NOAA Science Advisory Board
Teleconference Meeting
January 28, 2016
1:00-4:00 PM ET

Presentations for this meeting have been posted on the Science Advisory Board (SAB) website: http://www.sab.noaa.gov/Meetings

SAB members in attendance:
Ms. P. Lynn Scarlett, Managing Director for Public Policy, The Nature Conservancy *(Chair)*; Dr. Susan Avery, President Emeritus, Woods Hole Oceanographic Institution; Dr. Michael Donahue, Vice President, Water Resources and Environmental Services, AECOM; Dr. David M. Lodge, Professor, Environmental Change Initiative, University of Notre Dame; Ms. Jean May-Brett, Retired (Louisiana Department of Education Mr. Robert. S. Winokur, Retired (NOAA, Navy)

Working Group Chairs in attendance:
Dr. Paul Knight, Climate Working Group; Dr. Chris Lenhardt, Data Archive and Access Requirements Working Group (DAARWG); Ms. Nancy Colleton and Dr. Walt Dabberdt, Environmental Information Services Working Group (EISWG); Dr. David Fluharty and Dr. Jo-Ann Leong, Ecosystem Sciences and Management Working Group (ESMWG); Dr. Paul Knight, Climate Working Group (CWG) and Dr. Dwayne Porter, RESTORE Act Science Advisory Working Group (RSPAWG).

NOAA senior management and Line Office representatives in attendance:
Dr. Kathryn Sullivan, Under Secretary of Commerce for Oceans and Atmosphere; Dr. Rick Spinrad, NOAA Chief Scientist; Ms. Renee Stone, Chief of Staff; Ms. Mary Erickson, Director, National Centers for Coastal Ocean Science; Ms. Laura Furgione, Deputy Assistant Administrator, NOAA National Weather Service; Mr. Craig McLean, Assistant Administrator for NOAA Office of Oceanic and Atmospheric Research; Ms. Eileen Sobeck, Assistant Administrator, NOAA National Marine Fisheries Service; Dr. Richard Merrick, NMFS Senior Scientist; Dr. Gary Matlock, OAR Policy, Planning and Evaluation; Dr. Cynthia Decker, NOAA Cooperative Institute Program; Mr. Kevin Werner, NWS, Ms. Andrea Bleistein, NWS; LeAnn Hogan, NMFS; Paula Davidson, NWS and Shalini Mohlegi, Office of the Under Secretary.

Staff for the Science Advisory Board in attendance: Dr. Elizabeth Turner, Acting Executive Director; Dr. Bridget Seegers and Ms. Mary Anne Whitcomb

Call to Order
Lynn Scarlett, The Nature Conservancy and Chair, NOAA SAB

Lynn welcomed and thanked everyone for attending the teleconference meeting. Ms. Scarlett said she would like to commend NOAA and NWS on the excellent job on science and ability to forecast the recent winter storm and the communications of the forecast. Kathy Sullivan thanked her for this acknowledgement and made a point to thank NOAA staff for the science and computer upgrades for the models in the National Weather Service that contributed to the forecast.

SAB Consent calendar
The minutes from the SAB October 2015 were on the consent calendar and were accepted by the SAB.

Action 1: The Science Advisory Board approved the Consent Calendar items, which included. Approval of October 2015 meeting minutes. Meeting minutes are approved.

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

Summary

Personnel updates

Holly Bamford will be leaving NOAA on February 6 to the become Chief Conservation officer of the National Fish and Wildlife Foundation.

Sandy MacDonald announced his retirement in December after 42 years of NOAA Service, most recently as OAR's Chief Science Advisor and Director of the Earth System Research Laboratory in Boulder. Sandy is one of the world's foremost atmospheric scientists, and one of our most brilliant, innovative, and creative minds.

This is Bridget Seegers' last SAB as a Knauss Fellow; Dr. Sullivan thanked her for all the work she has done supporting the SAB during this past year and wished her well in whatever her future holds.

4 Quick Updates

● 2015 Arctic Report Card Released: NOAA released its 10th Arctic Report Card in December. Key observations included increasing air and sea surface temperatures, decreasing sea ice extent and Greenland ice sheet mass, and the changing behavior of fish and walrus.

● Sea Grant 50th Anniversary: For half a century, Sea Grant research, education, and outreach activities have spanned healthy coastal ecosystems, resilient communities and economies, sustainable fisheries and aquaculture, and environmental literacy and workforce development. Dr. Sullivan participated in the graduation of the 36th class of Sea Grant Knauss Fellows, who will join a network of over 1000 Knauss alumni.

● Supercomputers: Earlier this month, NOAA accepted two new supercomputers (Luna and Surge) into operations increasing computing capacity by nearly four-fold. The acceptance of these systems increased the computing capacity from 776 teraflops to 5.78 petaflops and will allow NOAA to roll out a series operational model upgrades throughout 2016, including:
    ○ Upgrades to the High Resolution Rapid Refresh Model and Hurricane Weather Research and Forecasting Model (HWRF)

○ Implementation of the Weather Research and Forecasting Hydrologic Modeling System

● Jason-3 Launch: On Jan 17, Jason-3 launched from Vandenberg Air Force Base to become the latest spacecraft to track the rate of global sea-level rise. The satellite will use a radar altimeter instrument to monitor 95% of the world's ice-free ocean every 10 days. Jason-3 will undergo a six-month phase to test the satellite's instruments in orbit. Once complete, it will officially begin operations, joining Jason-2, which was launched in 2008.

FY16 Appropriations

Congress passed the FY16 appropriations on December 16 bill funding the government for the remainder of the fiscal year:

● Provides NOAA $5.8B ($209M below President's Budget; $324M above FY15 spend plan). The request includes funds for: $80M of the $147M request for construction of a new NOAA ship and $370M for the Polar Follow-On. NOAA expects the FY17 President's Budget request to be released the week of February 8.

<u>21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21)</u>

In Paris in December, Dr. Sullivan joined NOAA and US delegates to discuss the importance of science-based decision making, climate services, and ecosystem and community resilience.

NOAA will play a key role in the implementation of the agreement reached at COP21 and will:

○ Continue to support critical climate science through observations, monitoring, and modeling efforts that help us understand, track, and predict changes in the climate system.

○ Strengthen scientific knowledge to inform climate services and support planning and decision making.

○ Look to advance efforts to account for and manage carbon sequestered and stored by coastal ecosystem in an effort to integrate blue carbon into the US National Greenhouse Gas Inventory.

<u>UK Trip</u>

In December, Dr. Sullivan traveled to the UK to meet with representatives from:

○ Newton Investment (part of BNY Mellon) and the Bank of England to discuss the interplay between climate science, resilience planning, insurance and investment

○ European Center for Medium-range Weather Forecasting (ECMWF) to talk about high performance computing and weather modeling

○ UK National Oceanography Center to discuss oceanography research, technology, fleets, and collaboration opportunities.

○ UK Met Office to discuss lessons learned about the changing landscape of private/public partnerships, the evolving role of hydro-meteorological agencies in providing decision support, technology and big data, and space weather

○ The Thames Barrier and the Greater London Authority to discuss resilience activities and future initiatives

United Kingdom Meteorological Office (UKMET) Memorandum of Understanding*:* Key takeaways include the prospect of cooperation with UKMET around significant changes afoot in the weather value chain, intended to identify the role of national meteorological services to maximize contributions and avoid being the "provider of last resort"; possible topics for the MOU include:

○ Technology (research plans for technology and software development)

○ Satellite services (data policies)

○ Communication to public

○ Role of forecasters and operational meteorologists (possible 'operational unit' exchange program and competency frameworks)

○ Insurance

○ Horizon scanning work

○ Space Weather (Agency-wide exercise for coordinated preparedness)

Ocean Observation and Exploration in the Ocean's Deepest Depths

Two new recent expeditions have taken NOAA scientists to the deepest depths of the ocean in the Mariana Trench region:

1. **Deep ocean mooring system:** In November, PMEL scientists recovered a unique deep ocean mooring system in the Challenger Deep that was recording ambient sound from the seafloor. Scientists are still analyzing the sounds but the hydrophone was deployed during this experiment and scientists have already heard a surprisingly wide variety of natural sounds, including biological, geological, and meteorological (including a category 4 typhoon). The mooring system developed will enable future exploration and research to be conducted in some of the most extreme and unknown environments of the ocean.

2. **R/V Falkor Expedition:** In December, PMEL scientists (with funding from Ocean Exploration Research), performed a 28-day expedition aboard the Schmidt Ocean Institute's R/V Falkor, which more than doubled the number of known hydrothermal vent sites in the Mariana Back-arc region.
This area, west of the Mariana Trench, is where plate spreading and submarine volcanism are concentrated. Several momentous findings were made, including the discovery of one of the deepest vents ever found.

Dave Fahey Confirmed to Montreal Protocol's Scientific Assessment Panel (SAP)

In November, NOAA's Dr. Dave Fahey (Director, Chemical Sciences Division at OAR's Earth System Research Laboratory) was confirmed as a new co-chair of Montreal Protocol's Scientific Assessment Panel (SAP), which assesses the status of the depletion of the ozone layer and relevant atmospheric science issues.

As one of four co-chairs of the SAP, Dr. Fahey's responsibilities will include:

1) Planning the scope, content, and authors of the assessment reports, prepared every 3 or 4 years.3; topics covered in the report include: processes that cause ozone depletion; emissions, atmospheric abundances, and trends in ozone-depleting substances; and issues related to climate and the ozone layer and identifying expectations for the ozone layer's recovery under different scenarios.

2) Providing scientific guidance to the Montreal Protocol's commitment to adopt a 2016 amendment to phase-down production and consumption of hydrofluorocarbons (HFCs) under the Montreal Protocol.

In November 2015 at the Protocol's Meeting of the Parties in Dubai, the Parties agreed on a "Dubai Pathway" for phasing down production and consumption of climate-change-inducing hydrofluorocarbons (HFCs).

NOAA Commercial Space Policy

On January 8, NOAA released its Commercial Space Policy to the public that sets the broad framework for use of commercial space-based approaches for the agency

The policy establishes critical components for engaging with the commercial sector:

- Designating the Office of Space Commerce as a single point of entry for commercial providers to streamline the process for easier engagement;
- Establishing an open and transparent marketplace;
- Defining guiding principles, implementation considerations, and strategic planning for potential commercial data buys;
- Establishing demonstration projects to test and evaluate new potential data sources and provide an avenue to operational commercial data buys.

Policy Guiding Principles include:

- Sustaining service quality
- Optimizing mission requirements
- Ensuring access to global observations

- Upholding national/international standards
- Ensuring a vibrant research enterprise, and
- Exploring new partnerships

NESDIS Commercial Space Activities Assessment Process: NESDIS will soon release its draft Commercial Space Activities Assessment Process for public comment. The NESDIS Process describes the process by which NESDIS will assess and pursue commercial opportunities to support NOAA's space-based observational information requirements.

El Nino Southern Oscillation (ENSO) Rapid Response

Kicking off this week, the El Niño Rapid Response Field Campaign will accelerate advances in understanding and predictions of El Niño events and impacts. From January-March, NOAA will have the following assets in the field:

- NOAA G-IV aircraft: Aircraft will conduct around 20 flights that will leave out of Hawaii carrying a suite of meteorological sensors and deploying dropsondes.
- NASA Global Hawk UAS: NOAA UAS program will deploy for 4 research flights also carrying a suite of meteorological sensors and deploying dropsondes.
- NOAA R/V Ron Brown: Ship will launch daily radiosondes up to 8-times on the Tropical Atmospheric Ocean (TAO) survey cruise from February to March.
- Radiosonde sounding system: On Kiritimati (Christmas) Island, a radiosonde system will provide twice-a-day vertical soundings made continuously from mid-January through March.
- Scanning X-Band radar: Radar will be deployed to the south of San Francisco Bay as a gap filling radar to provide more accurate rainfall estimates for the region.
- Air Force Atmospheric River Research: In partnership with Cooperative Institute at Scripps and Air Force, C-130Js will test the concept of targeting atmospheric river conditions between the West Coast and Hawaii to assess the value of dropsonde measurements in improving the 1-3 day prediction of potent landfalling storms on the U.S. West Coast.

American Meteorological Society (AMS) Meeting

Many NOAA staff traveled to New Orleans earlier this month to participate in the 96th AMS Annual Meeting. Secretary of Commerce Penny Pritzer provided remarks at the Presidential town hall that were well received. Secretary Pritzker made it clear that:

- This is a dynamic time for the broader weather enterprise, with different players contemplating different spaces along the value chain.
- Support for the NOAA "Evolve the National Weather Service" initiative.

○ With an infinite number of information sources, NOAA will always be an authoritative voice for critical safety decisions.

○ NOAA, like the private sector, must continue to explore and innovate.

Discussion

Lynn Scarlett thanked Dr. Sullivan for her update.

Lynn Scarlett asked about the NOAA challenges on the Hill with respect to climate science; what is the status? Dr. Sullivan responded that she remains under subpoena and can't comment on this topic; however NOAA Congressional Staff met with Representative Smith's staff to discuss the next steps in the process.

Lynn Scarlett asked about the NOAA budget: it seems that one impact from the appropriation relates to ship funding-were there any other big challenges? Dr. Sullivan said that NOAA funding of $324 Million above the FY 2015 funding is significant. Some requested funding was not provided particularly related to climate work. Overall, to be ahead of last year and largely stable in all our accounts and to have line of sight to the end of the fiscal year is a good position to be in. Renee Stone said NOAA was pleased that there was some funding provided for the ship and overall numbers were good. Rick Spinrad said there are some interesting add-ons in the research budget to solidify formal transition activities. Dr. Sullivan added that the Navy is procuring two new vessels and NOAA hoped to capitalize on some NAVSEA efforts before they closed down. This was not possible before it did close down; NOAA needs a regional class vessel.

Report from the EISWG on a Review of the NOAA Partnership Policy

Walt Dabberdt, Vaisala and Co-Chair Environmental Information Services Working Group (EISWG)

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

Summary

Nancy Colleton said one thing that makes the NWS successful is partnership with private sector in getting the word out. The NWS asked EISWG to review the policy as NOAA's current partnership policy was released in 2006. EISWG established a subcommittee to review the policy and develop a report that was approved at the December 2016 meeting.

Major recommendations

There are five major recommendations as well as other factors that NOAA should consider in a revised policy.

1. Expand the current policy beyond the "provision" of environmental information to include "acquisition and creation," thus changing the focus and title to NOAA Partnership in Support of Environmental Information and Services;
2. Clarify the ambiguity throughout the Policy regarding the use of "information" versus "information services";

3. Establish a sustained and consistent effort to ensure that NOAA employees, especially those in leadership positions, are knowledgeable on the intent, provisions and implementation of the Policy;
4. Define and communicate key terms in the Policy; and
5. Establish the proposed NOAA-wide Environmental Information Services Committee (EISC) to serve as the lead internal entity to address conflicts and disagreements within NOAA and with non-NOAA entities, guide the Policy's implementation, and oversee agency-wide awareness and training around the Policy.

Other considerations for an updated Partnership Policy

- There should be equity among sub-classes of the private sector. In private sector there are two major subclasses—end users and value added resellers.

-NOAA LOs should develop updated implementation guidelines that use a common format and protocol and publish them online.

--There should be a clear and concise statement of intent in the policy

--NOAA should continue not to set hard and fast boundaries between sectors and be flexible enough to address new issues as they arise

--NOAA should establish Tiers of Service: regulatory tier; policy and practice tier and discretionary tiers.

--The policy should reference specific types of NOAA agreements and address potential ambiguity with Circular A-130 which prohibits exclusionary arrangements. It should recognize costs to end-users, explicitly identify costs for services and charge equitably for those services which have changed since policy developed in 2006.

--NOAA should update the policy's reference to NOAA's mission goals and the policy's description of the roles and responsibilities of the three sectors

Discussion

Lynn Scarlett asked if by accepting the report, it means that the SAB does not commit NOAA to a course of action. Beth Turner confirmed that acceptance by the SAB does not commit NOAA to action.

Bob Winokur said this policy was vetted with the EISWG and the conversation on this policy goes back a number of years. One thing the EISWG found was that there was uneven implementation of the current policy across Line Offices.

Richard Merrick asked how this report relates to the federal policy on "Public Access to Research Results" (PARR) as it includes the same kinds of information and wondered how the policy deals with confidential data. Walt Dabberdt said he was not familiar with PARR but on confidential data, he mentioned that the Aircraft Communications Addressing and Reporting System (ACARS) data are confidential and they can be used but not shared with other airlines. EISWG recognizes confidential data and the policy recognizes it. Laura Furgione added that

aircraft data are not proprietary; there is a 48 hour delay to wide distribution and there is not the same level of confidentiality as with fisheries data.

Nancy Colleton said the EISWG did not go through the policy line by line and that is why they made recommendations for a NOAA review of the policy and the PARR should be included in that overall review.

Renee Stone said she appreciates the clarification on the need to reconcile many policies in relation to the partnership policy. The Administration and NOAA are interested in any partnership policy. Nancy Colleton added that one reason to look at this policy is that as other agencies struggle to determine how they share data, NOAA's policy could be a model.

Susan Avery said her concern is about a "one size fits all" policy that is driven by the weather community; she doesn't want NOAA to be boxed into any policy. It was important that the policy really takes into account that there are differences in environmental information with different practices and different communities and they would not want a single policy constraint. She asked about dialogue with communities other than weather in informing their report. Walt Dabberdt said they are recommending NOAA consider Tiers of Service given different restraints and requirements for NOAA in sharing data and each demands that policy be implemented in different ways. On communication, they initiated dialogue in 2011 and met with all of the Line Offices and have received partnership policies from all 5 Line Offices and there was not a lot of commonality across organizations. They are recommending review of all policies and a review of an apparent lack of consistency and transparency in implementation of policies. Susan Avery asked what if NOAA were to say if they want a separate policy for weather vs. fisheries—are you looking for a single policy? Walt Dabberdt said the current policy is NOAA-wide and applies to environmental information. The decision on how many policies NOAA should have is NOAA's issue.

Lynn Scarlett said the report doesn't conclude that the policy is good or not; she thought the report recommendations pertain to observations of uneven exposure, lack of clarity, uneven implementation, and lack of clarity in how disagreements are resolved. The report is not prescriptive but instead flags some weaknesses. Nancy Colleton agreed saying the policy should be updated, strengthened and communicated.

Kathy Sullivan asked if EISWG had consulted with any outside groups-such as academic or private sector groups- in developing the report. Walt Dabberdt said they engaged Line Offices; since this is a Working Group document; they limited their involvement of the sectors to the experience of the EISWG members. Kathy Sullivan asked about the meaning of recognizing the costs of services-did they include costs to end users and specific parties gaining special benefit? Walt Dabberdt said that goes beyond what EISWG was considering in terms of costs to end users—in the report it discusses costs to end users and to value-added resellers (VARS). While the government policy is free and open access to government data, there are costs above that or there would be costs to government to compile the data in a format useful to users. They wanted to point out where, when, and how there might be costs to the user.

Lynn Scarlett said the SAB is being asked to accept the report and it does not appear to be prescriptive or undermine any issues raised on the phone and leaves to NOAA whether or how to proceed on the recommendations. She asked members on the phone if the SAB is in a position to

accept the report but at the same time the interest in this topic caused her to wonder if there are any additional questions and whether it would be valuable to have a discussion at a future meeting to dive more deeply on these issues.

Lynn Scarlett asked if members wanted to accept the report or is there any opposition to the report. Bob Winokur said the report could be accepted and forwarded to NOAA and in a year NOAA responds to the SAB on what they want to do. At the same time NOAA can ask the EISWG to do some additional work. Lynn Scarlett asked if there was any opposition to accepting the report and as there was none the SAB accepted the report.

The second question is whether it is worthwhile for Lynn Scarlett to discuss with Kathy Sullivan and Rick Spinrad for the calendar of a future SAB meeting a second discussion on additional things pertaining to the partnership policy we want the EISWG to examine. Kathy Sullivan responded that there are other questions that NOAA will be asking as they review the report and it may not be a request to the SAB. This is not a topic that will sit on a shelf for a year in terms of response to the SAB. Lynn said NOAA will receive the report and NOAA will digest it and if there are additional questions they will figure out the best process to handle these.

Action 2: The SAB approved the EISWG report and will transmit it to NOAA.

Discussion of Ways to Optimize SAB and Working Group Operation and Working Group Staff Support from Line Offices

Lynn Scarlett, The Nature Conservancy and Chair, NOAA SAB

Lynn Scarlett said they will discuss what works well in Working Groups and then will talk about role of WG Chairs in SAB meeting. Kathy Sullivan suggested that they ask the NOAA leadership around the table about what works well in the value proposition.

Craig McLean said the renewal of direction to bring new thoughts into the forum is very rewarding and NOAA staff have received the benefit of the SAB as a useful forum including the climate discussion with reinsurers and value of economy of climate discussions. If he is looking at a migration from an external study group he gets great value as opposed to doing a management review of one of his organizations. Lynn Scarlett asked if the thinking could flow down to working groups.

Richard Merrick, program liaison to the ESMWG said that group has been charged with doing series of reviews and the results have been very helpful. The dialogue and the process of developing the reviews have been as helpful as the reviews. At the August 2015 SAB meeting, he presented the NOAA response to the ESMWG review of ecosystem-based fisheries management but NMFS was changing operations in the 2-3 years it took to develop their report, so many of the report's recommendations had already been adopted.

Mary Erickson said NOS works with the ESMWG and as well as the RSPAWG. With the ESMWG they have been having a dialogue on ecosystem services and emerging technologies and the speakers invited to the meetings helped connect NOAA to broader expertise in the development of the recommendations. On the RSPAWG, connecting to experts and networks in

Gulf community has been beneficial it is challenging as that effort is a little more nascent but the interactions are helpful.

Laura Furgione said the strategic conversations during the SAB have been beneficial to NWS and the advocacy that the SAB that brings to the table. Shared understanding becomes a force multiplier to help us get the word out; it is because of partnerships like the SAB that allow the NWS to be more successful.

Gary Matlock said what is working well is the Working Groups have an opportunity to provide input efficiently; reports to NOAA have been high quality and clear and provide thoughtful recommendations to which NOAA can respond; quality of interaction is knowledgeable, members always want to make sure that NOAA receives what was requested.

Lynn Scarlett said she heard from NOAA staff some specific comments to Working Group operations and some comments more broadly on the SAB and the more dynamic endeavors to bring some state of the art thinking into the discussions of the SAB to NOAA. She heard the interactions themselves are important and the data requests present an opportunity to think about information relevant to request that has a value, and that working group reports are useful. She is also hearing common themes on real-time dynamic interaction versus a report-only model. One question is whether there is a way to enhance dynamic interaction with the WGs and not just produce reports.

Lynn Scarlett said she wants to hear from Working Group Chairs on their participation in SAB meetings, how this has worked, and how it can work better. David Fluharty, ESMWG, found it extremely valuable to come to the SAB meetings, talk to members and also to be there to explain more about what ESMWG has been doing. This participation has helped to improve the ESMWG link to the SAB and he hoped it has provided a stronger sense of our committee. Jo-Ann Leong, ESMWG added that while she hadn't had the opportunity to participate at in-person meetings, this can only be an improvement in communications.

Lynn Scarlett also asked for thought on improvement of the interactions. Nancy Colleton said any steps to help the working groups be part of SAB operations would be useful; it would be helpful if there were more communications between the working groups.

Dwayne Porter, RSPAWG, said the opportunity to interact with the SAB is very useful for the group and they can convey the pulse of the SAB from the discussion. He also agreed about the benefit of knowing what other working groups are doing. The RSPAWG has had discussions with two other working groups but have not followed through; ways to better interact with other working groups would be helpful. Chris Lenhardt, DAARWG, agreed with comments including the communications with other working groups but the issue of time to attend the SAB and other working group meetings is an issue. Coming to the SAB gives a better understanding of SAB processes—communicating SAB processes is in the ConOps could help. SAB working group liaisons had a rocky start but has settled down. Paul Knight, CWG, said Walt Dabberdt was at the November CWG meeting and he added insight from a different working group and he would enjoy interaction with other working groups.

Lynn Scarlett asked the SAB members for comments on, from the vantage point of the SAB, the best way the working groups can provide advice to the SAB and then to NOAA—we have reports, interactions at SAB meetings—are there other ways we are not utilizing.

Jean May-Brett said she was not involved with working groups before the RSPAWG so she can't imagine what it was like before inviting working group chairs to the SAB meeting and that addition has been a helpful addition for NOAA to get a real feel for where things are going. Bob Winokur agreed that is important to have working group chairs at the meeting. He said one idea that comes up is to share key presentations and discussions from working group meetings at SAB meetings. For example, Ann Bostrum, a speaker at EISWG meeting, could speak to the SAB on the National Academies. Line Offices have ownership of the working groups and there are valuable discussions that do not get passed on to the SAB; he would suggest periodic briefings with more in-depth topics from the working groups.

Lynn Scarlett added that perhaps there is a benefit of multiple different approaches for the working group to provide feedback, input, interactions—including not just from reports, but the dynamic interactions. Lynn Scarlett asked Kathy Sullivan for her thoughts on the working groups and NOAA's needs.

Kathy Sullivan said she heard from the NOAA staff that the majority of the value of working group inputs was value of interaction around ideas and less on the specific reports. There is a spectrum of points of engagement and value along various NOAA staff, from program manager to Assistant Administrator. SAB brings us the abilities of the committed experts charged to advise NOAA not instruct NOAA. These interactions help us recognize directions to go and what to avoid. It is most helpful to NOAA to identify internal management or structural impediments, instead of telling us how to address them, or to paint an approach to aspire to and identify risks and opportunities rather than specific recommendations on how to manage NOAA. Dr. Sullivan agreed with the need to improve communications with working groups and the SAB and among working groups.

Lynn Scarlett said the dynamic and real time interaction at meetings rather than reviewing reports has been useful as well as the role not to micromanage NOAA. The SAB and working groups can broaden the universe of information for NOAA including exposure to issues and challenges that NOAA faces.

Chris Lenhardt asked about the December revision to the Working Group Concept of Operations (ConOps) posted to the website. Beth Turner said the change was to add the recent practice of inviting the Chairs to the SAB meeting. Chris Lenhardt asked if the working groups could look at the ConOps and suggest revisions. Beth Turner said this review would be helpful as there are some differences among working groups. Kathy Sullivan suggested rather than look at this review as a text edit task, look at content and see if there is a way to further enhance working group operations. Cynthia Decker said the ConOps has been around for 5-6 years but some groups may not have looked at it.

Rick Spinrad said the ConOps does not specifically address planning of work in the coming year; there could be a way of sharing of preplanning so, for example, DAARWG plans shared with other working groups. Kathy Sullivan agreed that this was a good idea.

Action 3: The SAB Office will send a request to SAB members and Working Group Chairs asking for high level comments on the Working Group Concept of Operations (ConOps)

Strategic Advice to NOAA
Lynn Scarlett, The Nature Conservancy and Chair, NOAA SAB

Lynn Scarlett said there are confirmed speakers for the April meeting; she wanted to recap where we are and where we are going in providing strategic advice to NOAA. The process to provide advice included an invitation to speakers to help NOAA look ahead in the future; there is also a working strategic advice document as well as the input from the speakers. There was an initial discussion to help shape the discussions but the purpose of these discussions was to begin a discussion of new processes and people. It would seem useful beyond just the meeting minutes if we periodically have some mechanism to summarize the results of the presentations as well as implications of presentation and advice to NOAA from the presentation on mission delivery. Do we continue this process to be an ongoing part of the SAB meeting? Do we want someway real-time to capture implications of discussions? Does the Board find this process useful? If it continues, how can we capture and meld together what we hear into observations from NOAA?

Rick Spinrad said the speakers and strategic advice process have become a fascinating component of the SAB meeting and the discussions are starting to stimulate strategic ideas in the agency and the process should be institutionalized. After the last meeting, NOAA staff were thinking about whether there is a way of building on these discussions with SAB and NOAA leadership and are asking what we might want to do or what advice should we ask for from the SAB or Working Groups to exploit the impact of these discussions.

Lynn Scarlett said we could build in time to the agenda for this discussion with ideas captured in the minutes, and/or have a discussion and through a subcommittee work to develop a brief summary.

Kathy Sullivan agreed that NOAA senior leadership should have a more in-depth look. This could include providing more depth to the minutes, or to use more of SWAT team approach; for example for compressed sensing, ask some SAB members and NOAA leadership to pursue an issue for 90 days to see where it could be of particular import to NOAA and to produce a 5-10 page report through the lens of what NOAA is about.

Bob Winokur agreed with that idea and added another one to think about organizing a SAB meeting around a theme—three speakers on same topic—observations, satellites—and then we could develop a 5-10 page summary of ideas.

Lynn Scarlett said some of the speakers we are bringing in are eminent and busy; we are dependent on when they are available, which may not conform to topical clusters. Another thought is to have presentations over a few meetings and pull together those that are related.

Lynn Scarlett suggested she and Rick Spinrad could discuss some options for proceeding and circulate these options to the SAB to review. Both Kathy Sullivan and Rick Spinrad agreed with this idea.

Invitation to future speakers

Beth Turner suggested that the SAB members could talk about how to nominate future speakers; there is no set procedure on whom to invite but once a decision has been made on speakers there is a procedure on inviting them through Dr. Sullivan's office. Initially the subcommittee suggested some people related to the topics in the initial paper. As we moved forward, the process has been more *ad hoc*, knowing that we want eminent thinkers on technologies or systems or analytical techniques Dr. Sullivan invited them and we have a list of those who agreed to attend meetings. Should we have a process to send out a list of names for the SAB to review, knowing who we actually get depends on their availability. Kathy Sullivan suggested that we open to SAB members and working groups the ability to suggest the themes and speakers; provide them to the Chair and the Chief Scientist for review and then to the Administrator to invite them..

Lynn Scarlett said if SAB members are comfortable with working in that informal way we can be nimble but SAB members can submit suggested names to Rick and Lynn at any time. Beth Turner said the list Lynn mentioned was a Google document that did not work for all SAB members but the SAB office can keep a list and include it in SAB communications prior to meetings. Lynn Scarlett agreed that is how we will proceed.

Laura Furgione said in the agenda on SAB working group discussions we did not discuss the issue of working group staffing and support: this warrants a little discussion as the EISWG has not been satisfied with the support NWS has provided.

Dwayne Porter said from the RSPAWG working group perspective they were impressed from support from SAB liaisons, support from Mary Erickson's group and, in particular, the two Knauss fellows and were able to accomplish more based on the support they received. Jo-Ann Leong said while the ESMWG has had excellent staff support they have not had consistent support from SAB liaisons that have not come to meetings regularly. Walt Dabberdt said for the EISWG there are things that could be done differently and travel arrangements and reimbursements done differently by each working group. EISWG has had trouble with webhosting and want to put meeting documents on a website and it has not happened. They have had discussions and meeting summaries that could have value to be posted on the EISWG portion of the SAB website.

Laura Furgione said there may be some best practices from working groups that might be shared. Kathy Sullivan said this is a good task for Rick Spinrad and herself, working with Beth Turner to either work on with working groups or Line Offices. If there is something NOAA can't do to support the working groups we will make clear the limitations.

Action 4: Lynn Scarlett and Rick Spinrad will talk about developing ways forward on the Working Group issues, adding NOAA perspective on discussions as well as adding best practices for working groups.

Public Comment

There was no public comment

Kathy Sullivan said NOAA received a letter from the American Association for the Advancement of Science that she has been chosen for the William D. Carey lecture on April 14 in the Reagan Building.

Review of Actions

Elizabeth Turner, Acting Executive Director, SAB

The SAB approved the October 2015 meeting minutes.

The SAB approved the EISWG report and will transmit it to NOAA.

The SAB Office will send a request to SAB members and Working Group Chairs asking for high level comments on the Working Group Concept of Operations (ConOps)

Lynn Scarlett and Rick Spinrad will talk about developing ways forward on the Working Group issues, adding NOAA perspective on discussions as well as adding best practices for working groups.

Beth Turner reminded members that the next in-person meeting will be April 28-29 in Silver Spring and more information on that meeting will be provided soon.

The meeting was adjourned at 3:50 PM.