

Identifying and mapping of vegetation forest disturbances on frame successions of Landsat type

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1. The starting point

- ❑ Satellite images are used for a short time compared with terrestrial and air means to investigate terrestrial ecosystems.
- ❑ Developments in technology and the climate change debate have imposed a focus on research related to the status of forest structure based on modern satellite recordings and the improvement and diversification of satellite data sensors

2. Research objectives

The aim of the research is to identify the usability of the LANDSAT satellite images of medium resolution in the identification and mapping of forest vegetation disturbances.

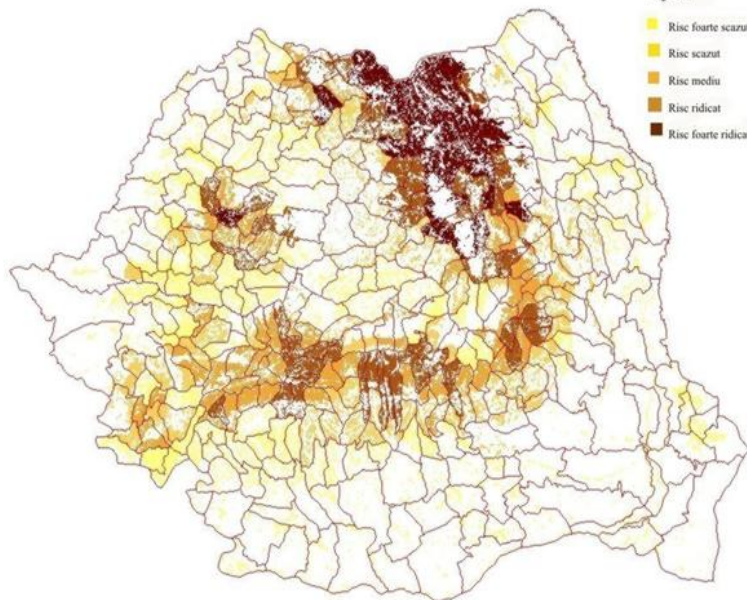
Objectives:

- O1: Highlight areas covered by forest vegetation by application of vegetation indices and the *tasseled cap* transformation;
- O2: Vegetation mapping by the Landsat images classification;
- O3: Determination of areas disturbed by comparing forest classified images.

3. Relevance of the study

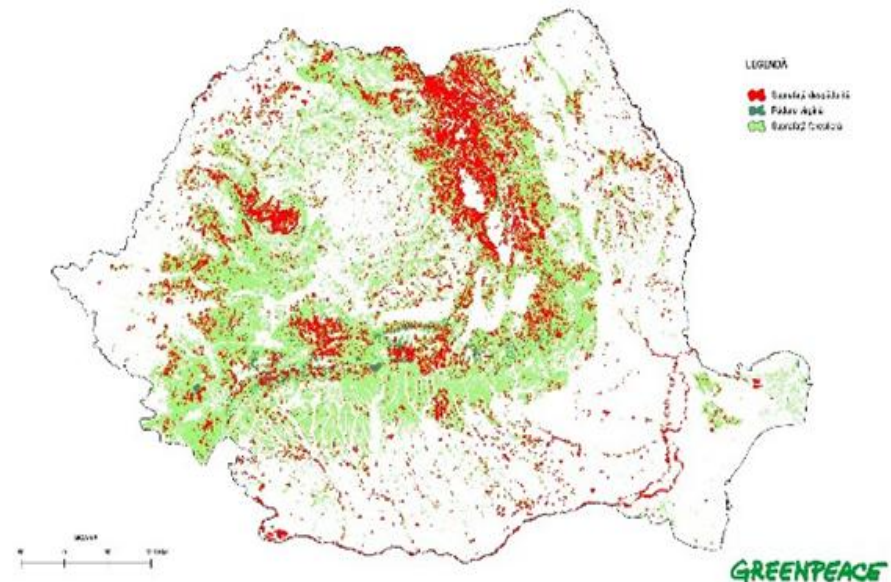
Forest disturbances may be classified into three major categories: abiotic disturbance (storms, land slides, volcanoes, droughts and floods), biota disturbance (insects, diseases, and invasive plants), and fire (a blend of abiotic disturbance and biota).

HARTA RISCULUI LA DOBORATURILE DE VANT PENTRU PADURILE ROMANIEI
Legenda:



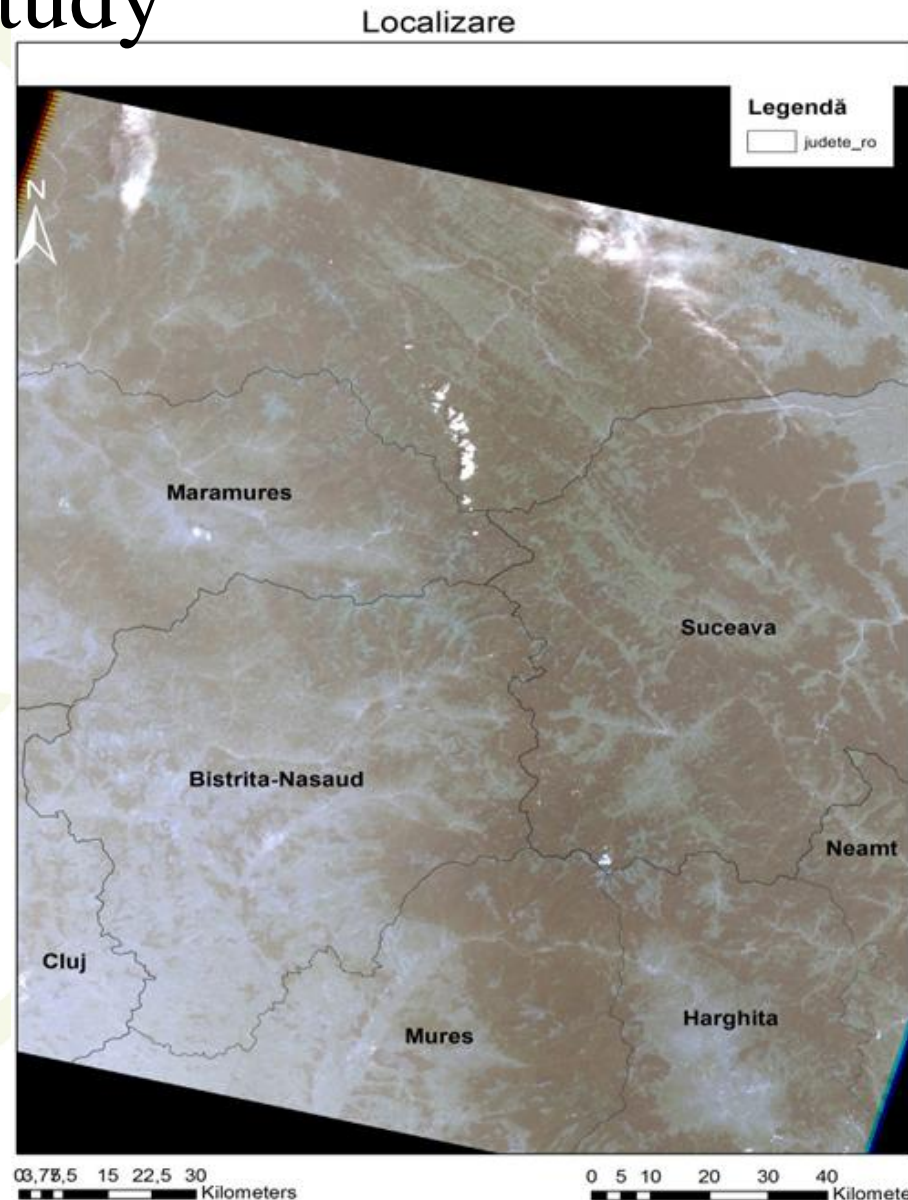
REALIZAT DE I.C.A.S. BRASOV: DINCA LUCIAN, CIOLOCANINIS, BUJILA MIHAELA

HARTA SUPRAFETELOR DESPADURITE SI A PADURILOR VIRGINE DIN ROMANIA
IN PERIOADA 2000 - 2011



4. Geographical location of the area taken in study

The test compound is represented by the northern Carpathians and overlap on boundaries of a LANDSAT scenes taken from the internet free archive



5. Equipments

Nr. Crt.	Imagine type	Year number	Layout number	Proceeding entry	Resolution	Orbit	Stage coverage	Covered area
1	Landsat 5 TM	1977	5	multispectral	30x30	183/27	Frame	N-ul Carpatilor Orientali
2	Landsat 5 TM	23.10. 1984	7	multispectral	30x30 120x120 (T)	183/27	frame	N-ul Carpatilor Orientali
3	Landsat 5 TM	Sept 1986	7	Multispectral	30x30 120x120 (T)	183/27	Frame	N-ul Carpatilor Orientali
4	Landsat 5 TM	08.07. 1989	7	Multispectral	30x30 120x120 (T)	183/27	Frame	N-ul Carpatilor Orientali
5	Landsat 5 TM	18.08. 1989	7	multispectral	30x30	183/27	frame	N-ul Carpatilor Orientali
6	Landsat 7 ETM+	05.06. 2000	8 1	Multispectral panchromatic	30x30 15x15 60x60 (T)	183/27	frame	N-ul Carpatilor Orientali
7	Landsat 7 ETM+	17.07. 2001	8 1	Multispectral panchromatic	30x30 15x15 60x60 (T)	183/27	frame	N-ul Carpatilor Orientali
8	Landsat 7 ETM+	4th July 2002	8 1	Multispectral Panchromatic	30x30 15x15 60x60 (T)	183/27	frame	N-ul Carpatilor Orientali

6. Methodology

www.earthexplorer.usgs.gov

Imagine Autosync

The screenshot shows the Earth Explorer website interface. The top navigation bar includes the USGS logo and the text "USGS Home Contact USGS Search USGS". Below the navigation bar, there is a search bar and a "Search Criteria Summary" section. The main content area displays a satellite map of a region with several search results listed on the left. The search results include details such as Entity ID, Acquisition Date, Path, and Row. The map shows a green, hilly landscape with various geographical features and labels.

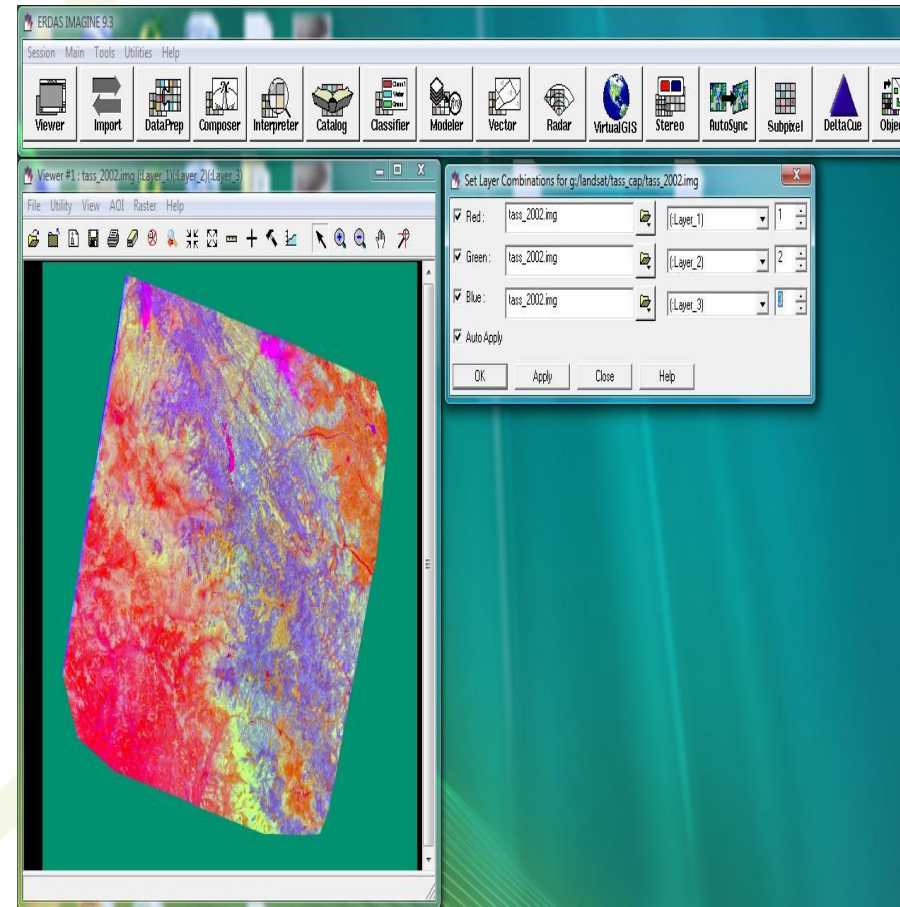
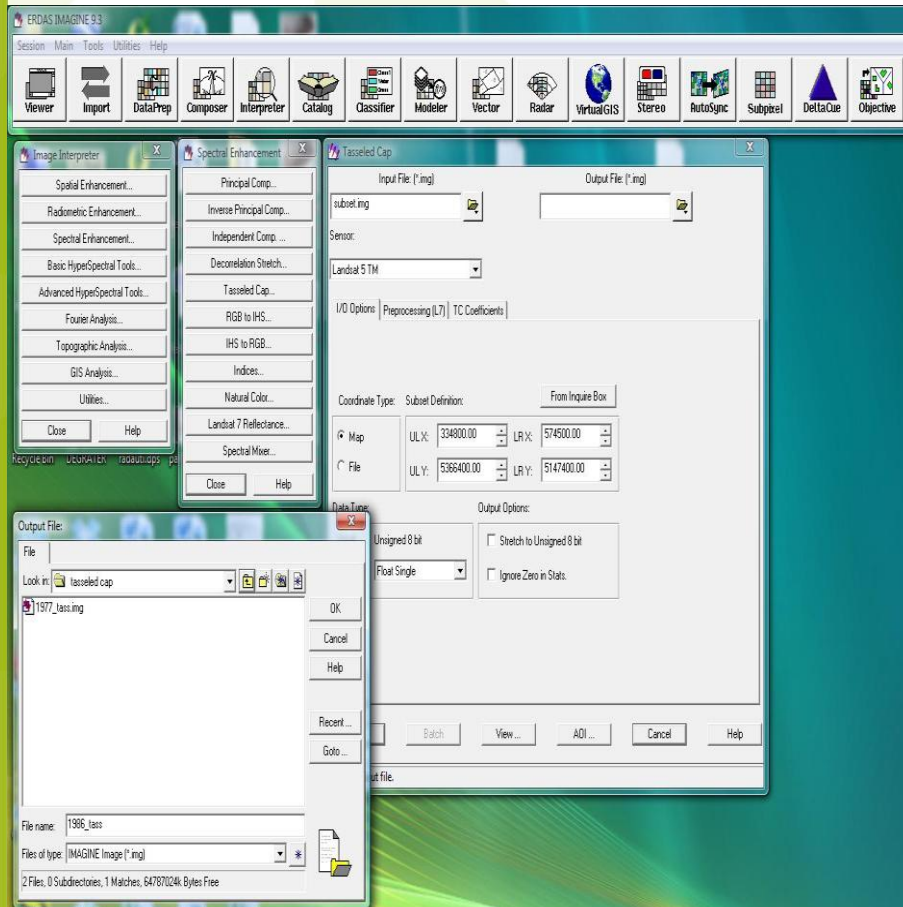
The screenshot shows the ERDAS IMAGINE 9.3 software interface. The main window displays the "IMAGINE GeoReferencing Wizard" dialog box, which is used for specifying the properties of output images. The wizard has several tabs: Input, Reference Image, APM Strategy, Geometric Model, Projection, and Output. The "Output" tab is currently selected, and it shows a table with input and output image paths. The "Output File Names" dialog box is also open, showing options for using the output directory and file name suffix for calibrated output. The "Default Output Directory" is set to "h:\earthexpl\sync\" and the "Default Output File Name Suffix" is "sync_2000".

Input Images	Output Images
h:\earthexpl\05.06.2000\2000_subset_2_img	h:\earthexpl\sync\2000_subset_2sync_2000.img

6. Methodology

„tasseled cap” change-over

RGB 123 mixture

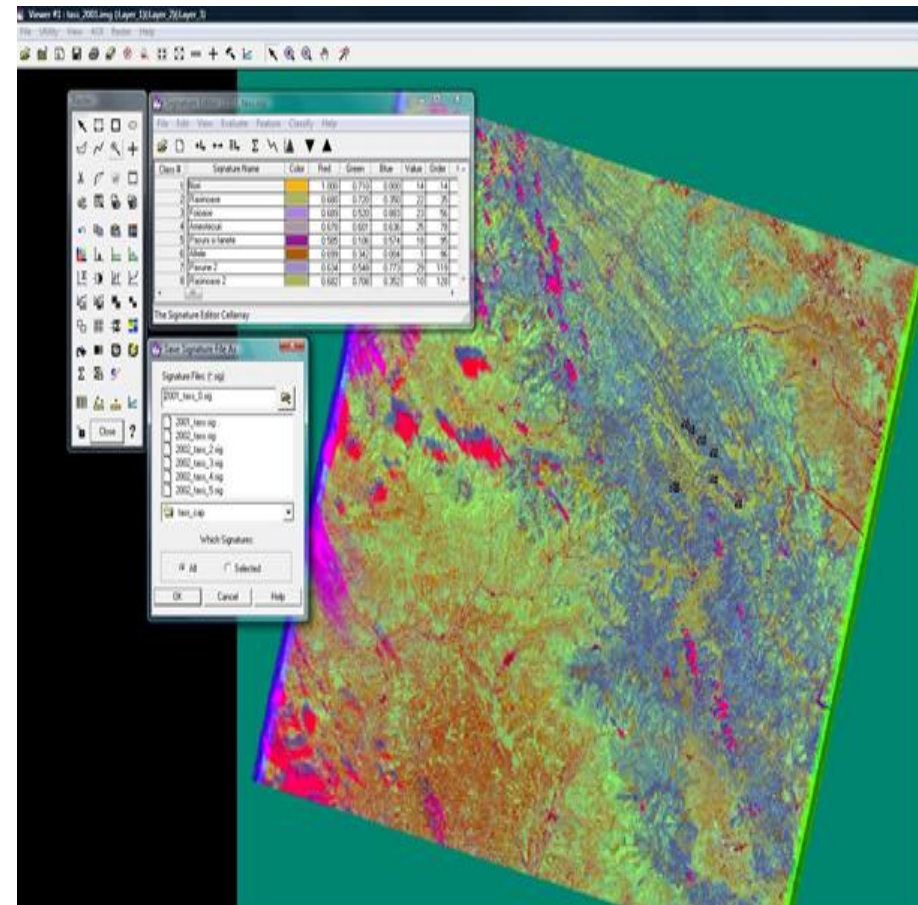
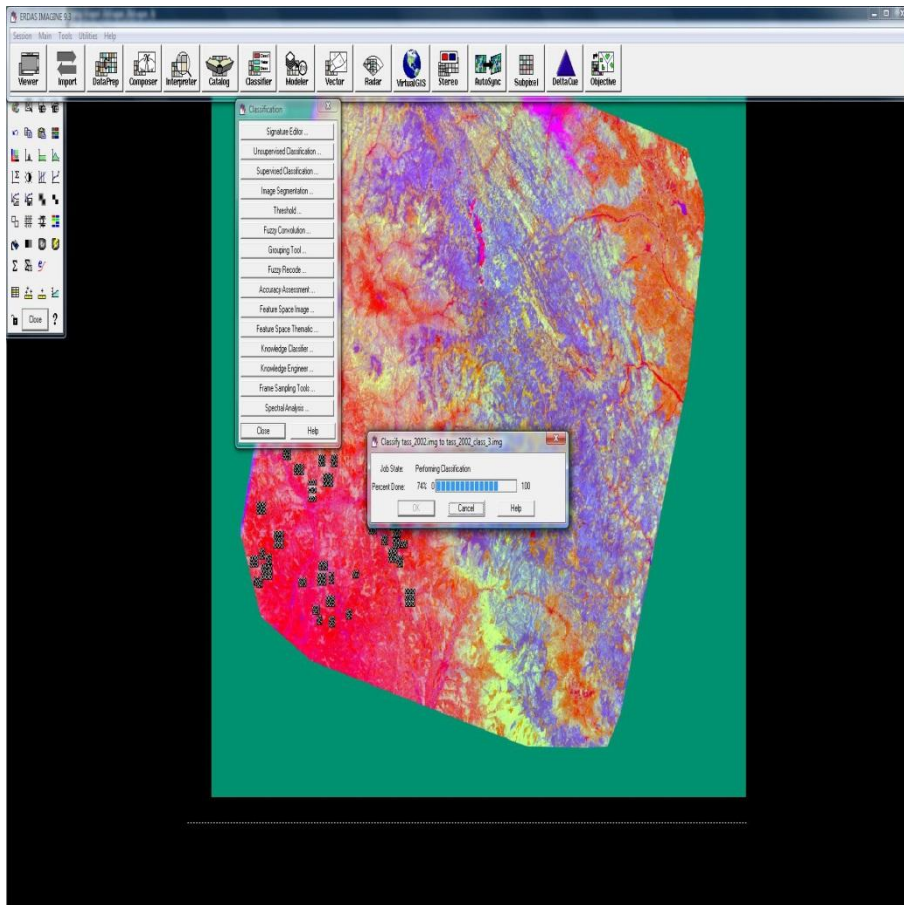


6. Methodology

Supervised classification

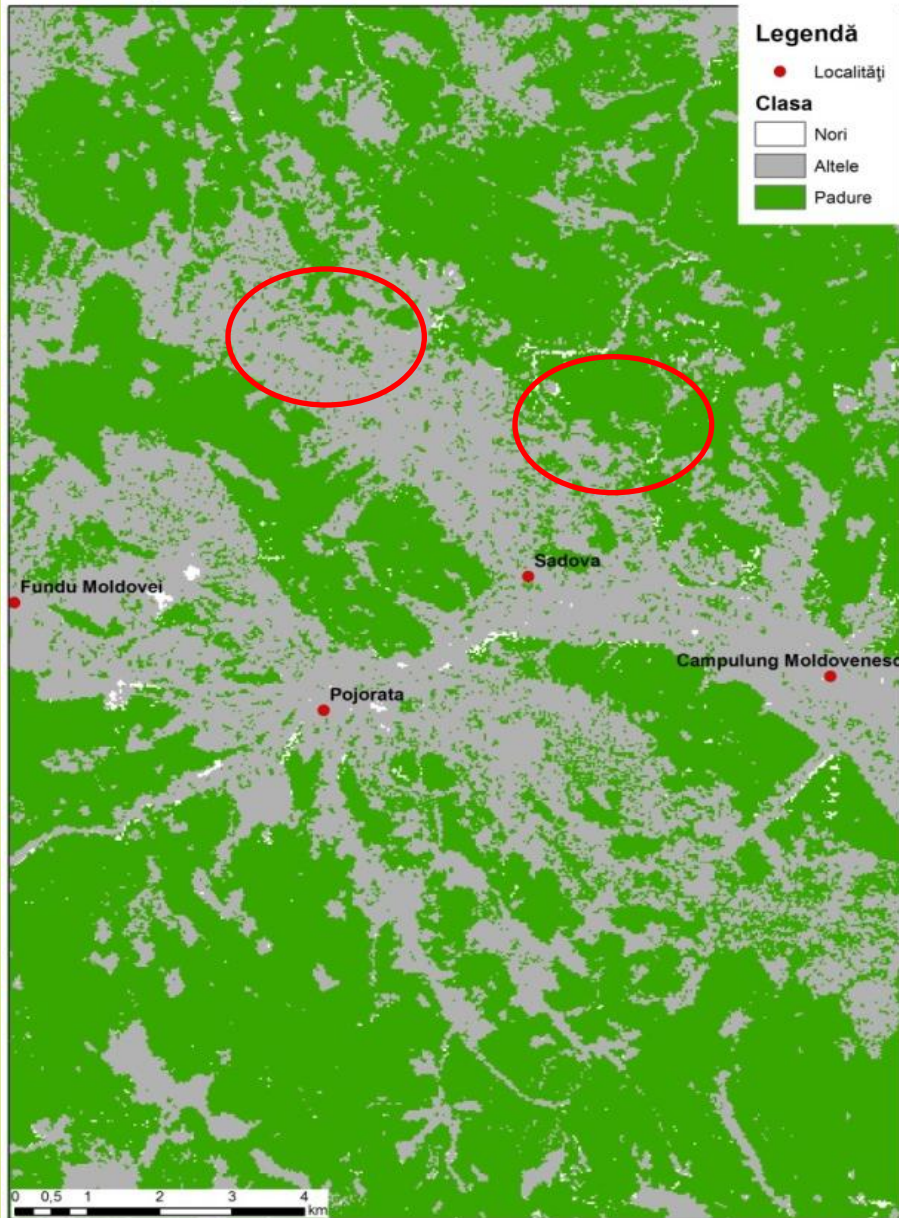
1. Maximum likelihood method
2. The minimum distance from the average

Spectral signatures

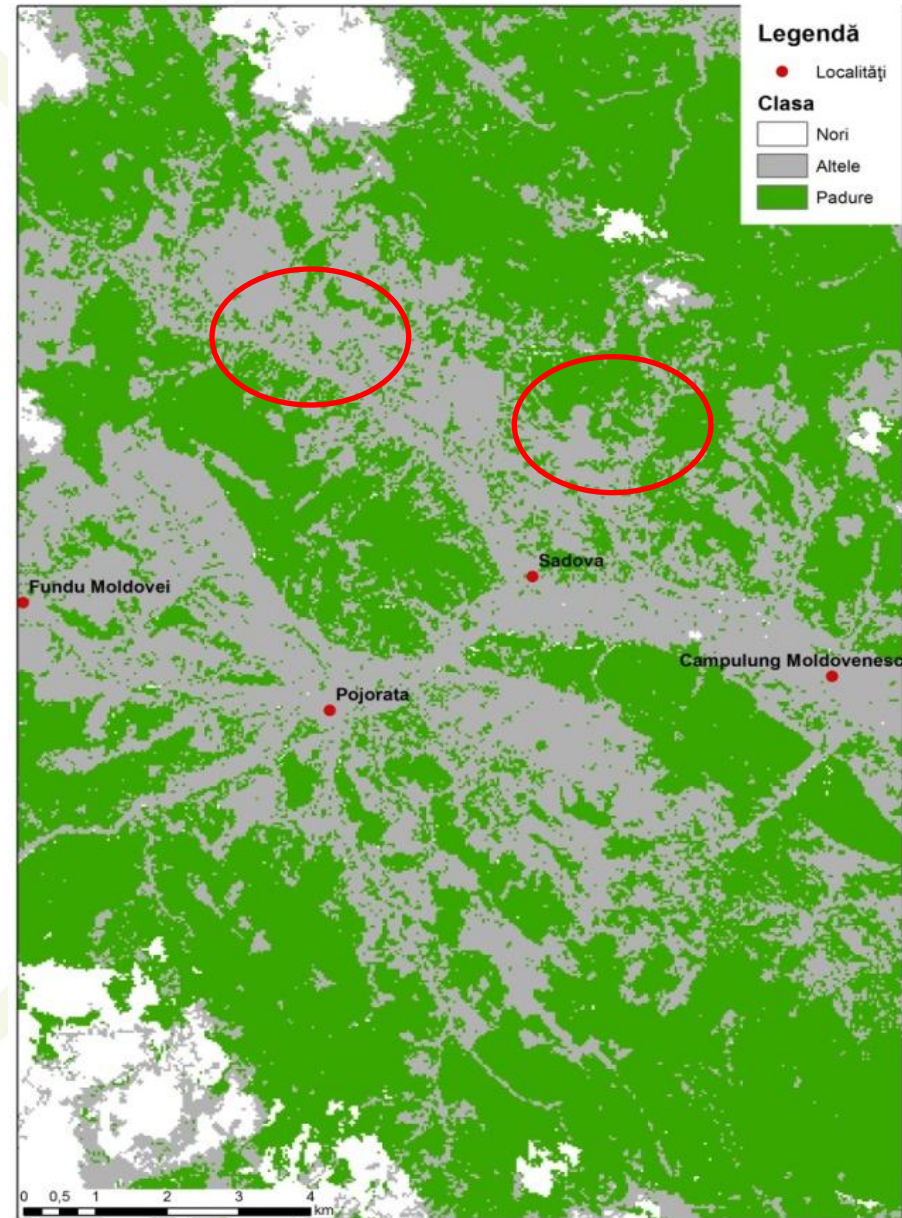


7. Results

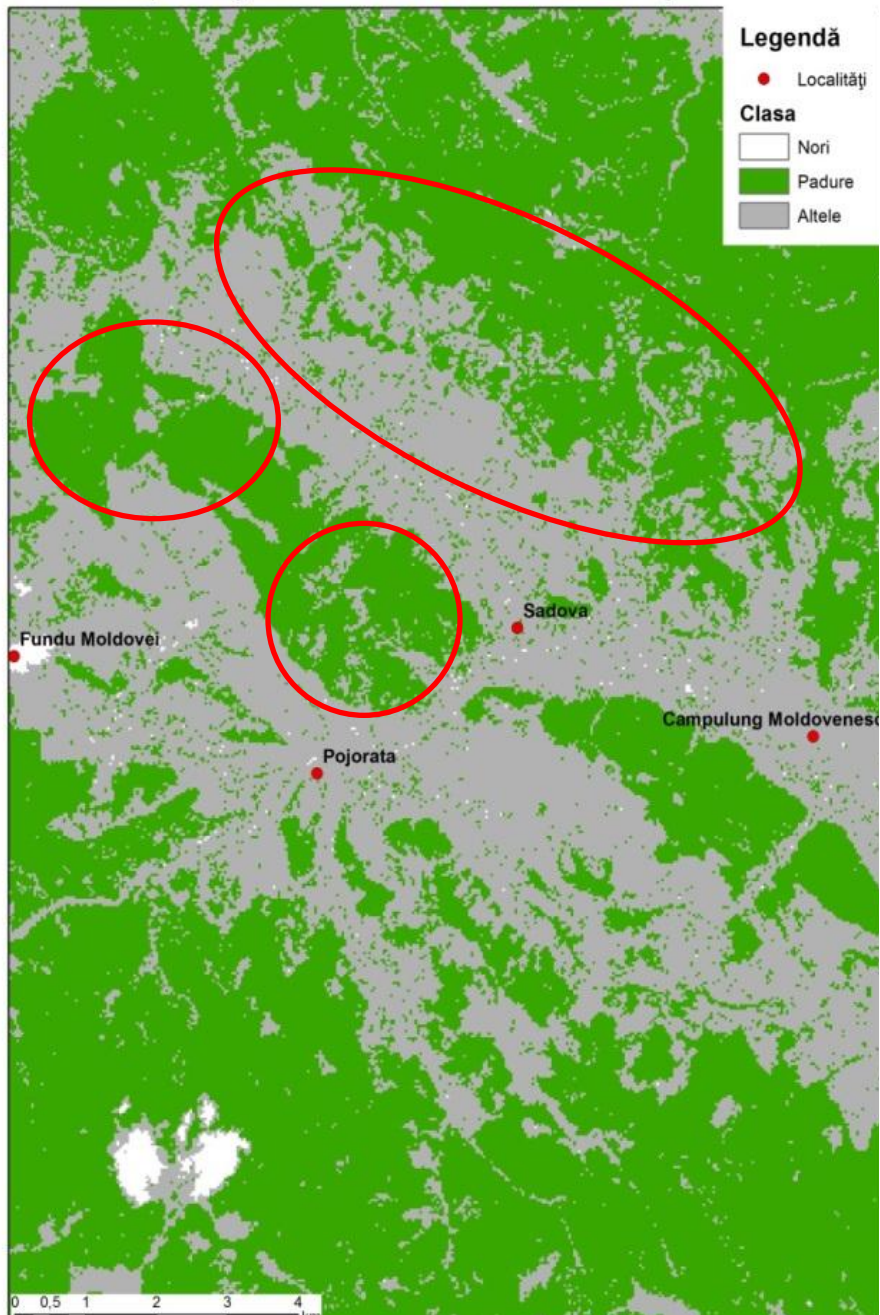
Evoluția vegetației forestiere
Zona Câmpulung Moldovenesc - Sadova - Pojorâta - 1989



Evoluția vegetației forestiere
Zona Câmpulung Moldovenesc - Sadova - Pojorâta - 2000



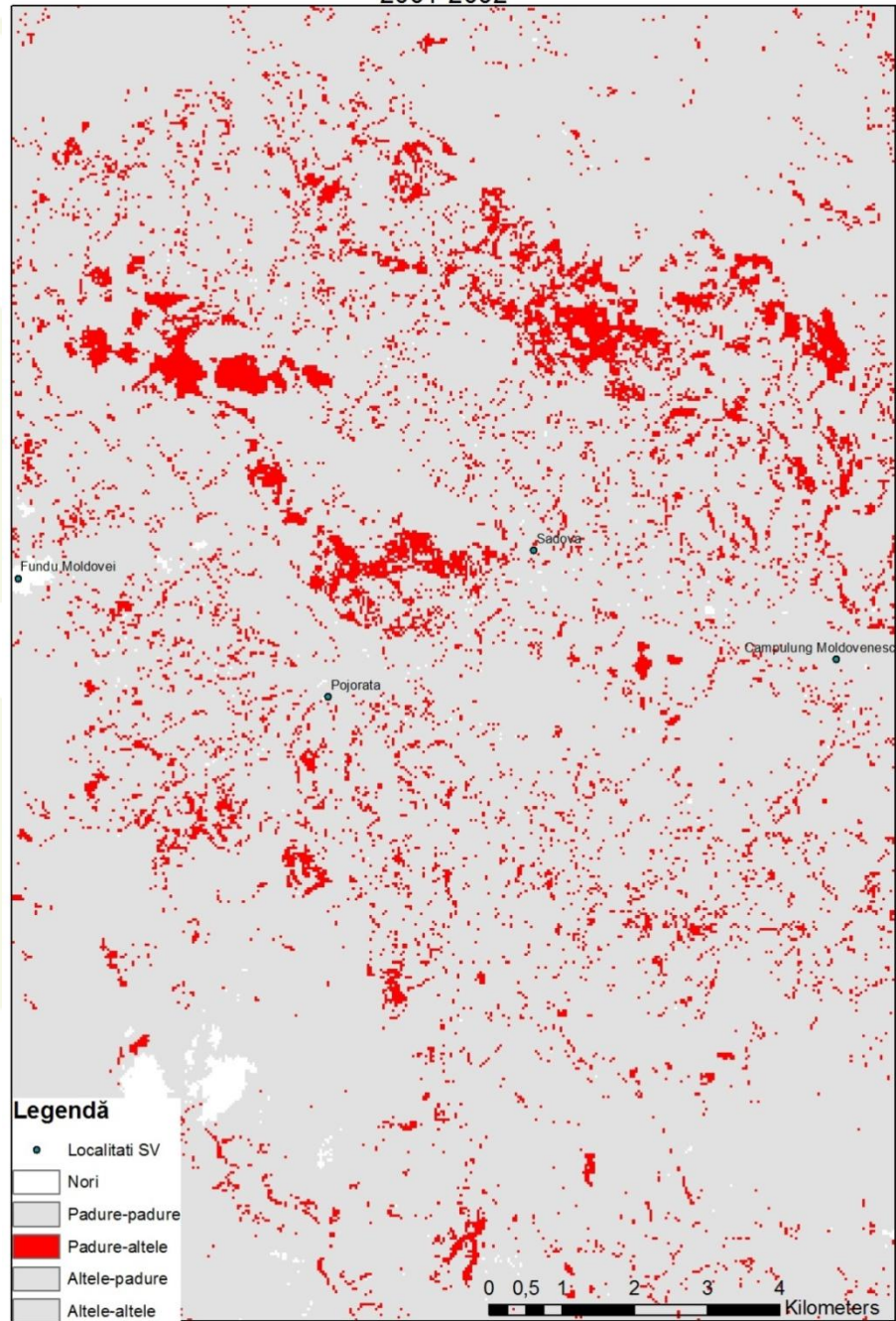
Evoluția vegetației forestiere
Zona Câmpulung Moldovenesc - Sadova - Pojorâta - 2001



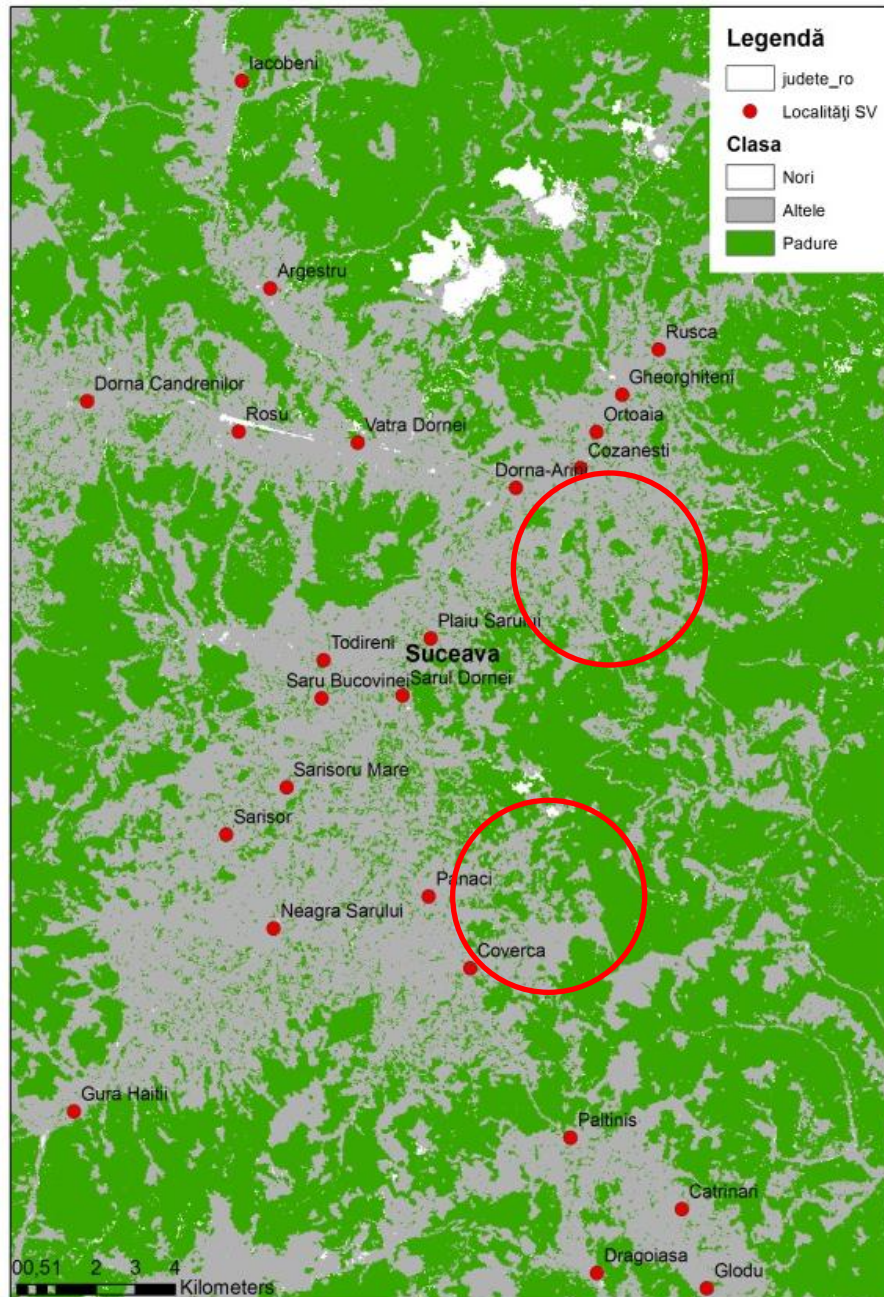
Evoluția vegetației forestiere
Zona Câmpulung Moldovenesc - Sadova - Pojorâta - 2002



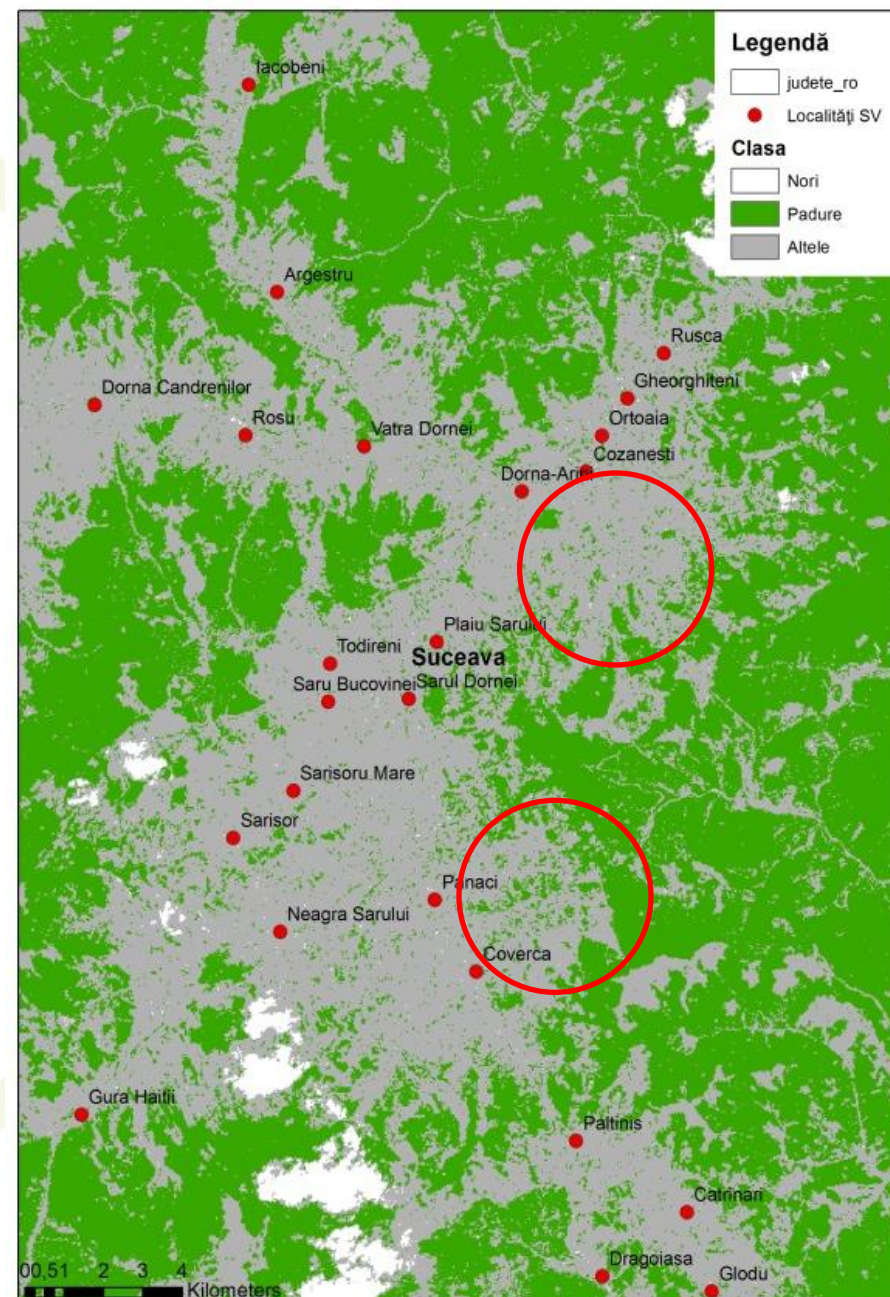
Perturbări Campulung - Pojorata - Sadova 2001-2002



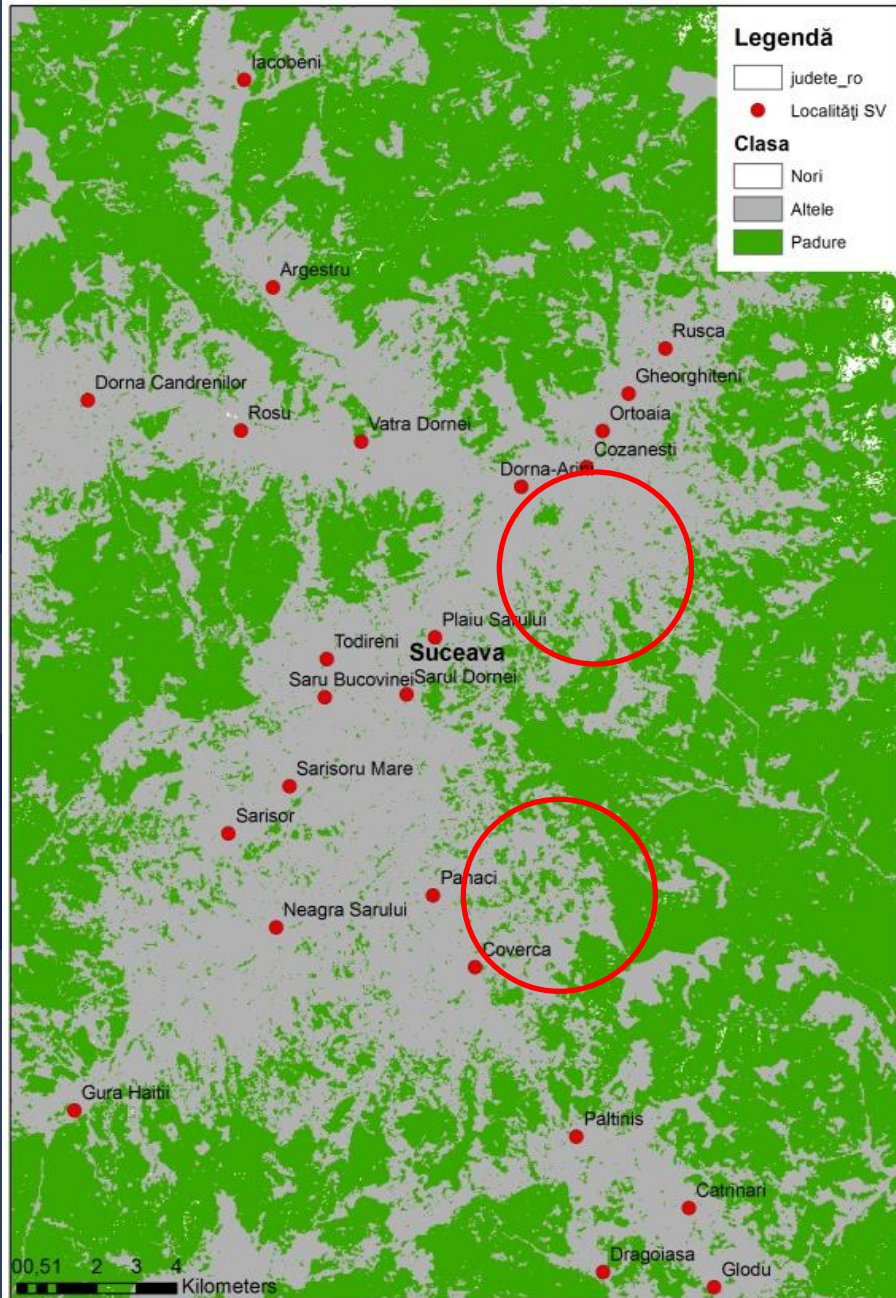
Evoluția vegetației forestiere
Zona Vatra Dornei 1989



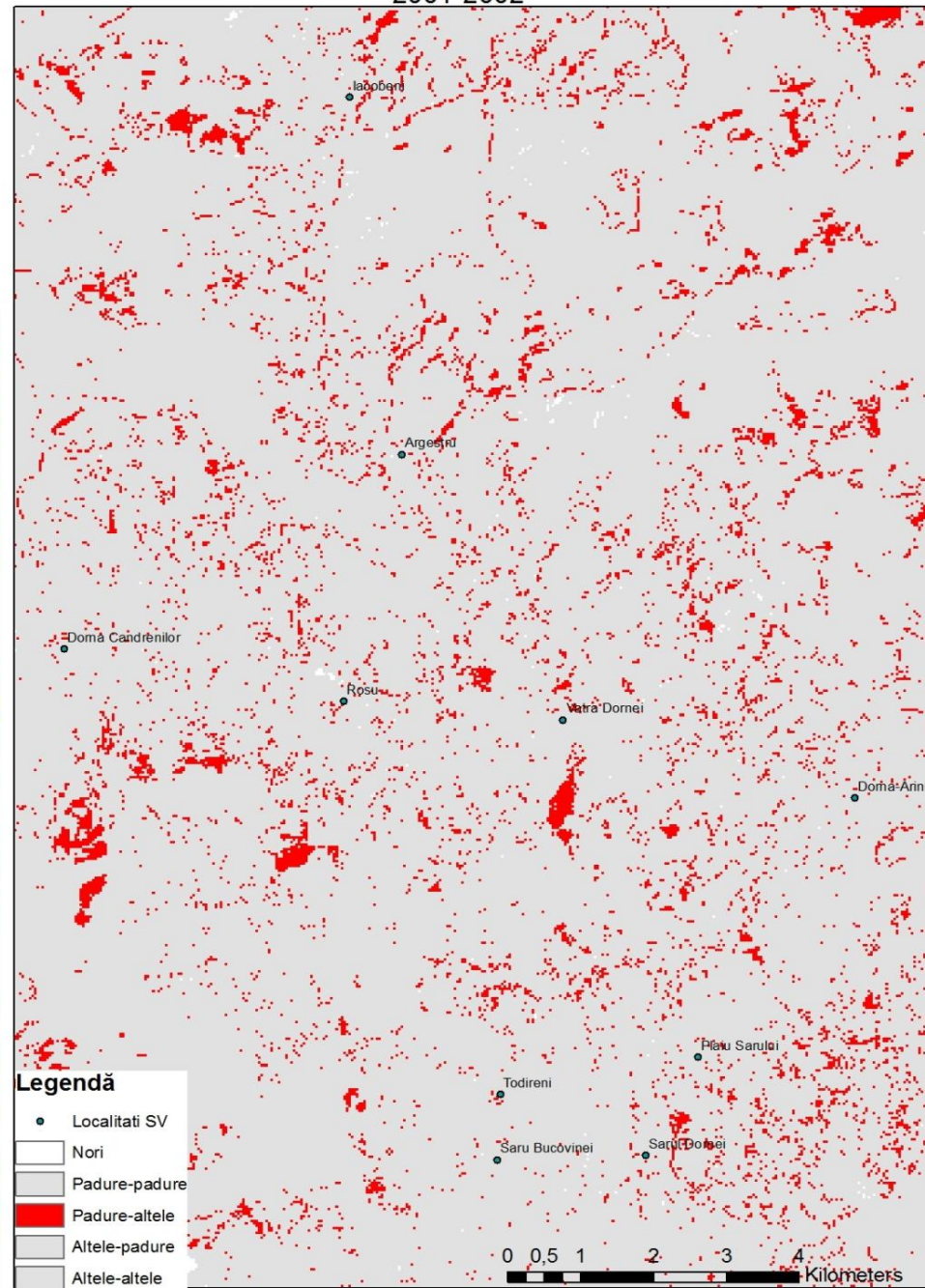
Evoluția vegetației forestiere
Zona Vatra Dornei 2001



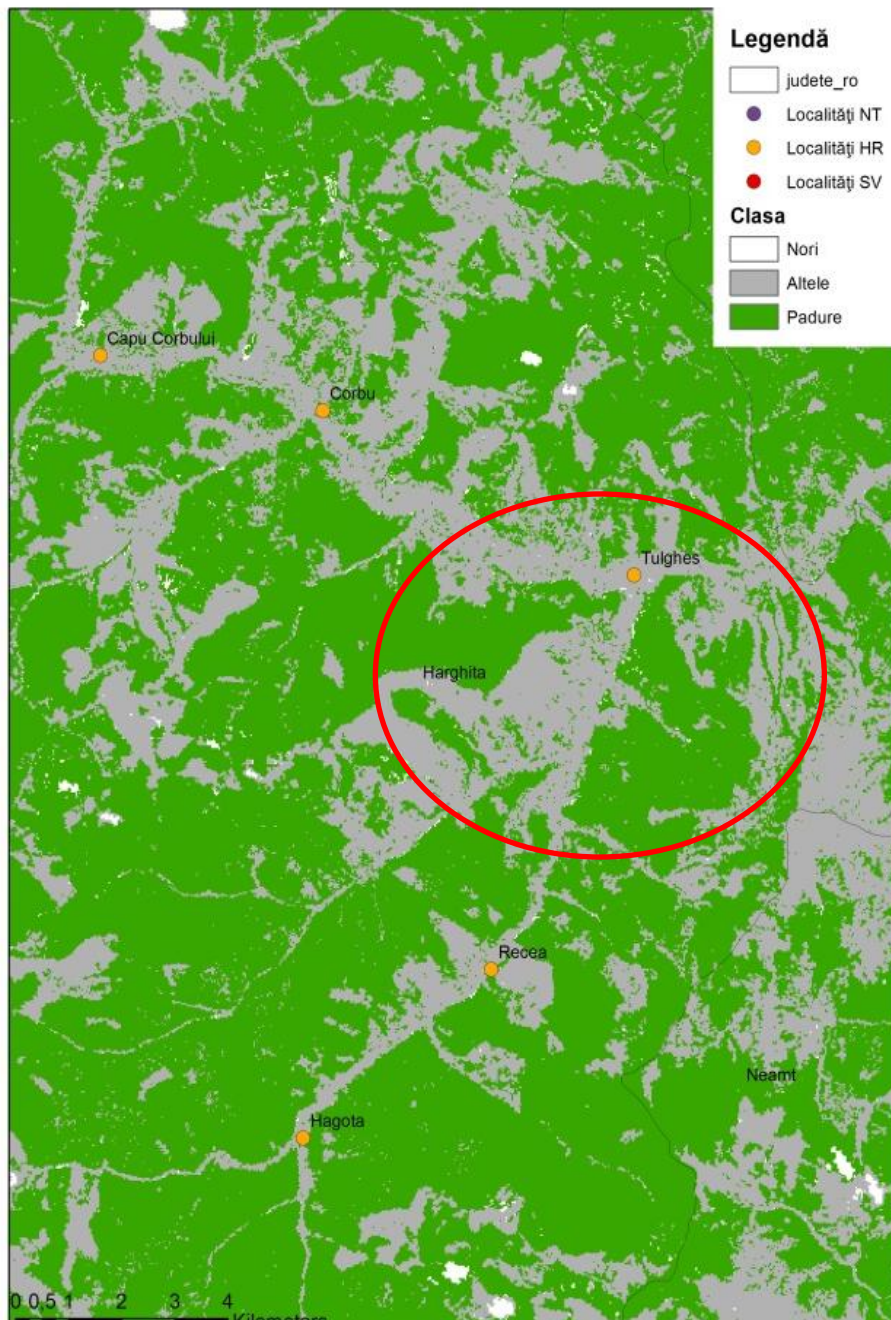
Evoluția vegetației forestiere Zona Vatra Dornei 2002



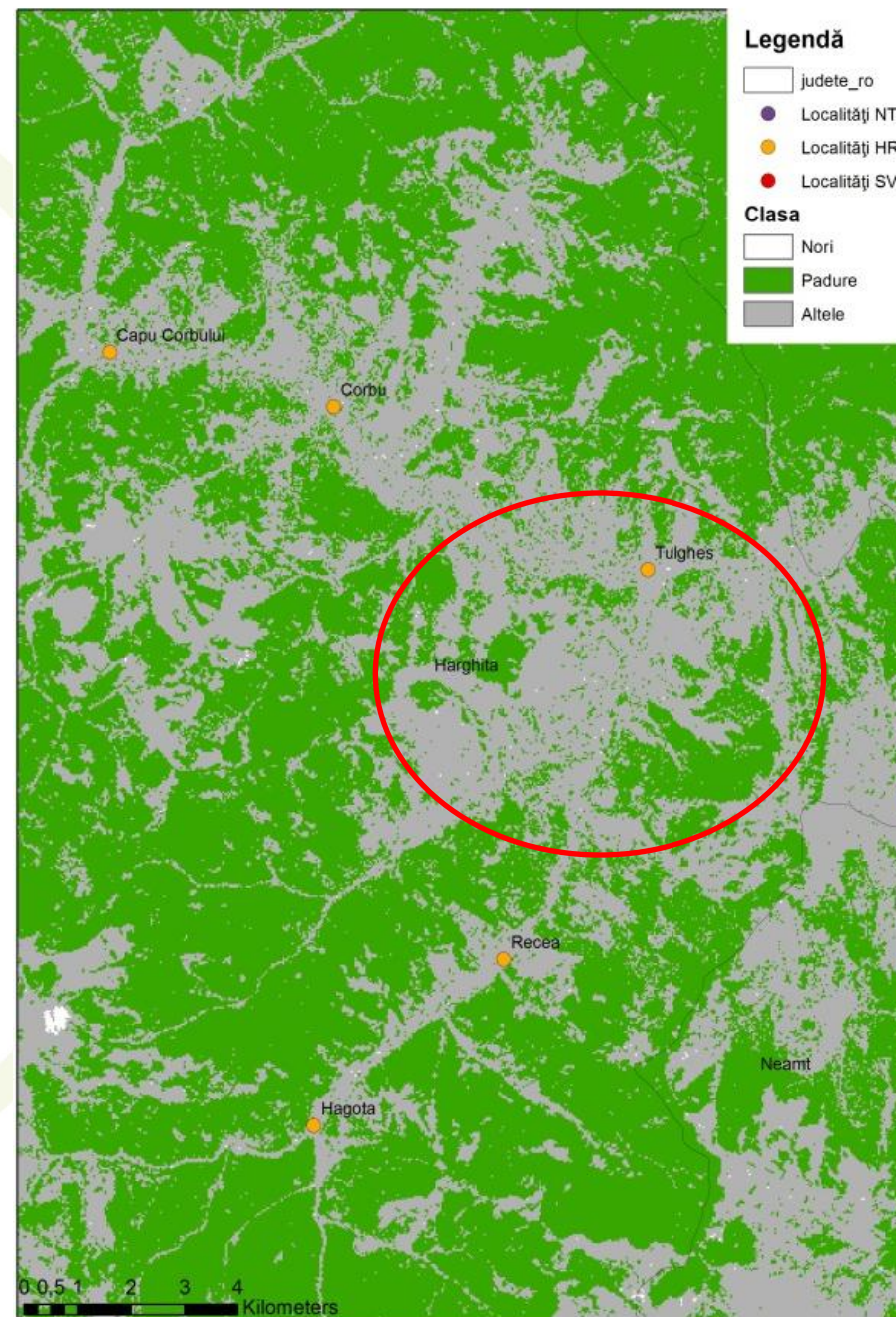
Perturbări Vatra Dornei 2001-2002



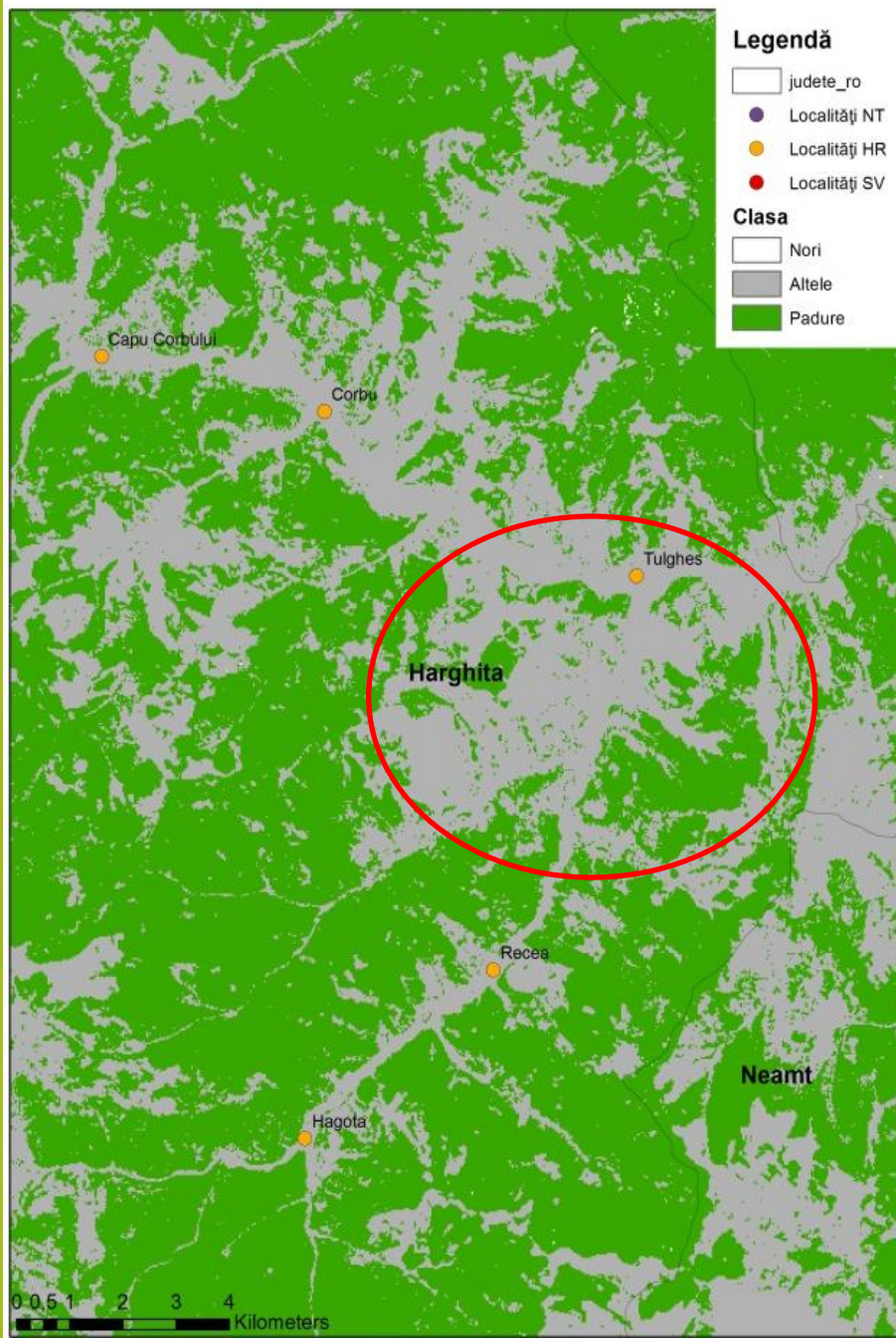
Evoluția vegetației forestiere
Zona Harghita 1989



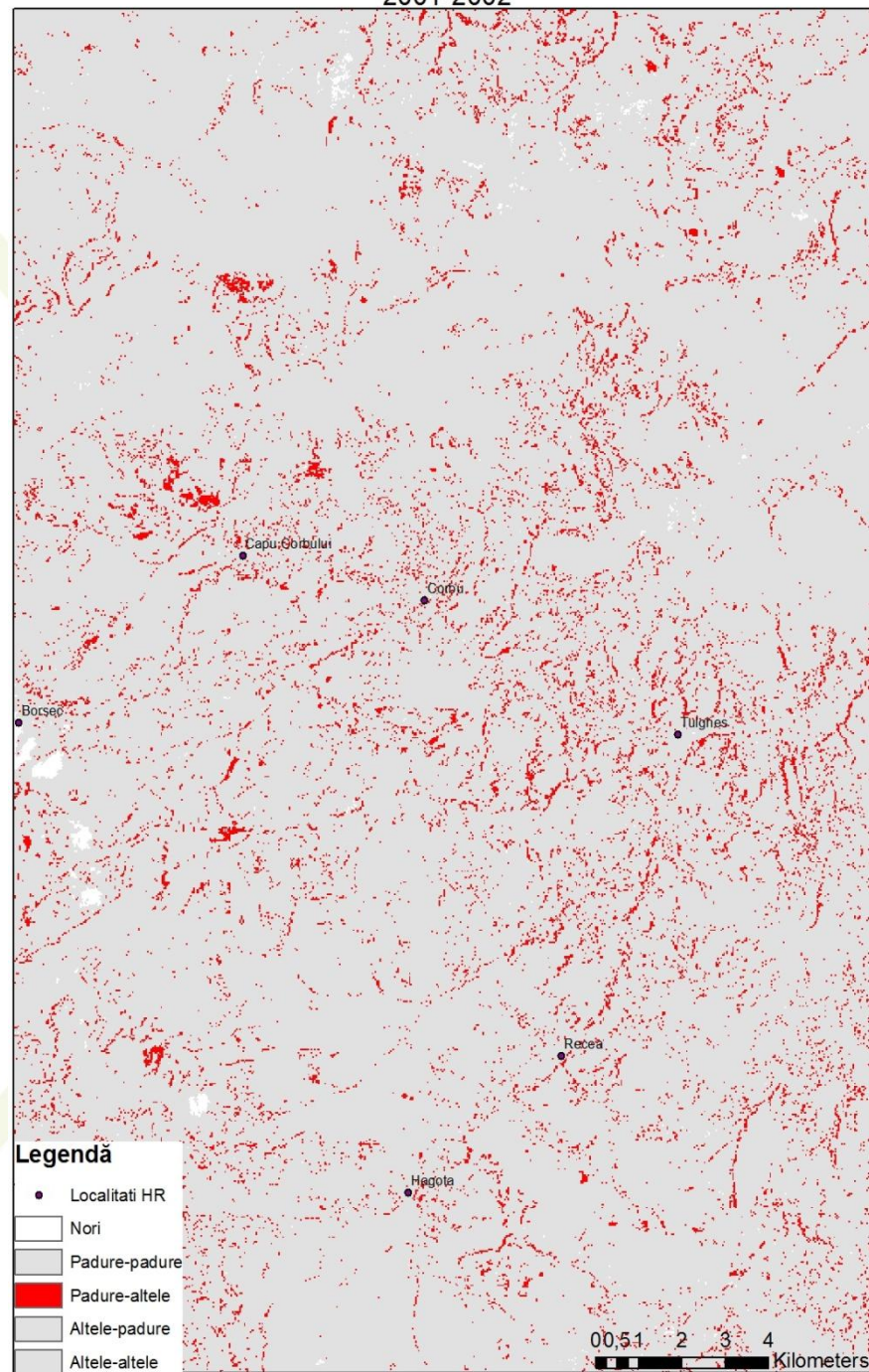
Evoluția vegetației forestiere
Zona Harghita 2001



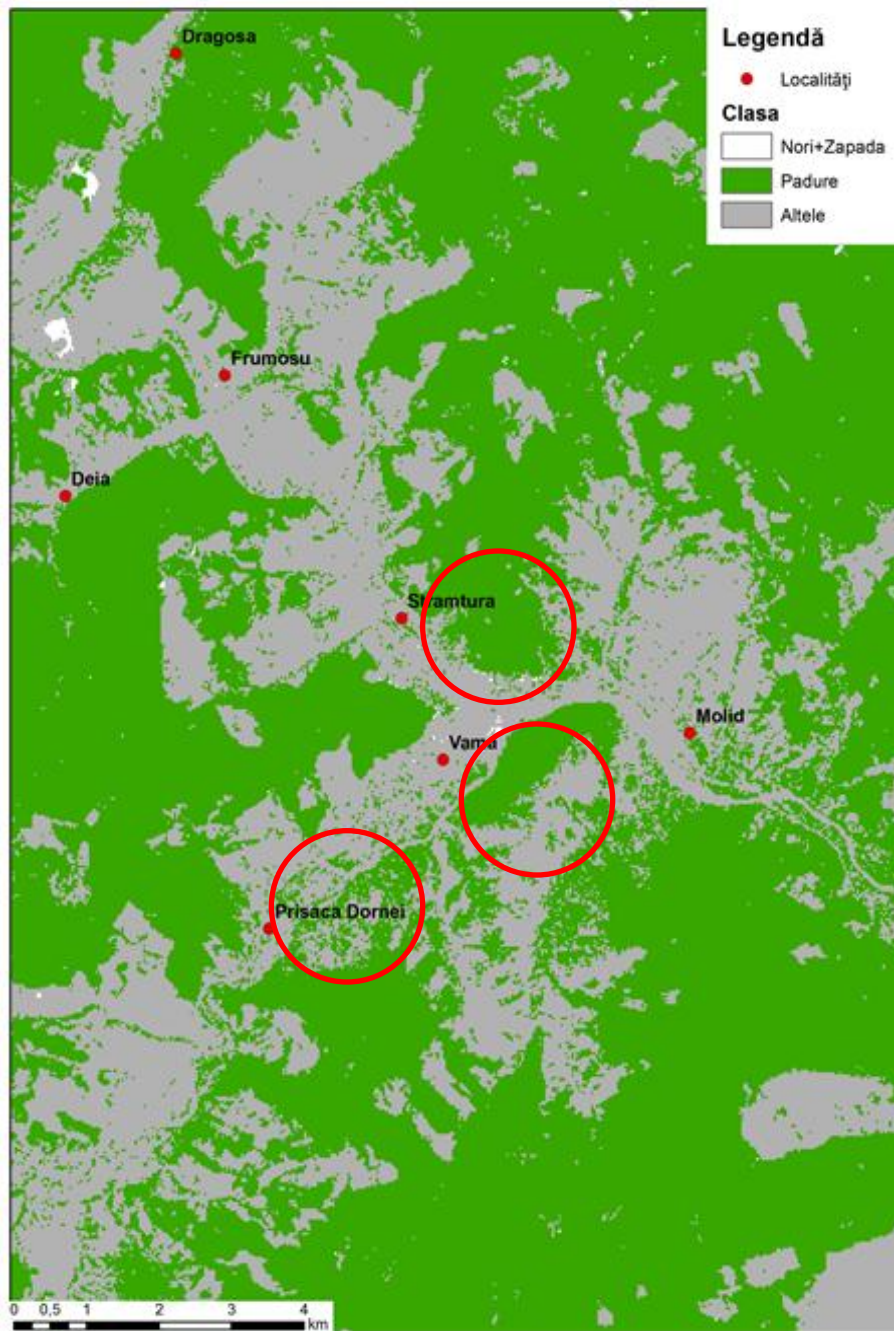
Evoluția vegetației forestiere Zona Harghita 2002



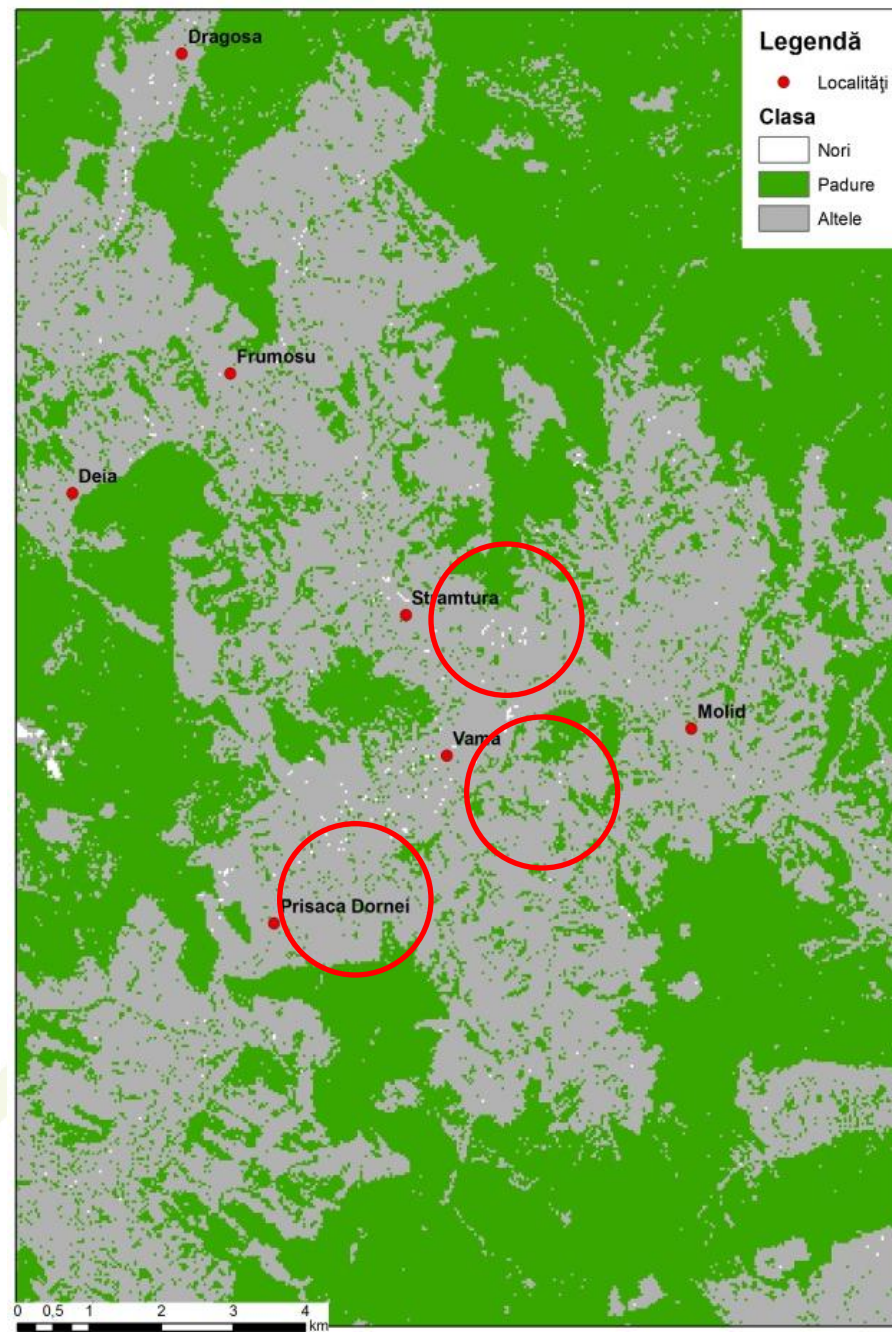
Perturbări Harghita 2001-2002



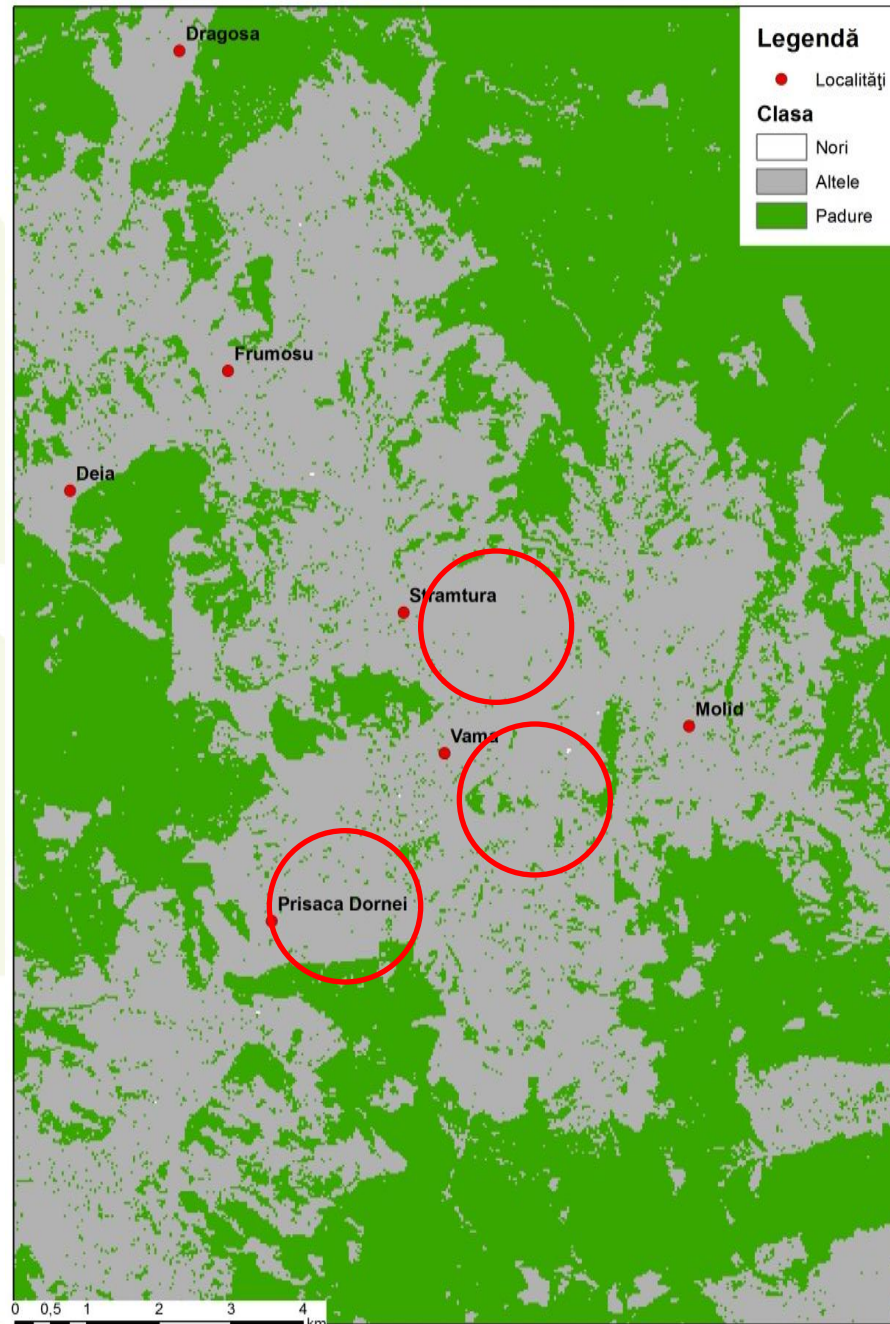
Evoluția vegetației forestiere
Zona Vama - 1986



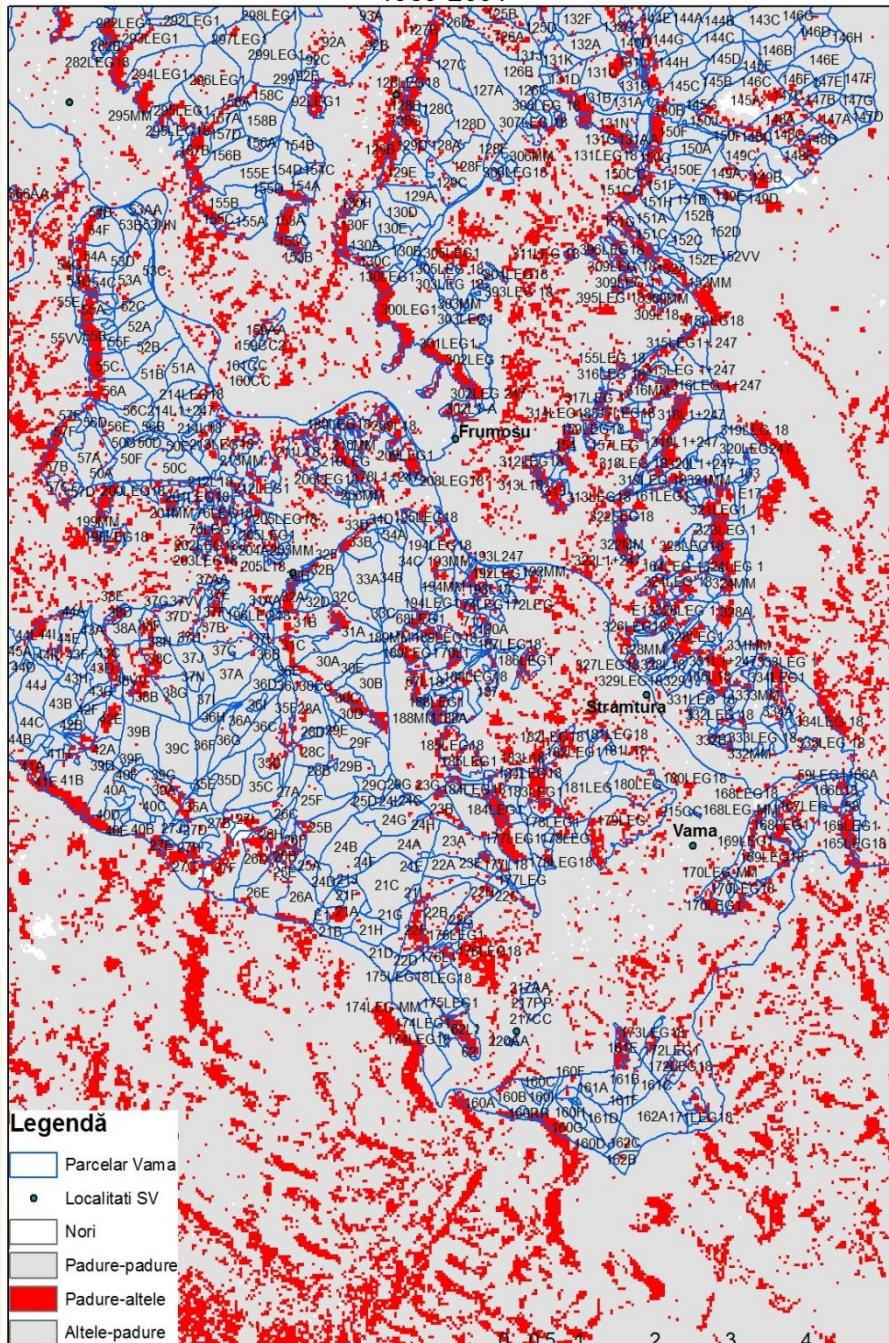
Evoluția vegetației forestiere
Zona Vama - 2001



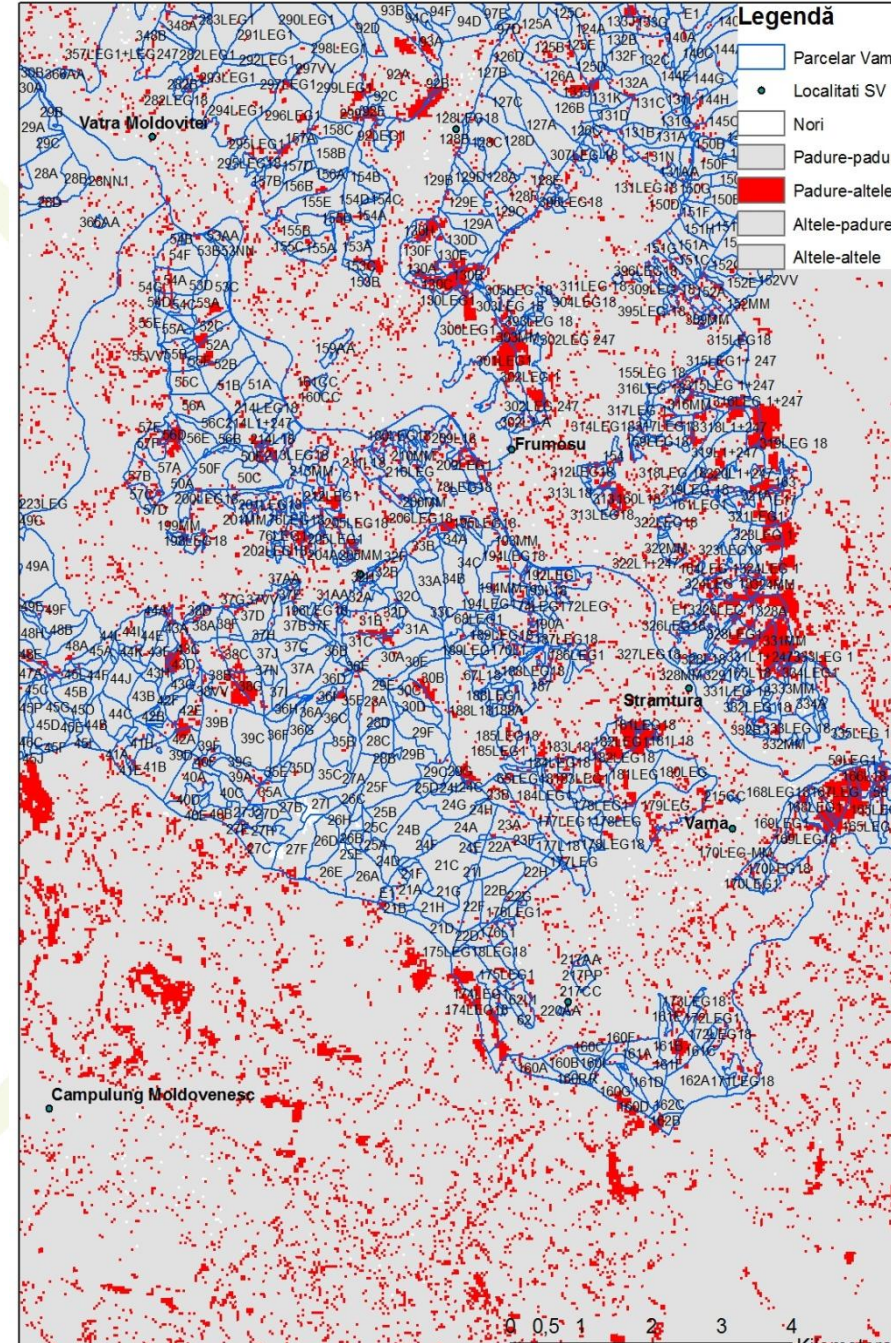
Evoluția vegetației forestiere Zona Vama - 2002



Perturbări Vama
1989-2001



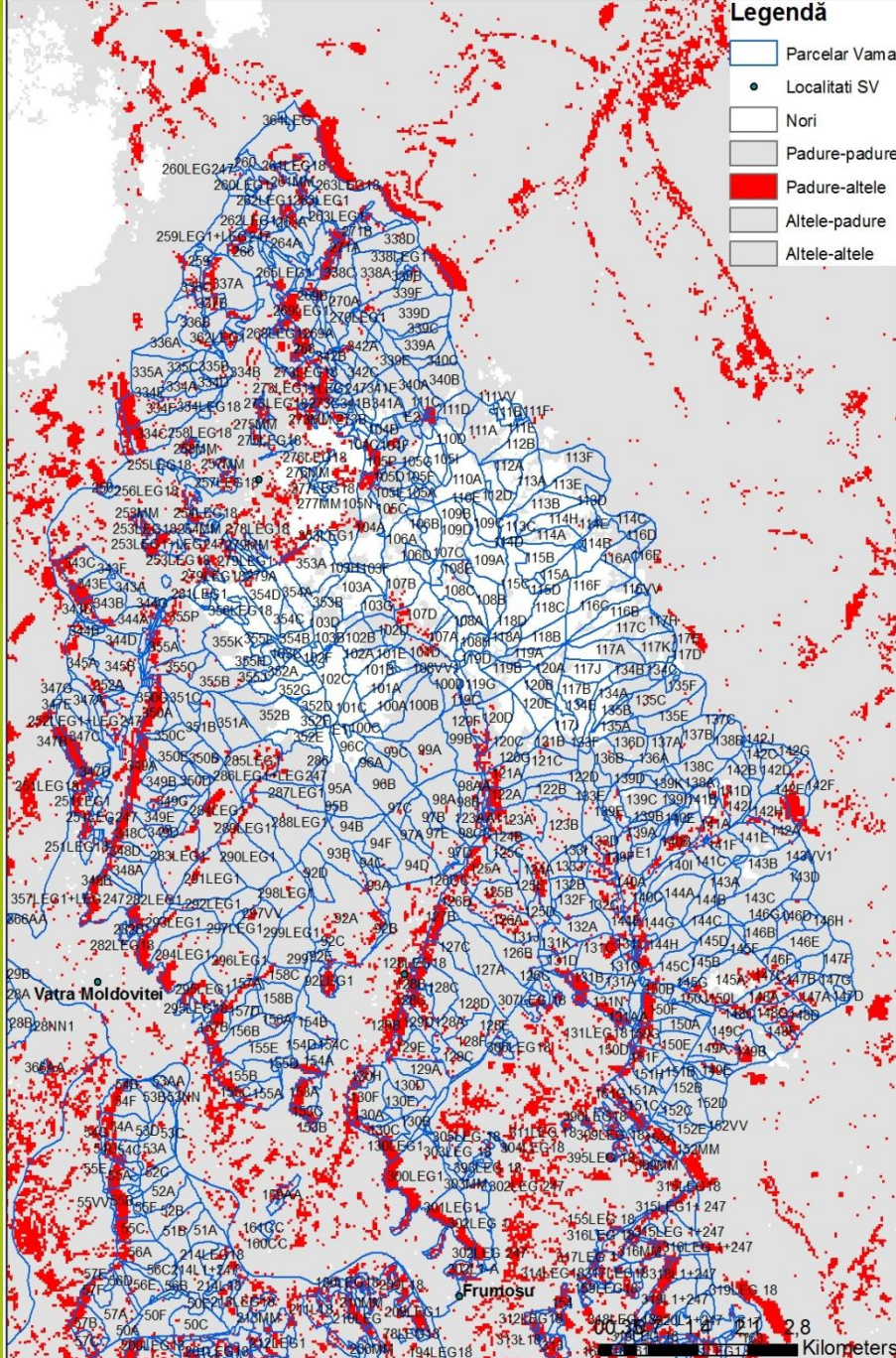
Perturbări Vama
2001-2002



Perturbări Vama
1989-2001

Legendă

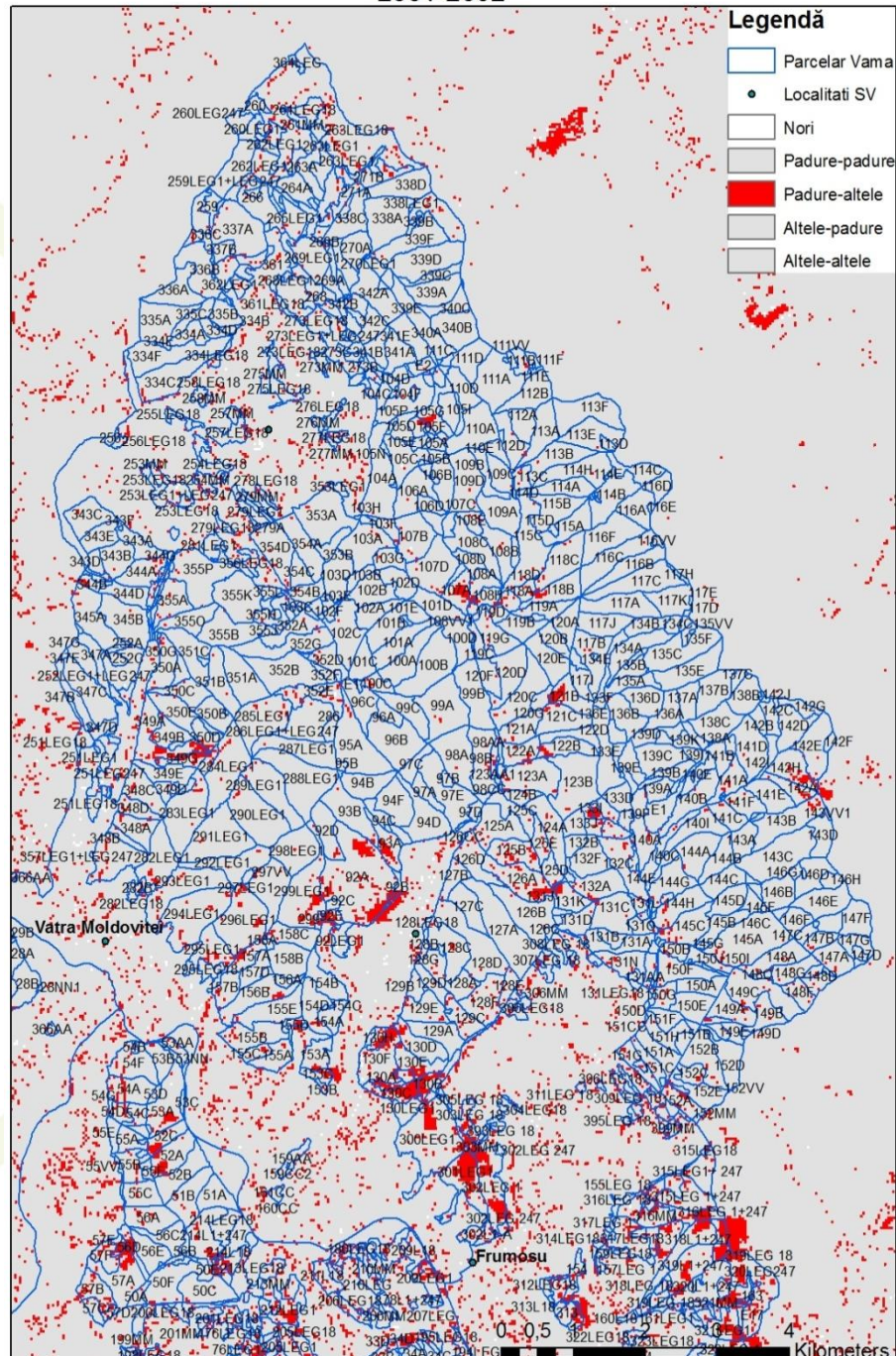
-  Parcelar Vama
-  Localitati SV
-  Nori
-  Padure-padure
-  Padure-altele
-  Altele-padure
-  Altele-altele



Perturbări Vama
2001-2002

Legendă

-  Parcelar Vama
-  Localitati SV
-  Nori
-  Padure-padure
-  Padure-altele
-  Altele-padure
-  Altele-altele





8. Conclusions

- ❑ Image Classification Landsat 5 TM and Landsat 7 ETM+ was the principal component in drawing disturbance maps. The work aimed that the number of classes to be optimum in classification in order to present as closely as possible the reality of forest fund
- ❑ The study has shown that satellite Landsat images may be used in the analysis of surface changes and changes of the limits of the forest.
- ❑ The result of the analysis provided an overview of disturbances in the northern Carpathians. Major advantages include low cost of images and the existence of 30 years archive which offers the opportunity to keep track of the transformations which takes place on large scale territories.
- ❑ Anthropogenic disturbances in the period 1989-2011 are distinguished by the natural disturbances from 2001/2002 by the fact that these surfaces are larger and spread evenly over the entire area of Vama forest division in comparison with those affected by windthrows.