

Responses to Referee #2:

1. As indicated in the paper "Precipitation anomaly also indicates that the annual changing trend is different before 1980", however there is no analysis given to explain what has caused the difference. It seems that only an averaged comparison over the whole China does not guarantee the regional differences in trends which are actually the emphases of this study.

We have explained the reason according to other paper; we also calculated a comparison of precipitation on a seasonal basis (Tab. 2). Furthermore, we have calculated correlation coefficients between the simulated and the observed data for each of the ten large river basins (Tab.3). Fig. 5 shows the spatial distribution of the trend of dryness/wetness in China during 2002-2050. Tab. 4 provides the results of the trend analysis for each of the ten large river basins for the period from 2002-2050.

There is an obvious mutation of atmosphere and ocean circulation of the northern hemisphere during 1970s but Ecam5 model doesn't simulate this change, so a discrepancy is exists (Sun and Ding, 2008).

2. The paper has reported the comparison of spatial distribution of mean annual rainfall during 1961–2000 between the observed and modeled, but given the discrepancy under 1., this does not seem a correct way of comparison, because the modeled and observed obviously have different trends before and after 1980, so a separate analysis might provide some more insights.

Reply: This paper illuminates the simulation ability of model about precipitation not only from spatial but also from temporal, we find this model have some ability and we analysis the reason about difference between observed and simulated precipitations according to one reference, more details about the difference you can find from it. In addition, we added some comparisons about seasonal precipitations and river basins averaged precipitations, you can find it in Tab.2-3.

3. A brief explanation of the three IPCC scenarios would help the reader to understand the analysis better. Not everybody remembers all the details of the emissions.

We have explained the three IPCC scenarios in our manuscript.

The scenarios were explained by the IPCC in 2000 (IPCC, 2001) in the Third Assessment Report (Special Report on Emissions Scenarios-SRES). The scenario A2 represents a very heterogeneous world with continuously increasing global population and regionally oriented economic growth that is more fragmented and slower than in other scenarios; B1 represents a convergent world with a rapid global population growth but with rapid changes in economic structures toward a service and information economy, with reductions in material intensity and the introduction of clean and resource-efficient technologies; A1B represents a situation which is between the A2 and B1 scenarios.

4. On p. 1390, L3, IDW is mentioned; one could only guess that this refers to the inverse distance weighted method. If so, it should be mentioned.

We have revised it.

The trends of dryness/wetness were spatially interpolated by applying the inverse distance weighted (IDW) interpolation method.

5. In the conclusion, the authors should report clearly the uncertainties in the model simulations and the implications to their conclusions based on the suggestions under 1, 2.

We have reported the uncertainties of the model.

When we projected the basin-averaged SPI and the frequency of drought in every basin, we found a complex situation. Therefore, a more specific analysis should be processed in the future.

There are many uncertainties in the predictions of future climate change; one of the reasons is that Global Climate Models have limitations itself. Another is the uncertainty of regional predictions based on the results derived from a global-scale model. So we should pay attention to the uncertainty when we interpret our results.