



Transport variability in the North Atlantic Current inferred from satellite altimetry

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The subpolar gyre is one of the key regions for the formation of water masses with a strong impact on the global circulation of the ocean. The North Atlantic Current (NAC) transports warm subtropical water to the subpolar and polar regions. These water masses cross the Mid Atlantic Ridge through the Charlie Gibbs fracture zone at 52°N - 53°N, the Faraday fracture zone at 50°N and the Maxwell fracture zone at 48°N into the eastern basin. In various studies it is shown that this circulation was weaker in the late 1990s than in the late 1970s and 1980s. Since the variability of the NAC has a direct effect on the western European climate it is an important study region.

One method for gaining information on large scale variability is satellite altimetry. Therefore three different datasets of the Jason-1 mission (2003-2009) are compared. The RADS (Radar Altimetry Database System) dataset and two datasets from AVISO, the vfec (filtered and sub-sampled) and the vxxc (neither filtered nor sub-sampled) dataset.

Another method to measure the changes of the NAC transports and the subpolar gyre are integral estimates by moored instruments. Four Pressure Inverted Echo Sounders (PIES') were placed along the Mid Atlantic Ridge at a depth of about 3 400 m - 4 000 m and distributed along 47°N - 53°N. The results of the moored PIES' will be compared with the altimetry calculations.