Geophysical Research Abstracts
Vol. 14, EGU2012-871, 2012
EGU General Assembly 2012

Mechanisms and impacts of decadal-scale fluctuation events in the Atlantic Meridional Overturning Circulation in unforced climate model simulations

L. C. Allison (1), E. Hawkins (1), T. Woollings (2), and L. Jackson (3)

(1) NCAS-Climate, Department of Meteorology, University of Reading, Reading, United Kingdom (l.c.allison@reading.ac.uk), (2) Department of Meteorology, University of Reading, Reading, United Kingdom, (3) Hadley Centre, Met Office, Exeter, United Kingdom

Variations in the strength of the Atlantic Meridional Overturning Circulation (AMOC) have the potential to influence various aspects of climate. Understanding the mechanisms behind decadal-scale AMOC variability in atmosphere-ocean general circulation models (AOGCMs) is likely to be important for making future predictions of climate variability, may also help us to understand possible mechanisms for a large abrupt weakening of the circulation, and could help explain the difference in AMOC stability between AOGCMs and lower-complexity models.

As part of the RAPID-WATCH RAPIT (Risk Assessment, Probability and Impacts Team) project, we examine the largest decadal-scale natural fluctuations in AMOC strength within a variety of coupled AOGCM control simulations. We aim to identify precursors and climatic impacts associated with these AMOC fluctuation events, and assess their robustness across the events in each model, and across the different models. We then compare the models' AMOC event fingerprints with decadal-scale Atlantic warming and cooling events in the observational record.