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Recent Geomorphological Evolution in the Southern Part of the Middle Russian Upland (Russia)

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The Middle Russian Upland occupies the central part of the East European Plain. Our structural and geomorphological study of the Upland's southern segment (mostly of the Ostrogozhsk Uplift) exposed the presence of differently aged erosion-shaped denudational, erosion-shaped accumulational and purely accumulational surfaces, each with its own complex of recent deposits. The entire landscape is a system of altitudinal 'steps', or 'levels', which we believe were formed by uneven neotectonic movements and also influenced by climate fluctuations.
The highest (220 - 230 m above sea level) and the oldest day light surface of the Ostrogozhsk Uplift lies on Poltava- and Shapkino-type deposit suites and dates from the Late Miocene. A surface at about 200 m dates from the Late Miocene and the Pliocene. Surfaces at 180 m and 150 m date from the Eopleistocene and the Early Pleistocene, respectively. The former lies on Kiev-type deposits, and the latter - on fluvioglacial deposits from the time of the maximum Dnepr (or Don) Glaciations. The valleys of the rivers Don and Tikhaya Sosna have fluvial terraces above their floodplains all formed under the influence of the Don, Dnepr, Moscow and, Valdai Glaciations. Terrace IV (at about 60 m above river level) formed in the opening half of the Middle Neopleistocene. Terrace III (40 m), formed in the closing half of the Middle Neopleistocene. Terrace II (30 m), formed in the opening half of the Late Neopleistocene. Terrace II (at 10 to 12 m), formed in the closing half of the Late Neopleistocene. The floodplain (at 2 to 4 m), formed in the Holocene.
There is ample evidence of neotectonic activity in the surveyed area, namely: changes in the flow direction of the rivers Don and Tikhaya Sosna, forced to bypass the growing upland forming tectonic meanders; instances of damming up, which have led to waterlogging in floodplains; increase in the density of the erosion grid; fall of the groundwater table; intensification of erosion and slope wash processes, forming numerous canyon-shaped ravines, very steep slopes, bastion-like relief forms and a very peculiar relief type - chalk outliers (Romanovskaya et al, 2015; 2016).
Thus the beginning of the modern topography of the study area falls in the Late Miocene, after the end of the Late Oligocene-Early Miocene sea regressed, and marine sediments were covered by continental sediments of Poltava type deposit. During the recent phase of lifting the area developed unevenly, as evidenced by the steplike on the slopes of the watershed. Neotectonic movements, are the major cause of the lifting of the study area and its modern geomorphological features.

Romanovskaya M.A., Bessudnov A.N., Kuznetsova T.V. The Role of Neotectonics in Landscape Formation in What Is Now the Divnogorie Nature Park (Southern East European Plain). AGU Fall Meeting, 14-18 December, 2015, San Francisco, USA.
Romanovskaya M.A., Kosevich N.I. Geomorphic Response to Neotectonic Rise of the Middle Russian Upland: the case of the Ostrogozhsk Uplift (European Russia). EGU General Assembly 2016, 17–22 April, 2016, Vienna, Austria.