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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Representation of spatial and temporal variability in large-domain hydrological models: Case study for a mesoscale prealpine basin" *by* Lieke Melsen et al.

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I would like to thank the reviewer for the positive feedback and the provided suggestions. Below a short response is given to the suggestions.

Point 1, lessons from physically based models. I would like to note that sometimes the VIC model is also considered 'physically based', the definition of 'physically based' and 'conceptual' are sometimes diffuse. We will definitely go through the provided literature to compare the approach.

Point 2, the spatial resolution of the routing. The river network has been determined based on sub basins with sizes in the order of $\sim$1 km. The river network is kept constant

for the different spatial resolutions of the VIC model, i.e.; for the 10x10 km resolution, several sub basins received the same input to rout, whilst for the 1x1 km resolution nearly all sub basins had their 'own' grid cell in the VIC model (see Lines 223-227 in the manuscript). We indeed think that the effect of spatial variation can be increased by adapting the routing scheme. However, this effect is then caused by the routing, and not by the VIC model. For clarity, we excluded the effect of routing (Line 575), but I agree with the reviewer that we could include some discussion on the effect of routing.

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