

# *Backyard Buoys: Meeting community needs for wave data through co-design and co-production*



BACKYARD BUOYS

[www.backyardbuoys.org](http://www.backyardbuoys.org)

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Pua Tuaua, National Park of American Samoa  
Eric Brown, National Park of American Samoa  
John Hopson, Jr, Alaska Eskimo Whaling Commission  
Jenny Evans, Alaska Eskimo Whaling Commission



**WHY?**

**LACK OF WAVE DATA TO  
SUPPORT INDIGENOUS  
COASTAL COMMUNITIES'  
SAFETY IN A CHANGING  
CLIMATE**

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



# BACKYARD BUOYS



ALASKA



PACIFIC NW



PACIFIC ISLANDS

# BACKYARD BUOYS TEAM



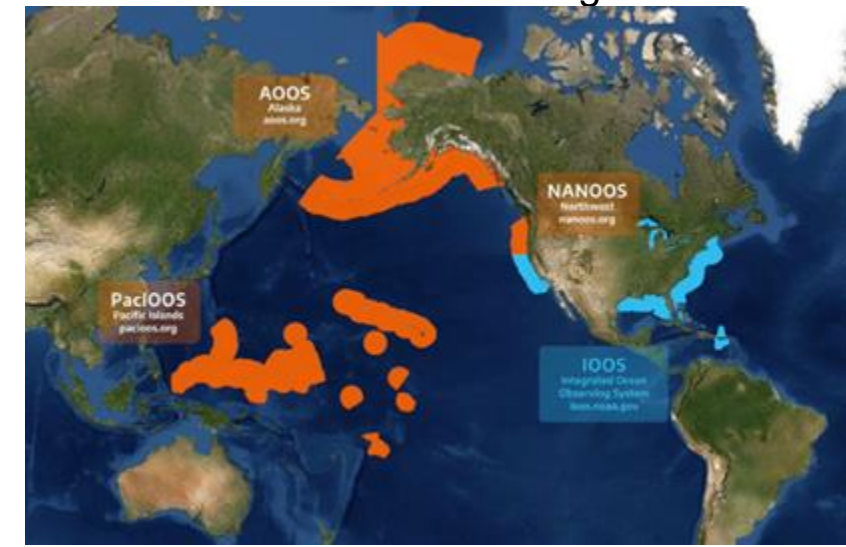
## Indigenous/Community Partners

## Technical/Educational Partners

## Ocean Observing Partners



\* US IOOS Regional Nodes



# ***OUR 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***



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





Fuiava Bert Fuiava  
Samoan Village Chief, National Park of American Samoa, Project Partner

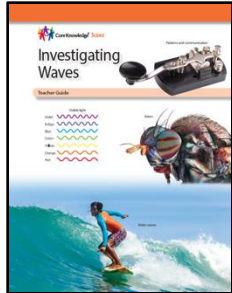
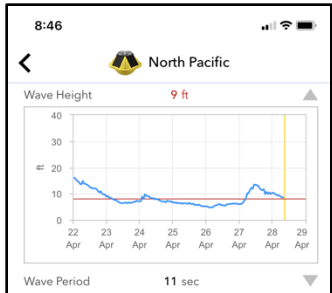
- **Bridge** Knowledge Systems to support ocean safety by making the data more **accessible** and **relevant** to local communities.



Lesley Hopson  
Executive Director, Alaska Eskimo Whaling Commission, Project Partner

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

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

*Indigenous communities not prioritized for ocean observing assets*

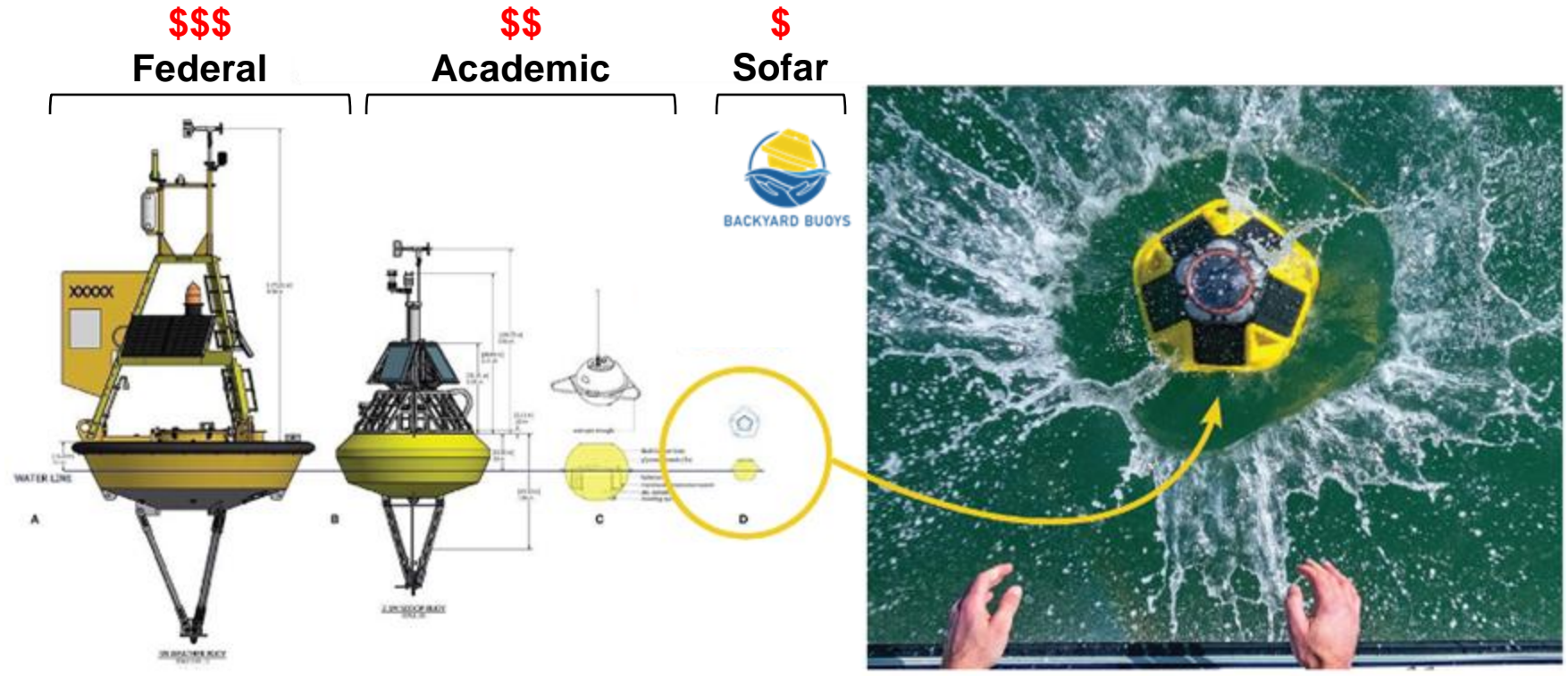


Working Groups:

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

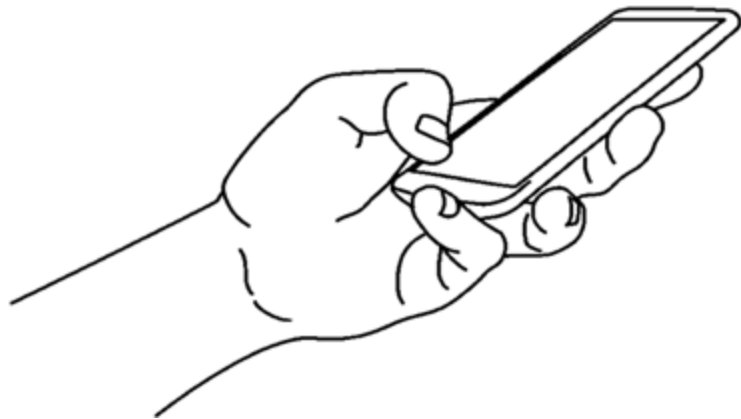


*Insufficient wave data to support safety at sea*



*[Scale comparison of buoys]*

*Data access in challenging environments*





# USEABILITY



**Majuro**

**Maua Data Fou 16 Minute Tuana'i**

28 Feb 2024 4:56 pm PST  
Lat: 7.151000, Lon: 171.201967

**Fa'amatalaga Atoa**

Mauluga o galu 2 ft

Taimi o galu 11 sek

Itu o aga'i ai galu WNW

Va o galu 61 °

Taimi ogalu 4 sek

Itu i le va o galu NNW

Pole Limiti Setiina Fa'amatalaga

**Majuro**

**New Data Received 17 Minutes Ago**

28 Feb 2024 4:56 pm PST  
Lat: 7.151000, Lon: 171.201967

**Complete Information**

Wave Height 2 ft

Wave Period 11 sec

Wave Direction WNW

Wave Spread 61 °

Wave Mean Period 4 sec

Wave Mean Direction NNW

Buoy Thresholds Settings Info



“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*





*“Snare the bird,  
watch the wave”*

# BACKYARD BUOYS

*To date, community-led deployments in 3 U.S. IOOS Regions:*



BACKYARD BUOYS

Alaska (AOOS)



Pacific Northwest (NANOOS)



Pacific Islands (PacIOOS)



Photo credit: (left to right) Lloyd Pikok, Jr., UIC Science; Dennis Wise, UW; Marshall Islands Conservation Society.

**“Backyard Buoys is creating momentum and demonstrating how our network can co-develop ocean knowledge with coastal communities to support decisions affecting lives everyday. IOOS Regional Associations are perfectly situated to scale up this work and to take it to another level.”**

*- Carl Gouldman, Director, U.S. IOOS*

***"We were able to make safer decisions to go out whaling based on these wave buoys offshore. We are excited to get these out sooner next year!"***

*- John Hopson Jr., Wainwright Whaling Captain and Alaska Eskimo Whaling Commission Chair*



# Dedicated Issue on Capacity Development

*Oceanography*

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## Early Release

 OPEN ACCESS

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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▶ 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



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