

**47th Meeting of the NOAA Science Advisory Board
Webinar
July 23-24, 2013**

Presentations for this meeting have been posted on the Science Advisory Board (SAB) website at:

<http://www.sab.noaa.gov/Meetings/meetings.html>

SAB members in attendance: Mr. Raymond Ban (Chair), Ban and Associates Consulting LLC; Dr. Susan Avery, President, Woods Hole Oceanographic Institution; Dr. Heidi Cullen, Vice President for External Communications, Climate Central; Dr. Jeremy Jackson, Senior Scientist Emeritus, Smithsonian Institution; Ms. Jean May-Brett, STEM Partnership Coordinator, Louisiana Department of Education; Dr. Jerry Schubel, President and CEO, Aquarium of the Pacific; Dr. Marshall Shepherd, Professor, Department of Geography and Atmospheric Sciences, University of Georgia; and Dr. Dawn Wright, Chief Scientist, Environmental Systems Research Institute

NOAA senior management and Line Office representatives in attendance: Dr. Kathryn Sullivan, Acting Under Secretary of Commerce for Oceans and Atmosphere and Acting NOAA Administrator; Dr. Holly Bamford, Assistant Administrator, NOAA National Ocean Service (NOS); Dr. Louis Uccellini, Assistant Administrator, NOAA National Weather Service (NWS); Dr. Richard Merrick, Chief Scientist, NOAA National Marine Fisheries Service (NMFS); Dr. Robert Detrick, Assistant Administrator, NOAA Oceanic and Atmospheric Research (OAR); Ms. Pat Montanio, Assistant Administrator, Office of Program Planning and Integration (PPI); Dr. David Hermreck, NOAA National Environmental Satellite, Data and Information Service (NESDIS); RADM David Score, Director, Office of Marine and Aircraft Operations (OMAO)

Staff for the Science Advisory Board in attendance: Dr. Cynthia J. Decker, Executive Director; Jennifer Bosch and Mary Anne Whitcomb

Tuesday, July 23, 2013

Call to Order

Ray Ban welcomed everyone to the 47th meeting and thanked them for participating in the webinar meeting.

NOAA Update

Kathryn Sullivan, Acting Under Secretary of Commerce for Oceans and Atmosphere and Acting NOAA Administrator

Summary

Kathy Sullivan thanked the Board and for the agreement to meet virtually, noting that the Board will meet in person November 19-20.

She thanked the SAB for the reports, including the one from the Research and Development Portfolio Review Task Force that was received in April; it was assigned to Robert Detrick for action and preparation of the NOAA response. NOAA is also preparing response to the review of the Ocean Exploration program; Craig McLean will be providing details on progress on the response during this meeting.

The SAB has some vacancies; NOAA identified a matrix of skills needed and nine new members have been recruited and have cleared vetting. Dr. Sullivan said she is looking forward to having them on board for the next meeting in November.

Penny Pritzker was confirmed as the 38th Secretary of Commerce on June 26. Ms. Pritzker is a civic and business leader with more than 25 years of experience in real estate, hospitality and financial services industries. Secretary Pritzker's initial thoughts toward NOAA are encouraging; she seems eager to meet people and get acquainted with NOAA's mission. Secretary Pritzker visited the weather and climate service building in Maryland and the NOAA labs in Boulder, Colorado. She asked the National Institute for Standards and Technology (NIST) Director Pat Gallagher to serve as the Acting Deputy Secretary of Commerce.

NOAA Leadership Changes

Eric Schwaab, Acting Assistant Secretary of Commerce for Conservation and Management, has departed. Russell Callendar has been named as the Deputy Assistant Administrator of NOS; Tom Burns has been named as Mary Kicza's Deputy AA for Systems in NESDIS. Amanda Hallberg has been named as the NOAA Director of Legislative Affairs. Wayne Higgins will become the Climate Program Office Director on Monday. Jim Turner departed; Elizabeth McLanahan is serving as the Acting Director of International Affairs. There is no news on appointments for the Administrator or Chief Scientist positions; she and Bob Detrick continue to act in those jobs.

NOAA budget

NOAA does have a FY 13 appropriation and was able to shift more funds into salaries and expenses to avoid furloughs for the remainder of the fiscal year; reductions were made that had consequences in other areas. The Hurricane Sandy Supplemental did provide funding for mapping and charting, research and Labs and CIs funding.

Both House and Senate approved the Commerce, Justice, Science (CJS) Appropriations bills for FY 14 on July 17 and 18. The Senate bill provides \$5.6 billion; House side \$4.9 billion, \$529 million below the Administration request.

Key legislative dynamics of FY 14

HR 2413 Weather Forecasting Improvement Act of 2013 was introduced in the House Subcommittee on Environment; the bill has not been marked up at the full committee. Dr. Sullivan said she testified about this bill on concerns with legislation that would set rigid boundaries between advancing our mission and the research that helps achieve that goal.

FY 14 Science, Technology, Engineering and Mathematics (STEM) education realignment was not approved by House and Senate and left funding in NOAA. During the House full committee mark up, Representative Sam Farr offered an amendment that was accepted and added \$4.4 million back into NOAA's education program at the expense of program support. The Senate fully funded education and had specific report language that encouraged the Administration to have additional discussions about a proper streamlining of education programs where necessary, but the NOAA programs, including Sea Grant, should continue to be managed by NOAA.

New and Noteworthy

NOAA is very pleased and proud to note that among the eight selectees for the NASA Astronaut Class of 2013 is Christina Hammock, who currently serves as station chief at the NOAA American Samoa observatory.

Dr. Zavisla Janjic, NWS, received the International Meteorological Prize, the highest award that can be bestowed by the international meteorological-hydrological community. Dr. Janjic introduced an original approach to parameterizing convective processes in atmospheric models, now known as the Betts-Miller-Janjic convection scheme; his method is widely used today. NOAA received the 2013 Space Achievement Award from Space Foundation “for its use of space-based systems in making life-saving predictions and issuing early warnings of calamitous weather conditions.”

The Society for Environmental Toxicology and Chemistry named a paper by Dr. Peter Landrum on toxic chemicals in aquatic organisms to its List of Top 100 Cited Papers.

Policy

On June 2, the President presented his Climate Action Plan. Work to implement the plan is underway; NOAA contributed substantially to the development of the plan and expects to be an active player in adaptation and resilience as well as observations and monitoring.

The National Clean Energy Summit is coming up in a few weeks; Dr. Sullivan has been invited by Senator Harry Reid to speak on a panel about “Resilience to Extreme Weather” to discuss how investments in clean energy can help hedge our bets against vulnerabilities due to extreme weather events.

The new National Strategy for the Arctic Region, released in May, points to the strategic position the Arctic occupies for our national security; the importance of pursuing responsible stewardship of its resources and environment; and the criticality of international partnerships to success in these areas.

The White House released its Open Data Policy in May; this policy directs the Administration to take historic steps to make government-held data more accessible to the public and to entrepreneurs and others as fuel for innovation and growth. In launching the policy, the White

House cited Open Weather Data and the private weather enterprise forum as an example of the benefits of public data access and accessibility.

NOAA Science Updates

There has been a lot of news in both the scientific and policy arenas. In May, a level of 400 parts per million of carbon dioxide, a level unseen in 3-5 million years, was recorded by NOAA scientists at the Mauna Loa Observatory. Climate.gov version 2.0, the latest version of the website, went live May 23 and includes updates to increase the usability of the site and enhance its functionality and contents.

The National Climate Assessment, being developed by a cross-sector Federal Advisory Committee, was out for public comment from January to April. During the public comment period over 4,000 comments were received and each comment was individually responded to. The draft assessment is scheduled to be reviewed simultaneously by the National Research Council and federal government agencies beginning in August. A final report is expected to be released in March 2014.

With respect to weather, NOAA completed the deployment of upgrades to dual-polarization radar. The research was done at the NOAA National Severe Storms Laboratory and National Weather Service (NWS). Contractors and CIs designed, tested, and installed upgrades on 122 NWS radars, under budget and ahead of schedule. This is the most significant enhancement to radar since Doppler radars were installed in 1990s.

With respect to satellites, last week the Joint Polar-orbiting Satellite System (JPSS) completed Key Decision Point (KDP) C for the JPSS-1 satellite as planned; Dr. Sullivan also recommended to the Deputy Secretary that the JPSS program as a whole is ready to transition from the formulation to implementation phase of its life cycle. All of the JPSS-1 instruments are at least 80% complete, with three 100% complete, and JPSS-1 is on track for launch as planned in the second quarter of FY 2017. In recent months NOAA and the Department of Commerce (DOC) have responded to key stakeholder input with a JPSS position that is more focused on the weather mission, and that strengthens the program's risk posture and reduces life cycle cost by \$1.6 billion. The new life cycle cost of JPSS has been validated by an Independent Cost Estimate, and the program is poised to execute its new focus on schedule and on budget.

NOAA issued its annual hurricane outlooks; for the six-month hurricane season which began June 1 for both the Atlantic and Pacific coasts.

Also on weather matters, NOAA received the National Academy of Public Administration report about building a better NWS; this report is the capstone report to two National Academy of Sciences reports. The report will be presented at this meeting by Louis Uccellini.

Hurricane Sandy provided some powerful lessons last October. Sandy was much more than a weather phenomenon; Sandy provided a powerful illustration-with both positive and negative aspects-of the vital importance to our nation of coastal resilience. The storm reinforced something NOAA knows well: preparedness matters and foresight is the key to preparedness.

NOAA released a Sea-Level Rise viewer on June 20; this is a planning tool and includes the NOAA sea level rise maps and the Army Corps of Engineers Sea Level Rise Calculator. NOAA is continuing to work with partners in the federal government and state and local government to socialize these new tools.

NOAA is also working to develop innovative ways for sustained observations and NOAA's FY14 budget proposes to launch an ocean "Grand Challenge"; a part of President Obama's Strategy for American Innovation. This effort will focus innovative thinkers on exploration, mapping and observing needs that would further NOAA's mission. The challenge model allows NOAA to leverage its funds by spurring investments from the academic community and industry.

Other high level themes include ocean exploration and healthy oceans on an international scale. In conjunction with World Oceans Day in June, Secretary of State John Kerry convened a group of high-level U.S. ocean experts to discuss the state of the world's oceans and identify opportunities for the United States to promote international actions to address these issues. The Secretary plans to convene an international oceans conference this fall to explore these issues further and work toward shared solutions. NOAA is an active participant in these conversations and is helping to shape this event.

The first national Ocean Exploration Forum was held in Long Beach this month; Craig McLean will provide more details in his presentation.

In fisheries, the reauthorization of the Magnuson Stevens Fishery Conservation and Management Act has begun. The third in a series of "Managing our Nation's Fisheries" conferences was held last May. The Congress has begun hearings on the reauthorization both in the DC and regional locations.

Dr. Sullivan thanked the SAB members for their service.

Discussion

Dawn Wright asked, with regard to Secretary Kerry's event in the fall, where and when that event will take place. Kathy Sullivan responded that NOAA will provide that information to the SAB members. Dawn Wright said there is a parallel effort going on supported by the World Bank and the National Academy of Sciences—Global Partnership for Oceans. Hopefully there will be some positive synergy particularly as there is an event planned by World Bank in January 2014 for the Ocean Action Summit.

Action 1: NOAA headquarters will provide information to the Science Advisory Board on the upcoming Ocean Forum to be hosted by the Department of State.

NOAA, Society and the Economy: An Assessment of NOAA's Social Science Capability and Needs

Linwood Pendleton, Acting NOAA Chief Economist, NOAA Office of Program Planning and Integration

Summary

Linwood Pendleton provided a summary of NOAA's social science capability and needs recently conducted by the agency. This assessment of was the result of a long process that began over two years ago and has involved NOAA staff from all Line Offices as well as from the NOAA corporate offices. Dr. Pendleton noted in particular that Peter Wiley and Tracy Rouleau were instrumental in coordinating this report.

The SAB issued reports in 2003 and 2009 that found NOAA does not have the social science capacity to meet mission goals and mandates; NOAA was also not utilizing its existing social science capability to meet its needs and goals. In 2003 the SAB made a recommendation for NOAA to have a fixed percentage of social scientists but did not tie this recommendation to specific needs. The SAB recommended in 2009 that capability and needs assessment be conducted to guide the use the social sciences in the agency.

Social science needs to be used in NOAA's research, operations and decision-making processes. In research NOAA works well with our external partners, Sea Grant, Cooperative Institutes and the National Science Foundation. But NOAA needs to do a better job in decision-making internally and for society. Some of this work can't be outsourced so NOAA must have in-house capacity in social sciences. However, social scientists currently make up only 0.8 percent of NOAA's federal staff; if contract staff are included, the number is 1 percent

Four critical needs for social science in NOAA were identified in the assessment:

- Ecosystem services
- Weather Ready Nation
- Climate Prediction and Adaptation
- Fisheries Management

Within these four critical needs, there are eight topics that expand on the needs. The topics include fisheries socioeconomic data collection; understanding and communicating the value of NOAA's products and services; interdisciplinary decision support work for Climate Program Office and National Climate Assessment; risk behavior information; risk communication expertise; non-market value information on resiliency and hazards; economic information for resource damage assessments; and valuation of ecosystem services.

The Social Science Needs Assessment team came up with three recommendations to pursue. One recommendation was that NOAA needs to do a better job of coordinating existing social science across the agency. One way to do that is to enhance the NOAA Social Science Committee by adding non-social scientists (budget and planning staff) who know how to use social sciences in decision making. The second recommendation was for the Social Science Committee to conduct a needs assessment every two years to determine NOAA's status in meeting its social science needs. The third recommendation was to create a fast-response "tiger team" to determine how NOAA should move forward to address the gaps identified in the

current assessment, given budget constraints. This team has been created and will conduct a workforce assessment on this topic. The tiger team has a due date of August 2013 to develop recommendations for filling gaps and will present these recommendations to the Deputy Under Secretary for Operations.

Discussion

Marshall Shepherd said the University Of Georgia Department Of Geography thinks a lot about social science and he was pleased to hear of these efforts. He noted the American Meteorological Society has the Weather, Climate and Society Journal that deals with social science. He stated that the tiger team should include in its report two recent events, tornadoes in Oklahoma and Hurricane Sandy, as examples of how people perceive and react to extreme weather events. Linwood Pendleton said and the group is aware of the Weather, Climate and Society Journal.

Susan Avery noted it is much more satisfying to not just talk about social science but the perceptions, communications, economics or natural capital issues the agency is trying to solve. Linwood Pendleton said they tried to do that in the report by identifying the issues they were addressing with social science.

Ray Ban asked if the reports from the tiger team will include timeframes for each of the recommendations. Linwood said there will be timeframes of how the processes can be undertaken out but it will then be up to NOAA and the Line Offices on when to implement them.

Ray Ban asked if the Board could be kept in the loop on the progress of the initiative and Linwood Pendleton agreed to do so.

Action 2: NOAA Chief Economist will provide periodic updates to the Science Advisory Board on the NOAA Social Sciences Tiger Team report and other actions taken as a result of the recommendations in the NOAA Social Sciences Needs Assessment.

NOAA and Federal Arctic Policy in 2013

Holly Bamford, Assistant Administrator, NOAA National Ocean Service

Summary

This was an informational briefing provided as a result of a request from the SAB Ecosystem Sciences and Management Working Group (ESMWG). It gave an overview of NOAA's role in the federal Arctic policy arena and of federal Arctic policy drivers. Dr. Holly Bamford made this presentation on behalf of Deputy Under Secretary Dr. David Kennedy who has the lead on the Arctic policy but was not able to attend the meeting.

NOAA is one of many players in the Arctic in the federal government. The State of Alaska is also involved with many activities in the Arctic, including administrative offices, the legislature and the Alaska Arctic Policy Commission.

The ultimate drivers of interest in the Arctic are climate change and oil/gas exploration. Other drivers include federal actions, including the National Ocean Policy (Arctic is one of nine priority areas); Arctic Research Commission; U.S. Interagency Arctic Research Policy Committee (IARPC, 15+ federal agencies and chaired by the National Science Foundation); NOAA's Arctic Vision and Strategy; and the Interagency Working Group on Domestic Energy Development and Permitting in Alaska.

The U.S. National Strategy for the Arctic Region (NSAR) was released this year and proposes to coordinate U.S. activities on three lines of efforts: 1) advancing U.S. security interests, 2) pursuing responsible Arctic region stewardship, and 3) strengthening international cooperation. NOAA is working on the second line of effort-pursuing responsible Arctic region stewardship. There is guidance to implement the strategy but no new money is provided. NSAR is the umbrella strategy. IARPC was charged to develop an Integrated Arctic management role and grew from a permitting role to an ecosystem-based management role. There are seven research focus areas in IARPC; three are most pertinent to NOAA: Sea Ice and Marine Ecosystems, Observing Systems, and Regional Climate Models.

The National Ocean Policy is a driver for Arctic policy as well. The plan includes 26 Arctic milestones with NOAA is listed as a participant in 23 of them. The Council on Environmental Quality is developing a reporting structure for this plan and a report is expected to be released in September 2013.

The Arctic Council includes eight nations that work on Arctic issues. The U.S. will become the chair of the Arctic Council in two years. There is a binding agreement on the Oil Spill Task Force; this is a new agreement on cooperation on marine oil pollution, preparedness and response. NOAA is involved in three of six working groups. The Arctic Marine Shipping Assessment report focuses on marine transportation in the Arctic. All of the requirements in this report are pertinent to NOAA.

Many federal agencies have a role in Arctic oil and gas permitting. The Department of Interior regulates oil and gas activity; NOAA Fisheries has a responsibility to manage the impacts of oil and gas activity on marine mammals and Endangered Species Act species.

NOAA's Integrated Arctic Vision is an objective of the Next Generation Strategic Plan (NGSP) under the Coastal Goal. There is a NOAA Arctic Task Force that is updating the Arctic Implementation Plan and will complete it in the next few months. Next steps in Arctic policy include identifying where the NOAA focus areas in the Arctic should be given the many existing activities. NOAA will focus on its unique strengths and mandates in the Arctic as well as prioritizing the data and resource needs. NOAA will also strengthen its research advisory roles for major funding sources as well as identify and prioritize efforts with highly effective partners.

Discussion

Dr. Sullivan added that, given the current fiscal environment, NOAA has been asked about leveraging partnerships. NOAA now has Memoranda of Understanding (MOU) with Shell, Conoco-Phillips and Statoil to pool and share data which contribute to observations. In the first

four months of these agreements, the National Weather Service saw an increase of 50% of observations in Chukchi Sea.

Heidi Cullen asked if there had been discussion on the status of icebreakers. Dr. Sullivan said there have been discussions on ice-breaking vessels. The Office of Management and Budget (OMB) and the Office of Science and Technology Policy (OSTP) are heading up an effort to determine needs and then decide who needs an ice-breaker.

Ray Ban asked, in terms of collaborative efforts in Arctic, if collaborative efforts are greater now than in the past. Kathy Sullivan said collaboration between NOAA and the Navy has not changed but NOAA has sharpened its cooperation with Coast Guard. NOAA is working with the Coast Guard to gear up for table-top exercises on possible oil spills given the higher level of commerce in the area. The NOAA General Counsel is looking into agreements with other agencies to facilitate cooperation on Arctic issues.

Kathy Sullivan said www.arctic.gov is the Arctic Research Commission portal and is a good place to find policy documents and reports.

NOAA Research in the Chukchi and Beaufort Seas

Richard Merrick, Chief Scientist, NOAA National Marine Fisheries Service

Summary

This was an informational presentation to the SAB on the NOAA research in the Chukchi and Beaufort Seas in response to a 2012 request from the SAB Ecosystem Sciences and Management Working Group (ESMWG). The ESMWG has shown a continuing interest in the Arctic to make sure the research there is well-organized. A second purpose of the briefing was to request continuing involvement from the ESMWG in the development of NOAA's Arctic research program.

Dr. Merrick discussed the many legislative drivers of Arctic research. While these policy drivers are important, climate drivers are important as well; there has been a decline in Arctic Ocean multiyear sea ice coverage. Since 1999, the Arctic lost over 50% of the multiyear ice cover; predictions are that by the middle of the century there will be no seasonal ice in the Arctic in summer. Lack of ice will impact weather throughout the northern hemisphere.

NOAA climate and weather research is primarily located in OAR and NWS; it focuses on the impact of climate change on the Arctic and weather. Arctic climate observatories are very important in this program; this is a program with a small amount of NOAA funding but it leverages additional international support. NWS is looking at sea ice predictions and consequences of loss of sea ice on severe weather; sea ice predictions are also important for shipping.

Ecosystem research has been done in the Bering Sea and is now being done in the Beaufort and Chukchi Seas. There are a number of ecosystem research programs centered in the Arctic.

Examples include Synthesis of Arctic research (SOAR), Distributed Biological Observatories (DBOs), Arctic Ecosystem Integrated Survey, Aerial Survey of Marine Mammals, Russian American Long-Term Census of the Arctic (RUSALCA), and others. Dr. Merrick provided additional details on some of these programs. Distributed Biological Observatories are centered on biological “hotspots” along a longitudinal gradient. DBO regions exhibit high productivity, biodiversity, and rates of change. The DBO can serve as a change-detection array via consistent sampling of biophysical processes.

Synthesis of Arctic research (SOAR) seeks to review the decades of Bureau of Ocean Energy Management (BOEM)-funded Arctic research to increase scientific understanding of the relationships among oceanographic conditions, benthic organisms, lower trophic prey species (forage fish and zooplankton), seabirds, and marine mammal distribution and behavior in the Pacific Arctic. The SOAR project is supported primarily by the BOEM and provides information for that agency’s evaluation of oil and gas development in the Arctic.

RUSALCA, which samples areas in the high Arctic, is a long-term program that collects information about changes in the Arctic and how these changes are impacting the Arctic. The Arctic Ecosystem Integrated Survey is a cooperative sampling effort for biology and physical oceanography and is also funded by BOEM. BOEM also funds and co-manages with NOAA the Aerial Arctic Marine Mammal Surveys.

NOAA requests that the ESMWG, in conjunction with other SAB working groups, provide advice on specific steps that NOAA could take to strengthen its current Arctic science programs, and to recommend the extent to which NOAA should act to create a more integrated and cohesive Arctic Science Enterprise.

Discussion

Marshall Shepherd asked about on the issue of Arctic amplification and its impact on day-to-day weather. Given the recently-introduced Weather Improvement Act in the House, he was interested in the importance of climate research on this. Louis Uccellini replied that the agency is working on the predictability research issues over the Pacific and what it would mean for the U.S. and Europe. There has been a change in the flow in the El Nino-Southern Oscillation (ENSO) pattern; this has ramifications for predictions based on the cross-polar flow.

Ray Ban asked why the Arctic was part of the Coastal Goal. Holly Bamford replied that NOAA thought it belonged under the Coastal Goal because many of the impacts occurred near the coast. However, NOAA is working across the Line Offices on the priority areas that need support from all the goals.

Ray Ban pointed out that Richard Merrick asked to use the SAB and particularly the ESMWG to look at the Arctic plan and strategy and see if NOAA is doing the right things. Based on ESMWG and SAB advice, the agency would then take steps to strengthen the program and how NOAA is organized to do this research.

Kathy Sullivan said it could be a topic for an SAB task force or it could be a topic that requires continuous consultation. This will be a continuing discussion.

Action 3: As a result of discussions at the meeting on NOAA's Arctic science, the Science Advisory Board's Ecosystem Sciences and Management Working Group (ESMWG) will provide advice on specific steps that NOAA could take to strengthen its current Arctic science programs, and recommend the extent to which NOAA should act to create a more integrated and cohesive Arctic science enterprise.

SAB Strategic Planning

Ray Ban, Ban and Associates and Chair, NOAA SAB

Ray Ban said the Arctic issue just discussed is a great segue for the discussion on SAB strategic planning. With a new set of members about to join the SAB, it should think about how to most effectively engage those new members. NOAA has the Next Generation Strategic Plan (NGSP); also there is, within the context of the economics of the country and world, the expanding partnerships and crosscutting enterprises that may deserve further exploration. For the next 3-5 year period the SAB should know the areas where it could bring the greatest value to NOAA. When the SAB meets in November, there will be a broader conversation about where it can be of greatest value. The SAB could look at the four NGSP goals but there are other perspectives as well that should be considered.

Dr. Sullivan added that she has been thinking about this as well. She thinks it is time to think in the agency and in conversation with the SAB about the key areas of greatest value for the SAB to consider.

Ray Ban stated that the in-person meeting in November will be a good time to discuss this. The discussion should include what is coming next in terms of drivers and challenges; this is where NOAA would benefit from a fresh perspective from the SAB. In the next few months there will be a NOAA internal process on that dialogue. It would be helpful to hear from the members on how they think it would be most effective to frame the conversation in November to best engage on ideas from both NOAA and the SAB.

Ray Ban asked the Board members if they had any ideas to provide now. If not, this may be a homework assignment for a good discussion in November.

Action 4: The Science Advisory Board will have a strategic planning discussion with NOAA leadership to consider the way forward for the next 2-3 years. The SAB will decide upon input for this discussion prior to the meeting.

Adjourn

The meeting adjourned for the day at 5:00 PM.

Wednesday, July 24, 2013

Ray Ban, Ban and Associates, and Chair, NOAA SAB, called the meeting to order.

Public Comment

There was no public comment.

Progress Report: NOAA Response to the SAB External Review of the NOAA Ocean Exploration Program

Craig McLean, Deputy Assistant Administrator, NOAA Office of Oceanic and Atmospheric Research

Summary

Craig McLean provided a review of progress on the NOAA response to the SAB external review of the Ocean Exploration program. He thanked the Ocean Exploration Advisory Working Group for completing the review. Mr. McLean addressed each of the ten recommendations in the review report, providing a status report on each recommendation. He spoke in some detail on the recommendation to conduct a National Forum on Ocean Exploration because the Forum took place earlier in July. The attendees at the Forum included a “Who’s Who” in the ocean exploration world, with about 100 ocean explorers attending. Recommendations from the Forum were wide-ranging, including the need for a national ocean exploration program of which NOAA is a part.

The final NOAA response to the review of the Ocean Exploration program will be presented at the November 2013 SAB meeting. Mr. McLean noted that Tim Arcano, the previous Ocean Exploration and Research (OER) Director, has left NOAA. John McDonough, Deputy Director of OER, will serve as the Acting Director until that position is filled. Craig McLean also noted that current plans are to establish an Ocean Exploration Advisory Board by January 2014, and that group will replace the existing SAB Ocean Exploration Advisory Working Group.

Discussion

Dawn Wright thanked Mr. McLean for the status report and asked about the recommendation on a radical new management model because she was impressed by the discussion at the Forum. She hoped that the discussion will lead to more use of models such as the National Oceanographic Partnership Program (NOPP) and the National Science Foundation’s Industry/University Cooperative Research Centers program that could be exemplars. Jerry Schubel said the discussion in the Forum was that the community doesn’t need a radical new management model; but NOAA needs to lead at the federal level while working within public-private partnerships.

Kathy Sullivan asked how radical program structures need to be. She wanted to know about the discussion at the Forum on other levels of management such as shared funding or leveraging. Jerry Schubel responded again that the attendees of the Forum did not believe a radical new model is needed; instead the community needs to demonstrate through NOAA that other partners, federal and private, can be included effectively. The ocean exploration community

should convert people into explorers; telepresence is just one way to do this and OpenROV is another. Data from explorations should be shared as soon as possible.

Dawn Wright agreed with Jerry Schubel on management models; this doesn't mean there is a need for something never tried but instead the suggestion is to use successful efforts to point the way to become the new "business-as-usual." She said it is good to hear that there is a desire to change the culture. In her opinion, "radical" is just code for engaging young people and "OpenROV" is code for crowd sourcing.

Kathy Sullivan asked if there was any discussion about the National Center for Atmospheric Research (NCAR) as a model. Dawn Wright said there was no mention; it was interesting that this topic did not come up. Kathy Sullivan asked about the attributes of a genuinely national program. Dawn Wright said Forum participants were talking about a model that allowed flexibility and nimbleness but no one from NCAR or that community was present". Kathy Sullivan said this model could be one way to move beyond the patchwork nature of things - a centrally-governed model, not just a bunch of Memoranda of Understanding (MOUs). Jerry Schubel agreed that nimbleness was discussed as a needed factor. The report from the Forum will be given to the Ocean Exploration Advisory Board and they can look at other organizational models. Susan Avery added that there is a need for flexibility to form these partnerships and that flexibility might not be found in a federal agency. There is a federal role but it might not necessarily be the central coordinating entity. The community will need to assess if an NCAR model could work in this context.

Ray Ban asked Craig McLean to clarify funding for Ocean Exploration. Craig McLean stated that for FY 14 budget markup the Senate provided \$29.1M, which was the President's budget request; the House mark was \$25M. Ray Ban asked when Continuing Resolutions are written, can amounts be increased for specific programs? Kathy Sullivan answered that in theory this can happen but in practice it only occurs in emergency situations.

Climate Working Group (CWG) Proposed Revision to the Terms of Reference and Update Holly Hartmann, University of Arizona, and Chair, CWG

Summary: Terms of Reference

Dr. Hartmann stated that a revised Terms of Reference (TOR) for the Climate Working Group was originally created in summer 2009 but never finalized or approved by the SAB. The TOR gives the a broad role to advise the SAB on science and service across climate as well as data management, outlines the meeting frequency as twice a year, and outlines the terms for members - a 3-year term renewed once. The request is that the SAB approve the revised CWG Terms of Reference.

Discussion

Ray Ban noted the previous terms of reference and the proposed terms of reference are on the SAB website.

A motion to approve the revised TOR was made by Susan Avery; seconded by Jerry Schubel and passed unanimously.

Summary: Working Group Update

Holly Hartmann said the CWG held a virtual meeting earlier in the year. She noted the group is at a transition point, discussing where it wants to go. There are plans to hold another virtual meeting in August 2013 before a planned in-person meeting in October 2013. The topic that has come up the most often is how to advance NOAA partnerships in light of the recommendations in the Climate Partnerships Task Force report. Other topics include reviewing alignment of NOAA climate activities with the societal challenges in NOAA's Next Generation Strategic Plan, and aligning the timing of CWG meetings and reviews that are budget-relevant to the fiscal year. The CWG is also interested in collaborating with other SAB working groups, particularly the Environmental Information Services Working Group (EISWG).

Action 5: The Science Advisory Board approved the Climate Working Group revised Terms of Reference (TOR). The new TOR will be posted on the SAB website and the CWG Chair will communicate this to the members.

Ecosystem Sciences and Management Working Group Working Group (ESMWG) Membership and Working Group Update

David Fluharty, University of Washington and Co-Chair, ESMWG

Summary

In the absence of David Fluharty, who had to cancel his participation by telephone at the last minute, Mary Anne Whitcomb, staff to the ESMWG, provided highlights of the request for a new member and an update on working group activities.

The ESMWG has a membership vacancy and identified the need for expertise on ecosystem services valuation. On April 24, 2013 the SAB received the CV for Robert Johnston, the recommended candidate for membership, for consideration. Dr. Johnston is the Director of the George Perkins March Institute at Clark University in Worcester, MA; his full CV is posted on the SAB website. The ESMWG requested approval of Robert Johnston as a new member.

On ESMWG activities, members are working on possible recommendations to the SAB in three areas: Ecosystem-Based Fisheries Management; Coastal Habitat Restoration and Ecosystem Services Valuation. The ESMWG also requested clarification of the policy on in-person versus virtual meetings of SAB working groups.

Discussion

Ray Ban said on the working group meeting issue, there have been similar discussions in the EISWG. This topic is something to put on the agenda for the November meeting so there can be an equitable policy for all working groups. Kathy Sullivan said the variation in policy is an artifact of volatility of budget and changing directions. While there is no guarantee of changes in

the future, she stated it is the NOAA desire that each SAB Working Group and Federal Advisory Committee have at least one in-person meeting per year. Mr. Ban said he understands the budget constraints; the policy could be written that it is the intent for working groups to have two meetings a year, one of which is an in-person meeting. The SAB agreed to discuss this topic in more detail at the November SAB meeting.

Ray Ban asked for any discussion on the proposed new ESMWG member. There was no discussion. Susan Avery made a motion to approve Robert Johnston as an ESMWG member; Marshall Shepherd seconded the motion and it passed unanimously. SAB staff will notify ESMWG Co-Chairs of the approval.

Action 6: The Science Advisory Board approved the nomination of a new member to the Ecosystem Sciences and Management Working Group and will notify him by letter of his appointment. The ESMWG Chairs will communicate this to the new member and existing members by email.

Action 7: The Science Advisory Board will have a discussion about the SAB working group meeting policy at the next meeting. The SAB will draft a policy for this discussion.

Terms of Reference and Membership Approach for Gulf Coast Ecosystem Restoration Science Program Advisory Working Group (RSPAWG)

Susan Avery, Woods Hole Oceanographic Institution and Member, SAB

Jean May-Brett, Louisiana Department of Education and Member, SAB

Summary

Susan Avery provided background information on the RESTORE Act and the RESTORE Act partnerships in the Gulf of Mexico. The legislative intent of the Resources and Ecosystems Sustainability, Tourist Opportunities and Revived Economies (RESTORE) of the Gulf Coast Act of 2012 is to “carry out research, observation and monitoring to support the long-term sustainability of the ecosystem, fish stocks, fish habitat and the recreational, commercial and charter fishing industry in the Gulf of Mexico.” In Section 1604 of the legislation, NOAA is required to establish a Federal Advisory Committee Act (FACA) approved advisory body as a standing working group to meet regularly to provide advice and input to NOAA’s RESTORE science program. The advisory group would be at the strategic, rather than implementation, level for this program.

Dr. Avery discussed the proposed Terms of Reference for the RSPAWG as well as the membership approach. The Terms of Reference provisions include:

- Provide informed regional advice on Gulf of Mexico RESTORE-related ecosystem science and monitoring to both the Administrative Body and the Oversight Board for implementation of NOAA’s RESTORE science program
- Assist NOAA’s RESTORE program in establishing plans, assessing progress, and reviewing priorities
- Provide a formal forum for the discussion and coordination of RESTORE related science outside of NOAA’s program

- Coordinate with other SAB Working Groups, specifically the Ecosystem Sciences and Management Working Group (ESMWG)

Membership on the RSPAWG will consist of 15-20 members including:

- Seven members representing science-related organizations in the Gulf of Mexico
- Four ex-officio members representing other funding organizations
- A rotating group of external subject matter experts

There will be a Federal Register Notice soliciting nominations for the external subject matter experts. The goal is to have members selected in October 2013 and to have the first RSPAWG meeting in late 2013 or in early 2014.

The SAB is requested to approve the RSPAWG Terms of Reference and membership approach.

Discussion

Kathy Sullivan asked about membership on staggered terms. The response was that the first two groups will be representational but the subject matter experts will have staggered terms. Dr. Sullivan noted NOAA should identify guidelines for stability for the two representational groups of members. Cynthia Decker agreed that this could be done.

Ray Ban noted that, given the hybrid nature of working group, there will be a significant amount of interaction between Working Group members and NOAA Line Offices. With this working group and its relationship to the broader RESTORE Act, he was concerned about how this Working Group would interact with the RESTORE Act structure. Richard Merrick responded that multiple NOAA Line Offices are represented at meetings and have informal discussions but the larger reviews will be coming back through SAB. Once the Science Plan comes back from NOS, RSPAWG members' advice on that plan would be useful through the SAB. Gary Matlock from OAR also commented that the focus on the interactions results from guidance in the RESTORE Act section 1604 and NOAA's role. He said he and Richard Merrick will ask the NOAA RESTORE Act Executive Oversight Board if anything is missing from the terms of reference or the process of interactions. There will be no direct interactions with other groups under the RESTORE Act but indirect comments on NOAA's interactions with those groups.

Richard Merrick said the three different sets of members on the RSPAWG represent different kinds of knowledge. The five members from the Gulf States' Centers of Excellence will be focused on Gulf science; the second group includes other funders who will provide advice on how to coordinate science; and the third group of subject matter experts will provide strong science advice and are chosen for their broader scientific credentials.

Ray Ban clarified that this Working Group, in spite of interactions with NOAA staff and the RESTORE Act structure, will function as other SAB WGs do – its information and recommendations will be presented to the SAB for consideration and the SAB will decide what is passed on to NOAA.

Louis Uccellini said the synthesis of data was emphasized and he asked how the data would be made available to the larger community. Susan Avery responded she thought Dr. Uccellini was referring to the RESTORE Act language and assumed that the NOAA RESTORE Science Plan would cover data access in more detail than what is in the Act itself.

Jerry Schubel made a motion to accept both the Terms of Reference and the membership approach; Dawn Wright seconded the motion. The motion passed unanimously.

Action 8: The Science Advisory Board approved the Terms of Reference and an approach to establishing membership for the new standing working group, the Gulf Coast Ecosystem Restoration Science Program Advisory Working Group (RSPAWG). Members of the SAB and relevant NOAA staff will form a nominating team to develop the list of members for final approval by the SAB.

Environmental Information Services Working Group (EISWG)-Report to the SAB

Nancy Colleton, Institute for Global Environmental Strategies and Co-Chair, EISWG
Walt Dabberdt, Vaisala, and Co-Chair, EISWG

Summary

The purpose of this talk was to present new member recommendations, a request for extension of existing member terms, and a working group update.

Earlier this year, the SAB broadened the scope of EISWG's Terms of Reference to deal with a broader range of environmental information issues thus involving other NOAA Line Offices, in addition to the National Weather Service (NWS).

EISWG holds two in-person meetings and 2-3 teleconferences annually to deal with special issues. The group wanted to let the SAB know of its desire for in- person meetings and the synergy that allows. In the past three years, the EISWG reviewed various Strategic plans, helped to form and facilitate the Climate Partnerships Task Force (CPTF) along with the SAB Climate Working Group, and developed and promoted the Open Weather and Climate Services concept (which is now referred to as the Open Environmental Information Services (EIS) concept).

At a recent meeting, the EISWG members identified candidates for membership, drafted a letter to the NOAA Administrator regarding NOAA's response to the CPTF report, and continued to work with NWS to develop further the Open EIS concept.

The focal point of the presentation was new EISWG membership and renewal of membership. There are four current members up for renewal: Walt Dabberdt, Phil Ardanuy, Barry Myers and Julie Ann Winkler. The EISWG co-chairs requested approval of the SAB to renew all four to a second three-year term.

With respect to new members, the EISWG co-chairs recommended adding expertise in three areas: economics, oceanography and hydrology. They also proposed adding individuals in an

“at-large” position. The members deferred filling the economist position for now but proposed members for the other categories. The four proposed members are:
Robert Weller, Woods Hole Oceanographic Institution - Oceanography
Jean Vieux, Vieux, Inc. -Hydrology
Ron Birk, Northrup Grumman Corp At Large
John Snow, University of Oklahoma - At Large

Discussion

Ray Ban reiterated the request from the EISWG on new members and renewals and asked for comments or questions.

Marshall Shepherd said that it was stated that EISWG is not constituted to address fisheries issues and wanted to know if this was a concern. Walt Dabberdt said he was just noting that EISWG has a broader mandate that does not currently include fisheries. He noted they didn't expect to have to address this but that in the future they could move into the area of ecosystems. Nancy Colleton added that given the charters of the Ecosystem Sciences and Management Working Group and the Climate Working Group the EISWG did not want to replicate activities in ecosystems or climate.

Susan Avery noted that in areas of expertise, the EISWG expertise is still weighted toward atmosphere and asked why the EISWG didn't propose adding someone in oceanography or hydrology instead of the at-large position. Nancy Colleton responded that meteorology would still be their core work. Walt Dabberdt added there were two oceanographers among existing EISWG members and other current members do have some ocean and hydrology expertise; they did add one member in hydrology and another in oceanography, and the EISWG members believed that was enough.

Dawn Wright made a motion to approve renewal of current members and approval of new members. Jean May-Brett seconded the motion. The motion passed unanimously. Ray Ban thanked Dr. Dabberdt and Ms. Colleton for their presentation.

Action 9: The SAB Environmental Information Services Working Group (EISWG) sent a letter to the SAB regarding the NOAA Response to the report from the joint EISWG/Climate Working Group (CWG) Climate Partnership Task Force report of 2012. The SAB will discuss this letter at its next meeting.

Action 10: The Science Advisory Board approved the nomination of four new members to the Environmental Information Services Working Group (EISWG) and will notify them by letter of their appointments. The EISWG Chairs will communicate this to them and the existing members by email.

National Weather Service Response to the National Academy of Public Administration (NAPA) Report “Forecasting the Future: Assuring the Capacity of the National Weather Service”

Louis Uccellini, Assistant Administrator, NOAA National Weather Service

Summary

The purpose of the briefing was to provide a brief review of the NAPA report, published in May 2013, and a discussion of NOAA coordination and views. NOAA has embraced the report and finds that it is far-reaching and provides strategic and tactical recommendations. The NAPA report was requested by the Congress. The National Research Council (NRC) report, “Becoming Second to None”, a preceding report, was already briefed to the SAB.

The top level recommendations of the NRC report included: prioritize core capabilities; evaluate function and structure; and leverage the entire enterprise. The NAPA report recommendations can be categorized as both strategic and tactical, with general recommendation for a formal advisory body and an improved relationship with the employee union having both strategic and tactical importance. Strategic recommendations covered future structure of the National Weather Service (NWS), need for public/private partnerships, need to centralize functions of change management, and information technology functions. Tactical recommendations included enhanced research-to-operations and operations-to-research including training and social sciences, consistent decision support services, open weather and climate support for commercial and research sectors, and simplify/sustain infrastructure.

NAPA recommends that the Department of Commerce form a new Federal Advisory Committee (FAC) under agency discretion, with the current Environmental Information Services Working Group (EISWG) shared between the SAB and the new FAC. Dr. Uccellini discussed four approaches to provide recommended advice:

1. Engage EISWG to serve an enhanced advisory role for a short time;
2. Stand up a short term FAC with a limited charter;
3. Establish a longer-term FAC based on experience gained from 1 and/or 2 above;
4. Legislation to establish the FAC (historically, legislation established advisory body for NWS Modernization and Associated Restructuring).

NWS sees the NAPA report recommendations as presenting five Grand Challenges for NWS:

1. Pace of Change: *Orderly Process vs. Immediate Savings*
2. Budget Restructuring: *Aligning budget to function and linking to performance*
3. Managing Innovation: *Engaging all stakeholders and avoiding hidden costs*
4. Consistent Services: *Timely, Accurate, Reliable Services Consistent Across the Nation*
5. Labor / Management Relations: *Building a strategic partnership*

Planned next steps to implement recommendations from the NAPA report (subject to budget availability):

Short Term (FY13-14)

- Consider options for advisory body/external guidance
- Realign budget following operational function, including consolidation of R2O/O2R and management of IT systems
- Focus on consistent services
 - Design and conduct tests for significant changes; implement others

- Work across weather and climate enterprise to address Weather-Ready Nation goals
 - Initiate NWS/NWSEO effort to re-frame relationship
- Medium Term (FY15-17)
- Stand up advisory body for NWS/Weather-Ready Nation
 - Increased consistency of forecast products
 - Baseline staffing model for decision support services
- Long Term (FY18-)
- Consensus process drives ongoing change
 - Primary and secondary value chains coupled to build a Weather-Ready Nation

There will be further discussion on the role of EISWG at the partnership meeting on August 5-6, 2013.

Discussion

Marshall Shepherd asked about how much this report or the SAB Portfolio Review Task Force report was used in the Weather Improvement Act bill under consideration by the House. Louis Uccellini said the reports had an impact on the budget marks in the House and Senate, particularly the NAPA report because it was requested by Congress. He did not know if there was any impact on the Weather Improvement Act bill. Dr. Sullivan added there was no information that the NAPA report was a factor in that bill.

Louis Uccellini said the FY 14 budget was created before the NAPA report but there were a lot of budget restructuring questions when the NAPA report was briefed. Kathy Sullivan said NOAA is looking at budget details in Line Offices now; budgets are being reviewed to determine if they are rational, aligned and linked to outcomes.

Ray Ban said the EISWG went through a thorough process in reporting to the SAB on EISWG moving forward. When EISWG was started, the charter included doing an assessment after three years on future structure, which was done. The motivator was the NRC Fair Weather Report for the establishment of an NWS FAC, and EISWG came about as a result of that. The SAB considered a separate FAC at that time as did the EISWG when it went through its own review recently. Ray Ban wondered if any deliberations that were held for the NRC or NAPA reports were as deliberate as the process that led to the creation of the EISWG and the retention of the EISWG as an SAB Working Group. The value that EISWG brings to that conversation is important. As the SAB and NOAA move forward, the EISWG has a strong and thoughtful process to bring to the table and Ray Ban suggested it be utilized.

Louis Uccellini said the advisory group that oversaw the NWS modernization was constituted differently than a SAB Working Group. Dr. Uccellini added that, in the future, whatever review board exists, services need to be represented. Mr. Ban agreed. For the Grand Challenges, a different mix of expertise may be needed.

Cynthia Decker noted that when the Partnerships Task Force of the SAB instituted EISWG the process looked at the pros and cons for all the options including a stand-alone FAC, National

Academy panel and others. It may be worthwhile to look at the partnerships report. Ed Johnson said for the NAS and NAPA reports, the NWS asked these groups to look at the advisory structures that helped manage the modernization (Modernization Transition Committee) and use this as a basis for making gathering advice.

Kathy Sullivan said there are administrative and budgetary costs for another FAC. The path Louis Uccellini outlined will account for these factors and be aware of the SAB Report as it moves forward on this process of change. Likely NOAA will find an external body to guide the NWS that can absorb some of the political impacts of making major changes.

Action 11: The Science Advisory Board Environmental Information Services Working Group (EISWG) will engage the National Weather Service in discussions about the implementation of recommendations from the National Academy of Public Administration (NAPA) Report, “Forecasting the Future: Assuring the Capacity of the National Weather Service.”

Working Group Reports

Data Archive and Access Requirements Working Group (DAARWG)

Dawn Wright, Environmental Systems Research Institute and Member, SAB

Dawn Wright thanked Jerry Schubel for hosting the Ocean Exploration 2020 Forum. DAARWG has an action to provide reactions to the Comprehensive Large Array-data Stewardship System (CLASS) requirements and express thoughts on GOES-R on zero-level data. The next DAARWG meeting is being planned for either October or November with a preference for a face-to-face meeting over a webinar meeting. DAARWG is working on recommendations for new members to present at the SAB meeting in November. The DAARWG website is publicly available at www.nosc.noaa.gov/edmc/daarwg.

Action 12: The Science Advisory Board Data Archive and Access Requirements Working Group (DAARWG) will present new members for approval at the next meeting. The DAARWG will also have letters with recommendations on two topics to present to the SAB for consideration at that meeting.

Ocean Exploration Advisory Working Group (OEAWG)

Jerry Schubel, Aquarium of the Pacific and Member, SAB

Jerry Schubel reported that the Ocean Exploration 2020 Forum, which took place earlier in the month, involved partnerships among the OEAWG, Ocean Exploration and Review program, Aquarium of the Pacific and sponsors. This was the first time the community of ocean explorers came together to discuss what ocean exploration should be in 2020. The participants acknowledged that NOAA needs to play a leading role in a public-private partnership. A number of participants focused on not just the need for exploration but also on opportunities that exist in ocean exploration.

Ray Ban thanked Jerry for his report, for hosting the Forum and being an advocate for ocean exploration.

Review of Actions

Cynthia Decker, Executive Director, NOAA Science Advisory Board.

Cynthia Decker reviewed the actions from the meeting.

Adjourn

The meeting adjourned at 4:05 PM.

Actions

Action 1: NOAA headquarters will provide information to the Science Advisory Board on the upcoming Ocean Forum to be hosted by Department of State.

Action 2: NOAA Chief Economist will provide periodic updates to the Science Advisory Board on the NOAA Social Sciences Tiger Team report and other actions taken as a result of recommendations in the NOAA Social Sciences Needs Assessment.

Action 3: As a result of discussions at the meeting on NOAA's Arctic science, the Science Advisory Board's Ecosystem Sciences and Management Working Group (ESMWG) will provide advice on specific steps that NOAA could take to strengthen its current Arctic science programs, and recommend the extent to which NOAA should act to create a more integrated and cohesive Arctic Science Enterprise.

Action 4: The Science Advisory Board will have a strategic planning discussion with NOAA leadership to consider the way forward for the next 2-3 years. The SAB will decide upon input for this discussion prior to the meeting.

Action 5: The Science Advisory Board approved the Climate Working Group revised Terms of Reference. The new ToR will be posted on the SAB website and the CWG Chair will communicate this to the members.

Action 6: The Science Advisory Board approved the nomination of a new member to the Ecosystem Sciences and Management Working Group and will notify him by letter of his appointment. The ESMWG Chairs will communicate this to him and the existing members by email.

Action 7: The Science Advisory Board will have a discussion about SAB working group meeting policy at the next meeting. The SAB will draft a policy for this discussion.

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