

Geography, geology, geomorphology, sedimentology:

Gulf Of Finland Coastal Systems In Holocene

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In spite of significant amount of data there are still lots of debatable questions and unsolved problems about postglacial and especially, the Holocene, geological history of the eastern Gulf of Finland. Among the most unclear are i) an amplitude of Holocene sea-level regressions; ii) the time and mechanism of large sand accretion forms (bars and spits) development and iii) sea-level changes and coastal development during last 4000 years. Recent marine geological and geoarcheological research of the Gulf of Finland near-shore bottom and coastal areas allowed receiving new data and developing a hypothesis of the paleogeographic development. Series of submarine terraces were found in the Gulf bottom (sea water depths 10 to 2 m). Analyses of the submarine terraces morphology and geology (e.g. grain-size distribution, pollen analyses and organic matter dating) allow to suppose that several times during Holocene (including preAncylus (11000 cal.BP) and preLittorina (8500 cal.BP) regressions) the sea-water level was lower than nowadays. Terraces morphology as well as results of mathematical modeling has shown that alongshore submarine accretion terraces can be generated as a result of transgression (from the sea-level -5 - -4 m) started 4000-3000 years ago. Detailed study of the long-core from the easternmost sedimentation basin of the Gulf (in frame of BONUS INFLOW project) has shown that near-bottom hydrodynamics between 3900 and 3100 cal.BP was much more active than later, which can be indicator of shallower conditions. Using both marine geological and on-land geoarcheological data the time of the Neva River onset from Ladoga Lake to the Gulf of Finland was estimated as 3200-3100 cal.BP. Detailed analysis of coastal morphology and results of geological research (ground penetrating radar, drilling, grain-size analyses) and recent geoarcheological studies allowed to reconstruct the mechanism of large accretion bodies (bars and spits) and lagoon systems formation during last 8000 years. Geoarcheological studies carried out within eastern Gulf of Finland coasts permitted to find some features of the Neolithic -

Early Metal settlements distribution, important for the coastal development reconstruction. Studies are supported by Russian Foundation for Basic Research (projects 12-05-01121 and 12-05-31196). Key-words: Eastern Gulf of Finland (Baltic Sea), coastal system development, Holocene