Geophysical Research Abstracts,
Vol. 11, EGU2009-2563, 2009
EGU General Assembly 2009

Variability of water mass properties and transport based on 60N transatlantic section data

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The study is based on the data from 8 repeated latitudinal transatlantic sections along 60N carried out by the Russian research vessels in 1997–2008 within the framework of the Russian research program "Meridian-plus". The transition from colder/fresher to warmer/saltier conditions in the intermediate and deep levels of the Subpolar North Atlantic during the past decade was revealed by the recent study based on the 60N section data [Sarafanov et al., 2007]. In 2007-2008 we found an opposite tendency: the intermediate and deep waters had become slightly colder and fresher. We also focused on the water mass transport changes over the 60N section. The meridional cross-sectional velocity was assessed as the sum of three components: geostrophic, drift, and barotropic (AVISO absolute sea level topography). The total transport in the surface layer does not differ significantly from year to year being 11–13 Sv (positive values indicate northward transport). The Iceland Intermediate Water transport ranges from 3 to 8 Sv. The Labrador Sea Water (LSW) is transported from the region to the north of the section at rates of –6 to –10 Sv contributing to deep water export. The deep waters, ISOW and DSOW, supply the North Atlantic southward outflow with 7–11 and 2–4 Sv respectively.