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## CHARACTERIZATION OF A ADMINISTRATIVE TERRITORIAL UNIT BASED ON REMOTE SENSING IMAGES

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**Abstract:** The remote sensing techniques are increasingly used in the analysis and monitoring of the territory, in the dynamics of changes in the cover of the vegetal carpet, in forecasting studies, in various fields such as: agriculture, environmental protection, forestry. The present research had as its main purpose the study of the dynamics of entire UAT Satchinez, based on the spectral information obtained from Landsat 8 satellite images and processed with specialized GIS and remote sensing programs namely ERDAS Imagery and ArcGIS, on the basis of which thematic maps were created with various combinations of spectral bands and 3 normalized indices of differentiation, useful in monitoring and analysis processes of the territory. It was downloaded and processed a satellite scene from the LANDSAT 8 remote sensing system, who receives satellite images in 11 spectral bands. Based on the spectral bands, various differentiation indexes useful in territorial analysis can be calculated: NDVI, SAVI, NDMI. These indices are calculated based on mathematical formulas that use the spectral bands of the remote sensing system used.

### Introduction

Remote sensing is of interest for the study and characterization of the vegetation and agricultural crops for their monitoring and the creation of predictive models regarding their dynamics and making decisions in real time (Calina et al., 2020; Calina et al., 2018, Bertici et al., 2012; Tarau et al., 2013).

Remote sensing is the technical field that deals with the detection, measurement, recording and visualization in the form of images of electromagnetic radiation emitted by objects and phenomena on Earth or in the Universe, from a distance, without having direct contact with them (Herbei et al., 2015, Sala et al., 2015).

### Material and method

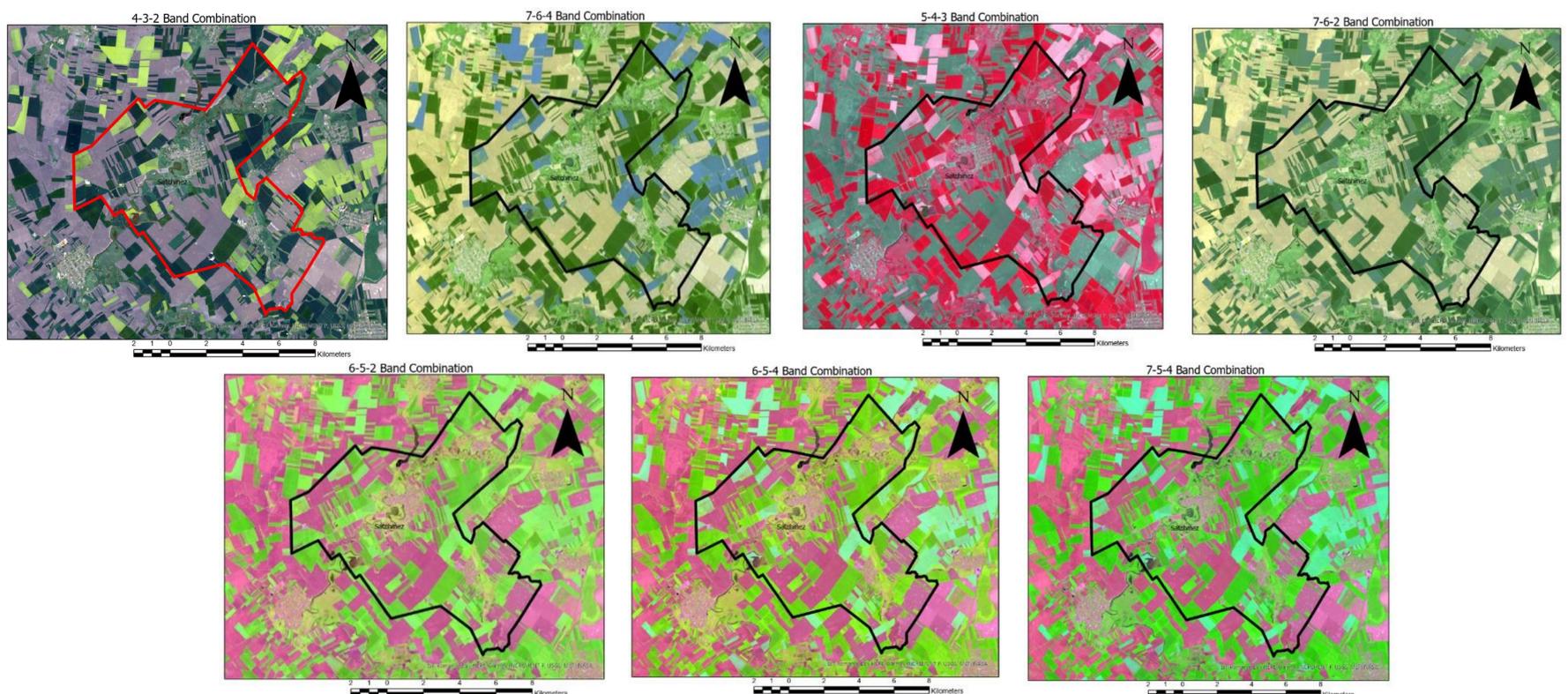
The present study was carried out within the Satchinez UAT in Timis county. In this study, a satellite scene from the LANDSAT 8 remote sensing system was downloaded and processed. The Landsat 8 system receives satellite images in 11 spectral bands.

This study used a remote sensing scene taken from the Landsat 8 system on the [www.earthexplorer.com](http://www.earthexplorer.com) portal from 11.05.2021

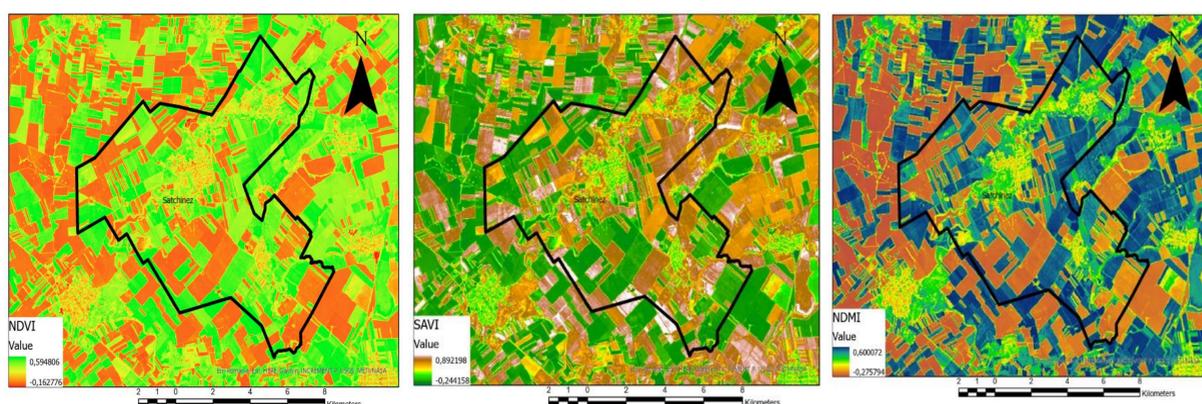
The retrieved images were processed using specialized remote sensing and GIS programs, namely ERDAS Imagery and ArcGIS.

### Results and discussions

The following combinations of spectral bands were made: Natural colors: 4,3,2, Color Infrared (CIR): 5,4,3, False Color (Urban): 7,6,4, Agriculture: 6,5,2, Geology: 7,6,2, False Color (vegetative Analysis): 6,5,4, Shortwave Infrared: 7,5,4



Based on the spectral bands, various differentiation indexes useful in territorial analysis can be calculated. In this paper, 3 differentiation indices were determined, namely: Normalized Difference Vegetation Index (NDVI) Soil Adjusted Vegetation Index (SAVI), Normalized Difference Moisture Index (NDMI).



### Conclusions

This study presented an efficient and fast way of using Landsat 8 remote sensing images in the analysis of a UAT from Timis county, Romania. A Landsat 8 image was used, on the basis of which thematic maps were created with various combinations of spectral bands and 3 normalized indices of differentiation, useful in monitoring and analysis processes of the territory.