

COMPARISON OF SEABEAM-2112 AND SCAMP BATHYMETRY DATA ALONG THE GAKKEL MID-OCEAN RIDGE; PRELIMINARY MAPPING RESULTS FROM THE HEALY03 ARCTIC CRUISE.

Gregory J. Kurras¹, M.H. Edwards¹, P. Michael², J.R. Cochran³, and B.J. Coakley⁴

¹ Dept. of Marine Geology and Geophysics, School of Ocean Earth Science and Technology, University of Hawaii, Honolulu, Hawaii 96822; 808-956-3593; email: gkurras@soest.hawaii.edu

² Dept. of Geosciences, University of Tulsa, OK 74104

³ Dept. of Geology and Geophysics, Lamont-Doherty Earth Observatory, Palisades, NY 10964

⁴ Dept. of Geology, Tulane University, New Orleans, LA 70118

As part of a joint international effort to understand the largely unexplored Arctic Ocean, the US Coast Guard Cutter *Healy* and the German research vessel *Polarstern* will survey and dredge the Gakkel Mid-Ocean Ridge in the summer/fall of 2001. The expedition is being planned using bathymetry and sidescan data acquired during the joint NSF/US Navy-funded Science Ice Exercises (SCICEX) in 1998 & 1999. In addition to seismic surveys and dredging both ships will acquire multibeam bathymetry: Seabeam 2112 from the *Healy* and Hydrosweep from the *Polarstern*. The acquisition of these two new datasets affords us a unique opportunity to compare data acquired by these survey systems under severe Arctic conditions.

Though comparisons of the bathymetric data from multibeam vs. phase-array sonar are many; the year-round ice cover in the Arctic requires some unique considerations. The SCAMP system is a hull-mounted 12 kHz phase array sonar build onto a US Navy fast-attack nuclear submarine. As nuclear submarines are quite by designed, they provide exceptional survey platforms. The quiet platform, ability to survey from below the near-surface thermocline, and ship stability produce excellent acoustic data; however, navigation is possible only by inertial guidance systems. The Seabeam-2112 system is a hull-mounted 12 kHz multibeam system mounted onto the *Healy*. Multibeam systems general produce very high quality bathymetry data; however, the disadvantage in the Arctic is that the sonar must operate in an environment of severe noise during icebreaking operations. Navigation onboard the *Healy* will be through DGPS. The comparison between the SCAMP and Seabeam bathymetry will use select regions to examine the quality of bathymetric data location and spatial resolution.