Print

Beaufort Gyre Exploration Project: Dispatch 19: Heavy Ice Pack

Judy Twedt
August 20, 2013

Until yesterday, the ship used just two of its six engines to get through the ice. Now we're using four, and the bubbler which blows pressurized air out through holes on the sides of the hull so the ice doesn't stick. We've entered heavy ice pack.

This ice is more challenging to characterize in my observations. The surface is covered with dry, windblown snow which partially masks the color different between young and old ice. After looking closely, I noticed a faint different in the brightness of different swaths of ice: very bright patches are old ice; dull white patches are young, first year ice. The pack also hides deceptively large ridges. Thick older ridges have been smoothed on the surface by melting and refreezing. Without as many jagged features, they throw fewer shadows and are harder to see. Much of the ice thickness is invisible from the surface; it extends down into the sea, as ice draft.

Related Multimedia

August 20th Photos
» View Slideshow

I've been estimating the thickness of the ice by watching it turn over against the sides of the ship, but this is a biased estimate since the officers save time and fuel by steering the ship away from the thickest ice. To get a better estimate of the ice thickness, the Beaufort Gyre Observation Project has equipped their moorings with upward looking sonars (ULS). These instruments are mounted on a buoyant, bright yellow sphere held 30 meters below the sea surface by an anchor on the seafloor. The ULS looks up at the ice above and uses acoustics to measure the ice draft.

Today Rick, Kris, Jim, Brian and the ship's crew recovered another of these moorings: BGOS-B. It was under a large floe of thick ice. The ship made loops over the site for several hours, churning and breaking the ice into small pieces so the mooring would come up in open water once released it from its anchor. When we arrived on site, heavy winds blew snow flurries, threatening a chilly recovery operation for those who work out on the deck. Fortunately, the winds softened and clouds cleared in the early afternoon.

Inside during the recovery operation, I found Michiyo and Ogi in the forward hold below the deck carefully removing water samples from a rack that was mounted on the top of the mooring. You may have read Kristina's post about Michiyos state-of-the-art remote access sampler (RAS). This is mounted 35 meters below the sea surface. It takes water samples every eight days throughout the year. Since foul weather prevents scientists from sampling the Arctic Ocean in the winter, they have not been able to see the how the upper layer of the Arctic Ocean changes with the seasons…until now. From these samples, Michiyo will see how salts from sea ice formation, river runoff, and nutrients fluctuate in the mixed layer throughout the year, weaving more threads into the story of the Beaufort Gyre.

Last updated: October 19, 2015

Mail: Woods Hole Oceanographic Institution, 266 Woods Hole Road, Woods Hole, MA 02543, USA.
E-Contact: info@whoi.edu; press relations: media@whoi.edu, tel. (508) 457-2000
Problems or questions about the site, please contact webdev@whoi.edu