

Assimilated Meteorological Data

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Constraints on Assimilated Data

- Will use of assimilated data allow more accurate modeled results? Is added cost worth it?
- Data is chronological (1tb/yr.); users need data geographically.
- Only private sector collects raw data – needs a robust and redundant system
- Many reviewing agencies not familiar with assimilated data

Diagnostic Model Output

- a) PBL important with large plume rise. Most sites modeled have small to modest plume rise. Small PBL exists for one hour after sunrise with clear skies. MM5 uses fundamental relationships. CALMET somewhat empirical.
- b) Near-calms best treated with a policy decision such as for ISCST, RAMMET, SARA III, RMP, and PSM. Consult NRC, AEA, etc.? Sensitivity analysis needed?

Diagnostic Model Output

- c) Cloud coverage and cloud height are generally available from ASOS (most of the time). A sensitivity analysis might suggest a policy on use of moisture data from MM5 some or all of the time. Need for policy eliminated with solar radiation and ΔT (2 & 10 m.) at ASOS.

On-Site/Local vs. Assimilated Data

- On-site data best for on-site sources, but preference diminishes with distance.
- Local data is easy to explain in public meetings.
- Assimilated data often misses extremes (highs/lows) of data. It is evened out.

Diagnostic/Prognostic Models

- CALMET is diagnostic providing meteorological parameters for grid cells considering topography and land/sea interfaces. Can be run for small grids.
- MM5 (prognostic but used as diagnostic) covers large grid cells. Useful with CAMx and CMAQ.
- Should meteorological differences be reconciled, at least somewhat?

Gaussian Models with Multiple Grid Cells

- Current AERMOD treats modeling domain as a single cell.
- Should/could met data be determined for points midway between a source and a receptor?
- Doubt that a Gaussian model can be naturally fitted to use assimilated data for grid cells. It is worth a try, however.

Grid Spacing

- AERMOD = Single grid cell
- CALPUFF could use cells with terrain variations of less than $0.005 \times$ grid cell length. This would also require some consideration of height of the plume.

Storing Assimilated Data

- 1tb storage cost about \$1,000-\$2,000
- Ideal would be a national archive, possibly NCDC
- EPA could maintain directory of processed sets produced within the last 5 years for regulatory analyses on SCRAM.

Final Comments

- Is newer always better?
- Should all applicants be required to use assimilated data – or only those that show produce concentrations that are a large fraction of the standard or increment?
- Cost and comprehension (by agencies and public) remain important issues.