Minor comments:

- The authors assessed model parametrization and regionalization of a spatially distributed hydrologic model over two mesoscale French catchments. This is a very timely and important topic for spatial hydrology and conventional model calibration using only streamflow data. However, from the manuscript the reader can see only temporal aspects and metrics such as KGE, RMSE and Relative error i.e. all based on discharge (Q) [Page 4 line 6]. Have you noticed the new spatial metric SPAEF (Koch et al., 2018) and other metrics on spatial performance of the models (Rees, 2008)?.

- The newest paper cited in the introduction section is from the year 2015 by Silvestro et al.

- The reference list seems not including papers from 2018. I could count only 2 papers from 2015, one paper from 2016, two papers from 2017 (one from Rouhier). However, there has been a lot done in 2018 about spatial parametrization and patterns in hydrology.

- Page 3, line 17: “The hydrological model used in this work is the spatially distributed conceptual model named MORDOR-TS”. The model can be distributed or conceptual, how they can be both?

- Based on Rouhier et al. (2017), MORDOR-SD is the semi distributed version of the model. However, it is difficult to understand the term “mesh” in that paper. In the section 2.1 of Rouhier et al. (2017), it is clearly mentioned that each mesh corresponds to "elementary sub-catchments". This makes the model again semi-distributed not fully distributed unless the mesh size is unique for every catchment. Please clarify the readers’ mind and mention that mesh is not HRU etc.

- What is mesh size used? Is it triangular? Similar to square grids? The main reason for a semi-distributed model is that a parameter is uniform over the mesh (sub-catchment). However, a fully distributed model like mesoscale Hydrologic Model (mHM, Samaniego et al., (2017)), grids (1x1km etc) are elementary units of simulation and do not vary for different sub-catchments.

- Rouhier et al. (2017) also uses KGE (a temporal metric for streamflow) and difficult to understand how spatial pattern can be ensured in the regionalization.

- Similarly, Rouhier et al. (2017) already states in the conclusion that

“The simulated hydrological response was evaluated in light of four runoff signatures in order to finely assess the impact of the spatial variabilities. However, it did not reveal the greater sensitivity of a particular hydrological signature.”

In short, looking only runoff may hinder the spatial patterns of the parameters that are sensitive to soil/vegetation related processes such as AET.

- IDPR appears in figure 5 at page 9 but firstly used in text at page 11.

What is the relation of “Index of Development and Persistence of the River networks” term with parameter regionalization?

- Page 9 line 3: Sobol for a model with 22 parameters is an extremely heavy work and no details are given except for the names of the sensitive parameters.

- How many runs were necessary for sensitivity analysis (SA)? How did you conduct the SA? How much time required for the run?

- Which objective functions were tested in the SA?
- Based on the statement at page 16 line 18, low flow performance in Durance basin hampered. How this is related to the way sensitivity analysis done? May be only high flow metrics are used and only high flow related parameters are highlighted as sensitive.
- Selecting appropriate objective function (OF) is crucial in SA (Demirel et al 2018, Koch et al 2018)
- Section 4.2.2 is very interesting. When PET is corrected by a uniform parameter Kc or linked to uniform NDVI, the reader can be curious how a spatially heterogeneous pattern can be formed?
- For that spatially distributed Kc based on LAI patterns should be multiplied by the PET, see Demirel et al., (2018) for the new approach used for PET correction.
- Papers by C. Corbari (Corbari et al., 2015) can be relevant to your work too.
- Other papers are mentioned in the reference list.

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