

## ***Interactive comment on “Insights from a joint analysis of Indian and Chinese monsoon rainfall data” by M. Zhou et al.***

**M. Zhou et al.**

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Response to Referee 1:

We are grateful to Referee 1 for the careful review of the paper and many constructive suggestions. We have incorporated all of the criticisms, as described in the following response to Referee 1, which also lists the changes we are making to the paper.

1)**Comment:** The study indicates the significant influences of the ENSO on the India PCs, China PCs and joint PCs (Section 3.3). However, the influences of couple ENSO and interdecadal oscillation of SSTa over Pacific Ocean (such as Pacific Decadal Oscillation, PDO) on those PCs have not been discussed. There are other previous studies,

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for example, showing the role of couple PDO and ENSO affecting the monsoon rainfall over China region (Chan and Zhou, 2005).

**Response:** We put this paper as reference at the end of the first paragraph of section 1 with the context “Moreover, a previous study show that the monsoon rainfall over China region is affected by the interactive of PDO and ENSO (Chan and Zhou, 2005).”

2)**Comment:** The study shows that the SSTa in winter months (Dec, Jan, Feb, or DJF) can influence the Indian and Chinese monsoon rainfall (Jun-Sep, or JJAS). However, there is no discussion on the influence of the Mar-May SSTa on the Indian and Chinese monsoon rainfall months. How well does it influence?

**Response:** We performed the correlation analysis between the Mar-May SSTa and PCs, the influence is weaker than summer and winter, so we did not put these figures in this paper.

3)**Comment:** Section 3.4: Table 3 shows the years in which the joint PC have the highest and the lowest values. Are the years in which the joint PC have the highest values related to La Niña years and the years having the lowest values related to El Niño years? If those years are related to El Niño/La Niña years, it could be discussed in this Section (Section 3.4).

**Response:** We compared the variation of joint PC and ENSO and did not see a clear pattern in their relations.

4)**Comment:** Section 3.1, last paragraph: It would be better to describe in more detail the Indian Monsoon Index (IMI) and western North Pacific Monsoon Index (WNPMI). It could be added in the introduction section. Why do the authors select these indices among other Monsoon indices?

**Response:** We also compared with EASMI (East Asian Summer Monsoon Index), and the results show the correlation between PCs and IMI and WNPMI is better.

5)**Comment:** It is mentioned in the introduction, result or discussion sections: Yangtze

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River basin, Mei-Yu, Ganges River basin, etc. Some basins are located in China and others are in India. It would be easier to follow the discussion if the authors presented a map which shows the location of those related basins.

**Response:** We are adding a figure at the beginning of the paper to show the study area and also the locations of Yangtze River basin and Ganges River basin.

6)**Comment:** In Section 2 (Data): What does the acronym WCRP GCOS stand for?

**Response:** WCRP/GCOS stand for World Climate Research Programme/ Global Climate Observing System. This is being added to section 2 line 2.

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