Ocean Mapping Technology Workshop

Monday May 1st, 2017

Workshop Overview: Over the past two decades, the technology we use to map and understand the seafloor and ocean systems has advanced dramatically. Software and hardware for the collection, processing, analysis and visualization of data has moved on tremendously. Scientific forums such as GeoHab have helped bring together technology providers and end users to advance the science associated with how we map, study and managed the marine environment.

The goal of this GeoHab workshop is to offer software and hardware vendors an opportunity to showcase the latest and greatest innovations in ocean mapping tools to the seafloor geological and habitat mapping science community. This may include hands-on trials of the latest software tools, classroom sessions on technology developments, or field demos of hardware.

Workshop Agenda (draft):

8.30	**Welcome and opening remarks**					
8.45	**Plenary session:** Overview on major hardware and software technology advances over the past decade associated with marine geological and biological habitat mapping (1 or 2 short overview presentations – speakers TBD)					
9.15	**Morning breakout sessions. Participants will sign up for sessions through the online registration process with vendors of interest**					
	Esri: **Computer lab** Analysis, Visualization and Sharing of 3D Ecological Marine Data **Room 5331**	**R2sonic:** **Field demo** R2Sonic 2026 Multi-Spectral Survey Demonstrations **M/V Eastcom**	**QPS:** **Computer lab** Acquire, Process, Visualize, Share: Utilizing QPS Software Solutions for Marine Habitat Mapping **Room 5334**	**DASCO:** **Field demo** Klein Marine Systems and HYPACK **M/V Halmar**	**HYPACK:** **Classroom** HYPACK: Comprehensive Habitat Mapping Solutions for all Applications **Room 5323**	**Maritime Way Scientific:** **Classroom** Acoustic Seabed Classification of Multibeam Data with SWATHWAY **Room 5325**
12.00	**Lunch**					
13.30	**Afternoon breakout sessions. Participants will sign up for sessions through the online registration with vendors of interest**					
	Esri : **Computer lab** Analysis, Visualization and Sharing of 3D Ecological Marine Data **Room 5331**	**R2sonic:** **Field Demo** R2Sonic 2026 Multi-Spectral Survey Demonstrations **M/V Eastcom**	**QPS:** **Computer lab** Integrated Analysis of Video and Still Images Within a Combined 4D Scene **Room 5334**	**DASCO:** **Field demo** Klein Marine Systems and HYPACK **M/V Halmar**	**Teledyne Caris:** **Classroom** What's new in CARIS HIPS and SIPS: Habitat mapping with SIPS Backscatter **Room 5323**	**PING DSP:** **Classroom** 3D Sidescan Sonar – An introduction to, and demonstrations of the Technology and its 3D Imaging and Mapping Capabilities **Room 5325**
16:00	**Plenary session:** Panel discussion with vendors on the panel – discussion on where the technology is going; what are the next innovations; where is support/research effort needed from an industry perspective etc.					
17:00		**Close of workshop**				

Plenary Session – NSCC Waterfront Theatre - Workshop Introduction

Overview on major hardware and software technology advances over the past decade associated with marine geological and biological habitat mapping (1 or 2 short overview presentations – speakers TBD)

Morning Breakout Session:

1. ***Esri - Analysis, Visualization and Sharing of 3D Ecological Marine Data – Room 5331***
Esri leads the way in developing innovative geospatial solutions for the scientific community. The ArcGIS platform enables organizations to better understand scientific data throughout the process of collection, analysis, and dissemination. In this demo-centric workshop, participants will explore a variety of tools for the collection, management, analysis, visualization and sharing of marine and MetOcean data and research results. Demonstrations will focus on 3D marine ecological data and will include:
- accessing data from authoritative providers such as NOAA, NASA and Esri
- 3D analysis and visualization of the recently released Ecological Marine Units
- leveraging the power of open-source analytical libraries from SciPy and R
- multi-dimensional spatial statistics
- sharing research data and results

2. ***R2Sonic- R2Sonic 2026 Multi-Spectral Survey Demonstrations – MV Eastcom***
R2Sonic is hosting on-water demonstrations of the Sonic 2026 Wideband Multibeam Echosounder on Monday, 1 May. The demonstrations will focus on the MultiSpectral capabilities of the Sonic 2026 as well highlight the 0.5 x 0.5 degree beamwidth capabilities of this high-resolution system. The demonstrations will be from 09:30 to 15:30 onboard the vessel Eastcom, from the Dominion Diving facility adjacent to NSCC. Transport will be provided.

Advanced booking is required and is on a first-come-first-served basis. Please contact Mike Brissette at R2Sonic at mikeb@r2sonic.com by 28 April to request your preferred time-slot for the demonstration.

3. ***DASCO – Klein Marine Systems and HYPACK field demonstrations – MV Halmar***
DASCO is hosting on-water demonstrations of a number of systems including Klein and HYPACK. Klein Marine Systems will be demonstrating innovative technologies in Shallow Water Swath Bathymetry – showcasing our HydroChart 3500 with bathymetric survey data collection and co-registered dual frequency, high resolution side scan sonar imagery. The System 4900, Dual-Frequency, Side Scan Sonar for Survey, Search and Recovery (SAR) applications will showcase our high-definition imaging capabilities while demonstrating the portability and rugged construction for the coastal survey and security communities. www.KleinMarineSystems.com. Field demos will be held from the Dominion Diving facility adjacent to NSCC. Transport will be provided.

4. ***QPS – Acquire, Process, Visualize, Share: Utilizing QPS Software Solutions for Marine Habitat Mapping – Room 5334***
This workshop will provide a tour of the QPS product line highlighting solutions available for each stage of the marine habitat mapping workflow. Through a combination of presentation, demonstration and a hands-on component users will be introduced to QINSy, Qimera and Fledermaus. Whether you are acquiring and processing acoustic and optical data, or processing, analyzing and visualizing data from another source, participants will learn easy to implement techniques for accomplishing their habitat mapping goals.

5. ***HYPACK - HYPACK: Comprehensive Habitat Mapping Solutions for all Applications – Room 5323***
The presentation will cover the following:
- HYPACK overview
- Multibeam acquisition, processing and visualization
- Backscatter data, GeoCoder & sediment classification
- Side-scan sonar acquisition, real-time mosaicking and data processing

- Sub-bottom profiling acquisition and processing
- UAV technology for mapping (Nexus 800)
- Final products

6. ***Maritime Way Scientific - Acoustic Seabed Classification of Multibeam Data with SWATHWAY – Room 5325***

Maritime Way Scientific recently acquired the marine division of Quester Tangent Corporation (QTC) along with its seabed classification software suites and capability.   In this workshop, Maritime Way will present the software suite for acoustic seabed classification of underwater acoustic backscatter data.

This workshop will therefore focus on multibeam and sidescan data and includes side notes regarding single beam echo processing. During the workshop, participants will have a hands-on experience with state of the art software to perform an accurate and efficient classification. It will also cover all aspects of seafloor characterization from data acquisition to quality control, processing and finally ground truthing.

Afternoon Breakout Sessions:

1. ***Analysis, Visualization and Sharing of 3D Ecological Marine Data – Room 5331***

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4. ***QPS – Integrated Analysis of Video and Still Images Within a Combined 4D Scene – Room 5334***

This workshop will examine the latest techniques for analyzing full motion video and still imagery in an integrated Fledermaus scene. The combination of high resolution acoustic data (bathymetric, water column, and backscatter) with optical data can greatly enhance the analysis and product generation process. This workshop will be of

interest to anyone collecting video for ground-truthing, habitat mapping and environment management, or performing related analysis tasks.

5. *Teledyne Caris - What's new in CARIS HIPS and SIPS: Habitat mapping with SIPS Backscatter – Room 5323*

This workshop will provide an update on the latest HIPS and SIPS advanced workflows, focusing on the use of bathymetry, seabed slope and backscatter to produce seabed classifications maps. We will highlight the latest capabilities of the SIPS Backscatter processing engine, including support for full time series backscatter, RESON normalized backscatter and a preview of the upcoming R2Sonic multi-spectral imagery support. We will also highlight streamlining this workflow using our new automation tools, including Process Designer. Finally, we will highlight advancements in HIPS technology, including better seafloor modelling with Variable Resolution surfaces, and extracting more information from your data with support for Multiple Detections.

6. **PING DSP - 3D Sidescan Sonar – An introduction to, and Demonstrations of the Technology and its 3D Imaging and Mapping Capabilities – Room 5325**

This half-day workshop will provide a hands-on introduction to 3D Sidescan and the 3DSS-DX-450 sonar, a compact, low power, pole-mount sonar that provides 3D sidescan, 2D sidescan and wide swath bathymetry. Workshop participants are invited to bring a laptop (gaming laptops with discrete GPU's preferred) and the 3DSSTM Software Suite will be provided with a time limited license. The workshop will begin with a 3DSSTM technology overview and comparison with Multibeam Sonar (MBS) and with interferometric Phase Based Sonar (PBS). The 3DSSTM Software Suite will then be introduced and a hands-on software tutorial presented with participants optionally running 3DSSTM software on their own laptop. The tutorial will demonstrate 3DSS-DX-450 sonar capabilities and participants will be guided through operation and features of the 3DSSTM 3D Display and a simulation of 3DSS-DX-450 sonar operating in real-time. A wide range of application examples will then be explored and discussed using the 3DSSTM Software and example 3DSS-DX-450 data files.

Plenary Session: NSCC Waterfront theatre - Panel discussion with vendors on the panel
Wrap-up session and discussion on where the technology is going; what are the next innovations; where is support/research effort needed from an industry perspective.