2020
Scientist Ashore
Introduction

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OCEAN EXPLORATION TRUST
Explore the ocean, seeking out new discoveries in the fields of geology, biology, maritime history, and archaeology while pushing the boundaries of STEM education and technological innovation.
CTD, O2 and HD video are standard

Integrate sensors (e.g. hydrate sampler, mass or laser spec, soft grippers, high res mapping system, 360 degree camera, rock gripper)

ROVs Hercules & Argus (4000-m, 6000-m)

ROVs Little Hercules & Atalanta (6000-m)
Sample Triage:

- Photograph and annotate
- Preserve voucher (ethanol)/air dry
- Preserve tissue for DNA
- Cap & refrigerate short cores
- eDNA water filtration
2019 TECH COLLABORATIONS

Applied Marine Sciences | PCB pump
Coda Octopus Group | Echoscope sonar
National Geographic Society | Deep ocean drop cameras & Aerial drones
Scripps Institution of Oceanography | Wave buoys
Pacific Marine Environmental Lab | MAPRs
SoFar Ocean Technologies | Spotter buoys
University of New Hampshire CCOM | ASV & Aerial drones
University of Rhode Island | Laser mapping system & Norbit multibeam sonar
University of Texas Rio Grande Valley | Suspended particulate rosette (SUPR)
Woods Hole Oceanographic Institution | MISO GoPro, IGTs
2019 (COMPLETED)
- Traction winch installation below deck
- DP upgrade
- Wet lab renovation

2019/20 (IN PROGRESS)
- Re-engining
- Funnel redesign, and
- Fabrication of configurable 3-van ROV control center
Fundamental exploration of the geological, biological, chemical, physical, archaeological and/or historical aspects of an unexplored part of the ocean.
Targeted research projects that are undertaken as a charter for a research group, university, government agency, or other organization.

Applied Exploration Partners:
Ocean Networks Canada - WHOI - Dalio Foundation - Harvard University
Temple University - ECOGIG - TX A&M - NOAA ONMS - GISR
Control Van

Science team

Operations team

24-hour operations (ROV or mapping)
3 watch teams (4 hour shifts)
Telepresence Model

High bandwidth satellite connection between ship and shore

Broader participation

- Low-latency video
- Some data ashore
- Science chat, VOIP, and phone lines

Engagement with public
Who’s Who on Nautilus

- **Expedition Leader**: organizes the cruise, oversees the cruise activities, and is the nexus of communication between the ship’s crew and science and ops teams, and shore

- **Lead Scientist**: senior scientist who fosters collaborations with the scientific community to ensure broad and inclusive objectives are met. Helps write cruise and dive plans. Sails on Nautilus

- **Watch Leaders**: on-watch decision-makers who guide the dives and monitor & respond to the Science Chat

- **Lead Scientist Ashore**: scientist with expertise who helps lead dive(s) from shore
Expedition Team:
- 31 Science and Operations
  - 1 Expedition Lead
  - 1-2 Lead Scientists
  - 3-5 Scientists
  - 6 ROV Engineers
  - 3 Data Loggers/Science Managers
  - 3 Navigator/Mappers
  - 3 Video Engineers
  - 3 Sci Comm Fellows
  - 1 Data Engineer
  - 1 Mapping Coordinator
  - 1 Deck Chief
  - 1 Comms Lead
- 17 Professional Crew
Questions on ship capabilities?
2020 E/V Nautilus Schedule

- British Columbia
- Olympic Coast
- Cascadia Margin
- Central California
- Southern California
- Channel Islands
- Osborn Bank
Why the Scientists Ashore Program exists
- Network of over 100 scientists
- Provide input for cruise, dive/mapping planning & post-cruise data analysis
- Publish and present findings, conduct follow-up research
Science Chat Log & Data Dashboard

- Science Chat Log
- Username and password emailed to you by our Data Dept.
- Same for all expeditions
- Reset each year
- Conversation is part of our data archive
Science Chat Log Etiquette

- Watch Leaders are busy....fielding questions, looking at the data and video, making decisions, communicating with the ops team....they may not respond immediately.
- Emojis can help communicate intent 😊
- You may suggest something operationally, but the Watch Lead ultimately makes all decisions
- All entries to the Chat Log are time-stamped and part of the archive
- ALL CAPS AND EXCLAMATION MARKS ARE INTERPRETED AS YELLING!!!!
Improvements for Data Displays Soon!
As a Scientist Ashore You Will Receive:

- Account information for Science Chat Log*
- Information about the “Science Dashboard”
- Email invitations to introductory and planning calls
- Cruise & Dive plans & Situation Reports

- *Emailed to you by our Data Engineering Team
- Latest URL for webpages will be sent prior to cruise(s)
- Most communication is via email and shared documents
Participating in Cruise Planning

- Pre-cruise planning call
  - Suggest exploratory ROV dive and mapping targets
    - Places that haven’t been explored
  - Suggest samples needed for baseline characterization
  - Suggest technologies that might be utilized
- Provide feedback on cruise plan
- Lead Scientist & OET ultimately sets Cruise Plan
Participating During a Cruise

- Add your expertise to guide exploration during the cruise
  - Dive plan suggestions (email Exp Lead or Lead Sci)
  - Read Dive plans and Situation Reports
  - Use Science Chat Log for on-watch guidance and suggestions
- Watch Leader makes decisions on dive operations including sampling
Follow NautilusLive on social media for updates (Facebook, Twitter)
Post-Cruise Involvement

- Request data/samples
- Help write Oceanography Supplement summary articles
- Publications & conference presentations
- Propose funding for additional analyses and grants

* Credit Ocean Exploration Trust for data/samples

* Please email citation/award info to: nicole@oceanexplorationtrust.org
Where were the Nautilus cruises?
The Ocean Exploration Trust was founded in 2008 by Dr. Robert Ballard—best known for his discovery of RMS Titanic's final resting place and as a National Geographic Explorer in Residence—to engage in pure ocean exploration. Our international programs center on scientific exploration of the seafloor with expeditions launched from Exploration Vessel (E/V) Nautilus, a 64-meter research vessel operated by the Ocean Exploration Trust. In addition to conducting scientific research, we offer our expeditions to explorers on shore via live video, audio, and data feeds from the field. We also bring educators and students aboard during E/V Nautilus expeditions, offering them hands-on experience in ocean exploration, research, and communications.

The 2018 Nautilus Expedition will launch the fourth year of exploration in the Eastern Pacific Ocean, and will be one of the most extensive seasons to date. From June to November, Nautilus will document and survey unexplored regions from British Columbia, Canada, along the West Coast of the United States, and for the first time, west to the Hawaiian Islands.
Dive Annotations: Ocean Video Lab

http://www.oceanvideolab.org/
**Open Access Data & Samples**

R2R Repository: Locate & ID

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**Nautilus**

Operator: Ocean Exploration Trust

 Cruise ID: NA14

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<thead>
<tr>
<th>CRUISE ID</th>
<th>SUMMARY</th>
<th>START DATE</th>
<th>START PORT</th>
<th>END DATE</th>
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**2017-2019 data**

https://www.rvdata.us/search/vessel/Nautilus

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**OCEAN EXPLORATION TRUST**

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**OET Video & Data Request Form**

Use this form to request copies of cruise videos or access to data products. As a general rule, our data products are available for only the cost of reproduction. However, certain contractual or security agreements may prevent us from sharing specific data sets. Non-video data is typically provided via a URL, or other online service. HIGH and 'LOW' resolution video encodings are provided via webserver when available. FULL quality encodings require a RAID-sized for the purpose, and may cost as much as $5000 for public data sets, depending on the hardware and technician time required to produce the copy, as well as shipping and handling. Private data's data reproduction costs will be estimated separately.

* Required

Cruise *

From which cruise are you requesting data? E.g. NA032

https://www.oceanexplorationtrust.org/data-request
Geological Samples

Find rocks and short cores:
http://www.geosamples.org/catalogsearch

Request rocks/cores: https://web.uri.edu/gso/research/research-facilities/marine-geological-samples-laboratory/mgsl-sample-request-form/
Biological Samples: Museum of Comparative Zoology

https://mczbase.mcz.harvard.edu/SpecimenSearch.cfm
New in 2020

- Scientist Expertise List: help us connect you to discoveries in your area
- Requesting all scientists to improve the archives by reporting sample IDs to repositories
- Soon: New and improved data graphics for shoreside scientists
- New & merged OET/NautilusLive website
2020 Timeline

Spring/Summer: Scientist Ashore Community Expedition Calls

April 15th: Expedition Overviews Released

- Summary of cruise objectives
- Dates of cruises

1 month prior to start of cruise: Cruise Plan released

Always keen to get your input and feedback!

Email nicole@oet.org with suggestions or questions
OET Employment Opportunity

Director of Data Engineering

The Ocean Exploration Trust (OET) is seeking an experienced and flexible generalist systems engineer who can manage junior data engineers and contractors to support shoreside and shipboard oceanographic scientific, engineering, and outreach operations. The Director of Data Engineering will lead the team in on-shore development of new software and systems, and the design and stewardship of the OET science and outreach infrastructure. The position includes responsibilities at all levels from physical networking to complex system design.

This position is based in Narragansett, RI, with travel to E/V Nautilus and other platforms as required.

Applications will be accepted until March 30, 2020

Job Description & Application Instructions

https://www.oceanexplorationtrust.org/director-data-engineering
Questions?