

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1  
<https://doi.org/10.5194/hess-2021-524-RC1>, 2021  
© Author(s) 2021. This work is distributed under  
the Creative Commons Attribution 4.0 License.

## Comment on hess-2021-524

Anonymous Referee #1

---

Referee comment on "Recent decrease in summer precipitation over the Iberian Peninsula closely links to reduction in local moisture recycling" by Yubo Liu et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-524-RC1>, 2021

---

This manuscript of Liu et al. presents and discusses decreases in summer precipitation over the Iberian Peninsula (IP) by analyzing the moisture sources. They applied WAM-2layers to track moisture sources that contribute to the summer precipitation. The moisture source region is divided into three sub-regions: western, IP, and eastern regions. Their findings show how moisture contribution changed from the three regions resulted in less precipitation over the IP.

The results showed by Liu et al. help to better understand what the changes and contributions of the three moisture sources are and how they affect the IP summer precipitation. The motivation is generally interesting, and the figures and text are clear. The method and analysis are clearly stated and explained. I have a few questions and recommend the manuscript for publication after a minor revision

### Questions/comments:

- About the identified west region, the moisture from this region was considered as a contribution from the circulation over the North Atlantic Ocean. North America is also included in this region. However, in Figure 4b it seems that North America is not connected to the other moisture source regions (e.g., the eastern North Atlantic Ocean) when you consider the significant differences between wet and dry years. What are the physical mechanisms of moisture transport from North America? Is it reasonable to include North America in the west region?
- As for the east region, it seems that it is at the downwind location of the circulation over the North Atlantic Ocean. It is not clear in the manuscript how the moisture from the east region contributes to the IP precipitation. It would be helpful if the authors could clarify the physical mechanism.
- Evaporation is used to explain the local moisture contribution. Although both have a decreasing trend, how does the annual evaporation (in Figure 9) correlate to the

contributed P in Figure 6 in terms of interannual variability?

- The role of local recycling is stressed in the conclusion. However, looking at Figure 6a and Table 1, it seems to me that the changes in contribution from the west region have the most dominant effect. I think this should be made clear in the conclusions.

### **Technical corrections**

- The grey shading in Figures 2,6 is not defined in the captions.