

Interactive comment on “Effects of horizontal resolution and air-sea coupling on simulated moisture sources for regional East Asian precipitation” by Liang Guo et al.

Anonymous Referee #1

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General Comments: East Asian precipitation simulation is one of the great challenges faced by climate scientists due to the complexity of East Asian climate system and topography. The simulation of East Asian precipitation is sensitive to model resolution and air-sea coupling. This paper investigated the moisture sources of East Asian precipitation simulated by MetUM models using WAM-2layers. It provides a novel way to understand model bias. This study shows evidences about the sensitivities of moisture sources of EA precipitation to model horizontal resolution and air-sea coupling. The results are convincing, and helpful for model developers and climate model users. This paper is well structured and written. Thus, I suggest a minor revision. Specific Comments: 1. As shown in Fig3d, the moisture source over the tropics in region1

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and region2 is underestimated, and more source from mid-latitude is transported to the two regions. Is there any coupling between the biases of the tropical source and mid-latitude source? 2. It would be useful to examine the travelling time and distance of moisture to further check the model biases and sensitivities to resolution and air-sea coupling. 3. As for the moisture bias of region5 precipitation in DJF, it shows that less moisture source from the mid-latitude and more moisture source from the Seas of Japan and Okhotsk lead to the eastward shift of the moisture center. This paper well discussed the positive anomalies of the moisture source from east of region5 with resolution. How about the contribution of mid-latitude circulation or evaporation bias?

Typing errors 1. Fig.10i, “CN512-CN512”-> “CN512-AN512” 2. P8 L229 Seas of Japan ad Okhotsk-> Seas of Japan and Okhotsk P10 L289 necessary->necessary

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