



Elemental and isotopic signatures of terrestrial organic matter along the Delta coastline of Lena River (Laptev Sea)

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A complex multidisciplinary oceanographic research was carried out along 358 km transect along the Lena Delta coastline (DCL): 58 stations were accomplished in 7 days in early September 2009. Our study focuses on structure of bottom sediments, dynamics of suspended particulate matter (SPM), content of particulate organic carbon (POC), total nitrogen (ON), C/N value, stable carbon ($\delta^{13}\text{C}$) and nitrogen isotopes ($\delta^{15}\text{N}$). It has been found a close connection between channels morphology, tectonic features and distribution of bottom sediments, SPM, water runoff along the DCL.

Neotectonic movements happened about 6,000 yr BP led to uplift of the DCL western part, which caused redistribution of river runoff to the eastern channels of the DCL. The boundary between these "tectonic" parts of the DCL is the submeridional fault, to which the Tumatsky Channel is currently confined. Shelf waters with salinity (S) > 20‰ penetrated to the channel mouth, causing formation of a frontal hydrological zone with increased gradients of thermohaline characteristics. Almost fresh river waters ($S < 1$ ‰) are distributed along the eastern part of the DCL (EDCL), and brackish water are distributed to the west of Tumatsky Channel (WDCL). The differences in the SPM average content between EDCL and WDCL are only 1.5 times, but the density of the river net in EDCL is almost 3 times higher. The reason is a more intense sedimentation of the SPM, causing the DCL progradation to the east and northeast of Laptev Sea. This is supported by 2-fold decrease by SPM from the inlets of Sardakhskaya, Bykovskaya and Trofimovskaya Channels to their mouths. Only fine SPM remain in transfer from the central DCL to the mixing water zone "river-sea". A circumterrestrial narrow strip of sand-silt sediments formed along the DCL's edge, and a vast field of relict sands is distributed near the northwestern elevated ledge of the delta (WDCL). Seaward direction from DCL sand-silt sediments are quickly replaced by silt-mud. The average POC content in EDCL and WDCL, respectively, is 1.6 and 2.7%; average C-13 isotopic signal is -26.5 and -26.0‰; average C/N values are 9.8 and 9.3. That is confirmed by similar terrestrial geochemical

signature in the nearshore sediments adjacent to EDCL and WDCL

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