



NSF's Convergence Accelerator

Backyard Buoys: Supporting the next generation of citizen ocean scientists

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www.backyardbuoys.org



BACKYARD BUOYS



BACKYARD BUOYS

→ Through co-design and co-production, we aim to support community collection, stewardship, and use of wave buoy data to protect lives and livelihoods in a changing climate, in a way that complements existing knowledge.



NSF's Convergence Accelerator



Photo: Lloyd Pikok, Jr.



BACKYARD BUOYS



ALASKA



PACIFIC NW



PACIFIC ISLANDS

THE THREE REGIONS LOOK NOTHING ALIKE...



**PACIFIC
ISLANDS**



**PACIFIC
NORTHWEST**



ALASKA

YET EACH HAVE NATURAL WAVE BUFFERS...



CORAL
CORAL BLEACHING



KELP
MARINE HEAT WAVES



ICE
GLOBAL WARMING

THAT ARE BEING AFFECTED BY CLIMATE CHANGE

BACKYARD BUOYS TEAM



Indigenous/Community Partners



Marshall Islands Conservation Society



ALASKAESKIMO
WHALING COMMISSION

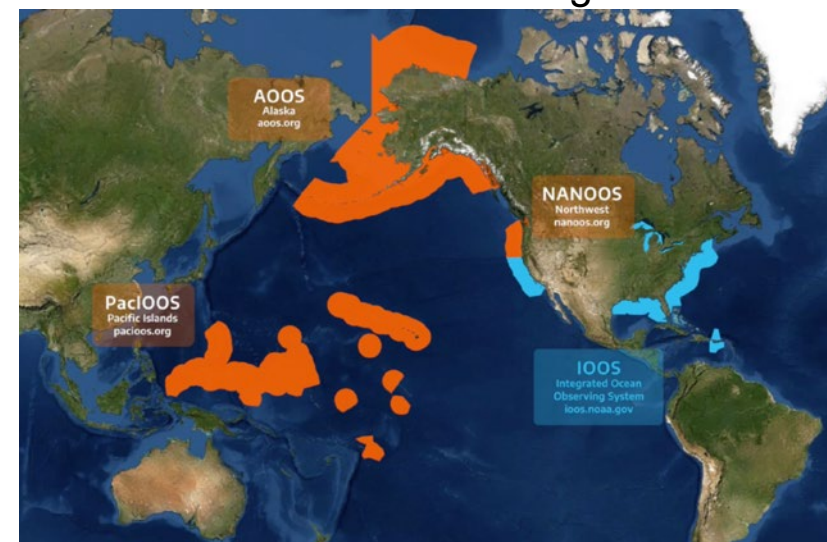
Technical/Educational Partners



Ocean Observing Partners



* US IOOS Regional Nodes



- An **affordable** wave buoy system to support **safety** by augmenting limited resources in **remote** regions, especially in a **changing climate**.

- **Bridge** Knowledge Systems to support ocean safety by making the data more **accessible** and **relevant** to local communities.

- **Community-led** and **community-driven** buoy program enhances local autonomy in ocean observing.

OUR APPROACH

TO: Support collection, stewardship, and use of wave data that complements existing knowledge and **enhances safety at sea** in a changing climate



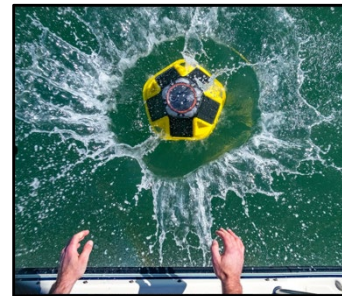
TRUST

Long-term partnerships



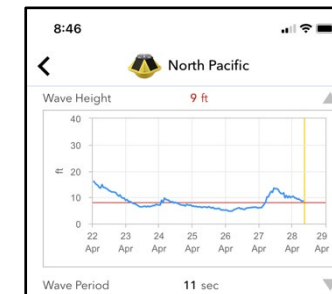
CO-DESIGN

Wave buoy programs bespoke to each community



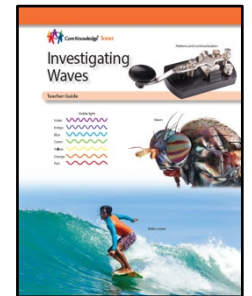
LOWER-COST TECH

Communities receive Sofar Spotter wave buoys



USEABILITY

New data tools developed with community input



EDUCATION

Curricula for the next generation of ocean stewards

“If they don’t understand the data, then it’s not their data.”

- Dua Rudolph, Deputy Director for Marshall Islands Conservation Society

TRUST AND CODESIGN

Indigenous communities not prioritized for ocean observing assets

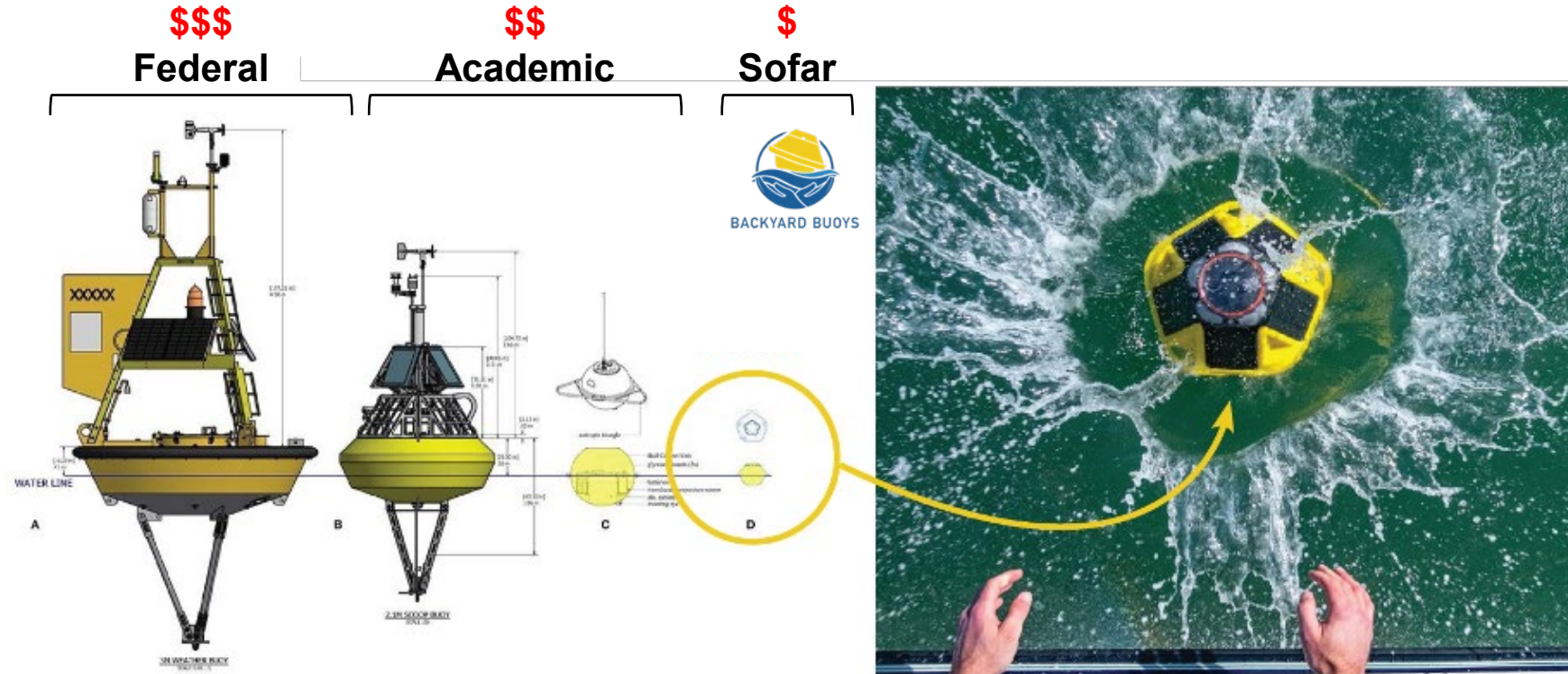


Working Groups:

- ✓ Everyone is a full partner
- ✓ Room for critical feedback

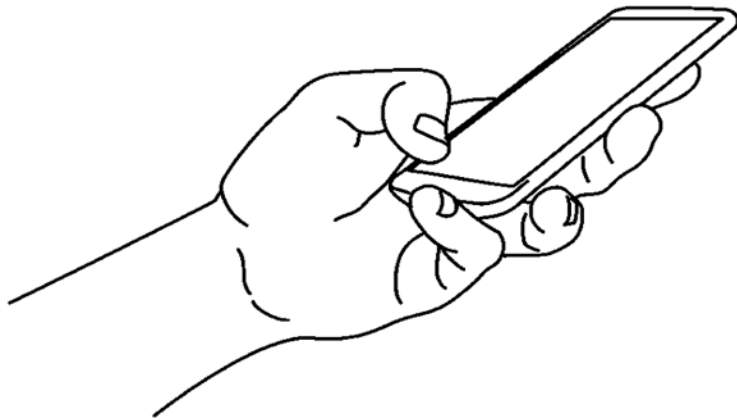


Insufficient wave data to support safety at sea

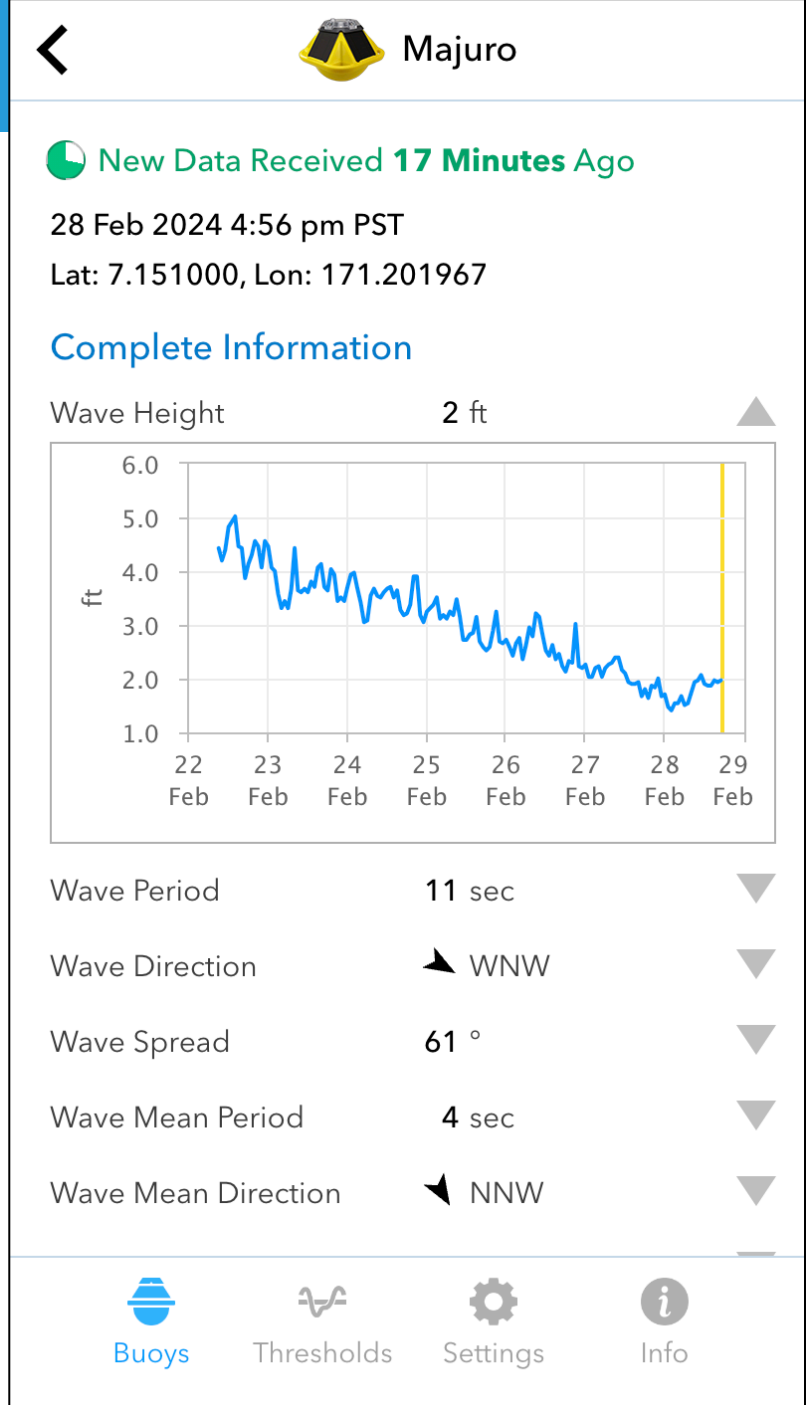
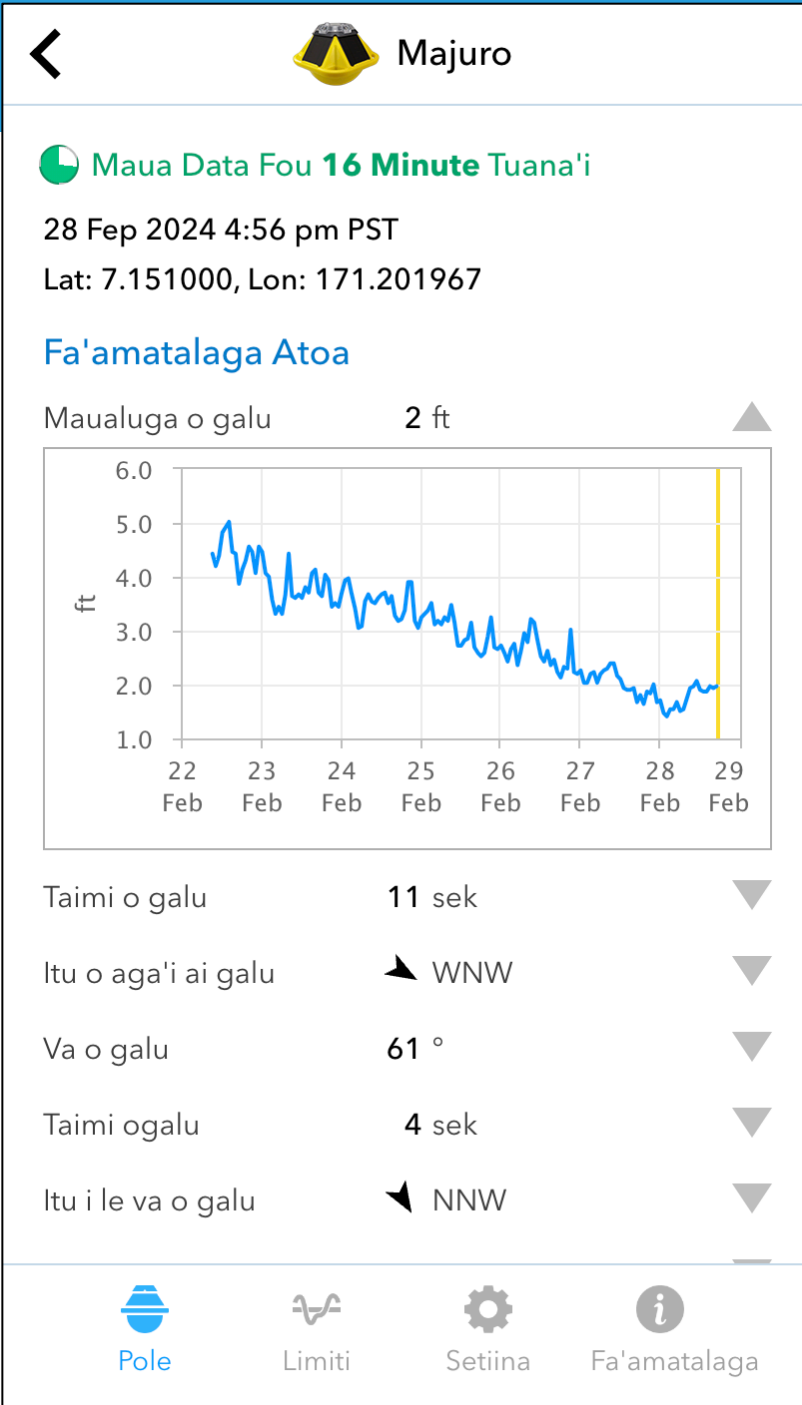
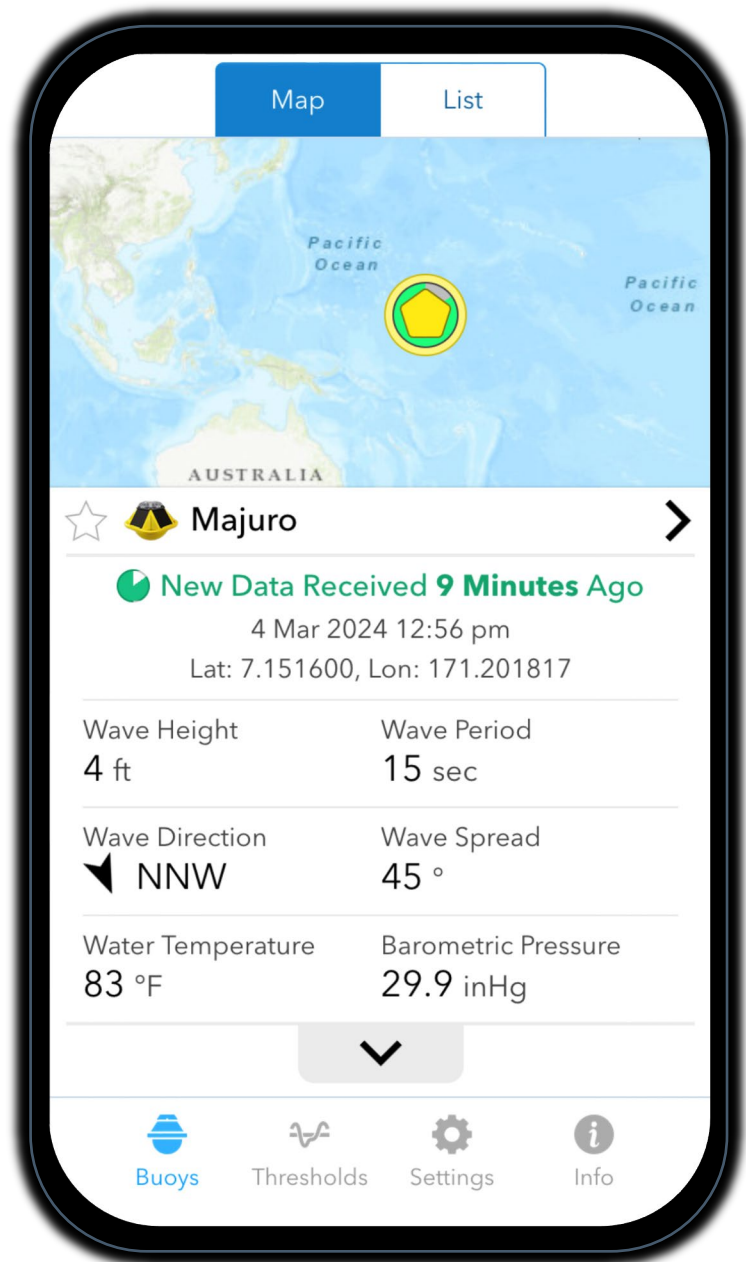


[Scale comparison of buoys]

Data access in challenging environments



USEABILITY





“For this project to be sustained, we need fewer gray hairs to be a part of this.”
- Arctic Whaling Captain

Need new ways to engage youth in ocean science and Indigenous practices













Classroom mini buoys and accelerometers

Middle school events and curriculum development

Integration of Traditional Knowledge in the co-design and communication





Activity book

Integration of Traditional Knowledge in the co-design and communication, specific to the region



Collegiate curricula developed for field class

Adaptation to middle school; sharing of teaching resources

Graduate school exchanges across the regions and conference sponsorship

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SPOTLIGHT • Backyard Buoys: Meeting Needs of Coastal, Indigenous Communities Through Co-Design and Co-Production

By [Jan Newton](#) , [Sheyna Wisdom](#), [Melissa Iwamoto](#), [Roxanne Carini](#), [Jordan Watson](#), [Sebastien Boulay](#), [Duncan Mactavish](#), [Jennifer Hagen](#), [Joe Schumacker](#), [Dua Rudolph](#), [Dolores deBrum-Kattil](#), [Pua Tuaua](#), [Eric Brown](#), [Scott Burch](#), [John Hopson Jr.](#), and [Jenny Evans](#)

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- ▶ <https://doi.org/10.5670/oceanog.2025.105>
- ▶ Full Article:  [PDF](#)

Many “Wins”:

- Communities get useful data
- Scientists engage in real-life applicability of their knowledge
- Communities have autonomy over data
 - All to date are sharing to improve forecasts
- Next generation entrained as part of the effort



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