

EGU2020-7240

<https://doi.org/10.5194/egusphere-egu2020-7240>

EGU General Assembly 2020

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## **Paleo-catenas of the Ryshkovsky pedo-litho-complex (130-117 KA BP) of the Central Russian Upland**

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The loess-paleosols sections (LPS) situated on flat interfluves 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.

In support of this idea, we show the results of study of paleo-catenas of the Ryshkovo pedo-litho-complex formed in the Mikulino interglacial (MIS 5e) and presented in the Alexandrov quarry near the city of Kursk, the Central Russian Upland. The Ryshkovo paleocatenas are analyzed along the slopes of the northern and southern expositions in the paleo-balka's upper course. The variability of the Ryshkovo paleosols fits into the framework of one genetic soil type. Its closest analogue is sod-podzolic soil of mixed forests (Luvic Retisols). The main differences between the soils developed in the paleo-catenas are related to the degree of detail of the evolutionary development record due to various combinations of soil forming and denudation-sedimentation processes. Paleo-catena 1 along the slope facing to south is distinguished by the simplicity of soil profiles. Paleo-catena 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 paleo-catenas, 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 paleo-catena 2, i.e., in the bottom and on the paleo-balka 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. This work was supported by the Russian Foundation for Basic Research; project N 19-29-05024 mk.