

Interactive comment on “Sensitivity study of the tropical Pacific precipitation anomalies” by S. Zhang et al.

Anonymous Referee #2

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This paper investigated the effect of an increased tropical Pacific precipitation on the tropical Pacific SST, upper layer oceanic current, the atmospheric circulation in the Northern Hemisphere and the sea ice. The response of global ocean and atmosphere to precipitation anomalies in the tropical Pacific Ocean is an important topic. This paper reports some interesting results on the topic, but some comments below should be taken into account by authors of this paper, and I recommend major revision of this manuscript.

1) Precipitation correlates significantly with SST over the tropical Pacific Ocean, as shown in Fig.1 in the paper, but this correlation is only a statistical result. This correlation cannot support the conclusion that the spatial distribution of temperature anomalies caused by strong precipitation resembles with the SST anomalies characteristics during El Niño periods. On the contrary, the precipitation anomalies may be caused by

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the SST anomalies.

2) The design of the numerical experiment is not appropriate. Precipitation involves many atmospheric physical and dynamical complex processes, it is not a proper method to add 10% of precipitation on each time-step in the coupler. The better choice maybe is to run the CESM model in RCP 4.5 or 8.5 scenarios, and then analyses the output of the model.

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