



**A cohort-based program to sustain early career
mentoring across maritime and ocean STEAM
opportunities.**

Presented to Ocean Research Advisory Panel
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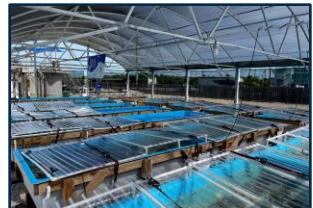
Chief Scientist, FIO



Hosted at



The FIO Consortium



FIO's Focus to support the State University System



Operations



Research Support

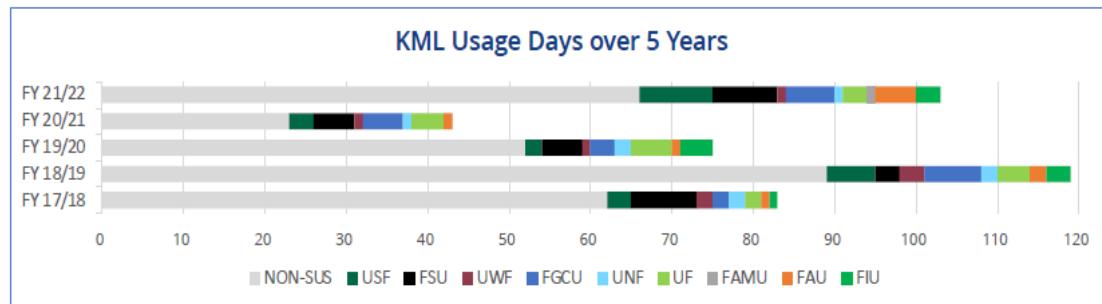
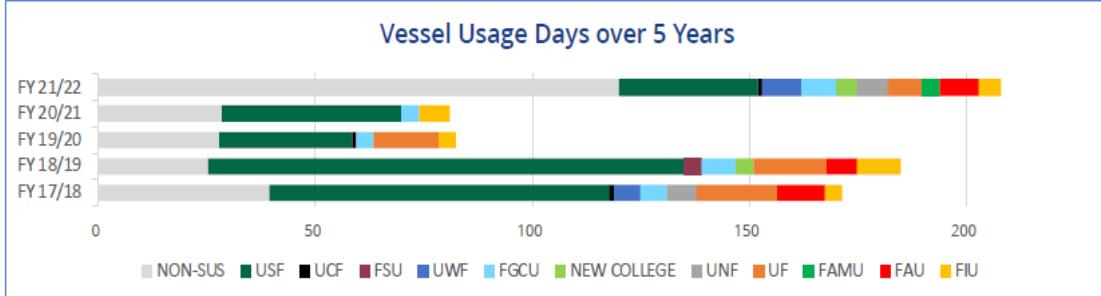


Education Support



Blue Economy Engagement

SUS use over recent years



Florida's Blue Economy

2023 Marine Economy Report

Florida

The marine economy is defined as those businesses whose existence depends on the oceans or Great Lakes. The economic data found here helps leaders better understand trends and consider the needs of these businesses when making decisions about the future of the coast. Six sectors make up the marine economy: marine construction, offshore mineral extraction, tourism and recreation, living resources, ship and boat building, and marine transportation.

The Big Picture

Florida's Marine Economy in 2020

23,989	477,251	\$16.5 billion	\$30.1 billion
Businesses	Employees	Wages	GDP

The Details

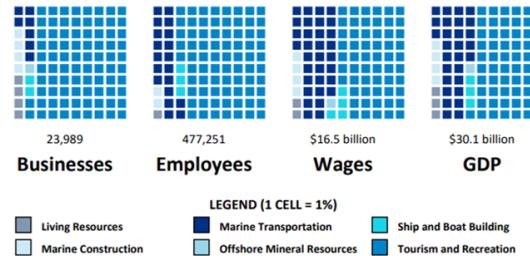
Largest Employment Sector:	Tourism and recreation employs 75% of the state's marine economy
Largest GDP Sector:	Tourism and recreation produces 61% of the total gross domestic product (GDP) derived from the state's marine economy
High Earners:	The average wage of marine economy employees in Florida is \$34,513, which is lower than the state average (\$55,868). Offshore mineral resources has the highest average wage per employee at \$69,482.
National Ranking:	Florida is ranked 1 out of 30 coastal states for marine employment, and 3 out of 30 coastal states for GDP
Top County: Employment	Miami-Dade County, Florida, is home to 14% of marine jobs in Florida
Top County: GDP	Miami-Dade County, Florida, produces 19% of the marine economy's gross domestic product in Florida

This report is based on 2020 Economics: National Ocean Watch (ENOW) data, produced by NOAA's Office for Coastal Management in 2023. The employment and gross domestic product statistics are derived from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages data (accessed in September 2022) and the Bureau of Economic Analysis' gross domestic product by state data (released in July 2022). For more information, visit coast.noaa.gov/digitalcoast/data/enow.html.

Office for Coastal Management



Florida's Marine Economy



A Decade of Change (2010-2020)

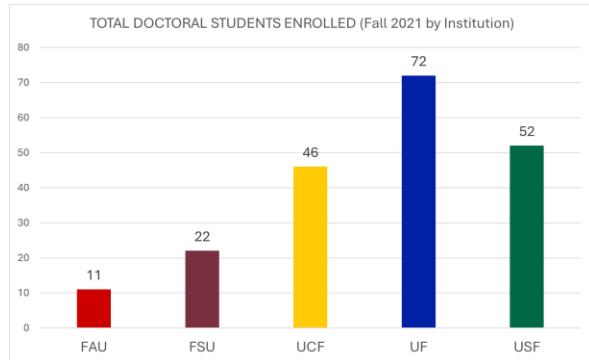
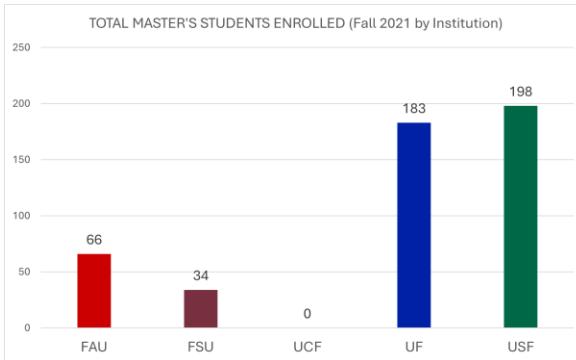
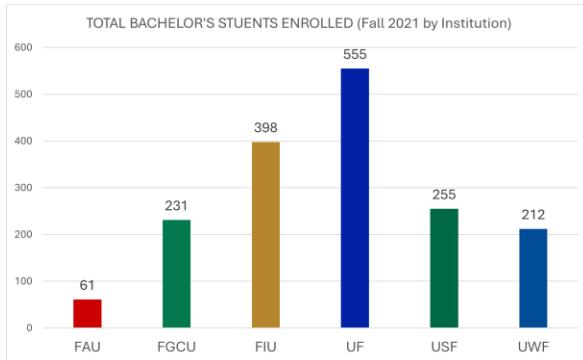
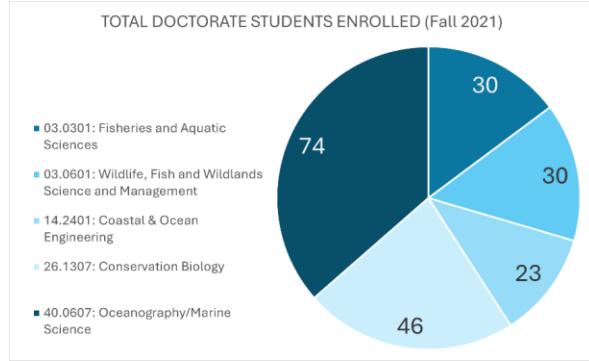
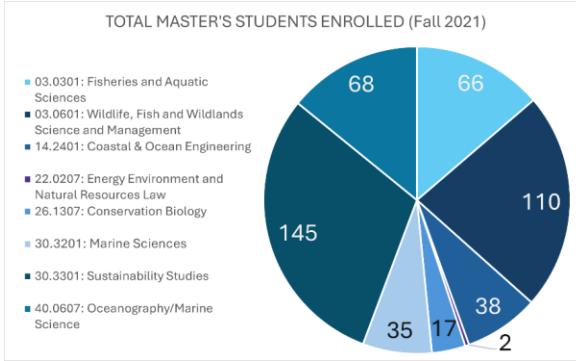
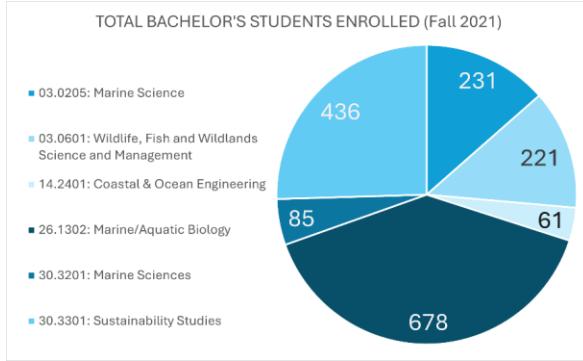


The numbers on the first and second page may vary slightly, as some data is suppressed when presented at the sector level. Rounding may also contribute to some differences. On the regional level, differences in numbers may arise from the way that the total economy is calculated.

Office for Coastal Management



SUS Students Enrolled in Blue Economy Degrees



Value placed on Workforce from Universities

- Traditional degree programs
- Non-traditional courses offering experience
- Direct workforce training
- Mentoring programs



Development Timeline

03/2021	Schmidt Ocean Inst. and Cons. Ocean Leadership
06/2022	\$12M Grant Agreement MBARI
10/2022	\$300K+ Schmidt Ocean Institute
10/2022	\$14.5M ONR Vessel Ops Grant
11/2022	Transfer of Title
01/2023	\$1.5M ONR DURIP 4K ROV build
03/2023	Transit Panama Canal/Shipyards
07/2023	Homeporting in St. Petersburg
07-08/2023	Peerside 2023 Pilot Expedition
05/2024	ROV TAURUS delivery and integration
05/2024	MTS and MATE ROV Agreements
07-08/2024	Peerside 2024 Expeditions





PELAGIC
RESEARCH SERVICES

ROV TAURUS

4000-meter depth rated ROV system

ROV TAURUS

KNOWN SPECS

GENERAL

Depth Capability: 4000 Meters

Size: (with basic science skid)

Length: 93.02" (2365 mm)

Width: 55" (1400 mm)

Height: 64" (2744 mm)

Weight (in air): 3,500 to 4,200 lbs (1600)

Payload: 150 to 250 lbs (70)

Through Frame Lift

(Ratings are for the "in air" weight of the package being deployed or recovered.)

- Vehicle rated for 1500 lbs - 2 load releases, rated for 750 lbs each
- Vehicle frame designed to accommodate customizable project specific work and science skids



PROPELLION

Seven hydraulic thrusters powered by 18.6kw (25HP), 2,000 PSI hydraulic system

Fore/Aft/Lateral Four Axial Mounted, 10-inch ducted thrusters, each providing 590N (133lbf)

Vertical Three, 10-inch ducted thrusters, each providing 590N (133lbf)

INSTRUMENTS/TOOLING

Manipulators

Vehicle designed to accommodate 2 Schilling Orion 7P manipulators (1 now, 1 future)

- 1 Schilling Orion 7P Manipulator mounted on starboard side
- 1 (1) 5-function, rate-controlled manipulator on port side

Hydraulic

• 2000 PSI system

• 1 ea. 6-position auxiliary valve-pack at 700 PSI

• 1 ea. spare bidirectional port at 2000 PSI

• Connection points for additional valve pack (future)

Video

• 4 Insta Pacific Mini Zeus on dedicated fiber

• 2 Irenco Ducky Shark parallel green lasers (10cm spacing)

• 4 Analog Deep Sea Power & Light (DSPL) Cameras

These utilize 4 of the 6 total available analog video channels

• 2 IP HD DSLR Multi-Scene

Lights

• 5 CPL LED 900W High Output SeaLites (9600 Lumens each)

• 3 CPL LED 700W High Output SeaLites (3300 Lumens each)

• Vehicle wiring allocated for 10 lights, but only 8 lights

and receptacles included

Inertial Navigation System (INS)

• Kongsberg Nano

Pressure Sensor

• Pan-scientific Digiquartz pressure transducer

Altitude

• Tritech PA200/20

Doppler Velocity Log

• Nortek DM1000 - 6000 m (connected to the INS)

Sonar

• Tritech Super SeaKing DST, dual frequency (325 and 675kHz), range 0.4 - 300 M

Data

• 4 spare RS232 channels at J-boxes

• 2 spare RS485 channels at J-boxes

• 2 100 Ethernet connections at Main Bottle

Power

• 24VDC at junction boxes for spare RS232 and RS485 channels

Unused

• 23 unused wires from Main Bottle to Port J-box

• 4 blanked Port J-box connectors

• 18 unused wires from Main Bottle to Std J-box

• 3 blanked Std J-box connectors

SCIENCE SKID

Usable Width: 48" (1219 mm)

Usable Length: 30.25" (768 mm)

Usable Height: 18" (457 mm)

Outfitted with hydraulic tray to accommodate various science kit including push cores, bio boxes, etc. Basic design feature is for the skid tray to retract so video field of view in front of the ROV is free and unobstructed.



Peerside Mission and Approach

Peerside aims to broaden access and ongoing involvement with the ocean

- Increases and sustains social, educational, technical, and professional support and builds community for ocean Science, Technology, Engineering, Arts, and Mathematics (STEAM).

Peerside applies:

- Mission-dedicated ship* (R/V *Western Flyer*) with Remote Science to broaden access through inclusion in all forms
- Cohort approach across varied career options (peer-peer and near-peer)
- Extensive network of partnerships
- Relationships with community-focused mentors to personalize the ocean

(*Crew are part of the program)

Meeting the Nation's Need for Broader and more Inclusive Ocean STEAM Workforce

Federal Workforce

- Leveraging agency direct agency involvement to put Peerside mentees in best position for hiring (scientists, technicians, officer corps, business or support functions);
- Utilizing Direct Hire opportunities (e.g., NOAA Cooperative Science Centers at MSIs)
- Addressing President's Executive Order 14035 and relevant Agency Strategies

Agencies' Common Needs in Ocean STEAM

- E.O. 14035 created requirements for federal agencies around DEIA
 - Embedded in each agency strategic plan
 - Workforce includes federal, contractors and partners
 - Focus on all workforce all degree paths and certification programs
- Partnership goals across agency strategies
- Utilizing Public-Private Partnerships or relationships
- Institutional relationships built (HBCU, MSI, Tribal, underserved)

Example: Relevance to the NOAA's Strategic Plan

1. Building a Climate Ready Nation

- Supporting new technologies for ocean exploration and science relevant to understanding, predicting and visualizing climate change
- Creating socially conscious expedition planning and implementation
- Supporting comprehensive observation and monitoring systems in the deep ocean

2. Integrating equity into core operations

- Peerside's mission is to build equity through inclusion in all aspects of our program
- Developing a technical and social platform for conducting Remote Science between ship and shore will open participation
- Developing relationships with Seminole Tribe of Florida to understand landscape of the ancestral coastline of the Gulf and US Southeast
- Developing a workforce 'highway' strategy with onramps and offramps across all aspects of ocean STEAM and maritime workforce training that is applicable to NOAA's need within both Officer Commissioned Corps and the wage-earning maritime communities of OMAO

Example: Relevance to the NOAA's Strategic Plan

3. Promoting economic development while maintaining environmental stewardship with a focus on advancing the New Blue Economy.

- Developing new strategies for intermodal data management that includes remote science application and traditional telepresence options
- Developing and translating technical skills that will foster the new blue economic development and ocean sustainability
- Building community connections and engagement elements of Peerside to foster trust in science and data needed to increase community resilience

Peerside Advisory Group



ANA ARELLANO, PEERSIDE
PROGRAM MANAGER



ANDREA BALBAS



DARLENE LIM



GREGG DIFFENDALE



JASMIN GRAHAM



JAY HAIGLER



KRISTEN YARINCIK



LEONARD PACE



MOLLY BARINGER



MONTY GRAHAM, PEERSIDE
STAFF



NICOLE RAINEAULT, PEERSIDE
CHAIR



PETER GIRGUIS



ROB SPARROCK



TARA COX



TARA WILLIS



ZARA MIRMALEK, PEERSIDE
STAFF

Purpose

Serve as a cross-sectoral advisory body on the Peerside program's development, implementation, and operation with respect to the stated mission, vision and goals of the program.

- Representing federal agencies, universities and community colleges, philanthropic/non-profit research organizations, and ocean industries
- Advocating for sector-specific needs; connecting Peerside mentees with career opportunities
- Matching Peerside activities with funding opportunities

The Peerside Model

Mentees: Undergraduates from 4- and 2-year institutions, grad students, early career post-graduate

- ✓ Career development workshops
- ✓ Expedition & remote science training
- ✓ Project development and final deliverable
- ✓ Sustained mentorship through career transitions
- ✓ Networking

Mentors: All professionals with demonstrated commitment to sustained mentoring

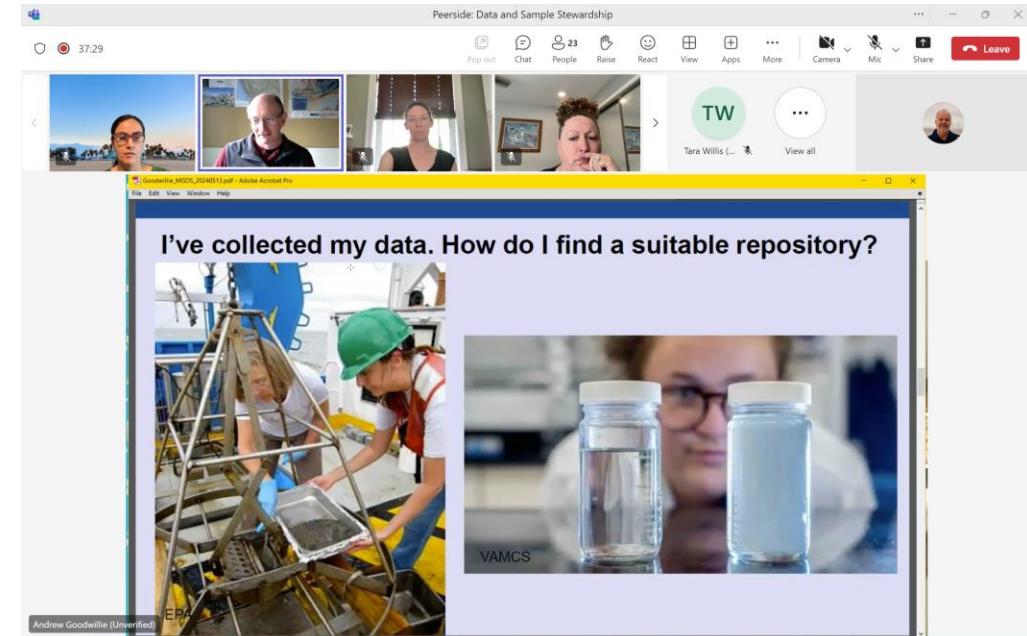
- ✓ Mentorship training
- ✓ Learning new science and technical skills
- ✓ Expedition planning; data & sample management
- ✓ Professional development
- ✓ Networking

Specialists Core: Ocean STEAM professionals with subject matter expertise for expeditions



Professional Training for Mentors and Mentees

- Career talks with professionals
- Site visits to local agencies and labs
- Workshops on:
 - Grant writing
 - Science communication
 - Collaborations and networking
 - Responsible conduct in research
 - Interviewing skills
 - Resume and CV preparation
 - Applying for federal jobs (jobs.gov)



Expedition Selection Process

- Expressions of Interest submitted
- Advisory Group review, discussion and team selection based on:
 - Research and mentorship plans match AG and sponsor requirements
 - Compatibility with available resources and ship/ROV scheduling
 - Firm commitment of the mentor to Peerside expectations
 - Availability and matching of mentees to the proposed activity



Expedition Planning

- In person expedition workshop (scientists, mentors, crew, techs/pilots, Peerside staff)
- Expedition planning worksheets
- Monthly remote meetings during expedition development
- Student project deliverable development
- All hands meetings
 - Targeted Trainings
 - Robots in the ocean
 - Remote Science
 - R/V *Western Flyer* and life at sea
 - Expedition planning and presentations
 - Sample collection and repositories/Data management
 - Chief Scientist training



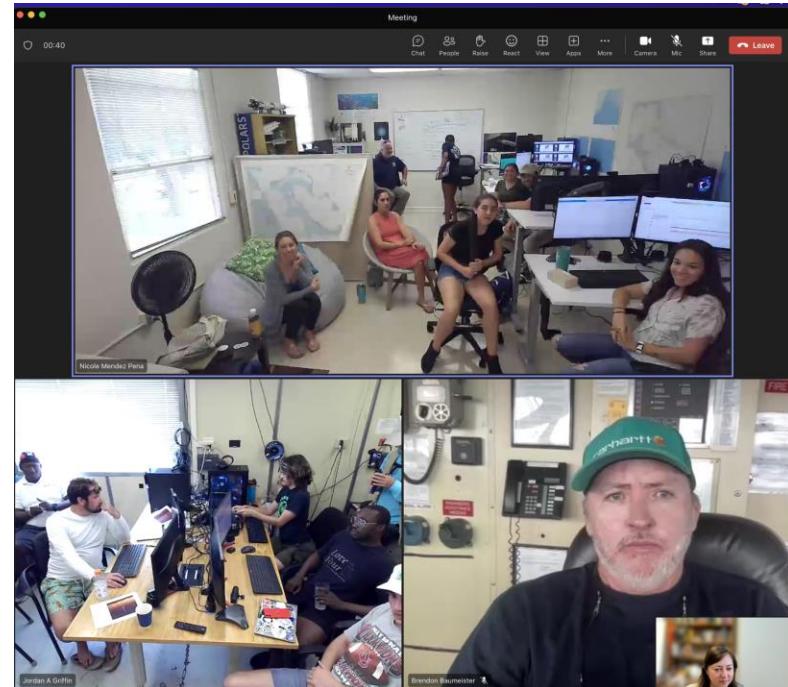
Pre-Cruise Briefings and Familiarization

- All-hands introductions and team building (at-sea personnel, shore/remote teams, crew, business)
- Mentee-specific comfort and expectation building
 - Civility at sea, Bias, Title IX and Safer Seas Act reporting, Chain of Command, Communication
- Safety briefings
- Science schedule briefings



Expedition and Remote Science

- Watch schedules set
- Daily All-Hands Briefings and Report-Out (Ship and Remote Teams)
- Check-in routines with mentors
- Experience



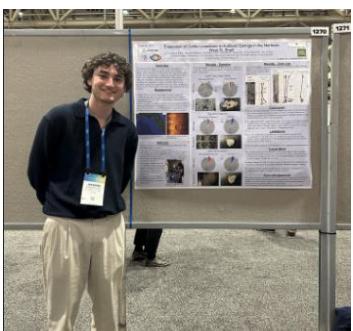
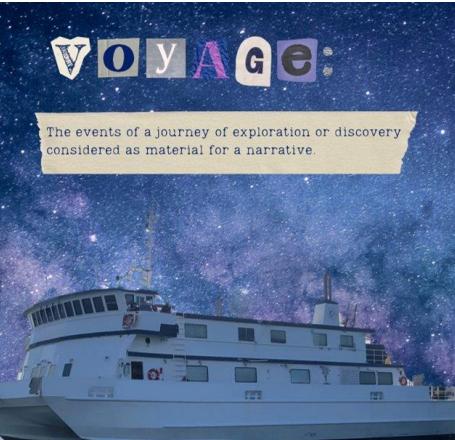
Post-Cruise & Assessment

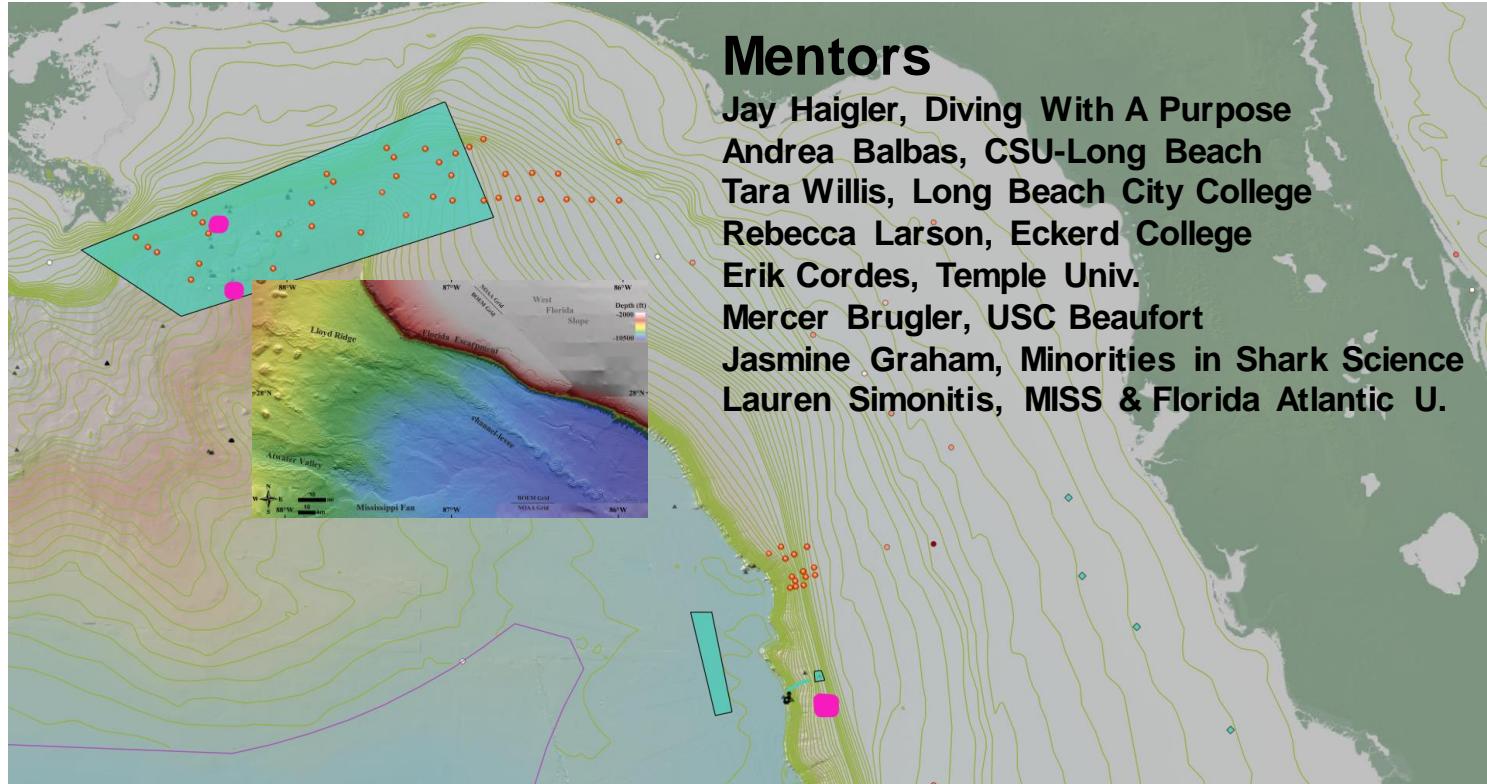
Post-Cruise Activities

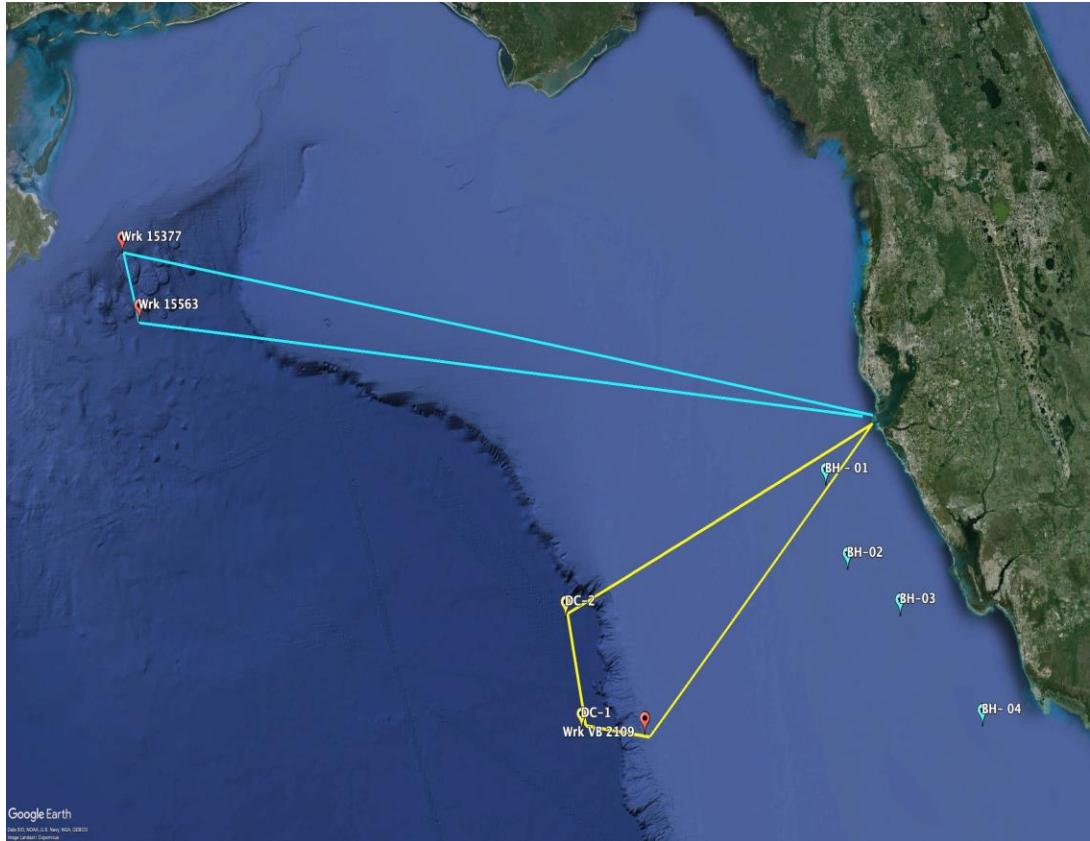
- All-Hands Post-Cruise Summary and Reporting
- Data/Sample handling and analyses
- Deliverable Development
- Project Deliverable Reporting and Submission

Program Assessments

- Engagement with Ocean STEAM opportunities
- Success in career development of mentees
- Mentor advancement
- At-sea and remote science advances
- Successes for partners and sponsors







Shipwrecks and Geology:

Cruise Dates:

Leg 1: June 29-July 6, 2024
Leg 2: July 8-July 15, 2024

Leg 1: Northern GoM

1. Shipwreck 15377
2. Shipwreck 15563

Leg 2: FL Escarpment and West FL Shelf

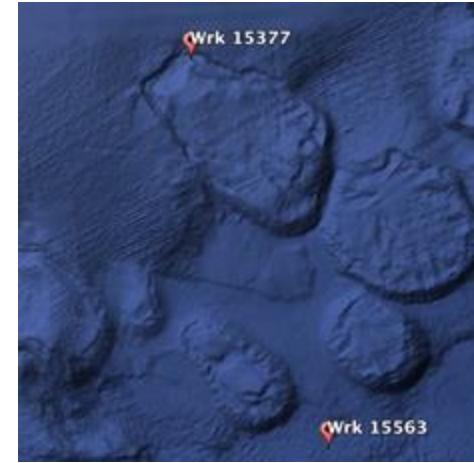
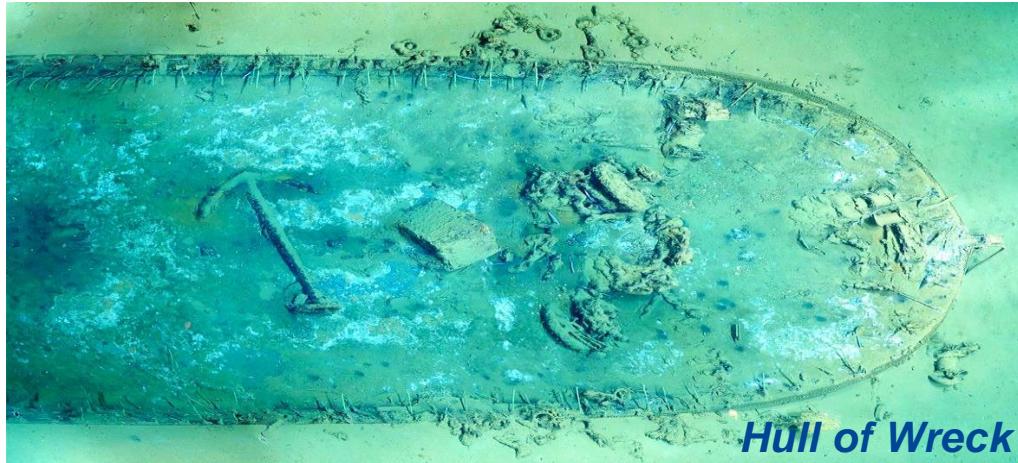
1. Shipwreck VB 2109
2. Deep Channel Feature
3. Blue holes



PEERSIDESM

Shipwreck 15377 (720 m/2,376 feet)

- Remains of a copper-sheathed, early- to mid-nineteenth-century sailing vessel of a type known as a “packet ship”
- Sank in the Gulf of Mexico: area of Viosca Knoll sometime between 1830 and 1860.
- Site is a substantially intact, undisturbed wreck
- Possesses an exceptionally high degree of architectural and archaeological integrity as much of the vessel other than its upper hull, main deck and masts have survived .
- Outline of the hull at the mudline indicates an overall estimated
 - length of 29.87 m (98 ft) with an overall visible beam of 9.75 m (32 ft).



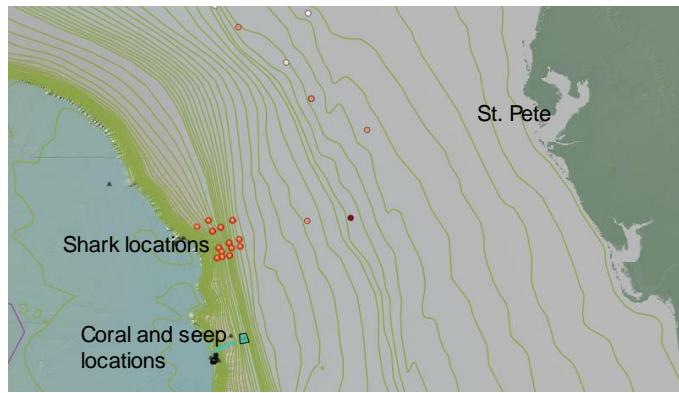


Sharks & Corals:

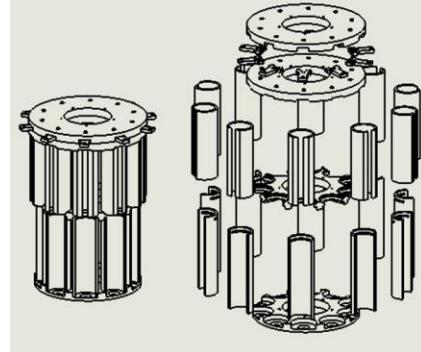
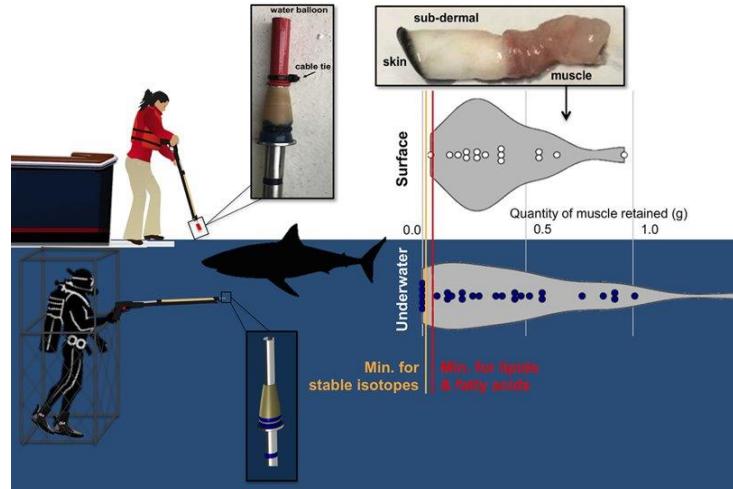
Cruise Dates:

Leg 1: July 22-29, 2024

Leg 2: July 31-August 7, 2024



- Coral and seep community collections
- Coral restoration form tests
- Shark kinematics, physiology, & tracking



Broadening Partnerships for Peerside

Considering a NOPP (FY26+)

Agencies, Industry, Philanthropy, Universities

- ONR investment in infrastructure and operations
- NOAA leadership in developing new blue economic workforce and recruitment to NOAA Corps
- NASA's interest in remote science applications (deep space and earth system)
- Consistent with NSF's and UNOLS desire for ARF and at-sea technical development
- Commitment and partnerships with philanthropy (SOI, MBARI/Packard)
- Industry is motivated through professional societies and targeted workforce development
- **GOAL is ultimately to have Partners (agencies, industry, philanthropy, institutions) to sponsor or co-sponsor expeditions in exchange for science and production of a trained workforce.**

<https://www.fio.usf.edu/>
<https://www.fio.usf.edu/peerside/>



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