

approximately every three years to standardize modeling procedures. This conference served as the forum for receiving public comments on the *Guideline* revisions proposed in April 2000. The 7th conference featured presentations in several key modeling areas that support the revisions promulgated today. A presentation by the Interagency Workgroup on Air Quality Modeling (IWAQM²) covered long range transport modeling for point sources. This presentation was followed by a critical review/discussion of the CALPUFF modeling system and available performance evaluations, facilitated jointly by the Air & Waste Management Association's AB-3 Committee and the American Meteorological Society's Committee of Meteorological Aspects of Air Pollution.

We asked the public to address the following questions:

- Has the scientific merit of the models presented been established?
- Are the models' accuracy sufficiently documented?
- Are the proposed regulatory uses of individual models for specific applications appropriate and reasonable?
- Do significant implementation issues remain or is additional guidance needed?
- Are there serious resource constraints imposed by modeling systems presented?
- What additional analyses or information are needed?

We placed a transcript of the 7th conference proceedings and a copy of all written comments, which embody answers to the above questions, in Docket No. AQM-95-01.

IV. Discussion of Public Comments and Issues

All comments submitted to Docket No. A-99-05 are filed in Category IV-D. We summarized these comments, developed detailed responses, and drew conclusions on appropriate actions for today's action in the summary of public comments and EPA responses.³ In this document, we considered and discussed all significant comments. Whenever the comments revealed any new information or suggested any alternative solutions, we considered such in our final action.

The remainder of this preamble section provides an overview of the

primary issues encountered by the Agency during the public comment period and summarizes our response-to-comments.³ This overview also serves to explain the changes to the *Guideline* in today's action, and the main technical and policy concerns addressed by the Agency. Guidance and editorial changes associated with the resolution of these issues are adopted in the appropriate sections of the *Guideline*. While modeling by its nature involves approximation based on scientific methodology, and entails utilization of advanced technology as it evolves, we believe these changes respond to recent advances in the area so that the *Guideline* continues to reflect the best and most proven of the publicly available models and analytical techniques, as well as to reflect reasonable policy choices.

CALPUFF

CALPUFF is a Lagrangian dispersion model that simulates pollutant releases as a continuous series of *puffs*. Preceding our proposal to adopt CALPUFF in the *Guideline*, IWAQM carefully studied the potential regulatory application of CALPUFF in its Phase 1 report⁴ and in its Phase 2 report.⁵

In our April 2000 **Federal Register** notice, we proposed adoption of the CALPUFF modeling system, developed by Earth Tech, Inc., for refined use in modeling long range transport and dispersion to characterize reasonably attributable impacts from one or a few sources for PSD Class I impacts. We also proposed use of CALPUFF for those applications involving complex wind regimes, with case-by-case justification. We sought comments on the use of CALPUFF for these applications, as well as on related uses of meteorological information, *e.g.*, on use of prognostic mesoscale meteorological models and the length of record for meteorological data.

³ Summary of Public Comments and EPA Responses 7th Conference on Air Quality Modeling, Washington, D.C., June 2000 (Air Docket A-99-05, Item V-C-1). This document may also be examined from EPA's SCRAM Web site (<http://www.epa.gov/scram001>). Note that comments/responses re: AERMOD & EDMS are deferred to a companion document to be released when the SNPR is published.

⁴ Environmental Protection Agency, 1993. Interagency Workgroup on Air Quality Modeling (IWAQM) Phase I report: Interim Recommendation for Modeling Long range Transport and Impacts on Regional Visibility; EPA Publication No. EPA-454/R-93-015.

⁵ Environmental Protection Agency, 1998. Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long-Range Transport Impacts. EPA Publication No. EPA-454/R-98-019.

Scientific merits and accuracy. In public comments there was a general consensus that the technical basis of the CALPUFF modeling system has merit and provides substantial capabilities to not only address long range transport, but to address transport and dispersion effects in some complex wind situations.

Commenters generally agreed that the CALPUFF modeling system has adequate accuracy for use in the 50-200km range, with some studies showing that acceptable results can be achieved at least out to 200 to 300km. Since the 7th Modeling Conference, enhancements were made to CALPUFF that allow puffs to be split both horizontally (to address wind direction shear) and vertically (to address spatial variation in meteorological conditions). These enhancements likely will extend the system's ability to treat transport and dispersion beyond 300km.

With respect to accuracy for complex wind situations, we believe that the commenters agreed with our proposal to promote use of CALPUFF for complex winds with prior approval by the reviewing authority. CALPUFF has been demonstrated to perform as well as, or better than, other short-range plume dispersion models for a few cases involving complex winds, several with wind fields that are dominated by terrain effects. Some suggested a need for more testing of CALPUFF, prior to accepting its results in all cases involving complex wind situations. We intend to post on our Web site citations to investigations for any cases involving complex winds as they become available, and to build a knowledge base from which determinations can be made on the use of CALPUFF for various complex wind situations. This will support consideration of new field study comparisons as they become available. For the reasons stated above, it is apparent that CALPUFF contains the scientific basis for more appropriately addressing long range transport and dispersion effects in complex wind situations than do standard plume models.

We conclude that, although the scientific advancements will continue to emerge, CALPUFF in its current configuration is suitable for regulatory use for long range transport, and on a case-by-case basis for complex wind situations. We will require approval to be obtained prior to accepting CALPUFF for complex wind situations, as this will ensure that a *protocol* is agreed to between the parties involved, and that all are willing to accept the results as binding. As experience is gained in using CALPUFF for complex wind

² IWAQM was formed in 1991 to provide a focus for development of technically sound air quality models for regulatory assessments of long range transport of pollutant source impacts on federal Class I areas. IWAQM is an interagency collaboration that includes efforts by EPA, U.S. Forest Service, National Park Service, and Fish and Wildlife Service.