Hydrology and Earth System Sciences Discussions

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Comment on hess-2021-194

Anonymous Referee #2

Referee comment on "Future water temperature of rivers in Switzerland under climate change investigated with physics-based models" by Adrien Michel et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2021-194-RC2, 2021

The manuscript provides a thorough investigation of modeled future temperatures in Swiss streams. Methods are well detailed and simulated streamflow for historic and future conditions are exhaustively detailed.

My main comments involve the length of the manuscript and the primary messages. The manuscript is almost too long, with certain side analyses partially detracting from more central messages of the manuscript.

On a related note, the abstract itself predominantly focuses on the future simulations (which – as admitted in the manuscript – have some potential limitations) while neglecting what I see as the more fundamental insights into hydrological process and the sufficiency of model structure. The manuscript had more nuance and deeper investigations into process than I was led to believe by initially reading the abstract.

Thus, I have two specific thoughts:

- Possibly move Figure 7, 8, and 9 and some accompanying text to Supplemental section
- Rewrite abstract to better emphasize insights into appropriateness of model structure and reduce emphasis on summary of future simulations. Similarly the conclusions section could also benefit from some shifting of prioritization of messages. In particular, there should be specific mention of that model does not allow for direct input of melt water into streams and that this led to overestimate of warming under historical conditions (but is believed to be less of an issue in the future as snow diminishes).