

Final

44th Meeting of the NOAA Science Advisory Board
Seattle, Washington
16 July – 17 July 2012

Presentations for this meeting will be posted on the SAB website at:

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

SAB members in attendance: Mr. Raymond Ban (Chair) Consultant, Ban and Associates Consulting LLC; Dr. Susan Avery, Director and President Woods Hole Oceanographic Institution; Dr. Eric Barron, President, Florida State University; Dr. Heidi Cullen (by phone), CEO Climate Central; Dr. Eve Gruntfest, Director, Social Science Woven into Meteorology; Dr. Peter Kareiva, Chief Scientist and Director of Science, The Nature Conservancy; Dr. Jean May-Brett, STEM Partnership Coordinator, Louisiana Department of Education; Dr. James Sanchirico, Professor, Environmental Science and Policy, University of California, Davis; Dr. Jerry Schubel, Executive Director, Aquarium of the Pacific; Dr. Marshall Shepherd (by phone), Professor Dept. Geography & Atmospheric Sciences, University of Georgia; Dr. Dawn Wright, Chief Scientist, Environmental Systems Research Institute

NOAA senior management and Line Office representatives in attendance: Dr. Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere; Dr. Kathryn Sullivan, Assistant Secretary of Commerce for Oceans and Atmosphere; Dr. David Titley, Deputy Under Secretary of Commerce for Oceans and Atmosphere; Dr. Laura Furgione, Acting Assistant Administrator for Weather Services and Acting Director of the National Weather Service; Ms. Mary Kicza (by phone), Assistant Administrator, National Environmental Satellite, Data, and Information Service; Dr. David Hermreck, Senior Programs Advisor, National Environmental Satellite Data and Information Service; Dr. Holly Bamford, Deputy Assistant Administrator, National Ocean Service; Dr. Richard Merrick, Chief Science Advisor, National Marine Fisheries Service; Dr. Patricia Montanio, Assistant Administrator, Program, Planning and Integration; Dr. Robert Detrick, Assistant Administration, Oceanic and Atmospheric Research; RADM Michael Devany, Deputy Director, Office of Marine and Aviation Operations

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

Monday, 16 July 2012

Welcoming Remarks and NOAA Update

Dr. Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere

Summary

Jane Lubchenco welcomed everyone to the meeting and thanked those present for the taking the time to attend. She expressed anticipated interest in the upcoming discussions at this NOAA SAB meeting and stated that she was looking forward to the updates from the Ocean Exploration program review and the SAB Portfolio Review Task Force (PRTF). Dr. Lubchenco expressed gratitude towards the PRTF and commended all the work they have accomplished thus far. An

Final

update was provided on changes within the board. Dr. Frank Kudrna left the SAB in June but remains a member of the PRTF. RDML David Titley also left the SAB but now serves at the Deputy Under Secretary of Operations for NOAA. As a result of these changes there are now two vacancies on the Board, which will be filled with individuals having appropriate expertise. Dr. Lubchenco also mentioned leadership changes within NOAA: Acting Secretary of Commerce – Dr. Rebecca Blank, , Principal Deputy Under Secretary – Margaret Spring, Chief of Staff – Renee Stone, Director of External Affairs - Jaimey Bavishi, Director of Communications – Ciaran Clayton, Acting Assistant Administrator for National Weather Service – Laura Furgione, and Acting Chief Financial Officer – Joanne Benzuli-Crane. Eric Schwaab has returned to his job as Assistant Administrator, National Marine Fisheries Service.

Concerning Information Technology (IT), Dr. Lubchenco said the administration is continuing transition to improve efficiency; reduce cost, which includes reducing paper and printing cost.

She stated that one of NOAA's goals in the RIO+20 meeting was to increase the focus on oceans. Represented at the meeting was a small team, which consisted of Deputy Assistant Secretary for International Fisheries, Russell Smith, Pacific Marine Environmental Laboratory scientist, Dr. Richard Feely, and from International Affairs, Allison Reed. The team participated in multiple events focused on sustainable fisheries, disaster risk reduction, marine debris and ocean acidification. In one of these sessions, Mr. Smith announced the creation of the new International Coordinating Office for Ocean Acidification, which will be housed within the International Atomic Energy Agency's Environmental Labs in Monaco.

Finally, Dr. Lubchenco highlighted one accomplishment and one challenge from each of the line offices. National Ocean Service (NOS) accomplishment: Hindcast model predictions, especially the current being conducted on the Japanese tsunami debris, and Unmanned Aerial Systems (UAS) PUMA used to detect in situ debris; Challenge: current modeling efforts can provide only general indications of the likely geographic areas and timing of tsunami debris impacts, congressional and media requests as well as funding; NOAA does not have the infrastructure or resources to address the potential scope and impact of tsunami debris. National Environmental Satellite, Data, and Information Service (NESDIS) accomplishment: On May 22, Suomi NPP successfully completed a rigorous and accelerated evaluation period and meteorologists have begun using the new data in operation models; Challenge: NOAA satellite programs are unsustainable in the current budget environment. National Weather Service (NWS) accomplishment: NWS is working to try to simplify licensing use of NOAA emblem, and four of the 22 proposals for the Weather Ready Nation competitive award have been selected; Challenge: engaging in dialogue with Congress on a strategic vision of what the nation needs from NWS in the 21st century. Oceanic and Atmospheric Research (OAR) accomplishment: Earth Systems Research Laboratory (ESRL) Global Systems Division (GSD) new super-high resolution weather model continues its test program; Challenge: NOAA needs improved quantitative and objective assessment capabilities. Climate Program Office (CPO) accomplishments: 2011 State of the Climate Report, and the development of the first Western States Quarterly Climate Impacts and Outlook; Challenge: Addressing societal issues with the current distributed cross-line office structure. National Marine Fisheries Service (NMFS) accomplishment: NMFS' advanced sampling technology – the HABCam, a non-invasive optical survey technique to help improve the accuracy of scallop and groundfish population assessments; Challenge: Producing and improving assessments with limited funding. Office of Marine and

Final

Aviation Operations (OMAO) accomplishment: The June 22 launch of the NOAA ship Reuben Lasker and the June 8 commissioning of the NOAA ship Ferdinand Hassler; Challenge: rising ship maintenance and fuel cost during declining budgets. Education Office accomplishment: NOAA education, in collaboration with the broader earth system science education community, worked to include ocean and climate topics in the framework for the Next Generation Science Standards, developed by the National Research Council; Challenge: Recognizing NOAA's Education investments as core accomplishments. In closing, Dr. Lubchenco stated that these accomplishments show how NOAA can carry out excellent science, provide valuable services and promote stewardship for the future despite the growing number of challenges.

Discussion

Susan Avery stated that the marine debris model is a surface model; it does not collect information on particulate matter in the water column. She asked if NOAA has given any thought to the ramifications on the water column as a result of the Japanese tsunami. She stated that Woods Hole Oceanographic Institute (WHOI) has looked at this; however, it is difficult to follow up on what happened in the long term. An NOS representative stated there has been some efforts made through National Centers for Environmental Prediction (NCEP) to investigate radioactive particles, however, the concentrations were very low with only short-term effects so there was no follow up. The real issue is what types of debris will show up, given the number of tons initially released, including the six vessels not accounted for; the large items are of most interest. Dr. Lubchenco added NOAA as well as the Japanese have done little work on the water column and its impacts on the food web; the topic still needs to be closely explored.

Eric Barron stated that the Resources and Ecosystem Sustainability, Tourist Opportunities, and Revived Economies (RESTORE) Act is a precedent for NOAA. Dr. Barron then asked if NOAA had any indication of the monetary implications. Dr. Lubchenco said no, this will be 80% of the total Clean Water Act penalties from the Deepwater Horizon oil spill, but that amount has not yet been determined. She said it could be significant in total amount as well as interest accrued. She continued by stating that there are multiple roles for NOAA in monitoring, and the Council will decide on the allocation of funds. NOAA is engaged in discussions, there is interest in having as much as possible go to funding restoration in the Gulf of Mexico. This does not preclude legal outcomes regarding the spill on the civil and criminal side with the responsible parties.

Welcoming Remarks from NOAA Under Secretary of Operations

Dr. David Titley, Deputy Under Secretary of Commerce for Operations

Summary

David Titley thanked Jane Lubchenco for giving him the opportunity to introduce himself in his new capacity as Deputy Under Secretary of Commerce for Operations. Dr. Titley stated that there are challenges, and with challenges come opportunity, and he will be looking to the SAB and NOAA professionals to keep him on task. He thanked the SAB and its Chair, Raymond Ban, and stated that being a part of the SAB was a tremendous opportunity that has given him a good start for his new position. Dr. Titley said his thought after being in the job for two weeks is for NOAA to be brilliant on the basics. He stated that NOAA has a great number of hard

Final

working and dedicated people who need to work efficiently and effectively. Such a work ethic enhances NOAA's reputation. He spoke to the idea of NOAA being one team – one NOAA - and that the line offices are interdependent on each other. He further stated that NOAA has an incredible mission, encoded by statute and executive order. NOAA should be recognized for this hence the discussion on the use of NOAA's emblem is important. He referenced the NOAA update presented by Dr. Lubchenco, which emphasized the theme “doing more with fewer resources”. He also made mention of the SAB Research and Development (R&D) Portfolio Review underway, stating that NOAA needs to ensure that R&D is being conducted in an efficient and effective manner. In closing, Dr. Titley stated that although there is a lot of technical and scientific work being done, NOAA is fundamentally in the people business with 13,000 dedicated professionals. This is an important aspect of the job that he will always keep in mind.

NOAA Emblem Update

Megan Mueller, Program Coordination Office

Summary

The purpose of this presentation was to provide an update on the April 6, 2012 NOAASAB discussion on the use of NOAA's logo, More properly called an emblem. In her presentation Megan Mueller recapped the April 6, 2012 recommendation, and stated that the NOAA emblem is a Department of Commerce trademark and its use by partners and third parties is governed by Department Administrative Order (DAO) 201-1. Ms. Mueller said since April 6, NOAA has engaged in discussions regarding expansion of the use of the emblem with: NOAA and DOC GC General Law Divisions; Line Offices (OAR, NWS, NESDIS); and Cooperative Institutes, Joint Institutes, and Sea Grant Institutions. Currently there are two test cases moving forward on this issue: 1) NWS delegation of authority to identify NWS products and links to websites and 2) OAR's request for CI use of the emblem on homepages and on NOAA products. Ms. Mueller stated that one of the first steps towards really moving forward on this issue it to assess whether or not there is a need to revisit existing findings and policies, including amendments to the DAO 201-1. In conclusion, she asked for suggestions regarding other areas on expanded NOAA emblem use.

Discussion

Marshall Shepard asked the difference between a logo and an emblem. Wendy Levine, Physical Scientist, National Weather Service responded stating the NWS identifier is a logo and the NOAA emblem has 'Department of Commerce' written around the boarder. The NWS does not have that written piece; therefore, it uses the logo.

Dr. Lubchenco thanked the SAB for raising the issue and presenting an articulate argument for why this is such an important issue. She stated that NOAA is working closely with the

Final

Department on Commerce on the issue and she is hopeful that progress will be made.

Dr. Shepard stated that during the April discussions NASA was used as an example, however, the Department of Energy (DOE) may be a better model because it has a similar status as NOAA. Megan Mueller said they are also looking at other agencies as examples, including the Department of Interior (DOI).

Susan Avery asked if successful test cases could open up the use of the emblem in offices such as OAR and NOS. Ms. Mueller said they are starting with the easy cases and then moving forward after that. Dr. Levine said the NWS moved forward with its request because it received requests to identify NWS products that are made available to the public; there is limited delegation of authority to use the emblem for unaltered NWS products and links to any NOAA website. Dr. Levine stated that if there are other requests, the NWS will let other line offices know, and forward these requests to the DOC General Counsel.

Raymond Ban asked if line offices other than NWS have logos. Ms. Mueller said no. Mr. Ban then asked if there was a process by which a line office could create a logo. Ms. Mueller stated that the issue goes beyond logos; it also encapsulates NOAA's marketing strategies. Mr. Ban followed up by asking about NWS' business cards. Ms. Mueller responded by saying when people ask about the use of identifiers, they ask for the use of the NOAA emblem. This is what is being recommended.

David Titley said that the Director of Communications, Ms. Mary Clayton, should be included in these discussions. Dr. Titley recommended that there should be fewer emblems and/or logos in the agency.

Katherine Sullivan said that the line offices website front pages will have either the NOAA and/or Commerce logos, except for NWS, which will have the NWS logo added to the page. Dr. Sullivan commented that NASA has made a concerted effort to have all its components use one logo. Robert Detrick stated that it would be better for NOAA to portray itself as a single agency with a single logo.

Jean May-Brett asked if NOAA should go further than accepting requests; how will people know that display of the NWS logo is something NOAA wants to see done; how will the information about that logo be disseminated? Dr. Levine said when online service is available; NWS will have a dissemination service for electronic products but will have limited access. NWS will send a notice to the American Meteorological Service (AMS) private sector listserv about availability of the logo. The public domain, i.e. NSW, can't require use, but can request that people use it, particularly for watches and warnings. For public domain use it would be worth checking on NASA to assess what they do, because there are ways NOAA can be more proactive. Ms. May-Brett asked Dr. Shepard if AMS could do something about publicizing this opportunity and

Final

encouraging use of the NWS logo. Dr. Shepard said yes, AMS could assist, especially through notices, mass emailing to the AMS listserv as well as including a new item on the front page of the AMS website. Social media such as Twitter and Facebook could also be utilized if needed.

Eric Barron complimented NOAA on its progress but stated that there is an underlying concern. He said that SAB's objective is to promote NOAA getting credit for its good works, however, if the CI effort fails, it may be wise to consider creating a version of the emblem that says "is a partner of" or "in partnership with." This would make it clear that it is not NOAA. Mr. Ban added that this issue has many levels; for example, the graphic on the SAB template is not copyrighted. If more logos are created, NOAA needs to ensure that there is a common look and 'feel' and they may need a budget to do this. Several of the SAB members stated there should be no new logos, there should be only one main NOAA logo or emblem. Mr. Ban requested that there should be ongoing updates on the progress of this issue.

Action 1: Marshall Shepherd, Science Advisory Board member and President Elect of the American Meteorological Society, will consider how to get the word out to the AMS members about the new National Weather Service policy, when it is approved by DoC, on use of the NOAA emblem by third parties.

Action 2: NOAA will continue to provide updates to the SAB on NOAA Emblem policy changes.

Ocean Exploration Report on the Review of the Ocean Exploration Program

Jerry Schubel, Aquarium of the Pacific, SAB member and liaison to the Ocean Exploration Advisory Working Group

Jesse Ausubel, Alfred P. Sloan Foundation, Review Co-Chair

VADM Paul G. Gaffney II, USN (Ret.), Monmouth University, Review Co-Chair

Summary

The purpose of this presentation was to provide an overview of the Ocean Exploration and Research (OER) Program review. Jerry Schubel introduced the review team. Jesse Ausubel and Paul Gaffney provided a summary of the findings of the review as well as the ten recommendations that were suggested by the review panel. The major findings of the review were that OE was successful in science, mapping, data management, education, politics and diplomacy, however, more support was needed for conducting research in vast, unexplored regions of the ocean. The ten recommendations were as follows: 1) set strategic priorities, 2) affirm NOAA leadership support, 3) create and operate a national forum, 4) consider new management models, 5) resume higher level of targeted expeditions, 6) consider alternatives to the *Okeanos Explorer*, 7) update technology strategy, 8) speed completion of extended continental shelf mapping, 9) improve branding of the program for outreach and education purposes, and 10) implement the formation of the OE Advisory Board in NOAA.

Final

Raymond Ban stated that the Ocean Exploration Advisory Working Group (OEAWG) is moving from the SAB to status as a stand-alone federal advisory committee status. He stated that as part of this transition the OEAWG agreed to do a review of the OER program. Dr. Schubel reminded the SAB that Craig McLean requested the OEAWG conduct a review of the ten-year program. He requested that OE Director, Tim Arcano be given the opportunity to provide comments and added that OE assisted with the criteria and identification of the review team. Dr. Ausubel stated that the review team met in May and that OE did a lot of documentation of the 10- year program. He said the good news was that an extraordinary amount of work was done with the 20M/yr budget and stated that the review panel's recommendations need to be considered under the continuing budget of 20M/yr, this places a premium on strategy and hard choices. VADM Gaffney added that the recommendation include setting strategic goals and priorities and considering new management models, all this to be done with a 20M budget. He stated that the entire panel agreed with the recommendations.

Discussion

Dr. Schubel thanked VADM Gaffney, Dr. Ausubel, and the entire review committee for their contributions. Tim Arcano also thanked the review team, and said that he wants to make sure that they have a good understanding of OE's capabilities and related costs. He added that there is a new IT model at the inner space center; this is a new paradigm doe engaging scientists on shore. Dr. Arcano said Craig McLean appreciated the results of this model and targeted recommendation 6 for NOAA colleagues. Dr. Arcano noted that when Congress gave OE a Navy ship the budget was the same then as it is now and some work was required to lower the operational cost of that vessel.

Mike Devaney commented on slide 5 of the presentation stating that it shows a decline across all federal fleets given the 500% increase in the cost of fuel; cost remains the same for fuel no matter where the ship goes.

James Sanchirico stated that he had a hard time interpreting the diverse metrics histogram data on defining program boundaries and setting goals and priorities. He expressed that it would be good if that data could be sorted in a more comprehensive way with more details. Dr. Ausubel stated this information interested the panel and this was one of the reasons they recommended a national forum. The forum could be an occasion to report on what other individuals are doing.

Dr. Schubel commented that funding for exciting individual short-term projects can be expected from the private sector but not for funding programs over the long term. Susan Avery agreed that the private sector will fund 'one-off' exciting projects. She added that the government does systematic exploration and that is why it is important for a national program to be in place. Dr. Avery expressed her interest in OER for increased scientific knowledge about the ocean, and this would require OE having a systematic process with long-term commitment. She stated the University-National Oceanographic Laboratory System (UNOLS) fleet is downsizing because

Final

there aren't enough resources to fund it. Stresses on ocean science resources are increasing; NSF is changing from 60% research to ~40% research.

Dr. Sanchirico stated that there must be a clear description of ocean exploration. Dr. Ausubel responded that is why the first recommendation was to define program boundaries.

Jane Lubchenco thanked the OER review team for a great report and expressed her enthusiasm for the national forum. She said that there is excitement for defining the boundaries and next steps; this would be engaging to the public and private sector as well as build on the McNutt [Ocean Exploration] report, creating a vision for OER. Dr. Lubchenco said in addition to Congressional interest, it is vitally important to have this dialogue in partnership with the Administration.

Dawn Wright commented that nonprofit organizations that charter commercial ships could be sought out as an alternative to ease the difficulty with UNOLS ships. She added that Global Oceans is one such organization.

Dr. Schubel stated that they will work to revise the report and that the report is currently out for comment by the OEAWG until the end of July. Dr. Sanchirico suggested that recommendation 6 about alternatives to the *Okeanos Explorer* be clarified. Dr. Ausubel said the panel can answer these questions and send them back to the SAB. Mr. Ban added that there were a few other technical issues and that the SAB would appreciate having the comments from the reviews and this meeting discussion included in the final report. VADM Gaffney said the review team will formally address the review recommendations as presented to the SAB and clarify them in the final report. Mr. Ban agreed. Dr. Schubel stated that he assumes things will be clarified but he is not certain that they will change the recommendations. Dr. Lubchenco stated that the when the SAB receives the report, they [SAB] can disagree with any of the recommendations in the transmittal letter.

Action 3: The Ocean Exploration Review Panel under the Science Advisory Board Ocean Exploration Advisory Working Group will finalize its report and submit to the SAB for the Fall 2012 teleconference meeting.

Action 4: The Science Advisory Board will consider the final Ocean Exploration Review Report at the Fall 2012 teleconference for transmittal to NOAA.

Development of Guidelines for NOAA's Integrated Ecosystem Assessment Program: An Update

Richard Merrick, Chief Science Advisor, National Marine Fisheries Service

Summary

The purpose of this presentation was to provide an update on the development of guidelines for NOAA's integrated ecosystem assessment (IEA) program. Richard Merrick, Chief Science

Final

Advisor, National Marine Fisheries Service (NMFS) stated that the IEA guidance document was written by a diverse team of partners, and comments were received and incorporated into the document that was submitted to the SAB. Dr. Merrick highlighted the key document sections, which included: concepts and terminology for IEAs, a step-wise process for developing an IEA, completing an IEA, and progress towards implementing IEAs in the United States. In closing, he stated that NOAA's IEA program is a cross-line office initiative. Following the process outlined in the guidance document, IEAs will continue to be developed, implemented, and informed by all partners to address a diverse suite of ecosystem management objectives nationwide.

Discussion

Jim Sanchirico asked what the support is from NOAA and external partners for using this method. He noted that NOAA does not have a lot of leverage in implementing management actions, so there would need to be a lot of buy-in on this method. Richard Merrick agreed. He said there is not a lot at NOAA's disposal therefore, there is a need to work with various groups to make the approach succeed.

Jane Lubchenco said it is even more challenging because federal partners also have to be taken in consideration. Dr. Lubchenco stated that it is more than just resource management; the aim of the IEAs is to enhance decision-making in resource management, and to inform decisions on healthy ecosystems and coasts. She added that NOAA has a lot to do and the agency is working on putting all its resources in place. She then posed the question – if there aren't the resources to do this in the region, are there simple rules that can advise decision-making that would make the process happen? She then added that the outcome needs to focus on the benefit to people and the delivery of ecosystem services people want and need. Dr. Merrick said the process needs to apply even if the resources are limited. He said without resources it all comes down to the process, and finding simpler ways to do things. Dr. Lubchenco commented that the description of the process make sense, however, the way it is written seems quite complicated. She added that describing it in multiple ways would be good. Dr. Merrick replied that this is part of the way they are trying to communicate the process.

Dr. Sanchirico suggested that they should find the best way to use the potential \$4-5M that Dr. Merrick had indicated NMFS might have to spend on this, NMFS should use the funds to consider what should be tested and on what scale. John Stein stated that through the West Coast Governors Alliance on Ocean Health there is a sub-team in place to discuss regional IEAs. Dr. Stein said while it is a linear process, it is recognized that NMFS must work on different aspects simultaneously. He added that NMFS is hiring a Senior Technology (ST) person for ecosystems.

Susan Avery asked about the assessment of the data that will be used, and when NMFS will know that it has the right information. Dr. Merrick said the development of system indicators and targets would be a form of measurement. Dr. Stein added that by going through the steps with the people involved, you can change the goals to take advantage of what is available to do to get started. He stated that NMFS is looking broadly at how best to use what it has.

Dr. Lubchenco asked if the SAB members of the ESMWG had any input. Dr. Sanchirico said yes, and added that ESMWG is happy with where the guidance is heading.

Final

Status Report for NESDIS Satellite Programs: Preliminary Findings and Observations

Marshall Shepherd, University of Georgia, SAB member, liaison to the SAB Satellite Task Force
Robert Winokur, Oceanographer of the Navy and Chair, SAB Satellite Task Force

Summary

Marshall Shepherd introduced this topic. He stated the group has been meeting over the last six months; this update leads into the final report, which will be delivered in the fall. Bob Winokur said the focus of the briefing is the key observations and recommendations. The findings are preliminary and will be updated based on feedback from SAB and NESDIS as the SATTF prepares the final report by October 2012.

Mr. Winokur noted several points in his “bottom line up front.” First, the SATTF thinks the NOAA budget for currently-planned space systems appears to be unsustainable. Second, NOAA is to be commended for taking steps to prepare for a future satellite system architecture and needs to continue down this path. Third, the SATTF believes NOAA needs a total systems approach to managing the satellite program, including the Joint Polar Satellite System (JPSS) and the Geostationary Operational Environmental Satellites (GOES), for which it now has sole responsibility. Fourth, the challenge is for NOAA to find a pathway to develop affordable, flexible and robust alternatives that allow it to stay within budget. The National Space Policy has provided guidance to NOAA. In addition, there is guidance to NESDIS from the NOAA Next Generation Strategic plan. The SATTF believes NOAA should continue to look to these documents for overall guidance.

The SATTF provided five general observations and a number of specific observations in the categories of requirements, systems engineering, alternative architectures, the ground system, policy, budget and risk, including top risks.

Mr. Winokur then outlined the preliminary recommendations developed by the SATTF:

- Establish a prioritized list of threshold space-based observational requirements
- Create a Chief Systems Engineering function
- Assess affordable architectures that include large multi-sensor satellite systems and alternative distributed systems, or a hybrid.
- Develop a tailored overarching risk-management plan consistent with alternative architectural decisions
- Develop a cost-capped implementation plan for a NOAA Enterprise Ground System building on recently completed study and analysis of alternatives
- Develop an integrated master schedule addressing the entire satellite system architecture
- Coordinate with stakeholders, including National and International stakeholders, with respect to prioritization of requirements and architectural tradeoffs.

Final

The next steps for the SATTF include production of a draft report for public comment in October 2012. The final report will be delivered to the SAB at its November 2012 meeting. Dr. Shepherd indicated that the Task Force wants feedback from the SAB.

Discussion

Dr. Lubchenco thanked Mr. Winokur for the report. She thinks the task force pointed out the need for a broader US government look at satellite architecture. She asked Mr. Winokur what he sees as the mechanism for doing that. A lot of the issues noted by the task force are not just in NOAA. What is the path forward and who benefits from the services NOAA is providing? Mary Kicza, Assistant Administrator for NESDIS, responded that the National Earth Observations Task Force (NEO TF) will take a broad look at requirements for 14 civil agencies and will offer a prioritized look at those needs. The Office of Science and Technology Policy (OSTP) leads this. It will be updated every three years and will inform the budget process. Secondly, each of the NOAA programs with operational requirements has a requirements document but this does not include who is using the information beyond NOAA and should more clearly articulate this. Mr. Winokur added that this NEO TF is important but OMB has to be part of this process. There has to be some agreement between OSTP and OMB as they move forward on this national strategy. In addition, he pointed out that the Department of Defense is not part of the NEO process.

Kathryn Sullivan thanked the SATTF for its work as well. She noted that the TF referred to the DoD operationally-responsive satellites (ORS) program. She wondered if the TF had any specific recommendations about that model. She also noted that NASA put out a Request for Information (RFI) on alternative approaches to JPSS2 for up to an eight-instrument configuration and wanted to know if the TF had considered this in its deliberations. Mr. Winokur replied the SATTF can provide a strong recommendation on alternative architectures but not the detailed look budget. The Task Force has no costing experts so can't provide funding tradeoff analysis.

David Titley, NOAA Deputy Under Secretary for Operations, asked how organizations or individuals could provide input on demonstration that would be useful. Does the Task Force have any comments on host-based payload and how it would apply to the NOAA mission? Mr. Winokur replied said with respect to organizations to speak to, they can make recommendations the Applied Physics Laboratory, Johns Hopkins University, DoD, appropriate federally-funded research and development centers, or the Jet Propulsion Laboratory at California Institute of Technology. The key is to find the right people within these organizations with whom to discuss the demonstration. The issue is the budget vs. capability tradeoffs. National Space Science Board can assist as well. The bottom line is that any aerospace contractor is willing to discuss alternative architectures. With respect to the question on hosted payload, Mr. Winokur

Final

responded that the benefit is a free launch to space, however there is a loss of control. One must launch on the schedule provided and if sensor fails there is no way to replace it.

Ray Ban asked why purchasing data through partial commercialization was not on the list of recommendations for implementation. Mr. Winokur replied it this is an option but the Task Force did not consider it. His experience in Navy has been that there were no real cost savings for this type of process.

Susan Avery asked if the recommendation for a Chief Systems Engineer referred an individual or a group of people. What was the vision for this? Mr. Winokur said there is no single person at this time in NOAA who has, from an engineering perspective, an end-to end view that includes the requirements process. There needs to be a person who does this; that individual may need a staff of a few people for support. It would be up to NESDIS to decide who that person would be and at what level that person would sit in the organization.

Ray thanked Mr. Winokur and Dr. Shepherd for their work on this topic and said the SAB was looking forward to the final report from the Task Force in November.

NOAA SAB Portfolio Review Task Force Update and Discussion of Next Steps

Peter Kareiva, Roberta Balstad, Co-Chairs of the Portfolio Review Task Force

Summary

The purpose of this presentation was to provide an update of the progress made by the SAB Research and Development Portfolio Review Task Force (PRTF) since the April 6, 2012 NOAA SAB meeting. Peter Kareiva and Roberta Balstad gave an over view of the scope of the portfolio review, and stated that the PRTF would have a set of preliminary recommendations to present at the November 2012 NOAA SAB meeting, with a final report to be submitted by the Spring 2013 SAB meeting. Dr. Kareiva and Dr. Balstad briefly recapped the various meetings conducted, both in person and via teleconference. These included meetings with the NOAA Council of Fellows, CI Executive Council, SeaGrant Directors, Presidential Early Career Awards for Scientists and Engineers (PECASE) winners, and social scientists who work in NOAA. They also highlighted some of the major findings gathered from the preliminary analysis of the results from the survey conducted on NOAA's bench scientists, noting that of the ~2560 bench scientists that were identified a total of 775 (30%) responded. A review of the information requested from NOAA was also provided.

Discussion

Jane Lubchenco expressed her appreciation for the work that PRTF has completed thus far. She said that she hoped the report will begin with stating the importance of research to NOAA on the short, medium and long term basis. She added that although the report will be coming from the

Final

SAB to NOAA, if successful, there will be a broader audience outside of the agency, and the PRTF should also keep this audience in mind. Roberta Balstad stated that one of the purposes of the PRTF's broad consultation was their recognition of this broad audience.

Raymond Ban stated that at the PRTF meeting in Silver Spring Jonathan Kelsey gave a presentation and proposed the idea of having policy briefings with Congressional members and staff about on the work of the PRTF. Peter Kareiva said the PRFT will discuss briefings on the Hill at the July PRTF meeting. Mr. Ban said that this could create more awareness across Congressional committees that have impacts on NOAA policy. Dr. Kareiva stated that the notion was to have briefings both before and after the report is transmitted to NOAA.

Dr. Lubchenco asked about the bench scientist survey and whether it was too late for people to submit responses. Dr. Kareiva and Dr. Balstad stated that the PRTF members have already begun reading them, so it is too late.

David Titley asked if the PRTF was thinking about how to summarize NOAA's R&D, and would it be appropriate for them to assess how NOAA is using R&D - it is more efficient and is that a fair question. Dr. Balstad said that it was a fair question, but there is a need to go beyond that. The importance of R&D is played out in the future of NOAA. NOAA needs to be more flexible and agile and the only way to do this is through R&D. Dr. Titley asked if other government agencies have recommended guidelines for improving things; should this be something that could be consciously added to guidance plans. He added that the Office of Naval Research (ONR) has specific R&D allocations that are approved at a senior level and then the programs execute the plans. Dr. Kareiva and Mr. Ban said there has been discussion on this topic, but no resolution has occurred. Jerry Schubel referred to a Russian parable stating "it is not the horse that pulls the cart, it is the oats." The oats in this case are R&D.

Mr. Ban commented that what has worked for NOAA before is not going to work now; there is a new world order. He stated as an example that the SAB Satellite Task Force (SATTF) recognizes that what NESDIS has been doing is not going to get the agency where it needs to go in the future. Dr. Schubel said one definition of a core mission is what the world would lose if NOAA stopped doing R&D tomorrow. Marshall Shepherd agreed that there needs to be a strong case for what the nation would lose if NOAA stopped doing its R&D.

Kathryn Sullivan asked about investing to improve work at NOAA, if NOAA had the right sort of tools, methods, and practices in place to evaluate alternatives to shape its portfolio. Dr. Kareiva said they get a sense of this from reading the survey responses.

Final

Working Groups Update

CWG

The climate working group (CWG) has been in recess for the past year and a half, pending a decision on the NOAA Climate Service. The next meeting will be on July 30-31 in Washington, DC. Topics for discussion include the climate goal budget, observations, monitoring, regional climate modeling, weather extremes, drought, and water resources.

Marshall Shepherd asked if his position on the CWG will be filled. Robert Detrick said there have been three resignations and several people reached the end of their appointments. The WG plans on filling 8-9 positions on the committee following the July meeting; adding to the nine remaining members. Dr. Detrick stated that other topics for discussion will be expertise needed for the new members, and how the CWG can assist NOAA in the climate goal. He added that NOAA has had discussions with senior leadership on how to move forward with the climate goal with climate services distributed across line offices. Dr. Detrick stated that conversations with Chair of the CWG Tony Busalacchi will be had on whether he will continue in that role.

DAARWG

Dawn Wright provided an update on the Data Archive and Access Requirements Working Group (DAARWG). She stated that DAARWG had a meeting on June 27-29 in Washington, DC. One of the topics discussed was the response to questions from the SAB PRTF on the NOAA R&D portfolio. Other topics included environmental data management at NOAA, data management as NOAA's core business and good business practices, and the issue of user requirements for finding and retrieving data archives. Dr. Wright said that the group will likely meet next in November on the east coast.

EISWG

Raymond Ban provided an update on the Environmental Information Services Working Group (EISWG). He stated that EISWG had a meeting on May 1-2 in Washington, DC. The EISWG was the first group to respond to PRTF questions. At the meeting the group discussed the open weather and climate service concept that was sent to the SAB last spring. The Working Group suggested that the American Meteorological Society (AMS) Commission on Weather and Climate Enterprise can help NOAA and NWS as they formulate responses to the SAB recommendations. He added that there will be further discussion on this concept at the AMS summer meeting in Norman, OK. Mr. Ban said the most important issue for EISWG is its evaluation after three years. He stated that EISWG was formed originally with a heavy focus on NWS; however, EISWG has gone beyond NWS in deliberations. The question now is whether EISWG should expand to be more inclusive of all of NOAA's functions. Should its mission change or should it be disestablished? Mr. Ban said EISWG will present the working group's recommendations for moving forward at the November SAB meeting.

Final

ESMWG

James Sanchirico provided an update on the Ecosystem Sciences and Management Working Group (ESMWG). Dr. Sanchirico said the ESMWG met in San Francisco during the week prior to this SAB meeting. At that meeting the members discussed ecosystem-based fisheries management (EBFM), NOAA habitat restoration and a process for deciding on future agenda items. He said the next meeting is October 31- November 1, 2012. For EBFM this was the third meeting ESMWG has had on the topic so there will be a report with recommendations presented at the November SAB meeting. Dr. Sanchirico offered to provide another update at the SAB fall teleconference. He stated that the main focus of the report will be on bridging the gap between science and implementation. Dr. Sanchirico informed the SAB that the working group began a review of coastal habitat restoration that will continue over the next two meetings. The working group will provide recommendations for NOAA on Arctic issues. He stated that the working group has also indicated an interest in reviewing the Arctic Implementation Plan.

Mr. Ban asked about creating a cross function team of working group members that could serve as a task force to review the Arctic Implementation Plan. Dr. Sanchirico said they didn't discuss how to implement the idea, but this would be a unifying idea that would help to get infrastructure in place. Jane Lubchenco and David Titley agreed that this was a great idea, and Eve Gruntfest suggested looking at the work done by the Canadians. Mr. Ban suggested that the SAB think about how best to get this done for discussion at the next SAB meeting. Richard Merrick suggested with so many working groups and task forces on the Arctic NOAA should perhaps present to SAB in November. Mr. Ban said the November agenda is quite full and suggested that this discussion could be covered at the fall teleconference. Cynthia Decker added that the discussion also start at the winter teleconference. Mr. Ban then stated that there is also the option of having a face to face discussion at Spring in-person meeting.

OEAWG

Jerry Schubel provided an update on the Ocean Exploration Advisory Working Group (OEAWG). He reminded the SAB that the OER review panel received the review report on Friday and has until the end of July to revise the Powerpoint presentation with the results and notes. He added that the OER program will convert the Powerpoint presentation and notes into a narrative report and append the Powerpoint presentation and notes. This will then be sent to the OEAWG, which will review it and then transmit it to the SAB. The SAB can then comment and transmit to NOAA. NOAA will send its response to the Ocean Exploration Advisory Board (OEAB), when it is convened, as well as the SAB.

Dr. Lubchencho asked for clarification on the timeline. The response was that narrative report will be transmitted by the end of August, giving the OEAWG a few weeks for comments and everything should be ready by the Fall teleconference. Ray Ban suggested October 1st as the target date for the SAB Fall teleconference. A question was asked about OEAB members appointments. NOAA replied that this process is still underway with the charter still awaiting approval.

Susan Avery said that she finds it unusual to have a stand-alone federal advisory committee for a \$20M program even given the importance of an ocean exploration program. She suggested having a liaison from the SAB on that Board so that the program does not get lost in the NOAA

Final

budget. Mr. Ban suggested having an *ad hoc* member of the SAB on the OEAB. Dr. Schubel agreed it would be a good idea.

In closing Mr. Ban commented that the cooperative institute CI review process document has not been reviewed in 13 years and suggested the SAB take a look at the document to assess if any changes should be made.

Action 5: Ray Ban, Science Advisory Board Chair, and Cynthia Decker, SAB Executive Director will work out a plan and timeline for NOAA to present its Arctic activities to the SAB.

Adjourn

The meeting adjourned for the day at 5:30 PM

Tuesday, 17 July 2012

Dr. Cynthia J. Decker, Executive Director made the opening remarks and reviewed the agenda.

Pacific Marine Environmental Laboratory Overview

Dr. Christopher Sabine, Director, Pacific Marine Environmental Laboratory

Summary

The purpose of this presentation was to provide an overview of the NOAA Oceanic and Atmospheric Research (OAR) Pacific Marine Environmental Laboratory (PMEL). Director Sabine gave a presentation that highlighted the major functions, achievements, and challenges faced by the lab. His presentation culminated with a short tour of the PMEL facility for the SAB members and others at the meeting.

In his presentation, Dr. Sabine focused on the main themes: PMEL observes, innovates, and informs. PMEL is an ocean-going laboratory that studies ocean processes from the sea floor to the air-sea interface. For example, PMEL developed the DART (Deep-ocean Assessment and Reporting of Tsunamis) moorings for real-time detection of tsunamis. In collaboration with the Ocean Exploration and Research program, PMEL finds and studies hydrothermal vents on the sea floor. PMEL's hydrothermal vent monitoring on the Juan de Fuca ridge has produced the longest record of vent activity anywhere in the world. Research is also conducted with the National Marine Fisheries Service (NMFS) on the physics and chemistry of the ocean to better understand the fisheries in the Gulf of Alaska and the Bering Sea. Dr. Sabine added that a variety of observations are made in all the major oceans using platforms ranging from buoys to hydrographic cruises on ships with measurements from the ocean-atmosphere interface and throughout the water column.

In terms of innovation, PMEL has been active in developing new mooring technologies for decades. New versions of the Argo floats (drifters that are released around the world to collect data in water column), sensors to understand hydrothermal vents, and autonomous atmospheric vehicles for air sampling are all examples of innovative technologies PMEL is working on with a

Final

variety of partners. In addition to these developments, Dr. Sabine stated that PMEL also has also integrated a suite of sensors into an autonomous surface vessel called a wave glider. The wave glider travels at 1-2 knots in a variety of seas and can be controlled from a desktop via satellite.

Dr. Sabine said PMEL has also developed the technology to process all the data that are collected from the various instruments, in real time, and make these data available to anyone. PMEL informs by making data free and quickly available to the community. For example, tsunami predications are available to the world within minutes after data are received from the DART moorings. PMEL has a very strong web presence, and is very active in development of an annually updated, peer-reviewed document on recent observations of environmental conditions in the Arctic - Arctic report card. There is also an ongoing initiative to work with the international community on gathering and providing global data sets, which people can freely explore. For the past ten years PMEL has been conducting a science summer camp. This year, a total of 120 middle school students are attending.

In closing, Dr. Sabine provided information on demographics, funding and challenges. He stated that there are 200 employees at PMEL, half of whom are from CIs; academic partnerships are very important. Half of the PMEL employees have advanced science degrees and the laboratory works closely with OAR programs. A lot of funding comes from NOAA programs and line offices; these include climate, ocean acidification, NMFS, and NWS just to name a few; funding is also received from other agencies. The greatest challenge, Dr. Sabine stated, is the dramatic decrease in available NOAA ship time. PMEL needs on average 600 sea days a year to conduct its research. He said this last year time available on NOAA ships has dropped below 100 sea-days; extra days at sea were supplemented by charter and bartered sources. The lab works closely with international colleagues to get ship time.

Discussion

Kathryn Sullivan asked about buoy maintenance and ship time for scientific cruises. Raymond Ban followed up with a question on the difficulty of getting ships into the Indian Ocean. Chris Sabine stated that most of the ship needs are for buoy maintenance and that cost is a major factor for conducting research using moorings.

Office of Response and Restoration Presentation

Dave Westerholm, Director, Office of Response and Restoration

Bill Lehr, Office of Response and Restoration, Emergency Response Division

Nir Barnea, Office of Response and Restoration, Marine Debris Program

Summary

The purpose of this presentation was to provide an overview of the NOAA National Ocean Service (NOS) Office of Response and Restoration (OR&R), and highlight research focus areas: emergency response, and marine debris. Dave Westerholm summarized what OR&R does. He

Final

listed the divisions and areas of expertise, which included trajectory forecasts and cost documentation. He also listed their mandates, two of which are the Oil Pollution Act and the Clean Water Act. He mentioned some of the projects that OR&R are currently working on: responding to 120-170 oil and hazardous spills on average each year, training for over 700 emergency responders, supporting over 40 oil spill drills, settling 4-7 natural resource damage assessment cases, supporting the removal of hundreds of tons of marine debris, and developing new tools and conducting research to address hazards on the water. Bill Lehr spoke briefly about emergency scientific support as it relates to oil and chemical spills. He mentioned some of the support the emergency response division provides: forecasts on fate and movement of pollutants, shoreline assessment and aerial observations, identify and characterize resources at risk, and training for emergency responders. Dr. Lehr also noted some of the upcoming actions and critical issues, including Arctic exploration and Caribbean deep well drilling, the implementation of a new National Response Team (NRT) guidance including dispersants, Bureau of Safety and Environmental Enforcement (BSEE) regulations and Exploration and Production (E&P) plan review, and 3-D modeling. He also mentioned ongoing damage assessment, remediation and restoration work being conducted on injured natural resources. Nir Barnea spoke about marine debris mitigation. He stated that the Japan tsunami debris and the reauthorization bills in the House and Senate are the main upcoming actions and critical issues on which the marine debris program is working. He said the key initiatives for the program are public outreach and education, a “fishing-for-energy” campaign, developing a marine debris tracker and an international strategy for addressing marine debris impacts. Mention was also made of NOAA’s new disaster response center in Mobile, Alabama for the all-hazards support in the Gulf of Mexico. In closing, each speaker discussed the various challenges faced by OR&R. Some of these challenges are logistics for working in the Arctic, oil spill cleanup technologies, long-term, natural disaster marine debris issues, and current spill threats. A list of NOAA actions E&P was provided. The main actions listed were collaborations with partners and safety.

Discussion

SAB members asked about the debris estimates from the Japan tsunami OR&R staff responded that the estimates came from the government of Japan.

Peter Kareiva asked about the background data for the July 14, Response Estimate pie chart OR&R presented. Bill Lehr stated that numbers aren’t complete at this point. Dave Westerholm said the White House wanted the information to be presented in an understandable way to the public. Dr. Kareiva asked why not provide the raw data. Dr. Lehr stated there was not enough time or resources to process all the data and they need to get the information out without creating bad publicity. Dr. Kareiva then commented about keeping information in-house for decision making versus letting the public see what data is being gathered and how ‘the story’ is being constructed. He stated that he favors a transparent approach.

Final

Kathryn Sullivan asked about marine debris data smart phone tracker application and whether it was being used by the public or just NOAA partners. Mr. Westerholm stated that it is still in the beta-testing stage. He added that some people are using it and they are trying to improve the marketing strategies. Dr. Sullivan asked if there was any follow-up from the Western Governors Conference and ESRI meetings. Nir Barnea said not yet, this is something that needs to be done. Dr. Sullivan strongly suggested that they follow up and take advantage of the partnership with ESRI because it has marketing applications to the general public. She also mentioned her meeting in Alaska with ocean observing regional affiliates, and suggested that OR&R needs to work with them and Environmental Response Management Application (ERMA) on their data platforms.

Jerry Schubel asked if OR&R has thought about putting some of its results on marine debris and oil spills on Science on a SphereTM. Dr. Barnea said it is being considered.

David Titley stated that he was interested in understanding the difference between the emergency response and disaster response divisions. OR&R staff responded that the disaster response center is a building in Mobile, Alabama, while the emergency response is within that office and is responsible for oil and chemical spill mitigation. Damage assessment looks at damage and cost, and collects evidence for court cases. Dr. Titley stated that he would like to know more about how NOAA's spill models compare to those of the US Geological Survey. He noted that NOAA's work on Deepwater Horizon issues as it relates atmosphere challenges is complicated.

Alaska Fisheries Science Center Presentation

Doug DeMaster, Director, NMFS Alaska Fisheries Science Center

Summary

The purpose of this presentation was to provide an overview of some of the current research the National Marine Fisheries Service (NMFS) Alaska Fisheries Science Center (AFSC) has been doing. Doug DeMaster, Director, AFSC spoke about the importance of Alaskan fisheries to the nation, and added that it was the largest private sector employer in Alaska. Dr. DeMaster highlighted the importance of subsistence harvests to many coastal communities, provided an update on the current status of fish stocks, and discussed three case studies of evolving areas of research at AFSC - the Bering Sea project, Arctic research, and Camtrawl, a survey methodology. For the Bering Sea project, Dr. DeMaster briefly described the various key partners involved in the project – U.S Fish and Wildlife Service, National Oceanographic and Atmospheric Administration, National Science Foundation, and the North Pacific Research Board. He provided information on pollock stocks and the effects of sea surface temperature on pollock recruitment. Dr. DeMaster stated that some of the most important drivers for Arctic research are climate change, oil and gas exploration, commercial fishing, co-management, and legal petitions. He listed some the Arctic research activities, which included an Arctic whale ecology study, ice seal abundance surveys, and the integrated ecosystem survey. He briefly

Final

described the results from bottom trawl surveys in the eastern Bering and Chukchi Seas, and the Beaufort Sea survey. He also described some of the future needs for sustainable ecosystem management in the Arctic, one of which was the need for continuation of NOAA's primary marine climate change research program, referred to as the Distributed Biological Observatory. In closing, Dr. DeMaster described the need for and explained the use of the Camtrawl technology (a trawl based camera system) and stated that it provided a viable non-extractive alternative for conducting fisheries surveys with minimal disruption to historic time series.

Discussion

David Titley commented on the error bars on the Alaska fisheries report card graph. Doug DeMaster responded that the error bars vary by species and how often they are surveyed. He stated that, for management purposes, point estimates are used, but that these threshold levels incorporate uncertainty in a precautionary manner. Dr. DeMaster noted that coefficients of variation (CV) for well surveyed stocks were typically less than 0.5; while for poorly surveyed stocks could exceed 1.0.

RADM Michael Devany asked whether the Fishery Management Councils (FMCs) were going to agree to the results of the Camtrawl surveys. Dr. DeMaster said the FMCs could not use the data from a Camtrawl survey for age specific assessment models; however, these data could be used for length based assessment models. DeMaster added that prior to exclusive use of this new technology, NMFS would calibrate the results of current survey protocols with those from the Camtrawl. In addition, survey results and calibration results would be carefully reviewed prior to any change in survey protocol by the Scientific and Statistical Committees (SSC) of the FMC's

Susan Avery asked if the sonars were narrow beam, Dr. De Master stated that they were multibeam.

Richard Merrick commented about the pictures from the Camtrawl. He stated that they were great but the processing of so many pictures is still problematic. He added that the Camtrawl is a pilot project that shows promise.

Dr. DeMaster said the AFSC would appreciate the SAB's attention on the Arctic issues. He stated that AFSC is 90% dependent on the Department of Interior Bureau of Ocean Energy Management (BOEM) for funding in the high Arctic. Dr. Merrick added that even with multi-year funding from BOEM, the research is mostly limited to what BOEM wants to do. Raymond Ban said the SAB may become more involved with the Arctic and will try to get something organized with the next 4-6 months with a broad look at Arctic issues. Dr. DeMaster stated that ocean aspects of research in the high Arctic are most problematic. He added that there has been considerable cooperation between NOAA Pacific Marine Environmental Laboratory (PMEL) and AFSC when dealing with some of the Arctic issues.

Final

James Sanchirico asked where/how does BOEM provide its funds. Dr. DeMaster stated that there is an MOA between BOEM and NOAA, which provides for transfers of funding between agencies, as well as BOEM funding going to universities that co-sponsor research with NOAA. He mentioned that NOAA also has a memorandum of understanding (MOU) with three of the primary oil and gas companies interested in production in Alaska (i.e., Shell Oil Co., ConocoPhillips, and StatOil).

Dr. Avery stated that there are areas the SAB should be paying attention to. For example, the interface between ocean and atmosphere is very important because the Arctic in its entirety is a tipping point. Dr. Avery commented on the oil spill response management and that BOEM is focused on technical risk. She stated that environmental and ecosystem risks need to be assessed as well, that this is now left up to NOAA. She then asked about NOAA's science and monitoring plan. Dr. DeMaster said he has been assisting with planning documents that are geared at improving monitoring and baseline species composition. Dr. Avery commented that the National Environmental Policy Act environmental impact statements are too narrowly focused. She added when looking at precautionary methods, the Deepwater Horizon oil spill has taught a lot. Dr. Avery raised the issue of technology development and test beds for new technology that could be transformative for fishery technologies. Dr. Merrick responded stating that there is money for this work. There is \$4-5M available to fund two multi-year projects from initial idea to final implementation. About \$1M of those funds will go to CIs and small internal grant programs. Dr. Merrick said that the first set of projects will focus on optical and acoustic technologies, and there will be workshops on how to better process data from Habcams, trawlcams, and other, similar sources.

Dr. DeMaster made mention again of the need for attention to the high Arctic. He stated that NOAA needs an "Arctic czar," who would provide a long term commitment for oversight on the ocean side of high Arctic research and management issues. He said input from the SAB on the Arctic would be greatly appreciated.

John Stein commented on the lessons learned from Exxon Valdez and Deepwater Horizon oil spills. He said that NOAA currently has critical expertise to address both seafood safety issues and ecological impacts to marine species, but that between major spills support for programs can erode and there is a risk of losing critical mass and that NOAA would then be ill-equipped to effectively respond to the disaster. He offered to do a 'state of science' presentation on fate and effects of oil in the marine environment to the SAB if the members are interested.

Action 6: The Science Advisory Board will request NOAA to send the Arctic Implementation Plan to the Ecosystem Sciences and Management Working Group for review.

Action 7: Ray Ban will send proposed wording changes on Cooperative Institute guidance to the Science Advisory Board members for consideration at the Fall 2012 teleconference.

Final

Action 8: The Science Advisory Board will consider whether to review Cooperative Institute review guidance completely in the future.

NOAA Northwest Fisheries Science Center Presentations

John Stein, Science and Research Director, Northwest Fisheries Science Center

George Pess, Scientist, Northwest Fisheries Science Center

Michelle McClure, Scientist, Northwest Fisheries Science Center

Summary

The purpose of the presentation was to provide an overview of the National Marine Fisheries Service (NMFS) Northwest Fisheries Science Center (NWFSC), and to highlight some of the research that is being conducted. John Stein, Director of NWFSC, presented the overview; George Pess, gave a presentation on the Elwha River dam removal; and Michelle McClure gave a presentation on the first Joint Northwest-Southwest FSC Hake-Sardine Integrated Acoustic-Trawl Survey. In his presentation, Dr. Stein highlighted the themes for NWFSC's strategic science plan, and how NWFSC has adopted the NOAA framework. He described some of the projects NWFSC is working on. He noted that the NWFSC is one of two Science Centers in the NMFS with the expertise to research issues related to aquaculture.. He highlighted research on Southern resident killer whales and discussed the recent research that is being conducted on the ocean survival of Pacific salmon; he also highlighted significant progress in understanding factors affecting survival and productivity of Pacific salmon in their freshwater life stages. In closing, Dr. Stein spoke about the NWFSC's surveys of west coast groundfish and Pacific whiting in order to provide fishery independent data in managing these fisheries and that recent research is now leaning towards conducting ecosystem surveys. Dr. Pess spoke about the impacts of the Elwha River dams on the productivity and abundance of Pacific salmon in the system, the objectives of the Elwha ecosystem and fisheries restoration act, the physical changes that have occurred with the removal of one of the two dams on the Elwha, changes in populations of salmon and steelheads that are anticipated from the removal of the dams, and the ongoing research in the freshwater and nearshore/estuarine ecosystems. Dr. McClure spoke briefly about hake biology, the differences in spring vs. summer distributions of hake, and the objectives of the project, one of which was to evaluate the feasibility of long-term annual hake and sardine surveys. She discussed the collaboration between Canada Department of Fisheries and Oceans and the NW and SW Fisheries Science Centers, CONAPESCA Mexico, and the Pacific Whiting Conservation Cooperative. Dr. McClure also discussed the issue with the adult Pacific hake biomass estimates of 2009 and 2011 that led to the industry request for a survey in 2012; the difference sampling methods used for both hake and sardine; and the challenges faced, e.g. data transmittal, time constraints and staffing.

Final

Discussion

Peter Kareiva asked about the Elwha River, and that while it was not possible to establish an actual before – after control – impact experimental design what were we doing to account for environmental variation , and if NOAA had encouraged any university partnerships to help collect data at the site. Dr. Kareiva commented that this was a great scientific opportunity to make such collaborations. NWFSC staff responded that they are addressing accounting for environmental variation by monitoring sites in other watersheds that were similar to monitoring sites in the Elwha.. NWFSC also conducted a correlation analysis between populations of fish across the Olympic peninsula to provide a means to estimate the likely salmon population response following removal of the dams. Dr. Pess stated that NWFSC has been working with university collaborators, and a website has been set up to input data. He also noted that for the academic community and seeking funding from the National Science Foundation the removal of dams on the Elwha falls between being an experiment and just a management action, thus it is extremely difficult to get proposals based on monitoring the Elwha even considered for funding. Dr. Kareiva suggested pushing for more data sharing.

James Sanchirico asked about the hake-sardine survey. Michelle McClure stated that the survey is still ongoing.

Review of Actions

Cynthia J. Decker, Executive Director, SAB

Dr. Cynthia Decker reviewed the actions from the meeting.

Meeting Adjourn

Meeting adjourned at 2:30 PM

Actions

Action 1: Marshall Shepherd, Science Advisory Board member and President Elect of the American Meteorological Society, will consider how to get the word out to the AMS members about the new National Weather Service policy, when it is approved by DoC, on use of the NOAA emblem by third parties.

Action 2: NOAA will continue to provide updates to the SAB on NOAA Emblem policy changes.

Action 3: The Ocean Exploration Review Panel under the Science Advisory Board Ocean Exploration Advisory Working Group will finalize its report and submit to the SAB for the Fall 2012 teleconference meeting.

Final

Action 4: The Science Advisory Board will consider the final Ocean Exploration Review Report at the Fall 2012 teleconference for transmittal to NOAA.

Action 5: Ray Ban, Science Advisory Board Chair, and Cynthia Decker, SAB Executive Director will work out a plan and timeline for NOAA to present its Arctic activities to the SAB.

Action 6: The Science Advisory Board will request NOAA to send the Arctic Implementation Plan to the Ecosystem Sciences and Management Working Group for review.

Action 7: Ray Ban will send proposed wording changes on Cooperative Institute guidance to the Science Advisory Board members for consideration at the Fall 2012 teleconference.

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