Geophysical Research Abstracts
Vol. 15, EGU2013-8392, 2013
EGU General Assembly 2013

Improved predictions of global climate in the decade ahead using a new version of the Met Office Hadley Centre Decadal Prediction System

Jeff Knight, Martin Andrews, Doug Smith, Alberto Arribas, Nick Dunstone, Craig Maclachlan, Drew Peterson, Adam Scaife, and Andrew Williams

Met Office Hadley Centre, Exeter, United Kingdom (jeff.knight@metoffice.gov.uk)

The Met Office Hadley Centre Decadal Prediction System (DePreSys) produced the first initialised short-term climate prediction in 2007. It showed, for the first time, that climate prediction up to a decade ahead was improved by including an accurate representation of the initial state of the ocean and atmosphere. Decadal predictions have subsequently been produced by a wide range of climate modelling centres, and this activity is an important new feature of IPCC AR5.

Here, results from a comprehensively revised version of the Decadal Prediction System (DePreSys version 2) will be presented. The key enhancement is the use of the Met Office's latest climate model HadGEM3 within the forecast system (as opposed to the HadCM3 model used in the original system). This has approximately doubled the horizonal resolution of HadCM3, and quadrupled the number of vertical levels, in both atmospheric and oceanic components. In addition, the atmospheric component has an improved dynamical core, fully revised parameterisations, and is coupled to a different ocean model (NEMO). The initialisation methodology is essentially the same as for DePreSys version 1. Taking a global overview, indices of local predictive skill show significant improvements for key surface variables across a range of timescales relative to the previous system. In particular, there appears to be more skill in predicting multiannual to decadal variability in the Pacific Ocean and regions with which it has teleconnections. A forecast for global climate over the next few years produced by DePreSys version 2 will also be presented.