

Interactive comment on “A novel regional irrigation water productivity model for complex cropping patterns in arid regions coupling soil water and salinity dynamics, irrigation and drainage, and shallow groundwater movement” by Jingyuan Xue et al.

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Received and published: 13 November 2019

Comments:

The study principally simulated soil hydrology and crop irrigation water productivity with recently developed regional temporal-spatial hydrological model in the arid district. These results attributes mainly to the dynamic-management of local agricultural water resources distribution and crop cropping system under changing climate environment,

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e.g. salinity, groundwater depth. The paper is well written and organized with novel idea and new findings. The model's simulation results are reasonable. Suggest accept after addressing these comments:

1. The title is too long and needs revision. Suggest: A novel regional irrigation water productivity model coupling soil hydrology and salinity dynamics in arid regions, China
2. L39-40 in Abstract, how about the simulation agreement of validation and calibration plots?
3. Provide details on model's calibration procedure before L345 as subtitle 2.3.2.
5. Crop growth is closely with ET? What are the model simulation performances of cash crops growth (biomass, LAI, phenology) and grain yield in the calibration and validation systems in the section of 3.1.
4. Each section of the three Results and Discussion is needed for greater improvement especially in global sensitivity analysis and irrigation water productivity. Provide more explanations regarding the cause of simulation results, except for comparison with similar previous study results.
5. L705, what are the measured values? Detail on figure title.
6. L704 provide details on soil particle size, bulk density, saturated water conductivity in table 3
7. Figure 10, there was no obvious difference in irrigation water productivity in groundwater 0-1 and 1-2 m? If not, provide the corresponding results between these groundwater levels

Please also note the supplement to this comment:

<https://www.hydrol-earth-syst-sci-discuss.net/hess-2019-359/hess-2019-359-RC1-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-359>, 2019.

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