Figure 1. Frank Bahr, Andrey Proshutinsky, and Richard Krishfield with the 6 ASL ULSs.

ASL instruments will soon be put to the test as part of a study aimed at collecting data on sea ice thickness in the Arctic Ocean. This summer, 6 of ASL's Model IPS-5 Upward Looking Sonar (ULS) instruments will be deployed for use in the Canada Basin Experiment (CBEX) to observe (or measure) sea ice thickness variability, which is funded by the US Office of Naval Research. The addition of ASL's ULSs will contribute to the Canada Basin Acoustic Propagation Experiment (CANAPE), taking place between 2016-2017 which is conducted by Scripps Institution of Oceanography and Woods Hole Oceanographic Institution.

This project will provide further insight to the larger Beaufort Gyre Observing System (BGOS) field program that has been in operation since 2003. With the help of ASL's ULS instruments, CANAPE will be able to provide an unprecedented coverage of the Canadian Basin for quantifying spatial variability of sea ice thickness in all seasons.

ASL's Model IPS-5 ULS instruments will be deployed beneath the Arctic ice pack on 6 CANAPE bottom-tethered moorings in the Canada Basin (location indicated in Figure 1) to obtain ice draft measurements. These instruments will provide over 15 million observations per mooring per year, and after the seawater corrections are applied, the accuracy of each acoustic range measurement is better than ±10 cm (Melling and Riedel, 1995).

The major products of scientific and practical importance of this study will be the processed observational data from instruments used as well as a synopsis of how and why sea-ice conditions and water stratification in the Canada Basin have evolved since 2003 to 2017, with a focus on conditions observed during the 2016-2017 CBEX observations. The project will provide sound estimates of the consequences to sea ice from changes in any of the forcing mechanisms, and causal mechanisms of sea-ice variability at different time scales, which will be essential for more reliable sea ice predictions.
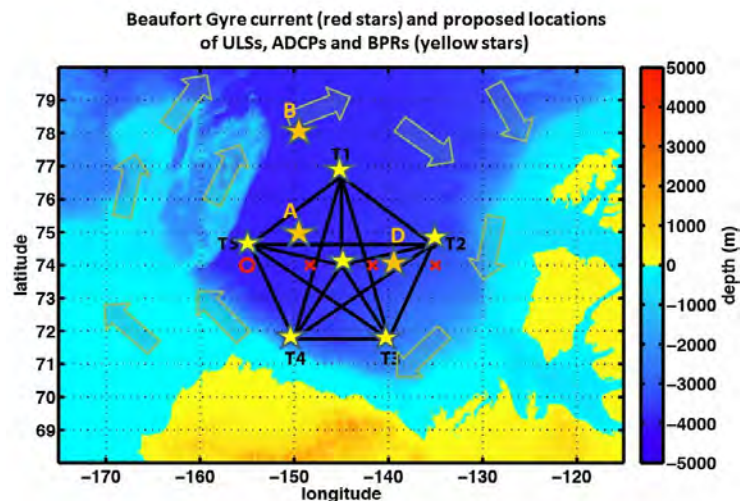

Figure 2. Stars show location of ASL's ULS instruments. A,B,C – depict locations of ULS at BGEP moorings where observations have been conducted since 2003 while small yellow stars indicate locations of CBEX program instruments.

To find out more information on the Model IPS-5 Upward Looking Sonar (ULS) instrument check out http://aslenv.com/ips.html, and to learn more about the study, see http://www.whoi.edu/beaufortgyre/expeditions.

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