

FEDERAL COMMITTEE FOR METEOROLOGICAL
SERVICES AND SUPPORTING RESEARCH
(FCMSSR)

Record of Actions 2002-1 Meeting

October 18, 2002

MEMBERS PRESENT

VADM Conrad C. Lautenbacher, Jr., USN (Ret.), Chairman

DOC: Mr. Gregory A. Mandt for Mr. John J. Kelly, Jr.
DOD: CAPT Frank Garcia, USN
DOE: Dr. Jerry Elwood for Dr. Aristides Patrinos
DOI: Mr. Mark Naftzger for Dr. Robert M. Hirsch
DOT: Mr. James H. Washington
EPA: Mr. Henry L. Longest
FEMA: Mr. Anthony Lowe
NASA: Dr. Jack Kaye for Dr. Ghassem R. Asrar
NRC: Ms. Jocelyn Mitchell for Mr. Jack R. Strosnider
NSF: Dr. Margaret S. Leinen
NTSB: Mr. Paul Misencik
OFCM: Mr. Samuel P. Williamson
OMB: Ms. Erin Wuchte for Mr. Randolph Lyon

Mr. James B. Harrison, Executive Secretary
Ms. Barbara J. Palmer, Recorder

INVITED PARTICIPANTS

DOC: Dr. James R. Mahoney, NOAA
Mr. Bruce Hicks, NOAA
CAPT Ted I. Lillestolen, NOAA Corps
CDR Scott Kuester, NOAA Corps
DOD: Dr. Richard W. Spinrad, USN
Col Web Tileston, USAF
Col Mark Weadon, USAF
Maj William Olsen, USAF
Mr. John Pace, DTRA
DOE: Mr. Rick Petty
DOI: Mr. Lewis Moore
DOT: Ms. Shelley Row, FHWA
EPA: Dr. S. T. Rao
FEMA: Mr. John Gambel
NASA: Dr. Ramesh Kakar

NSF: Dr. Jarvis Moyers
NTSB: Dr. Kevin Petty
NAS: Dr. Chris Elfring, BASC
Dr. Elbert W. Friday, Jr., BASC
OFCM: Mr. Donald R. Carver, FAA
Mr. Robert Dumont
Mr. Kenneth Barnett
Dr. Paul Try, OFCM/STC

Date of Issue: October 28, 2002

1. OPENING REMARKS

The meeting was called to order by VADM Conrad C. Lautenbacher, Jr., USN (Ret.), Under Secretary of Commerce for Oceans and Atmosphere and Administrator of the National Oceanic and Atmospheric Administration (NOAA), and Chairman of the Federal Committee for Meteorological Services and Supporting Research (FCMSSR). VADM Lautenbacher informed the committee that he would utilize FCMSSR as a decision-making body, with meetings limited to one hour duration and staff work done ahead of time.

VADM Lautenbacher noted that for a number of agencies the membership had changed since last year's meeting. These include: the Chairman, VADM Lautenbacher; Mr. James H. Washington, Director, Air Traffic Systems Requirements Service, Federal Aviation Administration; and Mr. Jack R. Strosnider, Deputy Director, Office of Nuclear Regulatory Research, Nuclear Regulatory Commission. Attendees introduced themselves. VADM Lautenbacher noted that the meeting will focus on Environmental Support to Homeland Security and the Climate Change Research Initiative. Additional items will include phased array radar technology, weather information for surface transportation, and the Integrated Global Observing System. The Chairman thanked and recognized those who have agreed to address the committee. These include: Mr. Bruce Hicks, Director of the NOAA Air Resources Laboratory; and Dr. James R. Mahoney, Assistant Secretary of Commerce for Oceans and Atmosphere. Dr. Parney Albright, Assistant Director for National Security and Homeland Defense, OSTP, and Office of Homeland Security (OHS), was to provide OSTP and OHS perspectives on the applicability and importance of the effort described in Item 2 of the agenda but, because of last minute work requirements, was not able to attend the FCMSSR meeting.

FCMSSR members were provided an agenda for the meeting, an OFCM report which shows highlights for FY 2002 and plans for FY 2003 (this is an excellent compilation of interagency coordination achievements which have taken place since the last FCMSSR meeting), a single sheet showing current membership of the Federal and Interdepartmental Committees, a detailed FCMSSR address list, a Federal meteorological coordinating infrastructure flow chart, and copies of the briefing materials. Committee members were also provided the recently published *Atmospheric Modeling of Releases from Weapons of Mass Destruction: Response by Federal Agencies in Support of Homeland Security*. This very important document is the subject of the first presentation of the FCMSSR meeting.

ACTION ITEM 2002-1.1: Office of Homeland Security Representation. The Federal Coordinator should explore the opportunity to include the Office of Homeland Security as a member or observer for FCMSSR.

2. ENVIRONMENTAL SUPPORT TO HOMELAND SECURITY

Mr. Bruce Hicks, Director of NOAA's Air Resources Laboratory, and Chairman of OFCM's Joint Action Group for Selection and Evaluation of Atmospheric Transport and Diffusion Models (JAG/SEATD), provided the briefing on the results of the JAG/SEATD's work, which was documented in the report *Atmospheric Modeling of Releases from Weapons of Mass Destruction: Response by Federal Agencies in Support of Homeland Security*. Mr. Hicks also

mentioned the Washington, D.C., Dispersion Testbed (an array of high technology sensors designed to provide Washington with a high quality real-time dispersion forecasting system), and the Defense Threat Reduction Agency (DTRA)/Department of Energy (DOE)-sponsored Oklahoma City Field Study planned for July 2003 (which will provide field data on atmospheric dispersion in urban environments).

Mr. Hicks identified the JAG/SEATD members, alternates, and subject matter experts. He noted that the purposes of the JAG/SEATD report are to provide FCMSSR members with information that will help improve the state of ATD modeling and the use of ATD products in emergency operations, and make state and local authorities aware of the substantial and important capabilities that the Federal agencies can provide so that these capabilities can be integrated into local emergency plans. As background information, Mr. Hicks identified several mainstream ATD activities in the civilian community: the U.S. local Emergency Response (ER) community relies on ALOHA/CAMEO (NOAA/EPA); the nuclear industry relies on NARAC (DOE) and RASCAL (NRC); and the weather forecasting community relies on HYSPLIT (NOAA). The military also has several capabilities: DTRA has developed HPAC; and Navy has developed VLSTRACK. Mr. Hicks noted that, in addition, there are hundreds of research models and assessment codes that are not well suited for ER applications; the academic community uses these models and the field studies that support them to improve understanding of the processes that influence dispersion, and the Federal agencies assimilate this understanding in the operational codes of present interest. Mr. Hicks also noted that operational codes are continuously evolving; there is no single code that is capable of addressing all situations or scenarios. Mr. Hicks further noted that there are only a few types of transport and diffusion models. The model types are plume, segmented plume-puff, particle, box, grid, and computational fluid dynamics. There are only about 29 codes used operationally by Federal modeling centers on a 24 x 7 basis, and most of these are regionally based. The strength of existing ATD codes lies in their applicability and utility in the circumstances for which they have been developed and in which they have been demonstrated.

Mr. Hicks described the process of the JAG/SEATD work effort. It included selecting a suite of scenarios representative of current threats, identifying relevant processes for each scenario, identifying dispersion codes in current 24 x 7 operational use by the Federal agencies, applying corresponding criteria to these codes, evaluating the relevance of each code to each scenario, reviewing agency methods for evaluating code performance, developing a list of needs for model development, and exploring opportunities for interagency participation in field studies related to model evaluation/development. The lack of field-test data limits complete evaluation. Mr. Hicks underscored the fact that our present capabilities to support defined scenarios were based on model physics alone.

Key observations which Mr. Hicks made were: there are differences between products developed for battlefield (military) applications and for civilian applications; the acceptability of a code is not only a function of its ability to predict dangerous areas, but also to identify safe zones with confidence; many codes are specifically designed to assist response activities, others are tailored to inform the public and avert possible panic; for first-response applications, very simple systems are preferred; for planning and for post-event assessment and remediation, more complex codes can be used; and few (if any) codes have been evaluated in areas where people

actually live. Major conclusions are: the ALOHA/CAMEO system is the most widespread capability now in use (improvements are now being made to this system); the 122 National Weather Service Weather Forecast Offices are the accepted source of related meteorological information; as soon as possible after an event, expert guidance is required (24 x 7 reach-back is a key requirement); civilian use of military capabilities remains a challenge (a first step might be to make the military's centers of dispersion excellence available to civilian authorities on a call-back basis); there are presently two civilian centers of excellence on the opposing CONUS shores (National Centers for Environmental Prediction in Maryland, and Lawrence Livermore National Laboratory in California).

Recommendations pointed to the following needs: research to address areas not yet understood (thirteen research needs were identified, which should be refined and prioritized by the Federal agencies involved to reflect individual operational needs); more field tests; finer scale meteorological information; a consensus-based model evaluation procedure (a common framework is needed for users to communicate requirements and expectations for modeling systems; limits of predictability need to be determined, as well as uncertainties and biases of model outputs); and better interagency coordination and information exchange. The 13 research needs include source characterization, behavior and simulation of chemical mixtures, urban canopy, terrain complexity, coastal influences (land-sea breeze circulations), methods to forecast concentration variability, planetary boundary layer (PBL) depth and interaction with the surface, surface deposition, re-entrainment of surface-deposited materials, migration of contaminants through the environment, long-term consequences of exposure, interaction between indoor and outdoor atmospheres, and communication of results.

Mr. Hicks informed the committee regarding multiagency field studies. He described a continuing study focused on Washington, D.C., to determine what additional measurements are needed to provide a next-generation dispersion forecasting capability for Washington (and for other areas). This study is led by NOAA, but also involves DOE, DTRA, and Army. Mr. Hicks also described an intensive study, *Joint Urban 2003*, planned for Oklahoma City in July 2003 to explore the processes controlling dispersion in an urban area. *Joint Urban 2003* is cosponsored by DTRA and DOE, but also involves NOAA and Army.

Mr. Hicks described the next steps to be taken which are the subject of the proposed actions listed below. He noted that in the future: every emergency manager could have rapid access to accurate dispersion models; meteorological data for emergency response could be transmitted from nationwide forecast systems augmented by local networks as needed; and immediate access could be provided to backup and reach-back capabilities stretching across all agencies with relevant skills. The bottom line is that we want to: bring our capabilities to bear to support homeland security in an efficient and effective manner; be responsive to specific Office of Homeland Security/Department of Homeland Security requirements; and improve our capabilities to support the first-responder, the Lead Federal Agency for crisis/consequence management, and the Office of Homeland Security.

Additional discussion noted that we should consider how much we should forward push products before the event (preparation of the battlefield), and that we should look to see how we could help exercises such as TOPOFF (top officials exercising crisis response). It was

mentioned that, although some models handle multiple releases, no models are capable of treating releases during extreme weather events. It was also noted that DOD is going to a single model with a lot of capability (JEM - Joint Effects Model).

ACTION ITEM 2002-2.1: Interagency Forum. The Federal Coordinator and the Interdepartmental Committee for Meteorological Services and Supporting Research (ICMSSR) should plan and conduct an interagency forum to bring together the responsible Federal agencies, together with representatives of the user communities, academia, and the private sector to address state of the science, identify priorities and issues for needed research and development, develop model evaluation procedures, and plan for field studies.

ACTION ITEM 2002-2.2: Washington, D.C., Dispersion Testbed. As appropriate, agencies should support the ongoing development and future expansion of the Washington, D.C., Dispersion Testbed. Contact point is Mr. Bruce Hicks, NOAA, 301-713-0684.

ACTION ITEM 2002-2.3: Oklahoma City Field Study. As appropriate, agencies should provide for expanded interagency support and participation in the Defense Threat Reduction Agency (DTRA)/Department of Energy (DOE)-sponsored Oklahoma City field study planned for July 2003 (*Joint Urban 2003*). Contact point is Mr. John Pace, DTRA, 703-325-7404.

3. CLIMATE CHANGE RESEARCH INITIATIVE

Dr. James Mahoney, NOAA's Assistant Secretary of Commerce for Oceans and Atmosphere and Director of the U.S. Climate Change Science Program, presented information on the Climate Change Research Initiative (CCRI) and on the *U.S. Climate Change Science Program: Planning Workshop for Scientists and Stakeholders*, which will be held December 3-5, 2002, in Washington, D.C.

The U.S. Global Change Research Act of 1990 initiated the U.S. Global Change Research Program (USGCRP) that continues today as a major sponsor of global change research. In June 2001, President George W. Bush directed the USGCRP agencies to develop a focused Climate Change Research Initiative with the goal of accelerating the USGCRP research activities in the next 2 to 5 years, to assist in the development of public policy and natural resource management tools related to climate change issues.

The U.S. Climate Change Science Program, which incorporates the USGCRP and the CCRI, is jointly sponsored by 13 U.S. government agencies. These are the Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Interior, and State; Environmental Protection Agency; National Aeronautics and Space Administration; National Science Foundation; Office of Management and Budget; Office of Science and Technology Policy; and the Smithsonian Institution.

The *U.S. Climate Change Science Program: Planning Workshop for Scientists and Stakeholders* responds to the President's direction that the U.S. global change and climate science programs must be objective, sensitive to uncertainties, and well documented for public debate. The U.S. global change and climate change research programs must consistently meet

the highest standards of credibility, transparency, and responsiveness to the scientific community, as well as to all interested user groups and our international partners. To assure the continued scientific credibility of the U.S. Climate Change Science Program, the workshop will provide a comprehensive review of the discussion draft of its Strategic Plan for climate change and global change studies. The workshop discussions, supplemented by written comments submitted during a 30-day post-workshop period, will be reflected in the final Strategic Plan.

The U.S. Climate Change Science Program will be responsible for preparation of the final version of the Strategic Plan, based on its evaluation of information presented at the workshop and/or posted on its website, as well as full review of recommendations developed by an advisory committee appointed by the National Academy of Sciences. The final Strategic Plan will be published in April 2003.

ACTION ITEM 2002-3.1: Climate Change Research Initiative. FCMSSR agencies support the Climate Change Research Initiative (CCRI). Contact point is Dr. James Mahoney, NOAA, 202-482-3567.

ACTION ITEM 2002-3.2: Climate Change Workshop. To the degree that it makes sense given agency interest and needs, participate in the *U.S. Climate Change Science Program: Planning Workshop for Scientists and Stakeholders*, December 3-5, 2002, Washington, D.C.

4. ADDITIONAL ITEMS

VADM Lautenbacher informed the committee and led discussion on the following items:

(1) Phased Array Weather Radar Project

The Phased Array Weather Radar Weather Project is a formal partnership between NOAA, FAA, Navy, and the University of Oklahoma to perform exploratory research on adapting phased array radar (PAR) technology to weather radar surveillance. Contributions through FY 2002 are:

- Navy \$10M + SPY-1 antenna
- DOT/FAA \$6M
- NOAA/NWS WSR-88D transmitter
- NOAA/OAR \$1M
- U. of Oklahoma \$1.5M
- Lockheed Martin \$1M in kind

The initial PAR platform utilizes a battle spare SPY-1 antenna and is presently under construction at the Lockheed Martin facility in Morrestown, New Jersey. The PAR system will be delivered to the National Severe Storms Laboratory in Norman, Oklahoma, in January 2003 as the centerpiece of the National Weather Radar Testbed (NWRT).

PAR potential will be evaluated in relation to:

- potential for chemical/biological detection and forecasting
- quantitative precipitation
- higher quality data
- ground clutter suppression and wind retrieval
- dual polarization
- dual-use to simultaneously perform weather surveillance and 3-D aircraft tracking

PAR technology could provide greater capability regarding support of homeland security, improve weather detection capabilities, and improve quantitative precipitation estimates.

ACTION ITEM 2002-4.1: Phased Array Weather Radar Project. The Federal Coordinator should work with the Interdepartmental Committee for Meteorological Services and Supporting Research (ICMSSR) and the Office of Homeland Security, to determine specific needs of the agencies, show benefits of the phased array radar capability for their respective agencies, and explore opportunities for expanded participation among other agencies.

(2) Weather Information for Surface Transportation

At the September 1998 FCMSSR meeting, the Federal Coordinator identified surface transportation (ground and marine) needs as a priority area requiring improved interagency coordination and cooperation. Since that time, OFCM and the Federal agencies have been extensively involved in Weather Information for Surface Transportation (WIST) [in November 2000, FCMSSR endorsed the continuation of this activity]. The bottom line is that improvements in surface transportation weather support will result in safer and more efficient operations by all users.

OFCM, through the Federal meteorological community, has prepared a national needs assessment report which is a culmination of intensive efforts in this area. Processes included formation of a joint action group to address meteorological requirements for surface transportation; questionnaires; surveys; WIST symposia conducted jointly with the Federal Highway Administration (FHWA); meetings with railroad, pipeline, and emergency managers; and participation on panels concerning public-private partnerships in transportation and Intelligent Transportation Systems.

The report, *Weather Information for Surface Transportation: Meeting User Needs for Improving Safety and Efficiency*, addresses meteorological needs for the six core modes of surface transportation: roadway, railway, transit, marine transportation/operations, pipeline, and airport ground operations. The report is nearly ready for publication.

The need for Weather Information for Surface Transportation was further endorsed by Mr. Neil Schuster, President and CEO of the Intelligent Transportation Society of America (ITS-America), on October 14, 2002, at the ITS World Congress in Chicago, Illinois. Mr. Schuster looks forward to working with the Federal meteorological community regarding this support.

ACTION ITEM 2002-4.2: Weather Information for Surface Transportation. The Federal Coordinator should complete final coordination of the WIST report through the Interdepartmental Committee for Meteorological Services and Supporting Research (ICMSSR) representatives and publish the report.

(3) Integrated Global Observing System

There is much work underway through the Climate Change Research Initiative (CCRI) on observations and monitoring of the environment on a global basis. The U.S. Global Climate Observing System (GCOS) and U.S. Global Ocean Observing System (GOOS) are two such programs that are underway to support this initiative. On the other hand, many entities, to include Federal, state, and local agencies; academia; and the private sector are developing and planning for new sensors for observing and collecting atmospheric/environmental information. Our goal is to take full advantage of these new capabilities and to ensure that the output will be part of an Integrated Global Observing Strategy (IGOS), leveraging the work of the CCRI.

ACTION ITEM 2002-4.3: Development and Planning for New Sensors. FCMSSR members should ensure that the development and planning for new sensors for observing and collecting atmospheric/environmental information are integrated through the Climate Change Research Initiative for the Integrated Global Observing Strategy.

ACTION ITEM 2002-4.4: Agency Requirements. The Federal Coordinator should act as liaison, as required, to ensure that known agency requirements are passed to the U.S. Climate Change Science Program for incorporation into the Climate Change Research Initiative (CCRI) and that the Federal meteorological community (FCMSSR) is kept aware of the CCRI's progress.

5. NEXT MEETING

The Executive Secretary will schedule the next FCMSSR meeting in coordination with the Chairman.

The meeting adjourned at 10:35 a.m.

