

**35th Meeting of the NOAA Science Advisory Board
Long Beach, CA
22-23 July 2009**

Presentations for this meeting will be posted on the SAB website at
<http://www.sab.noaa.gov/Meetings/meetings.html>

Meeting Attendees

SAB members in attendance: Dr. David Fluharty, Chair, and Wakefield Professor of Ocean and Fishery Sciences, School of Marine Affairs, University of Washington; Dr. William Ballhaus, Past President and CEO, The Aerospace Corporation; Mr. Raymond Ban, Executive Vice President, The Weather Channel; Dr. Eric Barron, Director, National Corporation for Atmospheric Research; Mr. Michael Keebaugh, Vice President, Raytheon Company (retired); Dr. Geraldine Knatz, Executive Director, Port of Los Angeles; Dr. Frank Kudrna, Kudrna & Associates Ltd.; Dr. James Mahoney; Environmental Consultant; Dr. James Sanchirico, Associate Professor, University of California at Davis; Dr. Jerry Schubel, President and CEO, Aquarium of the Pacific; Dr. Carolyn Thoroughgood, Vice Provost for Research, University of Delaware; Dr. Thomas Zacharia, Associate Laboratory Director, Oak Ridge National Laboratory.

NOAA senior management and Line Office representatives in attendance: Dr. Jane Lubchenco, Undersecretary of Commerce for Oceans and Atmosphere and NOAA Administrator; Ms. Mary Glackin, Deputy Undersecretary of Commerce for Oceans and Atmosphere; Dr. Paul Doremus, Director of NOAA Strategic Planning and Deputy Assistant Administrator, Program Policy Integration; Dr. Richard Spinrad, Assistant Administrator, Office of Oceanic and Atmospheric Research; Dr. Alexander MacDonald, Deputy Assistant Administrator, Office of Oceanic and Atmospheric Research; Dr. Stan Wilson, Senior Scientist, National Environmental Satellite, Data and Information Service; Dr. James Balsiger, Acting Assistant Administrator, National Marine Fisheries Service; Dr. Steven Murawski, Director of Scientific Programs and Chief Science Advisor, National Marine Fisheries Service; Dr. Louis Uccellini, Director, National Centers for Environmental Prediction, National Weather Service; Mr. John Dunnigan, Assistant Administrator, National Ocean Service; Mr. David Moroney, Deputy Director, NOAA Corps & NOAA Office of Marine and Aircraft Operations.

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

Wednesday, July 22, 2009

Opening Statement of the Chair and Self-Introduction by Science Advisory Board (SAB) Members-David Fluharty, University of Washington and Chair, NOAA SAB

Dr. David Fluharty opened the meeting by welcoming SAB members and NOAA leadership. The meeting attendees introduced themselves. Dr. Fluharty welcomed NOAA administrator Dr. Jane Lubchenco to her first SAB meeting. Also, Dr. Fluharty thanked Jerry Schubel for hosting

the meeting at the Aquarium of the Pacific in Long Beach, California. Dr. Fluharty turned over the proceedings to Dr. Lubchenco for her welcoming remarks.

Welcoming Remarks and Opening Statement-by Dr. Jane Lubchenco, Under Secretary for Oceans and Atmosphere

Dr. Lubchenco thanked the SAB for all the advice it provides to NOAA. The Science Advisory Board's advice helps NOAA conduct its business more strategically. The partnership between NOAA and the SAB is very important. She is looking forward to continuing the interaction between NOAA and the SAB.

Dr. Lubchenco summarized the opportunities and challenges facing NOAA in the new administration. There are three overarching goals, which represent vast opportunities for NOAA. These are science, service and stewardship. The overall goal for NOAA is to focus on the scientific underpinnings and share knowledge of relevant science with a variety of people.

NOAA's science is relevant for real-world decision making. This includes giving the public information to protect lives and property. This knowledge will also provide economic opportunities. NOAA's guiding principles include upholding the rule of law, implementing the president's agenda, and upholding scientific integrity. NOAA's objectives include strengthening the basis for environmental decision making to improve services, enabling food and environmental security for all Americans, and restoring oceans and coasts so society can be healthy, productive and resilient. The coasts and oceans play a key role in our society and are an integral part of a healthy ecosystem.

Dr. Lubchenco covered the importance of the American Recovery and Restoration Act (ARRA), through which NOAA received 830 million of funding to create jobs and improve environmental conditions. NOAA's ARRA funding covers a number of projects including construction, satellite development, and vessel maintenance and repair. Dr. Lubchenco focused on NOAA's habitat restoration program, which is providing \$167 million to award competitive grants for local habitat restoration efforts. The competition received 847 proposals totaling \$3 billion dollars; this indicates a significant unmet need. NOAA's habitat restoration program funded 50 of these proposed projects in using a process that was transparent and accountable. More information regarding NOAA's ARRA funding is at <http://www.noaa.gov/recovery/>

President Obama nominated his scientific team very early in the administration. Most of the team has collaborated in the past and NOAA is an integral part of the team. President Obama signed the Executive Order on Scientific Integrity on March 9, 2009. The President's scientific advisor, Dr. John Holdren, chairs the Interagency Task Force on Scientific Integrity that is preparing the response for this. Dr. Richard Spinrad is NOAA's liaison to the Task Force. The White House is currently reviewing the work of the task force and Dr. Spinrad hopes the report will be available in the near future. The NOAA Senior Science Advisor, Dr. Paul Sandifer, will work with Dr. Spinrad regarding the implementation of these policies.

Dr. Lubchenco discussed NOAA's priorities for the next four years.

NOAA must maintain the continuity of science information with an immediate focus on both climate and weather observations. This immediate focus must include the development of satellite information with an unbroken record in order to maintain continuity of operations.

The Development of a National Climate Service is another essential priority. Both the White House and Capitol Hill embrace this priority. The idea of National Climate service emerged from NOAA. The design and implementation of the National Climate Service must include partners from the academic community, regional climate centers, federal agencies and the private sector. This priority will be complex, challenging and exciting. NOAA should be the lead in this effort with an active dialogue with the Obama administration.

The elimination of overfishing is another vital objective. The Magnuson-Stevens Reauthorization Act (MSRA) 2006 includes language requiring the elimination of overfishing. However, the MSRA requires new scientific information and fresh ideas from the academic community. The use of programs such as catch shares is more likely to result in sustainable fisheries. Achieving this will require working closely with coastal communities and fishermen to include them in the development of a new vision for sustainable fisheries. Healthy fish populations depend upon a vital and thriving ocean ecosystem. This effort must also encourage Fishery Management Councils to consider catch-share programs as appropriate for their fisheries. NOAA is moving forward with fishermen and others to develop plans for sustainable fisheries.

The promotion of healthy oceans, coasts and coastal communities is another key goal. This requires partnership with other agencies, as well as state and local governments. Marine spatial planning and ecosystem-based management will provide vital tools in the development of healthy oceans and coasts.

The improvement of weather forecasts and disaster warnings is consistent with NOAA's mission. The improvement of weather forecasts must include space weather information in light of the anticipated apex of the solar weather cycle that occurs in 2012-2013. Also, NOAA must improve its ability to forecast hurricane intensity and predict storm surges.

NOAA must continue to grow its scientific knowledge for stewardship and adaptation to climate change. Scientific analysis of climate change is essential to provide information to the public regarding the environment. This analysis will provide vital information regarding how climate change will affect our society.

All of these priorities build upon what NOAA does well and how the agency does its work. NOAA's strong commitment to these priorities will guide its work in a manner that is inclusive, transparent and accountable. NOAA must be responsive and adaptive to the demands on its services, however the agency cannot do this work alone. These priorities will include regional opportunities and partnerships. There is a tremendous opportunity to engage in significant work but NOAA does not have endless resources. NOAA's approach to these priorities and issues must be strategic.

Dr. Lubchenco is excited to be the head of NOAA and looks forward to working with the SAB to address all of these issues.

Discussion

Dr. Fluharty asked about the President's new ocean policy initiative and NOAA's role in the Ocean Policy Task Force. The President issued a proclamation in early June regarding the importance of the nation's oceans, coasts and the Great Lakes. President Obama also issued a memorandum establishing a new interagency task force with short-term deliverables. The new task force will provide recommendations regarding ocean policy after 90 days, including recommendations for an implementation plan for a national ocean policy. Also, in 180 days this task force is required to develop a policy regarding marine spatial planning, including a provision that will provide a framework for adjudicating disputes. Nancy Sutley, Director of the Council on Environmental Quality (CEQ), chairs this task force. NOAA is one of 24 agencies participating on this task force. NOAA is seen a major partner, but not the only player in this effort.

Dr. Frank Kudrna asked Dr. Lubchenco about the integration of the Great Lakes into NOAA programs and policies. She responded that the integration of the Great Lakes needs improvement in NOAA. There is much commonality between the Great Lakes and NOAA's marine responsibilities. Although NOAA has done a good job in the past, there are some challenges and NOAA can make improvements.

Ocean Exploration Advisory Working Group-Larry Mayer, University of New Hampshire and Co-Chair OEAWG

The purpose of Dr. Larry Mayer's presentation is to provide an update regarding the RV *Okeanos Explorer* and the status of the NOAA partnership with the National Geographic Society. Also, Dr. Mayer's briefing covered recommendations regarding the status of the Ocean Exploration Advisory Working Group (OEAWG). The SAB needs to consider disbanding the OEAWG in light of the creation of the new Ocean Exploration Advisory Board (OEAB) under the recent Congressional authorization for Ocean Exploration and the National Undersea Research Program (NURP) in PL 111-11.

Dr. Mayer discussed the membership composition of the OEAWG. The OEAWG is standing committee of the SAB. The OEAWG consists of 12 members and Dr. Eric Barron is the SAB liaison. The OEAWG has held five meetings, 2 workshops and submitted a report in March of 2008. The OEAWG has the authority to conduct a program review for NOAA's OEP. However, Dr. Mayer mentioned the OEAWG has not conducted a program review because of changes in the program and lack of a permanent program lead.

The new paradigm for ocean exploration requires a different kind of research. Traditional ocean exploration concentrates on research that focuses on a hypothesis driven approach. The new paradigm for ocean exploration concentrates on a dedicated ship of discovery carrying out a

systematic program of exploration. The *Okeanos Explorer* provides an opportunity for exploration based on a linked telepresence to the scientific community, media and public. The *Okeanos Explorer* also has a very sophisticated mapping system. Dr. Lubchenco will visit the *Okeanos Explorer* on Friday, July 25.

Dr. Mayer's presentation provided an update on the *Okeanos Explorer* and its trials and test. The *Okeanos Explorer* is making discoveries even in test mode, including some findings made on the Mendocino Ridge involving previously unknown plumes of methane gas erupting from the seabed.

The OEAWG continues its collaboration with the National Geographic Society (NGS) in the development of a six-part television series entitled "Oceanus" The NOAA Director of Communications, Justin Kenney and Dr. Lubchenco will be meeting with NGS leadership to discuss NOAA's role in Oceanus. Also, Kenney will lead discussions of NOAA's role in the Exploratorium in San Francisco. NOAA also is considering opportunities regarding ocean exploration with Google.

With respect to the changed circumstances for the SAB OAEWG PL11-11 provides authorization for both Ocean Exploration and the National Undersea Research Program (NURP). It passed Congress on March 2009. This legislation requires the NOAA administrator to establish an Ocean Exploration Advisory Board. The OEAB will not fall under the Federal Advisory Committee Act's (FACA) provisions. The OEAWG provided three recommendations regarding its future in light of this legislation. The OEAWG is recommending that the SAB disband the OEAWG after the establishment of the OEAB. Also, the OEAWG's second recommendation is that the three NURP center directors obtain appointments, as well as a representative from the SAB. NOAA must work to ensure diversity on the Board. Dr. Mayer reiterated that the OEAWG is willing continue to exist until the OEAB is established.

Discussion

Michael Keebaugh asked a question regarding the downsides of OEAWG's recommendations. The OEAB will not have the influence of a FACA panel. Also, the OEAB will not have a connection with SAB. The OEAB will report directly to the NOAA administrator. Dr. David Fluharty asked if Dr. Mayer if OEAB will have SAB member with full membership privileges. This issue was not fully discussed, but full membership not liaison status is probably the most appropriate for the both SAB and OEAB for full engagement.

Dr. Eric Barron asked how the OEAB will be able to provide collective guidance to NOAA, if it is not a FACA committee. The OEAWG asked for a ruling from NOAA General Counsel and that advice is still pending. Dr. Richard Spinrad mentioned the OEAB will have the capacity to provide collective advice to NOAA. However, Dr. Spinrad is still waiting for the appropriate legal guidance.

Dr. James Mahoney provided background and history from the previous administration on working groups. Vice- Admiral Conrad Lautenbacher wanted the SAB to be formal and inclusive regarding working groups. NOAA followed congressional mandates and legislation regarding committees and working groups but otherwise tried to ensure that all informal advisory bodies were incorporated under the SAB. Standing working groups have more independence than ad hoc but all the working group report to the SAB. This process is formalized through the FACA legislation.

All other working groups are part of the SAB. This process if formalized in FACA legislation.

Mary Glackin commended the SAB for working on the intersection with other groups, including the Hydrographic Services Review Panel.

Dr. Barron made a motion to accept the recommendation that the OEAWG remain until the OEAB is established then disband the working group ensuring connectivity to the SAB. Some working groups have the scope to provide short-term targeted advice.

Action 1: The NOAA Science Advisory Board accepts the recommendations from the Ocean Exploration Advisory Working Group with respect to the new Ocean Exploration Advisory Board and will transmit these to NOAA

Ecosystem Sciences and Management Working Group - David Fluharty, University of Washington and SAB Liaison to ESMWG

Dr. Fluharty provided information regarding the membership of the ESMWG. The Ecosystem Science and Management Working Group (ESMWG) is a new standing committee of the SAB. The ESMWG's membership consists of individuals from academia, non-profits, and other agencies. The purpose of the ESMWG is to focus on broad research monitoring and management performance. There is minor overlap between the ESMWG and the Data Archiving and Access Working Group (DAARWG) and the Oceans and Health Working Group (OHWG). Also, the ESMWG advises the NOAA SAB to assist NOAA in establishing plans, assessing programs and reviewing priorities on a continuing basis.

The first meeting focused on the recommendations of the External Ecosystem Task Team and NOAA's response to date.

The second meeting resulted in a letter report to the SAB with recommendations for NOAA's coastal strategy initiative. The report strongly supports the emerging NOAA effort to develop a comprehensive approach, which must include both the upland ecosystem, and the near shore ecosystem, i.e., the coast is an ecotone. This effort to develop a comprehensive approach to coastal management must include investment in social sciences. The broader recommendations from the report include ecological assessments in coastal zones. Funding for future ecological assessments may take place by 2010. NOAA should construct a framework for providing integrated ecological assessment as a critical issue for coastal zones. This framework will inform policy issues, meet the needs of end users and should include planning and

assessments. These planning and assessments must include the development of new models for forecasting and data for observing systems.

Dr. Fluharty discussed the next steps for the ESMWG. The ESMWG focus includes coastal issues, the development of a coastal strategy and the reauthorization of the Coastal Zone Management Act (CZMA). Emerging topics for the ESMWG include the development of marine spatial planning as proposed under the President's Ocean Policy Task Force and the continuing issue of operationalizing a definition of biodiversity across NOAA. Fluharty noted that this would include the SAB committee work on the future role of Census of Marine Life and NOAA.

Discussion

Dr. Carolyn Thoroughgood asked question regarding how the atmosphere integrated into the Coastal Initiative. She argued that NOAA's regional approach regarding the ecosystem needs consistency on the coasts and land and that NOAA needs avoid sending multiple messages. The approach regarding ecosystem needs to have a balance and must include risk assessments. Dr. Fluharty said the ESMWG will examine atmospheric issues. Dr. James Sanchirico is impressed with membership of the ESMWG. Two economists belong to this working group. Both economists have the skill set to conduct risk assessments or call on colleagues for their expertise. Dr. Lubchenco mentioned Dr. Paul Sandifer's participation in the Ocean Policy Task Force (OPTF). Dr. Sandifer remarked that a draft document will go out for public comment in September. Dr. Sandifer will take the letter report written by the ESMWG as input to the OPTF once the SAB acts to approve it and transmits it to NOAA.

Dr. Kudrna asked about the adaptation and sea level rise and future evaluations of this issue. Dr. Fluharty said those issues should be included in ESMWG's work. Dr. Sandifer discussed the connection between healthy communities and coastal infrastructure. This includes roads, hospitals and emergency services, and working with local planning authorities. Dr. Schubel noted that the Ocean Research and Resources Advisory Panel (ORRAP) has been asked to run a workshop on the effects of sea level rise on coastal communities. Dr. Murawski noted that there is a subgroup of the ESMWG that will be examining the coastal issues, including this question. Dr. Fluharty said these issues need discussion and examination, along with productivity and other ecological issues.

Dr Louis Uccellini discussed the use of the word forecast and if forecasting becomes equivalent with assessments, the more applications can be used. There is an analysis, for example, on short-term ecosystem forecasts for the Chesapeake Bay. This analysis includes short-term gains that need to be more visible. There are applications for forecasting in the Great Lakes as well.

A member moved that the SAB accept the recommendations in the ESMWG's letter and transmit it to NOAA. The SAB approved the motion to accept this letter and transmit it to NOAA.

Action 2: The NOAA Science Advisory Board accepts the letter from the Ecosystem Sciences and Management Working Group on NOAA's coastal strategy and will transmit to NOAA as input for the Ocean Policy Task Force.

Oceans and Health Working Group - Steve Weisberg, Southern California Coastal Water Research Project and Chair OHWG

Dr. Steve Weisberg started by providing background on the Oceans and Health Working Group (OHWG) and its charge. Dr. Weisberg described membership of OHWG, indicating that it includes a good cross section of individuals from both discipline (individual health, public health, social sciences) and sector (federal government, state government, and academia) perspectives. The working group will address six charge questions provided by the SAB in its terms of reference, which center around two underlying concepts: 1) What is the role for NOAA in oceans and health?, and 2) What are the appropriate actions for NOAA to take in implementing this role. Dr. Weisberg indicated that the OHWG charge focuses on organism and human physiological health, so as not to conflict with the ecosystem health perspective examined by the Ecosystem Sciences and Management Working Group.

Weisberg stated that Oceans and Health purview contains a diverse set of threats, including toxins, coastal hazards, natural disasters, infectious agents and contaminants. The OHWG feels that NOAA is the only agency with the capability and responsibility to ensure a holistic approach to health science and management. He further indicated that NOAA has the mission and legislative mandates for this role, including the Oceans and Health Act, Marine Mammal legislation and the U.S. Ocean Action plan. NOAA also brings important capabilities no other agency can bring and includes marine mammal, surveillance and prediction expertise.

Dr. Weisberg next detailed what the OHWG feels NOAA needs to do to fulfill its potential in a leadership role. NOAA needs to develop a clear vision and strategic plan to connect vital elements together. This process must include conducting a risk characterization and the development of an Ocean Health coordinating entity. NOAA also needs to communicate a sense of urgency regarding ocean and health issues. NOAA's activities save lives and yet NOAA receives little recognition for its efforts. NOAA needs to create public awareness of its roles. NOAA must also have a stable funding base for its programs. Despite these valuable contributions, there appears to be little Congressional leadership or support for NOAA.

Weisberg continued by stating the while the OHWG thinks NOAA needs to take a leadership role; NOAA has only a subset of federal capabilities regarding health issues and needs to ensure coordination with other agencies to be successful. The Interagency Working Group on Harmful Algal Blooms, Hypoxia, and Human Health is a good example where NOAA has shown leadership while also facilitating interagency partnerships.

Dr. Weisberg reviewed the OHWG's schedule. Its third meeting is set for August 19-20, which will focus on preparing a draft report. The draft report is set for completion by October, intended to precede the November SAB meeting. The OHWG will meet early next year to respond to SAB and public comments, delivering a final report in time for the SAB's March 2010 meeting.

Discussion

Dr. James Sanchirico asked about the division of labor between the Ecosystem Science and Management Working Group (ESMWG) and Oceans and Health Working group. Weisberg responded that the OHWG followed the direction provided in the Terms of Reference by the SAB, but would be willing to expand its charge if the SAB desired. Dr. Sanchirico indicated that he wants to ensure the SAB is coordinating responses from the two SAB working groups.

Dr. Jerry Schubel commented that the OHWG's work is an excellent example of how the SAB can make effective use of a task force, bringing in experts for a limited period to address specific topics of interest. He also complimented the OHWG on its direct responses to the charge questions. Dr. Barron said the bullets listed for each question in the PowerPoint were very clear and asked how the bullets will fit into the report. Dr. Weisberg responded that the OHWG was aiming for a 20-page document with the NOAA Administrator as the target audience. The bullets were the report outline, with three pages dedicated to each question and about half a page to each bullet. Dr. Lubchenco asked that the OHWG report keep in mind the Department of Commerce and Congress, as her challenge is to convince them of the SAB findings. The OHWG should not assume the reader knows the importance of this subject matter.

Dr. Carolyn Thoroughgood commented that NOAA has the overall capability and responsibility regarding oceans and health. The OHWG is presenting a new approach for NOAA's role regarding this issue, which will enhance NOAA's importance to the nation. Dr. Barron asked if NOAA can manage all of the issues that fit under the Oceans and Health category. There is an issue of prioritization. Dr. Weisberg suggested that the recommended risk characterization is an important part of this process. Risk prioritization will analyze loss of life and economic value associated with ocean and health problems. Dr. Fluharty thanked Dr. Weisberg for his presentation and indicated that he was happy the SAB meetings provide an opportunity for working groups to receive preliminary feedback regarding their reports, while also enabling the SAB to better understand the issues.

Update on the NOAA Next Generation Strategic Plan - Paul Doremus, NOAA Director of Strategic Planning

Dr. Paul Doremus provided an update on the development of NOAA's strategic priorities and long-term strategic development. This briefing had two purposes: first for NOAA to provide an update on the NOAA Annual Guidance Memorandum (AGM) and the second for the SAB to provide input on the Next Generation Strategic Plan.

The AGM provides corporate planning guidance for executing the remainder of the FY 2009 budget, budgeting for FY 2010-2011, and programming for FY 2012-16. The AGM will also serve as a bridge from NOAA's current long-term corporate strategy to the next generation strategy. The management principles behind the AGM include scientific excellence and integrity, service to the nation, ecosystem thinking, engagement and transparency.

Dr. Doremus then discussed the principles and timeline for the next generation strategic plan. The principles include responding to the priorities of the Administration, stating NOAA outcomes and outputs, accounting only for NOAA's highest priorities and outcomes. Also, the alignment

of NOAA's outcomes and outputs in the Strategic Plan with line offices is critical since they are responsible for their execution. He will provide more details regarding this document at the November SAB meeting, after stakeholders and staff provide additional input. The current version includes input from the Cooperative Institute Directors, other NOAA Federal Advisory Committees and several engagement reviews with regional stakeholders. Dr. Doremus then discussed the important strategic issues facing NOAA. He provided some feedback on some key long-term trends regarding global climate change and ecology, competition for natural resources, scientific and technological innovation, political and economic power, and demographics. In addition, he presented some initial observations on opportunities and challenges facing NOAA. He indicated that NOAA is seeking SAB input on the Next Generation Strategic Plan. SAB members can provide input on external drivers, opportunities and potential responses as well as advice regarding methods for deriving strategy from diverse input.

Discussion

Dr. James Sanchirico asked if "fit to NOAA," means fit for right now or in the future. Dr. Doremus' response was that this is a broad test and asked the SAB to imagine the capabilities not currently provided by NOAA that could be in the future. Dr. Sanchirico further asked if the feasibility requirement for the requirements place a constraint on NOAA regarding high-risk research. Dr Doremus' response was that feasibility covers NOAA's current assets. However, feasibility should not limit innovation. Feasibility puts a focus on a realistic assumption of NOAA's abilities and expectations.

Dr. Geraldine Knatz mentioned the positive aspects of the current strategic plan, which focuses on marine commerce and transportation, a recognized NOAA goal. This is a current core capability in NOAA's strategic thinking but Dr. Knatz did not see it reflected in the new strategic plan. Dr. Doremus noted that there is recognition of commerce and transportation as a core capability and those things may change dramatically in the future, e.g., the summer ice-free Arctic.

Dr. Carolyn Thoroughgood noted the need for development of a strategic plan from a 50-year perspective but pointed to the issue of rapid response. Does NOAA have the capabilities for this? Dr. Thoroughgood said that human health need to become a part of the NOAA strategic planning process, that other agencies like the Centers for Disease Control(CDC) depend on NOAA. Dr. Doremus' response was that this strategic plan is being developed within a 25-year time period. This process must analyze current trends but plan for the needs for stakeholders and address how NOAA's ability to work with key partners. This requires a common vision of the future with NOAA's partners.

Dr. Thomas Zacharia noted that this Administration has made science a priority and wanted to know how NOAA's role as a science agency will fit into the strategic plan. Dr. Doremus responded that NOAA's role as a science agency is reflected in the development of the plan at the highest level. Dr. Lubchenco also noted that NOAA is about science, services and stewardship. The framework of science is discovery, sharing and use of the knowledge.

Dr. Lubchenco maintains that more fundamental science must be conducted that is relevant to policy and management. NOAA can develop partnerships with academia to foster more basic research. Mr. Raymond Ban said collaboration is a core competency that NOAA must have in order to make progress. Dr. James Mahoney discussed the concept of unified earth systems theory and noted that NOAA's collaboration with other science agencies and partners will enable a grand vision.

National Weather Service Draft Strategic Plan 2010-2025 - Louis Uccellini, Director,
National Centers for Environmental Prediction, National Weather Service

The purpose of Dr. Uccellini's presentation was to engage the SAB in the development of the National Weather Service's (NWS) strategic plan for 2010-2025. The draft strategic plan is almost ready for public comment. Ultimately, the annual operating plans (AOPs) will incorporate elements of the strategic plan.

Dr. Uccellini discussed both global and national challenges the nation faces, including the impact of climate change, the nation's vulnerability to natural hazards, increased vulnerability to solar activity, and large-scale impacts of droughts, floods and chemical changes in oceans and rivers. Transformational changes to our services require an understanding of the socioeconomic impact of forecasts. Other transformational changes include predictions based on an earth systems approach, and capitalizing on revolutionary advancements in data information and knowledge. The success of this strategic plan depends on people, collaborative approaches and value-added business processes, sound infrastructure, and continuous feedback from partners and stakeholders. The guiding principles for the NWS strategic plan include coordination with the NOAA Next Generation Strategic Plan, contribution to NOAA climate services through, most notably, the unique capability of NWS field offices providing climate service delivery, and the mission of the other line offices.

There are six goals and related outcomes in the NWS draft Strategic Plan. The draft is on schedule for completion in FY10. The NWS would like the SAB to provide feedback and guidance on key components and will continue to involve the Board as the plan nears completion.

Discussion

Dr. Eric Barron noted that the plan provides the goals and the target outcomes but does not provide any information on the actions for consideration in order to achieve these. He also asked how the strategic plan will balance the notion to take on greater breadth versus depth, when the NWS compares itself to other centers. For example, the European Center for Medium-range Weather Forecasting (ECMWF) runs just one model on a 10-hour cycle while the NWS National Centers for Environmental Prediction (NCEP) run multiple models. Dr. Uccellini responded that this can be approached from the need to establish a balance between maintaining the existing capability and what is required for improvement and developing new capabilities required for NWS to retain its place in the global community. This plan may provide an opportunity for collaboration with other global modeling centers.

Mr. Michael Keebaugh asked how the NWS will receive the plan so the workforce so that they incorporate it into their day-to-day work. The NWS staff sees a clear connection between the strategic goals and the annual operating plans that are developed for the NWS. The goals and outcomes are a part of the individual performance plans.

Dr. Thomas Zacharia noted that America's technology edge will work in favor of achieving the NWS goals, especially as computing moves from supercomputers to massively parallel arrays. Dr. Uccellini mentioned that these are under discussion for next generation computing. The process for the procurement of the next generation computer has started and this will enable America to take the lead in computation capabilities. Dr. Zacharia asked what the biggest challenges are in improving the operational models and catching up to the ECMWF. Dr. Uccellini responded the biggest challenges the NWS faces are data "dropouts" in skill scores that are possibly due to data assimilation and data quality control. Dr Uccellini thinks that the data quality control and data assimilation are as an important and complicated a model issue as any other and must be addressed in order to improve the skill scores and catch up to the European model centers. Dr. Uccellini noted that the ECMWF is starting to see the same problem so it is not just the NCEP models or computing system but is a total system problem. A better system will have to be developed that can better assimilate the data for the model runs.

Dr. William Ballhaus asked how the NWS measure the first goal of delivering trusted impact-based weather, water, and climate services with outcomes that reduce the number of fatalities and economic losses from high-impact events and improved community resilience to weather, water, and climate threats. He stated that one needs metrics for measuring the uncertainty in the forecasts. Dr. Uccellini responded that the NWS is working to set targets for this. This goal includes the accuracy of forecasts as well as how people use the information from forecasts. Data assimilation and quality control is a key element in this process. The use of decision trees is also important, and the NWS is considering using them. A lot of this has been done in conjunction with episodic events. However, long-term use is needed to quantify this and NWS is just learning how to do it.

Dr. James Mahoney asked if the weather forecasting offices can perform outside their comfort zones in delivering other NOAA information and services. These are the places where NWS can begin enhancing its services to the nation. Dr. Uccellini responded that any enhancement can be accomplished best through collaborative partnerships.

Mr. Ray Ban commended Dr. Uccellini on the plan, noting there was not much that was missed. He also said it was great to see societal benefits as one of the first goals. Incorporating social science will result in outcomes that have more resonance with the American public.

Public Comments

One comment from the public was received in conjunction with this meeting, provided in writing prior to the meeting.

Comment from Jean Public, 15 Elm Street Florham Park, New Jersey 07932 (via e-mail, dated 07/07/09, font in capital letters as provided by the commenter).

THIS AGENCY IS CORRUPT AND CROOKED. THE NOAA PROGRAM IS NOT OF A HIGH CALIBER AT ALL. NOAA TAKES INFORMATION FROM PROFITEERS AND CALLS THAT SCIENCE. THIS AGENCY HAS BEEN REGULATORILY CAPTURED BY THOSE WHO IT WAS CREATED TO REGULATE. THE COMMERCIAL FISH PROFITEERS HAVE BEEN ALLOWED TO DECIMATE VIERTUALLY ALL SPECIES OFF THIS COAST IN AMERICA. OUR CHILDREN HAVE BEEN STOLEN FROM AND SWINDLED BY THIS AGENCY AND ITS REGULATION IS ON A PAR WITH THE SEC AND WALL STREET - JUST AS BAD AND NEGLIGENT. THIS AGENCY NEEDS CORRECTION AND TO UNDERSTAND IT WORKS FOR EVERY CITIZEN IN THE US, NOT JUST FOR COMMERCIAL FISH PROFITEERS. OF COURSE, THEY WILL COME AND PRAISE YOU IN THIS MEETING BECAUSE THEY HAVE SWINDLED THE PEOPLE OF THE US WITH YOUR HELP. THEY ALWAYS PRAISE AN AGENCY THAT LIES DOWN AND LETS THEM RUN IT.

Thursday, July 23

NOAA's Commerce and Transportation Goal: 2009 Update with Spotlight on Maritime - Ashley Chappell, Deputy Lead, Commerce and Transportation Goal

Ms. Chappell's presentation was an informational briefing on NOAA's Commerce and Transportation Goal with a focus on the maritime program. This briefing also covered the nontraditional uses of NOAA's navigation data. Marine Transportation is one of six Commerce and Transportation programs (others are geodesy, aviation weather, marine weather, surface weather and emergency response). All programs support the nation's commerce and information sector to provide a safe, efficient and environmentally sound transportation system. One developing area in the Commerce and Transportation portfolio is the FAA's Next Generation Air Traffic Control System for which NOAA provides weather input. This will have a major impact on the NOAA weather enterprise and is an area to which the SAB may want to devote more attention in the future. The Surface Weather program sets a target to transition the Meteorological Data Assimilation Ingest System (MADIS) from research and development to operations. NOAA makes nautical charts, tracks tides and currents, and provides marine weather and forecast models in support of marine transportation. The C&T Goal also covers satellite search and rescue centers.

The Maritime Commerce sector is still growing despite the economic climate. There is an expectation that more transportation will take place between ports through short-sea shipping as congestion on our highways increases. Short sea shipping is an alternative to land-based surface transportation. The Hydrographic Services Review Panel is a FACA that briefed the SAB in 2007. This panel completed a report regarding the challenges and issues facing maritime transportation. The most critical issues facing maritime transportation include the increase in size of ships, the increase of ship traffic, doubling of maritime commerce by 2020, and the aging infrastructure. Additional findings from the review panel's report include improvement of mapping capabilities and the expansion of observations.

The Committee on Marine Transportation is an interagency committee on the marine transportation system and NOAA is important member of this committee. The CMTS has

developed a national strategy, and is now working on the implementation plan, and NOAA has several key roles to play in the plan.

The same data collected by NOAA for navigation purposes also has uses for non-navigation customers such as coastal zone management, emergency planning, ecosystem, management, energy siting and more. Applied research in support of this includes autonomous underwater vehicles, sensor improvements, and remote sensing technology enhancements in conjunction with various partners.

Discussion

Dr. William Ballhaus asked a question regarding NOAA's role in upgrading requirements for Guided Positioning Systems (GPS). Ms. Chappell replied that NOAA participates on the GPS Requirements Board. Dr. Ballhaus further asked about the impact on navigation of the vulnerabilities in GPS. NOAA will obtain classified level open for public access and is working on aviation access. NESDIS is working on the next generation GPS satellites that will have lasers on board to measure altimetry and sea surface height. NOAA is collaborating with NASA on the next generation of GPS satellites and research includes information from the National Geodetic Survey.

Dr. Carolyn Thoroughgood asked if NOAA participates in maritime associations to understand their needs. Ms. Chappell responded that NOAA connects with maritime community through regional navigation managers reaching out to communities. NOAA also works with state geodetic advisers through conferences, workshops, and working groups. Dr. James Mahoney commented that NOAA has a strong positive legacy in this area and discussed the importance of NOAA's efforts during Hurricane Katrina.

Dr. David Fluharty asked to what extent is NOAA is working with the Integrated Ocean Observing System (IOOS) to make sure the data from those sensors are part of the C&T effort. Ms. Chappell replied that the C&T observing systems are part of IOOS, and one area of collaboration with the NOAA IOOS Office is on quality control on data used for navigation. Dr. Stan Wilson said NWS is using NASA QuikSCAT data to track hurricanes and winter storm winds in the Northern Pacific and Northern Atlantic. Providing ships with such information is vital for rescue missions. This is an example of concerns about what might happen to ships between ports if QuikSCAT is no longer available. Dr. Uccellini indicated that NWS is working with NESDIS to fill the data gap when QuikSCAT data are no longer available.

Dr. Frank Kudrna commented that the Department of Commerce does not appear to recognize the science side of NOAA. He asked whether NOAA has performance measures that recognize job and economic impacts. Ms. Chappell responded that NOAA has no such metrics that are measured but that the Commerce and Transportation Goal has funded studies in Tampa, Houston, and New York that show benefits to communities.

Maritime Transportation Issues in the US - Geraldine Knatz, Director, Port of Los Angeles and Member, SAB

Dr. Knatz provided an overview of the national maritime transportation system (MTS). The US Maritime Transportation System is seamless and secures movement of goods, services and people in global supply chains. She refers to the bridges at the Ports of Los Angeles and Long Beach as “a bridge to everywhere.” Urban ports operate in a complex and sensitive environment which impacts ecosystem, environment and the public. Containers are the biggest drivers at ports. Dr. Knatz reports that she has seen a reduction of 20% in containers handled at the Port of Los Angeles since the economic downturn. Some estimates conclude it will take until 2014 for numbers of containers to return to the peak level in 2006. However, there is no doubt that container shipping will continue to grow in the future.

Ports have a strong relationship with NOAA, working with the agency on ballast water issues, safe navigation, and other topics. NOAA had addressed “Brownfield” restoration in the MTS and facilitates habitat restoration. Since the 1970s, NOAA has worked with the Port of Los Angles on restoration projects. In addition, Dr. Knatz works with NOAA seaport specialists on other issues. Two of the biggest challenges facing urban ports, are infrastructure and air emissions.

The Reauthorization of Surface Transportation act is an opportunity for the MTS. The lack of a national vision is problematic. There is no national plan which aligns water issues and land investments. Canada has a national strategy to serve America’s heartland through its rail and port system. Canada purchased the Joliet rail line that links Canadian ports to the American Midwest. Canada’s national transportation policy is a “best practice” that America should emulate. The problems facing West coast-based ports today will happen to East Coast Ports in the future. The only port with berths capable of handling the ships that can pass through the Panama Canal’s big lock project is located in Norfolk, Virginia.

The U.S. Commission on Ocean Policy provides recommendations for the MTS. The Council on Environmental Quality-led Ocean Policy Task Force will review these recommendations and will develop an ocean policy and implementation plan for marine spatial planning by the end of this calendar year. NOAA’s involvement is crucial on this Task Force because port development is pivotal to stakeholders.

The second biggest issue facing the MTS is air emissions. If there are no reforms regarding global ship emissions, emissions will double by 2020, and triple by 2030. The European ports are focusing on greenhouse gases. The International Port Association created the World Port Climate Initiative. Seven leading ports across the globe, including the Port of Los Angeles, are developing new technologies, solutions and best practices to share with the Port industry.

There are opportunities for NOAA to further assist the MTS. NOAA must continue to find programs and services they provide to the system. Finally, the Port of Los Angeles proposes to develop with area academic institutions a marine urban research center and NOAA could collaborate in this. The academic community developed a plan for research and business incubators at the Port.

Discussion

Dr. James Sanchirico asked if climate change legislation will raise energy prices and, if so, how is the Port of Los Angeles System building that into its plans for both short sea shipping and transportation planning. Dr. Knatz said the price of fuel is having a significant impact on ships. The West coast is not that involved in short sea shipping, however, over time if short sea shipping becomes more viable, that will change. Dr. Uccellini commented on The NWS efforts in training ship captains. The NWS introduced a weather course 15 years ago on how their ship observations are used; this helped improve observations from ships over time. Dr. Uccellini asked if the information regarding the issues discussed in this presentation (for example, pollution reduction) was provided to ship captains and operators. Both the California Maritime Academy and maritime industry emphasize the important of education. Also, the Marine Exchange provides a lot of information. There are also many marine related education programs provided by the Port of Los Angeles's maritime high school. The Coastal Zone Management Reauthorization Act, from the ports' perspective, could protect the traditional maritime areas.

Dr. Paul Sandifer asked about the impacts of the Port on the environment and problems for the Latino community. That is the community that surrounds the Port. The Port of Los Angeles established a community benefit fund to make investments to improve the quality of life in the surrounding community. The Port also provides inhalers for student and air filters for schools.

Panel Discussion: NOAA's Transportation Services - Not Just for Navigation Anymore

Richard McKenna, Deputy Executive Director, Marine Exchange of Southern California

Richard McKenna provided an overview of his organization and its interactions with NOAA. The Marine Exchange of Southern California is an 86-year-old, non-profit organization that deals with issues such as harbor safety and maritime security. The Marine Exchange also maintains records on vessel traffic and has records for every ship that has come through both the Ports of Los Angeles and Long Beach since 1923. The Exchange serves as connection point for other organizations and facilitates partnerships in the region.

The website for the Marine Exchange of Southern California at <http://www.mxsocal.org/> integrates weather, NOAA's websites, and the NOAA Physical Oceanographic Real-Time System (PORTS). Wave modeling prediction offshore has a significant impact on ferry operations, pilots, and surfers. The high frequency radar data from one of the universities also has great benefits for search and rescue. Mr. McKenna thanked Gerry Wheaton from NOAA's Coast and Geodetic Survey for the accuracy and speed of updating of the navigational charts in the area. All of these data is available on the website and are accessible to the public.

The Marine Exchange works with the NOAA Channel Islands National Marine Sanctuary and serves on its Sanctuary Advisory Panel. The big issue in the Sanctuary is ship strikes of blue whales in particular. The Exchange is working with the Sanctuary Advisory Panel and the National Marine Fisheries Service (NMFS) regarding the changes to separation schemes and speed zones in the approaches to the Ports. NOAA is conducting an experiment in Tampa Bay, Florida regarding automated identification that provides information on advanced weather conditions for ships arriving into ports. The Marine Exchange of Southern California eventually

would like to have such an Automated Identification System (AIS) to provide warnings on the location of whales for ship operators in Los Angeles.

The State of California implemented a low sulfur fuel mandate issued on July 1. This regulation requires a shift in the arrival mode. This has eliminated the use of the Santa Barbara Channel making arrivals more dangerous. The Marine Exchange is working with the Ports on this issue. The Exchange is also working with the Navy on issues regarding its Pacific missile range. Finally, the Marine is participating in the development of an ocean uses almanac.

John Z. Strong, Vice-President, Jacobsen Pilots Inc

Captain Strong emphasized the importance of NOAA in providing data to pilots in the ports. Pilots are the “valet parkers” in the ports, helping ships to get in and out of these areas. They are able to carry out seemingly impossible jobs because NOAA provides accurate information for the ports.

In addition to assessing bathymetry and vessel draft, pilots integrate air gap methods to assist in the mitigation of risk regarding the process of bringing ships under bridges. Pilots depend on accurate information regarding bathymetry, currents, and tides. These data allow pilots to guide ships into safe berths. The deep draft tankers offer a significant challenge to ports regarding navigation.

Captain Strong also discussed Surfline's role in providing information. Surfline provides swell forecasting which helps predict times of possible problems due to excessive vessel rolling and pitching when entering or leaving the port as well as surge while alongside the dock. The Port of Long Beach provides data used for depth overlays on the ARINC produced Portable Pilot Units the pilots use. These depth overlays provide pilots with a real-time view of the ports, covering both shallow and deep waters. Captain Strong discussed the products pilots want from NOAA. Currently, pilots use NOAA's tools for tides, air gaps, wind, soundings, electronic nautical charts (ENC), the Continuous Operational Real-Time Monitoring System (CORMS), and Mobile Ports. The pilots would like NOAA to provide more current meters, visibility sensors for fog, and PORTS transmitted to AIS.

Sheila Semans, Project Specialist, California Seafloor Mapping Program, California Ocean Protection Council

Legislation established the California Ocean Protection Council (COPC) in 2004. The goal of the COPC is the improvement of ocean management as well as enforcement of existing laws such as the California Marine Life Protection Act (MLPA). The MLPA mandates the creation of a network of marine reserves throughout the state and the COPC identified early on that comprehensive seafloor mapping which is necessary to support this effort, as well as many other ocean management priorities. The COPC gathered all existing seafloor data, determined appropriate standards and funded a pilot project on seafloor mapping in 2005 that ultimately led to initiation of the California Seafloor Mapping Program (CSMP), a comprehensive effort undertaken with a variety of partners, including NOAA. This program is an excellent example of the IOCM principle, “map once, use many times” as California will get habitat and geology

maps to support state needs and NOAA will get updated nautical charts, all with the same data. The information collected will also be used, among other things, for offshore renewable energy analysis and production, to better understand tsunamis potential as well as other coastal hazards, and to understand and mitigate the impact of sea level rise.

The CSMP partnership includes state and federal agencies, academia and industry. CSMP initially received \$15 million in funding from the COPC with an additional \$3.5 million from NOAA. When California froze all project expenditures in December 2008, NOAA was able to provide the financing needed to complete the data collection portion of the project. The COPC is seeking additional funding for ground truthing, data management and product development through its partnerships. Hundreds of hazards to navigation have already been discovered through CSMP so NOAA would like to continue to develop digital navigation charts and high-resolution seafloor mapping.

Ms. Semans discussed what the COPC needs from NOAA. NOAA leadership would be useful for advancing bathymetric LIDAR testing and development for use in nearshore mapping (CSMP currently collects data via ships from 3nm in to 10m water depth). NOAA can also provide help explore the use of autonomous underwater vehicles (AUVs) for nearshore mapping. Ms. Semans suggested that NOAA Coastal Services Center (CSC) can also provide advanced science for merging onshore-offshore data sets, integrating seafloor mapping with biological data sets, and advancing the development of ocean circulation models. Ms. Semans stressed that much better federal coordination is necessary for terrestrial coastal LIDAR mapping.

The California Coastal Ocean Current Monitoring Program (COOMP) is a \$21 million investment in ocean observing technology that California began in 2004. Through this program, CA has installed and operationalized nearly 50 HF Radar sites along the state's 1100 miles of coastline that monitor the direction and velocity of surface currents in the coastal ocean in near real time. COOMP also includes the development of an ocean circulation model. With the installation phase of COOMP nearing completion, Ms. Semans discussed a need for a stronger NOAA commitment to the Integrated Ocean Observing System (IOOS) and the Integrated Ocean and Coastal Mapping (IOCM) program. The COPC would like to see increased IOOS regional allocations in FY2011 that would provide operational funding for existing surface current monitoring systems around the country, something identified as a priority in the National HF Radar Plan. The COPC thinks this type of information is vital for improved ocean management, and needed for comprehensive marine spatial planning. Finally, Ms. Semans noted that the COPC will co-host a workshop in August regarding the use of geospatial data for marine spatial planning.

Julie Thomas, Manager, Coastal Data Information Program, Scripps Institution of Oceanography - IOOS in Support of Maritime Transportation

The Coastal Data Information Program (CDIP) started at the Scripps Institution of Oceanography in 1975. This program consists of 40 wave stations, a staff of 14 people and annual budget of \$2.5 million. The CDIP has collaborated with the Southern California Coastal Ocean Observing System (SCCOOS) to provide high resolution wave observations, nowcasts and forecasts wave models, surface currents and winds for the Ports of Los Angeles and Long Beach. The website

integrates and customizes the data for the stakeholders and provides geo-referenced NOAA charts on a Google map background (<http://www.sccoos.org/data/harbors/lalb/fullscreen.php>). . In addition, the SCCOOS sends automated messages to stakeholders, which provide four-day forecasts of conditions that are critical to their operations.

The CDIP provides wave observations and buoy-driven wave model predictions for the Port of San Francisco as well. The Port of San Francisco collaborates with the United States Geological Survey (USGS), the Army Corp of Engineers and the NOAA National Weather Service and the Central Ocean Observing System (CeNCOOS). The regional NWS office based in Monterey, California provides a San Francisco Bar Forecast that is based on the CDIP wave buoys.

Both Washington and Oregon are developing similar partnerships with the Ocean Observing System and the NWS. . The CDIP suggests developing the same type of collaboration and using the Los Angeles/Long Beach site as a template for additional West Coast sites.

There are several examples of excellent NOAA products, including electronic nautical charts, digital coasts and coastal marine weather. The coastal marine weather modeling that includes statistical and numerical models are a valuable resource to marine operations. IOOS includes many assets that can be critical for maritime transportation.

NOAA should rethink its instrumentation at the National Data Buoy Center and take advantage of some of the newer technologies that provide high resolution wave data. By improving instrumentation, NOAA will improve its importance to the safety and efficiency of maritime transportation.

Jim Fawcett, Director of Marine Science and Policy Outreach, University of Southern California Sea Grant - Sea Grant's Role in Marine Transportation

Dr. Fawcett provided an overview of the role of Sea Grant in maritime transportation, noting first that in the 1980's and early 90's there were at least nine specialists in this field throughout the Sea Grant network but that since then, all have either retired or taken administrative assignments. The Coastal Services Center provided funding for Dr. Fawcett's project for four years from 2002 until 2006. Since then he has been partially 80% funded by an endowment, by a study contract with the Port of Los Angeles and by other miscellaneous sources. Marine transportation is vital to the U.S. economy and Sea Grant specialists convey to a variety of audiences the importance and impact of marine transportation to the environment as well as the economy. Sea Grant is uniquely capable of this role primarily because of its neutrality and because of its access to both the industry and the academy.

The Sea Grant community provides research data to the marine transportation community but also provides its academic colleagues with information about the industry that can and does lead to research. Historically, smaller ports called on Sea Grant for assistance when they lacked in-house technical expertise. In contrast, for larger seaports such as those in Los Angeles and Long Beach, the need is different . In those circumstances Sea Grant has the capability to bring various parties together under neutral auspices (ports, academicians, regulators, agencies with

interests in the ports, businesses, etc.). This is vital because large ports often need the help of neutral experts to help negotiate issues, at times with their adjacent communities.

The Sea Grant program has also provided assistance and information to port associations. In other ways, Sea Grant also provides management consulting and connections to the academic world that ports often lack simply because they are too busy moving cargo. In this region, USC Sea Grant recently conducted a large-scale “visioning study” for a major (28 acre) urban marine laboratory complex to be operated by at least ten southern California universities (with space for a dockside NOAA laboratory as well) to be constructed as adaptive reuse of obsolete dockside warehouse space in the Port of Los Angeles. Sea Grant also participated in a study for the West Coast Governors Association regarding marine research needs on the West Coast, including marine transportation. The essence of the Sea Grant role is that the marine transportation industry is critical to the health of the U.S. economy but also has an environmental impact on our coastlines. Policymakers and the public need reliable, unbiased information on the impact of this coastal dependent industry to make useful policy decisions. Sea Grant is capable of providing that vital information.

Graeme Rae, Scientific Product Manager, Surfline

Sean Collins founded Surfline in 1985 as a phone line forecast service. The company staff has 40 employees and reaches 1.3 million users a month. Surfline compiles data and markets information and delivers these products along with entertainment. Surfline’s users are from Brazil, California, Australia and the U.S. The Coast Guards, lifeguards and surfers are also part of Surfline’s user community. Most of Surfline’s information is free and 10 percent of its business is through a subscription service.

Mr. Collins described the information that Surfline compiles. Surfline operates a wavemodel called LOLA and near shore models. Surfers and sailors need data regarding wave height, wave period, wave direction, wind speed and direction, tides and temperature. Surfline obtains wind data, buoy data, bathymetry, and tidal information from NOAA. Surfline wants NOAA to provide more observations and better observations. Dr. Ballhaus asked if users can obtain information regarding data on wave shape. Mr. Rae responded that forecasters develop a rating system that includes user feedback and there is some information on wave shape. Mr. Rae wants Surfline to contribute to NOAA development and success. Surfline can give NOAA brand awareness, exposure to different markets, justification to the lives of users, and skilled wave forecasting. Surfline wants more and faster data sources, accurate buoys, buoys that are more distant, bathymetry, sea swell/wave height, relationships and key contacts. Mr. Collins suggests that lack of development and competition will hinder Surfline’s development.

Discussion of Panel Presentations

Stan Wilson asked a question regarding the use of high-frequency radar data. Ms. Thomas replied that CDIP compiles information on both waves and surface currents from the H-F radars. NWS’s analysis through provision of bar forecasts, i.e., the specific conditions on narrow bars at the entrance to rivers, ports and harbors, is that the number of incidents involving rescue or loss of life has dropped.

Dr. Spinrad asked if there are products that NOAA could modify for users. Mr. Rae responded that the tsunami tracking system should include swell information and direction information. Dr. Spinrad said that NOAA rejected this information as irrelevant for NOAA's main purpose of tsunami detection. Swell information in that case is "noise". However, data acquisition can make the necessary adjustments to provide swell information especially in the Southwest Pacific.

Dr. Mahoney said he appreciated Mr. Rae's presentation. NOAA developed metrics regarding how to serve its constituency. The safety aspects of NOAA's products and services are very important to our constituents. The safety aspects of NOAA projects can gain an advantage with Capitol Hill for additional funding. Dr. Mahoney asked Captain Strong a question regarding the effects of wind and wave height on vessels. Captain Strong's response is wind is very important for long vessels in narrow channels. The wind is an important factor for high profile container ships.

Science Advisory Board-Census of Marine Life Subcommittee Report - David Fluharty, University of Washington and Chair, SAB

The purpose of this presentation was to update the SAB regarding the status of the Census of Marine Life (CoML) request to the SAB to make recommendations concerning the roles that NOAA might play in the continuation of CoML past its 10-year lifetime. CoML is a 10-year international initiative to assess the diversity, distribution and abundance of life in the oceans initiated with funding from the Sloan Foundation and leveraging funds from many US and International entities. The CoML projects include 2,000 researchers across 80 countries. Dr. Fluharty discussed the NOAA involvement in the CoML. NOAA provides ships, ROVs, and researchers with line office funding. NOAA, along with other federal agencies and academic institutions, participates in 19 projects that are a part of the CoML.

In response to the request from the US National Committee (USNC) of the CoML in March 2008, the SAB formed a committee, which consists of Dr. Fluharty, Dr. Carolyn Thoroughgood, and Dr. Frank Kudrna and three members of the USNC (Dr. Andy Rosenberg, Dr. Wes Tunnell, and Dr. Paul Sandifer). This committee conducted research, attended meetings, and interviewed staff regarding the CoML. The committee's finding is that NOAA may have an interest in specific components of the program that will assist with the agency's mandates. NOAA expressed an interest in CoML's ongoing activities including the Ocean Biogeographic Information Service (OBIS), the Tagging of Pacific Predators (TOPP) and the Pacific Ocean Shelf Tracking (POST). There are additional components of CoML projects that are part of ongoing competitive grant process such as through the Ocean Exploration and Research.

Dr. Fluharty discussed the bridges and barriers regarding the CoML's future and NOAA's ability to support this project. The CoML's coordination between agencies and academia on a variety of studies is an asset. The CoML's proof of concept for many tools and approaches in examining biodiversity is beneficial. However, CoML faces barriers regarding the future. The private foundation funding will end next year, with limited ability to continue important administrative duties. The scope of CoML is large and the implementation is uneven.

NOAA's bridges include a strong engagement in studying biodiversity. NOAA's platforms and laboratories also provide an opportunity for research and the agency has the capability to monitor change over time. NOAA resources and potential funding for these projects in the future, however, is uncertain. Within NOAA, there is a lack of coordination on CoML projects across NOAA's line offices despite a strong interest in biodiversity and its relationships to NOAA mandates.

Dr. Fluharty explored options for the future roles of NOAA with respect to CoML's core administrative roles and functions. These are: 1) CoML can continue with business as usual and end in 2010; 2) the CoML continues operating after 2010 with NOAA funding on an interim basis; 3) NOAA takes on leadership of the CoML at the federal agency level; and 4) the CoML explores a partnership that involves both the public and private sectors, as well as other federal agencies and sources of funding.

Discussion

Dr. Lubchenco asked about total funding for the CoML in 2008 and about the total cost to sustain the CoML on an annual basis. The total US funding for the COML over the past nine years has been \$152 million of which \$25 million has been from NOAA. The Alfred P. Sloan Foundation provides the primary funding for the CoML Secretariat and has provided over \$60 million dollars. The total expenditures for the CoML internationally in 2008 were \$62 million dollars of which \$29 million was from the United States. The average funding from the US has been \$28 million per year with NOAA providing an average of \$2 million of that. Dr. Fluharty also noted that the program is ramping down with its synthesis efforts and will finish in 2010. The Sloan Foundation will end its funding in 2010. The US National Committee of the CoML wants NOAA to provide a home for its 19 projects, especially for the marine biodiversity services. NOAA can use CoML's reach for meeting some of its mission components. In addition, the CoML has several components that are useful for education and outreach.

Dr. Jerry Schubel noted that the Ocean Research and Resources Advisory Panel (ORRAP) recommended to the Interagency Committee on Ocean Science and Resource Management Integration (ICOSRMI) that CoML receive transitional funding for one to three years from the federal government. This transitional funding will ensure the continuation of the COML coordinating Secretariat until the establishment of long term funding. Dr. Schubel said the problem with CoML is that there is no coordination of funding. ORRAP believes that, with transitional funding, the CoML will demonstrate its real capabilities and refocus its efforts. Jack Dunnigan mentioned the Intergovernmental Oceanographic Commission's discussion of the CoML and the OBIS network. IOC wants to provide a location for OBIS but the location of the OBIS Secretariat is up for discussion. IOC does not have funding to make this happen under its auspices.

Dr. Eric Barron asked why the CoML did not develop a Phase Two or ten-year plan. Dr. Sandifer commented that the lack of attention is not a factor by the US contributors to the project. The discussion regarding the future of the CoML started four years ago but it has not fallen on receptive ears in either federal agencies or private sources of funding. The current economic climate contributes to the difficult financial situation for the CoML. The US contributors have

talked with many agencies and discussed getting CoML into an agency's budget. For instance, the US OBIS node belongs to the USGS. Dr. Thoroughgood commented that a plan exists for ocean exploration, but not CoML. She noted that the original proposal made to the SAB regarding the COML suggested the possibility of a private and public partnership. Unfortunately, the current economic situation makes this unlikely at this time.

Dr. Thoroughgood asked if COML's approach is the most appropriate regarding an investment in biodiversity. Dr. Barron was very concerned that COML does not have a coherent plan for the future. The CoML appears to be requesting agencies to provide funding before the development of a program plan. Dr. Schubel asked why the Sloan Foundation does not extend funding for 1-2 years until the Secretariat can develop a plan. Dr. Murawski commented that the CoML is not a program that federal agencies invested in programmatically. The federal agencies have invested in COML's individual projects, but have never provided a long-term commitment to the program. Dr. Spinrad asked how the 21 national ocean priorities produced by JSOST relate to COML projects. Dr. Spinrad suggested that without a clear connection between CoML and these priorities, it will be difficult to justify further funding for the program as a whole. Dr. Mahoney commented that the CoML is an excellent program without clear path for the future. The CoML must discontinue until the development of a coherent plan. Jack Dunnigan stated that the COML achieved some success as a program and certain projects will continue. The CoML Secretariat has not planned for the next ten years, either in the US or internationally, in spite of a lot of support from the international community.

Dr. Paul Sandifer indicated that there is an internal NOAA group working to address issues of biodiversity. The NOAA research plan should cover biodiversity as part of ecosystem health, including this as part of the research priorities. Dr. Fluharty commented that he believes the SAB can develop recommendations for solutions to problems facing the CoML with respect to NOAA. The purpose of this discussion was to clarify key points and findings. One member asked who "owns" the CoML. Dr. Fluharty responded that the Sloan Foundation supported the CoML Secretariat and provided funding to different elements. There is an international scientific steering committee as well that makes decisions regarding overall direction of the CoML. Dr. Schubel suggested no one can really answer the question of who functions as the Chief Executive Officer (CEO) for the CoML. Dr. Fluharty thanked the SAB for its comments and feedback and agreed that a final report will cover the development of this topic at the next SAB meeting.

Action 3: The NOAA Science Advisory Board – Census of Marine Life Committee will take input from SAB and develop recommendations for consideration at the Fall 2009 SAB meeting

Cooperative Institute Reviews and the Role of the SAB - John Cortinas, Director, CI/JI Program

NOAA's Cooperative Institutes (CIs) engage the external research community and build partnerships. The purpose of Dr. John Cortinas' presentation was to brief the SAB on the overall CI policy and the review policy for individual CIs. The last SAB evaluation of any CI was two years ago. The first of the next round of reviews will take place in October 2009 for the Northern

Gulf Institute. Dr. Cortinas reviewed CI policy development in response the SAB's Research Review Team (RRT) report.

The CIs are selected through a NOAA-wide competitive process. The initial award period is for five years, with one non-competitive renewal up to an additional five years. CIs can consist of one or more research institutions (i.e., non-profits and universities) and the NOAA Administrator must approve the creation of a new CI. There are currently 22 CIs across 40 institutions. The total funding for CIs in FY 2008 was \$145 million. The SAB is the official reviewing authority of CIs. The SAB oversees the review by creating an ad hoc review panel and formally providing a review report to the NOAA Assistant Administrator requesting the review. The review report includes a final rating: satisfactory, outstanding and unsatisfactory. This rating weighs heavily in NOAA's decision about whether to extend the current CI award for a period up to an additional five years. NOAA granted seven CI awards during the last two years. There are four CIs expiring in 2010.

Discussion

Dr. William Ballhaus asked about the unique capabilities that determined the Cooperative Institute for the North Atlantic Region's (CINAR) award that was made in 2008. Dr. Cortinas responded that there was an analysis of capabilities need by NOAA. The capabilities of past and current needs in the areas of fisheries, climate, and ecosystem led to the CINAR award.

Dr. Mahoney asked if NOAA has ever terminated a CI. Dr. Cortinas noted that NOAA terminated one CI due to lack of funding.

Dr. Kudrna asked about the involvement of CIs in the engagement process. Dr. Cortinas' response is that the CI representatives are not in charge nor responsible for engagement. Dr. Kudrna stated that CIs cannot recognize NOAA in their publications as providing funding. Dr. Cortinas responded that the CIs have a broad framework to conduct engagement. The Department of Commerce (DoC) has rules limiting the use of the NOAA emblem without prior approval. According to the DoC policy, NOAA can give approval for the use of its emblem on a case-by-case basis. The DoC approved limited, blanket use of the NOAA logo by CIs some time ago. Dr. Spinrad emphasized that the policy of NOAA's logo use is a DOC decision, not NOAA's. He indicated that it might be helpful for the SAB take a position on this issue.

Dr. Barron stated that the SAB is actively engaged in discussions to gain greater recognition for NOAA and noted that restrictions on the use of NOAA's logo appear to be counterproductive and need reassessment. He moved that the SAB should consider drafting a recommendation about this for the NOAA Administrator to relay to DoC. The SAB passed this motion unanimously, however it would like clarification from OAR regarding the specific DoC regulation.

Dr. Fluharty asked how much lead-time is necessary for the CI reviews before funding terminates. Dr. Cortinas indicated that the review process builds in a lot of lead-time.

Dr. Mahoney asked if there is current information on the competitive research grants not in CIs or Sea Grant. Dr. Spinrad mentioned that \$600 million is budgeted for research each year of which 40% is extramural. There is a total of \$250 million in grants. In 2008, the CIs received \$150 million and Sea Grant has \$55 million.

Action 4: The NOAA Science Advisory Board is actively engaged in discussions on how to gain greater recognition of NOAA and notes that the Department of Commerce policy on use of the NOAA logo appears counterproductive and therefore should be reassessed. The SAB will follow up on this with a letter to NOAA containing a specific recommendation.

Action 5: The NOAA Cooperative Institute Office will send the Science Advisory Board the request for Northern Gulf Institute reviewers and SAB member participation in this review.

Updates

The Environmental Information Services Working Group now has a committee of 18 individuals approved by the SAB. The first EISWG meeting will be scheduled shortly.

The Climate Working Group is conducting a review of the Climate Program Office's products and Services. Dr. Barron commented it was a very large group of products and services. There was confusion on what products and services are under review. Dr. Schubel suggested the review needs to focus on the demand side and the supply side. One member asked when the report will complete. The CWG will have the reported finished by the fall SAB meeting in November.

Action Items

Action 1: The NOAA Science Advisory Board accepts the recommendations from the Ocean Exploration Advisory Working Group with respect to the new Ocean Exploration Advisory Board and will transmit these to NOAA.

Action 2: The NOAA Science Advisory Board accepts the letter from the Ecosystem Sciences and Management Working Group on NOAA's coastal strategy and will transmit to NOAA as input for the Ocean Policy Task Force.

Action 3: The NOAA Science Advisory Board – Census of Marine Life Committee will take input from SAB and develop recommendations for consideration at the Fall 2009 SAB meeting

Action 4: The NOAA Science Advisory Board is actively engaged in discussions on how to gain greater recognition of NOAA and notes that the Department of Commerce policy on use of the NOAA logo appears counterproductive and therefore should be reassessed. The SAB will follow up on this with a letter to NOAA containing a specific recommendation.

Action 5: The NOAA Cooperative Institute Office will send the Science Advisory Board the request for Northern Gulf Institute reviewers and SAB member participation in this review.