



Instrumental research of lithodynamic processes in estuaries of the White Sea

Nikolai Rimsky-Korsakov (1), Vladislav Korotaev (2), and Vadim Ivanov (2)

(1) Russian Federation (nrk6@yandex.ru), (2) Moscow State University

The report provides a comparative analysis of morphological lithodynamic processes in estuaries and river deltas on the basis of 2013-2015 field geophysical and hydrographic surveys held by IO RAS and MSU. Studies performed using side scan sonar (Imagenex YellowFin SSS), bathymetric (FortXXI Scat Echo sounder) and navigation (DGPS/GLONASS Sigma Ashtek receiver) equipment.

North Dvina modern delta can be classified as multi-arm delta estuary lagoon performance. Areas of modern river waters occupy a large accumulation of deltaic arms. It formed a young island with elevations of about 1 m. The islands are composed of river alluvium and annually flooded during the flood period.

Onega river mouth area is unique due to the specific geological conditions. Short, wellhead site is the cause of the anomalous attenuation of the tidal wave and the limited range of penetration of salt water seashore only to Kokorinskogo threshold.

Morphological lithodynamic processes in high tide Mezen estuaries (syzygy - 8.5 m) are caused by tidal currents, river runoff, wind waves and sediment longshore drift. Due to the movement of huge masses of sediment in the Mezen estuary occur intense deformation silty-sand banks, reshaping of the bottom channel trenches and displacement of navigable waterways.

Thus, the specificity of the morphological lithodynamic processes in high tidal estuaries is a lack of modern delta, the development of mobile local sediment structures inside the estuary and the formation of a broad mouth bar on the open wellhead coast. In multi-arm deltas an intense process of increasing marine edge of the delta is observed due to wellhead delta arms elongation and the formation of small estuarine bars at the mouths of the underwater channel trenches coming out into the open coast. Simultaneously, the process of filling the river sediments of residual waters within the subaerial delta and the formation of marine coastal bars on the outer perimeter edge of the sea ground delta.