

Mooring in Western Bering Strait

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Mass, Salt and Heat Fluxes in Western Bering Strait: US Mooring Program



Sarah Thornton and mooring float. Photo K. Wood

One of the main objectives of the RUSALCA program is to conduct a coordinated and quantitative study of the transport and water properties in the Bering Strait

during 2004-2005. We wish to

1. Quantify the variability in the transport and properties of the Pacific Ocean waters flowing through Bering Strait,
2. Improve upon estimates of the mass, salt, and heat fluxes here, and
3. Develop cost-effective approaches for future monitoring of this critical connection between the Pacific and Arctic oceans. To this purpose, we are making measurements of the salinity, temperature, velocity, fluorescence, and transmissivity in the western channel of Bering Strait at hourly intervals for the period of one year. Measurements are being made from a single mooring deployed in the center of the western channel of Bering Strait. The mooring contains an Aanderra RCM9 MKII acoustic current meter (S/N1173) at approximately 34 m water depth for measuring velocity and a SeaCat SBE-16 T/C recorder (S/N 4693) with attached WetLabs Eco-Fluorometer at approximately 32 m water depth for the temperature, salinity, fluorescence and transmissivity measurements. The mooring hardware includes an acoustic release EG&G 8242XS from ORE

Offshore (S/N 30593), one 30" syntactic float at the top of the mooring, 5 Vinyl-floats above the release, and an anchor weighing approximately 700kg.

Mooring operations for this expedition were conducted on 16 and 17 August 2004. After completing deployment of the Russian mooring at A1-R, we traveled to the US mooring proposed location A1-U. A CTD cast was conducted by the WHOI group on the mooring site to calibrate the salinity, temperature, fluorescence and transmissivity sensors. Following the CTD, the mooring was deployed 'anchor-last' after streaming the floats and sensors astern of the ship while traveling at approximately 2 knots. The floats and sensors were towed for approximately 15 minutes before the anchor was released. Location and time of mooring anchor drop were obtained from three (3) GPS systems (handheld on the back deck, in the CTD lab, and on the bridge). All three positions were very similar. Location from the CTD GPS is N 65 53.964, W 169 26.026 at 12:17:18Z on 17 August 2004. Water depth at the mooring location is 50.4 m. Depth was established from the pressure + altimeter readings from the CTD cast prior to deployment.

Mooring operations were conducted in a safe and efficient manner. We would like to thank the personnel aboard the Prof. Khromov and the Russian mooring technicians with the expedition (I. Lavrenov, S. Ipatov) for their assistance.

The mooring was deployed in the center of the channel at approximately the position of the A1 mooring previously deployed in the western channel from 1990-1993. The

Russian mooring (A1-R) was deployed approximately 7 miles to the east, also in the western channel, which will provide some resolution of cross-strait differences in water mass transport. Comparison of the two data records is anticipated upon recovery of these moorings. It is anticipated that recovery of the moorings will occur during the late summer/early fall of 2005; however, the recovery expedition has not yet been planned, which is of some concern. Our long-term goal is to obtain continuous and comprehensive monitoring within Bering Strait for several years. These two moorings are hopefully just the first in a continuing series of moorings to meet this goal.

Sarah Thornton, Research Technician, University of Alaska Fairbanks was the mooring technician for the A1-U mooring and participated in the RUSALCA Expedition. The mooring was designed by David Leech, Mooring Technician (UAF) under the direction of Dr. Tom Weingartner (UAF).



Preparations for mooring in the western Bering Strait. Photo: T. Whitledge