

Dear Authors

I really appreciate your efforts to improve the quality of your manuscript. Nonetheless, some parts are still not very clear to me.

For instance, I still do not understand the procedure applied for computing SPI3.

Following your description, a running window of 90 days is applied to daily precipitation, so that the time unit is 1-day rather than 1-month, as in the original procedure developed by McKee et al. (1993). What is doubtful is that according to Fig.3, SPI series are, apparently, computed by first fitting a gamma function to the precipitation data from the same day within the running window, for all the years included in the historical record. The gamma distribution is then transformed into a normal distribution.

In the original procedure, the precipitation totals from the same 3-month period are fitted to a probability distribution (usually gamma) and then transformed to a normal distribution, so that the SPI is referred to the last month of the considered 3-month period. In this way, SPI is designed to quantify the precipitation deficit for a 3-month timescales.

In Fig. 3, you refer to 90-day mean value. Thus, the reader is left to suppose that in SPI3 is derived by averaging daily SPI within a 90-day running period. However, this is denied in Section 3.2 and in Fig. 4, where it seems that the whole time evolution of daily SPI is considered instead. If this is correct, I suggest to improve Fig. 3 and to better clarify in Section 3.1.

Besides, following Section 3.2, the highest negative SPI3-grade is assigned to a drought process (i.e. when SPI3 values are below -0.50 for more than 30 consecutive days) when the corresponding duration is greater than 35% of the total drought duration. What is the rationale behind the choice of 35% threshold? Have you carried out some kind of sensitivity analysis on the threshold value?

With reference to Section 4 “Drought process division” and Section 5 “Predictor construction”, I evaluate the revised manuscript definitively improved. My only request of clarification is with respect to the EOF analysis applied to the atmospheric and oceanic standardized anomalies. As far as I have understood from the revised manuscript, EOF analysis is applied to SA daily grid point data of 200 hPa/500 hPa HGT and SST corresponding to the drought segments with the same dry/wet spell and drought grade (extreme or severe) according to Table 4. Therefore,  $\mu$  and  $\sigma$  are the daily grid-point mean value and daily grid-point standard deviation computed with reference to the period indicated in Table 4 (e.g. for wet spell and extreme dry condition,  $\mu$  and  $\sigma$  are computed on daily data observed during 21/6/1997–10/9/1997 and 4/8/1998–10/9/1998). Is it correct?

With respect to Section 6.1, synchronous statistical relationship are determined between all 90-day-accumulated SA-based predictors and prediction target SPI3 by using a stepwise regression. From lines 637 “the predictor is area-averaged over all gridded SA-based variables in selected areas, such as A and B ...”, I understand that regression (see Table 6 and Table 7) are computed only with respect to the most significant positive and negative pattern areas in the first EOF, as reported in Figs. 8, 9 and 10 and Table 5. If I am right, the prediction model, based on the considered predictors, is performed only with reference to limited areas, rather than on the whole China, as Fig. 11 and Fig. 12 imply. Would you please clarify this issue?

Equation at line 360 (page 7) is maybe out of position.

There are still some typos in the text, such as “metrological” or “El nirio”. Please check!