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Discussions

Interactive comment on "Contribution of Surface Solar Radiation and Precipitation to Spatiotemporal Patterns of Surface and Air Temperature Warming in China from 1960 to 2003" *by* Jizheng Du et al.

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General Comments

This is an important paper with interesting Figures on the regional variation of surface temperature trends over China, and their relation to regional precipitation and SSR.

The biggest challenge for this reviewer is that I unsure exactly what the elegant Figures show. There are critical gaps between the methods section and the Figures. The legends rather than the text try to explain the content of the Figures, and they are written for the authors, not for a global audience, which will struggle to follow the missing steps

in the logic. The reader cannot connect the symbols in Methods to the symbols in the Figures, and the description of the Figures.

Technical details

Methods uses Traw and Tadjusted and monthly anomalies, as well as 'Z' for a regression fit to monthly anomalies of T. Do all the graphs show anomalies? Which ones show Tadjusted? Which ones show regression fits Z?

Eq (1), 2 and 5 are just textbook definitions, which are poorly defined for this specific analysis. They use 'a' and 'b' as symbols for different coefficients in 1, 2 and 5. The values for these (a, b) in this analysis may appear in later figures, but the reader has to guess how they were actually computed. Which Figs show which coefficients or adjusted variables is unclear, because they are largely labeled the same: eg Ts-max or Ta-min, or just 'PC'.

Relabel PCa, PCb, PCc, PCd etc with a clear connection to a numbered equation coefficient. Use the same specific language to describe the coefficient in both methods and text introducing the Figure.

Consider adding a simple label to distinguish Tadjusted from T in the Figures.

L177-180 Comment that the number of sunshine duration stations (105 in Wang et al. 2015a) is still small compared with the Ta data. How well are they distributed in western China?

L242 What are the coefficients a and b; and their uncertainties? Cross-reference where you show these. When you reach Figs 5 and 6, it is unclear how they relate to Eq (2)

L245 There are no equations 3 and 4.

L251 And Figs 2 and 3. Are these Traw or Tadjusted?

Section 3.1.1 and Table 1 All these results are presented as mean trends with no estimate of uncertainty. Add some error estimates.

Section 3.2.1 You need an explicit explanation of Fig 5 and then 6, The reader cannot see clearly how they were constructed. What are these partial correlation coefficients using precipitation as control? Do they relate to the Tadjusted in (5) or the sensitivities in (2). Nothing has been defined or connected logically (and Eq (3) and (4) are missing? Same issues for Figure 8 and 9.

Fig 6 Is this the coefficient 'a' in Eq(2)? Where do you show coefficient 'b'? Is it in Fig 9?

Fig 11 Is this the first time Tadjusted is plotted?

L136 and L770 cite different references for the dataset

Language issues

The structuring of sentences is generally very good, but verbs and tenses need occasional editing, but I will leave this to later editing. An example is 106 LST... plays an important role in climate change 107 research because it directly relates to the land surface energy budget. Previously, Ts 108 values used in regional climate research were primarily derived

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-1022, 2016.