

## Geocritical Region of Environment Dynamics "The Curvature Carpathians"

Dr. Ion Mac<sup>1</sup>

"The scientific programme" of the International Congress Washington 1992, once more demonstrates that geography is the "science of multiple approaches" (Taillefer, F. 1972). However, upon sharp observations we can distinguish two fundamental trends: a., global examination of terrestrial cover; b., spatial organisation of this cover.

Terrestrial (geographical) cover represents "an extremely complex sphere" on the upper part of the crust where a strong interdependence works between abiotic, biotic and human elements.

However, the direction and intensity of these exchange processes differ from one place to another on the geographical cover. As a consequence the Earth surface has a great physionomical and functional diversity, generating distinct spatial systems which are working between specific territorial limits, that is to say, geographical regions.

From the very beginning until today, geography has had one scope: the knowledge of territorial realities (globally or partially) as the "home of man" (Ritter, C. 1859). Today this scope is essential, as the deterioration of the environment has become considerable.

The relationship: geographical cover-society means "total environment" or "global environment and matrix of life" (Rosu, Al. 1987).

The regional coordinates of geographical cover determine functional subtlety and an extremely varied dimension of human activity. It is exactly on the regional level of geographical cover that the complementarity between resources (abiotic, biotic and atropic), stock and human need becomes evident. That is why the ambient favourability or geographical optimum can exist only on the regional level of organisation.

In the context of geographical organisation and participation to environmental research and our objective being the regional level one can raise a question: What kind of a region is the geographer dealing with? The reason of this question is the fact that geography operates with the following categories of regions (Mihailescu, V. 1964):

- geographical region, that means natural region transformed by man;
- physical geographical region, that is a geographical region seen in its physical components;

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<sup>1</sup>University of Babes-Bolyai, Cluj-Napoca

-economic geographical region which is a geographical region seen in its social and economic components.

Accordingly, the environmental research supposes to define a new region. That is why we suggest the term: environmental geographical region for a concrete territory where the strong relationships between the human collectivity and the integral geographical environment are manifested.

Consequently, when the geographer has to study the environment he has as a first objective the environmental geographical region. This region has to be studied from the structural, functional, dynamic and typologic point of view.

Starting with the definition of environment, that represents a unity of natural and human factors ensuring the evolution of natural and social life on Earth, the geographer has to establish the way in which these factors fulfil their role. That means to estimate "the state of environment" of one given region. The quality of this state determines the character of environmental geographical region. There are two basic categories: environmental geographical region in balance, and critical environmental region. The former has a balanced territorial relationship between society and environment; while the latter can be characterized by aggressive manifestation of environment by society.

The character of such regions is expressed not only by the display of a single component (natural or human) but by the regional association and interrelationships of parts which "aim" at a territorial equilibrium.

Human efforts to reduce the friction between environment and society are very often frustrated by risk. A risk phenomenon represents a feature of the critical regions.

Human communities react differently to the potential negative effects of environmental processes. The necessity to control critical phenomena and ensure its future existence determines the cautious actions of the population.

The ancestral experiences determine that the regional economic activities from the critical territories should be viewed very often, as an extension of the state of environment.

Taking into consideration the origin of the critical factor, the geographical environmental regions can be classified as: geocritical generated by the natural factors aggressive-ness; and sociocritical as a result of the negative and voluntary manifestation of human communities.

Therefore if we apply the principle of determining factor we can define the critical nature of the regions. The geographical research of these territories represents a condition of better understanding of realities. Consequently, the development of environmental regional geography, a very useful discipline, is very badly needed. A prime necessity is to give emphases to the typical critical regions.

The Curvature Carpathians from Romania (know as Carpathians and Subcarpathians) situated between Trotus Valley and Prahova Valley represents a unique geographical region in the Alpine-Carpathian System (Fig.1). The essence of the model is based on the nature of interrelationships and of temporal-spatial juxtaposition between the factors of mobility. Its particular features are determined by fragility of the environment and are reflected in the architecture of human communities. The natural susceptibility to environmental lack of balance derives from a couple of controlling variables.

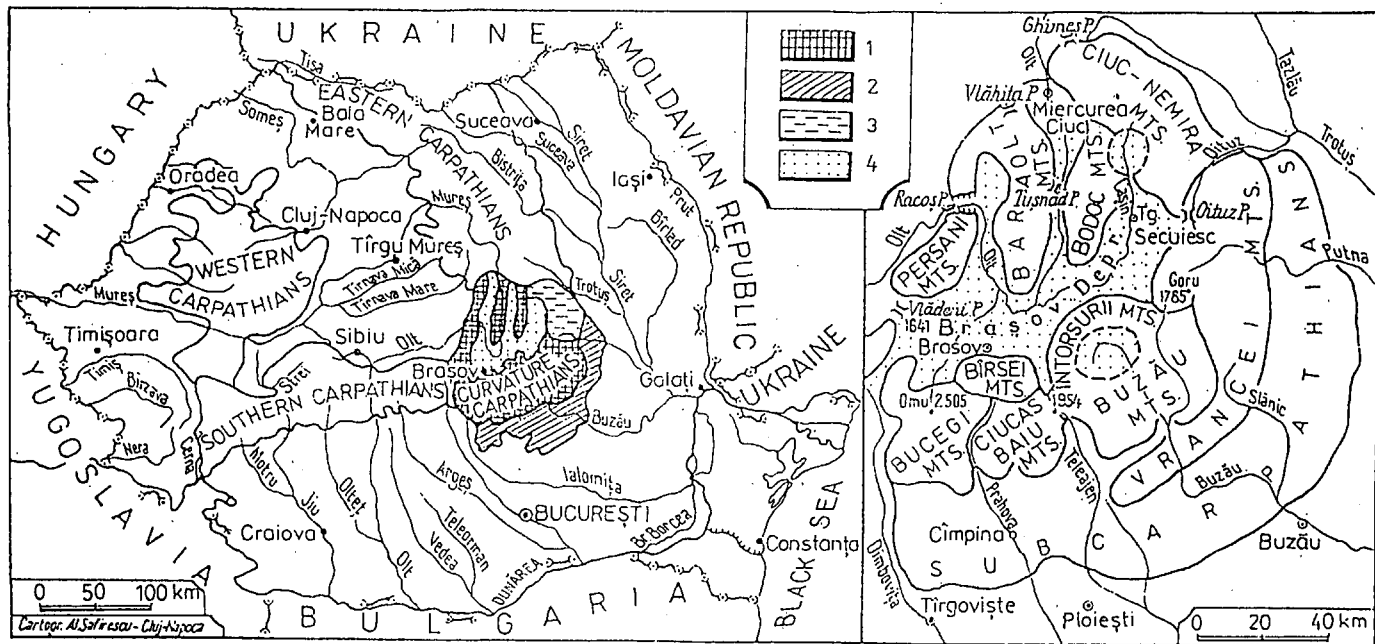
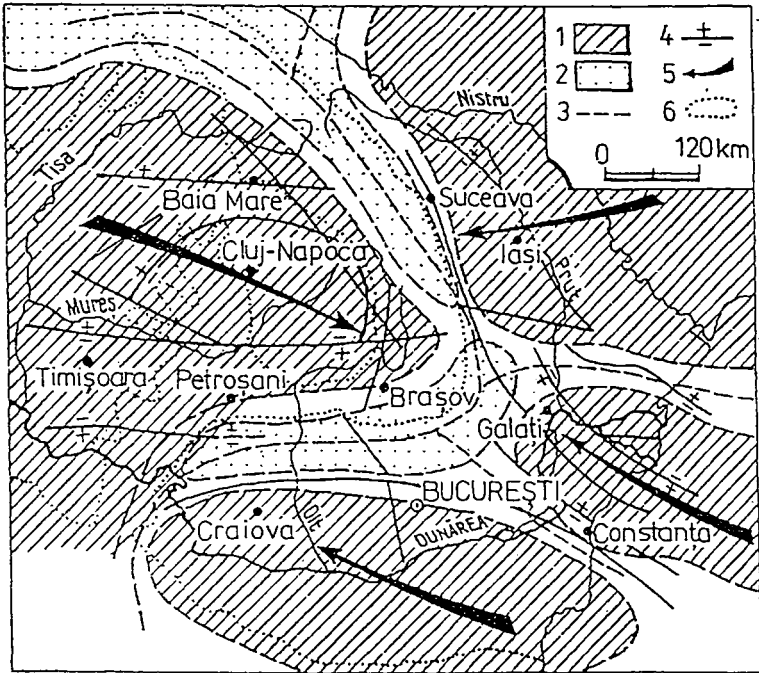


Figure 1 Location of Curvature Carpathians in Romania (a) and its subdivisions (b).

Thus the extremely active geodynamics, caused by plate collision: Euroasiatic plate, Transylvanian plate, Moesic and Black Sea plates and the compression of Carpathian substratum (Fig.2) between the other plates (Socolescu, M. et al 1975) determine frequent earthquakes followed by faulting and mass movements. Between 1100 and 1977 there were on an average three earthquakes in Vrancea, seven degree on Richter scale (Constantinescu, I.-Enescu, D. 1985). Very favourable supports for active morphodynamics are the petrographic making up (flysch and molasse) and extremely diverse geologic structure on a restricted area (hog-backs, thrust-sheets, folds).



**Figure 2** The sketch of reflected plate segments using the regional gravimetric anomaly (Airinei, 1977): 1. regional anomaly of maximum (plates); 2. regional anomaly of minimum; 3. axes of minimum; 4. field of crustal faults; 5. direction of plates and microplates movement; 6. mountain area limit.

The intense vertical movements of uplift (+2.0 - +4.0 mm/year) or even (+4.0 - +6.0 mm/year) in the folded area (Visarion, M. 1977) or subsiding movements on mountains basins (Brasov basin: -2.0 - -4.0 mm/year) and on adjacent fields (Rimnic Plain -0.5 - contributing to the maintenance of the critical ambiental state.

Also the new surface (Paleogene-Quaternary) with high relative relief (over 58% from the territory is between 150-600 m), high drainage density (over 3/4 from the area has values between 0.5 and 2.8 km/km<sup>2</sup>) and high gradients (frequently over 35°) are extremely favourable for processes with the highest erosional rates in Romania. Sediment discharges for some drainage basins of 5 and 10 km<sup>2</sup> are over 4,000 m<sup>3</sup>/km<sup>2</sup>/year (Ichim, I.-Radoane, M. 1987).

The meteo-climatic conditions are full of contrasts and characterise the entire region. It is here that the lowest temperature in Romania was registered: -38.5°C in the Brasov Depression (Bod, January 27, 1942), corresponding to the highest temperature in Romania: 44.5°C registered in the Braila Plain (Ion Sion, August 10, 1951) on the exterior margin of the Curvature. Another extraordinary phenomenon is the presence of "warm" periods in winter in the Subcarpathian belt in comparison with the outer region having very cold weather. This is explained by air-pressure evolution and foehn phenomenon. Rainfall quantities: 600 mm/year in Brasov Depression 1,100 mm/year on Curvature Mountains and only 480 mm/year on Curvature Subcarpathians together with their torrential regime (80-200 mm/year in May-June) stimulate an extremely active morphodynamics on river beds and hillslopes.

On such petrographic, relief and climatic conditions, the river network, runoff régime and underground waters presents spatial and temporal changes over: all year humid surfaces (Brasov Depression) and surfaces with seasonal water deficit (exterior Subcarpathian belt).

The natural vegetation (forests and grassland) together with soils were unrationally exploited so that they are now on different stages of degradation (more than 60% from Curvature territory are degraded surfaces). On a wide stretch of this belt there are many vegetal associations without any economic value (brables, derived birch forests).

The geographical cross-road position and its varied resources (oil, natural gas, salt, forests, pastures, wine-growing and fruit-growing terrains) represented the reasons for an active geo-economic appeal which led to a graded but strong human impact which is characterised, today, by a rapid degradation of the natural support of human communities.

The bad-lands or "bad Buzoian land" are the expressions of environmental degradation and the lack of urban settlements in Vrancea together with a weak development of communication system are the expressions of precarious stability.

Environment fragility in this geocritical geographical region frequently manifests itself in risk phenomena (earthquakes, massive landslides, intense fluvial erosion, accelerated erosion on hillslopes, muddy volcanoes) has both immediate (short time) and distant (long time) consequences.

This geocritical region has a binary spatial structure with distinct nuclei of manifestation: the Brasov Depression nucleus with a strong critical character due to climato-hydric factors together with the human factors having massive population concentration around Brasov (200 people/km<sup>2</sup>); the Vrancea land nucleus with a critical profile due to earthquakes, morphodynamic, climate and population features. There are still strong socio-economic relationships between these two regional nuclei.

The fact that the geocritical environmental region of Curvature Carpathians is densely populated since ancient times, explains why we witness today the "exhaust" of the last forms of landscape resistance to risk phenomena.

Under such circumstances there are only two alternatives: the elaboration and sustaining of a regional plan for rational exploitation, or human amplification of the critical character until global degradation stage which will lead to a gradual depopulation of some territories (especially in Subcarpathians) and to growing poverty.

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*University of Babes-Bolyai, Department of Geography*  
*Clinicilor str. 5-7. R-3400 CLUJ-NAPOCA*  
*ROMANIA*