

PreCaspian Saliferous Basin: Genesis and Evolution

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PreCaspian basin is particular distinguished by the salt accumulation, its thickness and halokinesis peculiarities. It was investigated relationships these parameters with geo-dynamic evolution of whole basin.

PreCaspian basin is located within SE corner of East European platform. Urals folded belt is an east border. Paleo-zoic South Emba Uplift limits in south-east. Donbass –Tuarkyr folded system is the south and south west boundary.

Using available geological and geophysical data carried out reconstruction of geological history of PreCaspian basin since Riphean. Four main structural elements are recognizable within basement. There are abnormal high seismic velocities of basement within Central PreCaspian depression. This is interpreted as existence of eclogite lenses in lithosphere.

The total sedimentary cover thickness exceeds 20 km: Riphean - 4 km, Lower Paleozoic - 4 km, Devonian – Lower Permian - 4 km, Kungurian salt - 4-5 km, Upper Permian - Triassic - 2 km and Jurassic - Cenozoic - 2,5 km. PreCaspian basin was isolated since Early Permian when the depression was formed with depth more than 2500 m. Kungurian salt accumulation rate was 50 sm per 1000 years to distinguish this basin.

Proposed mathematical model of PreCaspian basin evolution explains its structural and geological peculiarities. According this model the boundary conditions have been estimated for the process of eclogite injection from collision zone into the crust base.