

## COASTAL RESEARCH IN THE AREA OF THE GEOCRYOLOGICAL STATION "CAPE BOLVANSKIY", IN THE ESTUARY OF PECHORA RIVER

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The "Bolvanskiy" geocryological station is located at Cape Bolvanskiy at the mouth of Pechora River at its inflow into the Barents sea. Cape Bolvanskiy juts far out into the sea and is bounded on the east and west by two bays. This area corresponds to the hilly eroded surface of IV glacial-marine plain with heights from 25 m up to 100 m above sea level.

The research on the coast and coastal processes in the area of the station began in summer 2000. The sites along about 18 km of the Pechora sea coast were surveyed and 10 observational profiles, located perpendicularly to the coastal bluff, were established.

In the study area the erosive-denudational types of coast prevail, except in the mouths of streams running to the sea where the erosive-accumulative types occur. The height of the coast varies from 2 up to 25-30 m and the slope angle reaches 45-90°. We have allocated three basic types of deposits composing the coastal sections: 1) mainly peaty; 2) mainly sand; and 3) mainly sandy-loamy and loamy. The loams contain large quantities of bouldery material. All ground is perennially frozen. They have, as a rule, relatively low volumetric ice-content (no more than 0.2 without including polygonal-wedge ice). The increase of the ice-content (0.3 –0.4) is characteristic of the top 2-3 meters of sandy-loamy and loamy sections. The peat bogs contain the most ice-rich deposits, and they also have thick ice wedges. The width of ice wedges reaches 2-3 m, their depth is determined by the thickness of peat and can reach 5 m in depth.

The width of the beach at the inflow period reaches 5-10 m, and rarely 20 m. The beach is composed of bouldery material with mixed mineralogical composition. The width of the inflow-outflow (tidal) zone reaches 300 m. The sea floor here is sandy. The average height of inflow reaches 0.6 m. Permafrost under the sea is absent.

The most favorable conditions for the development and activation of coastal erosion appear when the tide is accompanied by the strong northeast winds. The base of slopes is undermined by the storm waves. The undermining of the coastal bluff breaks the equilibrium of the slopes and provokes the activation of slumping and sliding processes in the middle and upper parts of the slopes.

However, the formation of deep thermoerosive niches in the permafrost is not common, as the most ice-rich deposits lie usually in the upper part of coastal benches. The other reason is that the base of benches is blocked by a thick layer of sediments that were displaced downhill under the influence of slumping and slumping processes.

During our observations within the last two years we found no features of active coastal thermoerosion along the coast of the Pechora sea in the area of Cape Bolvanskiy. The retreat of the coastal bluffs top edges was stationary at six of the ten observational profiles; changing from several cm up to 40 cm per one year. The displacements of the active-layer ground blocks downslope (up to 6 m) were observed at several sites. The retreat of the coastal bluff occurs mostly as a result of slope erosion, slumping and sliding processes. The influence of coastal erosion was observed only at the base of the slopes at three observational profiles and located at the sites with the narrowest strip of the beach.

Thus, the coastal destruction in the area of Cape Bolvanskiy presently occurs under the influence of such processes as water and wind erosion, slumping, sliding, thermoerosion, thermodenudation etc.

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