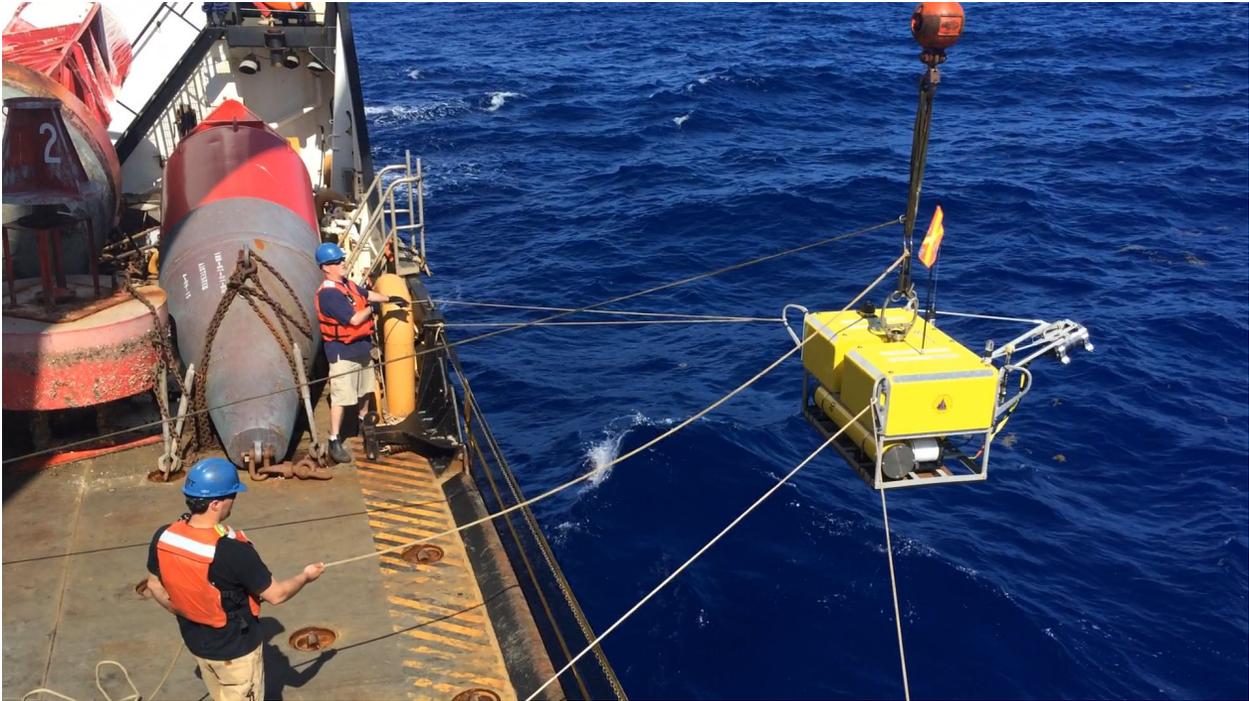
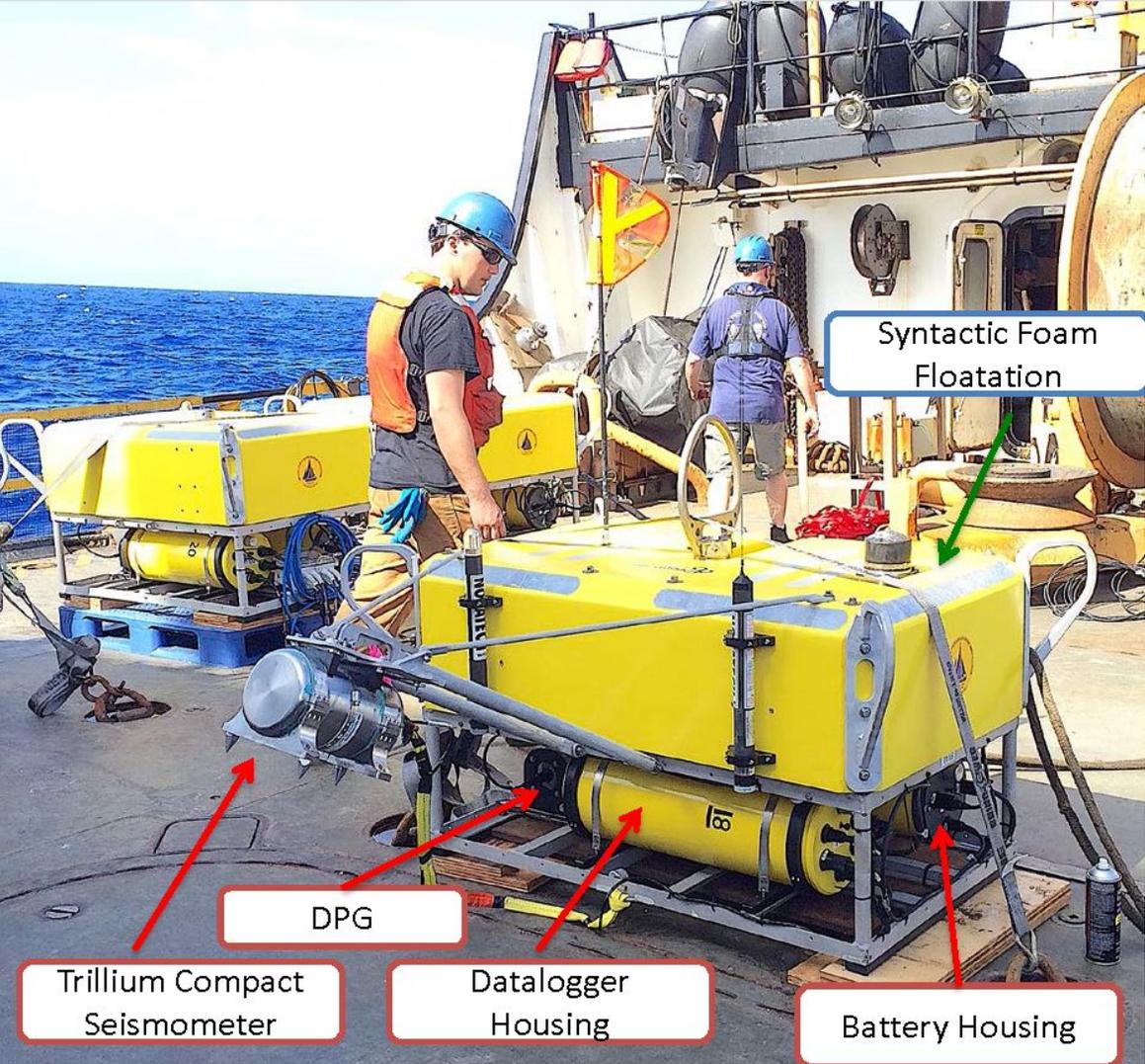
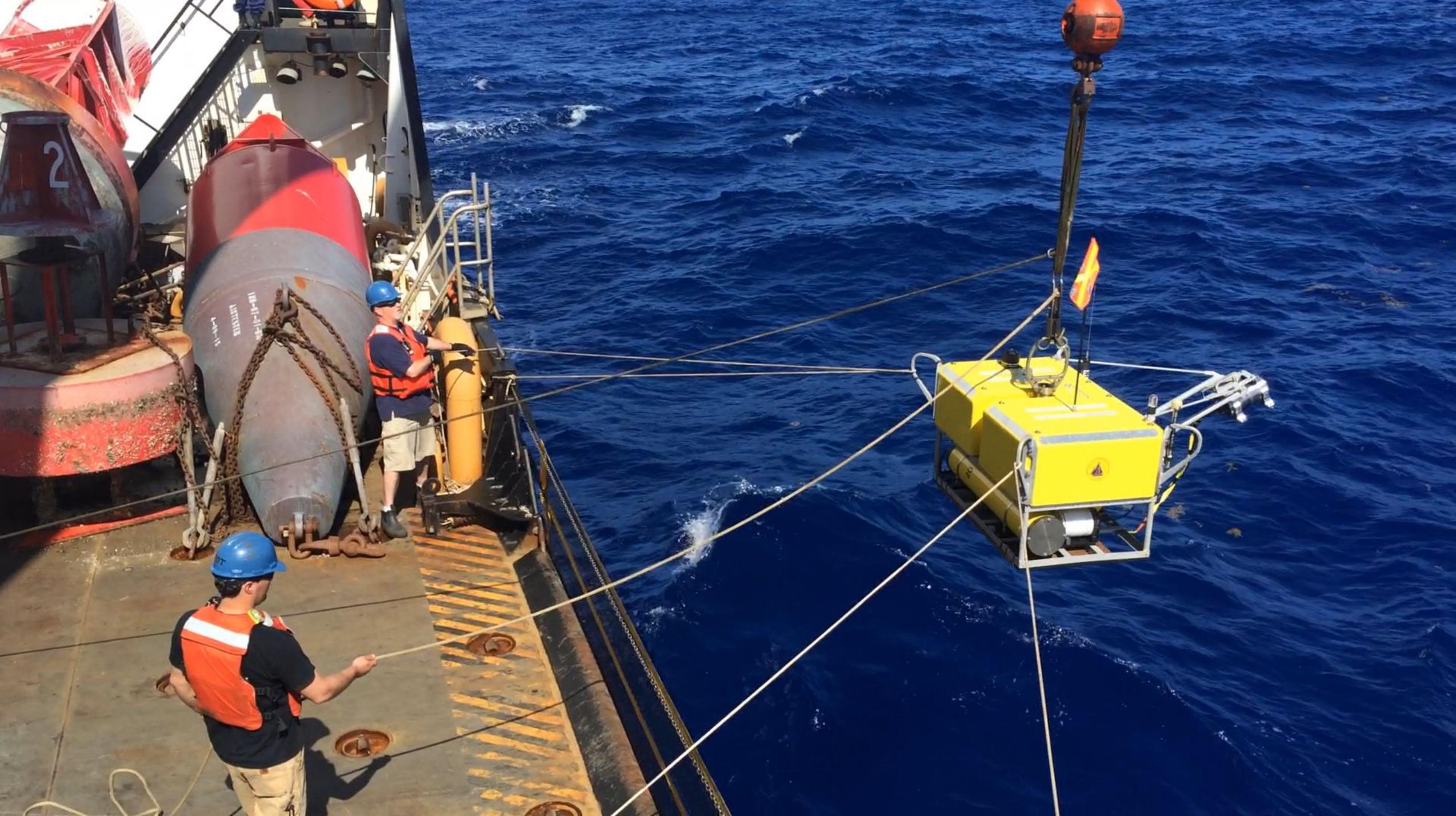


## Ocean Bottom Seismometer Instrument Center (OBSIC)

- Funded by NSF-OCE Marine Geology and Geophysics
- Provides and operates seismic instruments to support research on the structure and tectonics of the ocean basins, their margins, and the dynamics and structure of the Earth's interior.
- Makes ocean bottom seismographs (OBS) available to NSF-sponsored investigators, and to investigators at other research or educational institutions with government, private, or industry funding.
- Housed at Woods Hole Oceanographic Institution (WHOI) under a 5-year cooperative agreement that commenced in 2018.
- OBSIC replaces the Ocean Bottom Seismograph Instrument Pool (OBSIP) that was created by NSF in 1999 and jointly operated and managed by WHOI, SIO, and LDEO until 2011, and thereafter operated by these three institutions but managed by the Incorporated Research Institutions for Seismology (IRIS).

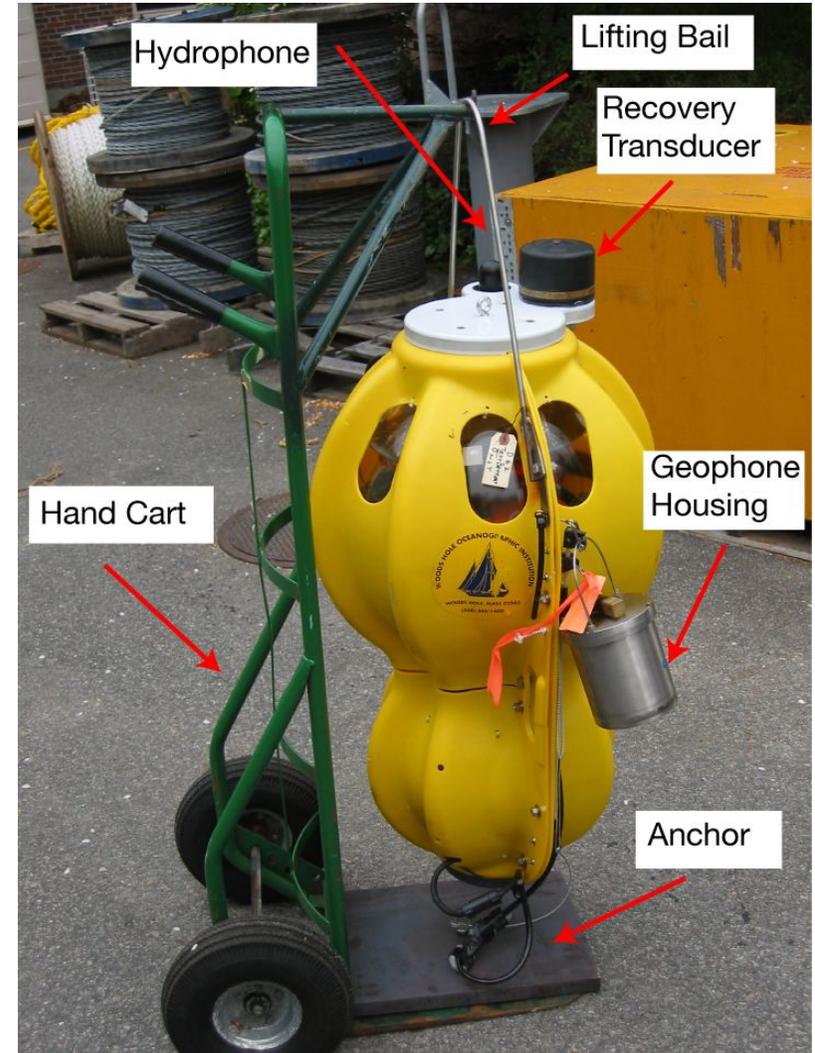
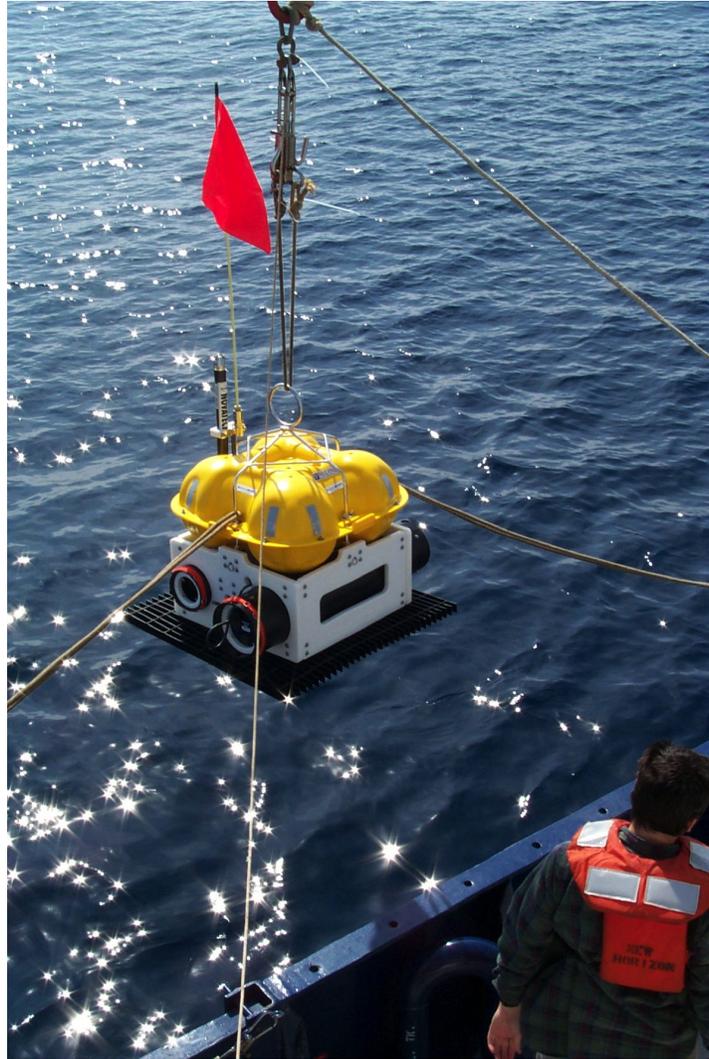
# Broadband OBS



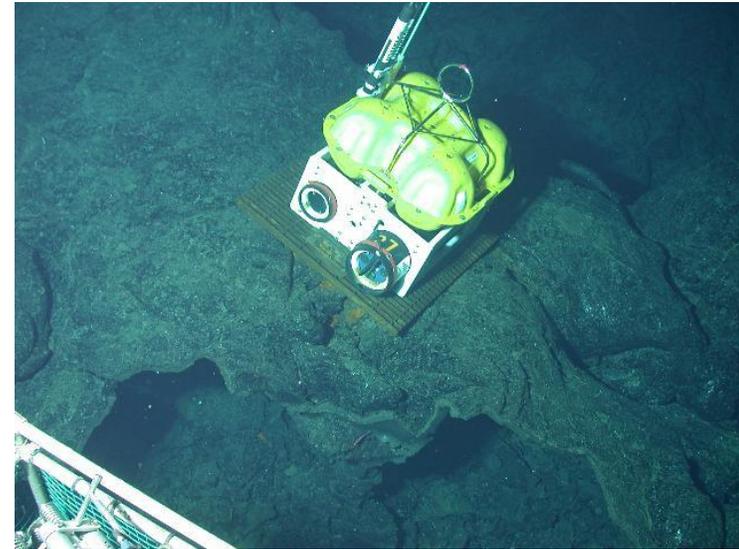
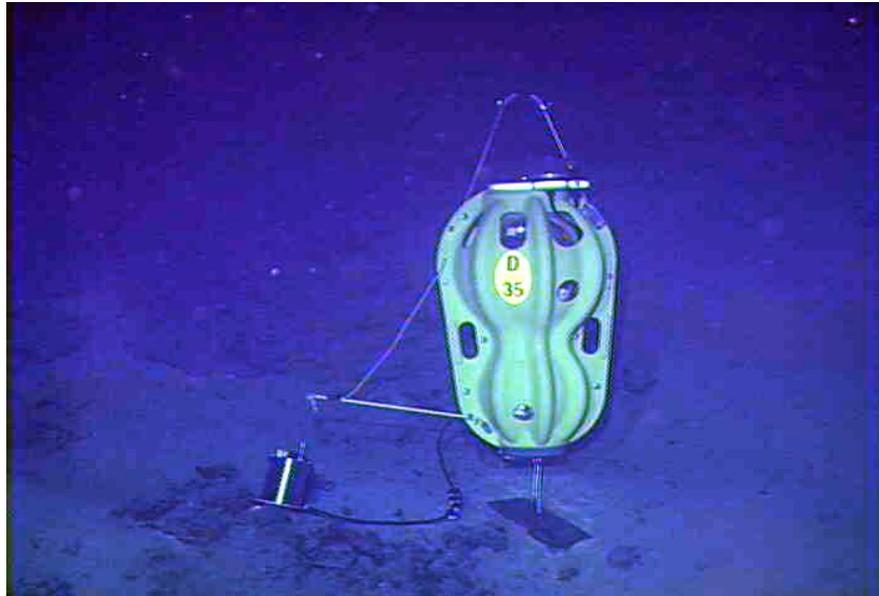
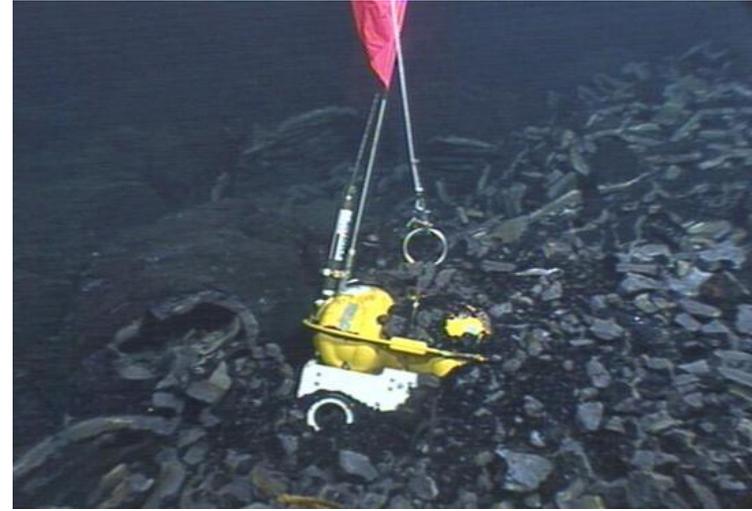




## Active-Source OBS



- ~90 short-period OBS in OBSIP fleet, 30 at WHOI and >65 at SIO-IGPP



## OBSIC Personnel



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**Kevin Nikolaus**

*OBSIC Engineer*

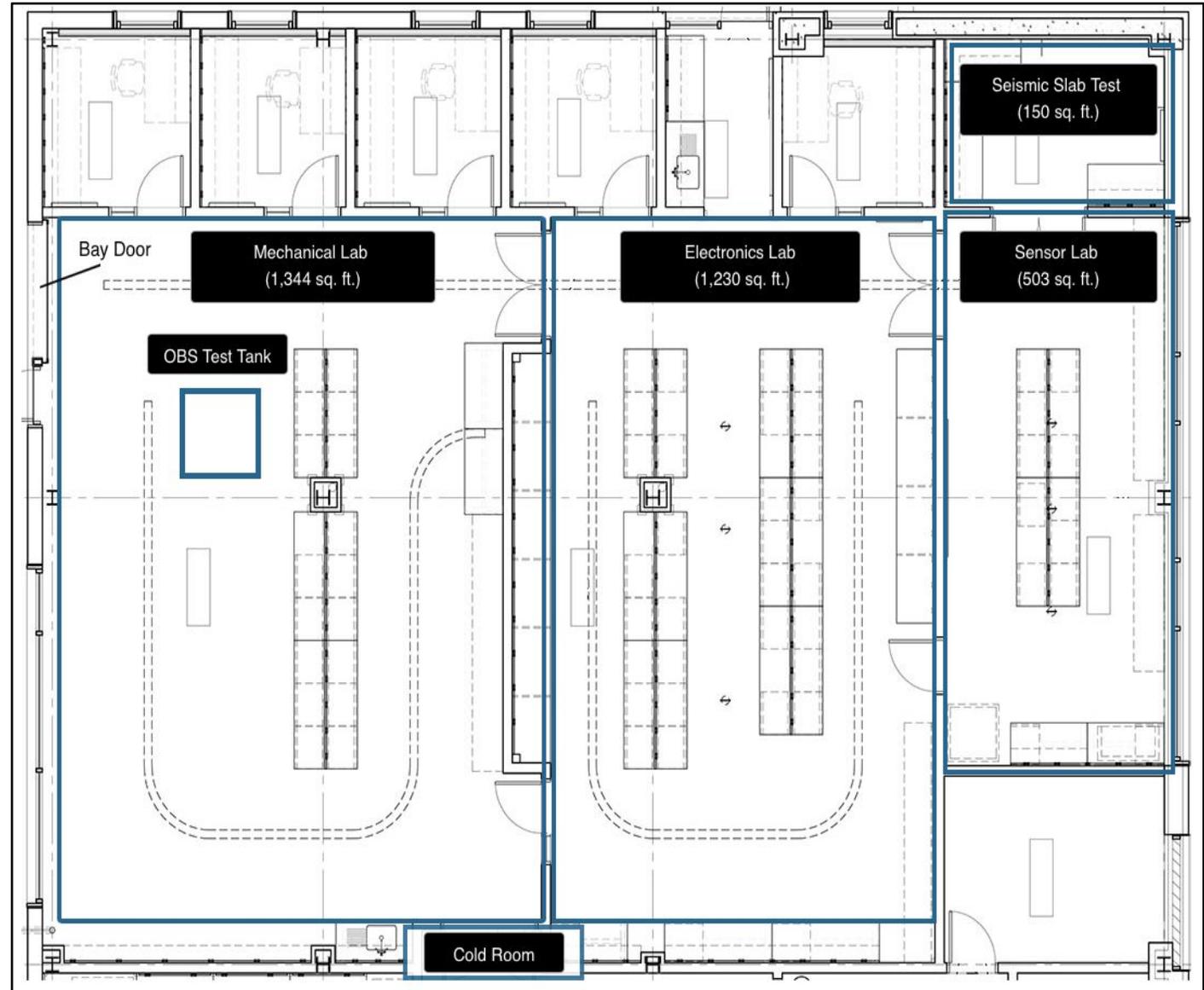
[knikolaus@whoi.edu](mailto:knikolaus@whoi.edu)

# WHOI OBS Lab



# OBISC Space

- 3,712 square feet in new (2011) LOSOS (Laboratory for Ocean Sensors and Observing Systems) building on the WHOI Quissett campus.
- Custom designed for the OBS group.
- Large enough to readily accommodate a 50% increase in the 90 OBS currently operated.
- mechanical lab (1,344 sq. ft.)
- electronics lab (1,230 sq. ft.)
- sensors lab. (503 sq. ft.)
- seismometer test slab room (150 sq. ft.)
- 5 offices totaling 485 sq. ft.





## Current Instrumentation Inventory

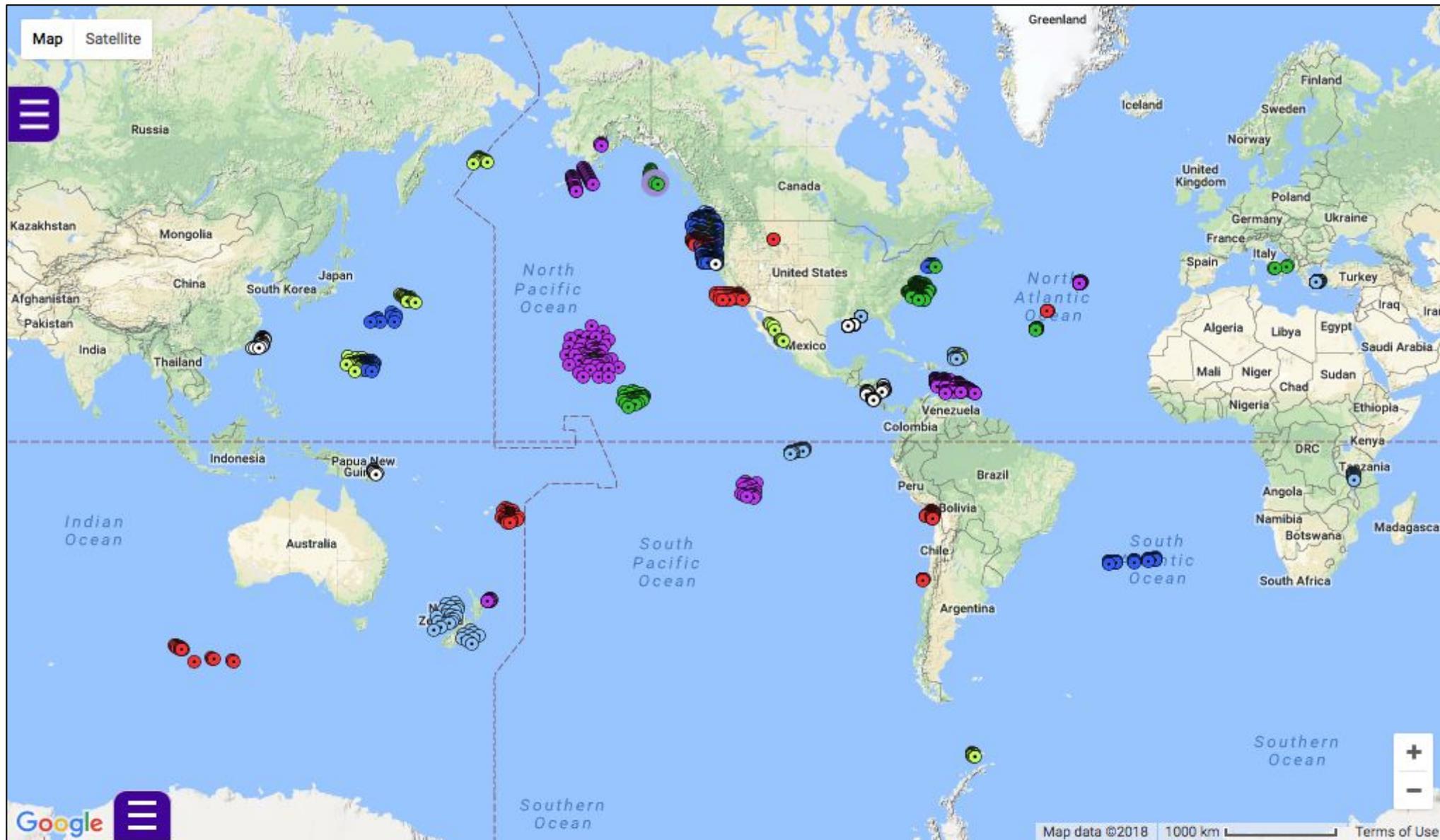
OBS Type	OBSIC Fleet
Short-Period OBS	28
Unshielded Broadband OBS with Guralp CMG-3T and DPG	30
Unshielded Broadband OBS with Guralp CMG-3T, Kinometrics Episensor Strong-Motion Accelerometer and DPG	10
Unshielded Broadband OBS with Nanometrics Trillium Compact and DPG*	20
Unshielded Broadband OBS with Nanometrics Trillium Compact and APG**	8
Shielded Broadband OBS with Nanometrics Trillium Compact and DPG***	15
Shielded Broadband OBS with Nanometrics Trillium Compact and APG*	19

*\*WHOI ARRA; \*\*designed & formerly operated by LDEO; \*\*\* designed & formerly operated by SIO*

**OBSIC: 102 Broadband OBS (5+ variants); 28 short-period OBS (1 variant)**

**Other: 41 SIO broadbands (34 x T-240; 7 x T-40); 16 LDEO broadbands; 72 SIO short-period (63 x conventional, 2 x flips, 7 x LPSPs)**

# All OBSIP Stations 2001-01-01 to 2018-12-31



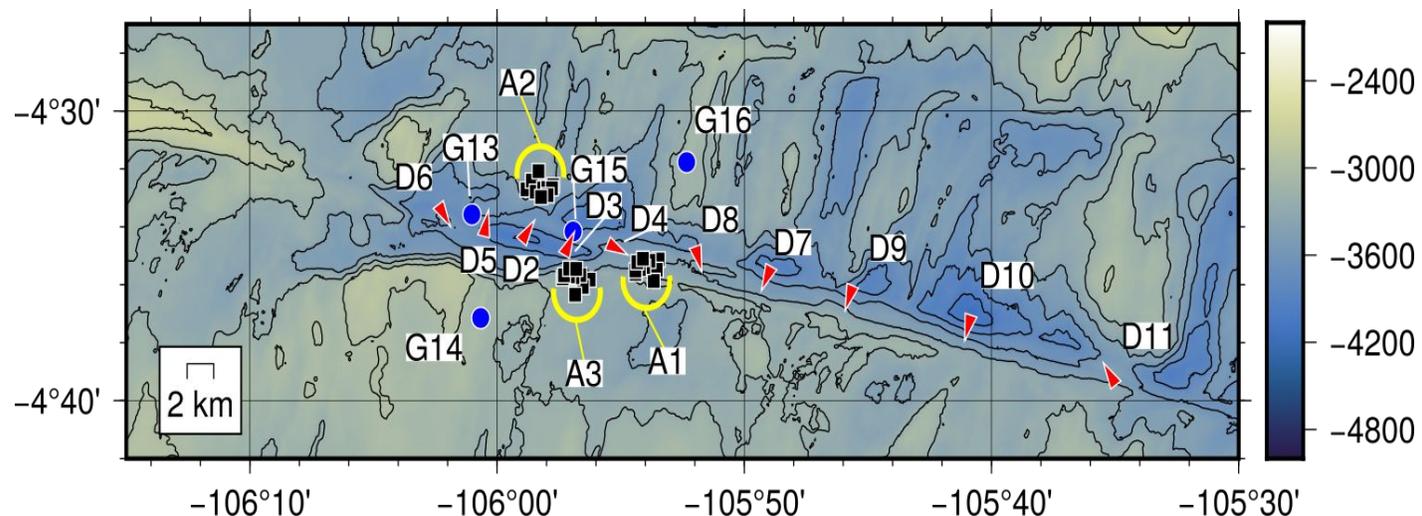
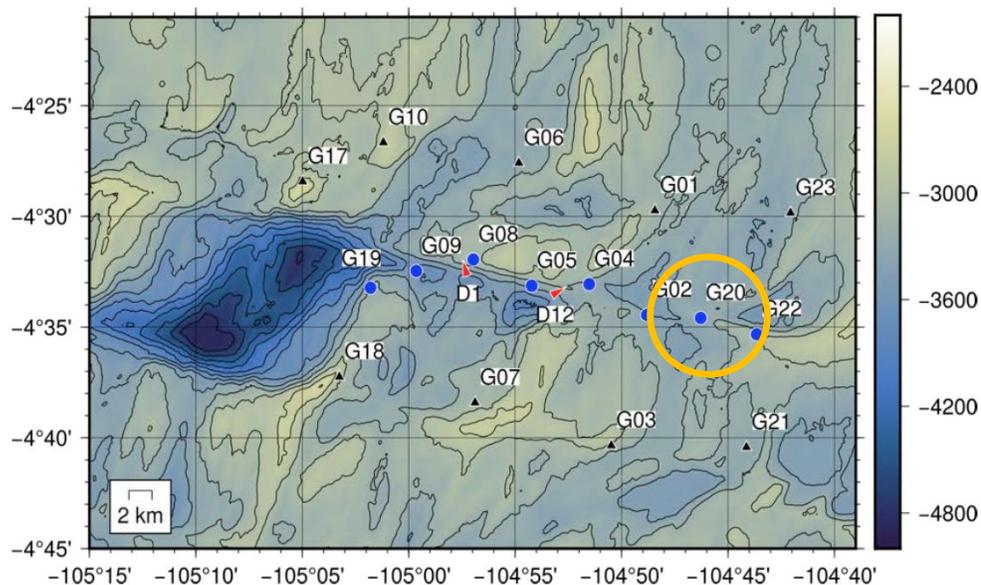
All 1982 Stations with SEED data at the IRIS Data Management Center. Total On-Bottom Time = 868 years



# At-Sea Operations Since October 2019

**Boettcher Gofar Year 1 Deployment:** 13 BBOBS; 10 SMOBS; 21 SIO SPOBS; 7 SIO Abalone  
11/16/2019 – 12/13/2019; R/V Atlantis, San Diego to Manzanillo, Mexico  
WHOI and SIO team plus Patrick A'Hearn from UNOLS TechPool

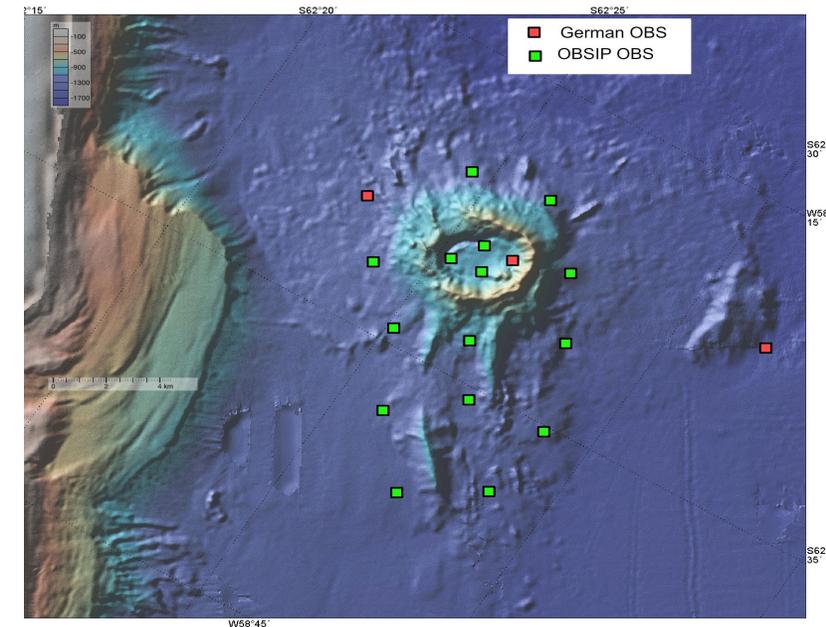
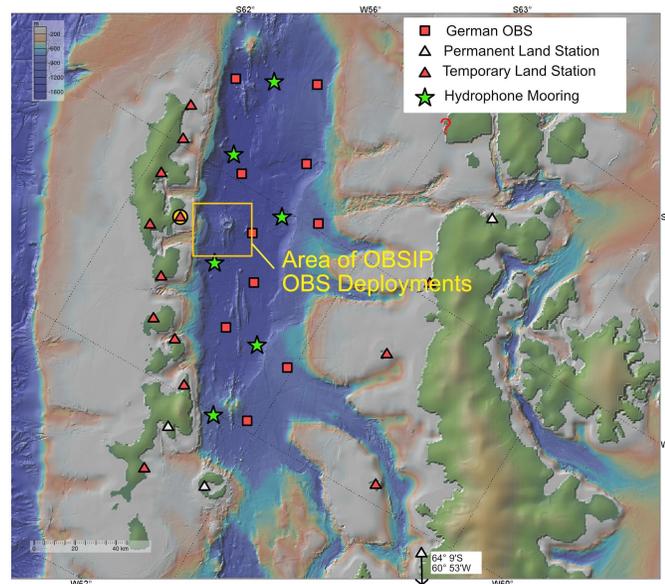
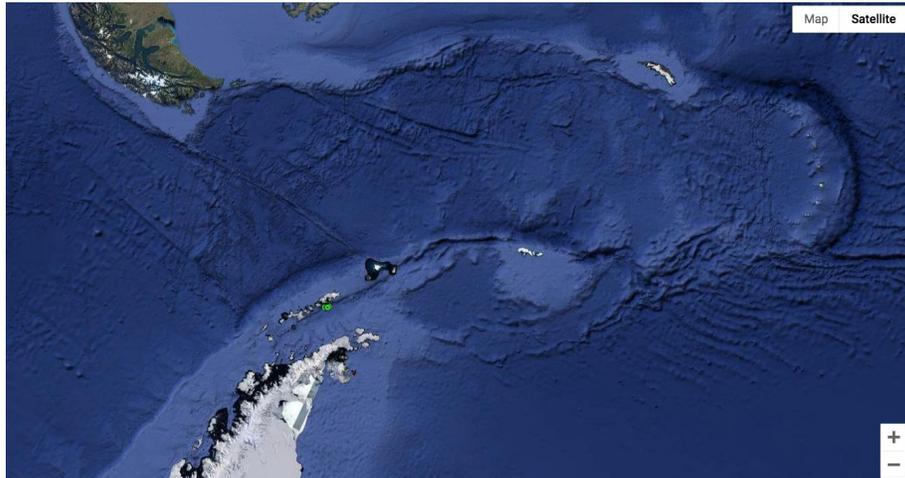
- 30 wire-dropped OBS in 3 arrays of 10 (~3.5 hrs per op.) to measure earthquake-related changes in Vs.
- Wire-dropped OBS included SIO SPOBS, Abalone, and WHOI ARRA
- Each mini-array had an aperture of ~1 km. Drop X-Y precision ~20 m
- SIO SPOBS modified to have geophone deployed external to main package
- March 22, 2020, Mw 6.1 Earthquake on Gofar G1 segment



# At-Sea Operations Since October 2020, ctd

*Wilcock* Bransfield Strait Active/Passive Experiment Recovery Cruise: 15 WHOI SPOBS for 1+ year.  
02/08/2020 – 02/27/2020; B/O Hespérides: Ushuaia/KGI

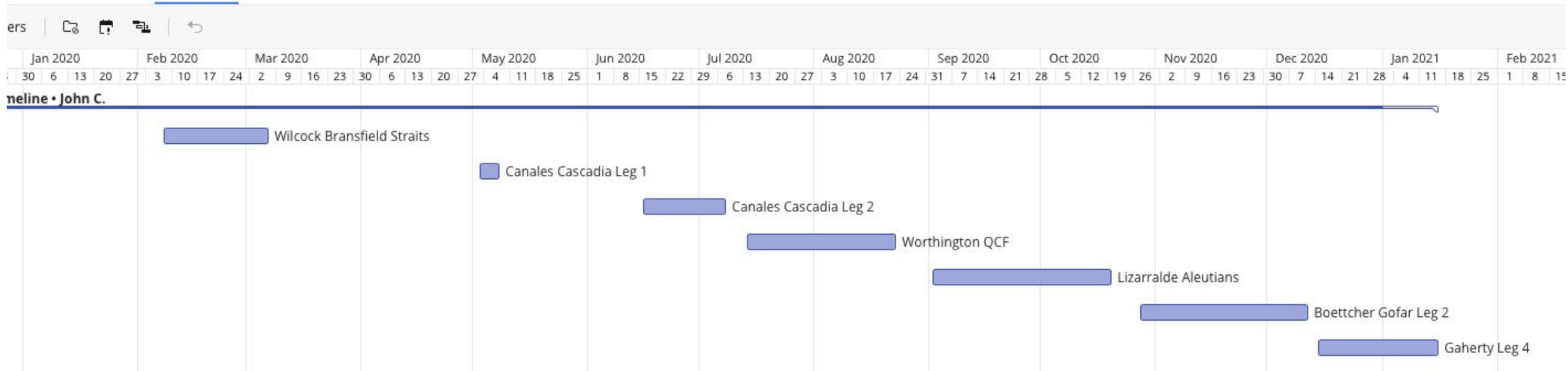
- 100 Hz on all Z,N,E, and H, as well as 200 Hz on Z.
- One OBS not recovered.
- All data at DMC



## Requesting OBS Instrumentation from OBSIC

- For NSF-funded projects, all OBS costs are supported through a cooperative agreement between NSF-OCE and OBSIC.
- OBS costs for experiments supported by the Marine Geology and Geophysics (MGG) Program within the Ocean Sciences Division are not included in the PI's proposed budget, but do come out of the MGG science budget and thus, ***an Informational Budget*** that summarizes the anticipated costs of supporting the experiment, both ashore and at sea, ***must be included in the proposal.***
- For experiments seeking support from MGG, the required procedure for requesting and using OBSIC instrumentation is available at;  
<https://obsic.who.edu/policies-and-procedures/>
- PIs submitting to NSF programs other than MGG should contact a program officer in MGG for information on how to include OBSIC costs in their proposal.

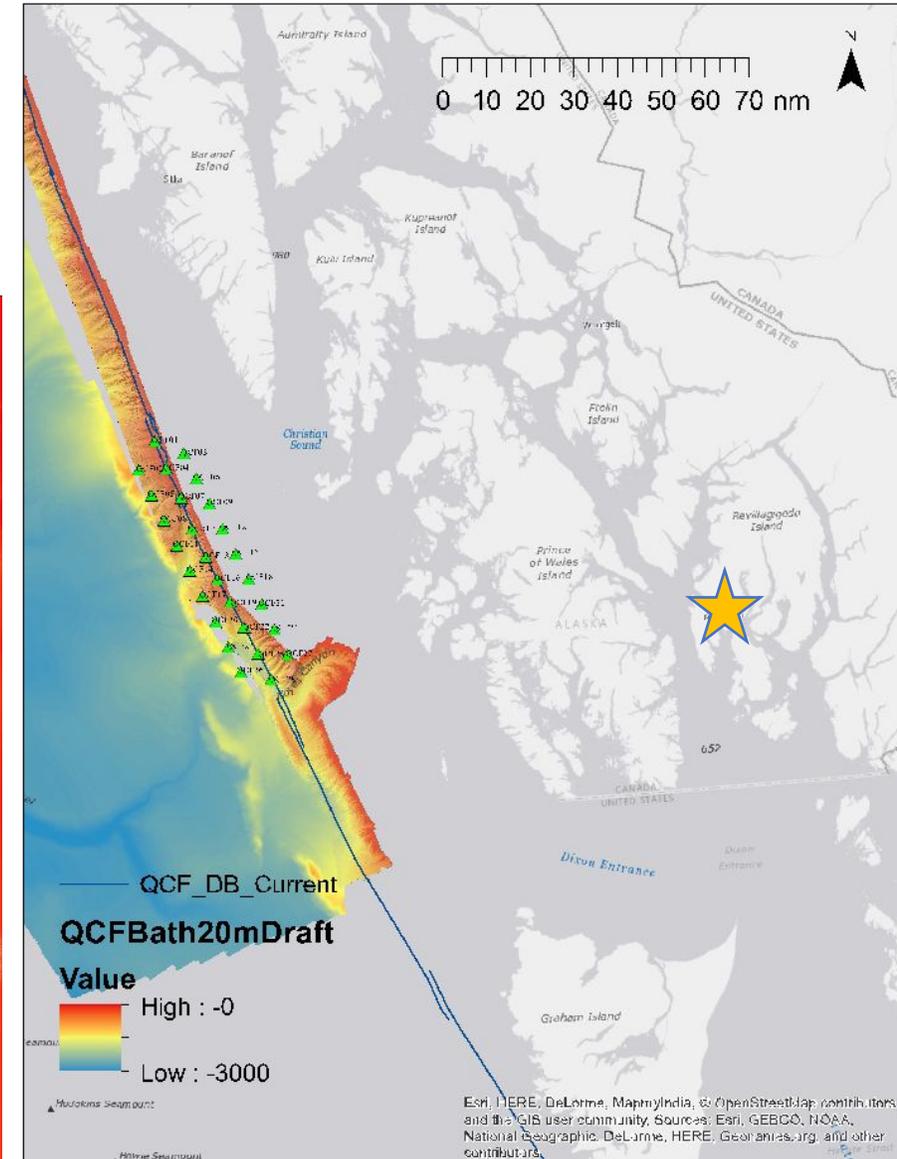
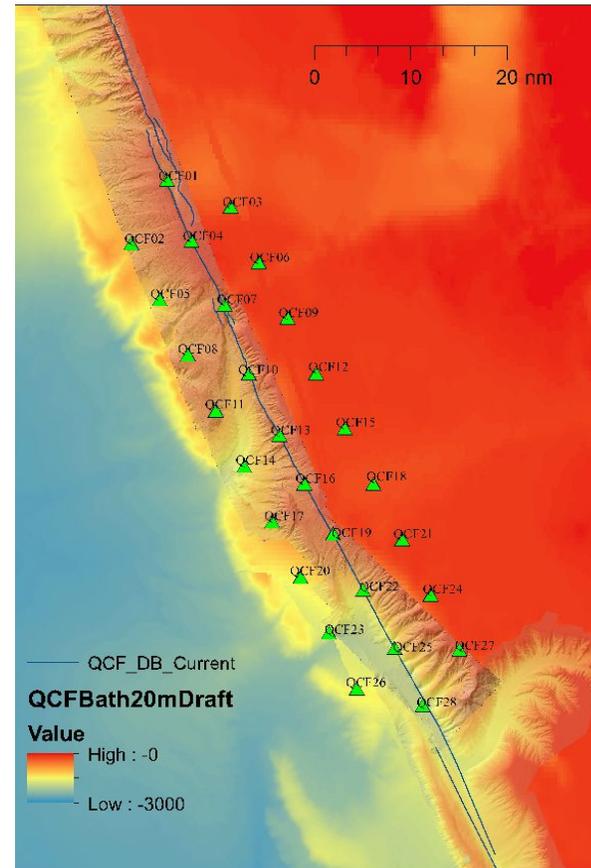
# COVID Impact on Pre-Pandemic OBSIC 2020 Experiment Schedule



- *Wilcock* Bransfield Straits: Experiment completed prior to pandemic but return shipment of OBS took >3 months
- *Canales* Cascadia experiment (two-ship): *Delayed to 2021*
- *Worthington* Queen Charlotte Fault active-source experiment (two-ship): *Delayed to 2021*
- *Worthington* Queen Charlotte Fault passive-source experiment: *Delayed to 2021*
- *Lizarralde* Andreanoff Islands active-source experiment: *Delayed by ~1 week*
- *Boettcher* Gofar Leg 2: *Delayed* to January 2021 because of other delayed cruises and WHOI COVID-related closure
- *Gaherty* Pacific Array Recovery: *Will sail early!*

# Worthington Broadband OBS Deployment

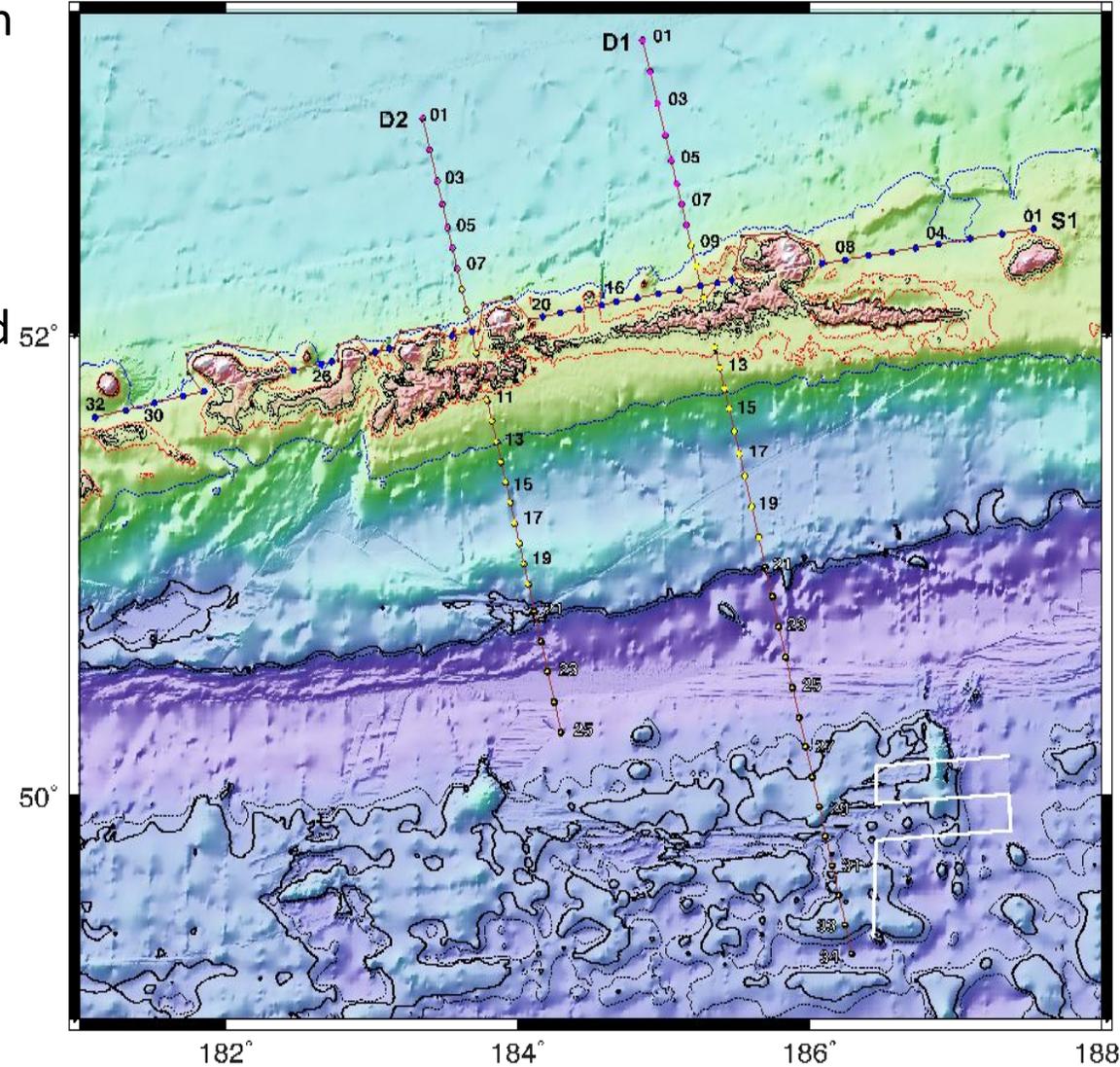
- Scheduled: 08/14/2020 – 08/24/2020:  
Newport to Ketchikan; 28 OBS
- 5 OBS techs quarantined in Newport.
- Cruise cancelled on day 13 of quarantine.  
4 techs flew home
- 1 tech remained in quarantine in order to  
sail on the following Lizarralde cruise
- Tech ended up in quarantine for 4 weeks  
before Langseth cleared to sail to  
Ketchikan



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# Lizarralde/Shillington Aleutians Active-Source Experiment

- Scheduled: 08/26/2020 – 09/14/2020: Ketchikan to Dutch Harbor; 60 short-period OBS
- Sailed August 31. No stop at Dutch prior to work.
- 4 OBS techs. quarantined in Ketchikan, 1 tech. quarantined in Newport.
- Cruise sailed ~1 week late because of COVID case in Newport; Ketchikan quarantine was 3 weeks; OBS personnel dropped off in Dutch Harbor Sept. 21
- Initial plan: 2 dip lines, 1 strike line; 91 OBS deployments, including 10 tethered deployments with a total tether length of 14 km.
- Personnel offload requirements + delay => reduced OBS program.
- Strike line and one dip line only; 49 OBS deployments; no tethered deployments.





## Delayed Experiments (Cascadia, QCF broadband, QCF active)=> Busy OBSIC Schedule for 2021

*Gaherty* ORCA Year 2 Recovery:  
11/03/2020 – 12/20/2020;

SIO; 30 BBOBS  
R/V *Revelle*, San Diego to Honolulu

*Boettcher* Gofar Year 2 Deployment/Recovery:  
01/16/2021 – 03/04/2021;

WHOI and SIO ; 13 BBOBS; 10 SMOBS; 28 SPOBS  
R/V *Thompson*, San Diego to Port Everglades, FL

*Laske* NE Pacific Deployment  
03/29/2021 – 04/20/2021;  
**OR** 04/21/2021 – 05/13/2021

SIO; 25 BOBS  
R/V *Kilo Moana*; Honolulu to Honolulu  
R/V *Kilo Moana*; Honolulu to Honolulu

*Wilcock* Axial Seamount Year-1 Deployment  
07/22/2021 – 07/27/2021; ????????

WHOI; 10 SPOBS and 5 BBOBS  
R/V *Oceanus*, Newport to Newport

*Canales* Cascadia Active-Source (2-ship):  
05/23/21 – 05/29/21 and 06/23/21 – 07/14/21;

WHOI and SIO; 60 SPOBS; 115 drops  
R/V *Langseth* and R/V *Oceanus* , Newport to Newport

*Worthington* Queen Charlotte Fault Active-Source (2-ship):  
07/18/2020 – 08/24/2021 (MGL dates);

WHOI and SIO; 35 SPOBS; 149 SPOBS drops  
Canadian Coastguard Vessel *Tully(?)* , Ketchikan to Ketchikan

*Worthington* Queen Charlotte Fault BBOBS Deploy  
07/28/2020 – 08/05/2021;

WHOI, 28 BBOBS (1-year);  
R/V *Langseth*, Ketchikan to Seattle

*Becel* Active-Source (Middle America Trench)  
09/21/2021 – 11/07/2021

WHOI and SIO; 33 SPOBS; 134 drops  
R/V *Langseth*; Manzanillo to Manzanillo

*Lin* Active-Source (Puerto Rico Trench)  
11/01/2021 – 12/03/2021

WHOI and SIO; 25 SPOBS; 30 drops  
R/V *Langseth*; San Juan to San Juan

*Boettcher* Gofar Leg 3 Recovery:  
January 2022 ????????

WHOI and SIO; 13 BBOBS; 10 SMOBS; 28 SPOBS  
Ship: ?; San Diego to San Diego (?)