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Title: *Results of the interdisciplinary marine-based expedition “Yamal-Arctic-2012”*

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The first goal of the interdisciplinary marine-based expedition “Yamal-Arctic-2012” is acquiring knowledge in a wide variety of scientific topics in the typical for the Yamal region settings, including oil and gas infrastructure development, climatic fluctuations, and social-economic development of the Yamal-Nenetz region.

Secondly, the Yamal-Nenetz Autonomous region is positioned as an active participant of the Russian national politics in the Arctic region due to its participation in the realization of the federal scientific research programs and projects.

Thirdly, applied scientific problems are solved for the local benefits, and fundamental problems are observed based on the region’s characteristic features.

Finally, the end-users conducting activities in the Russian Arctic zone are provided with up-to-date data and analytical materials on the state-of-the-art and possible changes in the environmental situation and natural territorial complexes settings.

In the report, a summary of achievements of the expedition conducted in the navigation season of 2012 is presented, together with preliminary investigations results on the following topics: spatial and temporal variability of the pollutants content in the natural environment; hydrological and hydro-chemical conditions of water bodies, vertical zonal distribution of oil products in permafrost settings; increase of oil advection during peat thawing due to climate warming; palaeo-climatic characteristics for the last 1000 years and sea-level fluctuations for the last 10000 years; coastal biocenosis stability for a 30-year period; ecosystems degradation analysis based on the evaluation of modern state and biological variability of microbial associations in the key zones of the water areas and terrestrial landscapes; measurements of the Earth’s magnetic field in the secular variations observation points on the YANAO (Yamal-Nenetz Region) territory; the impact of climate change on the energy transport in plankton food chains of the Arctic seas, etc.

Current estimations of the hydrometeorological conditions of some of the Arctic seas are performed, together with spatial analysis of various kinds of marine environment pollution, including oil spills in the Arctic Ocean and adjacent seas.



Variations of meteorological parameters over the Russian Arctic seas' water areas and river mouths, spatial and temporal variability in ozone, carbon dioxide and methane concentration in the near-surface atmospheric layer, content of organic matter in the sea water (based on the CDOM spectral analysis) are evaluated.

The medical and biological investigations consisted of comparative evaluation of thermoregulation specifications, aerobic respiration, etc., and investigations of the adaptation processes for local and non-native population including zonal distribution analysis for specific adaptation processes.