

Interrelation of methane distribution with psychro-, meso- and thermophilic hydrocarbon-oxidizing microorganisms in the bottom sediments of the Kara Sea

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Abstract. The article presents data on the distribution of bioindicator thermophilic hydrocarbon-oxidizing microorganisms in the surface layer of bottom oil and gas bearing sediments in the Kara Sea and their interrelation with methane content. Cultivated thermophilic microorganisms capable of using oil hydrocarbons as the only carbon source found in the zone of no constant heat flow are indicators of oil and gas deposits. In the work, enrichment cultures of bacteria were created, which were incubated at the different temperatures of +5, +30 and +60 °C. It was found that, the hydrocarbon-oxidizing microbiome is mainly represented by meso- and psychrophilic microorganisms. The stations with the highest methane content were dominated by mesophilic oil-oxidizing microorganisms. Thermophilic bacteria of this trophic type were identified only at one of the studied stations, located in the southern part of the Novozemelskaya Depression.

Keywords:

methane, thermophilic hydrocarbon-oxidizing bacteria, bioindicative microorganisms, sea bottom sediments, Kara Sea

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