

***Interactive comment on* “Spatial modelling of the variability of the soil moisture regime at the landscape scale in the southern Qilian Mountains, China” by C.-Y. Zhao et al.**

Anonymous Referee #1

Received and published: 10 November 2009

The paper provides the spatial modelling of soil moisture status in Qilian Mountains, China. The model results have been validated with soil moisture observations for Pailugou, a small catchment within the study area. The period May–August 2003 has been considered (it should be so, since in the text it is not clear).

The paper is well organized. However, the specific application to a limited area and the short time period considered make difficult the understanding of the usefulness of this kind of analysis. The authors should provide a satisfactory explanation to this key question in the revised text. A major revision of the text is suggested also in relation to

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the following comments:

- 1) The introduction starts with a general description of the study area and it is hard to follow for a reader who is not a Chinese. Thus, I suggest, at least, revising Figure 1 in order to illustrate the location of the study area with respect to China;
- 2) Figure 3 refers to the whole study area. Why in the text (page 6342, line 21) the authors state that the figure is for Pailugou catchment?
- 3) Does Figure 5 refer to the year 2003? In section 2.2 the authors refer to the period May–September 2003 and 2004. Why September is missing in Figure 5? Please clarify the time period under study both in the text and all figure captions;
- 4) Why Figure 6 shows only results for June? Please include also the ones for the other months considered. Moreover, lines 20–24 at page 6344 are confused, please revise the text;
- 5) Why in Figure 6 the soil moisture status has very different values compared to the ones shown in Figure 7? I suppose that in Figure 7 units for IN3 are mm, while in Figure 6 units are different since soil water content has been considered. If it is so, please render consistent figures and text;
- 6) I suggest re-plotting Figure 7 using the same range values, otherwise no differences are noticeable from one month to the other;
- 7) Page 6346, line 3–4: Which important factor has been excluded in the model?
- 8) The authors quote three papers written in Chinese (only the abstract in English). I strongly suggest removing those references and substitute them with other ones written in English. This is because HESS is an international journal and any reader must be able to access to the quoted manuscripts;
- 9) The soil moisture model results have been validated against observations for a small catchment (Pailugou) within the area. Why the catchment is considered representative

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of the whole area? Which is the physical basis of this assumption? Have the authors considered the possibility to use other sources of data for validation purposes?

10) In the conclusions, the authors should discuss the possibility, if any, to extend the analysis to other contexts (areas) having different hydrological regimes or orography.

Finally, in several points I found the text hard to follow. This is probably because the English is not fluent and the complex structure of several sentences (see for example, lines 17–23 in the abstract or point 3 in the conclusions). I suggest revising the text using simple and clear phrases.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 6335, 2009.

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