

THE GETIC SUB-CARPATHIANS, SPACE OF CARPATHIAN CONTIGUITY

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ABSTRACT – The Getic Sub-Carpathians show permissivity from their position, altitude, valley's orientation, mild climate, from the circulation and habitation favourability viewpoint. This way, they become a space of Carpathian contiguity. The humanization of this sector has deep roots in this space history. The fact that they have been a good place for the development of human settlements, through the attributes offered by the physical-geographic characteristics of the territory, is shown by the presence of the three old settlements that took the role of capitals: Câmpulung, Curtea de Argeş and Târgovişte. Depressions represented the right places for the settlements' genesis and evolution; the valleys crossing them have been the ways for the development of communication routs; the Sub-Carpathian heights offered some of the pastures necessary for animal feeding; they also played the role of shelter against the natural (e.g. the attenuation of cold air masses) and human factors.

Key words: the Getic Sub-Carpathians, relief, distribution of settlements, Carpathian contiguity

BACKGROUND OF THE STUDIED AREA

The boundaries of the Getic Sub-Carpathians (figure 1) are represented by the Dâmboviţa Valley in the east, the Motru Valley in the west, the contact with the Southern Carpathians in the north, that contains depressions in which there are some localities; in the south, the contact with the Getic Plateau is not well individualized, with a limit created, from west to east, by the localities: Berevoieşti - Curtea de Argeş - Băbeni - Bistriţa - Roşia de Amaradia - Ţicleni - Bălteni – Rovinari, next to Tismana and up to the Motru Valley.

Between the Dâmboviţa and the Olt, the mountain frame is represented by the Făgăraş Mountains, from east to west, formed by the Păpuşa, Iezer, Făgăraş, Ghiţu and Frunţi Mountains. Between the Olt and the Jiu, there lie the Parâng Mountains with the Căpăţanei and the Parâng Mountains. The contact with the Retezat-Godeanu Mountains is represented by the Vâlcan Mountains, between the Jiu and the Motru.

LITHOLOGICAL CONSTITUTION

The Sub-Carpathians, and the compartment under consideration, have their origin in the Alpine orogenesis, similar to the Carpathian unit next to them, but at the end of this cycle (Sarmatian - Pliocene and Quaternary).

The Getic Sub-Carpathians were formed as result of the transport of the Carpathian alluvial material and its sedimentation into the Getic Depression, originated from the sinking of the southern border of the Southern Carpathians and the northern border of the Moesian Platform.

Generally, on the synclines, there are Sub-Carpathian depressions, and over the anticlines, there are hills. Exceptions are those places where relief inversions have occurred (Ocnele Mari).

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The Sub-Carpathian depressions were formed by the selective erosion made by valleys at end of the mountain area and the beginning of the Sub-Carpathian structures, from Eocene, Miocene and Oligocene.

The geological constitution of the Getic Sub-Carpathian sector is represented by inserted grit stones, diorite sands, clay, gravel from Miocene and Pliocene (partially from Palaeogene). The differences in this sector appear between the Dâmbovița and the Olt, where the folds are covered by Levantine gravel. From the Olt to the Motru, the folds appear uncovered.

The formation of intra-hill depressions, at the contact with the Getic Plateau, is a result of the erosion that removed the piedmont gravel cover, and so, the monoclinical structures and the depression alignment have formed.

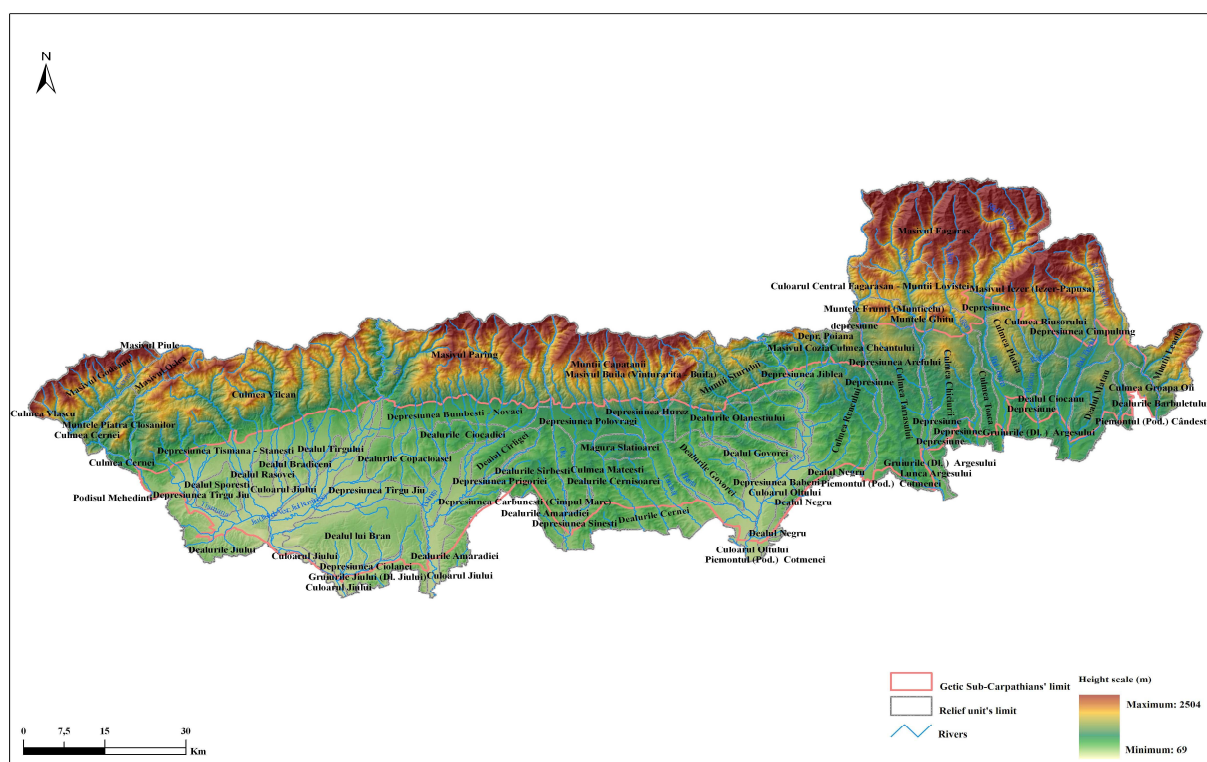


Figure 1. *The three-dimensional map of the relief in the Getic Sub-Carpathians*

THE ROLE OF THE MORPHOLOGICAL COMPONENT IN THE DISTRIBUTION OF SETTLEMENTS

The morphological component is, first, a support for settlements and for the development of the human activities.

Altitude is a very important factor in the analysis of the habitation conditions, having a great influence on the territorial system, through the ranging of natural elements and the constraints imposed on the distribution of settlements. The altitudes in the Getic Sub-Carpathians range between 69 m and 1218 m. A special characteristic is given by the decrease in altitude from north to south and from east to west, from 1100 m east near the Olt River to 400 - 500 m west of it.

The highest relief energy varies, in the east, between 200 and 300 m. The transversal fragmentation, represented by wide valleys with terraces, and the longitudinal fragmentation have contributed to an easy circulation and to a high population density in this area.

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The highest relief energy varies, in the west, between 300 - 400 m, and the anticlines and synclines are very deep and ramified, being cut by a dense hydrographical network. They have facilitated the genesis and the development of communication routes.

These altitudes have allowed the development of settlements in this area, both on the slopes and in the valleys.

The fragmentation density ranges between 0.00 – 6.63 km/km² (figure 2). The lowest values appear on the plane surfaces of depression basins at the contact with the mountain, of depression corridors and of the intra-Carpathian depressions: Câmpulung Muscel Depression, Arefu Depression, Jiblea Depression, Horezu Depression, Câmpu Mare-Tg. Jiu Depression, etc., which are very favourable for the development of settlements and human activities. Higher densities appear along the valleys of the Târgului, Doamnei, Argeș, Olt, Jiu rivers, etc.

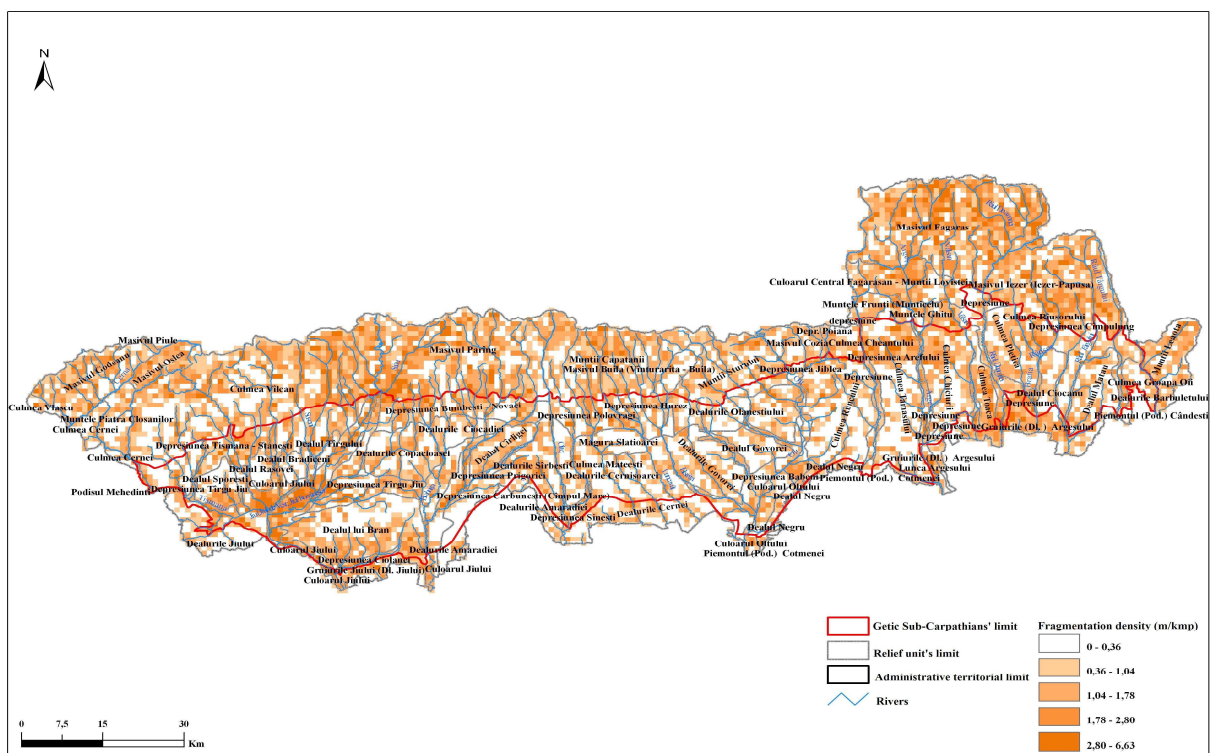


Figure 2. *Fragmentation density in the Getic Sub-Carpathians*

The gradient represents a peculiarity of morphometry that influences the outlining of the relief in the territorial system, determining the placement of settlements' precincts.

In the case of the Getic Sub-Carpathians, gradients vary between 0-25°, but there are also settlements where slopes have more than 35°, especially at the contact with the mountain. The settlements in the middle and lower water course of the Târgului, Bratia, Doamnei, Vâlșan, Argeș, Olt, Bistrița Vâlceană, Luncavăț, Olteț, Gilort, Jiu, Motru rivers, etc., such as Domnești, Mușătești, Curtea de Argeș, Băbeni, Cernișoara, Tg. Cărbunești, Tg. Jiu and others, are situated on low-gradient terrains.

The category of moderate-gradient terrains includes the majority of settlements in the Getic Sub-Carpathians (figure 3). The high-gradient terrains appear on the slopes and sometimes include dwelling precincts and isolated farms. These categories are not favourable for dwelling.

The relief energy is a morfometric parameter and many aspects depend on it, such as the risk of triggering the geomorphologic processes conditioned by other factors (lithology, gradient, vegetation).

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In accordance with the distribution of settlements (figure 4) depending on relief energy, most of the settlements in the Sub-Carpathians have the value of the relief energy between 0 and 500 m. The settlements that lie at the contact with the mountains have the value between 500 and 1000 m.

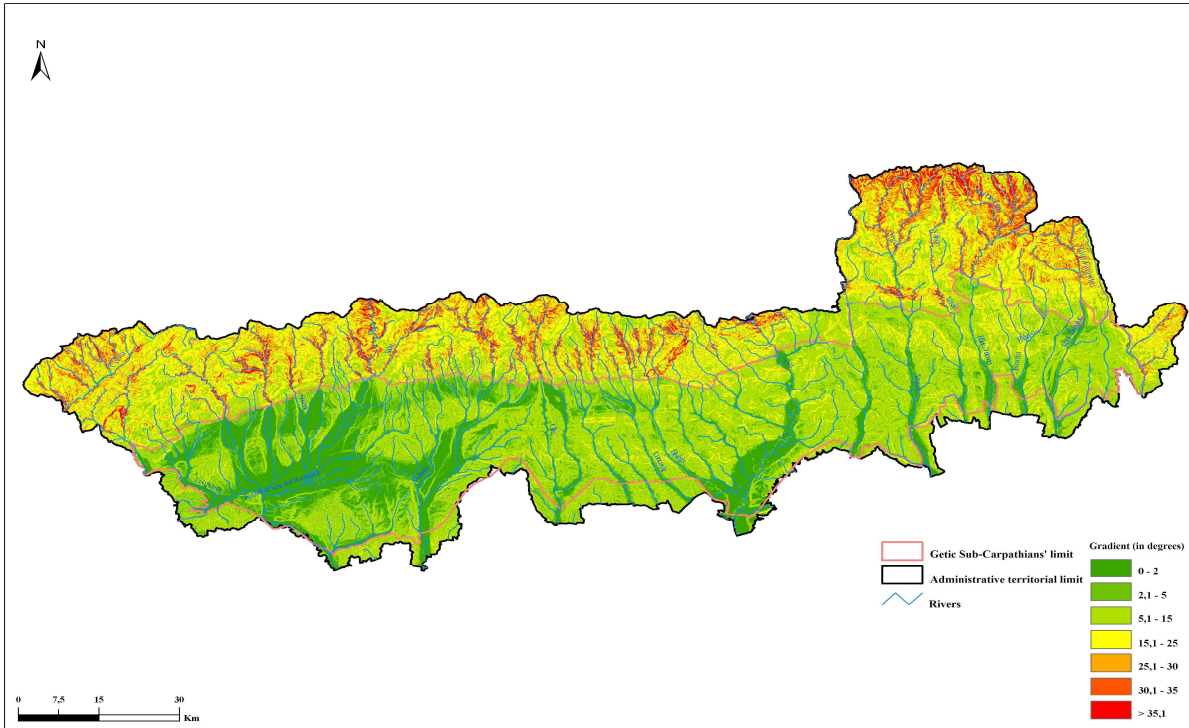


Figure 3. Gradient in the Getic Sub-Carpathians

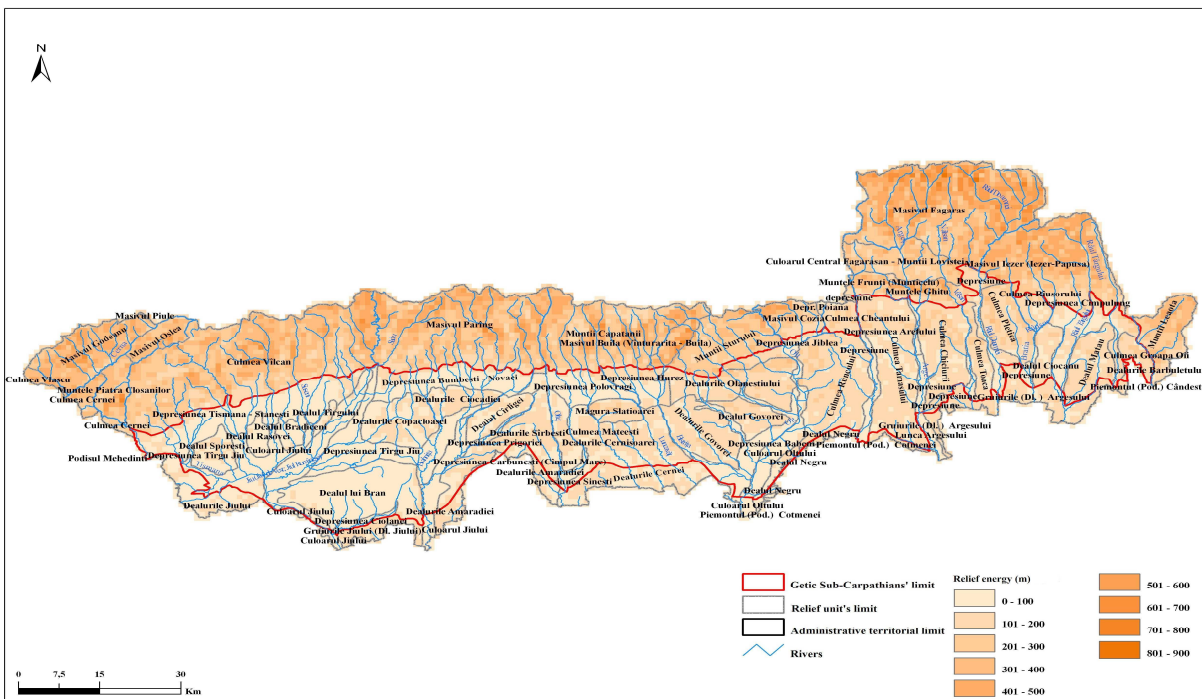


Figure 4. Relief energy in the Getic Sub-Carpathians

THE ROLE OF CLIMATE IN THE DEVELOPMENT OF SETTLEMENTS

Because of the position on the Globe, Romania is crossed almost in the centre by the 45° N latitude parallel, situated at the half distance between the poles and the Equator, in the temperate climate zone.

Through its central position in the European continent, its climate is temperate continental, and through the distance to the barometric centres, the climate has a transitional character, varying from sub-Mediterranean influences in south-east, which come from the barometric centres that lie over Africa, to oceanic influences in the west and excessive continental climate in the east.

The characteristic parameters of this climate individualise and influence, in a positive manner, the development of settlements.

The annual average of temperatures is of 8-9°C, the average temperature of January is -3°C and of July is 19-20.5°C. The annual average amplitude varies between 22-23.5°C. The absolute maximum temperature is 35-38°C and the absolute minimum temperature is -32...-33°C.

The precipitations are mostly liquid, with an annual average quantity of 650-850 mm and a warm season average quantity of 375-450 mm. There are 75-80 days with snow layer in this area.

The winds belong to the general circulation of air masses at these latitudes, especially to the west winds, this region being nearer to the barometric centres from the Adriatic Sea and the Mediterranean Sea. In the south-west, the warm winds determine a stronger heating and the development of Mediterranean flora and fauna.

In the corridors, there are deviations from the normal wind direction because of the relief, so the wind blows along the corridors. At the contact with the mountain, there are local winds: mountain breeze or valley - mountain wind.

Because of its width, the Olt Valley determines a north-south circulation of the wind, especially in summer. The rivers that spring from the southern slopes of the Carpathians bring cold air when they enter in the Olt Sub-Carpathian Depression, determining temperature inversions, especially in winter.

When invasions of cold air from north appear, they are stopped in the Transylvanian Sub-Carpathian Depressions, or they cross the mountains, flowing down to the southern regions.

Through their position, protected by the Southern Carpathians, the settlements are secured from blizzards and frosts.

THE ROLE OF HYDROGRAPHIC NETWORK IN THE DISTRIBUTION OF SETTLEMENTS

The hydrographic network has a high density because of the position of the Sub-Carpathian sector between the Southern Carpathians and the Getic Plateau. This sector shares both autochthonous and allochthonous valleys, which have their springs in the Southern and in the Eastern Carpathians (the Olt river).

The valleys are north-south oriented upstream and slowly turn to east or west downstream. The transversal orientation of the rivers facilitates the circulation, almost all the rivers following the rivers' course.

The hydrographic network is represented, from east to west, by the Argeş, the Olt and the Jiu rivers.

The Argeş hydrographic network, which crosses the Getic Sub-Carpathians, springs from the Făgăraş Mountains. This network contains mostly tributaries that come from the left side of the Argeş and are collected outside the Sub-Carpathian sector, near Piteşti, an exception being the Dâmboviţa, which has its confluence with the Argeş downstream Bucharest. From east to west, there are the following tributaries: Argeşel, Târgului, Bughea, Bratia, Doamnei, Vâlsan.

The Olt river crosses the Sub-Carpathian sector from north to south, downstream the village of Cozia till downstream the town of Băbeni. The tributaries that cross the Sub-Carpathian sector come from the left, springing from the Făgăraş Mountains (Ciosca, Topolog with Sâmnice, its tributary), and

from the right, springing from the Căpățâni and the Parâng Mountains (Olanești, Pârâul Sărat, Govora, Bistrița, with its left-bank - Costești and Otăsău, and right-bank tributaries - Luncavăț, Oltetul, with its left-bank tributary Cerna).

The tributaries of the Jiu River spring from the Parâng and the Retezat-Godeanu Mountains. The left-bank tributary is the Gilort, and the right-bank tributaries are the Tismana and the Motru, with Coșuștea, its right-bank tributary.

The river courses have been exploited since ancient times, by using the primary energy of water, for timber transport, location of traditional machineries used to process the agricultural primary products: "mori" (water mills), "vâltori" (whirlpool mills), "pive" (fulling mills), "dârste" (rudimentary fulling mills), "șteampuri" (stamping mills).

The density of the hydrographic network has determined the apparition of roads along them, the Sub-Carpathian sector being one with the highest number of roads, fact that has intensified the input and output of people.

THE ROLE OF SOILS IN THE DEVELOPMENT OF HUMAN ACTIVITIES

The Getic Sub-Carpathians belong to the Central - European province – *The Danube-Getic Province* - that is peculiar to the southern part of the sector.

In the Sub-Carpathian depressions and hills there are soils that take part of the secondary podsoils - highly podzolised, acid brown soils.

The appearance of pre-Mediterranean influences in *the Danube-Getic Province* determines warm winters and hot summers, and the appearance of forest brown and red-brown soils.

The forest brown soil that appears at a higher altitude is determined by the Central - European influences. The main peculiarity that determines this fact is that the precipitation and the evaporation annual average are almost the same. Because of the particular humidity and relative high temperatures for most part of the year, the alteration process is fast and determines the decomposition of organic substances, which determines high fertility. This fact allows an intense development of natural hayfields in areas with evergreen oak, beech, beech and fir forests, but also of artificial hayfields created through the clearing of this kind of forests in the Argeș Sub-Carpathian sector.

The red-brown forest soils appear under the oak forests, with a temperate climate with sub-Mediterranean influences. They have high fertility, because of their high contents of nutritive substances, so they can be utilized in agriculture and forestry.

In the west part of the sector, red forest soils appear, especially in the Cerna Basin, formed by red residual clays from the alteration of limestones. In the upper part of the profile, the soils have a brown - red colour, because of the presence of humus; this becomes lesser and lesser down the profile, reaching the red colour. They have a good productivity for vineyards and fruit-trees.

THE ROLE OF VEGETATION IN THE DEVELOPMENT OF HUMAN ACTIVITIES

The Getic Sub-Carpathians belong to the European flora region, European - Siberian subregion, east - Carpathian province. They correspond to the vegetation of the *beech, beech and evergreen oak, and evergreen oak forests subzone*.

The forests in the eastern part of the Olt River have beech and evergreen oak forests that alternate with hayfields composed of *Agrostis Tenuis, Festuca rubra*, while those in the west include evergreen oak and Balcanic beech forests at the contact with the mountain, hayfields up the mountain, and oak forests in the southern part.

The evergreen forests contain *Rubus idacus, Rubus fructicolus, Vaccinium myrtillus, Veratrum album, Urtica dioica, Lamium maculatum, Lapa, Rumex viridis, Campanula persicifolia, Dryopteris felix-mas, Taraxacum officinal, Plantago major, Colchicum autumnale*.

On the low slopes, terraces and valleys with fertile soils, high quality and very productive hayfields, with *Arrhenatherum elatius* and other weeds, appear in the entire evergreen oak subzone.

These hayfields, formed especially after the deforestation of evergreen oak forests, contain grass fodder and other weeds: *Agrostis tenuis, Festuca rubra, Cynosurus cristatus, Arrhenatherum*

elatius, *Festuca pratensis*, as well as leguminous species, such as clover: *Trifolium monatanum*, *Trifolium pratense*, *Trifolium alpestre*.

In the western sub-mountain depressions, there are evergreen oak forests, and thermophile vegetation and hayfields on the southern hills; the intra-hill depressions shelter oak, evergreen oak, cerris forests, hayfields, and farming lands.

In the depressions east of the Olt river, there are beech, beech and evergreen oak forests, while hayfields take in a larger part than in the west sector, in place of the cleared forests.

These hayfields from the beech forests contain mezzo-xerophile and xerophile species, such as *Festuca sulcata*, *Achillea millefolium* and xero-mezzophile species, such as *Medicagofalcata*, *Filipendula vulgaris*, with a low productivity.

In the valleys, the peculiar vegetation consists of black alder, willow and poplar forests.

The presence of areas with pasture and hayfields has oriented the human activities towards livestock, amplified by the neighbourhood of the Southern Carpathians, which offer vast pasturelands of quality. Animal breeding is practised in all localities in the Carpathians, some of them are well known at the regional and national level due to their specialisation in terms of cattle breeding, especially sheep (Corbi, Vaideeni, Polovragi, Novaci, etc.), and, in a lower number, cows, horses, goats. The pastoral tradition of these villages lies in the migration of some population groups from Transylvania in the Getic Sub-Carpathians, during the previous centuries, because of the political regime of that time. Nowadays, these places have a large number of livestock, mainly sheep (e.g. in 2009, Corbi – 36,000 sheep, Vaideeni – 45,000 sheep²).

CONCLUSIONS

Due to the favourable physical-geographical conditions, settlements appeared and developed in the Getic Sub-Carpathians from early times.

The vicinity of the Southern Carpathians led to activities involving the economic potential of the mountains. Livestock farming, timber exploitation and processing, exploitation of building rocks (e.g. Albești of Muscel, Costești), mining (e.g. Ocnele Mari, Baia de Fier) and tourism (e.g. Călimănești, Olanesti Govora) have always been the activities practiced by the people living in the settlements in the Getic Sub-Carpathians.

A phenomenon in the Romanian Sub-Carpathians was that of determining the population to migrate from Transylvania because of the unfavourable domination of the Romanians by the Hungarians and Austro-Hungarians (exclusion from political life, ignorance as a nation - Compact, "Unio Trium Nationum" -, the imposition of the Catholic faith against the Orthodox faith).

Although they have an impressive massiveness, the Southern Carpathians are crossed by several valleys, which had an important role in facilitating the flow of population from Transylvania to Wallachia, like in a folk song: "Winding mountains / You do not have many passes / Only one on the meadow / And so has many rocks".

Most immigrant population had shepherding as main activity and was located mainly in the lowlands of the southern Transylvania (Hațeg, Sibiu, Făgăraș). The habitable potential of the Getic Sub-Carpathians was well known by the Transylvanian shepherds, who used to cross the sector in their transhumance. A number of settlements in the Sub-Carpathian sector was founded or expanded by the establishment of immigrants from Transylvania, called "ungureni", "bârsani", "mocani" by the natives: Corbi, Galeșul, Corbeni, Oești-Ungureni, Albești-Ungureni, Băbeni, Vaideeni, Polovragi, Novaci, Tismana and others.

The favourable physical-geographical conditions, the natives' occupations, similar to the activities of most immigrants (mainly shepherding), the vicinity of the Southern Carpathians, the fact of being descendants of the Dacians and the Romans, the existence of the same cultural values (the same language-Romanian, the same faith-Orthodox) are factors that have encouraged immigrants to settle here and made the Getic Sub-Carpathians a contiguous area of the Carpathians.

² Data from the mayoralities of the villages of Corbi and Vaideeni.

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