Geophysical Research Abstracts
Vol. 12, EGU2010-4665-1, 2010
EGU General Assembly 2010

The regional hydrological cycle in an aggressive mitigation scenario

Heike Huebener (1), I. Höschel (2), J. Caesar (3), M. Sanderson (3), U. Cubasch (2), J.-L. Dufresne (4), S. Denvil (4), M. Giorgetta (5), T. Johns (3), J. Körber (2), E. Manzini (6), W. May (7), O.H. Otterå (8), E. Roeckner (5), J.-F. Royer (9), D. Salas y Melia (9), and S. Yang (7)

(1) Hessian Agency for Environment and Geology, Hessian Centre for Climate Change, Wiesbaden, Germany (heike.huebener@hlug.hessen.de), (2) Freie Universität Berlin, Institute for Meteorology, Berlin, Germany, (3) Met Office, Hadley Centre, Exeter, UK, (4) Laboratiore de Météorologie Dynamique du CNRS, Université Pierre et Marie Curie, Paris, France, (5) Max-Planck-Institute for Meteorology, Hamburg. Germany, (6) Istituto Nazionale di Geofisica e Vulcanologia, Bologna, Italy, (7) Danish Meteorological Institute, Copenhagen, Denmark, (8) Bjerknes Centre for Climate Research, Bergen, Norway, (9) CNRM-GAME Meteo-France CNRS, Toulouse, France

An aggressive mitigation scenario named E1 was developed in the EU FP6 Project ENSEMBLES, starting from current concentration levels (scenario path of SRES A1B) and leading to an eventual stabilization of CO2-eq. concentrations at 450 ppm beyond 2100. A set of 10 GCM and ESM is used to simulate climate change until 2100 under the E1 scenario, compared to the baseline A1B scenario. Temperature analysis has shown that in most simulations climate change stays below the 2K warming above pre-industrial levels target.
In this presentation, focus will be on the changes in the hydrological cycle and the avoided climate change under the E1 scenario compared to the A1B scenario.
For the 26 Giorgy-Regions the annual cycles of precipitation change will be shown for the two scenarios. We will discuss the regional signals in view of possible mechanisms causing them. Additionally, we will discuss the contributions of different models to specific signals in the ensemble mean results.
Finally, we will show which climate change signals in the regional hydrological cycle might be avoided by following the aggressive mitigation scenario instead of the A1B path. For some regions, a large effect can be detected. However, in other regions, dangerous climate change might still occur even under the E1 scenario.