

Interactive comment on “Runoff properties of extreme discharges on Paraná and Uruguay rivers” by W. Vargas et al.

Anonymous Referee #1

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This paper studies the monthly runoff anomalies for two rivers in the La Plata basin in South America. Although such a study might be useful for forecasting purposes or for the managing of the rivers, the paper in its present form is not fit for publication in HESS. The paper lacks a clear motivation and the analysis is rather descriptive than analytical. It has more the form of a technical report than a scientific paper. I therefore recommend that this paper is rejected.

Language and structure

Firstly, the language is not up to standard for a scientific paper. There are numerous grammatical errors, and many times I had difficulty understanding sentences and parts of the paper. This might be one reason I did not understand what the authors had done

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in parts of the study, and hence my review might be affected by a possible misinterpretation of the results. If that is the case, I would urge the authors to resubmit the paper after a thorough improvement of the language and presentation.

The structure is not clear. Although there might be some room to not follow the typical structure of a scientific paper, it helps the reader if the different parts are kept separate. For example, the data and materials should be kept in one section, not mixed together with analysis as it is now.

Scientific content

I miss a clear motivation for the study. The authors mention in the introduction that they aim to study the behaviour of monthly anomalies and how these are jointly correlated to in order assess the risks of extreme anomalies. There is no mention why this is important and how this information will be used. For a reader without any prior knowledge of the area and the possible problems of high or low flows for this particular region, it is difficult to understand the problems. Although high/low flows can generally cause problems, it always helps to get an insight in the specific case.

The actual study concentrates on monthly anomalies and these are classed as extreme if they are above the 7 decile or below the 3 decile. For me this seems like high or low flows rather than extreme. This classification needs further explanation.

The study of the anomalies, extremes and spell of extremes in section 3 is more descriptive than analytical. There is no attempt to statistically support the analysis with tests of significance of the results. For example, the claims that gauging stations in the same river are similar, but that the two rivers differ are rather basic and not very surprising. The rivers will show differences because of their location and climatic forcing.

The study of entropy and joint correlations in section 4 is not very clear to me. Is the purpose to build a forecast model using data from one river to model the other? The authors mentions “models” several times in the paper, but there is no mention of what

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these models are and how they will be used. This kind of analysis might be useful, but a reader without prior knowledge of how this would work is left with more questions than answers. I would also suggest coupling the runoff anomalies to for example large-scale circulation. This would increase the possibilities of forecasting.

A precipitation station is used to show how an increase in precipitation caused a jump in river discharge in the Parana river, however the reasons behind this is not discussed so the analysis does not shed any more light on this issue.

The conclusions of the study is that both rivers are dominated by the same dominant climate, but that the anomalies are not always correlated, explained by the fact that local processes are important too. This is neither novel nor interesting for the science community at large, so an in-depth analysis of the mechanisms behind is needed

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