New features of IDRISI Taiga 2009

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(September 3, 2009)

Outline:

- **Why IDRISI is useful ?**
- **Segmentation classifier**
- **Earth trend modeling tools**
- **Land change modeling tools**

1. Why IDRISI Taiga is useful?

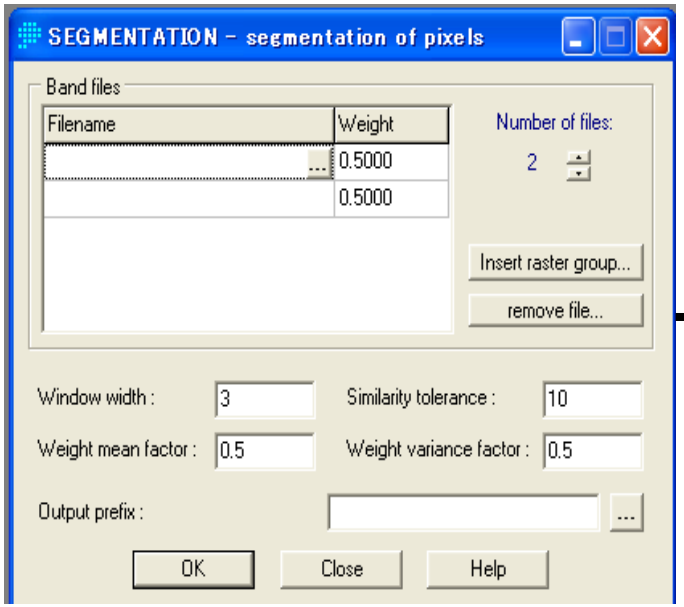
- IDRISI (1100-1166), a cartographer, who led the mission of mapping the world over 15 years, was used over 500 years.
- Become a commercial software product since 1987
- A industry leader in raster analytical functionality
- With **300 program modules** for environmental monitoring and natural resource management
- Being used in 175 countries worldwide
- Pioneering in decision support, classifier development, uncertainty management, change and time series analysis, and dynamic modeling
- Partnering with conservation international, United State Department of Agriculture and other environmental agencies
- Be familiar with IDRISI, you should read **Tutorial** and **Guide to GIS and Image Processing.**
- If you are interested, see the details at www.idrisi.com

New features of IDRISI Taiga

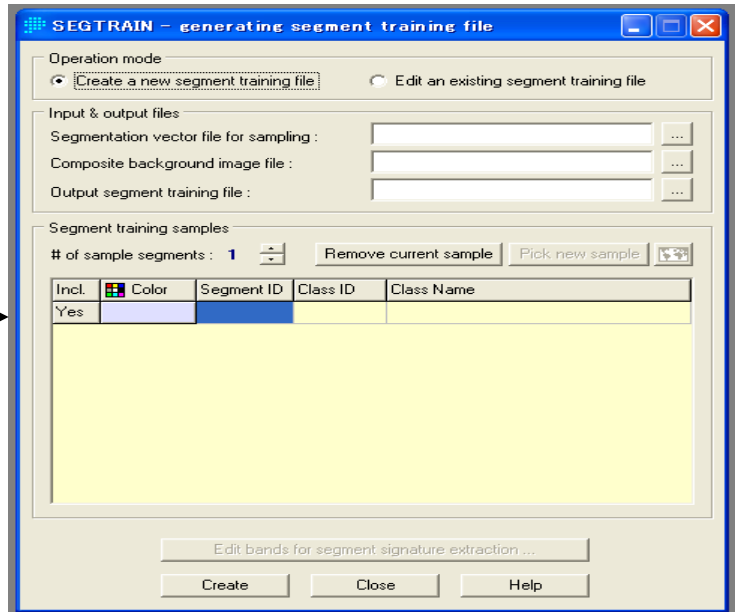
Segmentation classifier	Images are classified according to segments It is a tool for extracting information from satellite data
Earth trend modeler	Analysis of image time series (temporal dynamics), a number of **data mining tools** are included for extraction of earth trends underlying the determinants of variability
Land change modeler	- Land use/cover analysis and prediction with artificial neural network, logistical regression, Markov - Other algorithms are also included for implications and planning

2. Segmentation classifier

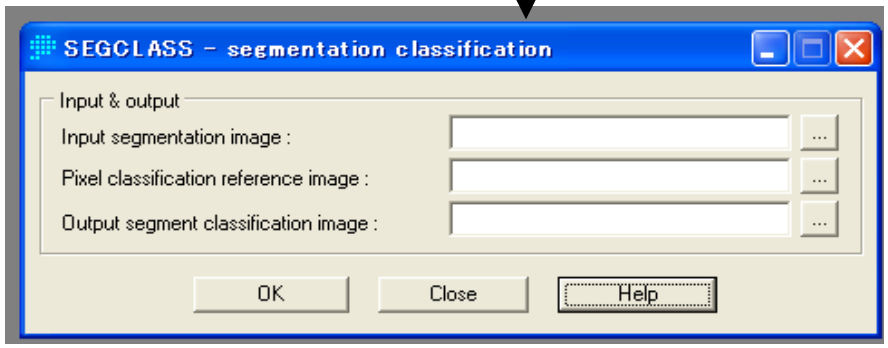
Step 1: Segmenting images

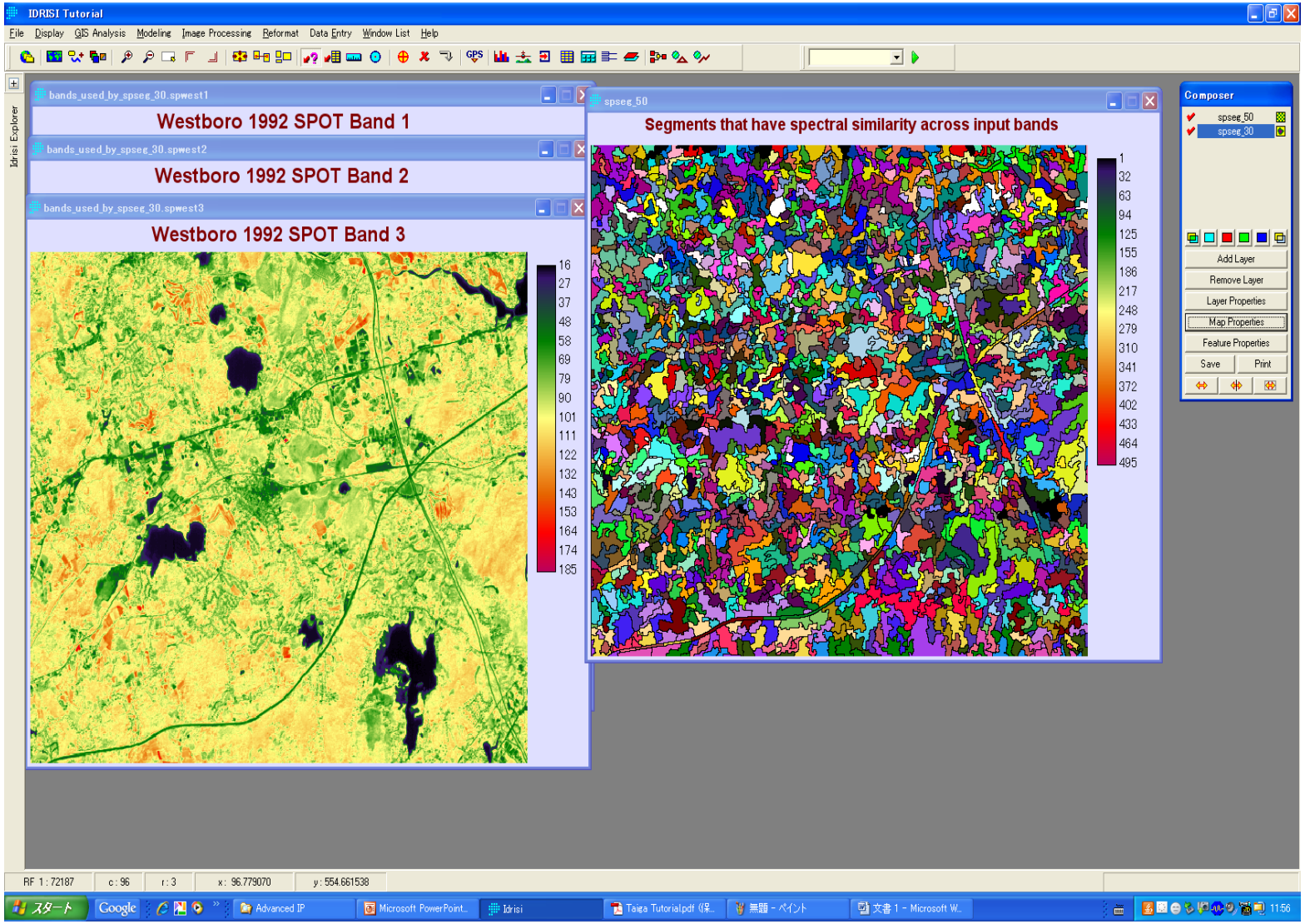


Step 2: Training site development

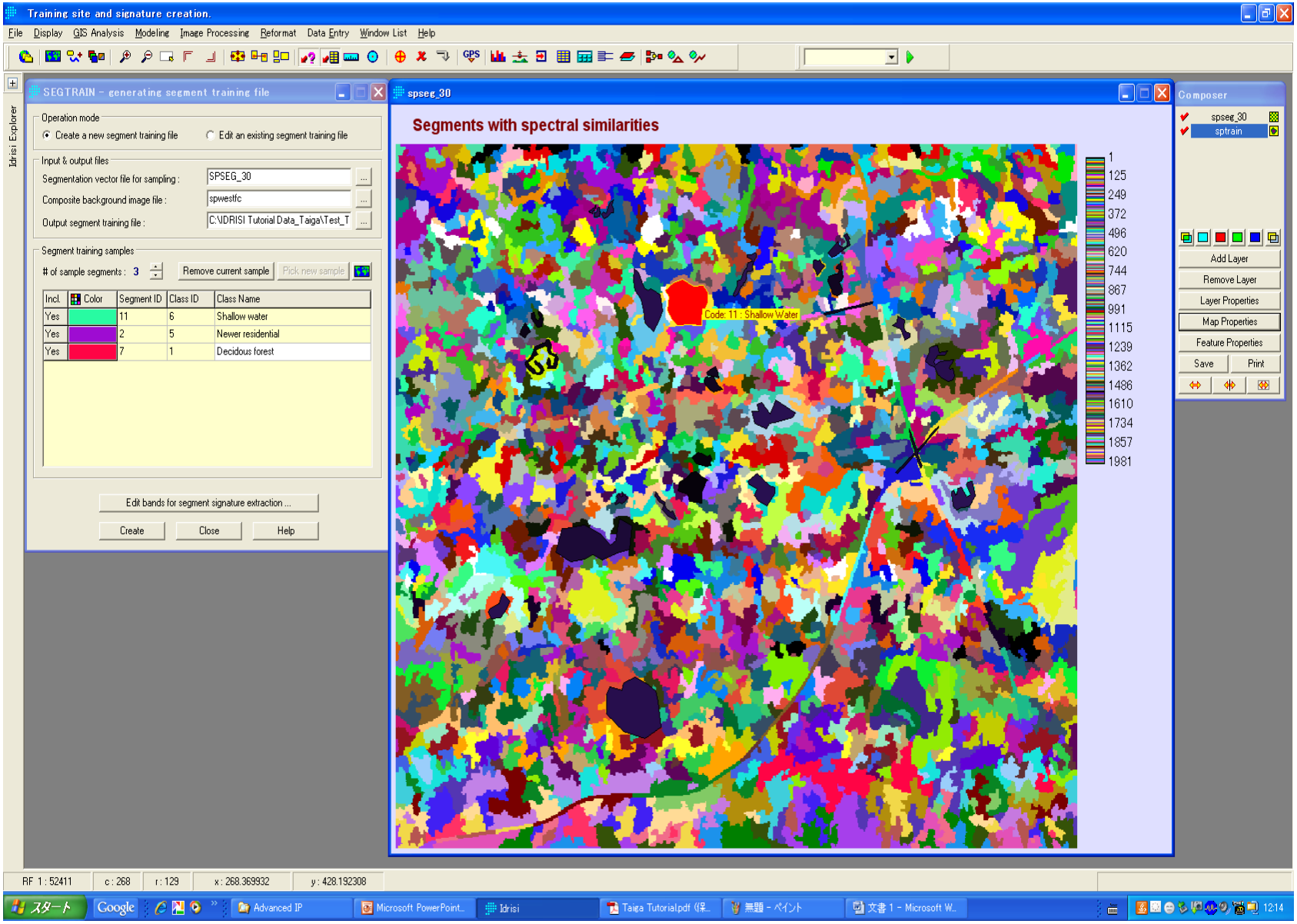


Step 3: Classification

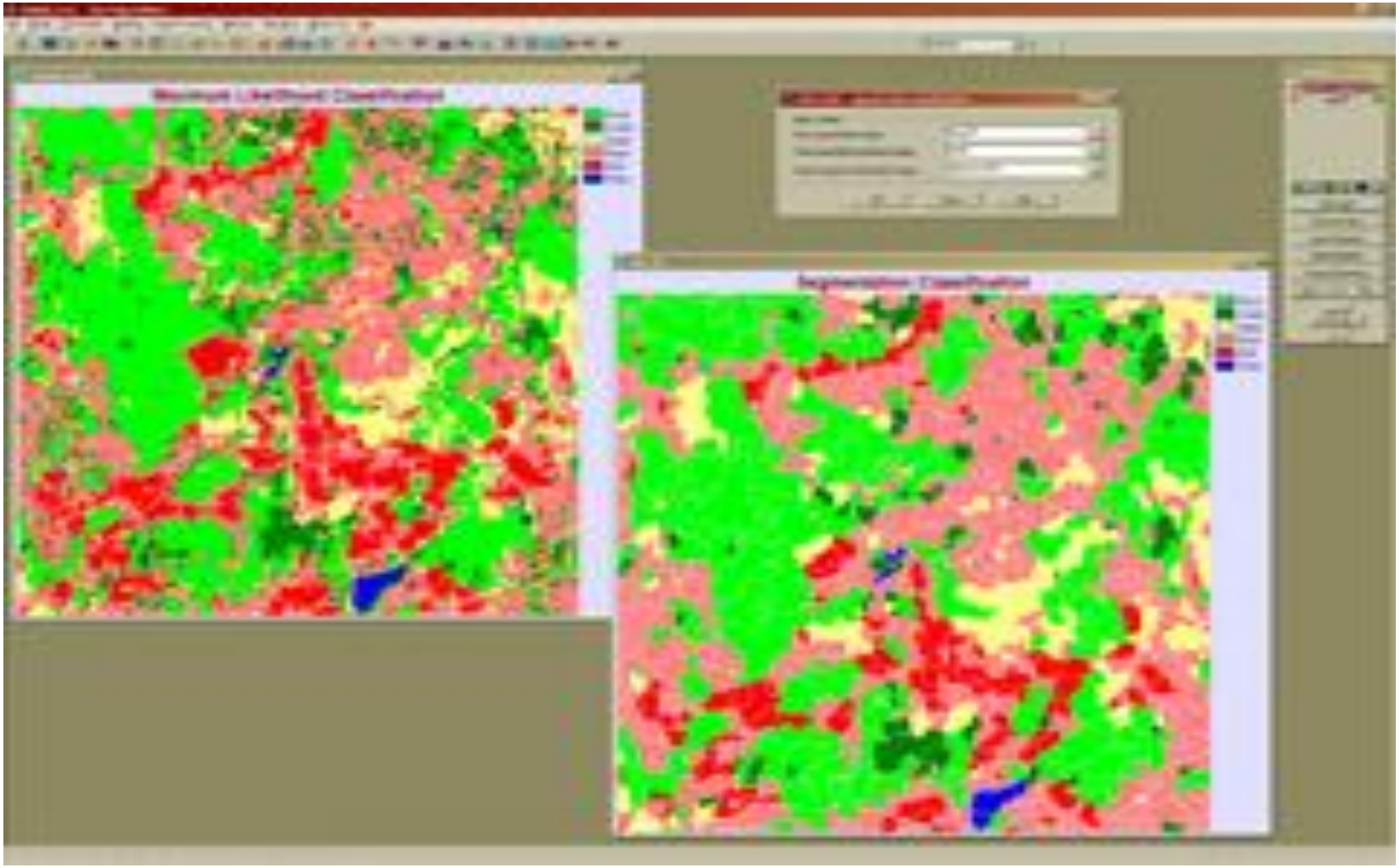




The SEGMENTATION module **creates an image of segments** that have spectral similarity across many input bands.

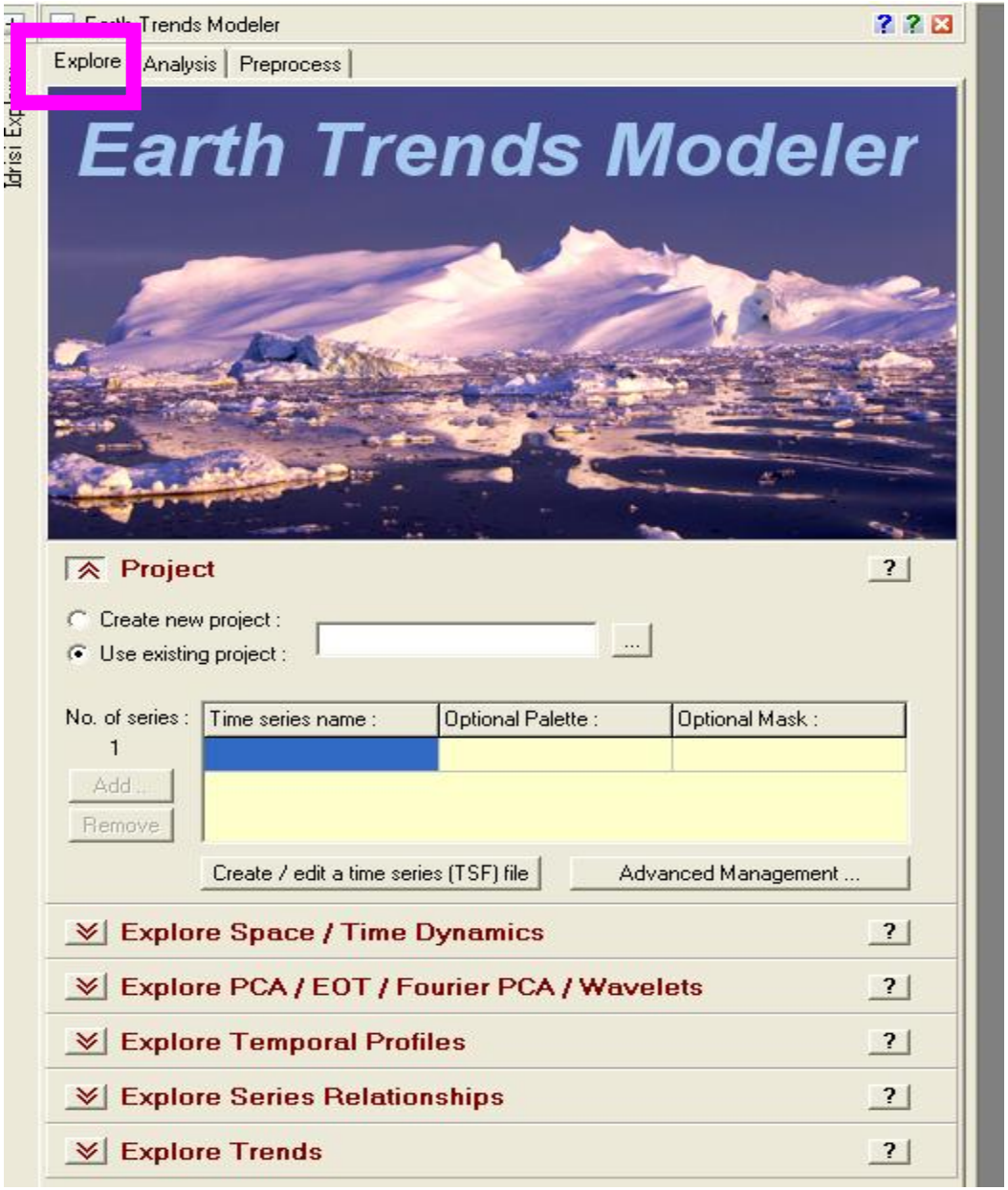


The module SEGTRAIN **assigns these segments to specific land cover types** for the development of training site data. The user interactively selects segments and assigns class IDs and class names.



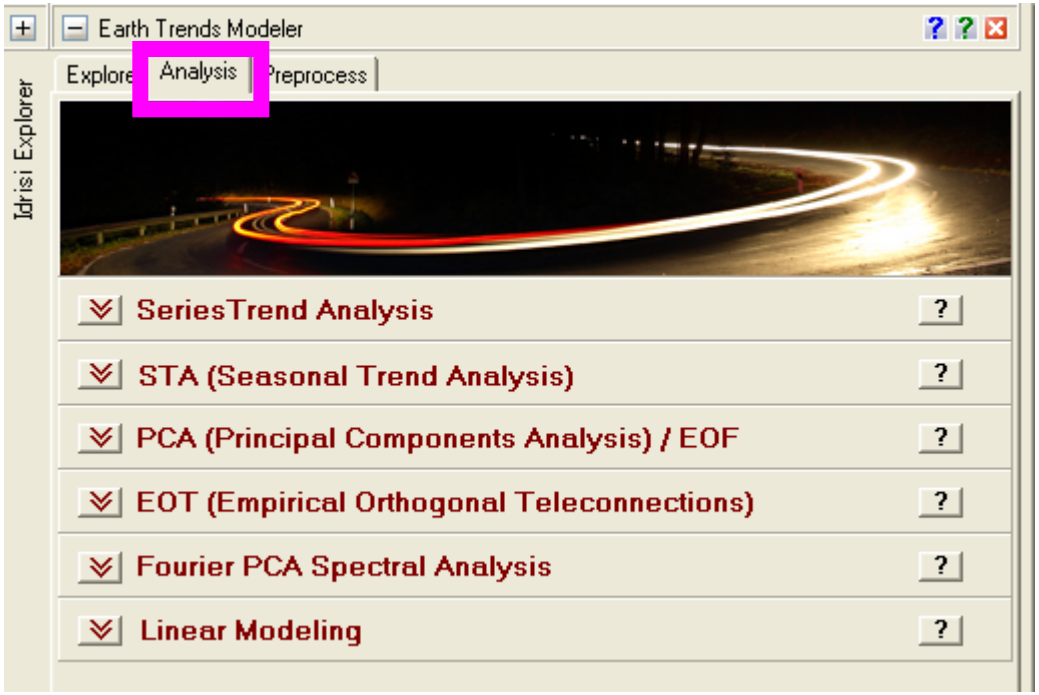
The module SEGCLASS classifies the imagery using **a majority rule algorithm** to assign each segment to a class, based on class majority within each segment as well as the segments of a previously classified image. SEGCLASS can improve the accuracy of a pixel-based classification and produce a smoother map-like classification result while preserving the boundaries between the segments.

3. Earth trend modeling tools

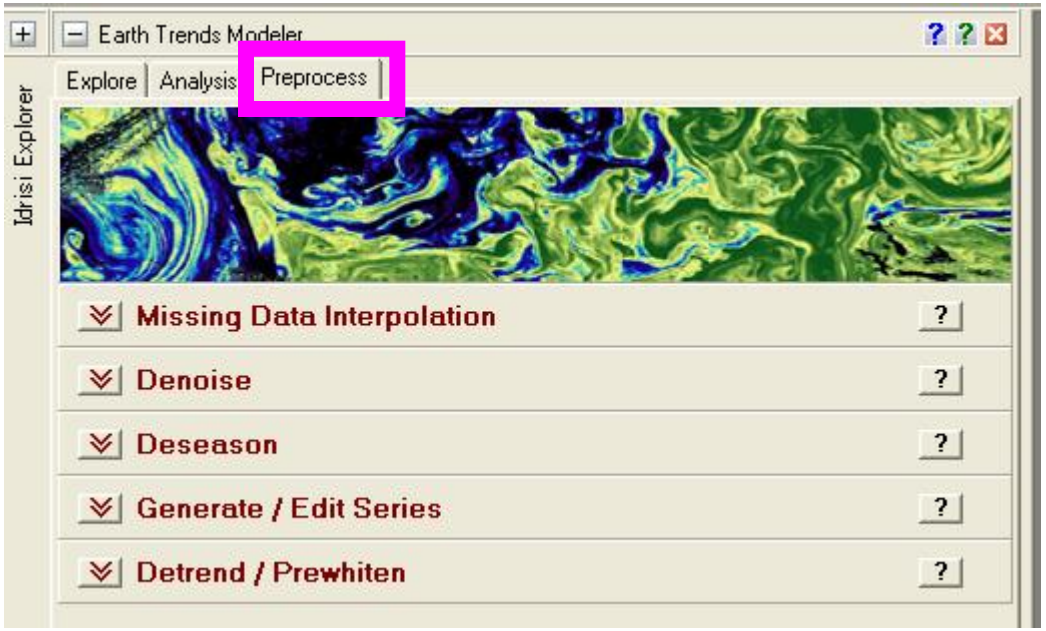


The Earth Trends Modeler is an application within IDRISI **focused on the analysis of earth trends over time**. It comprises of three tabs: Explore, Analysis and Preprocess

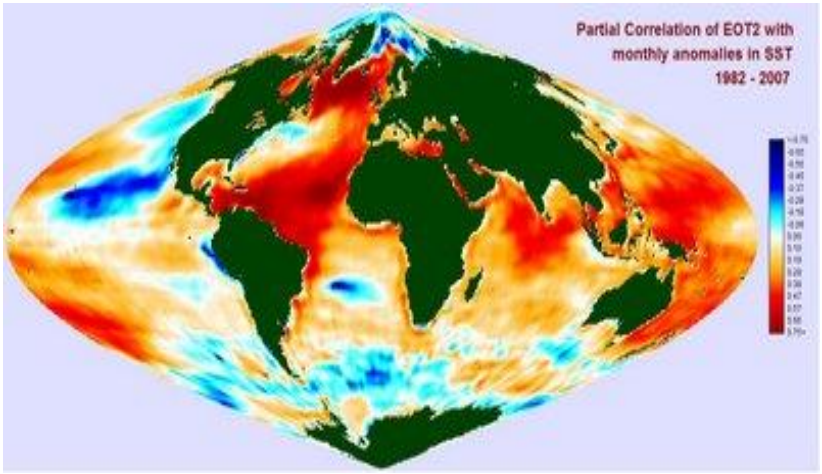
-Explore--visualize and examine through interactive exploration tools the series and analytical results processed from the Analysis tab



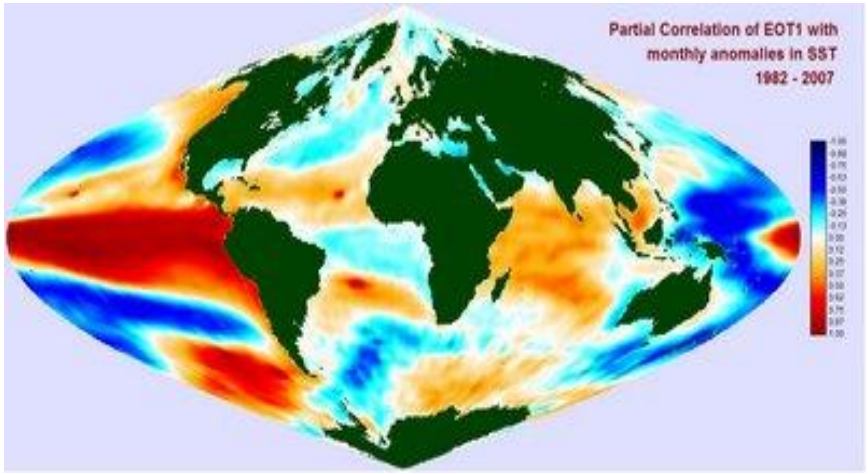
- Analysis--analyze through a variety of processes the series over time



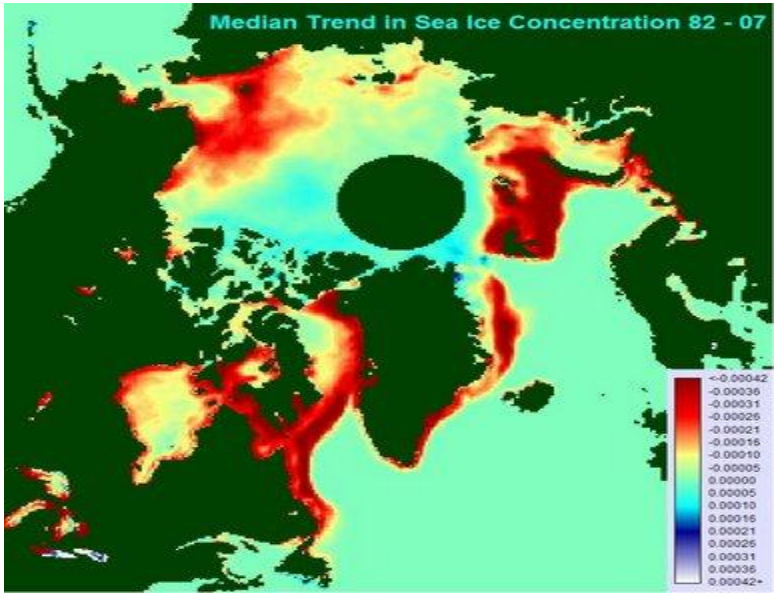
- Preprocess--preprocess and edit the series for input to the Explore and Analysis tabs



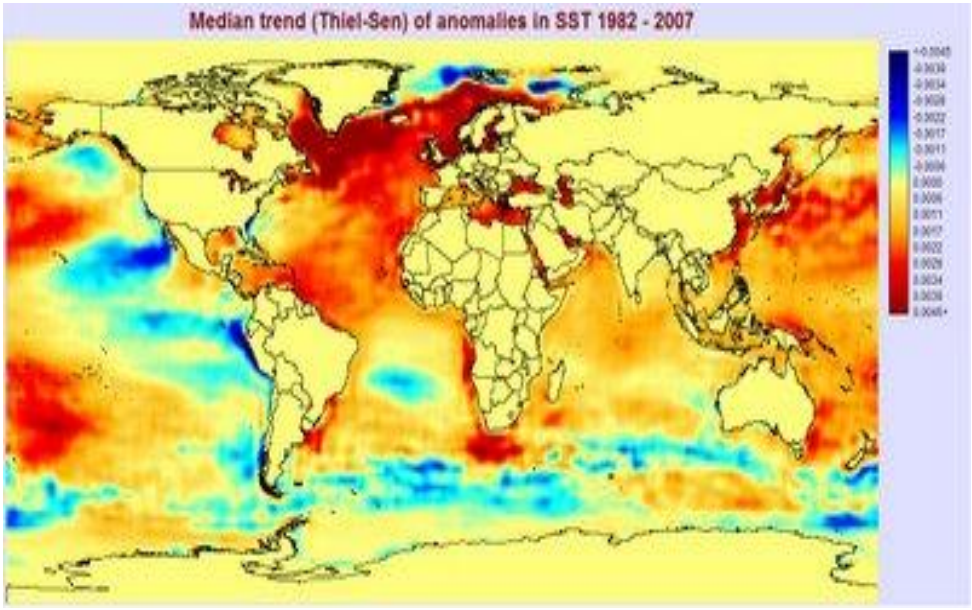
Monthly anomalies in **sea surface temperature** from 1982-2007, familiar to El Nino / La Nina (ENSO) event



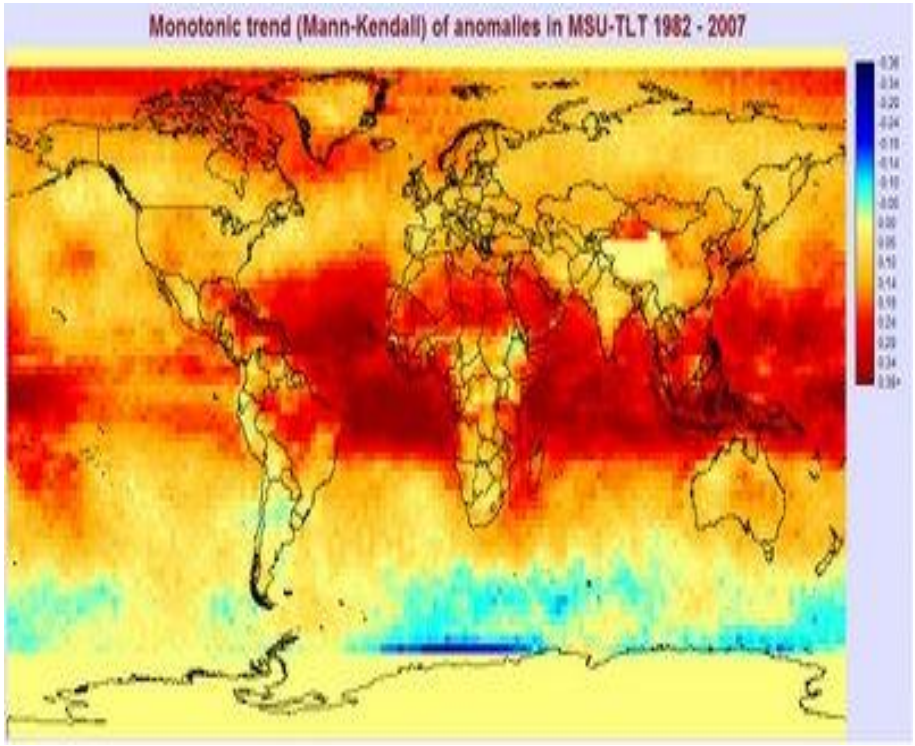
Largest pattern of space-time variability in sea surface temperature anomalies **after the effects of ENSO have been removed**

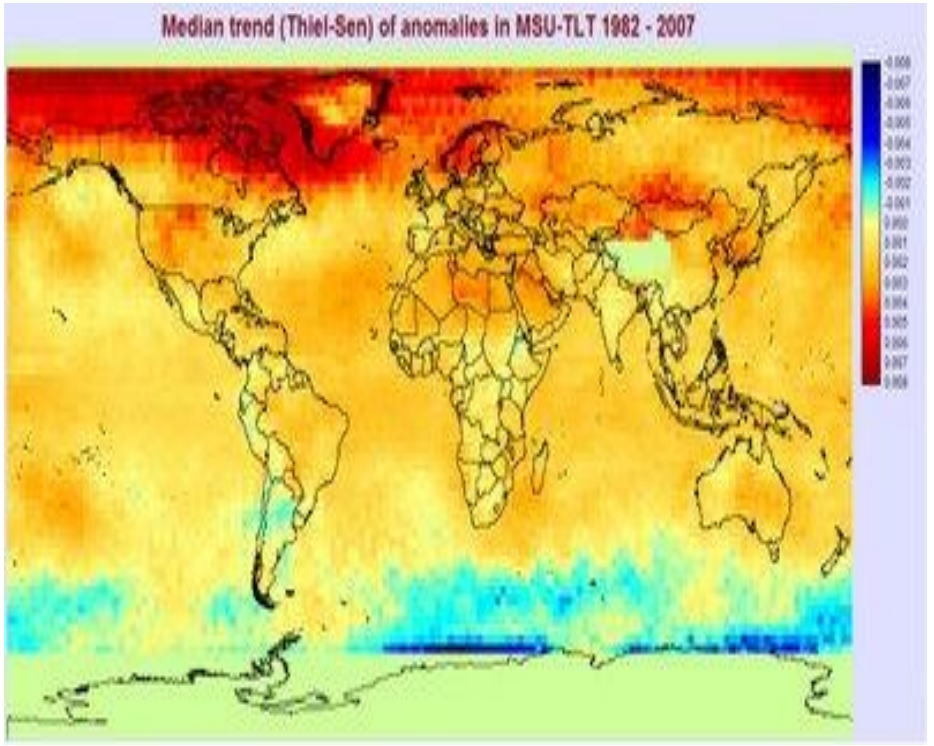


Median trend in **monthly sea ice concentration** from 1982 - 2007



Median trend of **anomalies in monthly sea surface temperatures** from 1982 to 2007





Median trend of **monthly lower tropospheric temperatures** from 1982-2007

4. Land change modeler

Land change modeler can help scientists to answer the following key questions

(1) Why land-use changes are occurred or what are the drivers of these changes?

(2) How much land would be expected to change in the future?

(3) What will happen if current changes continue in the future (effects of changes)

Identification of **potential** for change (suitability for change)
Method: use of MLPNN for classifying potential for change

↓

Land demand for future using past experience (amount of change)
Method: use of Markovian transition probability matrix

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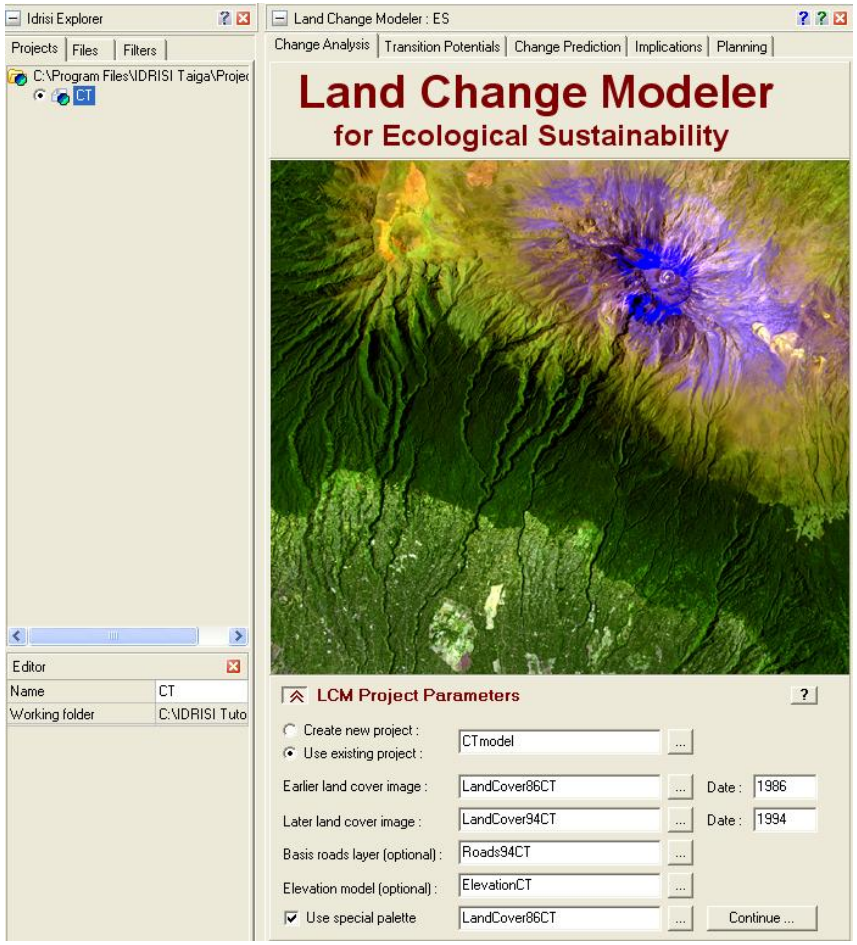
Based on the potential and the amount, land is **allocated** for future patterns
Method: use of competitive land allocation procedure

Step-by-step implementation of LCM

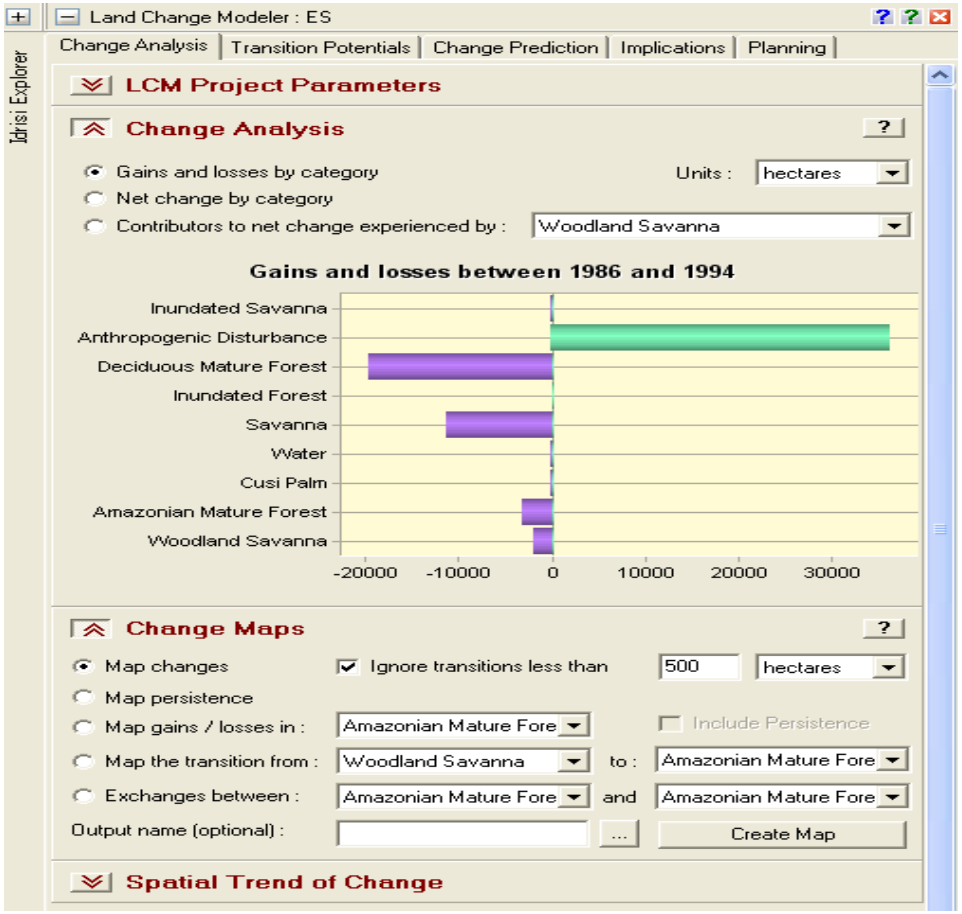
Step 1: Preparing land-use maps, other datasets such as DEM, biophysical, socioeconomic attributes

Step 2: Creating a new project and inserting inputs (a)



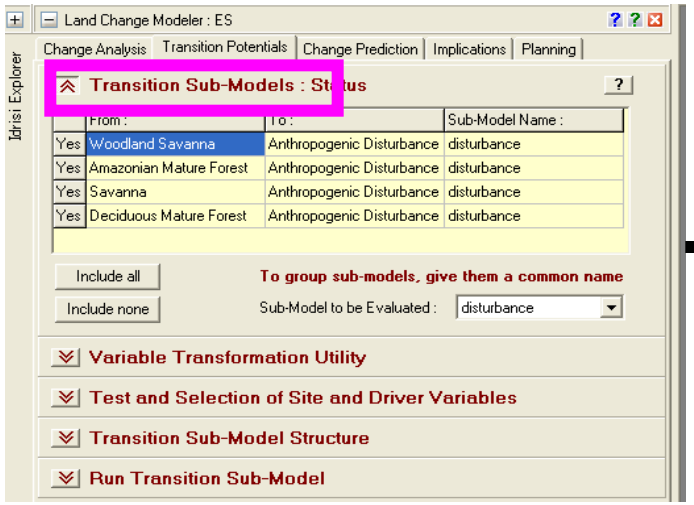
(a)

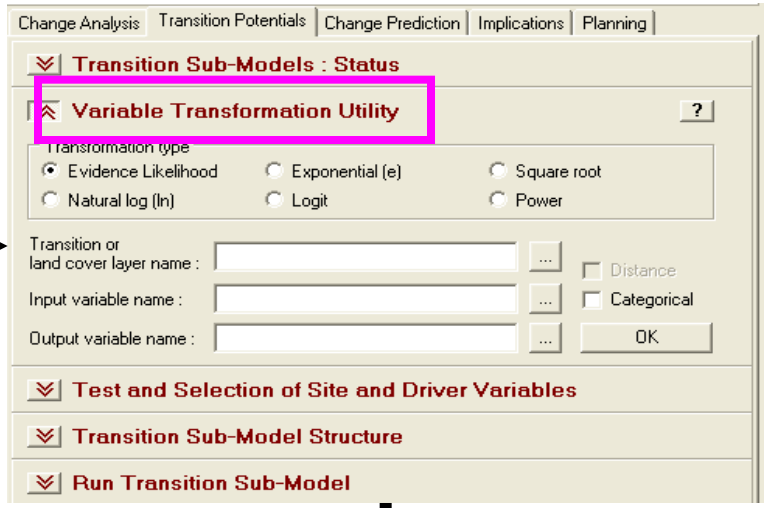
Step 3: Conducting change analysis (b)

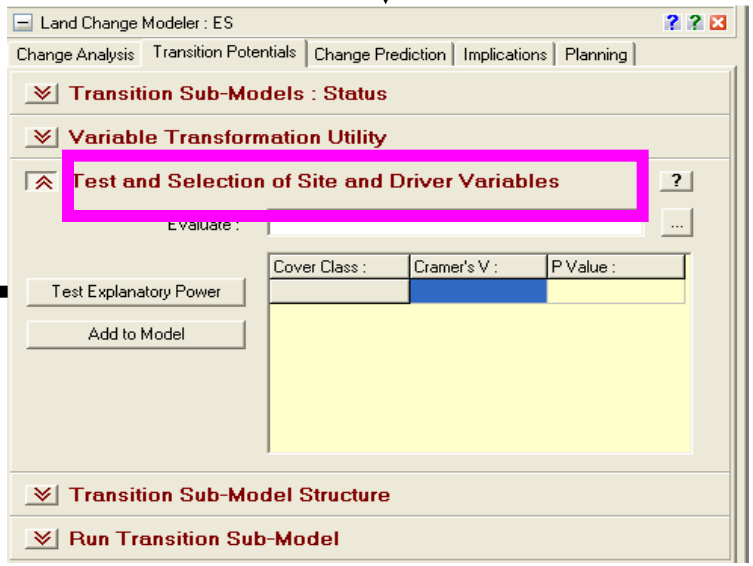


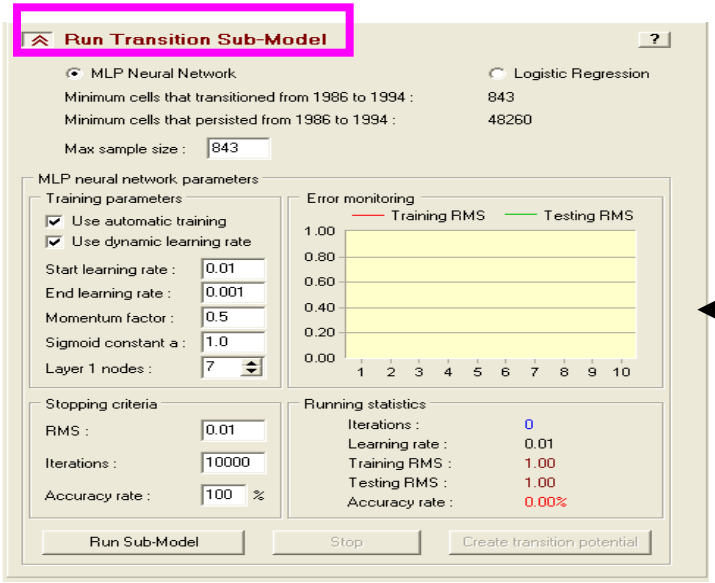
(b)

Step 4: Modeling transition potentials

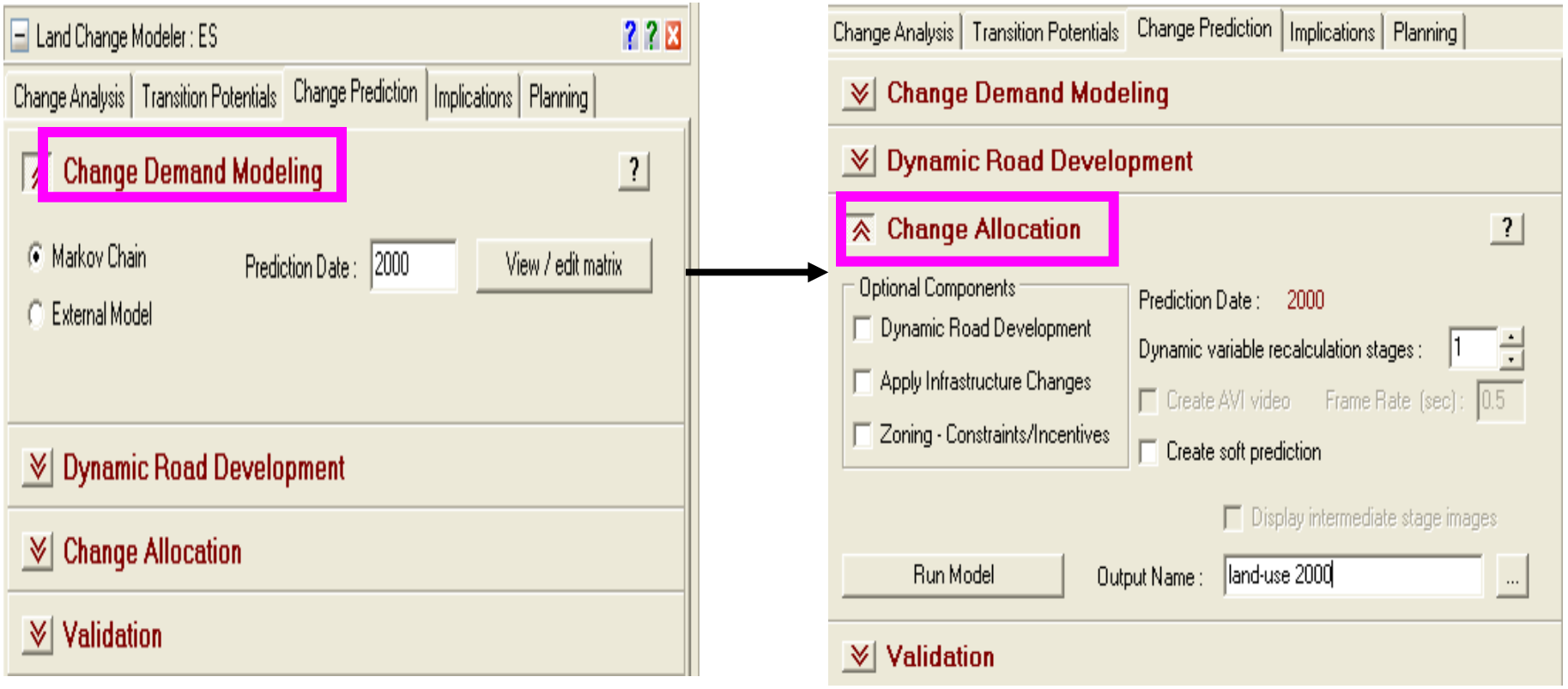








Step 5: Change prediction



Step 6: Model validation

Evaluate the agreement in quantity and location in the modeled period.

Thank you

for your attention!