

Welcome to RVTEC 2024

Center for Coastal and Ocean Mapping
University of New Hampshire
Durham, NH



About the University of New Hampshire

- 11,500 Undergraduate Students
- 2,500 Graduate Students
- #7 on the Best Value for Public University in US News & World Report College ranking
- R1 Research Institute
- Land, Sea, & Space Grant Institution



CCOM Operations Began ~ Jan 2000

~\$1.9 M earmark from Senator Gregg
JHC becomes line item in President's Budget
2009 - A Joint Hydrographic Center authorized under PL111-11



2010 - competed for
and awarded
5 yr JHC grant

2013 - part of School
of Marine Science and
Ocean Engineering

Nov 2019 - Awarded 2020-2025 Competitive

May 2015 - submitted proposal for 2016-2020 competition

November 2015 - awarded 2016-2020 grant

2017 - new addition with 9 new offices and 85-seat amphitheater classroom/seminar room

About the Center for Coastal and Ocean Mapping

- To be a world leader in the development of hydrographic & ocean mapping technologies and approaches
- To expand the scope of ocean mapping clients and constituencies through the development of innovative applications and collaborative work with both the private sector and government labs
- To educate a new generation of hydrographers and ocean mappers that can meet the growing needs of both government agencies and the private sector.



Who we are ?

Total Number of Graduates 2001-2023

Ph.D.s	15	
NOAA Ph.D.s	2	
Master's	78	
NOAA Master's	19	Including 3 NOAA Admirals
Non-GEBCO	5	
Certificates	113	120 students from 50 countries
GEBCO Scholars	232	
TOTAL		



Industrial Associates (64)

Acoustic Imaging Pty Ltd.

AML Oceanographic

Applanix

Arete Associates, Inc.

AusSeaBed

BAE Systems

BeamworX

Bedrock Ocean Exploration

Chance Marine Technologies, Inc.

Chesapeake Technology Inc.

CIDCO

Clearwater Seafoods Limited

David Evans & Associates, Inc.

Earth Analytic, Inc.

EdgeTech

EIVA Marine Survey Solutions

Environmental Systems

Research Institute

Euclidean International PYT LTD

Exocetus Autonomous Systems

Exail

Farsounder, Inc.

Foreshore Technology, Ltd.

Foxglove

Fugro USA Marine, Inc.

Huntington Ingalls Industries

HydroOctave Consulting, Inc.

Hypack, A Xylem Brand

IFremer

IIC Technologies

Jasco Applied Sciences (Canada) Ltd.

Kongsberg Underwater Technology,
Inc.

Kraken Sonar

L3Harris

Leidos

Lynker

Mitcham Industries, Inc.

NLA International

Norbit Subsea AS

Ocean Exploration Trust

Ocean High Technology Institute,
Inc.

Ocean Infinity

Ocean Power Technologies, Inc.

OceanX

Quality Positioning Services
B.V.

Saildrone, Inc.

SBG Systems

Sea ID Ltd.

Sea Machines Robotics

Seafloor Systems

SevenCs

SubCom (TYCO)

SubSeaSail LLC

Substructure

TCarta Marine

Teledyne Benthos

Teledyne Caris

Teledyne Marine

Teledyne Odom
Hydrographic

Teledyne RDI

Teledyne Reason, A.S.

Terradepth

Tetra Tech, Inc.

ThayerMahan Inc.

Woolpert, Inc.

XOCEAN

R/V Gulf Surveyor

Vessel Specifications

- 48' (length) x 17' 7" (beam) x 5' 6" (draft)
- Air Draft: 23' 9"
- Lightship Displacement: 17.29 Long Tons
- Home Port: New Castle, New Hampshire

Deck Equipment

- Retractable transducer strut
- Morgan Marine Model 300.4 Hydraulic Crane
- DT Marine Model DT5005EHLWR electro-hydraulic winch
- A-Frame (SWL 2000 lbs.)
- Universal Sonar Mount Foil Z-pole
- Davit (200 lb. capacity)
- Capstan winch



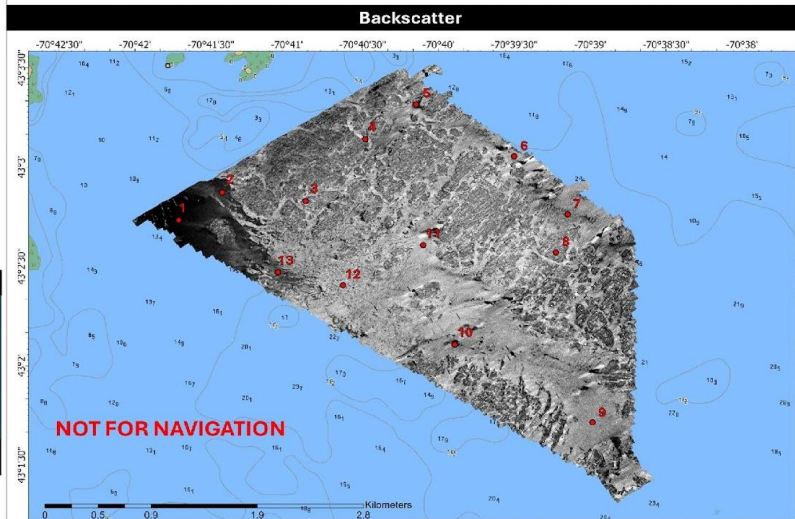
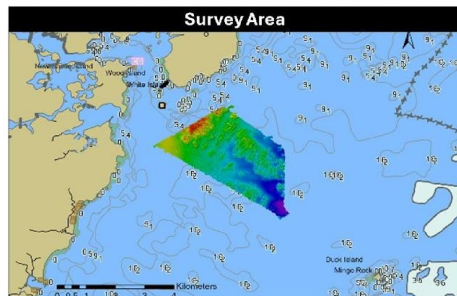
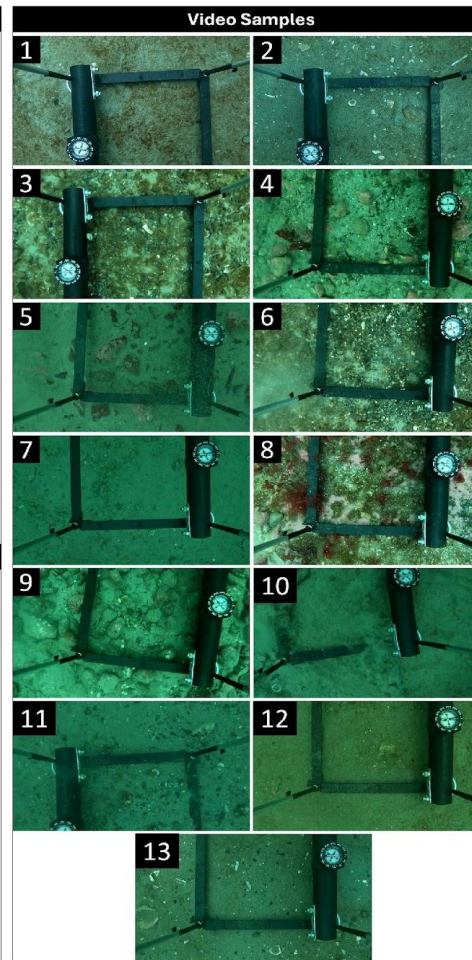
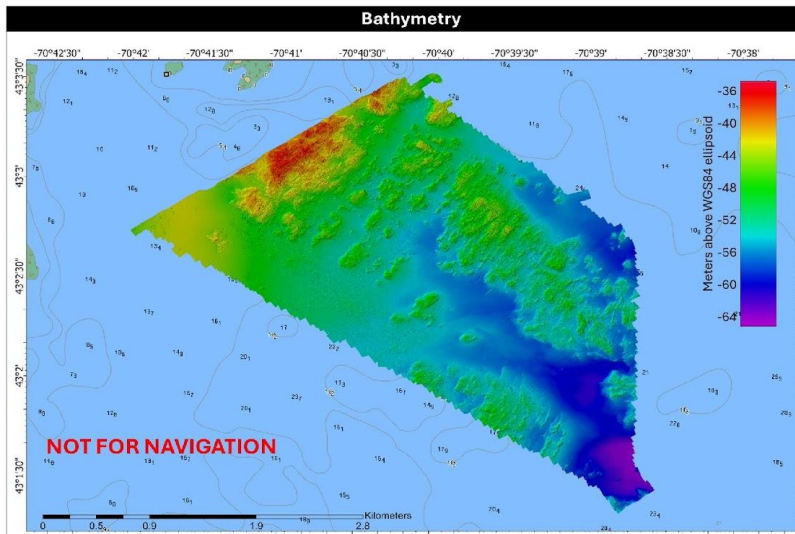
Education – Summer Hydro



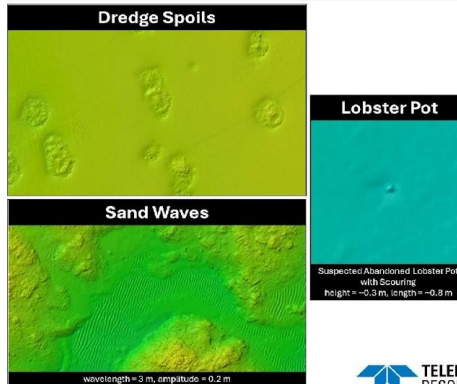
Summer Hydro 2024 Research Vessel "Gulf Surveyor"



Faculty: S. Dijkstra (NL), M. Rowell (USA), D. Tauriello (USA) SOMM: A. Menegatos (GRC), R. Nagasawa (JPN), C. Pulido (COL), J. Ren Jackson (USA)
NAFA: F. Bellabid (ALG), A. Borgini (TN), N. A. Cook (USA), A. Niedbala (USA) OrcaVision: M. Al-Harrasi (OM), X. Boza (PAN), K. Cav (TR), H. Gilman (USA), M. D. Henry (JAM)



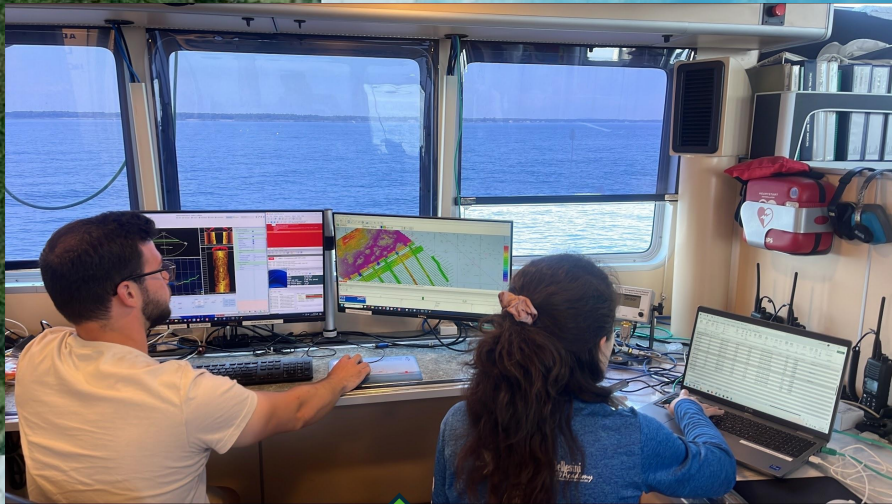
Survey Information	
Vessel	R/V "Gulf Surveyor"
Vertical reference	WGS 84
Horizontal reference	WGS 84 – UTM 19 N
Acquisition systems	SeaBat T51-R, MVP30, AML-3
Processing software	Qimera 2.6.2, FMGT 7.11.1, POSPac 9.1
Dates	06/10/2024 – 06/28/2024



- Planning
- Mobilization
- Acquisition
- Processing
- Reporting
- Various survey activities
 - SfM beach survey
 - Geodetic leveling
 - Total Station Resection
 - GNSS control point verification

Education – Summer Hydro

Integrate Starlink and ASV ops

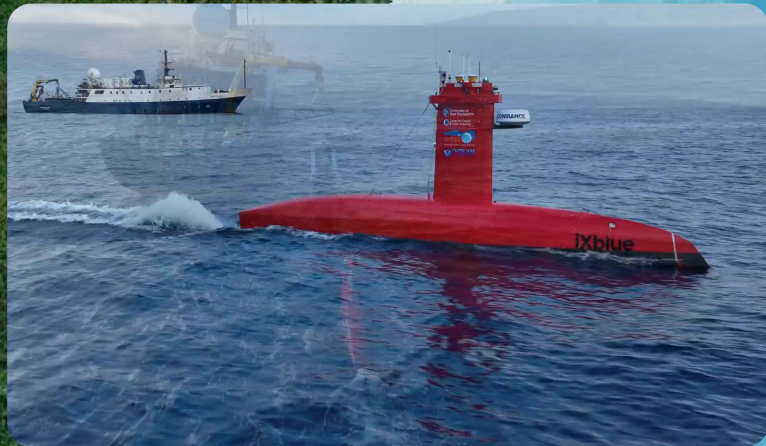


NOAA Partnerships

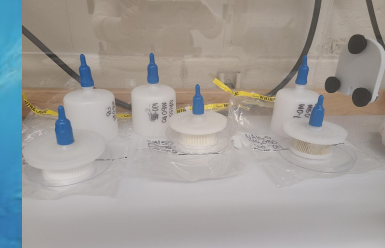
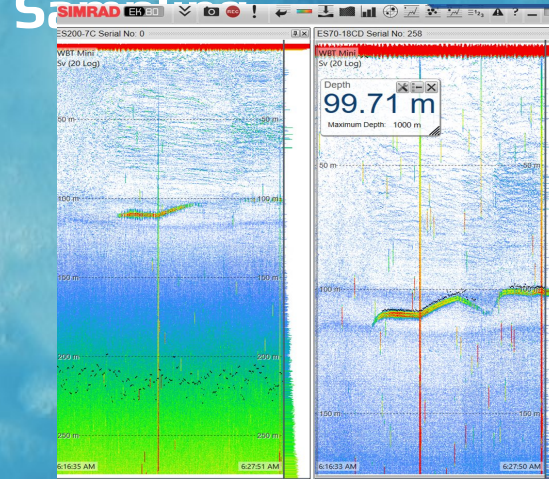
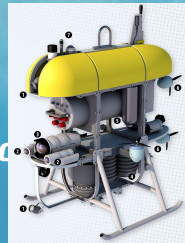


Member of OER Ocean Exploration Cooperative

Institute (with WHOI, URI, OET and USM) Collaborative Behaviors – Verified Directed



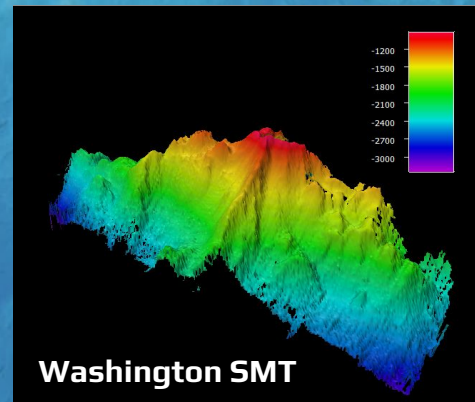
WHOI
Mesob



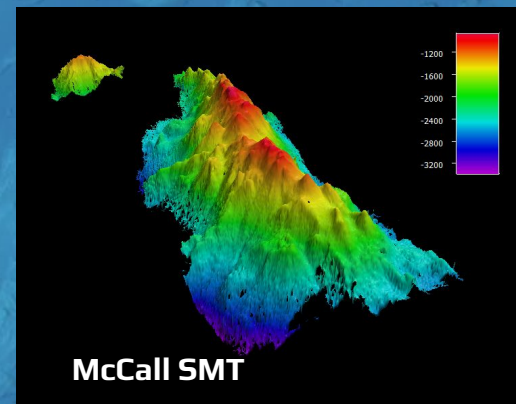
StarLink OTH

COMPACT

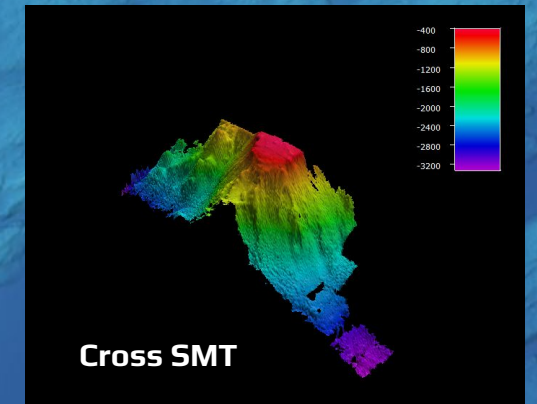
Sept 2023 -- EM-712 -- DRIX MAPPING TO >3000 m!



Washington SMT



McCall SMT



Cross SMT



NOAA Partnerships

Member of OER Ocean Exploration Cooperative Institute Saildrone Surveyor USV – Aleutians and California



Mapping Processing Summary Report

SD1200-0012-13: Aleutian Exploration (Mapping)

Aleutian Islands Region, Alaska
Unalaska (Dutch Harbor), Alaska, to direct trans
August 9, 2022 – October 3, 2022

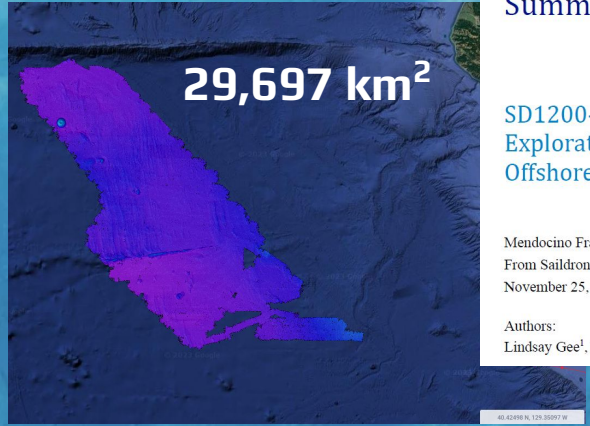
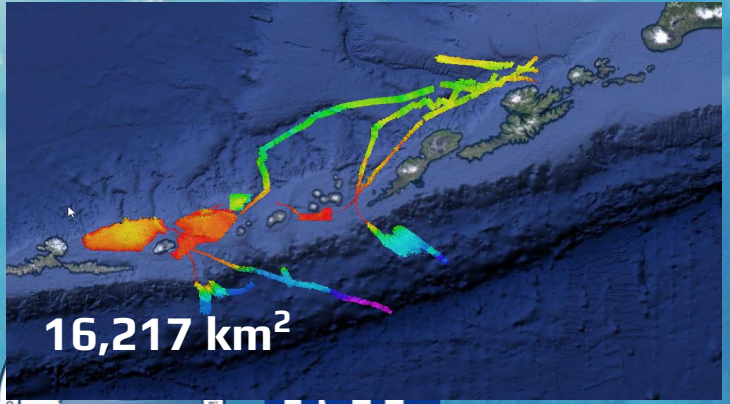
Authors:
Erin Heffron¹, Lindsay Gee¹

Observations on Initial Use of Saildrone Surveyor for Deep-Sea Mapping

Larry Mayer and Paul Johnson
Center for Coastal and Ocean Mapping
University of New Hampshire

Introduction:

For the past few years NOAA and the University of New Hampshire have been looking at the viability of uncrewed mapping systems to support the nation's mandate to map, explore and characterize its EEZ, and more generally to support broader ocean mapping and ocean exploration activities. There is much hope that uncrewed systems will provide an environmentally friendly approach to the collection of ocean mapping and exploration data, offering the potential for great increases in efficiency and significant cost-savings. While these hopes are shared by many, there is still insufficient data to either prove or disprove the value of uncrewed system operations, or to better understand how these innovative new systems might be best utilized to ensure their most appropriate use (see Mayer 2023 for broader discussion). This report takes advantage of more than two years of operation of the prototype "Saildrone Surveyor," a 21 m sail and solar-powered (supplemented by a diesel engine) uncrewed vessel equipped with both shallow water (EM-2040) and deep water (EM-304) multibeam sonar systems, to evaluate special issues associated with the collection of seafloor mapping data from this uncrewed system and to attempt to better understand the efficiency of surveying from this platform.



Mapping Quality Control Summary Report

SD1200-0014-15: Aleutian Exploration (Mapping) - Mendocino Fracture Zone and Exclusive Economic Zone, California

Mendocino Fracture Zone and Exclusive Economic Zone, California
From Saildrone Headquarters, Alameda, California
November 25, 2022 – February 20, 2023

Authors:
Lindsay Gee¹, Erin Heffron¹

Data QA/QC & Review of Issues

Prepared for: Ocean Exploration Cooperative Institute (OECI) and project partners
Prepared by: Lindsay Gee & Erin Heffron, Ocean Mapping Services LLC
(info@oceanmappingservices.com)



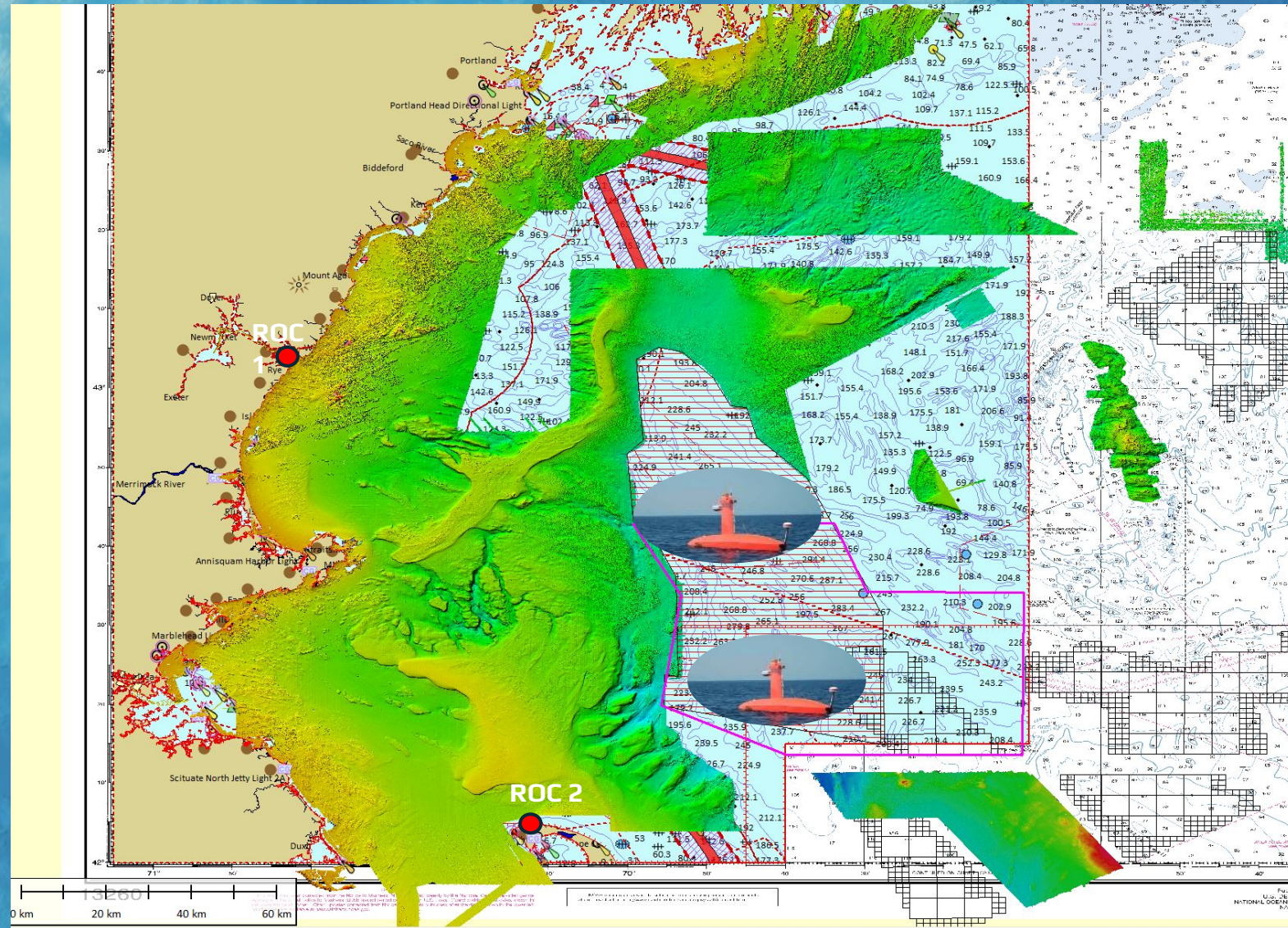
NOAA Partnerships

OECI, OMAO, OCS, BOEM + Intra and Inter Agency Collaboration



Dual DrifEs
Gulf of Maine

September/October
2024

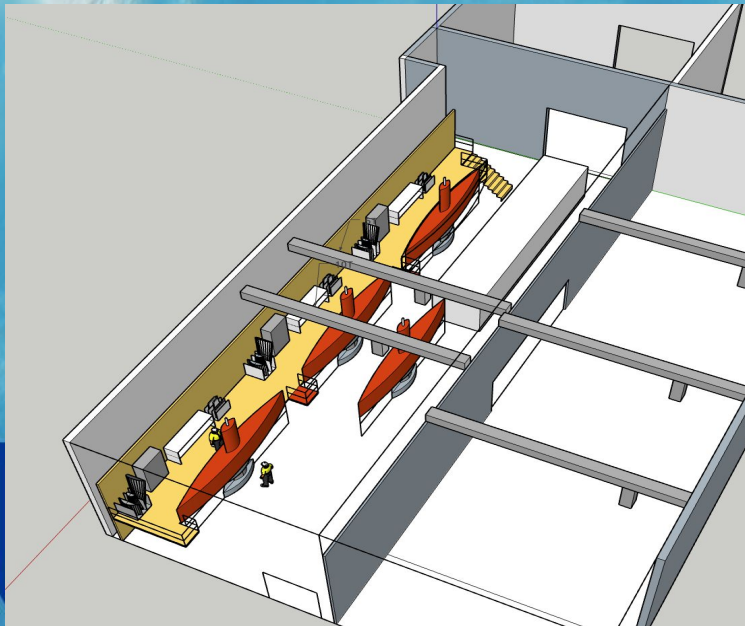


Public/Private Partnerships

Exail U.S.
Maritime Autonomy
Innovation Hub

07
15
23

exail

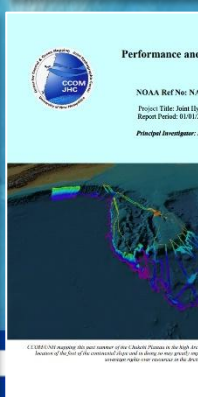


- KONGSBERG
DISCOVERY

- KLEIN MARINE



JHC Progress Reports 2001-2023



Task 16: Bathymetric Data Processing

JHC/CCOM Participants: Brian Calder, Adriano Fonseca, Kim Lowell, and Brian Miles

NOAA Collaborators: Matt Wilson (NOAA HSD); Gretchen Imahori, Jamie Kum, and Matt Scharr (NOAA RSD)

Additional Funding: Ocean Exploration Cooperative Institute

Despite advances in processing techniques and technology in the last decade, processing of large-scale, high-density, shallow-water hydrographic datasets is still a challenging task. JHC/CCOM has pioneered a number of techniques to improve on the processing times achievable, and new technologies that have conceptually redefined what we consider as the output of a hydrographic survey. There is, however, still some way to go, particularly in the context of cloud-based, distributed, and real-time systems for automated survey.

Project: Cloud-based Bathymetric Processing (CloudMap)

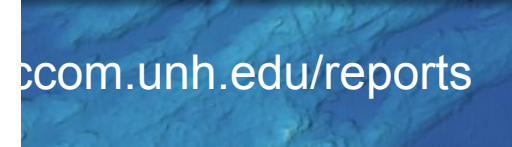
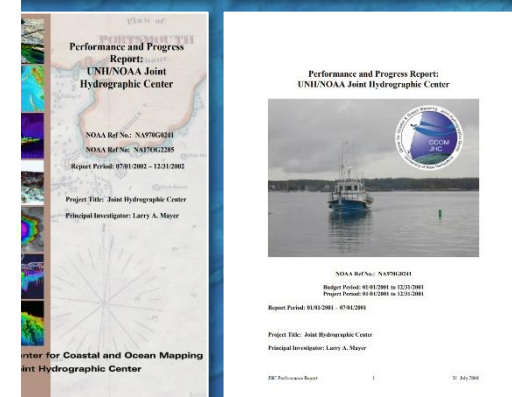
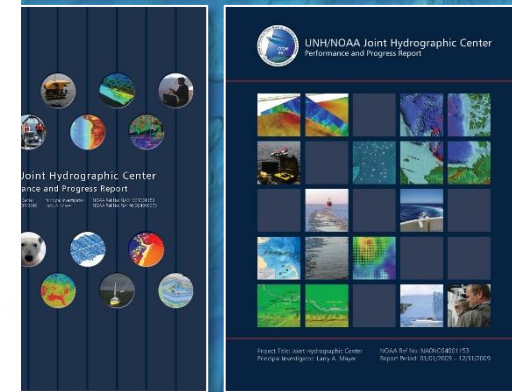
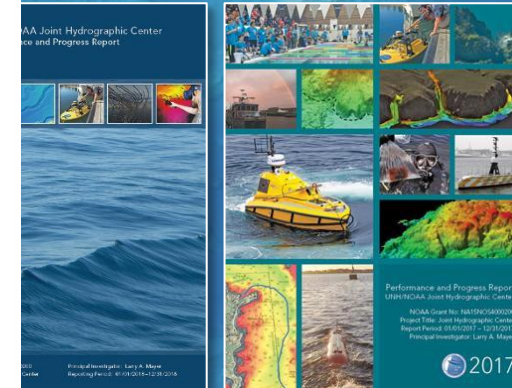
JHC/CCOM Participants: Brian Calder, Kindrat Beregovyi, Thomas Butkiewicz, Brian Miles, and Matt Plumlee

NOAA Collaborators: Matt Wilson (NOAA HSD)

Additional Funding: Ocean Exploration Cooperative Institute

The use of cloud technologies has been revolutionary for computing environ-

Main Body



ccom.unh.edu/reports

One of the homes of the MAC



Thank You!

