

Interactive comment on “Identifying global patterns of stochasticity and nonlinearity in the Earth System” by Fernando Arizmendi et al.

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Taking into account the referees' comments, we would like to withdraw our manuscript. While we disagree with the referees' opinion, we thank the three referees for their comments that will allow us to improve our work, which will be submitted to another journal. We present below our response to the specific comments.

Response to Referee #3 We remark that the relation between Shannon entropy (not entrophy) and the long tail shape of the PDF should be sufficiently clear for anyone that is familiar with the concept of Shannon entropy: the entropy is maximum if the PDF is uniform and is minimum if the PDF is a delta. We have performed additional calculations with the NCEP CDAS1 dataset and found that the resolution (10/20/40 bins) does not significantly modify the entropy maps. The reviewer says “It is not investigated in

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any detail why ERA and NCEP are so different in the warm pool (i.e. are the extreme values responsible for the differences reasonable or not and what is the mechanism by which those values appear?)”.

We don't know why the two datasets are different in the warm pool and we also don't know if the extreme values are reasonable or not. However, we remark that this difference is a very relevant result of our analysis, and the scientific community should be aware of this difference in this region. We agree with the reviewer that Fig. 4, aimed at explaining the differences, is not sufficiently clear and will be redone.

The reviewer says “Figure 3 has orange squares underneath the black circles and its unclear how meaningful is overall.” Of course the separation is not 100% but the bars that indicate the inter-quartile ranges clearly demonstrate the trend: higher entropy – lower distance.

The reviewer says “It is not obvious or proven that extreme values of Shannon entropy for SAT are stochastic or due to stochastic processes”. We fully agree and we don't say or mean that idea in the manuscript.

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