

Interactive comment on “Human-water interface in hydrological modeling: Current status and future directions” by Yoshihide Wada et al.

T. Zhou (Referee)

tian.zhou@pnnl.gov

Received and published: 7 June 2017

The manuscript “Human-water interface in hydrological modeling: Current status and future directions” By Wada et al. reviews the current and future research directions about modeling human impacts on water resources. Generally this manuscript is well-written and includes a lot of information. I would recommend publication after considering the following minor issues.

The structure of this manuscript could be improved for a better flow. From the way it's organized, it looks like the “current status” is discussed in Section 2 and the “future directions” is in Section 3. However in fact they are mixed in these sections. In my opinion, Section 4 could be one of the subsections of Section 3 as it's also about future

[Printer-friendly version](#)

[Discussion paper](#)



directions. Reorganizing the structure or modifying the title of each section would make the paper clearer to the readers.

Title of Section 2 may change to something like “Evolution of representing human impacts in hydrological modeling” to make it more specific.

Section 3.1 is about modeling human impacts on extremes but only drought is discussed here. At least one paragraph about human activities on flood events and how does flow regulation (dams) control the flood should be included here.

Section 3.5 is about urbanization, which is fine. But a boarder review about how to represent the land use land cover change in hydrological modeling is more informative than just focusing on the urban area.

Page 13 Line 6: Using “compared” rather than “unveiled”?

At the end of Section 3.8 the authors implied that satellite-based measurements should combine with ground-based observations to reduce the uncertainties. Actually a number of works had already been exploring on this topic for over a decade which need to be mentioned here. For example, the Tropical Rainfall Measuring Mission (TRMM) Multi-satellite Precipitation Analysis (TMPA) combines products from multiple satellite and ground observations from the Global Precipitation Climatology Centre (GPCC) (Huffman et al. 2010). Some studies also evaluated the consistency between the pure satellite-based measurements (TRMM) and TMPA at regional scale (e.g. Villarini 2010) and global scales (e.g. Zhou et al. 2014).

Section 3.9 and Section 4: when discussing the socio-hydrological modeling and the interactions with policy making, it worth mentioning the Global Change Assessment Model (GCAM)(<http://www.globalchange.umd.edu/gcam/>), in which a long time effort has been made to incorporate different social sectors into one modeling framework, including energy, water, economy, climate, policy, and agriculture.

References:

Huffman, G. J., R. F. Adler, D. T. Bolvin, and E. J. Nelkin, 2010: The TRMM multi-satellite precipitation analysis (TMPA). *Satell. Appl. Surf. Hydrol.*, 1–23. http://link.springer.com/10.1007/978-90-481-2915-7_1.

Villarini, G., 2010: Evaluation of the Research-Version TMPA Rainfall Estimate at Its Finest Spatial and Temporal Scales over the Rome Metropolitan Area. *J. Appl. Meteorol. Climatol.*, 49, 2591–2602, doi:10.1175/2010JAMC2462. <http://journals.ametsoc.org/doi/abs/10.1175/2010JAMC2462>.

Zhou, T., B. Nijssen, G. J. Huffman, and D. P. Lettenmaier, 2014: Evaluation of Real-Time Satellite Precipitation Data for Global Drought Monitoring. *J. Hydrometeorol.*, 15, 1651–1660, doi:10.1175/JHM-D-13-0128.1. <http://journals.ametsoc.org/doi/abs/10.1175/JHM-D-13-0128.1>.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2017-248>, 2017.

Printer-friendly version

Discussion paper

