

# ***Interactive comment on “Co-incidence Analysis of Changes in Flood Magnitude and Shifts in Flood Timing in a Large Tropical Pluvial River Basin” by Poulomi Ganguli et al.***

## **Anonymous Referee #1**

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### General comments

The manuscript “Co-incidence Analysis of Changes in Flood Magnitude and Shifts in Flood Timing in a Large Tropical Pluvial River Basin”, by Ganguli et al., aims at assessing coincidence of changes in peak discharge and shifts in its timing in Mahanadi River Basin (MRB), in India.

Many of the results that have been showed for the analyzed catchment are a summary or repetition of previous studies as also the authors declare both for what concerns analysis of trends in floods (Panda et al., 2013 – lines 452-457) and trends in flood seasonality (Ganguli et al., 2020 – lines 469-473). Therefore, this study reduces to

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a qualitative comparison between the two trends by introducing some explanatory hypothesis and contextualizing the finding of previous studies.

The language is fluent and precise. Scientific content and methods as well as overall presentation of the results are very good but the main problem, according to my opinion, is the poor degree of novelty of the tools, data and findings. Moreover, I strongly believe that the novel content is insufficient for the relevance of the journal. The results are presented with significant details and systematic approach. The authors made a great effort for motivating the few innovative results and study, for this reason the reading is very interesting but the paper resemblances a review paper in many paragraphs and still appears bare for what concerns new contents. Therefore, I invite authors to continue their fascinating research on the topic and to include in a future comprehensive version of the paper a supportive analysis for the new findings that can motivate the interest of the readers. For instance, I am referring to the role of catchment processes or trends in precipitation extremes for motivating the observed coincidence of trends in peak discharge and persistence in its timing.

### Specific comments

I suggest changing the 3-D plot in Figure 3 in a 2-D plot to improve its readability: may be different colors and markers just help to quantify the statistics.

Line 216: typesetting error

### References

Ganguli, P., Nandamuri, Y.R., and Chatterjee, C.: Analysis of Persistence in the Flood Timing and the Role of Catchment Wetness on Flood Generation in a Large River Basin in India. *Theoretical and Applied Climatology*, 139, 373-388, 2020.

Panda, D.K., Kumar, A., Ghosh, S., and Mohanty, R.K.: Streamflow trends in the mahanadi river basin (India): Linkages to tropical climate variability. *J. Hydrol.*, 495, 135–149, 2013.

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