

Circulation and generation of the North Water Polynya, Northern Baffin Bay

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The North Water (NOW) is a recurring polynya in Smith Sound, at the Northern extremity of Baffin Bay. A four year (1997-2000) research program was funded to study, among other things, the oceanographic and meteorological processes responsible for the generation and maintenance of the North Water. Close to 550 CTD profiles were obtained between April 1997 and October 1999, while nine (9) moorings were maintained between August 1997 and August 1999. The polynya circulation is dominated by a strong, cold southward flow, the Baffin Current, and a weaker but warmer northward flow, the West Greenland Current. The latter veers westward at least three different latitudes, while its northern reach is still poorly documented and is believed to vary with the seasons. Strong mixing is observed in the central region where the warm and salty northward flow meets the southward flowing colder and fresher water. The polynya is formed when an ice jam blocks the southward motion of ice floes. Warmer air and water masses on the Greenland side contribute to the early opening of the polynya near the Greenland coast.

