



Primary Assessments of Surface Climate Simulations With BCC_CSM1.1

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We primarily evaluate the simulation results from a suite of historical and 21st century projections made using the Beijing Climate Center Climate System Model (BCC_CSM1.1, Wu et al., 2012), which has been available through the PCMDI website and will be used for the next Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) for climate simulations and projections.

The BCC_CSM1.1, based on CCSM3/NCAR, includes components of atmosphere, land, ocean and sea ice, which are coupled through the coupler. The land component of the model is BCC_AVIM, which is originated from the Atmosphere and Vegetation Interaction Model version 2 (AVIM2, Ji 1995; Ji et al., 2008), and the modified biogeophysical framework with 10-layer soil and at model 5-layer snow mostly the same as that in the NCAR Community Land Model version 3.0 (CLM3, Oleson et al., 2004). The BCC_AVIM has the ability to describe the physical, dynamical vegetation and land carbon cycle processes.

Results show that the BCC_CSM1.1, with a T42 spatial resolution, has the abilities to reasonably reproduce the main features of land climate and terrestrial carbon cycle, and show an equivalent or better performances compared with other CMIP5 model results. The model performance has significant regional variations. But large biases exist in most of the fields, especially the overestimation of soil moisture. And because of the shortage and difference of land surface observations, uncertainties exist in evaluation the model results, like the land carbon cycle.