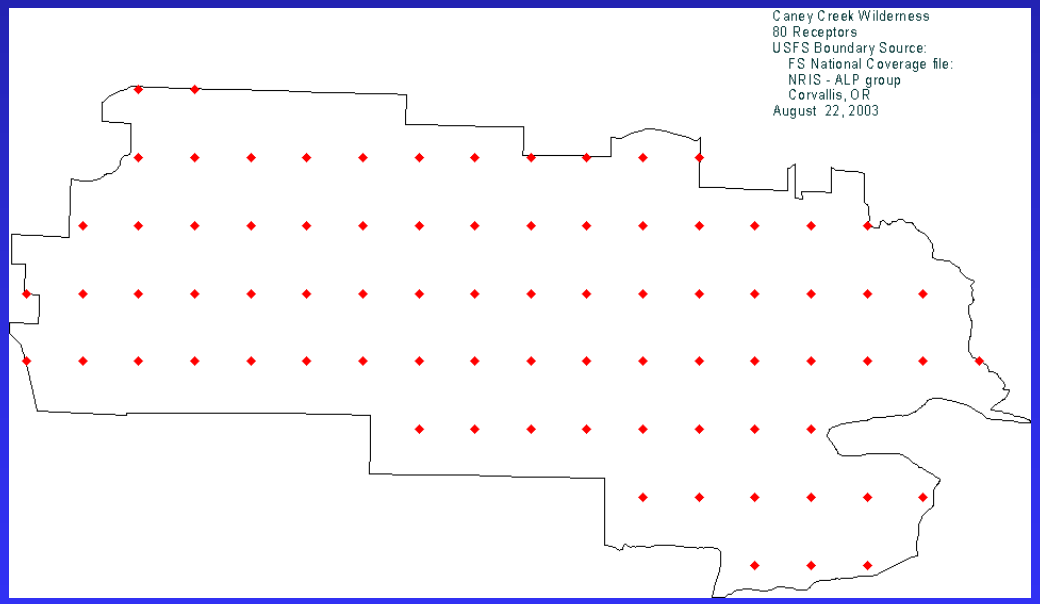
- CALPUFF (5.711a)
- Stack parameters
  - Release height
  - Exit diameter
  - Exit velocity
  - Exit temperature
  - Coordinates and elevation

CALPUFF Modeling System

- CALPUFF (5.711a)
- Emissions
  - Maximum 24-hr average actual emission rate
- Species
  - Depends on TCEQ CAMx modeling
  - PM profile and size distribution

CALPUFF Modeling System

- CALPUFF (5.711a)
- Model options
  - Default (App. B)
  - IWAQM Phase 2, CENRAP
- Receptors
  - NPS 1-km receptors

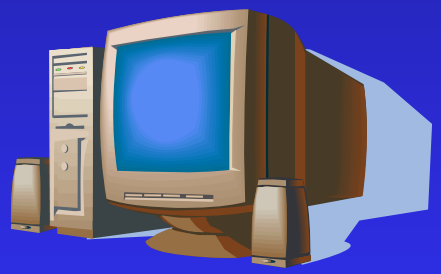


CALPUFF Modeling System

- POSTUTIL
- Recalculates nitric acid/nitrate based on available sulfate and ammonia
  - Requires CALMET data files
- Refinement

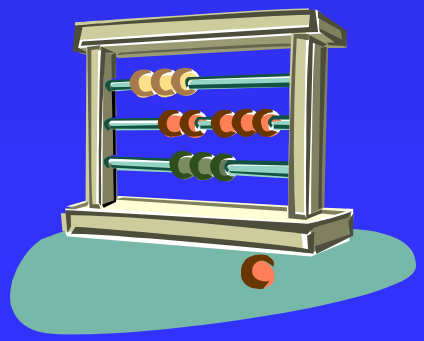
CALPUFF Modeling System

- CALPOST
- Calculate light extinction from model output
- Method 6
  - Monthly Class I area-specific relative humidity adjustment factors



CALPUFF Modeling System

- CALPOST
- Visibility derived from light extinction (dv)
- Change in daily visibility between modeled and natural background (Δdv)



CALPUFF Modeling System

- CALPOST
- Monthly Class I area-specific relative humidity adjustment factors
- Annual average natural background
  - Eastern or western U.S.
- "Guidance for Estimating Natural Visibility Conditions under the Regional Haze Rule" (EPA, 2003)

Reporting

- Maximum visibility impact for each Class I area
- If maximum impacts < 0.5 dv
  - Not subject to BART
- If maximum impacts ≥ 0.5 dv
  - Refined modeling or BART analysis

Reporting

- Protocols
  - TCEQ screening protocol: EPA and FLM
  - Refined modeling: TCEQ, EPA, and FLM
- Modeling Reports
  - Clear description of modeling procedures
  - Electronic archive of all CALPUFF input and output files
  - Submit to TCEQ, EPA, and FLM

Questions?

- Contact information:
- Phone – (512) 239-4342
- Email – djamieso@tceq.state.tx.us

Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule, EPA-454/B-03-005, September 2003. Available at www.epa.gov

www.epa.gov/ttncaaa1/t1/memoranda/rh_envcurhr_gd.pdf