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THE ASSESSMENT OF THE IMPACT ON THE ENVIRONMENT OF THE LIMESTONE QUARRIES USING SATELLITE IMAGES

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Abstract

Surface exploitations in the limestone quarries have a major impact on the environment both by area and intensity. The valuation of the impact can be carried out through different means, one of them being the satellite remote sensing. In this article we analyze the effects that limestone exploitations in the outskirts of Braşov city have on the landscape, using RGB combination, vegetation indices and spectrum profiles. A series of Landsat 5 TM satellite images taken in 1984, 1989 and 2009 has been used. The results obtained show that the most adequate RGB combination for limestone quarries identification on this type of images is the combination that includes NDVI. This combination has proved to be efficient because nearby there are asphalt and concrete surfaces, allowing the differentiation from these. TSAVI has, in general, bigger values for surfaces of low reflectance, while SAVI is more sensitive to details of high reflectance like limestone quarries. The analysis of the regression has revealed, in this particular case, that even if SAVI and TSAVI have been used, they have values close to the NDVI index. The bigger values of the used indices show the presence of vegetation in some areas. The spectrum profiles have been revealed both in the image showing NDVI and in the red and near infrared bands. The results show, according to the specialty literature, that the reflectance of the limestone quarries is very high in the red band as compared to the near infrared band.

Key words: remote sensing, satellite images, vegetation indices

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