

## **Arctic Ocean Podvodnikov Basin Tectonics According to the Latest Seismic Data**

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### **ABSTRACT**

Most researchers believe that Podvodnikov basin as a single structure was formed in the end of Cretaceous or in the middle of the Jurassic period on the even-aged folded basement. However, seismostratigraphic structure analysis of the sedimentary cover and underlying acoustic basement, which was made as a result of the 2011-2014 expeditions, showed that there are two depressions within Podvodnikov basin differs by stratigraphic completeness below the Cenozoic deposits, the number of seismic sequences, type of seismic record and age of the acoustic basement. To the west from Geophysicists spur allocated two Cretaceous seismic sequences with a weakly structured form of record. There is a clear cone of material from Lomonosov ridge, pointing to the erosion of the orogen and the accumulation of coarse molasse in the trough. To the east of the Geophysicists spur (inclusive) the 5 seismic sequences below the Cenozoic deposits are observed, starting with the Upper Permian age. All of them are characterized by a long stretch of reflections with high amplitude. It is shown that the eastern depression of Podvodnikov basin is the western extension of the North Chukchi Basin overlying the Ellesmerian folded basement. Differences in the structure of the sedimentary cover between the western and eastern depressions traced at all profiles crossing Podvodnikov basin: unstructured record in the Cretaceous complex of western depression and extended dynamically expressed record for seismic sequences of eastern depression. It is possible that the western depression formed as a result of Cretaceous rifting in Late Cimmerian time. Then the Geophysicists spur is the eastern edge of the rift and Lomonosov ridge - its western edge. This explains the unstructured nature of the records in the wave fields of the Cretaceous sediments of the western depression and a sharp reduction in the early Cretaceous (apt-albian) deposits on Geophysicists spur and Lomonosov ridge. To the north the western part of Podvodnikov basin reduced in size, bound up with Lomonosov ridge and Geophysicists spur. And to the south - transformed to Cretaceous post cimmerian grabens of the Laptev sea shelf. Already Cenozoic sediments cover both parts of Podvodnikov basin, presents in almost the same thicknesses, even on Lomonosov ridge. This indicates a neotectonic phase of block movements that formed modern Lomonosov ridge and Podvodnikov basin.