

Interactive comment on “Major dust events in Europe during marine isotope stage 5 (130–74 ka): a climatic interpretation of the “markers”” by D.-D. Rousseau et al.

Anonymous Referee #1

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Mainly based on the Dolni Vestonice (DV) loess sequence (Czech Republic) as the reference record, Rousseau et al assembled the most recent and classical eolian dust/loess data from Europe to address the major dust events during marine isotope stage 5 (130–74 ka). These European data are also compared with dust records from ice and marine cores, with the loess records elsewhere, and with the speleothem records. The main focus is to explore the climatic significance of some ‘particular loess layers’ within Marine Isotope Stage 5 (MIS-5) that were previously described as “markers” or Marker Silts (MS) and eolian silts (ES) by Kukla and some other colleagues.

I’d recommend the publication of the paper because of the following interests.

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The first part the manuscript represents a state of the art on the climatic understanding of the European loess, in particular, with regards to the millennial events of the last climate cycle. The detailed and comprehensive analyses on the available chronology data, on a variety of climate proxies and their relationships with the lithology changes, are highly attractive to loess geologists. These results confirm the large regional and even global climate significances of the loess records.

Based on such comprehensive analyses, the authors were able to define two modes of dust deposition during MIS 5, one corresponding to the ES layers and another to the MS layers, both corresponding to short events that lasted about 2 ka. They showed that some ES and MS events appear to be coeval with significant dust peaks recorded in the Greenland ice cores, while others are not. These led to the conclusions that different atmospheric circulation modes seem to be responsible for the two categories of dust events, MS vs. ES. This demonstrates again the unique values of loess/dust records as the geological tracer of paleo-atmospheric circulations. The interpretations also receive supports from the previously published results of climate models.

The manuscript was presented as it could be and I do not have the suggestion for a significant revision. Just, I'd suggest re-structuring and shortening the introduction section such that the scientific goals of the study are explained with a better clarity. In the current version, the long reviews about the earlier results make the readers hard to follow the main scientific purposes if they are not specialized in loess studies.

Interactive comment on Clim. Past Discuss., 9, 2235, 2013.

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