

Interactive comment on “Ideas and perspectives: why Holocene thermokarst sediments of the Yedoma region do not increase the northern peatland carbon pool” by G. Hugelius et al.

G. Hugelius et al.

gustaf.hugelius@natgeo.su.se

Received and published: 10 February 2016

Dear Katey Walter Anthony, Sergey Zimov, Guido Grosse, Miriam Jones, Peter Anthony, F. S. Chapin III, Jacques Finlay, Michelle Mack, Sergei Davydov, Peter Frenzel and Steve Frolking

Thank you for these constructive and careful comments to our submitted manuscript. We are happy to note that your interpretations and arguments are largely in line with what we propose. We are thus in agreement that these contentious sediments do not increase the circumpolar peat carbon store, but that the study by Walter Anthony et al. (2014) provided important new knowledge regarding the age, formation and develop-

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mental trajectories of these deposits. We also agree that the overlapping terminologies are confusing and that more dialog across disciplines regarding terminology will be fruitful in continuing investigations of permafrost dynamics.

We fully support your statement that quantifying the relative proportions of Holocene-aged versus Pleistocene-aged carbon sequestered in thermokarst deposits in the yedoma region is important. Your comments also provide an informative overview of how the different estimates of the Yedoma region C pool can be related and compared to each other in the light of the new information on sediment ages presented by Walter Anthony et al. (2014). We are particularly happy to see the clear information you provided in the update of our figure 2. This will certainly be a helpful guide to readers who wish to put these soil C stocks in a broader context. We feel that updated discussions of the whole Yedoma region C pool fall outside the scope and mandate of our submission but look forward to a constructive future dialogue and improved estimates under the leadership of the action group of the International Permafrost Association which gathers the diverse scientific community investigating the Yedoma region (http://ipa.arcticportal.org/images/stories/AG_reports/AG4_for_website.pdf).

You correctly point out that the main scientific issue is the vulnerability of these deposits to future environmental and climatic changes. If we are asked to re-submit this manuscript we will strive to enhance these perspectives, aided by the comments provided by you and the three reviewers.

On behalf of the co-authors, Gustaf Hugelius

Interactive comment on Biogeosciences Discuss., 12, 18085, 2015.

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