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Hydrology and Earth System Sciences Discussions

Interactive comment on "The hydrological responses of different land cover types in a re-vegetation catchment area of the Loess Plateau, China" *by* S. Wang et al.

Anonymous Referee #3

Received and published: 29 June 2012

General Comments: This manuscript compares soil moisture and temperature observations for five vegetative land cover types on the Loess Plateau in China. This work is important and timely as large-scale revegetation efforts are undertaken in China to mitigate soil erosion, but may have unintended consequences on soil moisture and water availability. The paper is suitable for publication in the Ecohydrology special issue of HESS, provided the following issues are addressed.

Specific Comments: 1. The authors present data regarding the height and percent cover of the five land cover types. How representative are these particular plots of the

region as a whole? Is 40% cover typical of Robinia pseudoacacia tree stands on the Loess Plateau?

2. The authors attribute differences in soil moisture and temperature to differences in vegetation type, but there are other variables at play, including vegetative cover percentage and soil properties. For example, the authors acknowledge that the crop land cover had "high clay content and poor water permeability, resulting their higher and more stable soil moisture content." The authors need to isolate the vegetative cover effects from the soil property and percent cover effects.

Technical Corrections: 1. Review entire manuscript for typographical errors and sentence structure (e.g. p. 5812 line 25, p. 5816 line 6, and others).

2. Need to provide some concluding statement to the abstract to relay the significance of the results.

3. The meteorological parameters were collected every 30 min, and the HOBO weather station data logger every 10 min?

4. What p value are you considering significant?

5. Throughout the manuscript, add clarification as to whether variability described is across time or across vegetation type (e.g. p. 5816 line 4).

6. In section 4.2, might be good to add a table of mean soil moisture and temperature for each vegetation type, also showing which are significantly different.

7. p. 5816 line 18, is the difference between soil moisture of grass and subshrub really different if your p-value is 0.26?

8. p. 5816 lines 22-23, how do you know the average soil temperature was clearly affected by the growth of foliage? It would be good to show the air temperature in figure 3 to demonstrate that it is not because of differences in air temperature.

9. p. 5817 line 1- what was the R2 for soil moisture and temperature correlation?

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10. p. 5817 line 14 and p. 5818 line 3, is the initial soil moisture content for all vegetation types the same? Is this an average across all plots? Also, are the units of cm3 cm-3 correct? Should this be 0.15 cm3 cm-3 instead of 15 cm3 cm-3, or 15%?

11. p. 5818 lines 20-21, How do you know that the loss of soil moisture mainly took place by ET, did you measure runoff or water loss to deep groundwater?

12. p. 5819 line 2, please clarify what is meant by "higher plants" and "more stable".

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 5809, 2012.