Lecture given at the

WCS Workshop on Land Change Modeling for REDD

October 25– 29, 2010

Wildlife Conservation Society - Bronx Zoo
Bronx, New York, USA

Hosted by

Clark Labs and the Wildlife Conservation Society

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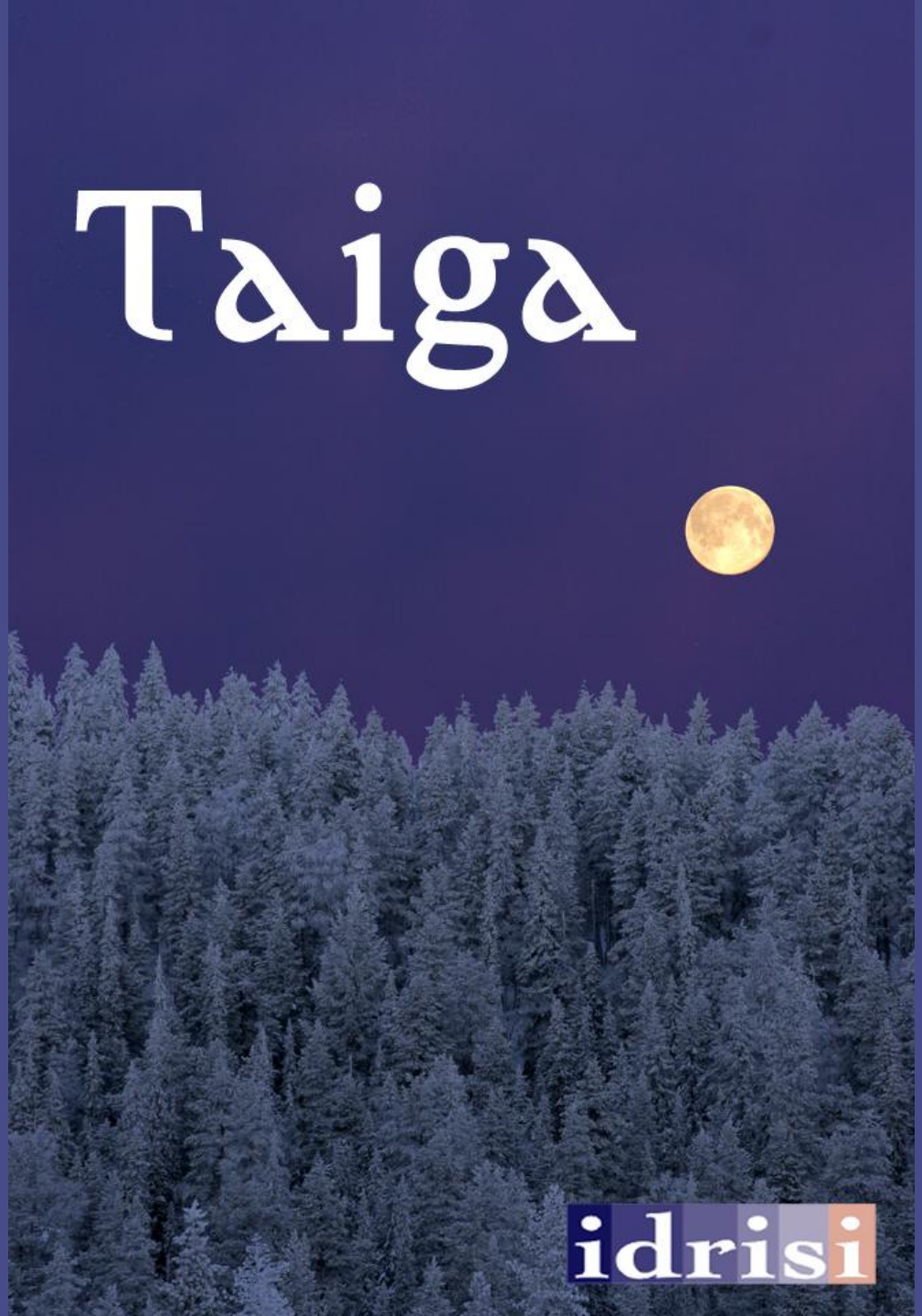
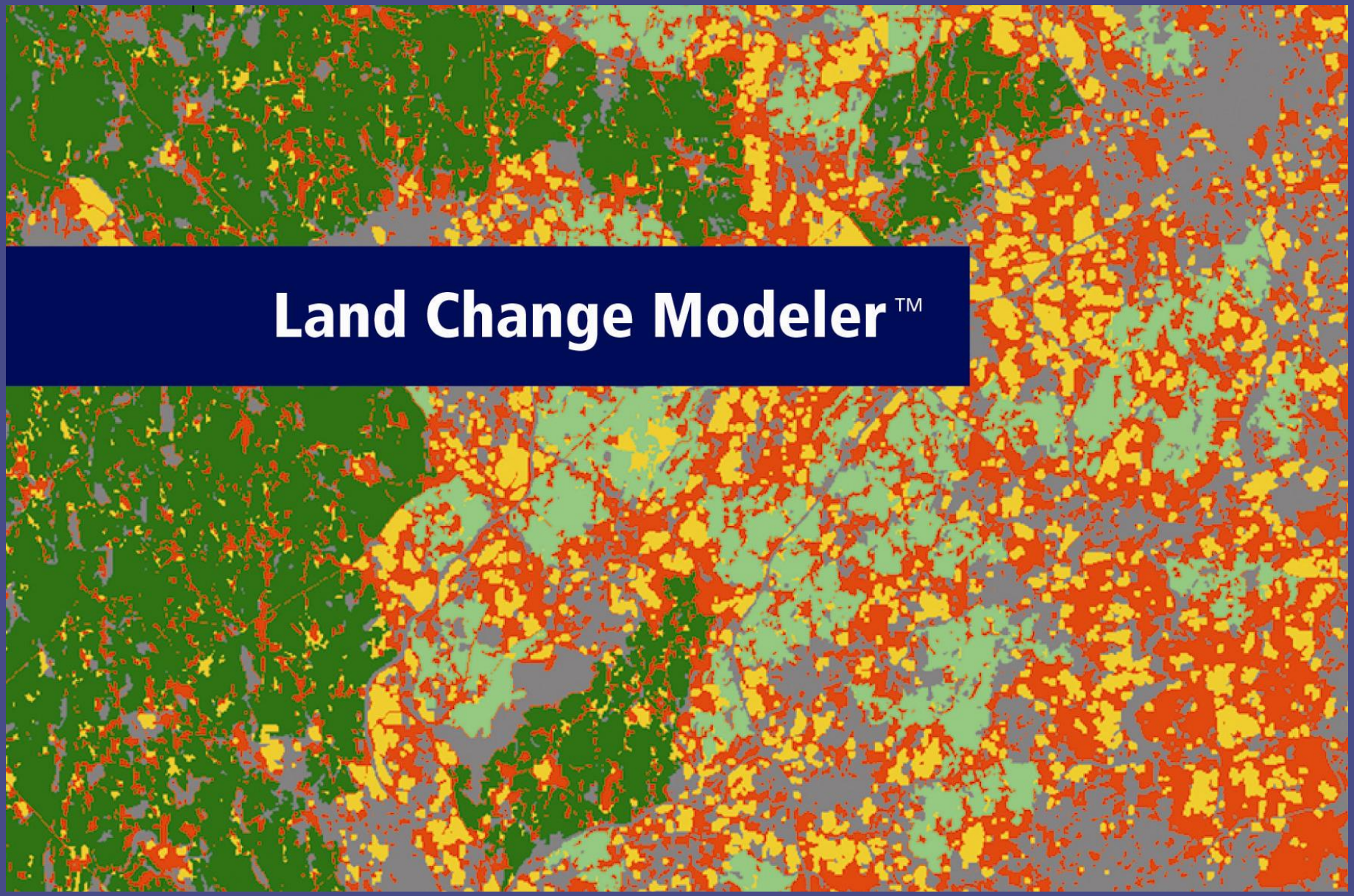
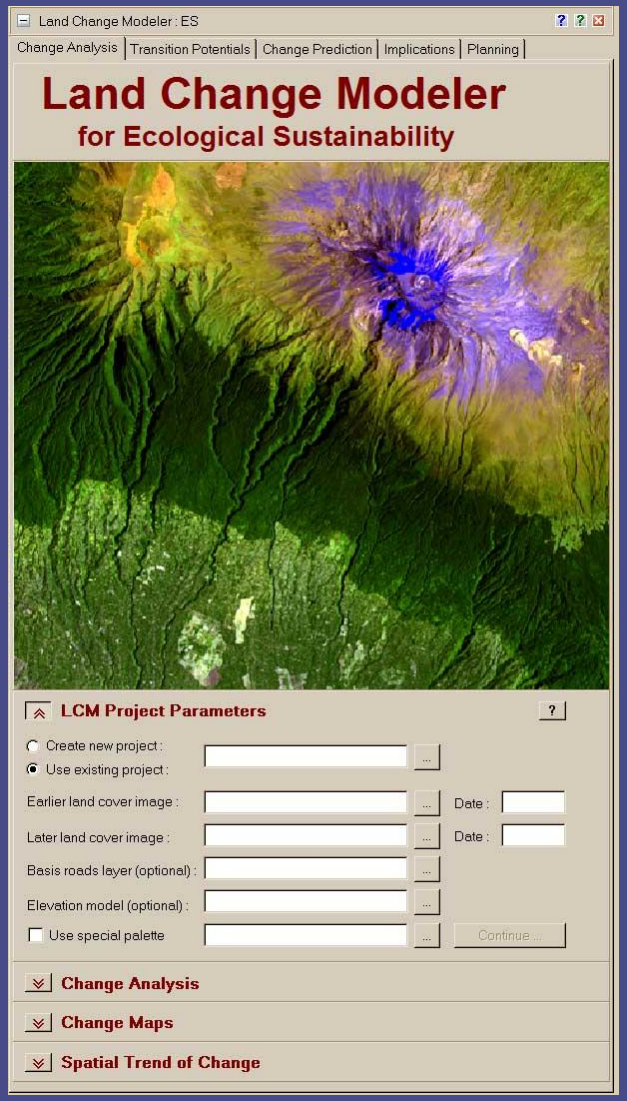
Taiga




Land Change Modeler™

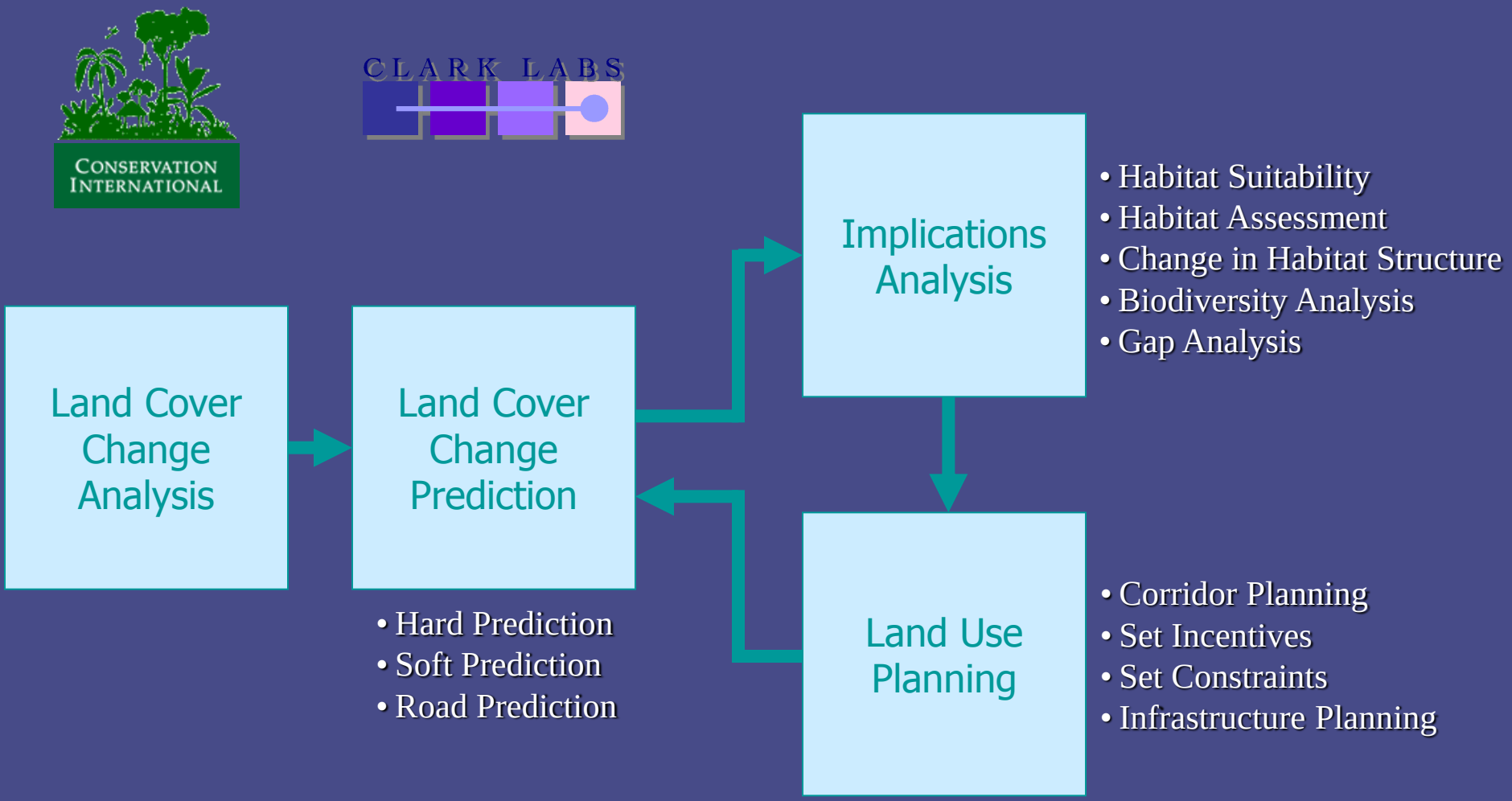
Introduction to Idrisi Land Change Modeler (LCM)

In this section you will learn:



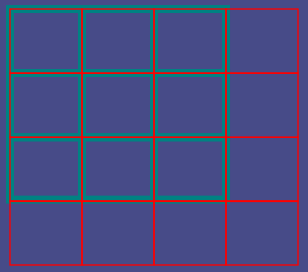
- LCM Schematic
- Data Preprocessing
- Sequential Categories
- Legend/Palette Creation
- Creating Project Data
- Creating Project Variables

LCM Schematic



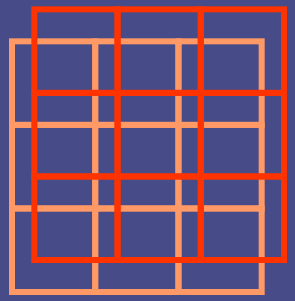
Data Preprocessing

≠ Rows and columns



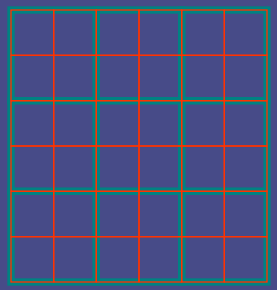
Use **Overlay** or **Window** to have all data in the same extent

≠ Projection or offset



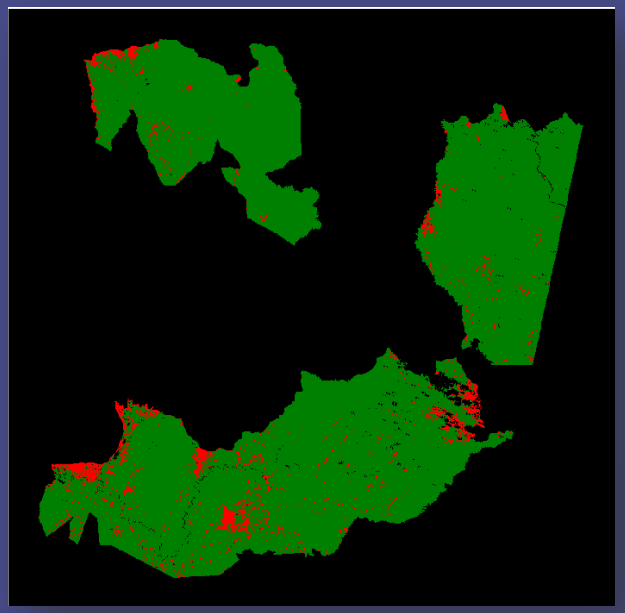
Use **Project** or **Resample** to have all data overlay exactly

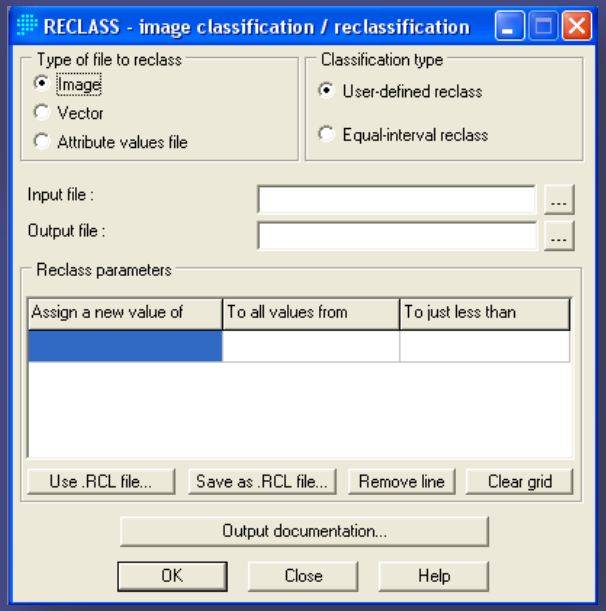
≠ Cell size



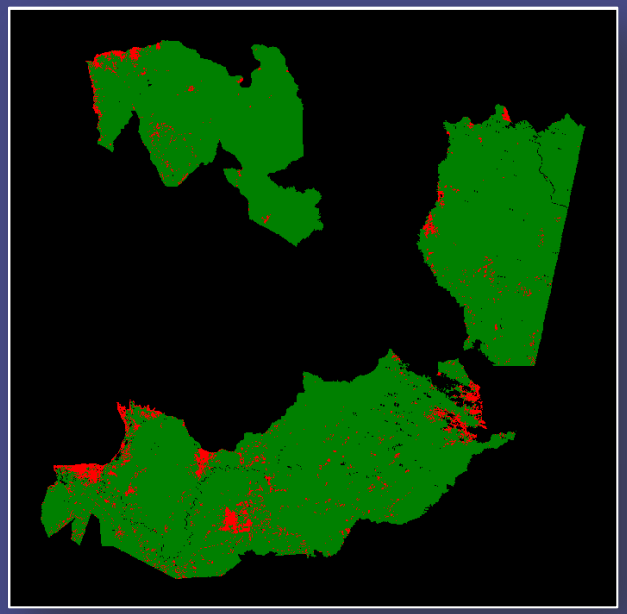
Use **Expand** or **Contract** to change cell size

Sequential Categories





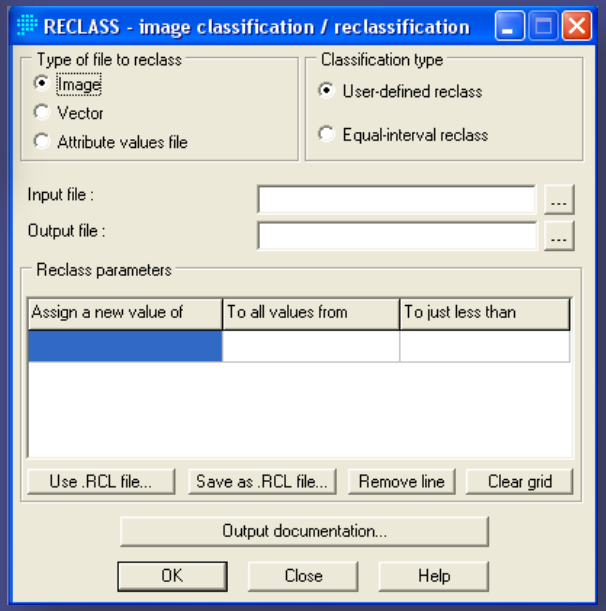
Sequential Categories



0 – Background

1 - Forest

2 – Non Forest



*Categories must always have the same pixel numbers

Legend Creation

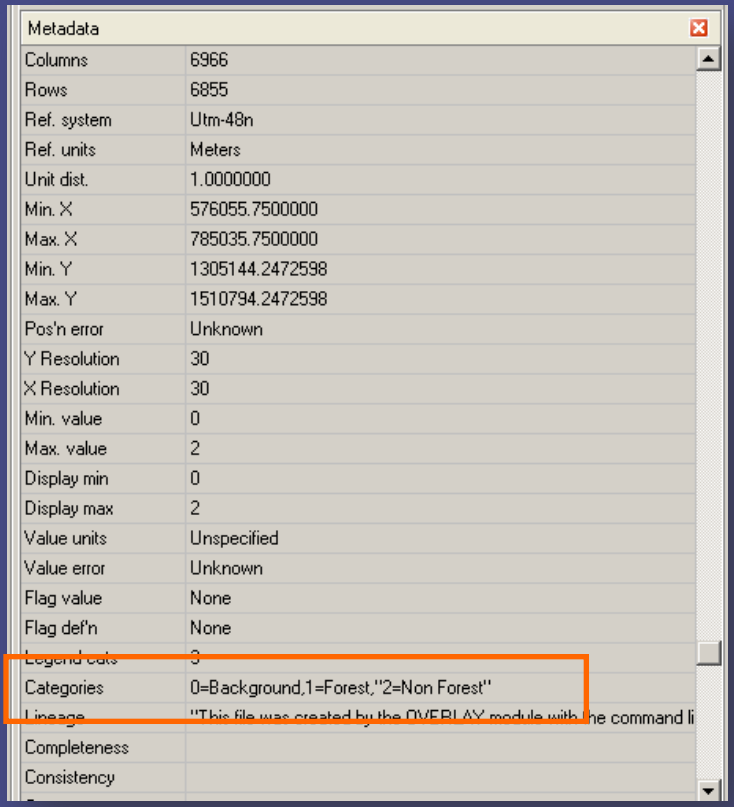
0 – Background

1 - Forest

2 – Non Forest

This legend information needs to be added to the image

• Click on the Files Tab, and find the Categories field in the Metadata window:



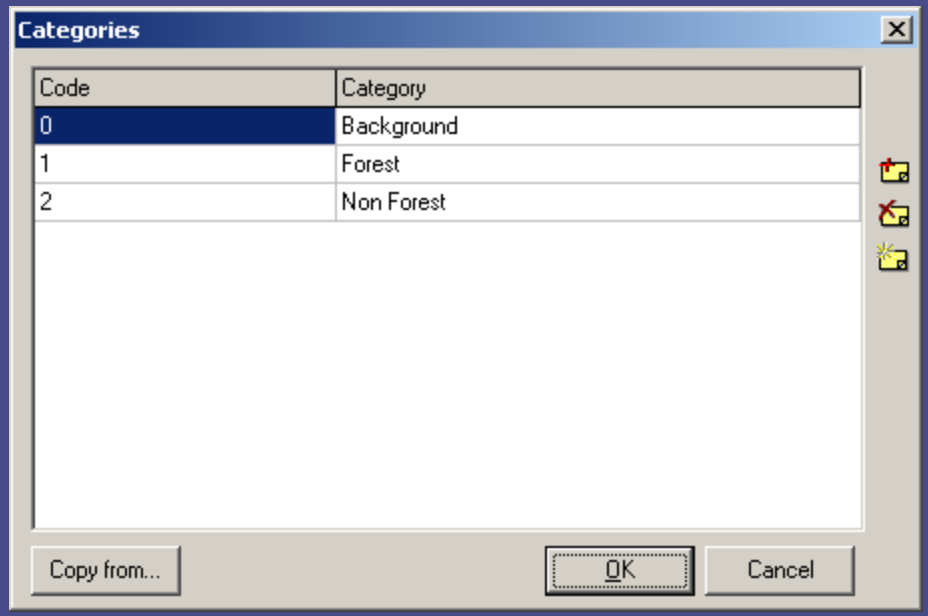
Legend Creation

- Fill in the Categories as they correspond to the pixel number:

0 – Background

1 - Forest

2 – Non Forest



Sequential Categories and Legend Creation

- Task: Use the **Reclass** tool to change the sequence of the numbers in 60m_landcover_1998_rc image.

- Task: Go to the Metadata window and scroll down to **Categories**. Click on the ellipsis (…) and enter in names for all of your categories.

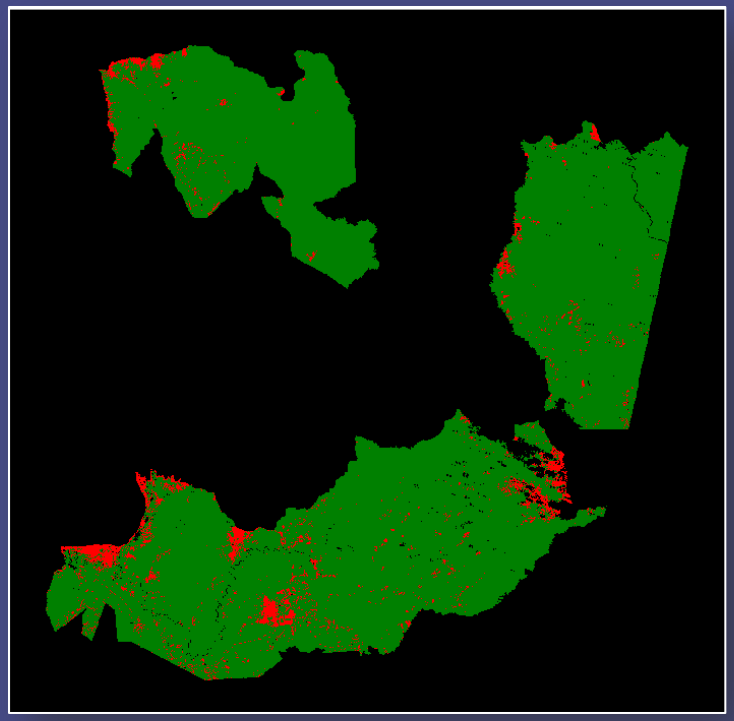
- Task: Click on the Display menu and choose Symbol Workshop. Create a palette that corresponds to your categories for your 60m_landcover_1998 file and save it as 60m_landcover_1998. Close the workshop and reopen your 60m_landcover_1998.

Creating Project Datasets

The Land Change Modeler is able to incorporate a variety of project area variables, which are created from project area datasets.

Examples

- Reference Area
- Project Area
- Leakage Area
- Land Use/Land Cover
- Soil Types
- Roads
- Water Bodies
- Town Locations
- Political Boundaries
- Elevation



Creating Project Datasets

- Task: Open the 60m_landcover_1998 land use map in the Input_Raster folder. Add the Roads_1998 vector line file from the Input_Vector folder over the land use map. Choose Outline White as the symbol file. Use RasterVector to make a vector of this point file called Roads_1998 and use the same output reference as one of your landcover maps.

Creating Project Variables

Distance Images
- -from features
- -from land cover types
- -distance vs. cost distance

Elevation Derived Images
- -slope
- -aspect

Evidence Likelihood

Creating Project Variables

Examples:

Categorical Maps

- Land Use/Land Cover – classify satellite data → reclassify to set categories
- Soil Types – import polygon → convert to raster →reclassify to set categories

Features

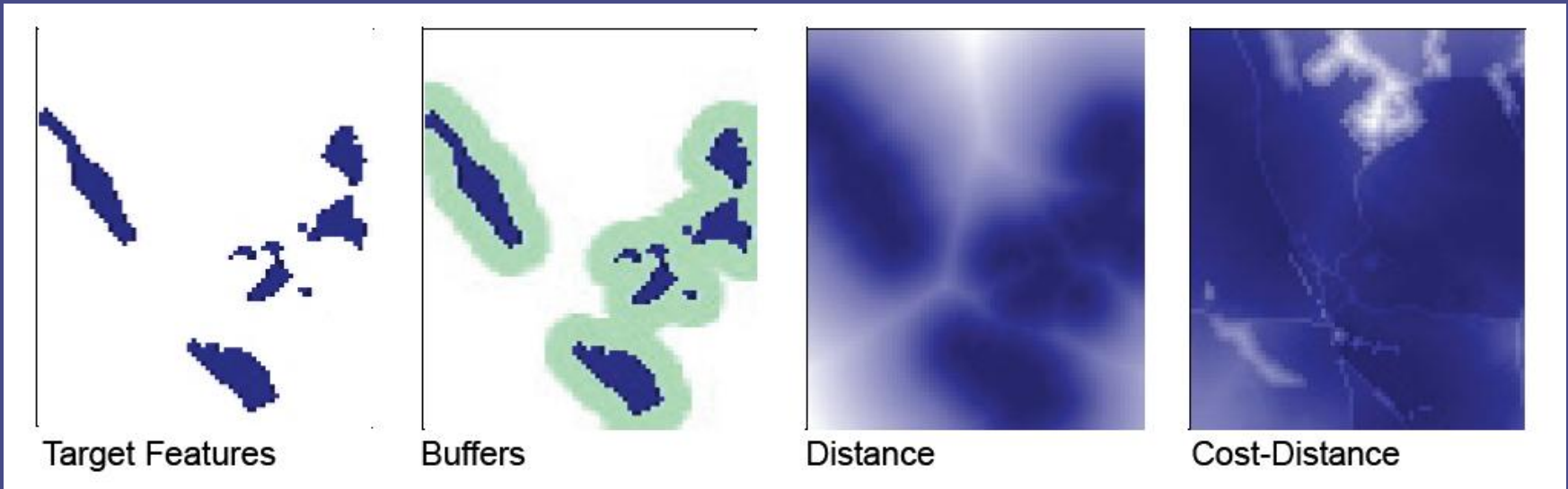
- Roads – import line file → convert to raster → Distance
- Water Bodies – import line file → convert to raster → Distance
- Town Locations – import point file → convert to raster → Distance

Terrain

- Elevation → import digital elevation model (DEM) → create Slope and Aspect

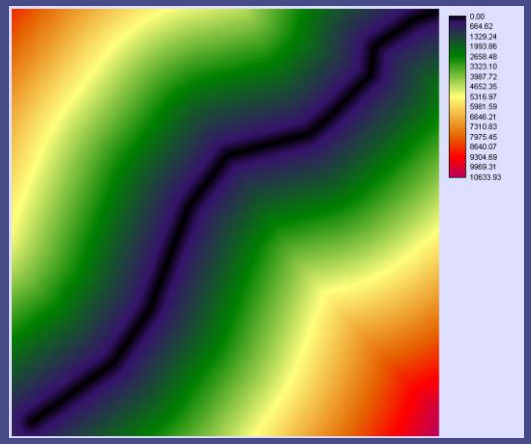
Creating Project Variables

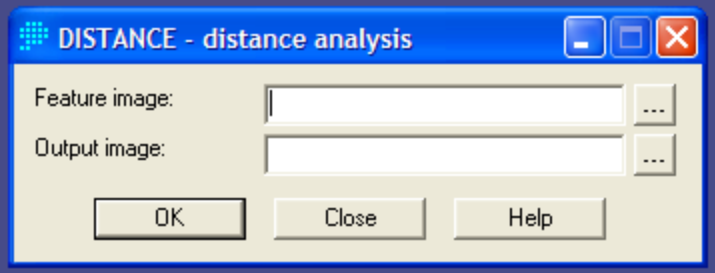
Distance Images

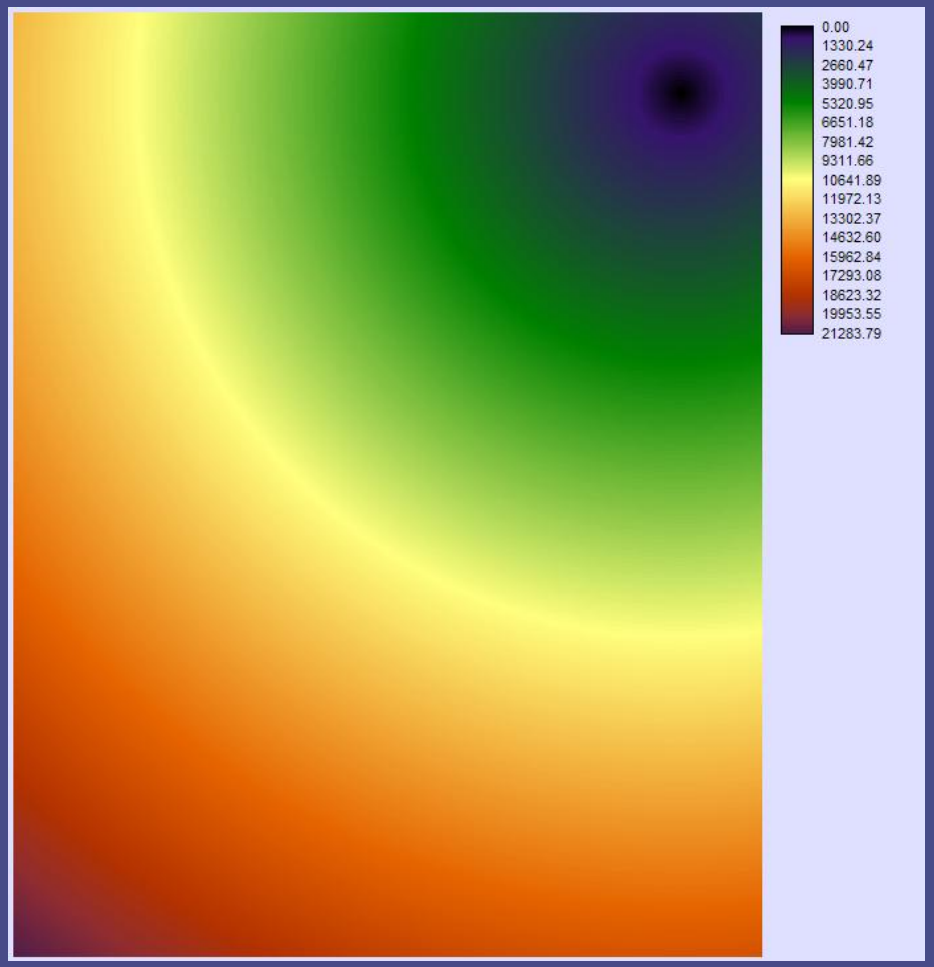


Creating Project Variables

Distance Images

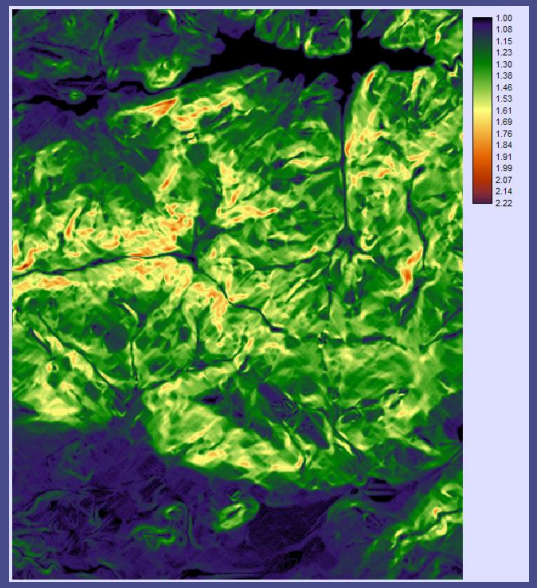


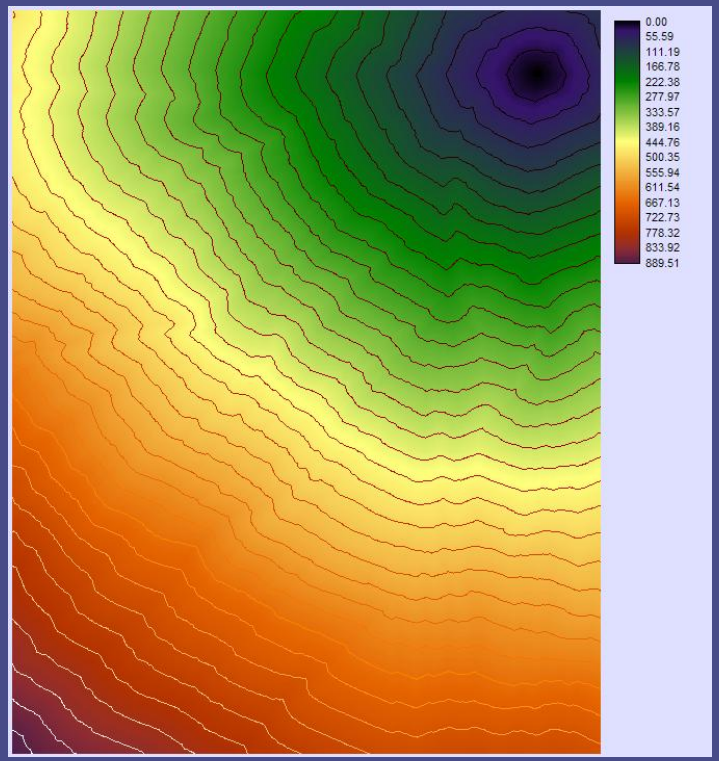


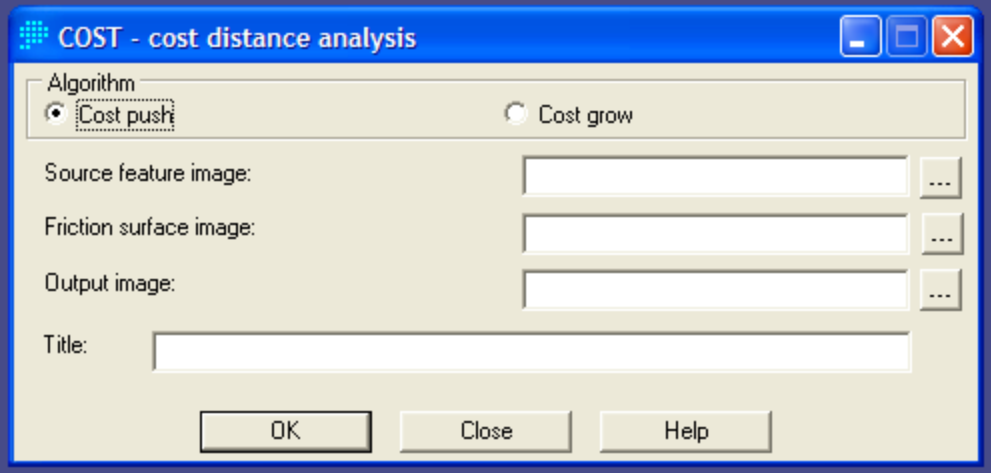


Creating Project Variables

Cost Distance Images







Creating Project Variables

OHT 53

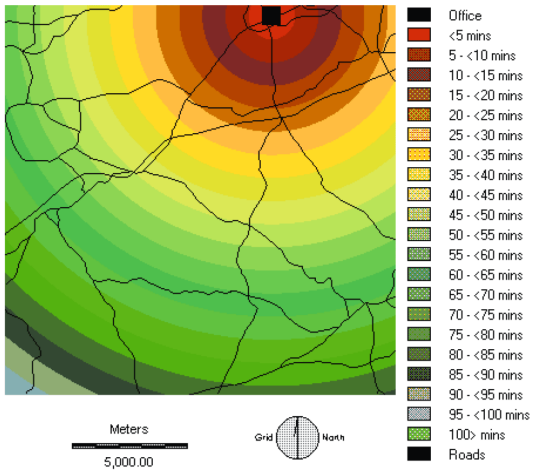


Plate 10 House hunting case study: distance from office calculated using proximity method

Heywood *et al.*, An Introduction to Geographical Information Systems, 2/e © Pearson Education Limited 2003

OHT 54

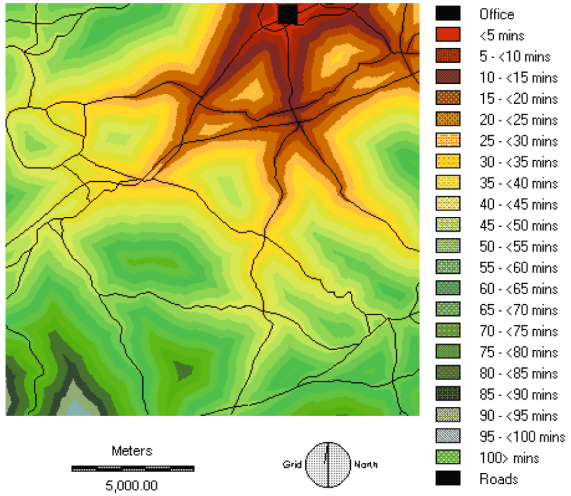


Plate 11 House hunting case study: distance from office adjusted for road network

Heywood *et al.*, An Introduction to Geographical Information Systems, 2/e © Pearson Education Limited 2003

A cost surface contains the minimum cost of reaching a layer from one or more source cells.

Cost can be specified as for example a monetary cost or as the amount of calories it will take to reach a place or the amount of time.

Cost vary across surfaces (e.g is not the same flat surfaces than steep hills) and also across distances (further distance = higher cost).

Cost is specified by friction surfaces- the higher the friction the higher the cost.

Creating Project Variables

- Task: Create a distance image from the previously rasterized Roads_1998 file.

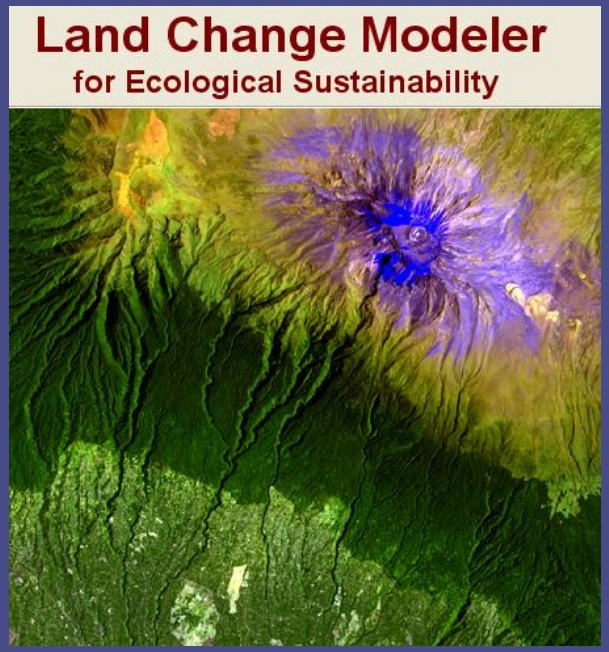
- Question: Cost distance requires a friction image. How would you create a friction image from a landcover image?

- Task: Use the **Cost Distance** module and the cost grow setting and use friction surface to create a cost distance image for the santacruz raster.

- Task: Use the 60m_elevation DEM image to create slope and aspect images.

Introduction to Idrisi Land Change Modeler (LCM)

You have learned:



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