

Paleocene-eocene depositional environments and abiotic events on the southern and south-eastern Russian platform

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Abstract

The paper proposes a new event model of formation of Paleocene-Eocene sands and sandstones of the Southern and South- Eastern Russian Platform and their overlying Eocene bentonite clays. Sands have been considered as sand injectites, which outpouring and intrusion are due to tectonic activity of the Pachelma and Dnieper-Donets aulacogens and the Voronezh mass in the Paleocene-Eocene period. The outpouring of fluidized sand was complicated by the income of acid pyroclastic material to the basin. The influence of the latter explains the layers of camouflage pyroclastics in the sands of Buchakskaya formation. The transformed pyroclastic material is presented by the paragenesis of authigenic minerals - montmorillonite, zeolite, opal-CT, glauconite, and volcanic glass. It has been shown again that the montmorillonite clays of the Kievskaya formation are of volcano-sedimentary origin and were formed by diagenetic transformation of the metastable pyroclastic material. The formation of confluent sandstone is also associated with the diagenesis of overlying ash material, upon which free silica - a quartz grain cementing material - releases. Material composition of sands and sandstones of Buchakskaya formation and clays of Kievskaya formation has been studied with a range of analytical methods (petrographic, X-ray, chemical, and electron microscopy). Consideration of the sand strata under the new perspective requires a review of existing stratigraphic schemes, as a synchronous formation of rocks of both Buchakskaya and Kievskaya formations is very likely.

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Keywords

Bentonite clays, Eocene, Paleocene, Sand injectites, Sands, Sandstones, The Russian platform