



Global mass transport estimation in the 50-year GECCO assimilation

W. Wang, A. Köhl, D. Stammer

Institut für Meereskunde, Center for Marine and Atmospheric Sciences, Universitaet Hamburg

Global mass transport estimation is being analyzed from the numerical results obtained from the German ECCO (GECCO) assimilation results for the period 1952-2001 on a 1° global grid. The model combined most of the World Ocean Circulation Experiment (WOCE) observations by using the model's adjoint to modify the initial temperature and salinity conditions over the full water column and to adjust the time-varying meteorological forcing fields over the full estimation period. For convenience, several neutral surfaces are selected to identify four density classes, which are marked by upper, intermediate, deep and bottom water. Examination of the three-dimensional mass flux field agrees well with a number of global and basin-scale circulation features quantitatively and even gives more fine structures of ocean circulation on global scale, such as vertical-meridional overturning rate in the three major basins and the transport through some major passages.