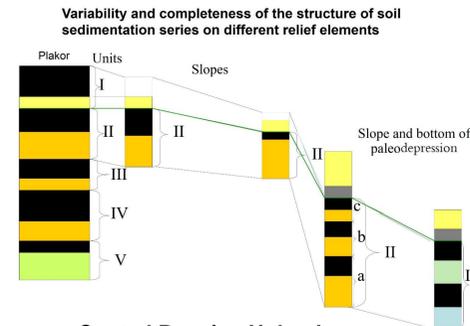


PALEOCATENAS OF THE RYSHKOVSKY PEDO-LITHO-COMPLEX (130-117 KA BP) OF THE CENTRAL RUSSIAN UPLAND

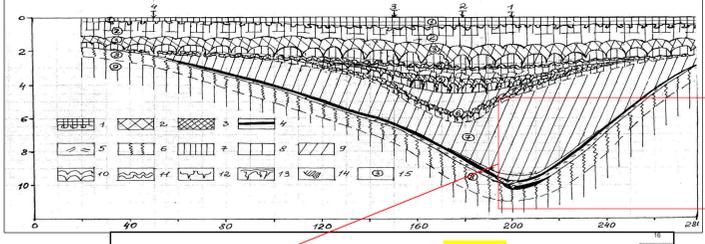
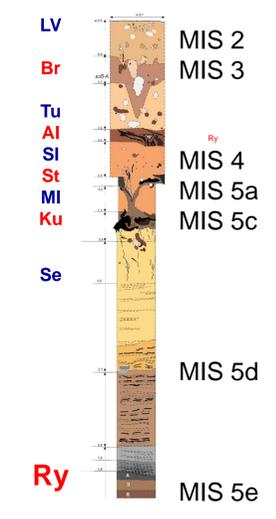
Polina Pushkina, Svetlana Sycheva, Institute of Geography, Russian Academy of Sciences, Moscow, Russian Federation



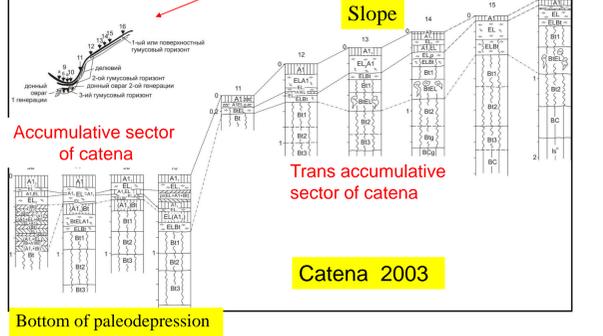
Central Russian Upland
Northern part of the "Chernozem belt"
Continental climate (MAT 5.2° C; MT January -8.3°C; MT July 18.9° C; MAP 580 mm)

Catena - interconnected geochemical combination of soils and landscapes along the slope.
Paleocatena - ancient catena formed in the paleoecological conditions of the past.
Paleocatena - mated a number of reconstructed paleolandscapes and their components on the slope.

- Paleocatenas and their meaning**
1. Stratigraphic (high-resolution stratigraphy)
 2. Evolutionary (soil, soil structure, micro- and mezorelief)
 3. Paleoecological (reconstruction facies, local and regional landscapes)
 4. The safety and diagenetic convert paleosols (fossilisation of soils).



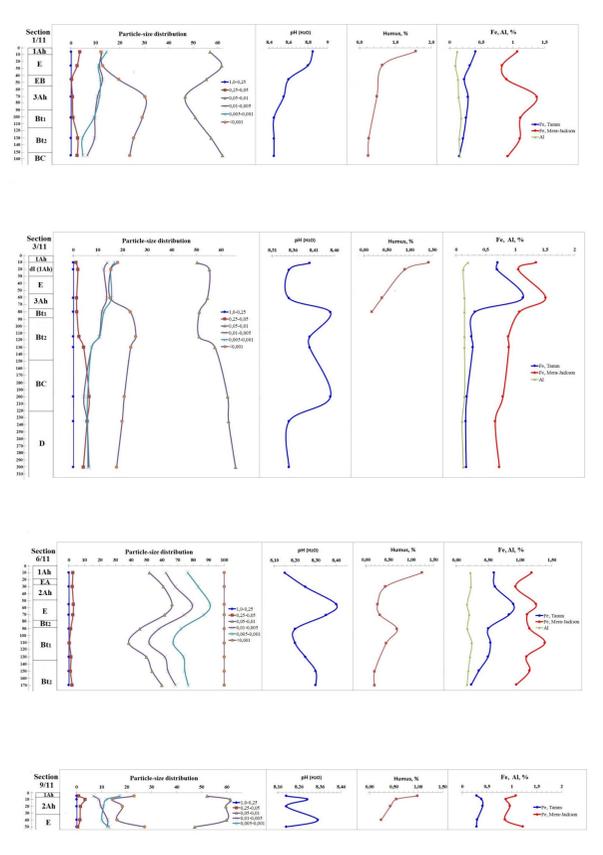
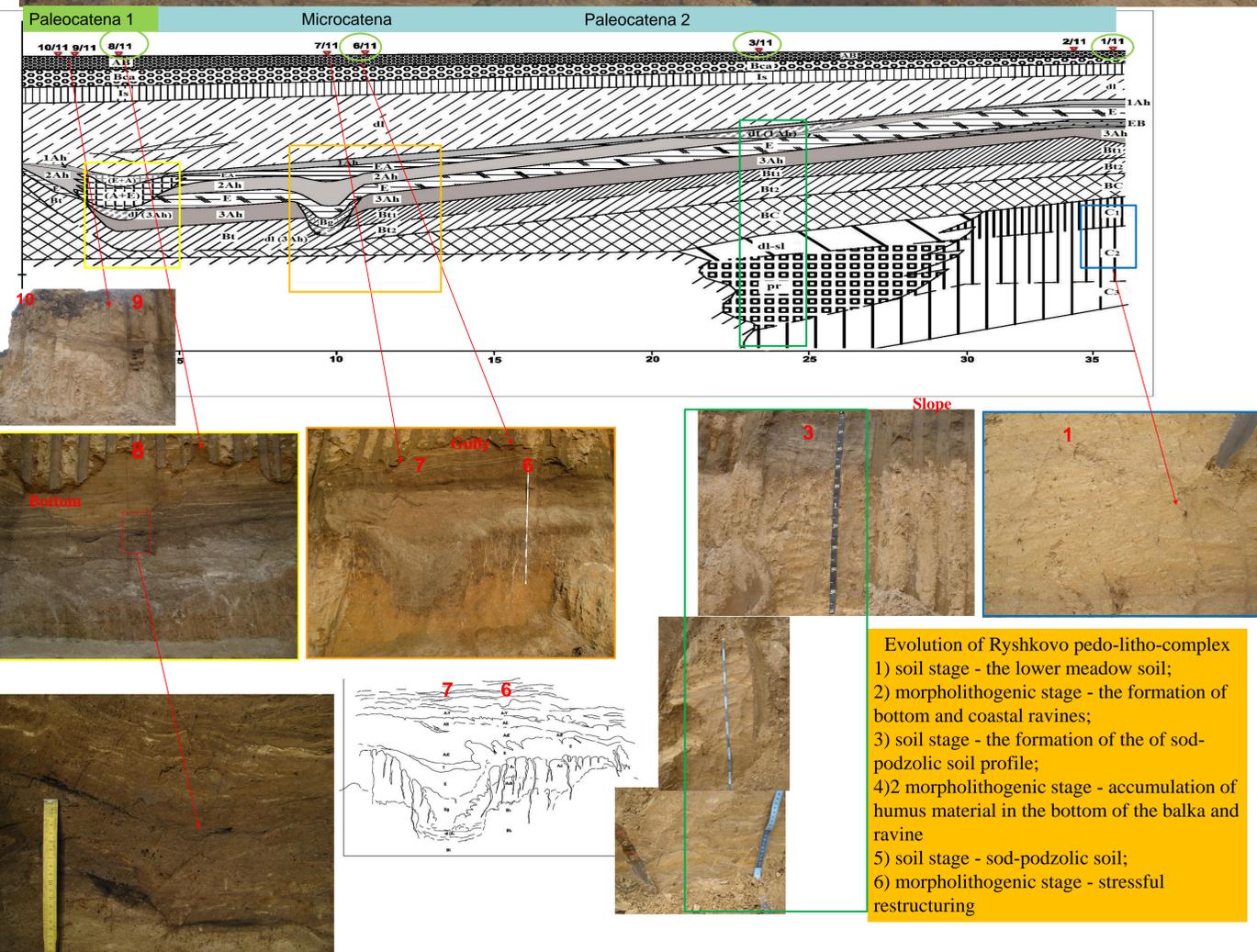
11 140±190, 12 200±180
Bryansk paleosol - MIS 3
33 140±230 BP
39 710±580, 40 200±420
Alexandrovsk paleosol - MIS 3
49 500±520 BP
Streletska paleosol - MIS 5a
75 000-80 000 BP
Kukuevka paleosol - MIS 5c
95 000-100 000 BP
Ryshkovo paleosol - MIS 5e, 115 000-127 000 BP



The loess-paleosols sections (LPS) situated on flat interfluvies integrally reflect the zonal characteristics of paleolandscapes and climate change of large-scale rank such as interglacial-glaciation, megainterstadial-stadial. However, they do not reflect small-scale climatic fluctuations and the local diversity of paleoecological conditions. Geochemical combinations of soils and sediments along the slopes of the paleo-relief, i.e., paleo-catenas, make it possible to supplement the missing links of the paleogeographic history and to detail the paleogeographic events. Pedosedimental archives of slopes and depressions allow reaching a qualitatively new level of resolution for the reconstruction of paleoclimatic events and landscape changes over the first thousands and hundreds of years.

In support of this idea, we show the results of study of paleocatenas of the Ryshkovo pedolithocomplex formed in the Mikulino interglacial (MIS 5e) and presented in the Alexandrov quarry near the city of Kursk, the Central Russian Upland. In the section, the Moscow-Mikulino buried balka was opened. The Ryshkovo paleocatenas are analyzed along the slopes of the northern and southern expositions in the paleobalka's upper course. Outside the paleobalka filling, the interglacial paleosols were not preserved. The change of soils in the studied catenas does not differ in sharp contrast. The variability of the Ryshkovo paleosols fits into the framework of one genetic soil type. Its closest analogue is sod-podzolic texture-differentiated soil of mixed forests (Luvic Retisols). The main differences between the soils developed in the paleocatenas are related to the degree of detail of the evolutionary development record due to various combinations of soil forming and denudation-sedimentation processes. Paleocatena 1 along the slope facing to south is distinguished by the simplicity of soil profiles. Paleocatena 2 of the northern exposition slope is more diverse in the completeness of the structure of paleosol profiles. It is complicated by micro-catena along a buried coastal ravine. Based on the study of the Ryshkovo paleocatenas, the following stages of soil development in the Mikulino interglacial (130-117 ka BP) are reconstructed: 1) the lower meadow soil (the first soil stage) is read throughout the paleocatena 2, i.e., in the bottom and on the paleobalka slope; 2) the formation of bottom and coastal ravines, their subsequent filling with material of a humus horizon, carried away from the slopes during the climatic cooling within the interglacial (the first morpholithogenic stage); 3) the formation of the of sod-podzolic soil profile (the second soil stage) is recorded in the fillings of the coastal ravine; 4) subsequent erosion and accumulation of humus material in the bottom of the balka and ravine (the second morpholithogenic stage); 5) sod-podzolic soil (the third soil stage) is detected throughout the catena; 6) stressful restructuring of the paleoecological situation before burial is recorded in traces of a strong fire and a post-fire storm erosion at the end of the interglacial period when the climate became cooler (the third morpholithogenic stage). Thus, in the catena along the northern exposition slope and especially in the bottoms of the ravine and the main channel of the balka, the detailed change in the stages of development of local landscapes is reflected: three soil-forming stages separated by two erosion stages, and the most intense final (third) erosion stage. A complex combination of soil and relief-forming processes is reflected in the physicochemical properties of the Ryshkovo pedo-litho-complex, especially in its upper humus-accumulative and eluvial parts. The revealed cyclicity is associated with climate variability within the Mikulino interglacial. This cyclicity was also reconstructed using other biostratigraphic indicators, precisely, changes in spore-pollen and phytolith spectra.

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Evolution of Ryshkovo pedo-litho-complex

- 1) soil stage - the lower meadow soil;
- 2) morpholithogenic stage - the formation of bottom and coastal ravines;
- 3) soil stage - the formation of the of sod-podzolic soil profile;
- 4)2 morpholithogenic stage - accumulation of humus material in the bottom of the balka and ravine
- 5) soil stage - sod-podzolic soil;
- 6) morpholithogenic stage - stressful restructuring