

Interactive comment on “The cryostratigraphy of the Yedoma cliff of Sobo-Sise Island (Lena Delta) reveals permafrost dynamics in the Central Laptev Sea coastal region during the last about 52 ka” by Sebastian Wetterich et al.

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Author's response to the interactive comment on “The cryostratigraphy of the Yedoma cliff of Sobo-Sise Island (Lena Delta) reveals permafrost dynamics in the Central Laptev Sea coastal region during the last about 52 ka” by Sebastian Wetterich et al. Martin Margold (Referee) #2, <https://doi.org/10.5194/tc-2020-179-RC2> Received and published: 1 September 2020

The manuscript ‘The cryostratigraphy of the Yedoma cliff of Sobo-Sise Island (Lena

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Delta) reveals permafrost dynamics in the Central Laptev Sea coastal region during the last about 52 ka’ by Wetterich et al. is a fairly technical piece of work that complements the long-term German-Russian research efforts in the permafrost environments of NE Eurasia. While the core part of the manuscript is outside of my field of expertise, I was approached to review the manuscript because the authors adopt the suggestion that megafloods from glacial Lake Vitim could have been responsible for the observed hiatus in the chronostratigraphy of the studied sedimentary records. From my perspective, the discussion of the megafloods causing erosion of the sedimentary record or re-directing the main stream of the river into another portion of the delta is sensible, with alternative explanations also considered. I agree also with the argumentation that the stage 3 hiatus does not match the period of the mildest climate and instead postdates it by at least several thousand years.

REPLY - Thank you for your positive statement and your approval relating the Margold et al. (2018) study to our interpretation of the hiatuses observed in the Yedoma Ice Complex records on Sobo Sise, Kurungnakh-Sise island of the Lena Delta as well as on Bykovsky Peninsula.

At line 614, I would suggest to change the wording of ‘but might be related to general MIS 3 climate instability’ to ‘but instead falls to a period of late MIS 3 climate instability...’. This wording is less speculative and the possible linkage between the IC stratigraphy and the DO events is expressed sufficiently in the following sentence.

REPLY - Changed accordingly.

I do not have any major comments or objections to the manuscript and find it ready for publication in TC. Minor comment

Fig. 1. It would be good to include the River Vitim in panel (a), given that the floods that went down the Vitim-Lena route are a key part of the interpretations of the studied sedimentary record.

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REPLY - Changed accordingly.

Figure 1: Study area (a) in north-eastern Siberia showing the study site on Sobo-Sise Island in the eastern Lena Delta (red dot no. 5) and further locations mentioned in the paper: Bykovsky Peninsula (1 - site Mamontov Khayata and 2 - site B-S), Lena Delta (3 - Kurungnakh-Sise Island, 4 - Samoylov Island), Buor Khaya Peninsula (6), Bol'shoy Lyakhovsky Island (7), Mamontov Klyk (8), Duvanny Yar (9) and Lake Vitim (10). More details of the eastern Lena Delta and the Yedomo IC sites studied nearby Sobo-Sise Island are shown in panel (b). Profile locations are indicated in (c) onsite the Yedomo IC cliff on Sobo-Sise Island (image based on GeoEye-1 scene dated 08 July 2014). Figure 1 (a) and (b) are based on ESRI ArcGIS Living Atlas of the World, layer World Topo Base (2020).

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Fig. 1. Updated Figure 1

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