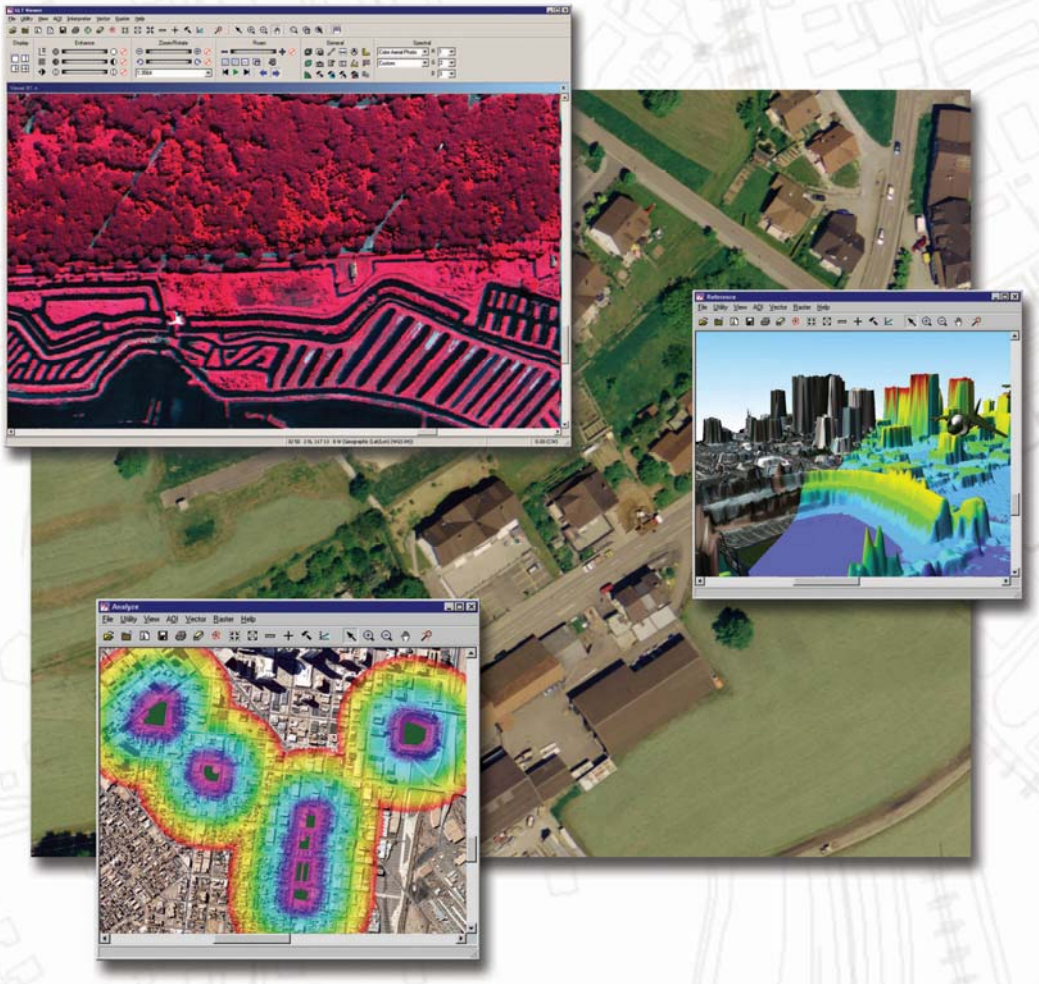
What's New in ERDAS IMAGINE® V9.1



capture · reference · measure · analyze · present

POWERING GEOSPATIAL IMAGING™

Leica Geosystems

ERDAS IMAGINE® 9.1

ERDAS IMAGINE® 9.1

Overview

ERDAS IMAGINE® is the raster-centric software GIS professionals use to extract information from satellite and aerial images. Because it is easy to use and easy to learn, ERDAS IMAGINE is perfect for beginners and experts alike. The vast array of tools allowing users to analyze data from almost any source and present it in formats ranging from printed maps to 3D models, makes ERDAS IMAGINE a comprehensive toolbox for geographic imaging and image processing needs.

Version 9.1 of the ERDAS IMAGINE suite is largely targeted as a maintenance release providing bug fixing and stabilization building on the capabilities added at version 9.0.

Additionally this release also includes numerous productivity-enhancing improvements throughout the ERDAS IMAGINE product suite, including all improvements previously released as Fixes for ERDAS IMAGINE 9.0.

Key New Features Summary

- Over 500 customer-related issues resolved
- Extended platform / operating system support
- Improved stability when used in conjunction with ArcGIS
- New and improved Pan Sharpening / Resolution Merge techniques
- Numerous productivity-based enhancements

New in IMAGINE Essentials®

Data Handling

TIFF Format Improvements

Support for the TIFF and GeoTIFF formats has been expanded in several ways, including

- Support for the new GeoTIFF 1.5 standard
- Correctly exports using YCbCr JPEG compression
- Issues found with using GCPs embedded in the TIFF file to geocode the imagery on the fly have been corrected
- The ability to export a TIFF Chip from a TIFF image has been added, which enables the user to subset a section out of the original TIFF file to a new TIFF file while maintaining the original TIFF version and compression options
- New/upgraded TIFF Info tab in Image Info provides access to previously difficult to access header information
- Support has also been added for persistent NULL values to be stored into the TIFF file.
- Directly writing to a GeoTIFF file should no longer result in slight precision rounding errors of projection parameters. This problem generally only happened when processing Image Interpreter functions directly to GeoTIFF, not when performing a Save As or exporting to GeoTIFF
- Support of the Gauss Kruger projection system in GeoTIFF header tags has been added thereby preventing some instances of applications exiting unexpectedly
- Opening Virtual Mosaic (VMC) files created in earlier versions of ERDAS IMAGINE and which reference GeoTIFF images will now work correctly

DPPDB Direct Read

DPPDB NITF files with RPCs can now be directly read in ERDAS IMAGINE without the need to import them first.

Oracle Spatial 10g

More extensive support is now provided for projected coordinate systems to be recognized and interpreted between ERDAS IMAGINE and Oracle Spatial 10g.

An issue whereby the thumbnails were not being created correctly for use by the Exploration tool has also been corrected.

ADRG

Several issues with the ADRG exporter have bee resolved, including the need to include a two character ARC zone number in the file naming convention

CIB Direct Read

Several issues which previously occurred when trying to read CIB imagery have now been resolved, including the ability to use the CIB Cell dll successfully

CIB Export

The CIB export process has been improved, including the more consistent creation of Tables of Content (a.toc) files

CADRG Color Issues

The CADRG exporter now provides an option to apply a low pass filter ("Optimize for Thematic") to the input dataset and construct the color lookup table from this smoothed imagery. For instances where color problems previously occurred on export due to a limited color palette in the input imagery this new option provides much improved results.

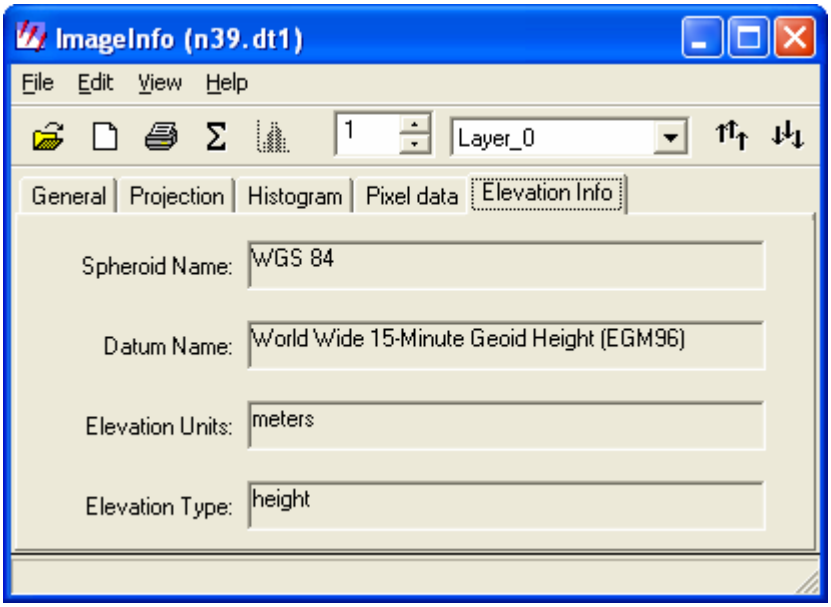
Geodatabase Support

There are two methods for providing Geodatabase support in ERDAS IMAGINE 9.1. Both will only provide support to Geodatabases of version 9.1 or earlier. ESRI Geodatabases versioned 9.2 cannot be read at this time.

- Install (and license) a copy of ArcGIS (V9.0 or 9.1 only), or
- Install the IMAGINE Geodatabase Support CD (requires no additional licensing of ArcGIS)

DTED Direct Read interprets Vertical Datum

The DTED raster dll now reads the field specifying which vertical datum the DTED file has been referenced against and populates the "Elevation Info" node so that other ERDAS IMAGINE applications (such as the Recalculate Elevation Values tool for performing vertical datum translations) can be automatically initialized with the correct information.



DTED Browsing The DTED raster dll should now filter for all DTED extensions automatically, including .dt0, .dt1 and .dt2.

ENVI Projection Parameters The ENVI raster dll should now correctly read and utilize spheroid and datum parameters provided in the ENVI header files.

MrSID Input Filesize The MrSID exporters (encoders) will now accept extremely large input image files (files larger than 50GB) as appropriate to the licensed level of MrSID module.

Hyperion Direct Read The Hyperion rater dll is now able to read level L1R data as well as providing improved read speeds for all levels (such as L1B).

Intergraph COT With certain variants of Intergraph COT files ERDAS IMAGINE would fail to read the file and return an error. This situation has now been remedied.

MODIS Improvements have been made to the HDF handling so that MODIS Level 2 aerosol products (MYD04_L2) can be successfully read.

JPEG2000 UNIX The JPEG2000 wavelet encoding capabilities have been made consistent between UNIX and Windows platforms such that the UNIX platform has the same advanced capabilities as Windows.

Landsat 7 Fast Format Issues with the Zone number not being correctly read for some Landsat 7 scenes have been corrected. The imported data should now retain the correct Zone number.

Map Composer

"Speckle" The Map Maker routine which is responsible for rendering a Map Composition into a printable form has been significantly re-worked to correct several issues. One such area affected is to correct an issue whereby discrete "speckle" pixels were introduced into the rendered map, especially when using 16-bit (or higher) data types, such as IKONOS, QuickBird, etc.

Transparent Background

Another area which was corrected was to make the use of Transparent Background more consistent between what could be observed in the Viewer / Map Composer and what would be rendered to the printer. Use of Transparent Background should now consistently print in the same manner as is viewed in Map Composer.

Please remember that if the intent is for the white "paper" background to show though in background areas within the map frame, then all images - including the bottom (first) image in the stack - should have Transparent Background turned on. Otherwise the bottom image in the stack will print with its background pixels (to the extent of the image) as solid color (usually black) if Transparent Background is not turned on for this layer.

Viewer Improvements

Open without Stats

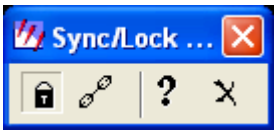
The IMAGINE viewer now provides a Preference to enable images to be opened without the need to pre-compute quick stats (the statistics the Viewer previously sampled from an image without statistics in order to provide a default lookup table for display). This is especially useful for users of TIFF imagery (a format which generally does not have saved statistics) that has already been stretched to an 8-bit range. Opening with a linear LUT will provide good image display in this instance without the need to take additional time to calculate statistics.

Raster Quality-Level Roaming

The Raster Roaming Quality percentage Preference enables a user to set roaming quality to achieve a smoother and quicker roam through images that don't necessarily require a lot of detail. This is possible if less data and detail is read. 0 - 100% is the range quality, and the lower the percentage the aster you can roam through images. For example, 25% roam quality would be considerably faster than 100 when roaming. 0 is the lowest quality available.

This preference works with image data that supports providing data at various quality. Consequently the only image data formats currently supported are JPEG2000 compressed inside NITF and JPEG2000 itself.

True Locked / Simultaneous Roam



This new option allows you to lock viewers so that all the viewers will display the same map center coordinates when you roam or pan. Otherwise the linked viewers would only update their geographic location once the roaming of the active viewer ceases. In other words the Sync/Lock tool provides true simultaneous roaming of linked viewers.

Select any number of viewers to lock. To add or remove viewers from the group, you must unlock the viewers first. To open this dialog, click View -> Link/Unlink Viewers from the GLT Viewer menu.

Transparent Background Preference with Drag and Drop

The GLT Viewer now recognizes the setting of the Background Transparent Preference when both dragging from Explorer to the view pane or when dragging multiple images between GLT view panes

Hotkey Roam

When editing a vector the feature which is being followed often extends beyond the edge of the current display extent. Previously roaming to see the rest of the feature was either difficult to control or required the user to end the current line, roam the view and then resume editing with a new vector and have it snap to the previous.

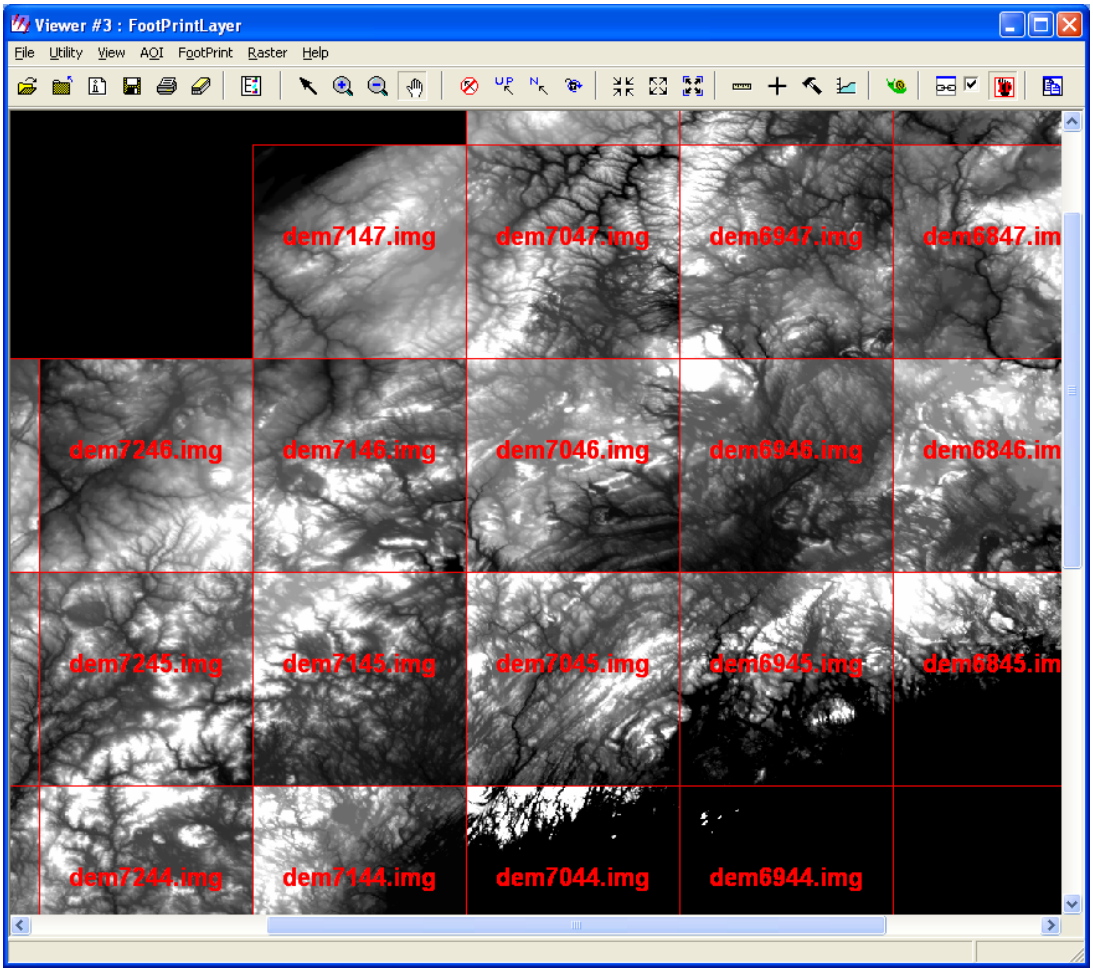
With ERDAS IMAGINE 9.1 the user has the ability hit the “R” key at any time when in the middle of editing a feature and have the Viewer enter a roaming mode controlled by the drag direction of the mouse. Once the view has roamed to the desired new location the “R” key is pressed a second time and the Viewer re-enters editing mode of the same feature.

Inquire Cursor with Lat/Lon data

Previously it was sometimes possible for the Inquire Cursor to jump to the origin of the coordinate system when displayed over Lat/Lon data and the Apply button pressed. If the data did not extend to the origin then an error was returned. With ERDAS IMAGINE 9.1 the Inquire Cursor should correctly drive to the specified coordinate when Apply is pressed and should not attempt to jump to the origin.

Footprints

The GLT once again has the ability to generate and display footprint outlines for the imagery displayed in either the GLT view pane itself or in an Overview window. The display of footprints can greatly assist in determining the correct image file to use for further processing.



Viewer Projection in Lat/Lon

The ability to set the display projection system of the Viewer now works correctly even if the chosen display projection is Geographic Lat/Lon.

Renaming Files

Between versions 8.x and 9.0 in ERDAS IMAGINE, the Rename feature in the Select Layer to Add dialog (right-click on a file name in the dialog and choose Rename) ceased to operate correctly.

In ERDAS IMAGINE 8.7 and earlier, the Rename function would rename all the supplemental files (the .img, .rrd, .ige, .igw, and .aux files) to the correct file name, and would change the .rrd and .ige file names in the HFA structure of the .img file under the RRDNamesList and RasterDMS nodes.

This ability has been re-implemented with ERDAS IMAGINE 9.1 and also now supports files being manually renamed through Microsoft Explorer so long as the ancillary files share the same root name as the .img file.

Vector Handling

Virtual Roaming

When displaying only vector layers in the Viewer (no imagery) the already displayed vectors will now move when you use the hand to drag the data around, enabling you to better choose when to release the hand (and thereby refresh the new extent of vectors).

Shapefile DBF Locking

The Viewer no longer locks access to the attribute DBF file as soon as the vector file is opened. It now only does so if editing is enabled or the attribute Cell Array is displayed. This allows external programs to access the DBF attributes while the Shapefile is being viewed in ERDAS IMAGINE.

Batch Shapefile Reprojection

In some instances attempting to batch the process of reprojecting multiple Shapefiles from one projection system to another would fail, or produce no output. This situation has now been corrected

South America 1969 Datum

The South America 1969 Datum is now recognized for Shapefiles

Vertex Undo

When editing a feature it is now possible to remove vertices while still capturing the specific feature. Just press the Backspace key and the last entered vertex will be removed from the line. Keep pressing Backspace to sequentially remove additional vertices.

This option is useful for removing digitizing errors introduced by erroneous movements and clicks of the mouse while digitizing.

Miscellaneous Improvements

Extended Platform Support

The Operating System platforms supported by ERDAS IMAGINE have been updated and extended to include 64-bit versions of Windows as well as to re-introduce the UNIX environment. Platforms now include

- Windows XP Professional SP2 or higher
- Windows 2000 Professional SP4 or higher
- Windows Sever 2003 SP1 or higher (only supported for License Manager)
- Windows XP Professional x64 Edition SP1 or higher (requires Intel EM64T or AMD64 processor)
- Sun Solaris 10

ArcGIS Interoperability

Extensive care has been taken to ensure that ERDAS IMAGINE and ArcGIS can be installed and uninstalled independently of each other on any given computer. Consequently, ERDAS IMAGINE 9.1 can be installed on the same computers as ArcGIS versions 8.3, 9.0, 9.1 or 9.2 Pre-release and will not cause conflicts with these versions.

ArcGIS 9.2 had not been released at the time of releasing ERDAS IMAGINE 9.1 and consequently it cannot be guaranteed to work, but testing with the Pre-release indicates good potential.

Please refer to the LPS System Specifications for limitations which might occur between installations of LPS 9.1 and ArcGIS.

Coordinate Calculator

An issue whereby the incorrect vertical datum shift would sometimes be applied if the horizontal units were not meters (e.g. feet), leading to incorrect horizontal corrections when changing map projection system, has been corrected.

Rubber Sheet Rectification

In previous versions of the software it was sometimes possible to come across situations in which the attempt to perform Rubber Sheet rectification with specific datasets would cause the process to fail. All known instances of this problem have now been resolved.

Cassini Projection

Instances whereby using the Cassini projection could lead to application errors have been corrected

Projection Systems

Various additions and improvements have been made to projection systems, including new Swedish projection libraries (including a new datum, SWEREF99) and new HARN libraries for the US.

Dice Image

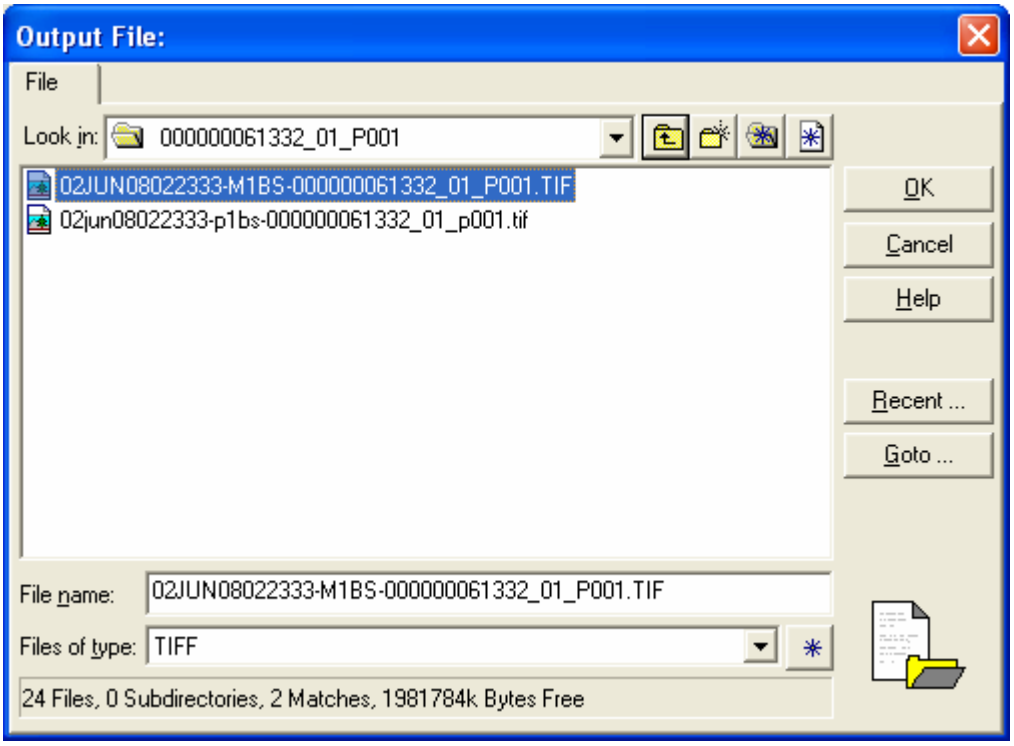
The Dice Image tool (for tiling an input image into regularly spaced subsets with options to include overlap collars) is now able to read input data from a non-mapped network location (such as a UNC path).

It also works more consistently on the UNIX platform.

File Selector Name Over-Write

The output File Selector has been modified to not immediately prompt the user to overwrite an existing file once selected. Instead the File Selector now adds the selected file name to the output name field facilitating the easy creation of new file names based on the name of an input file. Only when the "OK" button is clicked will the File Selector prompt to overwrite the file if it already exists.

This makes the File Selector more in-line with expected Windows operation.



In the figure above you can see that the user has selected an existing file to pre-populate the File Name field with a string which can then be modified to, for example, "02JUN08022333-M1BS-000000061332_01_P001_**subset**.TIF" without needing to type the entire string.

File Selector International 2-byte Character Support

The File Selector also is now capable of reading directories and filenames provided using international 2-byte character sets.

Double License Checkout

In some rare cases it was previously possible to have a Windows configuration which caused double quantities of licenses to be checked out of the License Manager. So, for example, starting ERDAS IMAGINE would consume two IMAGINE Essentials licenses. This effect has been corrected for in the 9.1 version of the License Manager and should no longer occur.

Snap to Raster Grid

The Snap to Raster Grid option available for AOIs now functions correctly again.

New in IMAGINE Advantage®

CARTOSAT-1 ortho-rectification

Ortho-rectification capability is provided for CARTOSAT-1 imagery through the RPC model.

Mosaic Tool follows No Stretch Preference

To assist in production mosaicing of imagery the Mosaic Tool preview windows now follow the standard user Preference of "No Stretch" when displaying imagery. This, for example, allows direct comparison of the DN values of the original frames against the previewed dodging or color balancing results.

RGB to IHS with 16-bit imagery

The RGB to IHS functions in Image Interpreter, and also Modeler in general, previously had issues in correctly calculating the Saturation component for non-8-bit data types, leading to problems with subsequent analysis. This issue has now been resolved and the Saturation calculates correctly.

Haze Reduction

The Haze Reduction utility will now work on Landsat data which has areas of zero pixels around the edges

Ehlers Fusion

The Ehlers Fusion algorithm was invented by Prof Manfred Ehlers, University of Osnabrück. It provides a research-level pan sharpening / resolution merging technique based around Fast Fourier Transform (FFT) domain filtering techniques.

User-friendly options are provided to pre-set the FFT filtering options based on user-selected image characteristics (is the imagery primarily Urban or Rural?, for example), but for users with experience in FFTs an advanced interface is also provided to allow user selection and previewing of filtering parameters.

Trade-off between retention of spectral fidelity versus spatial content is also enabled through the basic user interface.

Viewshed ASL

When performing a Viewshed analysis the Earth Curvature parameter is now correctly considered when using the Above Sea Level (ASL) option. Previously it only worked for the Above Ground Level option. This new capability is especially useful when considering coastal area observers attempting to determine the height at which aircraft over the sea can be seen

HPF Resolution Merge

The High Pass Filter (HPF) Resolution Merge technique, introduced in ERDAS IMAGINE 9.0, has been significantly improved to provide a better user experience including faster processing times, less temporary disk space requirements and better radiometric matching to the original multispectral image characteristics.

New in IMAGINE NITF 2.1 Module

The IMAGINE NITF 2.1 module and especially the exporter portion have undergone extensive re-architecting as well as renewing JITC Certification at C-Level 7 (the highest available certification). Improvements include:

- Export NITF Chip from NITF
- Upgraded NITF Info tab in ImageInfo
- Improved support for NITF DIGEST TREs
  - Geographic, Transverse Mercator, UTM and Lambert Conformal Conic projections and
  - WGS 1984 and GRS 1980 spheroids and datums
- Support for some commercial TREs where appropriate
- Support for persistent NULL values in NITF
- Direct editing of pixel values in uncompressed NITFs
- Direct editing of NITF DEMs (LPS)
- Fixed issues with converting annotation to CGM in the NITF exporter

IMAGINE Easytrace™

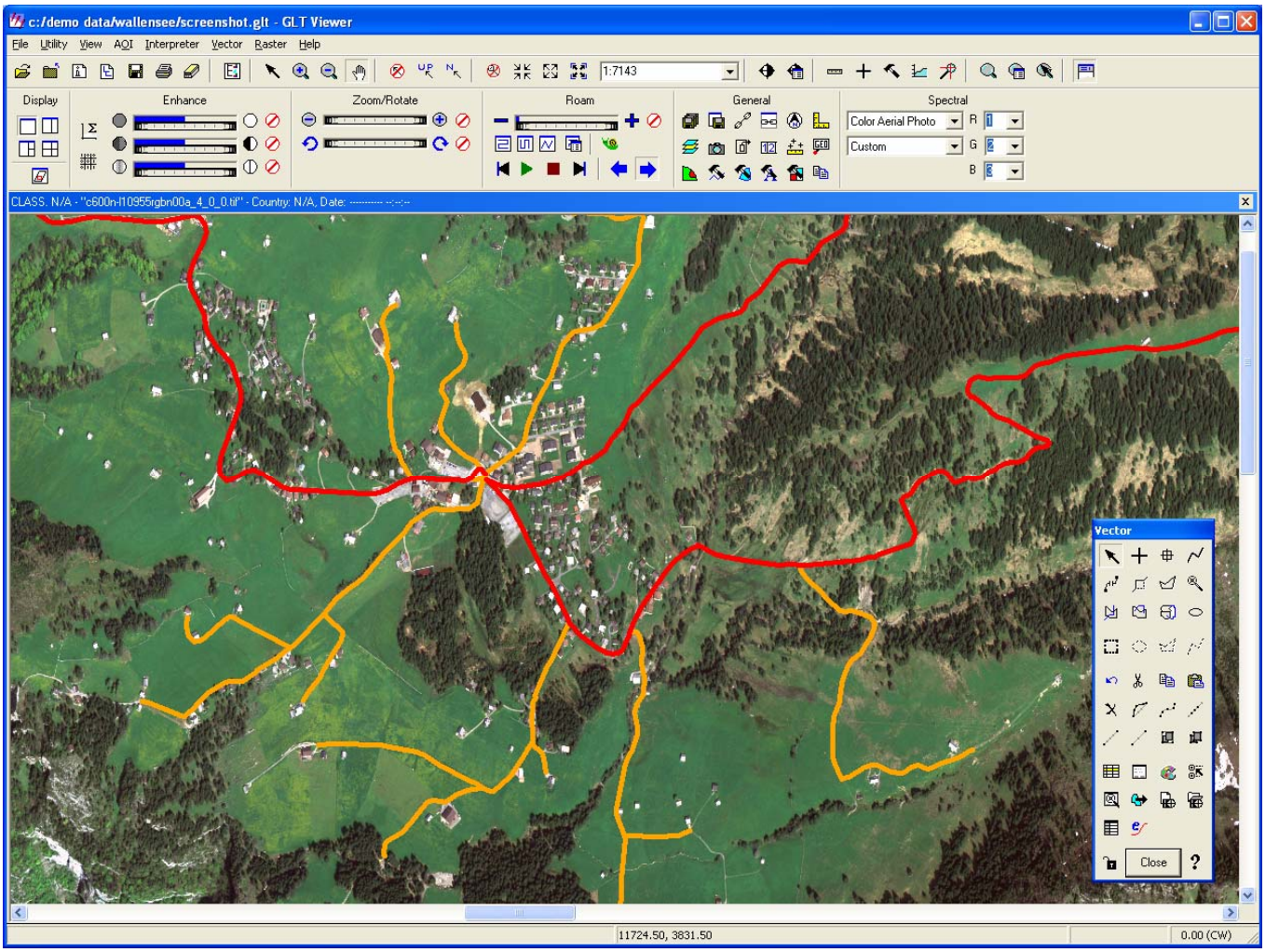
IMAGINE Easytrace™ was originally released shortly before ERDAS IMAGINE 9.1 as a web downloadable add-on module. This add-on module is now available for installation directly from the ERDAS IMAGINE for Windows CD-ROM.

Assisted Feature Capture / Editing

IMAGINE Easytrace delivers assisted feature extraction, streamlining your vector feature capture process.

In the geospatial imaging industry feature extraction relies heavily on labor intensive digitizing. The heads-up digitizing method is used for collecting GIS-ready data from geospatial imagery. It is costly, time consuming, and tedious.

Assisted (or semiautomatic) feature extraction fuses capabilities of computer and human operator. In an assisted system, an operator identifies and locates the feature or object (which is the step that is extremely difficult for the computer to do automatically). Once identified and defined by a few digitized points, the computer can finish digitizing the feature thus saving significant operator time.



The screen above shows how IMAGINE Easytrace was used to rapidly extract a road network from ADS40 data

New in IMAGINE AutoSync™

Projective Transform model enables orthocorrection of satellite imagery not currently covered by dedicated models

IMAGIZER®

Various issues which had prevented previous versions of IMAGIZER Data Prep and IMAGIZER Viewer to work correctly have been resolved and this freely-distributable viewer should now be capable of working again on Windows and UNIX platforms.

IMAGINE Developers' Toolkit™

To expedite continued improvements to the documentation and interaction between developers, the IMAGINE Developers Toolkit™ is now offered only as a web-downloadable package with online interactive support via the Leica Toolkit Developers' Network (http://developer.lggi.com). This packaging offers

- Interactive online forum owned by a dedicated LGGI employee
- Ensures up to date documentation is always available
- Toolkit Library contains all supported Toolkit packages, Data Types, and Functions
    - All entries are categorized for easy searching and
    - Every item is guaranteed to be complete
- Each item in the Toolkit Library Database is dynamically linked to every example

Licensing

Leica Geosystems would like to remind customers that from ERDAS IMAGINE version 9.0 and onwards all Leica Geosystems Geospatial Imaging software products are using a new licensing approach which should simplify the end-user experience with issuing and installing license files going forward.

To this end the “Upgrade” approach to licensing Leica Geosystems has been using since the introduction of FLEXlm with ERDAS IMAGINE 8.5 has been dropped. The old approach required issuing license files with every new release of ERDAS IMAGINE shipped to Software Maintenance (SWM) customers (e.g. ERDAS IMAGINE 8.6 to 8.7) – these licenses were “upgrade” types which required the original, earlier version, license file to still be present to be ”upgraded” to the newer version. In many cases however the old files were accidentally removed during un-installation of old versions of software or other problems were experienced such as the amount of time taken to request and issue licenses for the correct System ID and module types.

Instead two major changes have been made to the licensing approach:

- Only “Increment” style licenses will be issued (i.e. ones that do not require any existing license). Upgrade license files will no longer be issued.

- Existing SWM customers will only be required to request new license files for major version changes (such as going from ERDAS IMAGINE 8.7 to ERDAS IMAGINE 9.0). Minor version changes (e.g. from ERDAS IMAGINE 9.0 to ERDAS IMAGINE 9.1) will not, in general, require a new license – the newer version will be unlocked by a license file within the major version number range (e.g. a SWM customer installing ERDAS IMAGINE 9.1 will be able to unlock this new version using their existing 9.0 license file, but not with their 8.7 license file)

To the end user the advantages of this new approach are that you do not need to worry about retaining old license files when new ones are being issued and you will now only rarely be required to request license files to perform a SWM upgrade

Licensing Summary

Current ERDAS IMAGINE customers with valid Software Maintenance contracts who have existing license files for ERDAS IMAGINE 9.0 and who receive ERDAS IMAGINE 9.1 media under their Software Maintenance contract DO NOT need new license files*. The current 9.0 (or 9.1) license is sufficient.

Customers purchasing Version 9.1 of any ERDAS IMAGINE product will unlock the product using license files which will be issued with a version of 9.0.

* Customers should review the terms and conditions of their software license agreement to determine whether they are legally entitled to upgrade to a newer version of software. Customers are entitled to use up to the version of software that was current at the time of original software purchase or at the later expiration date of Software Maintenance (SWM) contract, where applicable.

CD-ROM Distribution

ERDAS IMAGINE 9.1 is distributed as a seven disk set consisting of the following volumes:

- ERDAS IMAGINE 9.1 for Windows
- IMAGINE Geodatabase Support Installer
- Leica Photogrammetry Suite (LPS) 9.1
- Example Data DVD 1
- Example Data DVD 2
- ERDAS IMAGINE 9.1 for UNIX
- Example Data for UNIX

Supported Modules

The initial ERDAS IMAGINE 9.1 release provides upgraded installation for the following modules (on the Windows platform):

- IMAGINE Essentials
- IMAGINE Advantage
- IMAGINE Professional
- IMAGINE AutoSync
- IMAGINE Easytrace
- IMAGINE OrthoRadar
- IMAGINE Radar Interpreter
- IMAGINE StereoSAR DEM
- IMAGINE IFSAR DEM
- IMAGIZER Data Prep
- IMAGINE Vector
- IMAGINE VirtualGIS
- IMAGINE Stereo Analyst
- IMAGINE NITF 2.1
- Leica MosaicPro
- IMAGINE MrSID Desktop Encoder
- IMAGINE MrSID Workstation Encoder
- IMAGINE Enterprise Loader
- IMAGINE Enterprise Editor

Additional modules are scheduled for future releases.

Information subject to change without notice.

Part number IMAGINE What's New 9.0 cc 03/06.

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