

Interactive comment on “Watershed discretization based on multiple factors and its application in the Chinese Loess Plateau” by Y. Xu et al.

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General comments: The paper used four important factors (land use, vegetation, soil type and slope) to spatially delineate a large watershed (Ansai watershed) in Western China into different land type units. In order to test the effectiveness of this discretization, the paper compared this approach to the units classified with overlaying land use and soil maps using SWAT hydrological modelling. The comparison indicated that the proposed discretization scheme improved the hydrological simulation.

I think the overall design is logic and robust. The tested discretization scheme can have broad potential applications on various eco-hydrological processes. The following suggestions should be considered for revision.

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1. More descriptions on SWAT model are needed to further clarify runoff prediction with CN values, calculation of soil profile water content or accumulated plant evapotranspiration and time steps involved. 2. The study used the first 3 years as a warm up period (1995 to 1997) without the model calibration so that the influence of model parameters was excluded. This is different from the commonly-used calibration/validation approach. More clarifications or explanations are needed on this approach. 3. It seems that water and residential districts are not used for land type unit delineation (Table 3). Were those land types explicitly considered in the hydrological simulation? I am sure they are important for hydrology. 4. There are quite descriptions on the methods mentioned in the Results section. They should be moved to the Methods section. On the contrary, some results mentioned in the Discussion section (e.g., the section on page 9075-Lines 15-19) may be better placed in the Results section.

Specific comments: P9065-L14: Minute should be replaced with minimum; P9066-L2: References should be added for the statement on the most common method for predicting runoff volume; P9066-L13: Water should be replaced with true; P9071-L10-11: The sentence "the hydrological condition...." is hard to understand; P9074-L6-8: the whole sentence is not clear; Table 4: Amount of units should be better replaced with number of units; Figure 1: What are gauge stations? Do you mean climate station? It is better to use hydrometric station for streamflow and meteorological station for climate; Figure 2: The scale bar should be changed to show exact numbers (e.g., 1 or 2 km)

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