

Interactive comment on “Reconstructing and analyzing China’s fifty-nine year (1951–2009) drought history using hydrological model simulation” by Z. Y. Wu et al.

Anonymous Referee #1

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This paper by Wu et al. (2011) uses observed precipitation and temperature time series to drive the Variable Infiltration Capacity (VIC) hydrologic model to reconstruct soil moisture values across China from 1951–2009. In turn, an assessment is undertaken of drought occurrence in nine drought study regions. The paper is a valuable contribution to the identification of drought events in China, and the reliable VIC simulations could be useful for future drought monitoring and prediction. However, there are general and some specific points which I believe need to be addressed. Here are the general comments followed by some specific and technical comments:

General comments:

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1. Most importantly and critically the clarity of English throughout the paper needs some attention. I have not listed an exhaustive list of changes to the English (see specific comments), and what is mentioned is only meant as a constructive critique.
2. On occasions I think it would be best to put parentheses around the drought regions when you mention them e.g. Page 1862 line 19, and p1877 lines 12–13. Currently they do not sit well in the sentences.
3. It would be useful to have some physical reasoning behind the occurrence of extreme drought events in China, and in particular the worsening drought in eastern China (e.g. p1876 lines 6–10). Is it to do with increased water consumption because of industrial and population growth in these areas, or is it due to changing climate patterns (or perhaps a mixture of both)?
4. In the text there are a few times where it says “in the recent fifty nine years”. On occasions for brevity and clarity, it would be better to say “from 1951–2009” (e.g. P1875 line 3, P1878 lines 10–11).

Specific and technical comments:

1. P1862 line 10: “As the result” should be “As a result”. This is repeated in other parts of the text too.
2. P1862 line 15: “progressing” should be “progression”. This is also repeated on P1878 line 21.
3. P1862 line 20: “week” should be “weak”. This is repeated elsewhere.
4. P1862 line 21: “wetting” should be rephrased to include the word “wetter”. This is also repeated elsewhere (e.g. p1877 line 29).
5. P1863 line 6: “agriculture productions” should be “agricultural productivity”.
6. P1863 lines 17–20: Is there a reference?

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7. P1863 line 22: does the 60% refer to China or the World? Just a little clarification is needed.
8. P1864: "indexes" should be "indices"
9. P1867 lines 11-12: Is there a reference for the temperature and precipitation data?
10. P1868 lines 1-3: Is it possible to say what the calibration and validation periods are?
11. P1870 line 9: "minima" should be "minimum".
12. Fig.3: For consistency, perhaps the y-axis should have the same values for all nine plots. I realise that it may make the top three panels harder to read, but the current plots are slightly misleading to the eye.
13. Fig. 4: It may be useful to include (in the figure caption) the name of the region that has the most severe drought during each of these four periods.
14. Fig. 5: Should the figure title "1951-1959" be "1951-2009"?
15. P1873 line 17: I think "gain loss" should be "grain loss". I believe this happened in another place too.
16. P1873 line 28: "life" should be "lives".
17. P1874 line 4-5: "Spatial extension" should be "Spatial extent".
18. P1876 line 7: "social-economical" should be "socio-economic".
19. P1878 line 26: It may be best to replace "less occurring" with "low frequency" or something similar.
20. P1879 lines 8-11: These lines read exactly the same as P1875 lines 9-13. This is a very minor point, but perhaps one of them should be rephrased slightly.

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