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ANALYSIS AND ASSESSMENT OF THE NATURAL PROTECTED AREAS BY REMOTE SENSING TECHNIQUES - A CASE STUDY FROM DINIAȘ SALTS-ROMANIA

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Abstract

The purpose of this research was to analyse the dynamics of remote sensing indices calculated based on Sentinel 2 satellite images over a period of 5 years: 2017-2021. The analysed area is a protected natural area in Western Romania. Remote sensing images were taken in approximately the same month of each year and based on them the remote sensing indexes was determined: NDVI, MSAVI2, NDSI, SI and BI. An unsupervised classification of the RGB image from 2017 and 2021 was also performed. Based on the remote sensing data, strong correlations have resulted between NDVI and SI, NDVI and NDSI, NDVI and MSAVI2, SI and NDSI, SI and MSAVI2, NDSI and MSAVI2. Considering the high level of correlations between NDVI and SI, NDSI, MSAVI2 indices, the regression analysis was used in evaluating the predictive relationship of each index based on the spectral values of the NDVI index. Prediction of SI, NDSI, MSAVI2 values based on spectral data of the NDVI index was possible with high statistic accuracy. For SI, the statistical security obtained was expressed by $R^2 = 0.89576$, for NDSI the statistical security obtained was expressed by $R^2 = 0.9845$ and for MSAVI2 the statistical security obtained was expressed by $R^2 = 0.99988$. This study presents a recent and efficient approach to monitor protected areas, based on spectral information provided by remote sensing. This study provides useful scientific information for the management of the studied protected area.

Key words: index, NDVI, NDSI, remote sensing, Sentinel 2, salty soil

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