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Beaufort Gyre Exploration Project: Dispatch 15: An Evening on the Wire...

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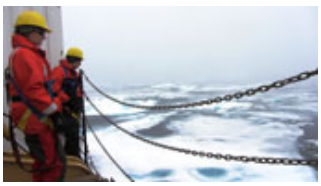

August 16th Photos
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As watch standers we spend a large chunk of each day out on deck while the CTD-Rosette is descending/ascending through the water column. Part of our job is to make sure there the cable pathway is clear and that there is no ice creeping toward the rosette line. Although there are a few ways we can adjust the position of the cable to get it out of the way of approaching ice, by far the most effective is the ships bubbler system, which works by pumping air bubbles from below the water line. With a power thrust of 1.2 megawatts, water and air are pushed up from below the ship, lubricating the hull and pushing ice away from the vessel. The Louis has three different discharges between the bow and mid-ship, and they can be used as bow thrusters, to move ice, and to help dock the ship. The ships bubbler system is one of the primary tools to allow us to carry out CTD-Rosette casts in the Canada Basin's ice covered waters. Not only is it one of the most efficient ways to clear the area of ice before deploying the rosette, but it also helps to keep the area clear of ice when we recover it again after sampling.

Once the rosette is back on board the ship, we start sampling for the various chemical constituents described in Dispatch 11. One of the parameters we are taking samples for is Coloured Dissolved Organic Matter, referred to as CDOM. CDOM is a kind of soluble material leached from soils or generated by the decomposition of organic material in the water column. Although CDOM represents only a small fraction of the organic material in the Arctic Ocean, its capacity to absorb light and heat from solar energy makes it of particular interest to the scientific community. Increased permafrost melt associated with Arctic warming is thought to lead to an increased contribution of organic material to Arctic rivers, which is then carried into the coastal ocean. This could potentially cause CDOM concentrations in surface waters of the Beaufort Sea to increase, in turn limiting the availability of sunlight deeper in the water column for primary production. Specific chemical properties of CDOM depend upon its source and can help to identify its origins from land, ocean, or microbial activity. Graduate student Paul Dainard (Trent University) is interested in the way different types of CDOM interact with light and how these characteristics can be used to determine the contributions of marine, terrigenous, and sea ice sources to CDOM distributions throughout Canada Basin.

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