

CGC HEALY

Supporting national objectives
in the Arctic region since 2000



HEALY

Commissioned in 2000

30,000 HP

420'

16,000LT

1.2M Gallons of Fuel

Breaks 4.5' of ice @ 3kts

Back & ram through 8+ feet

Six science labs (4,190 sq ft)

Crew: 84 (optimally crewed)

Max science party: 51



*Primary mission focus:
Supporting National
Science Foundation funded
research in the Arctic*

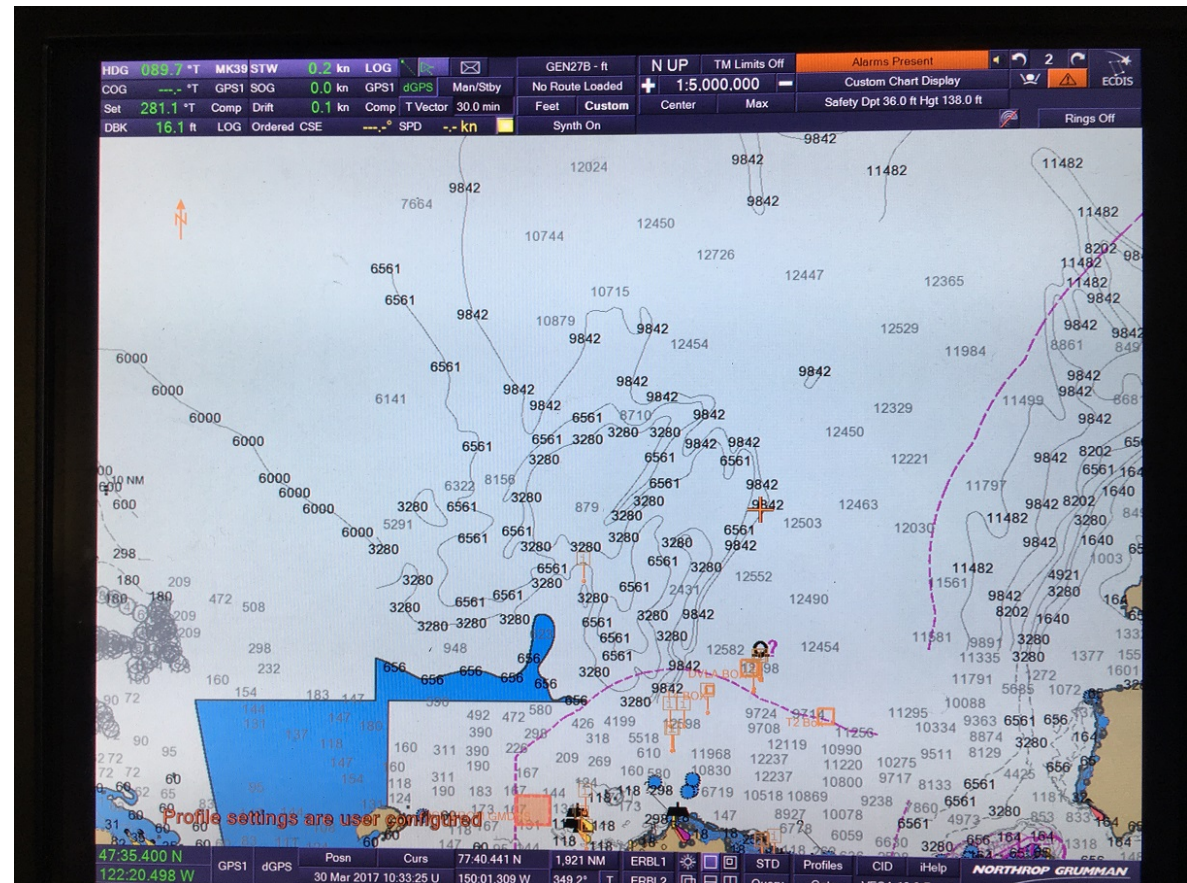




HEALY Navigation



- CG ECDIS
- DGPS Primary Positioning Source
- ENC and RNC Charts
- Paper Charts (Print on Demand)

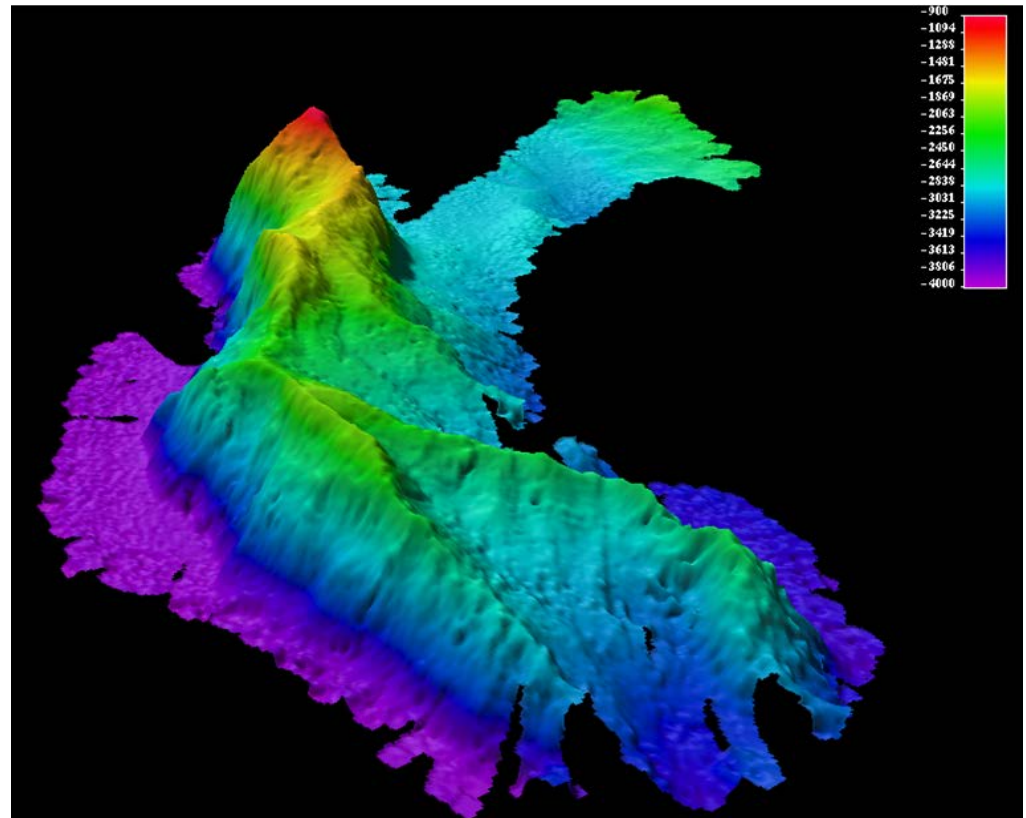




Multibeam Echosounder



- Kongsberg EM 122 Multibeam
- 288 simultaneous beams
- Max Depth: 11,000 m
- Constantly running & collecting data.
- Uploaded to national repositories upon returning to homeport.
- Data available to scientific community upon request.



HEALY Seamount – Discovered 06 SEP 03.

Bathymetric survey of Proposed Bering Transit Corridor:
8 multi beam sonar transits in 2014 & 2015
1,000 yard offset tracklines
5,000 miles of data collected

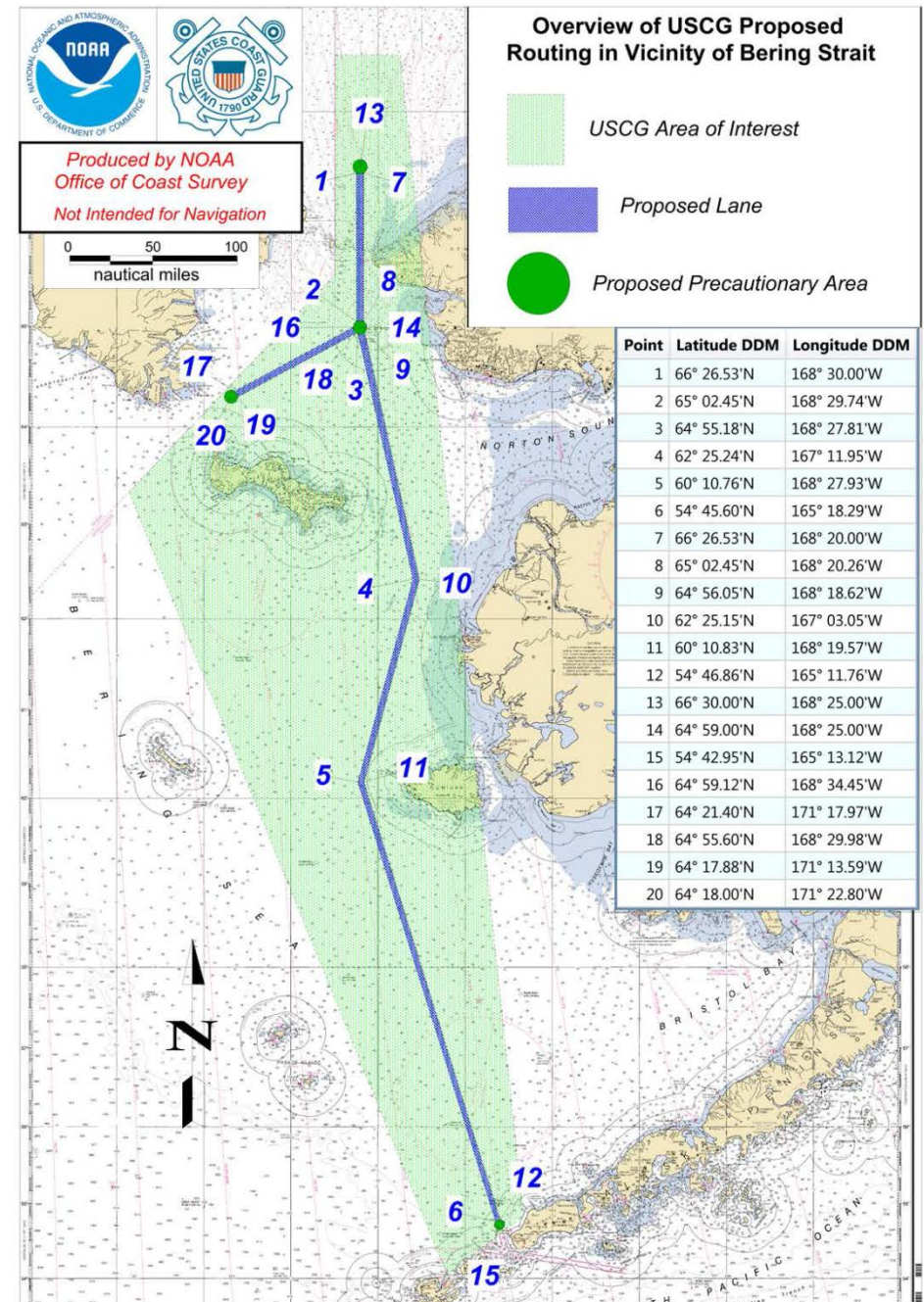




Port Access Route Survey (PARS)



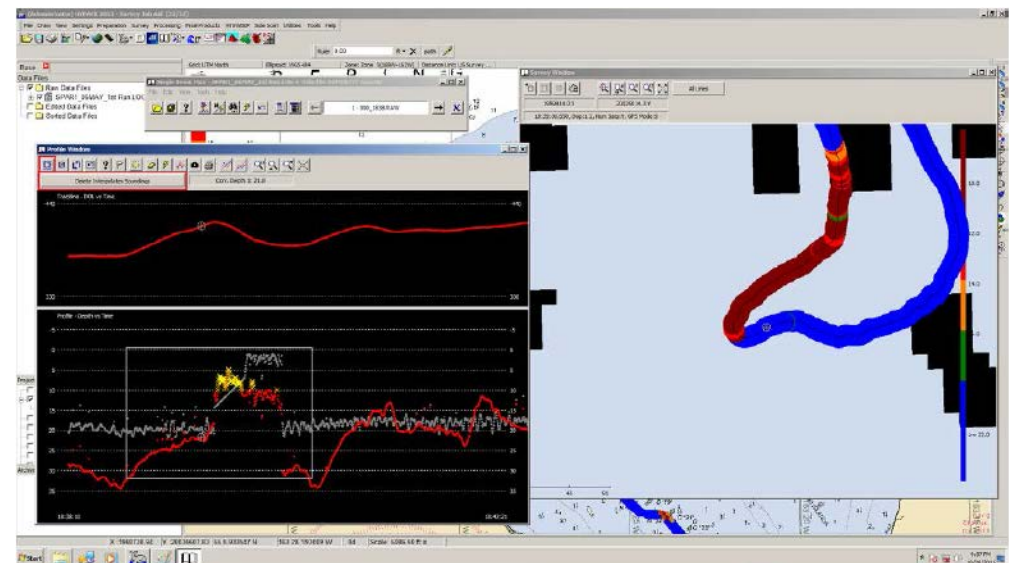
- Interagency effort (NOAA/USCG)
- Unimak pass to the Seward peninsula, through the Bering Strait into the Chukchi Sea
- Low hydrographic reliability of the existing nautical charts for this area,
- For verification of proposed route for deep draft vessel traffic.
- Highly confident that no vessel hazards exist at depths less than 10 fathoms.





Interagency Efforts

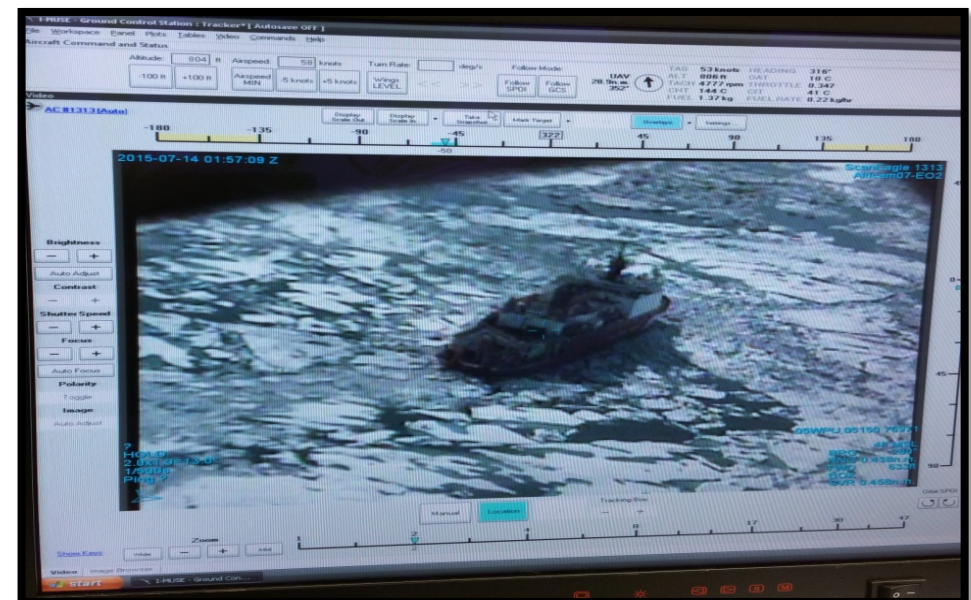
- Interagency Working Group on Ocean and Coastal Mapping (IWG-OCM)
- Helping fulfill NOAA ocean and coastal geospatial data demands in support of the Arctic Nautical Charting Plan.
- Hydrographic survey equipment installed on two Coast Guard buoy tenders and HEALY.





Interagency Efforts

- Arctic West Summer 2015 Search and Rescue Exercise (SAREX)
- HEALY served as On-Scene Commander and for an interagency SAREX. Participants included a ScanEagle UAV, Coast Guard MH60T, and AW139 Helicopter from Conoco Phillips (Era Aviation).



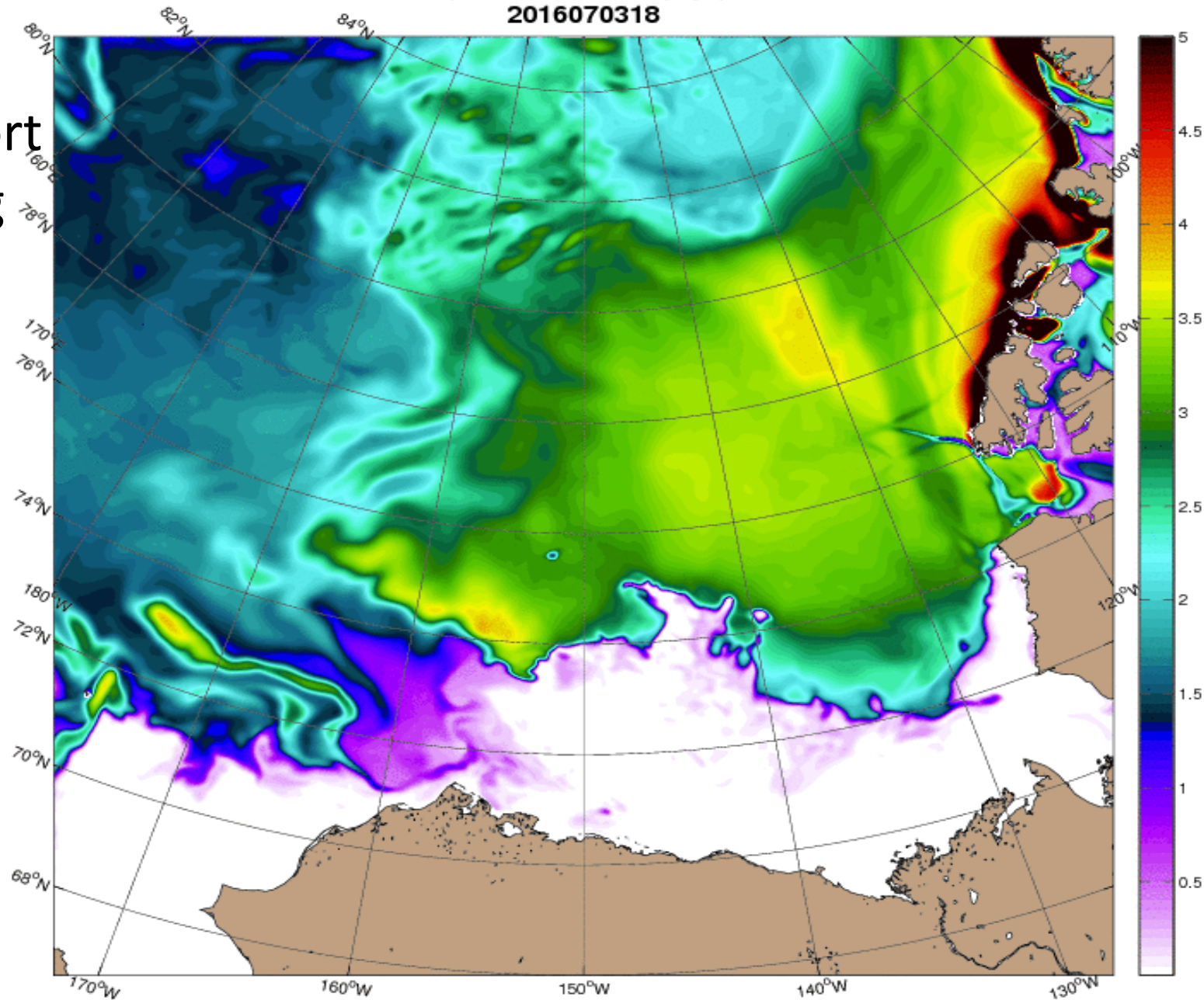


National Ice Center Support



ACNFS 04.2 | Ice Thickness (m) | 2016070600
2016070318

- Used to support ice forecasting and planning
- Daily weather briefs
- Strategic operational planning

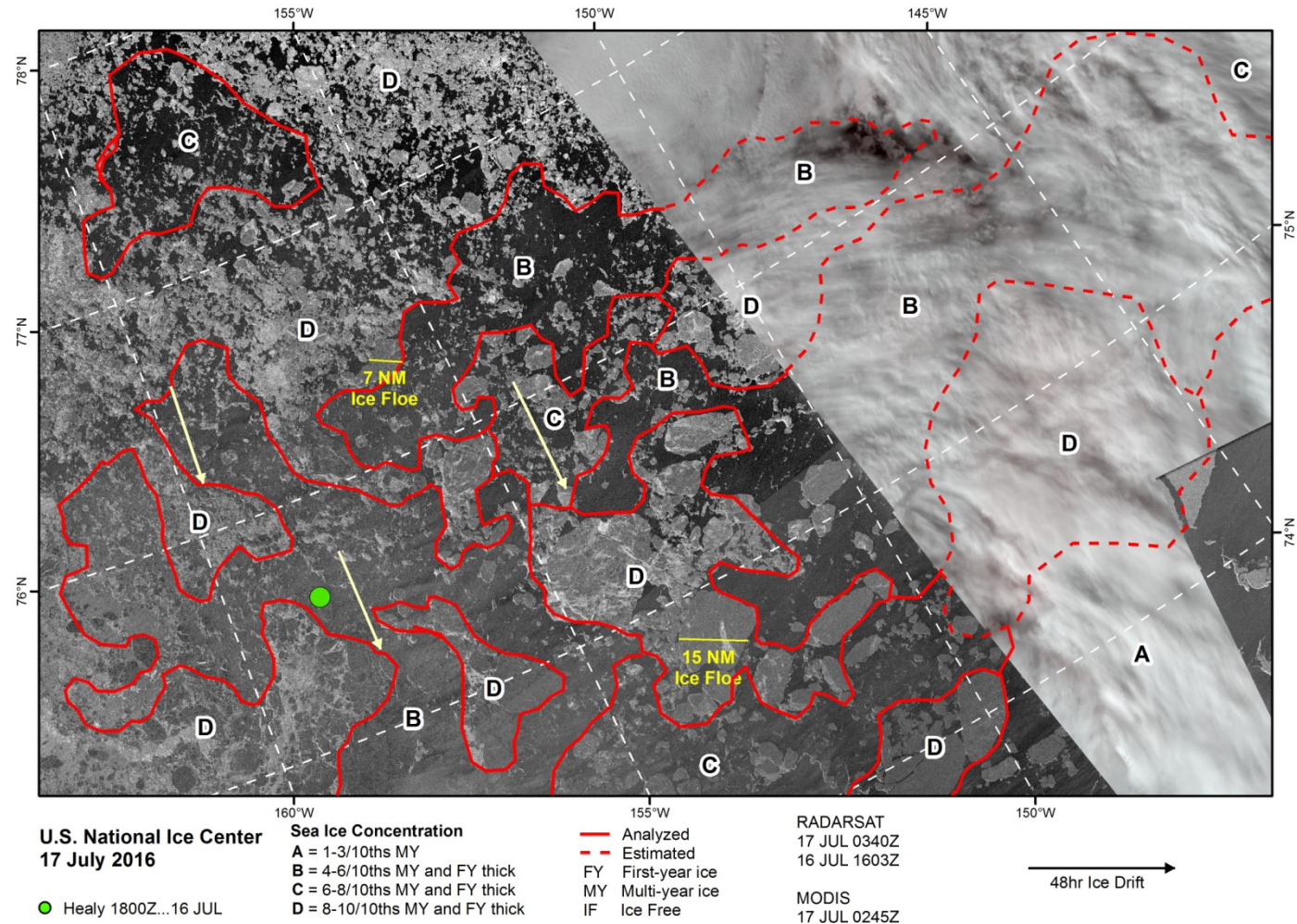




National Ice Center Support



- Daily Analysis
- SAR (Radar) and MODIS (Visible light) composite.
- Highlights regions of first year and multi-year ice.
- Provides 48-hour ice drift vectors based off mathematical models.

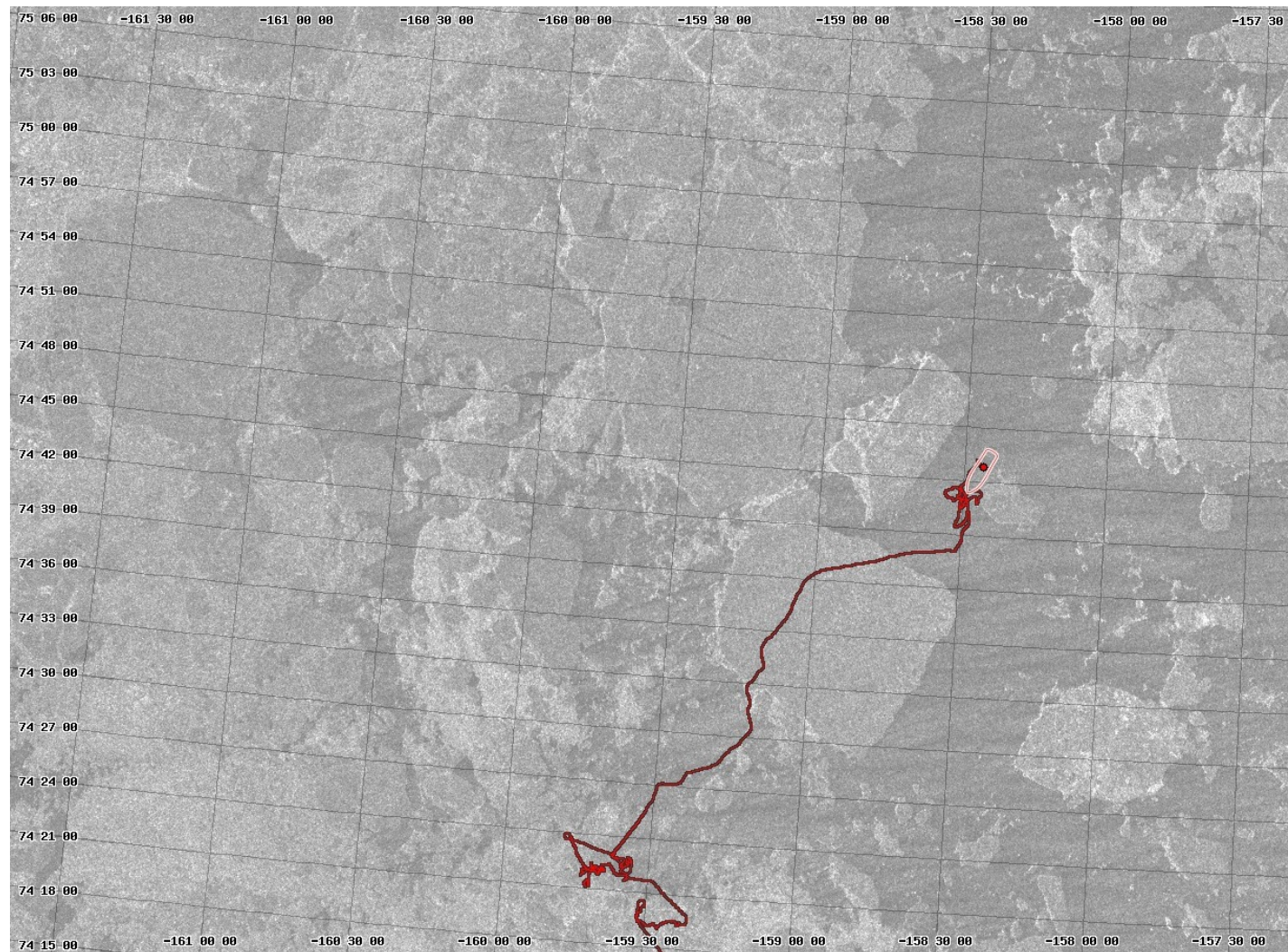




National Ice Center Support



- SAR Imagery.
- Provided by RADARSAT Constellation.
- International Agreement with NIC and Canadian Space Agency.
- Onboard typically within 3 hours of capture.
- Incredible value for tactical navigation.

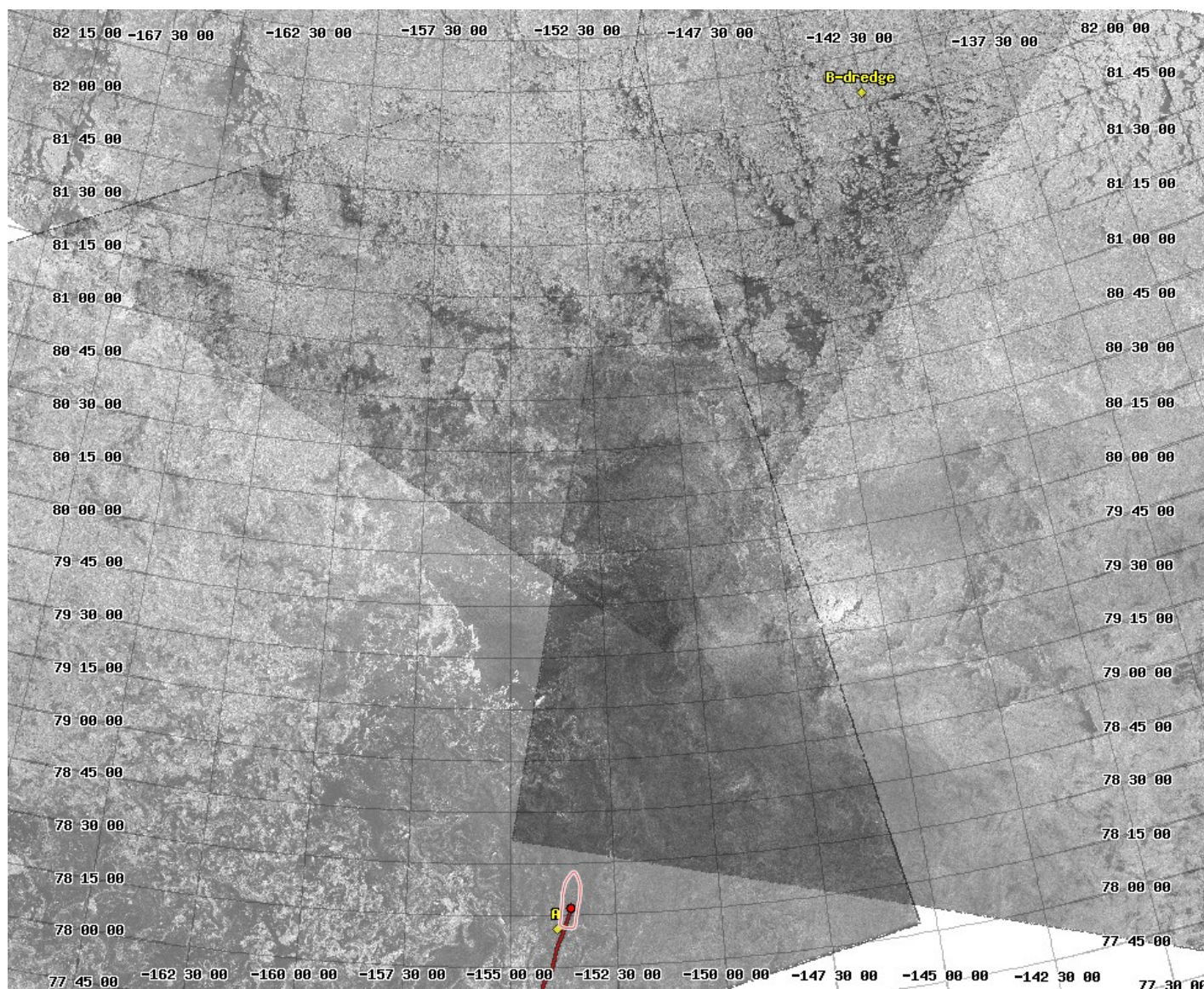




National Ice Center Support



- SAR Imagery incredibly useful in optimum track planning.
- Icebreaking vs. Ice avoidance.
- Often critical in accomplishing all mission objectives in limited timeframes.



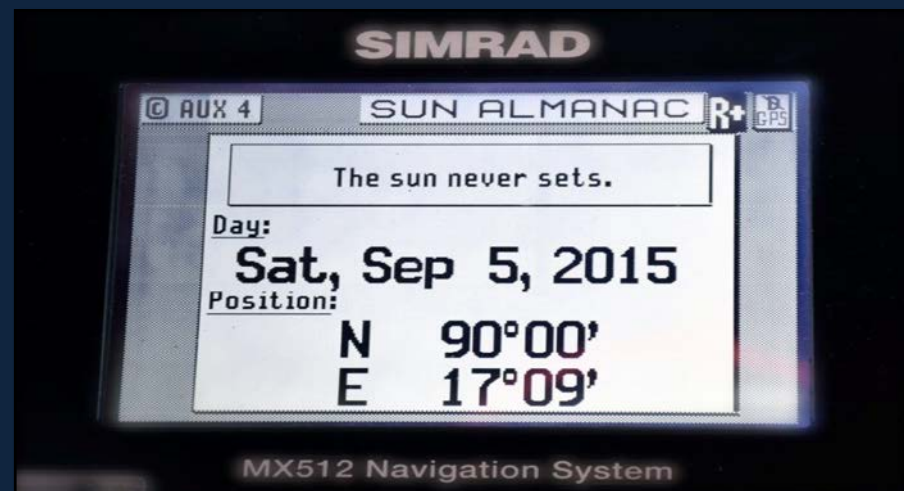


HEALY – AWS 15

GEOTRACES : The North Pole

(7 Sep 2015)

At 0747 on 05 Sep 15, HEALY became the first unaccompanied U.S. Surface Vessel to reach the North Pole.





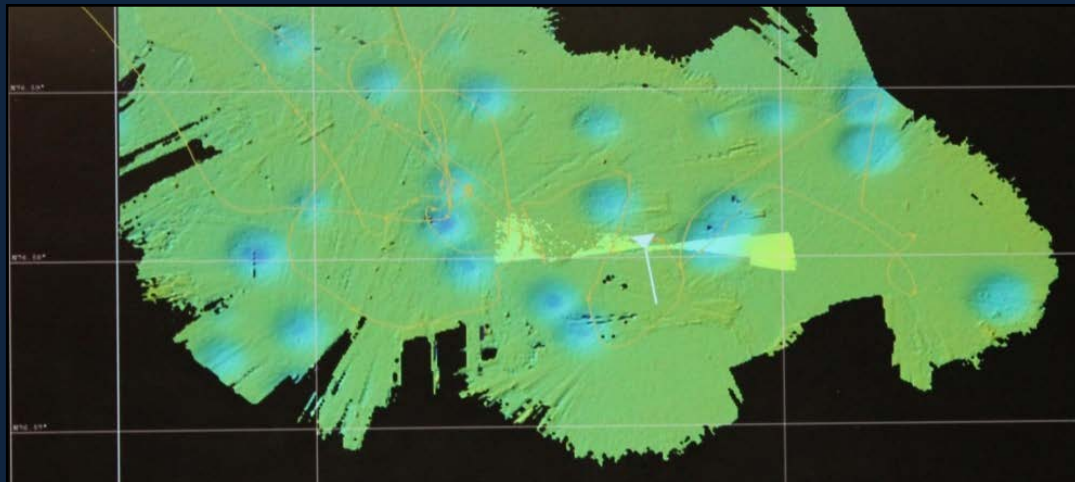
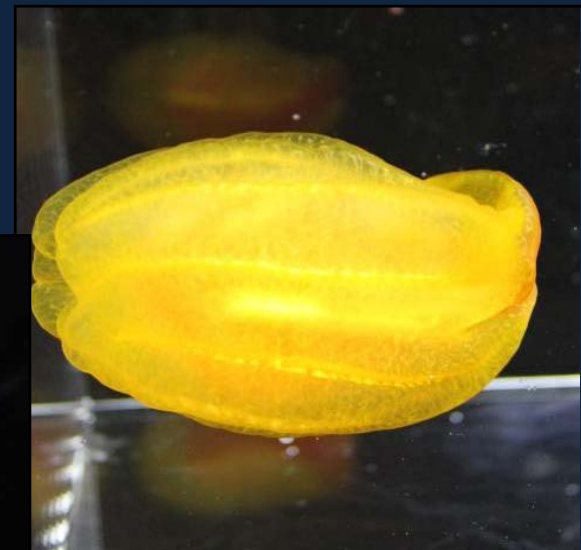
HEALY – AWS 16

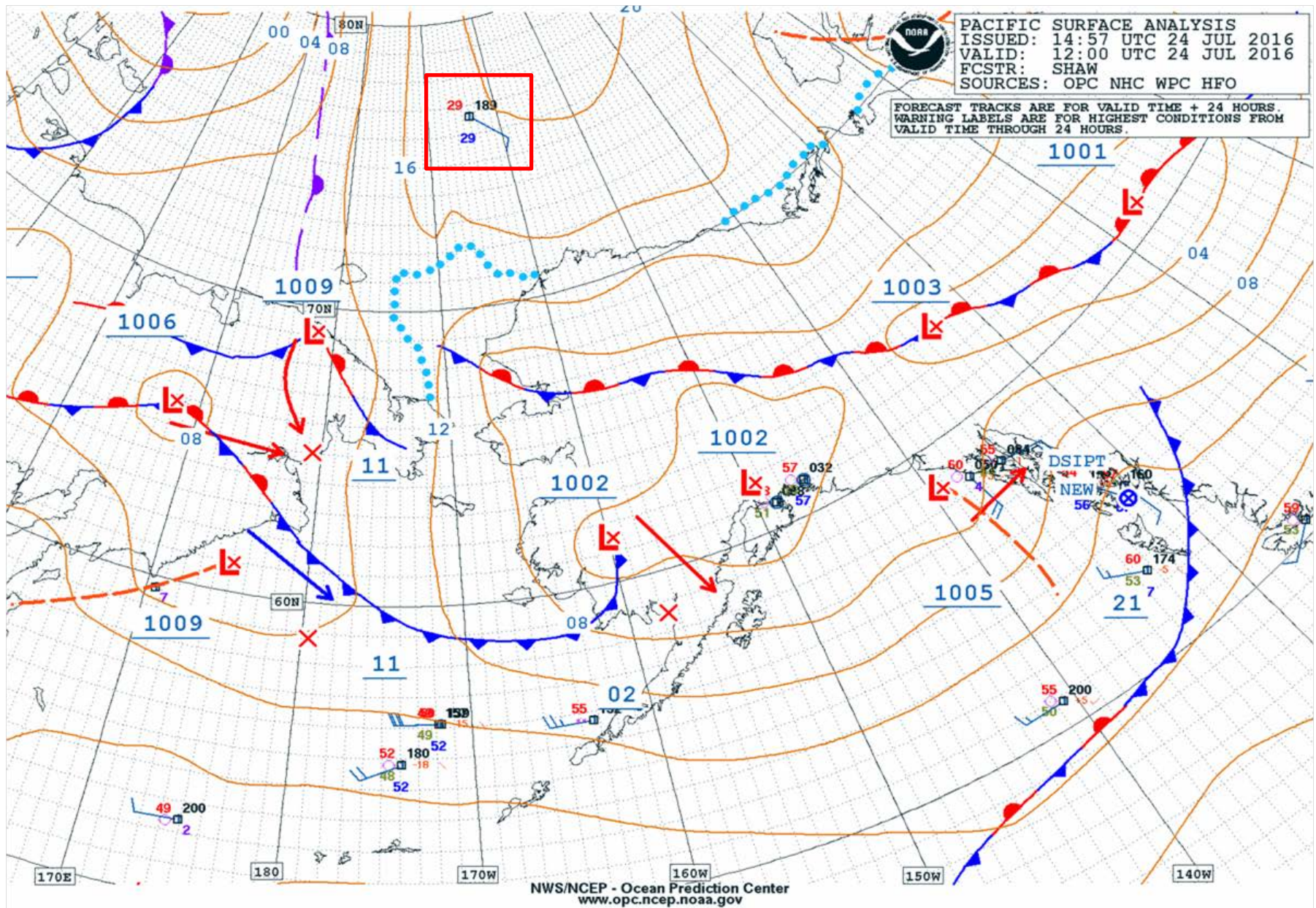
03 July 2016 – 10 Aug 2016

AWS-1601 Chukchi Borderlands

Completed 141 over the side evolutions to collect & study biological samples from Chukchi Sea. Discovered 2 new jellyfish (far right) & new order of marine life, the *benthic ctenophore* (near right).

Discovered anomalous “pockmark” areas on seafloor. Sediment and water samples revealed methane gas & new forms of life.



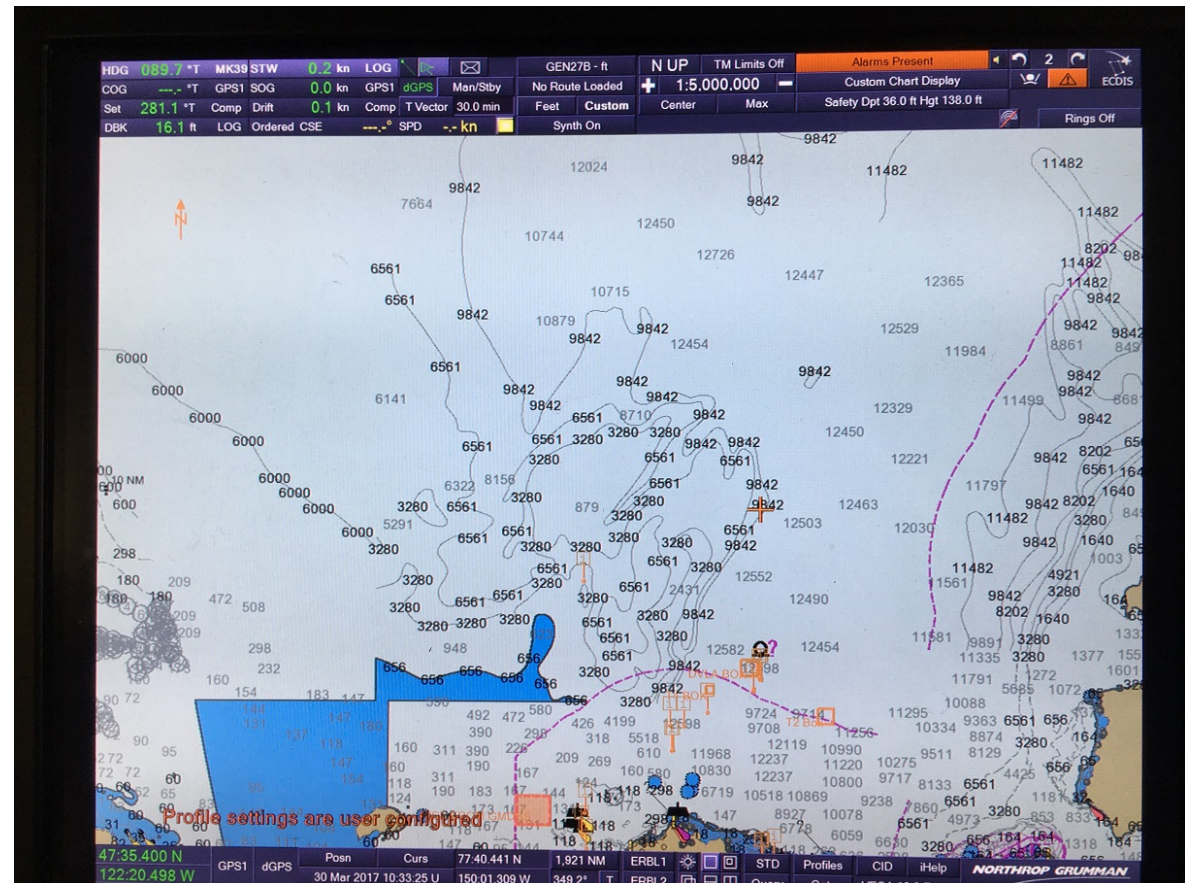




Future Efforts

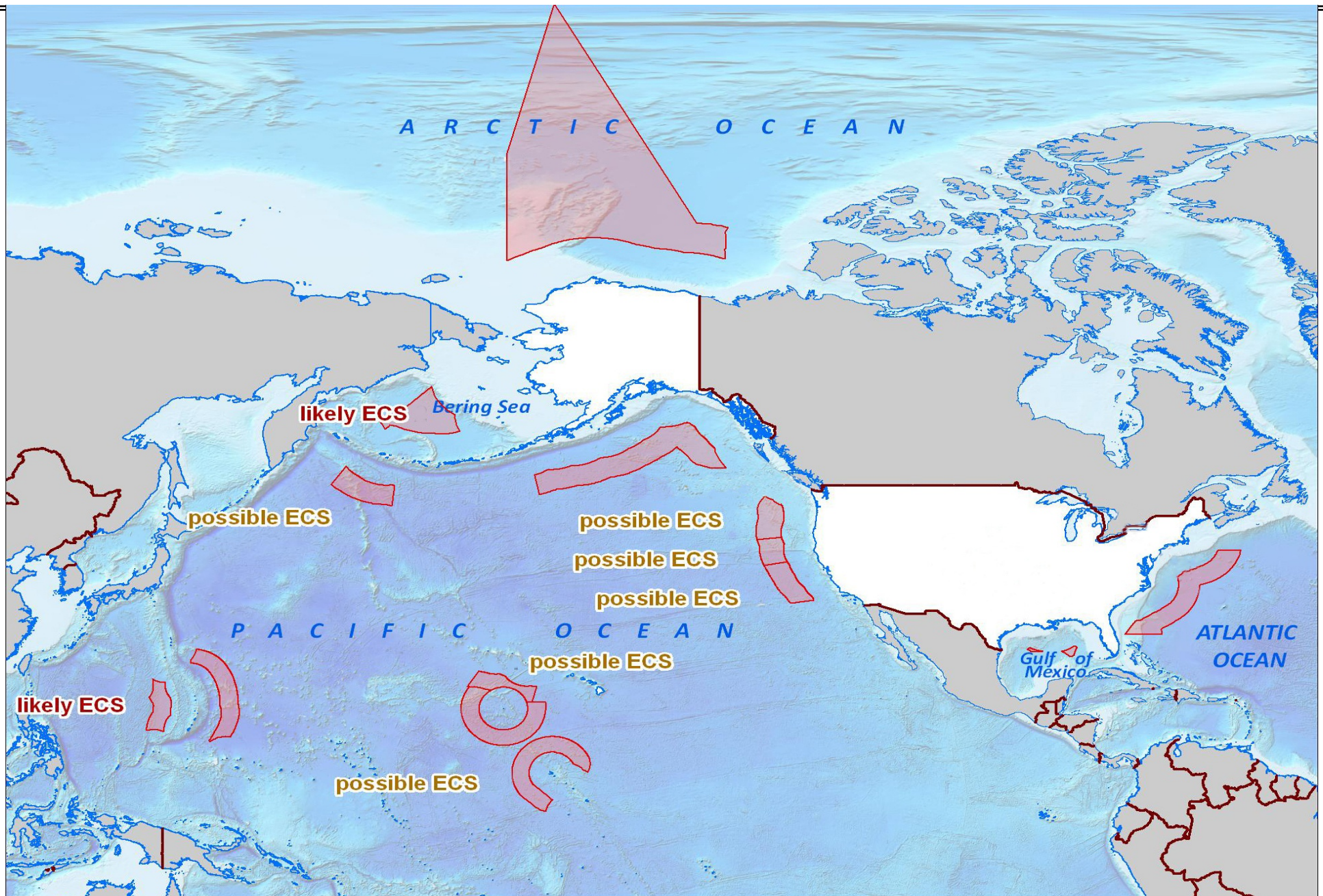


- Data Fusion
- All available information in one location
- Joint NIC/CG Effort to bring ice imagery into CG ECDIS as an overlay.





PROJECTED U.S. ECS CLAIMS



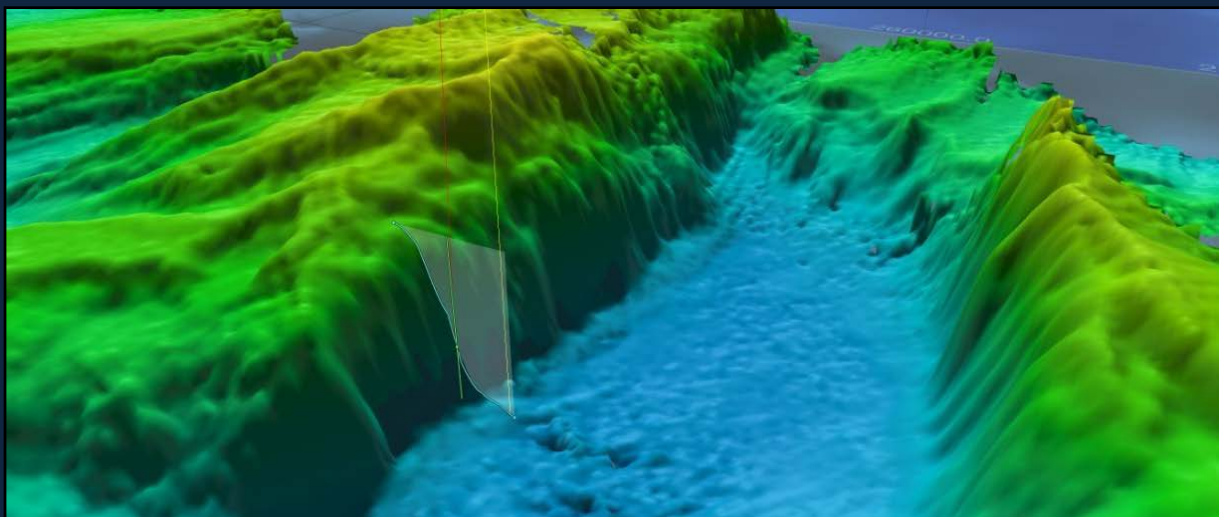


HEALY – AWS 16

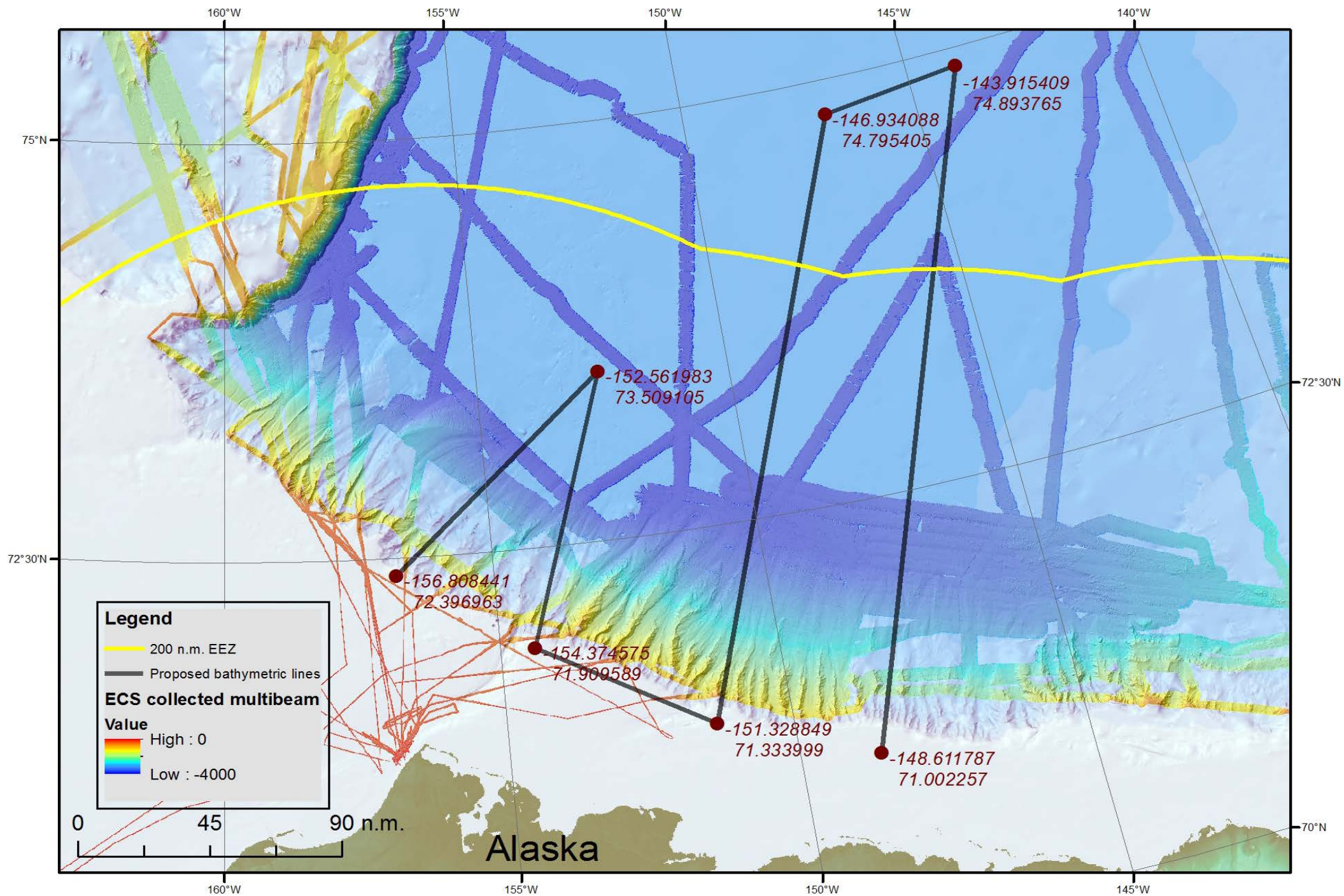
18 September – 05 October 2016

AWS-1603 ECS Mapping

- Mapped over 10,000 square miles, including several key foot of the slope crossings, vital for the U.S. Extended Continental Shelf project.
- Completed two 3,000 meter dredges in 6 ft thick ice, recovering multiple rock samples from the Alpha Ridge to fulfill an international agreement with Canada.
- Collected 65 XBTs and recovered approx. 60 lbs of dredged rock from the southern Alpha Ridge in support of both U.S. and Canadian ECS efforts.



Bathymetric Mapping in the Beaufort Sea





Arctic Data Collection Missions

Accomplishments



10 cruises (5 with Canada)

Bathymetric Data

Area mapped: $\sim 420,000 \text{ km}^2$
(Larger than Texas)

Seismic Data

Seismic tracklines: $\sim 15,000 \text{ km}$
(LA to NYC x 3.5)

Seismic data collection completed
in 2011; joint cruises have
concluded

DOS team in CO compiling
submission





PIB FUNDING AND NEW BUILD



- CG FY 17 Budget - \$150M
 - CG awarded five contracts worth \$20M for heavy polar icebreaker design and analysis.
 - Bollinger Shipyards, LLC, of Lockport, LA; Fincantieri Marine Group, LLC, of Washington, D.C.; General Dynamics/National Steel and Shipbuilding Co., of San Diego, CA; Huntington Ingalls, Inc., of Pascagoula, MS; and VT Halter Marine, Inc., of Pascagoula, MI
- Studies completed within the next year, contract awarded 3rd quarter of FY2019.
- First icebreaker delivered between 2023 and 2026.



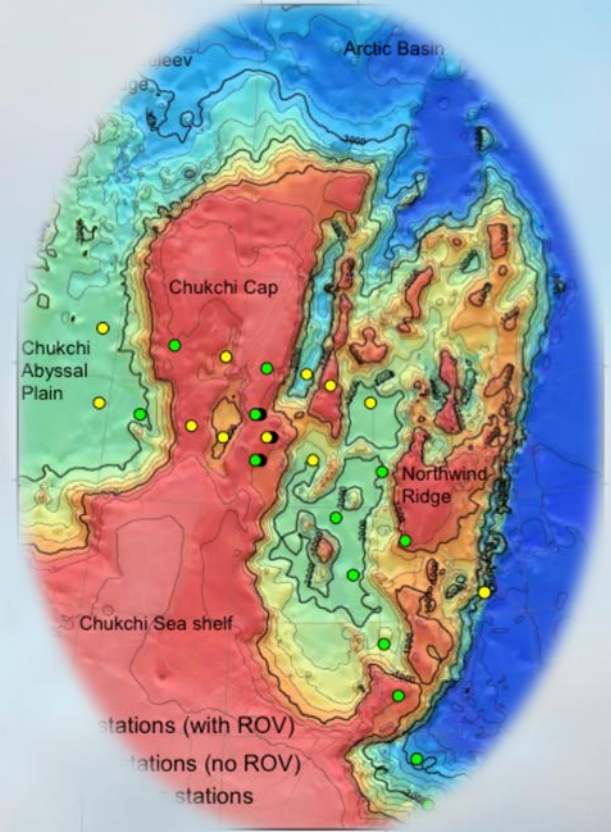
BACKUP SLIDES

Chukchi Borderlands

Dr. Russ Hopcroft, UAF

37 days

Biological and multidisciplinary study of Chukchi marine community from microbes to mammals from sea ice to sea floor, employing the Global Explorer ROV.





HEALY – AWS 16

17 August 2016 – 17 September 2016

AWS-1602 CANAPE Moorings

Deployed seven deep-water (3,700+ meters) moorings to measure the acoustic properties of the Atlantic Layer of the Arctic Ocean.

Deployed 2 sea gliders to survey entire mooring array over three weeks period.

Deployed NOAA Chukchi Surface Mooring: detected wildlife w/n 90 minutes.

