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GEOECOLOGICAL ASPECTS OF STUDYING OF END MORAINE COMPLEXES WITHIN THE BELARUSIAN HIGHLAND

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Two important aspects can be allocated in a problem of ecological geomorphology. A straight line – human impact on landforms, interfering geomorphological conditions, and reverse one - influence of natural and artificial landforms on human activities [1]. The present landscape is transforming under influence of current geomorphological processes and human activity. Human activities affect landforms as a direct impact creating objects directly changing a surface (dams, career, road embankments and dredging, meliorative channels and others) and as an indirect impact causing intensification relief-forming processes. In turn, mode of settlement, as well as mining and agricultural activity depend, sometimes significantly, on geomorphological and geological conditions.

The most interesting objects for geoecological studying within territory of Belarus is end moraine complexes occupying about 30% of the state area. These geomorphological objects are the most transformed by human impact. It is worthy to note, that such complexes are densely settled and economically developed areas. Especially it concerns the Belarusian Highland. The Belarusian Highland is characterized by maximum thickness of Quaternary sediments, watershed between Baltic and Black seas is located just here [2]. These Highland is the most technogenically transformed geomorphological complex in Belarus and that provokes occurrence of some important ecological problems [3].

As a key area for geoecological-geomorphology styding of the Belarusian Highland the Volozhin site of the Minsk Highland was chosen and for which a geoenvironmental assessment has been carried out (figure 1). Volozhin area represents a developed end moraine belt with a large glaciodislocations adjoining morainic plains. Except for interesting geomorphological aspects, Volozhin area is highly transformed by human activities that results in developing here of a technogenically affected geomorphological complex.

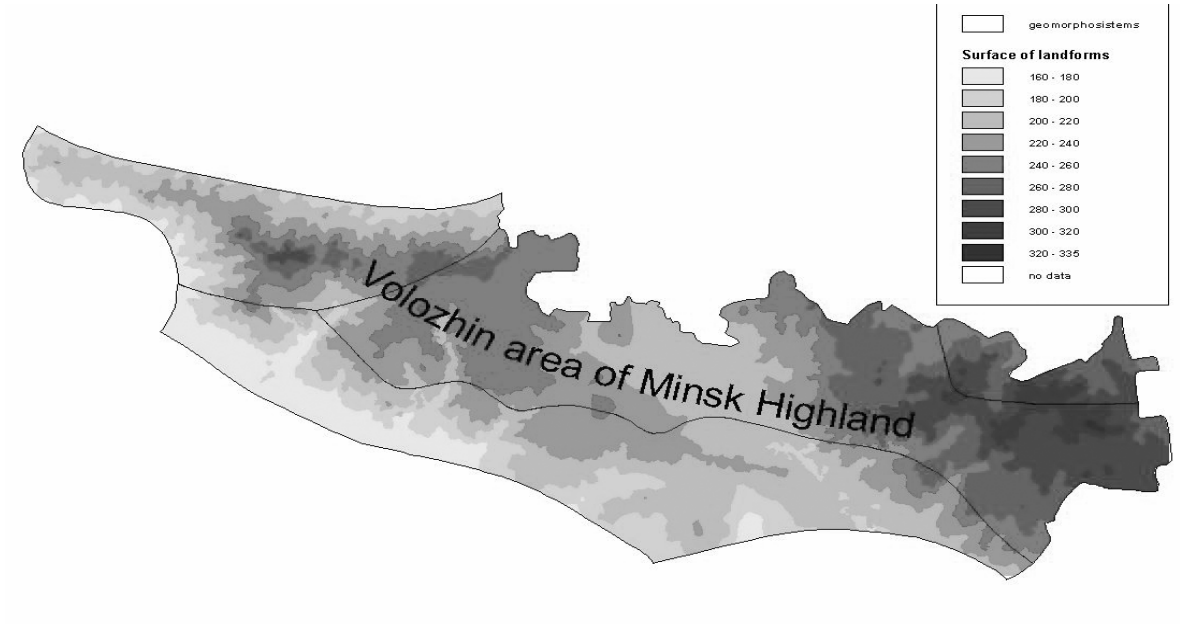

Figure 1. Geomorphosistems of Volozhin area of Minsk Highland

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In order to recognize geoenvironmental conditions of the area, geomorphosistems were allocated according to genesis and morphometrical parameters as hierarchically organized sets of forms and (or) the elements of a landscape, which connected by peculiar geomorphological processes [4].

Studying geoenvironmental state of geomorphosistems of the Volozhin area was carried out, taking into account a complex of natural parameters and the ones caused by human activity (figure 2). As a result of application of the klaster analysis, the geomorphosistems of the Volozhin area were classified according to ecogeomorpholorical conditions.

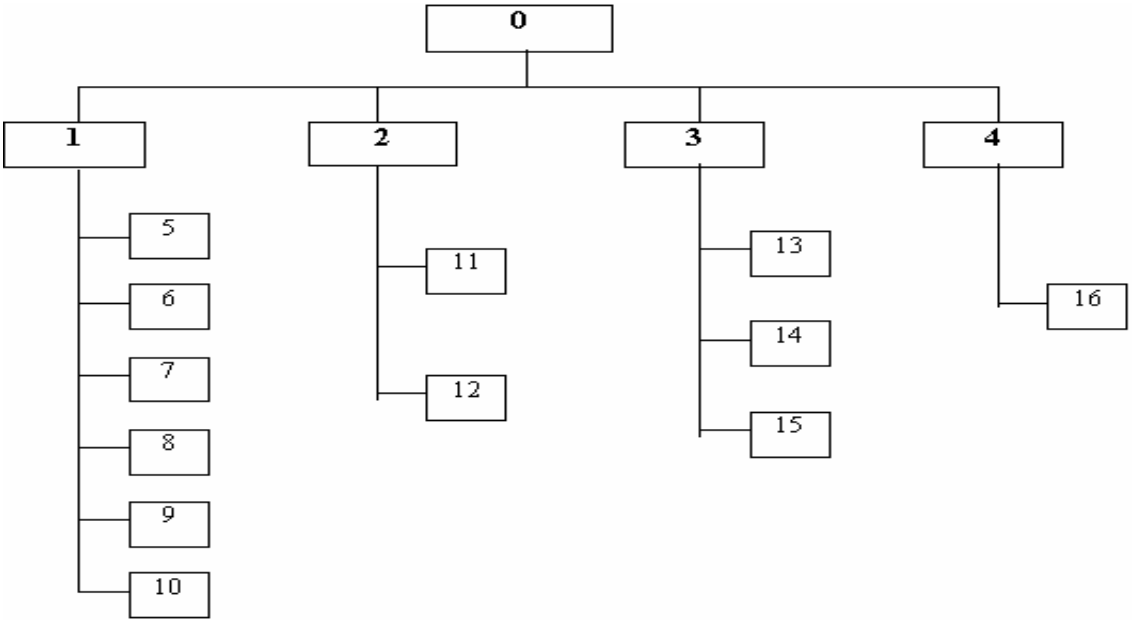

Figure 2. Diagnostic attributes of a geoenvironmental assessment of geomorphosistems of Volozhin area

0 - a geoenvironmental assessment of geomorphosistems; 1 - natural properties of landscape; 2 - natural properties of sediments; 3 – human impact on landforms; 4 - stability at current economic development; 5 – water erosion degree; 6 - depth of a partition; 7 - density of a partition; 8 - susceptibility to wind erosion; 9 - uniqueness; 10 - steepness of slopes 11 - absence of minerals; 12 - water resistance; 13 – technogenic transformation of surface; 14 - a share of the non-building area; 16 - safety of forests; 16 - stability of a landforms to technogenic impact.

Thus, the obtained results of geoenvironmental assessment of the Volozhin area allow to approach to rationalization of nature management of the this geomorphological complex more effectively.

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