Clim. Past Discuss.,
https://doi.org/10.5194/cp-2019-10-RC1, 2019

Climate of the Past Discussions

Interactive comment on "How large are temporal representativeness errors in paleoclimatology?" *by* Daniel E. Amrhein

Anonymous Referee #1

Received and published: 23 April 2019

This study addresses an important issue, which often is forgotten in the paleodata comparisons. Paleoclimatic measurements are usually dated and mostly dating uncertainties are communicated, too. However, depending on the archive and sample methods, measurements are often time averages, integrated over a specific period. This averaging period needs to be taken into account if these measurements are compared to simulations or other observations with different averaging periods. This study makes an important contribution to quantifying this error source.

The topic is highly relevant for Climate of the Past, ideas are novel and substantial conclusion reached. I found the figures, which introduce the basics concepts, very clear and helpful illustration. However, I assume the level of text and presented mathematical background goes beyond the average reader of this journal. Therefore, I suggest

major revision, which should mainly simplify the entire text, to make it clearer and more accessible to a broad audience.

Abstract:

- Line 11: Many expressions have not been introduced, yet and are therefore not clear to the reader. What is the "target interval". Better avoid abbreviations like "tau" in the abstract.

- Line 13: What is meant by "archive smoothing" and "anti-aliasing"?

Introduction:

- Page 2, lines 3ff.: I would suggest bullet points for the various error sources

Fig. 1: Great, this makes the problem easily accessible.

Table 1: This looks more like the variable list of the 500-page book than for a CP article. It may help to have reduced (basic) version of the mathematical background in the main part of the paper and the derivations in a supplement.

2.1

- Page 6, line 1: "boxcar" needs to be explained

- Page 6, line 6: over over

Fig. 3: Labeling too small

References: Latex code remained in the pdf version.

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