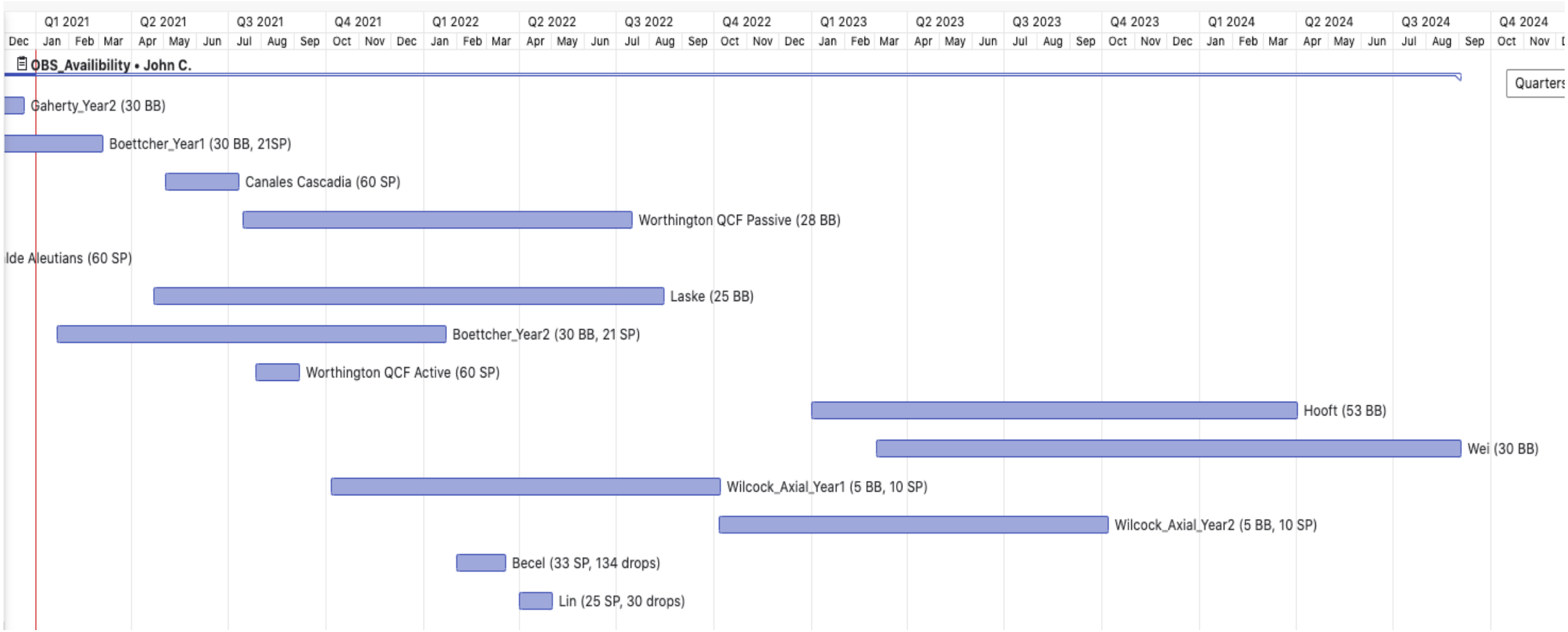
OBSIC Modernization (MSROC Winter Meeting January 7, 2021)

Concerns:

- Many OBS date from ~2000, and are showing their age.
- Heterogeneous Fleet.
- Instrumentation is expensive to maintain and complex to operate.
- Better technology (lower power) now available.

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

OBSIC

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, Kinemetrics 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

Instrumentation Worries

- ***Most pressing community need is for a large number (~100) of short-period OBS for active-source work***

- 56 surface-wave capable OBS, but 40 of these are Guralp CMG-3T seismometers
  - 13–16 years old
  - Have seen continuous 1+ year deployments since 2004
  - Total of 271 on-bottom years.
  - We test and repair multiple sensors prior to each cruise. Takes months (minimum 1 week on test slab, repair, repeat). Huge time sink for a skilled and expensive technician.