



## **North Atlantic Current variability as observed by two decades of XBT measurements**

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In the framework of the German contribution to the Ship-of-Opportunity program (SOOP) temperature measurements in the North Atlantic have been carried out since 1988. The timeseries of XBT measurements along the AX-03 line (English channel to Grand Banks, continuing to Halifax or New York) is without major interruptions and will be used to investigate interannual to decadal temperature changes in the highly variable transition region between the subtropical and subpolar gyre.

Along the western part of the section changes of the separation latitude of the North Atlantic Current (NAC) are observed, showing a tendency for warmer waters to penetrate farther north between 1999-2006 compared to the period 1988-1998. However, interannual variability is on the same order of magnitude and masks the signal in some years. Based on XBT data only it is impossible to distinguish if the 1999-2006 warming is a trend or decadal variability. The variability in the eastern basin reveals a qualitative similar behavior, although with smaller variability amplitudes. Combining both findings the observations indicate a basinwide northward shift of the NAC and the subtropical gyre until 2006. Heat content changes at the western boundary amount to about  $5 \cdot 10^9 \text{ J/m}^2$ , along the eastern boundary to about  $2 \cdot 10^9 \text{ J/m}^2$ . Applying XBT fall rate corrections to the original data does not reveal a significant change of the variability behavior.