

Terrestrial microbial biomarkers trace organic matter transport to the Arctic Ocean

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Permafrost environments of the northern hemisphere preserve 50% of the global belowground stored organic carbon (OC)¹. Rising atmospheric and soil temperatures is causing destabilization of permafrost deposits and increases the re-distribution of terrestrial OC to the Arctic Shelf, by erosion of coastal areas and transportation via the major Arctic rivers. To advance our understanding of the export and deposition/degradation of soil OC by the easternmost Great Russian Arctic Rivers (GRARs) to the East Siberian Arctic Shelf (ESAS), this work aims to track characteristic microbial biomarkers, bacteriohopanepolyols (BHPs)², along a terrestrial-estuarine-marine transect and determine its fate after remobilization. Here we focus on elucidating the distribution of these ubiquitous biomarkers in terrestrial endmembers including the first data on BHP distributions in Arctic permafrost ice complex and Arctic lake sediments. New data from the major estuaries of the easternmost GRARs and the ESAS are presented with BHP based proxies, R'_{soil} ², used to trace the mobilisation and fate of terrestrial material in this unique environment.

[1] TARNOCI *et al* 2009. *Global Biogeochem. Cycles* **23**, GB2023. [2] DOĞRUL SELVER *et al* 2012. *Org. Geochem.* **51**, 63-72