



High resolution climate change simulation of the 21st century over East Asia by RegCM3

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To meet the increasing demands from the climate change impact assessment studies, a high resolution climate change simulation over East Asia region has been performed in the National Climate Center of the China Meteorological Administration. The model employed in the study is the Abdus Salam International Centre for Theoretical Physics (ICTP) Regional Climate Model (RegCM3). A global model of the CCSR/NIES/FRCGC MIROC3.2_hires is selected to drive RegCM3 because of its high resolution (T106) and its good performances in simulating the present day climate over the region.

The simulation is conducted at 25-km grid spacing for the period of 1951-2100. Observed CO₂ concentrations are used for the present day simulation of 1951-2000 and the emission scenario of IPCC SRES A1B is used as the GHG (greenhouse gases) forcing.

Simulations of present day climate over China by RegCM3 and MIROC3.2_hires are compared against observation to validate the model performances. Results show that both models reproduced the general pattern of surface air temperature and precipitation well over the region. Compared to the driving MIROC3.2_hires, RegCM3 provides with more spatial details of the surface fields. Differed from previous GCM-RegCM3 simulations, the RegCM3 did not improve the general pattern of the precipitation due to the good performances of MIROC3.2_hires.

Preliminary analysis of the future changes simulated by the two models' show difference, in particular during June-July-August. For example while the MIROC3.2_hires projected a prevailing increase of precipitation in JJA over China, the RegCM3 projected extended areas of decreased precipitation.

The data are available for those interested from the community of climate change impacts studies.