

***Interactive comment on* “Links between Baltic Sea submarine terraces and groundwater sapping” by Martin Jakobsson et al.**

Anonymous Referee #1

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Firstly, I find the word “sapping” a bit problematic since that word has many meanings. Have you considered “seepage”? I suppose you then will miss the under-mining part of the process, but....? In general I find this to be a good manuscript on an almost neglected topic. It is also free from erroneous or speculative statements, but presents very reasonable interpretations and gives a good overview on the importance of combining the detailed submarine bathymetry, lithostratigraphy and hydrogeology to understand the under-lying processes. However, I think it would add an interesting aspect to the paper with a discussion on how long this “sapping” process has been going on and how it may be related to the Baltic Sea development and local isostasy. Are there differences between Finland, Stockholm and Blekinge? Are the right submarine conditions only met in areas with a continuous regression since deglaciation? One

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could for example speculate that the Yoldia Sea low stand below today's sea level in SE Sweden (and not e.g. in Stockholm), with the regressions and transgressions of the Yoldia-Ancylus-Littorina phases, reworked the coastal and shallow marine varved clay sequences to such a degree that you would usually not get the right conditions for "sapping" above -15 to -20 m in Blekinge (which is the appr. the low stand level there), in contrast to the Stockholm area where today's submarine varved clay units have been below 0 m throughout the Holocene. So I only have some very minor points to comment and warmly recommend publication. p. 6 l. 2: I suppose it should be Stable, not Stabile? p. 6. l. 22: How can most of the terraces be in 12 m water depth when the mean depth is 16 m? Are there so few in shallow depths/many in deeper depths? p. 10 l. 24: Why use the reference Hughes et al. (2016) when there are so many local/regional studies of the deglaciation of the Baltic Sea? p. 11 l. 32: it says "Ice Lake and older" but what is older than the Baltic Ice Lake in the Lake Vättern core? The thick varved clay sequence is most likely of Baltic Ice Lake origin.

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