

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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Answer to the interactive editor comments of Denis Rousseau (Received and published: 10 January 2010)

Thank you so much for your really constructive comments on our manuscript, they will help to improve it considerably. The minor comments will be corrected in the revised ms. We checked all references about their states and will update them. Furthermore, here are some more answers to your contribution.

1. The editor reminds to a state of the art climate model with a high spatial resolution of Sima et al. 2009. The special resolution of 60 km for Europe in the simulation of C1114

Sima et al. (2009) is already mentioned in the introduction and the main results will be discussed in the last paragraph: These data show higher east wind frequencies for the Heinrich events which underline our results.

2. About the mean temporal resolution of our data: We calculated the temporal resolution concerning our age model, which is mainly tuned to the NGRIP record. Since the new GICC05 stratigraphy lasts for the last 60,000 years, only, we decided to use the older ss09sea stratigraphy which covers the whole last glacial cycle and therefore the complete ELSA dust stack. In detail we used the onsets of the GIS corresponding with the onset/increase of organic matter in the sediment. In addition C14 datings (Seelos et al., 2009, GRL) support our age model. The De3 core is part of the ELSA dust stack, which is already published (Seelos et al., 2009).

3. Denis Rousseau asks for aggregation of grains during the deposition process and for possible misinterpretation of the measured grain sizes. It is true, that particles are transported through the water column by aggregation, which is enhanced during wet and warmer conditions. Our approach of image analysis is able to do separate single particles using a watershed algorithm (Seelos & Sirocko, 2005), which means that grouped detrital grains in clusters are not detected as coarse particles.

4. The editor refers to the not consequently used term of “east wind activity” in our ms. Our results are not representing the wind strength. The term “east wind activity” stands for the east wind frequency. We will clarify this in our manuscript. In fact, east winds are active during both, stadials and interstadials. During the LGM, H1, H2, and H3 the frequency of east wind layers is noticeable high.

5. Denis Rousseau comments the term “stable wind system”. In line 5 on page 2166 we have written GIS-2 instead of MIS-2. Our data show, according to Urs Ruth’s data from Greenland, little variations in east wind activity during MIS-2 in comparison to MIS-3.

6. The editor asked for the reference, when the ice sheets started to grow. The Scan-

dinavien (SIS) and the British-Irish ice shield (BIIS) started to grow around 29,000 years ago (Clark et al. 2009, *Science*). The misspelled abbreviation is corrected.

7. Line 320 "after the H2 event", referring to the figure provided it seems rather after the start of H2. Thanks for the comment. "After the start of H2" is right.

8. The editor commented the use of marine and ice cores stratigraphy in our ms. It is right that using different terminologies in our ms might provoke confusions. We will clarify this in our manuscript for example: "[...] both, the Greenland stadials (GS) before and after GS 4, which corresponds to H3 in marine cores, are characterized by the highest number of east winds [...]"

9. Denis Rousseau has a comment on figure 1 Figure 1 will be revised: We decided to show the elevation, the lime stone and dolomite units as well as the loess distribution on the map, only.

References:

Clark, Peter, et al. (2009): The Last Glacial Maximum. *Science*, 325(5941),710–714, doi:10.1126/science.1172873.

Seelos, K.; Sirocko, F.; Dietrich, S. (2009): A continuous high resolution dust record for the reconstruction of wind systems in Central Europe (Eifel, Western Germany) over the last 133 ka. *Geophysical Research Letters*, 36(L20712), doi:10.1029/2009GL039716.

Sima, Adriana, et al. (2009): Imprint of North-Atlantic abrupt climate changes on western European loess deposits as viewed in a dust emission model. *Quaternary Science Reviews*, 28 (25–26), 2851–2866, doi:10.1016/j.quascirev.2009.07.016.

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