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TESTIMONY OF MOLLY MCCAMMON, DIRECTOR ALASKA OCEAN OBSERVING SYSTEM

BEFORE THE HOUSE SUBCOMMITTEE ON
FISHERIES CONSERVATION, WILDLIFE AND OCEANS
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ON STATUS OF OCEAN OBSERVING SYSTEMS

Mr. Chairman and Members of the Committee. I am honored to be here today to testify before you on the development and implementation of the Alaska Ocean Observing System.

My name is Molly McCammon and I represent a group of federal agencies, universities, research institutions, and non-profit organizations who have committed to organizing an Alaska Ocean Observing System as part of the national Integrated Ocean Observing System.

We are the largest ocean state in the country, with more than 47,000 miles of coastline, about two-thirds of the total U.S. coastline. Alaska occupies 20% of the nation's land base, 40% of the nation's surface water, and contains half the nation's wetlands. Alaska's oceans are among the most productive ecosystems in the world, with healthy fish and shellfish populations producing over 50% of the nation's seafood, more than 80% of the nation's seabird population, and 36 recognized populations of marine mammals. Bristol Bay alone supports the world's largest sockeye salmon fishery, and Alaska's snow crab fishery is the largest in the U.S. Alaska's oceans and coastal watersheds produce 25% of the nation's oil as well as minerals from several world-class mines. Compared to other oceans and watersheds elsewhere in the United States, Alaska's resources are healthy, productive and pollution-free. In short, Alaska is a tremendous national asset.

Currently, the Alaska Ocean Observing System – or AOOS as we call it - is in its early stages of planning and development. The consortium of government agencies, research institutes and non-profit organizations developing AOOS feel so strongly about the importance of the AOOS mission and goals that they have committed their own funds to help kick-start the effort in Alaska towards its development phase. These have been supplemented by two small planning grants from NOAA. These organizations – and for this purpose I'll call them the AOOS partners – have signed onto a Memorandum of Agreement that commits them to work collaboratively to develop an Alaska node for integrating coastal and ocean observing activities in anticipation of authorization of the national effort.

Thus far, our partners include federal agencies such as NOAA, including the National Weather Service, NOAA Fisheries, and the Office of Oceanic and Atmospheric Research; the Department of Interior agencies of USGS and Minerals Management Service; academic institutions including the University of Alaska; research organizations such as the North Pacific Research Board, the Alaska SeaLife Center, the Prince William Sound Science Center and Oil Spill Recovery Institute, the Barrow Arctic Science Consortium, and the Alaska Sea Grant Program. We are working closely with other potential partners including the US Coast Guard, the State of Alaska, and industry groups who will likely be joining as partners as AOOS develops. Our office is co-located with the North Pacific Research Board, a program created by Congress to help meet the research needs of Alaska's oceans.

The vision for AOOS is to provide ocean data and information products to users of Alaska's marine environment whether they are fisheries managers, offshore oil developers and transporters, or Alaska Native subsistence users. Our program is developing in line with the national goals of improving the safety and efficiency of marine operations, mitigating the effects of natural hazards, especially coastal erosion from extreme storm events and earthquake generated tsunamis, improving predictions of climate change and its effects, improving national security, especially to our ports, reducing public health risks from contaminants in

the marine environment, more effective protecting and restoring healthy coastal marine ecosystems, and enabling the sustained use of marine resources. The program is intended to be an operational provider of ocean observations, not a research program, although the research community is definitely a primary user group in Alaska.

We do not have an integrated ocean observing capability today. Historically, government agencies have had the responsibility for gathering these observations, but have had neither sufficient funding nor discretion to mount comprehensive long-term collection efforts or tailor data collection to meet practical local needs. As a result, many observation and information gaps exist in Alaska. As uses of the marine environment increase, the broader, ecosystem-based decisions expected in the future will require more systematic, coordinated databases.

No process or forum currently exists for users to meet together with the providers of ocean observations to identify gaps and needs and jointly develop priorities. AOOS can provide that forum. It is important to note that AOOS is not intended to supplant existing marine research entities and local observing capabilities in Alaska. Rather, AOOS will serve as the overall facilitator and coordinator for the statewide system, providing funding and establishing standards to ensure that statewide and regional needs are met consistent with the national program.

We are now working in the three large marine ecosystems encompassed by Alaska – the Arctic Ocean, Beaufort and Chukchi Seas, the Bering Sea and Aleutian Islands, and the Gulf of Alaska. Within these three larger regions, are smaller sub-regions – such as Prince William Sound and Cook Inlet – that will require more intensive observing systems.

In Prince William Sound, we're working to develop an integrated observing system that will provide important information to oil tankers transiting the sound to and from Valdez, the terminus of the Alaska Pipeline, to commercial fishermen who want to understand and better forecast salmon production, and to recreational boaters who want to know weather conditions for weekend trips.

In Cook Inlet, an integrated observing system will help captains pilot barges up the inlet more safely with better information about currents and tides; help oil spill responders better understand where oil might go in the event of a spill; and help city and borough planners predict what will happen to bluff erosion along the shores of Cook Inlet.

In the Bering Sea, one of the richest fisheries in the world, an integrated ocean observing system will help develop more accurate maps of the wintertime southern ice edge, a valuable tool for subsistence users who rely on marine mammals such as walrus and seals for food and for commercial fishermen who fish year round in the Bering Sea; provide greater understanding of ocean warming and its impacts on commercial fisheries; and develop better predictive models of climate change impacts so that coastal communities can be better prepared to respond to rising sea levels and coastal erosion caused by more frequent extreme storm events.

These are all benefits that will have substantial economic benefits not only to Alaskans, but to the nation as a whole. One of the important aspects of AOOS – as well as the other regional associations – is the requirement that a cost-benefit analysis be conducted when planning and developing the various components - and especially the information products - of the regional observing systems. In Alaska, we're working with the University of Alaska's School of Business Administration and Public Policy to develop a business plan for AOOS.

Our planning efforts are focusing on two separate, but closely related tracks. One track encompasses the "core" ocean observations supported by various federal agencies that desperately need to be enhanced as part of the national backbone for the Integrated Ocean Observing System. These include buoys collecting weather observations as part of the National Data Buoy Center, NASA satellite observations of sea surface variables such as chlorophyll-a, waves and currents, temperature and sea ice extent, USGS water level and tidal gauges, and NMFS fisheries stock assessments. Data from these enhanced observations will be incorporated into a Data Management and Communications subsystem that transcends individual government agencies, research and monitoring programs, and research institutions.

On a parallel track, we are meeting with user and stakeholder groups to identify local user needs and the local observations needed to meet those needs. These users include the oil and gas industry, marine shippers, the cruise ship industry (with more than 45 vessels carrying a million passengers in Alaska waters

this summer), recreational boating organizations, commercial and recreational fishermen, the charter boat industry, Coast Guard search and rescue operations, oil spill response teams, and city and borough planners. All have expressed enthusiasm and support for AOOS efforts.

Although AOOS is still in the planning and early development stages, pieces of an Alaska Ocean Observing System are already under development. The Prince William Sound Science Center and its affiliated Oil Spill Recovery Institute have been working for more than five years on a Nowcast-Forecast program to provide real-time information and predictions on ocean conditions in Prince William Sound. That program is being enhanced to include additional precipitation and meteorological information, as well as surface current maps using High Frequency Radar.

Another program is the Exxon Valdez Oil Spill Trustee Council's Gulf Ecosystem Monitoring Program whose aim is to monitor well into the future the area impacted by the 1989 oil spill. The GEM program is funding the placement of ocean observing instruments on state ferries and oil tankers as "ships of opportunity".

In Cook Inlet, the Kachemak Bay Research Reserve, established as a National Estuarine Research Reserve, collects basic oceanographic conditions throughout the bay; the city and Borough of Anchorage collects water quality information as part of its sewage discharge permit, and a PORTS system in Anchorage and Nikiski gathers water level and meteorological information to aid marine traffic in the inlet. Experimental High Frequency Radar systems are being deployed to help improve tide predictions, but there is no entity that plans – or has the capability - to keep these in place operationally over the longer term. These observations are not sufficient for the needs of southcentral Alaska which is the most heavily populated region of the state and the largest port in the state.

In the entire Gulf of Alaska, which includes Southeast Alaska, Prince William Sound, and Cook Inlet, we have only 11 NOAA buoys and 9 C-MAN stations. The Gulf of Alaska coastline is more than twice as long as that of the northern California/Oregon/Washington coast, yet has about half the number of buoys and C-MAN stations.

In the Bering Sea and Arctic, we have only one NDBC buoy, although several research buoys have been in place intermittently over the past 10 years. Most observational data has been acquired as part of short-term research programs with no commitment for long-term deployment. What is needed are permanently based monitoring buoys with the capability to take physical and biological measurements above and below the water surface and ice profiling sensors where appropriate, as well as a network of C-Man stations along the coastline, several long range High Frequency radar surface current mappers at pulse points in ocean circulation (such as the Bering Strait and Aleutian Straits) and major fishing grounds, intensive cabled observatories in key areas, and enhanced fisheries surveys. The kinds of information products needed include improved sea ice forecasts, predictions of coastal erosion based on weather and wave data, and real-time access to data from moorings, HF radar systems, and cabled systems monitoring water and sea characteristics.

We are now using Prince William Sound's developing ocean observing system as the pilot project for the AOOS data management system. We envision a distributed system using multiple data nodes across the state with easy access from a centralized system as needed. Data would be provided in formats that are readily accessible to researchers, regulators, educators, and public and commercial users. That system will likely be housed at the University of Alaska Fairbanks supercomputer. Our long-term goal is a 24-7 real-time operational system. However, in Alaska, given our huge geographic range and current dearth of observations, our initial commitment is to make data available on a website as soon as practical. The data collected under the AOOS umbrella will meet national standards and feed into national databases as appropriate.

AOOS is designed to be user and information product-driven. The user needs vary widely. Some groups require precise navigation and real-time information, while others need only rudimentary knowledge of currents and water masses. Some needs exist today, yet others lie in the future, such as possible Northwest Passage transits under reduced Arctic ice cover. Increased surveillance, security and safety of transportation and commercial shipping activities (offshore, in ports, and in sea lines of communication between Alaska and the continental U.S.) are a recent and emerging area of concern for the U.S. that will be addressed by many of the proposed AOOS activities. Another area is climate change impacts. Since greenhouse gas-related global warming is thought to be amplified in polar regions, Alaska conditions can be viewed as a harbinger for climate change across the globe. All of these needs are closely tied to forecasting of weather and oceanographic conditions as most weather systems, including extreme events, transit across

marine waters before entering our state.

Implementation of an Alaska Ocean Observing System represents an enormous challenge due to the vastness of the region. Alaska's remoteness and extreme weather conditions make designing, installing and operating an ocean observing system throughout the three Alaska regions the most difficult undertaking of any shelf area in U.S. waters. However, in spite of these challenges, the opportunities and needs, as well as the economic benefits, warrant national attention.

Again, I want to thank you for the opportunity to testify before you today. If you have any questions, please don't hesitate to contact me at the Alaska Ocean Observing System office, 1007 West Third Avenue, Suite 100, Anchorage Alaska 99501, 907-770-6543.