

Ocean Exploration Trust

Allison Fundis (virtual)

OCEAN EXPLORATION TRUST

DeSSC New User Program

March 1, 2023

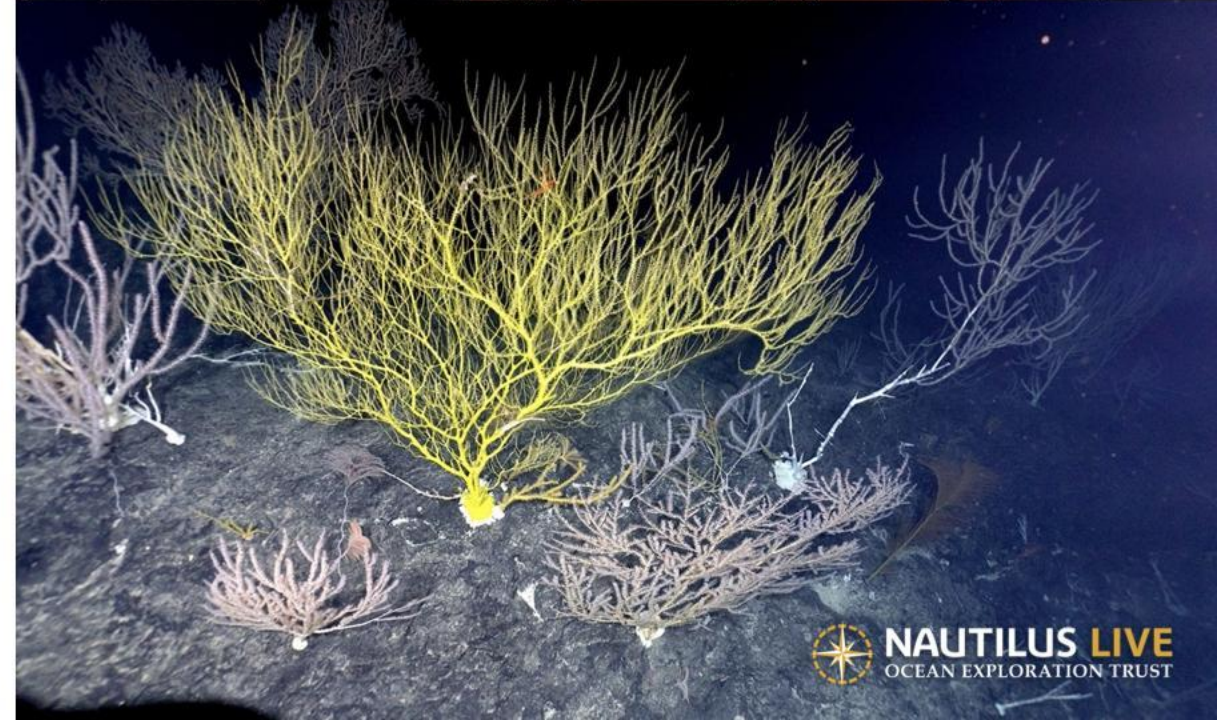


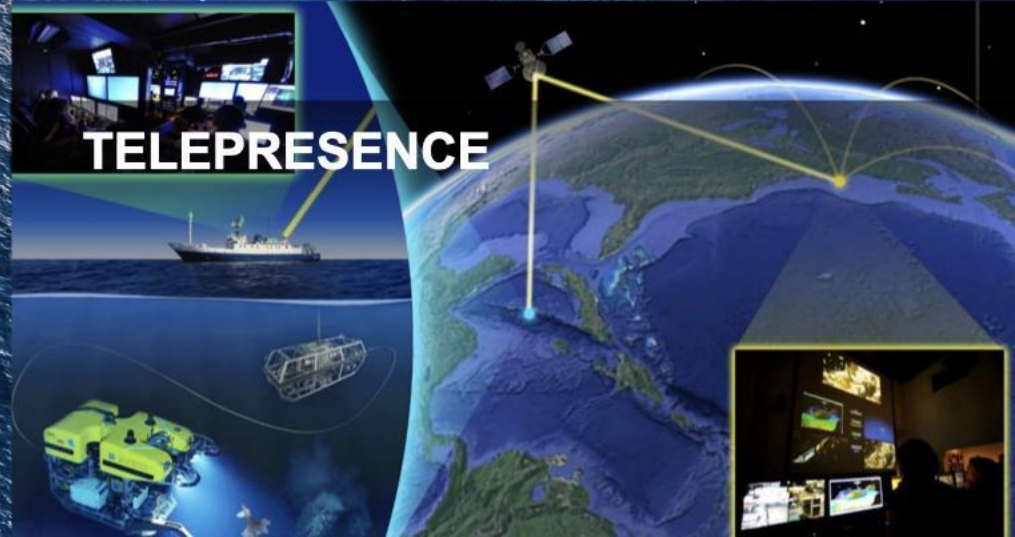
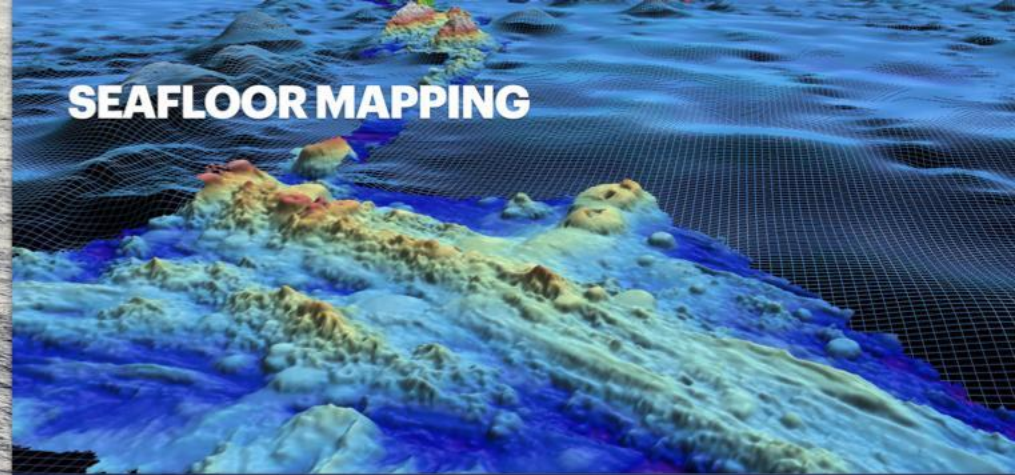


PROGRAM

PRIORITIES

- Align with NOAA & Other Sponsors
- Map & Explore Central-Eastern Pacific
- Integrate Emerging Technologies
- Co-Develop Locally-Relevant & Culturally-Appropriate Products
- Engage Broad Audiences
- Publicly-Accessible Data to Enable Follow-On Work

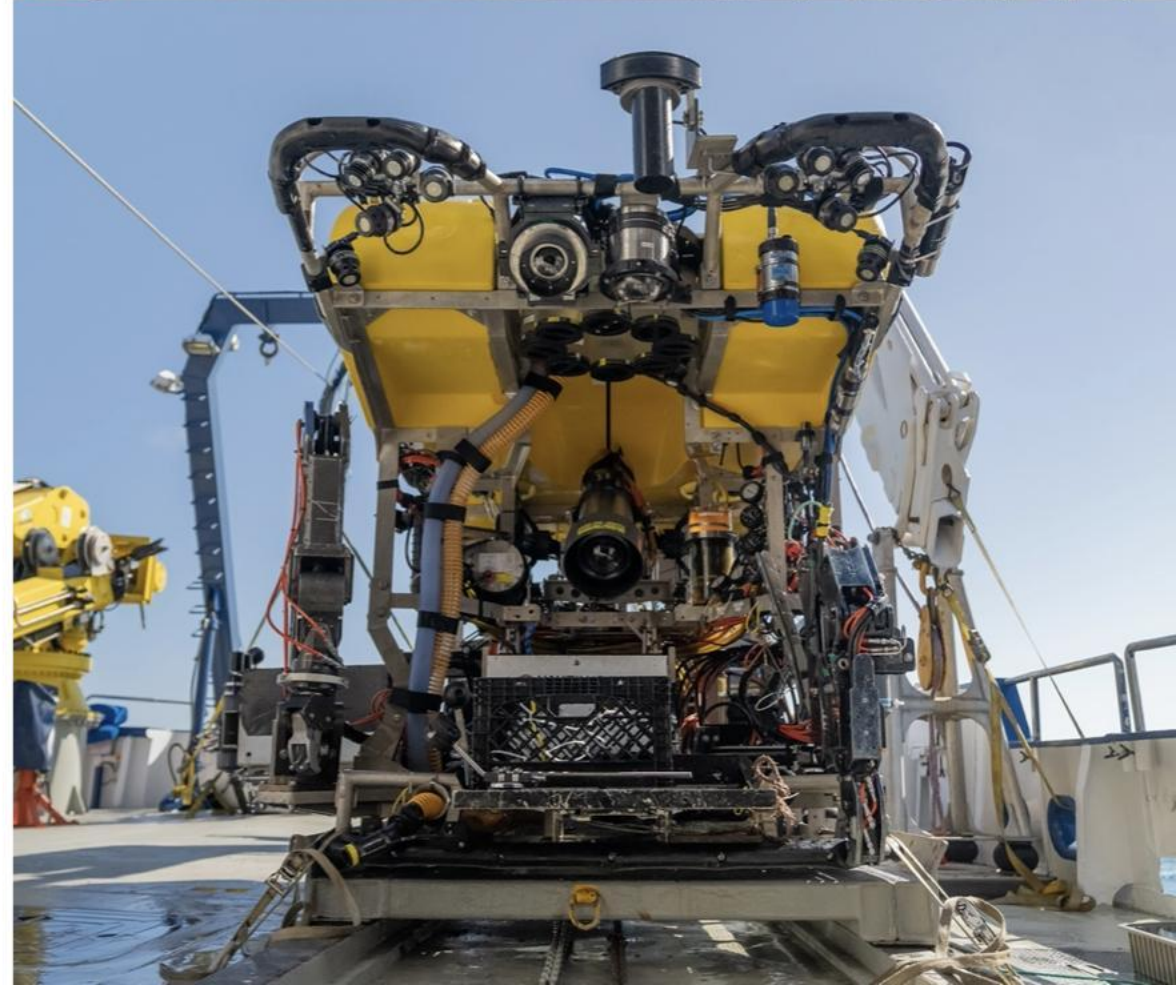




ROV

CAPABILITIES

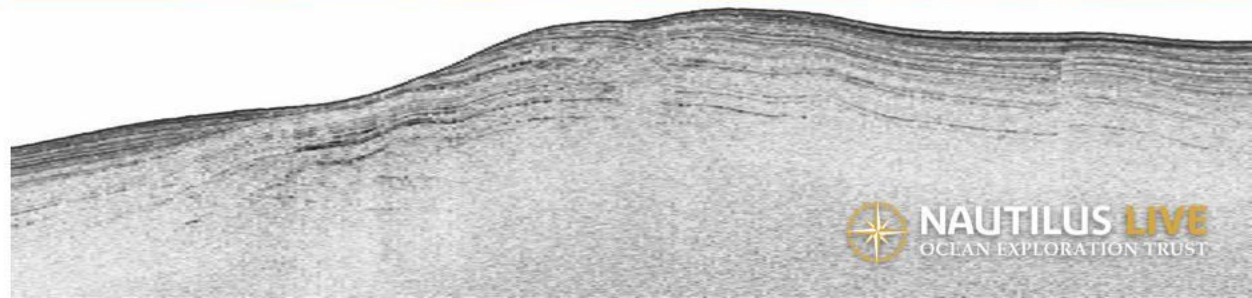
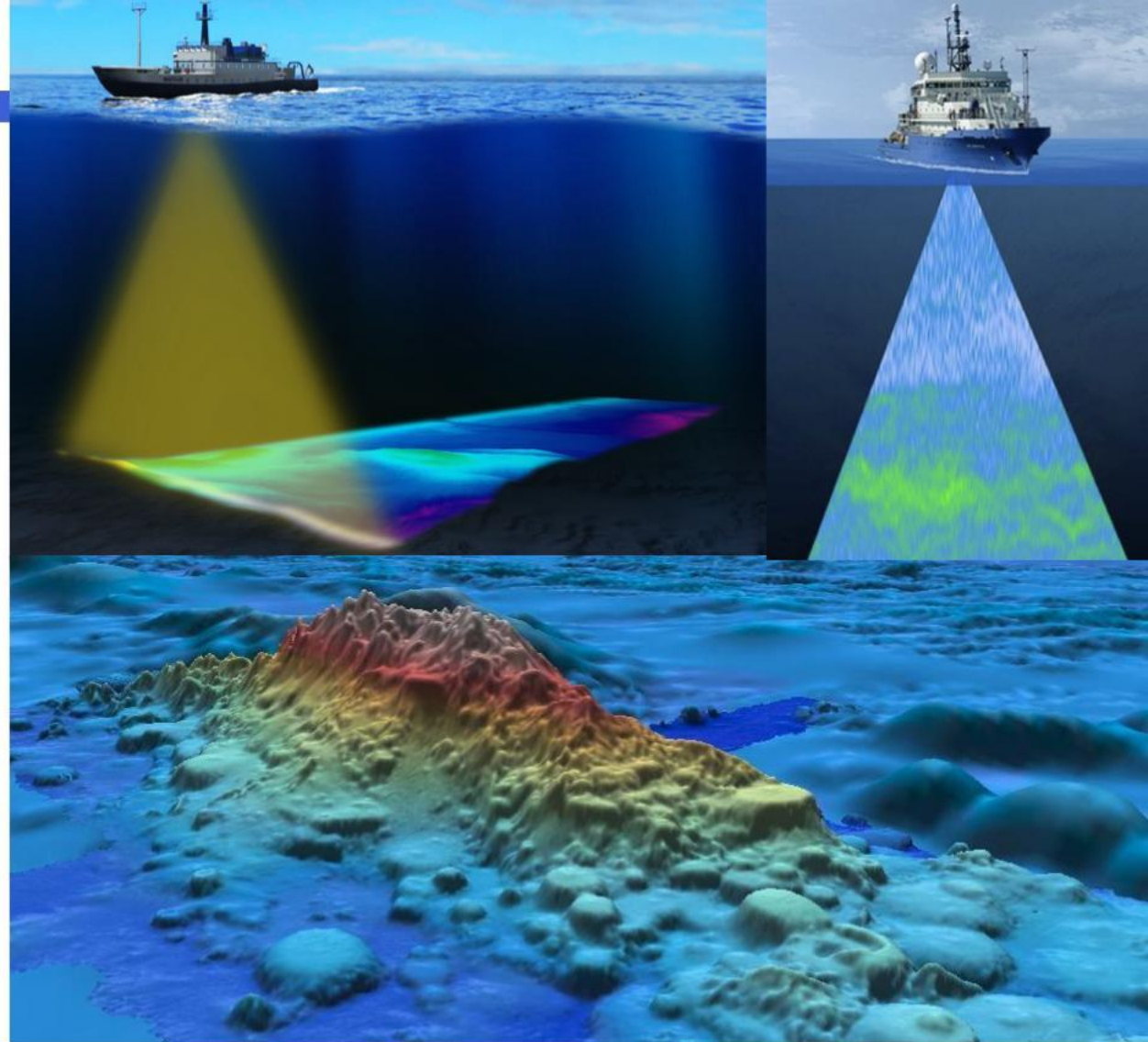
- ROV *Hercules* (4,000 m), Towsled *Argus* or *Atalanta* (6,000 m) & ROV *Little Hercules* (6,000 m)
- Mission configurable survey tools:
 - 2 x HD & 7 x SD cameras
 - 1 x high-resolution still camera (fixed)
 - Parallel lasers for scale (10 cm)
 - 2 x 7-function manipulators
 - 8 x 3-L suction sampling system
 - 5 x 11" push cores
 - 6 x 5-L Niskin bottles
 - CTD, oxygen optode, temp probe, scanning sonars
 - Configurable sample boxes & crates
- Flexibility for user-installed technologies:
 - Norbit wideband multibeam sonar
 - In Vader Raman Spectrometer



MAPPING

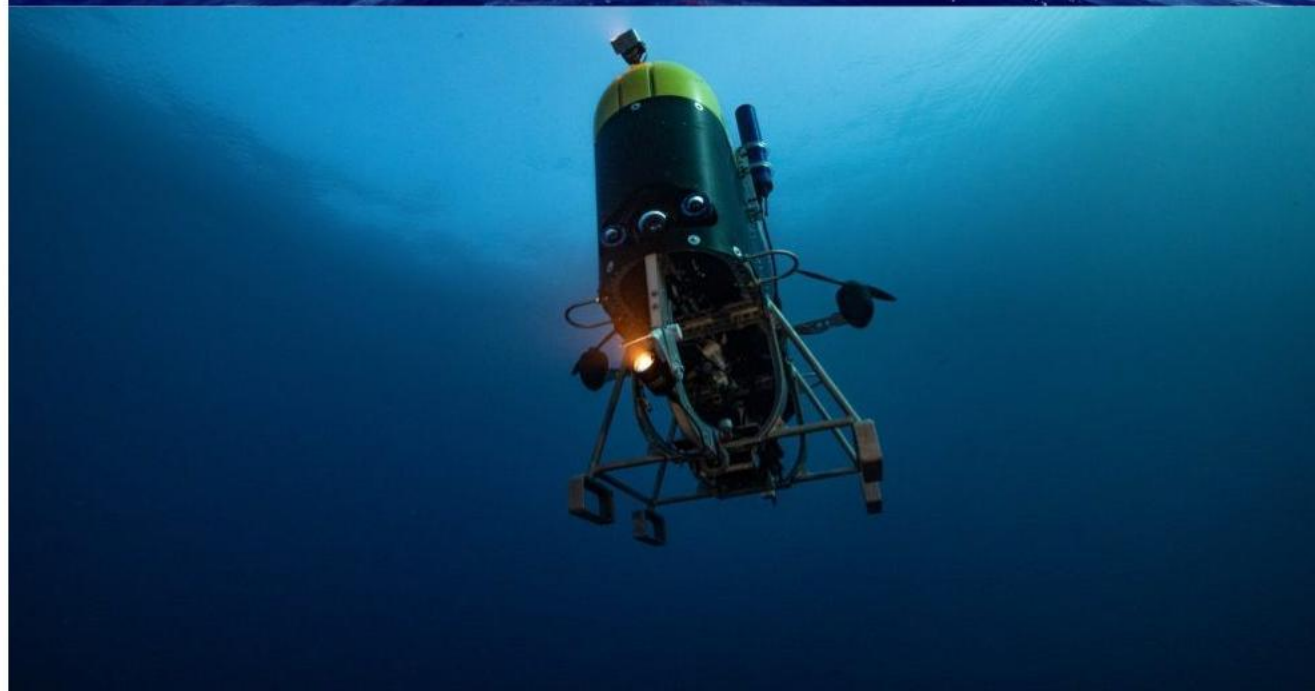
CAPABILITIES

- **Kongsberg EM302 Multibeam**
 - Seafloor bathymetry maps ~50 - 7,000 m (30 kHz)
 - Seafloor backscatter intensity
 - Water column backscatter
- **Knudsen 3260 Sub-bottom Profiler**
 - Subsurface maps <80 m (3.5 & 15 kHz)
- **Kongsberg Simrad EC150-3C (NEW!)**
 - Acoustic Doppler Current Profiler (150 kHz)
 - EK80 split-beam fisheries sonar
- **Guest Vehicle Mapping: USV *DriX***
 - Kongsberg EM712 Multibeam (40-100 kHz)
 - EK80 split-beam fisheries sonar



UNCREWED SYSTEMS

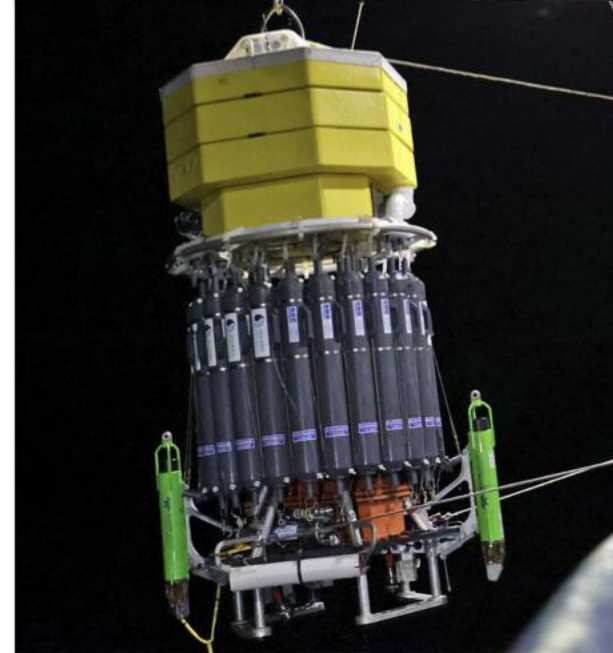
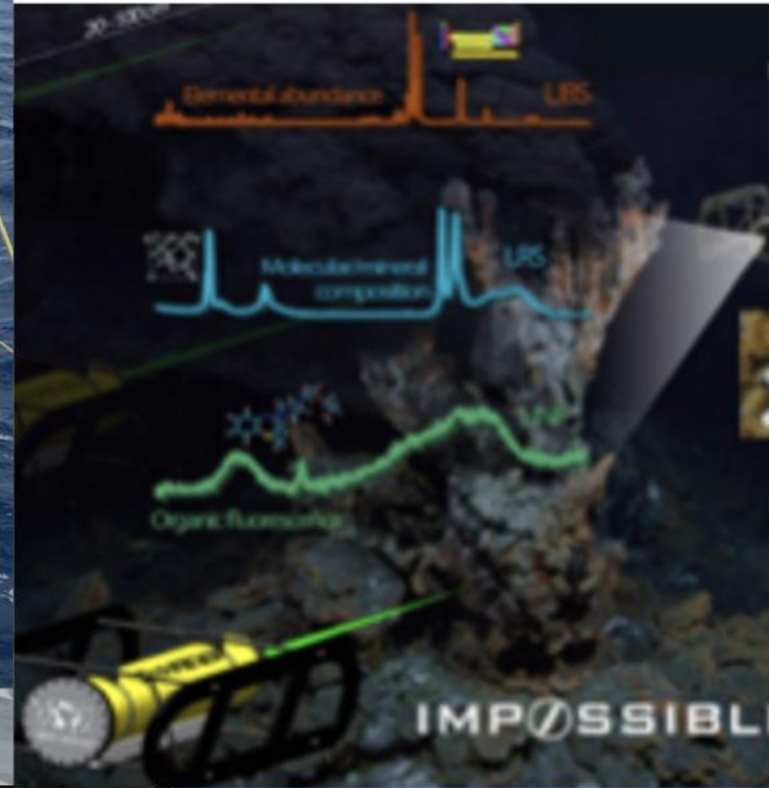
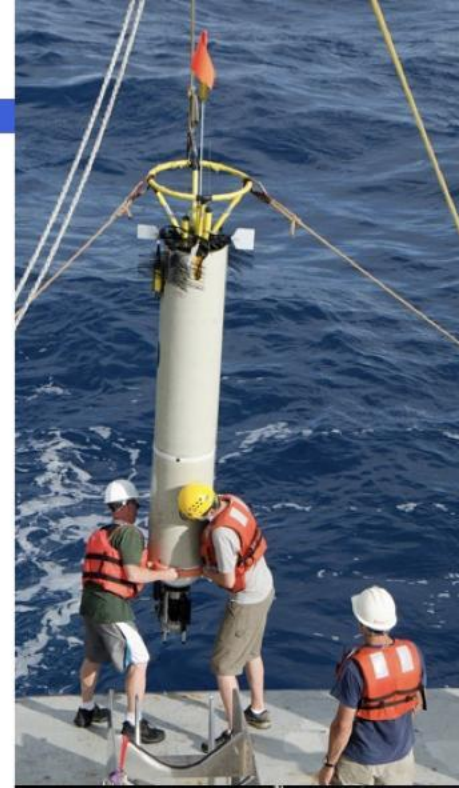
- USV iXblue *DriX* (UNH/CCOM)
 - OECI vehicle managed/operated by UNH/CCOM
 - EM712 multibeam
 - EK80 split-beam fisheries sonar
 - Topside sensors for situational awareness
 - Subsea communications with other vehicles
- AUV *Mesobot* (WHOI)
 - purpose built to study the mesopelagic (midwater) zone
 - radiometer
 - eDNA sampler
 - video cameras
 - CTD sensors
 - USBL positioning



GUEST TECH

2023 Examples

- **Hadal Profiler (UH)**
 - 11-km rated
 - vertical profiles of turbulent microstructure & horizontal velocity
 - CTD-O & 200 kHz bioacoustics backscatter
- **Raman Spectrometer (Impossible Sensing)**
 - 1,500-m rated
 - mineral/molecular composition & organic fluorescence
- **Deep Autonomous Profiler (URI)**
 - 11-km rated
 - CTD-O, video & sound
 - Water sampling
- **MiDAR (UM)**
 - Deployed via drones or divers
 - cm-scale 3D mapping down to ~60 m



Papahānaumokuākea
Marine National Monument

Wake
Island

Johnston
Atoll

Hawai'i

Guam

Pacific Remote Islands
Marine National Monument

Kingman Reef &
Palmyra Atoll

Howland &
Baker Islands

Jarvis

American
Samoa



NAUTILUS LIVE
OCEAN EXPLORATION TRUST

OCEAN NETWORKS CANADA 
NA151 CABLED OBSERVATORY MAINTENANCE

PACIFIC MAPPING 
NA150/152 MULTIBEAM EXPLORATION

PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT
NA154 ROV EXPLORATION & MAPPING 

CHAUTAUQUA SEAMOUNTS 
NA156 ROV EXPLORATION

 **HAWAIIAN ISLANDS**
NA155 OECI MULTI-VEHICLE EXPLORATION
NA157 MULTIBEAM EXPLORATION



PACIFIC REMOTE ISLANDS MARINE NATIONAL MONUMENT
NA149 ROV EXPLORATION NEAR KINGMAN & PALMYRA ATOLL
 NA153 ROV EXPLORATION & MAPPING NEAR JOHNSTON ATOLL
NA158 MAPPING EXPLORATION NEAR JARVIS ISLAND

EDUCATION & OUTREACH

SHARING STORIES WITH THE WORLD

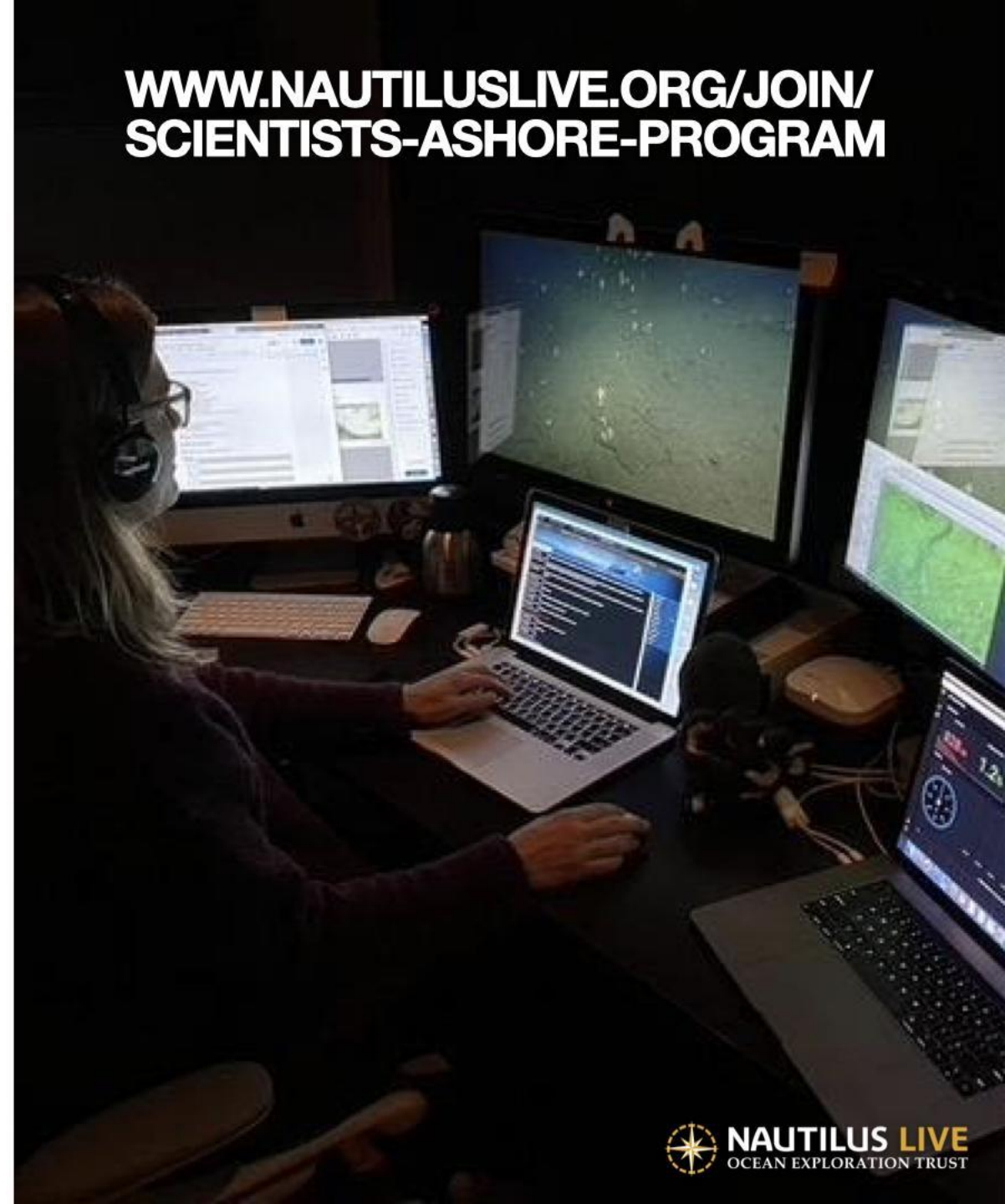
- **Science & Engineering Internships**
- **Science Communication Fellowships**
- **Live ship-to-shore Broadcasts**
(‘Ōlelo Hawai‘i & English)
- **K-12 educational resources**
(Spanish & English)
- **NautilusLive.org website**
- **Social media**
- **Media production**



SCIENTIST ASHORE PROGRAM

EXPANDING OPPORTUNITIES FOR PARTICIPATION

- **PLANNING**
 - Provide input on expedition plans and sampling objectives
 - Scientist Ashore Interest Form
 - Questions? email us at science@oet.org
- **DURING EXPEDITIONS**
 - Contribute via OET's Scientist Ashore Portal & text-based chat
 - Assist with dive and sampling objectives
 - Receive daily updates & dive plans (email)
- **POST-EXPEDITIONS**
 - Open access to samples & data
 - Participate aboard future expeditions



Video 1 x Video 2 x Video 3 x Video 4 x ArcGIS Map x



Chat x

general ☆

JUMP

2769 NEW MESSAGES

MARK AS READ

We tend to see them pretty frequently in areas where the currents are higher, where flow is channelized, etc

C Crispin Little @crispinlittle 11:21 AM
That's an interesting correlation. Something to ponder.



Message



B i ↻ </> ↵ $[[KaTeX]]$

Events x

Sealog for OET Science Portal

ALL MEDIA SCIENCE

HIGHLIGHT

OBSERVATION

Type new event

Submit

2022-04-11T06:08:31.480Z <dwrightcoleman>: FREE_FORM -->
"Delay the launch until midnight, due to DP system troubleshooting"



Grafana x

Realtime Data

🕒 🔍 ↻ 3s 🖨

Quick Stats

Herc Depth

1 m

DATA

PUBLICLY ACCESSIBLE

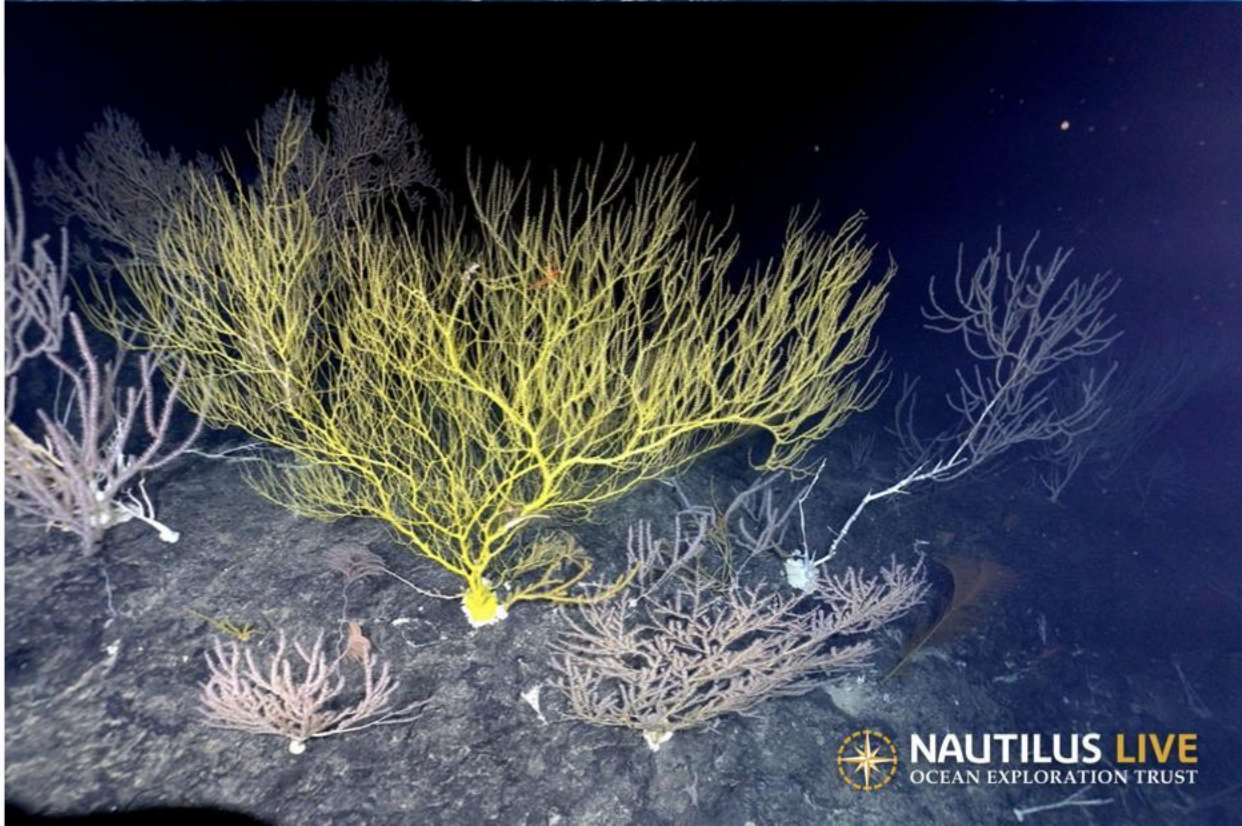
- Dive Video: [YouTube](#)
- Mapping & Environmental Data: [Rolling Deck to Repository](#) & [Marine Geoscience Data System](#)
- Geology Samples: [Marine Geological Samples Lab at the University of Rhode Island](#)
- Biology Samples: [Harvard University Museum of Comparative Zoology](#)
- Cruise Summaries, Background Info, Highlight Imagery & Educational Material: [NautilusLive](#)



EXPEDITION

PLANNING TIMELINE

- **Dec. 2022:** [Call for Science Input](#)
(open throughout season - suggest submissions >2.5 months out)
- **2 months out:** Draft Cruise Plan & Scientist Ashore Webinar
- **1 month out:** Cruise Plan Finalized
- **2 weeks after:** Cruise Summary



Thank you!



NAUTILUS LIVE
OCEAN EXPLORATION TRUST

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Science - science@oet.org

Education/Outreach - education@oet.org