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Climate of the Past Discussions

Interactive comment on "Simulated climate variability in the region of Rapa Nui during the last millennium" *by* C. Junk and M. Claussen

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The authors would like to thank the reviewer for her/his constructive suggestions and the time he/she devoted in carefully reading the manuscript. In the following, we would like to reply to her/his comments.

Reviewer 1: "The authors should consider Melinda Allen (Current Anthropology) on climate proxies, particularly between northern and southern hemispheres."

Authors: This is a useful suggestion. The paper "New ideas about Late Holocene Climate Variability in the Central Pacific" by M.S. Allen (2006) provides paleoclimate

evidence of climate variability during the Late Holocene in the Central Pacific. An important point raised in this paper is the evidence suggesting that the Central Pacific was cool and dry during the Medieval Warm Period (MWP) and comparatively warm and wet during the Little Ice Age (LIA). Since the temperature change is in opposite direction as proposed by Nunn (2000), we will include this point in a revised paper. Furthermore, the paper by Allen (2006) points to the paper by Mann et al. (2005) which investigates the El Niño response to natural radiative forcing over the past millennium using the coupled Pacific ocean-atmosphere Zebiak-Cane model. The model experiments support paleoclimate evidence for the Central Pacific that La Niña-like conditions prevailed during the MWP and El Niño-like conditions during the LIA. These model results will be mentioned in a revised paper as well.

Reviewer 1: "The date of colonization of Rapa Nui is hardly controversial. The issue comes down to standards of evidence. Those arguing for colonization prior to around 1200 AD are basing their arguments almost entirely on suspect or even missing evidence (i.e., faith or an argument of convention). Such an approach is less than scientific. A recently published paper by Wilmshurst et al (PNAS 2010) makes the case even better established when the entire region's chronology forms a highly consistent pattern. While the age of colonization is not central to the paper's objectives, the authors should show good scholarship and standards of science."

Authors: We will address the reviewer's comment by rewriting the sentence starting at line 23, page 382: "Although there are studies supporting an early colonization of Easter Island around 800 AD or even earlier (Martinsson-Wallin and Crockford, 2001; Mieth and Bork, 2005; amongst others), recent studies indicate that the colonization took place most likely around 1200 AD (Hunt and Lipo, 2006; Wilmshurst et al., 2011)."

Reviewer 1: "The authors cite sources on deforestation and make a false dichotomy

of human use of fire and clearing for agriculture versus the impacts of rats. These impacts would not be mutually exclusive, and need not be framed as such; it only simplifies the case for ecological change. Flenley, Diamond, and Hunt have each hypothesized the potential (major) role of rats in Pacific Island ecosystems. Perhaps only Mieth and Bork (various) have insisted that it was all or nothing, and ignored ecological and palaeo-ecological research elsewhere."

Authors: We admit that the way we discussed the potential role of rats for the vegetation change on Easter Island was perhaps dominated too much by Mieth and Bork's arguments. Hence we will reformulate our statement accordingly.

List of References

Allen, M. S.: New Ideas about Late Holocene Climate Variability in the Central Pacific, Current anthropology, 47(3), 521–535, 2006.

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Nunn, P.D.: Environmental catastrophe in the Pacific Islands around A.D. 1300, Geoarchaeology 15, 715–40, 2000.

Wilmshurst, J., Hunt, T., Lipo, C., and Anderson, A.: High-precision radiocarbon dating shows recent and rapid initial human colonization of East Polynesia, Proceedings of the National Academy of Sciences, National Acad Sciences, 108, 1815–1820, 2011.

Interactive comment on Clim. Past Discuss., 7, 381, 2011.