

Interactive comment on “Hydroclimate variability in the low-elevation Atacama Desert over the last 2500 years” by E. M. Gayo et al.

M. Grosjean (Editor)

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Dear authors

we have received the reviewer's comments. Both evaluations are very positive and I would like to encourage you to submit a revised version of your manuscript accordingly.

I have a few additional comments mostly technical, one scientific. Scientific:

- I am not really sure and convinced that the picture of humidity changes is as consistent as it appears from the text (e.g. Fig. 5) and coincides with the periods RWP and DACP (the MCA and LIA are ok). The series presented in Fig. 5 seem at least partly inconsistent (at least for the MCA and the early RWP the C/N data show a different picture than the other proxies, the SSTs do not show any change prior to ca 600 BP).

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Also it appears from the distribution of the 14C data presented, that the wet periods coincide rather with the TRANSITIONS from the Iron Age to the Roman Age (2200-2300 BP) and from the RWP to the DACP than with the periods per se. Judging from the 14C data distribution (Fig 5), I would conclude that most of the RWP was dry in QM/Ramaditas in N-Chile, but certainly the ONSET was wet (as you correctly state on page 3178 L 23).

Technical

- 3168 Line 11: I would clarify that these periods are understood as chronostratigraphic periods rather than global expressions of climate anomalies.

- 3170 line 17 check syntax

- 3171 line 3: triggered (?)

- 3171 line 6: .. global...? I don't think this claim can be made. It would mean that the climate history of QM could be used as a predictor for global climate ... replace with <regional>.

- 3176 L21: explain the first time m.b.g.l.

- 3178 L9: archaeological

- 3179 L16: do Bird et al 20011 make any statement about temperature? I don't think so (at least could not find anything)

- 3179 L27: I don't think we have made this statement; our statement holds rather for the second part of this sentence.

- 3080 L8: .. preceded the LIA ? The wet period at Pumacocha lasted throughout the LIA. I think it should be noted that the Pumacocha record shows largely the opposite of QM for the LIA and the MCA, before that the Pumacocha record remained remarkably stable (no changes). This is interesting, because according to Garreaud et al 2009 (Figs 8 and 10) precipitation in both localities (QM and Pumacocha) are posi-

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tively correlated with the MEI (certainly for DJF which counts, JJA and SON are largely irrelevant). In consequence one would expect a positive correlation in the humidity changes in both areas. (I read again in detail the Bird et al paper and think the line of argument about the influence of ENSO is inconsistent). In my view the long-term changes in the PP regime in parts of Southamerica have more to do with changes in the PDO, which has a very similar spatial structure and expression as ENSO (see also Garreaud et al 2009).

- 3181 L 21: PdT

- References: check upper and lower case and formatting!

- Refs: check if <Latore et al 2005> is quoted in the etxt (I might have missed it)

- Include McCormac et al 2004

- Rein et al 2004 or 2005 (as in txt – caption Fig 5)

- Fig 1: the Nr 1 (left hand side of the light blue line) is very difficult to read in b/w

- Fig 2: maybe mark the terraces in the picture

- Fig 3: legend: . . . containing rodent . . .

- Fig 4: yes this is very small! Fig 4c: Horizontally laminated silts

- Fig 5c SST Aug (C°)

We are looking forward to the revised version.

Kind regards Martin

Interactive comment on Clim. Past Discuss., 7, 3165, 2011.