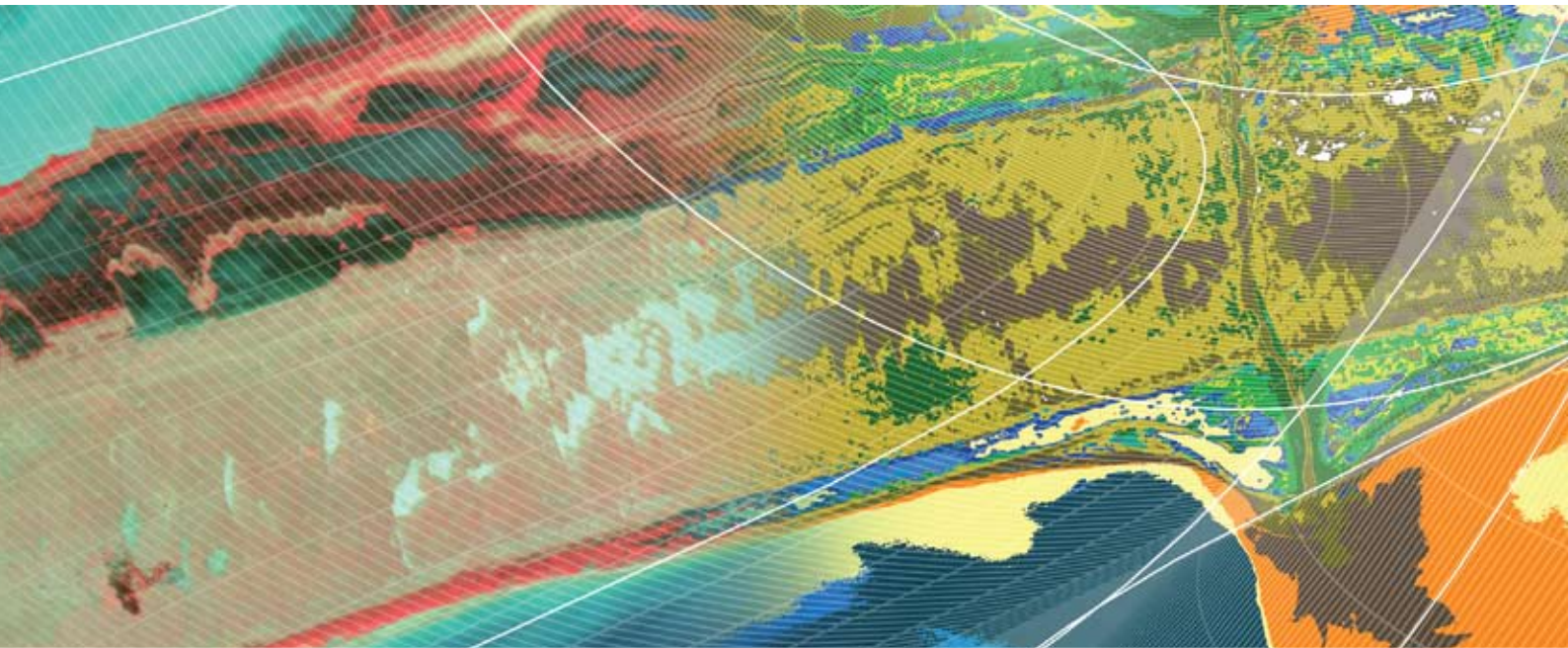


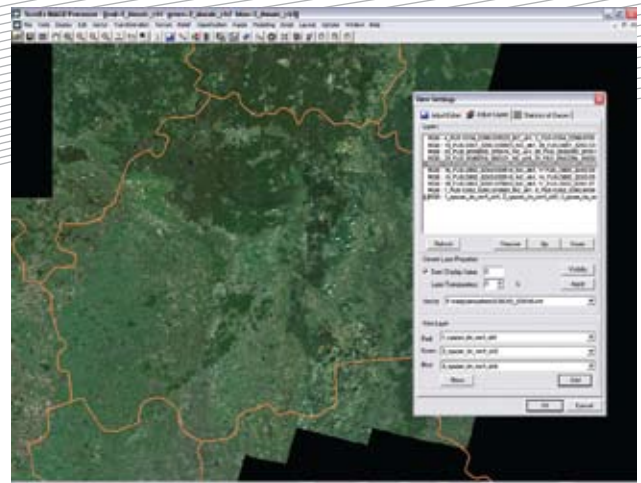
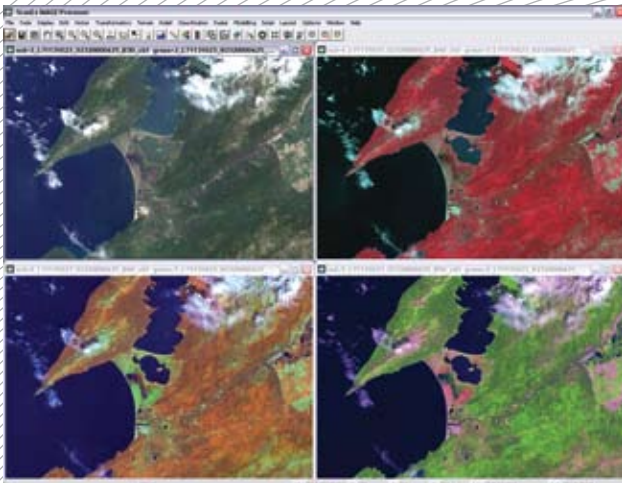
ScanEx Image Processor[®]

THEMATIC PROCESSING OF IMAGES

The application is intended for visualization, extended analysis and in-depth thematic processing of optical and radar imagery data and is an efficient tool to resolve a wide range of applied tasks



ScanEx Image Processor®



ScanEx Image Processor® has extensive functionality for deep satellite and aero-photo survey data processing.

The application enables to do visualization, radiometric and geometric processing of remote sensing (RS) data, thematic processing of radar and multispectral optical images, generation of DEMs and 3D modeling, images segmentation and classification, change detection, natural processes modeling and many more.

Application features cover almost all key tasks of RS data processing, which makes ScanEx Image Processor® an effective tool for solution of multiple applied tasks, whereas the application modular structure enables to select the proper set of functions.

IMPORT/EXPORT OF IMAGES

- Support of over 20 graphical formats ranging from 8 to 64 bits/pixel.
- DEM import in Surfer GRID, ARCINFO ASCII GRID, USGS DEM formats.
- Support of geolocation files in ESRI World File and Mapinfo TAB File formats.
- Fast data loading. Calculation of pyramidal layers.
- Prepress: layout control, overlaying coordinate grid, creation of thematic legend.

MODELING NATURAL PROCESSES

- Calculation of radiation balance.
- Air and surface temperatures calculations.
- Hydrological modeling of high waters, seasonal and flash floods.

RASTER VISUALIZATION

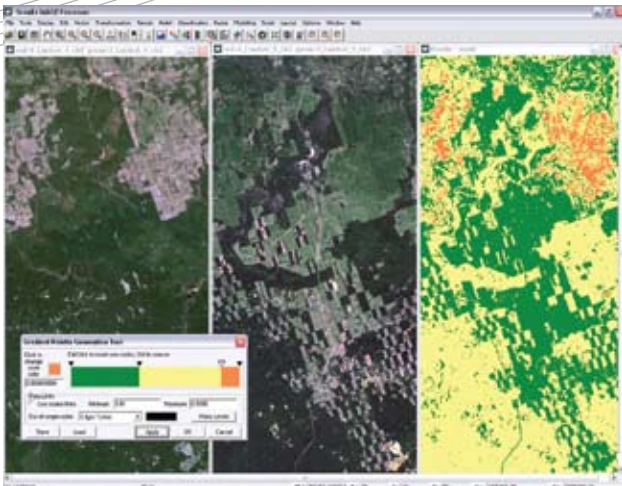
- RGB and Grey presentation possibilities.
- Operations with presentations in indexed colors and in form of continuous gradient palette.
- Automatic and manual contrasting of images.
- Gamma correction and color balancing.
- Re-sampling filter selection at displaying.
- Raster layers transparency feature.

GEOMETRIC CORRECTION OF DATA

- Strict mathematic models of systematic correction.
- Verification of the correction model, transformation accuracy assessment.
- Ortho-transformation of images using GCP.
- Simple, classic and rational polynomial transformations.
- Local distortions correction on the image.
- Vector layer geometric correction using control points.
- Automatic co-registration of images.
- GCP setting in manual mode, in "raster to vector layer" and "raster to raster" modes.
- Interactive creation of color-balanced mosaics of large areas.
- Possibility to use seamlessly mosaicked images.
- Capability to use image fragment within vector area.

USER IMAGE PROCESSING ALGORITHMS

- Possibility to write own processing algorithms using over 40 in-built functions and operators.
- Capability to save macro for repeated use.
- Setting macro, created by the users, in form of program dialogs called out from the main menu.



RADIOMETRIC PROCESSING OF IMAGES

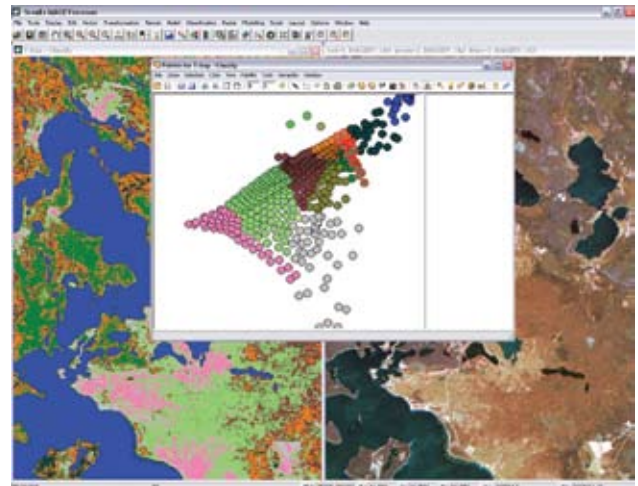
- Radiometric correction of images.
- Image contrast alignment. Histogram matching.
- Noise removal. Speckle Noise filtering.
- Image filtering: median, convolution and smoothing filters.
- Texture features calculation.
- Morphological operations.
- Spectral enhancement.
- Brightness re-calculation in Radiance/Reflectance.

RASTER IMAGES CLASSIFICATION

- Unsupervised classification (ISODATA).
- Supervised classification based on forward-propagation neural network.
- Calculation of raster data statistic values and saving results into vector layer attributive table.
- Neural network classification and GTM algorithm.
- Post-processing algorithms: generalization, sampling, etc.
- Object-oriented classification and thematic interpretation of multispectral imagery.

MULTISPECTRAL DATA PROCESSING

- Resolution enhancement applying PCA+ Wavelet, IHS, Browey Transform and Multiplicative transformations.
- Change Detection algorithms.
- Atmospheric correction (haze removal).
- Generation of thematic products based on MODIS data (fires, clouds, snow and ice covers, Earth surface temperature and vegetation index).



VECTOR LAYERS EDITING

- Support of vector data in ESRI SHP and Mapinfo MIF formats.
- Creation and editing of vector layers.
- Attributive information editing.
- Reprojection into preset coordinates system.
- Automatic vectorization within the specified brightness value and range.
- Vector rasterization.

TERRAIN ANALYSIS

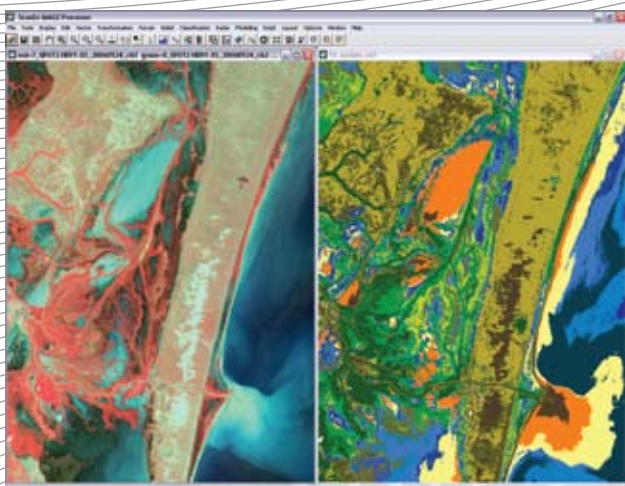
- Batch loading, correction and reprojection of SRTM and GTOPO30.
- Generation of hydrologically correct DEM from vector data.
- DEM generation from stereo images.
- Terrain derivatives computation, gradient, terrain classification.

THEMATIC PROCESSING OF RADAR IMAGES

- Oil spill detection.
- Ship detection.
- Radar images filtering.

OPTICAL AND RADAR DATA SEGMENTATION

- Radar and multispectral optical images segmentation.
- Considerations of images texture properties and objects geometry.
- Results thematic calibration using references.
- Interactive thematic classification of segmentation results.
- Automatic vectorization of results.



3D MODELING AND VISUALIZATION

- 3D landscape modeling.
- Creation of 3D objects based on vector map's outlined objects using textures.
- Overlaying vector and raster thematic layers.
- Modeling different natural objects and events.
- Operations with attributive data saved in 3D vector objects' database.
- Importing 3D models in 3D Studio MAX format.
- Creation of camera motion tracks and recording video-clips.
- Free application for 3D models viewing.

BUILDING 3D EARTH MODEL

- Global 3D model of the Earth.
- Vector layers overlay on 3D Earth model and toponymic search.
- Satellite tracks display using NORAD data.
- Earth rotation, illumination and atmosphere modeling.
- Switch from global model to local 3D models, video clips recording.

SDK

- Possibility to work with the image as with matrix.
- Use of over 40 standard mathematic functions, operators and filters.
- Stereo processing and radiometric correction possibility.
- Possibility to write processing scripts and to create user interface.

SUPPORTED REMOTE SENSING DATA

ALOS	Meteor-3M
Cartosat-1	NOAA
Cartosat-2	QuickBird
EROS-A/B	RADARSAT-1/2
ENVISAT	RapidEye
EO-1 ALI	RADARSAT-1/2
EO-1 Hyperion	RapidEye
GeoEye-1	Resourcesat
IKONOS	Resurs-01
IRS-1C/1D	SPOT-2/4/5
FORMOSAT-2	Terra ASTER
KOMPSAT-2	Terra/Aqua MODIS
LANDSAT-5/7	WorldView-1
TerraSAR-X	...

SUPPORTED DEMs

ARCINFO GRID	Surfer GRID
GTOPO-30	USGS DEM
SRTM-90	...

SUPPORTED RASTER FORMATS

ARCVIEW BIL/BSQ	HDF
ATLANTIS MFF/MFF2	JPEG JFIF
BMP	GeoTIFF
CEOS	GIF
ELAS	MrSID
ENVI HDR	NERIS STI
ERDAS IMG	NITF
ERMAPPER ECW/ERS	PCI AUX/DSK
EOSAT FAST	PIXMAP
FIT IMAGE	RAW
FITS	...