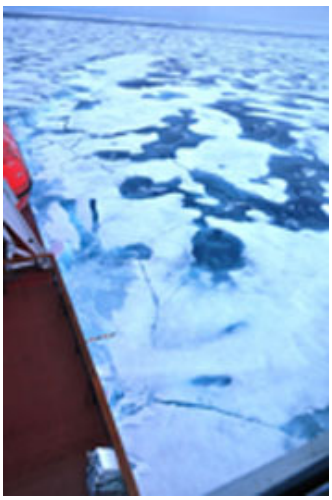
Print

Beaufort Gyre Exploration Project: Dispatch 16: Cold at Last

Judy Twedt
August 17, 2013

Related Multimedia



August 17th Photos
» View Slideshow

Until yesterday, dense fog rolled in each night and stayed until late in the morning. It blocked the sunlight, giving a pretense that the sun had set. When I climbed up to the bridge this morning at 2am for an ice observation, the windows were still painted gray. As the morning wore on, the blanket of fog lifted into low clouds which misted snow. At the same time, we entered the largest ice floe we've seen yet. A floe is a continuous piece of sea ice that has formed in the water. It was young and thin, maybe 10 centimeters, but it stretched out in all directions of the ship so far that we couldn't see the ends. The surface of the floe was spotted like the coat of a Dalmatian: a 2000+ meter white ice sheet melted in round spots of transparent ice, revealing the dark ocean beneath.

I am admittedly a fair-weather enthusiast and love the mild climate of Washington's Puget Sound. Here, however, cold is invigorating. When, for several mornings, the temperature was just above the freezing point, I was oddly disappointed. This morning's icy slick decks glazed with snow seem perfectly natural. It's August in the Arctic and snow is falling. Yes, of course.

At 11 am we have a daily science meeting led by chief scientist Bill Williams. This morning, Peter Peterson, a graduate student at the University of Alaska, Fairbanks gave a presentation about his O-buoys. He's monitoring bromine in the boundary layer of the atmosphere (the layer that meets the earth's surface), and its reactions with ozone.

Small amounts of ozone occur naturally in the boundary layer, and it contributes to the breakdown of air pollutants. The concentration of ozone in the boundary layer drops significantly in the spring, when the sun strikes upon new sea ice, releasing bromine into the atmosphere. Bromine reacts with and depletes ozone, indirectly affecting the fate of air pollutants. How does this work?

Sea ice purges salty brine as it ages. This brine is released below into the sea water and above onto the surface of the ice. When the spring sun returns to the arctic and reaches the brine-coated new ice, it releases Bromine ions which react with and deplete ozone. Since the arctic is rapidly transitioning to a younger ice pack, Peter and his colleagues want to know what kinds of ripple effects this will have on atmospheric chemistry.

Last updated: October 7, 2015

Copyright ©2007 Woods Hole Oceanographic Institution, All Rights Reserved.
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