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Interactive comment on "The influence of wind and land evapotranspiration on the variability of moisture sources and precipitation of the Yangtze River Valley" *by* Astrid Fremme and Harald Sodemann

Anonymous Referee #4

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General comments

The manuscript has analyzed the climatology, intraseasonal and interannual variability of moisture sources for the rainfall in Yangtze River Valley (YRV). The continental moisture sources are found to contribute more moisture for the rainfall in YRV than oceanic moisture sources if only the direct contribution is considered. The study have also found that the peak of the moisture sources from YRV is two months later than that of the moisture sources from the regions outside YRV due to the late peak in NDVI and lower-tropospheric horizontal wind over YRV. Besides, the study implies that the

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key moisture sources are different between intraseasonal and interannual variability of the rainfall in YRV. The results are of significance in the understanding of the mechanism for the rainfall variability in YRV. However, several concerns should be addressed before the manuscript can be suitable for published.

Specific comments

1.The introduction puts forward the main scientific problem of the present research at Line 12-15 of Page 3. However, the main assignment of this study, which is outlined in Line 13-15 of Page 3, does not clearly provide sufficient information on how to resolve the problem. Moreover, I do not find the direct answer to problem throughout the manuscript. The sentence “Without the ability to compare in detail, the results of these past studies are similar and do not contradict the results of this study” may make the readers think that the problem are not really solved in this study. I suggest the authors to improve the proposal of the scientific problems.

2.The manuscript have studied too many issues regarding the moisture sources for the rainfall in YRV, which are too dispersed for the readers to understand the central idea of the study. So I suggest the authors to reorganize the results and discussion section (Section 3) to make it more concentrated.

3.Line 23-29 of Page 9. The paragraph gives the reasons for the disagreement among existing studies from the perspective of the way of considering second-order continental sources. However, no more detail is provided here. I suggest the authors to give the ways how existing studies track the moisture beyond the last place of evaporation, which may provide the evidence supporting the assertion.

Minors

1.Line 32 of Page 4. Why sources for precipitation over the ocean are excluded by including the sources above 25 m elevation, not zero m? The area of the land regions with elevation <25 m is actually not small.

2.Line 9-11 of Page 8. The sentence is hard to understand.

3.Line 15-16 of Page 8. Fig. 7a only shows the results in the southeast part of Asia, how can the ET results over the whole Asia be seen?

4.The title of the manuscript does not exactly match the results of the present study and is thus misleading. The title suggests that the manuscript aims to study the effect of surface wind velocity and land evapotranspiration variations on the variations of the moisture sources for the rainfall in YRV. This is actually only one of the issues of the manuscript (Section 3.6). So the title should be revised according to the scientific problem of the manuscript.

5.Line 31 of Page 10. This sentence emphasizes the role of soil moisture and solar forcing in causing the late peak of local recycling in August. However, this sentence contradicts with the results shown in Line 13-18 of Page 10. Also, I do not find any evidence for the solar forcing throughout the manuscript.

6.Line 5-6 of Page 11. The meaning of the sentence is hard to understand because what the precipitation deviations are is not provided. Also I do not find the corresponding supporting data in Table 3.

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