The NOAA-University of New Hampshire Joint Hydrographic Center

A National Center for Research and Education in Hydrography and Ocean Mapping



Complementary Centers

• NOAA/UNH Joint Hydrographic Center (JHC)

- A NOAA and University Partnership
- Congressionally authorized and appropriated
- Funded through a competitive Cooperative Agreement



• UNH Center for Coastal and Ocean Mapping (CCOM)

• Provides for participation of private sector and other government agencies

Center Goals

To be a world leader in the development of hydrographic and 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.



Staffing

- 17 Research and Teaching Faculty12 Affiliate Faculty members
- 21 Research Scientists and Staff



- 9 Support Staff (Admin, IT, Design, Facility, Outreach)
- 12 NOAA Scientists
- 25 M.S. and Ph.D. graduate students



Acoustic and Wave Tank Test Facilities

Acoustic Calibration and Equipment Test Tank

Wave and Tow Tank



60' x 40' x 20'



120' x 12' x 8'



Research Vessels



R/V Gulf Surveyor



R/V Cocheco



Higgs Zego Boat

ASVs





SEA-KIT AS—Designed by GEBCO Alumni Team Ready for X-Prize finals

MAXLIME

DriX—iXBlue Arriving this summer



Instruction and Presentation Facilities

- High-end Macintosh, Linux, and PC workstations
- Training classroom with 18 workstations
- Visualization Classroom
- Auditorium Classroom
- High-end 48- and 60-inch large-format plotters and 60-inch scanner
- Geowall-2 and other large-format displays

Telepresence Center

Applied Research Emphasis on Research to Operations

- Underwater acoustics
- Lidar & coastal & ocean remote sensing
- Hydrographic data processing and analysis
- Electronic Chart of the Future
- Seafloor characterization
- Water column mapping
- Ocean data visualization
- Autonomous vessels
- Continental shelf mapping
- Crowd-sourced bathymetry
- And many more....

ACOUSTIC IMAGING ALIDADE HYDROGRAPHIC **AML OCEANOGRAPHIC** ANTHROPOCENE INSTITUTE **ASV GLOBAL BOULDER EQUITY ANALYTICS** CHESAPEAKE TECHNOLOGIES **CLEARWATER SEAFOODS** EDGETECH EIVA ESRI **EXXON MOBIL FUGRO USA MARINE** GARMIN GENERAL DYNAMICS BLUEFIN ROBOTICS HIGGS HYDROGAPHIC TEK

48 Industrial Associates

HYDROID HYPACK **IFREMER** IIC TECHNOLOGIES **ixblue KLEIN MARINE SYSTEMS** KONGSBERG UNDERWATER TECHNOLOGY LEIDOS MARITIME ALLIANCE NORBIT SUBSEA NOVATEL OCEAN HIGH TECHNOLOGY INSTITUTE PHOENIX INTERNATIONAL QPS **OUESTER TANGENT** R2SONIC

ROBOTICS SEA ID **SEVEN Cs** SMT KINGDOM SUBSTRUCTURE SURVICE ENGINEERING **TELEDYNE BENTHOS TELEDYNE CARIS** TELEDYNESOCEAN SCIENCE **TELEDYNE ODOM** HYDROGRAPHIC **TELEDYNE OPTECH TELEDYNE RESON TRITON IMAGING INC** TYCOM LTD YSI, INC. SEA MACHINES

Sonar calibration

<u>In Tank</u> Measurements of: Beam pattern, driving point impedance, transmit voltage response and receive sensitivity

<u>In Field</u> Suspended targets and trilateration of buoys

CUBE (combined uncertainty and bathymetric estimator)

Worldwide standard for Hydrographic Offices

uncertainty

Automated depth and uncertainty with indications of problem areas

CHRT (CUBE with Hierarchical Resolution Technology)

Solves variable resolution problem for surveys covering wide depth ranges (Alaska)

H12142 (Glacier Bay); Data: NOAA, CARIS

CHRT Resolution display

H12142 (Glacier Bay); Data: NOAA, CARIS

Geocoder

for multibeam backscatter processing

Solution (1997) Solution (1997

Shallow-water bathymetry from AUVs

GAVIA with GeoSwath

Vertical Uncertainty for Bathy/Topo Lidar

Collaboration with NOAA Remote Sensing Division and Oregon State University

Riegl VQ-880-G Survey

NOAA Science Advisory Board • July 17, 2018 • Greenland, New Hampshire

Bathymetry and Seafloor Character from Fisheries Sonars

Mid-water mapping and detection of seafloor gas seeps

Tracing seafloor mapping anomalies to water column features

Internal Waves ~10m amplitude, 100m wavelength Superimposed Billows 5-10m amplitude, 20m wavelength

Center Goals

To educate a new generation of hydrographers and ocean mappers who can meet the growing needs of both government agencies and the private sector.

Educational Programs

M.S. and Ph.D.

- Two tracks:
 - Engineering: Ocean, Electrical, or Mechanical
 - Earth Sciences/Computer Science/Oceanography/ Natural Resources
- Graduate Certificate Program
- Nippon Foundation/GEBCO Training Program
- FIG/IHO/ICA CAT A Recognition
 - recertified April 2018

N°181 FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC)

CERTIFICATE OF RECOGNITION

The PIG/INO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers, having reviewed the programme Graduate Programme in Cecan Mapping submitted by the UNIVERSITY OF NEW HAMPSHIRE/NOAA-UNH JOINT HYDROGRAPHIC CENTER (USA) against the "Standards of Competence for Category "A" Hydrographic Surveyors", 5-5 A Edition 1.0.1, and being satisfied that it meets the requirements prescribed in the Standards, hereby awards this certificate of recognition for a period of six(6)years.

Social Media

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Vimeo vimeo.com/ccomjhc 78 videos of visualizations and seminars

TORR

Flickr flickr.com/photos/ccom_jhc More than 2,000 photos posted since 2009

CCOM/JHC Website

ccom.unh.edu

- Directory of all Center faculty, staff, and students
- All Center publications
- Annual Progress Reports 2001-2017
- Research Themes

