The topic covered by the Paper is very interesting. The adoption of authoritative (freely available) datasets as support for hydrological analysis or weather-induced impact analysis deserves great attention. In this regard, ERA5 Land represents a valuable example providing data with a very high temporal and spatial resolution (1 hour and 9 km, respectively over the entire Globe).

Thank you for your detailed and informative comments on our work. We appreciate it so much and we'd like to improve our manuscript following your valuable suggestions. Meanwhile, we provide some explanations for your questions and advice.

However, the actual goal of the Article is not clearly identified. The main goal for which hydrological analysis are carried out, has to be identified because it play a key role on the significance (or not) of initial conditions and of the soil moisture data. Furthermore, the two test cases seem to be too large. It entails the adoption of coarse DEM for representing the orography and then the performances could be greatly affected.

This work proposed a way to get the initial conditions of the hydrological model from a global reanalysis dataset. And we conducted the experiments which is one of the applications of the proposed methodology to get the variables for the model initial conditions. Indeed, DEM resolution could affect performance. Actually, we set a hydrological model with a resolution of 500 m and 1 km. However, as the ERA5-Land data has a coarse resolution with 0.1 degrees. So the soil moisture variable from BTOP model were resampled to 0.1 degree to compare with ERA5-Land data.

Furthermore, I suggest introducing, first, the performance of the "best-configuration" hydrological chain. It permits to give confidence on the entire assessment.

Thank you for your suggestion, we will reorganize the structure to better show the results while revising the manuscript.

Discussion and investigation about the reasons entailing the discrepancy between ERA5LAnd and BTOP should be improved: how different are the two soil hydraulic parameter datasets and how the values are computed in the two approaches? The key point is the link among the soil zones of the two approaches: I can understand that the choice is not trivial. Probably an analysis about the water fluxes in ERA5 LAnd could permit clearly linking to the soil profiles in the hydrological model. Furthermore, is it not possible to set the depth of soil profiles in BTOP? However, when you use statistical relationships to "correct" the values, all the physical reasons for which they diverge could play a minor role.

We will improve the discussion and investigation about the reasons entailing the discrepancy between ERA5LAnd and BTOP. As for the question about BTOP soil profile, BTOP model classifies four layers of soil content. Usually, a hydrological model computes these variables by water balance budget. Thus, it is difficult to set depth in the current BTOP model.

Furthermore, some minor suggestions:

The Abstract should be improved. The main topic and the principal Results of the work should be made clearer . A one-sentence about ERA5-Land should complement its introduction. Furthermore, I suggest improving the lexicon (e.g. "luxurious" is not an usual term in scientific literature)

Thank you for your comments. We will improve this part.

General remark: please check the Figures quality. I suppose it should be greatly reduced during the PDF building

Thanks, we will give attention to this point.

L30: to "explore" the uncertainties; it could be better than "minimize"

L31-35: the significance of initial conditions is strictly related to the "memory" of the analysis and then to its duration (as for weather analysis). This aspect should be clarified.

Yes, for weather analysis, like WRF model, the initial conditions play a more

important role than its in the hydrological model.

L43: However, soil moisture represents the key variable as it summarizes the contributions of the different components of the soil water budget (precipitation/infiltration, potential/actual evapotranspiration)

We will describe it in the revised manuscript.

L75: please add information (if available) about the period over which the temperature values have been assessed

Sure, thanks, the temperature had been assessed over 2002-2011 which is consistent with the hydrological simulation period.

§ 2.1 you should try homogenizing the contents in the description of the two Test Cases (e.g. temperature information is missing for the second one)

We will add the information in the revised manuscript.

§ 2.3.1: for long-term analysis, surely, evapotranspiration dynamics should be considered; please provide details and insights :about the choice of using external datasets

As described in Line 133-136, Section 2.3.2, "evaporation module of BTOP model to generate potential interception evaporation (PET0) and potential evapotranspiration (PET)."

L146: ERA5Land is conceptually very far from the other products you have introduced (e.g. satellite data); it should be very important to introduce a paragraph to explain what is a reanalysis is, what is ERA5-Land (e.g. the limitations linked to its horizontal resolution). Furthermore, it should be important to report and compare the soil parameters (e.g. porosity) between the BTOP analysis and ERA5 land. It could significantly influence the results.

We will add related information in the revised manuscript.

L171: please check for typos

We modified it to "They share the exact170 calibration (2003-2007) and validation period (2008-2011), and all cases are auto-calibrated by shuffled complex evolution (SCE-UA) method (Duan et al., 1994) with approximately ten thousand irritations for eight simulations each (four cases for two basins)."

L185: the rationale for the three EXP should be clarified. You are considering a physically-based sub-division with a geometrical one. More details about the coupling are needed.

We explained it in Line 190-199, and we will add more detailed information to support the EXP.

Figure 7: it seems to have a low information content; the scatter plots are quite disperse and then it is hard to identify clear patterns to discuss; furthermore, too many series are retrievable on each plot

Yes, the scatters look disperse for EXP1, that's why we should conduct EXP2 and EXP3.

Figure 13: the investigated variable is not introduced in the graph; please provide additional information

Thank you, we will improve this figure.

Under such premises, in my opinion, the Article is not suitable for publication at this stage but I highly recommend its resubmission after major revisions are implemented