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Geochemical monitoring of the bottom sediments of the Barents Sea – exogenous and endogenous sources of polyaromatic hydrocarbons.

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Detailed organic geochemical study of the immersed bottom sediments of the Northern and North-Western parts of the Barents Sea region indicated the significant difference in the group and molecular composition of the dispersed organic matter (DOM). Hydrocarbons (HCs) distribution anomalies were identified in the western part of the Svalbard Island shelf, the area around the Shtokman gas condensate field and the Kola-Kanin Monocline shelf zone. The studied sediments (9 cores, up to 2 m length) were collected during scientific research cruises of "VNIIOkeangeology named after I.S. Gramberg" (Saint-Petersburg, Russia) to the Barents Sea between 1992-2006. Analytical procedure included the determination of elementary (TOC, Ccarb), group and molecular composition of DOM soluble part using preparative liquid chromatography and GC-MS analysis with the Agilent Technologies 6850/5973 GC System.

The studied samples are generally represented by low carbonate homogeneous pelites and aleuropelites (Ccarb$\leq$0.8% in sed.). The total organic carbon slightly varies through the sediment section and regularly decreases with depth, not exceeding 2% in the upper layer of sediments for the region. The maximum of chloroform bitumoid "a" was detected in the Svalbard shelf area (up to 0.04% in sed.). The molecular composition and ratio of PAHs in the Svalbard samples points to the high level of OM transformation (MPI1$\geq$0.6), that along with the lack of biogenic structures (perylene, cadalene, rethene) and increased concentrations of naphthidogenic PAHs (phenanthrene, alkyl-phenanthrenes), indicates the genetic association with the shore coal deposits. The Shtockman and Kola-Kanin Monocline sediments revealed other general trends in PAHs distribution. They are distinguished by a lower maturity level (MPI1<0.5), halving of naphthidogenic components and the great increase of biogenic structures (mainly perylene) relatively the Svalbard shelf zone. In the case of the Shtokman gas-condensate field area this could be due to the process of endogenous migration resulting in strong reducing conditions of sedimentation and new PAH formation. Speaking about the special DOM distribution near the Kola-Kanin Monocline the significant influence of the Atlantic flow, as well as an increased level of sediments contamination (high content of pyrogenic PAHs) should be considered.

Thus, the character of the group composition and hydrocarbons molecular structure of this three studied Barents Sea sites allow to conclude the prevailing importance of the provenances and endogenous processes for the formation of OM background in the region.