

## ***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 #2**

Received and published: 30 May 2011

#### General comments:

Wu et al. (2011) have reconstructed soil moisture values across China using the Variable Infiltration Capacity (VIC) model for the period 1951-2009. Using this simulated soil moisture dataset, agricultural drought characteristics over this period for nine study regions are examined. This study contributes to the study of drought in China. It also builds on the existing literature by extending the simulated soil moisture dataset from the previous 35 years to 59 years, which is valuable and could be used in the monitoring and assessment of droughts in China, in particular agricultural droughts. Specific

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and technical comments are as follows.

#### Specific comments:

1. This paper will benefit from improving the English and its clarity throughout. Some of the changes are specified in the technical comments.
2. There appears to be repetition of text for defining drought in Section 3.2 (Page 1872 Lines 13-14 and 24-25) and in Section 3.4 (Page 1976, Lines 17-19], as well as Figure 7 – perhaps omit or refer to Section 2.3?
3. Some lines appear exactly the same in different sections of the paper – rephrasing some of these will improve the draft.
4. The choice of the SMAP over other agricultural drought indices could be elaborated.
5. There seems to be confusion in the orientation and region in Page 1876, Lines 1-4? For example, should Line 2 read “was first developed eastward of the...”?
6. Conclusion could be strengthened by discussing the factors (both physical and human) that could have contributed to the drought trends, and the implications of these trends could be elaborated.

#### Technical comments:

[Page 1862, Line 2] Change “The recent fifty-nine year (1951-2009) drought...” to “The 1951-2009 drought...”. Similar changes are needed elsewhere.

[1862, 10-11] Change “As the result” to “As a result”. Similar changes are needed elsewhere.

[1862, 20] Change “its progressing” to “its progression”.

[1862, 20] Change “has been week in...” to “has been weak in...”. Similar changes are needed elsewhere.

[1863, 6] Change “agriculture productions” to “agricultural productivity”.

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[1863, 17-23] Reference(s) needed.

[1864, 8] Change “drought indexes” to “drought indices”.

[1865, 28] Change “this could be reduced the...” to “this could reduce the...”.

[1870, 9] Change “minima threshold” to “minimum threshold”. Similar changes are needed elsewhere.

[1870, 22] Change “known to its diversified” to “known for its diversified”.

[1871, 1] Change “division scheme is adapted in this study to preserving a consistency...” to “division scheme is adopted in this study to preserve consistency...”.

[1871, 23] Change “soil moisture is usual observed...” to “soil moisture is usually observed...”.

[1873, 17] Should “gain loss” be “grain loss”?

[1874, 4-5] Change “spatial extension” to “spatial extent”.

[1875, 7] Change “socio-economical” to “socio-economic”. Similar changes are needed elsewhere.

[1875, 25-26] Change “has been changed dramatically...” to “has changed dramatically...”

[1876, 24] It may be better to replace “30% in these three upward...” with “30% in the three upward...”.

[1877, 28] Change “weak in the rest five regions...” to “weak in the other five regions...”.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 1861, 2011.

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