

Interactive comment on “Climate variability and human impact on the environment in South America during the last 2000 years: synthesis and perspectives” by S. G. A. Flantua et al.

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Response to G. Sottile (www.clim-past-discuss.net/11/C1499/2015/): Interactive comment on “Climate variability and human impact on the environment in South America during the last 2000 years: synthesis and perspectives” by S. G. A. Flantua, H. Hooghiemstra, M. Vuille, H. Behling, J. F. Carson, W. D. Gosling, I. Hoyos, M. P. Ledru, E. Montoya, F. Mayle, A. Maldonado, V. Rull, M. S. Tonello, B. S. Whitney, and C. González-Arango et al. doi:10.5194/cpd-11-1219-2015

We appreciate very much the very nice summary of the different sections of our manuscript and the detailed revision by G. Sottile. We incorporated the suggested

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grammar suggestions and are convinced that these details are very important for the overall quality of the end results so our gratitude to the reviewer for these corrections.

Here we address his specific comments and technical corrections with our responses.

1) Page 3478, line 18: I think you should use the word archive in plural: “archives”

It concerns the following sentence “Fortunately, tree rings studies have expanded their geographical coverage. These constitute a widely distributed and frequently used high resolution climate archive”. The use of the singular “archive” is correct in this case.

2) Page 3492, line 21: correct “Ecuadorian” by Ecuatorian

It concerns the following sentence “A different kind of index to highlight vegetation-climate interaction was used in the eastern Ecuadorian Andes at Papallacta PA1-08.”

We feel that the correct use is “Ecuadorian”, as using “Ecuatorian” would refer to the Equator instead of Ecuador.

3) Page 3495, line 7: did you mean “suggests that people abandoned”

It concerns the following sentence “However, a drop in charcoal fragments (fire activity) coupled with the absence of archaeological evidence (1.9–1.4 ka), suggests that people abandon the valley during 1.5–0.5 ka and, consequently, that the aridity signal from the pollen could be interpreted as a climatic one.” Thank you for this observation, we corrected it to “abandoned”.

4) Page 3501, line 9: replace “a” by “an”

It concerns the following sentence: “However, a integrative multi-proxy approach allow inferring. . .”

Thank you for this observation, we corrected it to “an”.

5) Page 3504, line 6: skip “dominance” after Poaceae

It concerns the following sentence: “To the N (westward Andes), the Lago Aculeo

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record (34'5 S) shows dominance of Poaceae dominance suggesting. . .”

Thank you for this observation, we removed the duplicated “dominance” from the sentence.

6) Page 3505, line 10: do you mean: “can elucidate the correct origin. . .”. I think you should add a verb after “can” .

It concerns the following sentence: “Only by looking at pollen changes in context with other evidence – e.g. charcoal, limnology, sedimentology, archaeology- can the correct origin of these changes be identified.”

We understand that the sentence is a bit confusing. We changed the sentence to: “It is only by looking at changes in pollen spectra in context with other evidence (e.g. charcoal, limnology, sedimentology, archaeology), that we can identify their origin.

7) Page 3507, line 25: do you mean “conquistadores”? It concerns the following sentence: “This vegetation change could be related to the first arrival of the Spanish “conquistadors” (González-Carranza et al., 2012), or a set of different causes (Wille and Hooghiemstra, 2000).”

Thank you for this observation, we corrected it to “conquistadores”.

8) Page 3508, line 2-4: I think you should add a verb to this sentence. It concerns the following sentence: “At many of the sites occupied by native Amazonians, evidence of land use as a decline in burning by or before 0.5 ka, probably in relation to first European contact.

Thank you for this observation, we corrected it to: “At many of the sites occupied by native Amazonians, evidence for land use comes from a decline in burning at or before 0.5 ka, probably in relation to first European contact.”

9) Fig. 7b. Correct PARAM4-D07 by PATAM4-D07 Fig 9b. Corrected in the figure, thank you.

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10) Record Urpi Cocha is mentioned between pages 3493-3496, but is missing in Fig9b, why? Urpi Cocha is present along with Marcacocha in the top left of the figure.

11) Fig.10. Laguna El Cerrito, Laguna Frontera, Laguna San José and Maxus- 1 are not mentioned in the manuscript?. Correct. These records are only present in the figures and the tables because the entire record (or most of it) has anthropogenic signals. Due to the already high text volume we decided not to enter into detail but in the new version of the manuscript we added the following:

page 3515, lines 11-12 “The better-resolved late Holocene records tend to come from small lake basins (e.g. oxbows like Maxus-1, El Cerrito and Frontera), which have small pollen catchment areas”.

page 3515, lines 18: Examples of continuous anthropogenic signal during the last 2 ka are Laguna El Cerrito, Laguna Frontera and Laguna San José (Fig.10).

Page 3517, lines 5-10 “Most of these deep temporal pollen records, as they are published now, likely have sub-sample intervals of insufficient resolution to be able to discern high-frequency events, such as vegetation changes associated with ENSO variability. However, in some cases, such as Bella Vista, San José and Orícore, the potential for such fine temporal reconstructions may be limited by the low sedimentation rate of the basins”.

12) Fig. 12b: Is it possible that Hinojales- San Leoncio record colours are inverted? Because the climatic trend showed in the figure is opposite to the exposed between Page 3500, line 26 and Page 3501, line 5. Thank you for this observation. We made adjustments to Figure 12b so that it will reflect correctly the description in the text.

Interactive comment on Clim. Past Discuss., 11, 3475, 2015.

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