

AERIAL IMAGE USE IN THE SPATIAL VARIABILITY ANALYSIS OF DEGRADATION FORMS IN NORTH EASTERN ROMANIA

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Irresponsible use of soils in agriculture may cause the start of land degradation processes on large areas, with high impacts on the soil productivity and terrain stability. Romania's transition process increased the human pressure on natural resources (soils, forests, and water bodies) and the probability of natural hazards occurrence (floods, landslides, lake plugging).

The objective of the study is to analyze the spatial distribution of the degradation forms, within the specific conditions of Suceava Plateau in North Eastern Romania. The target area of the study has been identified based on the analysis of orthorectified and georeferenced digital images. These aerial images represent the material used for identifying and characterizing the degradation forms present within the target area. The instrument for the actual delineation of degradation formations is represented by photo interpreting patterns, obtained by comparing ground data to corresponding images.

The results of the study show a good comparability between the ground and aerial photo mapping for the degradation forms present in these areas. Each degradation form can be classified according to the predominant degradation process (land erosion, land displacement, pollution, industrial dumps) and afterwards divided in elemental units, units that generally require the same rehabilitation techniques. The result is a GIS database containing information needed in the ecological rehabilitation of affected areas: general information about geomorphologic, hydrologic and geologic parameters of the area, the analysis of terrain usage and its dynamics, the parameters of the degradation units found in the area, additional information. The GIS database is verified in the field by assessing the mapping accuracy, within a network of control points.

The analysis of the results prove the importance of the digital imagery in the mapping of degraded lands on large areas (landscape level), highlighting the importance of field observation (prior to vectorization) and ground testing of the mapping accuracy. The aerial photos represent an objective tool for extending the observation in time at a national level, given the fact that it is available for the entire Romania. The georeferenced character of the database makes it comparable to other sets of data within the same geodetic datum (aerial photos taken in the last half of century, old degradation maps etc.), resulting in a dynamic analysis of land degradation forms. The general view over a relatively large area and the subsequent data in the GIS database offer the possibility of developing a complete and unitary management plan for the area taken into account, in the general context of ecological rehabilitation.