HISTORY OF PLIOCENE-QUATERNARY SEDIMENTATION IN THE CHUKCHI SEA (ON MATERIALS OF SHALLOW DRILL CORING)

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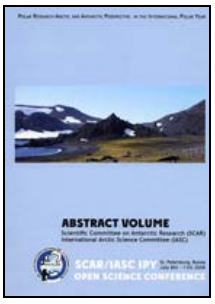
Based on complex study, including seismoacoustic profiling, paleomagnetic, lithological, biostratigraphic, radiocarbon and organo-geochemical investigations, the reconstruction of Late Cenozoic sedimentation of the Chukchi Sea shelf was implemented. VNIIOkeangeologia carried out shallow drill coring southern the Wrangel Island in 2006. According to seismoacoustic and lithology-mineralogy data could be marked out two seismostratigraphic units - Upper Pleistocene – Holocene and Eopleistocene – Pliocene, with a distinct unconformity between. Upper Pleistocene – Holocene is represented by fine marine silts and clays with mollusk shells and rare small pebbles. The Eopleistocene – Pliocene complex is built of sand and sandy silt with pebble and gravel and numerous fragments of burnt lumber. Paleomagnetic study confirms two-layer structure of sediment core. We refer upper part to the Brunhes epoch, the lower one (a reverse magnetization zone) likely corresponds to the Matuyama orthozone. Spore and pollen spectra from boreholes show that the upper part of the profile was formed when a forest-tundra and tundra vegetation occupied the considered territory. The lower part of the profile is believed to have formed, when the deposition area was occupied by relatively warm-loving coniferous and broadleaf species. The microfauna analysis of samples from Upper Pleistocene – Holocene deposits show the predominance of Arctic and Arctic-Boreal species, typical for modern Arctic seas, and redeposited shells of extinct Neogene species. In Eopleistocene – Pliocene deposits the fresh water microfauna is observed. The organic matter (OM) characteristics of the upper part of deposits profile corresponds to background values for modern terrigenous-marine Holocene deposits of the Arctic shelf (organic carbon – 0,5-0,9%, carbonate carbon <0,1%). OM soars up (organic carbon >3%) in the lower part of the profile, changes it's molecular and group composition. And the presence of hydrocarbon biomarkers testifies to sedimentation in continental shallow basins with considerable income of humus organics.

Reference:



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http://www.evgengusev.narod.ru/chukchi/gus-2008.html