The Ob Estuary (Kara Sea) Coastal Dynamics Interannual Variability Assessment

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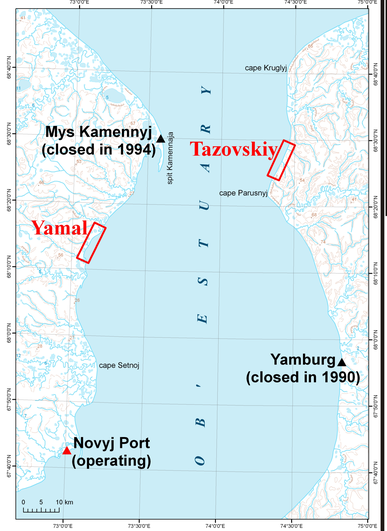

The discussed region is situated in the central part of Ob' Estuary (Kara Sea). The research was conducted for two sections of the Ob' Estuary coast. One section is located on the eastern coast of the estuary (Tazovskiy peninsula); the other is located on the western one (Yamal peninsula). Each of these sections is 10 km length.

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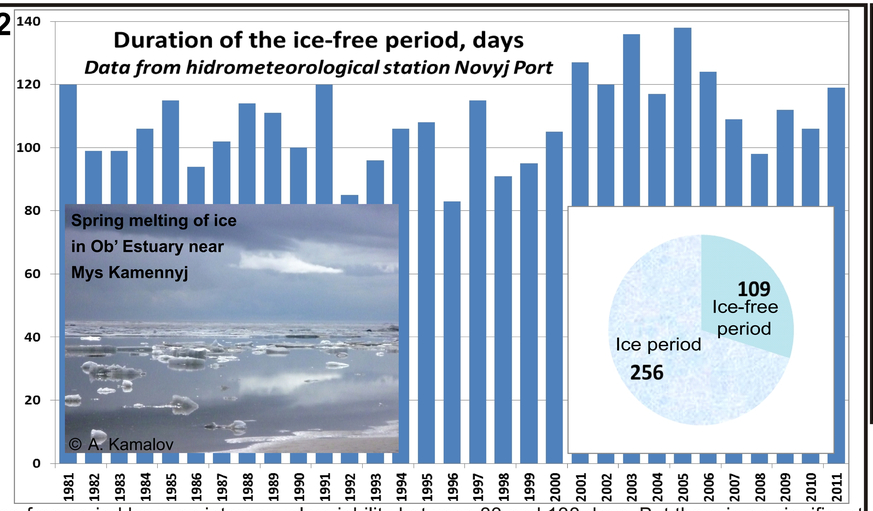

Ice-free period have an interannual variability between 83 and 138 days. But there is no significant trend of ice-free period duration in last 30 years. The mean ice-free period is 109 days

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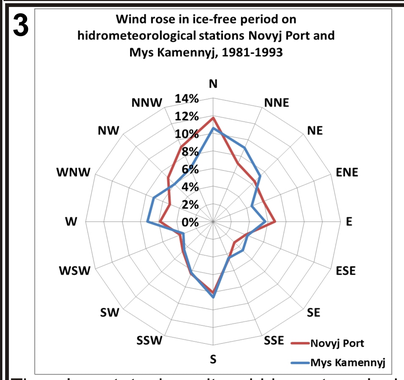

The closest to key-sites hidrometeorological station Mys Kamennyj was closed in 1994. But wind roses in Mys Kamennyj and Novyj Port stations for ice-free period in 1981-1993 are alike. So, we can use data from Novyj Port hidrometeorological station for our investigations.

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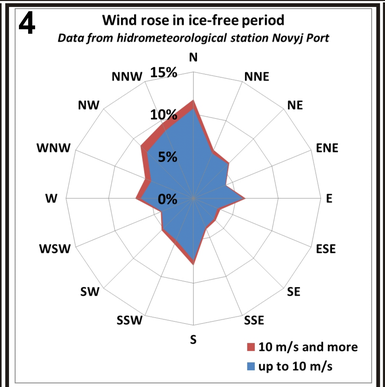

Although the prevaling wind directions in Novyj Port in ice-free period is N and S, the strong winds come mainly from NNW and NW.

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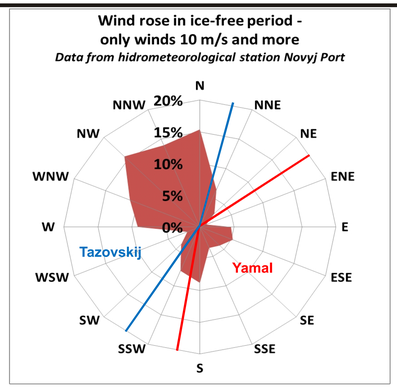

The repeatability of strong winds from wave-dangerous rhumbs during ice-free period is more on the eastern coast of the estuary than on the western. This goes from the predominance of N, NNW and NW strong winds during ice-free period. These winds cause waves leading to coastal erosion on the eastern coast of estuary and don't cause them on the western.

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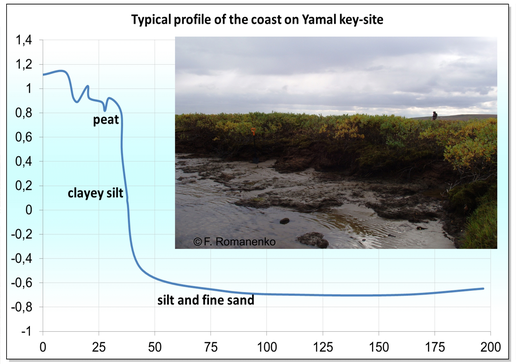

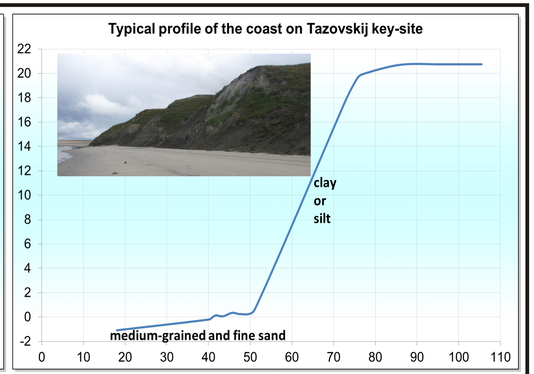

We can't draw conclusions about the comparative rates of coastal erosion on the western and eastern coasts of the estuary, because they are significantly different in morphology and lithology.

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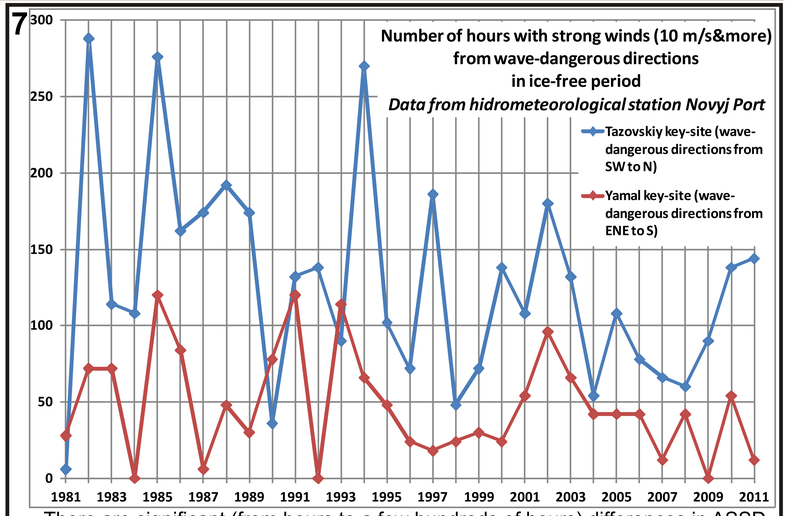

There are significant (from hours to a few hundreds of hours) differences in ASSD from year to year due to short ice-free period and high variability of wind velocity and direction. So, we can expect sharp interannual differences in coastal retreat rate. The specific year with frequent strong winds from wave-dangerous rhumbs during ice-free period on the western and eastern coasts of the Ob Estuary don't concur. That means, that in the same year, we can see accelerated retreat rate on the one coast of the estuary and stabilization on the other.