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DEVELOPMENT OF PALEOPEDOGENESIS IN EARLY PLEISTOCENE IN TERRITORY OF THE CISCAUCASIA (TEMIZHBEKSKY SECTION, MIDDLE COURSE OF THE KUBAN RIVER)

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The obtained materials allow revealing stages of the paleopedogenesis development in the Ciscaucasia in the late Pliocene – Pleistocene. Horizons of paleosols are investigated in the context of the Temizhbeksky section, which has thickness of about 48.5 meters. This section is situated on the right bank of the Kuban River (45°26'14"N 40°52'17"E), at the eastern part of the homonymous settlement. The riverside hill cross-sectioned by the river has a local name Sopatyi Kurgan. The section contains 10 horizons of the paleopedogenesis, of which 6 horizons are pedocomplexes (TM-2, TM-4, TM-5, TM-7, TM-8, TM-9), and 4 horizons are represented by individual paleosols (TM-1, TM-3, TM-6, TM-10). The Matuyama / Brunhes boundary is defined in a loess layer, slightly below the TM-3 paleosol. Bones of small mammals *Eolagurus cf. luteus* and *Ochotona* sp. were collected in a burrow infillings beneath the TM-2 pedocomplex. This makes it possible to determine the age of the TM-2 pedocomplex in the range of late Middle Pleistocene to the Late Pleistocene. Remains of *Clethrionomys cf. kretzoi* (Kowalski), *Mimomys reidi*, and *Mimomys* sp. (large form) were found eight meters above the base of the section, in greenish sandy loams. This record determines the age of the section's base as the earliest Pleistocene (Gelasian) (ca. 2.3-1.8 Ma). Two individual paleosols (TM-1 and TM-3) and one pedocomplex (TM-2) lie above the M/B inversion and belong to Middle and Upper Pleistocene. The TM-1 paleosol correlates with the Bryansk paleosol horizons, and the TM-2 pedocomplex – with the Mezin pedocomplex (Paleoclimates and paleoenvironments... 2009). Five pedocomplexes (TM-4 to TM-9) and two individual paleosols (TM-6, TM-10) lie below the Matuyama/Brunhes boundary and represent seven stages of the pedogenesis in Early Pleistocene (Gelasian-'Calabrian').

The soil-sedimentary record of the section reflects the change of sedimentation environments and paleoclimate during the earliest Pleistocene (Gelasian), the whole of the Early Pleistocene ('Calabrian'), and a part of the Late Pleistocene. At that the climatic trend is superimposed on the directional change of the sedimentation environments. The Temizhbeksky section is to be divided into three intervals. The first interval contains the TM-1, TM-3 paleosols and the TM-2 pedocomplex. This is a loess-paleosol series of the section. The second interval contains the TM-4

to TM-8 pedocomplexes. It is characterized by low rates of the red subaerial-subaqueous sedimentation and available prolonged subaerial breaks. The paleoclimatic conditions changed from warm semihumid or semiarid to warm humid ones in each pedocomplex. The third interval in the base of the section contains the TM-10 paleosol and the TM-9 pedocomplex. These paleosols recorded the carbonate-gley pedogenesis under conditions of high rates of the subaqueous sedimentation in the semiarid climate.

The magnetic susceptibility distribution in the section is characterized by a gradual decrease down to the section. The maximum values of 87×10^{-5} SI units are in the upper horizon of the TM-3 profile, the minimum values in the TM-2 profile make up to 17×10^{-5} SI units. For the enclosing loesses and loess-like loams the typical values make 27×10^{-5} to 32×10^{-5} .

The TM-4 pedocomplex consists of two paleosols. The upper paleosol is to be diagnosed as cambisols calcaric, and the lower one, as luvisols (WRB, 2006). The TM-5, TM-7, TM-8 pedocomplexes have a tripartite structure. The TM-8 pedocomplex structure is the most typical. The lower paleosol is to be diagnosed as calcisols and contains the maximum amount of carbonate formations. The middle paleosol is diagnosed as luvisols, and the completely gleyed uppermost paleosol can be diagnosed as gleysols. Each cycle of the pedogenesis is to be divided into three phases. The early phase reflects the most arid conditions. The second, longer phase evidences conditions of semihumid paleolandscapes. The third phase of the paleopedogenesis indicates hydromorphic conditions with periodic excessive flooding of the paleosol.

References

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