AOOS Signs New 5-Year Cooperative Agreement with IOOS

AOOS was awarded $4,176,512 as part of the support for continued growth, expansion, and modernization of our nation’s climate, coastal, ocean, and Great Lakes observing capabilities. In the first year, NOAA will distribute $41 million to the 11 regional associations along the U.S. national and territorial waters and coasts. The funds are awarded through a competitive process that includes funds from U.S. Integrated Ocean Observing System (IOOS) along with NOAA’s National Ocean Service, Office of Oceanic and Atmospheric Research, National Weather Service, NOAA Fisheries, Office of Marine and Aviation Operations; the U.S. Geological Survey; and the Environmental Protection Agency.

Over the next five years, AOOS will focus on maintaining and enhancing the Ocean Data Explorer data portal while supporting initiatives that respond to Alaska region needs, such as the Alaska Ocean Acidification (OA) Network, the Alaska Harmful Algal Bloom (AHAB) Network, the Regional Ocean Data Sharing Initiative, and the Alaska Water Level Watch (AWLW). In the upcoming year AOOS will spend over $2.5M to
meet the challenges of covering the vast and remote coasts of Alaska. Ocean observing in Alaska is dependent on collaborations; as such, one of our goals is to develop and maintain new partnerships for continued leveraging of resources.

**PROJECT HIGHLIGHT**

**Seafloor Mapping Tool**

*Contributors:* LCDR Bart Buesseler, NOAA; Jaci Overbeck, State of Alaska; LCDR Hadley Owen, NOAA; LTJG Harper Umfress, NOAA;

Inspired by the success of a small pilot project in northern Canada, AOOS, the State of Alaska Department of Natural Resources (ADNR) and NOAA’s Coast Survey are testing the use of a portable survey system to fill critical data gaps in seafloor mapping near Alaska’s coastal communities.

Despite significant increases in vessel traffic, including in shallow regions close to coastal communities, and the opening of previously inaccessible regions with the lengthening of the ice-free season, navigational charts in Alaska’s Arctic waters remain inadequate with limited bathymetry data. Not only is the Arctic huge, but it is also challenging to access, disconnected from the state’s limited road system, and known for long harsh winters and short operational seasons.

The system – called the M2Ocean Hydroball - is a form of crowd-sourced bathymetry that can use local vessels and communities to provide depth measurements that are typically hard to come by. The Hydroball is a self-contained survey solution roughly the size of a beach-ball. It contains a single beam echosounder, dual band GPS antenna, and an inclinometer, as well as a simple internal computer to log data from all the sensors. The
Hydroball can simply be towed alongside small boats or kayaks and — once initial setup is completed and the unit is turned on — will automatically record data without user interaction. While it can be towed as a floating ball, the most common configuration is fixing it to a small catamaran “sled” for optimal positioning of the sonar system.

Preliminary field tests were carried out in Seattle through NOAA’s Hydrographic Systems and Technology Branch and in Anchorage through joint efforts between the NOAA Alaska Navigation Manager and ADNR. ADNR collected bathymetric data at communities in northern and western Alaska (including Napakiak, Kotlik, Alakanuk, and Wainwright). Future plans include lending the Hydroball to partners in other state and federal agencies as well as universities to expand opportunistic deployments.

Since the configuration of the system is fixed, the data can quickly and easily be processed with its accompanying “Depth Star” processing software. Additionally, GPS data can be post-processed allowing for higher accuracies and the potential for GPS tide applications. Data will be available from ADNR for use in local and regional planning, as well as uploaded to NOAA’s National Centers for Environmental Information site (NCEI) to support the Alaska Coastal Mapping Strategy, the United States’ National Strategy for Mapping, Exploring, and Characterizing the United States Exclusive Economic Zone (NOMEC), as well as the international initiative Seabed 2030.

PARTNER HIGHLIGHT

Benthic Camera System for the Arctic

AOOS partners Seth Danielson and Katrin Iken from the UAF College of Fisheries and Ocean Sciences developed a new camera system to provide year-round photos of seafloor (benthic)
and as food for seals, whales, walrus, and seabirds. But, studying these communities is tricky beyond the short summer season when ships can access the region. To go beyond these short snapshots in time, Danielson and Iken developed a bottom-landing tripod and benthic time series camera and light system that can take time lapse photos for up to 15 months, even during periods of ice cover in the Arctic ocean.

The system will provide an unprecedented opportunity to observe benthic organisms during an entire year, and ultimately from year to year. In July 2021, the camera system was test-deployed for a few weeks in Sunny Cove, Resurrection Bay, and yielded excellent benthic imagery. The tripod will also serve as a stable near-bottom platform for sensors that measure water speed and direction, fish and zooplankton acoustic backscatter, ice draft, and sea water temperature, salinity, and pressure. The first year-long deployment is scheduled for September 2021, when the camera will be integrated into the Chukchi Ecosystem Observatory (CEO) mooring cluster and contribute to the Arctic Marine Biodiversity Observing Network (AMBON) program. Other partners in the system design and development include the Sexton Corporation and the UAF Geophysical Institute Machine Shop.

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**OCEAN ACIDIFICATION NETWORK UPDATE**

**The Future Ocean Podcast**

The Alaska OA Network just launched a new podcast called “The Future Ocean: what can carbon policy do for the ocean and our fisheries?” The six-part series features local marine scientists, economists, and leaders in Alaska’s clean energy transition as they introduce ocean acidification and discuss different carbon policy options, how they work, what the terms mean, and what action is currently happening regionally and nationally.

The podcast was developed in response to interest from the Alaska fishing industry in becoming more informed on carbon policy and what it can do for the ocean they depend on. It aims to engage more Alaskans in conversation about the changes happening in the marine ecosystem, and potential solutions that are on the table in Congress.

In the first two episodes, guest scientists describe the changes happening in the Bering Sea and Gulf of Alaska. They discuss how ocean acidification works, and why Alaska may be one of the first places impacted by acidification. In episodes 3, 4 and 5, the podcast turns to economists to explore policies that put a price on carbon emissions as a carbon reduction tool. In episode 6, leaders in Alaska’s expansion of clean energy talk about progress being made in the state. This includes renewable energy development in 80 rural villages, larger systems in regional hub communities, and emerging opportunities for clean energy along the railbelt.

“The Future Ocean is really about solutions,” said Dugan. “We want Alaskans to realize there are options being considered right now to help turn the tide with regard to ocean warming
AHAB NETWORK UPDATE

A Slightly Quieter HAB Summer, with Signs of Change

As the season of phytoplankton growth wraps up, we can look back on a relatively quiet summer for harmful algal blooms (HABs) compared to the previous few years. Partners of the AHAB network sampled both phytoplankton species presence and toxin levels in shellfish across Alaskan waters this summer, continuing to increase sampling activity year after year.

Overall, there seemed to have been slightly less HAB activity this year, as well as fewer shellfish samples over the regulatory limit for paralytic shellfish toxin. This might have been due to an overall cooler and less sunny summer in many coastal areas. However, this does not mean that there were no dangerous shellfish out there – Unalaska saw levels in blue mussels above the regulatory limit starting in March, and peaking at 75 times the limit in June. Southeast Alaska and Kodiak also had generally lower toxin levels, though 30 out of 40 sites still had shellfish above the regulatory limit, and the highest level ever recorded in Kodiak came from a blue mussel in South Trident Basin this year.

One change that has been observed over the last few years is the increasing presence and abundance of the dinoflagellate *Dinophysis* sp. in Alaskan waters. This phytoplankton can bloom and produce okadaic acid leading to diarrheic shellfish poisoning (DSP) if consumed. *Dinophysis* blooms have occurred in Washington State and British Columbia causing people to get sick. Despite an increase...
and its toxins.

As we move into the fall and winter, it is important to remember that **HAB toxins can be retained for months in shellfish.** So just because blooms are not happening does not necessarily mean that shellfish are not toxic. The old adage of shellfish being safe to eat if they are collected in months that have an ‘R’ should not be followed!

*Photo from SEATOR: Sampling for phytoplankton from a dock.*

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**REGIONAL HIGHLIGHT**

**A New Tool for the Bering Strait**

AOOS, with funding from WWF U.S. Arctic Program and the IOOS Regional Ocean Data Sharing Initiative, is developing a “Bering Strait Transboundary Incident Response Tool.” This tool will co-locate relevant data from the Russian and the U.S. sides of the Bering Strait, as well as the northern Bering and southern Chukchi Seas. The final product will allow for both Russian and U.S. authorities and scientists to access the same data and to share the same visualizations of the area within the Bering Strait region. This information is valuable not only for a potential response to an emergency event such as an oil spill, but will be useful as a public information resource to a broader group of interested parties on both sides of the EEZ, including coastal communities, conservation groups, resource managers and academic researchers.

Vessel traffic through the Bering Strait is increasing, and is expected to continue increasing as sea ice decreases and the open water season lengthens. With this increased vessel traffic comes increased risk of marine accidents and oil or other contaminant spills in the area. However, this area also has a lack of infrastructure and resources to respond to incidents of this nature, and there are challenges to communication and data sharing between the U.S.
and response actions, is stored on U.S. Government servers (i.e., NOAA) and not fully accessible by Russian authorities. For these reasons, there is a need for an oil spill response tool that is accessible by both US and Russian authorities in the event of an oil spill or some other contaminant spill in the Bering Strait area.

**AOOS Board of Directors Fall Meeting**

AOOS has confirmed it’s Fall Board meeting for Tuesday October 19, 2021. Earlier this summer, we had planned for the meeting to be in-person, but decided to move to virtual to be safe with the increase in covid cases in Anchorage. We hope to be able to meet in person for the Spring 2022 meeting! Our agenda includes an update from the U.S. IOOS program office and IOOS Association; changes in the Board membership (new representative and new seats); updates on the current and new NOAA cooperative agreements; and updates on proposals we are submitting or working on.

Despite the challenges of working around covid, our team has been busy! So we have asked for AOOS staff to update the Board on some of our exciting projects. Carol will discuss the Alaska Water Level Watch (AWLW) program, as well as the gliders and moorings; Thomas will share information on the AHAB network; Darcy will give an update on the Alaska OA Network; Jill will talk about the Bering Sea Incident Response Tool; and Rob with Axiom will give an update on the western storm surge modeling dashboard and the mariculture siting map. We are also excited to have two of our Principal Investigators present information on their funded projects. Mr. Aaron Poe, a new-to-AOOS PI, with the Alaska Conservation Foundation will talk about his new project with HABs community samplers and Dr. Russ Hopcroft with UAF will share information on the long-term Seward line project. We look forward to the meeting to share all the great work we've been doing this year, as well as to hear from our Board members.

**About AOOS**

The mission of AOOS is to address regional and national needs for ocean information, gather specific data on key coastal and ocean variables, and ensure timely and sustained dissemination and availability of these data.

Questions? Email Communications Director Holly Kent, kent@aoos.org

Alaska Ocean Observing System