



Coastal processes of the Eastern Gulf of Finland: anomaly erosion rates

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Results of VSEGEI research have shown that coastal zone of the Gulf of Finland is strongly affected by erosion processes.

The use of drones turned upside down the methods of modern environmental monitoring. Thus, a small quadcopter makes possible to get an orthophoto of the terrain relatively cheap and very fast comparing to traditional aerial photography methods. Usage of drones in Russian Federation are not regulated by law yet, but we widely use them in our investigations. Regular surveys in the study area allows us to monitor the dynamics of the coastline and additionally the coastal underwater ramparts.

Upper part of the coastal geological sequence consists of easily erodible Quaternary deposits represented mainly by Holocene marine sands and Late Pleistocene sandy and clayey loam of glacial origin. Maximal rate of erosion escarpment retreat is about 5 m in vicinity of Kurortny District. For the years without extreme storm events, the mean rates of retreat are less than 0.5 m/year.

During long-term observations with the involvement of remote sensing data showed that the coastal zone in the area of the village of Bolshaya Izhora is one of the most dynamic parts of the coast. From 2011 to 2018, the movement of the coast projection (waves) is 180 m. The wavy shore contour moves in the eastern direction with an average speed of 25 m / year.

The last analyzes of the dynamics of the coastal zone of Kotlin Island showed (data from the WWII Aerial Photos of August 15, 1939 and modern satellite imagery) that the development has a similar principle: straightening the coast with capes erosion and filling (accumulation) located of the adjacent bays to the East. During 76 years the average erosion rates are 1.2–1.6 m / year.

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