



Possible role of hydroisostasy in peculiarities of lateglacial - postglacial sedimentation of the eastern part of the Gulf of Finland and Lake Ladoga

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Baltic – Lake Ladoga - White Sea structural-denudational lowland extends along the margin of the Baltic (Fennoscandian) Shield. Its deepest parts in the bedrock and modern landscape usually coincide with zones of cropping out of the post-late Vendian platform non-metamorphosed cover or outcrops of Riphean formations that overly metamorphic basement. Landscape of this area was variably modified by different processes, in particular by strong Pleistocene glacial and fluvio-glacial erosion, strongly controlled by lithological and structural factors.

The bedrock is variably dissected by erosion, especially on terrigenous sediments, where deep tunnel valleys are common. Simply, it is normally covered by Late Weichselian till of variable thickness overlain by glaciolacustrine varved clay sequence of the Baltic Ice Lak. The study (partly supported by RFBR grant 12-05-01121-) focus on prominent feature of distinct erosional truncation prior to Holocene lacustrine and marine sedimentation, traced as deep as 50 - 60 m b.s.l. in the wider eastern part of the Gulf of Finland. We speculate that deep sediment erosion was caused by the increasing role of variable hydroisostatic uplift of the bottom in response to well known water-level lowering, starting from the Yoldia Sea lowstand ~ 11 560 – 11 600 cal. BP. The bottom locally could be additionally uplifted 8-10 m solely due to this factor.

We also discuss possible input of remaining forebulge migration in deep bottom erosion. Relevant role of global climate changes, possible permafrost degradation, hydrogeological recharge of aquifers and water balance of large lake systems can not be neglected. Stress-specific unstable anisotropic varved clays with internal water-bearing silt – sand layers traditionally responded on rapid changes by zonal debris flows and slope deformations.