

Interactive comment on “Development of the Community Water Model (CWatM v1.04) A high-resolution hydrological model for global and regional assessment of integrated water resources management” by Peter Burek et al.

Anonymous Referee #1

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Burek et al. present the Community Water Model for integrated water hydrologic modeling and water resources management from the global to the regional scale. The authors claim that the novelty lies in the flexible modular approach for community development and application, the incorporation of hydro-socioeconomic components, and the user-friendly application from the global to the regional scale at high spatial resolution. I have a number of concerns that are expressed below.

The manuscript is not in the scope of GMD. The model concept (section 2.1) is described on 1.5 pages, and does not provide any insight into the modular model de-

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velopment approach, which should be the focus in GMD. Thus, the novelty can not be assessed. The theoretical descriptions of the hydrologic processes do not contain any new theoretical developments. The data sets used by the model are open and standard. The applied calibration procedure is also standard.

The results section does not allow any conclusion about the utility of the model. The input timing for the meteorologic information for a regional model does not lend confidence in the software development approach. The global water balance is not sufficient to demonstrate the utility of the model. There is much more information available to convince the reader of the usefulness of the proposed model. For example, Scanlon et al. (2018) posed a challenge for global hydrologic models to simulate correctly the water storage trends globally. The calibration results show that the calibration works, which would be surprising if not (are the parameters calibrated at each pixel?). But what about validation? While section 5.4 presents perhaps meaningful results, they are not suitable for GMD.

In addition, there is much more to community model development than the term and providing the code in a git plus documentation. I encourage the developers to study principles of best practices for community scientific software development and think about a software productivity and sustainability plan.

Scanlon, B. R. et al. Global models underestimate large decadal declining and rising water storage trends relative to GRACE satellite data. PNAS 115, E1080–E1089 (2018).

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