9th Conference on Air Quality Modeling – A&WMA AB3 Comments on CALPUFF

Presented by
Gale F. Hoffnagle, CCM,QEP
TRC Environmental Corporation
21 Griffin Road North
Windsor, CT 06095
ghoffnagle@trcsolutions.com

Comment Areas

- CALPUFF fulfills an important modeling need
- EPA Concerns about CALPUFF
- EPA control of model development and coding
- Use at less than 50 kilometers
- Use at greater than 200/300 kilometers

CALPUFF Fulfills an Important Modeling Need

- Many applications require air quality impacts from individual stacks for long distances
- Need a 3-D Lagrangian model – Eulerian model will not work well for individual sources. Current subgrid scale modules in Eulerian models are too simplistic.
- CALPUFF is a model with substantial user community experience
- Better handling of low wind speed cases, stagnation, coastal, complex terrain and flow reversals.
- Better handling of deposition

EPA Concerns about CALPUFF

- EPA concerned that near field evaluations of CALPUFF has been somewhat limited, especially in near field (8 new studies)
- Some aspects of the approved model are now about 25 years old
  - Substantial EPA resources may be needed to evaluate and approve upgrades as opposed to EPA working on consideration of newer alternative models
  - Chemistry fine for NOx,SO2 and PM.

EPA Doesn’t Have Direct Control of the CALPUFF Code – Advantages

- EPA has control of the “regulatory” code
- Developer has multiple funding sources and the resources to provide for advances in this model
- Developer provides training courses for CALPUFF
- Developer provides continuous support for model maintenance, expanded GUI’s, etc. which EPA would not be able to do.
- AWMA supports an independent Workgroup

EPA Doesn't Have Direct Control of the CALPUFF Code – Disadvantages

- EPA has not been able to supply any funding to provide modeling updates that EPA wants
- As a result, EPA says…
  - CALPUFF user guide lags far behind updated code releases - last user guide (v.5.8) released in 2006
  - Some of the latest guidance is only available if you attend a course given by TRC (v 6 users guide awaiting EPA approval of code)
  - Code changes made without EPA oversight and funding require extensive EPA review.
  - Coordination between EPA and TRC needs to be improved

CALPUFF at Less Than 50 Kilometers

- Why 50 kilometers? Should be based on transport time.
- Requiring “equivalency” is too restrictive
- Better method is to define more precisely when “complex winds” require puff modeling as suggested previously
- Adding bells and whistles to AERMOD will not make it Lagrangian

CALPUFF at greater than 200/300 Kilometers

- CALPUFF comparisons to long range transport studies have shown relative accuracy to 200 kilometers
- FLAG says to use out to 300 kilometers
- Many States, RPOs and Regions are using out to 600 kilometers and more
- Either there should be a defined outer limit or more LRT field studies should be conducted

AWMA Specialty Conference

- “Guideline on Air Quality Models: Next Generation Models”
- RTP October 26-30, 2009
- Call for Papers out soon. Look for it at www.AWMA.org