

Dear editor,

Thanks for your suggestions to my second round of revision, I am very glad to see your approval of our modifications. Regarding the two questions you raised, here are our responses:

1. Modification related to Reviewer #1-main comments #2.

Thanks, I have modified the draft, you can refer to the changes in lines 121-122 and lines 527-530.

2. Questioning about wind directions to define LLJs.

Regarding the wind direction chosen when defining LLJ. I think I need to clarify in the manuscript that the research on LLJs in North America is based on the two directions I mentioned, which are related to the shape of the main terrain of North America, the direction of the coastline, and the large-scale circulation system. So, in the following Section 4, I also conducted a relevant mechanism analysis. Meanwhile, the study of Walter et al. (2008) and Doubler et al. (2015), did not mean to suggest considering LLJs in the N-S direction only. For the North American continent, the Great Plains S-LLJ and California N-LLJ have attracted much attention, then if the later research could focus on the same kind of LLJs, it would be more beneficial to comparison. Besides this, the meridional water vapor, heat, and momentum transport are relatively important to the North American climate system. Therefore, focusing on the N-S direction is more appropriate for research in North America.

LLJs in the W-E direction also exist in other areas, for example, the West African Westerly Jet (Bing Pu and Kerry H. Cook, 2010, *Dynamics of the West African Westerly Jet*, <https://doi.org/10.1175/2010JCLI3648.1>). The mechanism for its formation is related to the westward extension of the continental thermal low pressure over Africa in summer, which has a very certain local characteristic. And this zonal LLJ is helpful to the water vapor transport in West Africa, so it has attracted the interest of local researchers. Thus, the choice of investigation should normally match the local feature. I adopted part of this answer for the draft revision, you can refer to them in lines 143-148.

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Thank you for your consideration and suggestions. I am looking forward to your further responses.

Sincerely,

Yanping Li