

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

U. Ruth

uruth@awi-bremerhaven.de

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Thank you for putting the paper up for discussion. I really like the idea to use aeolian dust input from a distinct source as a marker for wind direction during storm-associated events.

Some comments as they come:

1. Title: I would suggest: "... wind directions during local storm events for ..." - This restriction should be made also in the text, because surely the dust is not transported during "mean atmospheric conditions", but during individual strong, cyclonic storm events.

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2. p. 2164, last paragraph: i) While I agree that DE3 shows low dust accumulation during 40.3-36.0 ka BP, I cannot agree to the statement that this time period is "relatively warm". From the NGRIP dust and temperature curves it is evident that significant temperature changes took place (several D/O-transitions) during this interval; these are evident in the North Atlantic region, in East Asia and in many other places, and to me it seems unlikely that the Eifel region would be an exception. Thus, is it possible that the low dust accumulation and increased organic content have a different cause, possibly regional? ii) if during the period 40.3-36.0 the carbonate detection is not possible (as you state) then the curve in Fig. 3 should be erased or greyed during this time.

3. Fig. 3: It severely puzzles me that the DO-cycles are not resolved in any of the parameters shown: neither organic content, nor dust accumulation, nor carbonate events. If you look at the ELSA stack (Sirocko2005 Nature, Fig.2) you can see that the greyscale shows a pretty good covariation with NGRIP temperature for all cores in the stack - except for the D2 core (presumably also from Dehner Maar). In core HL2 from the stack (Sirocko2005, Fig.3) also the dust content (quartz as well as loess) co-varies nicely with Greenland temperature. But why not dust content from D3? So something seems to be odd about the Dehner Maar cores, which unfortunately tentatively questions the representativity of the results for Middle European climate. This representativity, however, is necessary for the claim of your paper (to address the modelling community). Therefore, the detailed discussion of different time slices feels odd to me given the questionable representativity. - The most robust observation appears to be the reduction of easterly storm connected sediments during H3. This is something I would focus the paper on. - If you do have an understanding of why Dehner Maar behaves differently from the other cores I suggest to explain it in the text.

4. p. 2167, l. 18-21: In my opinion, to produce strong easterly flow in the Eifel region the center of the low must be south of the site; due to the impact of the alps maybe also south-west. If the storms are associated with what today is called the Icelandic low, then

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this must have been displaced southward (and not eastward as you mention). Given the sea-ice setting for the last glacial, a southward displacement seems certain; the question though is how far south it was displaced and how this position could have been "modulated" over time to explain your observations. Thus the position of this low should be checked in climate modelling studies of the LGM.

5. p. 2168, item 5+6: I have difficulty understanding the logic of this argument and to recognize the two atmospheric regimes after and before H2. E.g. during H1, where you truly state that Greenland dust does not respond to an H-event, your Eastwind-percentage is even higher than during H2, H3, and H4, where Greenland dust does indeed respond to the H-events. However, your text seems to suggest the opposite.

To me, the interesting finding of your data seems to be that while Greenland dust and East Asian storminess corresponds to DO-cycles, your Easterly-wind proxy seems to respond to H-events - but not to DO-events! However, this appears to happen in a non-consistent manner: H1->increas; H2-> a change **during** the event (maybe a dating issue); H3->reduction; H4-> possibly reduction, but not reliable data as you say.

I hope you find these comments helpfull. Good luck and success with the continuation of this interesting topic. Urs Ruth

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