



Mean circulation and variability of the tropical Atlantic during 1992-2002 in the ECCO assimilation fields

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For studying the overall regional variability in the tropical Atlantic, while being close to observations, the adjoint assimilation model ECCO is analyzed. ECCO was run with a horizontal resolution of 1×1 for the years 1992 – 2002. The mean circulation and transports are found in basic agreement with previously published observations despite the coarse horizontal resolution of the model. The small off-equatorial eastward undercurrents north and south of the equator are not reproduced; instead, the Equatorial Undercurrent (EUC) spans a greater latitude range and is found deeper than in observations. The adjustment of the assimilated surface momentum fluxes from the initially used NCEP fluxes is found to lead to a stronger Ekman divergence between $10^{\circ}N$ and $10^{\circ}S$ than from NCEP or ERS wind fields alone. This is most pronounced in the mean seasonal cycle but less in the anomalies. One focus is the variability of the Subtropical Cells (STCs) between $10^{\circ}N$ and $10^{\circ}S$, which is found to be small and not significantly related to equatorial upwelling. The respective contributions of different segments of the $10^{\circ}N$ and $10^{\circ}S$ sections to variations of the Meridional Overturning Circulation and heat transport during the running time of the ECCO assimilation are discussed.