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**36<sup>th</sup> Meeting of the NOAA Science Advisory Board  
Silver Spring, MD  
3-4 November 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, School of Marine Affairs, University of Washington; Mr. Raymond Ban, Executive Vice President, The Weather Channel; Dr. Eric Barron, Director, National Center for Atmospheric Research; 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. Gerald Wheeler, Executive Director Emeritus, National Science Teachers Association

NOAA senior management and Line Office representatives in attendance: Dr. Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator; Ms. Mary Glackin, Deputy Under Secretary of Commerce for Oceans and Atmosphere; Ms. Laura Furgione, 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. Al Powell, Director, Center for Satellite Applications and Research, representing the National Environmental Satellite, Data and Information Service; Dr. James Balsiger, Acting Assistant Administrator, National Marine Fisheries Service; Dr. Jack Hayes, Assistant Administrator, National Weather Service; Mr. John Dunnigan, Assistant Administrator, National Ocean Service; Rear Admiral Philip Kenul, Deputy Director of Aviation and Operation Centers.

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

**Tuesday, November 3, 2009**

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

Dr. Fluharty called the thirty-sixth meeting of the NOAA Science Advisory Board into session. SAB members, NOAA leadership and staff introduced themselves to the public.

**Welcoming Remarks and Opening Statement – Dr. Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator**

Summary:

Dr. Lubchenco welcomed the group and thanked them for coming. She indicated that due to her schedule constraints, she will not be able to participate in the full meeting. However, Ms. Mary Glackin and Dr. Paul Sandifer will attend both days of the meeting. Dr. Lubchenco thanked the SAB for their time and contributions to NOAA. The purpose of her presentation was to provide an update to the SAB since the summer meeting in Long Beach, California. She would also like feedback from the SAB regarding the priorities for the agency as well as NOAA's recent leadership realignment, administrative initiatives, and informal discussion with the SAB.

Dr. Lubchenco first noted that NOAA will host a national stakeholders meeting regarding the Next Generation Strategic Plan on December 2. Regional meetings in which stakeholders provided feedback have already taken place. SAB members are urged to attend the stakeholders meeting.

Dr. Lubchenco reviewed NOAA's organizational chart and discussed efforts to realign of the agency. The political leadership of NOAA has remained constant since 1970 when the agency was created and the budget was \$250 million. In 2004, the US Commission on Ocean Policy recommended the realignment of NOAA's leadership. The Department of Commerce and Office of Management and Budget approved the current plan for realignment. The realignment process includes the creation of two new political positions – the Assistant Secretary of Commerce for Conservation and Management and the Assistant Secretary of Commerce for Observations and Prediction. The objective of this realignment is to provide greater accountability and faster decision making. The new alignment establishes a clear process for responsibilities within NOAA under three primary functions: conservation and management; environmental observations and prediction; and research and education. One objective of the alignment is the reflection of these functions in NOAA's leadership and priorities. The Deputy Under Secretary for Oceans and Atmosphere position will become the Deputy Under Secretary for Operations. The Line Offices will report to this position, held by Mary Glackin. The DUSO will report to the newly-created Principal Deputy Under Secretary of Commerce for Oceans and Atmosphere. The alignment process will elevate the Chief Scientist position in the structure to a level commensurate with the two new Assistant Secretary positions and will handle the research and education portfolios. In addition, the realignment will create an Office of Policy. This Office will report to the Chief of Staff and will coordinate policy actions external to NOAA and within the agency with NOAA's advisory councils like the NEP, NEC and others. The realignment also creates the position of the Deputy Assistant Secretary for International Fisheries to comply with the recently-reauthorized Magnusson-Stevens Act.

Dr. Lubchenco also reviewed the process and timeline for the President's Ocean Policy Task Force, noting that the SAB members would hear a lot more about this later in the meeting. She also highlighted NOAA's FY10 Priorities, as stated in the Annual Guidance Memorandum (AGM). These include the National Polar-orbiting Operational Environmental Satellite System (NPOESS), the National Climate Service, improved forecasts and hazard mitigation, overfishing, resilient coastal communities, and Arctic science and stewardship.

Discussion:

Dr. Eric Barron asked if the realignment will evolve as NOAA takes on more climate responsibilities. Dr. Lubchenco responded that there are discussions underway on how to best organize the climate and research portfolios. This alignment process does not place constrictions on the climate agenda.

Dr. Frank Kudrna asked if there is an education and engagement element in the alignment process. Dr. Lubchenco's response was that the Chief Scientist will take the lead regarding education and engagement. Dr. Carolyn Thoroughgood asked how the Chief Scientist will work with OAR. According to Dr. Lubchenco, the Chief Scientist has a direct connection with OAR and all other line offices. The Chief Scientist will be responsible for the quality of research across all the Line Offices, with a special connection to OAR. However, the Line Offices will report directly to the Deputy Under Secretary for Operations. Mary Glackin commented that all of new positions will have relationship with the Goal Teams and Councils. Dr. Thoroughgood asked if the Chief Scientist will have direct budget authority will just be a "cheerleader." Mary Glackin's response was that the Chief Scientist will not have direct budget authority but that the position strengthens the possibility for NOAA to obtain new funding.

Mr. Raymond Ban asked if there is wiring diagram that shows the reporting chain. According to Dr. Lubchenco, this presentation provides a public version of the alignment chart. There are additional versions of the charts with that information, but they are not available to the public yet because they are not final. The matrix structure illustrates how functions cut across Line Offices. This cross-cutting capability is vital although it is hard to show the matrix structure with this type of diagram. Dr. Paul Sandifer commented that the goal of the new positions is to work as a team across Line Offices and provide advice to the Assistant Administrators. The goal of the realignment is to create a higher-level policy team.

Dr. Thoroughgood noted that the three new positions will provide a lot of opportunities to interact outside the agency and really engage in external communications. Dr. Lubchenco responded that this is a good point, that the increased number of positions will spread the policy load and allow additional and stronger communication with Congress as well.

With respect to the Annual Guidance Memorandum (AGM), Dr. Mahoney noted that the commonalities seem to be place-based management combined with observations and predictions and affected communities. Nevertheless, this is a diverse set of priorities and the requirements for predictions will be very diverse as well. NOAA will need to think across the agency to address all of these.

Dr. Barron agreed that this is a diverse set of priorities and very daunting. He wanted to know how NOAA will handle its place-based management activities across the country and how it will coordinate these with other agencies. Mary Glackin replied that other agencies have a regional focus and NOAA will also be using its new regional structure, as headed by Laura Furgione. Dr. Furgione reminded the SAB that NOAA has regional teams and coordinators who have the responsibility of doing all of this, with all the Line Offices and Goal Teams involved. Ms. Glackin noted that not all the priorities will be addressed regionally but most will be.

Although the climate service is a national issue, there still must be thought as to how it will be implemented regionally, providing products and services, outreach and engagement at many scales. Dr. Lubchenco pointed out that NOAA already has regions in the National Weather Service and National Marine Fisheries Service that are based on a variety of concerns, including politics, ecosystems, and history. NOAA will have to figure how to organize its overall regions on many scales. Dr. Thoroughgood said she would argue for ecosystem organization because of the ecosystem-based management approach that NOAA is taking. In that case, she thinks the Mid-Atlantic really needs to be its own region since it is quite different from the Northeast or Southeast. Dr. Jerry Schubel thinks the regions should be defined as opportunities and believes there should be a “NOAA West” with priorities specific to that region. People should be able to see what NOAA does through these activities. Dr. Kudrna thinks that the public perception of the regions needs to be worked out; the Great Lakes are easy but other regions are not well-defined. Dr. Thoroughgood also noted that NOAA must not forget the middle of the country and the influence of the oceans there. Oceans and Health is an opportunity that shouldn’t be missed because it is relevant across the country. How will NOAA make all of these priorities relevant to all US citizens? Dr. Lubchenco pointed out that the AGM priorities are special areas for action but will be framed in terms of all the other NOAA responsibilities. Human health and economic value are part of the consideration as well.

Dr. Schubel asked what is the “NOAA narrative?” What is the thread and what is the central message? If he knows these, he can better discuss them when he talks to the NOAA West group later in November.

Dr. Barron noted that he is pleased that the interagency process on climate services is going more slowly than originally. He thinks that a more thoughtful pace is good. Dr. Sandifer thanked him for his recent article in Science magazine on the topic of climate services.

Dr. Fluharty pointed out that the ecosystem-based approach is very important to NOAA, particularly if the agency is moving into watersheds and hydrography. NOAA defines marine ecosystems as stopping at the outer boundary of the Exclusive Economic Zone (EEZ) but marine ecosystem regions are much broader than the EEZ. Being true to what an ecosystem is, and defining at different scales for different purposes makes more sense. He also noted that integrated ecosystem assessments (IEAs) in NOAA started as a tool to connect with people and to provide services. What priority will IEAs have in the agency now? Dr. Lubchenco responded that IEAs are essential to what needs to be done. The focus of Ocean Policy Task Force on Marine Spatial Planning (MSP) would require that. IEAs are not lost in NOAA but being positioned as part of a larger effort to be more thoughtful about activities that need to coexist in areas in order to sustain coastal ecosystems. IEAs are one of the tools that will be used. Dr. Fluharty noted that IEAs do not show up as a tool in the interagency plan and NOAA may want to consider how to emphasize their role.

Another member pointed out that in MSP, there is a lot of work being done by those leading the development of the concept that presents MSP as a two-dimensional issue and it is not. The member asked how to keep third and fourth dimensions in MSP. Dr. Lubchenco responded she

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thinks of MSP in four dimensions but others may think of it differently depending on issue. She agreed it was useful to think of MSP more broadly, as a four-dimensional problem.

Dr. Fluharty pointed out that fishermen are having trepidation over allocation. Between sport and commercial fishing, how the allocations are done is essential. He wants to know NOAA's approach to assess the balance in the future. Once people see leadership and a way forward this will quell many of the fears.

Dr. Lubchenco agreed about fear on this topic and that allocation is important. Councils make recommendations and do so for historic reasons and now it is time to have discussions on allocations cross-sector. She stated that NOAA has not had that discussion although she discussed it with American Association of Sports Fishermen. Dr. Balsiger responded that the key issue is how the sports fishermen can get more access since the Fishery Management Councils see this within a more-limited historical viewpoint. Dr. Lubchenco agreed, saying that cross-sector issues are very important. There is a newly-designated senior policy advisor position on recreational fishing. That person will convene a summit on the topic in the near future to address these issues.

Dr. Jim Sanchirico asked about catch shares and MSP, pointing out that they must be worked together. Is NOAA thinking about integrating these into one process? Dr. Lubchenco said Territory User Rights Fisheries (TURF) is one way this is being handled - instead of allocating quota, allocate an area. Dr. Sanchirico noted that NOAA must think about these simultaneously not on separate tracks. Dr. Lubchenco said there are many agencies involved with MSP; only NOAA is concerned with fishing usage and is bringing that to the table. The agency is looking at various dynamics, e.g., TURFs next to marine reserves, and the likely dynamics. Dr. Fluharty noted that there will be conflicts in MSP but that the way to solve these is not to put down lines on a map. This would be the antithesis of the ecosystem-based approach. The agencies need to be practical but not locked into boundaries.

Dr. Lubchenco pointed out that what distinguishes the OPTF effort is the Presidential focus on stewardship, how agencies work together while ensuring healthy oceans. This is a major step forward.

The discussion wound up with Dr. Lubchenco thanking the group for the helpful discussion.

**NOAA and the Census of Marine Life: Final Recommendations** - *David Fluharty, University of Washington and Chair, NOAA SAB*

### Summary:

The purpose of the presentation is to provide recommendations to NOAA on interactions with the Census of Marine Life (CoML) program. At the March 2008 meeting CoML came to the SAB and asked for help as current funding was ending and a lot of CoML research was used in NOAA missions. The SAB formed a small committee with D. Fluharty, F. Kudrna, and C.

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Thoroughgood along with several members of the US National Committee (USNC) for the CoML.

The finding of the committee was that while NOAA and CoML planning for next decade are in a state of flux, NOAA should continue discussions with the USNC and CoML about future programs. The SAB recommends that NOAA engage with CoML and partners on how to operationalize biodiversity in NOAA and across federal agencies.

NOAA has opportunities to take a leadership role in marine biodiversity and the SAB recommends that NOAA create and endorse a marine biodiversity plank in the OPTF report.

There is no common set of metrics or language on marine biodiversity and this leads to a lack of coordination across NOAA. SAB recommends that NOAA operationalize a definition and metrics for use across the agency so there can be a common approach to discussion of marine biodiversity in management contexts.

Marine biodiversity is a topic bigger than NOAA, therefore the SAB recommends that NOAA should increase its involvement in coordinating among US national and international efforts to understand and monitor marine biodiversity through formal creation of an interagency taskforce. The SAB notes the informal, NOAA-led effort that presently carries this discussion.

NOAA has a strong role to plan in international marine biodiversity. The SAB recommends NOAA take a stronger leadership role, as appropriate, in US efforts to support international and intergovernmental programs.

Coordination across the agency on marine biodiversity can be a part of EBM. The SAB recommends that NOAA should develop a strategic plan for marine biodiversity.

SAB will continue to provide advice on biodiversity through existing working groups and offers its services as needed by NOAA.

#### Discussion:

Dr. Lubchenco asked if the Smithsonian Institution was involved with the CoML. Dr. Fluharty responded that the SI did not provide any direct funding to CoML but there were SI personnel participating in CoML projects, particularly those from the NMFS Taxonomy Laboratory based in the National Museum of Natural History. NOAA also worked with SI on biodiversity content for the new Ocean Hall at the NMNH.

Dr. Schubel pointed out that only one recommendation in the report actually relates to the CoML. He thinks there should be greater acknowledgement that the CoML is an amazing collection of research projects. He pointed out at its summer 2009 meeting the SAB agreed that the CoML needs a new business plan, should better connect to the Ocean Policy Task Force and/or to the NOAA priorities. An existing CoML project could be used as a demonstration project for ecosystem-based management. The language for the recommendations should be stronger and more specific to these issues.

Dr. Barron noted that a funding hiatus is inevitable for CoML since there is no plan for developing requirements for resources. This report shows the way forward for integrating CoML into US agency funding. Dr. Fluharty agreed that the funding hiatus is inevitable and that the CoML should focus on a plan for the future. These recommendations focus on how NOAA can develop a coherent approach to biodiversity across the agency rather than depending on CoML as a collection of projects.

Dr. Kudrna noted that early discussions about the CoML proposed that there should be discussions with other agencies but CoML preferred to focus on NOAA only. Dr. Fluharty agreed that there probably should have been an interagency discussion but was not able to find a time to convene the relevant individuals from CoML, NOAA and Department of the Interior.

Paul Sandifer (member of the USNC) noted that the committee tried to recognize that the CoML doesn't have a future plan but that it wanted to work with NOAA because the agency should have a strong on marine biodiversity within an EBM context, both nationally and internationally. The committee decided to move away from just a CoML focus and instead examine NOAA and look at recommendations for NOAA in terms of marine biodiversity including CoML components.

Dr. Sanchirico raised the broader question of how NOAA decides what the right priorities are for the agency. The SAB has made a lot of recommendations on many topics to the agency, including ecosystems, hurricane intensity, and soon, oceans and health. All of these recommend a strategic plan but they should really recommend that the topic be incorporated into existing plans. He thinks the Recommendation 6 in this report should be changed to reflect that NOAA has a strategic plan and marine biodiversity needs to be incorporated into it.

Carolyn Thoroughgood said that the committee was convened because there appeared to be a good opportunity for CoML and NOAA to form a public-private sector model for the next years of the CoML. Since then, however, the downturn in the economy has prevented this from being a viable option so the committee had to approach it differently. The US National Committee for CoML didn't provide a lot of guidance on where it wanted to go so the SAB members had to come up with recommendations that not only addressed the CoML but the broader concern of marine biodiversity across the agency.

Dr. Schubel would like to see a preamble or introduction added to the report that sets a better tone, provides background for the CoML and recognizes what the CoML has accomplished in ten years. He would like the report to point to how NOAA can take advantage of what CoML has accomplished to do its job better and meet its mission.

Dr. Fluharty agreed, saying CoML has provided a proof of concept in almost every area of marine biodiversity and NOAA should be able to move forward based on what CoML has accomplished. For example, the US part of the Ocean Biogeographic Information System (OBIS) is at the US Geological Survey but NOAA is contributing to it. A formal home for the International OBIS is under consideration by the Intergovernmental Oceanographic Commission for possibly being hosted by the International Ocean Data and Information Exchange (IODE) in

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Flanders, Belgium. NOAA provides the Permanent US Representative to the IOC. NOAA is also supporting the Integrated Ocean Observing System of Systems (IOSS) and it is possible that OBIS could be integrated into this.

Rick Spinrad noted that the revised version of the Ocean Research Priorities Plan will include new language on marine biodiversity as a result of CoML and NOAA. In addition, the Joint Subcommittee on Ocean Science and Technology (JSOST) is discussing the formation of a special interagency group on Biodiversity. JSOST hasn't made a decision on this but NOAA could contribute a White Paper on the topic. Perhaps the SAB could recommend that NOAA provide this White Paper to help JSOST consider how biodiversity fits into its activities.

Gerry Wheeler noted that the SAB has an extension, outreach and education report out. The language on outreach in the CoML report should note this and refer back to that report.

Dr. Sandifer pointed out that NOAA now has an internal biodiversity group and participates on an ad hoc interagency biodiversity group that has been formed under the Interagency Working Group on Ocean Partnerships (IWG-OP). The SAB can raise the issue of how important biodiversity is to NOAA's mission and to education and outreach efforts as well. The recommendations could refer to strategic discussions rather than a plan and how NOAA can move into a decade of marine biodiversity exploration, how crucial this will be for EBM and MSP.

Dr. Sandifer also noted that the original request from the CoML was that the SAB consider whether to recommend to NOAA that it pick up the cost of running the international Secretariat and/or the US National Committee for the CoML. Dr. Thoroughgood pointed out that the agency should consider what will be lost if the "glue" provided by the Secretariat no longer exists. Dr. Sandifer noted that the coordination and facilitation activities of the CoML will be lost if this happens.

Jim Mahoney said that this issue should be looked at from a public administration point of view. Any activity started by a private foundation that then wants to be picked up by the federal government will have a difficult time. NOAA would have to convince OMB that it isn't just picking up someone else's priority. OMB would ask why it's important now. The only way this could work is if NOAA used a leveraging argument and worked it the right way. But NOAA would have to ask itself what it is willing to give up in order to support the CoML Secretariat. This would be extremely difficult to do to cover the gap in CoML before the FY12 budget assuming that NOAA's response was positive.

Jim Sanchirico stated that Finding 6 needs to be reworked to tie CoML in with MSP and IEAs.

Jerry Schubel stated that NOAA will need to make the case for integration, using OBIS as a primary example of a tool that can do this

The SAB members agreed that the current report needs to be revised to provide more background and information on CoML, to make a better case for the relevance of CoML to NOAA programs, to modify Finding and Recommendation 6 as per member comments, to be



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more specific about the necessary business case and future engagement, and to rework the language so that it is more forward-thinking.

Action 1: The NOAA Science Advisory Board Census of Marine Life Committee will revise its report as per comments from the SAB members and transmit to NOAA.

**Preliminary Draft Report from the SAB Oceans and Health Working Group - Carolyn Thoroughgood, University of Delaware, Member of the OHWG and the SAB**

Summary:

The purpose of the briefing is to present the preliminary draft report of the group to receive initial reactions and suggested revisions prior to release of the draft report for public comment. The Chair of the Oceans and Health Working Group (OHWG), Dr. Steve Weisberg, was not able to attend but he called in and participated in the discussion.

The presentation reviewed the working group history, membership, and process, including the initial six charge questions and then focused on the recommendations. The overarching concept of the report is “One Ocean, One Health” with NOAA leading the national activities in this area. The concept will require a holistic approach entailing coordination within NOAA, across agencies, and in the public and private sectors. Why is NOAA seen as in the lead? NOAA has various legislative mandates (Oceans and Human Health Act, among others) and executive branch history (US Commission on Ocean Policy, Ocean Research Priorities Plan, and other reports to study health hazards in the ocean). NOAA has the scientific expertise as well. Finally, NOAA’s own mission statement about serving society in relationship to health includes a place for this.

There were six recommendations in the report.

1. Preservation and enhancement of Ocean Health as an agency-wide goal. If not broken out as a separate goal, this should be addressed as a sub goal of the NOAA Ecosystem Goal
2. Development of a strategic plan to integrate many disparate elements across the agency, including incorporation of risk-benefit characterization analysis.
3. Within NOAA there is a substantial effort to support other federal agencies in completing its missions. They suggest the articulation of NOAA support for other agency missions related to health.
4. Appointment of a senior management official and team to carry out the strategic plan with established budget authority and performance metrics
5. Quantification of benefits derived and demonstration of return on investment together with a key message that NOAA’s activities save lives and enhance the health of humans and marine organisms.
6. An investment in the funding base commensurate with societal, ocean health-related imperatives. While the OHWG recommends \$30M at a very minimum, there should be at least funding at the original Oceans and Human Health Initiative authorization of \$12M/year. Current funding is only \$1-4M/yr. Despite the minimal fiscal support, the program documents some striking results in particular with respect to its investments in graduate student research.

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The goal of the OHWG is to incorporate SAB comments into a revised draft for public comment by December 2009 and present final report to the SAB at its March 2010 meeting.

Steve Weisberg, Chair of the OHWG, stated that this is a decision point for the agency. The OHWG considers this is a winning program. It is part of the NOAA mission to save lives. If NOAA goes through the exercise to quantify return on investment and payback in saving lives, this program is a winner. Some early benefits from the Oceans and Human Health Initiative included potential drugs from the sea; there is huge potential here that is underexploited

### Discussion:

Eric Barron noted that this issue is hugely important but the report needs to differentiate between “oceans and health” and “ocean health.” The terms seem to be used interchangeably in the report; it is a confusing message and he is not clear what “health” you are looking at. . He also said that “One Ocean, One Health” is catchy but he has no idea what it means. He doesn’t believe that it is a concept that should drive the report unless it is clearly explained. He further noted that the science drivers for the program as well as the driving issue on why we need to be involved are missing entirely from the body of the report. He didn’t find any information on science drivers until he read the response to question 2 in the Appendix. There is a lot of good stuff in the Appendix and this language should be moved up and worked into the report itself at the front end. He wasn’t sold on something not explained until later in the report. He stated that “health” ranged from hurricanes to pathogens but, in the end, the report didn’t make a case for the “connectedness” of it all and so he found he didn’t believe in the concept and need for this. Carolyn Thoroughgood indicated that Dr. Lubchenco’s advice at the July SAB meeting [to prepare a short report that could be brought to audiences outside NOAA] might have been taken too literally and the report might have gone too far in that respect.

Jim Sanchirico noted that the report echoes a lot of the concerns voiced in the Social Sciences Working Group report, e.g. the funding is going down for this and the trend must be reversed. But the WG needs to explain why this is and how and why NOAA should invest the funds in this arena. The report must justify the NOAA ramp-down compared to other agencies’ ramp-up in oceans and health. Paul Sandifer responded that the original program was an earmark and so has not gotten a lot of support within the President’s budget. More funds have been appropriated each year but the President’s budget only requests \$1M/year. The OHHI results shown recently during a meeting in Seattle happened as a result of a program with annual funding of \$4-8M.

Carolyn Thoroughgood pointed out that there is a strong connection between the environment and human and animal health. NOAA is the only agency that makes this connection. Given that, the recommendation for \$30M/yr is really a very conservative request. But she agreed that the report may have gone “a bridge too far” in recommending that NOAA take on the role as lead agency in this area.

Mary Glackin expressed concern about the ability of this topic to compete with other priorities in NOAA. The science case has to be really well made for there to be support for Oceans and Health in the agency in comparison with other topics.

Jim Mahoney said that leadership and partners are important but to be a partner, the program needs to pick one or two situations with other partners where there are “win-win” possibilities. It is difficult for the agency to say it needs more money without the capabilities in-house. Instead the agency must build capabilities and latch on to a few partners; this is something NOAA can do. He noted that the need and relevance to NOAA’s mission are recognized but there should be a perspective on how many years it will take NOAA to ramp up to a \$30M/yr program. NOAA should take a strategic approach and design a program that ramps up funding over 3-5 years in collaboration with many partners. He suggested that there should be a demonstration that NOAA needs this as a core competency as a way to build from the small funding the agency has now.

Frank Kudrna pointed out that every SAB Working Group recommends more investment and a strategic plan. It’s hard for the agency to deal with such advice because it would involve deciding what NOAA should stop doing in order to make these investments. He suggested that the SAB could help by reviewing all of the recommendations it has made and provide advice to NOAA on the priorities among them. He also noted that the recommendations in this report clearly link to those in the Social Sciences Working Group and Extension, Outreach, and Education Working Group reports. In addition, this is a topic that is understood by the public and implementation could garner a lot of support for NOAA as an agency.

Jim Sanchirico stated that NOAA could build its capacity by partnering with the right agencies and sell this as a cross-agency program to OMB. Partnerships may be the key. He suggested that NOAA settle on a couple of strong partners, identify a couple of core competencies and go from there.

Ray Ban stated that he felt this is an overwhelming topic, which covers so much that it is really hard to digest. He suggested that it can only be tackled as a partnership with other agencies, each of which takes a different aspect, and NOAA just would be one of those.

Paul Sandifer pointed out that NOAA has already established substantial partnerships through the OHHI – both within the agency, across Line Offices, and with other federal agencies. The OHHI has been very successful to date; NOAA is further along than perhaps the SAB thinks, but not as far as it needs to be. NOAA needs a decision on where to go from here; the status quo won’t get the agency anywhere. He also pointed out that other federal science agencies are getting increased funding for science but not NOAA. This is an underlying problem as well.

Additional written comments were requested from SAB members by November 11. If comments are so substantial that they trigger a major rewrite, it will change the schedule for the report. If not, the current schedule calls for SAB comments to be included in a draft report that is put out for a 30-day public comment period. Comments are incorporated and a final report is presented at the March 2010 SAB meeting.

Action 2: The NOAA Science Advisory Board members will provide comments on the Oceans and Health Working Group Preliminary Draft Report.

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Action 3: The SAB Oceans and Health Working Group will revise its report as per SAB comments, put the report out for public comment, finalize and provide to the SAB at its Spring 2010 meeting

**Update on the Climate Working Group** - *Antonio Busalacchi, University of Maryland and Chair, Climate Working Group*

Summary:

The purpose of the briefing was to provide the SAB with an update on recent activities by the Climate Working Group (CWG) and to obtain approval of the SAB for its most recent review report (presented in summary by Dr. William Hooke below) and new members.

At its most recent meeting, in October 2009, the CWG received an overview of NOAA climate activities, including a briefing on the FY 12-16 priorities. The CWG was concerned that it had no opportunity to provide input to the FY12 priorities, however. The members also reiterated concern about the lack of agency progress on seasonal-to-interannual prediction timeframes.

Also at this meeting the CWG was asked to comment on three different models being considered for NOAA for the integration of research and operations in climate services. They did a pro-and-con analysis of the three models provided (National Weather Service (NWS) – operations only with relevant research carried out by another Line Office, Oceanic and Atmospheric Research (OAR); National Marine Fisheries Service (NMFS) - research and operations carried out in the same Line Office; National Ocean Service – relevant research funded and conducted both within the Line Office and exterior to the LO in OAR or NMFS). They also suggested that NOAA consider other models, summarized in their final report as Model 4, in which all research and operations are conducted within a single Line Office but with a large fraction of the research conducted external to the agency, via a variety of mechanisms. Of particular concern and not addressed in any of the in-house models was the interdisciplinary breadth needed to support climate services. The fact that there is no “L” in NOAA for land is illustrative of this need. The CWG also saw a strong need for a Climate Program Office in NOAA headquarters to act as an “honest broker” for research and that this responsibility should not be delegated to any specific NOAA laboratory.

Dr. Busalacchi then summarized the history of CWG meetings and activities to date with a goal of identifying emerging climate-related challenges for NOAA in the next 5-10 years, providing the SAB with a list of these challenges. The CWG agreed that it will focus on two of these in the short term: the integration problem and issue-based case studies. The integration problem involves climate observations, modeling, forecasts, and services across the agency and end-to-end. It includes the research-to-operations process, climate services, and engagement with the social science community. The issue-based case studies could be sectoral or regional and would address specific questions. At the Spring 2010 meeting, the CWG will learn more about these to determine whether either topic is ready for a summer study.

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The CWG looked at its original terms of reference and noted that the Terms were uneven with respect to execution, guidance and advice related to observations, modeling and services. The Working Group may take up a revision of its TOR at a later time once NOAA's plans for climate services become more apparent.

Finally, Dr. Busalacchi discussed potential new CWG members, primary and alternates, in the areas of atmospheric composition/ chemistry/ carbon and in the area of climate change scenarios and adaptation. The CWG requested SAB approval to invite these experts to join the working group. The CWG also asked the SAB for suggestions of experts in coastal processes.

### Discussion:

Eric Barron asked why there was no specific recommendation to the SAB on the National Climate Service research models. Dr. Busalacchi responded that the CWG wasn't asked to recommend a specific model but only to provide the pros and cons for each.

Regarding the FY12 priorities, Mary Glackin noted that there was little time for NOAA to make decisions regarding the FY09 stimulus funding or the FY12 budget. Dr. Barron noted that the report from the CWG Vail workshop (summer 2008) recommended that NOAA maintain an advisory body on climate. Looking at the list of topics that the CWG provided, it is clear that it will take the group at least 1.5-2 years to tackle all of these but the input is probably needed sooner. Dr. Busalacchi responded that the CWG will probably set up subgroups so they can be addressed in parallel and thus, on a shorter timeframe.

Dr. James Mahoney, SAB liaison to the CWG, recommended that the SAB approve the CWG to put new members on the SAB and also raised another membership issue. The term of the Chair ends in December 2009. The CWG voted unanimously in favor of extending the membership of Dr. Busalacchi to serve as Chair for another three years. Dr. Mahoney recommended that the SAB approve this appointment as well. The SAB approved this request.

Dr. Mahoney also noted the CWG recommendation that no NOAA laboratory be head of climate research for NOAA and asked if the concern was over potential conflicts of interest. Ms. Glackin further noted that the NOAA labs don't currently set the research priorities but that the Climate Program Office does that. Does the CWG recommend a greater separation than that? Dr. Busalacchi responded that the concern was about the former having the authority to set the budget priorities, yes, but that the CWG was satisfied with the way that the CPO was currently handling research priorities. Tom Karl, NOAA, asked if the recommendation applied to both external and internal climate research at NOAA. Dr. Busalacchi responded that it was primarily concerned about the one-third external research funding but that the group did also have some concerns about the two-thirds that is allocated internally as well. Dr. Barron noted that any good research institution should be able to handle funding allocations and be trusted to do this. Ms. Glackin pointed out that Model 4 in the research options report gets at the external funding question and it shouldn't be a problem. Dr. Mahoney reiterated that his concern is that research must not be disengaged from climate services, although research shouldn't be the only driver and shouldn't dominate climate services. Dr. Jack Hayes, NOAA NWS, concurred with this, stating that research and operations must act as a team. This really becomes crucial in adaptation

questions when local governments and organizations start asking how to make their decisions. Dr. Busalacchi noted that the research options report tried to look at how users could best use the research products.

The SAB wrapped up the discussion by approving both of the CWG requests on new member appointments as well as the request from Jim Mahoney to extend the membership and position of A. Busalacchi as Chair of the CWG.

Action 5: The NOAA Science Advisory Board accepts the recommendations of the Climate Working Group for new candidates and requests the Working Group to move forward to clear them onto the WG. The SAB also accepts the recommendation of Jim Mahoney and the CWG to extend the membership and position of A. Busalacchi as Chair of the CWG for another three years.

[Note for the record: Daniel Jacob, Harvard University, and Richard Moss, University of Maryland College Park, both agreed subsequent to the SAB meeting to serve on the Climate Working Group.]

Action 6: The NOAA Science Advisory Board accepts the recommendation from the Climate Working Group for a member in the area of coastal processes and will send names of candidates to A. Busalacchi and D. Fluharty.

**Report from the CWG Review of NOAA Climate Information Products and Applications - William Hooke, American Meteorological Society Policy Program, and Chair, CWG CIPA Review Team**

Summary:

The purpose of this briefing was to present a report to the SAB on the review by the Climate Working Group of NOAA's Climate Information Products and Applications (CIPA). This review is a third in a series of reviews conducted by the CWG that started with the review of the Climate Observations and Analysis program (2007) and the review of the Climate Research and Modeling program (2008). CIPA is a \$40M program.

The context for the program is that global sustainability is a growing challenge given increasing resource use with changes in climate. The question is whether this use can be sustained and whether there are unintended consequences. There are two widening gaps: 1) the gap between what we know and society's ability to benefit from that, and 2) the widening gap between advancements in science and technology and what is needed (observations, modeling, etc.)

The review concluded that NOAA must develop a strategic plan, including a central strategy, collaborations, a plan for demonstration projects, and the means to do this in an evolving way. The program must eventually transition to a true service by scaling up into a robust effort that is commensurate with future needs (integrating research with services). The effort must develop

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and hone collaborative skills, including the ability to listen to and gather information, engage collaborators more strategically and effectively, engage a broad range of intermediaries, and build capacity to sustain programs. The Review Team would like NOAA to report back soon on its response. NOAA should indicate what measures it will take over the coming year to address the review team concerns. In revisiting the climate reviews, NOAA should start with climate services.

The members of the review team and the CWG wished to point out to the SAB that the particular dilemma faced by the CIPA review team was the fact that they were reviewing a grants-based research component (i.e., CIPA) of the Climate Program office at a time when NOAA was considering how best to provide national and NOAA climate services. These are neither mutually exclusive nor synonymous, hence the challenge the review team encountered.

### Discussion:

Eric Barron stated that it was hard to determine the intent of the report, whether it was just a review of the existing program or a plan for moving CIPA to a climate service. It was hard to tell but these objectives are very different. Dr. Hooke indicated that it ended up being a bit of both. Chapter 4 addresses the original request to review the program but the review team also thought that they were good enough to do more and take a global view of this. Dr. Barron thinks the real issue for the program is scaling up the effort. The “program” just reads like 31 one-off projects that are all good but not, in combination, a cohesive program. He thinks the review was a very gentle analysis but should have used stronger language to point this out. This set of projects can’t be scaled up into a climate service because they are not coherent. Dr. Hooke pointed out that language on page 5 of the report does state that just improving these projects won’t achieve much. Dr. Barron thinks the recommendation of the review should have said that these are good projects to support but, in combination; do not make a strategy for a national climate service. Dr. Hooke agreed and said the language could be stronger.

Jerry Schubel, who also served on the CIPA review team, noted that there was no overview provided of the projects in total so it was left to the review team to infer it and they couldn’t see a strategy in the program. Dr. Hooke reiterated that it was an awkward time for such a review, given the state of climate services in NOAA during the summer of 2009 when the review took place.

Eric Barron reiterated that the report should say that the projects are good but that there is no vision in the program.

Tom Karl, NOAA, said that the strength of the National Climate Service will be the development of collaborations with users. Dr. Hooke agreed and said the CIPA review should be done again after the Climate Service is formed.

Ray Ban, who was an observer at the review, echoed earlier concerns and said that 31 projects were discussed but clearly they were not related and could not evolve as is in the Climate Service. Dr. Barron agreed and said that the review should state clearly that these types of projects won’t scale up into the Climate Service.

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Jim Mahoney pointed out that a climate service should state its goals and how to achieve them so there is a framework. The service should start with the questions to be answered not with what the agency already has in place.

Jack Hayes, NWS, agreed that there must be user engagement to develop the National Climate Service.

Dr. Barron stated that the review report should add language at the beginning, in the Executive Summary and the Introduction that provides context for the review and makes it clear what the review team was trying to do, that the message to NOAA is that it must do things differently, not just try to maintain the current CIPA program.

The SAB agreed to accept the report from the CWG if the Executive Summary and Introduction are revised to include the concerns of the SAB and make clearer the message to NOAA that it must do things differently for a National Climate Service. Ray Ban, Eric Barron, Dave Fluharty, Jerry Schubel, and Gerry Wheeler will work with Dr. Hooke and the CIPA Review Team to revise the report and send it back out to the SAB for review prior to transmittal to the NOAA Administrator.

Action 7: The NOAA Science Advisory Board accepts the report on the Climate Working Group Review of the NOAA Climate Information Products and Application Program, pending revisions to the Introduction and Executive Summary to reflect concerns about providing context for the report and perception that NOAA needs to change its approach to these products to better reflect a strategy for a National Climate Service. The SAB will transmit the revised report to NOAA upon approval of the final version.

**NOAA's Draft Strategy in the Arctic** - *Ashley Chappell, Deputy Lead, NOAA Commerce and Transportation Goal*

Summary:

The purpose of the presentation was to summarize for the SAB the Draft Strategy and seek input from the members. There are many reasons for interest in the Arctic with many potential and current problems in that region as well as unknowns. NOAA has the capabilities to address many of these issues. The Arctic strategic plan is the first step to identify these capabilities.

Other Arctic Nations are as preparing extended continental shelf (ECS) claims in the Arctic under the United Nations Convention on the Law of the Sea. The US is the only Arctic nation not party to UNCLOS. Other federal agencies are doing similar planning for activities in the Arctic. The state of Alaska is developing a climate change strategy as well and is seeking help from NOAA. President's Ocean Policy Task Force Draft Interim Report highlights the Arctic as one of nine priority objectives. In summary, there is an opportunity to get ahead on all of this through the plan, and implement sustainable uses of the ocean in this region.



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The draft plan articulates an Arctic Mission and Vision and identifies six theme areas: climate science and services; marine ecosystems and resource management; coast community hazard resilience; weather and water services; marine transportation and homeland security; Arctic governance and international cooperation. The current Plan has identified requirements in each area, some commonalities, gaps, and immediate needs.

Ms. Chappell also noted that there was an Arctic report card released by an interagency effort that included the US Geological Survey, US Fish and Wildlife Service, Army Corps of Engineers, NOAA, and others in October 2009 that emphasizes the urgency of action in climate sciences and services.

The beginning of the formal external input will be with the SAB and the Hydrographic Services Review Panel. The writing team is hoping the SAB will review the plan and validate framework and areas for action, identify omissions in the plan. The Plan will be ready for review sometime early in 2010.

### Discussion:

Dave Fluharty asked what definition of the Arctic NOAA is using. Ms. Chappell replied that NOAA is using the Arctic Research Program community definition, which starts it north of the Yukon River and covers a very wide area.

Jim Mahoney asked what were the specifics of the Plan and whether the themes had specific goals and recommended actions to achieve them. Ms. Chappell replied that the presentation was just highlights of a much larger document that is still being worked on. She indicated that the final Plan will indeed include goals and actions. Dr. Mahoney further asked what the level of discussion of partnerships and use of data was in the plan. He wanted to know how robust the plan is and how NOAA is working in concert with others. Ms. Chappell responded that the plan highlights who partners are and the kinds of projects that can be leveraged but doesn't go into detail on specific projects; there will be an Appendix with more detail, however. Dr. Mahoney asked whether the NOAA Arctic Plan builds on the Arctic Climate plan. Ms. Chappell responded that the team took many of the requirements from the Arctic Climate Plan and other reports like that. Finally, Dr. Mahoney wanted to know if the state representatives were involved in the development of the plan. The response was that there is a subcabinet-level climate change strategy group and NOAA is involved in this along with relevant state representatives. Laura Furgione, NOAA, agreed that the Alaska regional team has been very much involved with this

Jim Mahoney asked when the SAB will get the plan and when comments are needed. Dr. Fluharty said that, while it will go to whole SAB, it might make sense for the SAB to perhaps form a subcommittee to review it and develop response on behalf of the Board.

Paul Sandifer said some actions on what NOAA does first need to be clarified in the document before it is sent out. He thought the SAB would get it to review before the next meeting and have time to provide comments on it at that meeting. NOAA expects to provide the revised draft to the SAB soon after the first of year.

Jim Sanchirico noted that the plan contains no mention of marine spatial planning and said that the final version of the plan might need to address current efforts as they relate to the Arctic. Ms Chappell replied that they are trying to make the revisions as soon as possible and hope to include marine spatial planning in the FY11 or FY12 planning process.

Eric Barron noted that Arctic was one of six NOAA priorities in the Annual Guidance Memorandum for FY10. He wanted to know if this Plan was a response to that and if the SAB should expect to see a plan for each of the six priorities. Paul Sandifer replied that all six priorities will not have such a significant plan but that there will be places in NOAA to get more detail. On Arctic, there will be priorities identified in the plan so the SAB will be able to provide comments on the priorities as well as the overall plan.

### **Public Comments**

One comment was received in conjunction with this meeting, presented verbally at the meeting with final recommendations provided in writing subsequent to the meeting. The written testimony is provided here.

*Comment from Jim Tozzi, Center for Regulatory Effectiveness (CRE)*

The CRE looks at new regulatory programs and is provided a comment on the new program on Marine Spatial Planning that is being developed through the President's Ocean Policy Task Force. This concept was tried under President Carter but failed because it was not science-based. The end of the current process is going to be an Ocean Zoning program and it will be regulatory. CRE currently is running an interactive public docket, peer-reviewed on the website on this topic. Two recommendations have emerged from the public docket (language from the CRE website):

- (1) The SAB should request that they [*sic*] be accorded the opportunity to review the CEQ/NOAA document on Marine Spatial planning to [be] prepared as a result of the recent directive of the President.
- (2) The SAB request a briefing from NOAA staff on the Data Quality Act and its applicability to the aforementioned report on marine spatial planning and its applicability to NOAA marine models.

CRE also emphasized NOAA's excellent track record on implementing the DQA, in particular its commitment to the pre-dissemination review requirements of the Data Quality Act, see [http://thecre.com/pdf/Emerging\\_Information\\_Quality\\_Act-Pre-Dissemination\\_Review\\_&\\_Documentation\\_Form.pdf](http://thecre.com/pdf/Emerging_Information_Quality_Act-Pre-Dissemination_Review_&_Documentation_Form.pdf)

CRE was also advised that NOAA intends to release the aforementioned document on spatial planning for public comment. CRE applauds NOAA's commitment to transparency.

**Wednesday, 4 November 2009**

The meeting was called to order by David Fluharty, the Chair. He asked if any of the members had any questions about NOAA's budget and legislative affairs activities.

Carolyn Thoroughgood asked why NOAA didn't receive more FY09 stimulus funding than it did and whether the SAB could help in the future with requests like this. Mary Glackin responded that NOAA had been aggressive in its requests but the stimulus funds had to be tied to jobs. The agency did well by accelerating some projects that it had planned but likely other agencies were better able to tie their activities directly to job creation. It was still a lot of money to execute and NOAA did a great job with it.

Dr. Thoroughgood asked about other major issues with funding. Ms. Glackin replied that satellites, particularly NPOESS and GOES, are and will continue to cause problems. In addition, the America COMPETES Act didn't identify NOAA as a science agency and that should be rectified. It will be difficult for NOAA to carry out an effective science agenda if it doesn't get an adequate budget for it. Dr. Thoroughgood stated that NOAA needs to show better connectivity to universities and external funding and stakeholders. The Consortium for Ocean Leadership has pointed out that only 3% of NOAA's budget goes out of the agency so this is an issue. Ms. Glackin responded that NOAA has identified its external funding clearly in climate services and must do the same in all of its research lines. It must identify its partners, how the agency is involved with them, and how to work better with them. She noted that the agency is fairly weak in socio-economic research, except for Fisheries, good in climate, weather and some ecosystem science (although the latter is very dispersed in the agency) but a vision is needed to tie all of these together more effectively. NOAA needs input on how to do this in the future.

Eric Barron suggested that, for climate, NOAA could look at what assets are available in every region, how much is has, and how it works. NOAA may have the cascade from national to regional to state to even local but doesn't know it yet. Ms. Glackin acknowledged that this may be true but the agency shouldn't wait for internal reorganization to examine this. The agency is trying to work this within the regional collaboration structure already. Dr. Thoroughgood agreed that the regional approach is good but that NOAA should try using its external partners already established in the regions rather than inventing a new internal structure. Ms. Glackin said that the Senate climate bill is trying to address that concern by including Sea Grant and the US Department of Agriculture Cooperative Extension program in significant roles. Dr. Barron said that the Hill thinks NOAA already has all the pieces (e.g., regional climatologists, RISAs, etc.) but NOAA needs to show that it is small, not comprehensive, and needs funding to reach its potential. Ms. Glackin agreed but said the challenge will be for NOAA to take leadership of climate and move forward in addition to all its other challenges.

Frank Kudrna agreed with Dr. Barron's suggestion on the regional approach to climate and suggested that NOAA could select a single region and do a demonstration of how it could work. Ms. Glackin noted that the National Assessment in the 1990s provided a framework for doing this but the agency didn't continue with that implementation.

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Frank Kudrna asked if the Census of Marine Life had become an item in NOAA's budget. Ms. Glackin responded that it has not but NOAA has put more funding for it into the post-FY10 budgets.

**The SAB's Fire Weather Research Report: NOAA's Final Response** - *Heath Hockenberry, National Fire Weather Program Manager, NOAA National Weather Service*

Summary:

The purpose of the presentation was to provide a response from NOAA to the SAB Fire Weather Research (FWR) Report, which contained 46 recommendations within 19 findings. Mr. Hockenberry provided background on the FWR Working Group and NOAA's issues involving fire weather research. He reviewed the current fire weather services provided by NOAA in conjunction with federal and state land management agencies, including "red flag" warnings and the Incident Meteorologist (IMET) program. He highlighted the many ways in which NOAA coordinates in specific research activities as well with universities and other agencies. Finding #19 is the primary one for NOAA: "Given the number of fire entities with which NOAA interacts (and limited resources), NOAA is challenged to be open and flexible in its interactions. Roles must be defined, duplication avoided, leveraging maximized."

The 46 recommendations have been stratified into four categories: 1) weather and smoke modeling improvements, 2) enhanced research with and access to observed data, 3) improved operational fire weather capabilities and services, and 4) a clear organizational strategy for fire weather research. These have further been divided into those items to be completed in the near term by 2012, those where progress can be made by 2012 but with expectation of significant partner support, and those only to be completed in the longer-term. Mr. Hockenberry provided detail on all of these categories and the recommendations that fall into each one.

Finally, the vision that NOAA has identified for fire weather is "a dynamic, highly collaborative culture that supports transfer of innovative research into life and property-saving fire weather improvements." The National Weather Service concluded by asking the SAB to endorse the proposed strategies in the written report to address the SAB's recommendations and support NOAA's efforts to leverage interagency resources and expertise to make progress, especially on the most challenging recommendations.

Discussion:

John Snow (former member of the SAB and chair of the FWRWG, via teleconference) noted his disappointment that the social science recommendations of the report were put off into the long-term category, particularly with respect to smoke ("Collaborate with social scientists on best approaches to disseminate smoke, fire potential and debris flow information to the public." – recs. 10.3, 15.1). It was not clear to him who would take on these recommendations in the future. Mr. Hockenberry answered that the Joint Fire Science Program (JFSP) Smoke Science Plan, due to be completed by 2011, might cover this in the future. Jack Hayes pointed out that

there is an increased emphasis across the board in NWS to focus our warnings on expected impacts and desired public response, and this will include smoke hazards as well.

Jim Sanchirico noted that red flag warnings are like tornado and hurricane warnings except that people often set fires. How are the warnings used locally to warn people not to burn? Mr. Hockenberry responded that they are used to help local officials put out their own warnings and increase fire patrols. Unfortunately, these warnings also let “firebugs” know that conditions are good for lighting fires so use of these is a double-edged sword. On the whole, however, the warnings are a benefit.

Rick Spinrad noted that there are not a lot of resources for this program in NOAA, particularly for research. This includes modeling, observations, field studies, and forecast process improvements. In the short term, the agency can leverage opportunities at the National Science Foundation and he is talking with them about weather research in general, particularly in social sciences. He said he hoped social scientists could use NOAA research as case studies, thus bringing multiple offices in NSF into the dialogue as well as the NWS “operators.”

Jim Mahoney thanked Mr. Hockenberry for the great response and noted that fire weather and the IMET program represent a service culture central to the NOAA mission. He asked whether the fire weather program has had any collaborative talks with the National Hurricane Center on communication of risk, exposure and response actions. Mr. Hockenberry responded “no” but also said it is a point that can be explored. He also said that the NWS Fire Weather Program has had direct liaisons with the Storm Prediction Center but not the Hurricane Center. Jack Hayes agreed that this would be a good avenue to explore. NWS is broadening the Hurricane Liaison team to include the Federal Emergency Management Agency (FEMA) and SPC on how to communicate risk to emergency managers. This could be done with wildland fires as well.

Jim Mahoney asked if the fire weather program has the resources needed for all of the work identified, whether it would be helpful to call on specialized forecasts from other parts of NOAA, and what was needed to do the job better. Mr. Hockenberry responded that more funding was always helpful but the program has seen increases in recent years so that the program has what it needs operationally. The funding increases have enabled NWS to adequately train and equip the IMETs. In addition, David Caldwell, NWS, pointed out that the agency has added two full-time employees at the National Interagency Fire Center in Boise, ID and two FTEs at the Storm Prediction Center.

Carolyn Thoroughgood agreed that NOAA must do better with the social science aspect and not rely on NSF to serve its customers. There must be a One-NOAA approach to warnings and risk communication with the public. She agrees that the social science aspects should not be part of the long-term goals but should be now and ongoing. Mr. Hockenberry responded that people do take action based on the red flag warnings already but the agency will be trying to improve these. Jack Hayes noted that NOAA and NWS are working all the time to improve warnings and communication with constituents and not waiting to make improvements.

John Snow congratulated all of those who worked on the response and encouraged NOAA to keep up the momentum.

David Fluharty noted that there was no action arising out of this discussion but that the SAB would like to be kept apprised of efforts in fire weather. Jack Hayes said that he felt there was a message for NWG to keep working on social sciences and the agency will do this.

**External Review of the Northern Gulf Institute - Eric Barron, National Center for Atmospheric Research, Chair of the Review Team and SAB Member**

Summary:

The purpose of this presentation was to provide the results of the review of the NOAA cooperative institute, the Northern Gulf Institute, to the SAB for review and consideration. The review was conducted in October 2009 at the base for the NGI at Mississippi State University, Starkville, MS. Other partners in NGI include University of Southern Mississippi, Louisiana State University, Florida State University, Dauphin Island Sea Lab, The Review Team consisted of Dr. Barron, Chair; Bonnie Ponwith, National Marine Fisheries Service, Southeast Fisheries Science Center; Dana Erdner, University of Texas at Port Aransas; Robert Diaz, Virginia Institute of Marine Sciences; and Thomas Schroeder, University of Hawai'i at Manoa (*ex officio*, CI representative).

Dr. Barron started by discussing the themes and challenges of the NGI. The themes are multiple and significant with this CI as are the challenges - multi- university consortium, not focused on a single theme but on a geographical region, not co-located with a NOAA entity, and created funded through a Congressional add-on to the NOAA budget.

The Team came in ready to be critical based on these challenges, however it found that NGI is a successful and productive enterprise with collaborations a major strength and that addresses problems of significant importance to NOAA and the nation. The Team determined that NOAA funding and the CI model are transforming the partnerships within the Gulf Coast regional with considerable positive impact.

The recommendations from the Review Team were divided into several categories as provided to them. With respect to the Science Plan, NGI should start more strategic discussions. This has not been a priority due to the newness of the CI. On Science Management, the Review Team expects that the multi-university collaborations should become stronger with growth. NGI should improve its branding, however. With respect to Science, NGI should now explore additional funding opportunities to leverage NOAA funds (e.g., apply to become a National Science Foundation Science and Technology Center); develop a broader set of metrics, from input to outcome and impact; and consider metrics that describe the impact and quality of the research. On Education and outreach, these efforts should be part of the proposal process in the future.

The review panel unanimously agreed that the NGI should be continued and ranked NGI as Outstanding based on guidelines provided by the NOAA OAR CI Office.

Discussion:

Carolyn Thoroughgood asked if the relevant Sea Grant Institutes are involved with NGI. Dr. Barron responded that they are and the connections with them are well thought-out.

Frank Kudrna asked whether, since the funding came through an earmark, if the project selection process was different? John Cortinas responded that the process is somewhat different. NGI solicited letters of intent (LoI) from NGI consortium institutions, culled those down to those from which proposals were requested and selected from that subset. The process started with 100 LoIs, then 20 full proposals, and finally funded a third to half of those. Ray Ban asked what the traditional approach is to establishing a CI. John Cortinas said the traditional approach is driven by needs of the NOAA program that provides the funding. The NGI is a hybrid and has been funded by an earmark but the project proposals are reviewed by NOAA scientists and must be beneficial to NOAA. NGI requests for proposals rely on NOAA guidance documents; the process is indirectly managed by NOAA in terms of projects carried out. There are also projects carried out based on initiation from funding NOAA organizations. Rick Spinrad noted that all CI research is done within the context of NOAA's research needs, as stated in the 5-Year Research Plan.

Frank Kudrna noted that education and outreach are not considered in the final proposal but MS/AL Sea Grant requires education and outreach in its proposals. John Cortinas responded that education and outreach programs are very robust in the CIs overall but that this is not a requirement for project selection. Jerry Schubel noted that the Gulf of Mexico region is the strongest regional area in terms of education and outreach. David Shaw, Director of NGI, said that, in the first three years, this was part of the proposal process but the researchers did not execute them well. Education and outreach were removed from the requirements because researchers don't really know how to do them; those activities are addressed better by the central NGI Office at Stennis Space Center, local Sea Grant offices or other specialist offices. Eric Barron said that he thought it would be appropriate for NGI to respond to the review committee recommendation on including education and outreach in the proposal process in this manner.

Ray Ban asked if there was any collaboration with industry in the CI. Dr. Shaw replied that there was not, that they had focused on agencies but starting now to focus on other entities such as industry.

James Mahoney noted that even though the NGI was funded through an earmark, NGI has worked out well. NOAA has worked in the past few years on refreshing its CIs and has tried to conduct rigorous reviews. These are being done well and so the good score for NGI is well-calibrated with these other reviews.

Rick Spinrad said that NOAA is still doing experiments with the CIs in terms of regional approaches versus program or theme approaches. He would like to have a future discussion with the SAB members on the next generation of CIs as a result of this to get their input.

Jerry Schubel said that the CIs should do a better job of branding themselves with NOAA. He would like to see the CI discussion include this topic.

Paul Sandifer asked if there would be a formal NOAA response to the CI review. John Cortinas indicated that, once the CI Review was formally transmitted to the NOAA Administrator, the agency would begin to prepare a response back to the SAB.

Eric noted that the review itself was very well organized and asked if there were any further comments from the NGI Director. David Shaw responded that the NGI took the review very seriously. It was the first CI formed under the new NOAA guidebook and was the first regional CI as well so they spent a lot of time preparing for the review. He thanked the review team and said they did an excellent job as well, making sure that that NGI answered all of the questions. The NGI leaders have scheduled a strategic planning meeting in December to discuss their response to the review recommendations.

Eric Barron did point out that the Review Team was not altogether pleased with the review guidelines and thought the categories were not that good. The SAB should consider these in their overall discussion of the CI process.

Gerry Wheeler asked what metrics for quality exist that could be used. Dr. Barron replied that there is a recent National Research Council report on this.

The SAB agreed to accept the report and to have a session on the CI process at a future meeting.

Action 8: The NOAA Science Advisory Board accepts the report on the Review of the Northern Gulf Institute and will transmit to NOAA

Action 9: The NOAA Science Advisory Board agrees to have a session at a future meeting on NOAA Cooperative Institutes to discuss new CI models and other relevant issues of interest.

**Recommendations on Ocean Color from the Ecosystem Sciences and Management Working Group** - *James Yoder, Woods Hole Oceanographic Institution and Member of the ESMWG*

Summary:

The purpose of this presentation was to present to the SAB for review and consideration the recommendations from the Ocean Color subcommittee of the Ecosystem Sciences and Management Working Group on satellite ocean color continuity. Ocean Color imagers are the only source of routinely-produced global ocean data-based products. Existing wide-swath sensors are of limited use for observing near shore coastal waters. The Sea-viewing Wide Field-of-View Sensor (SeaWiFs) and Moderate Resolution Imaging Spectroradiometer (MODIS) satellites that currently produce ocean color data are nearing end of lifetime. The quality of the National Polar-orbiting Observational Environmental Satellite System (NPOESS) Visible/Infrared Imager/Radiometer (VIIRS) instrument (to be launched soon) for ocean color is problematic. A satellite continuity mitigation study focused on the anticipated gap in coverage was recently completed by NOAA. There were a number of mitigation options considered in the



study. The report also notes that there could be a Phase Two that could consider how best to use other platforms as well to fill the gap in coverage. Science drivers for research and applications include the variability of key biogeochemical and ecological indices related to ocean productivity.

The (shortened) recommendations from the report are as follows:

1. NOAA should initiate and pursue discussions with NASA for an ocean color mitigation partnership to build on lessons learned in particular from SeaWiFS and MODIS and with an initial focus on the wide-swath data. The partnership organization should be independent of the NPOESS Integrated Program Office (IPO), but IPO participation should be encouraged. To further develop NOAA capabilities for processing and analyzing satellite ocean color imagery, a near-term option for the partnership should be a real or virtual “center” involving NOAA and NASA personnel and with contributions from the academic research community.
2. NOAA should conduct a full Analysis of Alternatives for full NOAA ocean color requirements with a particular focus as to how best to extend routine ocean color measurements into coastal and estuarine waters. This study should consider an optimum mix of *in situ*, aircraft and satellite assets, including imagery from satellites operated by ESA at present and in the future that can provide 300m X 300m pixel resolution imagery.
3. NOAA/NESDIS should continue to encourage and support the Committee for Earth Observation Satellites (CEOS)-approved Ocean Color Radiometry Virtual Constellation (OCR-VC).

#### Discussion:

Jim Sanchirico noted that the real value of satellite ocean color is in the coastal zone. In the return-on-investment (ROI) studies, the calculations are different when conducted on the 1km-resolution data than on the 300m-resolution data. Jim Yoder stated that it’s true and the US is not planning for any satellites with higher resolution, only the Europeans, so there is a need to develop cooperative agreements.

Alexander MacDonald, NOAA, asked if there could be access to data from Indian satellites. Dr. Yoder responded that yes, it is possible but it will be difficult to work out an agreement with India, although recent signs, including a NOAA-ISRO (Indian Space Research Organisation) MOU are very encouraging. China is even more difficult since it is not even at the table at this point. No one is sure about Russia. Japan and the European Space Agency (ESA) are good partners.

Charley Baker, NOAA, noted that Mary Kicza, AA for NESDIS, is at a CEOS meeting this week where she is hoping to work some things out. The barriers are the cost of data and national security aspects. However, in two weeks the Group on Earth Observations Plenary will meet in the US and one item on the agenda is a data-sharing statement with principles. This statement would treat environmental data as a public good not for barter or sale. Dr. Yoder agreed that GEO has really helped to break down some barriers and lead to better collaborations. He also pointed out that getting raw data and calibration data are needed for climate record purposes and that is more difficult.

Jack Dunnigan, NOAA, asked about “getting over data access hump” and whether flow of data from the Medium-Spectral Resolution Imaging Spectrometer (MERIS) has started. Charley Baker said that the European Union Global Monitoring for Environment and Security initiative (GMES) is rethinking its data-sharing policy but the final decision has not yet been publicly announced. MERIS has been extended to 2013 and ESA expects overlap between MERIS and the Ocean and Land Colour Instrument (OLCI) on Sentinel 3a, scheduled for launch in 2013. However, it is possible that the “data tap” will be turned off in 2012 for both US and ESA and everyone will be relying on India. This may even happen earlier, between 2010-2012, if MERIS fails.

Jim Yoder indicated at this point that he will revise report as per comments from the group and those received from SAB members not able to attend the meeting who provided comments earlier – William Ballhaus, Michael Keebaugh, and Thomas Zacharia. In particular, he will make it clear that the statement that the NASA/NOAA partnership should not be part of the NPOESS Integrated Program Office does not mean that the IPO should be involved, only that this effort should not be conducted under the IPO.

James Mahoney asked if it was worth it to substitute aircraft coverage for some of the data. Mr. Baker indicated that NOAA has always felt that aircraft should be considered.

Eric Barron asked if there would be complaints from the research community when the data stream disappears. Dr. Yoder and Mr. Baker said yes and this community has sent letters to the NOAA Administrator about this.

The SAB agreed to accept the report pending revisions to be made by Dr. Yoder.

Action 10: The NOAA Science Advisory Board accepts the report on Ocean Color satellite continuity mitigation, pending minor revisions, from the Ecosystem Sciences and Management Working Group and will transmit the final version to NOAA.

**Overview of the Interim Report of the Interagency Ocean Policy Task Force - Sam Rauch, Deputy Assistant Administrator for Regulatory Programs, NOAA National Marine Fisheries Service**

Summary:

The purpose of this briefing was to bring the SAB members up to speed on the activities of the President’s Ocean Policy Task Force and summarize the content of its Interim Report. In June 2009, President Obama issued a Memorandum that directed the federal agencies to form an Ocean Policy Task Force (OPTF) to, among other things, submit in 90 days, a report that would include a national policy for coastal and Great lakes ecosystems, a framework for coordination, and an implementation plan. The President further directed the agencies to develop, in 180 days, a framework for Coastal and Marine Spatial Planning (CMSP). This latter is the subject of the next briefing.

OPTF members include Dr. Lubchenco. Under the OPTF is a working committee and subgroups for policy, coordination framework, implementation strategies, and public engagement. These groups developed much of the material for the Interim Report.

The Interim Report, released on 17 September 2009, started with a broad general policy statement followed by a policy coordination framework. Given the short timeframe, the OPTF was not able to provide all of the details on how to implement the specific aspects of the policy objectives. There is a set of national priority objectives and standards to guide the implementation plan. The nine national priority objectives are: Ecosystem-Based Management; Coastal and Marine Spatial Planning; Inform Decisions and Improve Understanding; Coordinate and Support; Resiliency and Adaptation to Climate Change and Ocean Acidification; Regional Ecosystem Protection and Restoration; Water Quality and Sustainable Practices on Land; Changing Conditions in the Arctic; Ocean, Coastal, and Great Lakes Observations and Infrastructure.

President will not likely take any action on the Interim Report until the CMSP Report is finalized. The recommended framework for effective CMSP is due December 9, 2009.

#### Discussion:

Eric Barron asked if this document is to serve as a comprehensive approach to oceans or is it just a list of priorities for what needs to be done better. He also asked if it was a national policy for ocean stewardship. Sam Rauch replied that it will serve as both a comprehensive approach and list of priorities but is not a complete approach to stewardship, i.e., it is not exactly like the National Security or National Transportation Policies. Dr. Barron further asked if ocean exploration for oil and gas was included in this. Sam Rauch responded that the document points out that the oceans need to be used wisely and sustainably; it recognizes both the environmental and economic/productive uses of the oceans.

Dr. Paul Sandifer, NOAA, who serves on the OPTF working committee, noted that the core of the document is the policy statement. It speaks to stewardship but also wise use. The report does not go into specifics of the individual uses, current and future. It is all in there but not the specifics. This is because 24 agencies were involved in writing it and the document had to be kept at a high level. Sam Rauch further noted that this ocean policy overlaps with other national policies but still will serve as the Ocean Policy.

Eric Barron asked if this would be a guiding document for how NOAA operates, including human capital and other aspects. Sam Rauch replied that it is expected that it will steer things in NOAA and other agencies, particularly if it is adopted by the President.

Dave Fluharty asked how the policy will be interpreted into the broader ecosystem approach. Sam Rauch responded that NOAA tried to make the link between oceans and land and upstream ecosystems; now need to make better linkages to different agency interests.

James Mahoney expressed concern about whether this document simply asks the agencies “to develop a process to develop a process.” He pointed out that the report must state matters in

such a way as to end up in implementation. Goals must be set, priorities established, so that actions can at least be tracked. He found it troubling that in aggregate the report doesn't take on the question of specific priorities and that it appears to only require better coordination. The agencies will need to get specific on actions or nothing will be accomplished. Sam Rauch agrees with this. He said that the agency is also concerned that the effort will result in nothing substantive and so has come up with a list of specifics for negotiation. The hope is to develop specific goals within the priorities.

David Caldwell, NOAA, noted that the report mentions the coast but didn't discuss the ecosystem from an earth system approach. He wanted to know if ecosystem modeling is included in the infrastructure. Sam Rauch said it is there by implication.

Dave Fluharty noted that the report provides a new structure for coordination but that he is concerned about implementation and the need for a robust governance structure. There is no new legislation so how will this happen? Sam Rauch said that the agencies will try to do this without statutory changes however it will only work if the Administration wants it to. Dr. Fluharty asked then if the plan was to have some new, high Administration authority that will force all the agencies to collaborate. Sam Rauch said that no agency will give up control over its programs but that this is an Administration process and it will provide support. The SAB should recognize that this can't be done as a budget-neutral policy and will need a lot of funds to really work but it is not likely the Administration will put a lot of money towards it. It is possible the Hill will act but there is no evidence of that so far.

**Marine Spatial Planning: An Overview** - *Sam Rauch, Deputy Assistant Administrator for Regulatory Programs, NOAA National Marine Fisheries Service*

Summary:

The purpose of this presentation was to inform SAB about current capabilities, evolving issues and NOAA's approach to a Coastal and Marine Spatial Planning (CMSP) framework and obtain SAB feedback on current approaches. As mentioned above, the Ocean Policy Task Force (OPTF) has been asked to provide a framework for marine spatial planning to the President by December 2009. NOAA has been fully involved in the development of this.

The concept of CMSP arose out of the need to protect ocean functions but allow for planned uses. Many agencies operate on a single-sector plan and not holistically; CMSP is designed to address this problem. The definition of CMSP provided was from the NOAA Annual Guidance Memorandum and will likely differ from the definition in framework for CMSP being prepared by the OPTF. CMSP is a comprehensive, ecosystem-based process through which compatible human uses are objectively and transparently allocated to appropriate ocean areas to sustain critical ecological, economic, and cultural services for future generations. The goals of CMSP are to maximize societal benefits of ocean uses while minimizing impacts on ecologically-sensitive areas and species and reducing conflicts between incompatible activities sharing marine locations. The hallmarks of CMSP are "prospective" and "allocative".

NOAA approaches CMSP with data integration, four-dimensional analysis and other decision support tools. NOAA has mandates on conservation and regulation of marine resources and supports inter-jurisdictional coordination. NOAA also has various capabilities in a spatial data framework: base maps, human uses, marine habitat and biodiversity, geology and seafloor, marine infrastructure, georegulations (legal framework), and the marine cadastre (jurisdictional and boundaries and limits).

Currently there are a number of evolving issues in CMSP. These include the fact that MSP objectives are not well articulated or coordinated; governance issues; conflict resolution; opportunities for sector stacking; no current models to analyze societal preferences and values; insufficient resources to implement, monitor and enforce CMSP; and articulation of geographical scales and limits. All of these will need to be addressed for CMSP to be effective.

Key elements to a CMSP framework include: coherent definition of CMSP, geographical extent, regional planning structure, enforceability, stakeholder participation, national goals for plans, and capacity building. CMSP is not meant to take over state land use planning. Ideally, the regional governance bodies, such as the Gulf Alliance, would be the governing bodies for CMSP. If these groups are unwilling, however, the federal government may need to step in.

Absent legislation, the government could create a plan that would allow federal agencies to participate given their jurisdictions and develop agreements with states to follow the plans as well. There must be incentives in the plans for the user communities—e.g., streamlined process, certainty. If the government wants to do this, however, it must build capacity to develop and carry out the plan at regional levels.

#### Discussion:

Frank Kudrna noted that the presentation didn't mention urban areas and sea level rise as a concern yet this will be a big issue for state and local governments in the future. Sam Rauch noted that this was not intentional and that the plan for CMSP is expected to be adaptable, particularly in light of climate change. Jerry Schubel also emphasized the concern over sea level rise, particularly as it relates to things like the migration of wetlands. Communities will rely on the federal government telling them what they can expect as climate changes.

David Fluharty noted that the recommendations from the SAB on the Census of Marine Life and biodiversity will likely recommend that the OPTF include biodiversity as a "plank" in its report and this will help the government to measure success. He also pointed out that the SAB Oceans and Health Working Group will point to the relationship between healthy oceans and healthy people. Nothing in the current presentation on CMSP points to this connection. Further, he noted that the Coastal Zone Management Act (CZMA) is implemented by states; this infrastructure could be used to carry out CMSP although it stops at the shoreline and would have to be modified to be effective. Sam Rauch agreed that Dr. Lubchenco is a strong advocate for biodiversity so he expects that NOAA would support better language on this topic in the report. He also said that it is doubtful that there will be new legislation to implement CMSP so CZMA could be a mechanism for this but would still have to be modified. Dr. Fluharty pointed out that

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CZMA requires that the states policies be consistent with the federal government so this is how it could be ensured that states follow what the federal government wants in CMSP.

Jim Mahoney summarized some of the ideas, noting that the federal government has responsibility for certain ambient conditions but that it's hard to keep the targets for these in balance with the other. He cited several examples, including defined sources of pollution (e.g., acid rain), ambient environmental standards with feedback, technical limits on pollutants, regulation of toxic substances, and special threats (e.g., harmful algae blooms). He noted that this is a lot to deal with and won't be easy but need to move forward. He urged strengthening CZMA as an example of how to implement solutions.

Dr. Paul Sandifer wanted to note to the SAB that one of its members, Jim Sanchirico, was called in as an expert to review aspects of the plan.

The framework CMSP is due out by early December 2009. Sam Rauch urged the SAB to review this when it was released for public comment.

**Geospatial Technology and Marine Spatial Planning** - *Margaret Davidson, Director, Coastal Services Center, NOAA National Ocean Service and David Stein, Coastal Services Center, NOAA National Ocean Service*

Summary:

The purpose of this briefing was to provide an overview of geospatial technology and marine spatial planning (MSP) efforts that are moving forward in NOAA. Margaret Davidson introduced the topic. She noted that, in the previous presentation, Sam Rauch was talking about MSP from a policy perspective and at a federal level. However, some states are showing the way based on these applications but looking to NOAA both for guidance and for the land/water connection. NOAA is also working with the Minerals Management Service (MMS) through the Federal Geographic Data Committee Marine Boundary Working Group.

Mr. David Stein then provided details in his briefing. The focus areas in NOAA for FY 11 and 12 include habitat and biodiversity mapping, human use mapping and economic valuation, and jurisdiction mapping, including identification of the data needed, synthesis, integration into management support tools, and access to the data. NOAA will also develop decision support tools; provide regional support and interagency coordination. In FY12, there will be a shift to implementation and providing regional support and capacity building. Some of this is being piloted through regional demonstration projects.

In terms of data, NOAA has over 100 data sets in geographical information system (GIS) format that could contribute to MSP but not all these data are standardized. Less than 50% are available in open source web service formats. Large gaps exist, most notably in seafloor, biodiversity and human use maps. Near-term actions are identification of those data to be included most immediately in an MSP framework, development of publishing guidelines, and conducting gap analyses for benthic and biodiversity data. It should be noted that these statistics were pulled

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from a recent data call on Coastal and Marine Spatial Planning from the Council for Environmental Quality.

Many geospatial and decision tools exist. However, only one tool in the marine environment integrates data across themes – the multipurpose marine cadastre - but NOAA doesn't yet have all the analysis tools that will be needed for scenario planning and marine spatial planning. Examples of existing tools include an Essential Fish Habitat mapper from NMFS, a California coastal uses atlas (human uses by category), West Coast Habitat Portal from Oregon State, MarineMap by the California Marine Life Protection Act, Digital Coast being developed by the NOAA Coastal Services Center, and design assisted by constituents; a legislative atlas (CSC), and the multipurpose marine cadastre that could be adapted for MSP. NOAA also supports regional ocean councils and is translating their needs to products and service. Finally, NOAA will be convening an intra-agency work group to develop an implementation plan for MSP once the federal Framework has been developed.

#### Discussion:

Frank Kudrna asked if the NOAA folks working on MSP were involved with the integrated ocean observing system regional associations. Mr. Stein responded that the CSC is just starting to engage with them. They will also be meeting with the IOCM and discussing its relation to MSP.

David Fluharty noted that the technical side of MSP really seems to be coming together in NOAA. He thanked all of the OPTF and MSP speakers for their coordinated set of presentations that helped the SAB to understand how these efforts are moving forward, what is likely to happen in the future, and the role that NOAA is playing in them.

#### **Meeting Adjourn**

The meeting was adjourned at 3:20 PM.

#### Actions

Action 1: The NOAA Science Advisory Board Census of Marine Life Committee will revise its report as per comments from the SAB members and transmit to NOAA.

Action 2: The NOAA Science Advisory Board members will provide comments on the Oceans and Health Working Group Preliminary Draft Report

Action 3: The SAB Oceans and Health Working Group will revise its report as per SAB comments, put the report out for public comment, finalize and provide to the SAB at its Spring 2010 meeting

Action 4: The NOAA Science Advisory Board accepts the recommendation of the Climate Working Group and renews Antonio Busalacchi, University of Maryland, as Chair of the CWG for a second three-year term.

Action 5: The NOAA Science Advisory Board accepts the recommendations of the Climate Working Group for new candidates and requests the Working Group to move forward to clear them onto the WG. The SAB also accepts the recommendation of Jim Mahoney and the CWG to extend the membership and position of A. Busalacchi as Chair of the CWG for another three years.

Action 6: The NOAA Science Advisory Board accepts the recommendation from the Climate Working Group for a member in the area of coastal processes and will send names of candidates to T. Busalacchi and D. Fluharty.

Action 7: The NOAA Science Advisory Board accepts the report on the Climate Working Group Review of the NOAA Climate Information Products & Application Program, pending revisions to the Introduction and Executive Summary to reflect concerns about providing context for the report and perception that NOAA needs to change its approach to these products to better reflect a strategy for a National Climate Service. The SAB will transmit the revised report to NOAA upon approval of the final version.

Action 8: The NOAA Science Advisory Board accepts the report on the Review of the Northern Gulf Institute and will transmit to NOAA

Action 9: The NOAA Science Advisory Board agrees to have a session at a future meeting on NOAA Cooperative Institutes to discuss new CI models and other relevant issues of interest.

Action 10: The NOAA Science Advisory Board accepts the report on Ocean Color satellite continuity mitigation, pending minor revisions, from the Ecosystem Sciences and Management Working Group and will transmit the final version to NOAA