

***Interactive comment on* “Eurasian contribution to the last glacial dust cycle: how are loess sequences built?” by Denis-Didier Rousseau et al.**

Anonymous Referee #1

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The manuscript is a follow-up study of Rousseau et al., 2017, which discussed a new method to identify the timing of alternating stadial and interstadial events recorded in the NGRIP ice core records. Here the authors present a review of the relative timing of the key features of paleodust records from Greenland (NGRIP ice core) and Europe (loess record) for the last glacial cycle, thanks to a revisited age model of the loess/paleosol sequence from Nussloch. The subsequent discussion aims at providing a revisited interpretation, on the millennial time scale, of the large-scale dynamics of the climate and atmospheric circulation in the mid to high latitudes of the Northern Hemisphere, with focus on Eurasia, the North Atlantic and Greenland. The overall quality of the study and the manuscript are in my view fit for publication, although with minor corrections. In particular I would recommend emphasizing and discussing more

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the revisited chronology for the Nussloch loess/paleosol sequence, which is the one element that is innovative with reference to Rousseau et al., 2017 in terms of data.

Specific comments

2, 30-31: Check parentheses

2, 37: Check the punctuation “events: For the last”

2, 39: “Dust concentration would require at least fifteen years to decrease”. Why “would require”? Please explain

2, 41: either “that occurs” or “occurring”

2, 43: Check the punctuation “variable as well: High-resolution studies”

2, 53-56: In this paragraph please explain more clearly what is the added value of this paper compared to e.g. Rousseau et al., 2017

2, 54-55: it may be more clear if sequences of deposition rates were somehow aligned in a graph or tables with those from Europe to facilitate the comparison of the relative variability

3, 66: briefly explain the differences/advantages etc of the visual vs algorithmic approaches

3, 66: “with an increase”?

3, 73-75: Please discuss more in detail the reasoning behind this type of approach, and why it applies to Nussloch but not to the Chinese loess sequences discussed later in the manuscript, for instance

4, 15-17: The size of the sources may not have varied, but how about their emissions? Could you comment on what the Chinese loess records show in this respect?

6, 98: Do you mean “particularly high”?

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Reference

Denis-Didier Rousseau, Niklas Boers, Adriana Sima, Anders Svensson, Matthias Bigler, France Lagroix, Samuel Taylor, Pierre Antoine, (MIS3 & 2) millennial oscillations in Greenland dust and Eurasian aeolian records – A paleosol perspective, Quaternary Science Reviews, Volume 169, 1 August 2017, Pages 99-113, ISSN 0277-3791, <https://doi.org/10.1016/j.quascirev.2017.05.020>.

Interactive comment on Clim. Past Discuss., <https://doi.org/10.5194/cp-2017-67>, 2017.

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