

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

**M. Barreiro**

mar.bar.par@gmail.com

Received and published: 21 November 2016

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 #2 We agree with the referee that “the adjective stochastic refers to the random behavior of a system...” and we also agree with the referee that “is well-known that deterministic chaotic dynamical systems can have a certain degree of disorder although they have no stochastic components.” To explain what we mean by “stochasticity”, in the introduction we say that the entropy allows to “...quantify the “noisy” nature of SAT variability (to which we refer to as stochasticity)...” We agree

C1

that this idea can be explained more clearly by rephrasing this sentence as “...quantify the degree of unpredictability of SAT variability” as indicated by Referee #3.

The referee says that “The authors normalize the distances by subtracting the mean and dividing by the variance and claim that this removes all the memory effects.”

This is not precise: we do not claim that this removes all memory effects. In the manuscript we say that “Here  $\tau_j$  is a lag that takes into account inertia and/or memory effects.” Moreover, in the introduction we discuss the fact that more general forms could include more than one lag time. Nevertheless, it is remarkable that such a simple expression allows uncovering meaningful long-range climate patterns.

---

Interactive comment on Earth Syst. Dynam. Discuss., doi:10.5194/esd-2016-47, 2016.

C2