

Summary

NOAA's Office of Oceanic and Atmospheric Research

Roundtable: Building NOAA's Weather & Water Social Science Program

On Thursday, February 1, 2007, Dr. Richard W. Spinrad, Assistant Administrator for Oceanic and Atmospheric Research (OAR), hosted a Constituent Roundtable, "Building NOAA's Weather and Water Social Science Program" at the Brookings Institute in Washington, DC. Constituents, representing academia, federal and state government, non-governmental organizations and private industry joined Dr. Spinrad. Following is a summary of the major points discussed at the roundtable.

Opening Remarks

In his opening remarks, Dr. Spinrad welcomed the group and underscored the important role NOAA research plays in NOAA achieving its [mission and goals](#). He stressed three messages – OAR supports preeminent research at all levels of the organization; OAR research provides value to society; and OAR operates in a culture of transparency, reaching out to constituents for input on research priorities and planning.

Before turning the floor over to the constituents, Dr. Spinrad discussed issues that "keep him up at night" including the continuing resolution governing NOAA's FY07 budget, the ability to attract and sustain a preeminent scientific workforce, NOAA's ability to support high-risk/high-payoff transformational research; scientific openness; and strengthening the public-private partnership.

Constituent Observations

Participants addressed how NOAA could use social science research to improve its ability to analyze and effectively demonstrate the value of weather and water research, products and services. They identified a shared goal of ensuring advances in science are used to help everyone (from the most sophisticated user to the general public) make better decisions.

Four common themes emerged: (1) communications; (2) valuation of research, products and services; (3) market notions; and (4) technology challenges and opportunities.

Communications

Communicating with users was repeatedly emphasized throughout the discussion. Participants noted the importance of ensuring weather and water information is not only available but disseminated in a manner understandable to different user groups.

In this regard, participants recognized communication skills must be learned and recommended communications skills be incorporated into meteorological training with emphasis on the different skills and techniques required for communicating with different audiences. Participants stressed that receiving perfect information late is not as useful as good information early. Participants also emphasized the benefits of tailoring a message to meet the needs of varied audiences.

For example, participants noted the emergency management and medical communities are reactionary. This makes it important to ensure these communities are receive the right information in a format that they understand.

Participants recognized the need for a renewed social science research program to refresh the outdated body of knowledge on the dissemination of hazard information, recognizing that much social science research regarding the communication of hazards was conducted before the advent of cellphones, internet, and cable news.

Expanding NOAA's outreach to schools was also identified as an area with a high return on investment.

Participants identified four areas where social science research could improve NOAA's ability to communicate weather and water information as well as the value of NOAA's environmental research, services, and information.

First, social science research would help NOAA identify various users of its environmental information and services, and to target messages to the appropriate audiences in the most effective and efficient manner. Noting the importance of understanding how different users and audiences receive and utilize environmental information, particularly weather warnings, participants, raised the need to understand the social dynamics behind transmitting environmental information.

Second, social science research would help NOAA better communicate uncertainty, particularly as the use of probabilistic forecasts increases, and improve the value of NOAA's products and services to society.

Third, social science research to understand how individuals and groups use forecast information would help NOAA save lives and reduce economic losses. This includes understanding the social factors influencing action or inaction, such as mitigation measures or evacuation.

Fourth, social science research would help NOAA expand its communication mechanisms by identifying which mechanisms function best for which types of information. Given the outdated nature of much of the social science research on communicating hazard information, additional information will be required to determine which new communication mechanisms are most effective and to determine how those mechanisms – cell phones, the internet, cable news – are utilized by different audiences. Improving collaboration across all levels of government, with the private sector and through public involvement is necessary to improve communication.

Participants also stressed NOAA's utilization of new communication media should not be accomplished at the expense of more basic technologies, such as HAM radio - which functions even following a disaster when many high-tech communications devices experience temporary service interruptions.

Valuation of Research, Products and Services

Participants noted that a great deal of research has already been undertaken in this area but more is needed. There was also general agreement that the

government paradigm of producing a product or service and then seeking input needs to change. They emphasized the importance of using social science research to guide product development from its earliest stages.

Participants recommended that NOAA could improve the value of its research, products and services by packaging information with an understanding of user needs. Additionally, they identified the need to expand NOAA's ability to evaluate the success of a new product or service - using reaction criteria, learning criteria, outcome criteria and performance criteria.

Participants suggested social science research could help NOAA identify and answer key questions including:

- What kind of coupling (partnerships, equipment) is required to achieve economic efficacy in protecting lives and property?
- What are the economic costs of evacuation?
- What are the likely lives lost due to late or non-existent evacuations?
- What are credibility costs of forecast errors?
- How do we value things we are not valuing now, i.e. environmental goods and services?
- How do we ensure forecasts are utilized and good decisions are made?

Participants recognized commercial weather services have a wealth of information on the value of weather products and services; but noted that much of the information is proprietary. A participant remarked that warnings are increasingly privatized, estimating that 50% of all warnings now come from the private sector. A participant also noted that ten years ago the Commercial Weather Services Association (CWSA) calculated that 35% of routine forecasts had been privatized and urged NOAA's National Weather Service (NWS) to focus on model improvements, data and warnings.

Participants noted that cooperation and collaboration will be key to NOAA's success in this area. A participant was encouraged by the more recent efforts of retired Navy Vice Admiral Conrad C. Lautenbacher, Jr., Under Secretary of Commerce for Oceans and Atmosphere and the NOAA Administrator, and retired Air Force Brigadier General David L. Johnson, Director of the NOAA's National Weather Service, to avoid direct competition with commercial weather services. Participants recommended using the private sector to leverage limited resources and to encourage economic strength.

Some participants were troubled by the notion of applying economic valuation broadly, noting that weather and hazard information are a public good and asserting freedom from hazards is a right, not a privilege and should not depend on one's ability to pay. Further, they cautioned NOAA to be cognizant of hidden costs such as some of the human impacts of disaster that can not be easily measured in economic terms.

Market Notions

Participants encouraged NOAA to use social science research to improve its weather and water products and services through an improved understanding and utilizing market forces. They underscored the importance to those acting at the policy-science interface of understanding how markets value ecosystem services.

According to participants, social science research could help NOAA enhance its ability to meet the needs of society by improving its understanding of:

- The social and economic forces driving markets;
- The different types of users (general public, water boards, utilities, commercial weather services) within a given market;
- The opinion leaders in particular markets;
- The information filtering occurring particular markets;
- How technology influences markets and users;
- The practical applications and needs of different users;

Participants noted social science research could help NOAA better understand market forces, adopt market driven approaches, influence decision makers, and affect community-wide behavior shifts using targeted education initiatives and social marketing. Participants recognized the need for strong partnerships and broad networks, such as the American Meteorological Society's connections with the Chambers of Commerce to NOAA's success.

Technology Challenges and Opportunities

Participants recognized the world is changing quickly and NOAA needs to focus beyond tomorrow. Participants raised some technological challenges and opportunities, including data management and sharing, regional approaches, and training implications for new and emerging technologies and products.

A common concern was the interoperability of observational systems. Participants noted that data is collected in different formats; stored at multiple locations unconnected to one another; incompatible with other data collected; or presented in a inconsistent formats. Some participants argued for a consistent, "Holiday Inn" approach to data presentation to ensure users could as easily understand the information presented them in California as New Jersey.

Participants noted the necessity of understanding future conditions for hydrology and adopting a regional or watershed to establish the nature of the risk. They acknowledged that while the computational and communications abilities to undertake this approach are available today, this approach requires transcending political boundaries.

Conclusion Dr. Spinrad noted that the breadth of perspective communicated at this roundtable will be incorporated into the Weather and Water Social Science Program Plan currently under development. He also noted the lessons learned by the weather community could also be applied to the ocean and ecosystem management communities.