

## **A 2000 year record of climate and hydrography on the North Icelandic Shelf**

Helga Bára Bartels Jónsdóttir (1,2), Karen Luise Knudsen (2) og Jón Eiríksson (1),

(1) Earth Science Institute, University of Iceland, IS-101 Reykjavík, Iceland

(2) Department of Earth Sciences, University of Aarhus, DK-8000 Aarhus C, Denmark

[helgabara@geo.au.dk](mailto:helgabara@geo.au.dk)

For the understanding of natural climate variability and for the determination of anthropogenic influences, it is important to look at high resolution natural archives that capture annual to centennial climate variability. Sedimentary basins on the North Icelandic Shelf have the advantage of high sedimentation rates, allowing a sufficient temporal resolution for important information about past oceanographic and climatic changes. The present study focuses particularly on the last 2000 years, a time interval which includes both the historical time in Iceland and the time when the anthropogenic forcing became significant.

Benthic and planktonic foraminiferal assemblages and stable isotopes were investigated in one sediment core (MD992275) from the Eyjafjarðaráll trough on the North Icelandic Shelf. Sea surface- and bottom water temperatures have been reconstructed based on the oxygen isotopes of *Neogloboquadrina pachyderma* (sinistral), *Melonis barleeanus* and *Islandiella norcrossi*. On the basis of the foraminiferal data and the SST and BWT reconstructions, five relatively long, hydrographically different time intervals have been recorded within the last 2000 years. It is interesting to compare these distinct intervals with the well known although loosely defined historical stages in Europe, the Roman Warm Period, The Dark Ages, Medieval Warm Period, the Little Ice Age and then, finally, the warming in the 20th century. The time period between 79 BC and AD 500, including the so-called Roman Warm Period, was characterised by relatively high bottom and surface water temperatures explained by relatively strong inflow of Atlantic water masses, particularly the palaeo-Irminger Current. During the Medieval Warm Period (AD 900 and AD 1300) the strength of the Irminger Current was further enhanced. The Dark Ages (AD 500 to 900) and the Little Ice Age (AD 1300 to 1900) are characterised by decreased sea-surface temperatures, most probably caused by intensified influence of the East Icelandic Current forming a cold tongue of surface water north of Iceland. During the last century, an amelioration of the temperature is indicated in the benthic and planktonic foraminiferal data from the North Icelandic Shelf.

Future studies on high resolution sediment cores from the North Icelandic Shelf as well as other natural archives from the North Atlantic will contribute to better understanding on the climatic changes during the last millenium, and provide important data to resolve the human impact versus natural variability enigma.