

## Beaufort Gyre Exploration Project: Dispatch 23: The O-buoy

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### O-buoy Deployment

Now that we are almost done with the cruise it seems like as good a time as any to let Rick take a break from writing dispatches and talk about the O-buoy. Carlton Rauschenberg and I tagged along on this cruise to deploy the O-buoy which looks at the chemistry taking place in the Arctic atmosphere. Sea ice, especially new first year ice has a significant effect on the chemistry of the Arctic and the O-buoy is designed to monitor some components of the atmosphere so scientists can get a handle on how the ice and the atmosphere are interacting and the implications of a changing icepack for the Arctic atmosphere.

The buoy measures three gases:

Carbon dioxide: A greenhouse gas which also contributes to ocean acidification.

Ozone: Gets depleted in the Arctic and Antarctic atmospheres every spring due to release of halogens from sea salt present on the surface of sea ice. Monitoring these depletion events provides insight into the effects of this halogen chemistry on the Arctic atmosphere.

Bromine monoxide: A product of this ozone depletion.

The buoy consists of three major components. There is the instrument tube which contains all the instrumentation and 3 large battery packs designed to keep it going during the winter months when the buoy's primary source of power (four 50 watt solar panels) is useless. This sits in the ice/seawater to keep the batteries and instrumentation at a uniform temperature. There is a mast which contains meteorological sensors, the scan head for a UV/Vis spectrometer to measure the absorption of sunlight by the atmosphere, inlets for ozone and carbon dioxide, a satellite transmitter for sending back data to the various groups involved with the project, and a GPS antenna that transmits the location and orientation of the buoy. The buoy is powered by a solar array during the summer months that attaches to the buoy's flotation collar.

When you are on a month long cruise with only one buoy to deploy, the cruise becomes quite the waiting game. I passed the time by eating ice cream, doing pre-deployment tests on the buoy and helping out with the CTD casts taking place. This morning looked like it would be more of the same until the chopper came back from a lunchtime recon and we were informed today was the day for deployment. Carlton and I watched our O-buoy get slung out into the hole in the floe prepared by the team from WHOI and then went out to finish the assembly process. We went to work attaching the mast with the assistance of Miranda Corkum from IOS. Once that was complete we started assembling the solar array. As the sun starts setting we are finally ready to power it on while Jeff Charters from IOS finishes tightening down the bolts holding the solar array together. I flip the switch and wait for signs that the buoy has come on and all is well. I hear the spectrometer scan head start moving and taking data which tells me the buoy has been successfully assembled. After a successful day on the ice we head back to the boat, find that the cooks kept the galley open late for those of us on the ice and sit down to a steak dinner. Not a bad way to end the day!

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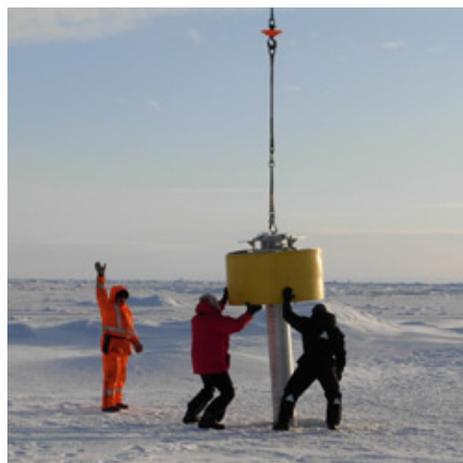
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