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Climate of the Past Discussions

Interactive comment on "Distorted Pacific-North American Teleconnection at the Last Glacial Maximum" *by* Yongyun Hu et al.

Anonymous Referee #1

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Based on climate model simulations and sensitivity experiments, this study shows that the PNA was largely distorted or broken at the LGM, which was attributed to a split of the westerly jet stream over North America induced by the thick Laurentide ice sheet. It further indicates that ENSO had little influence on North American climate at the LGM. The results are intriguing and the mechanism proposed is convincing. I would recommend a minor revision to address the comments below. 1. If the PNA is defined as the leading EOF of the 500hPa geopotential height, the results would change or not? 2. It is better to replace Figs. 6d-f with the meridional temperature gradient, and present a figure showing the sensitivity simulation result that meridional temperature gradient become sharper with increasing ice sheet thickness. This would clearly illustrate how a split of the westerly jet stream over North America is connected to the thick ice sheet

through the thermal wind relation. 3. Fig. 8 is kind of needless. Instead, the zonal wind in the 60%, 80%, 100% thickness simulations can be added to Fig. 7 to show the occurrence of easterly winds over the Laurentide ice sheet. 4. How are the wave activity flux and stationary wavenumbers calculated? 5. The temporal span used for the individual simulations of PMIP2 and PMIP3 should be clarified. What is the degree of freedom used for the correlation coefficient of 0.35? 6. L189: Alberta->North Pacific

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