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Comment on hess-2021-148

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Community comment on "The influence of hyporheic fluxes on regional groundwater discharge zones" by Brian Babak Mojarrad et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-148-CC1>, 2021

The paper presents an interesting model study concerning potential effects of the hyporheic zone on groundwater flow patterns using a selection of the hydrological data available for Krycklan. In its present state the study is theoretical. The study would be strengthened if it included an analysis describing the extent to which the regional model was able to capture the hydrology at Krycklan. This would help to address questions about the validity of the regional hydrological model and may help frame results from the hyporheic, local-scale simulations as applicable to a real-world scenario.

The paper would be further strengthened if it discussed the robustness of the results as affected by the parameterizations and structural assumptions made in the numerical and conceptual models. For example, the potential effects of landscape topography, time-variation of streambed topography, rock fractures, soil stratification, spatial heterogeneity of streambed sediments, parameterization of the infiltration rate at the surface, and model boundary conditions are not discussed. Without such a discussion it cannot be deduced the extent to which variabilities in these, and other, variables will affect the hyporheic phenomena postulated in the modelling exercise; it is therefore not possible to assess the extent to which the results and/or methodologies presented in the study are relevant to other sites.