

- General Update since Dec. 2022
- Instrument Requests
- Instrument Numbers and Types
- MSRI-funded (2021) Instrumentation
- MSRI Proposal (2023) for Active-Source OBS
- OBSIC Data Metrics
- Rapid Response
- 2024/2025 OBSIC Schedule



OBSIC Cruises 12/01/2022 – 12/06/2023

- Dec 2022: Cayman-Rise Deployment (40 SIO SPOBS deployed for 6+ months; *R. Parnell-Turner*)
- Jan/Feb 2023: OHANA Recovery (25 SIO BBOBS deployed for 15 months; *G. Laske*)
- Mar/Apr 2023: Galapagos Plume-Ridge Deployment (53 WHOI BBOBS deployed for 15 months; *E. Hooft*)
- Apr 2023: NESMA Deployment (3 WHOI SPOBS deployed for 2+ months; *M. Ballard*)
- June 2023: NESMA Recovery (*M. Ballard*)
- June/Jul 2023: Cayman-Rise Recovery (*R. Parnell-Turner*)
- Aug/Sept 2023: Blake Plateau (Active Source, WHOI/SIO; 39 SPOBS; 71 drops, *H. Van Avendonk*)
- Aug/Sept 2023: Axial Seamount (Recover/Redeploy 10 SPOBS; 5 BBOBS; *W. Wilcock*)
- Nov/Dec 2023: Puerto Rico (Active Source, WHOI/SIO; 31 SPOBS; 69 drops, *P. Canales*)
- Nov/Dec 2023: Tonga-Samoa Deployment (30 SIO BBOBS for 18 months, *S. Wei*)

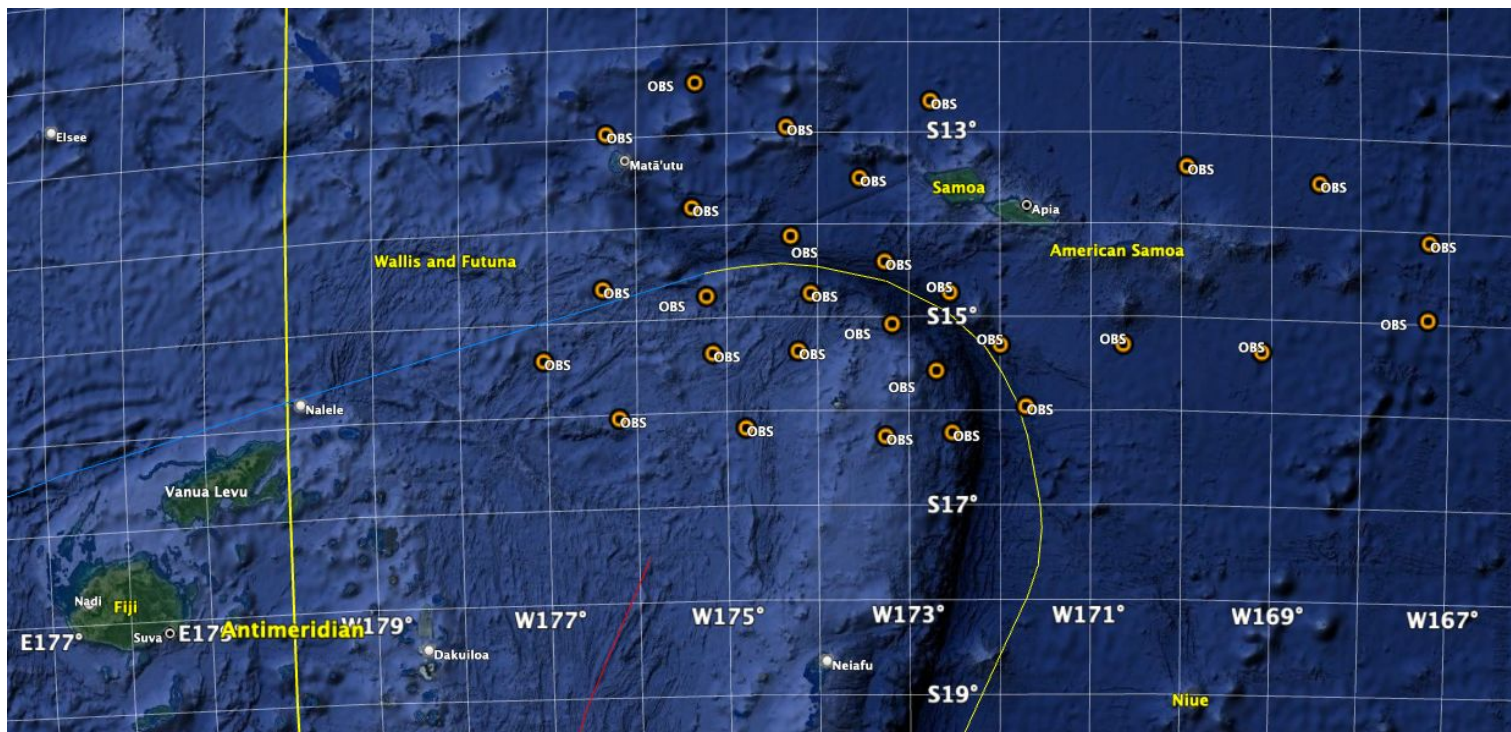
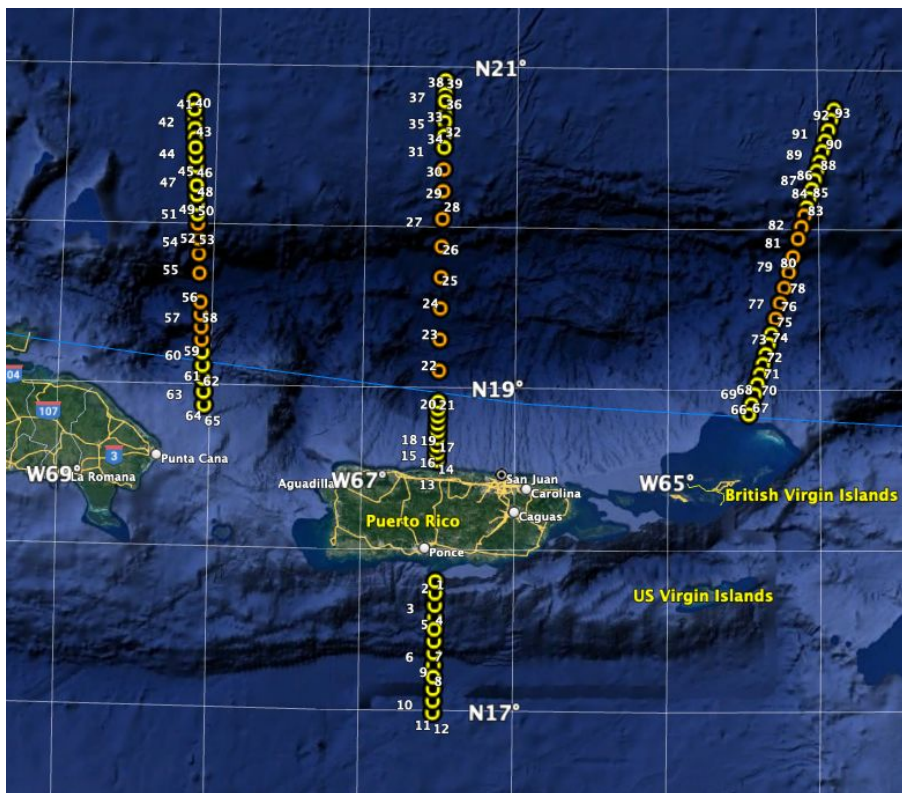
Ongoing OBSIC Cruises 2023

Canales Puerto-Rico Trench (Active Source)
11/20/2023 – 12/13/2023

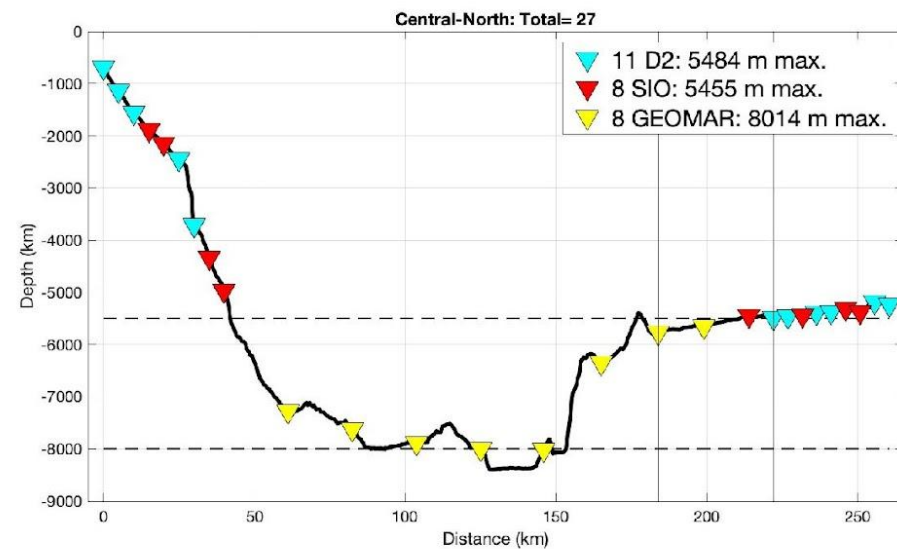
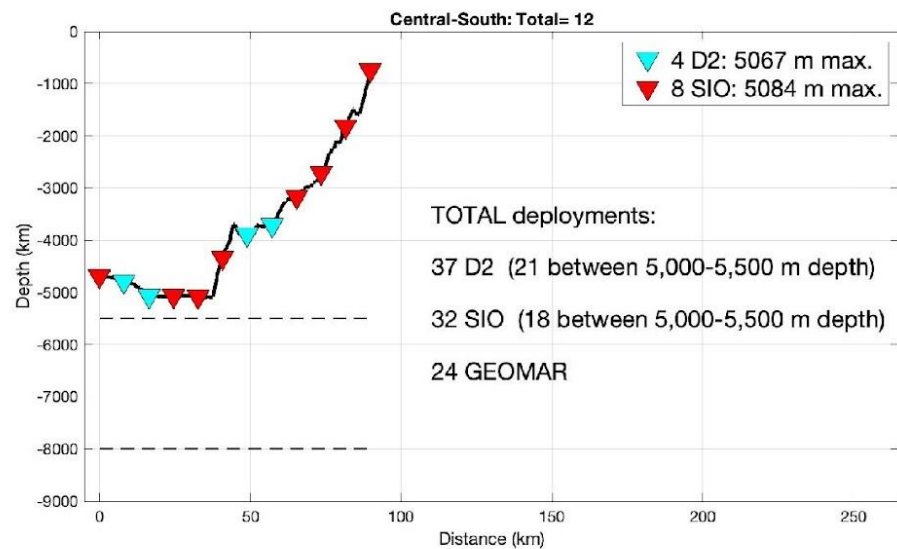
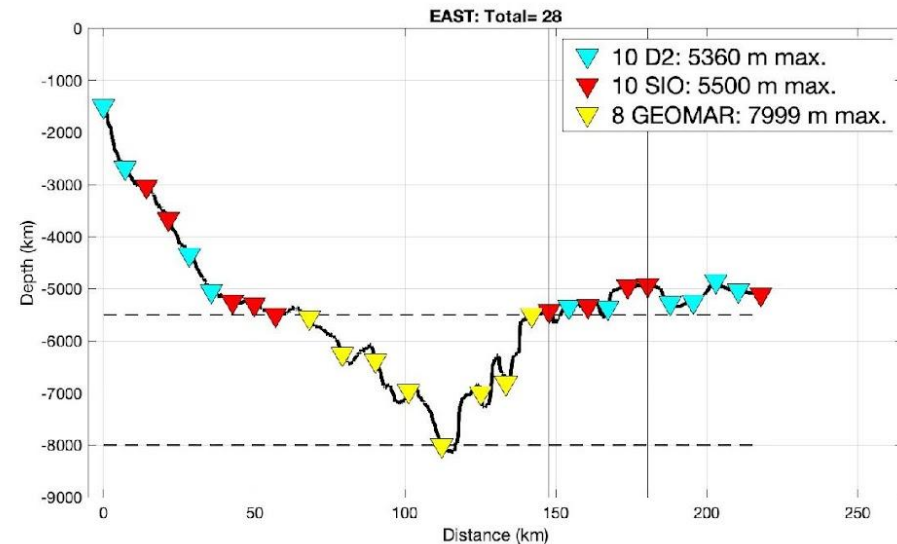
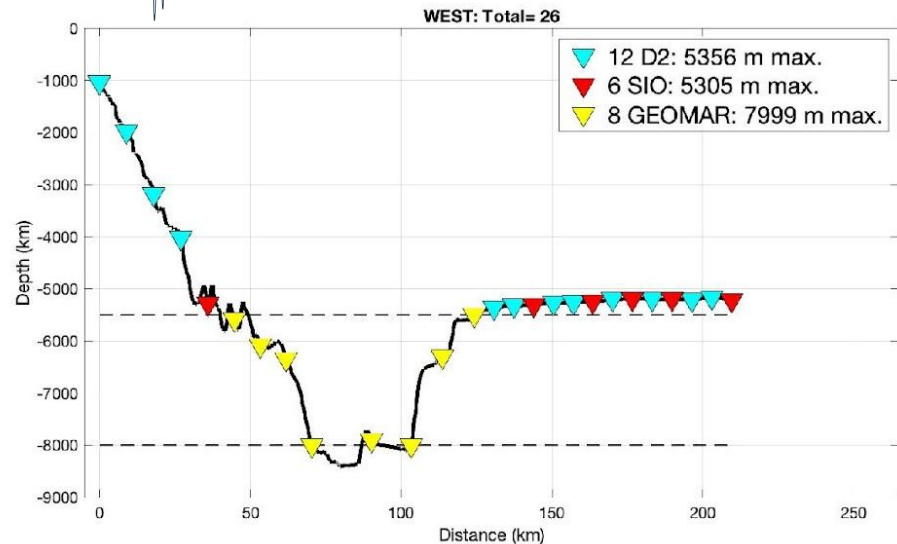
Wei Tonga-Samoa Interaction (Deployment)
11/24/2023 – 12/21/2023

WHOI/SIO; 31 SPOBS; 69 drops
R/V Langseth; San Juan/San Juan

SIO; 30 BBOBS for 18 months
R/V Thompson; Apia/Apia



Puerto Rico Trench Experiment



GEOMAR Short-Period OBS: Deployable to 8,000+ m





Data Submissions

- OHANA (*G. Laske*); Network Code: 8Q: 2021-2023
 - Cayman Rise (*R. Parnell-Turner*); Network Code: 9R: 2022-2023
 - NESMA (*M. Ballard*); Network Code: 3A: 2023
-
- Axial Seamount (*Wilcock*) and Blake Plateau (*Van Avendonk*) data sets are under review by Navy



OBSIC Formal Instrumentation Requests (01/01/2023–12/05/2023)

# of short-period OBS requested	Total # of OBS deployments requested	Experiment Location
52	52	Western North Atlantic
52	52	Western North Atlantic

Requests for *short-period OBS* to support active-source experiments

# of short-period OBS requested	Data recording duration requested (months)	Experiment Location
20	12	Central North Atlantic

Requests for *short-period OBS* to support active-source shooting and earthquake monitoring experiments

# of broadband OBS requested	Data recording duration requested (months)	Experiment Location
10	10	Indonesia
7	12	Eastern Central Pacific
30	12	Gulf of Mexico
63	12	Eastern North Atlantic
15	12	Mediterranean

Requests for *Broadband OBS*

# of strong-motion OBS requested	Data recording duration requested (months)	Experiment Location
5/5/5/5/5	12/12/12/12/12	Western Central Atlantic

Requests for *Strong-Motion OBS*



Current OBSIC Fleet

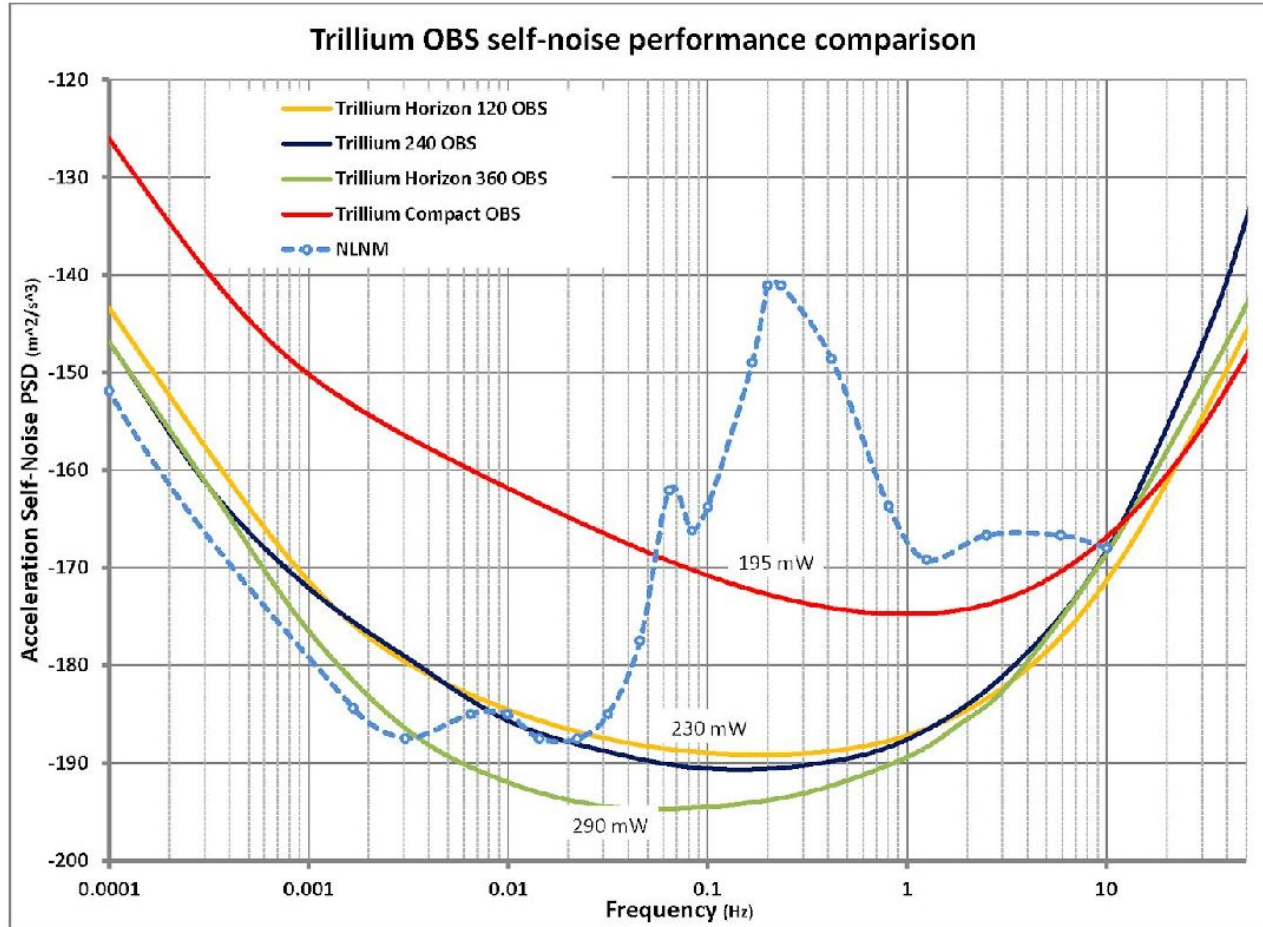
- 25 SPOBS
- 81 BBOBS
- 10 RROBS
- 35 MSRI-funded BBOBS coming

SIO OBS Fleet

- 30 BBOBS
- 50+ SPOBS

OBS Type	Count
Short-Period OBS (WHOI "D2"): 4.5 Hz geophone; hydrophone; Quanterra Q330 data logger; Seascan clock	25
Broadband OBS (Glass-Ball Floatation): Nanometrics Trillium Compact seismometer in WHOI leveling system; Differential Pressure Gauge; Quanterra Q330 data logger; Seascan clock	28
Broadband OBS (Glass-Ball Floatation): Nanometrics Trillium Compact seismometer in Nanometrics leveling system; Differential Pressure Gauge; Quanterra Q330 data logger; Seascan clock	5
Broadband ARRA OBS (Syntactic Foam Floatation): Nanometrics Trillium Compact seismometer in Nanometrics leveling system; DPG; Quanterra Q330 data logger; Microsemi CSAC	15
Broadband ARRA OBS (Syntactic Foam Floatation): Nanometrics Trillium Compact seismometer in Nanometrics leveling system; DPG; Quanterra Q8 data logger; power-cycled Teledyne CSAC	2
Shielded Broadband Abalone OBS with Nanometrics Trillium Compact in Nanometrics leveling system, DPG; Nanometrics Pegasus OBS data logger; Seascan clock	15
Broadband Angler OBS (Syntactic Foam Floatation): Nanometrics T-240 seismometer in WHOI leveling system; DPG; Q8 data; logger; power-cycled CSAC; power-cycled Teledyne CSAC	10
Broadband Angler OBS (Syntactic Foam Floatation): Nanometrics T-120 Horizon seismometer in WHOI leveling system; DPG; Q8 data; logger; power-cycled CSAC; power-cycled Teledyne CSAC	6
Rapid Response OBS (Sercel MicrObs): MEMS accelerometer and hydrophone, rechargeable battery; Glass-ball housing. Under evaluation.	10

New Trillium 120 OBS Seismometer



T-120 OBS

Clip Level: 16.6 mm/s (< 10 Hz); 0.12 g (>10 Hz)

Power: 250 mW

Trillium Compact

Clip Level: 26 mm/s (< 10 Hz); 0.17 g (>10 Hz)

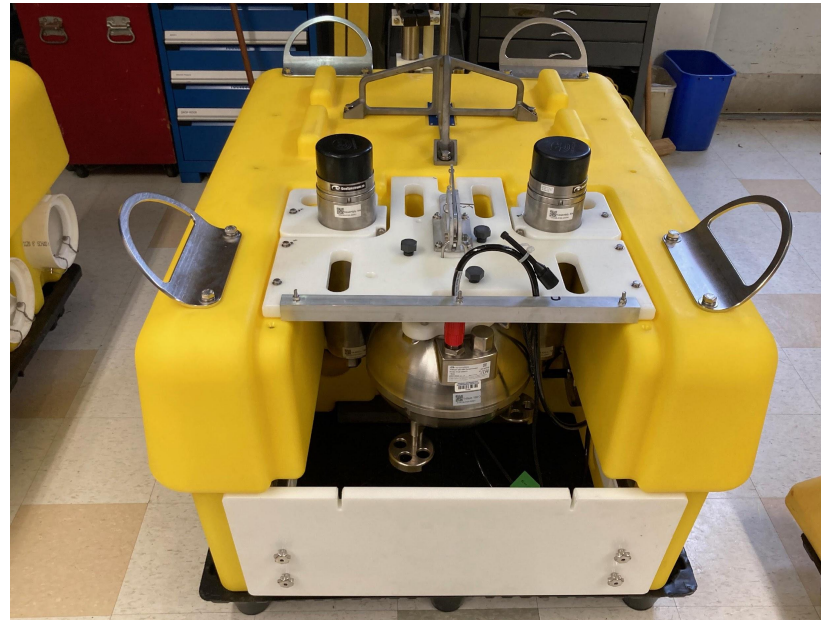
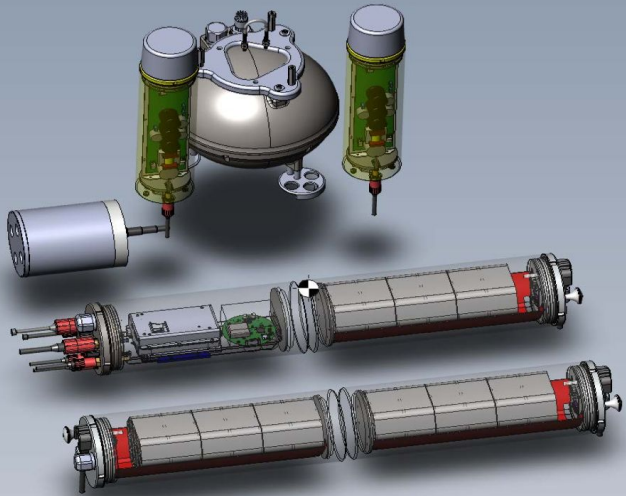
Power: 195 mW

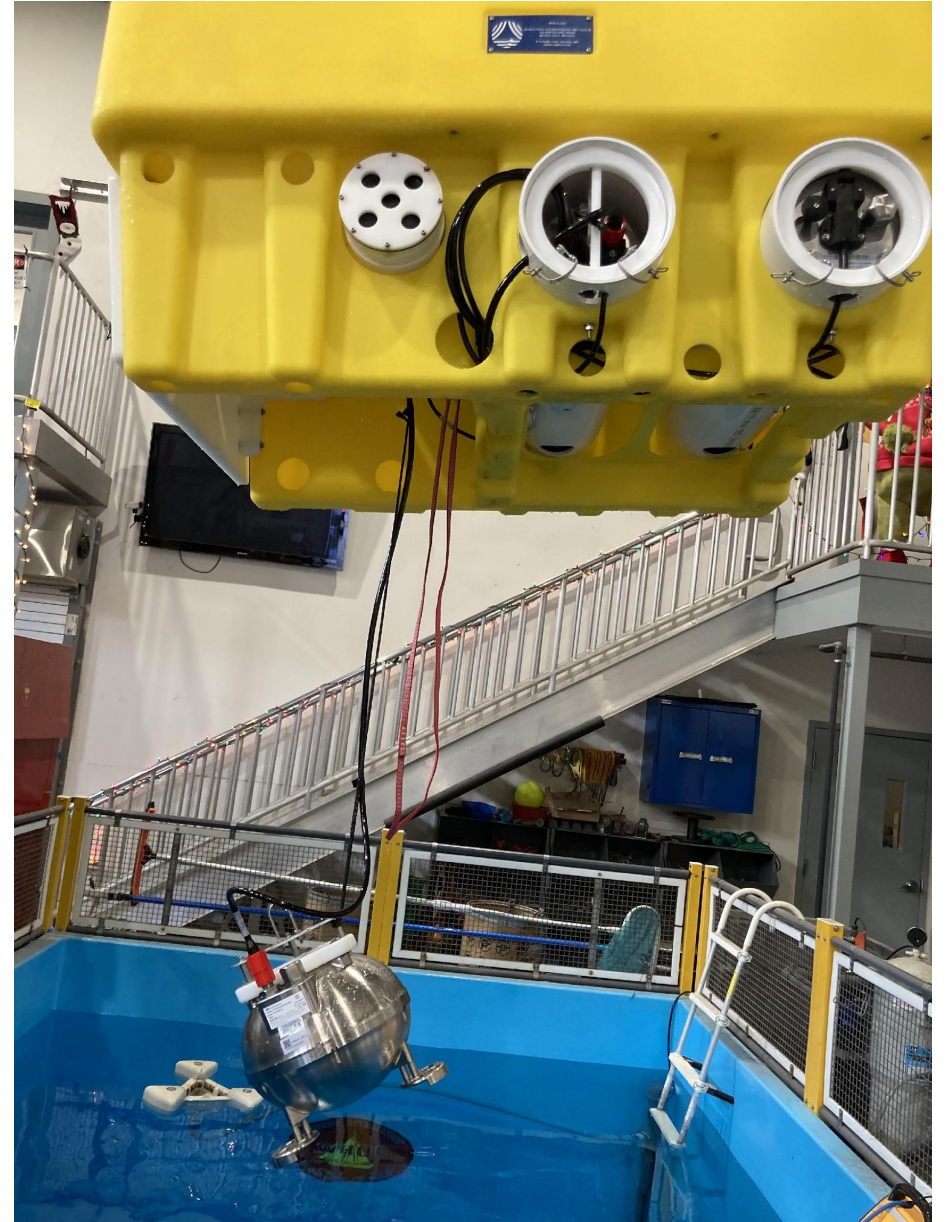
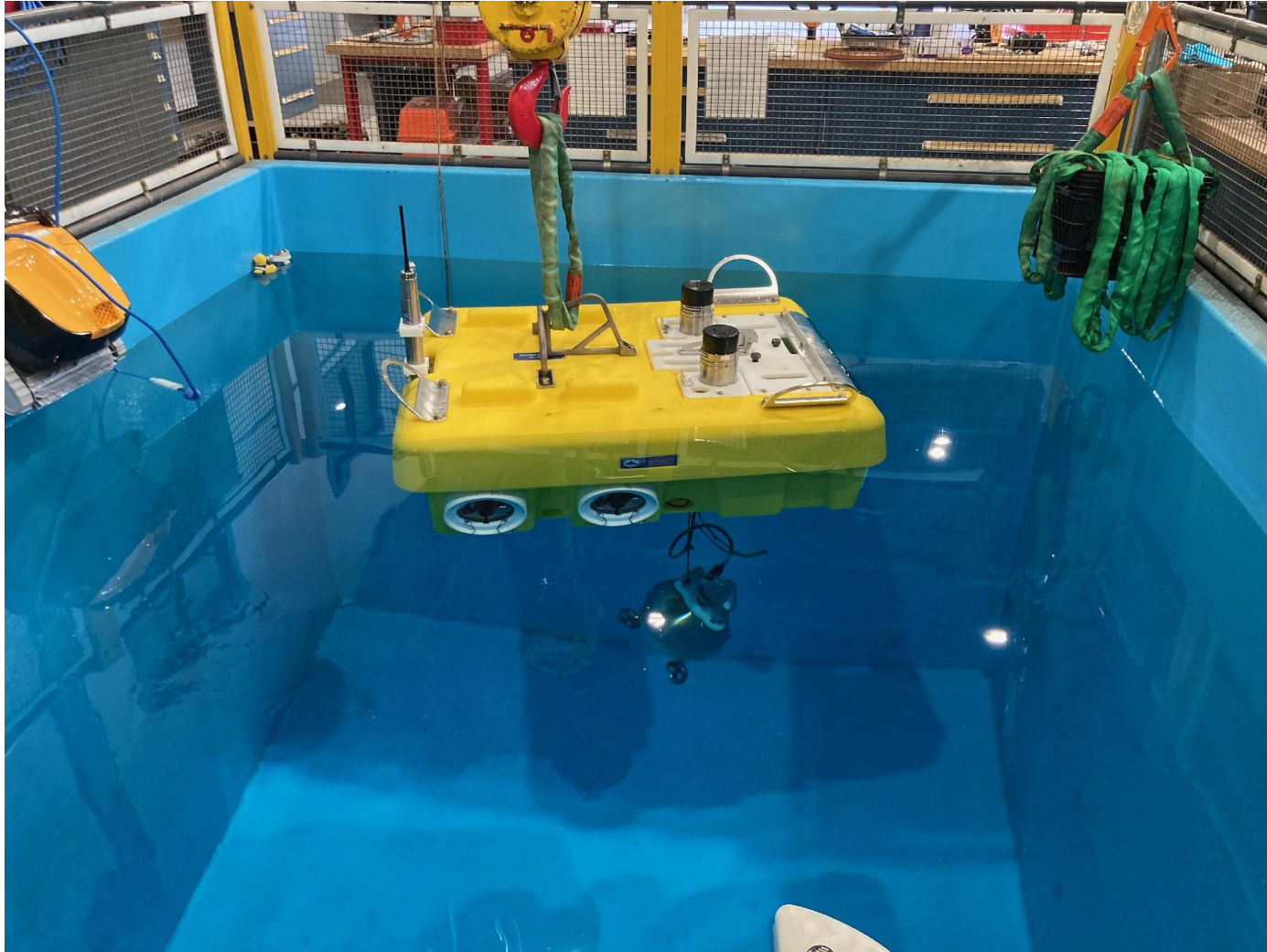




2021 MSRI Award to Build 35 Wideband/Broadband OBS

- Now have two prototype OBS in-house. Will deploy both systems in January along with reference systems.
- Now have 35 Nanometrics Pegasus OBS data-loggers and 20 Nanometrics Trillium Compact OBS in house. Expecting delivery of 15 Trillium T-120 OBS shortly.
- After the sea trial, the remaining production-run quantities (housings, frames) will be ordered with expected delivery anywhere from 10-24 weeks depending on industry conditions for items such as the Titanium pressure housings.







Active-Source OBS Recapitalization

2023 NSF Program Solicitation: Mid-Scale Research Infrastructure-1

Pre-Proposal Due Date: January 05, 2023

Mid-Scale RI-1 (M1:DP): Design and Construction of an Active-Source OBS Node Fleet for the U.S. Academic Community

100 SPOBS; At-Sea Infrastructure

Full Proposal Due Date: May 05, 2023

Research Infrastructure: Mid-Scale RI-1 (M1:DP): Design and Construction of an Active-Source OBS Node Fleet for the U.S. Academic Community

Requested Amount: \$9,283,807

120 SPOBS; Prototype Phase; Fleet Management System; Better-Defined At-Sea Infrastructure

DECLINED; October 26, 2023

OBSIC Data Metrics



OBSIC

OBSIC Metrics

Experiment Name	Network ID	Year	Status	Good hours, %
Cayman Rise	9R	2023	restricted	92
NESMA	3A	2023	restricted	63
Guerrero Gap	X4	2022	restricted	95
OHANA	8Q	2021	restricted	88
Queen Charlotte Fault	YI	2021	restricted	82
CASIE21 (Cascadia)	YR	2021	open	86
Andreanof Islands	YM	2020	open	100
Gofar Transform Fault	8A	2019	restricted	89
Pacific Array (Old ORCA)	7B	2019	open	80
Bransfield Strait	ZX	2019	open	81
Pacific Array (Young ORCA)	XE	2018	open	56
AACSE	XO	2018	open	74
Hawaii-Emperor Seamounts	ZU	2019	open	97
New England Seamounts	7K	2018	open	96
Hawaii RAPID Response	Z6	2018	open	90
Yellowstone Lake	YL	2017	open	84

OBSIC Data Metrics, ctd.

[OBSIC Home](#) [OBSIC Metrics](#)

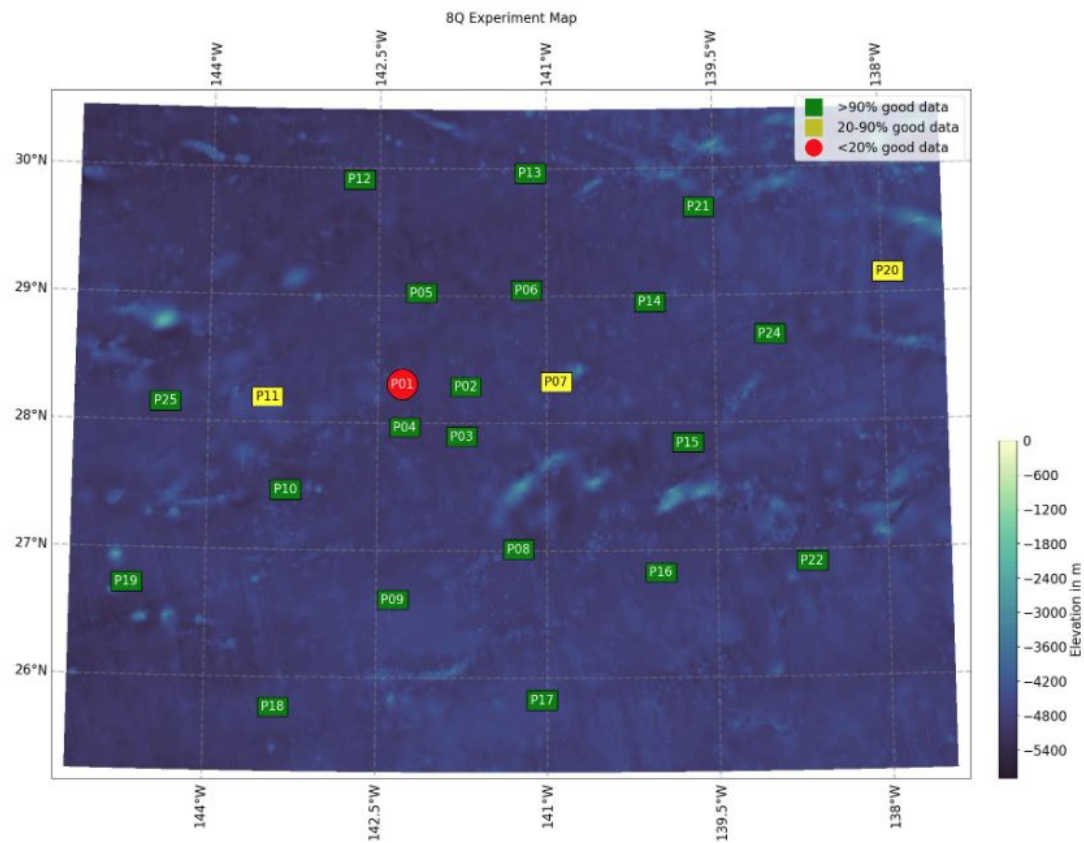
Experiment: OHANA

Network Code: 8Q ([IRIS MDA page](#))

Earliest Start: 2021-11-09

Latest End: 2023-02-07

Performance: 88% good data



OBSIC Data Metrics, ctd.

Experiment: OHANA

Station	Instrument Type	Elevation	Deployed	Recovered	Orientation	Error	Clock drift	% Good Hours
P01	SIO_LP	-4918	2021-11-12	2023-01-30	--	--	N/C	14
P02	SIO_LP	-4820	2021-11-20	2023-02-02	180	0	0.43	98
P03	SIO_LP	-4993	2021-11-20	2023-01-31	185	0	1.10	99
P04	SIO_LP	-4996	2021-11-13	2023-01-30	186	0	0.44	99
P05	SIO_LP	-5053	2021-11-21	2023-02-03	176	0	-0.09	99
P06	SIO_LP	-4974	2021-11-22	2023-02-02	275	0	0.44	99
P07	SIO_LP	-4890	2021-11-22	2023-02-01	--	--	1.09	24
P08	SIO_LP	-4894	2021-11-20	2023-01-31	140	0	2.25	99
P09	SIO_LP	-4706	2021-11-20	2023-01-27	9	0	-0.12	99
P10	SIO_LP	-4936	2021-11-12	2023-01-27	257	0	1.19	99
P11	SIO_LP	-4998	2021-11-10	2023-01-29	216	1	-0.06	73
P12	SIO_LP	-4995	2021-11-21	2023-02-03	288	1	-2.63	99
P13	SIO_LP	-4934	2021-11-21	2023-02-04	340	0	-3.41	99
P14	SIO_LP	-4868	2021-11-22	2023-02-05	148	1	0.20	98
P15	SIO_LP	-4942	2021-11-22	2023-02-05	29	0	1.75	99
P16	SIO_LP	-4793	2021-11-25	2023-01-26	250	0	3.72	99
P17	SIO_LP	-1754	2021-11-25	2023-01-26	71	0	0.52	98
P18	SIO_LP	-4876	2021-11-19	2023-01-28	101	0	1.34	99
P19	SIO_LP	-4961	2021-11-09	2023-01-28	100	1	2.65	99
P20	SIO_LP	-4691	2021-11-23	2023-02-07	--	--	1.99	24
P21	SIO_LP	-1	2021-11-23	2023-02-04	191	0	1.23	99
P22	SIO_LP	-4869	2021-11-24	2023-01-25	208	0	1.82	99
P24	SIO_LP	-4814	2021-11-23	2023-02-06	248	0	0.08	99
P25	SIO_LP	-5031	2021-11-11	2023-01-29	158	0	0.74	99

OBSIC Data Metrics, ctd.

OBSIC OBSIC Metrics 8Q Metrics

Experiment: OHANA

Network Code: 8Q ([IRIS MDA page](#))

Instrument Type: SIO_LP

Station Start: 2021-11-20

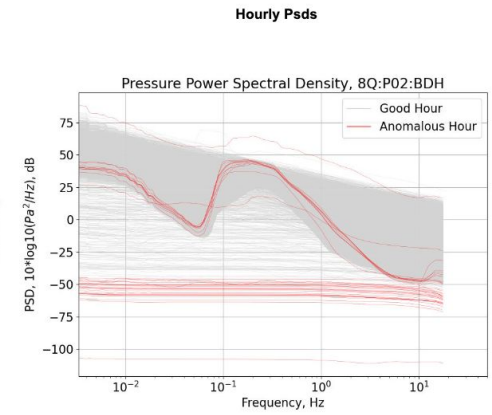
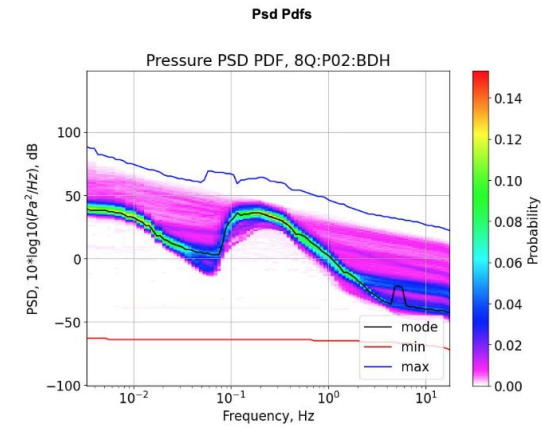
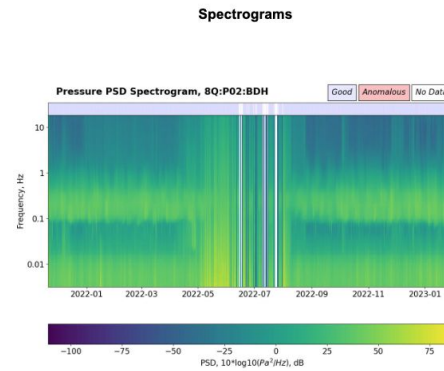
Station End: 2023-02-02

Performance: 98% good data

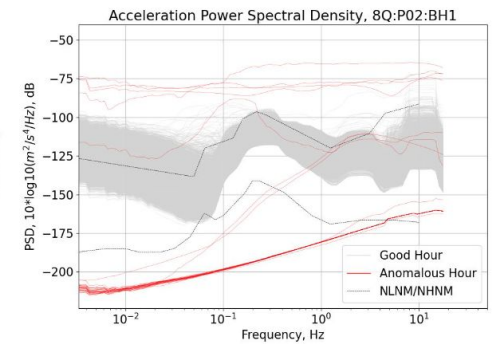
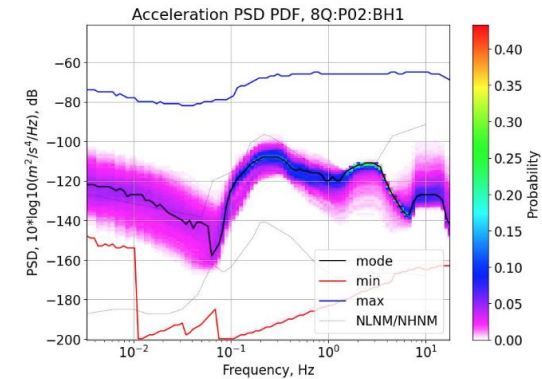
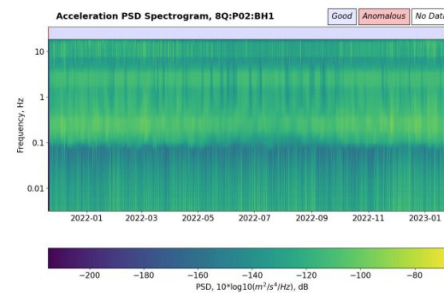
Experiment: OHANA
Station: P02

Channel	Good hours, %
BDH	95
BH1	99
BH2	99
BHZ	98

BDH

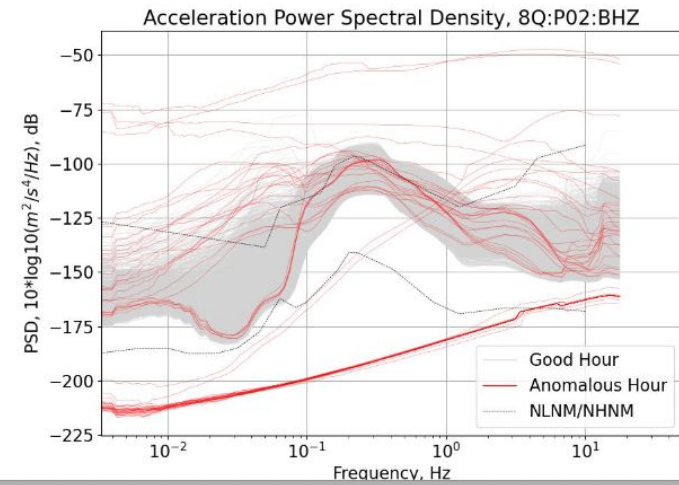
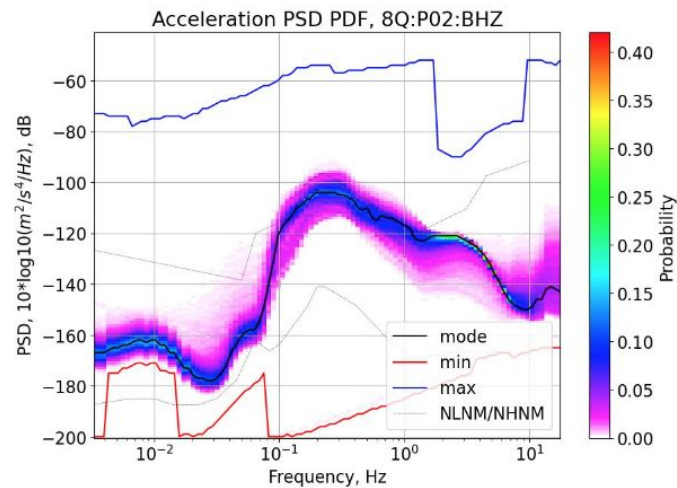
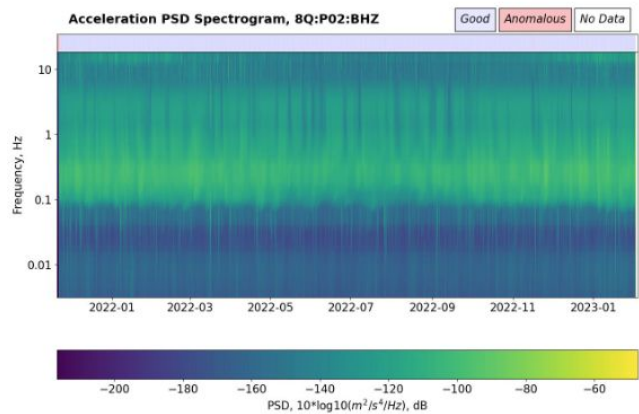
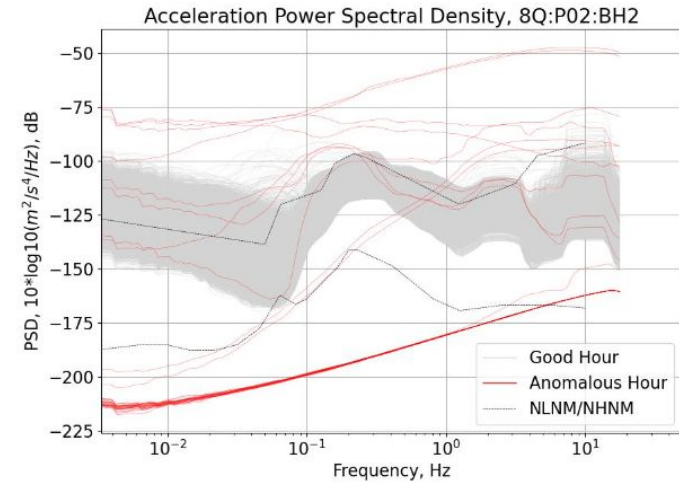
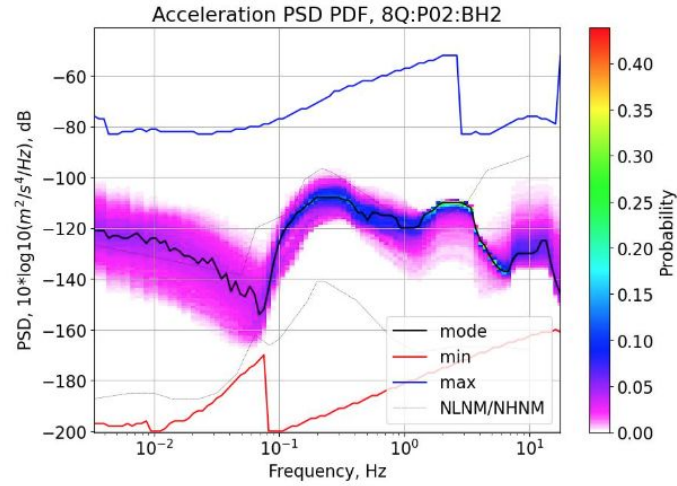
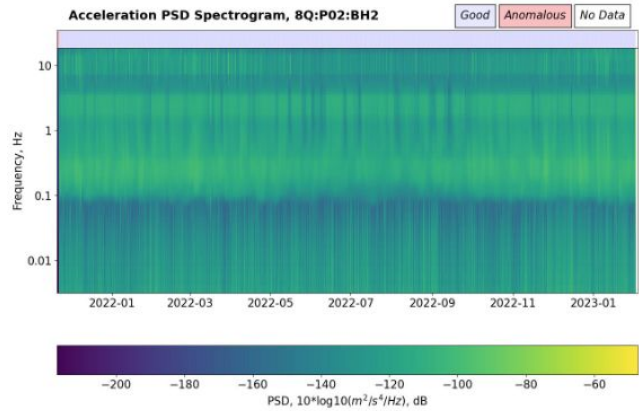


BH1



OBSIC Data Metrics, ctd.

Experiment: OHANA
Station: P02





USGS-Funded Rapid Response Capability

- 10 Sercel MicrObs delivered!
 - 6,000 m capable (but glass-ball housing!)
 - Deployment duration on re-chargeable Li-ion battery: 45 days
 - 4-components: 3-axis MEMS accelerometer and hydrophone
 - Accelerometer self-compensates for tilt
 - Accelerometer low-frequency performance better than a geophone
-
- Rapid-response only. Not to be used for standard experiments.
 - OBS stored in dedicated container, with dedicated clocks, acoustic deck box, computers, etc.
 - Protocol still to established but supported events to be decided by USGS and WHOI.



100% Funded by USGS Coastal and Marine Hazards and Resources Program (Nathan Miller, USGS Woods Hole)



OBSIC Cruises 2024

Miller Skilak Lake, (Kenai Penn., AK)
May 2024 – May 2025

2 WHOI BBOBS

Hooft Galapagos Plume-Ridge Recovery
06/13/2024 – 07/03/2024

R/V Sally Ride; Galapagos/Galapagos

Wilcock Axial Seamount Seismicity Recovery
09/23/2024 – 09/27/2024

R/V Sally Ride; Newport/Newport

Warren Chain Transform (Active/Passive) Deployment
11/16/2024 – 12/31/2024

20 SIO SPOBS for 11 months
R/V Langseth; Cape Verde/Cape Verde



OBSIC Cruises 2025 (To Be Scheduled)

Naif Cocos Plate Deployment
January/February 2025???

27 WHOI BBOBS for 12 months; R/V *Revelle*???

Eilon Galapagos Triple Junction Deployment (Year-1)
February/March 2025???

44 WHOI BBOBS for 15 months; R/V *Revelle*???

Miller Skilak Lake Recovery
May 2025

Wei Tonga-Samoa Interaction Recovery (SIO)
May/June 2025

Warren Chain Transform Recovery (SIO)
July/August 2025

Wiens Matthew Hunter Trench Deployment

20 WHOI BBOBS for 15 months

Abers Northwest New Zealand

20 WHOI BBOBS for 15 months

