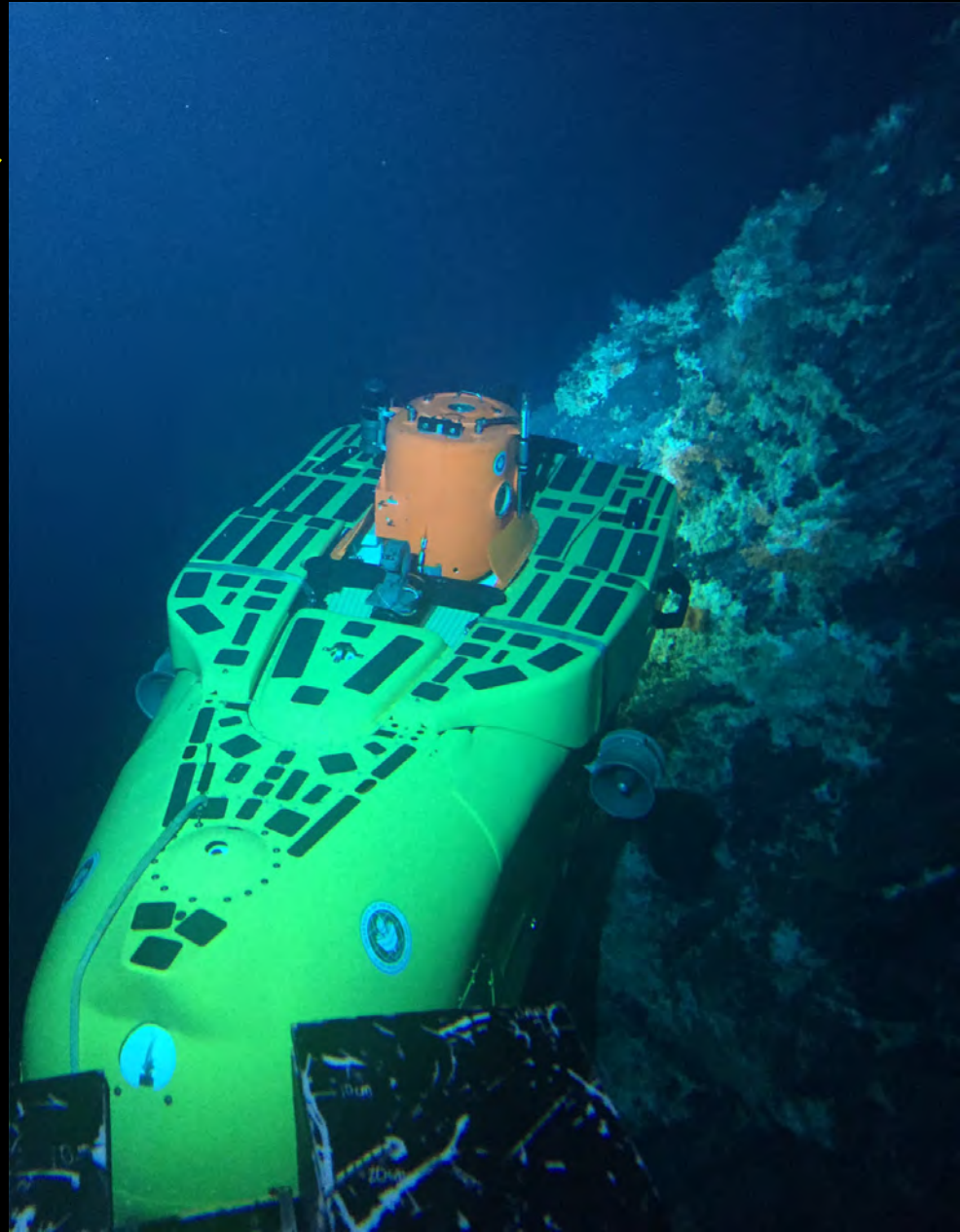


University of Hawai‘i Undersea Research Lab *@SOEST*



35 years of deep submergence science support

HURL in Transition

- Program defunded by NOAA in 2013
- As funding expired, HURL transitioned to an operational, contract for-hire entity with some institutional bridging support from UH/SOEST
- Science program & external awards for dive time via RFPs ended, currently no remaining UH campus staff on payroll
- Still operate both Pisces subs (2000 m)



- 35-year data archive being maintained and updated with limited support from SOEST
- Commitment to keep subs active through 2017 to complete obligations. Then??
- Much potential for work in the expanded Marine National Monuments & poly-metallic nodule/crust regions of the Pacific

2016 Major Accomplishments

- 62 dives from March-November in four mobilizations, most dive days were 2-sub ops (400 hrs u/w)
- 2 months of dives in South China Sea canceled days before departure, rebounded with productive alternate dive season
- Took on 30-day NSF-funded ROV Jason mission to the NWHI on short notice d/t Kilo Moana issues



- 18 dives in 10 days with 4 PI groups (Conservation Int'l, NMFS/HPU, NELHA, & DOER/Nat Geo) w/two hurricanes close by
- First Loihi pit survey in 5 years
- 4 Nat Geo dives with Sylvia Earle, first capture of deep ocean bioluminescence in the absence of artificial light sources

2016 Project Detail

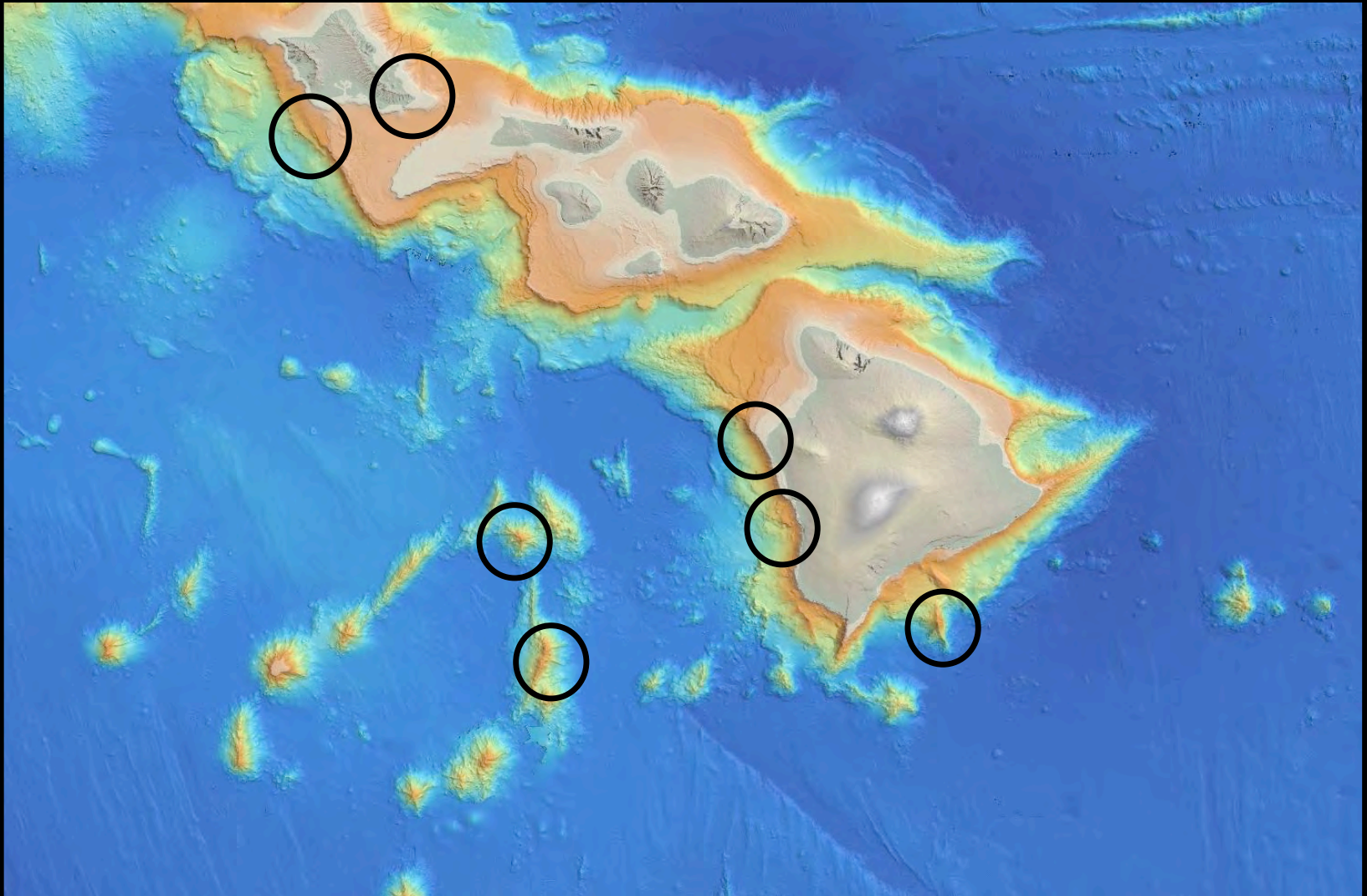
PI	Project	Location	Dives
Margo Edwards	Chemical Munitions	South Oahu	2 Pisces
Sylvia Earle	Deep-sea coral bioluminescence	East Oahu	6 Pisces
Liz Taylor	Deep-sea coral bioluminescence	East Oahu	5 Pisces
Frank Parrish & Sam Kahng	Deep-sea coral instrumentation & Recolonization of coastal lava flows	Kona Coast, Big Island of Hawaii	4 Pisces
Greg Stone	Seamount Exploration	Geologists Seamounts & Loihi	6 Pisces
Jan War	Cold water pipe inspections	Kona Coast, Big Island of Hawaii	3 Pisces
Amy Baco-Taylor & Brendan Roark	Deep-sea coral recovery on trawled seamounts	Upper Hawaiian Ridge seamounts	24 Pisces



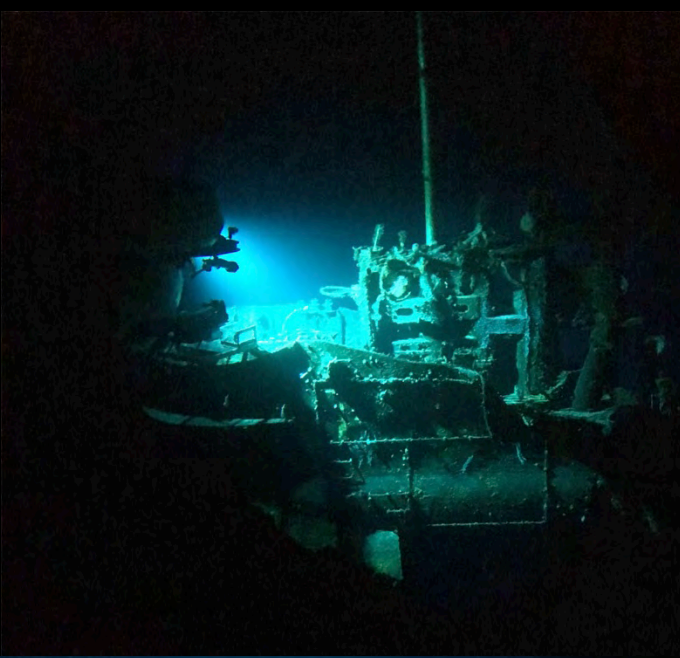
Total Dives = 62 Pisces IV & V including test dives

HURL's 2016 Operational Areas

- Main Hawaiian Islands -

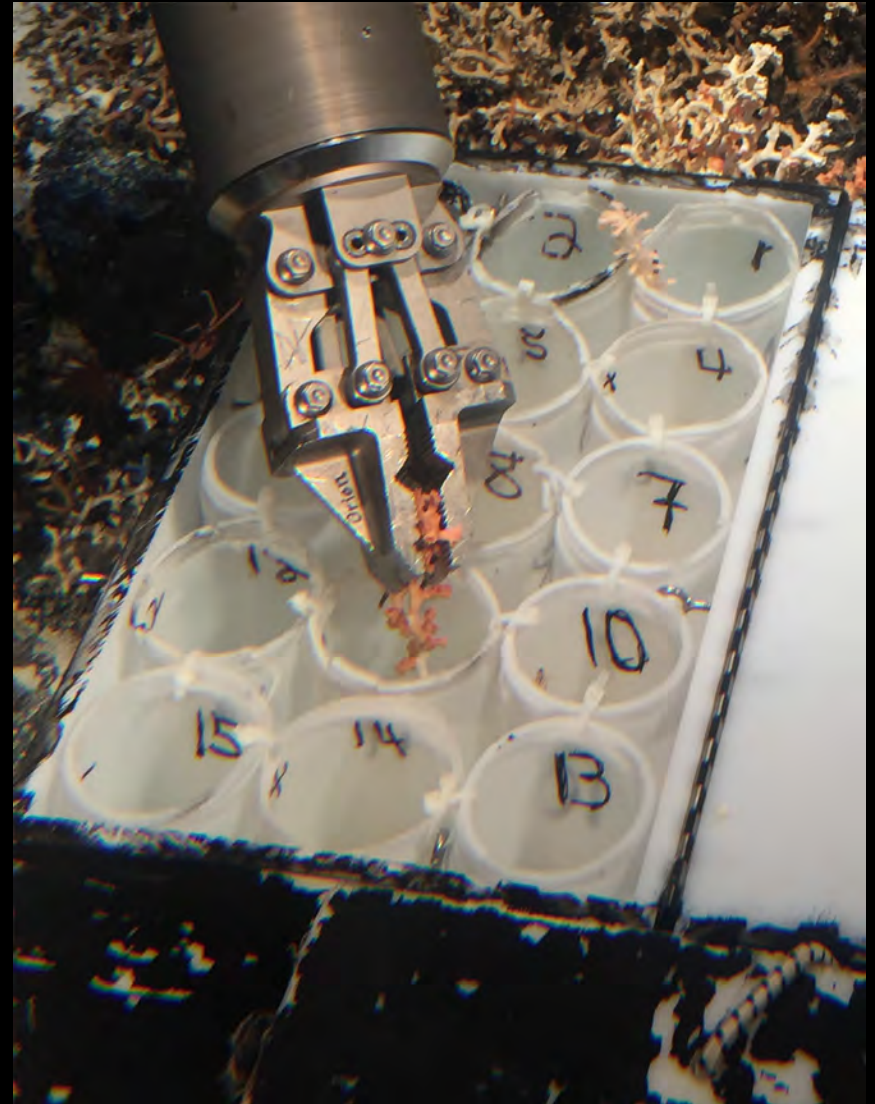


Maritime Heritage sites

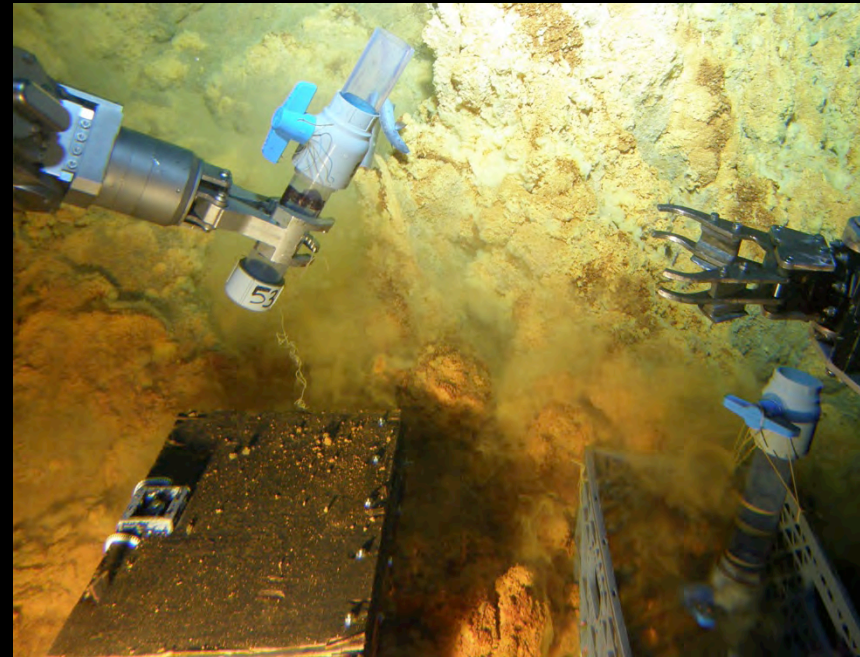
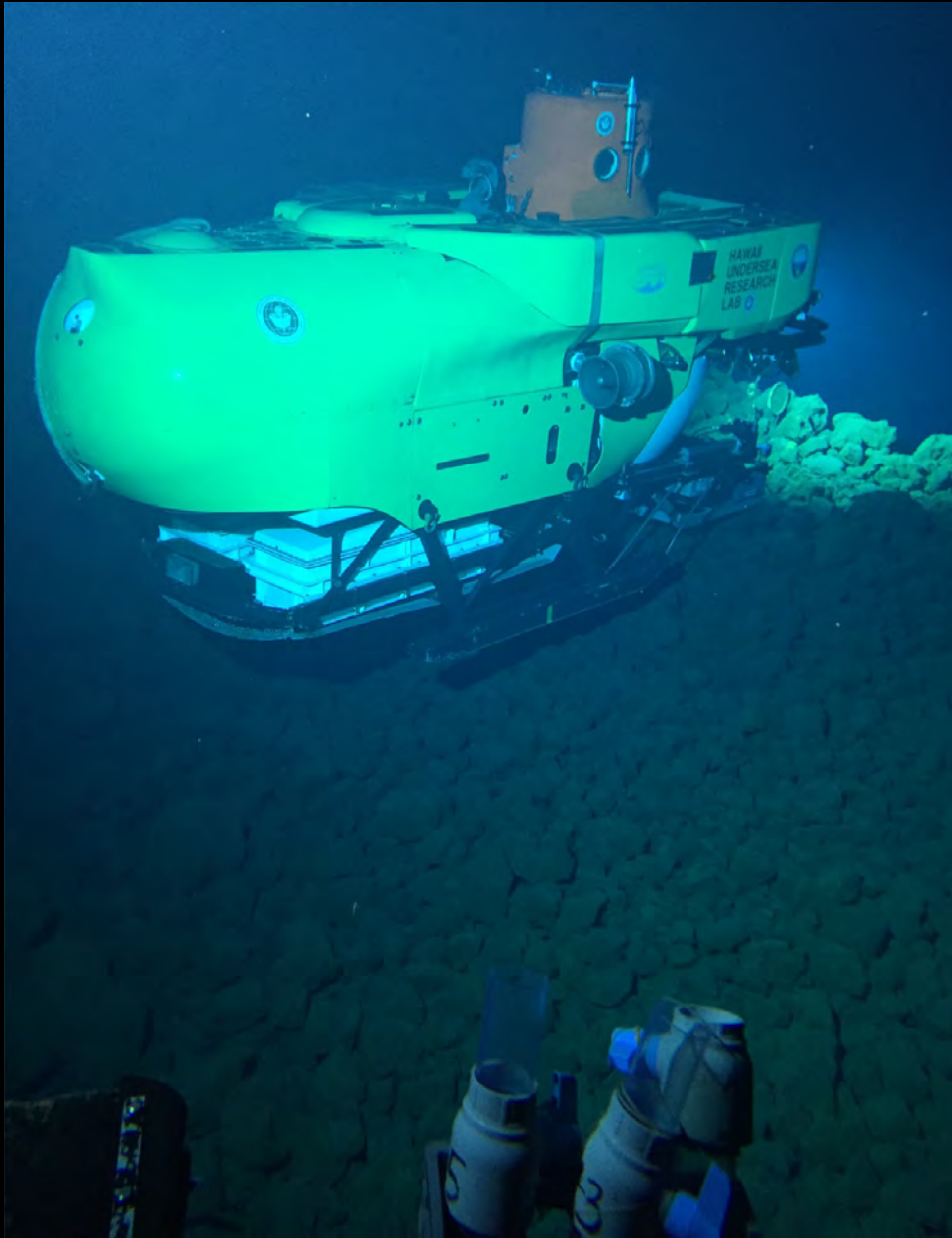


(Yes, this was a permitted & supervised op)

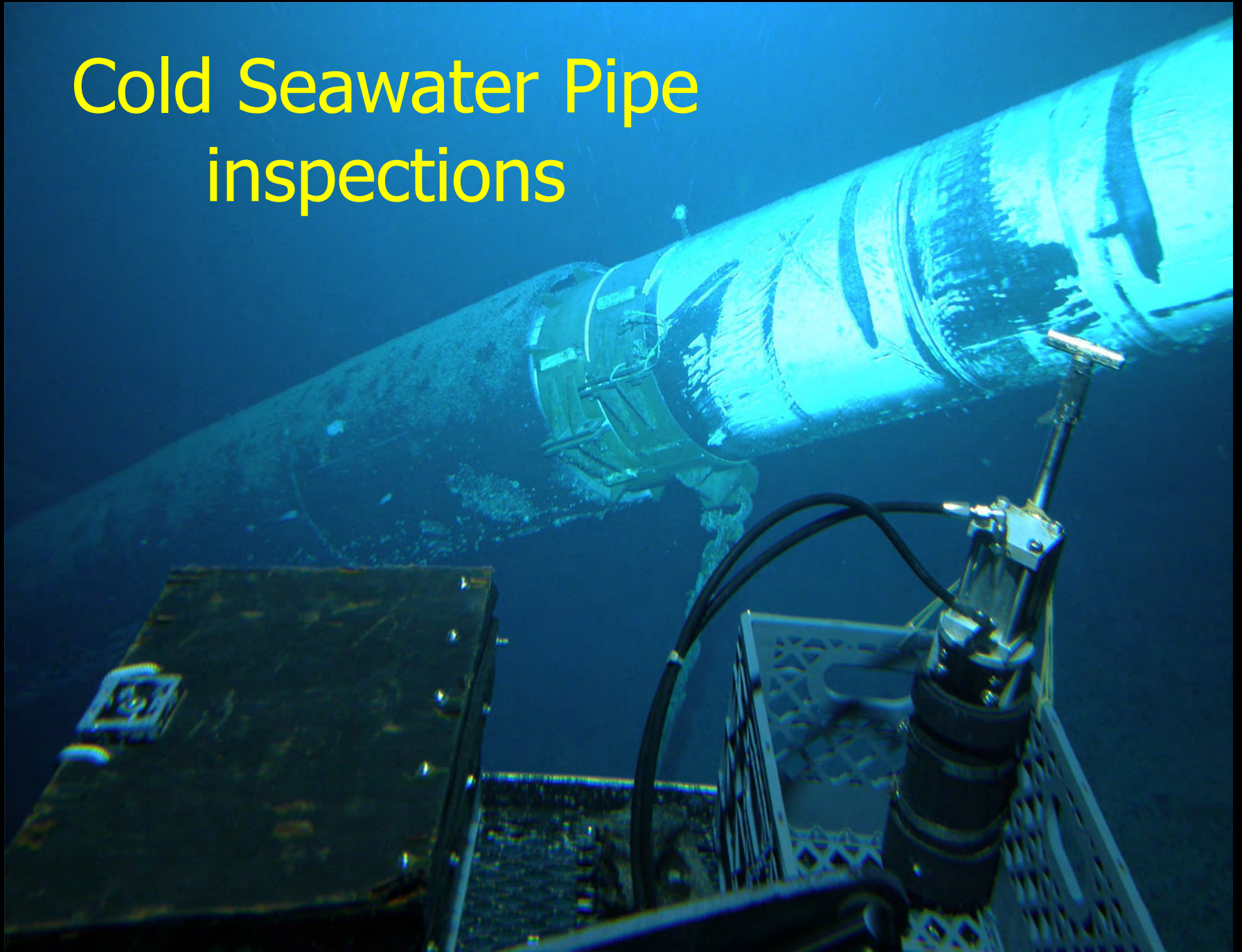
Deep-sea coral studies



Loihi Submarine Volcano pit dives

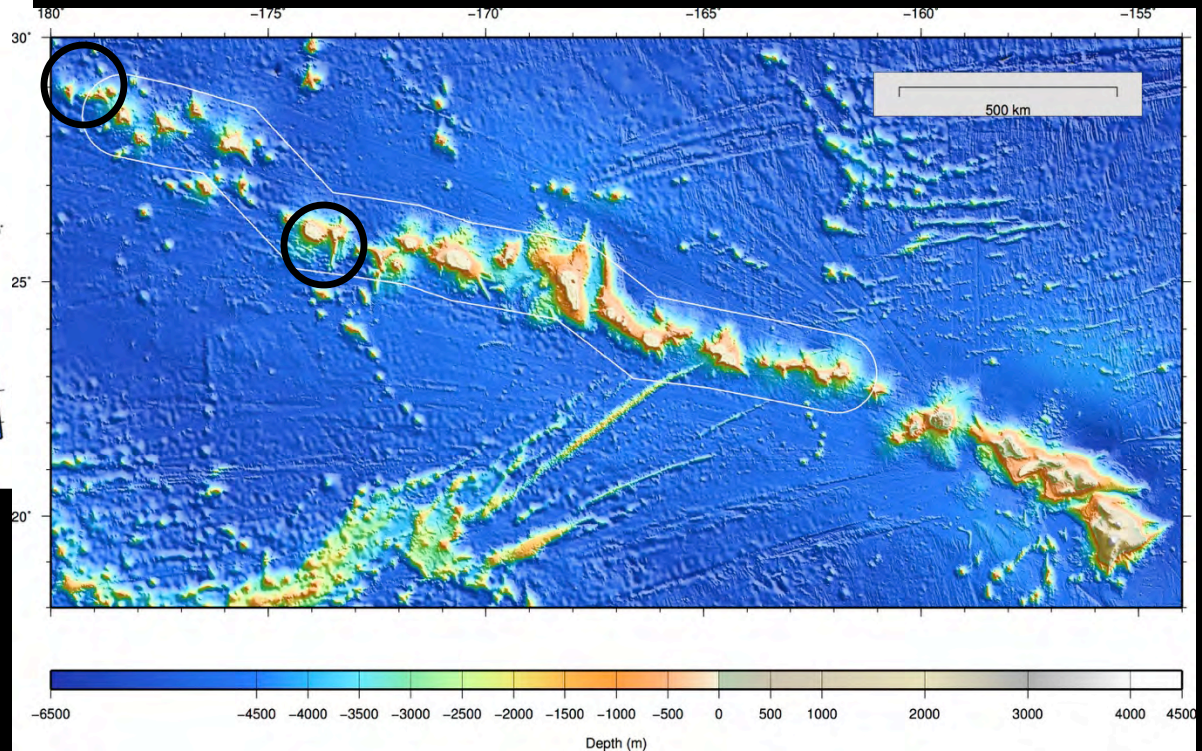
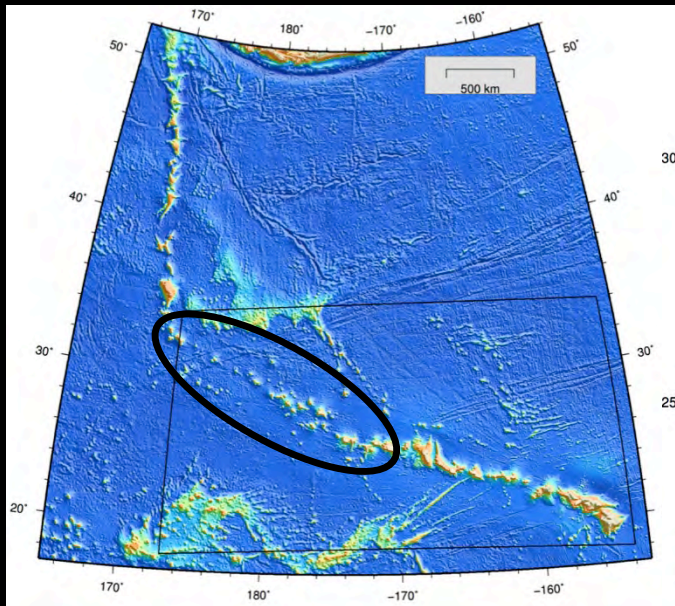


Cold Seawater Pipe inspections



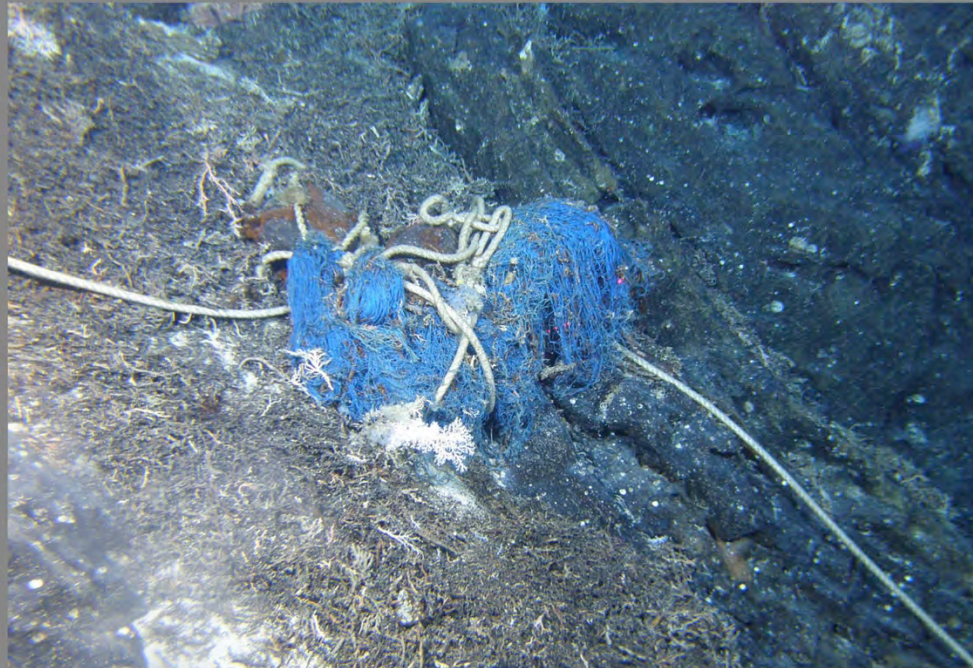
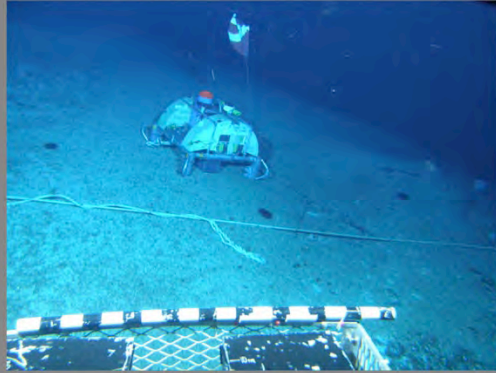
HURL's 2016 Operational Areas

Northwestern HI Islands to the
southern Emperor Smts (the Bend)

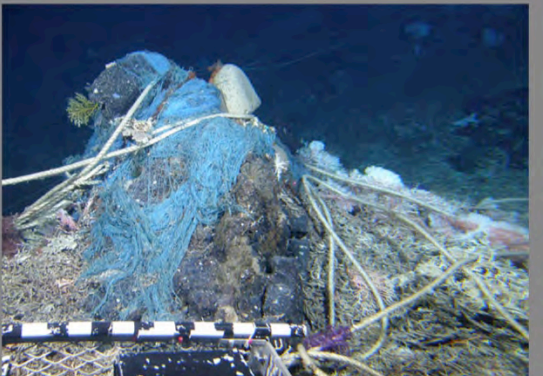
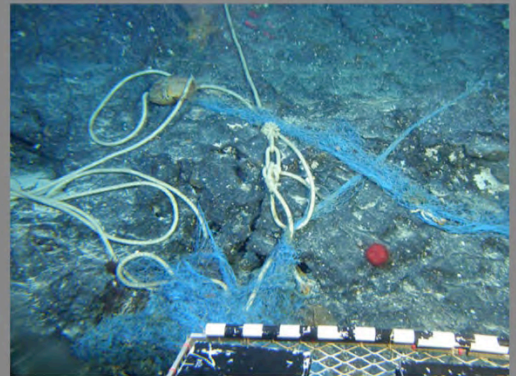
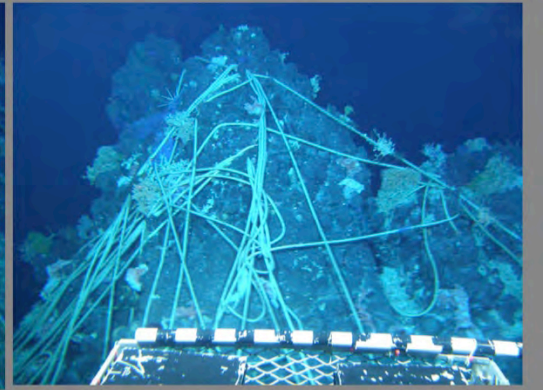
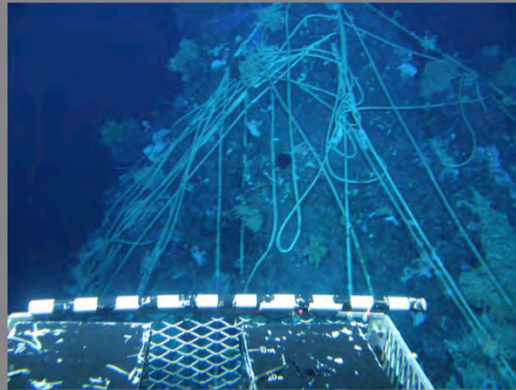
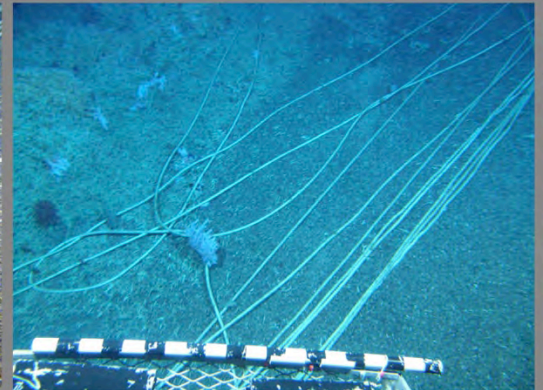
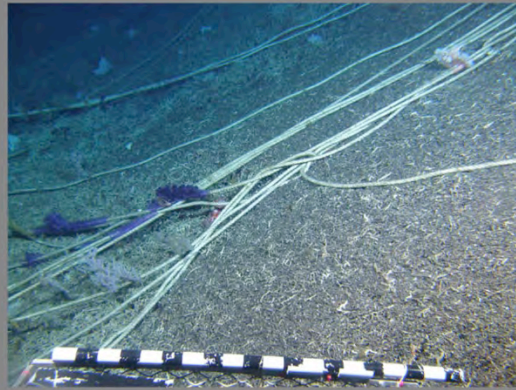


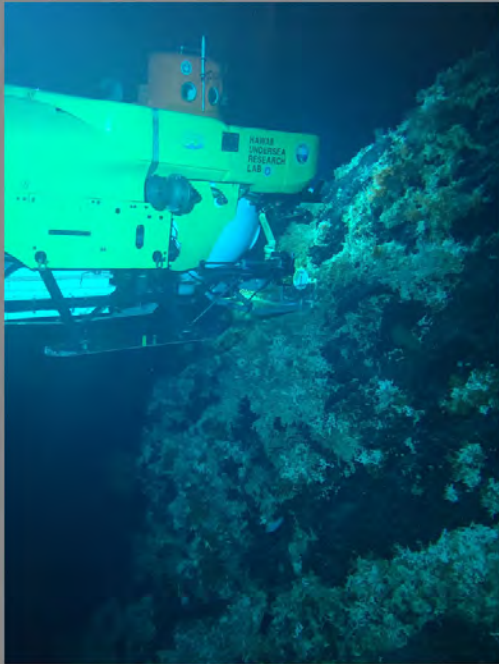
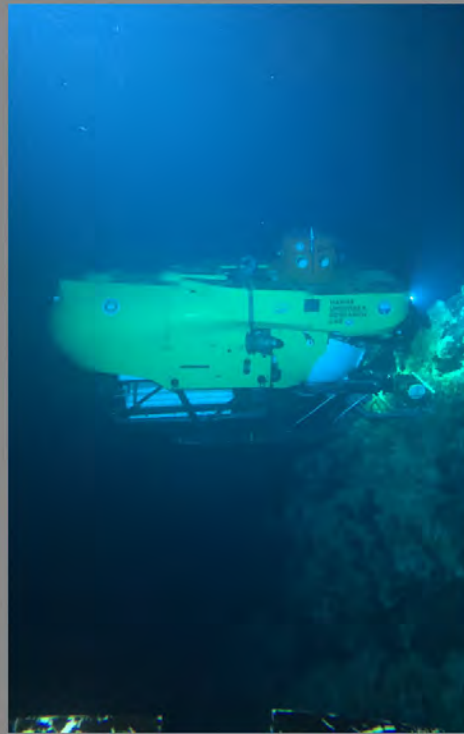
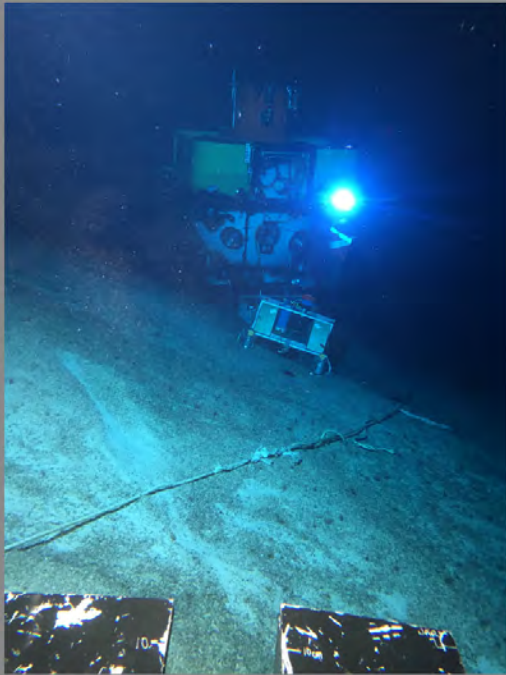
Deep-sea coral recovery from trawling

Coral tangle nets, repositioning landers



Dredge lines,
weights, coral
tangle nets
abound





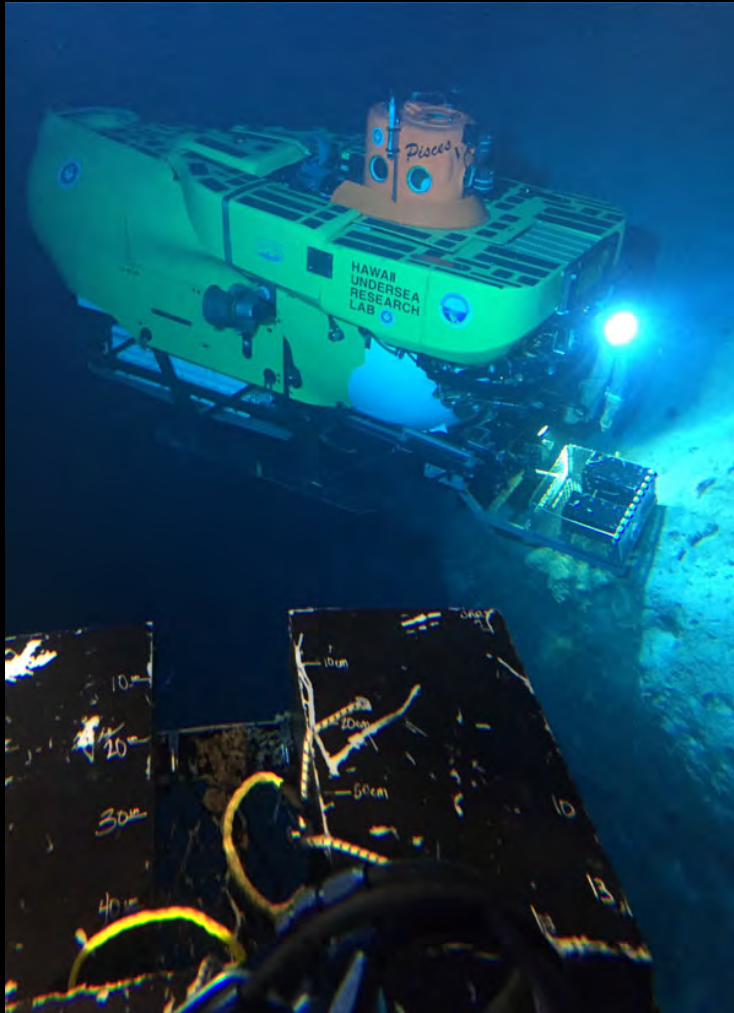
Transects &
collecting
along vertical
walls

Other Highlights in 2016



- Training of Navy SEALs in operating LRT submergible platform for delivery vehicle
- Two first descents on unexplored Geologists Seamounts, Cook and McCall
- 3 days of cold water intake pipe surveys for NELHA
- WWII era submarine I-400 bell recovery (permitted)
- Two more maritime wrecks located and identified

HURL's plans for 2017



- Refit Pisces V (ABS special survey, ongoing now)
- 45-day cruise to the NWHI/Emperors, part II
- Other, smaller Main HI Pisces projects TBD
- UH ROV projects to ACO and the CCZ nodule fields
- Continue working with Monument groups and scientists to develop projects in MPAs

Goals for the future

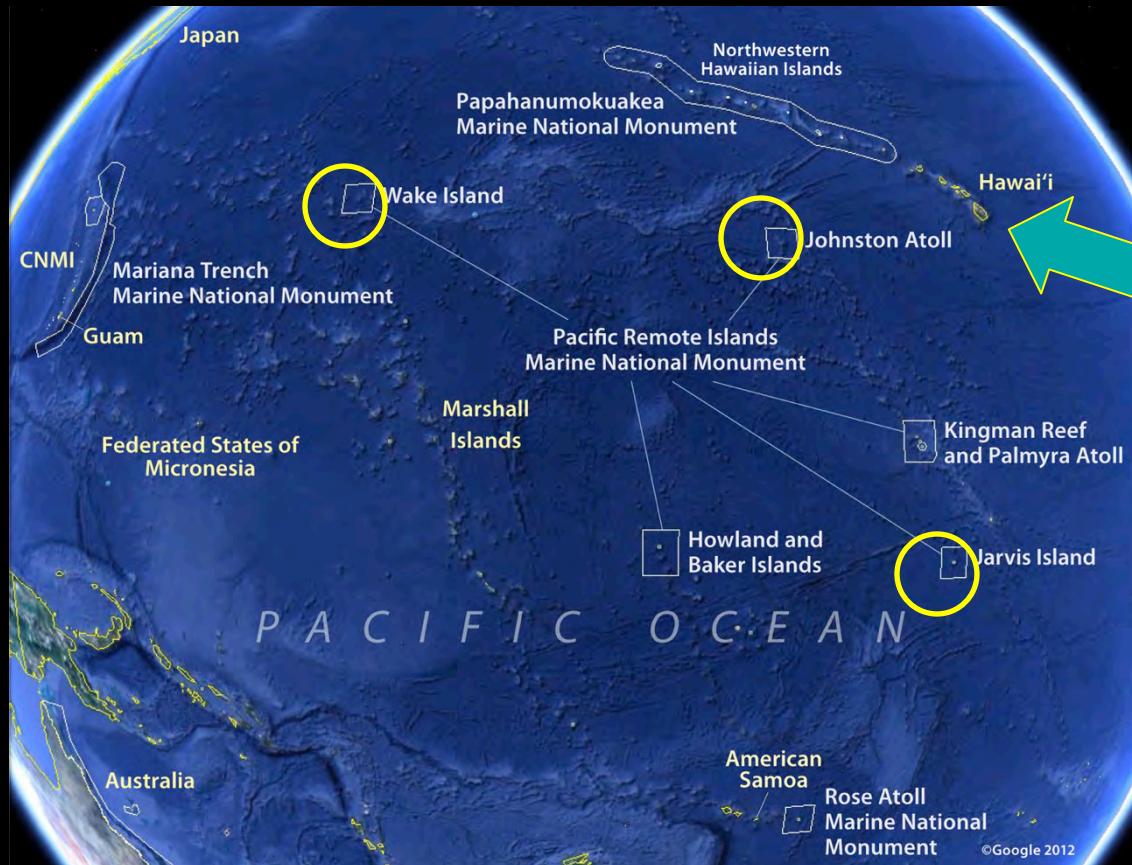
- Into the expanse – the recently expanded Papahānaumokuākea Marine National Monument
- Quadrupled in area to 582,578 mi² (1,508,870 km²), nearly the size of the Gulf of Mexico.
- Was largest protected area on Earth from August to October, now the Ross Sea MPA off Antarctica is the HUGest (598,000 mi², 1.55 million km²)



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The bigger Pacific Ocean picture

- Other Monuments and MPAs in the Pacific abound, many within relatively easy reach
- Monument boundaries of Wake, Johnston, and Jarvis Islands expanded in 2014 to their full 200 nm EEZs
- Closest access to the western CCZ poly-metallic nodule zones and encrusted seamounts for pre-mining studies



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