

# STARC Report AICC Summer 2021



**2021 Dockside Mobilization Efforts**

**2021 Shakedown**

**2021 Cruise Support**

**2022 Drydock Sonar Updates**

**2025 Drydock Sonar Updates**



Small Boat training ops

# Acknowledgements



**National Science Foundation (NSF)**

**United States Coast Guard (USCG)**

**Arctic Icebreaker Coordinating Committee (AICC)**

**Multibeam Advisory Committee (MAC)**

**WHOI Potential Fields Pool Equipment (PFPE)**

**National Geospatial-Intelligence Agency (NGA)**

**STARC University Partners (SIO, OSU, UW)**

# 2021 Dockside Mobilization



## CTD, SSW, and MET sensors

- Sensor calibrations completed and delivered
- Purchased ECO Triplet fluorometer to replace Turner
- Purchased SBE 63 Optical Dissolved Oxygen sensor

## Next-generation SSW wall implementation

- Modular grid on HDPE for flexible instrument config
- Siemens PLC, automated standard cycles to catch drift

## Ultrasonic anemometer forward jackstaff

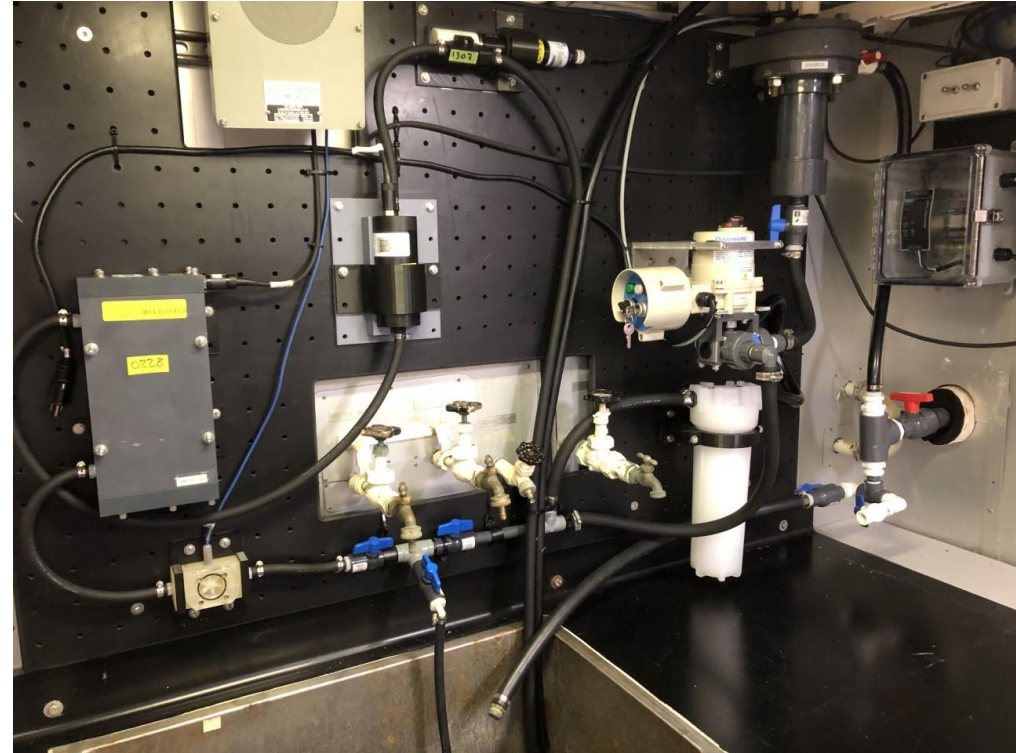
- Metek Omni 3D installed

## Autosalinometers maintained

- Two AutoSals will sail in 2021, one spare at SIO
- Millipore IQ7000 maintained, additional unit purchased

## Flow through pCO2 system (LDEO) modifications

- Replace equilibrator tank with smaller design
- Install small A/C unit to regulate control module



Bio Analytical Lab SSW wall



# 2021 Dockside Mobilization



## Computers and Data Management

- Software and hardware maintenance
- Virtual machine cluster maintenance
- Replace damaged machines and UPS units
- DeviceMaster serial/IP hardware update
- OpenRVDAS deployment (in progress)

## Gravimeters

- BGM-3 gravimeter mobilization
- DGS gravimeter deployment for NWP

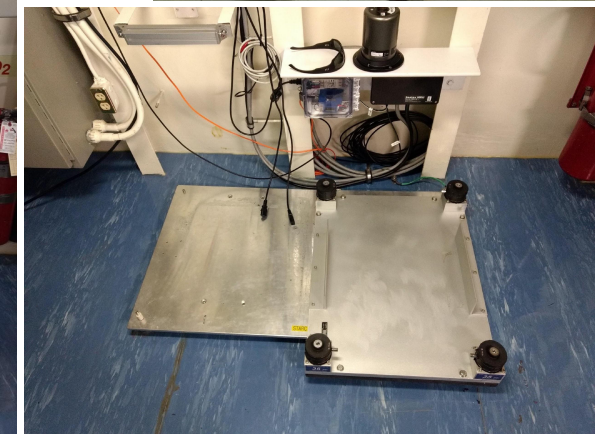
## Earth Analytic SmartOcean

- ArcGIS based platform, offline capable
- Beta version, testing and development

## Shakedown

- Multibeam patch test complete
- Acquisition systems operational

FWD STARC Workbench



Gravimeters

# 2021 Cruise Support



## Ongoing Cruise Planning :

- Healy's successful motor repair, finalized schedule, and approved science missions have now resulted in a concrete sailing season
- Principal Investigators unloading equipment this and next week
- STARC will support all legs including transits to collect underway data and assist with additional technical requests from the various science parties
- Sailing an additional technician per leg for enhanced support and training onboard USCGC Healy

# 2022 Drydock Work Items



## Transducer Well Deck Preservation

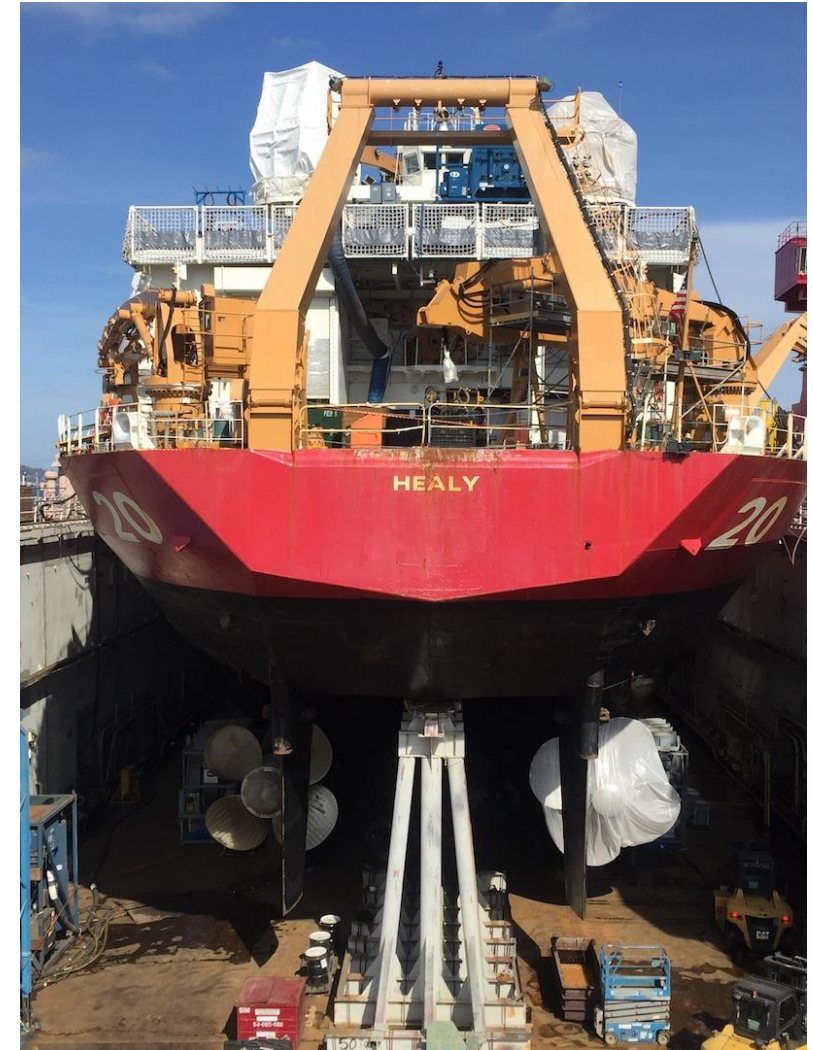
- 100% deck and 3" up bulkheads
- Transducer well exteriors and lids
- Request new ice windows for aux wells

## Transducer Maintenance:

- All transducers will be removed
- Clean and preserve transducer well interiors
- Replace OS75 and OS150 ADCP transducers
- Install EK80 18kHz and 38kHz fishery sonars

## Multibeam:

- EM122 RX array replacement
- Modify RX frame to install baffles



Healy high and dry



# 2025 Multibeam Update: EM304 & EM712



After AICC Winter 2021 Solicitation for feedback and consultations with NSF, STARC recommends the following course of action in 2025:

- **EM304** selected as optimal choice – based on scientific community feedback, technical advancements in transducer design, and matching Polar Security Cutter configuration (EM122 Obsolete)
- **EM712** - addition of shallow water, high resolution mapping is desirable for scientific and federal agencies, EM2040 too restricted on depth range, would not be utilized often

\* NSF commitment to funding contingent on NSF/CG MOU discussions

# 2025 Sub-Bottom Profiler Update: SBP29



- Replacement of single beam Knudsen Chirp 4kHz sub-bottom profiler (12 kHz to remain)
- System consists of a transmitter array (TX) that will be paired with the receive array (RX) of the EM304 multibeam
- Narrow-beam sub-bottom profiler system with roll/pitch stabilization, beam steering and slope correcting capabilities allow for highly accurate high-resolution data in varied terrain
- Will greatly improve US sub bottom profiling capabilities in the Arctic, collecting data sets that are challenged by sea ice coverage

\* NSF commitment to funding contingent on NSF/CG MOU discussions



# Questions and Discussion



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