

Natural prolongation of the East Siberian continental margin in the Amerasia basin based on the complex of geological and geophysical data

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In the last decade, a number of high-latitude expeditions were organized by various organizations within the continental margins of the Laptev, the East Siberian and Chukchi seas. Obtained multichannel seismic (MCS) reflection data, in combination with the results of deep seismic sounding (DSS) and density modeling, reveal the structure of the sedimentary cover, acoustic basement and consolidated layers of the crust within the Eurasian shelf and deepwater structures of the Amerasia basin.

As a result of the analysis of MCS materials, the continuous tracing of the main sedimentary complexes of the Mesozoic-Cenozoic age from the shelf of the Eastern Arctic seas to the deep-water region was revealed. Within the margin, a thick sedimentary basin stretches along the entire shelf boundary. The age of the oldest sedimentary complexes within the basin varies significantly. The internal structure of the acoustic basement (metasedimentary complex?) within this sedimentary basin and on the shelf of the East Siberian Sea is characterized by similar seismic parameters.

The DSS results along profiles crossing the continental margin, as well as the results of 2D density modeling, indicate continuous prolongation of the layers of the consolidated continental crust from the shelf to the deep-water area. Thus, a natural geological prolongation of the shelf structures of Eurasia in the Amerasia basin is justified on the basis of various geological and geophysical data, while there is no evidence of regional transform faults within the shallow - deep-water transition zone.