EPA-NOAA Scientist to Scientist Meeting
on
AIR QUALITY RESEARCH TO GUIDE NATIONAL POLICY AND PROGRAMS
EPA Building
Research Triangle Park, North Carolina
March 2-3, 2004

The EPA-NOAA Scientist to Scientist Meeting, to be held on March 2 and 3, 2003 at EPA in the Research Triangle Park, NC, is one in a series of meetings to be held in accordance with the EPA NOAA Memorandum of Understanding (MOU) on Air Quality Research and the parallel Memorandum of Agreement (MOA) on Air Quality Forecasting signed by the Deputy Secretary of Commerce and EPA Administrator on May 6, 2003. The purpose of the meetings is to ensure the two agencies work together to improve existing air quality assessment and prediction capabilities.

Day One–Room C111A

Plenary Session

8:15 am. to 8:30 am. Welcome and Opening Remarks — **Gary Foley**, Director, National Exposure Research Laboratory

8:30 am. to 8:50 am. Regulatory Challenges — **John Bachmann**, Office of Air Quality Planning & Standards

8:50 am. to 9:10 am. Research Challenges — **Darrell Winner**, National Center for Environmental Research

9:10 am to 9:30 am. Research Needs & Plans of the National Exposure Research Laboratory — **Gary Foley**

9:30 am to 9:50 am. Research Needs & Plans of the National Risk Management Research Laboratory — **Frank Princiotta**

Break 9:50 am to 10:10 am

10:10 am to 10:30 am. Research Needs & Plans of the Air Resources Laboratory — **Bruce Hicks**

10:30 am to 10:50 am. Research Needs & Plans of the Aeronomy Laboratory — **Dan Albritton**

10:50 am to 11:10 am Research Needs & Plans of the Geophysical Fluid Dynamics Laboratory — **Ants Leetmaa**

11:10 am to 11:30 am Research Needs & Plans of the Environmental Technology Laboratory	**Bill Neff**
11:30 am to 11:50 am Research Needs & Plans of the NOAA Air Quality Matrix Program	**Jim Meagher**
11:50 am to 12:10 pm Research Needs & Plans of the National Climate Data Center	**Sharon LeDuc**

Lunch 12:30 pm to 1:30 pm

Breakout Sessions

Five breakout sessions are planned to develop scientific collaborations for accelerating research both agencies deem important to meet the objectives of the MOU and MOA. The research proposed under the MOU and MOA should focus on scientific issues relevant to environmental assessment, air quality analysis/prediction/forecasting, development of regulations, policy decisions and control technologies. The purpose of the breakout session is to identify information needs and encourage EPA-NOAA collaborative process research projects to meet them. The projects identified in the sessions, along with proposed research outputs and how they reduce uncertainties in air quality assessment and prediction activities, will be presented to NOAA and EPA managers on March 3. It will be desirable to identify at least two potential projects in each session for collaborative research. Managers can then select projects from the list to support and address any resource and scheduling issues.

Group I, Atmospheric Process Research (Chemistry, Meteorology, Deposition) Room C500A	EPA- Lead, **Edward Edney** NOAA-Leads, **Fred Fedsenfeld** & **Bill Neff**
Group II, Atmospheric Model Evaluation Research Room C600A	EPA-Lead, **Deborah Luecken** NOAA-Lead, **Sharon LeDuc**
Group III, Air Quality Forecasting Room C300A	EPA-Lead, **Kenneth Schere** NOAA-Lead, **Paula Davidson**
Group IV, Source Characterization and Source Emissions Room C600C	EPA-Lead, **Andy Miller** NOAA-Lead, **David Parrish**
Group V, Special Issues in Air Quality Including Homeland Security Room C300C	EPA-Lead, **William Petersen** NOAA-Lead, **Bruce Hicks**

Day Two–Room C111A

Entire group meets to hear reports form the five break out groups

8:30 am to 9:00 am. Group I - Atmospheric Process Research

9:00 am to 9:30 am. Group II - Atmospheric Model Evaluation Research.

9:30 am to 10:00 am. Group III - Air Quality Forecasting.

Break 10:00 am to 10:15 am.

10:15 am to 10:45 am. Group IV - Source Characterization and Source Emissions.

10:45 am to 11:15 am. Group V - Special Issues in Air Quality Including Homeland Security.

11:15 am to 12:30 pm Discussion of Next Steps for Workshop and Future Workshops 2 on linking air quality models to climate change models (September 2004 in Boulder, Colorado) and Workshop 3 on multimedia and transboundary exchange (February 2005 in Annapolis, Maryland).

Main Group adjourns

Lunch 12:30 pm to 1:30 pm

1:30 pm to 2:30 pm Executive Session for Discussion of Research Collaboration by Directors (Albritton, Blancato, Foley, Hayes, Hicks, LeDuc, Leetmaa, McDonald, Neff, Princiotta, Rao) Room C111A

2:30 pm End of Workshop

Group I - Atmospheric Process Research

Facilitators: Ed Edney, Fred Fedsenfeld & Bill Neff

The purpose of the process research breakout session is to define collaborative research projects that will increase the understanding of the chemical, meteorological and depositional processes that determine air-quality. Also, implied in this discussion is the independent evaluation of emission inventories that is based on inconsistencies between our current understanding of these processes and our measurements of ambient concentrations and deposition loadings. The breakout session will consist of scientists from each agency who will provide a series of short presentations outlining current and planned future process research in chemistry, meteorology and deposition. EPA and NOAA will be allocated a total of 45 minutes for their presentations. It is expected 10 or 15 minute presentations will be made covering process research in each of the three areas. The presentations should include the following information concerning future research projects:

- Scientific issue addressed
- Research approach and time-line
- New opportunities afforded by advances in measurement and/or process modeling technologies
- An indication of how the proposed research will increase understanding and lead to improved air-quality management.

EPA
Introduction: Ed Edney -5 min
Atmospheric Chemistry: Tad Kleindienst -10 min
Supersites: Paul Solomon - 10 min
Meteorology: Jon Pleim -10 min
Deposition: Donna Schwede -10 min

NOAA
Chemistry: Fred Fehsenfeld - 15 min
Meteorology: Michael Hardesty - 15 min
Deposition: Rick Artz - 15 min

Following the presentations, 30 minutes will be devoted to a question and answer period for further clarification of the presentations and to identify potential important gaps in process research that were not described in the presentations. The remaining 90 minutes will be spent discussing the collaborative research projects that may be undertaken within the framework of existing agency programs or beyond the completion dates for these programs. These projects should make best use of the considerable scientific strengths and resources of the two agencies. Process research topics include: (1) theoretical studies and laboratory experiments for developing process models for air quality models and (2) field studies and/or testbed approaches using state of the science chemistry and meteorological methods to develop and/or evaluate process or emission components of air quality models. These discussions will, hopefully, provide a list of relevant collaborative atmospheric process research projects that can significantly improve our understanding of source-receptor relationships and their application to guide air-quality management.

Group II - Atmospheric Model Evaluation Research

Facilitators: Deborah Luecken & Sharon LeDuc

1:30-1:45	Introduction of participants and objective
1:45-2:00	What is EPA doing in the area of model evaluation? What are the major issues? What are we missing? (Eder, EPA-NOAA, Gilliland, EPA-NOAA)
2:00-2:10	Model evaluation at the Environmental Technology Laboratory (Bao, NOAA)
2:10-2:20	What are the prospects for using remotely-sensed data such as satellite data? (Kondragunta, NOAA)
2:20-2:30	Evaluation of forecasts and parameterizations using optical measurements (Eberhard, NOAA)
2:30-2:40	What types of comparisons should we be making between measurements and models: concentrations, process analysis, diagnostic indicators, ratios, intercontinental transport? (Dennis, EPA-NOAA)
2:40-2:50	Comparison of radiocarbon measurements with CMAQ simulations (Lewis, EPA, Yu, EPA-NOAA)
2:50-3:00	What types of comparisons should we be making between measurements and models? (Trainer, NOAA)
3:00-3:10	Potential for improvement in model evaluation by using averages and patterns versus particular observations (Irwin, EPA-NOAA)
3:10-3:20	Potential for use of measurement data assimilation into model predictions (Swall, EPA-NOAA)
3:20-3:30	Monitoring network redesign and data access improvements (Rice, EPA)
3:30-3:40	How can an ordinary researcher/regulator best access the data and model outputs? (Rutledge, NOAA)
3:40-3:50	Interest, use & evaluation of models with NCDC's partners in the regions and states (Owen, NOAA)
3:50-5:00	Overall discussion of areas for new collaboration and resources

Group III - Air Quality Forecasting

Facilitators: Ken Schere & Paula Davidson

The following are the confirmed attendees at the AQ Forecast session. If you have a subject line next to your name, you are expected to make a brief presentation at the session.

Paula Davidson, NOAA/NWS/OST (NWS air quality forecast program)
Ken Schere, NOAA/ARL, EPA/ORD (NOAA/EPA air quality forecast model and database development)
Nelson Seaman, NOAA/NCEP (WRF implementation at NCEP)
Jim Wilczak, NOAA/ETL (Radiation/PBL studies in mesoscale models)
Georg Grell , NOAA/FSL (WRF-Chem development and testing)
Jim Meagher, NOAA/AL (Field studies for model evaluation)
Stu McKeen, NOAA/AL (Diagnostic model evaluations and model intercomparisons)
Chet Wayland, EPA/OAQPS (EPA/State air quality forecasting program; emerging PM2.5 forecasting)
Phil Lorang, EPA/OAQPS (EPA emissions inventory development program)
Marc Houyoux, EPA/OAQPS (Emissions processing for air quality forecasting)
Jim Szykman, EPA/ORD (Satellite data applications at EPA and NASA)
Shoba Kondragunta, NOAA/NESDIS (Satellite data applications at NOAA/NESDIS)
Bob Banta, NOAA/ETL
Pat Dolwick, NOAA/ARL, EPA/OAQPS
Steve Fine, NOAA/OAR, EPA/ORD
Rohit Mathur, NOAA/ARL, EPA/ORD
Jeff McQueen, NOAA/NWS/NCEP
Tanya Otte, NOAA/ARL, EPA/ORD
George Pouliot, NOAA/ARL, EPA/ORD
John White, EPA/OAQPS

For those of you making presentations, please use no more than 5 slides and 10 minutes of time. The presentation should briefly state what your research or applications interest is in relation to AQ forecasting, and indicate potential areas of new or continued NOAA/EPA collaboration. Tentatively, the above list indicates order of presentation. We hope to leave sufficient discussion time to explore collaboration areas more fully, so they can be reported out in the March 3 plenary session.

Group IV, Source Characterization and Source Emissions

Facilitators: Andy Miller & David Parrish

The purpose of the source characterization breakout session is to define collaborative research projects that will increase the understanding of the emissions to the atmosphere that determine air-quality. Also, implied in this discussion is the independent evaluation of emission inventories that is based on inconsistencies between our current understanding of these processes and our measurements of ambient concentrations and deposition loadings. The breakout session will consist of scientists from each agency who will provide a series of short presentations outlining current and planned future research in source characterization and source emissions. EPA and NOAA will be allocated a total of about 45 minutes for their presentations. Presentations should include the following information concerning future research projects:

- Scientific issue addressed
- Research approach and time-line
- New opportunities afforded by advances in measurement and/or process modeling technologies
- An indication of how the proposed research will increase understanding and lead to improved air-quality management.

EPA - Four 12-minute presentations
Bruce Harris - Measurements of ammonia from animal feeding operations
John Kinsey - Measurement of emissions from diesel trucks & commercial jet aircraft engines.
Chris Geron - Emissions from open and prescribed burning
Mike Hays - Dilution sampling methods and analytical techniques

NOAA - Four 12-minute presentations
Tom Ryerson - Comparison of point-source emission fluxes derived from aircraft measurements with reported CEMS data including aircraft observations from Houston petrochemical facilities.
David Parrish - Using ambient measurements to critically evaluate the temporal trends of U.S. carbon monoxide emission inventories, and trends in benzene emissions.
Tom Pierce - Progress and remaining issues in quantifying biogenic VOC fluxes.
Greg Frost or Michael Trainer - GIS system for examining emission inventories.

Discussion
Following the presentations and a short break, 30 minutes will be devoted to a question and answer period for further clarification of the presentations and to identify potential important gaps in source characterization research that were not described in the presentations. The remaining 90 minutes will be spent discussing the collaborative research projects that may be undertaken within the framework of existing agency programs or beyond the completion dates for these programs. These projects should make best use of the considerable scientific strengths and resources of the two agencies. These discussions will, hopefully, provide a list of relevant collaborative research projects that can significantly improve our understanding of emissions and their application to guide air-quality management.

Group V - Special Issues in Air Quality Including Homeland Security

Facilitators: Bill Petersen & Bruce Hicks

Group V discussions include homeland security and any special issues/research not specifically covered by other groups or other Scientist-to-Scientist meetings. Group participants will have ~10 minutes for an informal presentation of their research and suggest possible area of collaboration. Currently, presentations include homeland security, fine scale modeling, urban modeling, and human exposure modeling. Time will be reserved for open discussion and development of several areas of possible collaboration. (List of presenters to be provided.)