Repkina T.J., Zaretskaya N.E., Shilova O.S., Lugovoy N.N., Sadkov S.A., Zverev F.V., Volovinskiy I.V., Gurbich V.A., 2017. Morphodynamics of the Wite Sea Gorge near Inzy cape in the Holocene. In: Geology of Seas and Oceans (Proceedings of 22 International conference of Marine geology), v. 3, p. 274-279 (In Russ.).

Rybalko, A.E., Zhuravlev, V.A., Semenova, L.R., Tokarev, M.Yu., 2017. Quaternary deposits of the White Sea and the history of development of the modern Belomorian basin in the late Nenopleistocen-Holocen, in: The White Sea System. Vol. IV. The processes of sedimentation, geology and history (Ed. by A. P. Lisitzin). Scientific World, Moscow, pp. 84-127 (in Russ.).

THE WATERSHED RECONSTRUCTION OF THE ONEGO PALEOLAKE WITH GIS

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The GIS paleoreconstructions of the shoreline, surface area and volumes of lakes are currently in the area of interests of wide scientific community including geologists, sedimentologists, archeologists, paleogeographers etc. However, the aspects of watershed formation and evolution are only formally entertained during the lake development assessment in spite of their key role in water chemistry and bottom deposits formation.

The Lake's Onego watershed evolution during and after the Last Galcial Maximum termination from ca. 14.5 ka BP to present was reconstructed in 0.5 ka increments. Reconstructions were based on ICE-6G paleo-topography model (Argus et al, 2014), modern digital elevation terrain model (Ferranti, 2017), 125 DEMs of lakes depressions situated in the Onego lake region and general Ice margins positions (Demidov, 2006). ArcGis 10.2 software with Spatial Analyst, Geostatistical Analyst and 3D Analyst packages were applied to delimitate and calculate the watershed area, Lake surface area and paleo streams pathways.

The strong variations of the watershed area and its configuration were identified in conjunction with Earth's crust glacioisostatic adjustments (fig). The area of the watershed was assessed to be from $160 \cdot 10^3$ 13.5 ka BP to $76 \cdot 10^3$ km^2 3.0 ka BP. High glacial rebound and lake watershed allocation close to ice sheet peripheral lithosphere forebulge resulted in turning many of modern rivers backwards and redirection of their drainage in north-west direction below the ice shield. From 14.5 ka BP to 10.0 ka BP the watershed was at least twice larger compared with modern one ($62.8 \cdot 10^3$ km^2 (Onezhskoe ozero, 2007)), extended more than 300 km southward out of the modern watershed border and included modern Beloe Lake, Kubenskoe and Sheksninskoe water reservoirs. Surface discharge and ancient rivers inflow redirected into the Onego Lake drained from $60 \cdot 10^3$ km^2 to $30 \cdot 10^3$ km^2 of the area of the Russian Plate beginning from 14.5 ka BP and ending 2.5 ka BP, when the Beloe lake subwatershed was betrunked and Onego Lake watershed generally came to the current borders.

The fundamental difference in the geological structure and lithology between the Russian Plate' sedimentary rocks and the Baltic Crystalline Shield' magmatic and metamorphic rocks that are mainly drained currently, can cause significant differences between the past and the modern hydrochemical conditions and sedimentary environments in the lake.

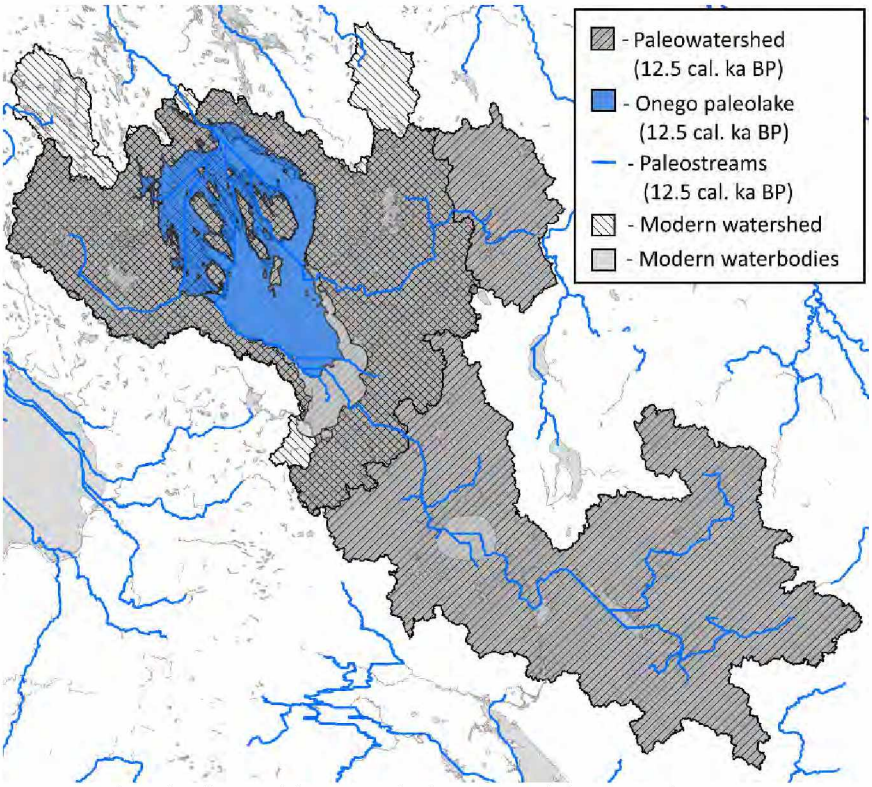

Fig. The Onego lake watershed at 12.5 cal. ka BP and present.

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References:

1. Ferranti J. Digital elevation data. *http://www.viewfinderpanoramas.org/* [Accessed November 15, 2017].
2. Demidov IN (2006a) O maksimalnoj stadii razvitiya Onezhskogo prilednikovogo ozera iizmenenii ego urovnya i glyacioizostaticheskom podnyatii poberezhij v pozdneledniko ve. Geologiya i poleznye iskopayemye Karelii 9: 171-182 [On a maximum stage in the evolution of periglacial Lake Onego, variations in its water level and glacioisostatic shore uplift of the shore in the Late Glacial Period, in Russian]
3. Argus, D.F., Peltier, W.R., Drummond, R. and Moore, A.W. (2014) The Antarctica component of postglacial rebound model ICE-6G_C (VM5a) based upon GPS positioning, exposure age dating of ice thicknesses, and relative sea level histories. Geophys. J. Int., 198(1), 537-563, doi:10.1093/gji/ggu140.
4. Onezhskoe ozero. Atlas (2010) Filatov NN (red). Petrozavodsk, 151 p [Lake Onego. Atlas, in Russian].

STUDY OF CONTEMPORARY VERTICAL LITHOSPHERIC MOVEMENTS IN THE AREA OF SZCZECIN, NW POLAND

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The contemporary geodynamic processes we observe, indicate the need for monitoring of vertical movements of the Earth surface. Monitoring of mass-movements in Szczecin area was carried out in 2016 and 2017 by the Polish Geological Institute. However, apart from mass-wasting, the origin of lithospheric deformations in the Szczecin area has not been fully explained. Vertical movements are dominant, and their character will be demonstrated based on descriptions from several places where land deformations have been highlighted before. The geology of Szczecin will be linked to elevation changes of monitoring points known from recent years. Thus