Interactive comment on "Calibration of a large-scale hydrological model using satellite-based soil moisture and evapotranspiration products" *by* Patricia Lopez Lopez et al.

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This study caught my interest because it aims at improving discharge predictions in data scare areas using remote sensing (RS) data of evapotranspiration (ET) and soil moisture (SM) as calibration targets to inform model parameters of a distributed model. I think the work is nicely presented and a very relevant contribution to HESS. However, I would like to discuss one aspect, which the authors did not touch upon. This may inspire the authors when revising the manuscript.

I would like to ask the authors if they regard spatial averaging of RS data as the optimal

way to utilize these data? If I understand correctly from Figures 8 & 9, the authors used timeseries of averaged ET and SM as calibration targets. This neglects the valuable spatial information which is contained in the RS data. One could imaging that an additional metric, which is targeted at the spatial patterns of ET and SM may improve the discharge performance from calibration scenarios 2-4. A pattern oriented calibration can potentially yield more realistic parameter fields which are necessary to be able to simulate the spatial variability of runoff generation within the catchment in a more realistic manner.

Ultimately, if the spatial variability of hydrological processes is not of concern and the model is simply calibrated, evaluated and used at aggregated scale, then why not just use a simple lumped model? I think the discussion of the manuscript at hand would be significantly improved by showing and discussing simulated and observed spatial patterns of ET and SM.