

Sedimentological conditions and sediment transport pathways in the nearshore zone of the Russian part of South-Eastern Baltic Sea

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The sediment transport pathways and sedimentological conditions are identified on the South-Eastern Baltic Sea coastal zone (Russian part) up to the depth of 30 m on the base of grain size analysis of recent marine sediments. The interrelations between grain size statistical parameters of 971 sediment samples are used. The two independent approaches that discussed in the literature are applied: 1) the sediment trend analysis, based on spatial variations of sediment grain size parameters from sample to sample (McLaren, 1981) and 2) the population anomalies method, which allows to determine the sedimentation conditions (erosion, transit or accumulation) from the deviations of sediments grain size parameters in each sampling place from the average values in investigation area (Baraniecki and Racinowski, 1996). Taking into account that the sediment grain size composition achieve its constant in calm period of reduced storm influence and that the all samples were taking during summer season, the obtained sedimentation pattern present the long-time annual average of sediment transport pathways in the investigated area. The results show that the sediment accumulation under the wave influence prevails up to the depth of 5 m. The continuous accumulation zone breaks in erosion where the shore line changes its direction. Seaward of the accumulation zone the sediment transit area extends and interrupts by zones of erosion and accumulation up to the depth of 20 m. Sediment transport here occurs in hydrodynamic circulation cells within bays along the Sambian peninsula north coast. The erosion zones serves as sediment source on the underwater shore slope. The north-eastern direction of sediment transport exist along the straightened coast of Curonian spit according to prevail west winds. Deeper there are zones of transit and “slowly” sediment accumulation up to the depth of 30 m. The seaward and isobaths parallel sediment transport pathways are obtained in these zones.

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