The present state and evolution of permafrost in the continental and shelf areas of the Russian Arctic (eastern sektor): cryogenic processes, coastal erosion, geothermal field, subsea permafrost degradation, continental sediment influx into the Arctic Basin.

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Objectives. Characterise the geothermal field and present state of permafrost. Conduct paleo-permafrost reconstruction for the key stages of the Late Pleistocene and Holocene. Study the development of cryogenic processes within the Arctic coasts and offshore permafrost. Develop a data base on offshore permafrost of the Russian Arctic based on GIS-technologies.

Brief rationale. At present it is still unknown the phase state of the bottom deposits on the Arctic shelf and whether permafrost exists in the deeper part of the Arctic sea shelves. Preliminary investigations indicate that sediment input into the Arctic Basin from coastal erosion far exceeds all other sources. If funding is provided, the available maps, equipment, experience and investigations made to date will help understand the processes in greater depth and detail.

Expected results. Paleo-permafrost reconstruction of the Arctic shelf for the key stages of the Late Pleistocene and Holocene; classification of ice-rich coasts and predictive estimation of coastal processes in a changing climate; coastal erosion maps and a data base on the current state and evolution of subsea permafrost beneath the continental shelves based on GIS technologies; estimation of sediment budgets (mln. t per year), including organic carbon, delivered to the shelf from coastal erosion. Permafrost map and permafrost-geothermal profile series for the continental and shelf areas.

Main Types of Research Activities. Monitoring, remote sensing, experimental and analytical studies on the dynamics of cryogenic processes and permafrost in the continental and coastal areas of the Arctic; drilling, geological, geomorphological, geophysical, geothermal and geochemical investigations.

Timing, Location and Resources of Field Work. 2005-2008, coasts and shelves of the Kara, Laptev, East Siberian and Chukchi Seas, Taymir Peninsula, the Yenissey-Khatanga and Lena-Anabar Foredeeps (spring - drilling and geophysics from the sea ice; summer - permafrost-geological, geomorphological, geophysical and other investigations). Resources: drill rigs, geophysical instruments, track-laying vehicles and small sea vessels (rented).