Clim. Past Discuss., 5, C1117–C1119, 2010
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Climate of the Past Discussions

Interactive comment on "The reconstruction of paleo wind directions for the Eifel region (Central Europe) during the period 40.3–12.9 ka BP" *by* S. Dietrich and K. Seelos

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Received and published: 26 January 2010

Answer to the Short comments of Urs Ruth and Jef Vandenberghe

We would like to thank Urs Ruth and Jef Vandenberghe for their interesting and helpful comments which will enhance our ms.

The detection and analysis of single storm events is not the focus of this paper. We already published a time series of strong storms for last glacial cycle in GRL (Seelos et al., 2009). State of the art of our research is the ELSA dust stack and not anymore the low resolution greyscale stack published in 2005 (Sirocko et al., Nature).

We agree with Urs' second point that the period 40.3–36 ka BP was not really warm (also MIS 3 was moderately temperate in comparison to MIS 2), but in comparison with the sediments of our studied sequence we observe a relatively high content of organic matter. The period of H4 is dominated by a series of slump events in our core sequence. Thus the dust signal is strongly blurred in our data. We will follow Urs' comments and will clarify this in text and figure 3. Urs mentioned some small(?) uncertainties due to the assignment of our east wind peaks to other records at least to NGrip. First of all, our data show strongly corresponding patterns to other high resolution loess records like Nussloch (Antoine et al. 2009, QSR). Therefore we think that our record from the Eifel archived a representative signal for Europe. We completely agree with Urs' observation that our data seems indeed to be more coupled to Heinrichs than to DO cycles. Heinrich events and the stadials before and after have, according to our data and data from Nussloch, a strong influence to the terrestrial realm.

Jef Vandenberghe mentioned that, according to Isarin et al. (2008, JQS) that N-S shifts of the belt of strong westerlies are probably the reason for the oscillations in the wind patterns we observe in the studied period 40–13 ka BP. Urs' arguments are going into a similar direction. He mentioned that the southward displacement of the Icelandic low by a more extended sea ice cover during the last glacial may have led to more east winds. What we think is indeed the same: During extreme cold climate conditions with extended sea ice cover the polar front is displaced to the south and thus the Icelandic low as well as the westerlies. Subsequently, the strength of western winds in the Eifel region is reduced and east wind anomaly, probably by a glacial anticyclone, represents this weakening. This is what Sweeny et al. (2004, GSA) suggested for the N-American continent, but as Urs mentioned, this explanation and especially its amplitude and the seasonality has to be checked within climate models.

After Antoine an ENE replacement of North Atlantic low pressure centres is leading to high GSI sediments at Nussloch. But this does not explain increasing east wind sediments in our data. Renssen et al. (2007, JQS) show in climate models that during

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the LP northwestern winds are dominant because of direct response to an easterly relocation of the Icelandic low.

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