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Comment on hess-2021-542

Stein Beldring

Community comment on "A retrospective on hydrological catchment modelling based on half a century with the HBV model" by Jan Seibert and Sten Bergström, Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2021-542-CC1, 2021

The strength of the HBV model is the sub-surface process algorithms for soil moisture and runoff response that provide accurate streamflow simulations. These algorithms can easily be combined with other process descriptions, e.g. evapotranspiration modelling (Huang et al., 2019), streamflow routing (Li et al., 2014) and glacier ice melting and retreat (Li et al., 2015). These examples show that the HBV model can be included in a distributed model framework providing physically based simulations of various hydrological processes in addition to streamflow.

Huang, S., Eisner, S., Magnusson, J., Lussana, C., Yang, X., Beldring, S. 2019. Improvements of the spatially distributed hydrological modelling using the HBV model at 1 km resolution for Norway. *Journal of Hydrology 557:123585,* https://doi.org/10.1016/j.jhydrol.2019.03.051

Li, H., Beldring, S., Xu, C.-Y., Huss, M., Melvold, K., Jain, S.K. 2015. Integrating a glacier retreat model into a hydrological model – Case studies of three glacierised catchments in Norway and Himalayan region, *Journal of Hydrology 527*, 656-667. http://dx.doi.org/10.1007/s11269-015-1194-5

Li, H., Beldring, S., Xu, C.-Y. 2014. Implementation and testing of routing algorithms in the distributed Hydrologiska Byråns Vattenbalansavdelning model for mountainous catchments. *Hydrology Research*, 45.3, 322-332. https://doi.org/10.2166/nh.2013.009