

Interactive comment on “ENSO-triggered floods in South America: correlation between maximum monthly discharges during strong events” by Federico Ignacio Isla

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The author's main aim is to link the occurrence of major river floods in South America to the El Niño - Southern Oscillation (ENSO) phenomenon. This is done by analyzing time series of monthly discharges from major rivers in several South American countries. The most interesting result is Fig. 9, where the author shows a strong correlation between monthly peak discharges during two subsequent ENSO periods for the analyzed time series. This suggests that such peak discharges exhibit a high degree of predictability, conditional on the predictability of the ENSO phenomenon, which is an interesting observation with practical applicability.

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However, the presentation of the data and methods, the results as well as the discussion in the current version of the manuscript lack the depth and rigor that are needed to warrant publication of the paper in HESS in its present form. Therefore, I am inclined to recommend rejection of the paper in its current form, with an encouragement to resubmit a new version of this paper. In the attached annotated version of the manuscript, I provide a large number of detailed comments and suggestions, both concerning the contents of the paper and concerning the text.

My overall impression is that the paper in its current form is quite descriptive in its approach. This would make it difficult if not impossible for others to understand exactly how the reported results were obtained. Please try to be as exact as possible as to where the employed data may be found (also by others), what the quality of the data is (both in terms of data gaps and in terms of the discharge estimates themselves), and finally what methods were used to quality control and process the data.

Also, the idea of investigating the predictability of peak discharges by linking them to the ENSO phenomenon, interesting as it may be from a hydrological perspective, is currently not really investigated quantitatively. Although the employed data records are relatively short, I have the impression that a more quantitative appreciation of the mentioned predictability is actually possible. Perhaps most importantly, a discussion of the physical cause of the reported correlation is largely lacking.

Finally, the paper comes with a significant number of rather anecdotal statements concerning past floods (as well as some droughts) and their presumed relation to the ENSO phenomenon. Although they provide support for the claim that the link between ENSO and peak discharges is indeed existent in South America, many of the statements distract from the main storyline of the paper. Perhaps these can be summarized in a table, which would leave more room for more detailed presentations of the data, the methods, the results, the discussion and the conclusions.

Please see the comments and suggestions in the annotated paper for further details.

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Please also note the supplement to this comment:
<https://www.hydrol-earth-syst-sci-discuss.net/hess-2018-107/hess-2018-107-RC2-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2018-107>, 2018.