

Clim. Past Discuss., referee comment RC2
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Comment on cp-2021-60

Jef Vandenberghe (Referee)

Referee comment on "A new perspective on permafrost boundaries in France during the Last Glacial Maximum" by Kim H. Stadelmaier et al., Clim. Past Discuss.,
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I have a few general comments, mainly some minor comments and suggestions.

A few general comments

- I find the objectives clearly described in the Introduction and adequately discussed in the final Discussion. The methodology is well explained also for non-specialists in modelling (section 2) The analysis of the results is fine to me, although they may be better structured and organized.
- Also the first part of the Abstract (l 1-8) suffers from poor cohesion.
- Since I am not a climate modeller nor permafrost modeller, I have no real comments on those aspects.
- Section 3.1: state why the analysis in this section is relevant for the objective of this study.
- wind circulation:

-l 50-52: please allude here to the hypothesis of proxy evidence for northern and western winds during LGM in NW Europe (eolian sands and loess and morphology) as forwarded in papers by Renssen et al 2007 (JQS22 (3), p 281-293) and papers by Schwan (Sedimentary Geology).

-Further in l 193-203 you derive and discuss especially western and d northwestern wind, This seems contradictory to me. Please, explain better.

Minor comments:

-l 6 and 7: 'large-scale circulation' and 'LGM climate': obtained by modelling?

-l 12-13: sentence is vague

-l 17: this definition of permafrost is much older than 2005

-l 31: '130 ka': at the coldest phase of LGM

-l 38: these climate comparisons concern France

-l 56: suggest to refer to refer also to Huijzer & Isarin 1997 in QSR and Vandenberghe 1983 in Polarforschung

-l 55-57: 'ice-wedge pseudomorphs most reliable for pf reconstruction'. Ok, but why not mentioning the large cryoturbations (as evidence of former permafrost degradation) and the deep large sandwedges that formed in permanently frozen subsoil (e.g. papers by Ghysels in PPP: LGM wedges in Belgium) and by Murton (Canada).

-l 65-66: (see also comment in l 254) these wedges are formed in the subsoil that is affected by deep winter frost (and thus are shallow) as is also stated in l 254-255.

-l 73: please insert 'as reported by' after 'earliest reconstructions'

-l 89 and 243: 'effects of snow for SFI': OK, although estimates of snow presence/thickness at LGM are speculative. But, if you mean the use of SFI only in models, please state that clearly.

-l 143: I suppose you jump here to modelling experiments as SFI is difficult to estimate

from proxy data in paleo-records. Thus, I suggest starting a new paragraph here.

-l 254: I suggest also to refer to similar structures on the Ordos Plateau in China (small-sized or shallow sand wedges formed under conditions of deep seasonal frost): Vandenberghe et al 2004 in PPP and 2019 in QSR.

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30/07/2021