

Early Career Ocean Decade

US National Committee for the Ocean Decade
Ocean Studies Board Annual Meeting
10/7/2025

An aerial photograph of a large, circular coral atoll in the middle of a deep blue ocean. The atoll has a dark blue central lagoon surrounded by a lighter turquoise ring of coral and reef. The outer edge of the atoll is a rough, light-colored sand and coral border. In the bottom right corner, a small white research ship with a helicopter on its deck is visible, providing a sense of scale to the massive size of the atoll.

OCEANIX



Kailani Acosta, Ph.D.

Pronouns: She/her/hers



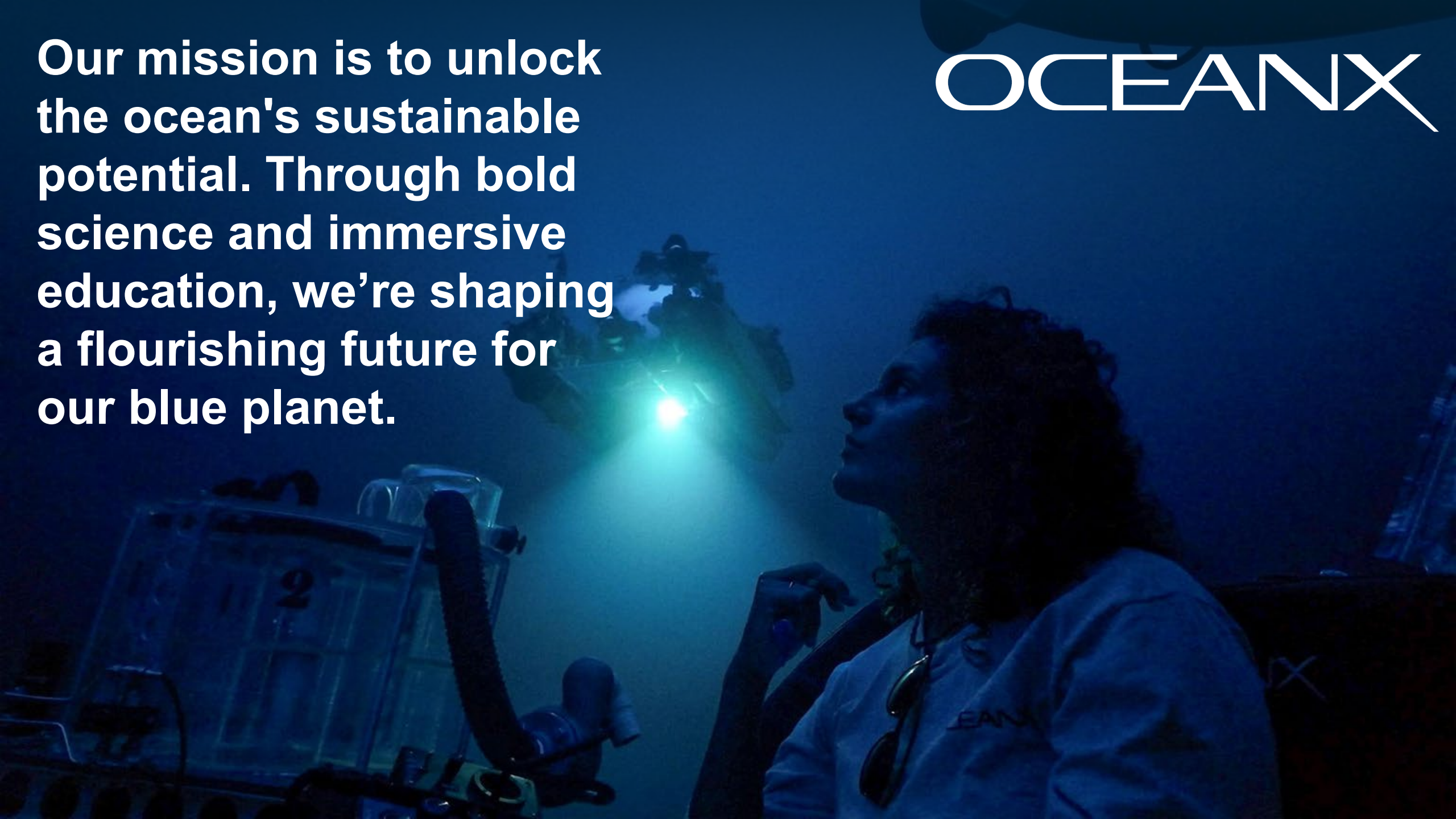
B.S. Environmental Science, Brown University
2016

Ph.D. Earth and Environmental
Science, Columbia University; 2018 – 2024

2024 – Current: Science Program Associate,
OceanX

Our mission is to unlock the ocean's sustainable potential. Through bold science and immersive education, we're shaping a flourishing future for our blue planet.

OCEANX



OUR PILLARS

Our model pulls together four key tenets — technology, science, media, and education — to uncover the unexplored depths of the ocean and bring back our learnings to the world. Our extraordinary partnerships help amplify our work and impact.



The Ship

A research & media vessel like the world has never seen.



Science

A commitment to science that goes 6,000 meters deep.



Media

Creating traditional documentaries, physical, and digital storytelling experiences for global audiences of all ages.



Education

Making marine science accessible to everyone.



Partnerships

A purpose-driven coalition of world-class partners.

OUR SHIP

OceanXplorer is a floating research, media, and education platform, built to help OceanX deliver on its mission.

Equipped with next-generation technology, the vessel empowers scientists and storytellers to study and explore the ocean's mysteries. It also serves as a floating classroom to introduce the next generation of ocean leaders to potential career paths.



EDUCATION PROGRAMS



Digital

Bringing OceanX learning and OceanXplorer experiences to students globally:

- Curated classroom dial-ins
- Livestreams
- Educational resources



On-Ship

Immersive hands-on experiences with science, media, and operational tools aboard OceanXplorer:

- Young Explorers
- Early Career Explorers
- Hackathons
- Portside tours



Exhibits and Outreach

Bringing the tangible experience of marine science, storytelling, and operations to communities around the globe:

- Pop-up exhibits
- Dome experience
- Premier travelling exhibit



AROUND AFRICA EXPEDITION

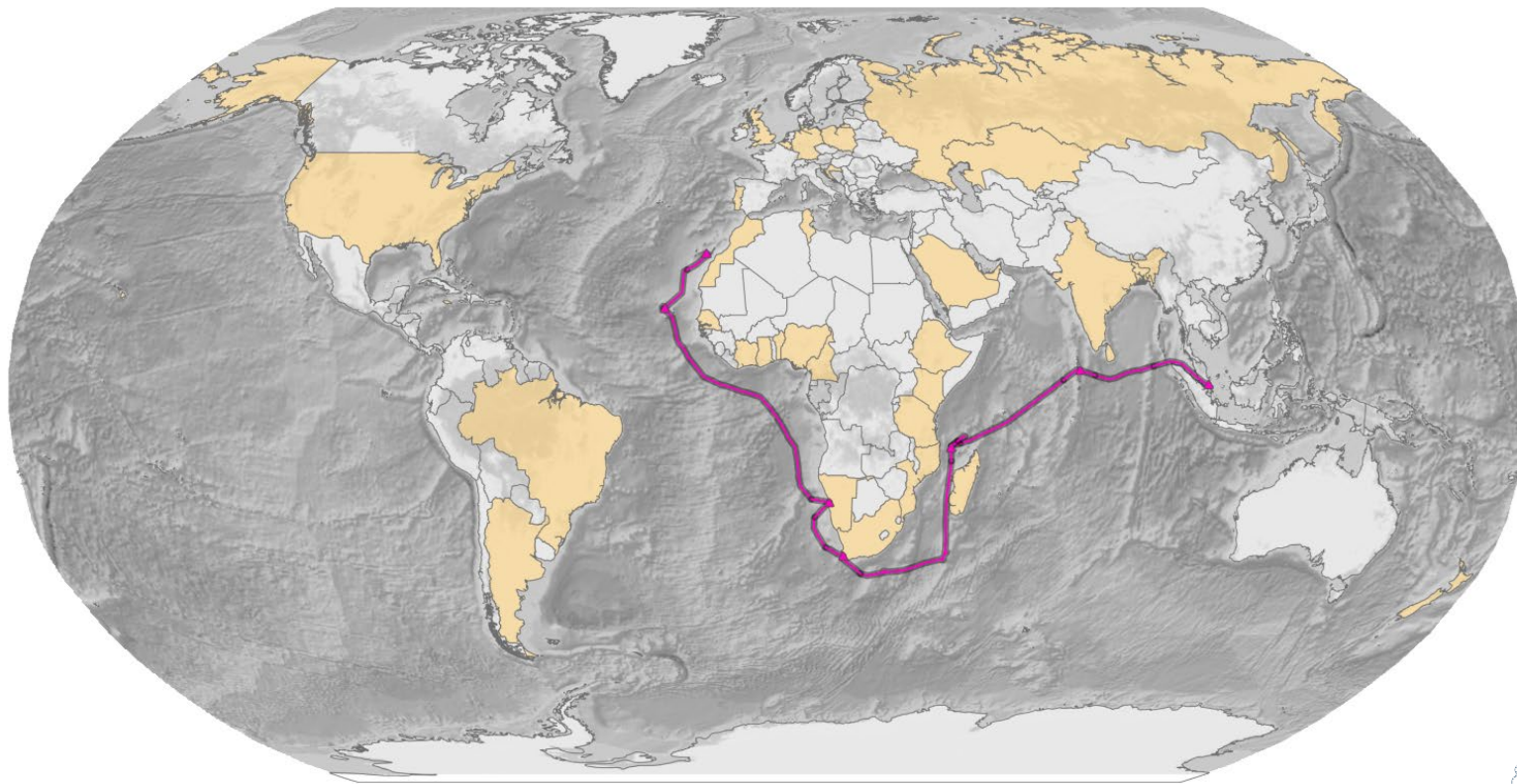
OCEANX × ^{أوشن كويست} OceanQuest



2021 United Nations Decade
2030 of Ocean Science
for Sustainable Development

Mission Objectives

- **Design an optimized transit route** to maximize scientific data acquisition in international waters, contributing datasets to public repositories aligned with the goals of the UN Decade of Ocean Science for Sustainable Development.
- **Leverage access to data-limited regions** to conduct impactful, basin-scale scientific research projects that are globally significant and relevant, positioning OceanX as a leading contributor to the global oceanographic and biomolecular observing community.
- **Empower Early Career Researchers (ECRs)** from regions of study (in collaboration with POGO and OBON) by providing them with hands-on research opportunities aboard OceanX expeditions, fostering regional capacity building and innovation.
- **Forge strategic partnerships** with key global organizations tasked with implementing the UN Decade of Ocean Science, reinforcing collaboration toward sustainable ocean science and research goals.



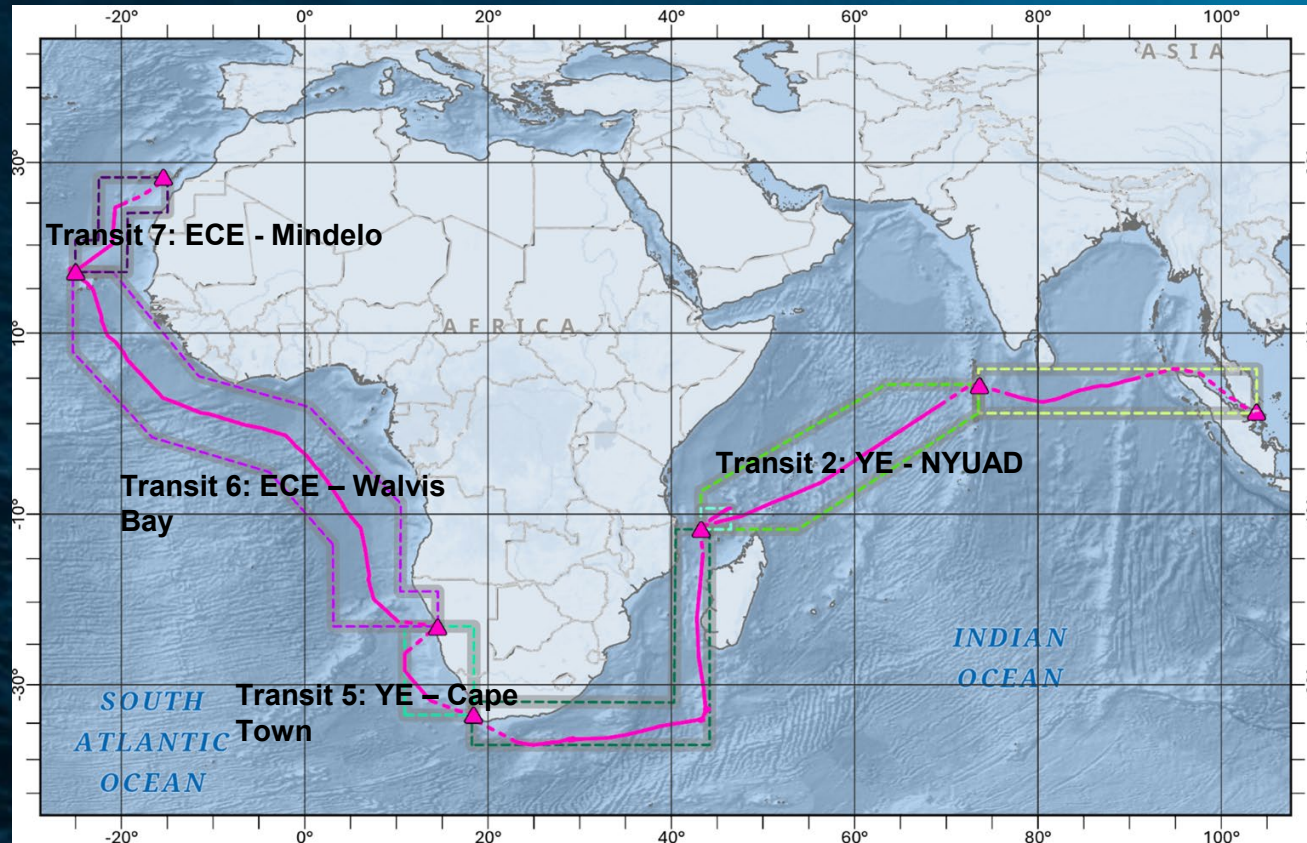
Mission Metadata	
Number of Days	83
Number of nautical miles traveled	15047
Total Amount of Data Generated (TBs)	25
Total Mapping Coverage (km ²)	120036
Total New Mapping Coverage (km ²)	95357
Number of seamounts explored	5
Number of Sampling Events	748
Number of ROV + Sub Dives	39
External Scientists	69
YE and ECEs	56
Number of Affiliated countries	33

- OceanX and OceanQuest concluded the 4-month long Around Africa Expedition, focused on capacity building, seamount characterization, and mapping the gaps in global understanding of Africa's oceans.
- All data collected will be submitted to publicly available data repositories

Data Contributions in Support of UN Ocean Decade

- NOAA National Center for Environmental Information (NCEI): All acoustic, oceanographic, and underway data
- Global Multi-Resolution Topography Synthesis (GMRT): Bathymetry
- Seabed2030, WIOBathy Project, GEBCO:Bathymetry
- NASA Plankton, Aerosol, Cloud ocean Ecosystem (PACE): Oceanographic data
- Global Ocean Biochemistry Array (GOBGC Array): Deployed ARGO floats
- Ocean Biodiversity Information System (OBIS): eDNA
- FathomNet: ROV & Sub imagery and video
- Challenger 150: ROV & Sub imagery and video
- Ocean Discovery League: Targeted locations bathymetry
- Regional/Institutional Data Repositories

AROUND AFRICA EXPEDITION

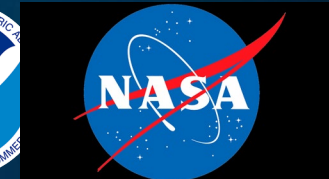
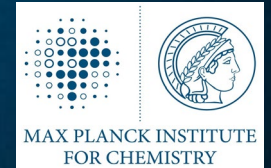
2021
2030United Nations Decade
of Ocean Science
for Sustainable Development

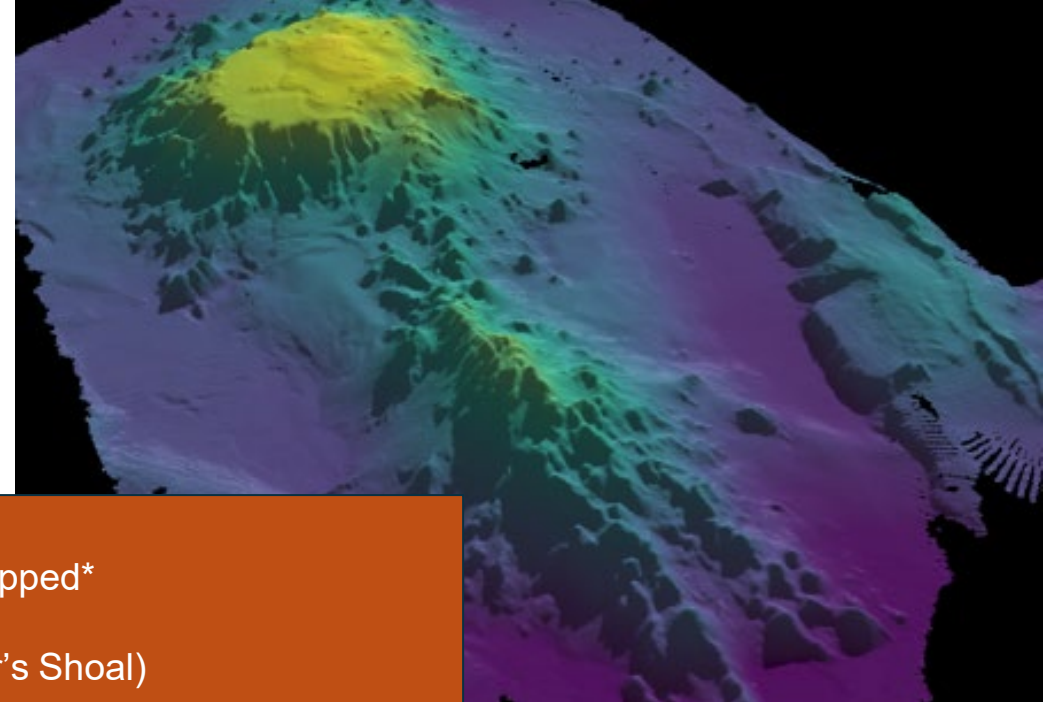
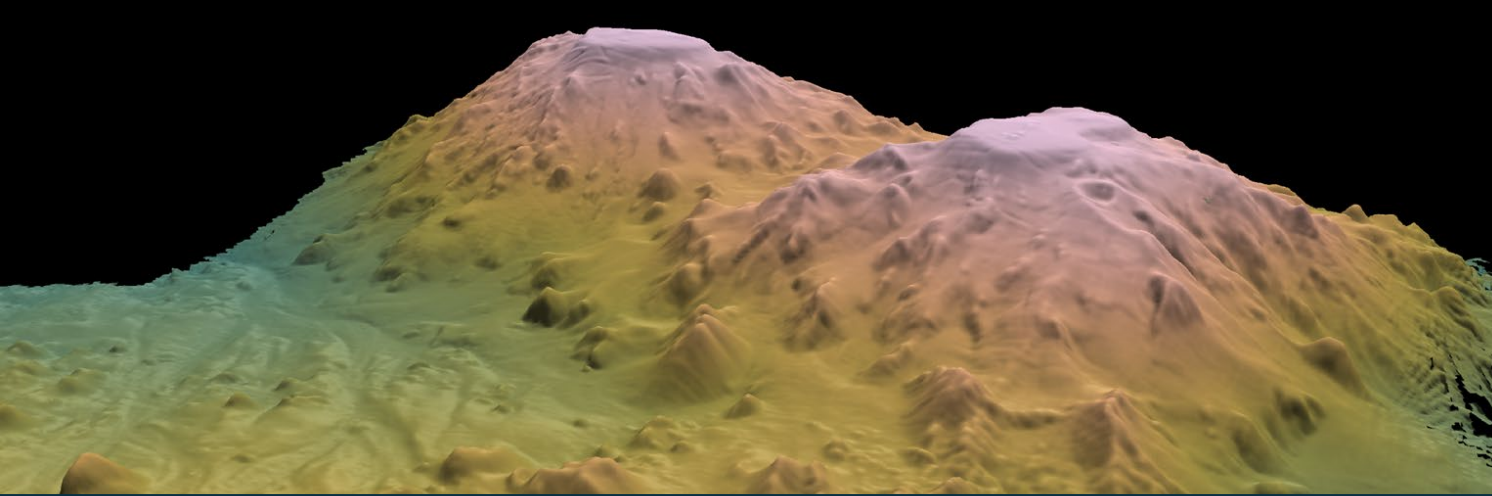
Education Mission Metadata

Guest Faculty	17
YE and ECEs	56
Number of Faculty and Student Affiliated countries	24

- We ran 4 education programs on the Around Africa Expedition –
 - 2 Young Explorers
 - 2 Early Career Explorers in collaboration with OceanQuest and Partnership for the Observation of the Global Ocean (POGO)
- Focus on hands-on learning, developing skills in science communication, media, XR, as well as learning acoustic mapping, eDNA analysis, Carbon system analysis, marine geology, and bioinformatics.

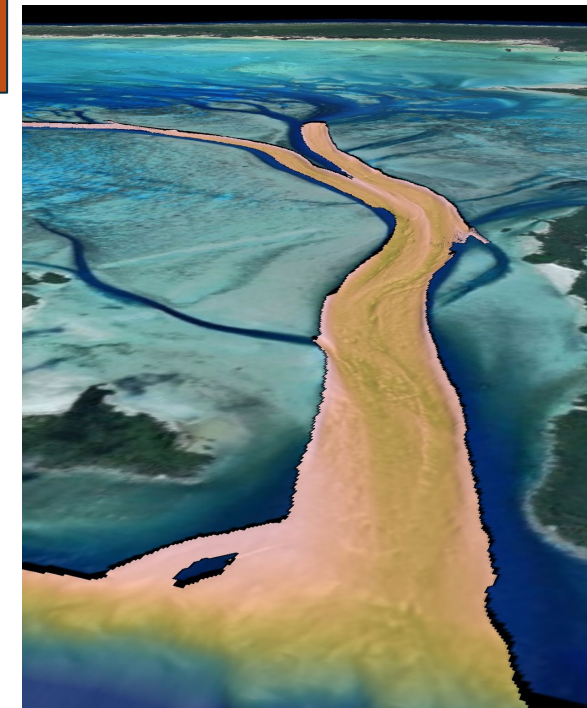
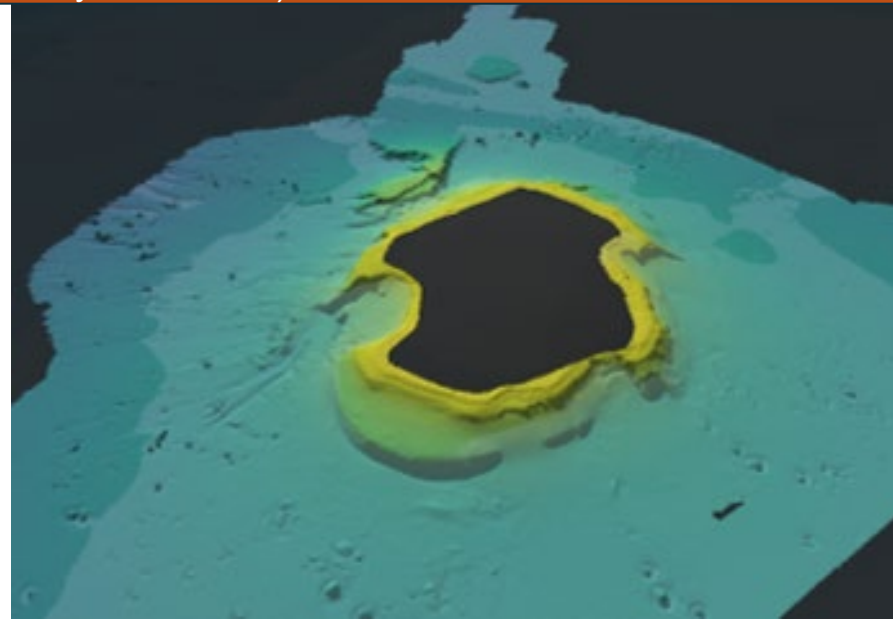
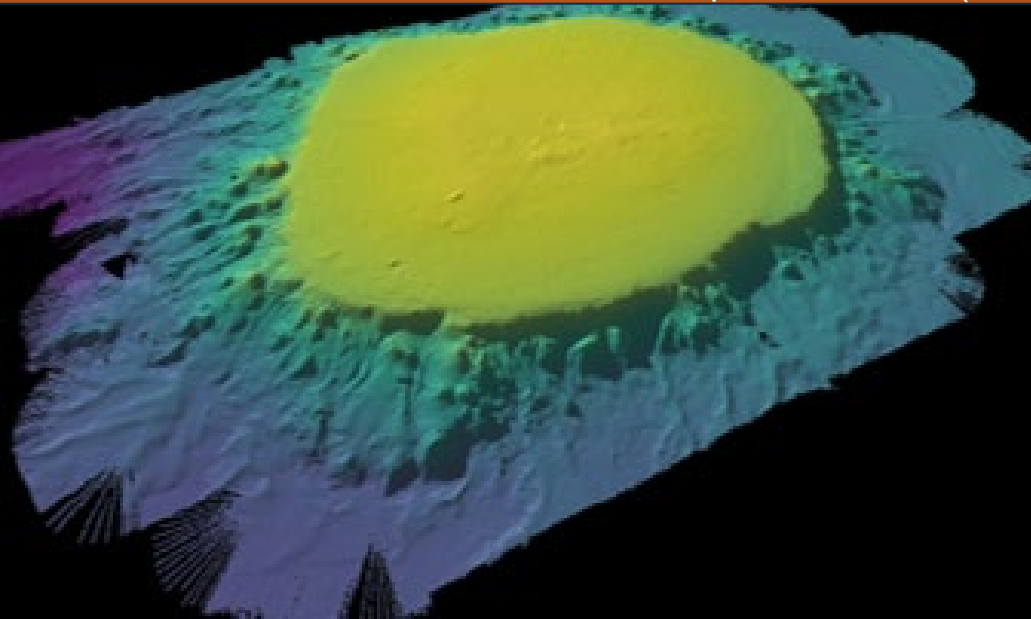
Partnerships





Around Africa Mapping Highlights

- **120,036 km²** mapped – **95,357 km²** of that estimated to be newly mapped*
- **33,137 km²** submitted to GMRT/Seabed2030 so far
- Extensive mapping of three major seamount complexes (and one Walter's Shoal)
 - Many newly mapped features on transit
- Shallowest: +0.4 m (Seychelles mapping at high tide with Metal Shark & Otter!)
- Deepest: ~5500 m (Walvis Bay to Mindelo)



OCEANX
Education

WALVIS BAY



EARLY CAREER



EXPLORERS



OCEANX
Education

MINDELO



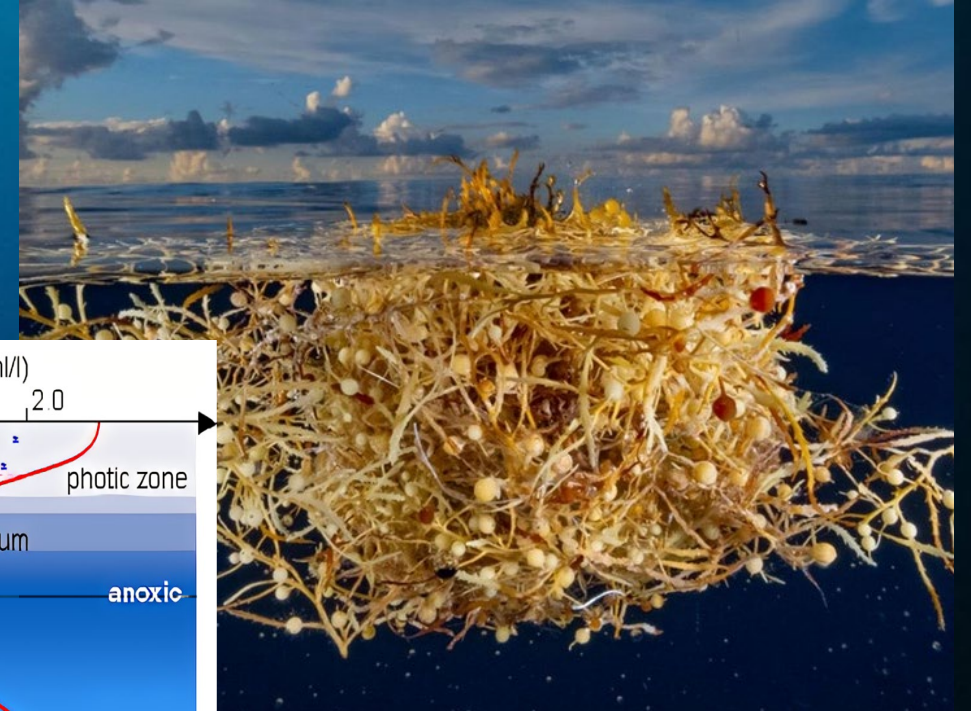
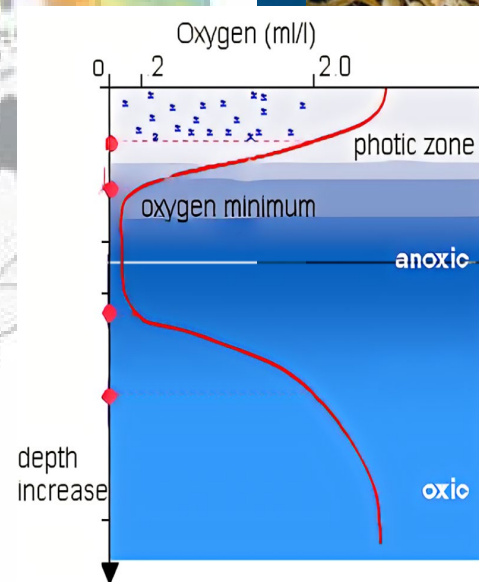
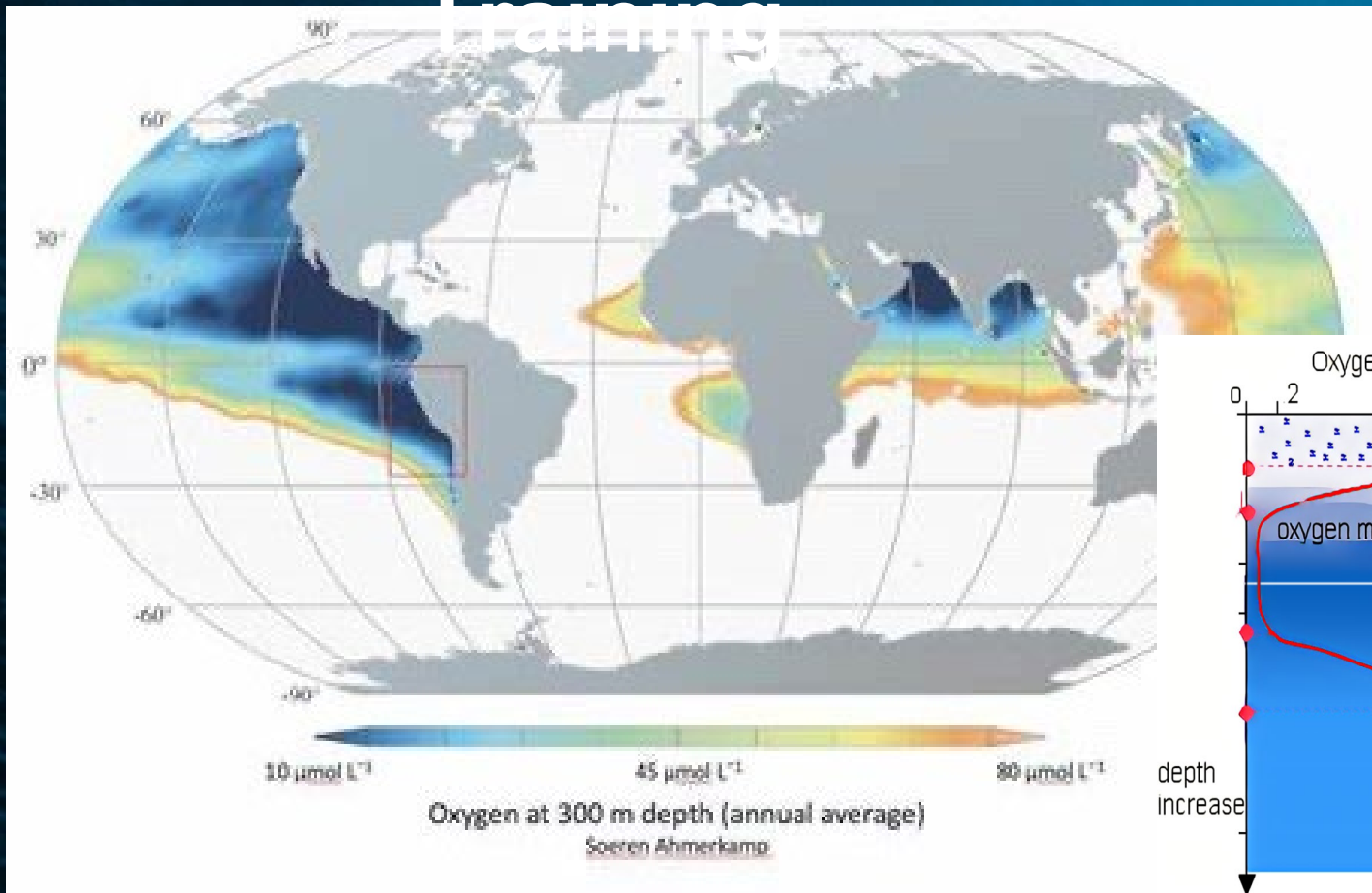
EARLY CAREER



EXPLORERS



Opportunistic Sampling and Training



Experiential Learning on the OceanXplorer



Capacity Building through:

- Hands-on training
- Scientific skill building
- Science communication and media
- Expert Guest Faculty in-depth focus groups (carbon, marine geology, media/ XR science communication, eDNA)

OceanX Artificial Intelligence Program

Our Vision: AI can support Ocean Protection and Sustainable Use

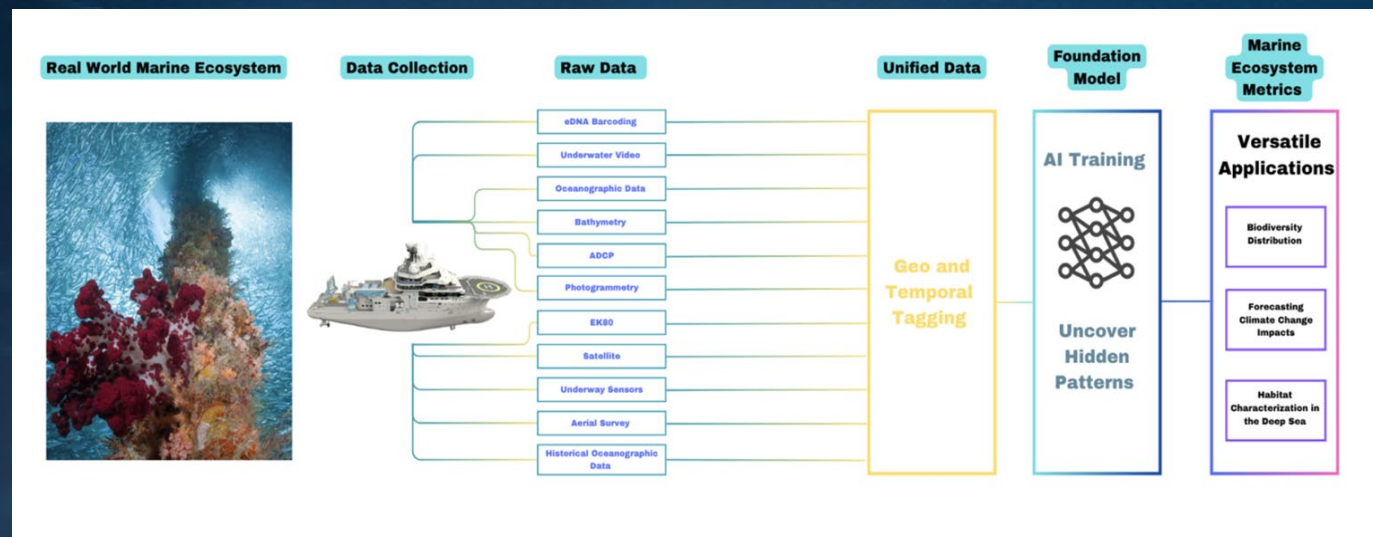
AI will help translate discovery into meaningful data and impact

Combining biodiversity metrics with multimodal data to predict species distributions

Digital twins as engaging visualizations for displaying deep-sea data

Predict response to climate and anthropogenic stressors

Support conservation and sustainable use decisions



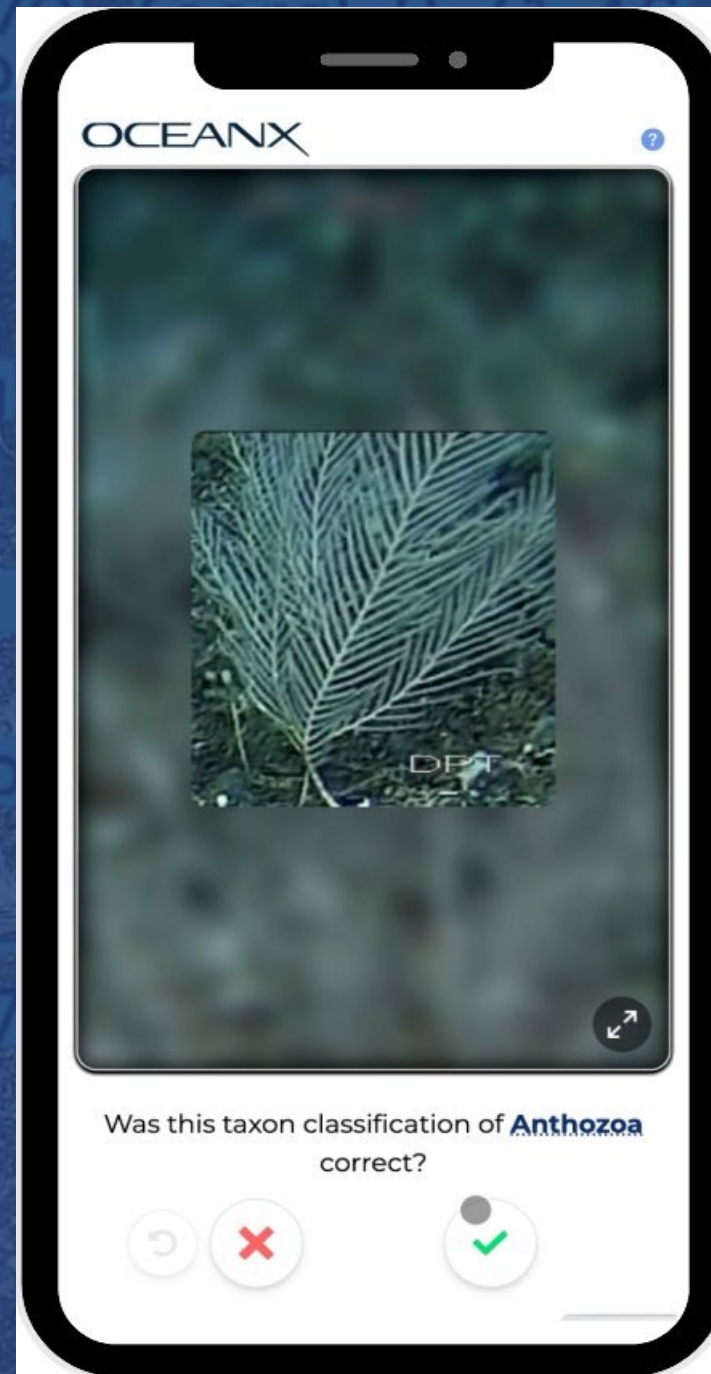
Depth: 999.23m
Time: 11:20:32
Temperature: 6.18c
Pressure: 1013.21 dbar
Salinity: 34.94 PSU
Oxygen Sat: 59.05%

OCEANX



AI Video Annotation Platform “Sea Swipe”

- Retrains and analyzes ROV videos in real time.
- Collaborative, engaging.
- Generalizable to locations/species.
- Education / Live Streaming potential.
- Complementary to SeaLog.





UNOC Deep Blue Pavilion



Early Career Scientists Need:

- Opportunities
- Exposure
- Showcases
- Integration into ongoing work
- Continued support

We need to think:

- Globally
- Long-term
- Collaboratively



An aerial photograph of a large, circular coral atoll in the middle of a deep blue ocean. The atoll has a light blue, shallow lagoon in the center, surrounded by a thick, greenish-brown ring of coral and reef. A small, white research vessel is visible in the lower right corner of the frame, near the outer edge of the atoll.

Thank you!

Kailani Acosta
Kailani.acosta@oceanx.org