

THE FAVORABILITY OF RELIEF FOR TERRITORIAL EXPANSION OF MARGHITA CITY

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Abstract: This article aims to show the important role played by relief in the territorial expansion of the city of Marghita. With the advantage of the topography in a relatively flat area (the built up area has grown over an area of land with a maximum gradient of 5%) and the potential location within landscape units consisting of plains and hills. This territory has a high potential induced by the attractive development of a spa and the construction of the Transylvanian Highway. It is necessary to know the limits imposed by the natural environment, highlighting the important elements of its expansion, but also its territorial limits to its development.

Key words: favorability, territorial expansion, local development, restrictivity

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INTRODUCTION

The city of Marghita is located in north-eastern part of Bihor County, at a distance of 60 kilometers from the county seat, Oradea, at 30 km from the Hungarian border and near the limits of the county of Sălaj, respectively Satu Mare (Nemeș, 2010).

The position occupied in Bihor County (figure 1) confers to this city several advantages, stand on one side the location in a cross-border area (Hinfray, 2006, 82), so Marghita together with the city Létavértes (Hungary) make that kind of settlement called "doublet" (Ilieș, 2003, 154) provide favorable conditions for cross-border cooperation. On the other hand, the proximity to the towns of Săcuieni, Valea lui Mihai (Bihor), the area of exploitation of oil in Suplacu de Barcău and not least its proximity to major communication axes, respectively the future Transylvania Motorway, creates an ideal framework for the capitalization of existing potential. Regarding the positioning of city of Marghita in relation with the Barcău hydrographical basin the following can be outlined: it is located in the northern part of Barcău corridor, at the contact with Viișoara Hills (Pop, 2005), on the left of the stream of Eger at the confluence of the river Barcău with Eger (Posea, 1997), side at an altitude of 135-140 m. The surface area of the city Marghita overlaps Marghita Hills (High Plain of Marghita) Toglaciului Hills, Barcău Corridor and of Buduslăului Plain (figure 2).

METHODOLOGY

In preparation of this material have been harmoniously combined classical geographic research methods (observation, description, analysis of land) and specific methods of spatial analysis (geomorphological mapping, GIS, 3D analysis of geomorphological profile). As background maps was used the topographic maps Marghita section at 1: 25,000 scale,

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orthophoto, the Land Use Plan of Marghita (PUG¹, 2005) processed in special software which allow the graphical representation of the dynamics of expansion of urban systems updated with field observations.



Figure 1. Marghita location in Bihor County

(Source: processing after the map of Bihor County Council <http://www.cjbihor.ro/>)

¹ Planul Urbanistic General (en. Land Use Plan)

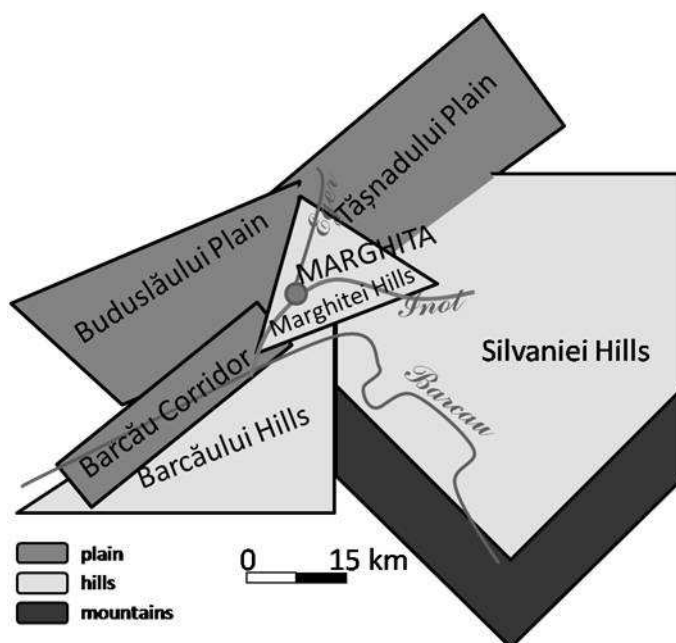


Figure 2. Chromatic representation of the position of Marghita within major relief units

MORPHOMETRIC CHARACTERISTICS

The slope has an important role in the formation and concentration of the leak. Between the altitude and slope of a river basin or a section of it are, in general, close connections. By slope depends largely the water infiltration or alternatively the surface runoff and gravitational processes. Indirectly, they influence the soil erosion processes and, consequently, the solid flow of rivers.

The role of slopes in the formation of drain cannot be removed from the general context, because, in good part, the "effects" that they might have are attenuated by vegetation, especially by the trees. Cvasi-horizontal surfaces are found in the river meadow where the probability of occurrence of phenomena of hydrological risk is higher. Values below 5 % dominate the area under study, corresponding to the Barcău Corridor and Inot meadow and the entire area situated on the west of the Chet River. Slopes between 5 and 20 % being found in the hilly area between Chet and Inot, respectively, Viilor Hill. Isolated there appear slopes greater than 20 %.

The relief's energy has the highest values in the Toglaciului Hills or Marghita Hills, where in the glaciis sector has values of 50 - 75 m, while in the meadow of Barcău Basin these values are very low (below 20 m).

The exposure of slopes is one of the potential factors on which depend the genesis and dynamics of geomorphological processes. It reflects the specific conditions in which takes place the relief modelling, closely related to several factors of geology, climate, hydrology, pedology and antropic. The exposure of slopes has a determinant role in promoting the calorie regime or the amount of moisture retained, involved in the configuration of vegetation cover characteristics, the suitability of the different land use. Overall, the radiative - caloric balance - the moisture individualize two major orientations - the north and east, characterized by a lower degree of sun exposure and the south and west, more sunny.

GEOMORPHOLOGICAL PROCESSES

Although they are composed of friable deposits (alternating sand and clay), erosion is essentially limited due to the low frequency of versants with large slopes. Drip erosion is particularly evident on the slopes with perpendicular plowing on the contour line.

Most of ravines are installed on slopes covered with grassland. Ravines are generally narrow at the top (deepened in clay) and wide at the bottom (embedded in sands). Some of them are flat bottomed, grassy, inactive, indicating favorable conditions prior to their genesis. Length of ravines is conditioned by inclination of versants, and the depth is between 0.25 to 2 m.

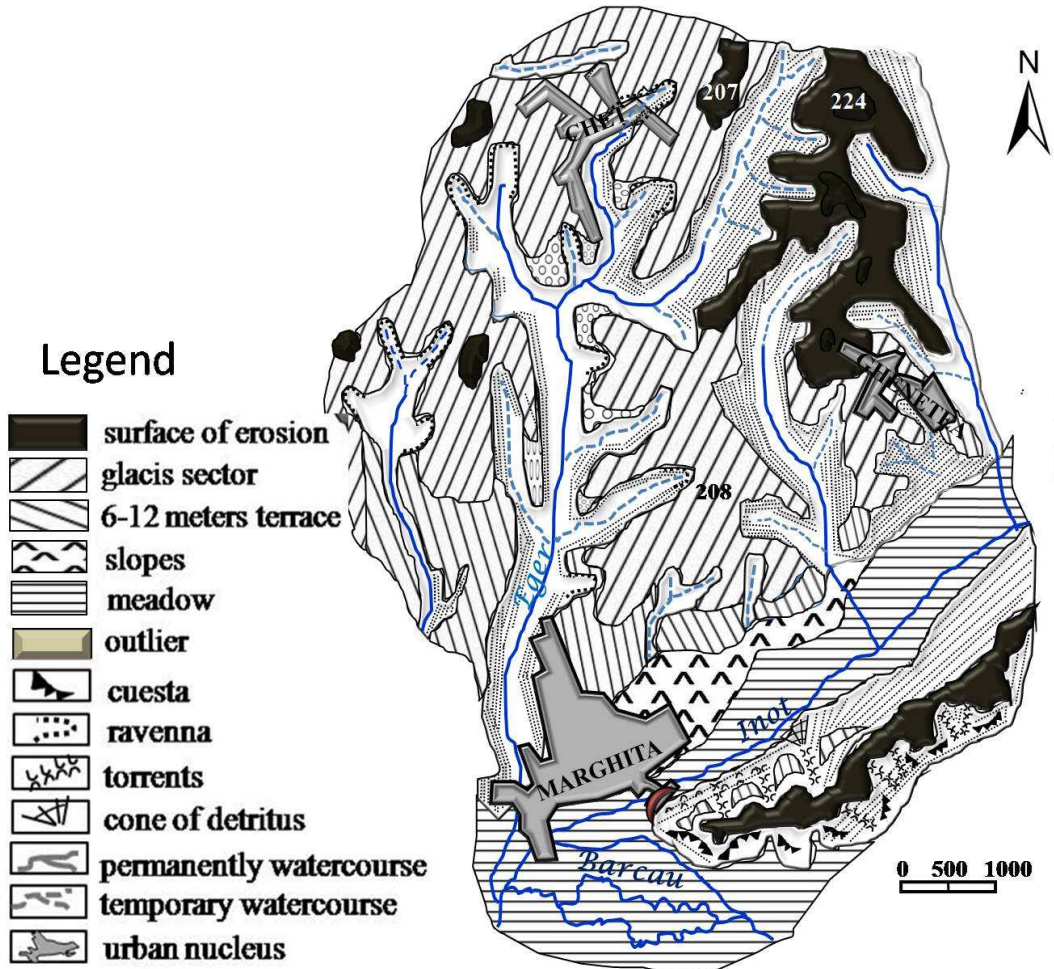


Figure 3. Geomorphological map of Marghita

Their shape is triangular and trapezoidal in clays when flattened bottom. The more inclined clay slopes of the Toglaciului Hill ($10 - 20^\circ$) are affected by shallow landslides. Since the frequency of these slopes is reduced, landslides are not carried out on large areas. Most of the secondary valleys fragment Marghita Hills (Eger and tributaries of Inot River) has flat bottomed, low meadows where water is stagnating on the surface frequently.

In the lowlands of the meadow, groundwater levels with aggression generally in acid-carbon, were intercepted in clay dust, at a depth of 0.5 - 1 m sometimes maintained at the surface, favoring the creation of swamps or ponds.

Frequent stagnation of water on the surface, favoring pseudogleization processes can be reported on smooth surfaces of interfluvies or in the glacia sector. Overall, we can estimate that the analysed sector presents a modest morphodynamic except the inclined versants affected by ravination (Petrea, 1998).

FAVORABILITY OF THE RELIEF IN MARGHITA CITY TERRITORIAL EXPANSION

Marghita extended in the early stages especially on the eastern and western part of the urban nucleus and less to the north, along the main road, exploiting the most favorable terrain, of terraces.

The maximum extension was done on account of this type of relief.

The inclined slopes of the Valley of Eger, affected of landslides, have limited the extension of the construction to the west. Great while unfavorable meadows of Inot and Barcău have limited the extension of the urban nucleus to the south. These areas were avoided because of flood danger (WMO², 2007), high hydrostatic level and stagnation of water at the surface.

Due to rapid economic development in recent decades, the city could no longer maintain in the old geomorphological framework, so construction was placed on the surface of the floodplain. During the communist period in the floodplain surface was located a neighborhood with apartment buildings, the dominant regime GF +3, the most severely affected by excess water and subsidence etc. In the alluvial plain in south-western part was located an industrial units and warehouses, leading to elongation of the urban nucleus in this direction (Petrea, 1998).

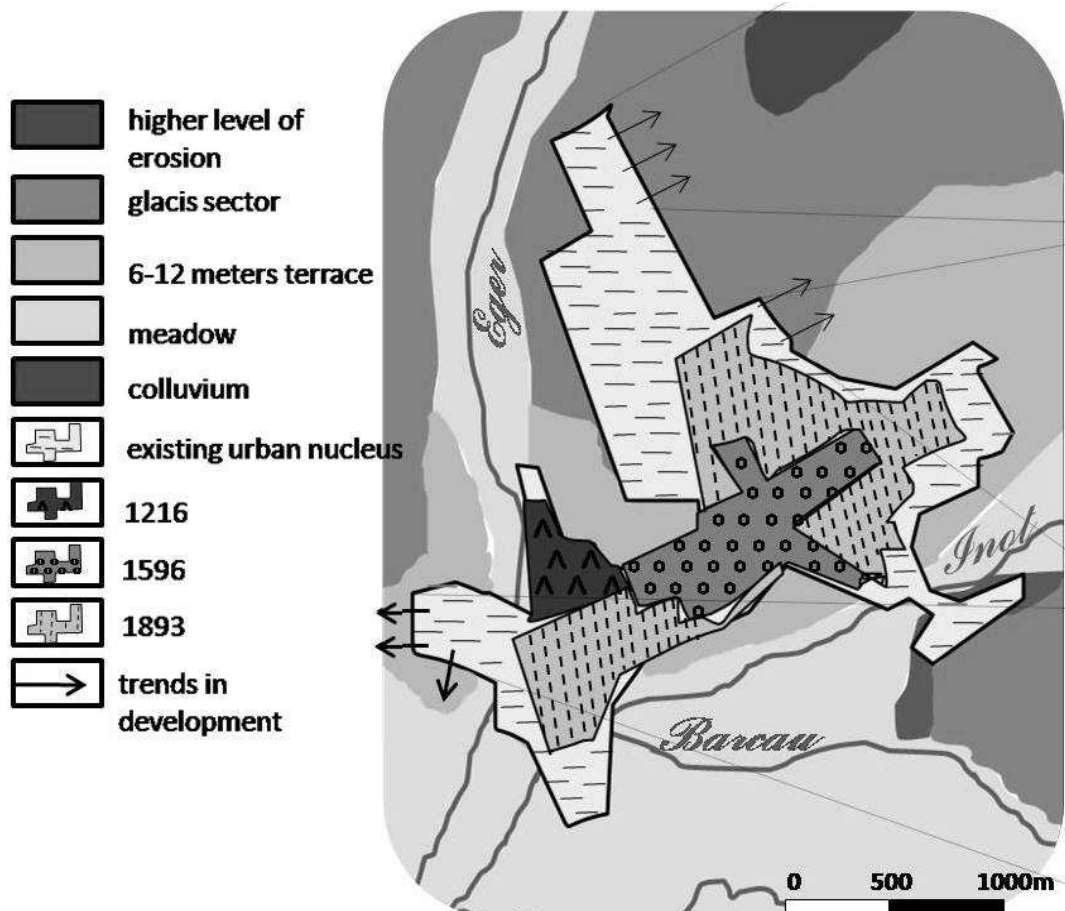


Figure 4. Marghita. Urban Development and current trends of development (Source: processing after Petrea, 1998)

² World Meteorological Organization

The existing urban nucleus occupying different landforms, with implications for the urban physiognomy. At the level of urban nucleus there is recorded a relief energy of 35 m. Most of the city overlap terrace is of 6-12 m. Its great expansion, the low horizontal fragmentation, the reduced relief energy facilitated the development of a compact city of this type of surface.

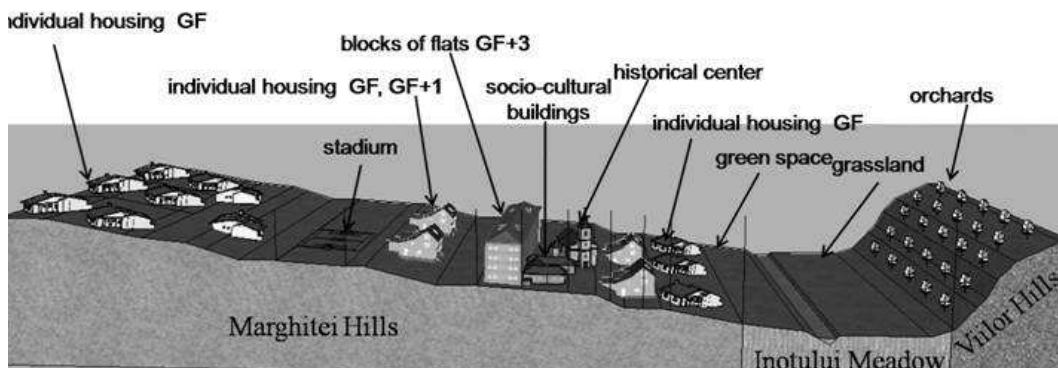


Figure 5. Geomorphological profile with emphasis on current land use

RESTRICTIVENESS IN THE PROCESS OF TERRITORIAL EXTENSION

The restrictiveness of the relief in the urban sprawl is given by the area occupied by meadows, where besides the risk of flooding, may occur risks due to the contact construction foundation with groundwater land also the subsidence represent major problems.

The restrictiveness is insignificant throughout the rest of the built-up area being imposed by the current geomorphological processes.

CONCLUSIONS

The territorial extension of the town of Marghita felt in recent years due to urban economic growth induced by the opportunities created by investments made by local authorities in urban facilities and equipment with private investment the establishment of the new economic activity was supported by the natural component, and conferred the most varied opportunities of expansion by the lack of natural constraints. The only restrictions are given by the proximity of Barcau River and the presence of landslide on the inclined slopes in the south-eastern part of Viisoara Hills.

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