

Interactive comment on “Classification of mechanisms, Climatic Context, Areal Scaling, and Synchronization of floods: the hydroclimatology of floods in the Upper Paraná River Basin, Brazil” by Carlos Lima et al.

Anonymous Referee #3

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A methodological framework based on the Self-Organizing Map (SOM) clustering was employed to find the spatio-temporal dynamics of the rainfall field over the Upper Paraná River Basin in Brazil in the days that preceded the major flood events. For each cluster, the large-scale moisture transport into the region was analyzed as well the upper level structure and teleconnections associated with sea surface temperature. The flood response associated with each rainfall pattern was evaluated in terms of magnitude, frequency, spatial scaling and events synchronization.

I agree with the authors that the findings and the methodological framework proposed

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in this study provide new insights for understanding causes of floods around the world and are a step forward to improve flood risk management and interpreting statistical assessments. I support publication of this manuscript in ESD after minor revisions:

Specific issues:

1. Please provide additional discussion on how the proposed approach help short-term flood forecasting.
2. Please provide assumptions and limitations of the proposed approach, mainly due to SOM approach and using ERA-Interim reanalysis datasets.
3. Clarify “typically of some km²” in line 7 of page 3.
4. Please provide justification or the limitations of using 2.50 x 2.50 resolution ERA-Interim reanalysis datasets (moisture fluxes, vorticity, upper level winds and sea surface temperature) in the proposed approach for investigating the basin scale flood mechanisms.

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