

Interactive comment on “DO-like events of the penultimate climate cycle: the loess point of view” by Denis-Didier Rousseau et al.

Anonymous Referee #2

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While the DO cycles were widely recognized in globally distributed archives, the nature of abrupt climate changes remains controversial before the last climate cycle. This paper presents a good review on DO-like events of the penultimate climate cycle. New investigations of European loess records from MIS 6 reveal the occurrence of alternating loess intervals and paleosols, similar to those from the last climatic cycle and to those in lake, marine and speleothem records. Based on statistical similarity between these millennial-scale oscillations, the authors argue that the abrupt cause and global imprints were persistent during at least the last two climate cycles. This topic is suitable for the scope of the CP, but current version can be improved if the following concerns can be fully incorporated in a revised version.

1 Title: “The loess point of view” can be removed from the title, since this paper

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includes a broad review of DO-like events in different records.

2. Add a new map showing the locations of loess, speleothem, lake, and marine records mentioned in this paper, rather as separated maps in each figure.

3. Fig.1 and related text: As a review of European loess records, the authors emphasized the similarity of DO-like events during the last two climatic cycles. But this similarity can not be verified from a single loess record shown in Fig.1. It's very necessary to add additional loess records with clear DO events of the last climatic cycle in Fig.1 to confirm the similar expression of millennial events during last two glaciations. While several weak paleosol layers can be identified in the outcrop, some layers in early MIS 6 can be easily judged by abrupt proxy changes, but others in late MIS 6 is not evident. Please clarify how many DO-like events can be robustly confirmed from the loess proxies, which is the key for further comparison with other records.

4. Fig.2 and related text: A regional synthesis of high-resolution records from adjacent lakes and ODP sites can confirm the presence of DO-like events in the MIS 6. Two concerns need to be clarified: (1) why the Soreq $\delta^{18}O$ record is different from those of lake and marine records (e.g., the precession cycles and DO-like events); and (2) How to correlate the DO-like events of S1-9 and I1-12 to those in the Haletz loess sequence.

5. Fig.3 and related text: A global synthesis of abrupt events in the MIS 6 is presented in Fig.3. It seems to me that the magnitudes and timing of these abrupt events are quite different. I would suggest employing a unified strategy to synchronize and numbering these DO-like events, rather than just putting these records together. Then, the similarity and discrepancies among these records can be properly addressed, which permits a better understanding of the abrupt cause and global nature of these DO-like events.

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