

**Follow Up Questions on VADM Lautenbacher's USN (Ret.) Hawaii Statement  
Before the U.S. Commission on Ocean Policy on May 13, 2002**

**QUESTION 1:**

In your testimony and answers to questions about an ocean and coastal observing system you commented on the biological component. Please provide more information on the status and trends regarding the biological component of an ocean and coastal observing system.

**ANSWER 1:**

Biological ocean observations remain heavily reliant on direct human measurements often from vessels. This makes biological observations expensive and difficult to conduct on a regular and consistent basis. It is anticipated that requirements for biological data in support of resource management, human health, and other needs will continue to considerably outweigh available resources for at least the short term.

Increased use of biological sensors in ocean and coastal observing systems will reduce costs and increase our knowledge base. But development of such sensors has lagged behind that of physical oceanographic sensors. Without question, *in situ* and remote sensing/satellite observing capabilities are most advanced for observing physical processes (temperature, water levels, waves, currents, etc.), less advanced for chemical properties and contaminants, and even less so for biological features.

Some biological sensors have been developed. Work also continues on new sensors that will detect a wider range of biological elements. Particle size counters, acoustic and optical sensors can be used for studies of phytoplankton, zooplankton, and small fish. In addition to *in situ* sensors, there have been advances in remote sensing for biological and chemical properties. Satellite sensors that measure sea surface productivity are supporting efforts to characterize the evolution and impacts of harmful algal blooms (HABs). Satellite-tracked drifter buoys can delineate larval dispersal patterns and help resource managers to more effectively identify areas vital to fishery productivity. New biological devices are also being designed for relatively new platforms, such as autonomous underwater vehicles and ocean observatories. Electronic tagging and satellite tracking of fish and marine mammals is another valuable observing tool. The National Oceanic and Atmospheric Administration (NOAA) is working with academia to speed the development and implementation of a variety of biological sensors.

The value of these biological observations will not be optimized if they are just an "add on" to existing physical observing systems. It is important that biological measurements are taken in biologically significant locations with appropriate instrument spacing and time frames for data collection. As ocean observing technologies—biological and others—continue to advance, consistent techniques and quality assurance protocols are

required to ensure the viability and usefulness of the observations. Future advances must be a factor when designing present observing systems. As is the case for physical observations, the costs of data management, product development, and archiving must be considered from the outset. This is essential for ensuring that the massive quantities of new data can be processed, retrieved, archived, and ultimately be integrated and applied into a range of services and products for ocean and coastal managers and decision makers.

NOAA currently is in the process of evaluating its capabilities, contributions, and role in an Integrated Ocean Observing System. The most recent statement on the intended breadth and extent of an Integrated Ocean Observing System (IOOS) was prepared by Ocean.US on May 23, 2002. It divides IOOS into two primary subunits:

- 1) the *global component*, which will be used primarily to detect and predict changes in the ocean/climate system; and
- 2) the *coastal component*, which the report acknowledges is lagging behind the global component and which would monitor a much more diverse array of phenomenon and serve a much broader range of needs and user groups.

Clearly, biological observations will principally support the coastal component of IOOS. The blessing and the curse of the coastal component is its potential to provide a wide variety of data for a wide variety of needs. Its scope, including the scope of its biological component, has not been definitively established. Which ocean plants and animals should be observed? Should all biological observations be a part of the coastal component of IOOS? Physical observations are becoming increasingly automated into a system of *in situ*, and satellite sensors that make regular, 24/7 observations and that can provide data in near-real-time. How do we incorporate the vast majority of current biological observations that are not made with that temporal frequency? For example, how should fisheries stock assessments, catch totals, and on-board observer data be incorporated into the coastal component of IOOS?

Details on the scope and breadth of the coastal component of IOOS continue to be discussed within NOAA, National Ocean Partnership Program (NOPP), and the broader IOOS community. There is agreement that biological data will be a part of the system. But the details on how biological data would be incorporated into the coastal component have not been fully resolved. There is agreement that there needs to be continued and increased investment in the research and development of biological sensors.

## **QUESTION 2:**

In your testimony and answers to questions about an ocean and coastal observing system you commented on the potential role of an observing system for enforcement. Please provide more information on how an ocean and coastal observing system might support regulatory and enforcement actions.

## **ANSWER 2:**

Enforcement's goal is to assure compliance with complex and frequently changing regulations in a vast and distant marine environment. An observing system has the potential to greatly enhance compliance and to support timely response to incidents of habitat destruction (*e.g.*, oil spills, natural disasters), incursions into closed and protected areas, and other illegal activities, such as poaching.

The primary value of on-board fishery observers is that they provide important biological and ecological data that supports improved conservation and management. The observer program could in some instances also provide evidence in the event of a violation. The presence of observers on commercial fishery vessels has also increased compliance through its deterrent effect. A major limitation on use of on-board observers is the cost of developing and maintaining a large network of highly trained observers.

Enforcement can also benefit from new technologies, such as vessel monitoring systems (VMS). While VMS will not eliminate the need for at-sea enforcement or on-board observers—particularly in complex mixed-species fisheries or in addressing marine-mammal, seabird and other non-target bycatch—it will be increasingly used as a key element of area-based management programs. Cooperative ventures with state marine resource agencies and the commercial fishing industry have demonstrated the potential of VMS to simplify the enforcement of increasingly more complicated protective regulations. Observing systems also can improve enforcement in remote locations. For example, a VMS is being used in the Northwestern Hawaiian Islands.

In addition to direct enforcement, ocean observations are being used to trigger regulatory actions. For example, mandating the use of turtle exclusion devices is in some cases triggered by sea surface temperature data derived from NOAA satellites. Also, NOAA is considering rules where it can take regulatory actions to restrict fisheries when observations indicate the onset of an El Niño. Similarly observations of sea surface temperatures and of coral bleaching could also be used to trigger other regulatory actions. NOAA is working to leverage all available enforcement assets in order to address its stewardship responsibilities; and this includes leveraging technology when and where possible.

### QUESTION 3:

Some nations are already mapping the seafloor beyond their EEZs in preparation for claiming these areas under the United Nations Convention on the Law of the Sea (UNCLOS). If the United States were to sign UNCLOS, it is not clear that our mapping efforts are properly preparing us to make claims beyond our own EEZ. Is NOAA examining this issue?

**ANSWER 3:** Yes. Article 76 of the U.N. Convention on the Law of the Sea (UNCLOS) establishes a basis for maritime nations to claim extensions of their juridical “continental shelf” beyond 200 nautical miles to the outer edge of the continental margin. The continental shelf consists of the seabed and subsoil, but not the water column above. Preliminary indications are that the United States may be able to claim jurisdiction over as much as 220,000 square nautical miles of additional seabed beyond the 200 nautical mile Exclusive Economic Zone. The identification and location of certain underwater features (such as the “foot of the continental slope” and the 2500 meter isobath) are required to support such a claim along with the estimated errors in the bathymetric database used to establish these features.\*

Mapping is a significant issue in the Arctic because Russia has filed a claim on a large part of the Arctic seabed. The United States has no data on which to base a claim or counterclaim in some areas. This UNCLOS issue could also affect the United States-Russia boundary in the Bering Sea and Arctic Ocean and perhaps the United States-Canada boundary in the Arctic.

The Department of State sought to initiate a government-wide inventory of applicable data to support a potential claim for extending the Continental Shelf as defined by UNCLOS. Beginning in August 2000, NOAA began a series of meetings/discussions with representatives from the Department of State, U.S. Geological Survey, Minerals Management Service, the National Imagery and Mapping Agency, and the Arctic Research Council. NOAA provided data inventories and locations for bathymetry, sediment thickness, and seismic reflection data.

Working with the University of New Hampshire Joint Hydrographic Center (JHC), NOAA initiated preparation of an evaluation of the Nation's data holdings in the context of an UNCLOS claim. In 2001, Congress appropriated funding to JHC to better define the areas of possible claims, analyze the existing data, identify data deficient areas, and provide time and cost estimates for surveys of those areas. The project began in December 2001, and the findings were reported to Congress on May 31, 2002.

The JHC report reviews, in technical detail, the data and data gaps that exist for bathymetric and seismic data that may be used to compile a submission to the Commission on the Limits of the Continental Shelf. The report states “there are few explicit descriptions, and no precedents, that define data acceptable for submission in

support of a claim for an extended continental shelf under UNCLOS Article 76.” In order to meet the high standards of acceptable bathymetric data, the report recommends “the collection of modern, high-density, complete coverage multibeam sonar data in those areas where an extension of the continental shelf depends on delineating either the 2500m isobath or the foot of the slope.” This data may also be useful for other environmental, geologic, engineering, and fisheries habitat needs.

The JHC report also recommends that the acquisition of seismic data be postponed (except for the Arctic) until a more thorough study of the adequacy of current seismic data holdings is undertaken. If all of the existing seismic data are found to be adequate, no further acquisition will be necessary. The report offers cost estimates in the event that none of the data are found to be adequate.

If funding for the required surveys is provided, it is expected that all of the non-Arctic bathymetric and seismic data acquisition will be performed using contractors with NOAA maintaining oversight of the project. The most feasible solution for bathymetric and seismic data acquisition in the Arctic is by U.S. Navy submarine and by U.S. Coast Guard icebreaker.

NOAA and JHC are prepared to provide a more thorough briefing to the Commission on the findings of the study, at which time a copy of the study would be provided to the Commission.

\* The outer limit of the continental margin is derived by drawing a line connecting the most seaward of the following points determined from the “foot of the slope”: (1) 60 nautical miles or (2) a series of points where the thickness of the sedimentary rocks divided by the distance to the “foot of the slope” equals at least 0.01. Furthermore, the resulting outer limit may not extend further seaward than either: (1) 100 nautical miles from the 2500 meter isobath or (2) 350 nautical miles from the baseline determined in accordance with international law.

#### **QUESTION 4:**

NOAA has a variety of mandates and missions that intersect with the authorities of other federal agencies. Does NOAA/DOC have the statutory and executive authorities to fulfill these multiple mandates? What changes to or clarifications of these authorities are necessary or would be of benefit in the effort to develop a comprehensive and integrated ocean governance regime?

#### **ANSWER 4:**

Yes, generally NOAA has the statutory and executive authorities to fulfill its multiple mandates. More than 150 different statutory authorities provide a diverse range of mandates and program missions. It is also true that NOAA and the Nation might benefit if some of these authorities were clarified. In recent years, new technologies and scientific advances have often driven the need to update or provide new authorities. Also, new theories of resource management—such as watershed, sustainable, and ecosystem approaches—have been, and will likely continue to be, a driver of statutory and regulatory change.

Having sufficient authorities is only part of the equation. Agencies also must have the resources necessary to fulfill the statutory goals. Each year the Administration and Congress must divide a limited pool of resources among a host of ever-shifting national needs, priorities, and authorities. New homeland security priorities provide a recent and vivid example of how national priorities can rapidly and unexpectedly change.

Improved coordination among laws and within and between agencies is desirable, but that does not mean that all instances of conflicting missions can or should be alleviated. The debate among priorities is how the Nation establishes priorities and policies among the range of conservation, development and management options.

Improving coordination within NOAA has been deemed a priority. NOAA is implementing matrix management for missions that involve multiple parts of the organization. Under matrix management, a lead manager and appropriate staff from across the organization are established for a specific mission area. That staff is responsible to the matrix manager, as well as to their “home” program office managers. Some initial mission areas that have been identified for matrix management are coral reefs, marine protected areas and habitat restoration.

The goal of matrix management is to bring together the best expertise and ensure collaboration across offices and programs to jointly address a particular mission area. A benefit of matrix management is that it improves coordination without imposing the burden of a major reorganization. Another benefit is that it identifies to the public and other agencies the individual within NOAA that has primary responsibility in a specific

mission area. The lack of such transparency is a common complaint leveled at the Federal Government.

It is not clear how or if an analogous system could be developed to apply across the Federal Government. Yet, there is widespread agreement that improved cooperation across government is fundamental to forging a comprehensive and integrated ocean policy. Agencies have undertaken a variety of cooperative efforts aimed at better integrating their activities. Examples include the National Ocean Partnership Program, Aquatic Nuisance Species Task Force, the Interagency Committee on the Marine Transportation System, the U.S. Coral Reef Task Force, and the National Geophysical Data Center.

Like matrix management, these efforts tend to focus on specific issues. But unlike matrix management 1) agency representatives generally remain responsible only to their parent organization, 2) they do not necessarily have decision making authority within their own organization, e.g., they are not empowered as their agency's matrix manager for that mission area, and 3) participants also change rather regularly, inhibiting the building of the necessary trust that can only develop over time. In the end, reducing the strong vertical ties of employees to their organization in favor of a system that favors and rewards issue-related, horizontal organization across agencies is no simple task. It would probably require both a clear legislative mandate with strong incentives and an equally strong administrative commitment during implementation.

In addition to improving policy coordination, there is a need for a comprehensive geo-spatial analysis to examine the geographic extent and boundaries of statutory and regulatory authorities. Because regulations and jurisdictional authorities generally apply to a specific area of land or water, the language used to define these regions must be clear to minimize potential and unintended conflicts and overlaps. Currently, it is not uncommon to encounter incorrect, imprecise, or inaccurate boundary text or coordinates published in the U.S. *Federal Register* and U.S. *Code of Federal Regulations*. Clarification of these boundaries is essential to highlight potential gaps, overlaps, or inconsistencies that may limit the effectiveness of U.S. coastal and ocean policy. The application of advanced geo-spatial (or mapping) technology provides a unique and practical method to evaluate each boundary component or management regime and highlight potential problems, such as gaps in coverage or conflicting jurisdictional authorities.

There are problems with boundary definitions in both federal and state regulations. Problems ranged from inconsistent boundary descriptions to coordinate omissions and errors. Generally, each legal description includes a combination of text, coordinate listings, references to physical features or chart elements, and references to other agency boundaries. References to other external boundaries are problematic, as they often vary considerably depending on the source and may conflict with the other coordinate listings or portions of legislative text. Such complexities and inaccuracies are confusing to the public and may render boundaries subject to legal challenge, which could create potential enforcement issues.

