

Cruise Information for Pickart Knorr Cruise, Summer 2011

1. Media Information

We have two types of outreach. (1) A team of 4-5 people will be performing outreach for the general public and for school children in roughly 10 schools. We will have onboard 1-2 teachers, a writer, a photographer, and a videographer. (2) We will have a camera-person from National Geographic TV onboard, filming for an episode in an upcoming series about the oceans.

2. Cruise Information

Science Objectives

This project investigates the sources of water feeding the Denmark Strait Overflow Water. It is a collaborative field program between the Woods Hole Oceanographic Institution (WHOI), the Marine Research Institute of Reykjavik (MRI), the University of Bergen (UIB), and the Netherlands Institute for Sea Research (NIOZ). Our approach is to deploy a year-long set of moorings from August 2011 to August 2012, and carry out a shipboard hydrographic/velocity survey of the region during the mooring deployment and recovery cruises. Moorings will be 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 (see the attached figure showing the mooring locations). The main scientific objective of the program is 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.

Science Activities

The primary activities on the 2011 cruise are as follows:

(i) *Mooring Work* (see the attached figure showing the mooring locations). We will deploy 12 new moorings across the northern part of Denmark Strait along the Kogur Line (Note: a PIES instrument will also be deployed along the line for IFM-Hamburg). Additionally, we will turn-around 4 existing moorings, 1 near the Denmark Strait sill and 3 to the northeast at the Hornbanki Line.

(ii) *CTD Survey* (see the attached figure showing tentative CTD lines). We will carry-out a CTD survey, on the order of 300 full-depth casts. Water sampling will be minimal (salt samples only).

(iii) *Velocity survey*. We will use the vessel-mounted ADCPs extensively to survey the water currents.

3. General Operations Area

The area of operations is the vicinity of northern Iceland, extending eastward to the Faroe Island and northward to Jan Mayan Island (see the figure showing the tentative CTD lines).

Latitude: 60°–72° N

Longitude: 33°–2° W

Depth range: 200m–3500m

We will operate inside the EEZ of the following countries: Iceland, Denmark (Greenland and the Faroe Islands), Norway (Jan Mayan Island).

Departure: August 22, 2011 from Reykjavik, Iceland

Arrival: September 22, 2011 in Isafjordur, Iceland

Note: After the mooring work is completed (approximately 10 days into the cruise) we will drop off 7 members of the science party (including the mooring technicians) at a coastal town in northern Iceland. This will likely be Siglufjordur (see the attached map of Iceland). This requires use of the small boat (this has already been discussed with the port office and the master).

Mooring Locations

(i) Kogur Array (approximate)

25.24°W 68.20°N

23.53°W 67.20°N

23.57°W 67.25°N

23.63°W 67.34°N

23.69°W 67.41°N

23.75°W 67.49°N

25.12°W 68.15°N

24.51°W 67.87°N

24.85°W 68.02°N

25.51°W 68.32°N

24.17°W 67.71°N

23.90°W 67.58°N

(ii) Hornbanki Array

21.41°W 66.90°N

21.54°W 67.00°N

21.31°W 67.15°N

(iii) Denmark Strait Sill Array (note: only one of these will be serviced during the cruise).

27.09°W 66.08°N

27.27°W 66.12°N

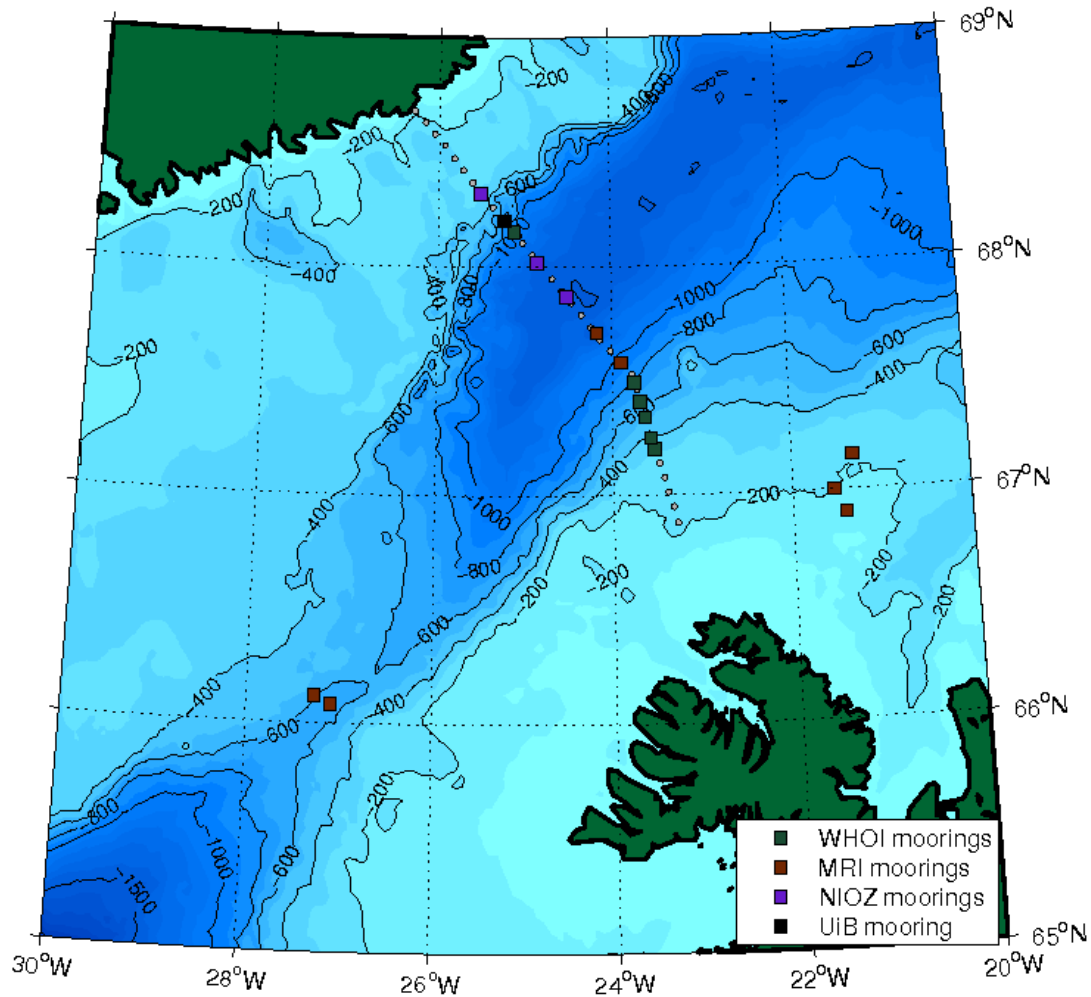


Figure 1: Mooring Locations. The southern-two moorings are referred to as the Denmark Strait Sill Array (only one of these moorings will be serviced on the cruise). The 12-mooring array across the northern part of the strait is called the Kogur Array (there is also a PIES that will be deployed along this line that is not indicated in the figure). The three moorings to the east constitute the Hornbanki Array (all of them will be serviced on the cruise).

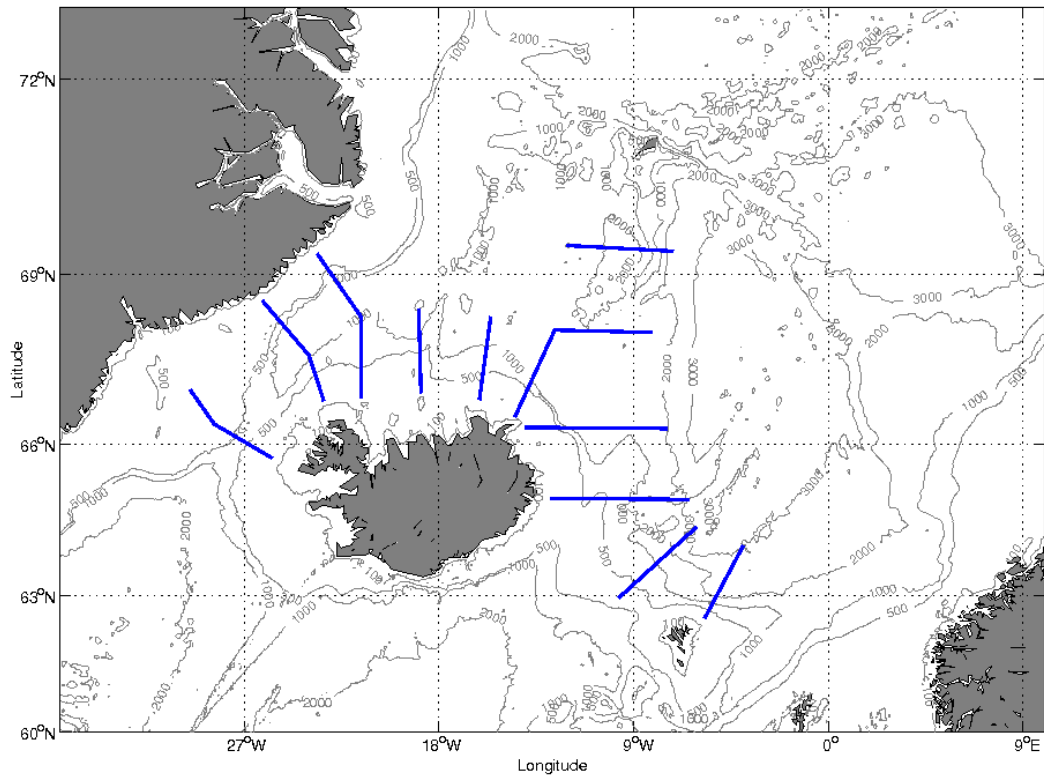


Figure 2: Tentative CTD sections (blue lines) to be occupied on the cruise.

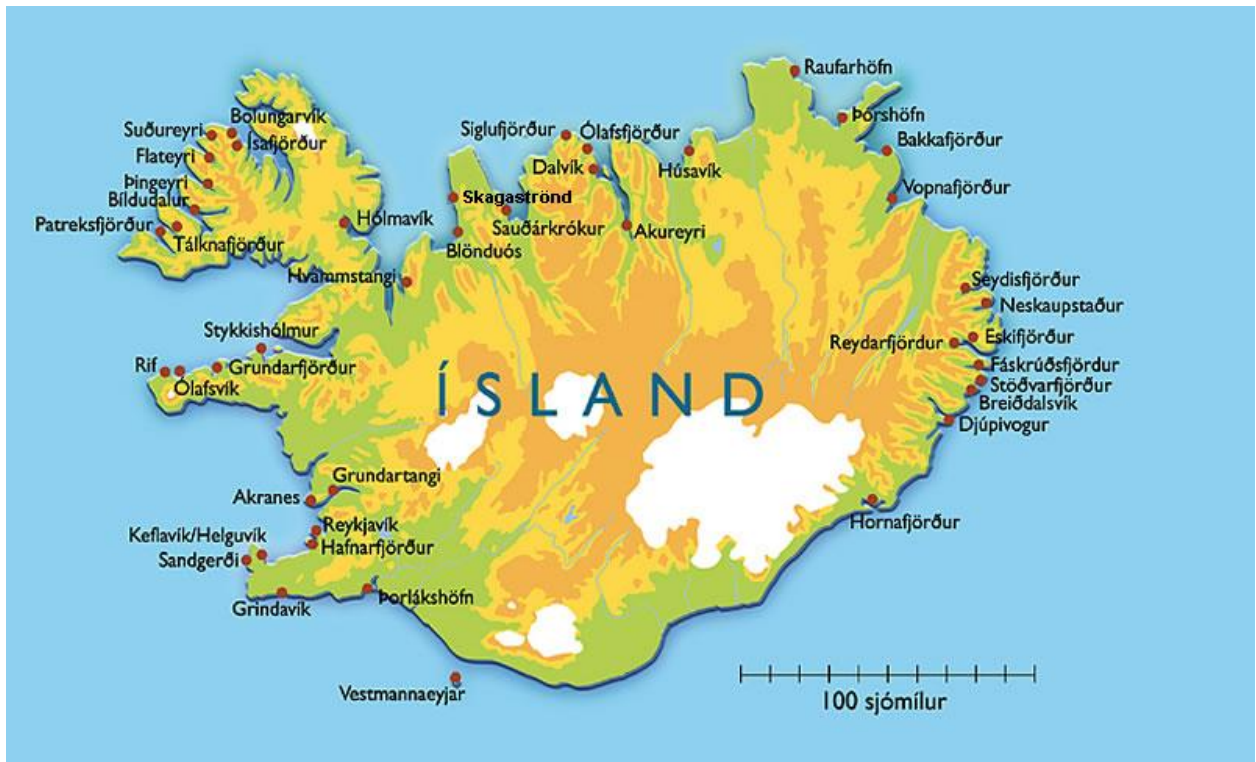


Figure 3: Map of Iceland showing the coastal towns. Seven members of the science party will likely be dropped off in Siglufjörður (northern Iceland) after the mooring work is completed (roughly 10 days into the cruise).