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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Modelling of shallow water table dynamics using conceptual and physically based integrated surface water-groundwater hydrologic models" *by* Mohammad Bizhanimanzar et al.

Anonymous Referee #2

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The paper is well organized/ written and for further improvement, I would like to forward the following comments:

(1) In this paper, the authors are reporting as they present a new conceptual scheme of coupled MOBIDIC-MODFLOW model. But, in the paper, nothing is said about MODFLOW and how they link the two models. (2) In this study, the MOBIDIC-MODFLOW results were based on the output of MIKE-SHE (eg. the coefficient of groundwater recharge used by the model is based on the water table of MIKE-SHE) and the result also interpreted again by comparing with MIKE-SHE results. How much this coupled

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model can stand alone without MIKE-SHE? Why not consider the evaluation of the model result by comparing the measured time series water table of the month considered in the "real" field condition? (3) Page 1 (line 21) and page 16 (lines 23-26)- It is reported that in computational efficiency (time efficiency) of the proposed approach, MIKE-SHE took 180 times longer to solve the 3D case than the MOBIDIC-MODFLOW in its application to real catchment case studies. Since MIKE SHE model simulation covers a fully integrated aspect of all important hydrology including groundwater, surface water, recharge, and evapotranspiration, how much the new coupled model is capable in computing all those hydrological processes, and is it acceptable to compare the efficiency of the two models and report theses much gap? (4) Page 2 (Line 15) - "Inconsistency in the conceptualization of the interaction between SZ and UZ" is reported in externally linked models listed. It needs a strong justification. The recently released SWAT_MODFLOW papers could not agree with this idea. (5) There is inconsistence in using the abbreviation for moisture content at saturation which is used in page 5 line 14. (6) "t" is missed in the ward water table in sentences on page10 line 8 and page 14 line 13. (7) A full stop (.) is missed in the sentence on page 13 line12.

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