

## ***Interactive comment on “Changing climatic and anthropogenic influences on the Bermejo wetland, through archival documents – Mendoza, Argentina, 16th–20th centuries” by M. R. Prieto and F. Rojas***

**M. R. Prieto and F. Rojas**

mrprieto@mendoza-conicet.gob.ar

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### REFERI 3

Referi 3- Unfortunately, the paper as it stands is not well structured, or well written and the logic of the argument is difficult to follow. There may well be a publishable paper here, but it would require major redrafting.

Answer: The work is reformulated according to the suggestions of Referee 3, changing the structure and improving the argument.

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Referi 3- Greater care also needs to be taken with matters such as referencing (a number are cited in the text, but not listed at the end) and the quality of English.

Were added reference citations at the end of the text, by increasing the number of citations and improved the quality of the language.

Referi 3 Introduction. This seems rather confused to me, covering a wide range of topics, geographical areas and timescales. There are also a number of factual errors in it at present in relation to previous studies. This could be rewritten to be much more specific, setting out clear goals for this study and the questions it seeks to address.

Answer- The introduction was re-organized; previous studies were reviewed based on the objectives and questions.

Referi 3. Study area. This could be clearer, explaining the geographical context of the wetland. The fact that the wetland was effectively drained by the 1930s could usefully come here rather than right at the end.

Answer -We extend the description of the study area and the geographical context of the swamp. The final drying of the Swamp in the twentieth century, begins long before 1930, is progressive and caused by the same factors that are discussed since the late nineteenth century. It is therefore important to take a time scale between the late eighteenth century and the mid-twentieth to observe how they relate to climate factors and man-made at different times when presented with different intensities and characteristics. The dimension of the study area does not have large ranges, it covers just the extent of the swamp at different times. But like all climate system, hydrological and social, can be analyzed at different scales with different depth of study. In this case we take previous studies on Rio Mendoza, on climate variability and social studies and historical context prior to the fluctuations of the swamp in a larger system. In synthesis this was clarified in the text and features a map of the study area.

Referi 3- Methodology and sources. This refers to the use of a wide range of source

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materials from colonial documents to satellite images, but the main focus of the paper is the four maps, with some longer term context provided by the long reconstruction of Mendoza river streamflow published previously by one of the authors.

Answer: Here arises a misunderstanding because the mapping analysis was complementary of the analysis of writings historical documents and were not the focus of the work, but a source that complement other historical sources. Satellite images were used to georeference maps as base charts not to perform the analysis.

Referi 3: would suggest focusing on the data types that are actually used. It would be interesting to know more about why these maps were drawn up and for whom.

Answer: Other maps were added to analyze and define the purpose and brief biographies of the authors of the maps in Appendix

Referi 3. Background. This actually includes both new results and a discussion of previous data. Why not focus on the period covered by the maps, explain the apparent changes in wetland area and then discuss their possible relationship to either climate or (and?) human activity.

Answer- We thought it was meaningful to present the complete process of growth and drying of the swamp. For that reason we add results of previous work as background and relate to variations in river flow Mendoza before 1802. We also thought it was better to be discussing two parallel phenomena: variations in flow and changes in the magnitude of the swamp. There are different ways to approach or deal with an investigation.

Referi 3 - At present, the climate change record is effectively taken as a 'given', although the data sources for these reconstructions are not always clear.

Answer: The reconstruction of the Mendoza river flow by Prieto et al, 1999 and 2009 has been widely recognized and used in academic circles (see eg. R. Neukom, Prieto R., et al, A. Moyano, J. Luterbacher, Pfister Ch, R. VillalvaLBA, P. Jones and

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H. Wanner. 2009. An extended network of documentary data from South America and its potential for quantitative precipitation reconstruction back to the 16th century. *Geophysical Research Letters*, Vol 36, LXXXXX, doi : 10.1029/2009GL038351).

Referi 3 There is an unexplained reference to changes in the second half of the 20th century, when we are told that the marsh was dry by then. The significance of the long stream flow record in relation to the wetland area reconstruction needs to be made clearer.

Answer: We think there is a confusion in this regard. We have revised the text and in no time we have referred to changes in the Mendoza river flow or the surface of the swamp in the period mentioned by the reviewer (second half of the twentieth century). We are clarified the significance of the long stream flow record in relation to the wetland area reconstruction

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Interactive comment on *Clim. Past Discuss.*, 7, 3775, 2011.

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