

Interactive comment on “Intraseasonal summer rainfall variability over China in the MetUM GA6 and GC2 configurations” by Claudia Christine Stephan et al.

Anonymous Referee #1

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The authors have produced a nicely written article on the important topic of the performance of one of the MetUM models in simulating boreal summer intraseasonal variability over China. It is useful to quantify how well a model can reproduce such variability given its important impacts on water resources and extreme events during the monsoon season; yet it remains a very poorly understood phenomenon. The introduction is well motivated and references the appropriate literature; the techniques used are varied and sound, having been used comprehensively in this field before. I have several major comments on this paper which are as follows:

(1) In section 3, the authors give an assessment with a discussion of mean state biases.

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Since the western Pacific subtropical high is another dominate climate system in East Asian region, evaluation on the simulation of the western Pacific subtropical high will gain more insight into the model bias in precipitation.

(2) In Section 4, the authors shows the meridional profiles of bandpass-filtered precipitation variance averaged between 103–119 E. The role of bias in 30–80 and 10–30 day variability on the total bias in IPV is explored. Why the authors divide the ISO over China into 10-30 days and 30-80 days? If you take an analysis on the power spectra of precipitation or OLR over the Eastern China, you can find that the biweekly oscillation (peak on 10-20days) is significant, ISO on time scale of 20-60 days (with one or two peaks) is also evident. Thus, in this section, investigating what timescales are associated with IPV biases according to the dominate period over China may be more meaningful. (3) In Section 5, the fractions of the wettest decile of pentads that occur during phases 1–5 of BSISO-1 and phases 4–8 of BSISO-2 are shown. Here, the BSISO-1 and BSISO-2 are usually used to represent the BSISO over the Asian region which including the Indian region. Previous studies have found that there are the large regional differences between the Indian region and WNP region. The former is characterized by northeastward propagation with period on 20–50 days, while the later show periodicity on 10-60 days, which includes a significant biweekly component. So if the analysis based on the BSISO index derived from the regional ISO over the East Asian – WNP region may be more convincing, and the discussion on the relationship between the BSISO phase and EOT mode may be more interesting.

(4) In Section 4, Fig.10 gives the percentages of the wettest 10 % of pentads that occur in different BSISO phase. Then, how about the occurrences of the percentages of the wettest 10 % of pentads in different month?

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