FEATURES OF STATISTICAL DISTRIBUTION OF ORGANIC CARBON IN CONTINENTAL PERMAFROST OF ARCTIC SHORES (EAST SIBERIAN SEA)

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To calculate the flux of organic carbon (OC) into the Arctic Ocean from coastal thermal erosion, the OC content of the eroding permafrost deposit has to be evaluated. Depending on the facies of the deposits, the OC concentrations in syncryogenic continental permafrost sediments vary between zero and tens %.

We have considered OC data of permafrost deposits of both ice complex and alas complex of the ACD key site Malii Chukochii Cape, East Siberian Sea (276 measurements totally). These sediments are typical for thermal-erosive shores of the East Siberian Sea. The statistical tests showed that the distribution of the OC contents has a binomial character. The form of the histogram with two maxima confirms the binomial character of the statistical distribution. The first maximum is situated at a mean concentration of 0.85 % of OC and corresponds to "mineral layers" of the continental sediments. These layers do not have morphological indictors of subaerial soil formation such as specific soil structures, horizons and profiles. The second maximum (4.05 %) is observed for lenses of peaty horizons of buried soils inside the permafrost massif. The peaty horizons of the buried soils account for about 9 % of the permafrost massif of the alas complex deposit, which is compacted and does not contain thick ice wedges.

The binomial statistical distribution of the OC concentrations confirms, that the permafrost deposit can be described as a product of both sedimentation and soil formation under cold climatic conditions (cryopedolite). An updated technique for the determination of the contents of OC in eroding permafrost deposits is suggested. It is based on the binomial non-uniformity of the statistical distribution of the OC concentrations in permafrost deposits.