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Application of geoinformation technologies in erosion research in mountain areas – Case studies of Eastern Rhodopes (Bulgaria)

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Приложение на геоинформационни технологии при изследване на ерозия в планински територии – на примера на Източни Родопи (България)

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Soil erosion is one of the most widely spread and the most serious environmental problems on a global scale. Erosion processes not only destroy lands and reduce agricultural productivity, but they also have a negative impact on water, vegetation, and ecosystems. If long-term measures are not taken to minimize erosion, it can lead to changes in the topographic surface, to reduce the stability of the slopes, and this increases the susceptibility to hazardous geomorphological phenomena.

Considering the seriousness of the problem “erosion”, scientists from the University of Mining and Geology St. Ivan Rilski, Sofia (Leading organization), and from the Institute of Soil Science, Agrotechnologies and Plant Protection “Nikola Pushkarov”, Sofia (Partner organization) established scientific cooperation to work on the current project, about the application of geoinformation technologies in the assessment of slope wash and linear erosion on the territory of the Eastern Rhodopes (Bulgaria). The project activities are directed to the integrated application of innovative technologies and classical geomorphology, and more specifically to the study of soil erosion, in the context of slope

dynamics, by using unmanned aerial systems, 3D terrestrial laser scanning, and multispectral satellite imagery. The results of the research are complemented by geomorphological field studies and morphometric and grain-size analyses. Models of soil erosion susceptibility were elaborated and erosion and deposition rates were determined.

The project is financed by the Bulgarian National Science Fund, Ministry of Education and Science. Its general goal is to contribute to the optimization of the assessment of erosion and to increase awareness about these processes by expanding research, obtaining new information on the dynamics of water erosion, and developing the research methodology by applying innovative technologies.

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