

Interactive comment on “Past freeze and thaw cycling in the margin of the El’gygytgyn Crater deduced from a 141 m long permafrost record” by G. Schwamborn et al.

G. Schwamborn et al.

georg.schwamborn@awi.de

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Thank you for the two constructive reviews! We modified the manuscript and followed to much of what “reviewer one” said, who was very detailed. “Reviewer two” pointed to similar issues in a shorter way.

Emphasis has been put towards tempering the chronological interpretation, and at the same time considering discontinuities in the sediment and ground ice record. We hope that it is clearer now that neither the sediment nor the ground ice record are regarded as continuous archives. In fact, the interpretation of the ground ice chemical changes are mainly linked to known Pleistocene lake level fluctuations, but without demanding a

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consistent picture out of it due to erosion and accumulation uncertainties on the slope. The manuscript is shorter now - mainly due to shortening in the discussion part, which - by the way - was suggested by reviewer one. This is especially relevant to parts, where the interpretation and discussion of the chronology was overstated.

We added a notion on the evidence that the isotope and chemical parameters reflect freeze-thaw cycles as opposed to changes in sources of pore water, and/or hydroclimate at a suitable place; i.e. a successful multi-millenia oxygen isotope record from diatoms of the lake is available that minimizes the effect of changing water sources or hydroclimate effects back in time.

We modified slightly the way water chemical values are described in chapter 4.2. It has become shorter a bit, but the content and conclusions from that did not change though. This follows a remark by reviewer one.

Two figures have been found obsolete and have been removed (formerly Fig. 5 and 8); the information was found to be redundant (former Fig. 5) or not relevant (former Fig. 8) to the core of the manuscript (i.e. hydrochemical changes at the lake edge). This has been criticized by reviewer one and we can agree on that. Fig. 2 has been modified slightly in the way that the sedimentary interpretation of the alluvial fan is now included. This was part of former Fig. 8 and held necessary to be introduced earlier in the manuscript (note of reviewer one).

The axis on the $d^{18}O$ -vs- dD has been expanded, the extraneous horizontal lines have been removed in Fig. 6.

Sometimes the wording has been changed as suggested. A paragraph of the discussion chapter has been moved into the results chapter as suggested.

The text corrections made are highlighted in the revised manuscript using the functions of the text processing software. We hope they meet the reviewers' requirements.