

# Effect of river runoff on the biogeochemical structure of the Kara Sea surface water in autumn period

SVETLANA PAKHOMOVA<sup>1</sup>, ANFISA BEREZINA<sup>1</sup>, ANNA KHREPTUGOVA<sup>2</sup>, JULIA PRONINA<sup>3</sup> AND EVGENIY V. YAKUSHEV<sup>1</sup>

<sup>1</sup>Norwegian Institute for Water Research

<sup>2</sup>Lomonosov Moscow State University

<sup>3</sup>Shirshov Institute of Oceanology RAS

Presenting Author: svp@niva.no

The main feature of the Kara Sea, which receives the bulk of the river runoff of the Russian Arctic, is the mixing of marine and fresh waters of the largest Arctic rivers, the Ob and Yenisei. The studied region can be divided by different areas (west of the Yamal Peninsula, plumes of the Ob, Yenisei and Pyasina rivers, St. Anna Trench), which have specific features that determine their hydrophysics, chemistry and biology. Surface water samples (about 2.5m depth) were collected during the expedition of the R/V Akademik Mstislav Keldysh in the Kara Sea in October 2021. Totally 83 stations were analyzed for dissolved oxygen, nutrients, carbonate system (pH, alkalinity, pCO<sub>2</sub>), dissolved organic carbon, colored dissolved organic carbon and Chlorophyl-a. Salinity, temperature together with dissolved oxygen and pH (PyroScience) were measured continuously during the cruise.

Stations in the river plumes were characterized by the highest concentrations of nutrients and DOC, while the minimum was noticed for pH and alkalinity there. The minimum concentrations of Si, PO<sub>4</sub>, DOC and pCO<sub>2</sub> were observed at the northern stations, where the effect of river runoff disappears. Chl-a was significantly higher in the river plume waters and had a direct dependence on the Si/N ratio and an inverse dependence on N/P ratio. Correlations between salinity, Si, DOC, pH, alkalinity and Chl-a were found.

This work is supported by the Research Council of Norway project 315317 BEST-Siberian.

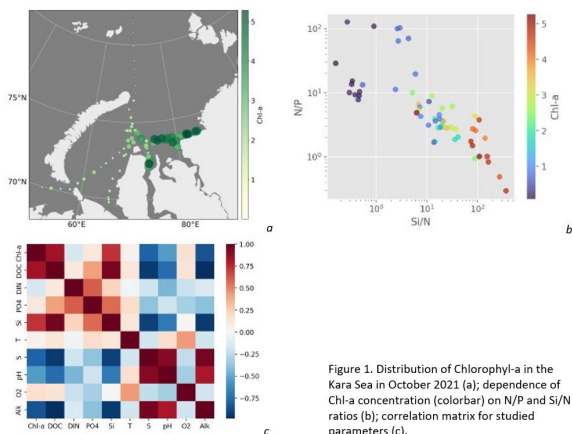


Figure 1. Distribution of Chlorophyll-a in the Kara Sea in October 2021 (a); dependence of Chl-a concentration (colorbar) on N/P and Si/N ratios (b); correlation matrix for studied parameters (c).