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Quaternary loess of the Southern Middle Russian Upland as a possible eastward extension of the Great European Loess Belt

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The southern part of the Middle Russian Upland belongs to the East European Plain. In paleoclimatic terms, the area is located within of the equilibrium permafrost zone at the map of the Last Permafrost Maximum (LPM) (Vandenberghe J. & al. 2014).
The results of our comprehensive geological and geomorphological exploration of the area have clearly shown that this area is an actively growing structure (Romanovskaya,2016,2017). Structural and geomorphological modeling has exposed the presence of variously-aged erosion-shaped denudational, erosion-shaped accumulational and purely accumulational surfaces, which were formed by neotectonic movements and influenced by climate fluctuations. The entire landscape is a system of altitudinal steps. Each surface has its own complex of recent deposits. The fluvial terraces above the floodplains of the rivers Don and Tikhaya Sosna were formed under the influence of the Don, Dnepr, Moscow and Valdai Glaciations.
There is a lot of pale yellow calcareous loess layers, loess-like loam and brownish paleosol in the Quaternary geological sections of the area. Loess of the Great European Loess Belt located with respect to the Fennoscandian Ice Cap and the North Atlantic Ocean is considered to be eolian-glacial deposits and an ideal material to record the impact of rapid climate change (Antoine et al., 2009). Radiocarbon dating of fossils and paleosol layers within the multilevel archaeological site Divnogorie-9 located in loess-like loam parts of the section (50.9649ºN, 39.3031ºE) has shown 12-14 ka BP (Lavrushin, Bessudnov et al, 2010). There are at least 6 levels containing loess layers and loess-like loam. Drilling with coring along a profile across some relief structures has shown that Quaternary loess deposits are more than 20 m thick in places. Our rock magnetism studies of these sections have shown that their formation was affected by regional paleoclimate.
We believe that the loess deposits of the Middle Russian Upland in our study were formed under similar conditions to those that shaped the Great European Loess Belt and may represent an eastward extension of the latter. The results of our work suggest it would make good sense to further study the Middle Russian Upland's loess with a view to gaining an insight into regional climate fluctuations and into the study area's role in the geological and paleoclimatic history of the Great European Loess Belt.
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