

Interactive comment on “Climatic information of Western Sahel (1535–1793 AD) in original documentary sources” by V. Millán and F. S. Rodrigo

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Thank you very much for your useful comments. We will take them into account in the revised versión of the paper.

In relation to the index value $I=0$, it is true that this value is misleading, because it may be assigned to different cases:

(1) Absence of information (2) Information on 'normal' events (3) Information of different events in a single time interval (for instance, torrential rains, +1, with drought conditions, -1, for a certain year, resulting in the annual value =0).

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In relation to (1) we can say that "absence of information" is not equal to "information of absence" of extreme events. This problem only may be resolved if the documentary information is enlarged with new data. In consequence, we always must be cautious in interpreting documentary data.

In the case (2) the problem is the 'normality' concept, and the vulnerability of historical societies to climatic events, which may change in time. A deep historical analysis may help in this case.

Finally, in the case (3) the variability of a single year may be masked by the index value assignment. Here, we must remember that the final purpose of the indices is the reconstruction of the total rainfall cumulated in a single year. In this case, the work hypothesis is the compensating effect of the coexistence of both, wet and dry episodes, (the excess of torrential rains is compensated by the shortage associated to drought).

In a previous work (Rodrigo, 2008. Climatic Change, 87:471-487,) an alternative methodology to reconstruct past rainfall, based on the frequency of extreme events, was proposed. This method solves at least partially these problems, but it needs that information density be higher than the information available in the case of Sahel. Due to this problem we choose to use ordinal indices for this first approach to historical rainfall in the Sahel. We will try to clarify these problems in the revised version of the paper.

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