ScanMagic®

Remote Sensing Software

EASY WAY TO THE MAGIC WORLD OF SCANEX

Thinking of starting to use remotely sensed data?

Are you an experienced user of remotely sensed data?

Anyway you'll be amazed how our magic software eases and advances your trip in this sophisticated environment!

BACKGROUND

Geoinformation technologies and remotely sensed data, recently only in hands of large government and military institutions, are actively entering all the fields of the economy. This imposes new requirements on the dedicated software for remotely sensed data processing. First and foremost the high quality of the output image products should be ensured. At the same time this software should run on ordinary computers of average performance, provide for an advanced set of tools as well as be user-friendly and easy-to-use. The Research & Development Center ScanEx has extensive experience in the field and works at the cutting edge of advanced technology. ScanEx offers an easy-to-use and powerful ScanMagic® software, which makes it possible even for beginners to efficiently process the remote sensing data for a wide range of applications.

SUMMARY

ScanMagic®, a stand-alone Windows-based application, is an easy-to-use and powerful software for viewing, analyzing and processing remote sensing (RS) data. In most cases ScanMagic® allows to create finished remote sensing products cost-effectively without involving additional software tools. The complete functionality and unique features of ScanMagic® allow to process RS data in near-real time (NRT).

ADVANTAGES

ScanMagic® utilizes efficient innovative techniques of image processing. On-the-fly spooling allows to open up to 4 GB images instantly and provides for the analysis of these large data amounts in real-time viewing mode. On-the-fly processing (for example, on–the-fly image re-projection) allows to repeatedly change the data processing parameters and make an immediate visual assessment of the results.

ScanEx
RESEARCH AND DEVELOPMENT CENTER

FEATURES

Graphical User Interface (GUI)

- Windows based multi-document user interface.
- All-in-one package with easy-to-use interface.
- Well-balanced, operative and intuitive software.
- Familiar and configurable GUI.
- Setting preferences.

Image Import

- Importing more than 60 generic/GIS/RS image formats.
- Image type auto detection while importing.
- Direct access to any raster data formats without conversion.
- Immediate image opening regardless of its size.
- Opening many images simultaneously without memory overflow.
- Supporting generic RAW binary format with manual definition.
- Recent file list.

Image Export

- Exporting to many generic/GIS/RS image formats.
- Supporting export to COTS GIS and RS packages, including ARCGIS, ENVI, ERDAS, PCI, ERMAPPER, etc.
- Exporting compressed data formats (e.g. JPEG2000, ECW).
- Supporting spatial and spectral subset while exporting images.
- Exporting images with custom histogram stretching.
- Generating quicklook and metadata files.

Image Printing

- Standard tools for preparing and printing images.
- Adjusting printer and page parameters.
- Header and footer editing.
- Print preview.

Image Manager

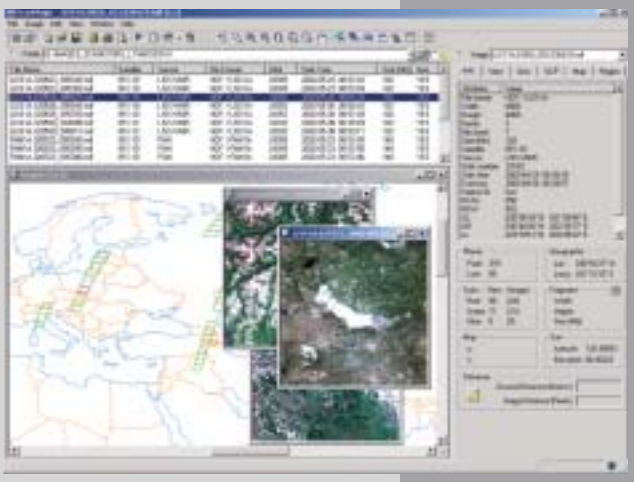
- User-friendly file manipulation tool for intuitive browsing and product selection.
- Attribute-based and list-form review of images from a disc.
- Viewing image location on the world map.
- Customized reference map and projection.
- Selected images display and image selection on a map.
- Image opening directly from a list or a map.
- Handy selection and deletion of images from a disc.

Image Analysis

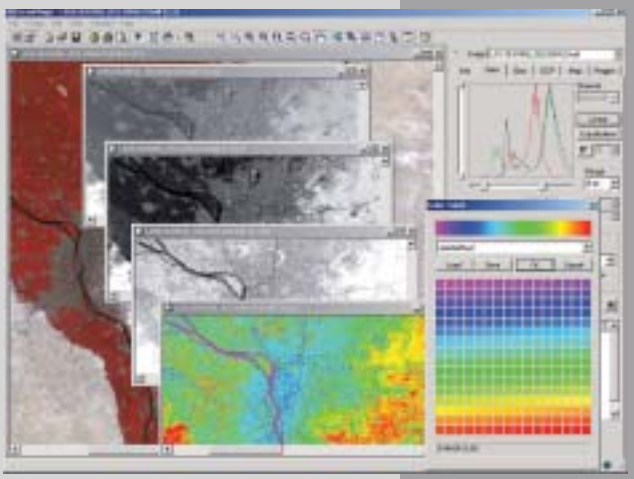
- Getting image information.
- Measurement tools in real-time cursor movement mode.
- Planar coordinates and pixel value display in real-time.
- Real-time display of geographic and cartographic coordinates.
- Real-time sun azimuth and elevation calculation for any pixel.
- Displaying parameters of a selected image subset.
- Measuring distances.

Image Vizualization

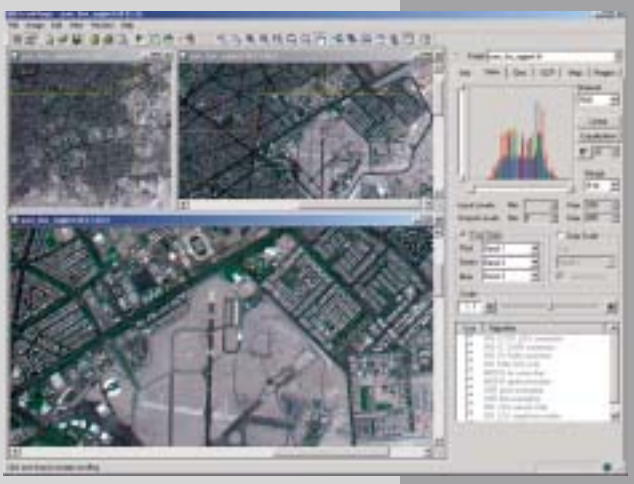
- Real-time display of up to 4 GB images with up to 16-bit radiometric resolution.
- RGB color composite viewing.
- Grayscale channel-by-channel viewing.
- Pseudo color viewing and color table editing.
- Easy image zooming and scrolling.
- Zoom In/Out/ToWidth/ToHeight/Actual/Rectangle.
- Supporting Undo (Previous Zoom command).
- Handy Zoom Bar for easy adjustment of the zoom level.
- Effective Pan mode (free image scroll by mouse drag).
- Flexible Navigation tool (scroll/zoom window).
- Automatic along-path scrolling.



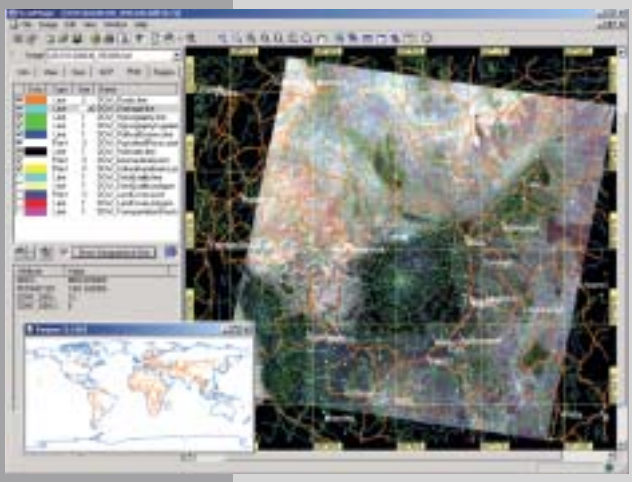
User–friendly Image Manager for quick data manipulation



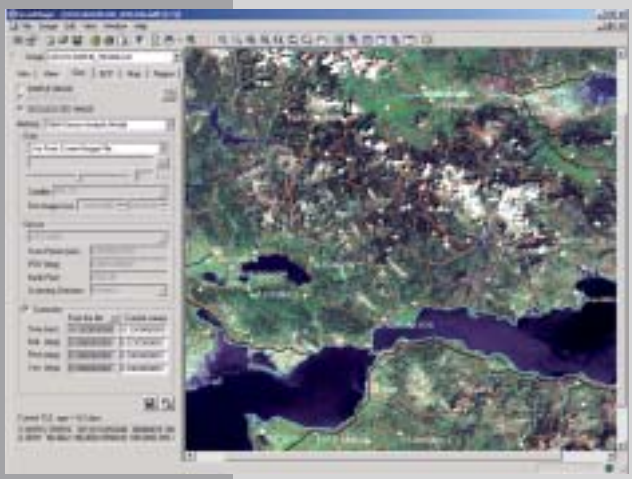
Enhanced tools for data visualization and analysis



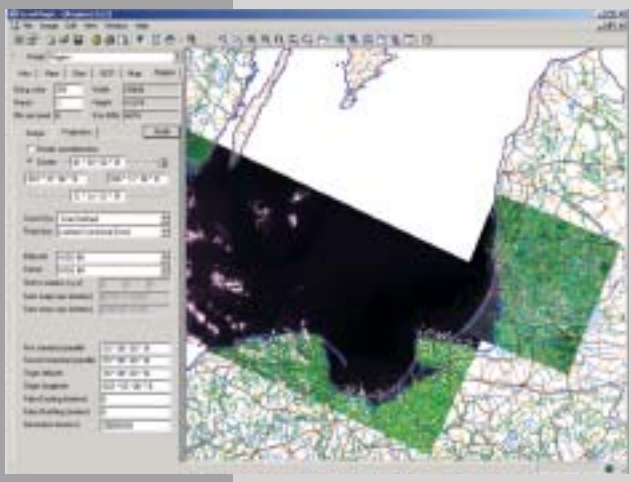
Intuitive and flexible tools for easy image viewing



On-the-fly image re-projection and map overlay



Easy-to-use tools for automatic or manual image georeferencing



Powerful functionality for precision image rectification

Image Enhancement

- Contrast/Brightness enhancement.
- Quick Enhancement.
- Graphical histogram contrast adjustment tool.
- Linear and nonlinear contrast enhancement.
- Min-max linear contrast stretch.
- Percentage linear contrast stretch.
- Histogram equalization.
- On-the-fly algorithms for image processing.
- Spatial enhancement (e.g. noise filtering).
- Instrument-dependent data processing.
- Generation of value added products.
- Resolution Merge (Image Fusion) with Brovey, HLS and Arithmetic Transformation methods.
- Merging Radar and VIS/IR Imagery.
- Satellite-based specific radiometric correction.

Overlaying Vector Maps

- Fast overlay of vector data on images.
- Ultra speed overlay of DCW data.
- Supporting popular vector formats, including ArcInfo Coverage, ESRI Shapefile, MapInfo MIF/MID, MapInfo TAB, Microstation DGN.
- Multiple-vector overlay.
- On-the-fly map re-projection.
- Supporting points, lines and polygons.
- Customizing size and color of vector objects.
- Point-and-click attribute view for map objects.

Geographic Location

- Automatic geographic and cartographic location while opening RS and GIS images.
- Supporting georeference file formats (e.g. ESRI World File, MapInfo Tab File, WKT).
- Universal Orbit/Sensor Model for easy georeferencing remote sensing images from any generic format.
- Manual georeferencing for any raster data.
- Satellite trajectory information extraction from NORAD TLE files.
- Easy adjustment for satellite position and orientation.
- Ground Control Points (GCP) rectification.
- Graphical selection of GCPs with automatic coordinate conversion.
- GCP editor with import and export capability.

Geometric Correction

- On-the-fly processing during geometric correction.
- Image transformation into user-defined map projection.
- Over 70 map projections, 40 ellipsoids and 200 datums.
- Over 2000 available EPSG coordinate systems.
- User-defined projections, coordinate systems, ellipsoids and datums.
- ROI selection.
- Image-to-map and image-to-image rectification.
- On-the-fly image re-projection.
- Affine and Polynomial transformation (up to 5th order).
- Nearest Neighbor, Bilinear, Cubic Convolution image resampling.
- User-defined pixel size and geographic subset.
- Up to 255 channels for output cartographic product.
- GCP selection from image, vector map and user input.
- Any spatial and spectral image mosaicking.
- Image mosaicking with manual color balancing.

Supported Generic Images

Image Format	Import	Export
BINARY BIL	Yes	Yes
BINARY BIP	Yes	Yes
BINARY BSQ	Yes	Yes
BMP	Yes	Yes
GIF	Yes	Yes
HDF	Yes	Yes
JPEG	Yes	Yes
JPEG 2000	Yes	Yes
PGM	Yes	Yes
PIXMAP	Yes	Yes
PNG	Yes	Yes
PPM	Yes	Yes
RAW	Yes	No
TIFF	Yes	Yes

Supported Remote Sensing Images

Image Format	Import	Export
ARCINFO ASCII GRID	Yes	Yes
ARCINFO BINARY GRID	Yes	No
ATLANTIS MFF	Yes	Yes
ATLANTIS MFF2	Yes	Yes
CEOS	Yes	No
ELAS	Yes	Yes
ENVI BIL	Yes	Yes
ENVI BIP	Yes	Yes
ENVI BSQ	Yes	Yes
EOSAT FAST	Yes	No
ERDAS IMG	Yes	Yes
ERDAS LAN / GIS	Yes	No
ERMAPPER ECW	Yes	Yes
ERMAPPER ERS	Yes	No
ESRI BIL	Yes	Yes
ESRI BIP	Yes	Yes
ESRI BSQ	Yes	Yes
EUROMAP FAST	Yes	Yes
FIT IMAGE	Yes	No
FITS	Yes	Yes
GEOSOFT GXF	Yes	Yes
GeoTIFF	Yes	Yes
JAPANESE DEM	Yes	No
MAPTECH BSB	Yes	No
MrSID	Yes	No
NIMA DTED0	Yes	No
NIMA DTED1	Yes	No
NITF	Yes	Yes
PCI AUX	Yes	Yes
PCI DSK/PIX	Yes	Yes
SOFTCHART GEO / NOS	Yes	No
USGS ASCII DEM	Yes	No
USGS DOQ1	Yes	No
USGS DOQ2	Yes	No
USGS SDTS DEM	Yes	No
VTP BINARY TERRAIN	Yes	No

Minimum System Requirements

- Intel Pentium III processor
- 256 MB RAM
- 1024x768 True Color monitor
- Microsoft Windows 2000/XP or later

Supported World Satellite Images

Image Format	Import
ASTER DEM	Yes
ASTER HDF	Yes
ASTER L1A	Yes
ASTER L1B	Yes
ASTER L2	Yes
ENVISAT IMAGE	Yes
EROS L0	Yes
EROS L1A	Yes
EROS L1B	Yes
ERS CEOS	Yes
IKONOS GeoTIFF	Yes
IKONOS NITF	Yes
IRS SUPER STRUCTURE	Yes
LANDSAT CEOS	Yes
LANDSAT FAST	Yes
LANDSAT GeoTIFF	Yes
LANDSAT HDF	Yes
MODIS HDF	Yes
MODIS L1A	Yes
MODIS L1B	Yes
MODIS L3	Yes
NOAA L1B	Yes
QUICKBIRD GeoTIFF	Yes
QUICKBIRD NITF	Yes
RADARSAT CEOS	Yes
SAR CEOS	Yes
SEAWIFS L3	Yes
SPOT 1 / 2 / 3 SISA	Yes
SPOT 4 CAP	Yes
SPOT 5 DIMAP	Yes
SPOT GEO	Yes

Supported ScanEx Satellite Images

Image Format	Import
SCANEX IRS LISS L0	Yes
SCANEX IRS LISS-SWIR L1A	Yes
SCANEX IRS LISS-SWIR L1B	Yes
SCANEX IRS LISS-VNIR L1A	Yes
SCANEX IRS LISS-VNIR L1B	Yes
SCANEX IRS PAN L0	Yes
SCANEX IRS PAN L1A	Yes
SCANEX IRS PAN L1B	Yes
SCANEX IRS WIFS L1A	Yes
SCANEX IRS WIFS L1B	Yes
SCANEX METEOR MSU-E L0	Yes
SCANEX MODIS AQUA L0	Yes
SCANEX MODIS TERRA L0	Yes
SCANEX NOAA AVHRR APT	Yes
SCANEX NOAA AVHRR HRPT	Yes
SCANEX RESURS MSU-E L0	Yes

Supported Vector Formats

Image Format	Import
ARCINFO BINARY COVERAGE	Yes
CENSUS TIGER / LINE	Yes
ESRI SHP	Yes
MGL	Yes
IHO S57	Yes
MAPINFO MIF / MID	Yes
MAPINFO TAB	Yes
MICROSTATION DGN	Yes
ORDNANCE SURVEY NTF	Yes
USGS SDTS VTP	Yes

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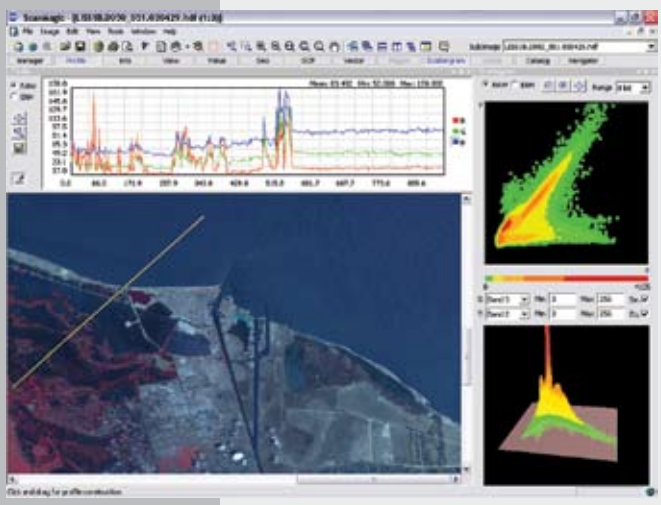
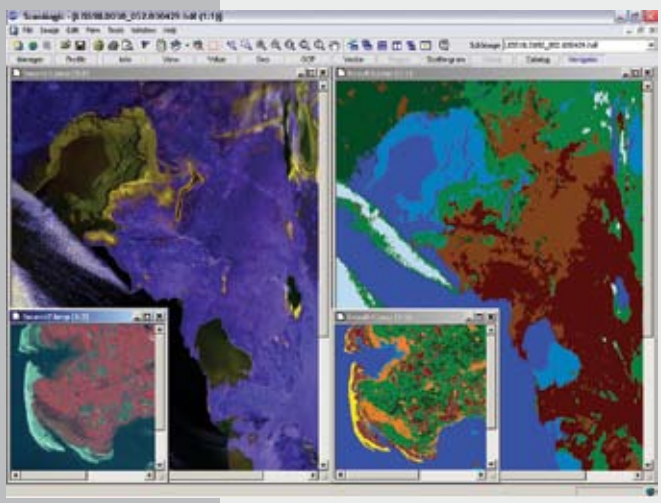
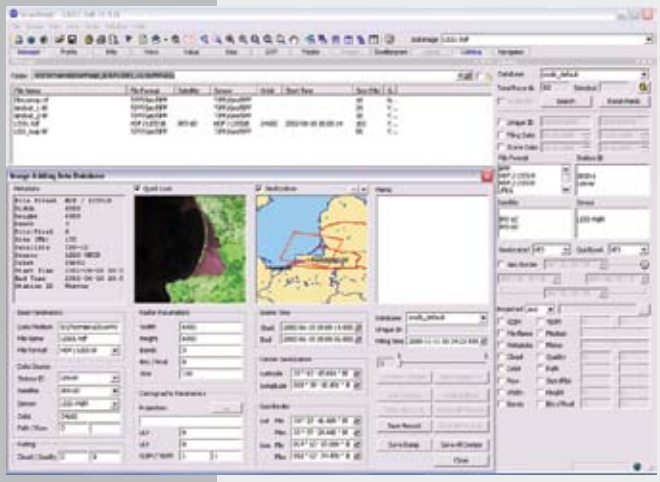
New possibilities of ScanMagic



Building pixel profile lines and image scattergrams



Fast automatic image segmentation



Universal tools of RS data cataloging

Application features

- Support of 64-bit MS Windows operating systems
- Compatible with MS Windows Vista
- Compatible with Linux / Unix operating systems
- Support of multi-lingual graphical user interface
- Support of network license applications

Additional image visualization possibilities

- Fast image navigation toolkit, including quicklooks and geolocation
- 3D data visualization using DEMs of web-map services

Enhanced tools of image analysis

- Display and analysis of pixel intensity properties as a table and as a pixel profile line
- Building image scattergrams and their 3D visualization
- Measuring distances between two points on an image
- Automatic algorithm of image segmentation

Universal tools of RS data cataloging

- Batch processing of large volumes of RS data of different types and presentation formats
- Automatic metadata, quicklooks and geolocation data retrieval
- Creation and editing of customized catalogs (databases)
- User-friendly search by attributes and catalog data picturesque presentation
- Saving dumps (metadata, quicklook, geolocation) for selected catalog records
- Access to catalogs in LAN, catalogs import\export to exchange databases

Vector editor

- Creating and editing vector layers
- Support of point, linear and polygonal objects
- Support of most popular vector data formats
- Algorithm of automatic search for ground control points based on vector data

Integrated tools of access to web-map services

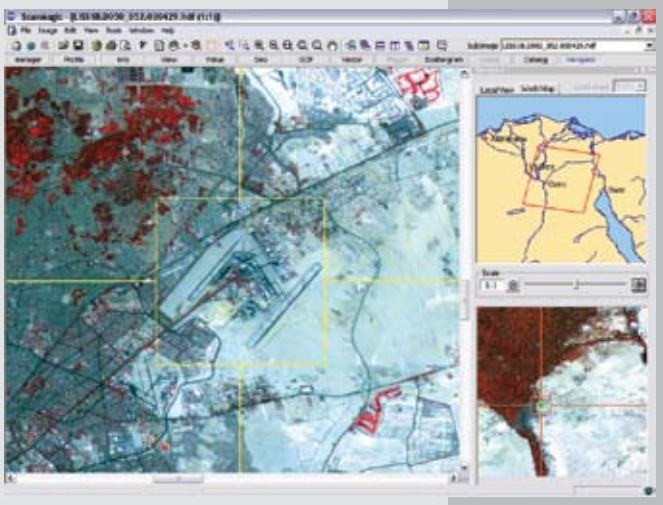
- Support of 2D and 3D map services: Microsoft Virtual Earth, Google Maps, Google Earth, Yahoo Maps, etc.
- Unified access interface for all services; interactive toggling between map resources and displayed data types
- Operations with multi-terabyte mosaics in common view window with the possibility to zoom and to navigate; simultaneous operations with several windows of different services
- Use of global Earth mosaics coverage as base maps; viewing geographic coordinates of objects along with pointer movement and picking up GCPs
- Mirror movement of view area in the other window, when working with RS data; quick translation to the area with specified geographic coordinates
- Google KML format image rendering and review on Google Earth global coverage
- Overlaying remote sensing data on the DEM of map service for 3D visualization
- Display of satellite tracks and imaging process in real-time mode

Additional tools of data processing

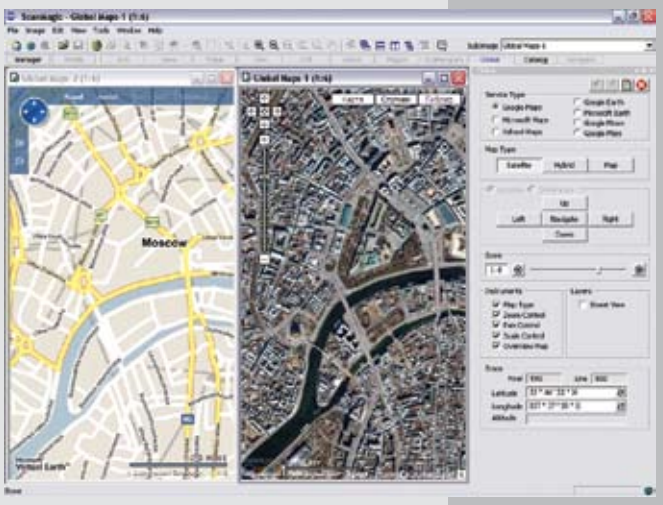
- Built-in raster files converter for data batch processing
- Vector files converter for data batch processing
- Batch reprojection of map coordinates
- Vector files and GPS data receivers' converters (support of Magellan, Ozi Explorer, Shape File, KML formats, etc.)
- Hex editor
- Values converter (changing representation formats or units of measurement)

A set of tutorial materials

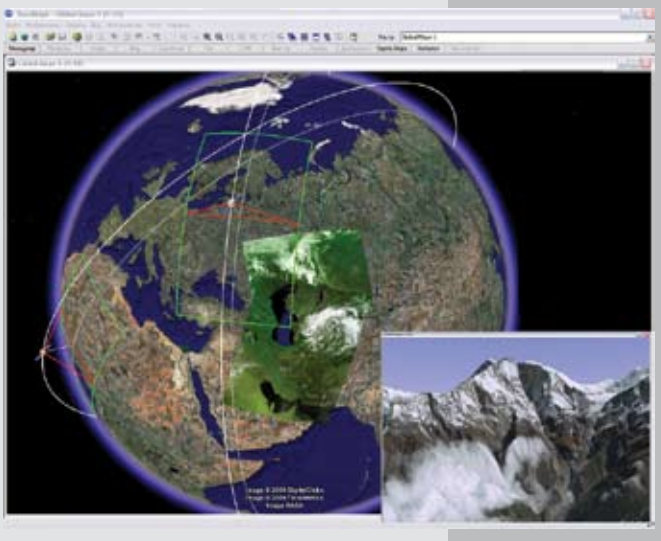
- A comprehensive User's Guide
- A set of exercises to perform with examples of images
- Training video



Enhanced tools of navigation through the image



Unified access to web-map services



Overlaying images onto DEM

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