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Beaufort Gyre Exploration Project: Dispatch 25: Another Day on the Ice

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While air temperatures descended to negative eight degrees Celsius this morning, we arranged thousands of pounds of gear in the helicopter hangar, warmed up the small motors that were coming out onto the ice with us, and started layering up. This was our second and final day of ice sampling, and the last installment of an ice-based observatory (IBO) for the JOIS 2013 expedition.

The work day began at 8am, just after breakfast, with a helicopter reconnaissance flight. Rick went out with Colin, the pilot, to find a floe that was large enough and thick enough for our operations. In less than an hour they found one, visible from this ship, between 1 and 2.5 meters thick with some rubble fields and frozen melt ponds. Perfect.

Immediately after Rick's return, we began laying the cargo loads out onto the helicopter deck. Most of the gear is transported to the ice in a nets or slings that hang down from the helicopter. The order of helicopter flights was carefully scheduled in advance by Bill (chief scientist) to minimize transit time and get people working on the ice as quickly as possible. We work at the mercy of the weather; in less than an hour thick fog can roll in and halt flight operations.

I flew out with the second flight of people to set up transect lines for the ice sampling operations. Rick had previously designated an area for the suite of buoys to be installed, and it was up to me to designate a region for ice measurements.

While the WHOI team began setting up their equipment, Cory and I cautiously wandered out to examine the real estate. What were the criteria by which to choose transect lines? First, they should be roughly random. We're aiming for a representative sample of the ice. But in practice they're far from random: we want a good distance from the ice edge, for safety. We want a good distance from the IBO station, to avoid overcrowding. We want a good distance from the helicopter landing area, where the dry snow quickly becomes a small, stinging blizzard under the helicopter's updraft. We want to avoid frozen thaw holes because the ice there might be quite shallow, and we want at least one line adjacent to a melt pond, since that is what Yasu has come out here to study. With all of those factors in mind, I chose two lines, roughly perpendicular to each other, one of which began near an aqua-blue frozen melt pond and both were safely near the center of the floe.

After several cargo loads, Colin flew the rest of the crew out, and the ice work began in full force. Rick, Kris, Jim, Bryan, and Cory worked all day on the installation of the ice observatory buoys. Sarah, Kristina, and I collected ice core samples to be analyzed for Iron, DNA, temperature, density, and salinity. Yasu and Ogi made detailed measurements of melt pond characteristics. Sarah-Ann, Deo, and Genke took measurements of the ice thickness, snow thickness, and freeboard along the transect line, using both an electromagnetic induction sensor and a 2 inch ice drill. All the while we were accompanied by Justin Dalley, on bear watch, and Kirby Vatcher, on helicopter and cargo operations.

Several hours later, with coolers full of cores, log sheets full of ice data, and buoys secured on the floe, we packed up our gear and prepared for the series of helicopter flights that would return both people and cargo to the ship. I kept to the back of the crowd and caught one of the last flights back, savoring the final minutes on that small, frozen piece of ocean.

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