

INMARTECH 2018 Symposium – Program (*tentative*)

Woods Hole Oceanographic Institution
Sea Crest Beach Hotel
350 Quaker Rd., North Falmouth, MA 02556

Monday, October 15: RVTEC Meeting
Tues-Thurs, Oct 16-18: INMARTECH 2018 Symposium
Friday, October 19: Multibeam Training and Vendor Tours

Please note: The RVTEC Meeting will be held on Monday, October 15th from 8:30 to 17:00 pm at Woods Hole Oceanographic Institution, Redfield Auditorium. The agenda will be posted separately.

Monday, October 15, 2018 – Sea Crest Hotel

17:00 – 19:00 **INMARTECH 2018 Check-in** – Participants can pick up their program material in the Nauset I & II.

Tuesday, October 16, 2018 – Sea Crest Hotel

8:00 – 8:30 **Coffee** – Sea Crest Hotel, Nauset I & II (*Sponsored by Sonardyne*)

8:30 – 8:45 **Welcome Remarks**

8:45 – 9:15 **Featured Speaker**

9:15 – 9:45 **Technical Challenges and Solutions** – Participants are invited to present one slide explaining the greatest technical challenge faced this year and how it was resolved.

9:45 – 9:55 **Session Introductions** – Session leaders will provide brief overviews of plans for the morning and afternoon sessions.

9:55 – 10:15 **Break**

10:15 – 12:15 **Technical Break-outs, Skillset Sessions & Trainings – Sea Crest Hotel**

Time	Nauset III	Nauset IV	Nauset V
10:15 - 12:15	CTDs, Sensors and Observing Systems	Acoustics and Camera Systems	Skillset Session: Serial Data 1

12:15 – 13:30 **Lunch** (*Lunch sponsored by Worldlink Communications*)

13:30 – 15:00 **Technical Break-outs, Skillset Sessions & Trainings – Sea Crest Hotel**

Time	Nauset III	Nauset IV	Nauset V
13:30 – 15:10	CTDs, Sensors and Observing Systems	Planning for data growth: a community discussion	Load Handling Systems and Tension Members

15:10 – 17:00 **Trade Show** – Exhibits will be on display in Nauset I & II.

17:40 **Buses depart** to Woods Hole Oceanographic Institute (WHOI)

18:00 – 20:30 **INMARTECH Reception & Poster Session** at WHOI, Clark 607 (*Reception sponsored by Kongsberg*)

20:30 **Buses return** to Sea Crest Hotel

Wednesday, October 17, 2018

8:00 – 8:30 **Coffee** - Sea Crest Hotel, Nauset I & II (*Sponsored by Markey Machinery*)

8:30 – 8:45 **Day-2 Welcome, Logistics, and Session Introductions**

8:45 – 12:20 **Technical Break-outs, Skillset Sessions & Trainings – Sea Crest Hotel**

Time	Nauset III	Nauset IV	Nauset V	Racepoint
8:45 – 10:25	Ship/Shore Communications		<i>Skillset Session:</i> Serial Data 2 – Can you hear me now?	Technical Demonstrations
10:25 – 10:40	<i>Break</i>			
10:40 – 12:20	Vehicles and all the rest	<i>Training:</i> pCO2	<i>Skillset Session:</i> Timeservers, and why we love them: Why do we care about time?	Intro to PLCs & PACs

12:20 – 13:35 **Lunch** (*Lunch sponsored by Scanmar*)

13:35 **Buses to WHOI**

14:00 – 17:00 **WHOI Ship and Facility Tours**

17:00 **Buses to Sea Crest Hotel**

18:30 **INMARTECH 2018 Dinner** – Sea Crest Hotel Dining Room (*Dinner sponsored by Rapp Marine/Triplex*)

Thursday, October 18, 2018 – Sea Crest Hotel

8:00 – 8:30 **Coffee** - Sea Crest Hotel, Nauset I & II (*Sponsored by Hawboldt Industries*)

8:30 – 8:45 **Day-3 Welcome, Logistics, and Session Introductions**

8:45 – 12:05 **Technical Break-outs, Skillset Sessions & Trainings** – Sea Crest Hotel & WHOI Village

Time	SeaCrest			WHOI Village Campus	
	Nauset III	Nauset IV	Nauset V	Mooring Lab	High Bay
8:45 - 10:25	Vessels and Operations	<i>Skillset Session:</i> Intro to Oscilloscopes	<i>Training:</i> Catching Shipboard ADCP System Problems Early: Visualization and Diagnosis	<i>Skillset Session:</i> Wire Terminations & Wire Testing	
10:25 – 10:45	Break				
10:45 – 12:05	Vessels and Operations		<i>Training:</i> Catching Shipboard ADCP System Problems Early: Visualization and Diagnosis		<i>Skillset Session:</i> Winch Operations

12:05 – 13:20 **Lunch**

13:20 – 15:30 **Technical Break-outs, Skillset Sessions & Trainings** – Sea Crest Hotel & WHOI Village

Time	SeaCrest			WHOI Village Campus	
	Nauset III	Nauset IV	Nauset V	WHOI Pier	High Bay
13:20 – 14:50	Data Management and IT	<i>Skillset Session:</i> Intro to Electronics Design	<i>Training Session:</i>	<i>Skillset Session:</i> A hands on Introduction to Ultra Short BaseLine (USBL) systems with Sonardyne's Ranger 2 systems	<i>Skillset Session:</i> Winch Troubleshooting
14:50 – 15:30		<i>Skillset Session:</i> Tips for installing & Support of a Debubler	Exploring the mysteries of the EK80: A practical guide to Simrad broadband echosounders		

15:30 – 15:50 **Break**

15:50 – 16:30 Featured Speaker

16:30 – 16:45 **INMARTECH 2018 Closing Remarks**

Friday, October 19, 2018

0830 – 15:00 Training Session: Multibeam

8:30 Bus to WHOI Smith Conference Room

9:00 – 13:00 Multibeam Training (box lunch to be delivered at 12:00)

Presented by Kongsberg and the UNOLS Multibeam Advisory Committee (MAC)

1. So your ship has a multibeam on its hull and electronics scattered about.. this is how it came to be (Kongsberg)

2. These are the components to that system, this is what they do (Kongsberg)
3. Here is how to operate and maintain your multibeam (Kongsberg)
4. Open Q&A with a Kongsberg field engineer (Kongsberg)
5. What is next? (Kongsberg)
6. Here is how CTD/SV data is collected, evaluated, loaded into the multibeam system (MAC)
7. Data evaluation / QC / Performance testing (MAC)
8. Data processing for field deliverables (MAC)
9. File management-archiving-distribution (MAC)
10. What is next? (Kongsberg)

13:00 – 15:00 “Using Quimera to Diagnose your Multibeam” – Jonathon Beaudoin/QPS

OR

8:30 – 12:30 ***Local Oceanographic Instrumentation & Equipment Vendor Tours***

Tours of oceanographic instrumentation and equipment vendor facilities in the Woods Hole, MA area. Confirmed Vendors include:

- McLane Research Laboratories, Inc. - <http://mclanelabs.com/>
- Hydroid (Kongsberg) - <https://www.hydroid.com/>
- EOM Offshore - <https://www.eomoffshore.com/>
- MITech - Marine Imaging Technologies - <https://marineimagingtech.com/>
- Benthos (Teledyne) - <http://www.teledynemarine.com/benthos/>
- Webb Research - <http://www.teledynemarine.com/webb-research/>

Technical Session Presentations

NOTE: The order of the presentations may change in the final program

Session Name	Presentation Title	Presenter
CTDs, Sensors and Observing Systems <i>(10/16 – Tues AM & PM)</i>	"Hands-Free" CTD Water Sampling	Keijzer, Edwin
	Development of an autonomous solar tracking measurement platform for offshore use	Vansteenwegen, Dieter
	Enhancing CTD And Multiparameter Water Column Data Collection With Moving Vessel Profiler	Walton, James
	Implementation of automatic underway measurement system ("Ferrybox") on Research Vessels	CRENAN, Brieuc
	Oceanographic Data Facility 36 Position Rosette Improvements for Repeat Hydrography Cruises	Becker, Susan
	Optimising performance of a long range Ultra Short Baseline tracking and telemetry system	West, Geraint
	Seabed mining: field testing of a nodule mining crawler	Smit, Marck
	Sensor Calibration Tracking	Felix, Bruce
	The temperature-dependency of oceanographic thermometers	Ober, Sven
Acoustics & Camera Systems <i>(10/16 – Tues AM)</i>	High-rate underwater acoustic communication system for image transmission with a manned submersible SHINKAI6500	Deguchi, Mitsuyasu
	LED Strobes – the challenges of getting high power at a fast recharge rate	Cordell, Jeff
	Practical Impacts of Sonardyne CASIUS Calibration on USBL Performance	Vaughn, Ian
	Presentation of Kongsberg's EM304 results onboard RV Thalassa	CRENAN, Brieuc
	High Resolution Deep-Sea Imaging and Camera-Guided Sampling Using EPO-Ocean Imaging Systems and WHOI-MISO/SSSG Integrated Camera Systems	Fornari, Daniel
Load Handling Systems and Tension Members <i>(10/16 – Tues AM)</i>	Multiple platforms on a fibre optic towed cable	Tyndall, Aaron
	Rapp Marine and Triplex - Full Lifecycle Resource for Oceanographic Load Handling Systems	Moore, Fin
	USCG 46CFR189.35 vs Commercial Standards for deck machinery : A comparison of their impact on design and load testing	Einhorn, Micheal
	Community Discussion on synthetic 0.322 alternatives for CTD operations	Trask, Rick
Ship/Shore Communications <i>(10/17 – Wed AM)</i>	HiSeasNet Engineering Review and Preview	Walsh, Kevin
	LEO + GEO = Innovation Squared	Kemp, Amy
	VSAT communications enabling survey USV operations beyond line of sight	Calvin, Jorge
	Ship-to-Shore Telepresence Enabled Research & Education	Coleman, Dwight
	UNOLS Internet Use Policy (40 min)	Stolp, Laura
Vehicles and all the rest	Technically enhancing an aging roV	Houthoofd, Robin

<i>(10/18 – Wed AM)</i>	Scripps Institution of Oceanography Portable Multichannel Seismic System, Applications, and Recent Activities	Pedrie, Kolby
	Evaluation of Accurate Heading Devices for use with Shipboard ADCP Systems	Hummon, Julia
	Routine near-surface current and shallow-water bathymetry mapping capabilities for research vessels with science marine X-band radars	Lund, Bjoern
Technical Demonstration <i>(10/17 – Wed AM)</i>	OpenRVDAS - an Open Source Data Acquisition Architecture	Cohn, David Pablo
	UNOLS Cruise Planning Application	Gruebel, Erich
	Using Kayaks for Low-Impact Coastal Research in Antarctica	Race, Julian
Vessels and Operations <i>(10/18 – Thurs AM)</i>	Underway Ifremer projects – RV Thalassa refit, seismic renewal and Polar Pod project	Nokin, Marc
	Aranda, an Arctic research vessel now	Pajala, Jukka
	Feasibility of the Zero/V: A zero-emission, hydrogen fuel cell coastal research vessel	Appelgate, Bruce
	RV Sally Ride Ship Improvements	Hirsch, Matthew
	The Making of RV 'Kronprins Haakon'	Bremnes, Jan
	Managing the UNOLS Marine Technician Pool	Chapman, Piers
	Conceptualizing an International Marine Technical Enhancement Exchange (IMTEE) Program	Roth, Ethan
Data Management and Vessel IT <i>(10/17 – Thurs PM)</i>	CTD deployments - Operational Challenges	Palmer, Rod
	Deployment of High Availability Computing Clusters on Research Vessels	Meyer, Jon
	KVM over LAN for Oceanographic Data Acquisition Systems	Yang, Daniel
	RCRV Datapresence: A Near Real-time Update	Nahorniak, Jasmine
	Rolling Deck to Repository (R2R): current status and new developments	O'Hara, Suzanne
	Supporting research on-board CSIRO's RV Investigator – A data perspective	Van Graas, Steven
	UHDAS: Shipboard ADCP Data Acquisition, Processing, Monitoring, and Stewardship	Hummon, Julia

Skillset Sessions, Discussions, Training, etc:

Session Name	Session Details	Session Leader (s)
Skillset Session – Serial Data 1 <i>(10/16 – Tues AM)</i>	Learn about asynchronous serial communications: bits, bytes, and frames; parity; baud rates; breaks and checksums; logic level, RS232, RS422, and RS485 communications; hardware and software handshaking; cables, adapters, and tools; surge protection; and sending serial signals over Ethernet, Bluetooth, and fiber. Useful preparation for Serial Data 2 – Can you hear me now? Which will be a serial troubleshooting practicum.	Tom Wilson
Planning for data growth: a community discussion <i>(10/16 – Tues PM)</i>	The volume of data collected on expeditions is continually increasing. This is due in part to new devices, and in part to the deployment of existing high-data-volume instruments on new platforms (e.g. ROVs, drones) and for new purposes. At the same time, scientists are increasingly expecting near-real-time access to data. This creates challenges for storing	Karen Stocks and Suzanne O'Hara

	<p>data on the vessel, moving it off the vessel, providing access to the data, processing the data, and archiving it long-term. This will be an open discussion of the challenges of growing data volumes, and the potential solutions different groups are evaluating, such as using cloud resources for storage and processing, using new storage media, moving data off the vessel throughout the expedition, and increasing connectivity at ports. We invite the community to bring their experiences to the discussion.</p>	
<p>Training: pCO₂ (10/17 – Wed AM)</p>	<p>Details coming soon</p>	<p>Aleck Wang and Susan Becker</p>
<p>Skillset Session – Serial Data 2 (10/17 - Wed AM)</p>	<p>Can you hear me now? Talkers with no communication skills: Is your pet serial device lacking in communication skills? Let us figure out what your unsocial serial devices have to say. Bring your tired, your poorly specified, your one wire connections yearning to be heard to this <i>hands-on</i> serial communications workshop.</p>	<p>Toby Martin</p>
<p>Skillset Session: Timeservers, and why we love them: Why do we care about time? (10/17 – Wed AM)</p>	<p>Timeservers, and why we love them: Why do we care about time? - Time via location (or location via time); - order of events - synchronization within a platform; - synchronization between platforms; How do we know what time it is, Network Time Protocol (NTP)? - Synchronizing daemons: NTP, systemd-timesyncd, chrony, - Synchronizing on windows: tardis - How often to synchronize? - Jumping versus slewing? Who watches the watchers? Monitoring the timeserver. ntpq: GPS, flywheeling, init; delay, offset, jitter</p>	<p>Toby Martin</p>
<p>Skillset Session: Intro to PLCs & PACs (10/17 – Wed AM)</p>	<p>Introduction to programmable controllers. Learn about using industrial hardened hardware. Is it better than a Raspberry Pi or Arduino?</p>	<p>Josh Eaton</p>
<p>Skillset Session: Intro to Oscilloscopes 101 (10/18 – Thurs AM)</p>	<p>Details coming soon</p>	<p>Lane Abrams</p>
<p>Training: Catching Shipboard ADCP System Problems Early: Visualization and Diagnosis (10/18 – Thurs AM)</p>	<p>This half-day tutorial will introduce shipboard ADCP acquisition systems and describe common problems. For example, a layer of bubbles may block sound from the transducer; electrical noise may get in through the transducer cable; heading or position feeds may fail; or the acquisition software may be mis-configured. We will demonstrate the use of free (open source) software tools to assess and visualize the data, identify problems, and provide solutions.</p>	<p>Julia Hummon</p>
<p>Skillset Session: Wire Terminations & Wire</p>	<p>This session will explore various termination types for wire ropes and cables. Beginning with a short presentation providing an overview of different wire rope and cable types</p>	<p>Matt Durham & Rick Trask</p>

Testing (10/18 – Thurs AM)	that are standard or commonly used aboard UNOLS research vessel, the session will then transition into a more open form "show and tell" where there will be examples of the terminations and descriptions of their installation and the pros and cons associated with each. Further, the session will go into the UNOLS Wire Pool wire test procedures and pull test a few different wires and terminations to breaking. The strength of various terminations applied to the same types of wire and cable can be compared.	
Skillset Session: Winch Operations (10/18 – Thurs AM)	Details coming soon	Joshua Easton
Skillset Session: Intro to Electronics Design (10/18 – Thurs PM)	Electronic troubleshooting is like code debugging: work down from the total system to locate the specific subsystem that is malfunctioning. Electronic design is like code writing: build simple, robust, testable subsystems, then combine them to achieve a large and complex result. This session will discuss starter kits and projects, good reference books, sources for parts and tools, the wonderful world of surplus vendors, schematics, building "one off" projects, and designing PC board	Tom Wilson
Skillset Session: Tips for installing and Support of a Debubbler (10/18 – Thurs PM)	The SoMAS Vortex Debubbler: 1987 - 2018. The SoMAS vortex debubbler is designed to remove nuisance air bubbles from an input seawater stream before sending the water to bubble-sensitive instruments such as salinometers and fluorometers. The talk will cover history, use of the debubbler aboard various ships, and a live demonstration of adjustment and operation.	Alex Sneddon
Training Session: Exploring the mysteries of the EK80: A practical guide to Simrad broadband echosounders (10/18 – Thurs PM)	Details coming soon	Andone Lavery and Micheal Jeck
Skillset Session: Winch Troubleshooting (10/18 – Thurs PM)	This is an opportunity to have hands on training on the use of winches, as well as the methods of operation.	Joshua Easton
Skillset Session: A hands on Introduction to Ultra Short BaseLine (USBL) systems with Sonardyne's Ranger 2 systems (10/18 – Thurs PM)	The session will cover principles of USBL operation and optimisation, including functionality for autonomous and remote vehicle operations and will supported with live in-water demonstrations. There will be plenty of opportunity for discussion and Q&A.	Geraint West and WHOI
Training: Multibeam (10/19 – Fri AM)	Details coming soon	TBA
Training: Using Qimera to Diagnose your Multibeam (10/19 – Fri AM)	How Qimera can be used to diagnose the health of the ship multibeam system, as well as how to use some of the other Qimera tools that may be helpful to the techs.	Jonathon Beaudoin

List of Presenters (in Alphabetical Order) and their Presentation Titles

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Appelgate, Bruce	Feasibility of the Zero/V: A zero-emission, hydrogen fuel cell coastal research vessel	Vessels & Operations
Becker, Susan	Oceanographic Data Facility 36 Position Rosette Improvements for Repeat Hydrography Cruises	CTDs, Sensors and Observing Systems
Bremnes, Jan	The Making of RV 'Kronprins Haakon'	Vessels & operations
Calvin, Jorge	VSAT communications enabling survey USV operations beyond line of sight	Ship/Shore Communications
Chapman, Piers	Managing the UNOLS Marine Technician Pool	Vessels & operations
Cohn, David Pablo	OpenRVDAS - an Open Source Data Acquisition Architecture	Technical Demonstration
Coleman, Dwight	Ship-to-Shore Telepresence-Enabled Research and Education	Ship/Shore Communications
Cordell, Jeff	LED Strobes – the challenges of getting high power at a fast recharge rate	Acoustics & Camera Systems
CRENAN, Brieuc	Implementation of automatic underway measurement system ("Ferrybox") on Research Vessels	CTDs, Sensors and Observing Systems
CRENAN, Brieuc	Presentation of Kongsberg's EM304 results onboard RV Thalassa	Acoustics & Camera Systems
Deguchi, Mitsuyasu	High-rate underwater acoustic communication system for image transmission with a manned submersible SHINKAI6500	Acoustics & Camera Systems
Einhorn, Micheal	USCG 46CFR189.35 vs Commercial Standards for deck Samachinery: A comparison of their impact on design and load testing	Load Handling Systems and Tension Members
Felix, Bruce	Sensor Calibration Tracking	CTDs, Sensors and Observing Systems
Fornari, Daniel	High Resolution Deep-Sea Imaging and Camera-Guided Sampling Using EPO-Ocean Imaging Systems and WHOI-MISO/SSSG Integrated Camera Systems	Acoustics & Camera Systems
Gruebel, Erich	UNOLS Cruise Planning Application	Technical Demonstration
Hirsch, Matthew	RV Sally Ride Ship Improvements	Vessels & operations
Houthoofdt, Robin	Technically enhancing an aging roV	Vehicles and all the rest
Hummon, Julia	Evaluation of Accurate Heading Devices for use with Shipboard ADCP Systems	Vehicles and all the rest
Hummon, Julia	UHDAS: Shipboard ADCP Data Acquisition, Processing, Monitoring, and Stewardship	Vehicles and all the rest
Keijzer, Edwin	"Hands-Free" CTD Water Sampling	CTDs, Sensors and Observing Systems
Kemp, Amy	LEO + GEO = Innovation Squared	Ship/Shore Communications
Lund, Bjoern	Routine near-surface current and shallow-water bathymetry mapping capabilities for research vessels with science marine X-band radars	Vehicles and all the rest
Meyer, Jon	Deployment of High Availability Computing Clusters on Research Vessels	Data Management & Vessel IT
Moore, Fin	Rapp Marine and Triplex - Full Lifecycle Resource for Oceanographic Load Handling Systems	Load Handling Systems and Tension Members
Nahorniak, Jasmine	RCRV Datapreence: A Near Real-time Update	Data Management & Vessel IT

Nokin, Marc	Underway Ifremer projects – RV Thalassa refit, seismic renewal and Polar Pod project	Vessels & operations
O'Hara, Suzanne	Rolling Deck to Repository (R2R): current status and new developments	Data Management & Vessel IT
Ober, Sven	The temperature-dependency of oceanographic thermometers	CTDs, Sensors and Observing Systems
Pajala, Jukka	Aranda, an Arctic research vessel now	Vessels & operations
Palmer, Rod	CTD deployments - Operational Challenges	Vessels & operations
Pedrie, Kolby	Scripps Institution of Oceanography Portable Multichannel Seismic System, Applications, and Recent Activities	Vehicles and all the rest
Race, Julian	Using Kayaks for Low-Impact Coastal Research in Antarctica	Technical Demonstration
Roth, Ethan	Conceptualizing an International Marine Technical Enhancement Exchange (IMTEE) Program	Vessels & Operations
Smit, Marck	Seabed mining: field testing of a nodule mining crawler	CTDs, Sensors and Observing Systems
Stolp, Laura	UNOLS Internet Use Policy (40min)	Ship/Shore Communications
Trask, Rick	Community Discussion on synthetic 0.322 alternatives	Load Handling Systems and Tension Members
Tyndall, Aaron	Multiple platforms on a fibre optic towed cable	Load Handling Systems and Tension Members
Van Graas, Steven	Supporting research on-board CSIRO's RV Investigator – A data perspective	Data Management & Vessel IT
Vansteenkamp, Dieter	Development of an autonomous solar tracking measurement platform for offshore use	CTDs, Sensors and Observing Systems
Vaughn, Ian	Practical Impacts of Sonardyne CASIUS Calibration on USBL Performance	Acoustics & Camera Systems
Walsh, Kevin	HiSeasNet Engineering Review and Preview	Ship/Shore Communications
Walton, James	Enhancing CTD And Multiparameter Water Column Data Collection With Moving Vessel Profiler	CTDs, Sensors and Observing Systems
West, Geraint	Optimising performance of a long range Ultra Short BaseLine tracking and telemetry system	CTDs, Sensors and Observing Systems
Yang, Daniel	KVM over LAN for Oceanographic Data Acquisition Systems	Data Management & Vessel IT

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Name	Poster Title
Diao, Xinyuan	The usage of the ROV system for the deep sea research in the West Pacific Ocean
Fairbarn, Kenneth	Unmanned Surface Vehicle (USV) Deployment and Retrieval Methods
Forest, Alexandre	The Canadian research icebreaker CCGS Amundsen and its pool of scientific equipment
Heater, Allison	Search for the San Juan
Laird, Robert	Euler, TSS, Tait-Bryan? Do you know what your Motion Sensor is saying?
Mathews, Nick	Underway Data Logging, Wire Reports & Event logging Integrated Solutions for Automation
Quinn, William	Installation of Geotechnical survey systems on small Vessels
Rolph, Jeremy	Best Practices for Automated Meteorological and Thermosalinograph Observations
Stolp, Laura	Bandwidth Limiting Tools
T'Jampens, Michiel	Adding an event-based scheduling interface to a Research Vessel's data acquisition system
Yokota, Makito	Air-sea flux observation by Wave Glider SV3