

Validating PRECIS with ECMWF Reanalysis data over China

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In this paper, 15-year (1979-1993) ECMWF reanalysis (ERA) data was employed as quasi-observed boundary conditions to drive Hadley Centre RCM system-Providing Regional Climates for Impacts Studies (PRECIS) at its lateral boundaries for model's validation. Because it is available for us to do the day-to-day comparisons between the simulated results of ERA experiments and the observation datasets, it is very helpful for us to understand how PRECIS performs over China and PRECIS' capacity to anticipate anthropogenic climate change if PRECIS is used for developing future climate scenarios.

There are totally 740 meteorological observatories' datasets in China available for in situ comparisons in this paper. We selected the same amount of RCM model grids which are the nearest to the observatories to validate model's performance. It is indicated from the comparisons of the simulated and observed daily maximum/minimum surface air temperatures over the selected model grids that the simulated results correspond to observed values very well-either the seasonal cycles or the absolute values-which contains the strong ENSO signals, the quite big systematic biases of simulated and observed Tmax/Tmin over a few stations are due to that the altitudes of model's grids are obviously higher/lower than the observatories. As the difficulties of precipitation simulation, it is hard for us to compare the simulated daily precipitation with the observation, but it is shown from the comparisons of the simulated and observed monthly mean precipitations that the model can simulate the seasonal cycles of monthly mean precipitation quite well. It is shown from the statistical analyses that the occurrences of simulated daily Tmax/Tmin and precipitation-either for each station or over whole China-are corresponding to the observed ones very well, that is to say that PRECIS possesses the strong capacity to simulate the extreme climate events.

Based on the above analyses, it is also discussed in this paper how to apply PRECIS, which is driven by high-resolution GCM-HadAM3H, over China-a monsoon-affected country-to anticipate the anthropogenic climate change, and how to link the outputs of an RCM with impacts assessments models as well.

Tuesday IV (Talk)