October 1, 2010

The Honorable Jane Lubchenco, Administrator
National Oceanic and Atmospheric Administration
14th Street & Constitution Avenue, NW
Washington, DC 20230

Dear Dr. Lubchenco:

On behalf of the NOAA Science Advisory Board (SAB), I am pleased to provide comments on the draft National Weather Service (NWS) Strategic Plan. The SAB reached out to its expert working groups for input in addition to comments from its own members. Two of the working groups, the Environmental Information Services and Fire Weather Research, provided comments to the SAB. The SAB members discussed these comments in a teleconference meeting on September 20, 2010. Overall, the members and working groups had positive reactions to the draft Plan.

Please find attached specific comments on the NWS Strategic Plan. In transmitting these comments, the SAB would like to highlight the need for the National Weather Services and the new NOAA Climate Service to interact and coordinate their activities closely. The intersection between the observing, data assimilation, and modeling capabilities of both Services is critical for both and for the users who rely on this information. NOAA must ensure continuity of services delivered to the public during this time of transition.

Thank you for this opportunity to provide comments on the National Weather Service Strategic Plan. This Plan follows the excellent efforts in the NOAA Next Generation Strategic Plan and is a significant step forward in mapping the future for weather services in this country.

Sincerely,

Raymond J. Ban
Chair, NOAA Science Advisory Board
Consultant, Weather Industry & Government Partnerships

Enclosure

cc: Mary Glackin
Paul Sandifer
Paul Doremus
SAB members
Jack Hayes
Laura Furgione
Walt Dabberdt
Nancy Colleton
John Snow
Cynthia Decker
Marcey Guramatunhu
Mary Anne Whitcomb

NOAA Science Advisory Board

Comments from Working Groups on the NWS draft Strategic Plan

Fire Weather Research Working Group Comments on the National Weather Service Strategic Plan 2020

The NOAA Science Advisory Board (SAB) chartered the Fire Weather Research Working Group to conduct a review of NOAA's operationally-oriented research activities. The Working Group completed a report that included recommendations for next steps in this important area. The report, Fire Weather Research: A Burning Research Agenda for NOAA was submitted to the SAB, which approved it and transmitted it to NOAA (http://www.sab.noaa.gov/reports/2008/FWRWGreportFINALfromSABtoNOAA_11_03_08.pdf).

The following comments on the NWS draft strategic plan for the next decade are offered with regard to the needs of the US wildland fire management community. The Fire Weather Research Working Group report mentioned above has already identified and articulated the research and operational fire weather needs of the nation and this review attempts to validate whether the NWS strategic plan accommodates those needs strategically. The Working Group was somewhat disappointed that more of its recommendations were not explicitly mentioned or discussed in the NWS strategic plan. However, various elements of the plan could and should contribute to improved wildfire weather services as envisioned by the Working Group.

The concept of the 4D Cube is particularly gratifying from the fire management—indeed the wildland management—perspective. Federal land management agencies such as the USDA Forest Service are responsible not only for the nation's forests and wildlands, but also for the clean air and water that the public expects from those lands. Informed management of those resources will increasingly depend on scientific tools such as computer models to analyze and predict the impact of management actions. The Earth systems framework is particularly suited for this complex task.

The objective under Goal 1, to provide demand-driven, impact-based weather services, is intended to:

- Tailor forecasts to user-defined thresholds with objective uncertainty to communicate environmental impacts and risks.
- Increase direct support to emergency responders for incidents.

The Wildland Fire Decision Support System (WFDSS) now used for large-fire management has needs which align closely with these planned activities. There is probably not a better place to start than with WFDSS.
Another objective is to utilize emerging science and technology to improve weather prediction, through better observations, Earth system modeling, objective forecast uncertainty, and the advancement and deployment of fire-scale models and forecaster and decision support. This part of the strategic plan validates the recommendations of the SAB fire weather report.

Goal 2 of the NWS strategic plan addresses improved water services. This includes:

- R&D to advance understanding of precipitation, temperature, evaporation and other hydrologic processes in an Earth system framework.
- Integrate long-range weather forecasting into hydrologic modeling.

These activities can also advance fire danger rating through better predictions of fuel moisture, particularly for strategic fire planning, and for postfire vegetation/hazard management. The postfire flooding and debris flow problems in Southern California are dramatic examples of the damaging effects of fire, long after the fire is out. A better understanding of the ecohydrology of Southern California through Goal 2 R&D would address a significant concern described in the SAB fire weather report.

Goal 3 of the NWS strategic plan aims to enhance climate services, which would include the objective of improving and expanding climate modeling for time scales from weeks and seasons to years. This goal requires the Earth system framework and modeling of land/water processes. Collaboration in this enterprise with researchers outside of the atmospheric science community is crucial. For fire management needs, fire scientists are natural, even ready and willing partners. Land management concerns about the effects of climate change are sure to invite more collaboration in this area. This reviewer hopes that NOAA fully engages Forest Service fire scientists, among others, in the execution of the NWS strategic plan.

While the above discussed elements of the National Weather Service draft strategic plan are promising, to implement them to support wildfire weather monitoring and forecasting will require focused efforts and appropriate resources. It won't happen spontaneously.

Environmental Information Services Working Group Comments on the National Weather Service Strategic Plan 2020

September 8, 2010

NOAA Science Advisory Board
1315 East-West Highway
Room 11230
Silver Spring, Maryland 20190

Dear NOAA Science Advisory Board Members:

The Environmental Information Services Working Group (EISWG) is pleased to provide you with the following consensus comments on the draft National Weather Service (NWS) Strategic Plan. As you know, the EISWG members—diverse representatives from industry, academia, and government agencies—have worked individually in close partnership with the NWS for many years. Therefore, the comments and recommendations provided below are based on a strong and active interest in the future and success of the National Weather Service and its importance to our nation.

Regarding the overall plan, the EISWG members believe that the context of the NWS Strategic Plan would be enhanced by:

- Clearly stating the connection between the NWS Strategic Plan's ten-year focus and the NSGSP's five-year focus and how the plan could be updated based on major events or other priorities;
- Better describing the weather enterprise and its various sectors and how they work together;
- Using consistent language throughout the document (e.g., users versus stakeholders, decision services versus decision support services);
- Incorporating, as appropriate, the key recommendations made by recent reports of the National Academy of Sciences, such as: *1) Fair Weather: Effective Partnerships in Weather and Climate Services, 2) Observing Weather and Climate from the Ground Up: A Nationwide Network of Networks, and 3) When Weather Matters: Science and Service to Meet Critical Societal Needs;*
- Addressing the strategic plan's connection to the NWS' planned science and technology roadmap document and its planned services implementation plan; and

- Addressing how the NWS will accomplish its ambitious goals given the current budget environment (e.g., by discontinuing some services).

With reference to the goal statements included in the draft plan, EISWG offers the following comments:

- Goal 1 introduces the challenges associated with urbanization and population growth, yet the objectives and strategies are silent on the need to make observations and provide urban-specific numerical models and predictions. Further, Goal 1 should be accomplished in a manner that honors appropriate boundaries between the NWS and those provided by the weather and climate industry.
- Goal 2 addresses the challenges of water resource management, but seemingly not the need for improved hydrologic models and supporting observations for flood and flash flood prediction. Also, the first objective (develop cross-government, integrated water resource services) focuses on "climate-related impacts;" why not impacts on the many important weather timescales?
- Goal 3 does not recognize NWS' role in support of the proposed NOAA Climate Service or anticipate the likely development of an even wider national climate service. With all of the recent interest in the establishment of a NOAA Climate Service, the EISWG members feel it particularly important to further define the relationship of the NWS to the planned NOAA Climate Service.
- Goal 4 is virtually silent on the needs of the road transportation sector (while emphasizing aviation and shipping). PBL observations are cited here as an important (currently unmet) need, but why not in several of the other goal statements? The interface/boundary between services provided by NWS and government and those provided by the private sector and other government agencies is nebulous, implying that NWS may support specific applications typically currently or appropriately provided by the weather and climate industry or by other public agencies apart from NWS.
- Goal 5 is another example of where the introduction speaks to weather and air quality extremes without recognizing that these are predominantly urban extremes and that there is a pressing need to explicitly develop the observations, models and tools to support the urban zone.

The communication of the plan could be made more effective by:

- Strongly stating NOAA's leadership in weather services and the importance of enhancing these key capabilities in the future;
- Defining important terms or concepts in the report; and
- Discussing and stressing earlier in the text the importance of international cooperation.

Several of our comments on the NWS Strategic Plan are similar to those provided previously by the EISWG for the NOAA Next Generation Strategic Plan, these include:

- Improving measures of success and recognizing that in the context of the NWS that the country may still experience negative weather impacts even if success criteria is met;
- Stressing the importance of social science and the recognition of the need to engage with this external community and to add social science staff rather than trying to cross train meteorologists to function as social scientists;
- Further acknowledging and defining the NWS's engagement with partners and stakeholders, clearly defining those terms, stating current mechanisms NWS employs for engagement, and considering the demands or need for engagement and improved communication may change or focus on new sectors (e.g., water and agriculture) in the future;
- Recognizing the capacity of the private sector in providing observation data and other products;
- Noting that NWS will also increasingly rely on non-NWS, publicly-supported observations for its activities; and
- Specifying approaches to improve public-academic-private collaboration and diminish the public-private sector divide and, with special focus on the role of the weather and climate industry in America's weather and climate enterprise.

The EISWG also identified several areas that either were not addressed or should be addressed in greater detail or that require clarification:

- The Arctic—with fragile ecosystems highly-sensitive to climate change and an increasingly critical area for US commerce and defense—brings an emerging need to better understand its changing environment and deliver improved weather and climate forecasting;
- The importance of weather products and services to homeland security;
- How integrated environmental information decision support hubs, a hugely significant, transformational step into the future, would work and what technologies are needed to underpin them;
- The description of the 4D Weather Cube is vague and should include not only what it will do, but also a more detailed description of what it is and why it is important;
- Specific improvements to data dissemination, access, and interoperability that anticipate models for emerging and future user requirements;
- Information dissemination and social media approaches;

- How social sciences and understanding of socioeconomic impacts are to be integrated in the research and operations to best meet NWS needs. Social sciences covers a wide range of disciplines and there is insufficient clarity in the plan as to which of these disciplines will be most relevant or how NWS will develop the capacity to best utilize diverse social science research and applications.;
- The addition of approaches for improving the communication and coordination between the NWS and the physical science, social science, and engineering research communities to ensure the incorporation of cutting edge scientific advances, technologies, and methodologies in NWS operational and outreach activities;
- A defined systems engineering process to improve future Earth observation requirements, especially for climate and mesoscale weather;
- Hydrology and specific approaches for improving measurement and prediction capabilities;
- Ocean acidification is a significant problem resulting from carbon emissions and not climate change per se, as implied in Goal 3 of the draft NWS Strategic Plan;
- A strategy to sustain or improve high-performance computing capabilities (as recommended by the recent UCAR review of the National Centers for Environmental Prediction [NCEP]);
- Renewable energy and why this sector specific topic was called out in the text; and
- The strategic process or pathway needed to facilitate the transition of research applications into the new Advanced Weather Interactive Processing System (AWIPS) II architecture to leverage its “plug-n-play” capabilities.

Numerous workforce-related issues are presented or implied throughout the draft plan. In response, the EISWG recommends:

- More clearly addressing how to sustain and improve NWS’ workforce to meet the draft strategic plan goals, which should include an explicit mention of training;
- Articulating how social scientists or social science knowledge or skill will be integrated into the NOAA/NWS workforce;
- Discussing in further detail how to make the NWS more cross-disciplinary and to be able to work more effectively in cross-agency settings, which are becoming more commonplace;
- Addressing how the NWS workforce will evolve to meet the challenges posed in the draft strategic plan (e.g. training for risk-based decision support); and

- Developing a partnership strategy with the nation's universities designed to create a pipeline of a properly educated and trained future workforce sufficient to meet the evolving needs of the NWS.
- Developing and incorporating improved understanding and knowledge about the basic nature of partnerships, what they consist of, and how they are maintained and enhanced.

We hope that you will find these comments about the draft plan useful. If we can provide any additional information, please do not hesitate to contact us at walter.dabberdt@vaisala.com or nancy_colleton@strategies.org.

Sincerely,

Nancy Colleton
EISWG Co-Chair

Walter F. Dabberdt
EISWG Co-Chair

cc: Ray Ban, EISWG Liaison and NOAA SAB Chair
Cynthia Decker, Executive Director, NOAA SAB
Ed Johnson, NOAA EISWG Liaison
Jennifer Sprague, NOAA EISWG Liaison

EISWG Members:

Philip Ardanuy	*Ronald McPherson*	*Peter Neilley*	*Warren Qualley*
Helen Brohl	*Eric Grimit*	*Rebecca Morss*	*Eugene Stallings*
Jeffrey Lazo	*Barry Myers*	*Kelly Redmond*	*Joel Widder*
John Toohey-Morales		*Julie Winkler*	*Robert Winokur*