

**Minutes of the BAAQMD 2004 SIP Modeling Advisory Committee (MAC)  
Eleventh Meeting**

**The eleventh meeting of the MAC was held on  
Thursday, August 14, 2003, at 1:00 p.m.  
at the District office, fourth floor Conference Room.**

Attendees: see sign-up listing attached

Agenda: Posted with these minutes on project web site  
([www.environ.org/project.html](http://www.environ.org/project.html); click on "Bay Area Air Quality Management District"; enter user name and password)

Next meeting: Tuesday, September 16, 2003 (1:00 pm at BAAQMD)

Presentations and handouts (all are provided on project web site):

- Agenda
- Chris Emery's presentation on recent work;
- Craig Tremback's presentation on meteorological model status;
- Jim Wilkinson's presentation on emissions processing status;
- Saffet Tanrikulu's presentation on District work.

**Discussion items:**

Agenda -- No changes were suggested

Air Quality Modeling Status

Dave Souten began the meeting with a comment on the current direction of the project. While episode choice was set at beginning of the project (even specified in RFP for the current work), the team recognized some problems with the representativeness of the two CCOS episodes and their utility for SIP development. During protocol development the choice was made to evaluate other periods outside CCOS that would be more applicable, and ultimately the decision was made to add the July 1999 episode. The June 2000 episode has proven very difficult to model meteorologically, so given time constraints of the project, work on that episode is being discontinued. The July/August 2000 episode is showing considerable contributions from fire-derived ozone and precursors, and future-year inventories lacking the episode-specific fire emissions will likely show attainment in most (if not all) areas due to the relatively low ozone exceedance levels observed during that episode. Therefore, the July/August episode will be less effective for showing the air quality benefits of various anthropogenic control strategies. The Team will "tidy-up" the development of this

episode, and put most of its energy into developing the July 1999 episode over the next month or so. Emission budgets are to be defined in October.

Chris Emery began his presentation describing where the project had left off in June, and described the latest developments on the air quality modeling front. This included: (1) the reconciliation of Environ and UC Riverside CAMx runs (where different input met contributes less than half the ozone differences, but initial/boundary conditions contribute to the bulk of the differences); (2) use of the latest CCOS surface and aloft ozone, NOx and VOC data, esp. as it relates to setting boundary conditions; (3) extensive analyses to date regarding fire contributions (initial/boundary conditions appear to be crucial; emission rates, locations, durations will be crucial); and (4) reviewed the work of Bruce Jackson (ARB) in evaluating MM5 wind speed errors in the Sacramento and SJV areas, the role of top boundary conditions on surface-level ozone performance, and the effects in CAMx of using alternative meteorological fields from MM5/CALMET hybrid runs. CAMx statistical performance measures were shown to be very good using the hybrid meteorology.

### Meteorological Modeling

Chris Emery reviewed ATMET's presentation on MM5-RAMS comparisons, the latest RAMS modeling of July/August 2000 using observational nudging, and preliminary RAMS simulation results for the July 1999 episode. Statistical analyses show that MM5 is not performing well for wind speeds around the Bay Area, and is in fact under predicting speeds by up to 50% during mid-afternoon hours (District staff have earlier reported on wind directional problems in MM5 in the I-680 corridor). RAMS is showing much better statistical behavior for wind speed, temperature, and humidity. While the use of MM5 fields causes higher ozone in CAMx, which appears to be in the correct direction relative to RAMS, it is now clear that the MM5 met is compensating for other errors in the air quality model. The RAMS simulation of July/August 2000 using observational data nudging is not showing significant improvements in wind, temperature, or humidity statistics, but may be doing better on wind directions. Several MAC members suggested additional analyses (horizontal wind vector field plots, comparisons to profiler data aloft, etc.). Bob Bornstein offered several insightful opinions and modeling hints based on his modeling work in Los Angeles (strength of analysis nudging with height above ground, roughness length problems over water bodies, terrain-induced return flows aloft, etc.). RAMS modeling of the July 1999 episode is performing well based on the standard set of statistics. More robust analyses are forthcoming.

### Emissions

Jim Wilkinson presented the current status of the July-August 2000 and the July 1999 emissions inventories for use in CAMx air quality modeling. He reported that per earlier direction from the project sponsors, the June 2000 episode had been put on hold indefinitely; hence, no effort has been expended on it. Since the last MAC meeting, no new ARB emissions data had been delivered to the project team.

Mr. Wilkinson reported that efforts to integrate new commercial marine shipping emissions data into the July 1999 inventory were still on-going. He also stated that the project team was conducting quality assurance checks on the new emissions estimates. He presented the current summary of the emissions estimates for each episode. These QA checks were presented in tabular form to the MAC. He still has concerns in regards to the episodic comparison of the emissions (e.g., EGU NOX emissions in July-August 2000 were about a factor of three higher than the EGU NOX emissions in July 1999). The project team will continue to work with the ARB to resolve this issue. Mr. Wilkinson indicated that he believed that this was the last outstanding issue (besides fires) to be resolved associated with the base case emissions inventories.

Mr. Wilkinson reported that the development of the future years (i.e., 2005, 2006, 2007, and 2010) base case inventories were well underway and should be completed within a few weeks.

### District Work

Saffet Tanrikulu began the District's presentation on their work to date by describing new MM5 simulations, based on the NOAA configuration, that add a 2-way nested 1.33 km grid over the immediate Bay Area. Results are very promising, and horizontal wind vector plots at the surface (~ 10 m) show very good agreement with CCOS observations in the area.

Steve Soong discussed CAMx simulations using the high-resolution meteorology, and showed that peak ozone in the Livermore area was not significantly affected (in fact, slightly reduced). Steve also showed the results from decreased horizontal diffusivity in CAMx, which led to a 3 ppb increase in ozone in the Livermore area. There was a general agreement that horizontal diffusivity may be somewhat high in CAMx, but it does not seem to have strong impacts on peak ozone.

Phil Martien discussed the District's work on QA and evaluation of CCOS aircraft observation data. He provided a web site address for participants to download various plots of ozone, NO, NOy, and VOC data. Saffet concluded the presentation by listing the various tasks to be taken in next month.

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**Sign-up Sheet**  
**Bay Area Modeling Advisory Committee 8/14/03**

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