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The bottom topography and dynamics of the Obskaya and Baydaratskaya Bays, Kara Sea

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The development of the arctic gas fields requires a gas transport system to be laid across the Obskaya Bay and the Baydaratskaya Bay, Kara Sea. Designing, construction and safe operation of the offshore parts of the crossing demands special knowledge about a structure of the bottom topography and coastal zone dynamics. Results of investigation indicate a difference between those regions and common features of structure and evolution. Owing to a quite large scale of research it was possible to detail the bottom topography, to reveal separate elements and forms. The analyses of topography were executed to define the mechanisms and basic phases of relief formation. Accordingly, the geomorphological map describing the bottom topography by the set of parameters (major of them are morphology, morphometry, age, genesis and dynamics) has also become more detailed. Geomorphological structure of a seabed is the important source of the information on location of permafrost relicts, sites of concentration of rip currents, intensive ice bottom gouging, deformations of an underwater coastal slope and other adverse phenomena and dangerous exogenous processes. The analysis of all these data allowed making prediction of bottom topography development, to plan and carry out an engineering construction. Digital model of bottom topography is a basis for engineering constructions designing. Creation of digital models of bottom topography was carried out by the original method consisted of several stages and based on manual author's processing and interpretation of maps. Also a large amount of archival and literary materials on geophysics, geology, geomorphology and paleogeography has been involved for digital model creation with the purpose to determine the features of morphostructure and genesis of the basic elements.
It is established, that the geomorphological structure of the bottom of the Baydaratskaya and Obskaya Bays reflects consecutive change of the conditions and relief formation processes in Late Pleistocene-Holocene, since a continental stage of development of the drained erosion plain down to present time, including attributes of non-uniform rise of a sea level and activity of coastal processes (underwater bluffs, ancient beach ridges et al.).