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Coastal dynamics at the Pechora and Kara Seas in changing climatic conditions and under a human-induced disturbances

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Examples of the negative impact of the oil and gas development on the resistance of the coasts to erosion are analyzed for the coasts of the Pechora and Kara seas. Local technogenic disturbances in the cryolithozone put the activating mechanism of thermal abrasion into action. Under the conditions of global warming and ice cover decrease, this effect is enhanced due to the increase of the length of the ice free period and the length of the wave fetch. As a result, anthropogenic impact and climate change create a synergetic effect, due to which rates of coastal retreat may double or even triple. Such negative experience has been observed on the coasts of Varandey island, Pechora Sea, and hasn't been taken into consideration during the latest works on oil and gas infrastructure construction on the coasts of the Kara Sea, which also lead to dramatic abrasion rates increase in the region. The task of the present study was to assess the technogenic impact and separate it from the natural consequences of the climate change in coastal areas of the Kara sea. For several key areas on the western coast of Yamal Peninsula, rates of retreat were assessed using multiannual repeated stationary observations data. Additionally, multitemporal satellite imagery analysis for Western and Eastern Yamal allowed to enlarge the period of analysis, as well as to compare the rates and mechanisms of coastal dynamics change for Eastern and Western Yamal.