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Loess deposits at Luochuan



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New data on the structure of the loess-paleosol series of the middle Kuban Rivervalley

O. A. Tokareva¹, S. N. Timireva¹, M. P. Lebedeva², Yu. M. Kononov^{1*}, N. A. Taratunina^{1,3}, R. N. Kurbanov^{1,3}

¹Institute of Geography RAS, Moscow, Russia

²Dokuchaev Soil Science Institute, Moscow, Russia

³Lomonosov Moscow State University, Faculty of Geography, Moscow, Russia

Corresponding author: Yuriy Kononov (kononov@igras.ru)

Abstract: Loess-paleosol series (LPS) are the most significant paleogeographic archive containing information on landscape and climatic changes during glacial and interglacial epochs. These deposits are widespread in Eurasia and studying them is of great importance for paleoclimatic reconstructions. Currently, one of the urgent tasks in studying is to clarify the stratigraphic position of specific loess-paleosol horizons of the sections according to the existing chronostratigraphic scheme of the East European Plain. Our study area is located in a transit position between Siberian, Central Asian loesses and loesses of Eastern and Western Europe; however, it is still poorly studied. We carried out field work in the south part of the Russian Plain between Tbilisskaya and Kazanskaya villages (N 45°22'54.055" E 40°19'34.961) on the right bank of the Kuban river valley. A 25-meter section named Kropotkinsky was studied in the upper part of the natural outcrop. The field study included: lithological characteristics of deposits, identification of the stratigraphic units, description of the paleosols, detailed sampling for a set of analyzes (magnetic susceptibility, grain size measurements, micromorphology, OSL and paleomagnetic dating, morphoscopy of sandy quartz grains, etc.).

At the moment, the first results have been obtained on the general structure of the units of this section. The upper half of the sequence is represented by subaerial deposits consisting of four intervals which correspond to different structure of paleosols and loess horizons separating them. Thick layers of alluvial sands lie at the base of the section.

The upper interval of the subaerial stratum, formed during the last glacial cycle, is distinguished by a large thickness of loess deposits and the presence of three poorly developed paleosols. In the second interval, three well-developed pedocomplexes (PC) are noted, alternating with thin horizons of loess. The paleosols are brown in color, enriched in carbonates and gypsum accumulations.

The third interval is represented by a thick PC4 consisting of 3 paleosols with characteristic red color. Specific feature of the paleosols of this interval is the presence of slickensides, increased clay content and a platy structure.

The fourth interval is represented by two well-developed brown PC5 and PC6, separated by thick loess horizons (2-3 m), also affected by soil formation processes.

Thus, a thick subaerial stratum is distinguished in the Kropotkinskiy section in the middle part of the Kuban River valley, consisting of 6 pedocomplexes formed during periods of warming

separated by loess horizons accumulated during glacial periods. The alternation of paleosols and loess in the section reflects climate changes over the past 800 ka.

Keywords: Loess-paleosol sequences; East European Plain; Kuban loess; Cis- Caucasus

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