

Mountain area – research, evaluation, planning

Abstract

The study of mountain area as a whole, but especially of the highest one (alpine and subalpine) concerned us since the beginning of our professional training. For this purpose during the doctoral internship I participated in activities that involve documentation in two emblematic mountainous areas – Scandinavian Alps (Abisko Research Station of the Royal Academy of Sweden) and the Alps (Joseph Fourier University in Grenoble), where I learned the research methodology in mountain areas, in Environmental and Dynamic Geomorphology, as well as techniques and measures for the management and development of top mountain area.

After the presentation of the PhD thesis (Arges Valley in the mountain sector – geomorphological study), in 2005, I continued the research in mountainous areas in Romania (Fagaras, Piatra Craiului, Bucegi), both individually and in teams of different research projects where I took part as a leader or as a member.

The work is divided into two main parts: the problems of research and contributions until now and the perspectives for career development, both from scientific and didactic point of view. The scientific activity in the study of mountain area led to the creation of a line of study at the University of Bucharest, Faculty of Geography, the results obtained being integrated into the course subjects we teach or in introducing in the curriculum new topical subjects such as: the science that studies the mountain areas and mountain tourism; Environmental geomorphology and Mountain area – mapping, assessment and planning.

Among the scientific results obtained so far we mention:

- Study in interdependence of the factors determining the current dynamics of the landscape in mountain area
- Study of correlative morphodynamic factors and geomorphological processes;
- Analysis of glacial and periglacial problems as representative types of relief for the mountain area;
- Calculation of ecoclimatic indices (de Martonne aridity index, Gams continentality index, Hydrothermal index, Pluviothermal index, etc.) and spatialization of indices
- Identifying areas where avalanches may occur and mapping the hazard of avalanche in different areas of Fagaras, Piatra Craiului, Bucegi Mountains;

- Making correlations between different morphometric / morphographic parameters and the occurrence/initiation of avalanches;
- Analysis of general and local conditions that influence the dynamics of avalanches as natural phenomena;
- Establishing the correlation between climatic / hydrological factors and the occurrence of avalanches.
- Establishing morphodynamic levels and their characteristics for Fagaras Mountains;
- Determination of the relationship between anthropic development and geomorphological processes for the mountain area;
- Individualization of the role the human plays in changing the structure of vegetation and hence the morphodynamics of mountain areas;
- Determining the most appropriate forms of planning and organization of the mountain area in the context of sustainable development

Considering the activity done so far we consider the mountain as the object of our scientific expertise. Future scientific concerns will cover:

- Establishment the suitability areas of mountain areas for different planning and types of infrastructure focusing on the development of tourism infrastructure and the ski area;
- Deepening the ratio of current geomorphological processes – infrastructure and of the way of evolution of the current processes affecting infrastructure, in the context of the ongoing development of mountain area;
- Elaboration of maps of anthropic impact and correlation with vulnerability and risk maps by calculating the synthesis indices;
- Establishment of a GIS database by selective and correlative digitization of topographical, geological data, land use and vegetation cover for assessing the geomorphological hazards;
- Drawing up analytical vulnerability and risk maps oriented on the problem of the dynamics of current geomorphological processes;
- Description and explanation of geomorphological processes and landforms within phenomena based on making dendrogeomorphological analyses, etc.
- Identifying and arguing the presence of rock glaciers and permafrost;