



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canadian activities in the Pacific Arctic Region: 2016 icebreaker plans.

**Pacific Arctic Group meeting
Arctic Science Summit Week, Fairbanks, Alaska
13 March 2016**



Canada

CCGS Louis S. St-Laurent



A map of the Arctic region, showing the North Pole and surrounding landmasses. The map uses a color scale where darker blue indicates deeper water and lighter blue/cyan indicates shallower water. Landmasses are shown in brown and white. The text 'UNCLOS mission:' is overlaid on the map.

UNCLOS mission:

Start/Finish: Early Aug - Mid Sept 2016, Tromso, Norway to Kugluktuk, NU

Oceanographer: Jane Eert, DFO

Collaborations: JAMSTEC, Trent U., ...

Activities: XCTD section from Svalbard across the North Pole to the Beaufort Gyre; CTD/Rosettes where possible.

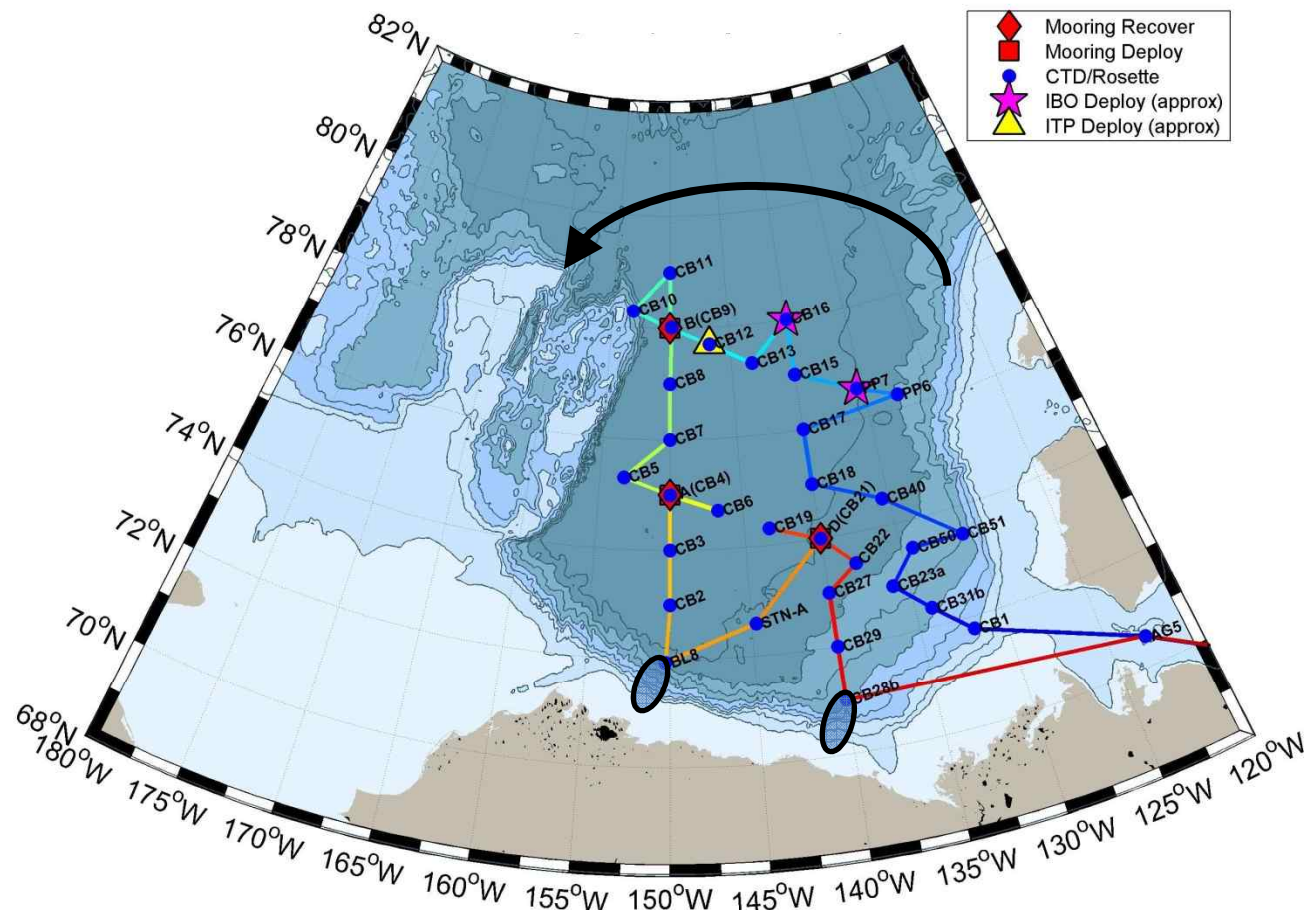
JOIS/AON-BGOS

CCGS Louis S. St-Laurent: Kugluktuk to Beaufort Sea/Canada Basin

- **Mid-September – Mid-October, 2016 (27 days)**
- **35 berths requested**
- **CTD/rosette profiling and biogeochemical sampling**
- **Vertical net casts**
- **XCTD and UCTD casts**
- **Recover/deploy 3 moorings (WHOI)**
- **Deploy 3-4 Ice Tethered Profilers**
- **2 Ice-Based Observatories**
- **Underway measurements**
- **Ice Observations (ship, ice and helicopter)**



(Photo: Jeffrey Charters)



JOIS – AON-BGOS:

Start/Finish: Mid- Sept to Mid - Oct (27 days), Kugluktuk to Kugluktuk, NU

Chief Scientist: Bill Williams

Collaborations: WHOI, JAMSTEC, TUMSAT, ...

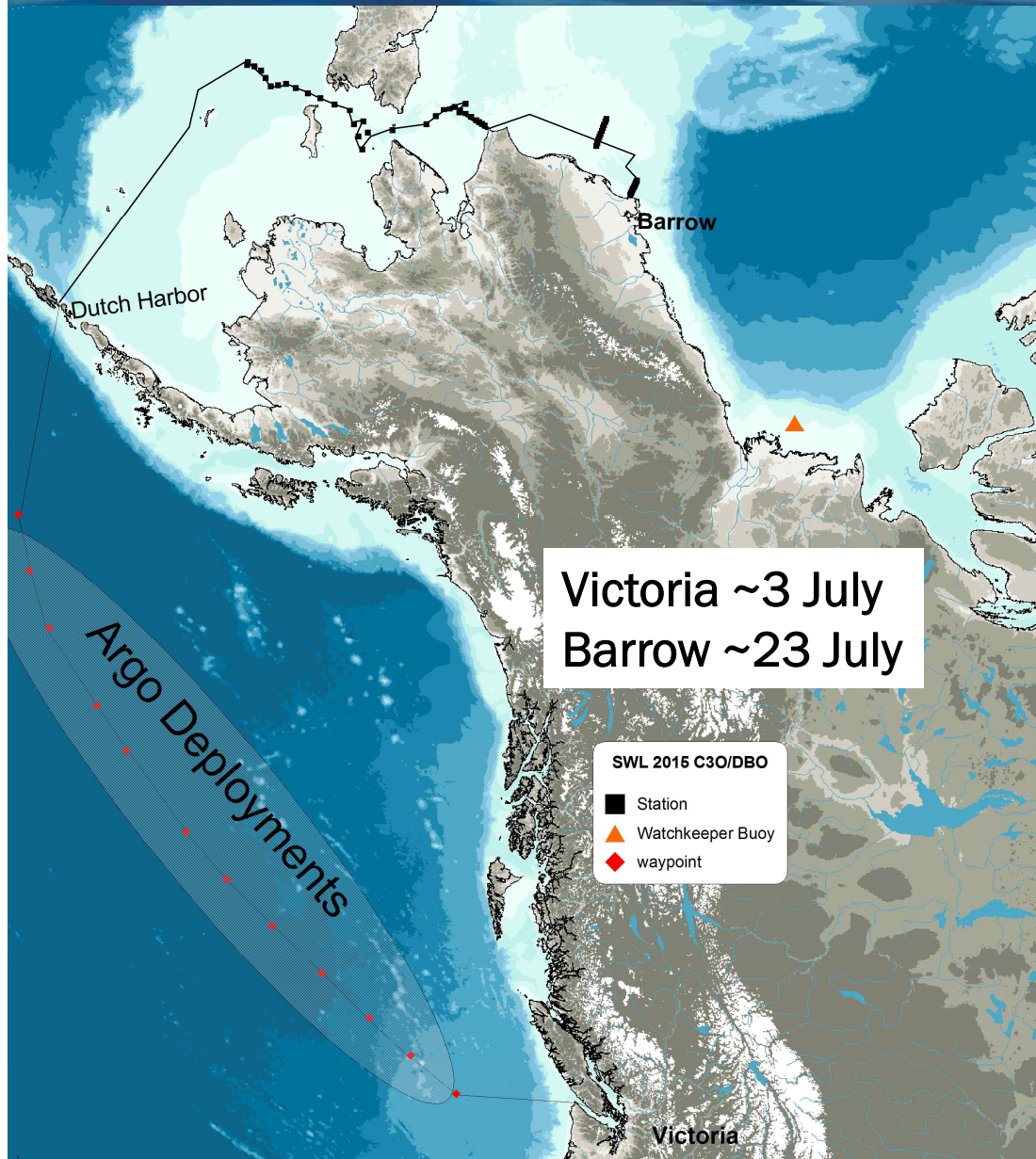
Activities: Mooring recoveries/deployments, ice buoy/ITP deployments, CTD/Rosettes, XCTD/UCTD, Bongo nets, ...

CCGS Sir Wilfrid Laurier





C3O Pacific-Arctic + DBO



CCGS Sir Wilfrid Laurier: Victoria to Barrow

- 6 days, 14 berths requested,
- Stop at Dutch Harbor to pick up about 12 scientists
- UCTD and XCTDs deployed from stern during transit
- Underway seawater sampling
- Bird observations
- Deployment of Argo floats
- Collect sediment samples using VanVeen grabs and Happs corer at stations in the Bering and Chukchi Seas. Also, collect CTD and geochemical samples with the rosette and plankton samples with vertically towed bongos.
- CTD/Rosette casts across the Gulf of Alaska.

DFO's Role in Sustained Observation of the Beaufort-Chukchi

Scientists at DFO's Institute of Ocean Sciences, Pacific Region, Sidney BC

Humfrey Melling, Bill Williams

Continuous observations at some locations for more than a quarter century

Field work supported by Canadian Coast Guard ships on annual Arctic Patrols

Resources provided by:

DFO, PERD, ESRF, Imperial Oil, Shell Oil, NSF(USA), NOAA(USA), BOEM(USA)

Collaborators include:

Geological Survey of Canada, ArcticNet Inc, MBARI, Woods Hole Oceanographic Institute, US National Marine Mammals Lab

ASL Environmental Sciences Inc, Golder Associates

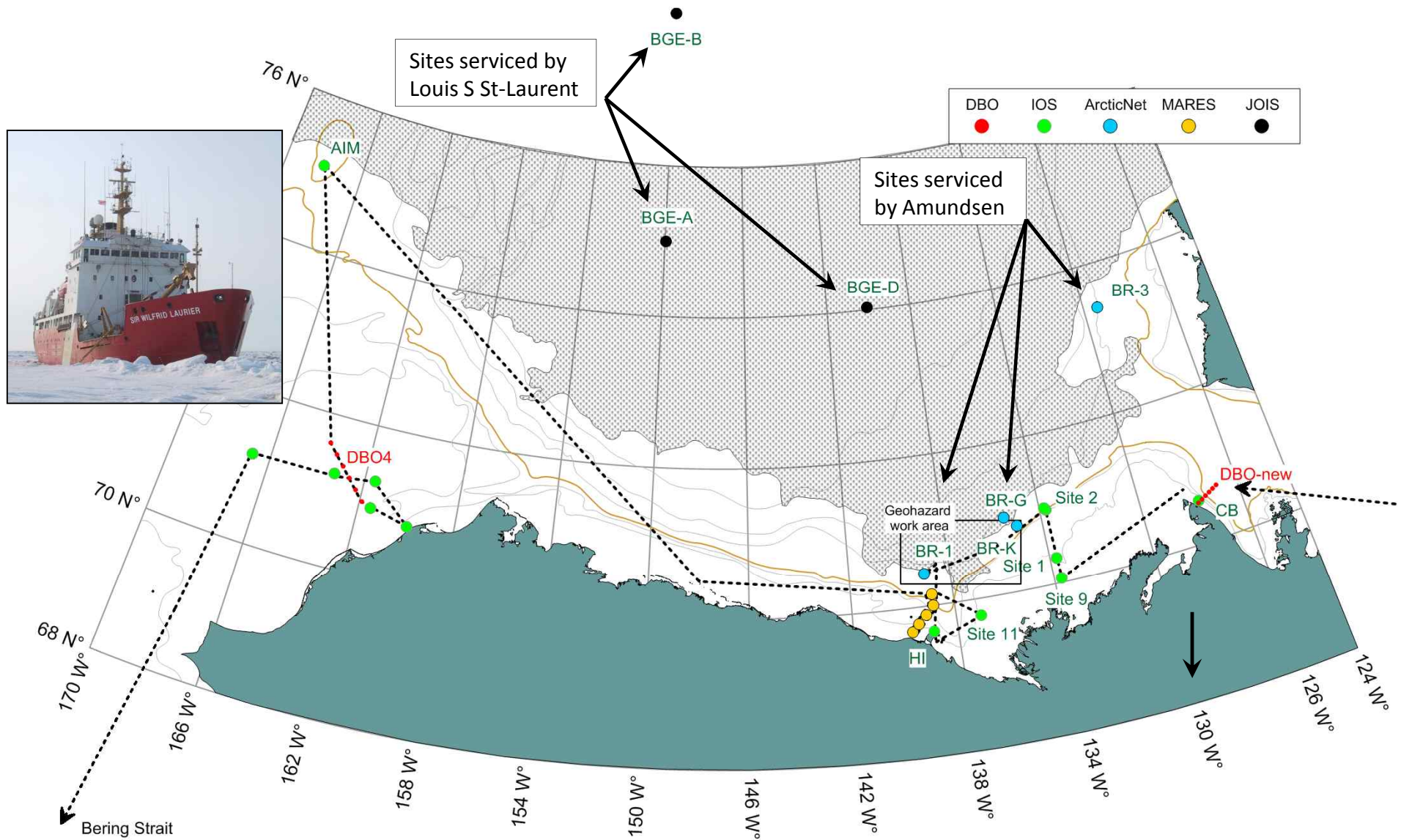
Projects supported:

Beaufort Marine Hazards (BMH), Integrated Beaufort Observatory (iBO),

Arctic Ice Monitoring (AIM), Joint Ocean Ice Studies (JOIS),

Distributed Biological Observatory (DBO)

CCGS Sir Wilfrid Laurier servicing long-term observing sites during autumn 2016



Year-round observations from submerged moorings reveal the natural range of conditions, normals & extremes, trends, ...

Sea ice

Thickness, drift speed & direction , hazardous features

Sea surface

Storm waves, storm surge

Ocean current – surface to seabed

Speed & direction, ocean eddies, intensified flow at the seabed, pathways for water movement (e.g. marine pollutant dispersal) at all depths

Ocean water masses – key levels

Temperature & salinity at key levels, identification of water-mass origin

Biological hotspots

Upwelling of nutrient rich water, variation in zooplankton abundance

Settling of sediment

Rate and variability of supply, plankton blooms, dispersal of eroded sediments

Ambient sound

Mammal's vocalization, species presence, natural sound, seismic sound, ship noise

NGCC • CCGS

AMUNDSEN



2016 CCGS *Amundsen* Expedition Plan
DRAFT – February 2016

2016 *Amundsen Expedition* - Overview

Overview

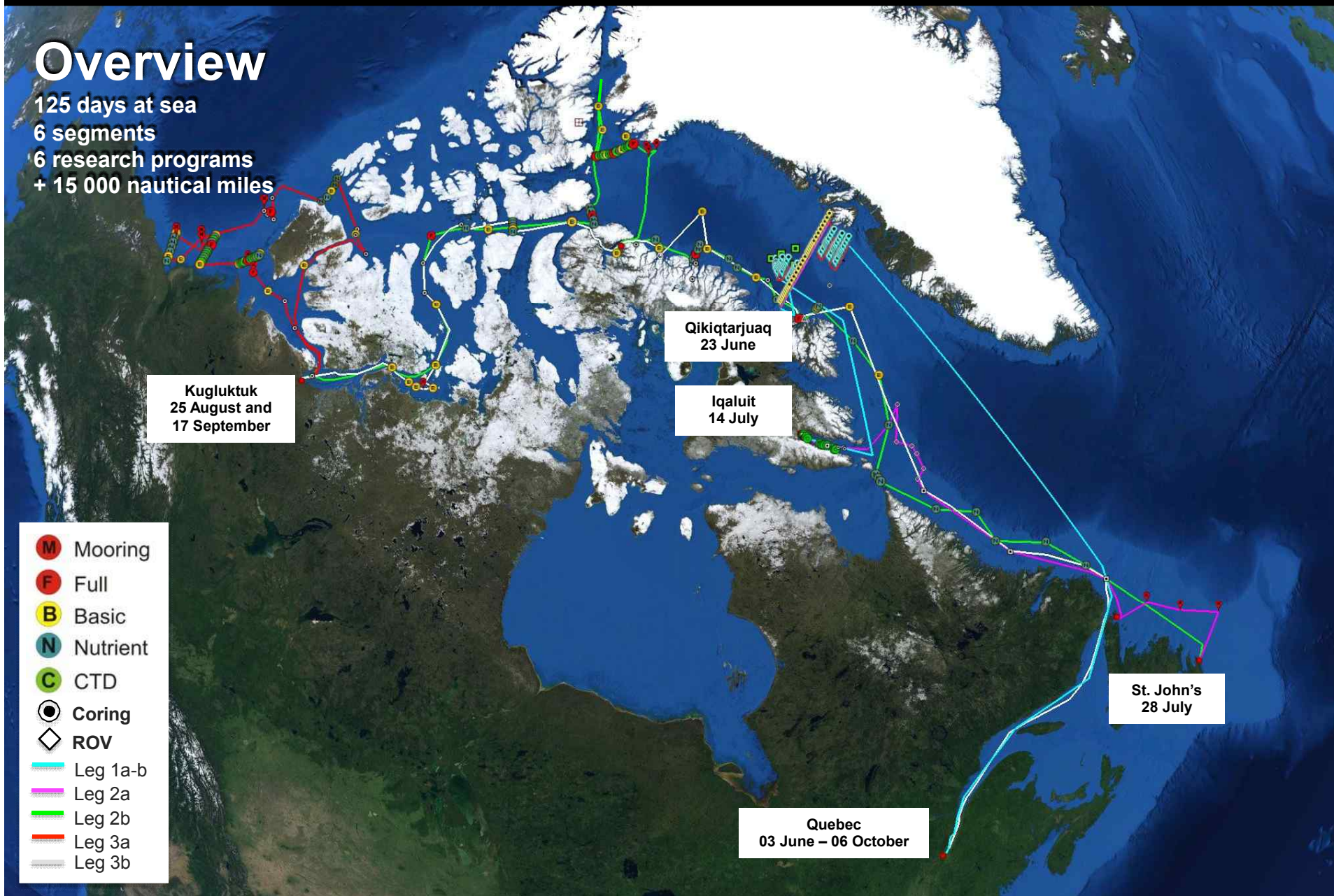
The plan is currently divided into 6 different segments for a total of 125 days at sea.

- Leg 1a: Quebec to Qikiqtarjuaq (03 to 23 June)
- Leg 1b: Qikiqtarjuaq to Iqaluit (23 June to 14 July)
- Leg 2a: Iqaluit to St. John's (14 to 28 July)
- Leg 2b: St. John's to Kugluktuk (28 July to 25 August)
- Leg 3a: Kugluktuk to Kugluktuk (25 August to 17 September)
- Leg 3b: Kugluktuk to Quebec City (17 September to 06 October)

2016 Amundsen Expedition - Overview

Overview

125 days at sea
6 segments
6 research programs
+ 15 000 nautical miles



2016 Amundsen Expedition – Leg 3a

