

Interactive comment on “Hydroclimate variability of the South American Monsoon System during the last 1600 yr inferred from speleothem isotope records of the north-eastern Andes foothills in Peru” by J. Apaéstegui et al.

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Short comment on Hydroclimate variability of the South American Monsoon System during the past 1600 yr inferred from speleothem isotope records from the northeastern Andes foothill in Peru by J. Apaéstegui et al

This paper presents a new speleothem record from north-eastern Peru, in the northern Andes, a well studied area with the publication of several high resolution paleoclimatic and paleoenvironmental records during the past couple of years. Therefore this new

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contribution should be able to include a discussion in a wider pattern of regional climate variability. However the discussion is too limited and I am struggling to find any indication in the paper of how this study improves significantly upon the comprehensive picture of tropical climate patterns in the past 1600 yr.

Specific comments

1- My concerns are the absence of critical review of the results obtained by speleothem records when they might differ from other proxies such as for instance vegetation record, e.g. pollen or dendroecology, from the same area. This would reinforce the discussion and interpretations of the observed hydrological changes. However the discussion is almost exclusively based on speleothem records and never discussed in the frame of other environmental records (apart from one single lake and one glacier published in 1986).

2- The chronological frame to define MCA and LIA chosen by the authors needs more explanation. How did the authors decided to bracket the MCA and the LIA while different time intervals are discussed in other papers? The explanation that LIA started at different time along the Andean Cordillera has not yet satisfied the community and needs to be better discussed in the light of more recent literature. For instance why did the authors decide to start the LIA at 1400 AD when there is a pronounced dry episode in the Andes at the time of the expansion of the Inca civilisation?

3- Conclusions They appear to be entirely similar to Ledru et al' s conclusions published last year in Climate of the Past. For instance "...Atlantic and Pacific decadal to multidecadal variability and their teleconnections play an important role..." corresponds to the last sentence of Ledru et al Climate of The Past 2013. Same detailed conclusions with the above cited paper are also obtained with "a weak SASM activity and the important result of a strong Atlantic influence during the MCA" and "a stronger SASM activity during the LIA", although this similarity is never mentioned. In addition regional differences between the different records in the hydrological signals need to

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be discussed. Indeed, apart from the MCA and the LIA, two major events were pointed out in Ledru et al: a dry episode between 1250 and 1550 AD and, during the last century, the progressive evolution of the paramos into a drier environment concomitant to a strong increase in the convective activity until high elevation. There is a strong influence of the water evaporation from Amazonia and the related convective activity along the slopes of the Cordillera that contributes to maintain the andean forest. This hydrological supply might work independently from the monsoon and needs to be discussed.

Therefore I am not convinced by the novelty of this research in its actual state. New statements and discussions about the efficiency of speleothem records in discussing changes in rainfall patterns in the Tropics need to be properly discussed in the light of other proxies before being able to show a significant step forward in this field of research.

Some missing references

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