

Idrisi

Steve Graham

Basics

The current version of this GIS software: Idrisi32 focuses primarily on the analysis of raster data such as remotely sensed data. Idrisi32 is developed by Clark Labs (<http://www.clarklabs.org/>). The software has a full range of analytical functionality including: database query, spatial modeling, and image enhancement and classification. Special facilities are included for environmental modeling and natural resource management, such as change and time series analysis, multi-criteria and multi-objective decision support, uncertainty analysis and simulation modeling. TIN interpolation, Kriging and conditional simulation are also offered. For Image Processing, a complete suite of tools is available for restoration, enhancement and transformation, and for signature development and classification, including hard and soft classifiers and hyperspectral image classification.

Features

Display and Map Composition – As with all GIS software Idrisi32 can display geographic information from both vector and raster sources. Legends, symbology, and labels are customizable and final map compositions can be printed or transferred to other programs. In addition to the standard 2 dimensional data representations, Idrisi32 can produce 3D displays of such map data as contours and hillshading.

GIS Modeling - MACRO MODELER provides a tool for the development of models as flow diagrams by dragging and dropping mathematical, relational, and analytical functions into the model. These models can be converted into iterative dynamic models by connecting their inputs and outputs, so that one model's output can provide the input for another. Models can also be run in a batch mode to process multiple map layers. Users can customize models by adding their own modules, as well as access other programming environments with full COM compliance.

Image Processing and Analysis - Four major categories of image analysis are possible with Idrisi32: Image Restoration, Image Enhancement, Image Classification and Image Transformation. Existing hyperspectral analysis has been enhanced with added functionality. Change and time series analysis have been expanded and streamlined.

Statistical Analysis – Methods include: simple and multiple regression, logistic regression, autocorrelation, pattern statistics, quadrant analysis and polynomial trend surface analysis, random image generation procedures to support Monte Carlo simulation, and spatial sampling and ground truth validation including the latest variants of Kappa analysis and the Relative Operating Characteristic (ROC). An interface to StatSoft's Statistica has been added.

Import/Export and Layer Reformatting – Import and export of most common GIS formats, both raster and vector are enabled. Specific enhancements include improved UNIX format compatibility and ESRI data format procedures and full two-way conversion between raster and vector representations.

Surface Modeling and Geostatistics – Functionality includes: interpolation procedures such as Inverse Distance Weighting, Triangulated Irregular Network (TIN) modeling, and Kriging; surface characteristics calculations such as slope gradient, aspect (slope orientation), illumination (hill shading), and curvature; special tools for calculating hydrologic information such as watersheds and runoff.

Other functionality –

Database Query functionality: query map layers, query and summarize spatial databases; relational database management tools for the vector databases, field calculations and SQL queries.

Decision Support tools: decision support tools for Multi-Criteria and Multi-Objective decision making with a Decision Wizard to guide the user through the process; consensus-seeking procedure, a set of criteria aggregation procedures; tools for uncertainty management.

Spatial Data Development/GPS Support: satellite imagery, government-supplied data sets, derived data and newly developed map layers; on-screen digitizing and editing facility for vector data, vector-to-raster (and vice-versa) conversion, and surface interpolation. Idrisi32 also provides a direct link to CartaLinx: The Spatial Data Builder.

Tutorials and Training and Examples

Online tutorials can be found at: <http://www.sbg.ac.at/geo/Idrisi/wwwtutor/tuthome.htm>,
<http://geography.laurentian.ca/resources/Idrisi/tutindex.htm>

Or in pdf format: <http://geo.skku.ac.kr/~skkugis/data/idrtutor.pdf>

<http://www.geog.le.ac.uk/assist/Idrisi/index.html> has hardcopy tutorials that can be ordered online.

Clark labs offers a series of workbooks on various topics and how to complete them at:
<http://www.clarklabs.org/Unitar.asp?cat=2>

Hardcopy manuals for Idrisi for windows version 2.0 are shelved in the GIA Core Library, 8th floor of Oswald.

Several applications of Idrisi32 are available at the GIS Application Examples page:
<http://www.clarklabs.org/ApplicationExamples.asp?cat=4>