Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2017-756-AC2, 2018

Hydrology and Earth System Sciences
Discussions
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Interactive comment on "Spatiotemporal Patterns and Trends of Precipitation and Their Correlations with Related Meteorological Factors by Two Sets of Reanalysis Data in China" *by* Jinhui Jeanne Huang et al.

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Received and published: 10 April 2018

Firstly, the authors express our appreciation to your review of the paper. Your careful review has resulted in a greatly improvement of our paper. Our reply and comments are as follows:

1. Reply to your question about why GLDAS2 phase 2 and NCEP data sets are selected in this study.

The two-setsreanalysis data were not randomly picked up. First of all, NCEP reanalysis

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Discussion paper

data as said before, has been widely accepted (e.g. being used in SDSM as the ground truth observation) and has been well studied; it is however, with coarse resolution. While GLADS dataset might be less investigated in the past, it however is with high resolution of 0.5°ïĆť0.5°. The two dataset are both from US and may share a similar observational data source and the structure of calibration. It is then might be easier to compare the discrepancy induced by different resolution. Error exists everywhere. By comparing the results from two dataset, it is a way to reduce the error. In addition, the GLDAS has also been used previously to study the climate change in the world, e.g. Gomez (2018), Jon Gottschalck (2005) et al. and in China, e.g.Y Y Liu (2012); we then choose the two datasets for further investigation in our study.

2. Reply to your question about why the three major China sub-division zones were selected.

The partition of sub-division zones in China was based on a 50-year study since 1950's funded by Ministry of China Water Resources. It was published in a book entitled"Torrential Rainfall in China" by Jiaqi Wang in 2002. It now became the national guideline for design and planning.

3. Reply to your suggestion about add potential ET and actual ET in the study.

The calculation of PET for grid datainvolves a lot computation. It can be another study. It is then very hard to be included in the current study. So does actual ET.

4. Reply to your suggestion about add simple surface point validation of reanalysis datasets for random selected points.

The validation by randomly selected ground meteorological station data was included in the revised manuscripts. The source of data was added in P7L12-16 and Figure 1, the correlation analysis was added in P15L1-7 and Table 2, the Mann-Kendall analysis was added in P17L7-10, and P21L1-6 as well Table 3. The validation based on the ground station indicates the similar trend and correlation with the results from the two

reanalysis data sets.

5. Reply to your suggestion about illustrate the history of land use/land cover in China.

We have tried a lot of efforts to search for the land use maps. The land use map over entire China is not free of charge; the cost of obtaining these maps is substantial. Additionally, evaluating the history of land use change in china and comparing with the precipitation trend and PET/Actual ET could be a good research topic and a good paper itself, while it would involve a lot of efforts. Thanks for the idea and we may apply some additional funding for this research in the near future, it however could not be done in this paper. It seems to be too much to be integrated into one paper.

6. Reply to your minor question.

The detailed mistakes about some minor spelling and grammatical errors have been corrected, and we have masked out the area outside of China in each figure and corrected the legend. The detailed correction are in the supplement below.

Please also note the supplement to this comment:
https://www.hydrol-earth-syst-sci-discuss.net/hess-2017-756/hess-2017-756-AC2-supplement.zip

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