

Date: 10 July 2015

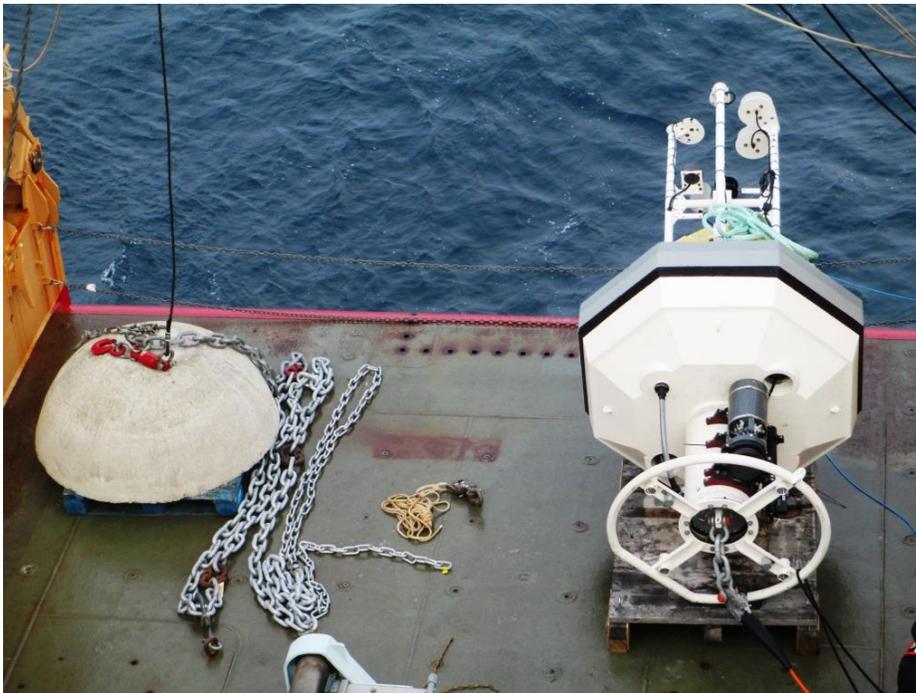
Location: Approximately 70 miles northwest of Icy Cape

Primary Activities: NOAA buoy and wave glider launches; continued communications testing

Conditions: Heavy fog most of the day, limiting visibility to approximately 0.5 miles and 200-foot ceiling

Temperatures: Air temperature range 38 - 49 F; water temperature 42 F

Today, the NOAA team led by Noah Lawrence Slavus, the CGC HEALY crew, and the Coast Guard R&D Center (RDC) test director Jason Story deployed a series of environmental buoys. The purpose of these buoys is to evaluate innovative sensors and techniques to increase NOAA's observational capabilities as well as to obtain baseline environmental information in the Arctic. The first deployment was a moored 1.5m wide octagonal surface buoy. The buoy has a central instrument well that houses a data logger and alkaline battery packs, an integrated ~1m bridle that holds subsurface scientific instruments, and a bolt-on 2m tower with meteorological instruments. The team is leaving this buoy in the water for three to four months to collect data. The buoy will be recovered by another Coast Guard vessel in the fall before ice re-occupies the mooring site.



(NOAA Octagonal Surface Buoy - photo courtesy of Ryan Fitzler)

In a box-shaped pattern approximately 20 miles around this buoy, the team deployed a series of additional sensors. This included three drifter buoys, like the ones deployed on 8 July, to collect environmental data in the immediate proximity of the moored buoy. The team also conducted Conductivity, Temperature, and Depth (CTD) castings at nine locations to include the initial buoy deployment site. These castings provide a vertical profile of the fundamental ocean

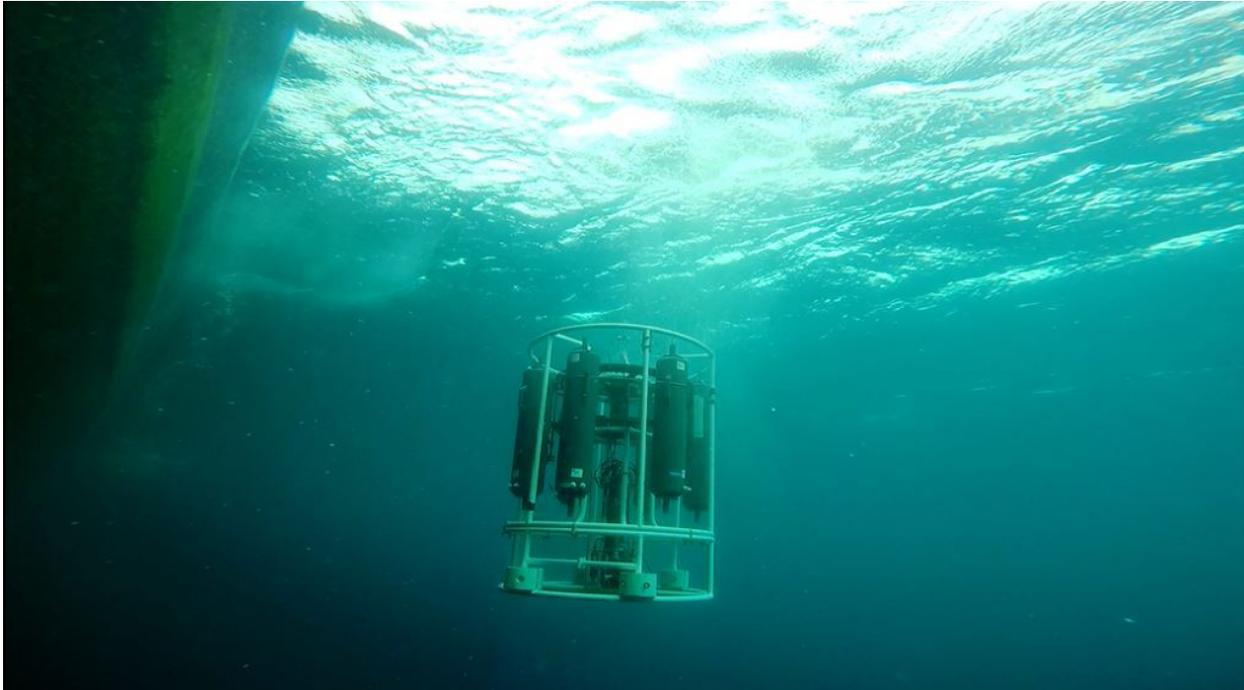
properties, and the multiple castings are necessary to determine any variations in the boundary conditions around the moored buoy.

The team also deployed two wave gliders, which are autonomous wave-powered surface vessels with various ecosystem monitoring instruments. The vehicles are controlled via RF and satellite communications and are generally programmed to run track lines between waypoints. One of the wave gliders will provide a broader perspective around the area of the moored buoy while the other will focus specifically on measuring regional carbon processes, which has implications on ocean acidification. The wave gliders will remain deployed in the region for several months.



(NOAA wave glider – photo courtesy of Andy Mahoney)

To assist in recording CTD deployments, representatives from the Coast Guard Dive Locker deployed their VideoRay Remotely Operated Vehicle (ROV). With an array of cameras, DB2 Adam Harris and DB2 Sean Eversole piloted the ROV through and beneath the swells to observe and document the deployments. Despite the strong currents and some initial ballasting issues, they were able to provide exceptional video and photos of the CTD collecting water samples.



(Image of CTD unit being deployed - photo courtesy of DB2 Harris and DB2 Eversol)

For the second straight Arctic Technology Evaluation, Don Decker from the Coast Guard Research & Development Center (RDC) and NORTHCOM are collaborating on testing the Mobile User Objective System (MUOS), the Navy's next generation secure mobile communications satellite system. This year's objectives include continued testing of single and group communications using the AN/PRC 155 radio. The difference from last year is that the RDC is training the CGC HEALY crew to operate and evaluate the equipment independently for their GeoTraces cruise to the North Pole later this year. So far, the temporary installation and operation on board HEALY are meeting performance expectations, and the crew is rapidly becoming proficient in its operation. Later in the evaluation, the team will test sending webcam images from HEALY to NORTHCOM.

This year Auxiliarist Jeanne Suchodolski from the RDC, in cooperation with COMMSTA KODIAK, is also evaluating the High Frequency Automatic Link Establishment (HF-ALE) network. The RDC will use the resulting data from to validate existing HF communications performance models and to evaluate the efficacy of a temporary communications site in Barrow. So far, HEALY had reliable communications via the GOTHAM HF-ALE network during the transit from Kodiak to Nome, and communications utilizing the mobile terminal in Barrow have been successful based on connectivity and Link Quality Assessment (LQA) scores. The LQA system of measuring signal quality at HF GOTHAM sites allows data to be collected for both individual HF site performance as well as model verification of HF propagation delivered by the RDC in 2014. The RDC will continue to gather and evaluate test data throughout HEALY's transit along the North Slope and U.S. Arctic EEZ.

Note that the news crew from the television show TechKnow on Al Jazeera America (America.ALJazeera.com) plans to conduct another live video feed with their New York news room on Monday 13 July at approximately 20:45 EST. We will provide further updates as they are known.

Tomorrow, the team enters the ice! They will deploy and evaluate multiple air, surface, and subsurface technologies.