

Interactive comment on “A review of the South American Monsoon history as recorded in stable isotopic proxies over the past two millennia” by M. Vuille et al.

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We are grateful to referee #2 for his/her review of our paper. We reply to his/her comments as follows:

1) "The paper is very well written, and it really makes a great contribution to the knowledge of the SAMS. The fact that they used paleo indicators to describe some of the past characteristics of the SAMS is perhaps the best contribution to this paper, and it also refers to many studies published before, even though perhaps this literature review may have to be updated. There should be some indication, and perhaps a figure on the uncertainties and limitations on the paleo indicators. ENSO is not the only factor

C707

that affect climate variability in the SAMS regions, the tropical Atlantic and the AMO are also important, and this should be indicated on the text."

There are of course significant uncertainties and limitations of paleo-indicators. Some of these refer to the climatic interpretation of the stable isotopic signal and its spatial representativeness (sampling uncertainty), both of which we address in this paper. Other uncertainties are related to dating and measurement errors (methodological uncertainties) or process-based uncertainties (conversion of climate signal from rain into proxy). These uncertainties however, are discussed in the original papers (e.g. Thompson et al., 1986; Reuter et al., 2009; Taylor 2010; Bird et al 2011) and it is beyond the scope of this review to revisit this issue. We fully agree with the reviewer regarding the relevance of the tropical Atlantic and the AMO. However, we do not feel like we neglected this aspect as we discuss it in detail throughout the paper (see pages 641, 651 and 652).

2) "Page 639, I suggest to include a review paper on the SAMS, published on line in 2011 and paper in 2012, in International Journal of Climatology. This paper is a updated review on SAMS, and should be referred in here."

The only review paper on the SAMS published in the International Journal of Climatology in 2012 that we are aware of is by Marengo et al. (2012a). This paper is discussed in our manuscript and listed in the reference section.

3) "Page 645, lines 10-12, what about the Atlantic influence (AMO, tropical Atlantic)?, ENSO is not the only influence on SAMS"

We fully agree with the reviewer. We mention the influence of the AMO and tropical Atlantic variability on page 641 (lines 21-23) and discuss it in great detail on pages 651 and 652. In fact one of the main conclusions of our paper is that Atlantic variability significantly affects monsoon strength.

4) "Page 657, in line 10, what about the intensity of the SAMS during periods such as

C708

the Holocene?."

We assume the reviewer meant page 647, since page 657 belongs to the reference section. The Holocene history of the SAMS is documented in many proxy archives and discussed in several papers, some of which we reference on pages 645 (last paragraph) and page 646 (1st paragraph). However, since this topic is covered in detail in these aforementioned studies and our paper is a contribution to a special issue discussing climate variability in S. America over the past 2,000 years, we prefer to keep the discussion focused on the last 2 millennia.

Interactive comment on *Clim. Past Discuss.*, 8, 637, 2012.