

Date: 11 July 2015

Location: Icy Cape to Barrow

Primary Activities: SPAWAR wave glider test; Puma flights and video feed; Aerostat test flight;  
NOAA under-ice buoy launches; ROV deployments

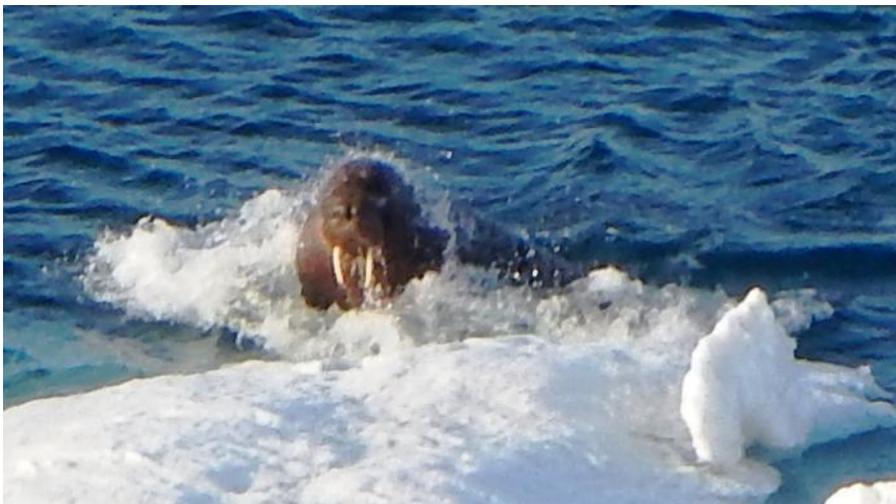
Conditions: Broken ice from early morning on; mix of light fog and sun throughout the day

Temperatures: Air temperature range 35 - 44 F; water temperature 29 - 37 F

Early this morning, the CGC HEALY entered the ice field and conducted air, surface, and sub-surface technology evaluations.



(Photo courtesy of LT Anastacia Visneski)



(Photo by Chief Scientist Scot Tripp)

The Space and Naval Warfare Systems Command's (SPAWAR) Nam Nguyen and Aleksey

Mafusalov have developed an image processing algorithm to autonomously command a wave glider's rudders to avoid objects in its path. Today, the SPAWAR team planned to deploy their Sensor Hosting Autonomous Research Craft (SHARC) wave glider to evaluate the algorithm in ice infested waters. Although today's icing conditions were ideal, there were no waves to generate forward propulsion for the glider. Therefore, the team collaborated with the HEALY crew to adapt their test plan. They decoupled the underwater portion of the wave glider, and the HEALY small boat crew deployed to propel the top portion towards ice flows. This plan enabled SPAWAR to still collect the data they need to advance their object avoidance algorithm.



(Photos by S.R. Jenkins)

The Puma team - consisting of NOAA, AeroVironment, and RDC – conducted additional flight operations today. Some of the successes included establishing a streaming video downlink to HEALY, multiple 360 degree orbits of the ship that can be used to develop a 3D model, and a fly-by of the tethered aerostat. The team also had a couple of lessons learned as a result of two failed net captures. For the first, the team found a variation in the dGPS calibration, and the second was a result of shifting winds around HEALY's superstructure. As a result, the team is adjusting tactics, techniques, and procedures for both the Puma itself and operational interactions with the ship. Of note, the Puma experienced only minor damage as a result of operations and failed captures, and it was quickly put back into service.



(Photo courtesy of McKenzie Funk)



(Photo courtesy of Puma Team)



(Photo courtesy of Charissa Moen)

NOAA and IGM Aerostat-IC (IGM) and the RDC collaborated to conduct a second Aerostat deployment. The aerostat is a potential enabler for long range communications between a ship, aircraft (sUAS), and shore-side command center. For the first flight this year, the team leveraged a high relative-wind condition to test operational limits. To reduce the risk of damaging the sensor package, they launched without a payload and a t-bar, which negatively impacted flight characteristics. Although IGM had tested the aerostat in similar wind conditions, the lack of payload plus t-bar, the 25-30 knot winds, and the wind turbulence from HEALY's superstructure

all combined to destabilize the flight. The team altered the deployment plans to include the t-bar and payload and launch in winds under 15 knots. Under the revised launch parameters, the team launched and recovered the aerostat without incident, captured still images, and validated the modified launch tactics. The next steps include integrating and testing communication links between the aerostat and the Puma.



(Photo courtesy of Hasan Shahid)



(Photo courtesy of Coast Guard R&D Center)

NOAA continued buoy deployments in its series of environmental assessments during Arctic Technology Evaluation 2015. NOAA and the HEALY deck crew deployed an under-ice mooring buoy. This buoy is a float connected to an anchor via a corrode-able link. The configuration will sit on the ocean bottom for a period of time before separating at which time

the float should “bounce” under the ice until it finds open water and transmits a signal. This is an engineering proof-of-concept for an Arctic monitoring system that can capture under-ice profiles and ocean thermal properties. NOAA will look for opportunities and conditions to deploy a second buoy on this cruise.



(Photo courtesy of Nicholas Haliscak)

Tomorrow, we will be making best speed to the SAR exercise and will continue evaluations on a not to interfere basis.