Interactive comment on

"Unraveling the spatial diversity of Indian precipitation teleconnections via nonlinear multi-scale approach"

Kurths et al.

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COMMENTS FROM REVIEWERS

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<u>Reply to the Review Comments</u>

We thank the editor and reviewer for investing his/her valuable time in our manuscript. We have revised our manuscript, taking into consideration all the review comments. Here, we respond to the specific review comments. In what follows, line numbers correspond to those in the clean version. We have responded (in black) to each reviewer comment (in red).

Anonymous Referee #2

This paper introduces a nonlinear, multiscale approach, based on wavelets and event synchronization, for unraveling teleconnection influences on precipitation. The results suggest significant nonlinear influences which are not well captured by the wavelet coherence analysis, the state-of-the-art method in understanding linkages at multiple time scales. The results provide an exciting perspective for capturing the dynamics of precipitation and improving precipitation forecasting. In addition, the substantial variation of precipitation teleconnections across India and across time scales that is unraveled by the proposed method provides an exciting perspective for rainfall forecasting for India and for making better sense of its weather. The analysis is very interesting and the results are insightful. The paper is well written and I would like to recommend the publication of this paper once the following minor points can be addressed.

We thank the reviewer for acknowledging the potential of the method in capturing dynamics of precipitation and his/her critical and supportive suggestions.

The Z-P space approach should be given some basic descriptions in this paper to help readers understand this paper conveniently.

We thank the reviewer for demanding a necessary explanation on Z-P space approach that definitely would increase the understanding and readability of the paper. In the revised version we have included more discussion which read as follows.

In the Event synchronization and network construction part, 95% threshold is chosen. I think a simple description should be given to the choice criterion.

We thank the reviewer for highlighting and demanding an explanation for such an important step. In the revised version we have modified the statement which reads as follows:

A number of criteria have been proposed to generate an adjacency matrix from a similarity matrix, such as a fixed amount of link density (Agarwal, 2019; Agarwal et al., 2018; Stolbova et al., 2014) or fixed thresholds (Donges et al., 2009). Here, we consider a 5% link density since it is a well-accepted criteria in general for the network construction. Also, 95th percentile is a good trade-off between sufficient number of connections and capturing high synchronized connections.

References

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