



## **OBSIC Report to MSROC Winter Meeting January 7, 2021**

### OBSIC Report

- COVID Impacts on OBSIC work and personnel
- Operations since Fall 2019 Meeting
- 2020 OBSIC Experiments
- 2021 OBSIC Schedule
- 2021+ Schedule



## Impact of the COVID-19 Pandemic on OBSIC Operations

- WHOI OBS Lab has remained open throughout the pandemic, initially at greatly reduced capacity.
- Good risk mitigation plans meant that we were allowed to bring in more staff over time.
- Some staff split their work hours between home and the lab. Some worked at odd hours and at weekends to comply with distancing rules.
- Salaries covered by WHOI where necessary (those not allowed in lab because of distancing restrictions, and/or family challenges).
- Now close to 100% capacity
- COVID means that our TechPool (and USGS-Woods Hole) training program is on hold.



## Impact on OBSIC Personnel for Cruises

- OBSIC personnel (WHOI and SIO) willing to go to sea. UNOLS documents and webinars laying out risks and procedures for risk mitigation seen as positive by staff. Likewise efforts by ship operators to describe in detail risk mitigations plans while at sea. Full disclosure about risks increases people's confidence to sail.
- WHOI cruise participation subject to approval initially by COVID Task Force and now Travel Review Board. WHOI-HR arranges PCS testing.
- Need to quarantine for 14 days prior to cruise has a big impact on productivity. MA requires quarantine on return to state. WHOI requires 5-day quarantine and then a negative PCR test before return to campus.



## Governance

- OBSIC Operations Sub-Committee (OBSIC-OS)
- Sub-Committee of MSROC
- Chair: Jim Gaherty (Northern Arizona University)
- One physical meeting at WHOI and 2 virtual meetings to date.

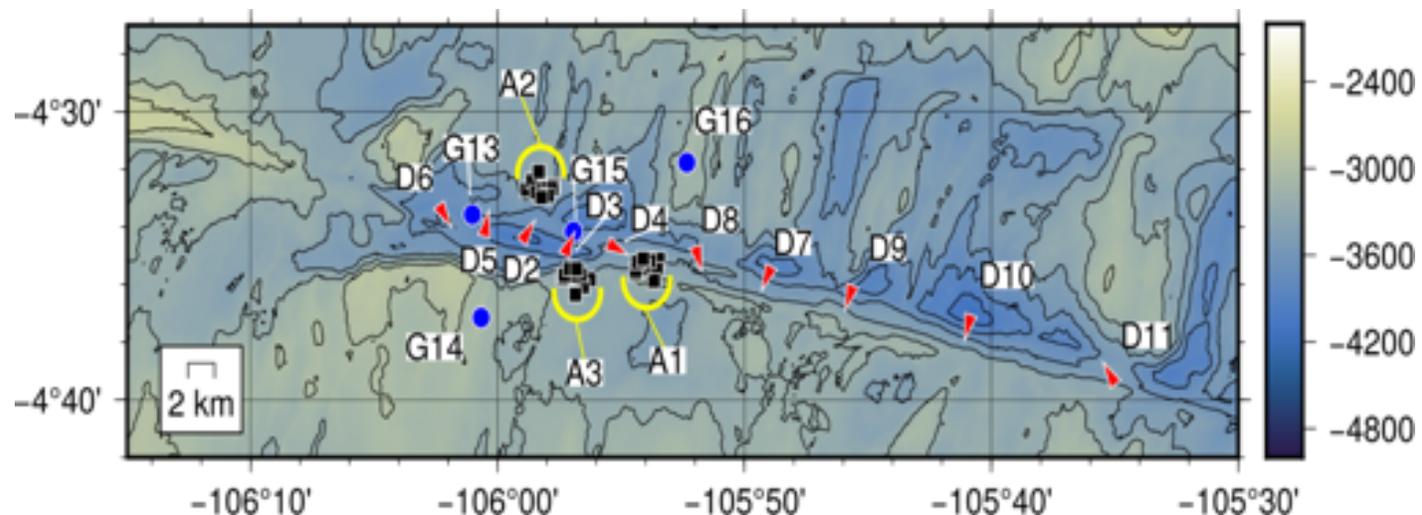
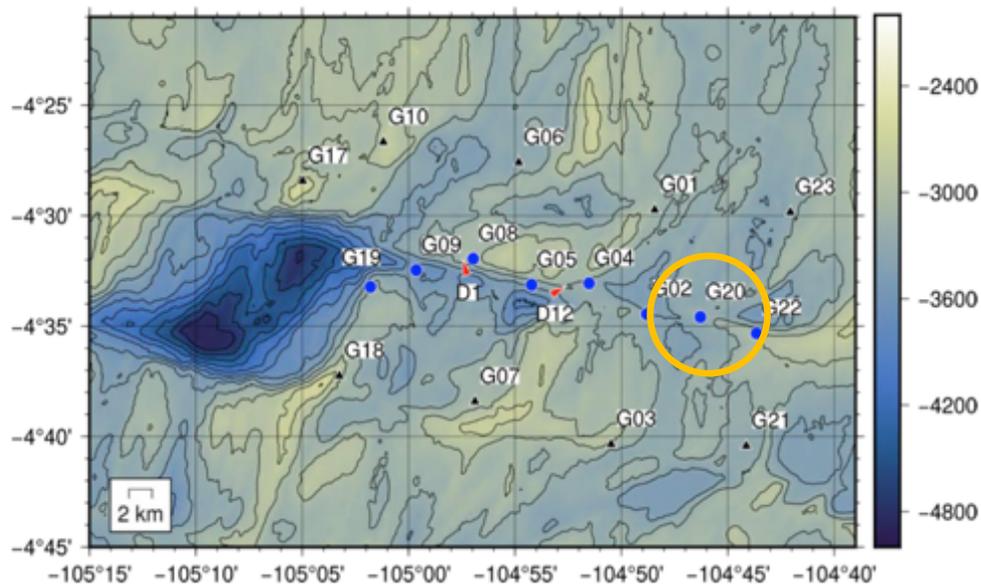
# At-Sea Operations Since October 2019

Boettcher Gofar Year 1 Deployment:  
11/16/2019 – 12/13/2019;

13 BBOBS; 10 SMOBS; 21 SIO SPOBS; 7 SIO Abalone  
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



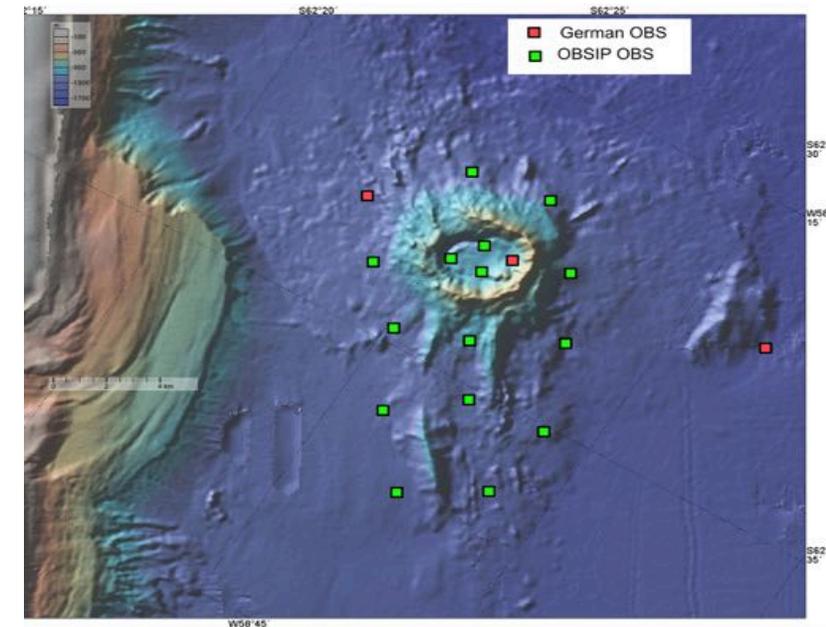
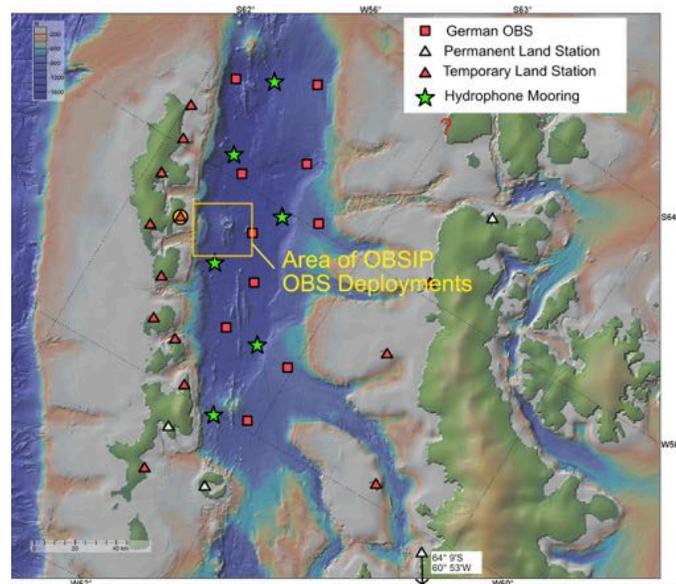
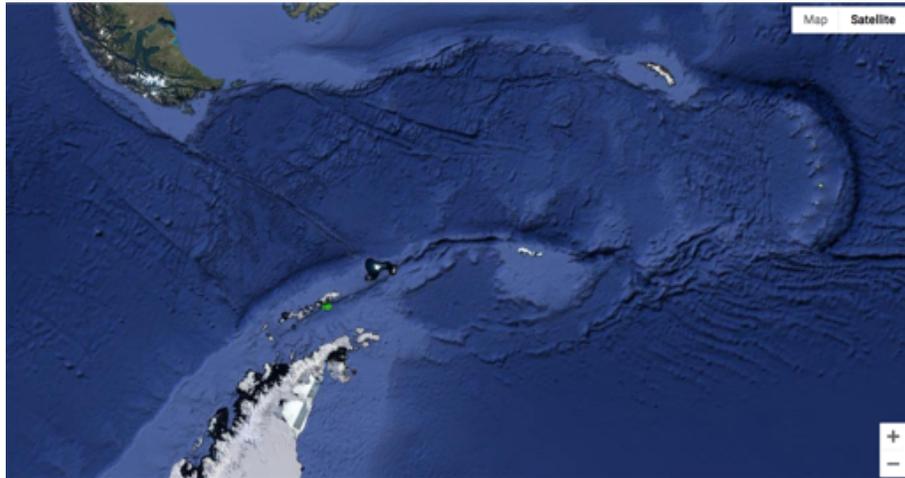
# At-Sea Operations Since October 2020, ctd

*Wilcock* Bransfield Strait Active/Passive Experiment Recovery Cruise:  
02/08/2020 – 02/27/2020;

New Tech Hannah Brewer's first OBS Cruise

15 WHOI SPOBS for 1+ year.  
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



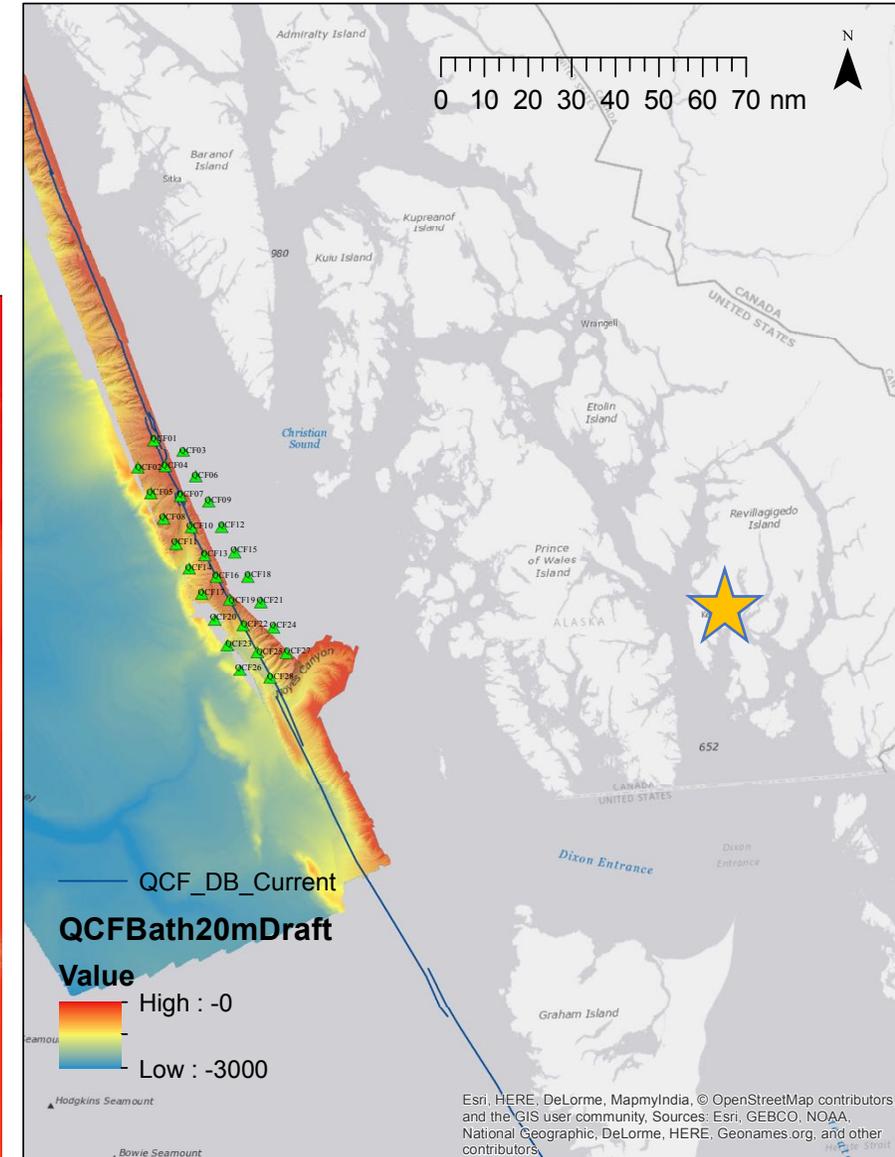
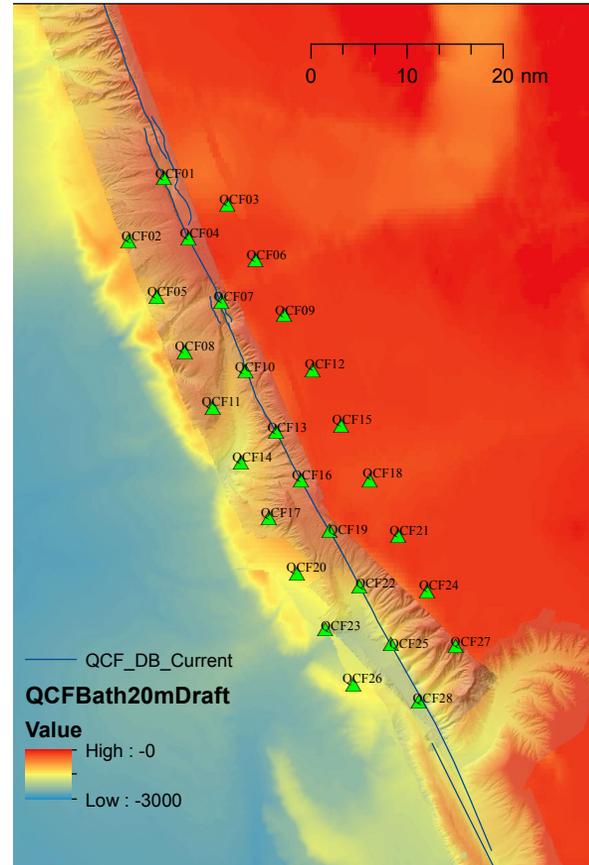
# COVID Impact on Pre-Pandemic OBSIC 2020 Experiment Schedule



- *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: *Pretty much on time*
- *Boettcher* Gofar Leg 2: *Delayed to January 2021*
- *Gaherty* Pacific Array Recovery: *Early*

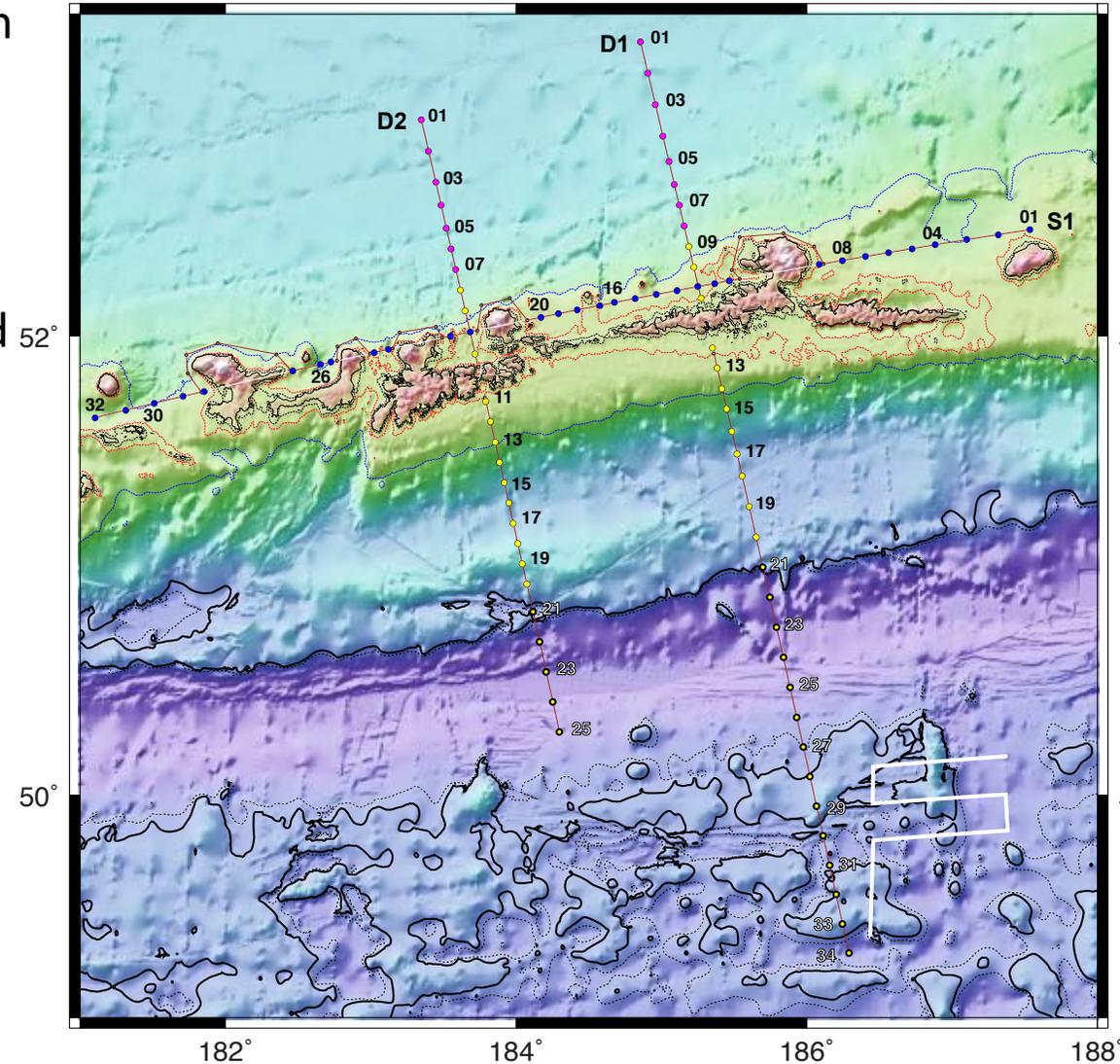
# Worthington Broadband OBS Deployment

- 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



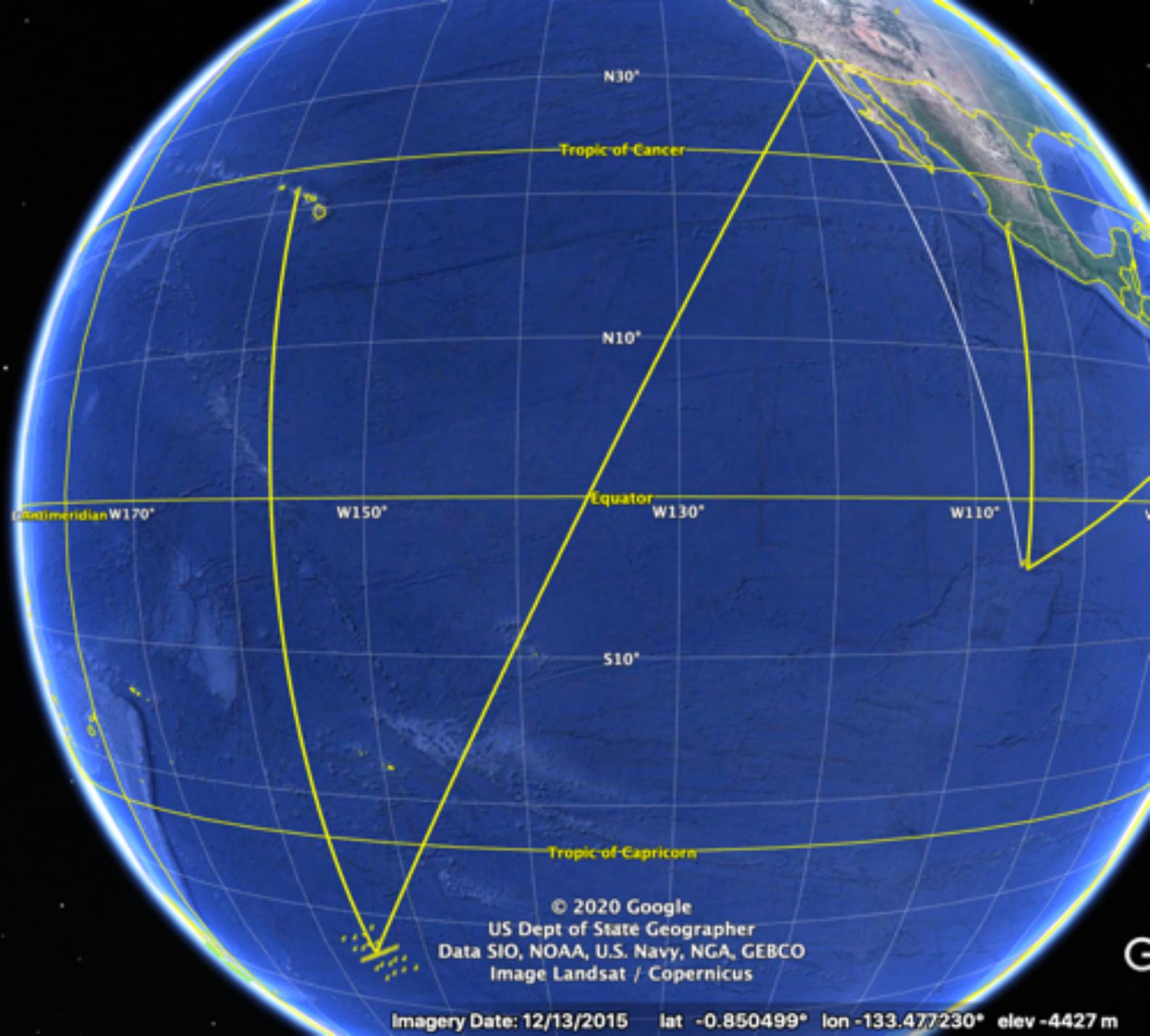
# Lizarralde/Shillington Aleutians Active-Source Experiment

- 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.



# Gaherty: Pacific Array Year-2 Recovery Cruise

- 11/02/2020 – 12/20/2020
- 49 days at sea
- San Diego to Honolulu
- 30 SIO broadband OBS
- All OBS recovered





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

### Cruise dates and vessels subject to change.

*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

04/21/2021 – 05/13/2021

SIO; 25 BOBS

R/V Kilo Moana; Honolulu to Honolulu

*Canales* Cascadia Active-Source (2-ship):

05/23/21 – 07/14/21; ????????

WHOI and SIO; 60 SPOBS; 115 drops

R/V Langseth and R/V Oceanus , Newport to Newport

*Worthington* Queen Charlotte Fault BBOBS Deploy

07/15/2020 – 07/26/2021;

WHOI, 28 BBOBS (1-year);

R/V Langseth, Seattle to Ketchikan

*Worthington* Queen Charlotte Fault Active-Source (2-ship):

07/27/2020 – 09/05/2021 (MGL dates);

WHOI and SIO; 60 SPOBS; 149 SPOBS drops

Canadian Coastguard Vessel Tully(?) , Ketchikan to Ketchikan

*Wilcock* Axial Seamount Year-1 Deployment

10/06/2021 – 10/11/2021; ????????

WHOI; 10 SPOBS and 5 BBOBS

R/V Oceanus, Newport to Newport

*Boettcher* Gofar Leg 3 Recovery:

January 2022 ????????

WHOI and SIO; 13 BBOBS; 10 SMOBS; 28 SPOBS

Ship:??; San Diego to San Diego (?)

*Becel* Active-Source (Middle America Trench)

Spring 2022 ????????

WHOI and SIO; 33 SPOBS; 134 drops

R/V Langseth; Manzanillo to Manzanillo

*Lin* Active-Source (Puerto Rico Trench)

Spring 2022 ????????

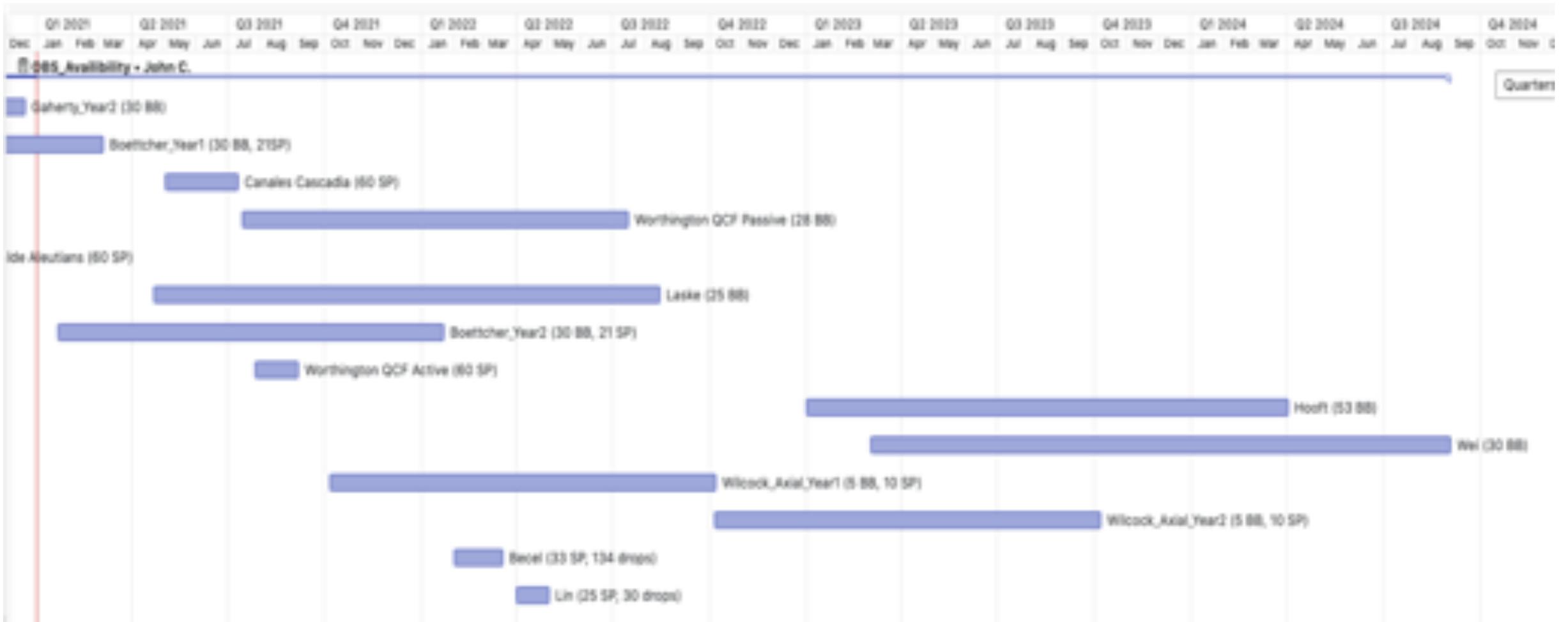
WHOI and SIO; 25 SPOBS; 30 drops

R/V Langseth; San Juan to San Juan



# OBS Availability for Post 2021 Schedule

- Hooft (Galapagos; 53 BBOBS for 15 months)
- Wei (Tonga, Samoa 30 BBOBS for 18 months)





## OBSIC Formal Instrumentation Requests (12/01/19–12/31/20)

### OBSIC requests for short-period OBS to support active-source experiments

# of short-period OBS requested	Total # of OBS deployments requested	Experiment Location
33	124	Eastern Central Pacific
80	182	North Pacific
39	71	Western North Atlantic

### OBSIC requests for broadband OBS

# of broadband OBS requested	Data recording duration requested (months)	Experiment Location
10	15	Eastern Pacific
6 + APG pressure sensor	12	US West Coast
42 (year-1); 44 (year-2)	15 (year-1); 15 (year-2)	Equatorial Pacific
20	15	Western Pacific
5 + APG pressure sensor	15	Eastern Central Atlantic
5 + APG pressure sensor	15	Central North Atlantic
20 + APG pressure sensor	15	Western Central Atlantic
4 TRM (Trawl-Resistant Mounts)	12	Northern Pacific

### OBSIC requests for short-period OBS to support earthquake monitoring experiments

# of short-period OBS requested	Data recording duration requested (months)	Experiment Location
32	8	Western Pacific
40	6	Caribbean
9	1	Central North Atlantic



## Current Instrumentation Inventory

OBS Type	OBSIC Fleet
Short-Period OBS (WHOI “D2”)	28
Unshielded Broadband OBS with Guralp CMG-3T and DPG (WHOI BBOBS)	30
Unshielded Broadband OBS with Guralp CMG-3T, Kinematics Episensor Strong-Motion Accelerometer and DPG (WHOI Keck OBS)	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
Broadband OBS with Nanometrics T-240 seismometer****	16

*\*WHOI ARRA; \*\*designed by LDEO; \*\*\* designed by SIO; \*\*\*\* under construction by WHOI using NSF funds*

**OBSIC: 118 Broadband OBS (6+ variants); 28 short-period OBS (1 variant)**

**Other: 41 SIO broadbands (28 x T-240; 7 x T-40); 16 LDEO broadbands ???; 72 SIO short-period (63 x conventional, 2 x flips, 7 x LPSPs)**