October 18, 2010

The Honorable Jane Lubchenco
Under Secretary of Commerce for Oceans and Atmosphere
Herbert Clark Hoover Building
14th and Constitution Avenue, NW
Washington, DC 20230

Dear Dr. Lubchenco,

On behalf of the 95 members of the Consortium for Ocean Leadership, I thank you for the opportunity to provide comments and recommendations on Strategic Vision and Framework document for a Climate Service in NOAA. As I mentioned in our letter on May 16th, we appreciate NOAA’s leadership in proposing a climate service and recognize NOAA’s strong record of providing critical climate information for research and resource management decisions.

As detailed in the 2009 NRC report *Informing Decisions in a Changing Climate*, the nation urgently needs a comprehensive and integrated slate of climate-related services, requiring direct, immediate and substantive involvement of a broad range of scientific expertise, constituent engagement, cross-jurisdictional cooperation, and operational capacities. NOAA’s Climate Service (NCS) initiative is an important step in developing, providing and sustaining the climate products and services demanded by many sectors of our economy and all levels of government.

The NCS framework document (hereafter referred to as the framework document) outlines the core capabilities and societal challenges that will drive the services and products of the new line office. We value the effort to build on some of NOAA’s strengths while meeting the challenging demands of multiple users of climate information. We would like to highlight certain areas in this framework document, many of which we mentioned in our initial letter in April: The Role of Basic Climate Science and Research in the NCS, Types of Climate Services, Structure and Location of the NCS Workforce, Nurturing the Role of the Academic Community, and the NCS Organization Structure. These topics are explained in more detail below.

The Role of Basic Climate Science and Research in the NCS

While the framework document mentions NOAA’s emphasis on evaluating new areas of research that will drive products and services,
basic science seems to solely play the role of developing a better service rather than also improving understanding of the global climate system. Furthermore, as outlined in Chapter 3, the criteria for prioritizing programs will use a decision-making framework that places a lower priority on “programs and projects that a) fit poorly within the mission or are difficult to achieve, and b) deal with small potential impacts.” With the continuous focus on products and service-oriented research, there is potential for basic research efforts to be considered “low priority” simply because they have longer-term development periods or uncertain deliverables. To ensure basic climate research remains an important element in the NCS, we recommend that NOAA:

1. develops a way to evaluate priorities that accounts for encouraging basic research and continued development of long-term climate observations.
2. adds an explicit mention of the importance of increased/more efficient support of basic climate research into the Chapter 1 “Consequences” section.

Much fundamental research is needed in both natural and non-natural sciences (e.g. health, political, economic, engineering, hydrology and social sciences) to arrive at an operational integration from climate science products (data and model outputs) to users. While NOAA’s current climate research and services are strongly anchored in the natural sciences and some in hydrology, most of the remaining expertise on the non-natural sciences is in the academic and private communities. NOAA will need to build upon its current research, expand partnerships to address the need for other types of sciences, and develop a supportive, tight interaction between the two to achieve useful climate science products.

More specifically, comprehensive model outputs which are essential to developing accurate climate services will require information sharing across disciplines. In many cases, applications depend on linking global climate models to regional, statistical, and specific process/sector models such as hydrological, agricultural, and economic. The information transfer between models is not trivial and requires each side of the equation (i.e., climate scientist and hydrologist) to understand the limitations (and strengths) of each model to "couple" them and address the effect of such coupling on the uncertainty. Therefore a NCS will need to use a multi-model approach and we believe the framework document does not address the importance of multiple models nor does it outline plans for broadening NOAA’s model capabilities. Beyond NOAA’s current climate modeling work at GFDL and NCEP, is NOAA developing agreements with other modeling centers to seek use of ‘third party’ model output operationally?

When discussing data, the framework document plan does not implicitly address the need to maintain data integrity and continuity, as well as timeliness. Often data availability lags in time compared to the present and data are distributed widely with unsatisfactory search capabilities. There is also an issue of data biases: as new observing systems are developed, we often find biases introduced between past and present data. While we understand the vision of the NCS, we also would like to emphasis the importance of current and detailed archives of meta-data to be able to develop bias correction schemes or approaches to work within the limits they introduce.

Beyond the concern for the de-prioritization of basic research and the lack of emphasis on collaborative science, both for the sake of service-driven science, we also would like to highlight our significant concern that the service mission will always dominate the budget, leaving science behind in times of limited budgets. The NAPA report recommended NOAA have a single
climate research budget account within NCS which would include all funds to support NOAA climate research, including research performed by laboratories not transferred to NCS. This approach would certainly ensure that climate research across all NOAA offices would have more efficient access to funding. However, it also has the potential to cause confusion or internal disagreement over how to fund research that has both climate and non-climate significance throughout the agency. Instead of one climate research budget for all of NOAA, we would recommend a separate budget between research and service within the NCS. We refer to the Department of Defense’s setting up its 6.1, 6.2, 6.3, etc structures as an excellent example of addressing the requisite independence of research and operations. Does NOAA have a plan to address the independence of the NCS research component so it is not at the mercy of operational budgetary shortfalls?

Types of Climate Services

With regards to the societal challenges, we recognize there is good reason for the NCS to limit the number of challenges to address initially. However, we believe a broader range of challenges should be mentioned including energy, transportation, food, and health. Furthermore, it is unclear how the NCS will identify vulnerabilities and needs on regional, sectorial and national scales. Will there be a process and specialized workforce to not only respond to requests, but also be more proactive in identifying future climate services and products?

In some places the framework document refers to NOAA as the service provider (particularly in the various types of assessments and in maintaining and providing access to data and model output archives), but there is also reference to the model established by the weather service, where an external, private or academic party is using NOAA products and providing the added value service. Surely, counting on the weather service model requires a much more mature state of the art than what exists today with the dynamic and developing state of climate science and associated non-climate sciences. What is NOAA’s plan for balancing these two roles?

Structure and Location of the NCS Workforce

As mentioned in our April letter, climate services will have different foci or different demands than weather services for a particular climate regime. Housing the Directors within the NWS entities will create a disconnect between the climate science that is needed for decision support and the stakeholder and economic drivers that require that support. For a nascent climate service this connection with users of climate services is critical for the NCS success. Furthermore, we believe it would be beneficial and efficient for the Regional Directors to be located where NOAA conducts the most collaborative activities with internal and external partners. Beyond the Regional Directors, what kind of skills will the NCS assemble? How will they be trained and located? How many new Full-Time Employees will be required?
Nurturing the Role of the Academic Community

The nation has climate-related information needs at all levels of social and political organization, and in public, private, and non-profit sectors. Therefore working together with other Federal agencies, academic programs, and other stakeholders is vital to the success of the NCS. Moreover, much of the existing climate service work in the country is done either in close collaboration with academia (in cooperative institutes) or by academia (in RISAs and the IRI). Academia participated heavily in the assessment process.

While we were pleased to see the consistent recognition of the importance to NOAA and NCS of external partnerships, including in the Key Principles section of the Framework, the role of the academic community is not recognized strongly enough in the document. An example for not assessing correctly the need for academia is in Figure 3.4 on p. 32: Here a heavy role for academia was only identified under the "extremes" challenge while academia has a small role under "coastal resilience". Furthermore, in Chapter 3 of the Framework, the allocation chart seems to show a smaller allocation to academic partners than would be expected based on OAR budget activity. How does NOAA expect to allocate for future support for academic partners based on the five societal challenges?

The role of academia in the future NCS is critical not only in addressing scientific understanding and prediction and providing services but also in helping NOAA educate the NCS future workforce. Existing programs in universities should be engaged to improve their effectiveness and consistency with NCS needs and in some cases new programs may need to be developed.

While the framework document generally states that partnerships will be established, this is a vital area that needs a separate Director to coordinate such partnerships. Therefore, we agree with NAPA’s recommendation for an Office of Policy and Strategic Partnerships. NOAA’s approach to working with other agencies and external research communities deserves more clarity since a climate service will have a broad set of users and stakeholders with various needs for climate information, and we believe creating this office is the step in the right direction.

Organizational Structure

We agree with NAPA’s findings and the NCS framework with respects to developing NOAA’s Climate Service as a separate line office. However, a major concern with the proposed structure of the NCS is the division between “Observations and Monitoring” and “Understanding and Modeling.” Although much “observations and monitoring” work is done via NWS and NOS, with regard to global oceans monitoring much of the work is done by Office of Oceanic and Atmospheric Research (OAR) labs and, generally, much of the necessary observation and modeling work would likely best be done by OAR and in the academic community. It would be helpful to see how NCS would divide these activities from a research perspective. The deliverables/societal challenges framework might be artificially splitting these activities, which, by their nature, are inextricably linked.
When considering the role of NOAA’s current climate research facilities in the new NCS line office, we agree with the NAPA study’s recommendation to include the Climate Predication Center in the new NCS line office. We would also suggest revisiting the role of the Pacific Marine Environmental Laboratory (PMEL) and the Atlantic Oceanographic and Meteorological Laboratory (AOML) in providing the science for NOAA’s Climate Service. While the NAPA panel concluded moving PMEL and AOML completely into the NCS line office would be too disruptive, they did recognize the importance of these two laboratories’ climate-related activities to the NCS. Therefore, we recommend the NCS develop a system to integrate those relevant components of those labs into the basic research elements of the new NCS. Also, we hope to continue to learn more about how the functional requirements (e.g., types of observations, models, etc.), the operational model, and how the reorganization of existing NOAA laboratories will address these requirements. This information is vital to the internal and external ocean and climate communities.

We believe the success of the NCS is dependent on addressing the aforementioned issues. While we recognize NOAA’s effort to achieve the ambitious goals laid out in the framework document, there are currently many limitations in our ability to describe and predict the climate and its variability which stems from insufficient data and imperfect models. Therefore, through this endeavor to stand-up a climate service, we hope NOAA addresses the climate research and science needs vital to providing accurate and comprehensive climate products. Moreover, NOAA can benefit from leveraging the role of academia, professional organizations, as well as private organizations that already provide climate services to industry during their progress in developing a NCS.

We look forward to discussing these issues with you and your NOAA Climate leadership as the work continues to stand-up a Climate Service Line Office. We hope these comments are useful.

Sincerely,

Robert B. Gagosian
President & CEO
Consortium for Ocean Leadership