



IODP Update MSROC AGU 2018

SEP Co-Chair
Sean Gulick

Seismic Imaging for IODP

Future of US Seismic Imaging and Site Surveying for IODP

- **Marine seismic data are critical to IODP**
 - Every site drilled, cored, and logged within IODP requires high quality seismic data.
 - If drilling targets cannot be imaged properly, or if sites cannot be occupied safely, the proposals will not be approved and not be implemented.
 - On the other hand, well-imaged sites through acquisition with modern-day marine seismic capabilities often lead to excellent peer-reviewed scientific proposals, safe operations at sea, and thus overall successful expeditions within IODP.

- IODP NEEDS SEISMIC IMAGING!

- 2015 SEP Consensus Statement: “The SEP wishes to convey concern regarding the increased pressures on the acquisition of academic active-source seismic data, some of which by design is conducted in support of scientific ocean drilling. Continued reduction in the international marine geoscience communities’ ability to collect seismic data in areas of scientific interest is jeopardizing the scope and impact of IODP science. The SEP consensus is that the IODP should stress the importance, both to member country funding agencies and environmental permit organizations worldwide, of high-quality subsurface images for science and safety in connection with expected continuation of IODP...”

● IODP FORUM Consensus Statements

- **16-06:** The international marine seismic imaging community has moved toward conducting IODP site surveys in more cooperative ways with combined resources. The IODP Forum endorses that trend and encourages that community to explore options for more efficient and cost-effective use of existing seismic imaging assets and survey funding across all IODP partners. The Forum suggests that the initial steps should include a formal meeting of the international seismic imaging stakeholders within the next year to develop a framework and justification for utilizing existing resources more efficiently in support of IODP, ICDP and other scientific requirements.

IODP NEEDS SEISMIC IMAGING!

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IODP
INTERNATIONAL OCEAN
DISCOVERY PROGRAM

exploring the earth under the sea



**FOR
SCIENTISTS**



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Australasian IODP Workshop, Consensus Statement

Following community discussions at the Australasian IODP Workshop, it was agreed that a consensus statement relating to the importance of site survey data and especially the availability of high quality seismic reflection profiles should be developed. The statement, below details the critical importance of this material in continued productivity and safety of sub-seafloor research.

This statement will be circulated internationally, to research vessel managers and stakeholders, on behalf of the Workshop team.

[Consensus statement on need for site survey data for IODP](#)



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● IODP FORUM Consensus Statements

- **Forum Consensus Item 17-06:** The Forum is encouraged by activities in support of its *Consensus 16-06* over the past year in support of both publicizing and supporting the crucial relationship between seismic imaging/drill- site characterization and scientific ocean drilling, across all platforms. However, the risk of a reduction in seismic imaging capabilities internationally remains. The Forum notes that the efficiency of *JOIDES Resolution (JR)* operations within this phase of IODP has been improved by multi-year regional planning; recently, the primary seismic imaging asset of the U.S. has been operated productively in a similar way. The Forum suggests and supports development of a planning effort linking seismic imaging and drilling, through workshops, with emphasis on likely future areas of anticipated IODP operations. The primary goal is to support seismic imaging efforts in support of and *en route* to development of competitive proposals to drill all accessible parts of the global ocean system, during the next phase of IODP.

Seismic Imaging for IODP

Future of US Seismic Imaging and Site Surveying for IODP

- **One of the three main concerns documented in the NSF JRSO Panel Review of FY2017:**
[a decrease in] “availability of sufficient high-quality seismic data continues to impact the ability to submit competitive [IODP] proposals; continuation of this trend ultimately can/will impact viability of/need for the JRSO facility.”
- **NSF Response:**
“NSF acknowledges these [three] concerns [... and] remains committed to supporting the seismic research needs of the U.S. ocean science community.”

Seismic Imaging for IODP

JRFB 1805 Consensus Statement 14

Marine seismic data are critical to IODP, as every site drilled, cored and logged with the JOIDES Resolution requires high quality seismic data. If drilling targets cannot be imaged properly or if sites cannot be occupied safely, the proposals will not be approved by SEP/EPSP and will not be implemented by the JRFB. Over the last 15 years, 47% of the seismic data in support of 81 IODP expeditions have been collected with US seismic-enabled research vessels. The JRFB underscores the deep concern expressed in the 2018 NSF Panel Review of JRSO, which states that a decrease in availability of sufficient high-quality seismic data continues to impact our ability to submit competitive IODP proposals, a trend that ultimately impacts the viability of JOIDES Resolution operations. Having the capability to carry out deep-ocean crustal imaging in the US and worldwide is key for the safe operation of the JOIDES Resolution and to support IODP in fulfilling its 2013-2023 Science Plan, which requires operation in challenging drilling environments, including seismogenic subduction zones, continental shelves, deep ocean crustal formations, methane hydrates, hydrothermally active regions, and more.

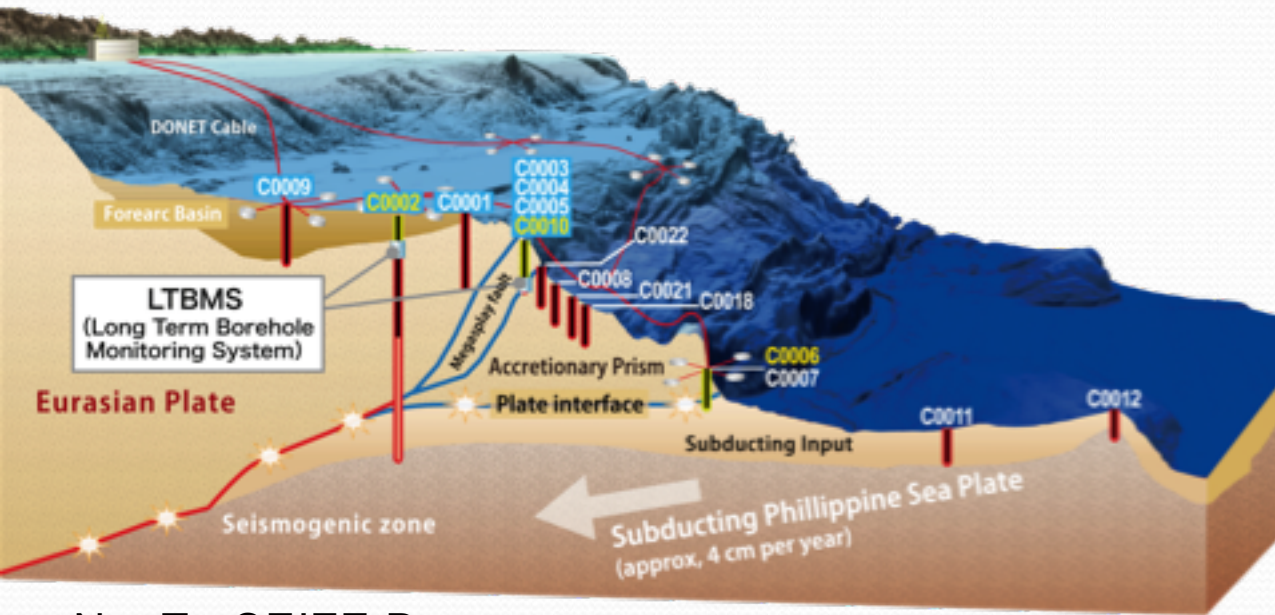
Seismic Imaging for IODP

US Seismic Support for IODP1+2 Drilling

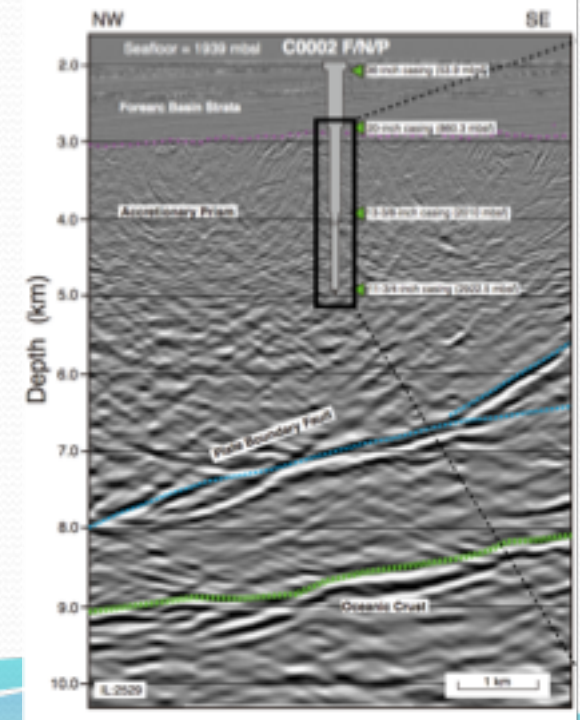
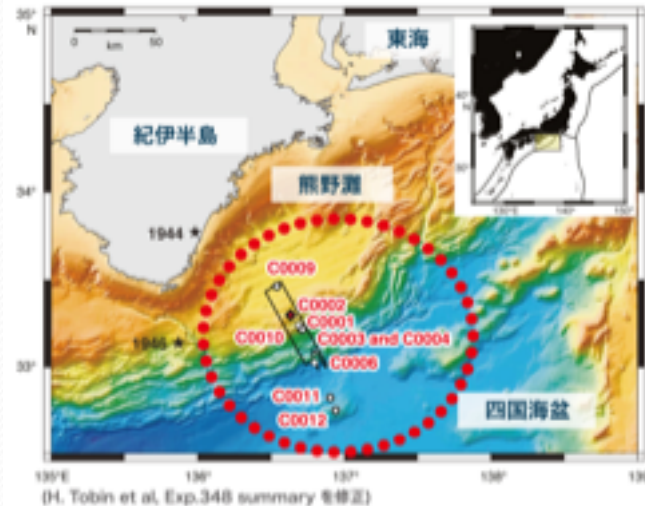
87 Expeditions during IODP1+2	R/V Langseth Ewing	R/V R/V Revelle, Knorr, Thompson, Faranelle, RVIB Palmer
31 with US Ship (35%) 47 NSF Support (54%)	21 IODP Expeditions SEISMIC PLATFORM	15 IODP Expeditions PORTABLE SEISMICS

- International ship use significant (36 exp or 41%)
- Industry data use (24 exp or 28% but...)
- Numbers skewed by NanTroSEIZE (13 Expeditions)
 - US\$ 46%, US ship 48%, Industry 15%
- Deep crustal imaging (68%) outweighs , high-res (41%) – many do have both
- Many expeditions are still being carried out on *Ewing* data showing longevity of data importance

The *Chikyu* is currently engaged in Exp. 358 NanTroSEIZE Plate Boundary Deep Riser 4 7 October 2018 – 21 March 2019



NanTroSEIZE Deep Riser Drilling, a historic attempt to sample the plate boundary



(H. Tobin et al, Exp.348 summary 巻修正)

Mission Specific Platforms

IODP Exp 381: Gulf of Corinth
October-December, 2017

Exp 389 Hawaiian Drowned Reefs
Sept.-Oct. 2019



JOIDES Resolution

Some recent mechanical issues with the JR have resulted in some changes to the schedule.

NOTE: those proposals affected by this stay with the JRFB and will be rescheduled at the earliest possible time.

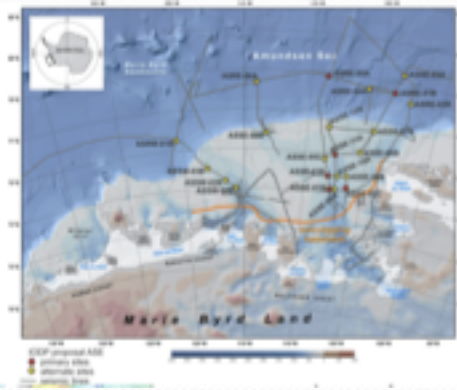
JRFB Housekeeping:

Policies and guidelines have been revised. Please see

www.iodp.org for details

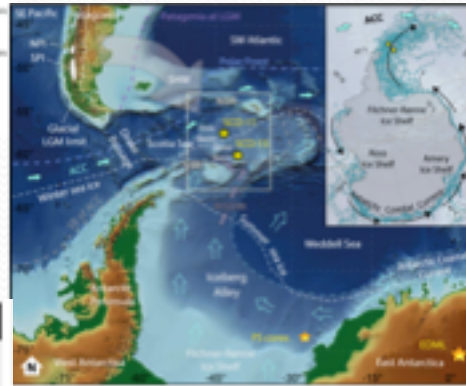


2019: An exciting year for the JR!



Amundsen Sea/
WAIS

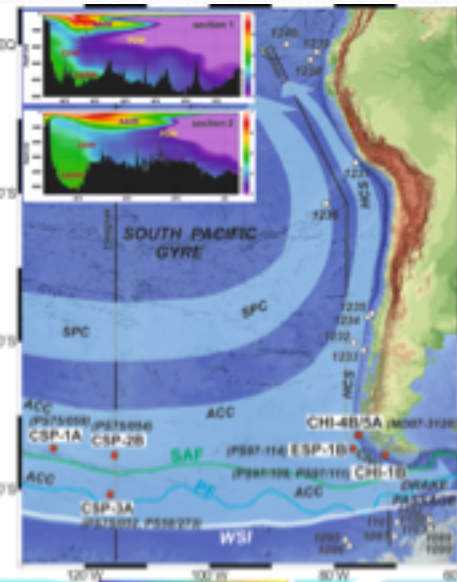
Exp 379. Amundsen Sea West Antarctic Ice Sheet History Jan 18 - Mar 20, 2019
Punta Arenas / Punta Arenas



Exp 382. Iceberg Alley & Subantarctic Ice & Ocean Dynamics Mar 20 - May 20, 2019
Punta Arenas / Punta Arenas

Iceberg Alley

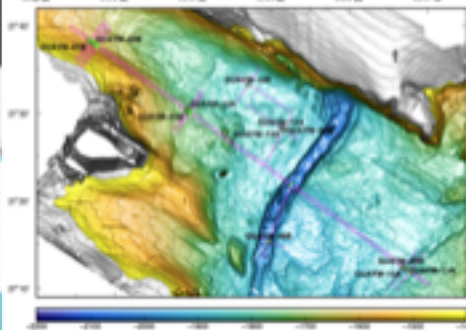
Exp 383. Dynamics of Pacific Antarctic Circumpolar Current May 20 - July 20, 2019
Punta Arenas / Punta Arenas



DynoPac

Exp 385T. Panama Basin Crustal Architecture (504B) and Restoring Hole 896A Aug 18 - Sept 16, 2019 Antofagasta / San Diego

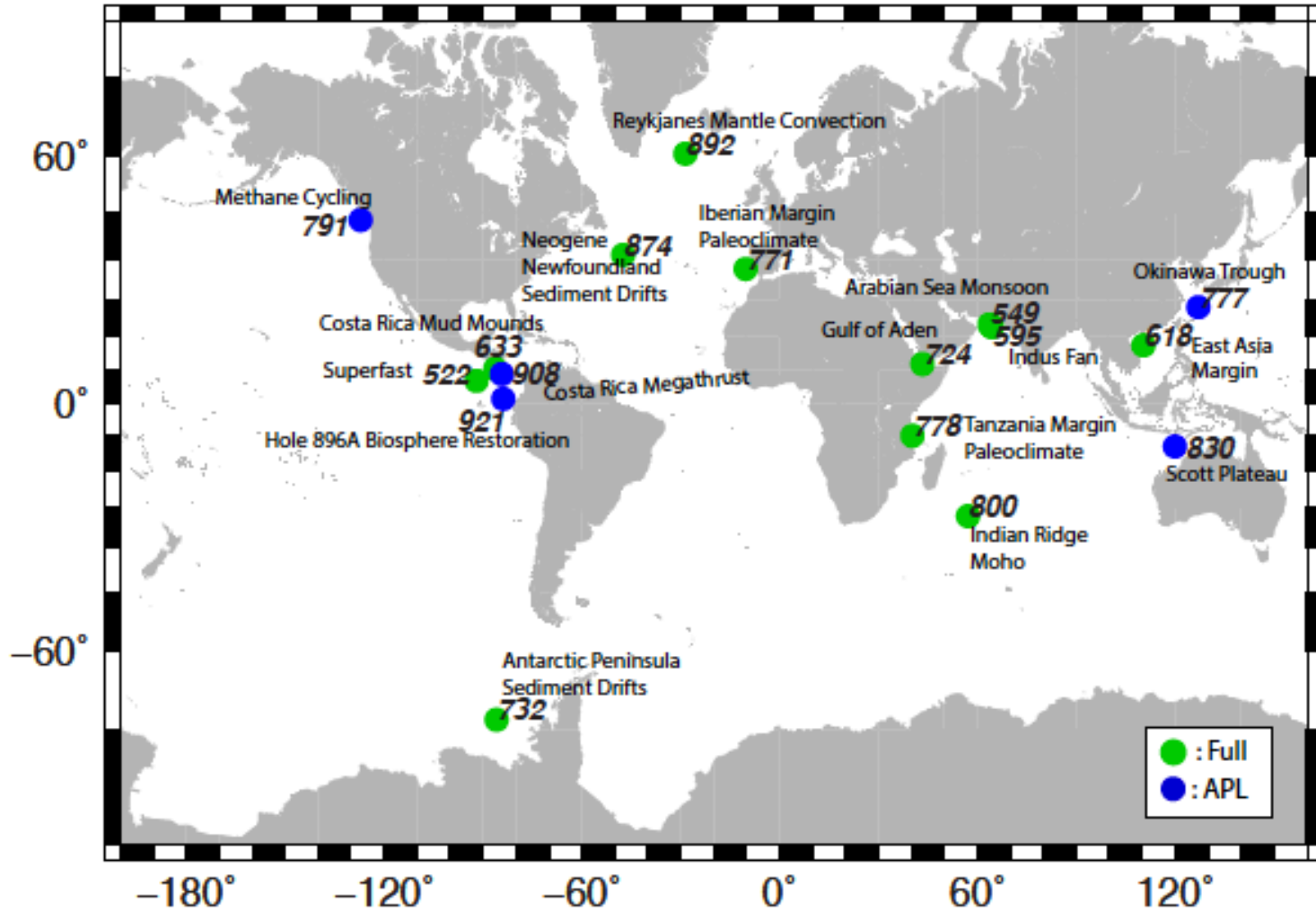
Guaymas



Exp 385. Guaymas Basin Tectonics and Biosphere Sept 16 - Nov 16, 2019
San Diego / San Diego

Thanks to the community diligently submitting & revising proposals, SEP has provided needed proposals to JRFB

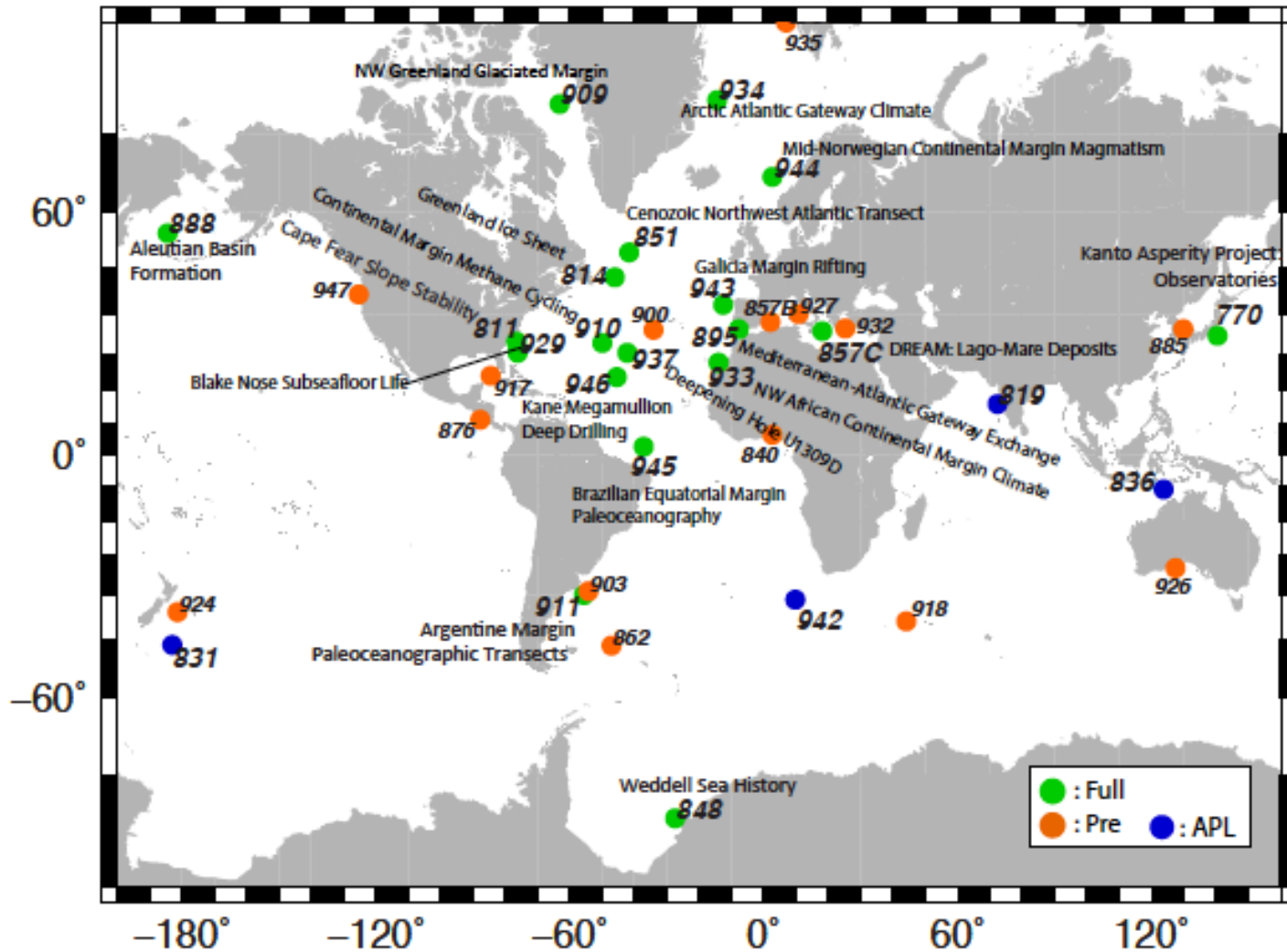
JR Proposals at JRFB



Future scheduling: Regional planning works!

JOIDES Resolution proposal pressure is excellent in the targeted Atlantic-Med.

JR Proposals at SEP



- The current 5-year plan may continue through FY 2024, which would mean ~12 expeditions could be scheduled.
- Currently have a contingent of Full proposals for the Atlantic at SEP that will be forwarded to JRFB in 2019 & 2020
- SEP & JRFB strongly encourages proposals for the 2019 April and Oct. deadlines, especially Pre- and Full- proposals for the Indo-Pacific
- **IMPORTANT!** A seamless transition in 2024 to a new program requires proposal pressure. We plan to schedule beyond 2023-24 in anticipation of a new program. This would be best for funding agencies, the program, and the scientists writing proposals.
- Possibilities for a new drillship are being explored.....

Key planning activities through SOD 23+: AGU2018, Denver3 meeting



Seismic Imaging for IODP

- Issues going forward- no onboard compressors *could* mean fewer high-resolution cruises –data?
- No US seismic facility would likely reduce in crustal scale and high-res data for future IODP expeditions

Potential avenues for NSF-funded site survey cruises including *Langseth*-comparable seismics

- International research vessel barter system
- Direct payment of industry or international seismic vessels based on day rate (\$10M/yr available)
- Submit proposals using bi-lateral agreements between US-NSF and other countries
- Work towards an MG&G capable vessel including *Langseth* equivalent seismic capability