NOAA's Office of Oceanic and Atmospheric Research

Roundtable: Environmental Data & Information Services

On July 10, 2007, Dr. Richard Spinrad, Assistant Administrator for Oceanic and Atmospheric Research (OAR), and Mary Kicza, Assistant Administrator for Satellite and Information Services (NESDIS), brought together a diverse group of high-level constituents to provide input on NOAA's research priorities to ensure NOAA is able to provide the high quality data, sophisticated models, and scientific knowledge our partners and customers will require in the future. 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 Mary Kicza, Dr. Spinrad discussed topics that "keep him up at night" including securing the resources required to carry out NOAA's mission, attracting and sustaining a preeminent scientific workforce, and supporting high-risk, high-payoff research.

Mary Kicza highlighted NESDIS' accomplishments and challenges, including NOAA satellite acquisition programs, climate data records, managing NOAA's increasing volume and diversity of data, and the importance of integrated earth observations. She stressed NESDIS' commitment to enhancing partnerships in the environmental data and information services arena, not only for good stewardship, but also to meet the evolving demands of society.

Constituent Observations

Participants identified current and future areas where NOAA could focus resources and efforts to improve the value of NOAA's for environmental data and information services. Four common themes emerged: climate services and data, data standardization and integration, data availability, and partnerships.

Climate Services & Data

Participants described NOAA's environmental data and information services as essential to their success researching and mitigating the impacts of global climate change as well as seasonal and interannual climate changes. In addition, participants identified the need for projected climate data, including remote sensed data, marine monitoring, and data on vegetation.

States and other agencies are adopting varied approaches to mitigating the impacts of global climate change, but recognize the potential impacts are complex, ranging from erosion to storm intensity to changes in coastal hydrology to loss of wetlands to submerged habitats and that the potential exists for the acceleration of combined impacts. In addition, planners are interested in the impacts of climate change on heat islands and in obtaining microclimate data that would allow them to effectively advocate for green space, not only domestically but internationally.

Participants stressed the importance of continuing the global carbon dioxide (CO_2) record begun at Mauna Loa, and maintaining the historical climate record at a reasonable density – recognizing satellite observations are particularly crucial for areas, such as Africa, where the observation networks are sparse. In addition, participants identified the polar orbiting environmental satellite system - in particular the Advanced Very High Resolution Radiometer (AVHRR) and the Normalized Difference of Infrared Index (NDII) as key tools. They also suggested improving satellite rainfall products, which are currently good at coarse spatial and temporal resolutions but whose quality diminishes at higher resolutions. Reanalysis products have proven useful as well and could be improved by addressing some consistency concerns. LIDAR is also needed for obtaining the bathymetric information required by the states to develop 1-2 foot contour maps of the most vulnerable coastal areas.

Participants suggested the value of the data could be improved by making it available in a variety of formats, including GIS, to meet the needs of diverse users. In addition, some participants noted improved data would only strengthen their role helping interpret the climate forecast information to determine the implications for health, agriculture and community planning.

Data Standardization & Integration

Standardization and integration of disparate data sets into useful tools was a recurring theme.

Some types of data desired included near shore measurements of waves and wind, sea surface temperature, studies on the effects of sea level rise on habitat, salt water intrusion and ecosystems. In addition, improved information on fluxes in the boundary layers - soil moisture, air-ocean – was identified as an area where return on investment is high. A participant also identified space weather research as an area for increased investment.

Participants recognized NOAA's increasing difficulty developing and financing new satellite sensors while maintaining existing capabilities. They recommended improving the prioritization of capabilities by quantifying degrees of improvement or degradation particular sensors or data sets provide.

In discussing the Integrated Ocean Observing System, participants recommended treating buoys as critical tools and setting standards for quality control/quality assurance, data standardization and integration. They also expressed interest in hearing more about the future direction of IOOS and increased financial support for regional associations.

Participants discussed the challenge of creating incentives to encourage agencies collecting meteorological and oceanographic data around the globe to meet international standards for quality and interoperability. Suggestions included using the Intergovernmental Oceanographic Commission (IOC) and the World Meteorological Organization (WMO) to establish standards. In their view, only data meeting these standards should be available as part of the global network.

Participants suggested combining NOAA's strong promotion of free and open data exchange with common guidelines for rights and obligations of scientists and private agencies for sharing data. They also recommended that NOAA and the international community clearly establish roles for national climatic and oceanographic data centers.

Data Availability

Participants noted NOAA's success distributing environmental data and information in a variety of easily-accessible formats and some areas where successes could be duplicated or expanded to improve the value of NOAA's observations and models.

Suggestions included ensuring data is available as GIS products and that resource managers have access to and are aware of where to locate model information. In addition, some participants requested access to 13 kilometer Rapid Update Cycle (RUC) data and NOAA's full suite of models and algorithms.

Participants noted the Meteorological Assimilation Data Ingest System (MADIS) program is a good example of NOAA's ability to add value by aggregating data and making it available to the public. They suggested increasing observation density and creating data standards and integration requirements to incorporate other available observations. They also recommended a MADIS-type program for expanding access to non-traditional radar sources (i.e. FAA, NOAA P-3s) and developing a mechanism by which the public can access NEXRAD 2 data.

Participants stressed the importance of working across agencies and organizations to increase awareness of available NOAA products and services, and train users, such as urban planners and coastal resource managers, to locate and use NOAA data.

Partnerships

Partnerships emerged as essential to the success of NOAA's environmental data and information services. Participants recognized that NOAA provides crucial information to coastal zone and emergency managers, the weather enterprise, research organizations, and the international community.

Participants acknowledged the success of existing research partnerships with NOAA. One example cited was The Nature Conservancy's partnership with NOAA's National Marine Fisheries Service to undertake coral and marine restoration projects, which relies on NOAA Research coral monitoring data and NESDIS satellite sea surface temperature measurements.

Some participants noted that the existing paradigm for NOAA grants precludes their participation. They encouraged NOAA to review opportunities for organizations and corporations that are too large to qualify for Small Business Innovation Research grants, but not large enough to meet the requirements for major NOAA programs.

Potential opportunities for collaboration between NOAA and the National Institute of Standards and Technology (NIST) also emerged as part of the discussion. In particular, the discussion centered on American Competitiveness Initiative and the possibility for early-stage high-risk research grants for technologies, such as aquaculture advances, that would advance NOAA's goals.

Participants noted that NOAA's brand is trusted by the general public and can be strengthened through partnerships to share information on data availability and interpretation. They praised NOAA's progress in reaching out with greater frequency to user communities and encouraged NOAA to pursue partnerships with non-traditional NOAA constituencies – such as urban planners – to provide crucial environmental information and education, particularly as related to global climate change.

Some participants also recommended NOAA employ a bottom-up approach to educating the users and the public about the revolution occurring in ecosystem and climate services, highlighting the intangible benefits of these efforts and garnering support. Dr. Spinrad clarified NOAA's education authority, noting it only exists under specific programs such as Sea Grant and Ocean Exploration, and a NOAA organic act would have substantive implications for enhancing NOAA's educational activities and campaigns.

Conclusion Prior to concluding the discussion, Dr. Alexander "Sandy" MacDonald, NOAA Deputy Assistant Administrator for Laboratories and Cooperative Institutes, provided some additional context for the discussion. He noted that the Earth is shifting from a period of relatively stable climate to one that is rapidly changing. He noted this is a growth business – the environmental data and information services discussed in this roundtable will enhance our understanding of climate change.

Dr. Sprinad and Mary Kicza concurred; we live in time of change. NOAA's responsibility is to make predictions from minutes to millennia and NOAA needs partners to succeed.