



WOODS HOLE OCEANOGRAPHIC INSTITUTION

Final CRUISE REPORT – KN203

Cruise Summary

RATS Application Number: F2011-004

Coastal State: Iceland / **Approval Number:** UTN11020079/34.R.611

Coastal State: Greenland / **Approval Number:** JTF,j.nr.55.DAN.9-8

Coastal State: Faroe Islands / **Approval Number:** JTF,j.nr.55.DAN.9-8

Coastal State: Denmark / **Approval Number:** JTF,j.nr.55.DAN.9-8

Coastal State: Jan Mayan / **Approval Number:** 1.2.2011,19.8.-24.9.2011, Jnr 11/1615

Coastal State: Norway / **Approval Number:** 1.2.2011,19.8.-24.9.2011, Jnr 11/1615

Vessel: KNORR

Cruise ID: KN203

Dates: Aug 22 2011 – Sep 22 2011

Scientific Objective

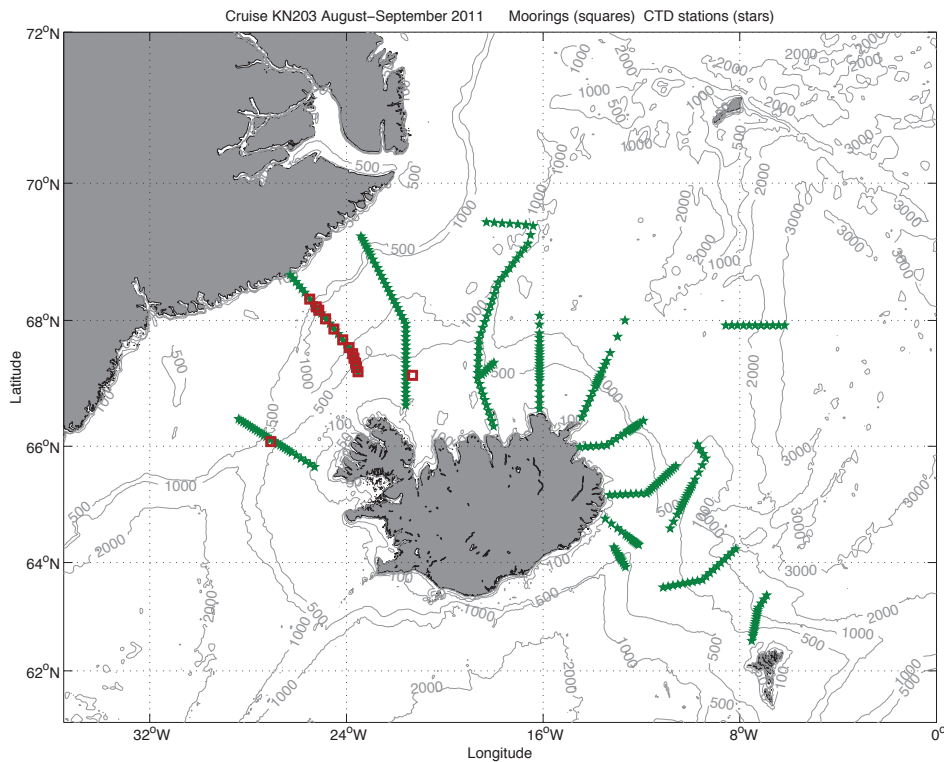
This project investigated the sources of water feeding the Denmark Strait Overflow Water. It was a collaborative field program between the Woods Hole Oceanographic Institution, the Marine Research Institute of Reykjavik, the University of Bergen, and the Netherlands Institute for Sea Research. We deployed a year-long set of moorings from August 2011 to August 2012, and carried out a shipboard hydrographic/velocity survey of the region during the mooring deployment and recovery cruises. Moorings were maintained upstream of the Denmark Strait sill in the major components of the circulation, as well as in the overflow water at the sill itself. The main scientific objective of the program was to quantify the different water mass components, transports, and pathways feeding the overflow water, and to understand the dynamics of the warm-to-cold conversion of water that forms the overflow. Results from this program were published in the paper listed at the end of this report.

Principal Investigators

1. Robert Pickart, Chief Scientist, Woods Hole Oceanographic Institution, Woods Hole, MA 02543 USA
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4. Kjetil Våge, University of Bergen, Bergen, Norway
5. Laura de Steur, Institute for Research of the Sea, Texel, Netherlands

Measurements

A total of 15 moorings were deployed during the cruise. Following this, 335 conductivity-temperature-depth (CTD) stations were occupied comprising 16 sections. During each CTD cast, water samples were collected at discrete intervals and analyzed for salinity in order to calibrate the conductivity sensors. At selected stations and selected depths water was also collected for measuring dissolved oxygen, O-18 oxygen isotope and nutrients. The hull-mounted acoustic Doppler current profiler (ADCP) was operated throughout the cruise. See the figures below for the positions of the moorings and hydrographic stations.



Results

The data obtained from this cruise led to the submission/publication of the following paper:

Våge, K., R.S. Pickart, M.A. Spall, G.W.K. Moore, H. Valdimarsson, D.J. Torres, S.Y. Erofeeva, and J.E.O. Nilsen, 2013. Revised circulation scheme north of the Denmark Strait. *Deep-Sea Research I*, **79**, 20-39.