

## ***Interactive comment on “Global and regional sea surface temperature trends during Marine Isotope Stage 11” by Y. Milker et al.***

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Milker et al. present a well-written study of global MIS 11 sea surface temperature trends based on EOF analysis. The authors compare their results to climate model outputs and to various climate-forcing parameters clearly demonstrating that orbital forcing played a dominant role in the MIS 11 SST patterns. This paper is highly suitable for publication in *Climate of the Past* and I have only a few comments for the authors.

My biggest issue with the paper is related to the chronostratigraphy. On page 842 the authors write that records were tuned to LR04. The compilation includes records from 14 cores/ Sites records (DSDP 607, GeoB1312, ODP Sites 722, 806, 846, 980, 982, 1012, 1020, 1089, 1090, 1123, 1143, and 1146) whose benthic isotope records are part of LR04. One of those Site is ODP Site 1020 were a correlation to LR04 is

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shown in Figure 2. So my question is were all those records correlated back to LR04? Why? Are there major age differences between the Lisiecki and Raymo ages and the new correlation? The LR04 ages for the respective records are now available from <http://lorraine-lisiecki.com/stack.html>

Minor comments I am listing in order of page numbers:

p. 841 –Material: there are two, potentially even three additional records that could be included into the compilation whereby the two MD96 cores are relevant for the South-eastern Atlantic. All cores should conform with the temporal resolution criteria. The cores/ Site are: 1) MD96-2085 by Chen et al. 2002, Late Quaternary sea-surface temperature variations in the southeast Atlantic: a planktic foraminifer faunal record of the past 600 000 years (IMAGES II MD962085): *Marine Geology*, v. 180, p. 163-181. 2) MD96-2081 which has planktic foraminifer faunal data but no SST calculated by Peeters et al. 2004, Vigorous exchange between the Indian and Atlantic oceans at the end of the past five glacial periods: *Nature*, v. 430, no. 7000, p. 661-665. 3) IODP Site U1314 by Alonso-Garcia, M., Sierro, F. J., and Flores, J. A., 2011, Arctic front shifts in the subpolar North Atlantic during the Mid-Pleistocene (800-400 ka) and their implications for ocean circulation: *Palaeogeography, Palaeoclimatology, Palaeoecology*, v. 311, no. 3-4, p. 268-280. And Alonso-Garcia et al. 2011, Ocean circulation, ice sheet growth and interhemispheric coupling of millennial climate variability during the mid-Pleistocene (ca 800-400 ka): *Quaternary Science Reviews*, v. 30, no. 23-24, p. 3234-3247.

p. 844 bottom: 394 ka is  $\pm$  equivalent with isotopic event 11.24 (and an IRD peak at Site U1313 –see Stein et al. 2009 or Voelker et al., 2010) and thus not interglacial MIS 11.3 anymore. So correct to MIS 11 in the last line and likewise in p. 846 line 5.

p. 849 line 25 and following text and Table 1: the correct nomenclature is ODP Site 999, IODP Site U1313 etc. – that is the word “Site” is missing. By IODP rules Site is capitalized.

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p. 850 line 2: insert “mid-latitude” before North Atlantic because there are many more sites/ cores in the North Atlantic that do not show this signal.

p. 852 line 5-9: The model seems not to capture the strengthening of the Agulhas retroflexion that is clearly depicted in the two MD96 cores mentioned above (Chen et al., 2002, Peeters et al., 2004). Peeters et al. 2004 also see enhanced Agulhas leakage during the “394 ka” time slice. So the data from these two cores supports the evidence from ODP Site 1085.

p. 854 line 7: replace Hole with Site

P. 855 line 18 and following: Do the Lake Baikal (e.g. Prokopenko, A. A., Hinnov, L. A., Williams, D. F., and Kuzmin, M. I., 2006, Orbital forcing of continental climate during the Pleistocene: a complete astronomically tuned climatic record from Lake Baikal, SE Siberia: Quaternary Science Reviews, v. 25, no. 23-24, p. 3431-3457 or Prokopenko, A. A., Bezrukova, E. V., Khursevich, G. K., Solotchina, E. P., Kuzmin, M. I., and Tarasov, P. E., 2010, Climate in continental interior Asia during the longest interglacial of the past 500 000 years: the new MIS 11 records from Lake Baikal, SE Siberia: Clim. Past, v. 6, no. 1, p. 31-48.) or lake El'gygytgyn records (D'Anjou, R. M., Wei, J. H., Castañeda, I. S., Brigham-Grette, J., Petsch, S. T., and Finkelstein, D. B.: High-latitude environmental change during MIS 9 and 11: biogeochemical evidence from Lake El'gygytgyn, Far East Russia, Clim. Past, 9, 567-581, doi:10.5194/cp-9-567-2013, 2013.) show the same?

Caption of Figure 7: I suggest adding a note in the different y-axis scales.

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