

Interactive comment on “Strong summer monsoon during the cool MIS-13” by Q. Z. Yin and Z. T. Guo

J. Vandenberghe (Referee)

jef.vandenberghe@falw.vu.nl

Received and published: 1 November 2007

General comment: In the Introduction a discrepancy is mentioned by the authors between alternating warm periods (interglacials) and cold periods (glacials), expressed by changing global ice volumes. The period before the mid-Brunhes event (MBE), corresponding with the transition between MIS-12 and MIS-11, is characterized by a 'significantly weaker amplitude of ice volume variations than after the MBE' according to marine benthic $\delta^{18}O$ and Antarctic deuterium temperature and other records (figure 1). Especially the existence of 'cool interglacials' before MIS-11 is questioned in the paper. This is based on some Chinese records. The authors give most attention to MIS-13, corresponding with the paleosol S5-1. Almost all evidence presented by the authors to support their statements, relates to high humidity (strong monsoons) and consequently strong pedogenesis. The authors present very interesting ideas that should be published. With the modifications outlined below I can recommend the paper

for publication.

Specification: Comment 1: The authors compare the jump in temperature conditions (cold-warm) in the oceans/ice sheets with the Chinese loess records which show alternations in humidity (monsoon strength) which is not the same! The weathering of Chinese loess is more a matter of humidity rather than temperature, while the marine and ice isotope studies are rather an indication for temperature. For instance, loess layer L7 at Luochuan shows a grain-size distribution which contains a well-expressed interglacial-type interval which is invisible in the $\delta^{18}O$ record of Bassinot et al. 1994. And there are many others.

Comment 2: Worldwide the reconstructed climatic conditions in terrestrial environmental during the interglacials previous to the MBE seem to have been warmer, rather than cooler than the interglacials younger than the MBE. These reconstructions are mainly based on pollen analyses. For Poland a nice summary is given by Rzechowski (1996) in which the Ferdynandowian interglacial with a double maximum is correlated with the double-peaked S5 in China (Vandenberghe, 2000). This Polish interglacial pollen record shows climatic conditions which are at least as warm as the younger interglacials. The same conclusion may be made for the youngest Cromerian interglacials and equivalents (Zagwijn, 1996) which are time equivalent roughly with S5 and next older Chinese soils (interglacials). It means that the authors' conclusion is not limited to the terrestrial environment of China, but is more widely occurring, for which many other examples may be found.

Comment 3: I find the text poorly illustrated. Even in the Chinese loess records the statements of the authors could be supported not only by geochemical data (figure 2) but also by other proxies as the magnetic susceptibility data (e.g. Kukla, 1987) and grain-size data (e.g. Vandenberghe et al., 1997, Nugteren et al., 2004).

To conclude, I suggest to distinguish between temperature and precipitation reconstructions (comment 1), to enlarge the scope of the conclusion of the paper by insert-

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

ing terrestrial reconstructions from other regions (comment 2) and from other proxies in China(comment 3) to increase the validity of the conclusions.

References:

Bassinot et al. 1994 EPSL 126, 91-108. Kukla, G. 1987 QSR 6, 191-220. Nugteren et al. 2004 GIPICh 41,167-183. Rzechowski, J. 1996 in Turner, C. (ed.) The early Middle Pleistocene in Europe. Balkema, Rotterdam, 279-293. Vandenberghe et al. 1997 Geology 25, 35-38. Vandenberghe J. 2000 QSR 19, 1701-1707. Zagwijn, W.H. 1996 in Turner, C. (ed.) The early Middle Pleistocene in Europe. Balkema, Rotterdam,145-172.

Interactive comment on Clim. Past Discuss., 3, 1119, 2007.

CPD

3, S683–S685, 2007

Interactive
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper