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Comment on hess-2021-243

Anonymous Referee #2

Referee comment on "Multiscale assessment of TRMM (3B42 V7) and GPM (IMERG V5) satellite precipitation products over a Mediterranean mountainous watershed with sparse rain gauges in the Moroccan High Atlas (case study of Zat basin)" by Myriam Benkirane et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2021-243-RC2, 2021

The paper presents an assessment of two precipitation satellite products, TRMM 3B42 and IMERG V5, in reproducing observed rainfall and streamflow data over the Zat basin, a small mountainous basin in Morocco. At first, the authors investigate the capability of satellite precipitation data to reproduce rainfall time series recorded by one raingauge located at the outlet section of the basin. Then, the satellite precipitation products are used to force an hydrological model for the simulation of specific flood events occurred in the basin.

I have some concerns about the work that in the present form results as a purely didactic exercise adding little evidence about the use of satellite precipitation products over poorly instrumented Mediterranean basins. My concerns are related to two main aspects summarized in the following:

1. it is not clear to me the final aim of the paper and I don’t agree with the general conclusion drawn in the lines 428-433. For which applications a such analysis could be useful? Gauged-corrected satellite precipitation products, such as the ones used in the study, have a latency of several months and cannot be used for flood or precipitation forecasting as stated by the authors (see Lines 88-90 or 91-92, respectively). For the specific case study (small poorly gauged basin) it would be more meaningful to test the capability of near-real time satellite precipitation products in reproducing rainfall and streamflow time series at hourly time step.

According to me, the authors should better define the final purpose of the study and re-address the analysis, consequently.

2. The manuscript should be careful revised to add some missing details, to improve figures or to correct wrong information. Some more specific comments are listed in the following:

- If I well understood from lines 153-155, the comparison in terms of rainfall was made by comparing the in situ data against the data extracted from the pixel covering the in situ station. If so, how are the authors considering the different spatial resolution of TRMM 3B42 and IMERG V5? Moreover, how the satellite precipitation data are extracted for the

flood simulation?

- it is not specified which IMERG product (Early, Late or Final run) is used in the analysis;

- some Figures and Tables, e.g. Figure 3 and 4 or Figure 6 and Table 5, represent the same information. Please, remove one of them in the revised version of the manuscript.

- it is not clear to me how the authors construct Figure 5. If I well understood, Figure 5 illustrates the results of Table 4. How the authors built the boxplots?

- some indexes (e.g., Nash-Sutcliffe) are not defined in the text.

- Figures 7-9 should be improved as they are hard to read.

For the manuscript in the present form I suggest the rejection with an invitation to re-submit a new manuscript. I hope that some of the above comments can help the authors in the re-submission process.