



North Atlantic large-scale 1992-2001 variability in five ocean hindcasts and one reanalysis

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Recent climate variability studies require the combined investigation of disparate ocean in-situ/satellite data, and numerical experiments. Ocean reanalyses, where large amounts of observations are assimilated into numerical models, provide syntheses based on both types of information.

The present study aims at describing, comparing and assessing over 1992-2001 the variability of large-scale circulation indexes (e.g. Barotropic Stream Function, Meridional Overturning Circulation, Meridional Heat Transport, at basin scale and along the 24°N and 48°N repeated sections) obtained from six recent model integrations. These are four 50-year global ocean simulations from the DRAKKAR project at 2°, 1°, 1/2°, and 1/4° resolution, the 10-year MERA11 North Atlantic 1/3° reanalysis performed by Mercator-Océan, and its unconstrained counterpart.

Model intercomparisons are presented. Differences reveal the impact of model resolution (among the DRAKKAR hierarchy) and sequential data assimilation (among MERA realisations) on the means and variabilities of these indexes, as well as on their continuity over time and space in the case of assimilation. Complementarily, common features among this 6-member hindcast ensemble exhibits robust features of the actual ocean variability, as well as their forced character.