

Beaufort Gyre Exploration Project 2011 Dispatches



[1: All Aboard](#)

Today marks the start of the 2011 Joint Ocean Ice Studies (JOIS) expedition, which involves the collaboration of Fisheries and Oceans Canada researchers, and scientists from the USA, Japan and other institutions in Canada.



[2: Safety: Learn It, Love It, Live It!](#)

We donned "emergency suits," yellow, clown-like, rubber costumes that offer full skin protection in case we were to abandon ship and float in the murky Arctic waters.



[3: Recovery of the CABOS mooring](#)

This afternoon the mooring team, Captain, First Officer and Deck Department recovered the Canadian Basin Observational System (CABOS) mooring, a joint US (IARC) and Canadian (IOS) project.



[4: Underway measurements of sea ice](#)

Early this morning Kunio Shirasawa (Hokkaido University), Kazu Tateyama and Hiroki Shibata (Kitami Institute of Technology, KIT, Japan) deployed an electromagnetic (EM) inductive sensor system off the ship's port bow to record under-way measurements of ice thickness.



[5: Measurements of opportunity](#)

During an unplanned stop anchored in the shallow waters off Tuktoyaktuk (around 70 N, 133 W) scientists took the opportunity to collect water samples and make measurements.



[6: Water samples at the basin boundary](#)

Today we continued our south-north MacKenzie line of science stations making bongo plankton net tows and CTD/rosette casts across the continental slope.



[7: In the ice](#)

We made it to the edge of the multi-year ice pack today and were met with high ice concentrations on our way to science "Station A" (at 72.5 N, 144.5 W).



[8: The engine room](#)

The Louis S. St-Laurent has massive engines, a reinforced hull and heavy-duty steering gear for making her way through the Arctic pack ice.

[9: Recovery of BGOS Mooring A \(75 N, 150 W\)](#)



The Captain and officers on the bridge, the WHOI mooring team (John Kemp, Rick Krishfield, Jeff Pietro and Steve Lambert) and the Deck Department recovered Beaufort Gyre Observing System Mooring A in rainy, overcast conditions today.



[10: Re-deployment of BGOS Mooring A](#)

Mooring A was re-deployed today, beginning with the 4500-pound anchor, Bottom Pressure Recorder (BPR), and releases, followed by a string of 50 buoyant glass spheres (protected by yellow hardhats), and the instruments placed in-line on the wire at various stages.



[11: Recovery of an Ice-Tethered Profiler \(76 N, 148 W\)](#)

The morning began with helicopter reconnaissance to survey sea-ice conditions to the north and to search for an Ice-Tethered Profiler (ITP) that was in the vicinity of the ship.



[12: Recovery of BGOS Mooring B \(78 N, 150 W\)](#)

The furthest north of the three BGOS moorings (Mooring B) was recovered today in a region of 9/10 ice cover and under mostly clear skies; temperatures on deck were around freezing with about 15 knots of wind.



[13: Another Ice-Tethered Profiler recovery \(79 N, 150 W\)](#)

Our cruise track brought us nearby another Ice-Tethered Profiler (ITP 33) that was reporting GPS positions but had stopped sending water-column data in late January.



[14: Re-deployment of BGOS Mooring B \(79 N, 150 W\)](#)

The mooring team and Deck Department deployed Beaufort Gyre Observing System Mooring B in the fog and 9/10 ice cover today.



[15: Ice work](#)

After a brief reconnaissance flight this morning, Helicopter Pilot Chris Swannell, Rick Krishfield, Jeff Pietro and Ice Observer Roger Provost located a suitable multi-year floe (about 1.5 km from the ship) for the deployment of an ITP (ITP 53), with room for more of the science party to perform a magnetic survey, take ice cores, and collect melt-water samples during the deployment.



[16: The first Ice-Based Observatory \(78 N, 140 W\)](#)

Helicopter Pilot Chris Swannell, Ice Observer Roger Provost, Rick Krishfield and Steve Lambert needed only a short reconnaissance flight to find a floe about 1 km from the ship for the deployment of our first Ice Based Observatory (IBO). We'll deploy two more IBOs (multiple instrument systems on a single ice floe) on this cruise.



[17: Another Ice-Based Observatory \(77 N, 140 W\)](#)

Today's IBO consisted of an ITP, an Autonomous Ocean Flux Buoy (AOFB), an Ice Mass Balance (IMB) buoy, three temperature/salinity Ice Beacon buoys, and a surface-ocean temperature buoy (called the UpTempO buoy, Univ. Washington).



[18: The O-buoy Project](#)

John W. Halfacre and Carlton Rauschenberg describe the O-buoy.



[19: The final Ice-Based Observatory \(76 N, 138 W\)](#)

Dense fog this morning prevented a helicopter flight to search for a suitable ice floe for our final IBO site. As we waited for it to lift, Rick Krishfield (WHOI) spotted a decent floe through the fog from the ship, and an afternoon of ice work followed.



[20: Geochemistry of the Canada Basin](#)

Geochemist Michiyo Kawai (TUMSAT) has been busy in the main science lab of the Louis S. St-Laurent analyzing water samples to understand the geochemistry of the Arctic Ocean.



[21: Plankton dynamics in the Beaufort Sea](#)

Peter Lavrentyev (University of Akron, Ohio) is taking part in the expedition this year to investigate biological primary production and the microbial food web of the Beaufort Sea.



[22: Recovery of BGOS Mooring D \(74 N, 140 W\)](#)

Heavy ice and fog greeted us at the site of Beaufort Gyre Observing System Mooring D today.



[23: Ice and Fog](#)

After CTD/Rosette and zooplankton net casts in the morning, we spent much of the day steaming to our next science station at 73.5N, 138W.



[24: Re-deployment of BGOS Mooring D \(74N, 140W\)](#)

The early sunshine soon turned to fog for the re-deployment of Beaufort Gyre Observing System Mooring D.



[25: Bio-geochemical analyses](#)

On this year's expedition, we collected water samples from all depths in the Canada Basin water column to analyze dissolved oxygen, dissolved inorganic carbon (DIC), alkalinity, isotopes of oxygen and argon, chlorophyll, salinity, ammonium, nutrients (nitrate, phosphate and silicate),



colored dissolved organic matter (CDOM), phytoplankton, microzooplankton, barium, bacteria and pH.



[26: Thanks to the Captain, Officers and Crew of the Louis S. St-Laurent](#)

We've finished all science activities and are steaming through Amundsen Gulf (south of Banks and Victoria islands) on our way to Kugluktuk, Nunavut.

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