

Maastrichtian sedimentation and palaeoenvironments of the Saratov Volga region

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The Saratov Volga region was a shallow-marine epicontinental basin North-Eastern shelf zone of the Tethys Ocean in the Maastrichtian.

The basis for the modeling conditions of sedimentation was the detection mineral composition of rocks, as well as the contents of various chemical elements in rocks in three reference sections: Lower Bannovka, quarries "Bolshevik" and "Kommunar".

Rocks of quarries "Bolshevik" and "Kommunar" characterized by quartz-calcite mineral association. The main rock-forming mineral is calcite, small amounts in rocks contain quartz. Other mineral composition characterized section Lower Bannovka. At the base of the section in the rock marked the presence of the opal. The source of silica are radiolarians. Favorable conditions for the existence of which is cold deep water enriched with SiO₂.

Above the section marked authigenic glauconite, which are confined to zones of skip in sedimentation. Further up begins to dominate the accumulation of calcite with rich bentic foraminifera.

Clay minerals in rocks of the section Lower Bannovka presented montmorillonite and illite. The relationship of chemical elements and their alkali modules allow to detail the conditions of sedimentation. The ratio of Fe/Mn in them varies from 44 to 5729. Higher values are characteristic of glauconite sandstones. Up the section marked decrease in the Ti/Zr, indicating that the increase in the distance from the source area to the place of deposition. The similarity values of the ratio Ti/Zr samples indicates a community source area.

Sedimentation Model revealed the impact of the PreUral strait connecting Tethys and Paleoarktic. Through the Strait of deep cold water saturated with SiO₂, penetrated into the of the Saratov Volga region, were accumulated clay. The closing of the PreUral Strait changed the conditions of sedimentation, the associated fall in sea levels due to global cooling reflected in the crisis of radiolarians, increase in the number of glauconite. Subsequent warming and warm-water transgression caused dominance of carbonates.

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