

Interactive comment on “High-resolution ensemble projections and uncertainty assessment of regional climate change over China in CORDEX East Asia” by Huanghe Gu et al.

Anonymous Referee #1

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This paper reports a useful analysis of model simulations and forecasts of temperature and precipitation over China. Yet the presentation needs improving by avoiding vague and empty statements and the English needs polishing before the paper is publishable.

Section 2, Data and methods lacks details. Why selecting these five RCMs? What advantages do they have compared to other regional and global models products? Do the five models have desired features for the purpose of this analysis? CRU and APHRO products are used as “observations”. Are they more accurate and reliable than other global temperature and precipitation data products over the study domain (China)? Section 2.3 is somewhat confusing due to lack of details. Why using Taylor diagram? A

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concise description of the Taylor diagram is needed for those who are not familiar with the method. Eqs. (4)-(5) appear to come from nowhere with undefined notations. A justification of the statistical method and metrics used in the analysis is helpful. Section 3 is not well organized and thought out. Overall, discussions are somewhat superficial. To make this paper useful, more insightful explanations and suggestions should be made explicit and specific. For example, on page 6 “All RCMs successfully simulate the precipitation patterns but with quite large biases in amounts”. Should we trust more the CRU data or the RCMs simulations? The authors suggest that “the multi-model ensemble outperforms the individual RCM in reproducing the observed spatial pattern of precipitation” (page 6). Would it be possible to obtain the “true” climate by having infinite ensembles? In section 3.3.2, it was suggested that “the seasonal precipitation change in multi-model ensemble has larger magnitude and variability than driving GCM. This phenomenon concerns the significance of the model physics and processes for future climate projection”. Specification of what model physics and processes are important would be very useful. The paper ended with “More reliable future climate information could be provided by coupling GCMs and RCMs through the modifications to model structures and parameters.” To be specific about the model structures and parameters to be modified would be the valuable new knowledge that the reader can learn from this analysis.

The paper needs a careful text editing to improve its presentation. A long sentence is often confusing such as “Reliable regional future climate projection is important for the evaluation of climate change impacts and vulnerability, as well as the elaboration of appropriate mitigation and adaptation measures, especially for the developing countries like China tend to be one of the most vulnerable to the adverse effects of climate changes” (page 1). English Grammar needs to be checked carefully. For example, “The ongoing coordinated regional downscaling experiment (CORDEX) (Giorgi et al., 2009; Jones et al., 2011), whose aim is to provide high-resolution regional future climate projections for the majority of populated land regions on the globe by using multi-RCMs, and an interface to the applicants of the climate simulations in climate change impact,

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adaptation, and mitigation studies.” (page 2) is not a sentence as it does not have a verb.

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