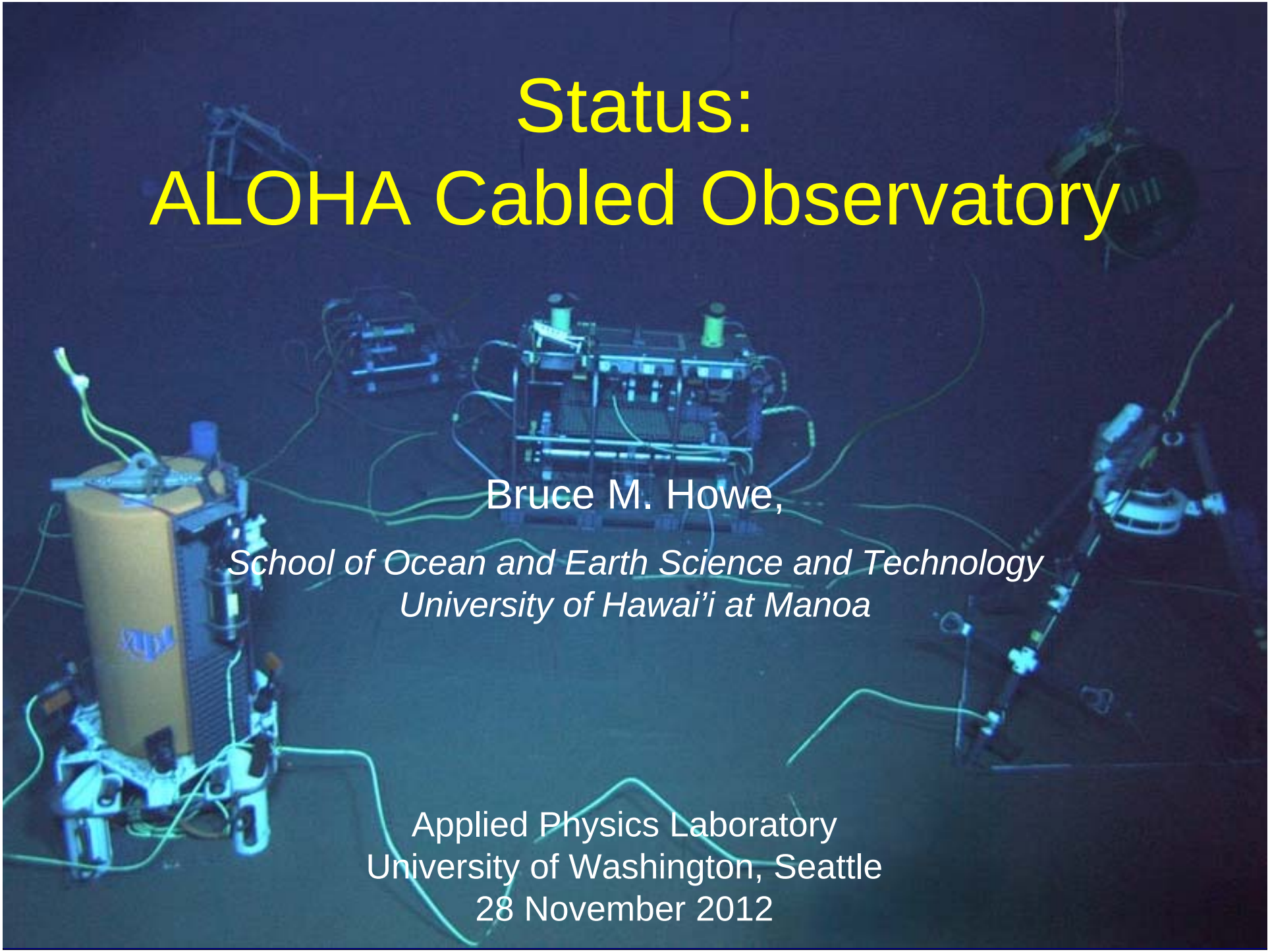


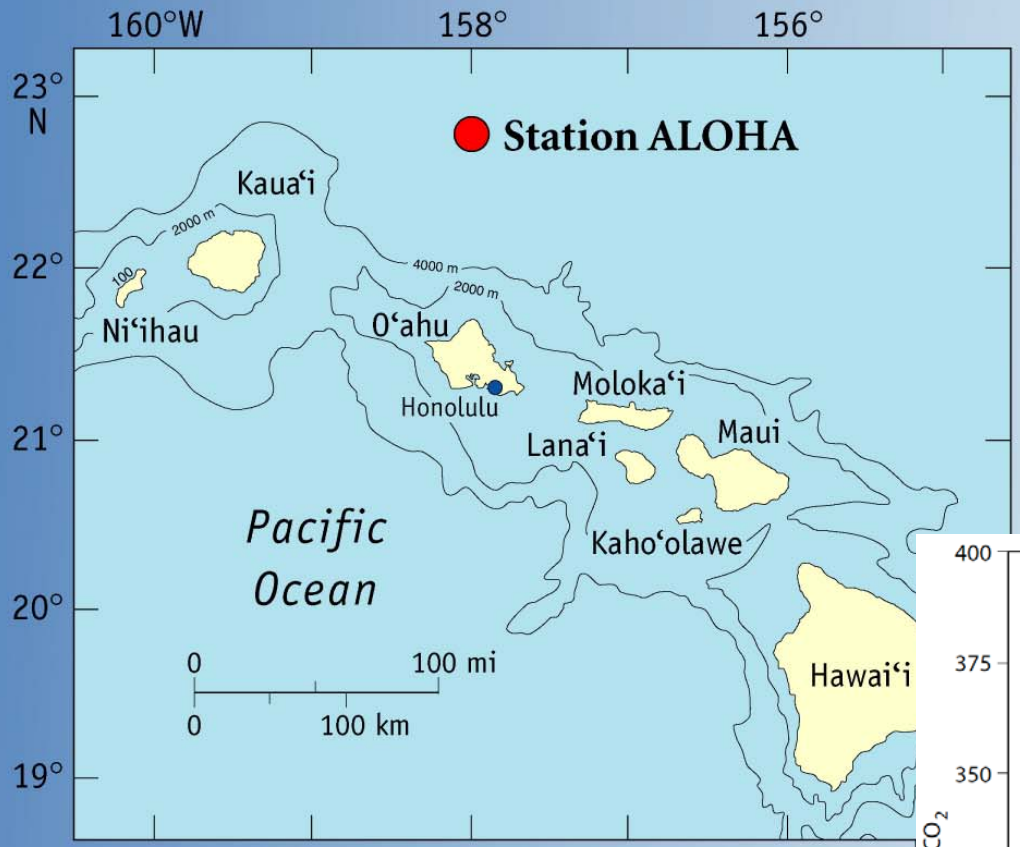
Status: ALOHA Cabled Observatory

Bruce M. Howe,

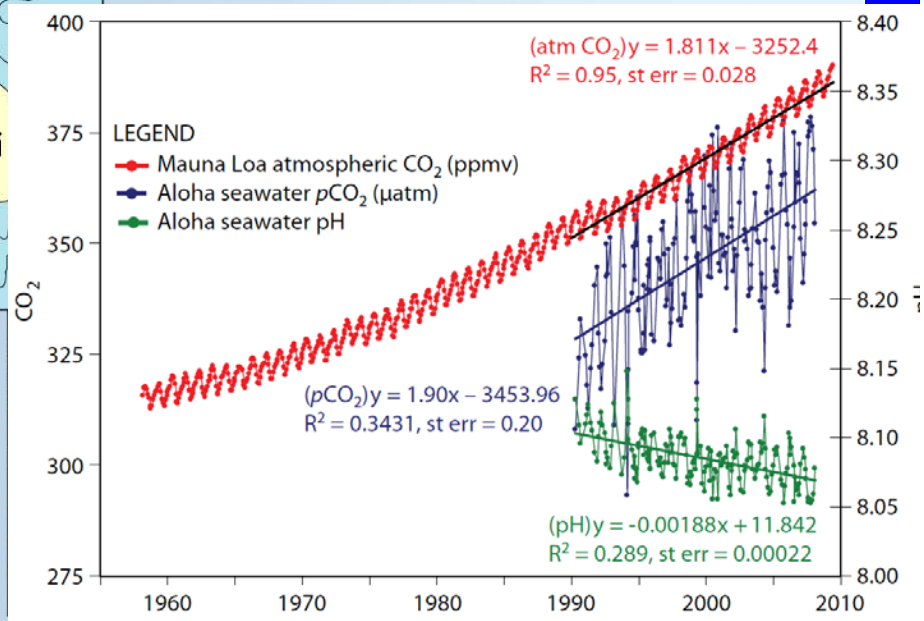
School of Ocean and Earth Science and Technology
University of Hawai'i at Manoa

Applied Physics Laboratory
University of Washington, Seattle
28 November 2012

Station ALOHA



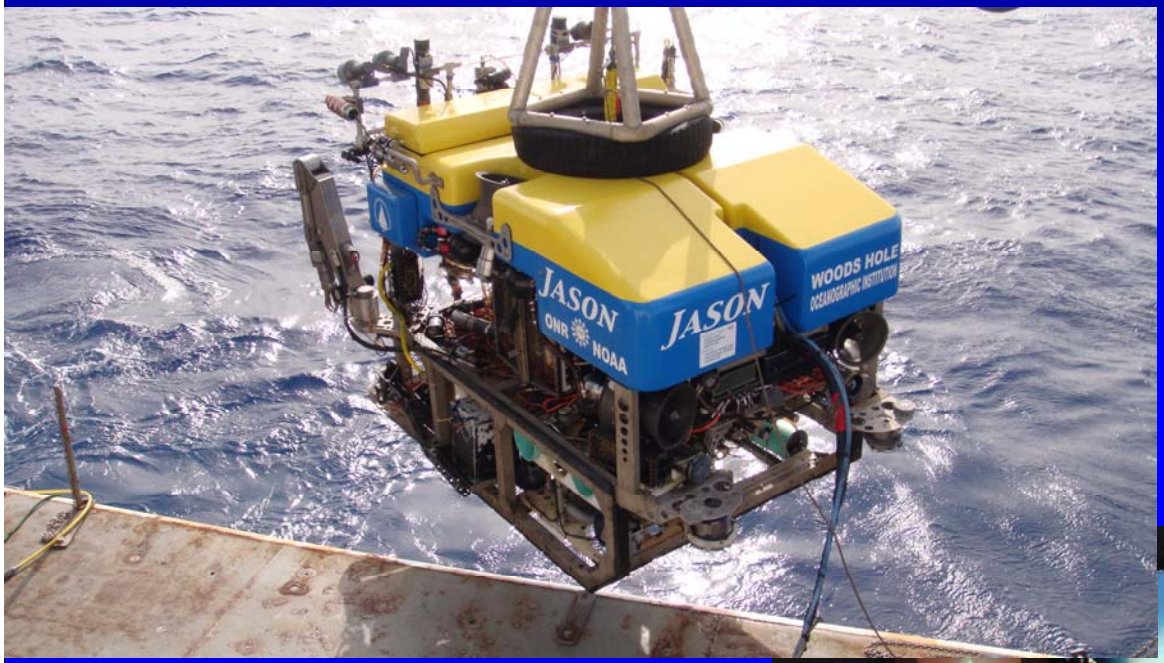
Hawai'i Ocean Time-series (HOT)



R. Lukas, D. Karl and many others

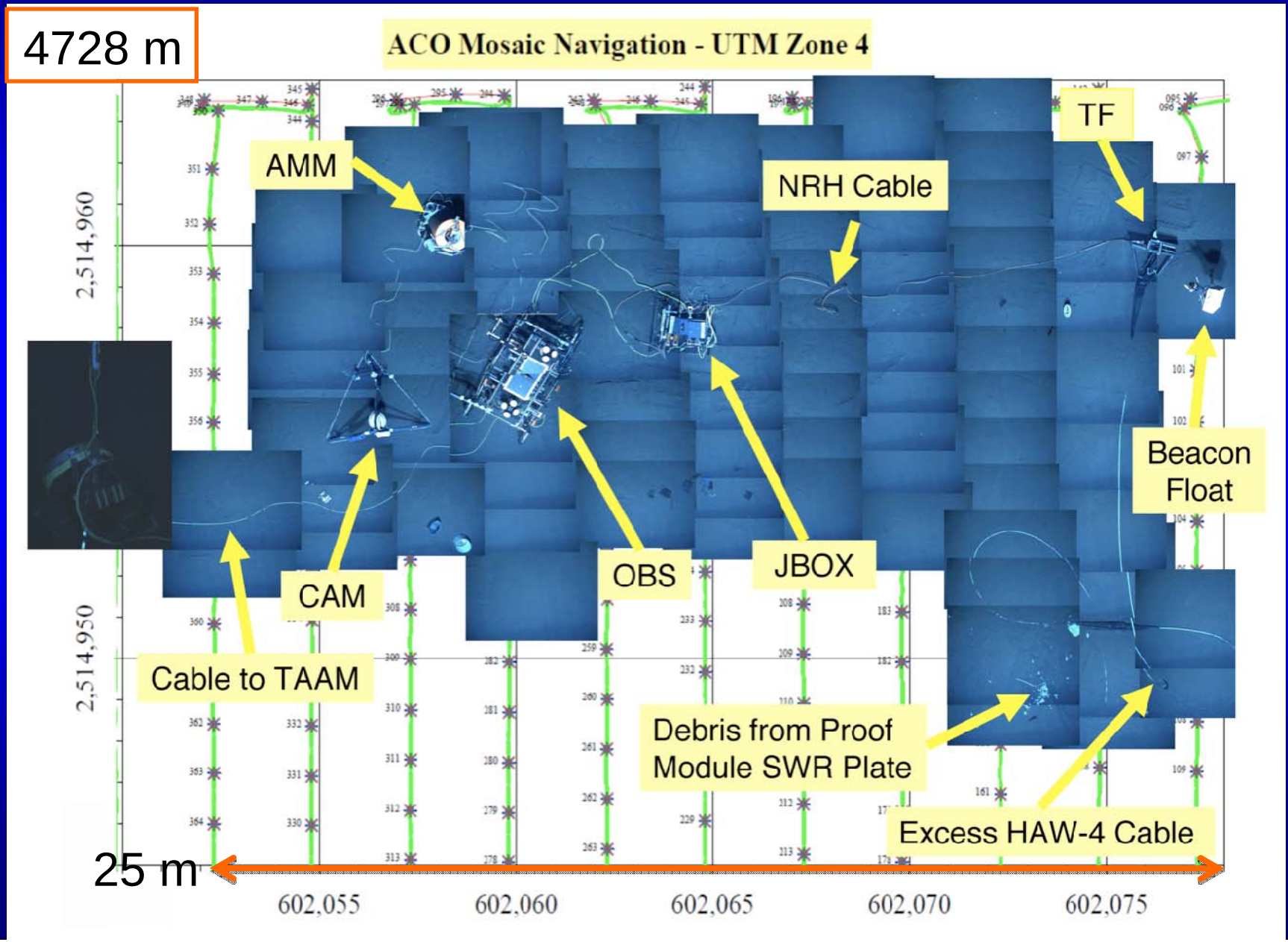
ALOHA Observatory

Jason – sine qua non

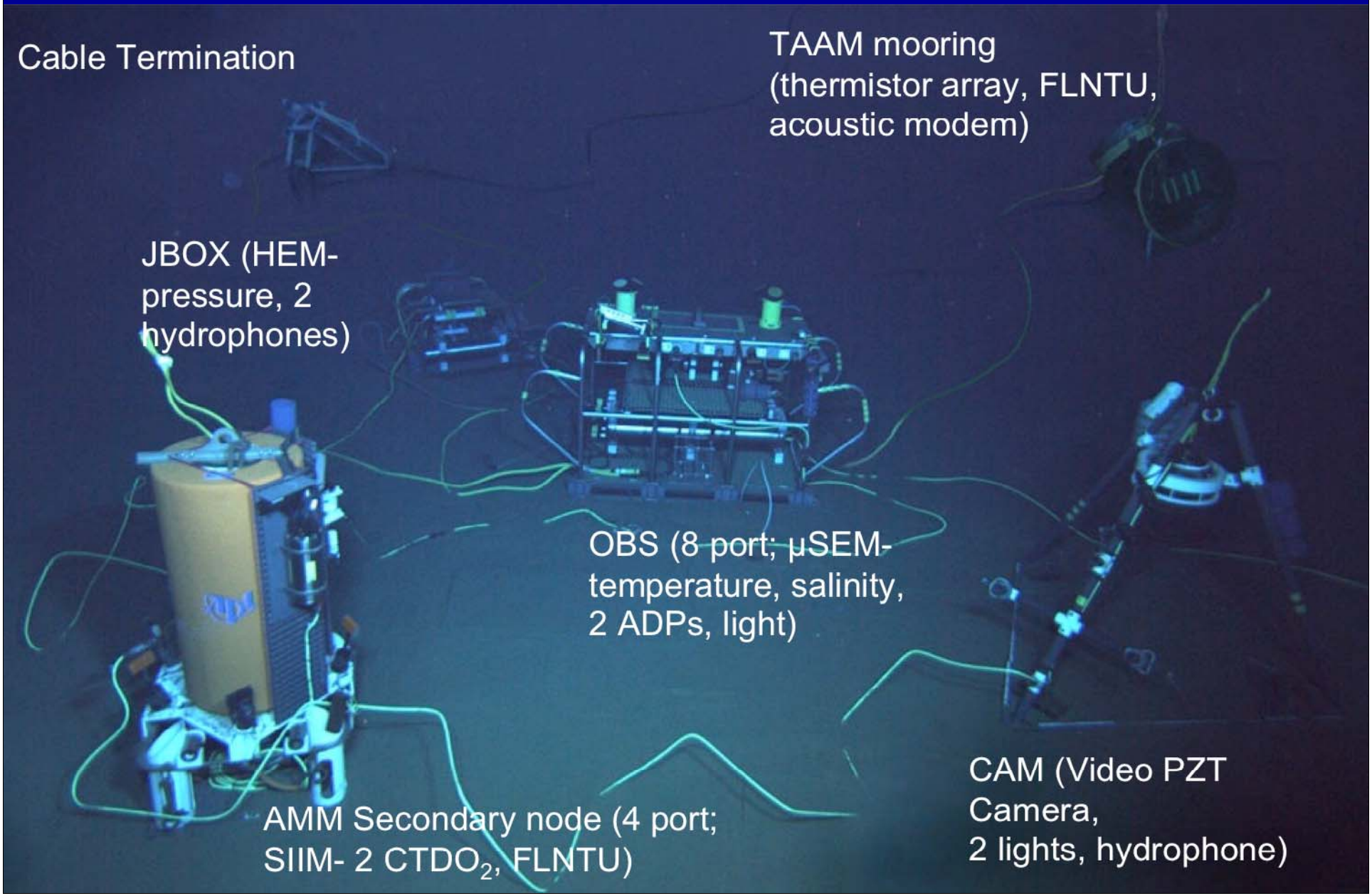


ACO Deployed June 2011

Mosaic of bottom components



Bottom configuration – June 2011



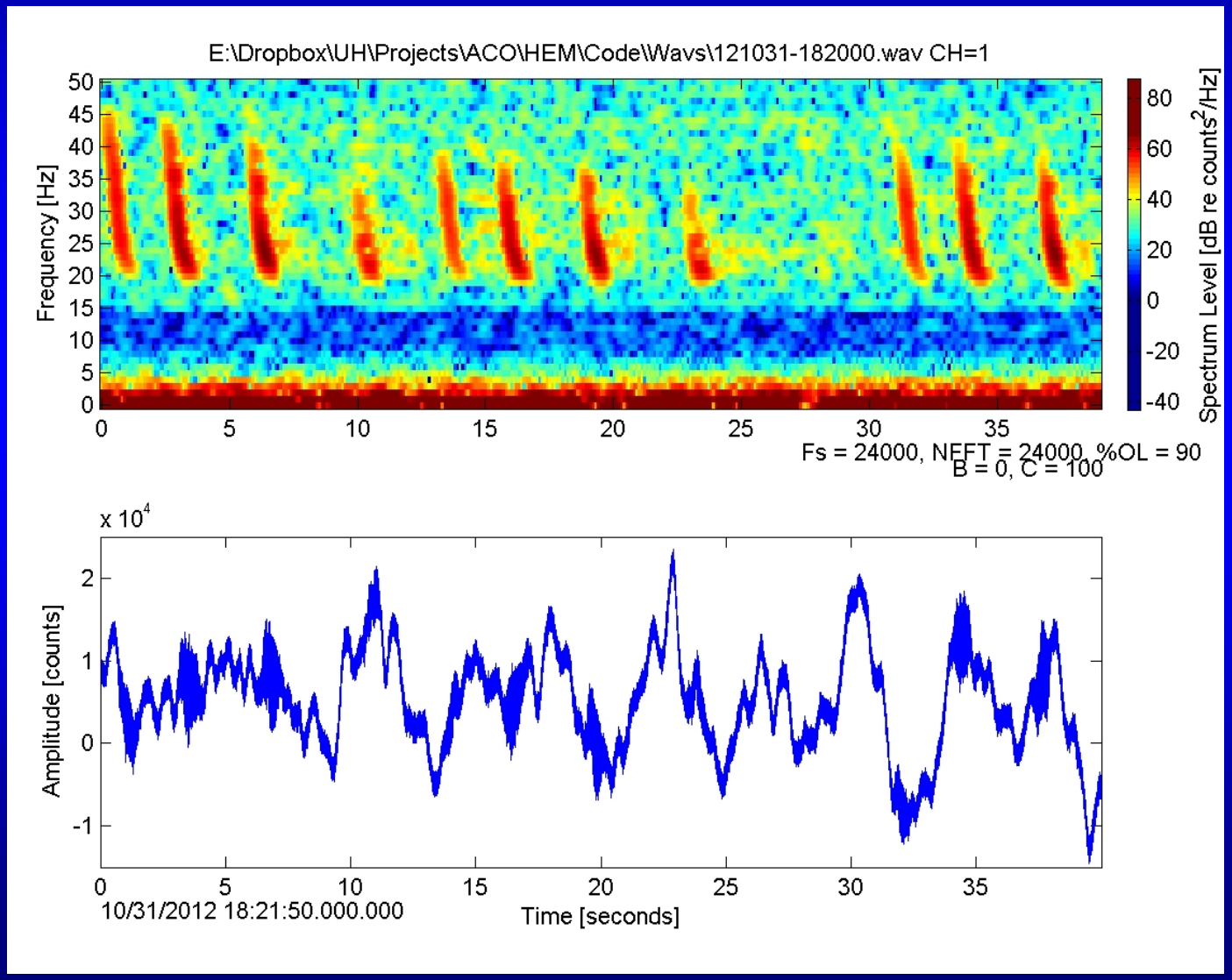
A few results

- Aloha.manoa.hawaii.edu

15+ species, ~1 event/hour

Deep-sea lizard fish attempting to eat an aristeid shrimp

First blues 31 October 2012

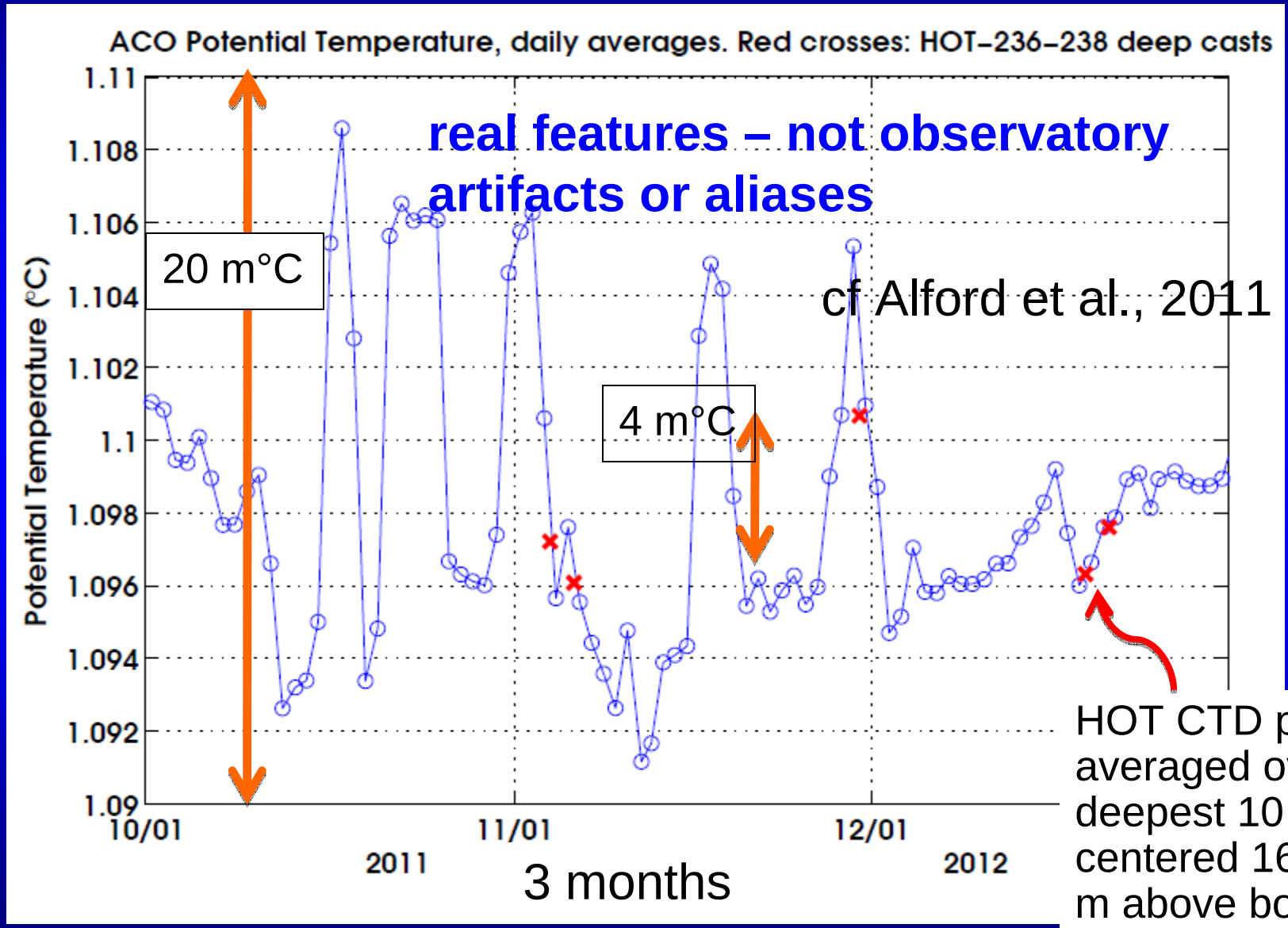


x10

Roth

Cold overflow event, large oscillations and slow recovery

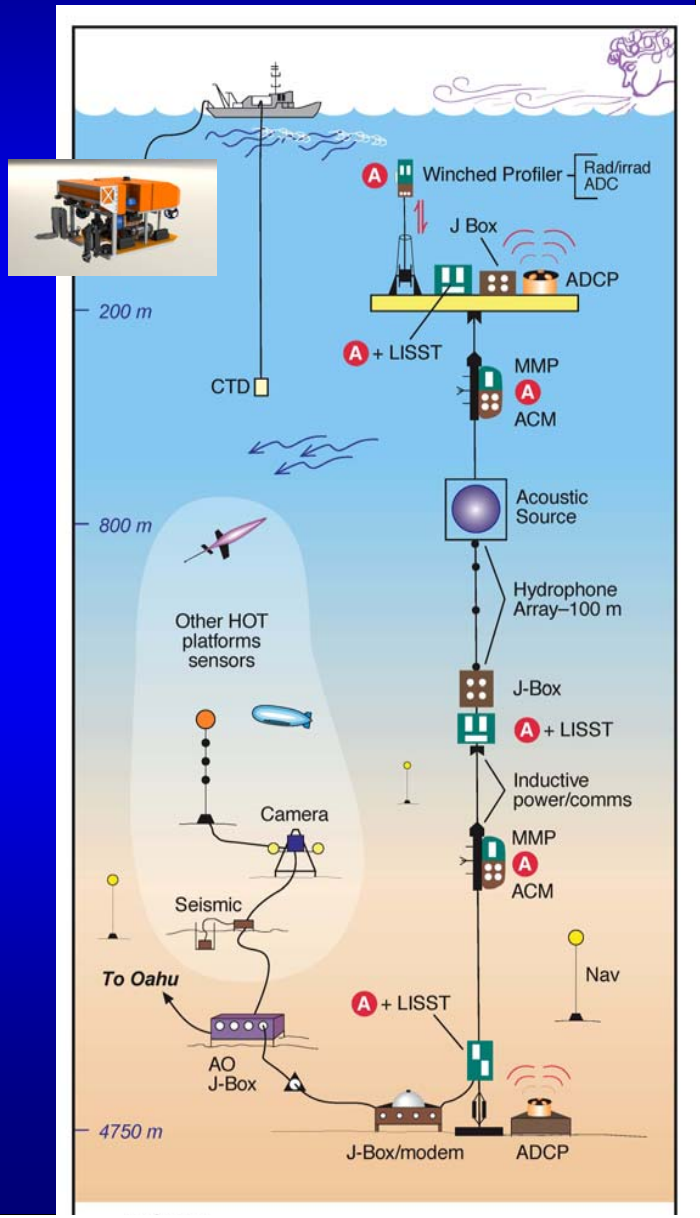
De-spiked daily averaged temperature at 4726 m



Lukas and Santiago-Mandujano

Expanding science at ALOHA

- Water column
  - Dynamics, mixing, turbulence, episodic events
  - Biogeochemistry – nutrients, production, fluxes
- Benthic communities – vertical fluxes, top predators
- Surface wave phenomena (e.g., ultragravities)
- Marine mammal studies – ships, behavior, population
- Basin scale communications and thermometry
- Synergies with historical/on-going ALOHA/HOT program



Next steps

- NSF OTIC O&M project
  - 2012-2015
  - Includes 5 days ship/rov time
  - Barebones
- September 2013 cruise
  - repair/replace non-working core sensors
- Proposals to use – Submit

- http://aloha.manoa.hawaii.edu
- AGU talk Friday morning

Hawai‘i Undersea Research Laboratory

NOAA’s Undersea Research Center for Hawai‘i & the Western Pacific

http://www.soest.hawaii.edu/HURL/

Pisces IV & Pisces V

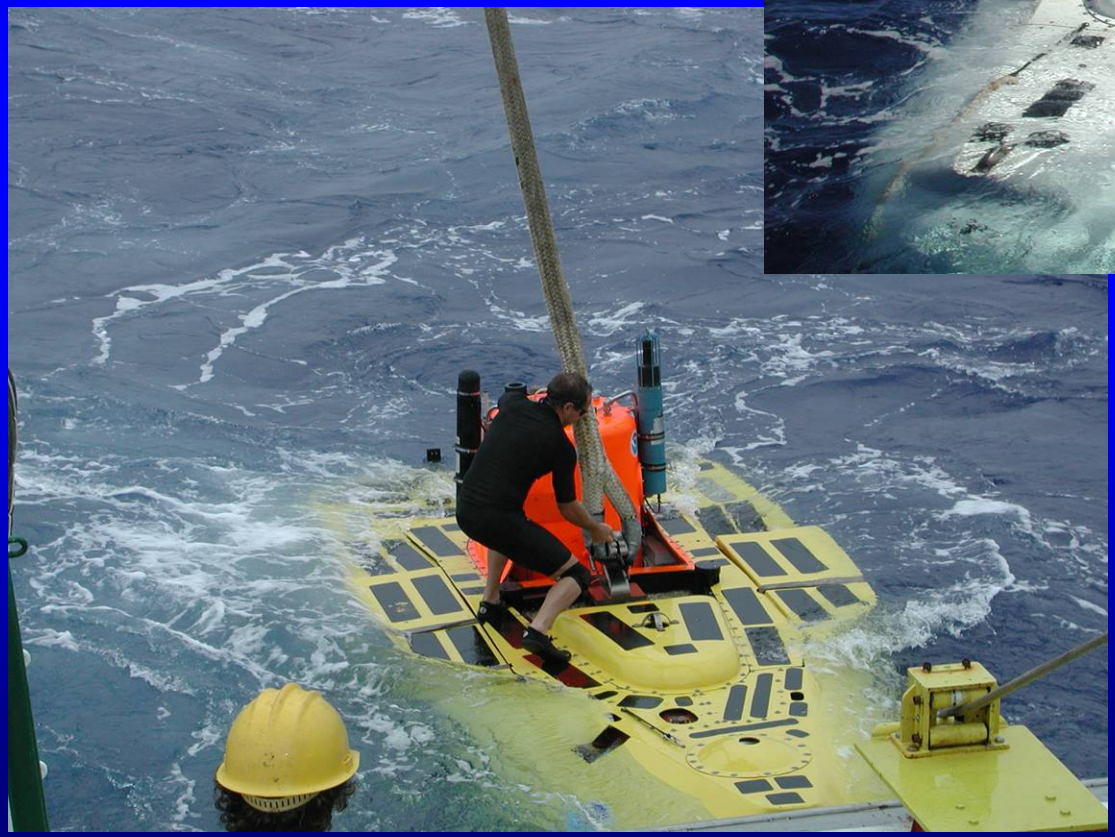
~2000 meter capable

Continual upgrades in science and operational gear

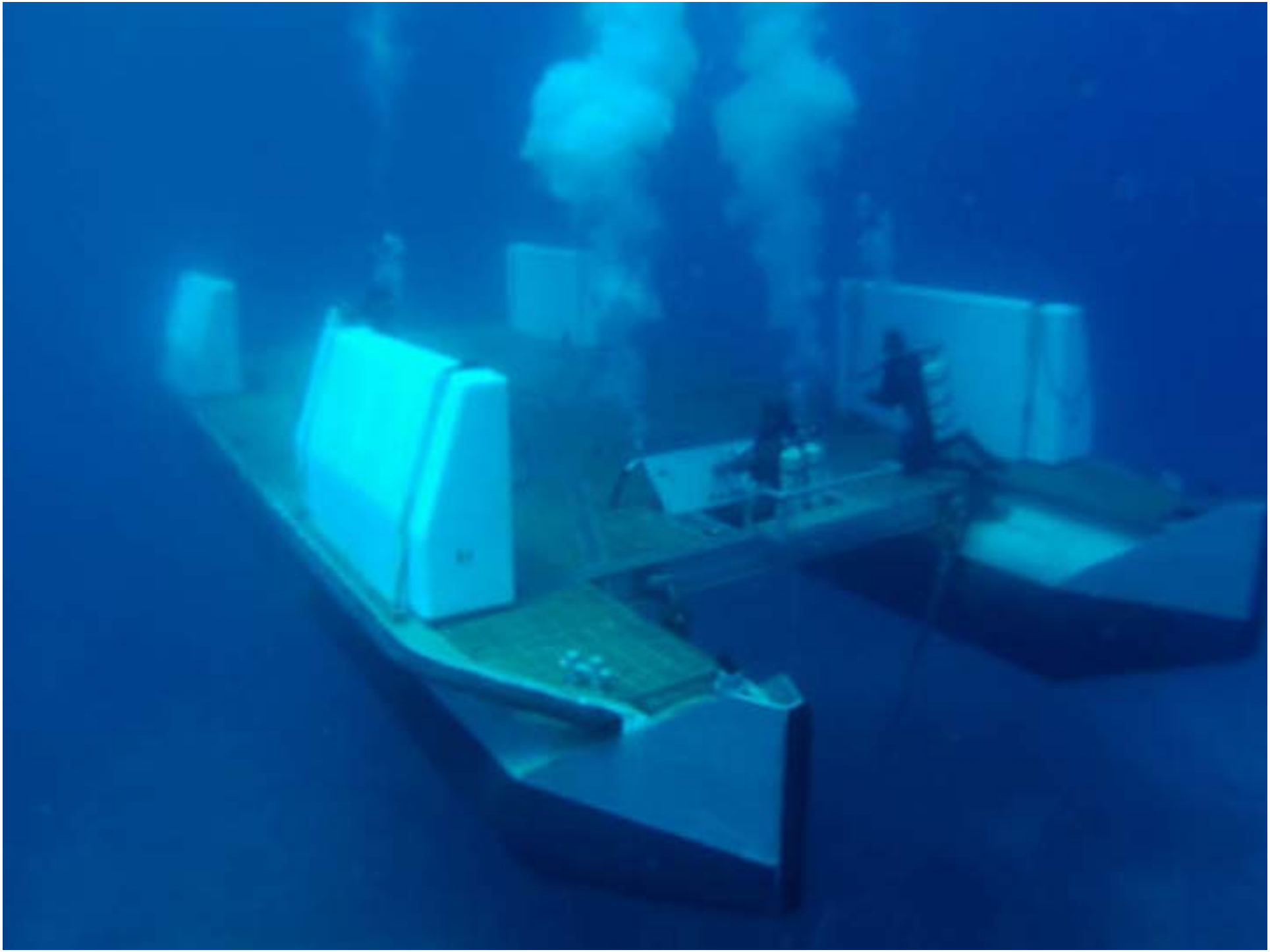
Provides self-rescue capability

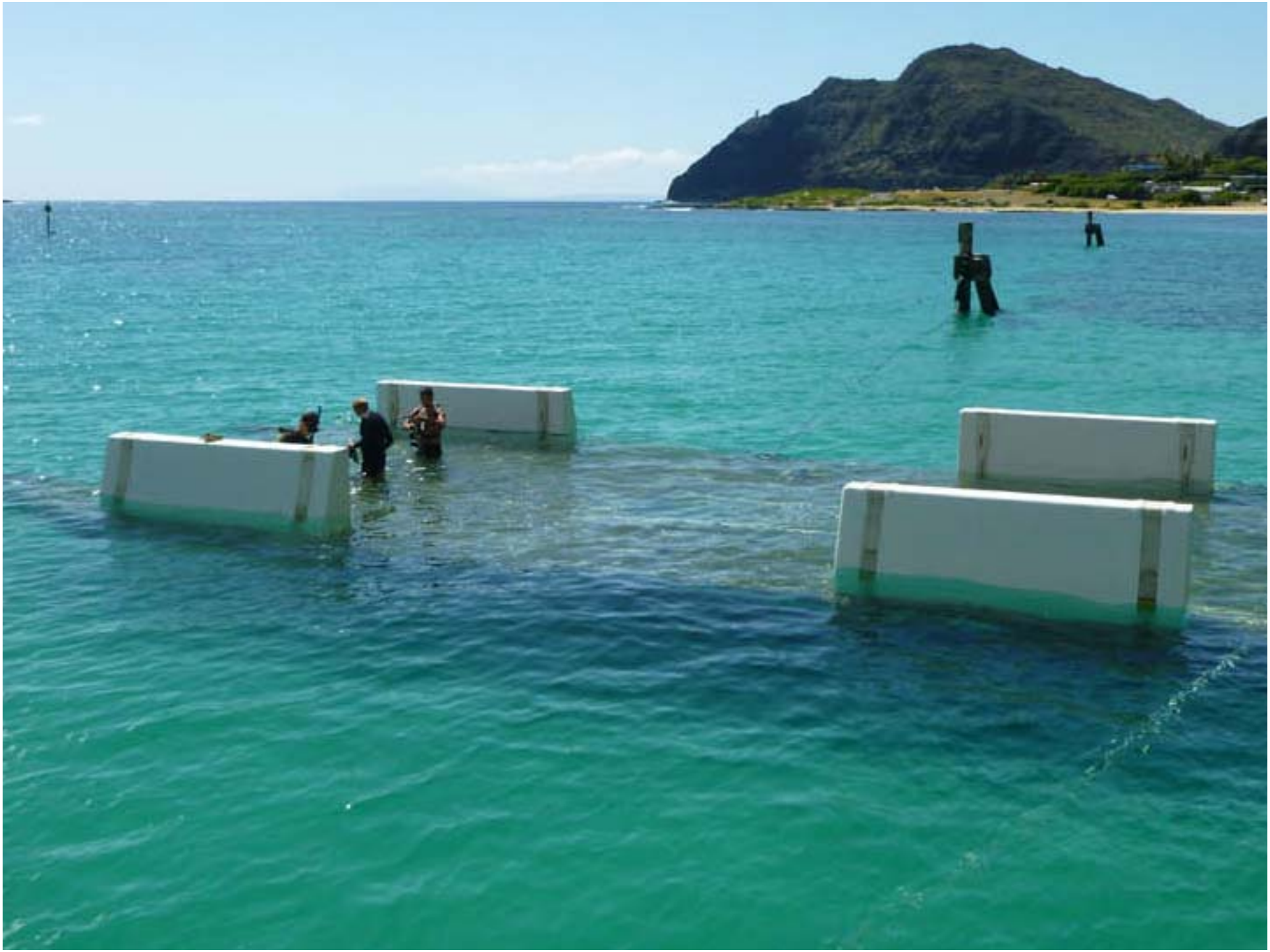
Goal is to make them as identical as possible with a complete set of spares

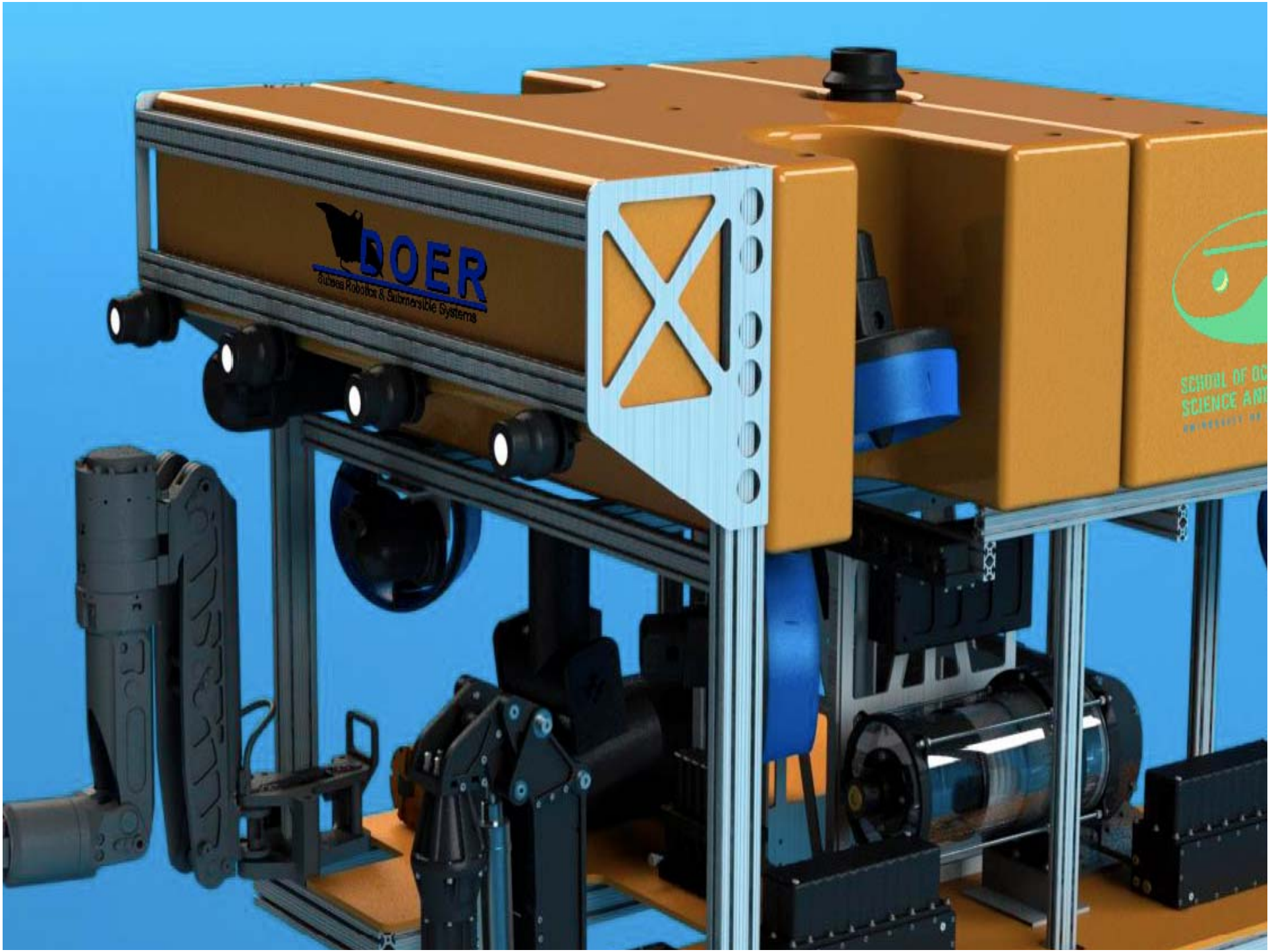
3 forward-looking viewports




DOER






DOER
Subsea Robotics & Submersible Systems

Payload : 80 pounds
power 25 hp , 7 thrusters
two manipulators-
Orion 7P and Sea Mantis
Zoom video cameras-mini Zeus
Fixed focus cameras- DSPL
Nano and multi Sea cams
UNOLS 0.681 cable


DOER
Subsea Robotics & Submersible Systems

Database Review for Ordnance

- 123 Dives
- 477 tapes
- 653 hours
- Over 1000 still-grabs

Makai Pier

Operations HQ During "off" Season

- General submersible maintenance
- Submersible overhauls & upgrades

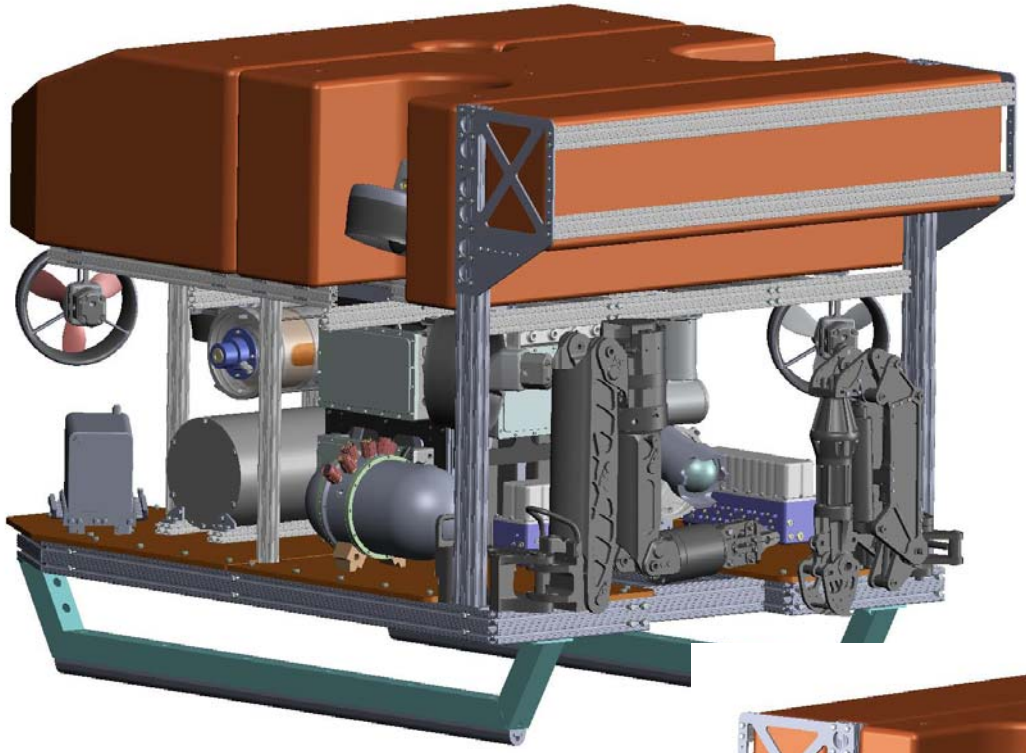
Check us out at www.soest.hawaii.edu/HURL !

Status Report: UH-SOEST ROV

Bruce M. Howe
for Sandy Shor, Scott Ferguson, Dan Greeson, Peter Townsend, and many more!

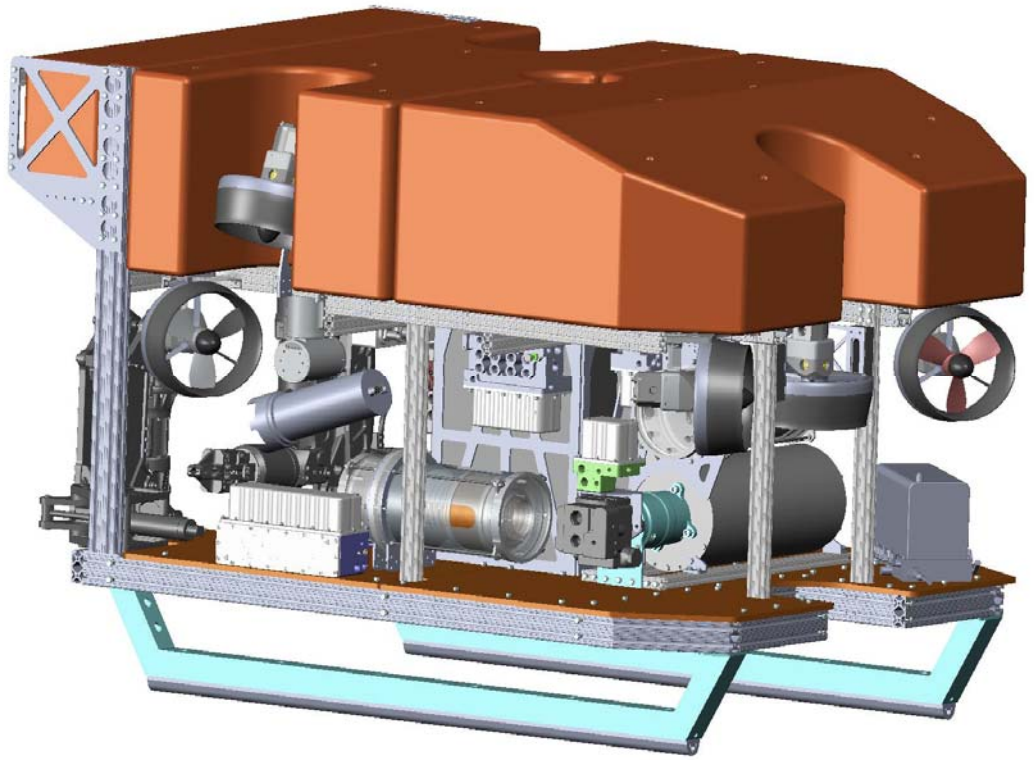
School of Ocean and Earth Science and Technology
University of Hawai'i at Manoa

DEep Submergence Science Committee (DESSC)
Annual Community Meeting
2 December 2012
San Francisco



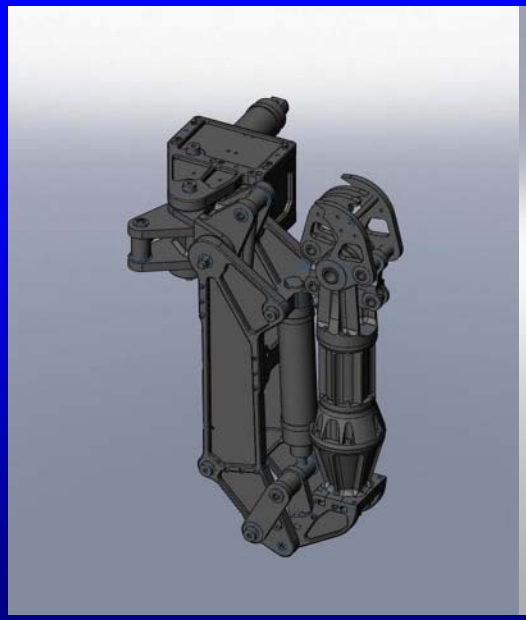
DOER Deep Ocean Exploration and Research, Alameda, CA

- 80” long x 56” wide x 58” tall
- 3,000 lbs, 80 lbs reserve
- 25 HP
- 7 thrusters
- 6000 m



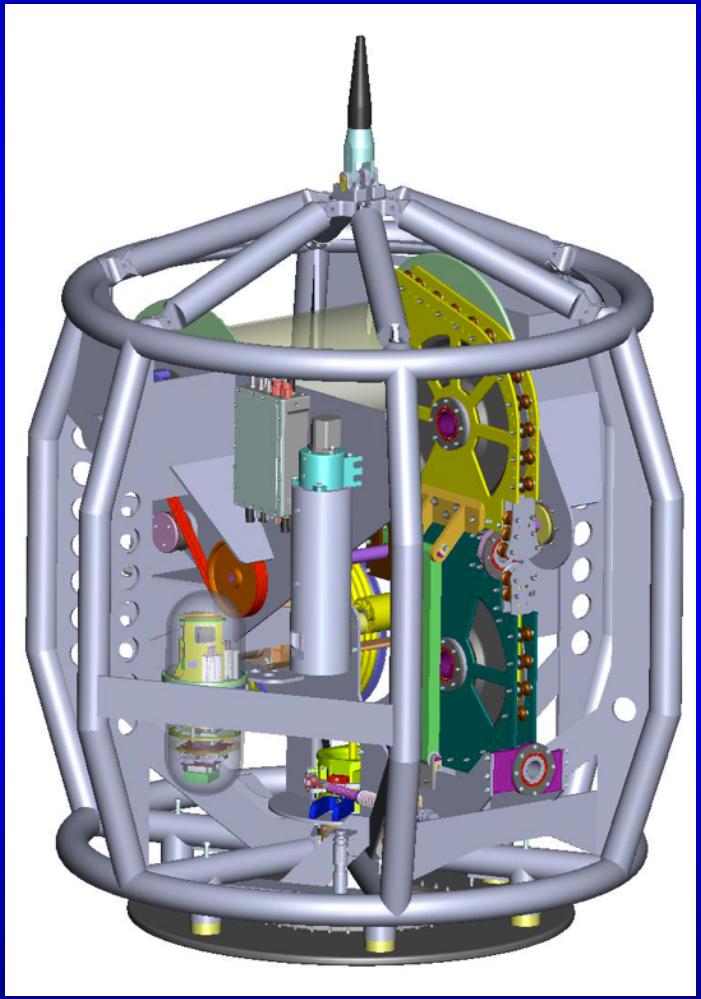
ROV science capabilities

- Manipulators
  - Schilling Orion 7P, seven-function
  - DOER SeaMantis, five-function



Tether Management System

- 75” diameter, 68” high (top-hat only)
- Transition between 0.681” cable and neutrally buoyant tether
- Winch drum w/ slip-ring and level-wind
- 5 HP hydraulic motor



ROV science capabilities

- Sensors and Lighting
  - 4 DSPL SeaLite Sphere, 160 W dimmable LED lights with capability for 2 more
  - 1 Insite Pacific Mini-Zeus HD camera, w/ pan & tilt
  - 2 DSPL Nano SeaCam SD cameras (can fit on manipulator arm)
  - 1 DSPL Multi SeaCam SD camera*
  - 1 Falmouth Scientific MicroCTD*
  - 1 Tritech Super SeaKing collision avoidance sonar* (to 4000 m)
  - 1 LinkQuest Navquest 600P Micro-DVL
  - 1 LinkQuest TrackLink 5000HA USBL transponder* (to 4000 m)
  - Tritech PA 200/20 altimeter*
  - Sample basket: 30” wide x 32” long x 8” deep (trying for 10”)

*UH-provided

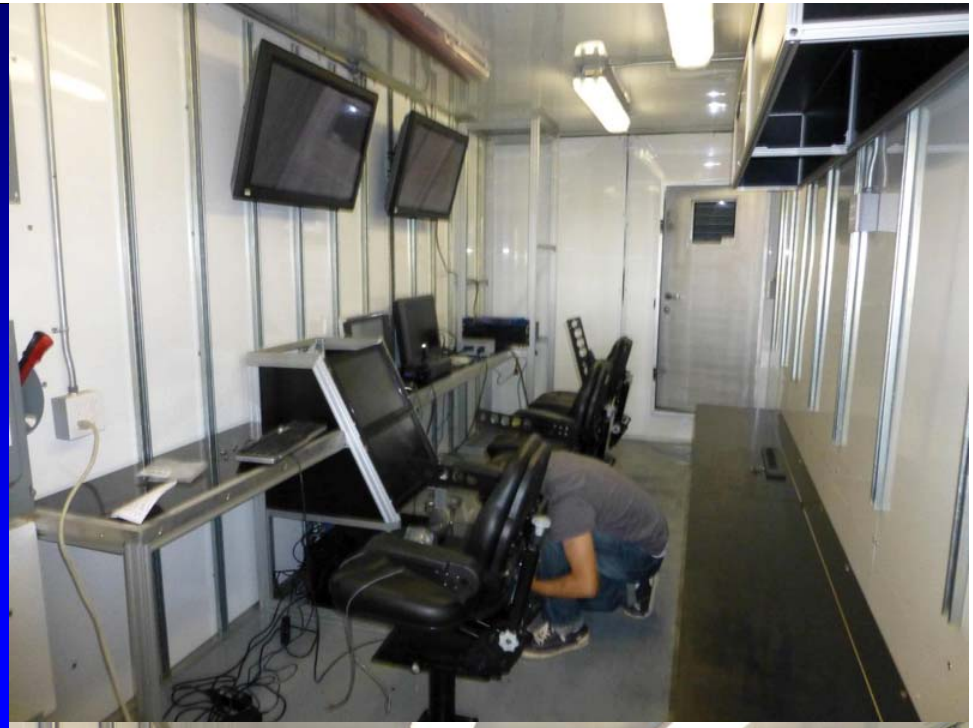
ROV science capabilities

- Science Manifold
  - 6 bulkhead connectors
  - Will support RS-232/422/485 and Gigabit Ethernet
  - Supported voltages include 5, 12, 24 and 48 VDC
  - Additional ACO support manifold is being developed, bulkhead connector TBD
- Expandable to larger sample basket and/or tool skids

Control and Maintenance Vans

- Three seats: pilot, co-pilot, manips
- 12 ft. Bench for observers

- Power Distribution Unit
- ROV Tie-downs
- Work table
- Storage



Cable heating on Drum

- Overheating of the cable on the winch drum is a potential concern
- Addressed in MS Thesis, John Casilio
  - Thermal analysis: mathematical model and small scale test
  - Predicted maximum temperatures of the shipboard reel: most operations less then 18 hours in duration are within an acceptable margin of safety (all on, on deck)
  - Real-time temperature monitoring should be considered for future employments

Next

- Awaiting delivery – any time
- Training and testing
- First mission
  - ALOHA Cabled Observatory
  - September 2013
- R/V KOK Launch and recovery (LARS)