

Beaufort Gyre Exploration Project: Funding Agencies

The Beaufort Gyre has been characterized in the past as the region of "relative inaccessibility" because of the difficulty of accessing the area by icebreaker due to heavy ice conditions and by airplane due to its remoteness from the mainland. As a result, the area is one of the most poorly sampled regions in the Arctic Ocean. In 2002, the [National Science Foundation \(NSF\)](#), Office of Polar Programs recognized the great importance of the Beaufort Gyre in the fresh water balance of the Arctic Ocean and funded the "Beaufort Gyre Freshwater Experiment (BGFE): Study of fresh water accumulation and release mechanism and a role of fresh water in Arctic climate variability" (Principal Investigator, Andrey Proshutinsky). The major goal of this project is to investigate basin-scale mechanisms regulating freshwater content in the Arctic Ocean and particularly in the Beaufort Gyre throughout a complete annual cycle (see [Background](#)). As part of the field experiment for this project, three bottom-tethered moorings were deployed with CTD and velocity profilers, upward looking sonars for ice draft measurements, and bottom pressure recorders, and four expendable surface buoys with CTDs (see [Instruments](#) for details) during a Joint Western Arctic Climate Study (JWACS) cruise on the Canadian Coast Guard Icebreaker *Louis S. St. Laurent* (LSL) in August 2003 (see [2003 Cruise](#)). This was the beginning of a long-term collaboration with researchers from Fisheries and Oceans Canada at the Institute of Ocean Sciences to conduct hydrographic surveys and deploy moorings from the LSL.

However, given the importance of this region for Arctic climate studies, it was desired to investigate interannual and longer variability, so that it was necessary to continue acquiring the same data for several years, although the observational program supported by NSF would end with recovery of the moorings in 2004. In 2004, WHOI's Ocean and Climate Change Institute provided the support to redeploy the three moorings in order to continue monitoring freshwater and heat content in this climatically sensitive region of the Arctic Ocean, thus establishing the Beaufort Gyre Observing System (BGOS).

In 2004, NSF granted a 5-year proposal "The Beaufort Gyre System: Flywheel of the Arctic Climate?" so that all of the moorings were recovered in 2005 (with additional support from the WHOI Ocean and Climate Change Institute), and redeployed and then maintained until 2008 with NSF support.

In 2008, NSF provided additional support to continue observational activities in the BG region during the [International Polar Year](#) (2008/2009) to document the unprecedented changes in sea ice and ocean parameters occurring there.

In 2009, NSF granted a 5-year proposal "AON: Continuing the Beaufort Gyre Observing System to Document and Enhance Understanding Environmental Change in the Arctic" to continue observations in the Beaufort Gyre under the umbrella of the Arctic Observing Network program of NSF in 2009-2013. It was recognized that the continuation of the BG program is essential to solidify or challenge presumed causes particularly during the time of rapid Arctic change.



[National Science Foundation](#)

The National Science Foundation is an independent U.S. government agency responsible for promoting science and engineering through programs that invest over \$3.3 billion per year in almost 20,000 research and education projects in science and engineering. The BGFE project is funded by the Office of Polar Programs grant numbers ARC-0230184, ARC-0424824, ARC-0532754, ARC-063399, ARC-0631951, ARC-0722694, ARC-0806115, ARC-0938137.



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WHOI is a private, nonprofit research facility dedicated to the study of marine science and to the education of marine scientists. It is the largest independent oceanographic institution in the world. Support to continue the BGFE field program for a second year is being provided by the Ocean and Climate Change Institute.



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Last updated: June 24, 2011

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