O23. LONG-TERM DYNAMICS IN LOCATIONS OF COASTLINE OF THE VISTULA SPIT BY RESULTS OF THE SATELLITES IMAGES ANALYSIS

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Images of satellites OrbView-3 for 2004 and 2005 years (spatial resolution 1 m/pixel) and Pleiades for 2014 year (spatial resolution 0.5 m/pixel) for the Vistula Lagoon (the Baltic Sea) were used. In contrast to shoreline location often used as an indicator of a shore retreat the paper recommends to use the changes in location of dune edge as an indicator of shore dynamics. Nine well identified mark points were selected for the northern Russian part of the Vistula Spit as control ones. The average difference in locations of these points obtained by geodetic survey and satellite images was 0.4 m.

The lines of the foredune edge for 25 km northern part of the Vistula Spit (from the Polish-Russian border to the Strait of Baltiysk) for 2004-2005 and 2015 were digitized with the step of 10 m and compared. Introducing the level of confidence ± 1.5 m per 10 years, we considered that eroded, stable and accreted parts of the shore have the total length 15.4, 4.9, 5.2 km (60.4%, 19.1%, 20.5%). The average (10 years) erosion rate for the marine shore on the Russian side of the Vistula Spit is 0.6 m/year, and accretion rate is 0.3 m/year.

Maximum erosion rate (2.2 m/year) was revealed on the shore segment to south from the Strait of Baltiysk, which is under permanent erosion during last one century and a half after construction of the entrance jetties.