



Using Argo data to investigate the Meridional Overturning Circulation in the North Atlantic

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The mean net upper meridional transport obtained with Argo data in the North Atlantic at 24N and 36N during the three year period 2003-2005 is presented and compared with previous estimates. The transport is estimated by means of inverse calculations applied to Argo float profiles, drift velocities from Argo floats and direct volume transports in the Florida Strait. For the inverse solution, the upper ocean, from the surface down to 1600 m, is divided into 7 layers of neutral density, and mass conservation constraints have been applied to a closed box bounded by these latitudes, including the Florida Strait. Ekman layer transports have been included in the top-most layer, and the inverse calculation has solved for changes from the initial reference velocities, Ekman and Florida Strait transports, given *a priori* estimates on the accuracy of each of these quantities. Our results indicate that 1) time-averaged transport estimates derived from Argo data have significant less eddy noise than individual hydrographic sections, 2) the southern recirculation gyre of the Gulf Stream at 36N is broader and deeper than earlier estimates, and 3) comparison of the total integrated interior mass transports in the thermocline waters for the period 2003-2005 with the previous estimates using inverse model based on trans-ocean hydrographic sections shows that the Meridional Overturning Circulation has not significantly changed since 1957.