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The development of Atlantic Water heat content on its way through the Arctic Ocean

C. Koeberle, R. Gerdes, and F. Hacker

Alfred-Wegener-Institut fuer Polar- und Meeresforschung, Klimasystem, Bremerhaven, Germany (ckoeberl@awi-bremerhaven.de)

In the light of a warming Arctic Ocean there has been a lot of speculation on the role of the heat that is imported into the Arctic Ocean with the Atlantic Water. If this heat would be available, e. g. for ice melting, that could account for a lot of the recently observed and for the future expected ice loss.

We use a coupled ocean-sea ice model and the NCEP/NCAR atmospheric forcing data from 1948 until 2008 to trace inflowing Atlantic Water all the way around the Arctic from sections at 65N and 79N respectively. Marking a water mass of interest allows to see how much of the imported heat is lost and where to.

An exactly comparable tracing is unfortunately not possible for hindcast simulations of the IPCC 4th assessment due to unavailable output. Nevertheless we will show integral calculations of heat loss over the same sections for some good hindcast models and roughly approximate the results of our own model by looking e. g. at the areas of highest heat loss.