



NOAA ARL Monthly Activity Report



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1. Highlight -- Global Quality Assurance Program for Precipitation Chemistry Re-aligned. For the last decade, ARL has led the international Precipitation Chemistry Quality Assurance activity, under the auspices of the World Meteorological Organization's Global Atmosphere Watch. Precipitation chemistry is a powerful tool for keeping track of changes in air chemistry of the lower atmosphere, since the precipitation process is an efficient scavenger of pollutants from the air. Many nations have precipitation sampling programs. The long-standing problem has been to ensure that the various data sets are compatible and interweavable. A decade ago, ARL set up the Precipitation Chemistry Quality Assurance Center at the State University of New York. Initially, the program was partially supported by DOE and EPA, but as a result of recent budget cuts both of these agencies have now withdrawn their support. The work has continued under NOAA sponsorship only. At this time, the pre-existing program at SUNY is being terminated, in favor of integrating the activity with the US national program, the National Atmospheric Deposition Program (NADP) led by Illinois State Water Survey (ISWS). It is expected that substantial cost savings will result. The quality assurance programs developed at SUNY are now being transferred to ISWS. (Bruce Hicks, Rick Artz)

2. Highlight -- Collaboration with NCAR in the Washington area. The multi-agency activity focused on the National Capital Region is about to get a boost. NCAR scientists, working under the sponsorship of the Department of Defense, are about to instrument a tall tower in the vicinity of the Pentagon. The intent is to provide detailed meteorological information to help develop an improved plume dispersion model for the Pentagon and its surroundings. Arrangements have been made to integrate this tall tower with the ARL DCNet program. Several standard DCNet installations will be nearby; one is already operational. (Will Pendergrass)

3. NOAA Silver Medal Awarded to ASMD/NWS Team. A NOAA Silver Medal has been awarded to a ten-member team from NOAA ARL/ASMD and NWS for developing, testing, and implementing in less than two years the initial operational capability for national air quality forecasting. This capability was built through internal NOAA research and operations partnerships as well as NOAA/EPA partnerships fostered through a Memorandum of Agreement. The initial model forecast capability was built upon NOAA's Eta mesoscale weather forecast model and NOAA/EPA's Community Multiscale Air Quality (CMAQ) model. The members of the air quality forecast team to be honored include, from NOAA ARL/ASMD, Tanya Otte, Jonathan Pleim, George Pouliot, Kenneth Schere, and Jeffrey Young, and from NOAA NWS, Allan Darling, Paula Davidson, Geoffrey DiMego, Jeffrey McQueen, and Wilson Shaffer. The Awards will be presented at NOAA's 57th Annual Honor Awards Program, on 6 December 2005.

4. Departure of the ARL Boulder team. It is with mixed feelings that ARL relinquishes its direct association with its Surface Radiation Research Branch in Boulder. SRRB is now a part of the new Earth System Research Laboratory of NOAA. Regardless of the administrative separation now imposed, the various groups of ARL will keep working with the Boulder radiation team to improve and expand the integrated monitoring activities developed over the last decade. Integrated monitoring combines measurements with ongoing research, and brings together otherwise disparate elements of environmental monitoring. The Atmospheric Coordinated Observations and Research Network (ACORN) will continue, with components addressing incoming radiation, the surface energy budget, the surface fluxes of heat, moisture, momentum and CO₂, and pollutant deposition (both wet and dry). (Bruce Hicks, Rick Artz)

Silver Spring

5. HYSPLIT Dynamic Plume Transect Sampling. A new option has created within HYSPLIT to configure a dynamic sampler -- a moving sampler that can pass through the model domain, simulating what would be observed by a moving detector (either with a balloon or an aircraft). Multiple samplers can be defined each with its own averaging time and output frequency. roland.draxler@noaa.gov

6. Gulf of Mexico Dispersion Program. Discussions are being conducted with staff at Jackson State University, to construct a research program aimed at developing a coastal dispersion forecasting program for application along the Gulf coast. The evolving program will make use of specialized mesoscale observations to augment localized dispersion models. There will be special attention to the role of the sea breeze. bruce.hicks@noaa.gov

7. SPARC Assessment. The assessment team met in Boulder October 20-21 to discuss and evaluate observational data relevant to stratospheric temperature trends. The panel is preparing a review paper examining satellite, radiosonde, rocketsonde, lidar, and reanalysis data and their uncertainties. dian.seidel@noaa.gov

Oak Ridge

8. Diversity -- 2005 Southeast Regional Meeting. LaToya Myles served on the conference planning committee for the 2005 Southeast Regional Meeting of the National Organization of Black Chemists and Chemical Engineers (NOBCCHE). The meeting, which will be held in Atlanta, GA in early November, will showcase technical and poster presentations, career development workshops, and student development seminars. ray.hosker@noaa.gov

Research Triangle Park

9. AERMOD Approved for Regulatory Application. On October 21, 2005, the Administrator of the Environmental Protection Agency designated the AERMOD atmospheric dispersion model as an approved guideline model for regulatory application. AERMOD is the culmination of a decade of collaboration with

the American Meteorological Society, involving scientists from NOAA, EPA, NCAR, the academic community, and private environmental consulting firms. Several ARL scientists served in a leadership role. steven.perry@noaa.gov

10. North American Mercury Model Intercomparison. Concern about mercury in the environment continues to grow, with modeling work currently limited by a paucity of data and by different interpretations of the few data available. A model intercomparison study is generating momentum, at the same time as large-scale multi-disciplinary studies are starting to gain support. The intercomparison participants have agreed that the end of February 2006 was a reasonable deadline for completing initial evaluations and intercomparisons, in time for a report on the intercomparison to be made at the 28th NATO International Technical Meeting in Leipzig, Germany, May 2006. russell.bullock@noaa.gov

11. Emission Modeling for Air Quality Forecasting. Air quality forecasts require predictions of emissions from utilities. To improve emission estimates of electrical generating units (EGUs) for air quality forecasting, statistical relationships between several meteorological parameters and emissions have been derived, using Continuous Emission Monitoring data from 2003 on a state-by-state basis. The results are now being tested for 2004 and 2005 in the Eta/Community Multiscale Air Quality system in anticipation of its operational use by the National Weather Service in 2006. It has been found that the seasonal variability of emissions in the base year (2001) inventory is quite different from the actual monthly data from 2004, because of recent adoption of “ozone-season” emission controls. george.pouliot@noaa.gov, rohit.mathur@noaa.gov, tanya.otte@noaa.gov

12. Atmospheric Deposition of Nitrogen to Coastal Ecosystems. The first CMAQ runs using a new climatological approach to estimate average deposition over the eastern United States were completed in September. The meteorology includes a wet (2003), normal (2002) and dry (2001) year over the Mid-Atlantic and Northeast region of the United States. Comparisons with data indicate an improvement, relative to previous predictions using the Extended Regional Acid Deposition Model (RADM). The sulfur dioxide (SO₂) and total sulfur comparisons were exceptionally good. One advantage of the new multi-year approach is the ability to estimate deposition over the coastal ocean out to the continental shelf. With the new version of CMAQ, dry deposition increased for both the oxides of nitrogen and for ammonia. The success of the preliminary, multi-year results opens up a couple of new possibilities for better linking the CMAQ atmospheric deposition with watershed models, such as the Chesapeake Bay Watershed Model. That linkage is now under discussion. robin.dennis@noaa.gov

13. Linking CMAQ and HYSPLIT. The development of software interfaces to link the Community Multiscale Air Quality (CMAQ) and the HYbrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) modeling systems is gearing up in a collaborative effort between ASMD and ARL Headquarters. This research effort is expected to expand the capabilities of both systems. The capabilities of HYSPLIT to generate and display either forward or backward trajectories, in particular, are expected to assist in analyses of CMAQ model results once HYSPLIT is linked to various CMAQ data sets. Consequently, the initial work to be performed will involve developing an interface program for the conversion of meteorological data files into a format compatible for direct use in exercising HYSPLIT model components. james.godowitch@noaa.gov

Idaho Falls

14. Urban Dispersion Program (New York City). Review and verification of data from the 2005 New York City study were completed this month. Final data files have been generated and checked for correctness, with a current emphasis on getting location data correct. Preliminary information has suggested that there could be an interference between some of the tracers used in the study by other groups and the SF₆ used by ARL. The effect will need to be quantified before data are released for general use. roger.carter@noaa.gov, Debbie Lacroix, and Jason Rich

15. Smart Balloon deployment in the TexAQS II study. There has been interest expressed by our university collaborators in using the ARL Smart Balloon capability in the TexAQS II study. The NOAA Air Quality Program has decided not to support such a deployment, even though the capability has been resoundingly endorsed by a number of collaborators in the experiment. Hence, any FRD presence at the experiment will have to be supported through our university collaborators. It is not yet clear whether such support will be forthcoming. richard.eckman@noaa.gov, and Randy Johnson

Las Vegas

16. Yucca Mountain. Data collected by ARL at Desert Rock, the ARL research station located at the south of the Nevada Test Site, are in increasing demand as studies related to the Yucca Mountain nuclear storage facility continue. Surface radiation data were recently requested, and have since been provided. douglas.soule@noaa.gov

17. Urban Air Quality Study. Data collected using SORD Ozone monitors are being compared with the results yielded by the monitors deployed Clark County Department of Air Quality and Environmental Management (CCDAQ). Ozone data from the Desert Rock Observatory are being analyzed and compared with ozone observations from Las Vegas City Center. Summertime ozone data from the SORD ozone sensor, located approximately 100 km southwest of downtown Las Vegas, will be downloaded in November. james.s.wood@noaa.gov, and Marc Pitchford