Hydrol. Earth Syst. Sci. Discuss., 9, C2189–C2190, 2012
www.hydrol-earth-syst-sci-discuss.net/9/C2189/2012/

Hydrology and Earth System Sciences Discussions

Interactive comment on "A comprehensive approach to analyze discrepancies between land surface models and in-situ measurements: a case study over US and Illinois with SECHIBA forced by NLDAS" *by* M. Guimberteau et al.

Anonymous Referee #4

Received and published: 13 June 2012

In the paper, the authors try to test the land surface model SECHIBA over two different scales: US and Illinois. Moreover, the enhancement of parameterization in SECHIBA such as changing vegetation parameters and improving the computation of evapotranspiration are also investigated. Overall, the authors give a clear and innovative scheme on comparing the land surface simulations with in situ observations over two different scales. However, some revisions should be considered before publishing. Major comments: 1. The authors use the NLDAS-1 forcing data and results to test the SECHIBA

model and study the uncertainties in rainfall forcing data, while Xia et al. (2012, JGR, 10.1029/2011JD016048) already published their results on NLDAS-2 which built upon the NLDAS-1 through increasing the accuracy and consistency of the forcing data, upgrading the land surface model code and parameters, and extending the study from a 3-year (1997–1999) to a 30-year (1979–2008) time window. I suggest the authors to check the results of Xia et al. (2012, JGR, 10.1029/2011JD016048) and try to compare their results with NLDAS-2. 2. The authors mention in Page 5051 line 7 that "the impact of the difference in soil texture between simulation and observation on soil moisture content has not been tested", but why? I agree the statement in Page 5060 line 14 that "the study of the impact of soil texture on soil moisture content is a reliable perspective". In the paper, the authors do not describe the parameters in the model related to the soil texture, which I think can be very important to determine the field capacity, as well as affect the simulation of soil moisture and runoff. Specific comments: 1. In the section of model description, for the reason that the SECHIBA model is not familiar to me, the description in the manuscript is difficult for me to understand the flow chart of SECHIBA simulation. For example, in the model, how to determine the drainage (D)? How to calculate the potential evaporation (Epot)? Can the authors rewrite and rearrange this part to make the model clear for the readers? 2. The authors compared the model simulation over Illinois and Kaskaskia river, which are not familiar to me, can the author describe the location of the two study area more clear (e.g. figure out the area or location on the map)?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 5039, 2012.