



Variability of volume and heat transport of water masses on the north Icelandic shelf

Steingrimur Jonsson (1) and Hedinn Valdimarsson (2)

(1) University of Akureyri, Marine Research Institute, Akureyri, Iceland (steing@unak.is, +354-4608972), (2) Marine Research Institute, Reykjavik, Iceland (hv@hafro.is)

The flow of Atlantic water to the Nordic Seas is a part of the MOC. In the Denmark Strait, between Greenland and Iceland, the warm and saline Atlantic Water of the Irminger Current meets the cold and relatively fresh Polar Water of the East Greenland Current. A mixture of these two water masses then flows along the shelf north of Iceland and it can vary from being almost pure Atlantic Water to consisting nearly entirely of Polar Water. Therefore the North Icelandic shelf is an area that shows highly variable hydrographic properties. The relative amount of the water masses to some extent determines the productivity and the living conditions on the shelf north of Iceland and also affects climate on land. To determine the flow along the shelf, the Marine Research Institute in Iceland has been monitoring the flow with current meters on a section north of Iceland since 1994 making it one of the longest continuous records of flux estimates in the North Atlantic. Between 1994 and 1999 current meter measurements were made on a single mooring but after that the measurements were extended to three moorings. Measurements with a vessel mounted ADCP have been done on several occasions during this time. Together with the current measurements, CTD measurements have been made on standard sections in the area. All these measurements are used to study the structure of the flow and its variability. The amount of both Atlantic and Polar water masses carried by the flow are calculated as well as the associated heat transport. In the period 1994-2009 the flow consisted on the average of 67% of Atlantic Water and the associated heat transport was estimated to be 23 TW. In 2009 the moorings were equipped with ADCPs at all moorings giving more information on the vertical structure of the flow. The flux of the different water masses as well as the heat transport for the period from 1994 – 2010 will be discussed and the influence on conditions over the north Icelandic shelf.