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Back to the Ice, Part 1

We Rejoin *Louis* and Head into the Ice Pack

August 17, 2010

By Helen Gibbons, Web Coordinator, ECS Project

Date: August 17, 2010

Time: 1443 hours

Pacific Daylight Time

Latitude: 73°38.27'N

Longitude: 150°44.15'W

Air temperature: 2.92°C (37.26°F)

Sea temperature: -0.4°C (31.3°F)

Wind speed and direction: 21.1 knots from the east

Ship's speed over the ground: 4.0 knots

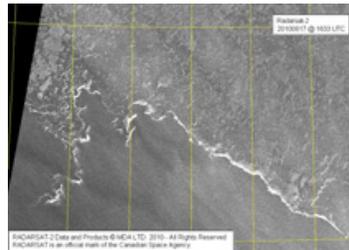
Water depth: 3832 m

Last night we were off Barrow, Alaska, where we picked up a new crew member and spare fuel filters for the Canadian Coast Guard Ship *Louis S. St-Laurent* (and enjoyed the unexpected pleasure of making cell-phone calls to family and friends). Our chores in Barrow complete, we headed northwest to rejoin *Louis* at the edge of the ice pack, the large mass of ice that covers much of the Arctic Ocean.



Close-packed floes at the edge of the ice pack, photographed at 1121hrs PDT on August 17. Click image for larger view.

Credit: Helen Gibbons, USGS/ECS Project.



Screenshot of SAR (Synthetic Aperture Radar) image from the Radarsat-2 satellite, collected August 17, 2010. The bright band around the edge of the ice pack is a rim of densely packed ice. Click image for larger view. **Credit:** Erin Clark, Canadian Ice Service.

I asked MST1 Josh Miller, an ice analyst with the National Ice Center (NIC), about the ice that awaited us. Josh and Erin Clark—an Ice Services Specialist with the Canadian Ice Service, Environment Canada—have been using satellite images ordered by the U.S. and Canada to track the position of the ice edge every day. Last night, they noted that a south-southeasterly wind was blowing and would likely push the ice edge farther north than it appeared on their latest imagery. When the wind pushes floes up against the ice pack, it creates a band of more highly concentrated ice at the ice pack's edge. Erin and Josh predicted that when we arrived at the ice pack, we would first encounter this densely packed rim of ice and then break into an area of lower ice concentration (the fraction of sea surface covered by ice, typically reported in tenths). On a SAR (Synthetic Aperture Radar) satellite



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In close-packed ice at the outer edge of the ice pack, at 1143 hrs, Pacific Daylight Time. **Credit:** Helen Gibbons, USGS/ECS Project.



Farther into the ice pack, at around 1300 hrs, the ice concentration had decreased to about 4 tenths (that is, about 4 tenths of the sea surface was covered with ice). Click image for larger view. **Credit:** Helen Gibbons, USGS/ECS Project.

image, the densely packed rim of ice looks like a bright band around the edge of the ice pack.

Sure enough, when we caught up with *Louis* at about 1100 hrs today, we saw ahead of us a thickly concentrated band of ice, about 20 miles north of its position on the satellite imagery from the previous night. Predicting the position of ice based on available imagery plus knowledge of weather conditions and sea-surface currents is an essential part of ice analysis.

After a helicopter from *Louis* picked up her new crew member and fuel filters, we resumed our tandem data collection, with *Healy* leading the way into the ice pack. As Erin and Josh had predicted, the ice concentration diminished as we sailed farther into the ice. At the edge, around 1145 hrs, we were in 9 to 10 tenths ice coverage. By about 1300 hrs, we had moved farther into the ice pack and the ice concentration was estimated at 4 tenths.

To be continued...



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