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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Assessing Green and Blue Water: Understanding Interactions and Making Balance between Human and Nature" *by* Ganquan Mao et al.

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In this paper, the authors analyzed output from the GSFLOW model in the middle and lower Heihe River Basin (HRB), and investigated the division between green and blue water and their interaction in different ecosystems. There are quite a number of models that have been applied to the HRB, among which the GSFLOW model, which has been crosschecked with multi-source datasets.

Figures 3 and 6 provide a clear representation of the water balance of the middle and lower HRB and in different ecosystems. However, I am not sure if Figure 6 fully represents reality. It is assumed that all the precipitation that does not runoff goes

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through the soil moisture stock. I doubt this. Apparently it is assumed that this water is transported through the root zone, and evaporated by transpiration. This cannot be true. Judging by the very low precipitation (about 170 mm/a), I would expect most of the precipitation on the lower Heihe to be partitioned into interception. In forested areas, the preferential infiltration may be substantial, but in forests interception is also substantial. On the desert, the infiltration is probably zero. Also on farmland and grassland, most of the precipitation will be captured by (leaf and ground) interception. I think the authors should make an effort to identify the partitioning of ET in Transpiration, Interception and Soil Evaporation.

Minor Comments:

I think that the last paragraph of the conclusion would be better placed in the discussion section.

I think that one publication on the Heihe is missing, which is the paper by Gao et al. (2014), which studied the runoff of the Upper Heihe river basin and providing the input to the middle HRB, see: Gao, H., Hrachowitz, M., Fenicia, F., Gharari, S., and Savenije, H. H. G.: Testing the realism of a topography-driven model (flex-topo) in the nested catchments of the upper heihe, china, Hydrology and Earth System Sciences, 18, 1895-1915, 10.5194/hess-18-1895-2014, 2014.

Some small corrections:

page 5 line8, do you mean by "grids"

page 5 line18, what is improved in the GSFLOW model?

page 8 line 3, "Which means...", please merge the two sentences.

page 8 line 33, in some regions, ...

page 9 line 4, "The blue water map is not shown here..."

page 9 line 15, "which supports the ecosystems and bridges the gap between..."

page 9 line 29, "water availability is the main..."

page 10 Section 3.3 what do you mean by "explicit"?

page 10 line 18, "all the precipitation", precipitation is uncountable.

page 10 line 29. "the forest also received 171.5 mm/year irrigated water..." this is very interesting conclusion. Please clarify how forest is irrigated. Is this really happening in the entire basin or only in urban and agricultural areas?

page 10 line 33. "there are quite amount of water are ..." this sentence should be rephrased.

page 13, line 7 it is better to say "for the first time...interconnections in the HRB".

page 13, line 10 "beyond the water balance". I am not quite convinced with this conclusion. It seems to be still in the framework of water balance.

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