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Beaufort Gyre Exploration Project: Dispatch 9: Recovery of BGOS Mooring A (75 N, 150 W)

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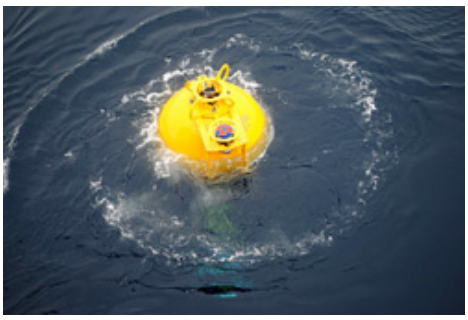

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The Captain and officers on the bridge, the WHOI mooring team (John Kemp, Rick Krishfield, Jeff Pietro and Steve Lambert) and the Deck Department recovered Beaufort Gyre Observing System Mooring A in rainy, overcast conditions today. Rick used acoustic signals to pinpoint the mooring location (see Dispatch 3) while the Captain maneuvered the ship in an oval pattern. Ranging was done on the acoustic releases on the bottom of the mooring (the water depth is around 3800 m here) plus a second survey to triangulate on the transducer at the top float around 35 meters below the sea surface. The Captain then used the ship's fish finder to ping on the top float of the mooring under the ship, so that by the time the mooring was released, its position was known exactly. The top float was about 680 m east of the location where the mooring was released from the ship last October.

Recovery operations got underway after a break for breakfast while the ship steamed in the mooring area and upwind to break the larger floes into smaller chunks to minimize the possibility that the released mooring would float up to the underside of a large ice floe. After some skillful maneuvering of the ship by the Captain before coordinating with Rick to release the mooring, the top float surfaced on the starboard side of the ship almost right beside the crane. From a basket suspended from the crane, Seaman Barney Noseworthy hooked the top float to begin the recovery process. During any recovery, the Captain and officers on the bridge keep a close eye on the wire over the side. If the wire begins to angle under the ship, or ice approaches the wire, the ship's air bubbler system (compressed air blasted through nozzles below the waterline) is used to push ice out of the way or maneuver the bow. It took about three hours for the mooring team and Deck Department to bring all instruments on board using the A-frame and cranes together with the Lebus winch.

The instruments on Mooring A include an Upward Looking Sonar (ULS) and an Acoustic Doppler Current Profiler (ADCP) mounted in the top float to collect data on sea-ice draft and ocean currents in the shallowest few tens of meters of water. Below the top float, two McLane Moored Profilers (MMPs) - one on the upper portion and one deep - profile up and down the wire measuring the water column down to 3200 m (collecting information on ocean currents, temperature, salinity, oxygen, and bio-optical properties). The mooring also has a McLane Sediment trap positioned around 3200 m depth to collect sinking particles in the water column. The amount of particles captured is an indicator of biological production and the transport of organic matter in the ocean. Changes in particulate fluxes through the water column help us to understand changes in the physical and biological Arctic environment and how the two are coupled.

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