Geophysical Research Abstracts
Vol. 14, EGU2012-4939, 2012
EGU General Assembly 2012

Dynamical downscaling of the most recent climate change projections over Africa using REMO

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Within the CORDEX initiative a multi-model suite of regionalized climate change information at a horizontal resolution of about 50km will be made available for the first time for the whole of the African continent. The Climate Service Center (CSC) is taking part in this initiative by applying the regional climate model REMO to downscale several scenarios of different coupled general circulation models (GCMs) for Africa. So far the CMIP5 projections of the Max-Planck-Institute for Meteorology (MPI-M) Earth System Model for the scenarios RCP2.6, 4.5 and 8.5 have been downscaled for the time period from 1950 to 2100.

In this study we investigate projected changes in future climate conditions for the three different concentration pathways. Focus is given to projected changes in the hydrological conditions over the major water basins of the African continent. Furthermore, differences to earlier REMO simulations over the region conducted on the basis of the CMIP3 projections of the MPI-M GCM are also examined. This comparison allows to judge on the magnitude of the projected changes in the most recent climate simulations with respect to the findings of IPCC AR4 and subsequent studies.