CHARACTERISTICS OF SOIL EROSION PROCESES
IN THE KUMANOVO BASIN

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ABSTRACT

In this article, with one complex approach are discussed soil erosion processes in Kumanovo Basin. First were analyzed factors which caused accele-rated erosion, and then, the related soil erosion landforms are presented. Finally, there are provided our estimations of soil erosion and accumulation rate, using sup-ported methodology.

Kumanovo basin is located in the northeast of the Republic of Macedonia, and one small part belong to the FR Yougoslavia. In the natural borders, this basin has an area of 1357,03 km^2, and completely belongs to the basin of river Pcinja (with Kriva Reka). Because of natural-geographic conditions, this area is one of the most erosive in all country. The main geographic factors that affect recent erosion are: geological and pedological structure of the area, slopes of the relief, structure of the rain and temperature, river network, biogeographical characteristics and anthropogenic effect. All of this factors are just appropriate ford hard soil erosion, especially geological and pedological structure represented with erodible stones (gravel, sand, sandstones, volcanic tuphs, sadlike clay ect.), and slopes of valley sides who are about 15-25°. But great role in hard erosional effect have the man too who changing the natural balance (deforestation, changing the slopes) accelerate erosion for factor 10.

Specific lithology of Kumanovo Basin, with high erosion rate is related to interesting landform structure. In the east part of the basin we have great erosion surfaces, and where are crystalline and volcanic rocs we can find denudation forms: pulpit rocks, needle rocks, mushroom rocks, and natural windows. In softness rocks are formed rills, gullies, landslides, badlands and fans.

Main goal of one detailed work for soil erosion is to find numerical values about intensity of sediment production. We use one original way like combination of software modeling and traditional empiric by S. Gavrilovic. Comparison with final results and measured values in river profiles (river Pcinja) tell us that using model is very good and have possibilities of time changing. According to the used model i.e. equation, water-mechanic erosion in Kumanovo Basin reaches an area of 1341,51 km^2 (98,8 %), and the deposits as a result of water-mechanic erosion, in Kumanovo Basin is evaluated at 899.923 m^3, which represents 5,2 % of total erosion deposits production in Republic of Macedonia (according to: Map of erosion in Republic of Macedonia). Approximately 40 % of the erosion deposit has been inevitably lost (or layer of 0,26 mm of soil). Total annual average sediment yield which river Pcinja evacuated from Kumanovo Basin, according to the used software model it estimated at 509.716 m^3/y, i.e. 190 m^3/km^2/y.

Key words: recent erosion, denudation, accumulation
With: 4 figures, 1 table, 1 map of erosion