

## ***Interactive comment on “Comparison of the diurnal variations of warm-season precipitation for East Asia vs. North America downstream of the Tibetan Plateau vs. the Rocky Mountains” by Y. Zhang et al.***

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Title: Comparison of the diurnal variations of warm-season precipitation for East Asia vs. North America downstream of the Tibetan Plateau vs. the Rocky Mountains

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Recommendations: Accept after minor revision  
C4332

### General comments:

This paper explores the differences and similarities of the diurnal variation of warm-season precipitation in the East Asia and North America downstream of the big topography. The multi-scale, multi-modal features of precipitation over both continents are also examined and discussed. This manuscript is generally well written, and is recommended to be accepted after very minor revisions.

### Minor comment:

1. There is a little difference between these two focus domains. In East Asia, the focus domain includes a small part of ocean, so the impact of the land-sea circulation is discussed and seems important to the diurnal precipitation over the coastal area and the ocean. While the focus domain in the North America is in the continent completely, doesn't include the ocean in the east, and just the mountain-plains circulation is analyzed. On the other hand, there is another downdraft (updraft) between 86-81W in Fig. 7b (7d) except for the one of S0. This downdraft/updraft seems to belong to another circulation which is not obvious in Fig. 7. If the domain in Fig.7 could extend to the east ocean, or the horizontal distribution of the low-level vertical motion derivations over the larger domain as Fig. 9 in BZS11 can be showed, the other circulations beside S0 in connection with the diurnal precipitation should be clear and entire.
2. According to Fig. 7, The period that MPS circulation in North America converts from daytime pattern (00 UTC, Fig. 7a) to nighttime pattern (06 UTC, Fig. 7b) seems to be around 6h, is shorter than that in East Asia (around 12h, Fig. 6). Does the faster transition influence the propagation of diurnal precipitation signal? Or is this just because the low temporal resolution of FNL analysis can't give the correct peak time of daytime and nighttime MPS pattern? Because this question needs the higher temporal resolution data to resolve, so the authors can glance at it merely.
3. P. 13771, L5-13 and P. 13774, L6-15: In these two paragraphs, a lot of toponyms are used to describe the topography features of East Asia and North America in detail,

but aren't showed in the corresponding topographic map Fig. 1a and 1c. While some key places, such as Tibetan Plateau, Yangtze and Huai River Valley, Rocky Mountains, Appalachian Mountains, are mentioned frequently. So it will be very helpful to readers unfamiliar with these regions to mark these key placenames or their abbreviations in Fig. 1a and 1c.

4. P. 13784, L18-20: The southwestern low level jet (LLJ) is introduced to be the possible reason that the wind speed at levels lower than 500 hPa over the southern area is slightly larger than the northern wind speed, but it is not explored further. Please cite some relational references to support this statement.

5. P. 13801, Fig. 8: please use the same color bars of the power spectra in both domains.

Technical points:

1. P. 13774, L5: lost a full stop "." at the end of the paragraph.

2. P. 13776, L6: please change "BZS11," to "BZS11;".

3. P. 13779, L1: please change "He and Zhang, 2010," to "He and Zhang, 2010;".

4. P. 13782, L17-18: "CAR02," should be "CAR02;". "Zhou et al;" should be "Zhou et al.;".

5. P. 13784, L12: "HZ10" is not defined before its use.

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