



2020 Impact Report



Letter from Executive Director

As Alaska's coasts and oceans continue to change more rapidly than ever anticipated, we were also faced this year with a global pandemic that had widespread health and economic consequences for Alaska. In 2020:

- AOOS worked with our scientists and coastal communities to keep observing assets operating, in spite of equipment repair delays and restricted travel. A big "hats off" to our dedicated partners, whose support was essential to keeping wave buoys, high frequency radars, and AIS weather stations providing essential data to Alaskans.
- Some of the new assets funded by Congress will hopefully be deployed in the coming year. This includes the new underwater glider program to support the commercial fishing industry in the Gulf of Alaska and the Bering Sea. Although longer flights were delayed, one glider was redeployed in the Chukchi Sea with a shorter flight, and another was deployed in Prince William Sound to track tagged herring.
- The observing activities described in this report would not be possible without the partnerships with the private sector and other federal, state and local entities. These allow us to provide Alaskans with scientific information and tools that have a value far greater than the funds provided by AOOS.
- We submitted a 5-year proposal to the national IOOS program for 2021-25 to fund an enhanced array of observing activities, including a new program on ocean sound and enhanced product and service delivery.



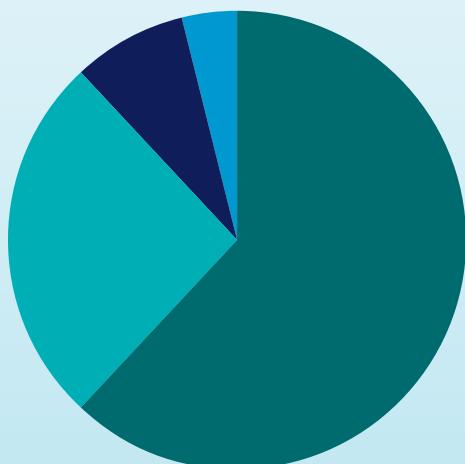
Also in 2020, Molly McCammon stepped down as AOOS Executive Director, a position she held since AOOS' founding in 2003. I was fortunate to be selected as her replacement. I greatly look forward to engaging with all of you in the coming years.

Sincerely,

A handwritten signature of Sheyna Wisdom.

Sheyna Wisdom

Income by Source



- IOOS
 - Other NOAA
 - Other Federal
 - Other – tribal, state, private, EVOS settlement, etc.
- Total: \$4,426,243



Observing Changes in Ecosystems, Fisheries & Climate

Documenting current and future coastal and ocean conditions, climate trends and ecosystem productivity and change. These efforts will aid fisheries, protect living marine resources and food security, and enhance the blue economy.

Monitoring Water Quality

Monitoring ocean acidification and harmful algal blooms for potential ecological forecasting and providing decision support tools and community networks.

Year-Round Ecosystem Moorings

- Gulf of Alaska and Chukchi Sea Ecosystem Observatories and two Bering Sea Observatories (under development) provide year-round biological, physical and chemical measurements throughout the water column.
- Congressional “Fill the Gaps” funding is used to add novel sensors (including eDNA and acoustics) to these moorings and those funded by other programs.

Ship Surveys Used for Time Series

- Twice-annual Seward line cruises document ecosystem change across the shelf break in Gulf of Alaska: the longest time series survey in Alaska.
- Monthly and quarterly cruises in Kachemak Bay and Cook Inlet add nearshore context.

Gliders for Ecosystem and Fisheries Management

- Enhanced glider survey program includes new ecosystem and fisheries management gliders for the Gulf of Alaska and the Bering Sea funded by “Fill the Gaps” initiative.
- Glider data supports fisheries management, storm forecasts, marine heat wave monitoring, and marine mammal response to changes.

Regional Ocean Data Sharing Initiative

- Bering Science Reports, a new Bering Sea data portal and dashboard, and a transboundary emergency response tool for the Bering Strait using both US and Russian data.
- Focusing on data products needed for decision-making, now expanding statewide.

Ocean Acidification (OA)

- Alaska OA Network supports researcher collaboration, information sharing, and stakeholder engagement, and provides “State of the Science” updates and other resources on the web.
- More than 20 communities from Ketchikan to Utqiagvik, many tribally-led, take weekly water samples to establish nearshore baseline conditions for OA.
- Alaska M/V *Columbia* ferry collects OA data along its weekly 1,800-mile route between Bellingham, WA and Skagway, AK, detecting OA seasonal cycles and “hotspots”.
- OA sensors on moorings and four Burke-o-Lators provide continuous year-round monitoring data on ocean conditions.

Harmful Algal Blooms (HABs)

- Congressional HAB funding supports a full-time coordinator for the Alaska Harmful Algal Bloom Network (AHAB) to develop a statewide action plan and pilot new observations.
- More than 120 (AHAB) members coordinate research, monitoring and education and outreach.
- Heightened sampling efforts in the Bering and Chukchi Seas are documenting ambient conditions of toxic algae in the water column, cysts in the sediment, and biotoxins in marine mammal samples.



Bethany Goodrich

Harvesters wash shellfish samples to remove sediment before delivering them to the Sitka Tribe environmental research lab for saxitoxin testing.

Enhancing Marine Safety

Improving safety at sea for maritime, aviation and coastal operators, and emergency responders using real-time data, information products and decision support tools.

Responding to Coastal Flooding and Erosion

Improving the ability to forecast and plan for changing storm, sea ice and tsunami conditions and their impacts on coastal communities and habitats.

High Frequency Radar (HFR) Real-time Surface Current Mapping

- 5 HFRs support search and rescue models, oil spill response, harmful algal bloom tracking and forecasting, water quality monitoring, and safer port and harbor navigation.
- Bering Strait radars added with “Fill the Gaps” funding augment Beaufort/Chukchi radars as ship traffic increases with longer ice-free season.

Weather Sensors Added to AIS Vessel Tracking Stations

- 39 AOOS-supported AIS/weather stations fill gaps in maritime weather conditions.
- New weather stations were installed in the Aleutians and Southeast Alaska in 2020.

Real-time Wave Observations

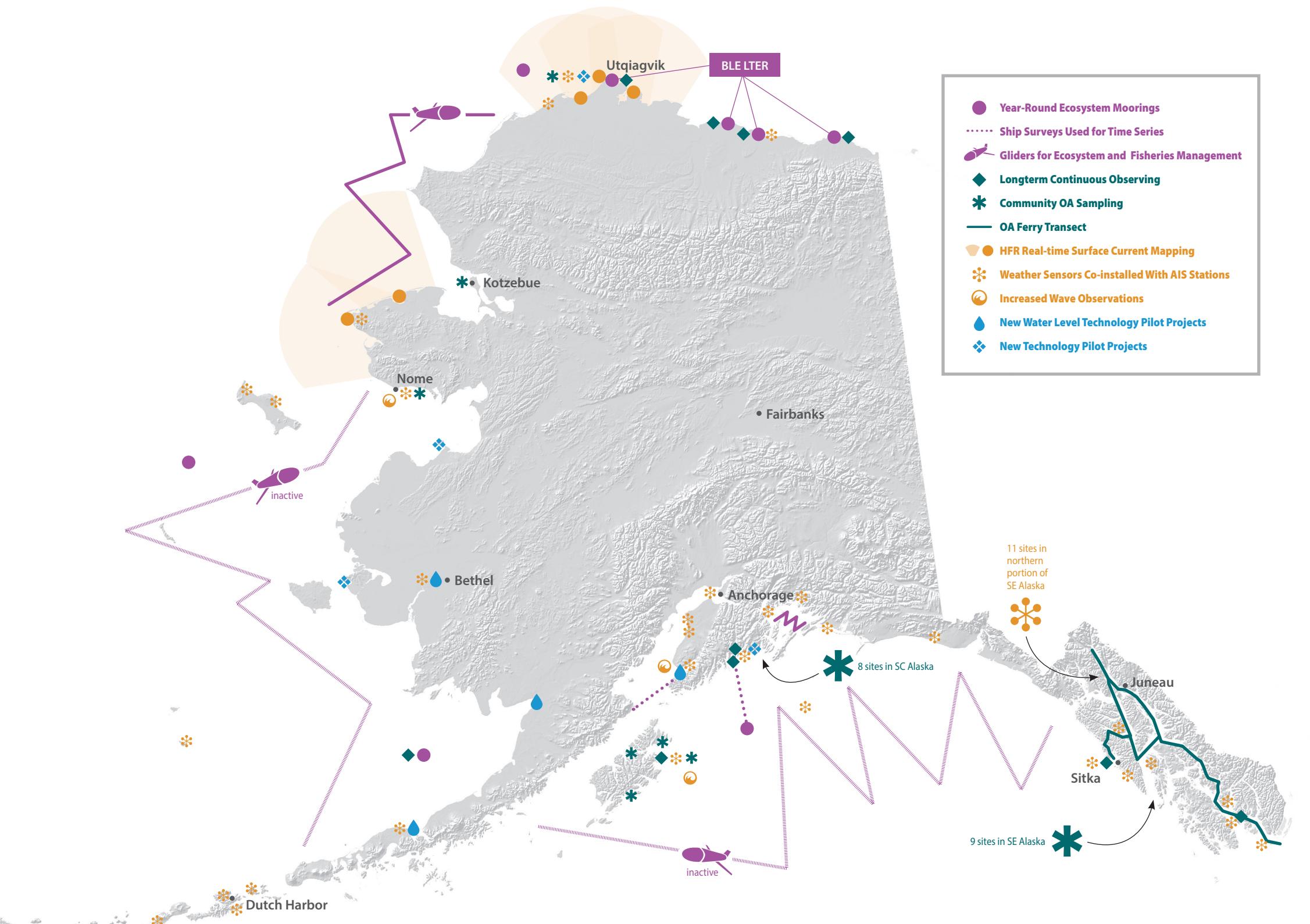
- Wave buoys provide continuous real-time wave and sea state data in Cook Inlet, Bering Strait region offshore Nome and near Kodiak in Gulf of Alaska.

Water Levels

- The collaborative Alaska Water Level Watch (AWLW) network coordinates and improves the quality, coverage, and access to water level observations in Alaska’s coastal zone by maintaining an updated build-out plan with priorities for new installations.
- Non-standard technologies increased water level observations by more than 50% in western Alaska. These included GPS/Global Navigation Satellite Systems (GNSS) reflectometry deployed in remote and low infrastructure regions and low-cost acoustic sensors deployed on docks and bridges in remote communities.
- A new AWLW data portal mirrors CO-OPS’s Tides Online, but accommodates a wider range of data from external partners that may be less “robust” than the Tier A NWLON data, but key for local planning and decision making.
- The data portal prototype is now being assessed for use in other parts of the US.

Mapping Alaska’s Coasts and EEZ

- AOOS is supporting the Alaska Coastal Mapping Strategy and Implementation Plan with a Coastal Mapping Strategist, in response to the November 2019 Presidential Memorandum calling for enhanced efforts to map Alaska’s coast and EEZ.
- A low-tech single beam sonar system towed behind skiffs – called a Hydroball® - will soon be piloted in several nearshore regions and river mouths in western Alaska.



Members

State Agencies

- Alaska Department of Environmental Conservation
- Alaska Department of Fish and Game
- Alaska Department of Natural Resources

Federal Agencies

- Bureau of Ocean Energy Management
- NOAA
- U.S. Coast Guard
- U.S. Geological Survey

State/Federal Agencies

- Alaska Sea Grant

Research Entities

- Alaska SeaLife Center
- NOAA Alaska Fisheries Science Center
- North Pacific Research Board
- Prince William Sound Science Center / Oil Spill Recovery Institute
- University of Alaska
- U.S. Arctic Research Commission

Industry

- North Pacific Fishery Management Council
- Marine Exchange of Alaska

Non-Governmental Organizations

- World Wildlife Fund

Tribal

- Indigenous Peoples Council on Marine Mammals

AOOS Board Officers

- Chair: Katrina Hoffman, Prince William Sound Science Center / Oil Spill Recovery Institute
- Vice Chair: Sara Longan, Alaska Department of Natural Resources
- Secretary: Cheryl Rosa, U.S. Arctic Research Commission
- Treasurer: James Kendall, Bureau of Ocean Energy Management

AOOS Staff

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- Carol Janzen, Director of Operations and Development
- Holly Kent, Director of Administration and Outreach
- Darcy Dugan, Director of Alaska Ocean Acidification Network
- Jill Prewitt, Bering Sea Region Coordinator
- Thomas Farrugia, Alaska Harmful Algal Bloom Network Coordinator
- Marta Kumle, Coastal Mapping Strategist

COVER PHOTO:
AIS weather station installation at
Portland Island near Juneau, Alaska.

THIS PAGE:
Cook Inlet sunset.



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