THE IMPACT OF TABULAR GROUND ICE OF THE GULF OF KRUZENSHTERN COASTS ON EXOGENOUS PROCESSES

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The Gulf of Kruzenshtern in the western Yamal is a closed bay, protected from the waves of the Kara Sea by a chain of Sharapovy Koshki islands. However, in this area, well expressed thermoabrasional coastal segments are present. They have steep cliffs (up to 70-80°), narrow beaches and sometimes overhanging niches.

The topography of the coastal land near the Gulf of Kruzenshtern is presented by a combination of several levels. The highest one consists of surfaces ranging from 20 to 30-35 m a.s.l.; they come to the coast to the south of Mordiyakha river and near cape Yasalia. The surfaces are cut by numerous thermoerosional ravines, complicated by thermokarst lakes and alases. In the coastal sections, two main units of Quaternary deposits outcrop: the upper one represented by interbedded brown silts and badly washed fine-grained dark grey sands of lacustrine-alluvial genesis; the lower one consists of dark grey bluish non-laminated clays outcropping up to 2-3 m a.s.l.

The lower unit hosts massive ground ice. Its outcrops are widespread from the mouth of Niudia-Mongotayakha river to cape Yasalia. The ice is laminated with flowed upper contact, unconformly overlain by clays and silts. In the clays, numerous schlieres of ice up to 2 sm, both vertical and horizontal, appear. The outcrops of the ground ice are up to 20-30 m long; their visible thickness reaches 2 m, which allows to attribute them to tabular ground ice. Similar ice has been described in the outcrops and boreholes of the near-lying Bovanenkovo area.

The ice usually outcrops either in small thermoabrasional niches or in the basement of thermocirques up to 100-200 m wide. Suffusion processes are also connected with the ice: thawed water on the top of the ice body washes out the ground; as a result, mud springs appear on the beach under the cliff.

In this way, despite the fact that the Gulf of Kruzenshtern is a closed water area, and wave impact on the coasts is relatively small due to insignificant length of the wave fetch, thermoabrasional and thermodenudational processes here are intense due to thawing of the tabular ground ice outcropping in the lower part of the coastal cliffs.

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