



## **Dynamics of the terrestrial particulate material and organic carbon derived from thawed permafrost in the East-Siberian Sea and adjacent part of the Laptev Sea.**

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A hypothesized climate-change driven increase in terrestrial organic carbon inputs to the Arctic Ocean through permafrost thawing, increasing river runoff, and accelerated coastal erosion could dramatically alter carbon budgets and biogeochemical cycles. Many lines of evidences indicate that further warming will be most pronounced in the Laptev and East-Siberian seas (LESS). Therefore the strongest impact of future changes including increased export of terrestrial carbon can be found over the shallowest and broadest LESS shelf. The role of the coastal zone in lateral transport and fate of terrestrial organic carbon in the East-Siberia is still not studied well because most of last decade activities were focused on onshore geomorphologic and geochemical studies, while biogeochemical and sedimentation consequences of coastal erosion and riverine runoff in the sea were not studied sufficiently. Here we present results from our multi-year (2003-2007) biogeochemical and hydrological studies made in the LESS with focus on dissolved (DOC) and particulate organic carbon (POC). Horizontal variations in geochemistry and OC content of the surface seafloor sediments as observed in connection with effects of coastal erosion and inputs from riverine discharge. based on these large observational data sets, empirical regional correlations were found both between in situ measurements of colored dissolved organic matter (CDOM) and DOC, as well as between turbidity and concentration of particulate material (PM). This allows us to use such sensor data to build up detailed pictures of DOC and PM interannual dynamics in the LESS. We observed abrupt (5–10 times) eastward decrease in PM concentration crossing the frontal zone which separates the low-transparent and low-productive LESS shelf water from the high-transparent and high-productive Pacific-derived water which dominates in the eastern LESS.