

Interactive comment on “Changing trends and abrupt features of extreme temperature in mainland China during 1960 to 2010” by S. Fang et al.

Anonymous Referee #1

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This paper describes the trends of extreme temperature in mainland China from 1960 to 2010. Compared to previous studies, the main distinction is that the authors chose the 95th and 99th percentiles (instead of 90th) as threshold for extremes in trend analyses. Their key results show more stations have significant decrease in extreme cold days than significant increase in extreme hot days.

Overall I feel this paper is potentially publishable, if the authors illustrate the key difference of their results compared to those in previous studies using the 90th percentiles (i.e., Zhou and Ren, 2011). In fact, the consistency, not difference among results using the 90th, 95th and 99th percentiles are discussed in this paper. It would justify the necessity of using the 95th and 99th percentile thresholds if the authors highlights the

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features that would have been missed by analyzing the 90th percentile extremes alone.

Another major part of the analyses are the detection of abrupt changes in the temperature extremes, which the authors called “mutations”. Some readers may not be familiar with the methodology involved, and it would make the paper more clear if the authors describe their method in detail, in addition to a few citations. Were the statistical tests performed on the regional averages, or individual stations? If on the regional averages, how large are the variations within each region?

In addition, I have the following comments:

1. For readers unfamiliar with the CMA dataset or the RHtest software, some technical description (either in main text or appendix) would be helpful.
2. The division between SWC and SC climate zones is not clear in figures.
3. A more careful examination on the units throughout the text should be performed. For example, the abbreviation “yr” and “a” are used, both of which should mean “year”, but it was not explained; sometimes it is also missing, i.e., in P984L18, “+0.62 day/10”. Also in Figure 3 caption: “5a moving average”, perhaps changing to “5-year moving average” ?
4. Inconsistent wording in text and figure captions: should it be “cold/frozen days” or “cold/frozen nights”?
5. How do results such as Figure 2b and Figure 3 compare with Figure 8 and Figure 9b in Zhou and Ren (2011)?
6. Figure 3: suggest moving the x axis to the bottom of the graph, so as not to overlap with the bar and line plots.

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