BACKYARD BUOYS

Convergence Accelerator

Backyard Buoys is a project of the National Science Foundation Convergence Accelerator

Equipping Underserved Communities with Ocean Intelligence Platforms

Backyard Buoys empowers Indigenous and other coastal communities to collect and use ocean data to support their blue economy: maritime activities, food security, and coastal hazard protection. Innovations include a sustainable process for community-led stewardship of affordable ocean buoys and a web-based application that renders data easy to understand and bridges to Indigenous knowledge.

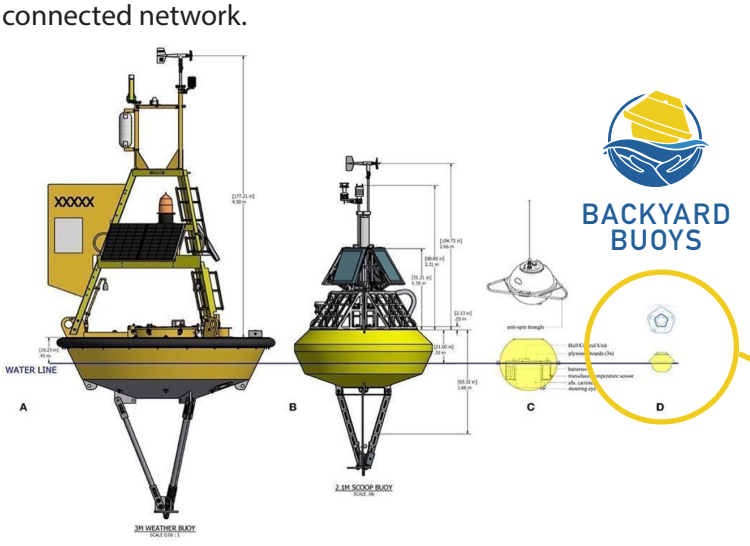
Description

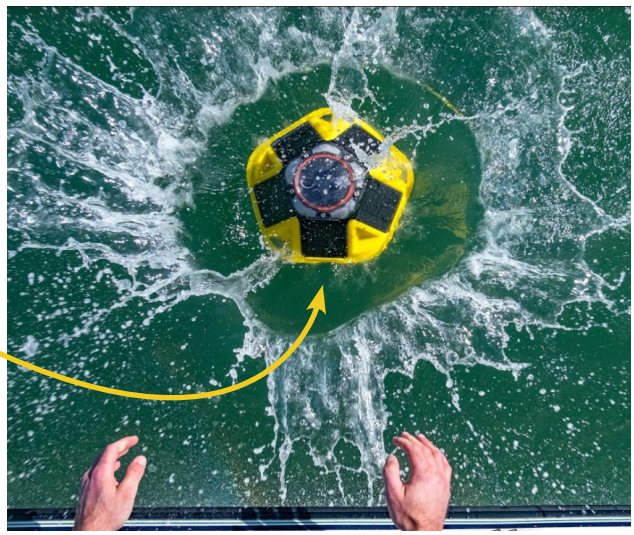
Under the National Science Foundation (NSF) Convergence Accelerator program, Team Backyard Buoys brings together regional ocean observing networks of the U.S. Integrated Ocean Observing System (IOOS), underserved Indigenous coastal communities, and a sensor company as partners working collectively to democratize local wave measurements and provide a solution to the existing hurdle of observing technologies that are too expensive to purchase and to sustain. Through co-design of an implementation and stewardship plan, as well as low-fidelity prototypes of data servicing apps that we co-designed in Phase I, we now stand ready to revolutionize the status quo in Phase II. To do this, we will use lower-cost tools and deepen the human and data connections to collectively facilitate an effective system that has a focus on hyper-local scale observations—sorely lacking in the design of existing ocean observing systems—while assuring the effort is grounded it is within and supported by a globally-connected network.

Phase I

During Phase I, based on use-inspired research interview results, our team produced an actionable research and implementation planning model for community engagement and ocean observing stewardship. This was co-developed by partners across the three geographically distinct regions (Pacific Northwest, Alaska, Pacific Islands) including diverse Indigenous partners within each region. The outcome of this Phase I effort is the detailed outline for what we are calling a Community Research Implementation and Stewardship Plan (CRISP). It is founded on common and distinct needs in various regions and allows creation of unique implementation plans for the diverse communities wanting to deploy ocean observing assets.

All Indigenous communities engaged in Phase I worked to provide substantial input for their CRISP, and remain engaged with the project for Phase II.





Schematic drawn to scale of common wave buoys from federal and academic networks (A-C). These buoys were designed for open ocean observations. For comparison, the Sofar wave buoy (D), which has a much smaller footprint and is more easily deployed with smaller boats. This buoy is ideal for hyper-local applications closer to the coast to serve the needs of Indigenous communities.


ALASKA


PACIFIC NW


PACIFIC ISLANDS

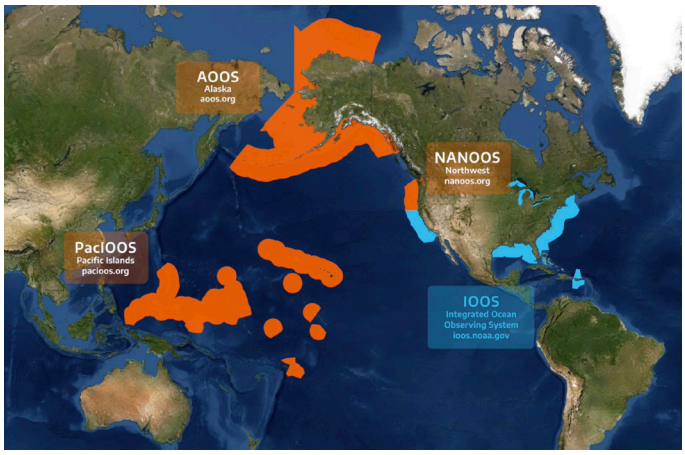
Partnerships to continue in Phase II

Backyard Buoys brings together geographically, academically, institutionally, and culturally diverse groups of partners: 1) three U.S. IOOS Regional Associations; 2) Indigenous partners in each region; 3) a proven ocean wave buoy developer; and new educational partners.

- **Pacific Northwest:** Northwest Association of Networked Ocean Observing Systems (NANOOS), Quileute Tribe, Quinault Indian Nation, Western Washington University
- **Alaska:** Alaska Ocean Observing System (AOOS), Alaska Eskimo Whaling Commission, University of Alaska Fairbanks, Alaska Dept of Natural Resources, Alaska Native Science & Engineering Program
- **Pacific Islands:** Pacific Islands Ocean Observing System (PacIOOS), Marshall Islands Conservation Society, National Park of American Samoa, Hawai'i Sea Grant, Conservation International Hawai'i
- **Sofar Ocean Technologies (Sofar)**

What is at stake?

Our work starts to address inequities and helps to increase autonomy, as community members will choose where and how the buoys are deployed—in places where it matters most to them—and will steward the buoys in their community. This facilitates their blue economy with safer and more efficient fishing, cultural practices, and local entrepreneurs. Wave data are needed to improve safety and to help better understand environmental changes and alert residents to potential breach events. Hundreds of lives, millions of dollars of revenue, and cultural resilience is at stake in each community.



Map of U.S. IOOS Regional Associations, with the three partners (orange) and remaining network (blue). Several have expressed interest in developing Backyard Buoys. U.S. IOOS is an interagency implemented via NOAA.

Next phase

In Phase II we will utilize a modular, sustainable, and exportable process for community-led stewardship of affordable ocean buoys in each region. Through training modules, communities will be involved along with ocean observing system staff. Through co-designed web apps, real-time wave data will be accessed. Both innovations empower underserved communities. The hyper-local wave data will be available to improve localized weather and ocean forecasts; new baseline data enhances near-shore climate dynamics research and plans for effective adaptation strategies. We will develop region-specific curricula with new partners to inform a wider community and entrain the next generation.

We will succeed because

- **It is needed**
- **It is now possible**
- **It can be sustained**
- **The cost of waiting is too high**
- **The seas are already changing**

[CLICK TO VIEW OUR VIDEO]

Want to learn more?

Check out our webpage at **www.backyardbuoys.org** to find more information, watch our video, and meet the project team.