Hydrocarbon molecular markers in carbonate sediments of hydrothermal vent sites of the Mid-Atlantic Ridge

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Here we present the study of five sediment cores collected during the 36 expedition of R/V "Professor Logachev" (PMGE) to the 13-14 and 18-30 blocks of the Russian exploration area in the Atlantic Ocean in 2013-2014. We use a wide set of hydrocarbon (HC) molecular markers to assess the influence of hydrothermal environment on the organic matter (OM) content and composition in sediments of the active (17°51' - 18°02' N) and relict (19°40' - 20°10' N) hydrothermal sites of the Mid-Atlantic Ridge (MAR) [1]. The analytical procedure includes determination of elemental (TOC, $CaCO_3$) and group composition of the dispersed OM, chromatographic fractionation of saturated and aromatic HCs and their molecular composition determination using GC-MS [2].

High biodiversity and mineral composition of sediments of hydrothermal sites determine the specific composition of sedimentary OM in comparison with the remote pelagic regions [3]. The revealed variations in *n*-alkanes, cyclanes, bio- and geohopanes and polycyclic aromatic HCs composition of the studied carbonate sediments (up to 60% of $CaCO_3$) are highly associated with cyclic changes of chemical and physical conditions of hydrothermal environment. The increase of HCs content (up to 54%) together with the high input of low molecular weight *n*-alkanes, methyl-alkanes, triterpanes and methyl-phenanthrenes in some layers of sediment cores may indicate splashes of bioproductivity and accelerated rates of OM transformation under the extreme environmental conditions.

REFERENCES

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