

Seismostratigraphy and Cenozoic evolution of the North-Chukchi basin and adjacent Arctic areas

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The North-Chukchi basin is a part of huge continental margin sedimentary basin. Cenozoic history of the region currently is poorly understood. Lack of seismic data and exploration wells makes it difficult to determine age and nature of the North-Chukchi basins sediments. We recognize substantive stages of Cenozoic geological history and compose series of paleogeographic reconstructions of the North-Chukchi basin and adjacent region from Paleocene to the present using new seismic data (2011-2015 years).

The main seismic horizons were tracked on the vast territory including the North-Chukchi basin, the East-Siberian basin, the Chukchi plateau, the Mendeleev rise and the Podvodnikov basin. The age control was carried out using two further data sets: (1) five offshore exploration wells on American sector of Chukchi sea shelf and (2) ages of linear magnetic anomalies of Amundsen basin.

The significant part of the basin infill by different oriented clinoform deposition sequences that progradated from different sides one towards another. Three stages of evolution were recognized. The first stage (Paleocene (?)) strata consist huge clinoform sequences that progradated from Vrangel islands to north-west direction at least 300 km. The second stage (Eocene-Oligocene) sediments are presented by three clinoform deposition complexes, that progradated from the opposite directions. The last stage (Miocene-Recent) is characterized by slow aggradation of all clinoform complexes to the north even to recent shelf break location. Total thickness of all sediments is up to 10 kilometers.

Although age of each stage is discussed, enozoic history of the region is found as complex and diverse.