2008 Arctic ECS Mapping Cruise Summary

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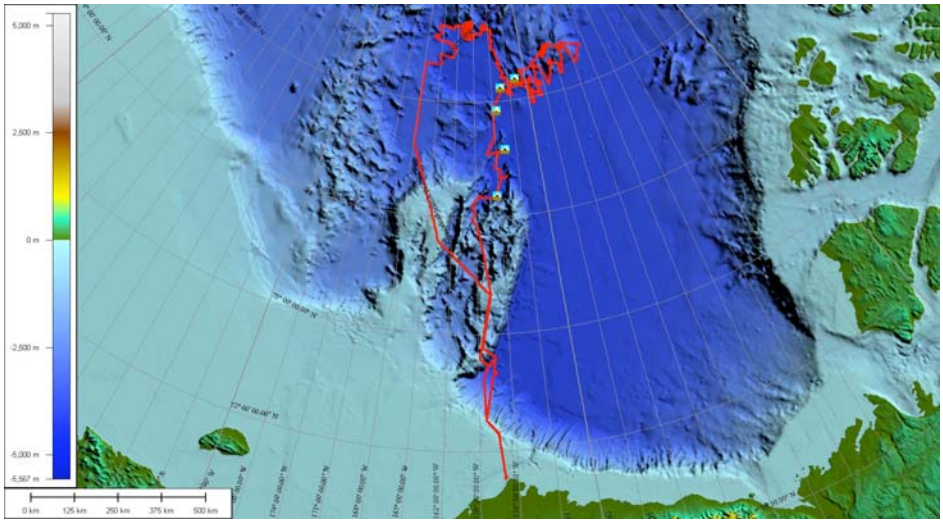
Summary
The Center for Coastal and Ocean Mapping/Joint Hydrographic Center successfully completed a 24-day Arctic Ocean mapping cruise, designated Healy 0805, aboard the icebreaker USCGC *Healy*. This cruise, running from 14 August to 5 September, and funded by a NOAA grant to the University of New Hampshire, carried out research related to the definition of the US continental shelf beyond 200 nautical miles, an area generally referred to as the Extended Continental Shelf (ECS).

Departing from Barrow, Alaska, the 2008 seafloor mapping picked up where our 2007 cruise left off north of the Chukchi Cap, following the potential foot-of-the-slope, the transition between the continental slope and the abyssal plain. The foot-of-the-slope is a feature defined in Article 76 of UNCLOS, crucial to defining a nation's ECS. After some days of multibeam echo sounder bathymetry and sub-bottom profiling, the character of the slope and the transition changed somewhat, and we began a series of transects across the transition to improve our understanding of the seafloor morphology. We also located and mapped some seafloor features rising above the 2500 m isobath, another Article 76-specified feature. We followed this multibeam/sub-bottom mapping with a set of bottom dredges designed to recover rocks from strategic locations on the seafloor, recovering excellent samples that will ultimately help define the geological character of the region. The rocks are being sent to independent academic labs for analysis and description.

This cruise has greatly improved our understanding of the Arctic Ocean seafloor morphology and geology north of the Chukchi Cap, and will provide valuable data and insight for the delineation of the limits of the US ECS. Additional mapping and seafloor sampling will be required to follow up on the discoveries of this cruise and further develop the foot-of-the-slope, the 2500 m isobath, and the seafloor geology.



Healy 0805 cruise track and dredge sites

Statistics

Lineal Nautical Miles of multibeam sounding and sub-bottom profiling:	3114
Approximate Square Nautical Miles of multibeam sounding:	10,090
Seafloor Dredge Samples:	7

Ancillary Projects

High Frequency Acoustic Recording Package (HARP), Scripps Institution of Oceanography—The cruise began with the recovery of 2 acoustic moorings (deployed on our 2007 cruise) on the continental shelf off Barrow. The hydrophones on these mooring have been recording ambient, marine mammal, and ship noise for the past year. The acoustic data were downloaded from the recording device and the moorings and hydrophones were refurbished during the cruise. Throughout the cruise, sonobuoys were deployed opportunistically and monitored to record ship and/or marine mammal sound. The cruise ended with the redeployment of the acoustic moorings. The moorings will be recovered in 2009.

National Ice Center (NIC) Buoys—The Chief Scientist of the National Ice Center and two other NOAA ice observers/analysts plus two NIC contractors were aboard to observe ice conditions and to deploy observing buoys, respectively. Two AXIB seasonal buoy prototypes and three open ocean SVP-B drifters were deployed during the cruise.

Bird and Marine Mammal Survey—An observer from the U.S. Fish and Wildlife Service was aboard during the cruise conducting sea bird and marine mammal surveys. They observed 38 seals, 3 polar bears, and 130 birds.