



New Initiatives & Deep Submergence Science



Gulf of Mexico

- NOAA-OER: 2 x *Jason* (2009, 2010)
- NSF–RAPID: 1 x *Sentry*; 1 x *Alvin* + *Sentry* (2010)
- NRDA/NOAA: 1 x *Sentry*; 2 x Other ROV (2011)...

Gulf of Mexico Research Initiative

- ≤ \$500M from BP for research consortia
- 2 x consortia interested in *Alvin/Jason*
 - 1-2 cruises/year for 3 years



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Ocean Observatories Initiative I

Implementation

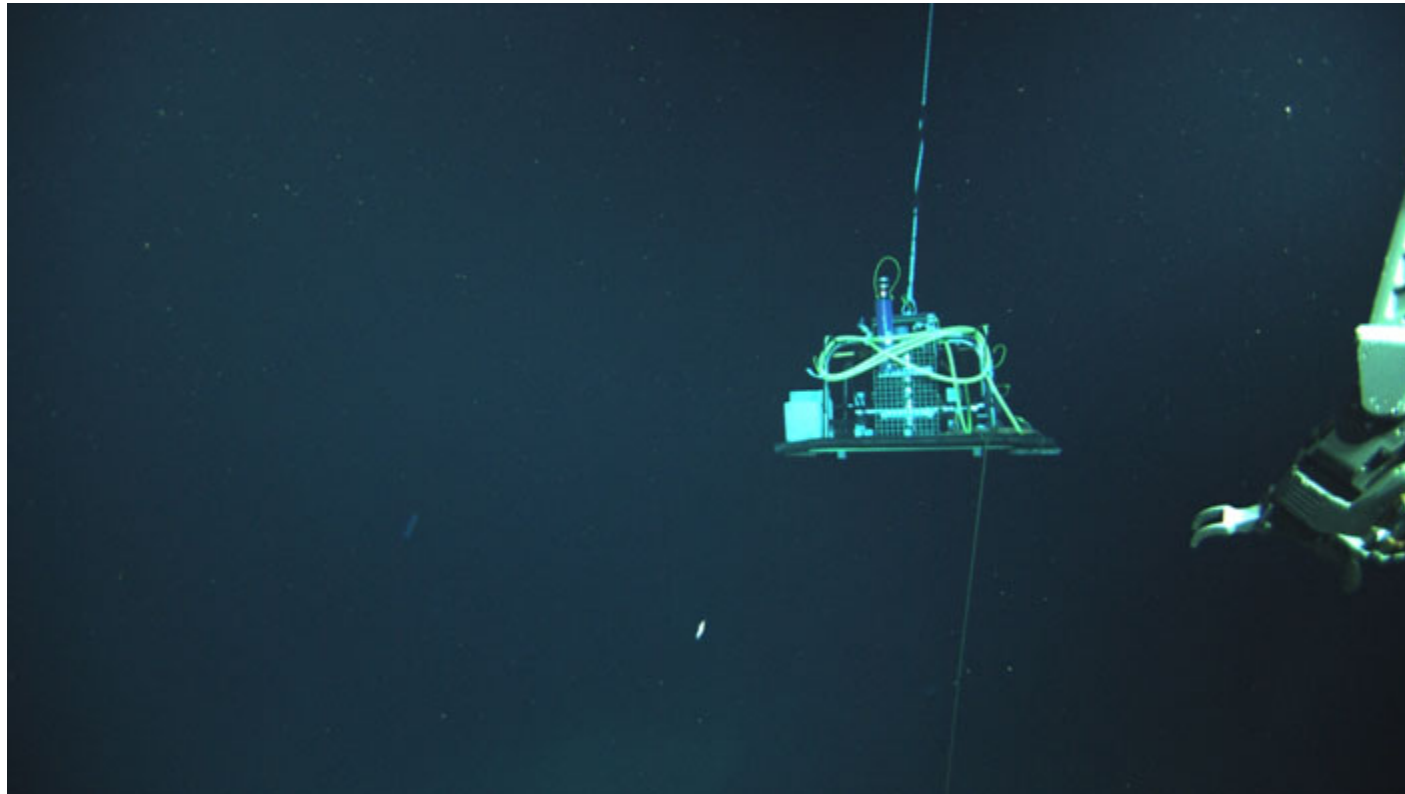
- ROV for OOI = $52+49+45+35 = 181$ days requested, 2013-2016
 - Equivalent to 45 days/year & $\leq 25\%$ of Jason availability
 - Capabilities demonstrated on recent ALOHA cruise:
 - Lifting/lowering heavy packages under Medea
 - Jason can re-orient packages just off-bottom, prior to release
 - Precise location of packages on seafloor via plumb-line
 - Delicate manipulations at the seabed



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- Lifting/lowering large packages through *Medea*
- Ability to orient packages, 20-30m off, prior to release

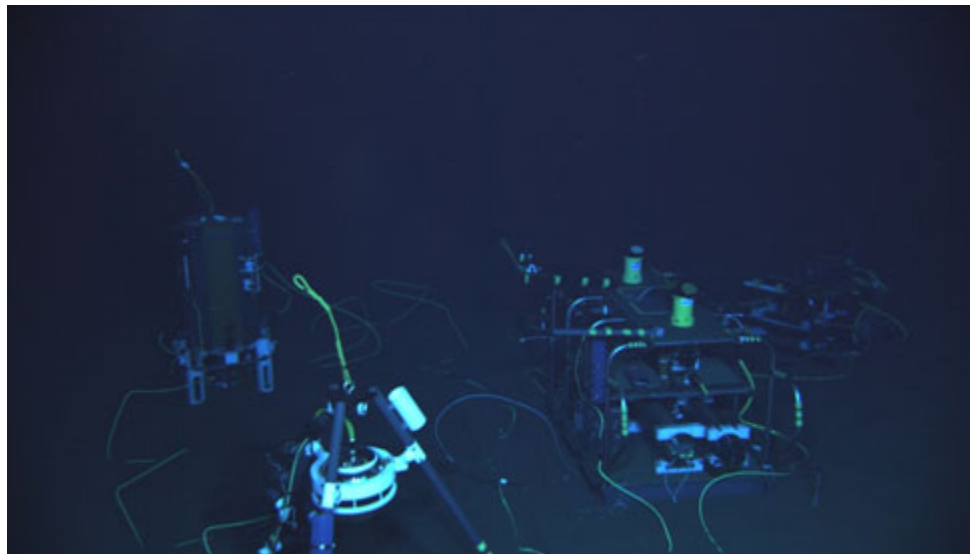
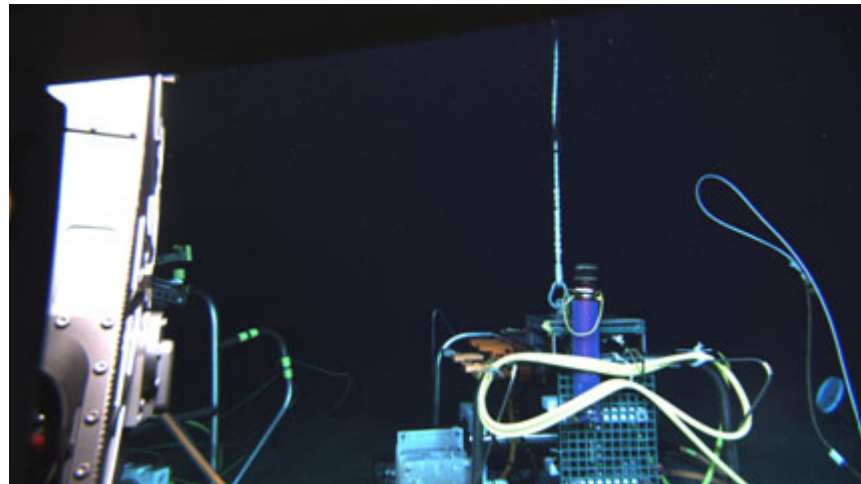




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- Precise location of packages on seafloor via plumb-line

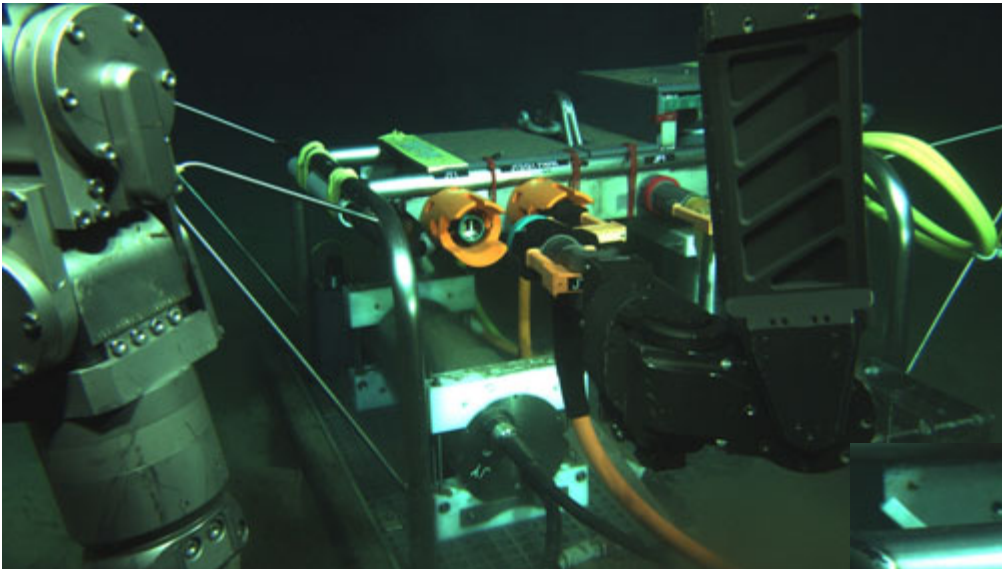




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- Delicate manipulations at the seabed



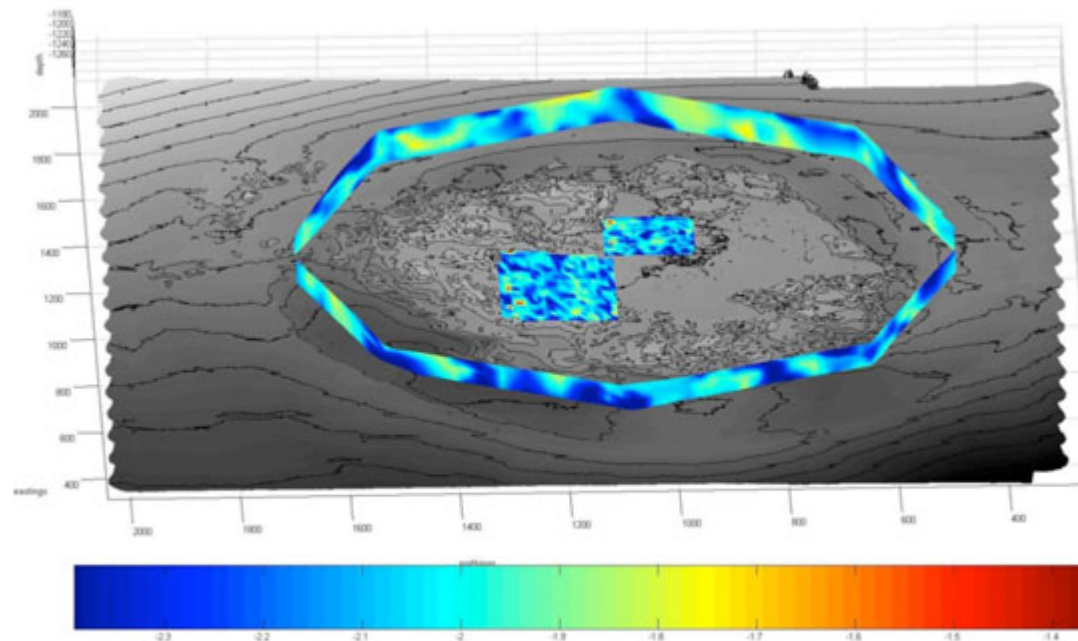


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Ocean Observatories Initiative II

- **NSF's OCB-GBF Workshop; SCOR/IR C-cycle Working Group**
- Time series study of hydrothermal fluxes from one eruption to the next
- Axial Volcano is currently inflating at 15cm/year = eruption due soon?
- Cold seep fluxes (using new seep capabilities) can be conducted too



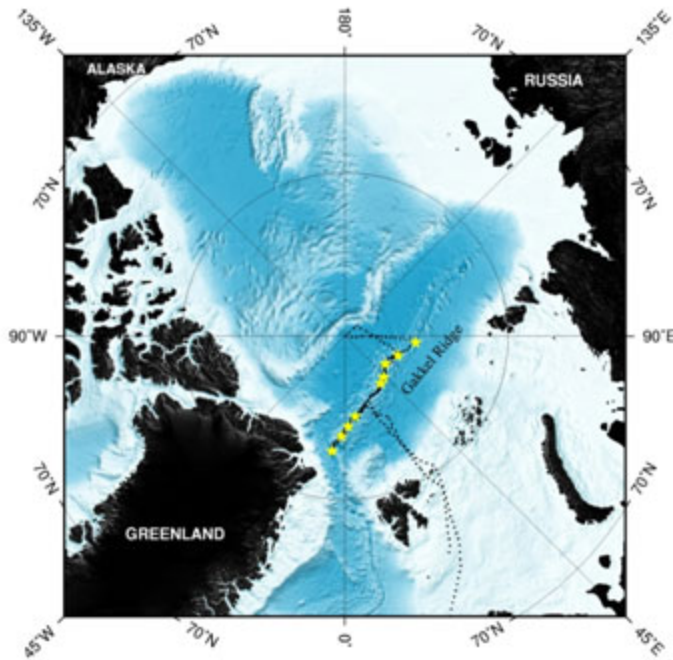


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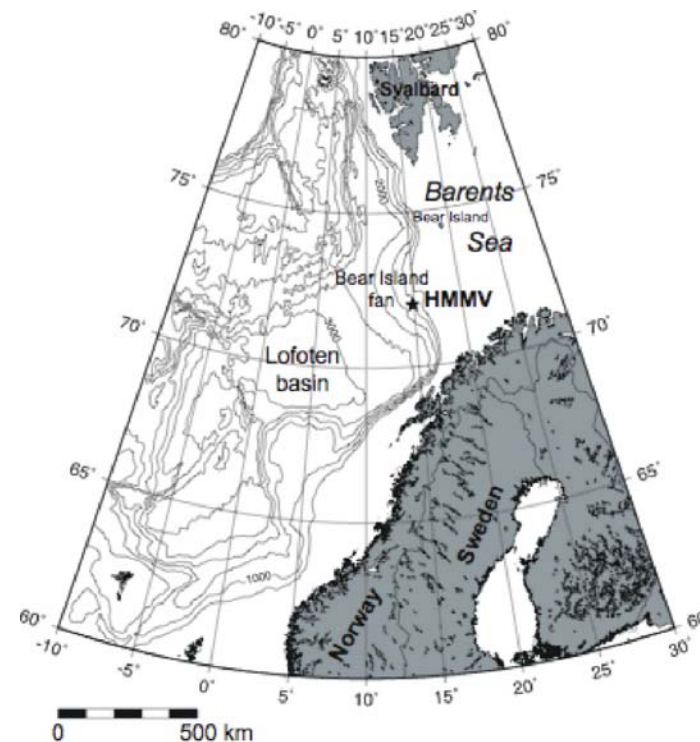


Polar Research I

- Arctic Interests – Gakkel Ridge; Haakon Mossby Mud Volcano



Edmonds et al., 2003



Boetius et al., 2011

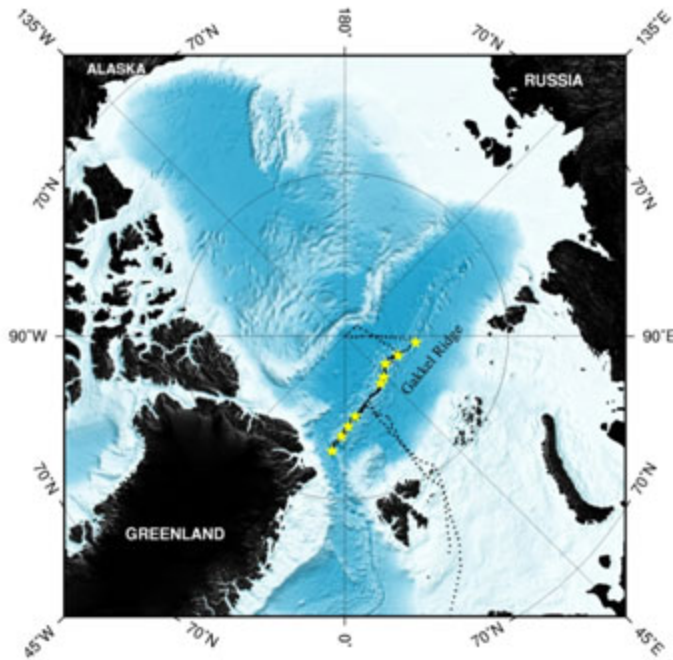


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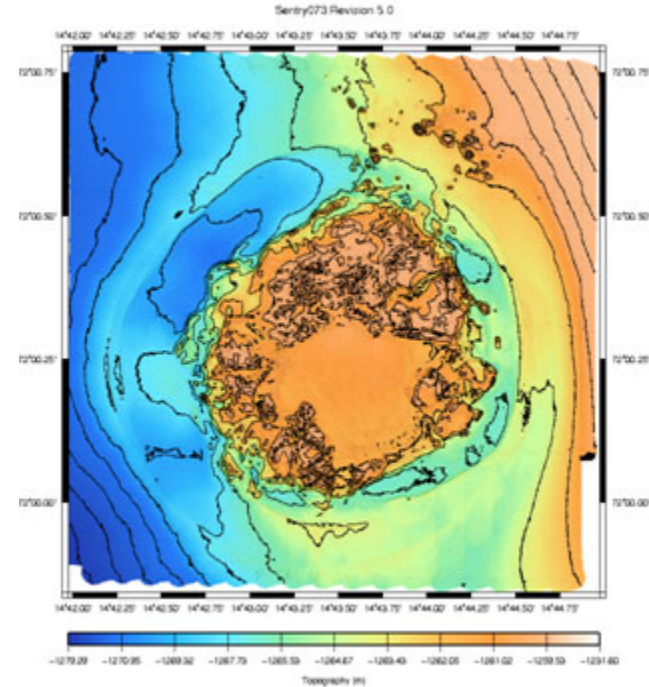


Polar Research II

- Arctic Interests – Gakkel Ridge; Haakon Mossby Mud Volcano



Edmonds et al., 2003



Yoerger et al., 2011



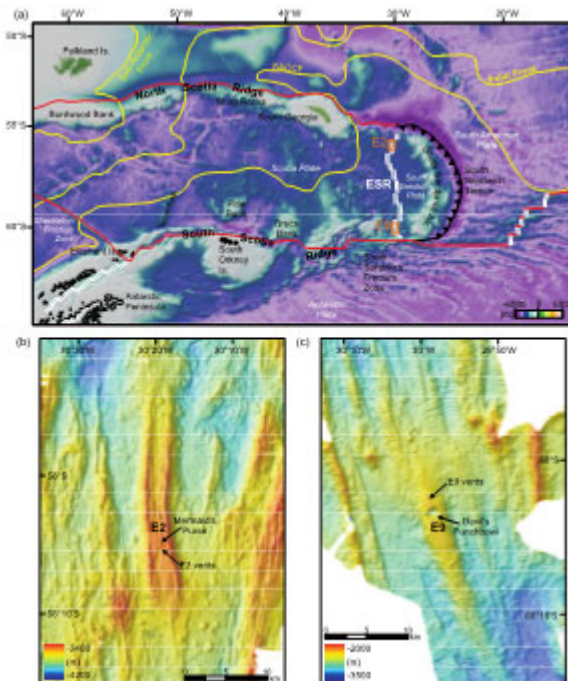
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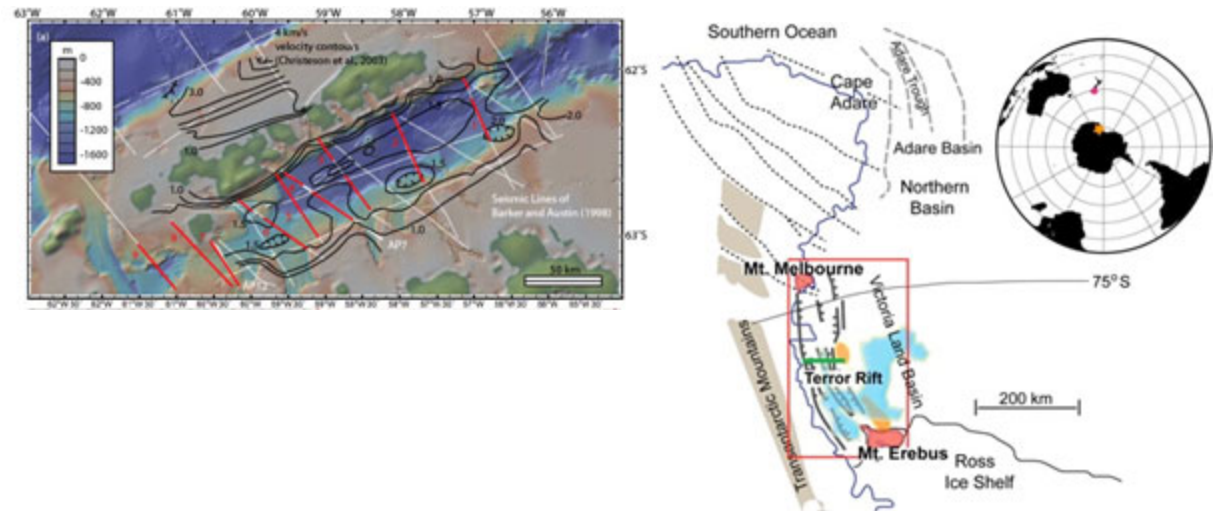
Polar Research III

- Antarctic Interests – Scotia Ridge, Bransfield Strait, Ross Sea

Rogers et al., 2011



NSF-OPP Submissions, 2011



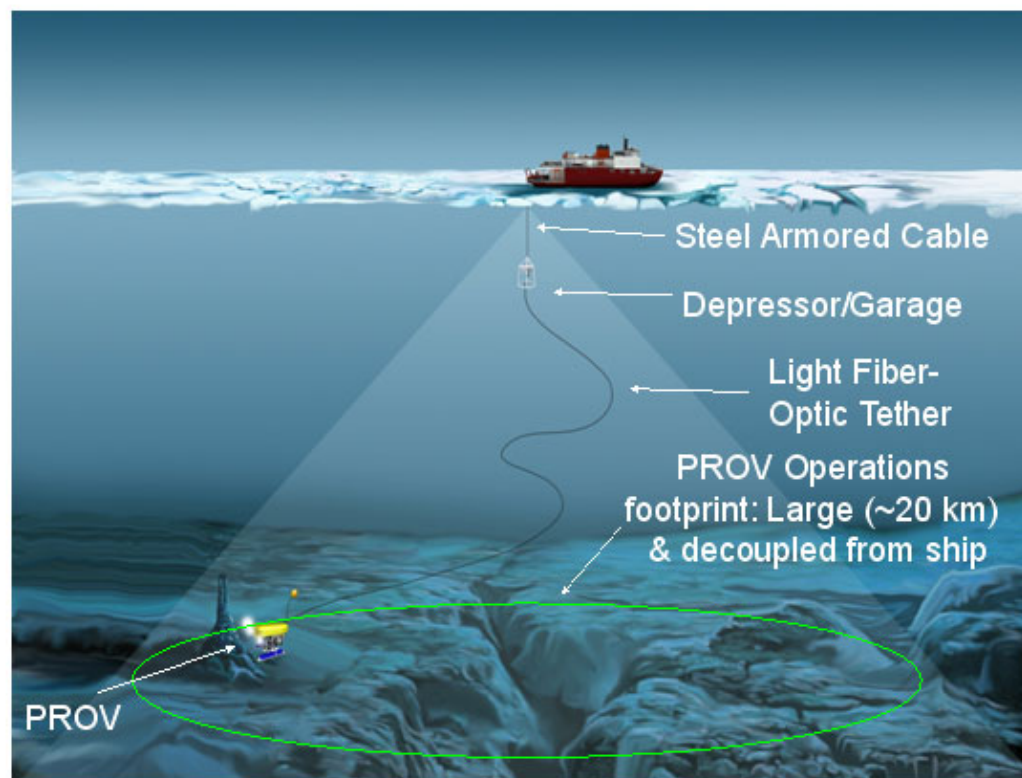


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Polar Research IV

PROV: Submission to NSF-MRI (Jan 2011)



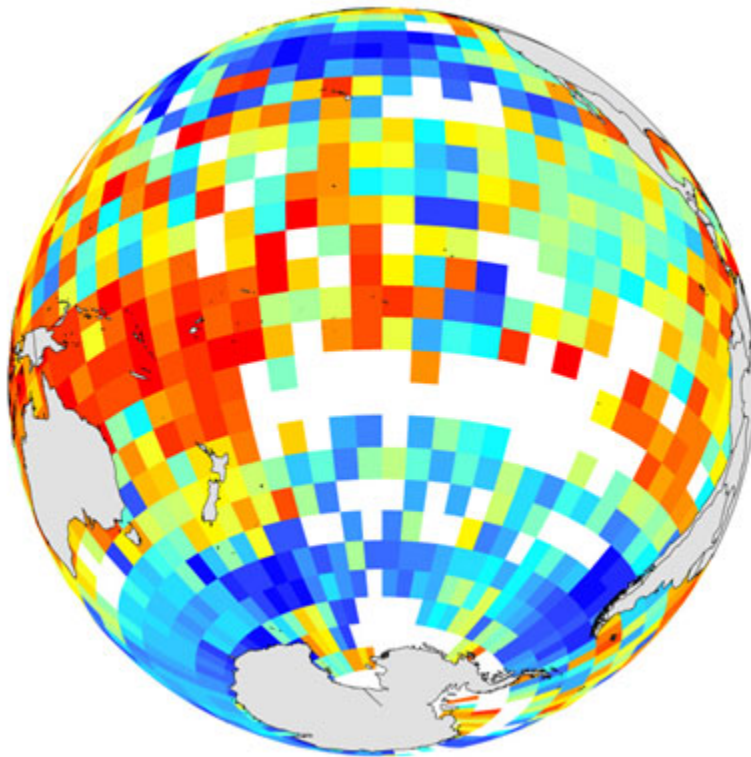
Bowen et al., 2011



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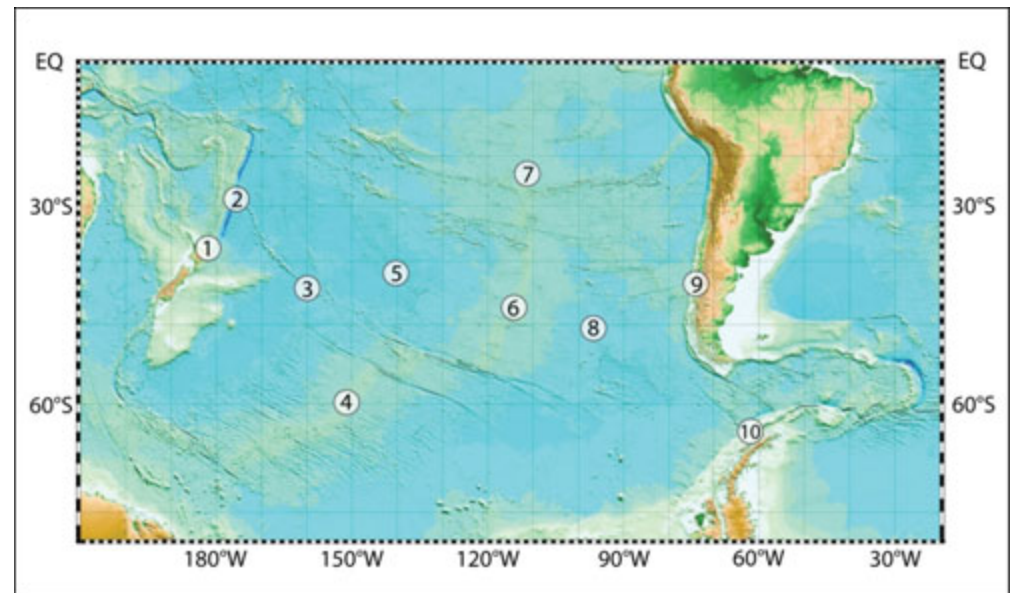


Deep Ocean Trenches (Biology; Biogeochemistry; Tectonics)



**CoML/SynDeep
(2001-10)**

=>



**INDEEP
(2011-??)**



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GLOSSARY

CoML – Census of Marine Life

SynDeep – Synthesis of Deep Ocean Realm Field Programs

INDEEP – International Network for Deep-Sea Ecosystem Research

IR – InterRidge

NOAA OER – Ocean Exploration & Research

NRDA – Natural Resource Damage Assessment

NSF GBF – Global Biogeochemical Fluxes

MRI – Major Research Infrastructure

OCB – Ocean Carbon & Biogeochemistry

OPP – Office of Polar Programs

PROV – Polar Remotely Operated Vehicle

SCOR – Scientific Committee on Ocean Research