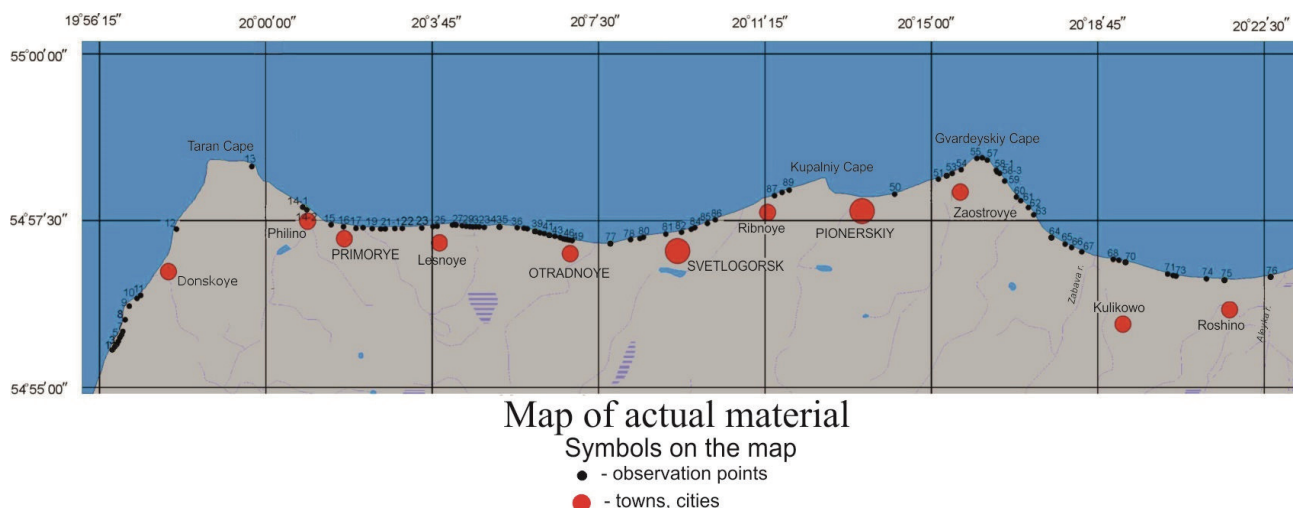


## SATELLITE REMOTE SENSING APPROACHES AND FIELD MEASUREMENTS TO TRACKING COASTLINE CHANGES OF THE SAMBIAN PENINSULA AT THE BALTIC SEA

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Changes in shoreline boundaries in the coastal areas lead to a reduction or growth of beach areas, areas suitable for economic development typically accompanied by appearance of economic or environmental damage. The intensity of coastal destruction especially intensified during extreme storm weather conditions is accompanied the surges sea-level rise. In the center of special attention is the coastal zone of the Sambian Peninsula, where the resort towns and settlements, industrial and agricultural activities are located. The coastline of the peninsula is characterized by active shoreline abrasion, almost complete lack of stable sections of the cliff, weak development of beaches, avandune, large gradients of the underwater coastal slope, widespread in the coastal zone of boulder-pebble bench. On the coast and on the slopes, landslides, rills, and coastal slopes are actively developing, leading to a reduction in beach areas. The most intensive destruction of the coast occurs along the sides of the bays of the village Filino to Svetlogorsk, to the south of Cape Gvardeisky, on the western edge of Zelenogradsk. As shown in the paper (Spiridonov et al., 2010) the retreat of the coastline on the northern Peninsula Sambian range from 0.5 to 1.5 m per year, and on the western from 0.3 to 200 m per year. In this regard, the study of changes in the coastal border and the area of beach zones for the purpose of preserving and ecological protection of the coastal zone of the Baltic Sea in the Kaliningrad Region is undoubtedly an actual problem. Its solution due to the long coastline is impossible without the use of remote sensing data of the Earth surface. For the remote studies of changes in the coastal zone of the Baltic Sea were used Landsat and Resurs-P satellite multi-temporal cloudless images for the period 2010-2017. Image processing and analysis of the obtained data on the areas of beach areas were carried out using standard tools of geoinformation systems ENVI 4.4 and ArcGIS 9.3. The field measurements along the coastline the observation points (Figure 1) in the northern part of the Sambian Peninsula made it possible to obtain quantitative estimates of change in the shoreline at the time of the survey and to estimate the error in measurement of the coastal boundary in satellite imagery. Based on the results of remote sensing of the beach areas the quantitative estimates of change in the coastal boundary were obtained for all the studied sites for 2010-2017.



*Fig. 1. Map-scheme with observation points along of the northern coast of the Sambian Peninsula.*

## REFERENCES

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