

AMOC in Coordinated Ocean-seaice Reference Experiments (COREs)

Gokhan Danabasoglu¹, Steve Yeager¹, David Bailey¹, Helge Drange², and
CORE participants

¹ National Center for Atmospheric Research, Boulder, CO, USA

² University of Bergen, Bergen, Norway

The CLIVAR Working Group on Ocean Model Development (WGOMD) has recently finalized an experimental protocol for the Coordinated Ocean-seaice Reference Experiments (CORE-II) forced with inter-annually varying atmospheric data sets for the period 1948-2007. These hindcast simulations provide a framework to evaluate ocean model performance, to study mechanisms of ocean phenomena and their variability from seasonal to decadal timescales, to identify forced variability changes, and to develop mechanistic descriptions of observed climate variability and change. Furthermore, they represent an alternative option to data assimilation in providing ocean initial conditions for decadal prediction simulations. There are about 15 major ocean modelling groups from around the world participating in the CORE-II project. Our hypothesis is that models forced with the same CORE-II data will produce similar solutions. In this study, we test this hypothesis, considering the mean state and variability in the North Atlantic with a focus on the Atlantic meridional overturning circulation and deep-water formation. We highlight similarities as well as differences in model solutions with important implications for variability mechanism and decadal prediction studies.