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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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Renewed attention for the reconstruction of former wind directions is very welcomed. I find this paper an interesting contribution and therefore I like to put forward some comments that may be useful. It is a tough subject because 1/ proxy data are often not really straightforward in the solution of the problem, and 2/ both proxy and model results seem to point to different results. Although Renssen et al. (2007) favour a mainly northwestern wind direction both in the LGM and the final Pleniglacial (18-14 ka BP), they show several cases where geomorphological-sedimentological-petrological data point to an eastern component (for instance data by Gullentops and by Krook). This is

not well addressed in the paper. In addition, LGM model results show a clear eastern component in the cell over Denmark. The high variability -which in my opinion is really existing- may be due to different reasons: 1. different circulation systems It is stressed by Renssen et al. that the mean annual direction should not necessarily correspond with the main aeolian transport. Therefore, when considering aeolian deposition (like in the present paper) it is important to derive whether it is a deposition by the main (but not strongest) winds or by the strongest (storm) winds that may have a completely different direction. 2. regional factors Regional topography may direct near-surface winds, while the regions that supply the aeolian sediment are governed by local factors as vegetation and soil humidity. 3. seasonality Authors are not always agreeing on the season in which the aeolian processes did occur. And different seasons may have had different wind regimes. In addition, some regions may be free of snow and vegetation in winter time and thus prone to wind erosion in that period, while others are covered with snow or/and vegetation and can only supply eolian sediment in the other seasons. 4. climate? Until recently, relatively small climatic oscillations could not be taken into account, for instance by imprecise dating of the geological data or low spatial resolution of the models. Nevertheless, Renssen et al. and Isarin et al. (1998 Journal Quat Science 13, 447-453) drew the attention to the important impact of slight N-S shifts of the belt of strong westerlies (adhering to the jet stream). It is probable that such shifts occurred concurrently with the numerous climatic oscillations that are recorded within the studied period 40-12 ka BP (stadials-interstadials-Heinrich events), which may have resulted in changing wind directions at a certain location.

Minor comments: 1. Your conclusion 4 about 'a slightly elevated east wind activity' is not really contradicting model results by Renssen et al. since the conclusion of the latter authors is depending on the cells you look at. They calculated stronger wind activity in the Denmark cell. 2. Atmospheric blocking of large-scaled westerly circulation (at the end of your section 3, p. 2167) has been mentioned already by Vandenberghe in 1995 (Geologie en mijnbouw 74, 245-249) as a hypothesis to initiate eastern winds, but not taken seriously by climatologists... Jef Vandenberghe 13-11-2009

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