



Seismostratigraphy, tectonics and geological structure of sedimentary basins of the East Siberian Sea

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New data of detailed study of deep-seated structure are presented for the sedimentary basins of the East Siberian Sea. Interpretation of seismic lines in network over the East Siberian Sea is accepted to be a work basis.

Two main stages of seismic complex formation are currently distinguished in sedimentary cover: (1) syn-rifting stage dated at Aptian–Albian; (2) postrifting stage, which comprises eight complexes (the lower one is bounded by reflectors 100 Ma and 80 Ma and the upper one by 20 Ma and by sea bottom). Their evolution took place in a wide range of time between Late Cretaceous and Oligocene–Quaternary. The data on ages of reflectors are based on study of the archipelago of New Siberian Islands, as one part of shelf accessible for direct geological observations, which are key for comprehension of nature and tectonic evolution of the eastern Arctic Region.

In seismic sections of the De Long Plateau, the members of striking high-amplitude rocks are observed; they likely correspond to eruption of basalts, the age of which is dated at 125–110 Ma. This fact, in turn, indicates that the oldest sedimentary rocks beneath the East Siberian Sea and its shelf might be Cretaceous as well. Their sole serves as an acoustic basement.

Thereby, we can identify the following seismic stratigraphic boundaries in the East Siberian Sea:

- 125 Ma is high-amplitude erosion surface of unconformity. This boundary is characterized by volcanism on the De Long Plateau and the start of rifting in the East Siberian Sea;
- 100 Ma is marker an approximate time of the rift/postrift boundary in the East Siberian Sea. Horizon is correlated with counterparts in the Podvodnikov Basin.
- 80 Ma is stable over the entire East Siberian Sea. The horizon is not complicated by vigorous tectonic disturbances.
- 66 Ma corresponds to boundary between Cretaceous and Paleogene sedimentary rocks. This is bottom of the lower clino-forms between Podvodnikov Basin and Kucherov Terrace.
- 56 Ma is characterized by the break-up boundary at the time of start of opening of the Eurasian Basin, the boundary is traced to the wells on the Alaska Shelf.
- 45 Ma, 34 Ma, and 20 Ma boundaries were identified through correlations of the seismic stratigraphy and linear magnetic anomalies in the Eurasian basin. They have been traced to the wells on the Alaska Shelf.

The sedimentary basins of East Siberian Sea was formed in Aptian–Albian, being related to coeval onset of rifting, which is dated close to age of basalts from De Long plateau. Since the Late Cretaceous, the Podvodnikov Basin has gradually undergone a thermal post-rifting submergence. Clinoforms have been identified in postrifting sedimentary cover.

A strongly extended and flattened continental crust is suggested for the Podvodnikov Basin. This is followed from typical rift structures at the base of section. The rifts with such geometry and synrift sediments are typical for continental rifting. The study was funded by RFBR - projects № 18-05-70011 and 18-35-00133.