Release Guide

ERDAS IMAGINE 2020 Update 2

Version 16.6.2

December 2020

Contents

About This Release

This document describes enhancements in ERDAS IMAGINE 2020 Update 2 (v16.6.2), including IMAGINE Photogrammetry (formerly LPS Core) and ERDAS ER Mapper. Although the information in this document is current as of the product release, see the Hexagon Geospatial Support website for the most current version.

Update 2 includes both enhancements and fixes. For information on fixes that were made to ERDAS IMAGINE, see the Issues Resolved section.

This document is only an overview and does not provide all the details about the product's capabilities. See the online help and other documents provided with ERDAS IMAGINE for more information.

Development of ERDAS IMAGINE 2020 focused on ensuring that virtually all aspects of ERDAS IMAGINE run in 64-bit. Consequently, the installer has been split into three separate installers: ERDAS IMAGINE 2020 64-bit; ERDAS IMAGINE 2020 32-bit; and ERDAS ER Mapper 2020. The same split is available for Update 2 installers.

ERDAS IMAGINE Product Tiers

ERDAS IMAGINE performs advanced remote sensing analysis and spatial modeling to create new information. In addition, with ERDAS IMAGINE, you can visualize results in 2D, 3D, or video and on cartographic-quality map compositions. The core of the ERDAS IMAGINE product suite is engineered to scale with your geospatial data production needs. Optional modules (add-ons) providing specialized functionalities are available to enhance your productivity and capabilities.

IMAGINE Essentials is the entry-level image processing product for map creation and simple feature collection tools. IMAGINE Essentials enables serial batch processing.

IMAGINE Advantage enables advanced spectral processing, image registration, mosaicking and image analysis, and change detection capabilities. IMAGINE Advantage enables parallel batch processing for accelerated output.

IMAGINE Professional includes a production toolset for advanced spectral, hyperspectral, and radar processing and spatial modeling. This tier comes standard with ERDAS ER Mapper.

IMAGINE Photogrammetry maximizes productivity with state-of-the-art photogrammetric satellite and aerial image processing algorithms.

New Platforms

Full Installers

Starting with ERDAS IMAGINE 2020 Update 1, update installers became full installers.

This means that they can either be installed as a stand-alone (install ERDAS IMAGINE 2020 Update 2 without first installing ERDAS IMAGINE 2020) or as an update to an existing install (installing ERDAS IMAGINE 2020 Update 2, even if ERDAS IMAGINE 2020 Update 1 is already installed, will update the existing installation to v16.6.2).

With full installers, it is no longer possible to roll back an update to the previous version. So, for example, if ERDAS IMAGINE 2020 were updated with ERDAS IMAGINE 2020 Update 2, uninstalling it removes ERDAS IMAGINE 2020 entirely. Consequently, “rolling back” now involves uninstalling ERDAS IMAGINE and re-installing the desired previous version.

ArcGIS 10.7.x and ArcGIS 10.8.x

ERDAS IMAGINE 2020 Update 2 (32-bit) has been tested and declared supported when using an installed and licensed version of ArcGIS 10.6, 10.6.1, 10.7, 10.7.1, 10.8, or 10.8.1 to provide geodatabase support libraries.

Alternatively, the IMAGINE Geodatabase Support component (based on ArcGIS Engine 10.7) can be installed to provide geodatabase support.

Licensing

ERDAS IMAGINE 2020 installers no longer attempt to automatically install geospatial licensing tools as part of the installer. If customers wish to use geospatial licensing tools (for example, to set up a floating/concurrent license server), Geospatial Licensing 2020 must be downloaded separately.

It is strongly recommended that customers upgrade to the newest version of Geospatial Licensing 2020. If in doubt, refer to the Microsoft Windows Add or Remove Programs utility to determine the version currently installed.

The appropriate download can be found in the Downloads section of the Hexagon Geospatial web site.

New Technology

IMAGINE DSM Extractor module

The new IMAGINE DSM Extractor features advanced SGM (Semi-Global Matching) algorithms for faster and denser digital surface generation from stereo imagery. This module replaces the existing XPro SGM and Tridicon SGM modules. You can now generate denser point clouds in a fraction of the time with enhanced accuracy. IMAGINE DSM Extractor works with all types of imagery, sensor data, and file formats that are supported by IMAGINE Photogrammetry with none of the former limitations on file size.

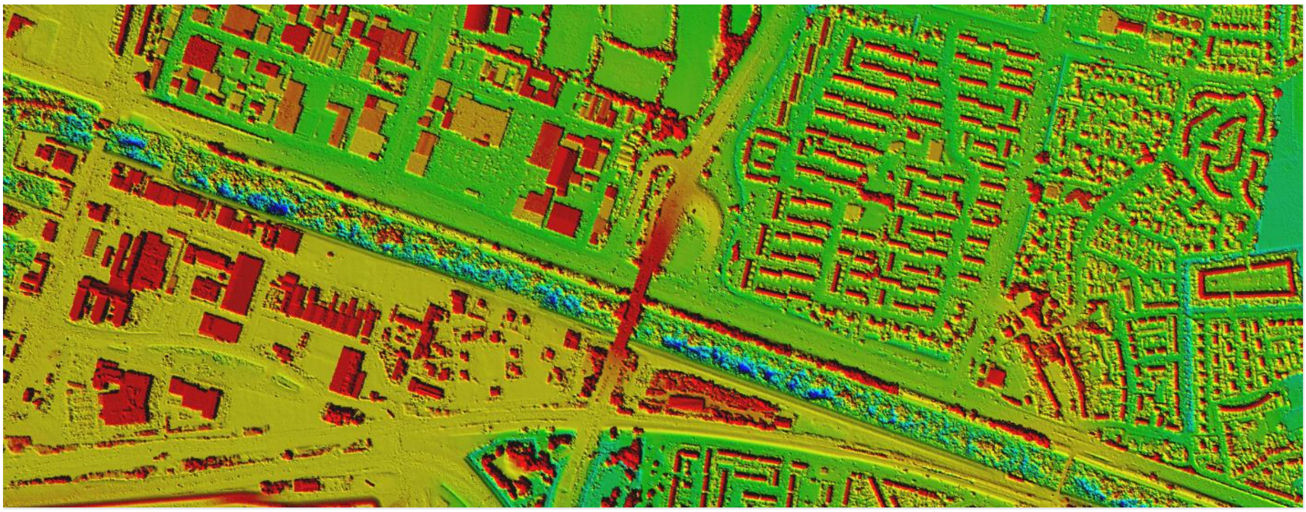


Figure: A point cloud extracted from an UltraCam Eagle Mark 3 camera displayed as a surface.

Benefits of the new IMAGINE DSM Extractor module include:

- Support for all sensors supported by IMAGINE Photogrammetry
- Support for all imagery formats and bit depths supported by IMAGINE Photogrammetry
- On-the-fly epipolar resampling, removing the need to generate epipolar resampled images
- Support for batch or local/distributed parallel processing
- Generates Intensity, RGB, and RGBN encoded point cloud files

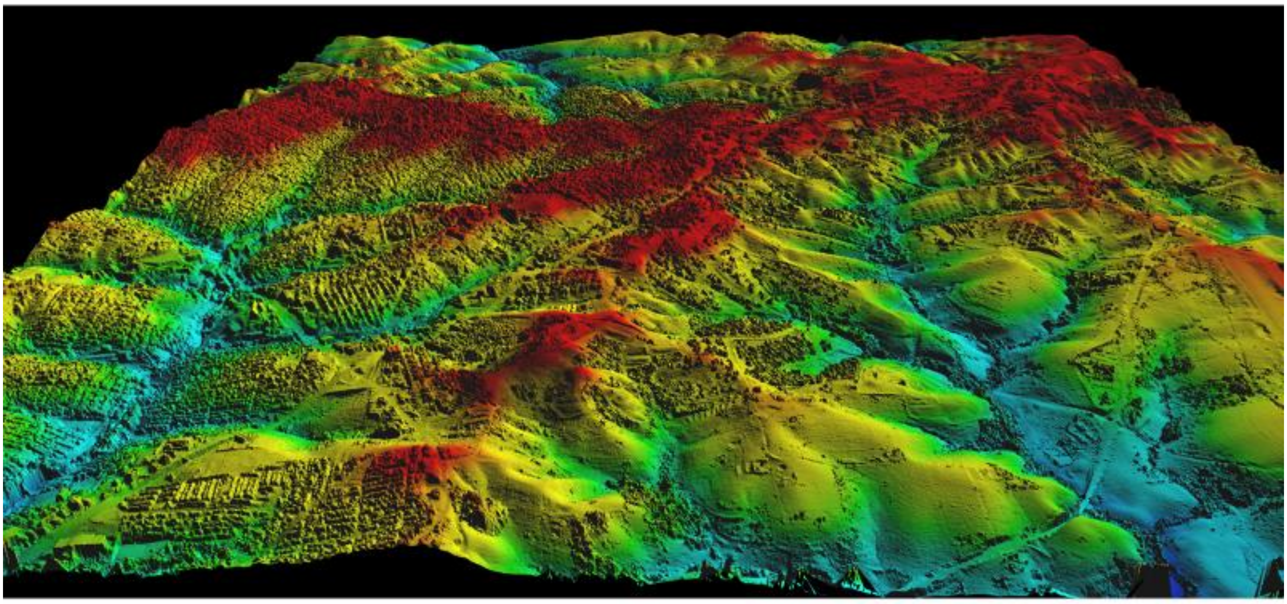
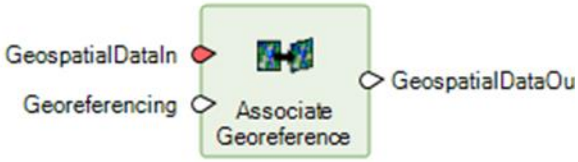


Figure: A point cloud extracted from DigitalGlobe WorldView-3 imagery displayed as a surface.

New Operators for Spatial Modeler

Hexagon continues to add operators to Spatial Modeler. New (or modified) operators are outlined below, with a brief description of their capabilities. See the ERDAS IMAGINE 2020 Help for the full details of each operator, and visit the Hexagon Geospatial Community Spatial Recipes page for examples of spatial models that use many of these capabilities.

Associate Georeference



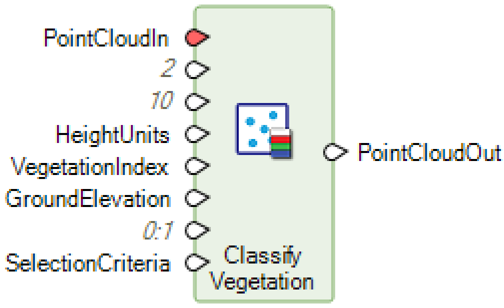
Replaces the georeference associated with the input geospatial data, GeospatialDataIn (currently limited to IMAGINE.Raster), with the input georeferencing. Common use cases involving this operator are described in the Raster Geometry in Spatial Modeler section below and may also utilize other new operators listed below.

CRS ID Output

This operator outputs a coordinate reference system represented by the input CRS ID to a file in one of the following supported file formats:

- ERDAS IMAGINE Projection Library (PLB)
- GeoMedia Coordinate System File (CSF)
- ERDAS IMAGINE World Coordinate System (WCS)
- ESRI Projection File (PRJ)

Classify Vegetation



This operator identifies points from the input point cloud that represent vegetation and reassigns them to either Low Vegetation (Class 3), Medium Vegetation (Class 4), or High Vegetation (Class 5).

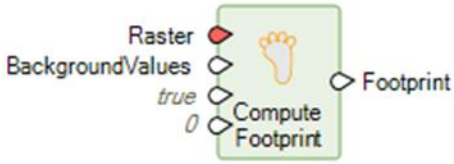
To discriminate between Low, Medium, and High Vegetation classes, the operator expects that the points that fall on the ground in the point cloud have already been classified, that is, assigned to the Ground class (Class 2). If the ground points in the input point cloud are not classified, you can classify them using the Classify Ground operator.

The classification is performed by first analyzing the geometric relationship of the non-ground points to their neighbors. Several geometric descriptors (scatter, planarity, linearity, and verticality) are computed for the points and then taken into account in determining possible vegetation points. If the radiometric properties Near Infrared and/or Red, Green, and Blue (RGBN or RGB) are supported by the point cloud point record format, these properties are used to determine which candidates represent vegetation points.

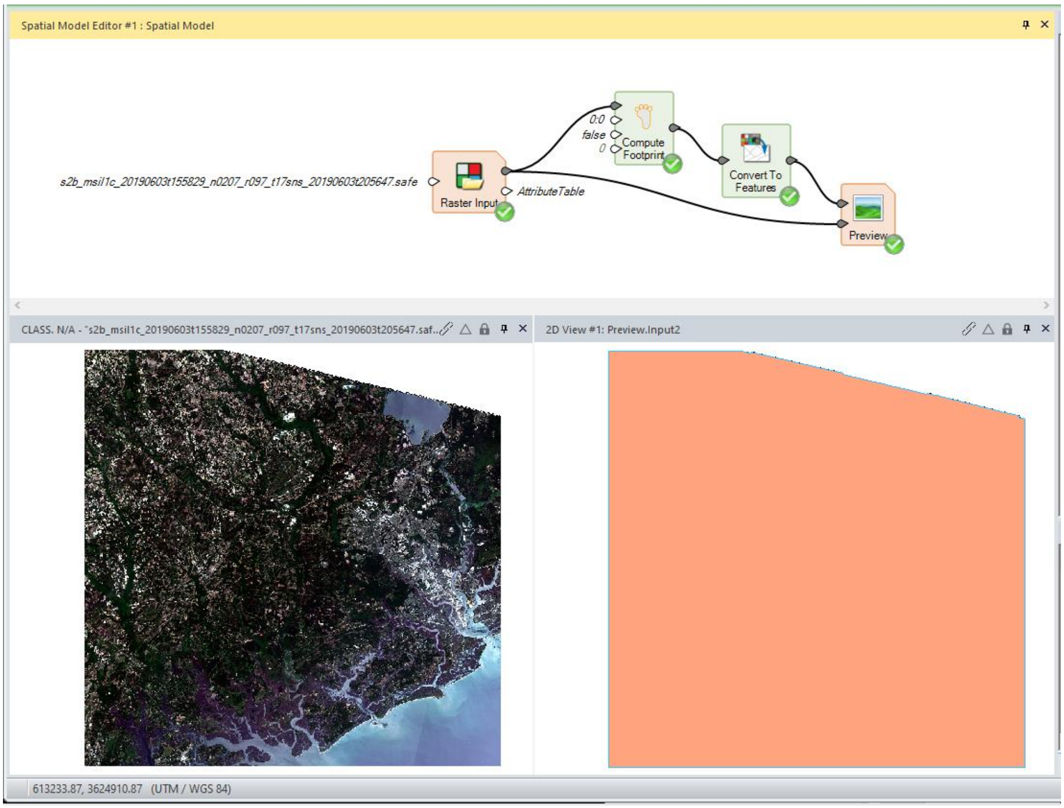
If the point cloud has color (RGB/RGBN) attributes, each point's vegetation index is computed and compared against the value specified on port VegetationIndex. For point clouds with RGBN attributes, the Normalized Vegetation Difference Index (NDVI) is used. For those with RGB attributes, the Greenness index is used.

If a point's vegetation index is greater than or equal to the value specified on port VegetationIndex, it is considered a candidate for classification as vegetation.

Compute Footprint

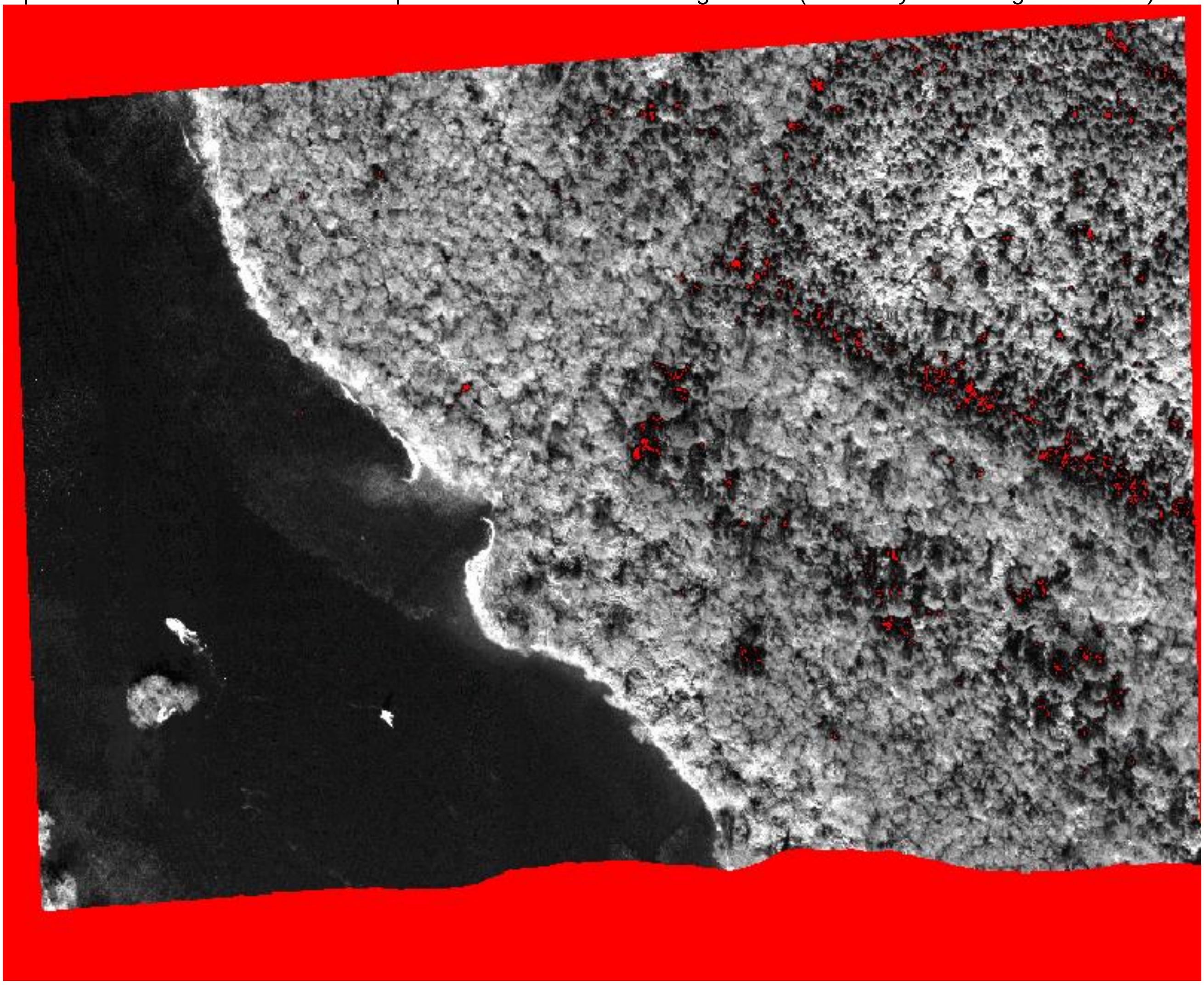


This operator generates the not-necessarily-rectangular footprint for raster data. The output Footprint is the outline polygon that defines the extent/boundary of the input Raster's valid (non-NoData, as determined by mask or supplied background values) area.

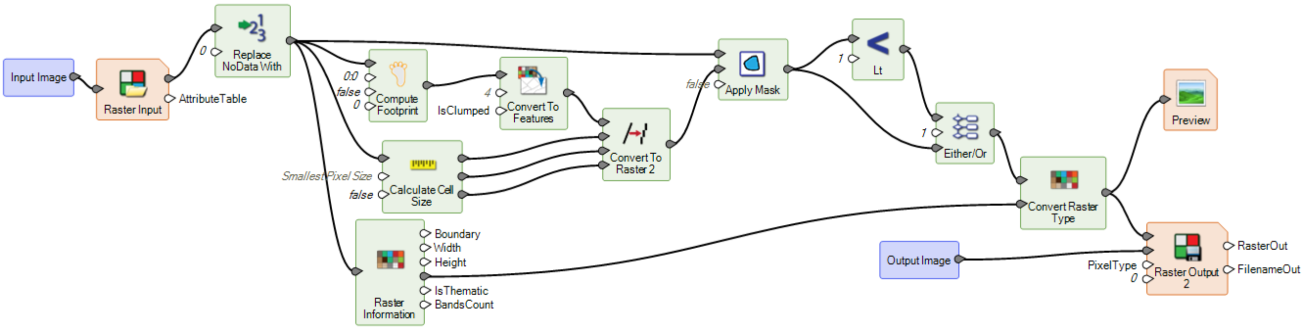


Alternatively, a spatial model like the one below could be used to set “outside the footprint” to value-based NoData (e.g. 0) while converting “inside the footprint” pixels that were that value to a value of 1 to avoid them also being treated as NoData “holes”.

Input Pan data with undifferentiated pixels with a DN of 0 causing “holes” (shown by red background color):

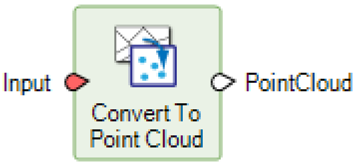


Spatial Model using the new Compute Footprint operator:



Resulting output image with trimmed NoData “surround” and no interior holes

Convert To Point Cloud



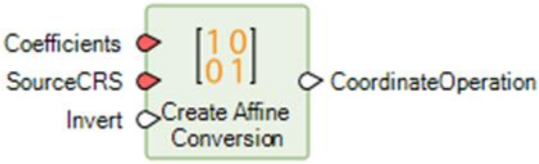
This operator converts features to point cloud.

The input features' primary geometry field's CRS determines the dimensionality of the geometries, which may be either a 2D or 3D CRS. If the primary geometry field's CRS is 2D, the output point cloud's vertical CRS will be 1D unknown. If feature geometries are linear or area, the vertices are used to define the point cloud points.

If the features' primary geometry field's CRS is 2D, the input features must have an attribute named ELEVATION of data type IMAGINE.Float or IMAGINE.Double, which provides the Z value.

The operator determines the point record format based on the attributes of the input features.

Create Affine Conversion



This operator creates an affine conversion based on input affine coefficients and source CRS. The target CRS (the To property of the resulting CoordinateOperation) does not need to be specified and will be created as a GridCRS (a derived CRS) , which is derived from the SourceCRS using the provided affine conversion.

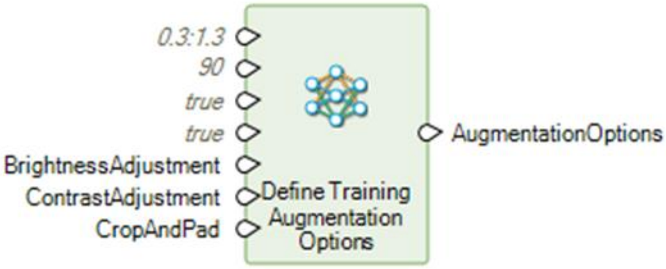
Note that the meaning of the Invert input differs from the Create Affine Transform operator. In this Create Affine Conversion operator, setting Invert to true results in the inversion of the math transform implied by the Coefficients, but the To of the resulting CoordinateOperation remains the GridCRS defined by that inverted conversion. This is useful for defining Georeferencing because for rectified images it is more natural to specify the upper left map coordinate and cell size (implying a pixel-to-map conversion), but the proper form of the Georeferencing CoordinateOperation is as a map-to-pixel conversion.

Common use cases involving this operator are described in Raster Geometry in Spatial Modeler section below.

Create Directory

This operator creates a specified directory, including any parent directories that do not exist. If the directory already exists on the file system, the operator will simply output the directory name. The operator will fail if the specified directory cannot be created.

Define Training Augmentation Parameters



This operator creates a set of parameters that will be used for generating additional training data from existing training data.

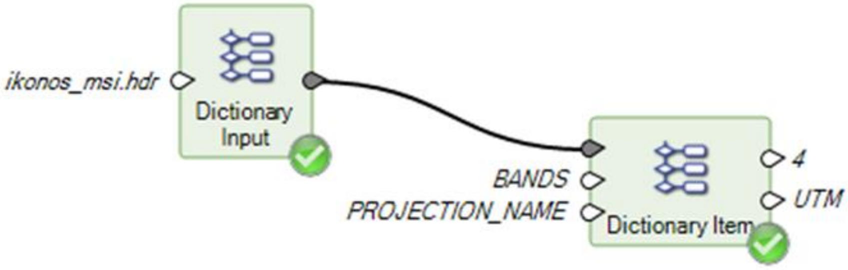
Depending on the selected options, parameters for dynamically generating scaled, rotated, flipped, cropped and radiometrically adjusted versions of the existing training data can be specified. Augmenting existing training helps improve object detection accuracy.

The parameters can be used as an input in the Initialize Object Detection operator to generate additional training data during the initialization process.

Delete File

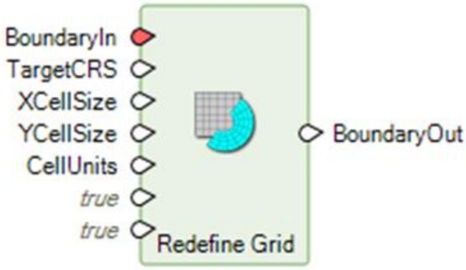
Deletes a file. For example, if c:\temp\foo.txt is provided as input, that file will be deleted from the file system. If the file does not exist on the file system, the operator will simply output the filename. The operator fails if the specified file cannot be deleted.

Dictionary Input



Read HDR files and other text files, such as DiMAP XML headers containing key/value pairs, and turn them into dictionaries for use within a spatial model.

Redefine Grid



Redefine Grid allows a raster's grid geometry to accommodate alignment to map axes, pixel size scaling, and translation of the grid boundary's minimum to 0, 0. The input boundary is expected to be a GridBoundary (that is, the CRS property of the Boundary has a value that represents a GridCRS). The redefinition accommodates the modification of properties of typical concern, that is, orientation/rotation, scaling, and translation, while maintaining proper georeferencing for the newly defined grid.

With respect to orientation, the grid will, by default, be redefined such that the new grid axes are parallel to the axes of TargetCRS (or, if not specified, the CRS to which the original grid is referenced). This may involve orienting the grid through an inverse ground to image transformation (for calibrated grids) or eliminating any rotational element that might be present in a rectified grid.

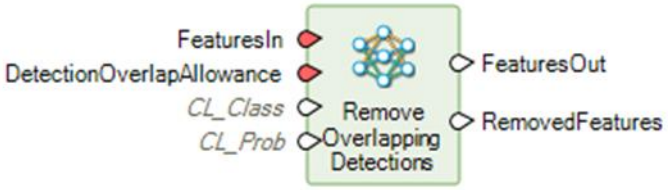
The scale of the grid may be specified through an X and Y cellsize. If these are not specified, the cell size used will be that calculated by the default behavior of the Calculate Cell Size operator when BoundaryIn is supplied as the Grid input and TargetCRS is supplied as the TargetCRS input.

Finally, by default, the new grid will be adjusted such that the minimum coordinate of its boundary is 0,0. If this option is not taken, the output grid boundary limits will still be set such that the entire input grid boundary can be represented in the output grid. This may require negative grid coordinates.

Normally, AlignToReferencedAxes is specified with a default value of true and BoundaryOut is used with the Warp operator to warp a raster input to the redefined grid geometry. A value of false, however, allows redefinition of a grid that may be used effectively as a reprojection to the (presumably new) TargetCRS and saved as a calibration when BoundaryOut is supplied to Update Georeferencing instead of Warp.

Common use cases involving this operator are described in Raster Geometry in Spatial Modeler section below.

Remove Overlapping Detections



During object detection using the Detect Objects Using Deep Learning operator, the operator may find multiple bounding boxes for the same object.

This operator detects if there are two or more bounding boxes that overlap by more than DetectionOverlapAllowance, and, if so, it will retain the bounding box that has the highest probability and remove all the others.

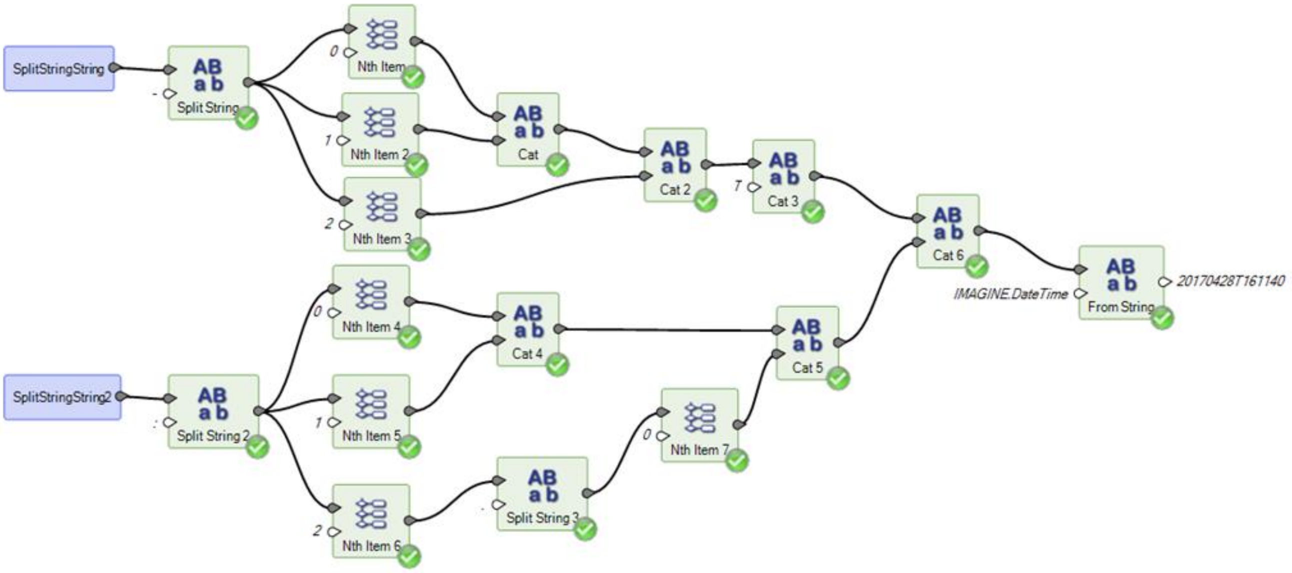
As part of the non-maximal suppression algorithm used to remove overlaps, the overlap between two bounding boxes is determined by computing their Intersection over Union (IoU). IoU is defined as the ratio of the intersection area to the union area of two bounding boxes.

Updated Operators

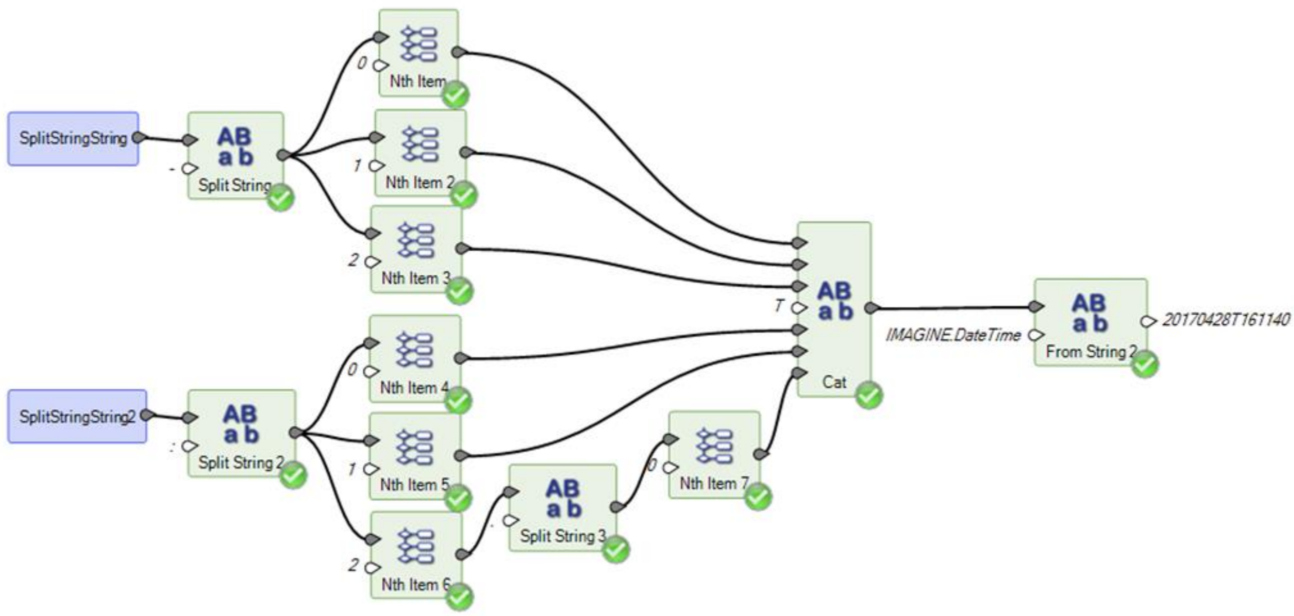
Cat

The Concatenate (Cat) operator is now expandable, and will also accept lists of input strings, enabling more than two inputs to be evaluated in a single operator.

This means you can replace a spatial model that looks like this…



…with a much simpler one that looks like this.

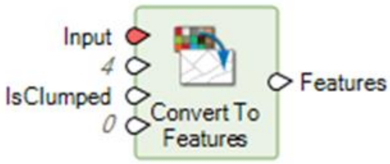


Clump

The Clump operator (which re-organizes thematic raster data into groups of contiguous pixels with the same original class/DN value) has been re-written to address several issues, primarily to improve the performance through a new multi-threaded tile-based approach and to output unsigned 32-bit data by default.

Note: The behavior of this new Clump operator is different from the prior Clump in that the new operator clumps all pixels that are not NoData, so even 0s will form clumps. Consequently, if you are replacing the old (deprecated) operator in an existing spatial model with the new operator, be aware that the result may now differ. You may need to add a Set to NoData prior to the new Clump to ensure that the same set of pixels are clumped.

Convert To Features

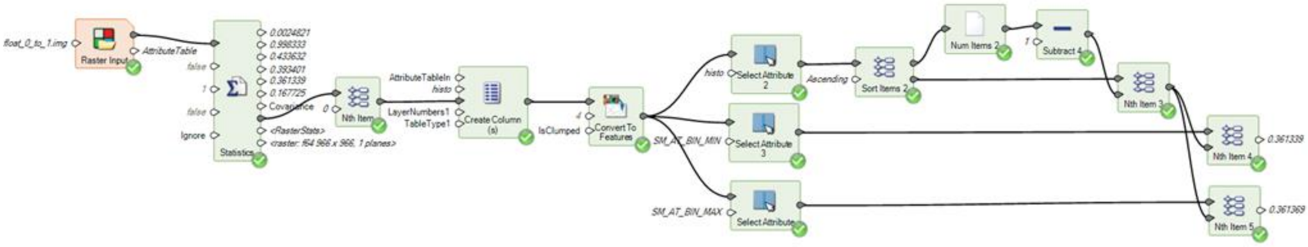


The Convert To Features operator has been updated to accept point clouds as input for conversion to (point) features geometries. Previously, it was primarily intended to convert raster.

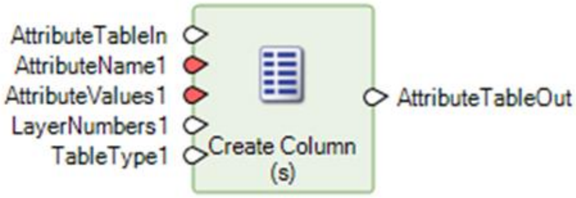
IMAGINE.PointCloud is converted to features having 3D point geometry and attributes based on the schema defined by its point data record format (see LAS Specification 1.4). An additional attribute, ELEVATION, of type IMAGINE.Double, holds a copy of the Z value from the 3D point geometry.

This new Convert To Features operator has also been used to implement a new Spatial Modeler-based Raster to Shapefile utility on the main ribbon Vector tab.

Attribute information can also be converted to features for further analysis (features do not necessarily need to contain a geometry attribute field). For example, in the model shown below, the histogram of a floating-point raster image (not the pixels themselves) is passed through the Convert To Features operator for analysis of the values. The Convert To Features operator also tries to preserve any bin functions that would be present on the input data, such as would be used for float raster values. The model identifies the Majority set of DN values represented in the binned histogram data (by sorting the histogram in ascending order and identifying the index location of the highest histogram value) and returns the minimum and maximum values of that bin (in this case, the input image had the most pixel values falling in the 0.361339 to 0.361369 bin).

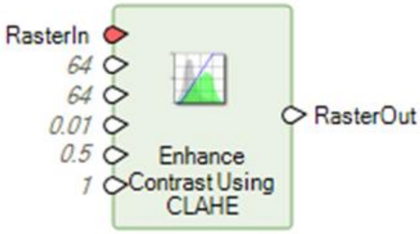


Create Column(s)

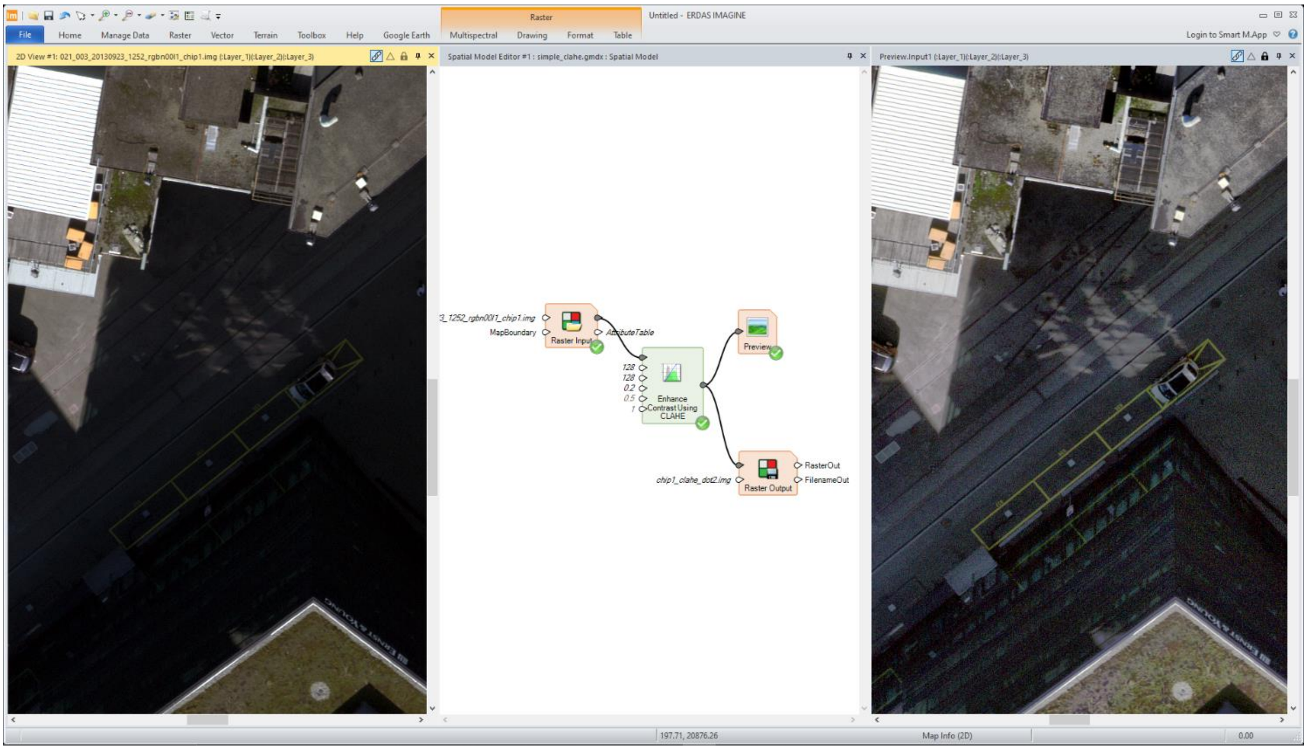


The Create Columns(s) operator has been updated to accept Lists as input.

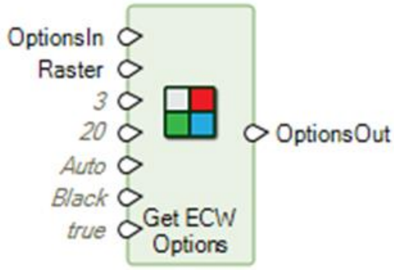
Enhance Contrast Using CLAHE



Previewing the results of this operator will now correctly process just the extent and scale displayed in the Preview window, thereby providing much faster visual feedback.



Get ECW Options



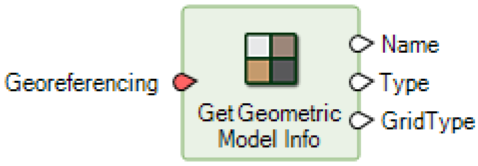
A new port called ColorSpace has been added. It had previously been noted that on creation of a three-band ECW image, the assumption was that the three bands represented RGB (truecolor) color space, and compression optimizations were consequently applied based on this assumption. However, this is not necessarily true — the three bands might, for example, be three bands derived from SAR data, and the colors produced by these three bands do not represent “truecolor.”

Consequently, the ColorSpace port has been added to control this behavior. Four options are provided: Auto, Greyscale, RGB, and Multiband. The ECW compressor uses source color space description to determine the optimal color space for compression. Currently, only the RGB option will use an alternate color space (YCbCr) to improve the compression efficiency for three-band RGB imagery. Note that using the RGB option for non-RGB three-band imagery can produce undesirable compression results due to the assumptions built into the RGB-to-YCbCr conversion equation.

If Auto is selected, then if Raster has one band, ColorSpace is set to Greyscale; otherwise, Multiband is used.

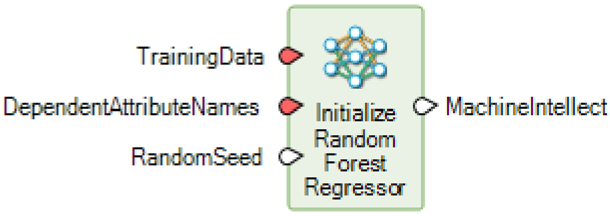
The color of the NoData mask in an output ECW file can now also be controlled and set to Black or White. This capability is available for general ERDAS IMAGINE via a Preference.

Get Geometric Model Info

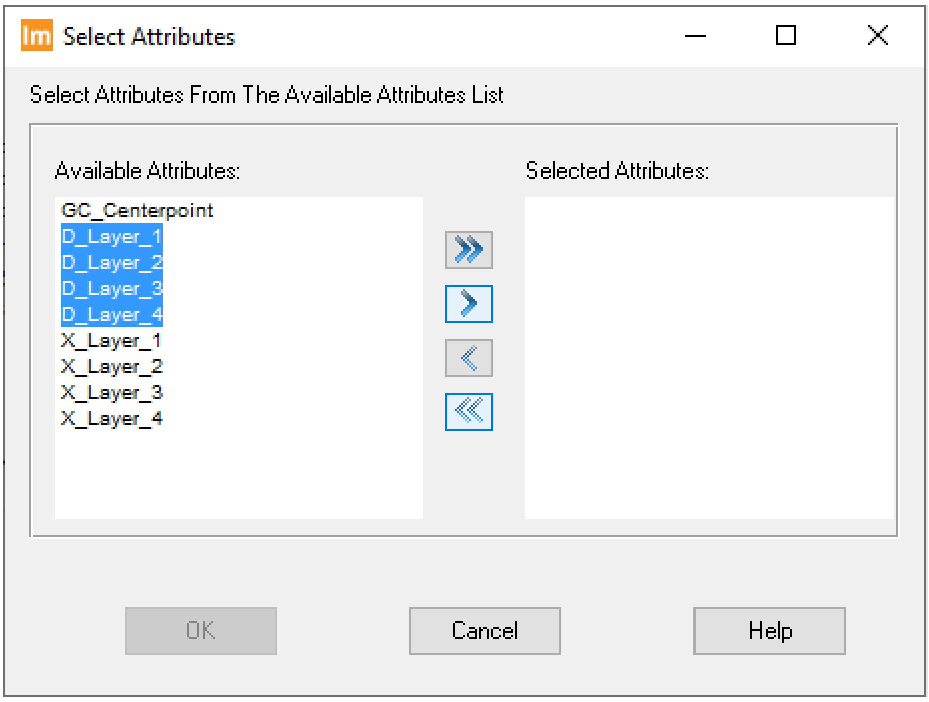


GridBoundary is being promoted as the definitive way to represent raster geometry in Spatial Modeler. As such, the Georeferencing operation to be examined by the Get Geometric Model Info operator can now be presented as either a GridBoundary or a GridCRS.

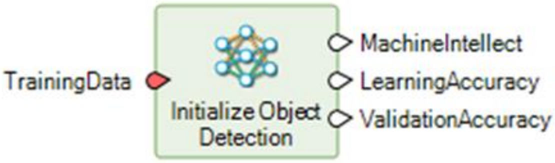
Initialize CART Regressor and Initialize Random Forest Regressor



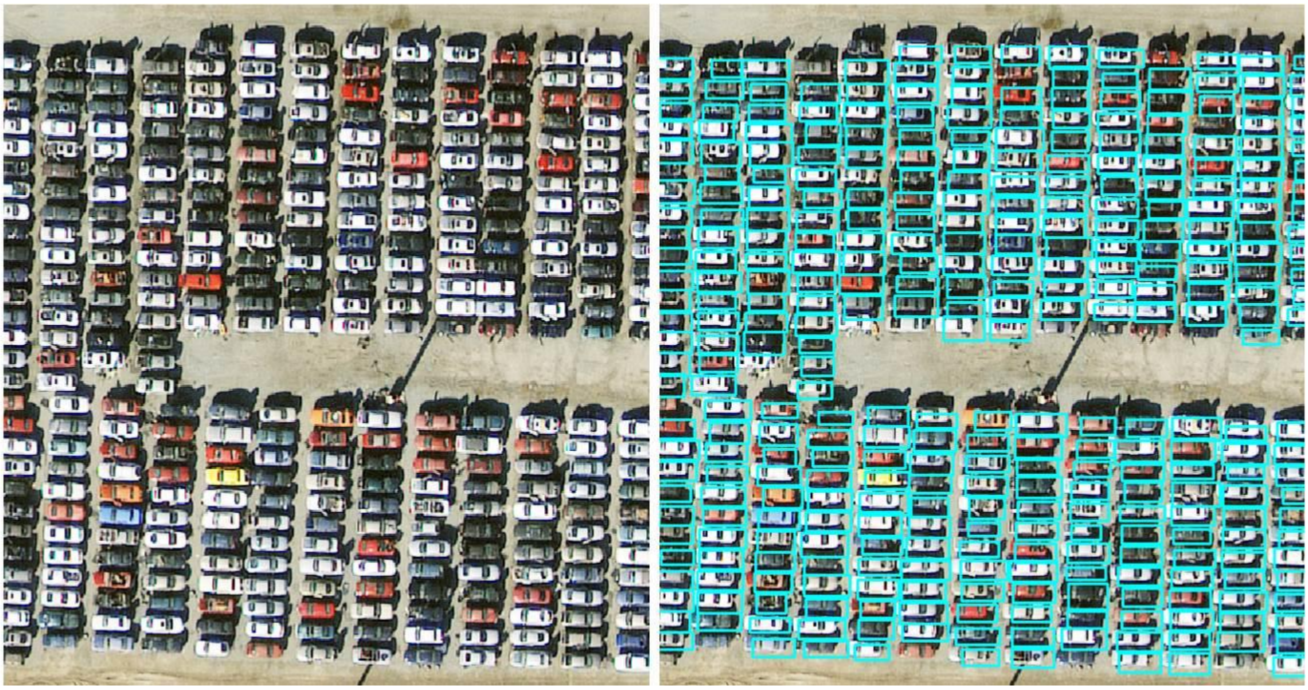
Both of these operators required that the list of Dependent Attribute variables be manually entered, which was time-consuming and prone to error. They have been updated to provide a graphical user interface, which enables the user to select the appropriate attribute fields from a list of those available from the provided TrainingData.



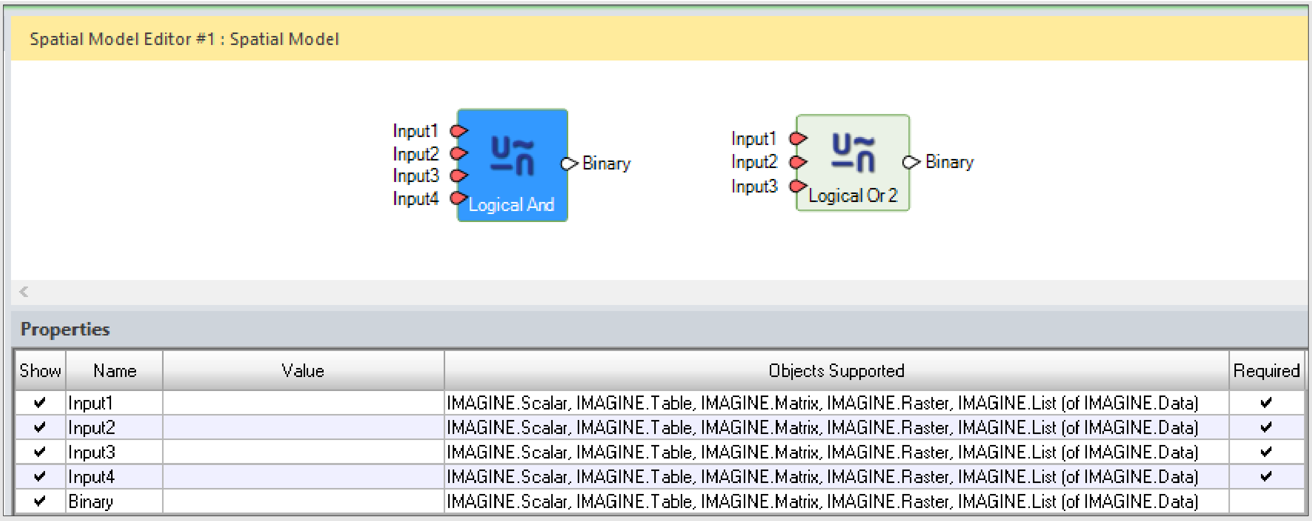
Initialize Object Detection



Previously, Object Detection could have issues trying to identify smaller features, such as cars, as opposed to aircraft. Consequently, the operator has been enhanced to better handle smaller features, as shown by the detection example below.



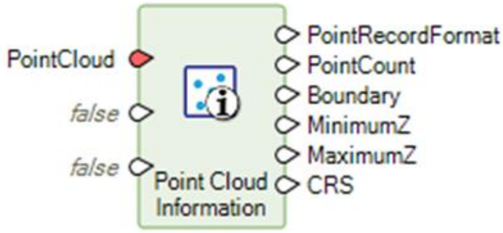
Logical And and Logical Or



Show	Name	Value	Objects Supported	Required
✔	Input1		IMAGINE.Scalar, IMAGINE.Table, IMAGINE.Matrix, IMAGINE.Raster, IMAGINE.List (of IMAGINE.Data)	✔
✔	Input2		IMAGINE.Scalar, IMAGINE.Table, IMAGINE.Matrix, IMAGINE.Raster, IMAGINE.List (of IMAGINE.Data)	✔
✔	Input3		IMAGINE.Scalar, IMAGINE.Table, IMAGINE.Matrix, IMAGINE.Raster, IMAGINE.List (of IMAGINE.Data)	✔
✔	Input4		IMAGINE.Scalar, IMAGINE.Table, IMAGINE.Matrix, IMAGINE.Raster, IMAGINE.List (of IMAGINE.Data)	✔
✔	Binary		IMAGINE.Scalar, IMAGINE.Table, IMAGINE.Matrix, IMAGINE.Raster, IMAGINE.List (of IMAGINE.Data)	

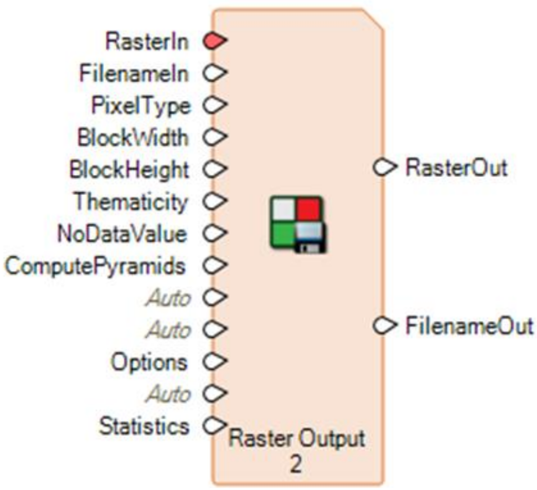
These two operators are now expandable and will also accept Lists of inputs, enabling more than two inputs to be evaluated in a single operator.

Point Cloud Information



The Point Cloud Information operator has been updated with Boolean ports to force the computation of the point count and boundary of the point cloud being passed through. This ensures accuracy of these values for point clouds, which may have been manipulated by upstream processes.

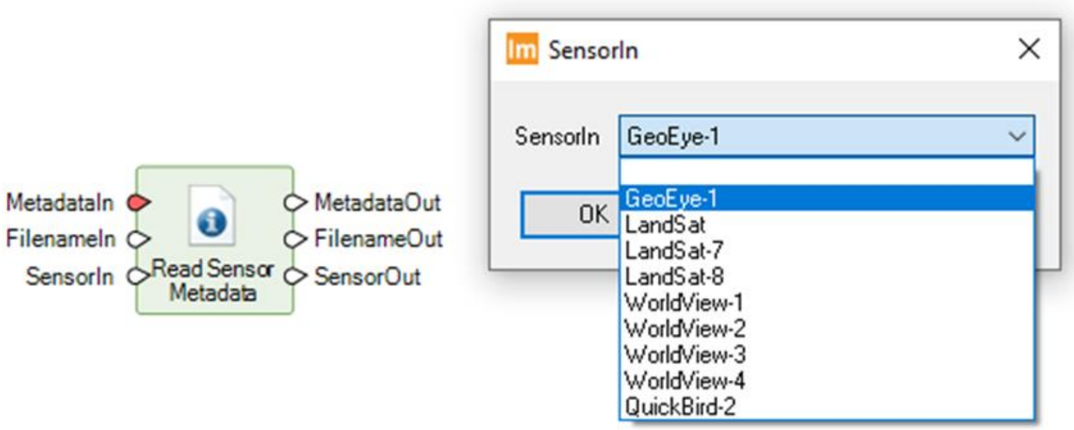
Raster Output



A new Statistics input port has been added to Raster Output. This was added because of a need to set custom statistics on an output. It allows statistics created using an AOI, skip factor, ignore value(s), etc., to be passed in.

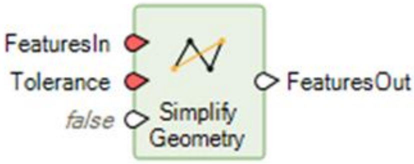
A new Format input port has also been added to define the format to be created rather than leaving it as a decision made based on the filename extension provided.

Read Sensor Metadata



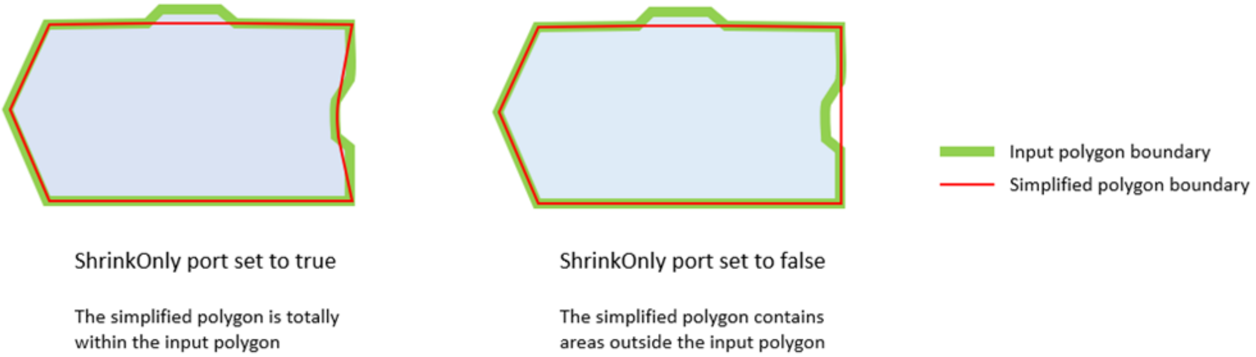
Read Sensor Metadata has been updated to reflect that it will read metadata from various flavors of DigitalGlobe/Maxar WorldView sensors, not just GeoEye-1.

Simplify Geometry

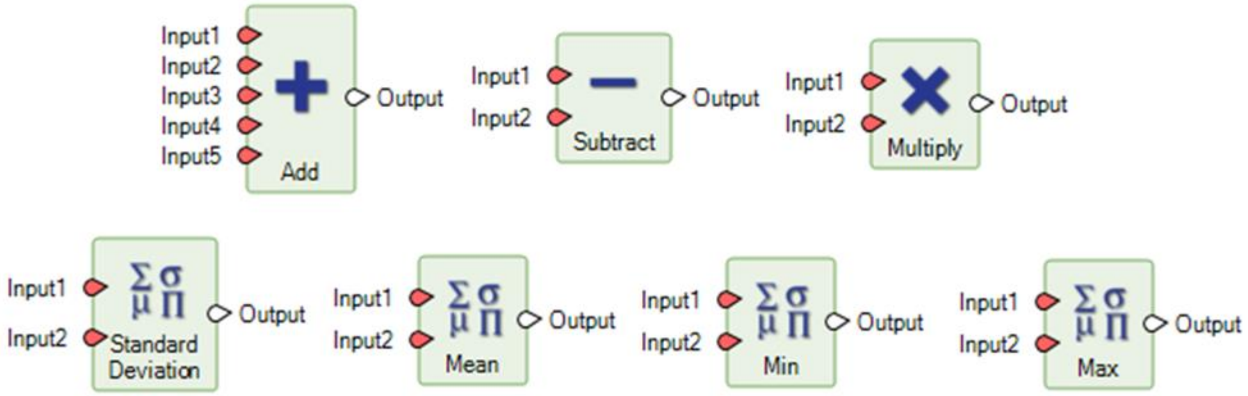


A ShrinkOnly port has been added. This port is applicable only to AreaGeometry features. If it is true, the simplified geometries are guaranteed to be wholly inside the original geometries.

For example, in the following two graphs, the green polygons are input geometries and the red polygons are the simplified results. The left graph shows the result with ShrinkOnly being true. The right one shows the result with ShrinkOnly being false.



Various Math Operators Updated to Accept Lists



Various math operators have also been updated to accept Lists as input to make interaction with Iterator outputs easier.

Raster Geometry in Spatial Modeler

Introduction

The Spatial Modeler strives to make processing tasks easy to assemble and efficient to execute. One of the main ways it attempts to ease the model creator's efforts is by making data conversion automatic so that sensible operations can succeed even in the face of a variety of data representations.

For processing tasks that are geospatial, this data conversion typically needs to involve coordinate operations, i.e., representing coordinates for two or more data sources in the same coordinate reference system (CRS), so that data that represents the same place can be recognized.

For geospatial data with explicit geometry, such as Features and PointCloud, coordinate operations are familiar and intuitive to most users. Operations on geospatial data with implicit geometry, i.e., Raster, tend to be more awkward. Spatial Modeler's simplified representation of Raster geometry, the Grid Boundary, attempts to make these operations easier to comprehend and undertake while continuing to fully subscribe to international definitions and standards.

Geometry Transformation vs. Georeferencing Correction

Regardless of the type of geospatial data (Features, PointCloud, Raster), it is important to understand the distinction between geometry transformation and correction of a dataset's georeferencing information.

In geometry transformation, the geospatial data's georeferencing information is assumed to be correct and this information is used to facilitate the rereferencing of explicit or implicit coordinate values to a different coordinate reference system. This can be accomplished using operators such as Coordinate Transformation, Elevation Transform, Point Cloud Reproject, and Warp.

In georeferencing correction, on the other hand, the geospatial data's georeferencing information is assumed to be incomplete or in error. The intention is not to modify explicit or implicit coordinate values, but rather to revise how those values are to be interpreted (which, in the case of a Raster's grid coordinates, may involve changing the way they are related to an external coordinate reference system). To effect these changes, operators such as Associate Georeference and Attach Vertical CRS may be used. Some of the more challenging cases of Raster correction may require the preparation of input to Associate Georeference via operators like Redefine Grid, Create Affine Conversion, and Associate Elevation.

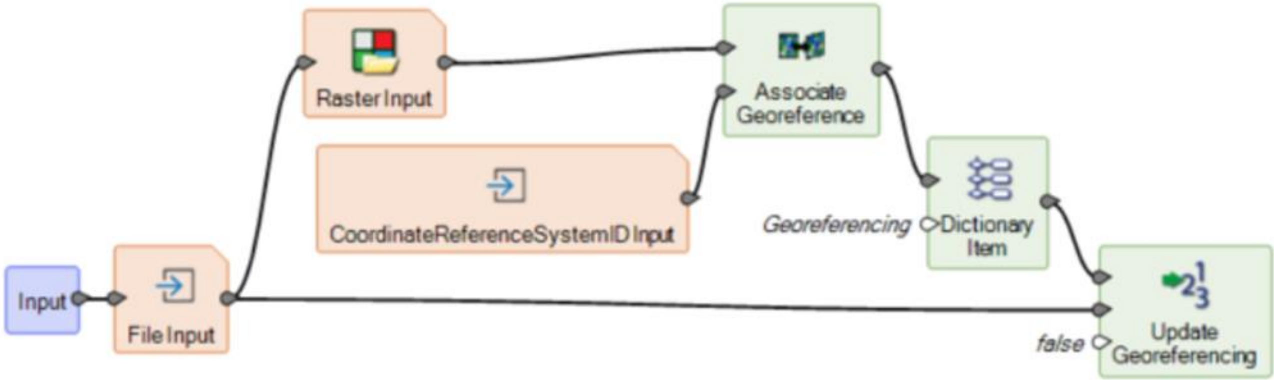
Typical Use Cases

The following typical use cases illustrate how Raster geometry can be manipulated using the Grid Boundary and related representations:

CRS Association

A Raster Input has an associated world file but no identified CRS. How might a CRS definition be associated with the Raster for reliable integration with other data in a spatial model?

A model such as the following may be used to achieve this result.



By setting the Input property of the CoordinateReferenceSystemID Input operator to the desired CRS, either via direct input such as:

Properties

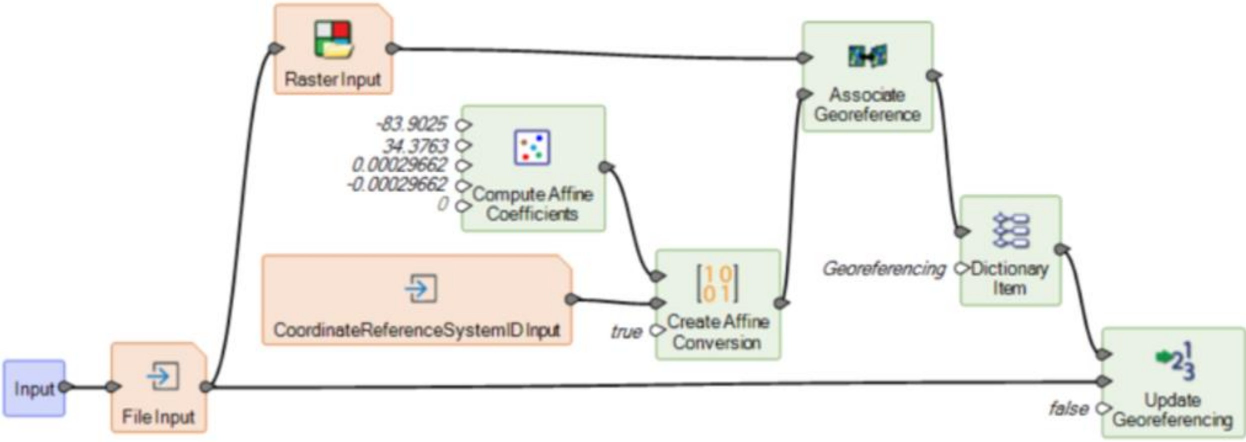
Show	Name	Value	Objects Supported
	Input	Authority: EPSG; Code: 4326	IMAGINE.CoordinateReferenceSystemID
✔	Output		IMAGINE.CoordinateReferenceSystemID

or by interacting with the UI Provider (CRS chooser), the georeferencing operation from the associated world file which is ingested by Raster Input will be retained when the CRS definition is associated in the Associate Georeference operator, whose output will have the desired georeferencing. The original input may be persistently updated by using the Update Georeferencing operator as shown. If the data format is such that it can retain the georeferencing, such as IMG or TIF, the georeferencing in its entirety will be placed in the dataset, rendering the world file no longer necessary.

Georeferencing

The upper left corner coordinate in a known CRS and the cell size of an unreferenced image are known. How might this information be associated with the Raster for reliable integration with other data in a spatial model?

This case is similar to the CRS Association case, but we will require the Create Affine Conversion operator to relate our Raster to the known CRS directly with the known georeferencing parameters. The model below illustrates this approach:



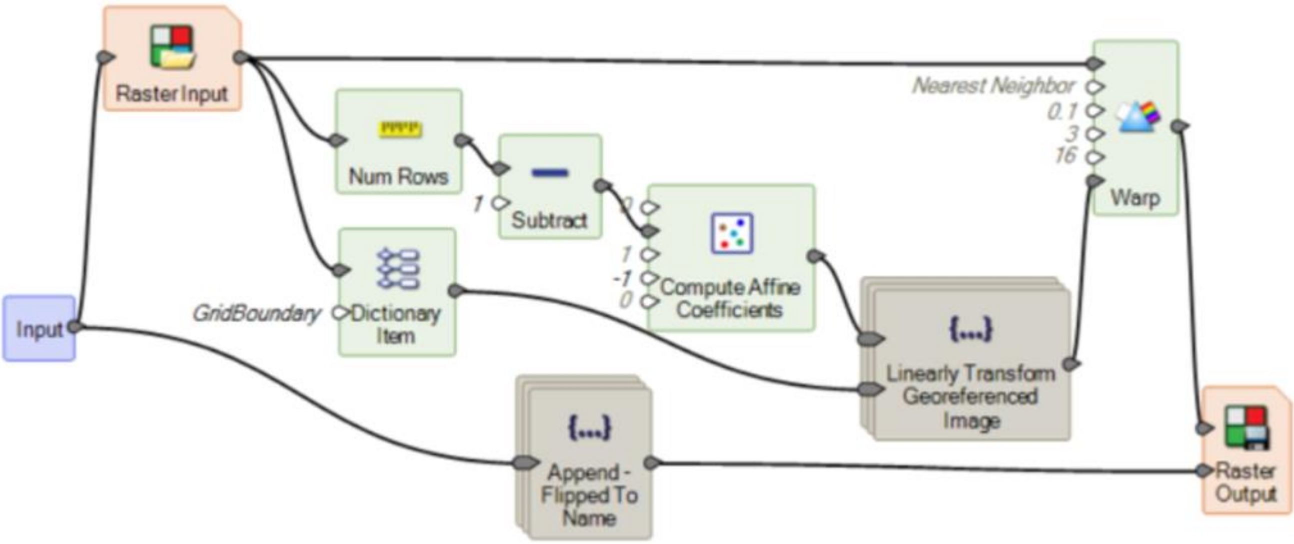
Note that the Invert parameter of Create Affine Conversion is set to true, indicating that we are providing pixel-to-map parameters to Compute Affine Coefficients which must be inverted to supply the correct map-to-pixel operation to Associate Georeference.

As with the previous case, the input dataset may be directly updated with the Update Georeferencing operator. In fact, the output of Create Affine Conversion may be sent directly to Update Georeferencing if there is no requirement to update the input on-the-fly within the model using Associate Georeferencing.

Linear Transformation

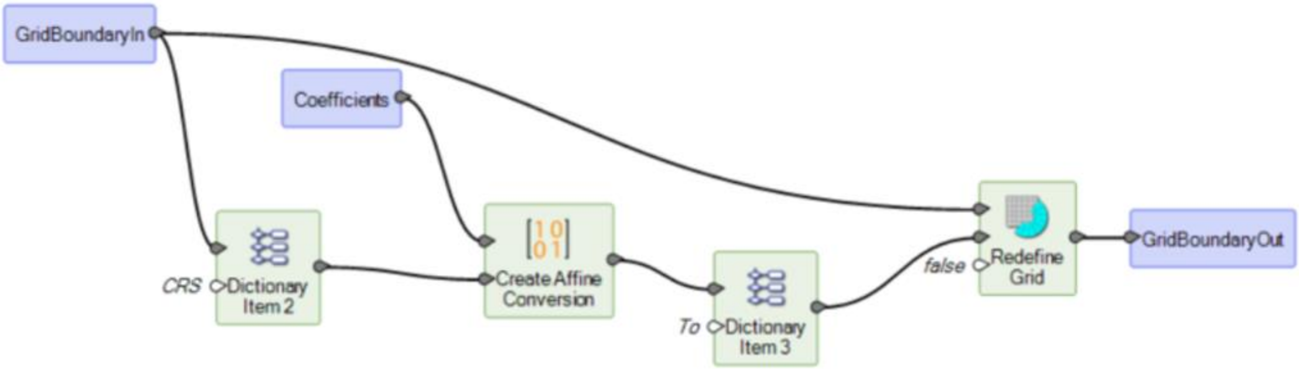
Raster data requires reflection in order to make it consumable by a less capable GIS tool that is confused by the current form of its georeferencing. How are grid-space transformations that preserve georeferencing performed?

The model below performs a vertical flip of the image pixels while preserving the georeferencing of the original image. Since we want to preserve the original georeferencing, it is necessary to Warp the input pixels to the newly defined raster geometry prior to saving them to a different dataset.



Note that to flip vertically, the image must be translated and scaled. The correct translation is height - 1 so that the center of the bottom-most, left-most pixel is at the origin prior to flipping the y-axis with a scale of -1.

The raster geometry is manipulated with the Linearly Transform Georeferenced Image sub-model shown below:

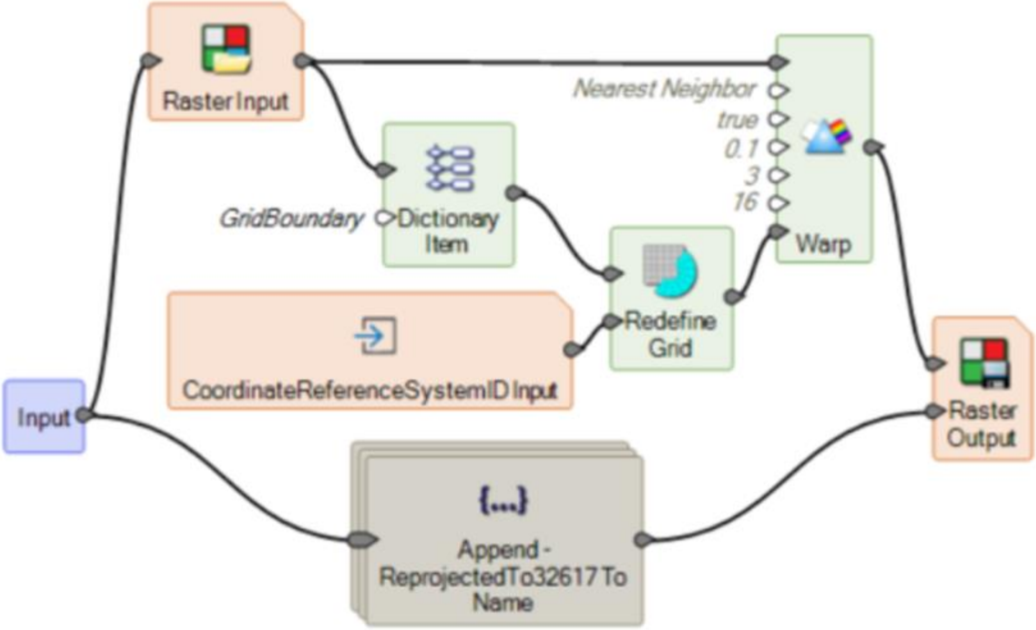


An affine conversion from the original GridCRS using the vertical flip coefficients produces an operation to a new GridCRS. This new GridCRS can be taken from that operation and used to redefine the input grid. Supplying a Grid Boundary to Warp is the only way to directly define the output Grid Boundary that we desire. Providing the output of Create Affine Conversion directly to Warp will not produce the desired result.

Reprojection

How can georeferenced Raster data be explicitly re-referenced to a different external coordinate reference system?

The tricky part of this operation is usually deciding on the output cell size. Redefine Grid will use the default of Calculate Cell Size when provided with no inputs on its XCellSize, etc., ports as shown in the model below. This behavior can easily be controlled more finely by using Calculate Cell Size explicitly in the model and supplying its outputs to Redefine Grid.

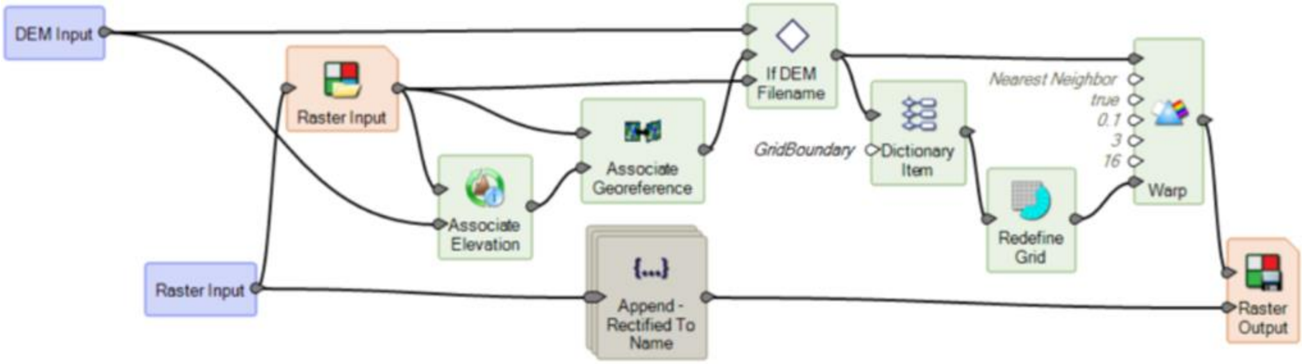


Using Associate Georeference and Update Georeferencing instead of Warp and Raster Output will allow a reprojection calibration to be placed into the original dataset's georeferencing information.

Rectification

Referenceable imagery requires rectification, again, so that it might be consumed by a less capable GIS tool that cannot access the sensor model information associated with the imagery. What is the approach to that in a spatial model?

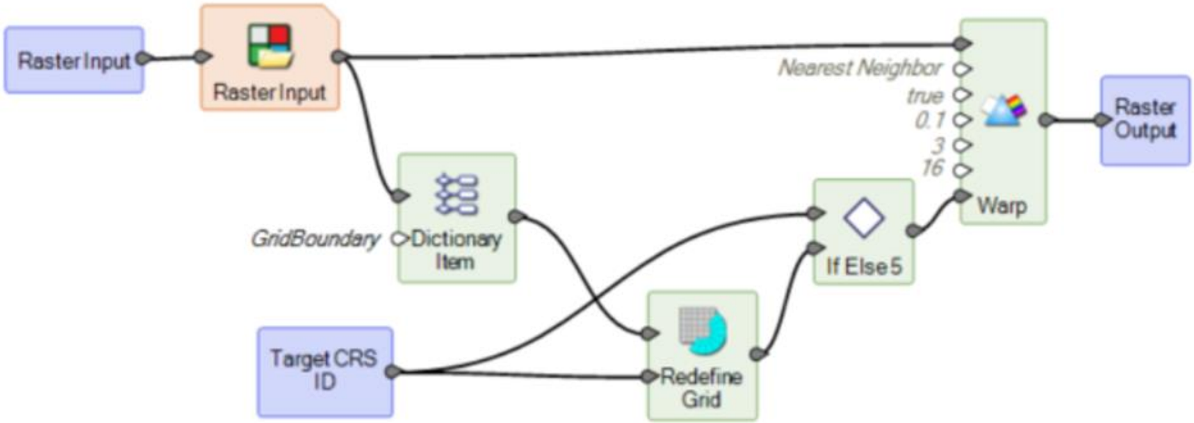
The model below illustrates using Redefine Grid to orient a referenceable grid to the external coordinate reference system to which it is referenced (this is the default behavior of the operator when no TargetCRS is supplied). A DEM input may be supplied to ensure high quality ground-to-image transformation. As shown, Redefine Grid will utilize the Calculate Cell Size default internally, but finer control is possible by using Calculate Cell Size explicitly in the model.



Tile Requests in Arbitrary Grid Geometry

A spatial model can support tile delivery of a geoprocessing imagery server, delivering tiles in any supported CRS of interest. What is a recommended way of approaching the geometry manipulation aspects of such a model?

One possible way to approach this use case is to create a model that is prepared to deliver requested tiles for a given Raster Input based on a specified Target CRS ID. Failure to supply a Target CRS ID indicates a desire to request tiles in Raster Input's pixel coordinates. A tile request server caching model execution based on Raster Input, Target CRS ID, can direct a request to the proper model. The Warp operator can handle requests of arbitrary scale when properly formulated. This can be readily constructed using an extent in Target CRS ID and an associated tile size.



For a glossary of terms mentioned in this section (e.g. “CRS”), see the Help for Spatial Modeler.

Spatial Model Editor Interface Improvements

Copying and pasting operators from one Spatial Model to another is now independent of the relative zoom scales of the source and target models, meaning that you should not need to re-organise the operators after pasting.

Also, when exiting (Collapse Submodel) from a sub-model (including Iterators) the zoom extent that was in use at the time of entering the sub-model is reconstructed so that you do not unexpectedly jump to a different part of the Spatial Model.

New Photogrammetry Workflows in Spatial Modeler

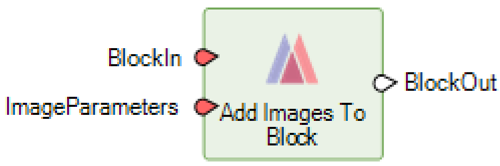
Over the past several years, the amount of data acquired by image acquisition systems has grown exponentially not least because of the advent and proliferation of lower-cost UAV platforms. This effect is seen not only in the spatial resolution of the imagery but also in the frequency of acquisition, with daily revisit rates becoming the norm. With that comes the need to automatically process the data with a very short turnaround time.

Photogrammetry workflows (adjustment, ortho rectification, color balancing, mosaicing) are usually the initial steps of data processing. To handle the large volume of imagery, photogrammetric solutions that can be configured to detect new acquisitions automatically, process data as soon as it becomes available, scale up computing resources as needed, and feed output to downstream geospatial processes, are needed.

Spatial Modeler is designed to solve these kinds of challenges. It has hundreds of operators that can easily be chained together into models that solve complex Geospatial problems.

With this release, we have expanded Spatial Modeler’s capabilities by adding a new suite of photogrammetry operators that perform project setup, automatic point measurement, triangulation and mosaicing for scanned frame and digital frame cameras. Note that many of these new operators require additional licensing in order to run as part of a spatial model execution. This is generally noted in the Help for each operator.

Add Images to Block

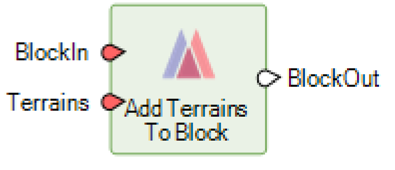


Requires IMAGINE Advantage or higher licenses in order to run.

This operator adds images to a block which is being processed within a Spatial Model. The images must be of the same sensor model types as that for which the block was created. As part of this process, interior orientation of the images are solved. The status of the exterior orientation of the images is also set according to the value specified in the parameter dictionary.

If the image is not found in the path specified in the parameters, it is set as offline and will not be included in downstream processes until the correct path is set.

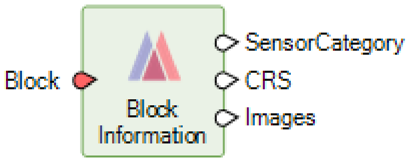
Add Terrains to Block



Requires IMAGINE Advantage or higher licenses in order to run.

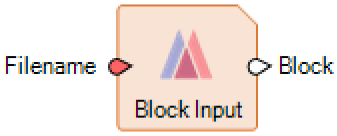
The operator adds one or more digital terrain models to a block. The added terrain data could be used in operations such as ortho rectification and mosaicking where the block is used as input.

Block Information



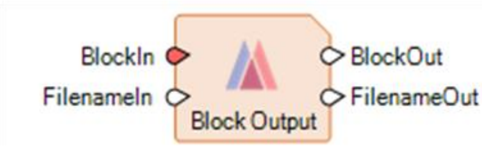
Provides basic information about a block, including the Sensor Category it has been defined to handle, the CRS, etc.

Block Input



Reads a Block file (such as that created by IMAGINE Photogrammetry, or the Block Output operator) into a form that can be utilised inside a Spatial Model.

Block Output



Saves the contents of the given block as a file. The output file will have the name given by FilenameIn, if this is empty then a temporary name will be generated. In either case the name of the resulting file will be available as FilenameOut. This will be an IMAGINE Photogrammetry block file and can be opened, viewed and manipulated in IMAGINE Photogrammetry.

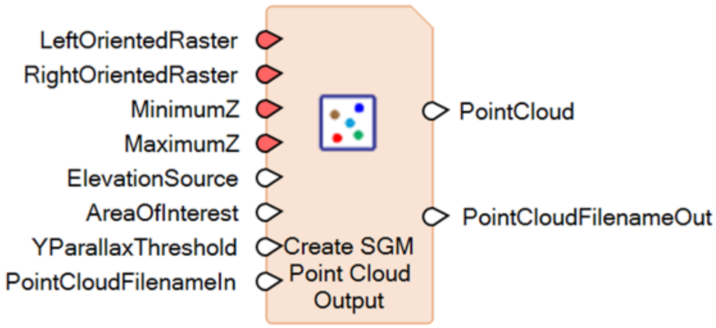
Create Block

Requires IMAGINE Advantage or higher licenses in order to run.

Creates a photogrammetric project called a block. The type of sensor model for the block is determined by BlockParameters.

Spatial Modeler supports creating block files for several sensor models: Camera, RPC, and Rigorous sensor models. For each sensor type, a "Define Sensor Parameters for <Sensor type>" operator collects the parameters needed to define a block file for the sensor. The information collected by this operator is then passed to the Create Block operator via the BlockParameters port. For example, to create a camera model block file, use the "Define Block Parameters For Camera Model" operator to collect information for the parameters that are needed to set up the block file.

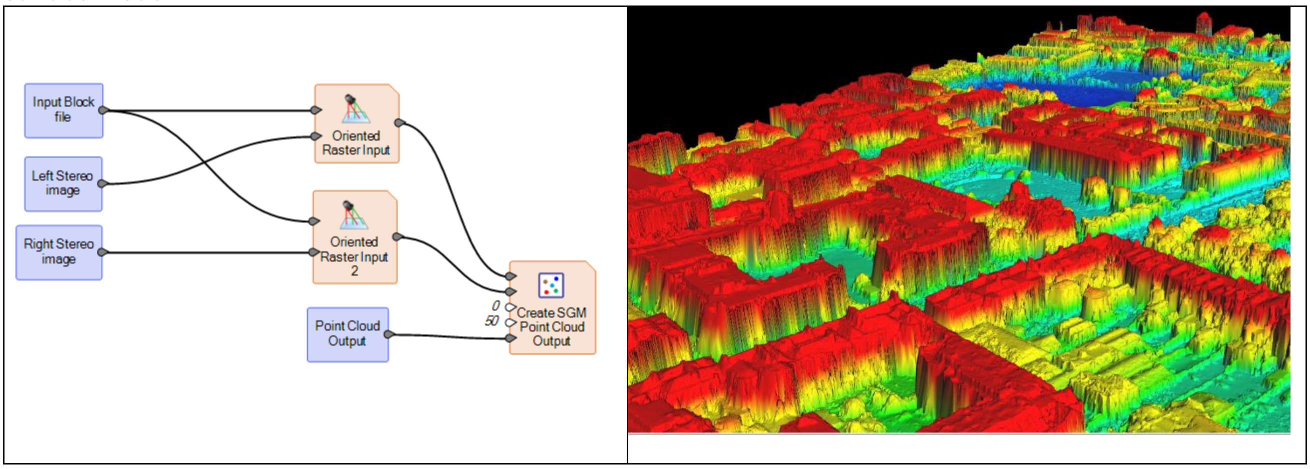
Create SGM Point Cloud Output



Requires IMAGINE DSM Extractor or equivalent licenses in order to run.

This operator extracts a dense point cloud from a pair of stereo images using Semi-Global Matching (SGM).

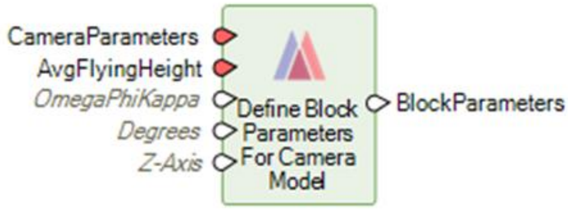
Left: Spatial Model for generating point cloud from a stereo pair. Right: generated Point cloud displayed as surface model



Define Adjustment Options for Camera Model

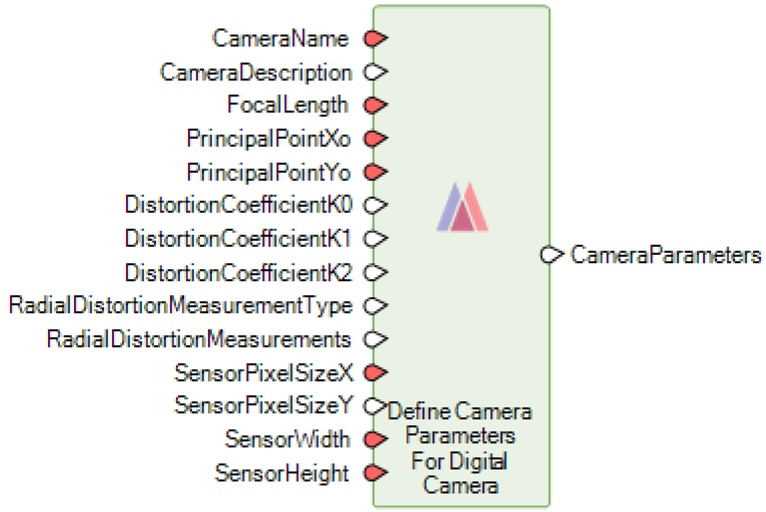
This operator assembles the options that can be used to affect the results of the Run Bundle Adjustment operator process when run on Camera Model blocks. The detailed descriptions of these options can be found in the aerial triangulation help.

Define Block Parameters For Camera Model

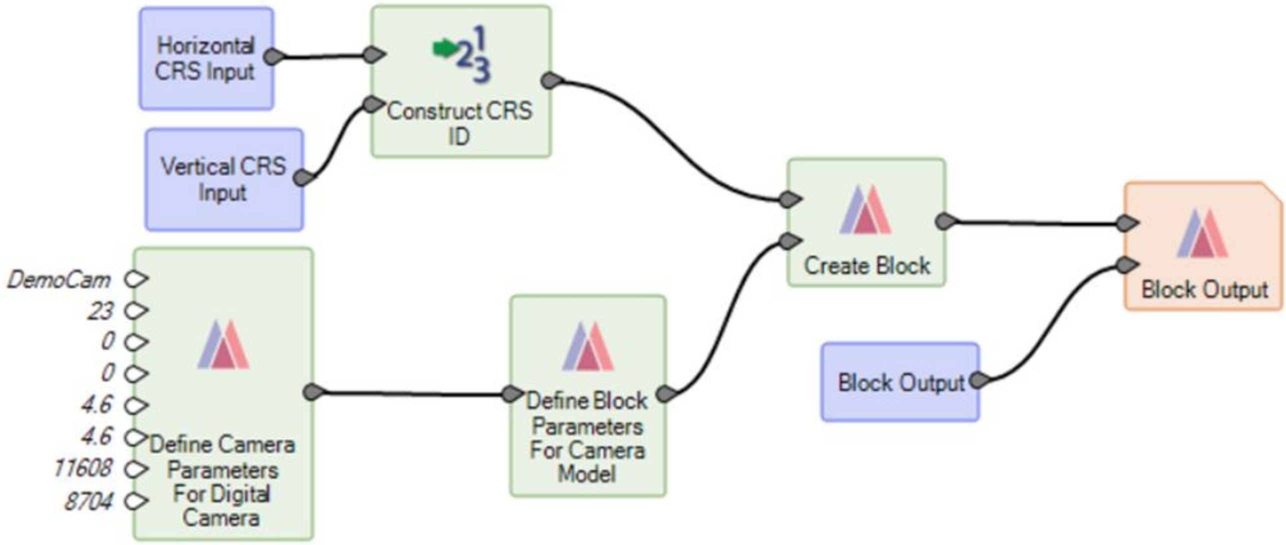


Defines parameters needed for setting up a block of camera images

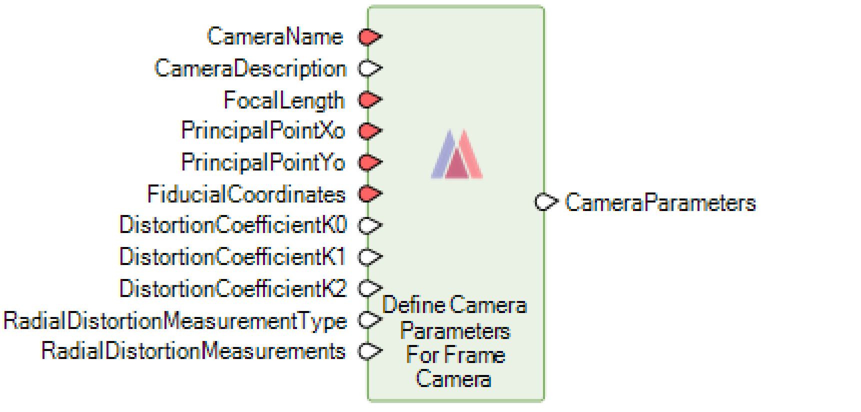
Define Camera Parameters For Digital Camera



Defines the parameters for a specific digital camera. For example:

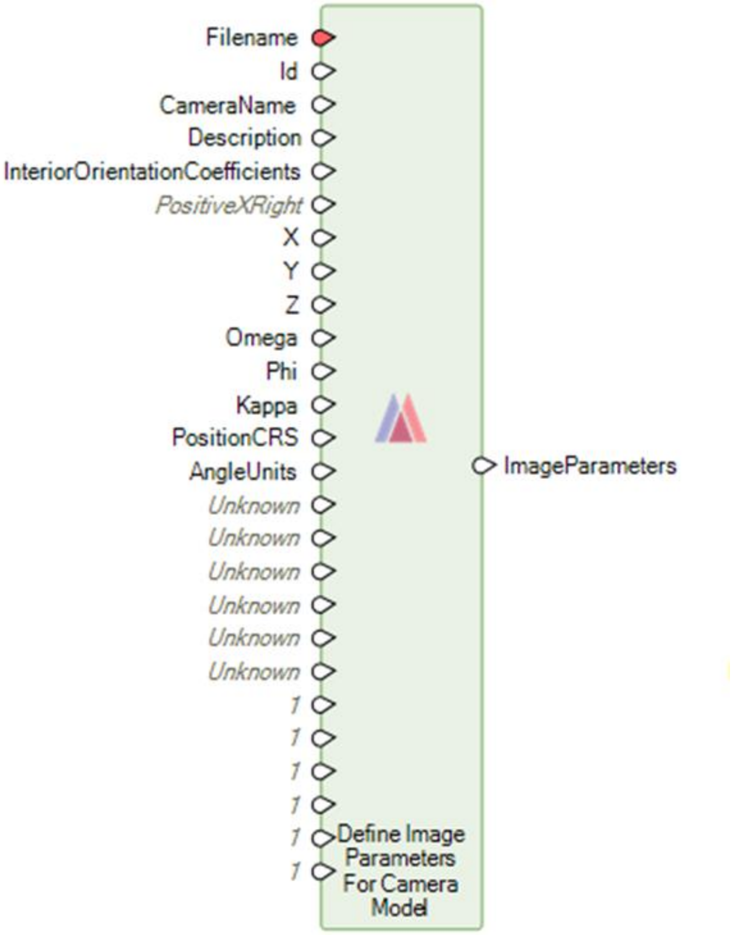


Define Camera Parameters For Frame Camera



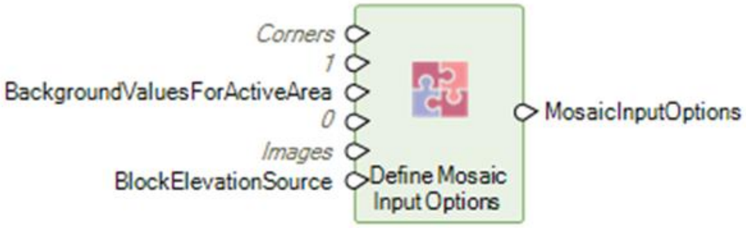
Defines the parameters for a specific frame camera.

Define Image Parameters For Camera Model



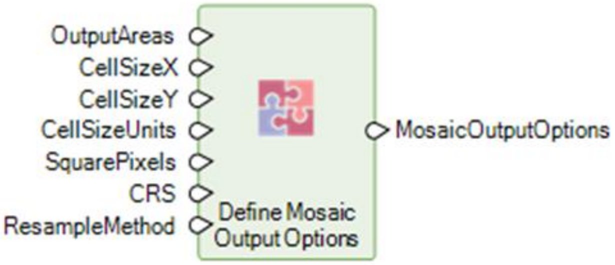
This creates a set of image parameters that are used when adding a camera sensor model to an image.

Define Mosaic Input Options



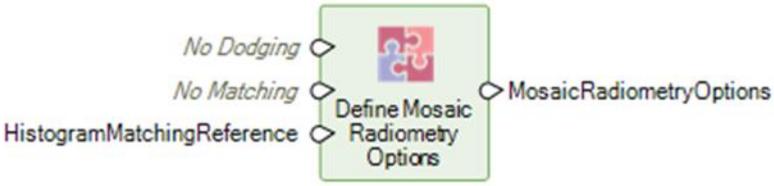
This operator defines input options used with the Mosaic Images operator, such as the Active Area Method for determining the footprint of the input images to use and the elevation source to be used if orthorectification might be applied as part of the mosaicing process.

Define Mosaic Output Options



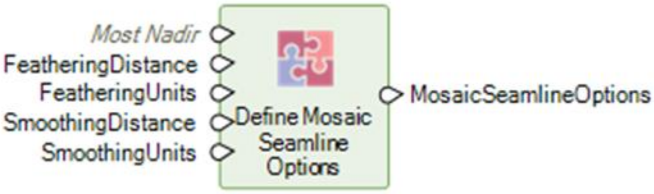
Defines output options used with the Mosaic Images operator, such as the cell size, coordinate reference system and resampling technique to apply.

Define Mosaic Radiometry Options



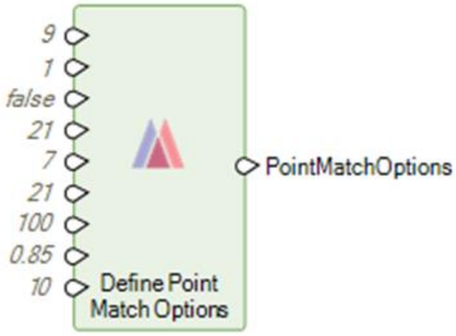
Defines options used to apply color correction on input images in the Mosaic Images operator, such as the Histogram Matching Method to be used to tonally balance the input images.

Define Mosaic Seamline Options



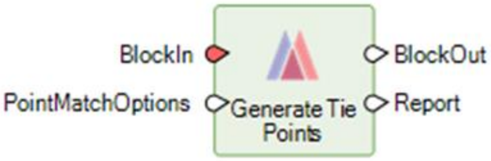
Defines seamline generation and processing options used with the Mosaic Images operator, such as the distance away from the seamline locations to feather.

Define Point Match Options



This operator defines the point match options to be used with the Generate Tie Points operator, such as the number of points to generate per image.

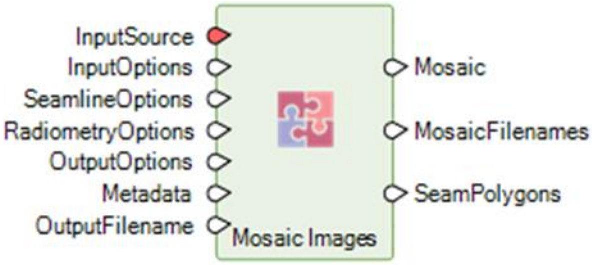
Generate Tie Points



Requires IMAGINE Photogrammetry licenses in order to run.

Automatically locate tie points for a list of images provided by an input Block.

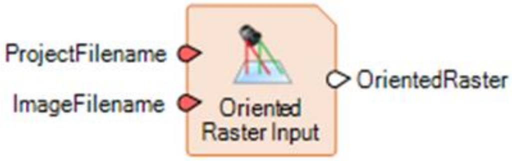
Mosaic Images



Requires IMAGINE Advantage or higher licenses in order to run.

Apply mosaicking operation on input images (generally defined by a Block).

Oriented Raster Input



This operator creates an oriented image from a solved photogrammetry project (Block). The image, which must be present in the Block project, is oriented based on the 3D model information present in the project.

Run Bundle Adjustment

Requires IMAGINE Photogrammetry licenses in order to run.

This operator will perform triangulation on the images in the input block using the control points, tie points, and check points in the block. The triangulation is considered successful if the iteration converges and the Root Mean Square Error (RMSE) is less than the specified threshold value. A warning message will be logged and BlockOut will be empty if the triangulation is not successful.

Parameters for the triangulation can be specified as a dictionary to the AdjustmentOptions input port.

The AdjustmentOptions dictionary can be generated by one of the "Define Adjustment Options For <sensor category> Model" operators. For example, the "Define Adjustment Options For Camera Model" operator can be used to create a dictionary that specifies parameter values for a camera model.

Update Data Paths In Block

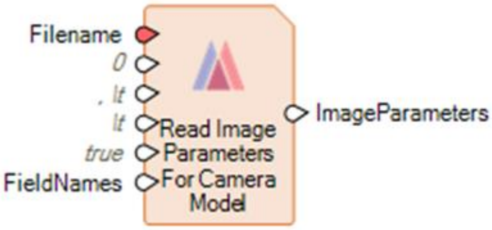
Requires IMAGINE Advantage or higher licenses in order to run.

A block contains references to datasets that exist in the file system. The references are in the form of complete paths and there are actions that can cause the paths to become invalid. For example, if data is moved or if the entire project is moved, then these paths will need to be updated. This operator updates the paths of data (images, terrains and orthos) in the block based on the specified directory to search.

It looks for data in the specified Directory and its sub-folders if IncludeSubFolders is set to true that match the root names of the data in the block, and if found, their path in the block will be updated to the new data path.

If no paths can be updated, it is an error. If some, but not all, paths can be updated, a warning will be issued.

Read Image Parameters For Camera Model

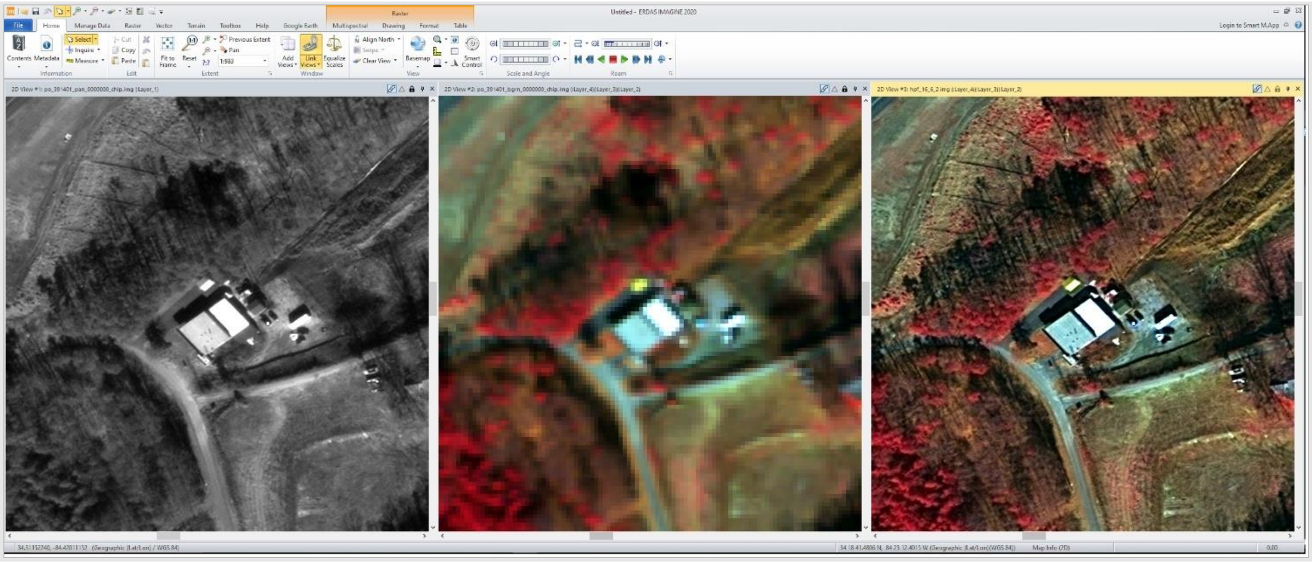


This operator reads the image parameters for a camera model for one or more images from the text file referenced on the Filename port. The parameter set for each image is output as a dictionary which has the same form as that constructed by the Define Image Parameters For Camera Model operator and, thus, may be used as input to the Add Images To Block operator.

The project information for camera projects of photogrammetric software packages that provide a means of exporting project information to a text file may be imported in this manner.

HPF Resolution Merge

Based on customer feedback the HPF Resolution Merge technique for pan sharpening data has been modernized to use Spatial Modeler. This means it now has View and Preview options on the dialog, as well as avoiding some former issues such as the introduction of pixels with values of 0 in darker areas of the data (which were perceived as “holes” by some geospatial applications).



Format Support

DiMAP v2 RPC auto-association

DiMAP v2 formats (such as SPOT 6, SPOT 7, Pleiades, etc) will now automatically associate any RPC information (if present and pertinent) with the imagery to increase the default spatial accuracy of the data.

This also makes it much easier to batch ortho-rectify such imagery without needing to measure GCPs or manually associate RPC information before using the **Raster tab > Geometry group > Geometric Calibration menu > Orthorectify without GCP** utility.

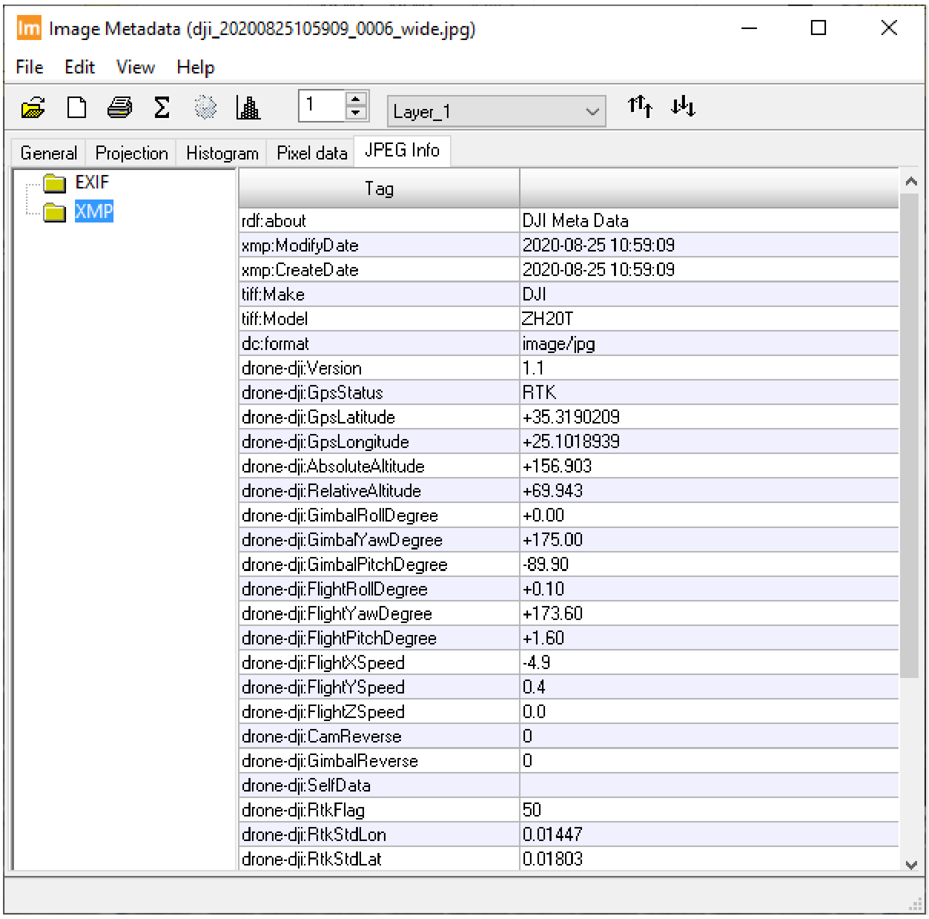
Reading of DiMAP V2 imagery should also be significantly faster in this release.

EXIF and XMP tag support in JFIF (JPEG) and TIFF

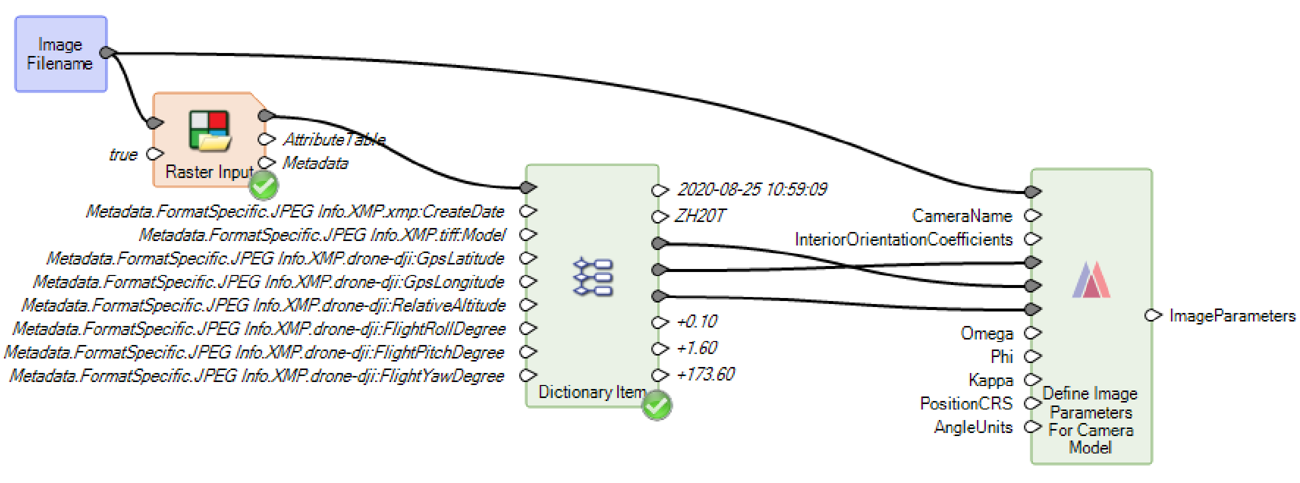
With the increase in popularity of lower-cost camera platforms has come an increased use of additional metadata stored inside image files such as TIFF and the JPEG File Interchange Format (JFIF) using tags such as EXIF (Exchangeable Image File) and XMP (Adobe's Extensible Metadata Platform).

Common examples are the Lat / Lon at which a picture was taken with a hand-help camera, or flight heading information for a drone image.

These optional tags can now be read by ERDAS IMAGINE and used to define processing parameters in Spatial Modeler:



Below is a spatial model showing how to extract camera position and orientation information at the time of image capture:



OSDDEF BIIF support updated

Similarly to the use of EXIF and XMP tags, support for Text segments in OSDDEF BIIF profile data has been enhanced to decode and expose additional image parameters (for example, by using the Metadata Input operator in Spatial Modeler to read flying height information).

Pleiades Neo

In early 2021 Airbus will launch four identical new generation satellites to join its existing constellation of optical and radar satellites to offer enhanced performance.

Airbus has provided pre-launch prototype image samples and documentation and support for these DiMAP v2 data has been added to ERDAS IMAGINE 2020 Update 2. Further optimisations will occur as additional samples are provided.

ICEYE

ICEYE's small satellite SAR imaging constellation is customized for the high revisit rate and frequent delivery of high-resolution imagery.

Sample GRD data that has been provided is now supported. Further optimisations will occur as additional samples are delivered.

Capella

Capella Space recently launched the first of their X-Band SAR satellite constellation, the Sequoia satellite.

Prototype GEO data that has been provided is now supported. Further optimisations will occur as additional samples are delivered.

TRE Decoding support for MIE4NITF

The following additional TREs are now decoded from the NITF container

MTIMSA - This TRE specifies the nominal frame rate, frame numbers and time stamps for the Motion Imagery data within the Image Segment in which the TRE is found. Ties this information back to the phenomenological layer, camera set, camera, time interval and temporal block associated with the Image Segment.

MIMCSA - This TRE contains high level metadata regarding the frame rate range of the Motion Imagery, encoding methods used and if any temporal subsampling was performed.

TMINTA - This TRE Defines the start and end times for one or more time intervals. Multiple TMINTA TREs may be used to “on-the-fly” define time intervals as data is being collected. The TMINTA containing the time interval definitions for the MI data within a file resides in that file. A given file may also have TMINTA TREs from other files that correspond to one or more “temporally adjacent” time intervals.

MTIMFA - This TRE Specifies how the Motion Imagery data for all cameras in a phenomenological layer for a given camera set and time interval are subdivided into temporal blocks. Also associates the temporal blocks to the Image Segment index.

CAMSDA - This TRE defines the camera sets, places cameras on the CCS, assigns phenomenological layer IDs and UUIDs to all cameras in the collection.

CSEXRB - Common Sensor Exploitation Reference Data.

NITF 27-bit J2K

27-bit J2K images stored in a 32-bit word in NITF 2.1 were previously not displaying consistently. The underlying JPEG 2000 decoding libraries have been updated to properly decode this type of data.

SNIP NITF

SNIP NITF data support has been updated to conform with the latest released specification, including decoding of additional DES and TRE (CSATTB, ILLUMA, ILLUMB, CCINFA, MATESA, PIXMTA, CSEPHB, CSCSDB, CSSFAB)

DED segments in NITF

The Digital Elevation Data (DED) segments that may be embedded in some NITF file containers are now readable as a sub-image.

BadPixelSegment in NITF

The BadPixelSegment data now defaults to Thematic display mode when opened using the Image Chains, applies appropriate colors, and a legend in the Properties pane.

12-bit YCbrCr TIFF

Some 12-bit TIFF imagery (that using YCbrCr JPEG compression) was formerly being interpreted by ERDAS IMAGINE as 8-bit data. This has been enhanced so that the data is correctly decoded and treated as 12-bit.

Please note that this means that any existing YCbrCr JPEG TIFF images which had been opened in older versions of ERDAS IMAGINE may have incorrect statistics, histogram information and pyramids stored in .aux and .rrd files (resulting in washed-out, or all white, display). These ancillary files should be deleted and regenerated using ERDAS IMAGINE 2020 Update 2 for correct display.

Sentinel-1

Reading of Sentinel-1 SAR imagery should be significantly faster in this release.

Sentinel-3

Sentinel-3 SAFE data (where the raster data is stored in NetCDF files) can now be directly read, including geocoding information.

DTED

Reading of DTED raster data should be significantly faster in this release.

PlanetScope Level 3

PlanetScope Level 3A and 3B data can now be directly read via its XML header file

HDF 5

There is a new raster format direct read for HDF 5 files such as multi-segment ASTER Global Emissivity Data (GED) V003.

Esri *.asc

Esri *.asc files delivered with .prj files can now be correctly read

SocetSet GRID

SocetSet GRID files containing mixed data types

PRISMA

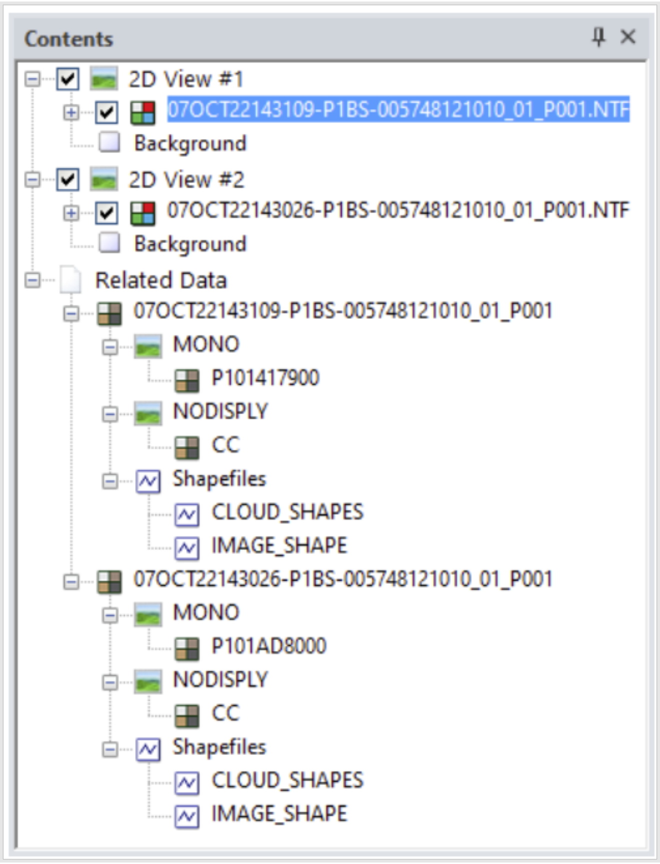
PRISMA Level 1 and 2 HDF EOS 5 formatted data can now be directly read.

General ERDAS IMAGINE

Related Data in 2D View

Data no longer necessarily follows a "one file, one dataset" pattern. Formats such as GeoPackage, NITF and HDF are all capable of storing multiple related sets of data within a single file. When such a file is dragged and dropped into an ERDAS IMAGINE 2D, 3D, or Map Views there will be a default behavior which accesses one of the constituent datasets and displays it. If using the File Chooser to select the file, a Sub-images (or similar tab) may be displayed enabling the constituent datasets to be explored and selected for use. However, in both instances, once initially selected it may not be obvious to the user of the software that additional data may be available from the file that has been displayed.

That's where the Related Data section of the Contents panel comes in. For each such constituent raster dataset in a displayed parent file, a sub-image proxy file (.sbi) will be automatically created alongside the original parent file. If the original parent file is a GeoPackage that contains features, GeoPackage Features proxy files (.gfp) will be automatically created for each constituent feature dataset; the .gfp files will be create in a sub-directory (<original filename>.proxy) alongside the original parent file. If the original parent file is a NITF that contains shapefiles, the shapefiles will be automatically extracted alongside the original parent file. The proxy files and extracted shapefiles can be used to process constituent data in other ERDAS IMAGINE tools.



Machine Learning Layout Improvements

The Machine Learning Layout ribbon tabs (File tab > Layout > Machine Learning Layout) have been re-organized in an effort to increase productivity. The Layout now has two main tabs.

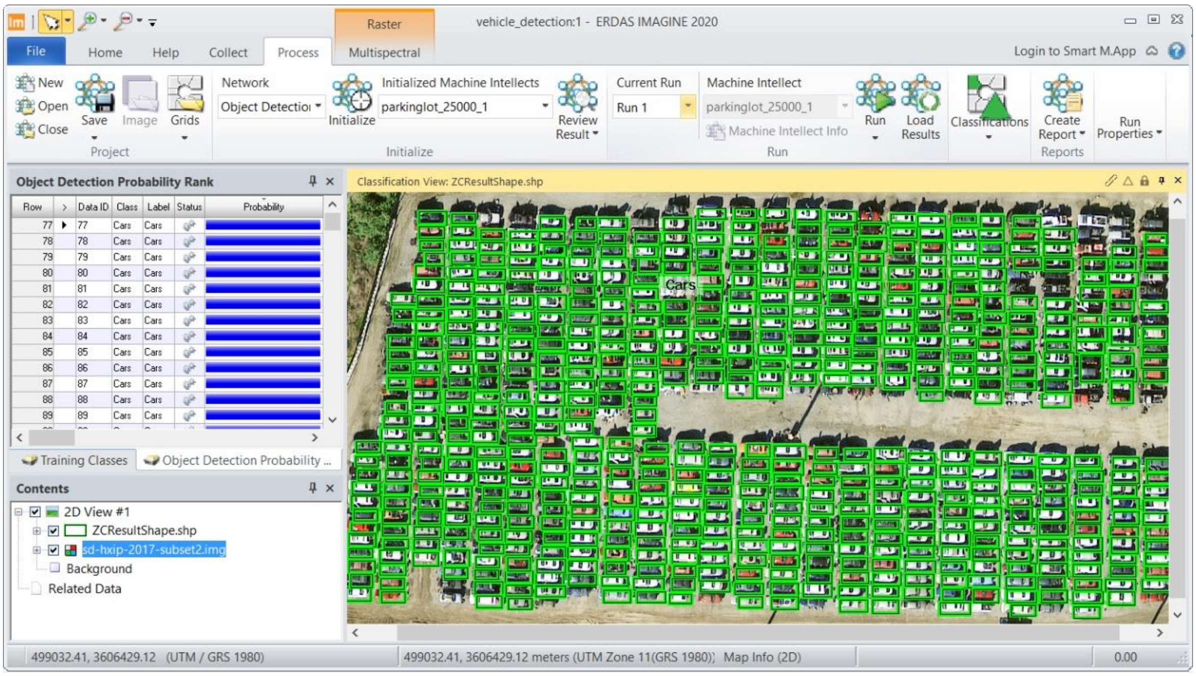
Collect Tab – This tab is for extracting training image chips and/or footprints to be used for initializing Machine Intellects.

Process Tab –This tab is mainly for setting up, processing, and managing a Deep Learning based classification or Object detection project. Initialization/Training of Machine Intellects, Classification/Object detection and review of the results after processing is performed on this tab.

In addition to the reorganization of the ribbon tabs, the following features have been added to the layout:

- Object Detection Workflow – Initializing/training an object detection network and performing object detection workflow, which used to be available only in Spatial Modeler, is also now available in the Layout.

- Importing an Initialized Machine Intellect – Machine Intellects that are initialized outside the Machine Learning layout framework can be imported to the layout and be used for performing classification or Object Detection. This is done using the Load Machine Intellect option from Process Tab > Initialize Group > Review Result drop-down menu.



Inquire Cursor “Live Update” Option

The ribbon-embedded Inquire Cursor has had a Live Update option added. When enabled the Inquire Cursor will continuously update the values shown in the CellArray as the cursor is dragged around the 2D View rather than on release of the cursor.

Projected Coordinate Systems

The following changes to Projected Coordinate System support have been made:

Three Malaysian RSO projections which had their EPSG codes missing have been added.

Australian GDA 2020 zones have been exposed in the Australia category of the Projection Chooser for ease of selection.

The CARIB97 vertical datum has been added.

Canadian Geodetic Vertical Datum of 2013 (CGVD2013) is now supported.

Auto-rotation of Image Chains based on SIPS rules

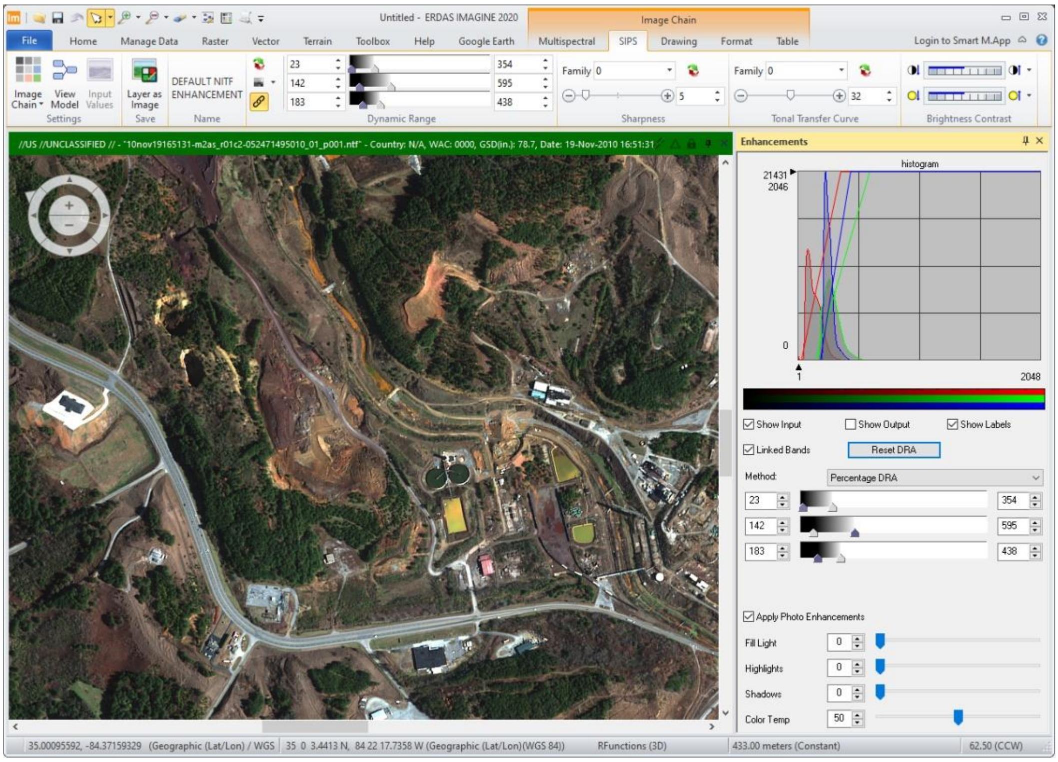
When an image is initially displayed using the Image Chain method a set of SIPS control files will be referenced to determine if the type of sensor should have its data displayed as File, North or Up as Up in the 2D View.

For example, DigitalGlobe WorldView-2 NITF data may be rotated to Up is Up by default.

This behavior can be overridden via a new Preference if File is Up is preferred (Preference Editor > Viewing > Image Chain > Follow SIPS Rotation Behavior > On/Off).

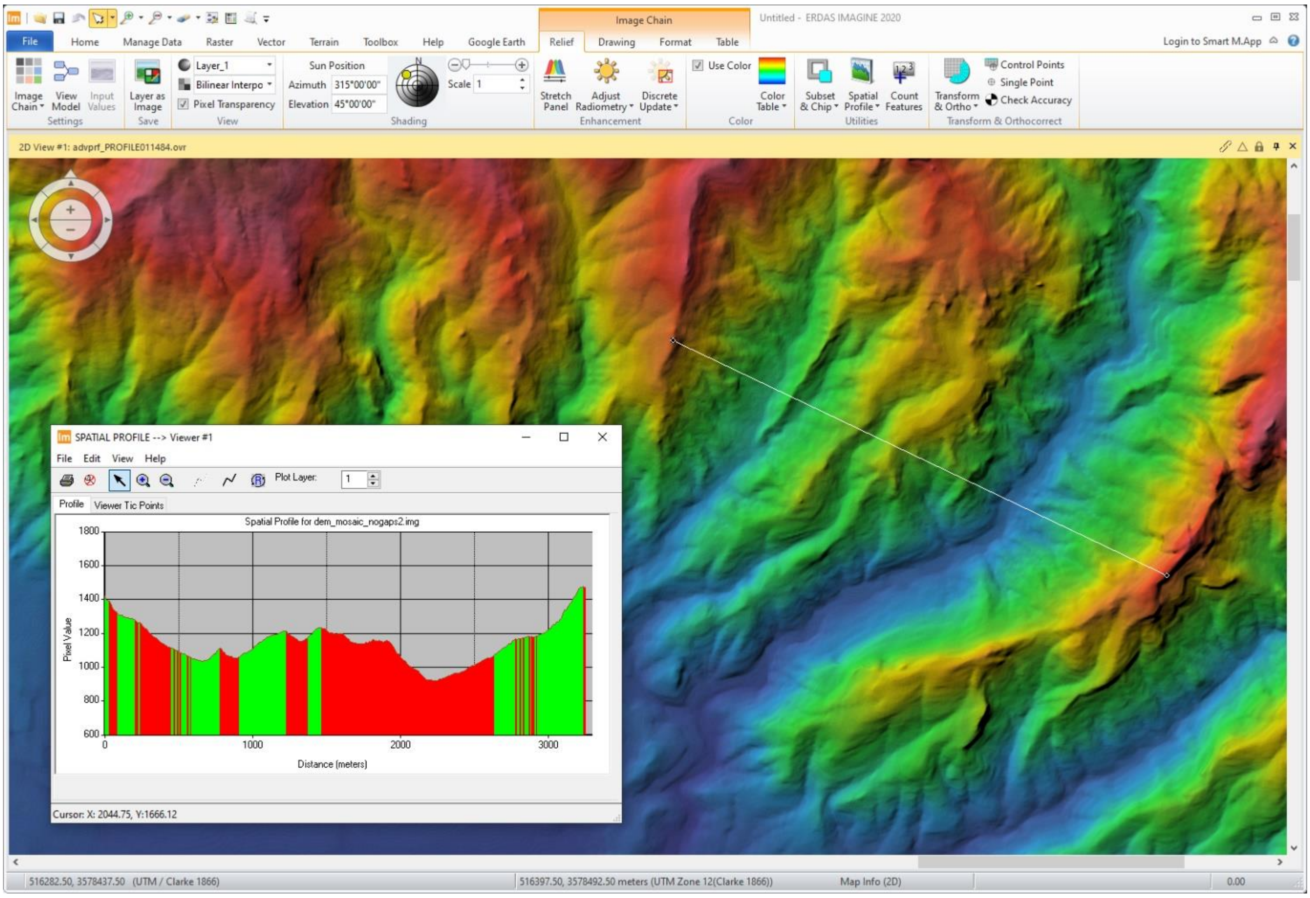
Histogram Manipulation for Image Chains

Manual Dynamic Range Adjustment (DRA) has been made visually easier. When displaying imagery via the Image Chains the Stretch Panel now enables displaying the input and output histograms as well as the breakpoints defined by the default DRA parameters. A user can then easily slide the minimum and maximum breakpoints and see the effect on the current histogram caused by the updated look-up table (LUT) values.



Profile Tools Enabled for Image Chains

The three Profile tools (Spectral, Surface and Profile) all now work with data displayed as Image Chains, such as this intervisibility spatial profile defined over a DEM displayed using the Relief Image Chain:

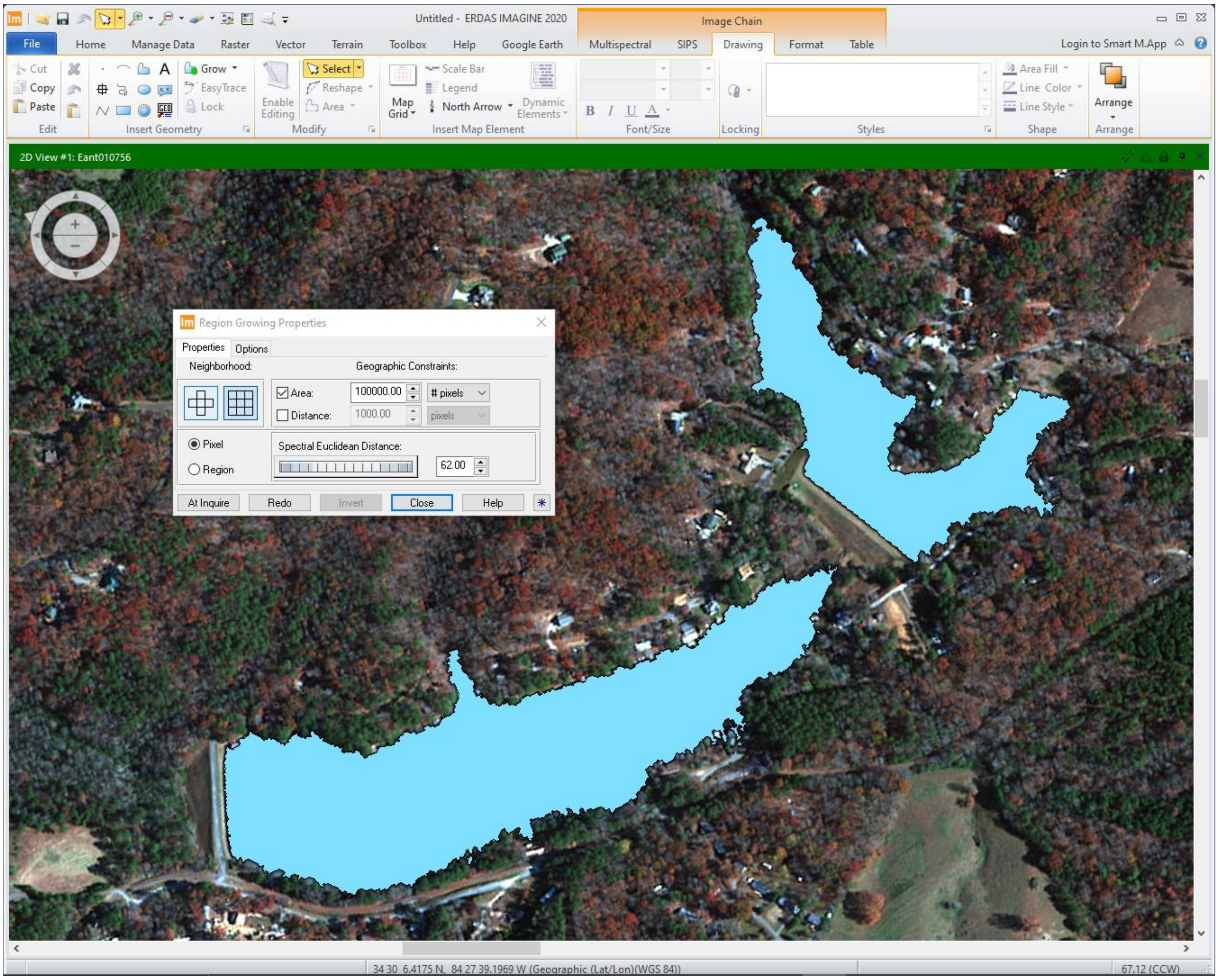


Additional Tabs Enabled with Image Chains

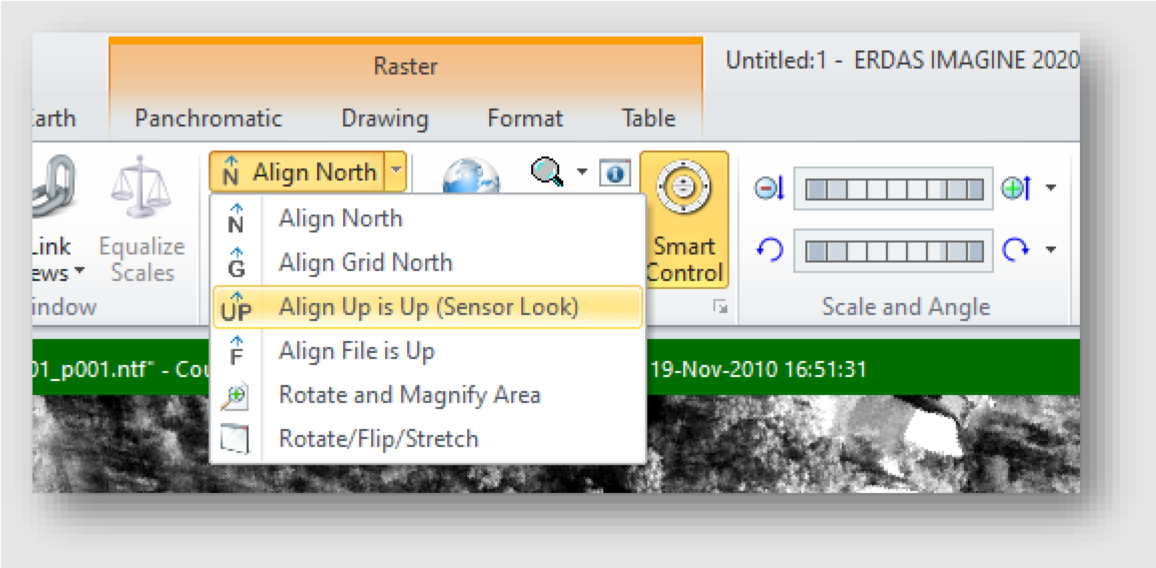
The Drawing and Format tabs are now present when data displayed via the Image Chain is active. Most tools on those tabs will operate as normal.

Region Grow with Image Chains

One example of a tool now accessible through the Drawing tab for Image Chains is the Grow utility for assisted feature extraction.



Consolidated Rotation Menus



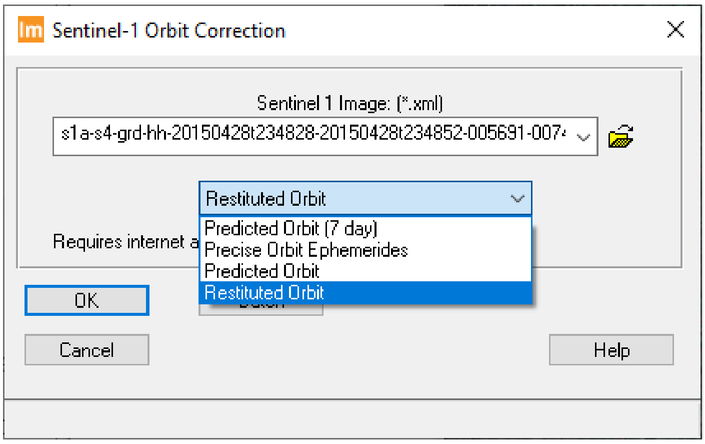
Options for rotating imagery to specific values (such as Up is Up, the sensor look direction) were repeated in differing locations of the ribbon interface and sometimes duplicated but using differing terminology. This has been rationalised so that consistent terminology is used and the options are replicated where it makes sense for ease of access to the options.

Sentinel-1 E-Z Coherence Change

The Sentinel-1 E-Z Coherence Change utility has been updated to enable use of Sentinel-1 A and B satellite data (i.e. it is no longer limited to a single orbit path).

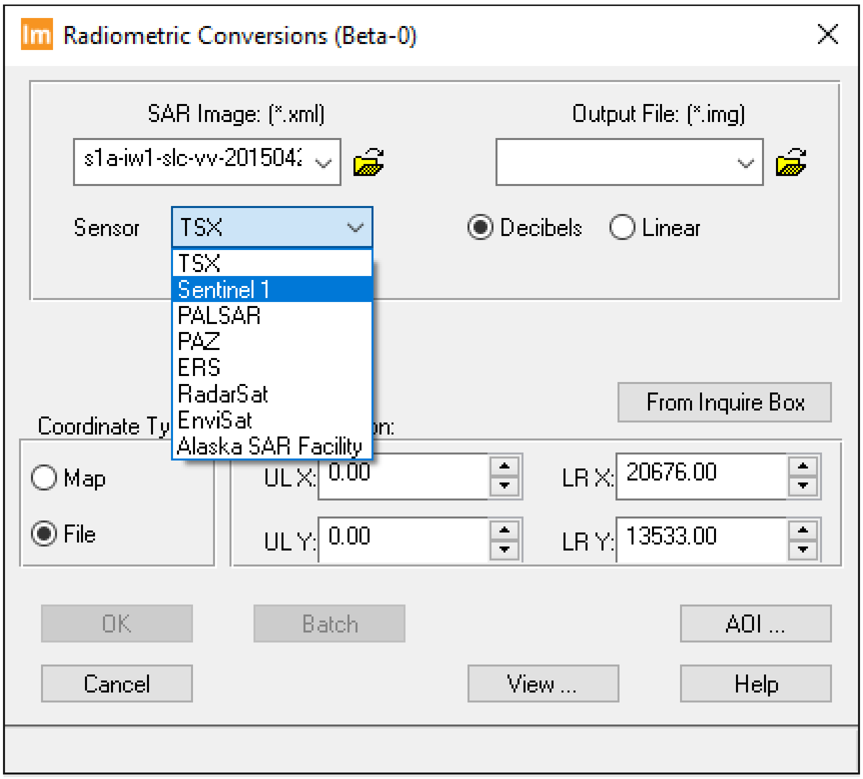
Sentinel-1 Orbit Correction

This functionality allows the analyst to update the orbit ephemeris data of a Sentinel-1 image with parameters downloaded from the ESA website. This will permanently change the metadata of the image and the new metadata will be used for all subsequent processing.



Sentinel-1 Beta-0 Conversions

The Radiometric Conversions (Beta-0) utility now supports Sentinel-1 imagery. This utility converts each pixel from the DN value distributed by the Receiving Station to the absolute radiometry as received by the sensor. This is done by using the metadata supplied with each scene by the Receiving Station.



I & Q to/from Magnitude Phase Conversion

This functionality allows the analyst to convert pixel values from In-Phase and Quadrature into Magnitude and Phase. Radar pixel values are commonly stored, as received, as In-phase and Quadrature components. These are generally converted into Magnitude and Phase as this representation is more useful; Magnitude for visual interpretation and Phase for interferometry.

Usually the ERDAS IMAGINE raster read DLLs, which are used to read the data files and display an image in the 2D Viewer or other applications, automatically convert the I&Q disc storage into Magnitude and Phase. Thus, most customers will never need to use these conversions.

Some radar sensors, such as those on UAVs or government assets, do not have ERDAS IMAGINE supplied raster read DLLs. For these sensors, it may be necessary to converts the I & Q format prior to analyzing in ERDAS IMAGINE. Or it may be desirable to convert a Magnitude & Phase image back into the more basic I & Q format. Again, this is not common.

Linear to/from Decibel Conversion

Radar image pixel values can be analyzed in either a linear or logarithmic distribution. The logarithmic distribution is traditionally termed Decibels. This utility provides conversion from one to the other.

Support

To assist in troubleshooting issues which may occur in the software the Session Log now lists the full build number associated with the installed version of ERDAS IMAGINE, as well as specifying the Spatial Modeler SDK (SMSDK) it was built upon. This information is also present in the System Report file which can be produced. For example, the Session Log may look like this:

Session Log

User: jdoe

Date: Wed Oct 21 15:34:29 2020

Host: myserver

OS Version: Windows NT 6.2 Build 9200

GPU: Available

Locale: en-US

Software: ERDAS IMAGINE 2020

Version: 16.6.0.1920

Spatial Modeler SDK Version: 16.6.0.2006

System Requirements

ERDAS IMAGINE

Computer/ Processor	64-bit: Intel 64 (EM64T), AMD 64, or equivalent n(four or more logical processors are strongly recommended)
Memory (RAM)	16 GB or more strongly recommended
Disk Space	• 6 GB for software • 7 GB for example data • Data storage requirements vary by mapping project[1]
Operating Systems [2, 3, 4]	• Windows 10 Pro (64-bit) • Windows 10 Enterprise (64-bit) • Windows Server 2016 (64-bit) • Windows Server 2019 (64-bit)
Software	• OpenGL 2.1 or higher (this typically comes with supported graphics cards [5]) • Java Runtime 1.7.0.80 or higher - IMAGINE Objective requires JRE and can utilize any installed and configured JRE of version 1.7.0.80 or higher. • Python 3.6.x or 3.7.x (Python is optionally usable with Spatial Modeler). • Microsoft DirectX® 9c or higher • .NET Framework 4.7.2 or higher • OpenCL 1.2 with a device that supports double precision (cl_khr_fp64) if wanting to GPU accelerate NNDiffuse and other Operators • An NVIDIA card with CUDA capabilities is recommended for use with Deep Learning
Recommended Graphics Cards for Stereo Display [6]	• NVIDIA® Quadro® P6000, P5000, P4000, P2000 • NVIDIA® Quadro® M6000, M5000, M4000, M2000 • NVIDIA® Quadro® K5200, K5000, K4200, K4000, K2200, K600, K420
Recommended Stereo Display Monitors	• 120 Hz (or above) LCD Monitors with NVIDIA 3D Vision™ Kit, or • 3D PluraView system from Schneider Digital [7]
Peripherals	All software installations require: • One Windows-compatible mouse with scroll wheel or equivalent input device • Printing requires Windows-supported hardcopy devices [8] Software security (Hexagon Geospatial Licensing 2020) requires one of the following: • Ethernet card, or • One USB port for hardware key Advanced data collection requires one of the following hand controllers: [9] • TopoMouse™ or TopoMouse USB™ • Immersion 3D Mouse • MOUSE-TRAK • Stealth 3D (Immersion), S3D-E type, Serial Port • Stealth Z, S2-Z model, USB version • Stealth V, S3-V type (add as a serial device) • 3Dconnexion SpaceMouse Pro [10] • 3Dconnexion SpaceExplorer mouse [10] • EK2000 Hand Wheels • EMSEN Hand Wheels

	• Z/I Mouse

ArcGIS and GeoMedia Interoperability	• ERDAS IMAGINE can be safely installed on a computer that has GeoMedia 2018 or GeoMedia 2020 installed. However, for greatest compatibility, it is highly recommended to install matching versions (including Updates).
	• ERDAS IMAGINE 2020 requires GeoMedia 2020 for live linking. Order of installation does not matter.
	• ERDAS IMAGINE can interact with both types of personal Geodatabases (*.mdb and *.gdb).
	• ERDAS IMAGINE can be safely installed on a computer that has ArcGIS® versions 10.6 through 10.8.1.
	• ERDAS IMAGINE and IMAGINE Photogrammetry (32-bit) can interact with ArcGIS Server 10.6 – 10.8.1 Geodatabase servers (ArcSDE). To read or interact with an Enterprise Geodatabase, you must either:
	  o Install and license the appropriate version of ArcGIS for Desktop versions 10.6 through 10.8.1, OR
	  o Install the IMAGINE Geodatabase Support (based on ArcEngine 10.7) - requires no license

Database Engines	• PostgreSQL 9.6 with PostGIS 2.3: PostGIS can be used to store GeoMedia Features (.pfp) • Oracle Server 12c 12.2 64-bit: Oracle Server 12c can be used to store Oracle GeoRaster (.ogr) (requires Oracle Spatial), SDE Raster (.sdi) (requires ArcGIS for Server) and Oracle Spatial Features (.ogv) (requires Oracle Spatial), as well as GeoMedia Features (.ofp). • Microsoft SQL Server 2017 64-bit: Microsoft SQL Server 2017 can be used to store GeoMedia Features (.sfp)

ERDAS IMAGINE System Requirements Notes

[1] Disk I/O is usually the slowest task in geospatial data processing. Faster hard disks improve productivity. Reading data from one disk, writing temporary data to a second disk, and writing data to a third disk improves performance. Disk arrays improve productivity, but some RAID options slow performance. Network disk drives are subject to network limitations.

[2] Server Operating Systems are not supported for IMAGINE Photogrammetry, ORIMA or ERDAS ER Mapper.

[3] The 3D stereo viewing and peripheral requirements of IMAGINE Photogrammetry limit its operating system options.

[4] ERDAS ER Mapper is not supported on Windows 8. It is considered Viable on Windows 8.1.

[5] Windows provides a generic OpenGL driver for all supported graphics cards. However, an OpenGL-optimized graphics card and driver are recommended for these applications.

[6] Graphics cards certified with previous versions of IMAGINE Photogrammetry and ORIMA may also be compatible, but are not certified in the current version. Drivers must not be newer than R418. NVidia dropped 3D Vision support for drivers released after R418 U4 (425.31), which was released on April 11, 2019.

[7] Stereo Monitors certified with previous versions of IMAGINE Photogrammetry and ORIMA may also be compatible, but are not certified in the current version.

[8] HP-RTL drivers are recommended. Windows 64-bit print servers require 64-bit print drivers.

[9] Stealth S-Mouse (S2-S model) and MOUSE-TRAK are the only supported hand controllers in Stereo Analyst for ERDAS IMAGINE.

[10] 3Dconnexion mice are supported in IMAGINE Photogrammetry.

Issues Resolved – ERDAS IMAGINE 2020 Update 2

IMAGINE Essentials

Issue ID	Summary – IMAGINE Essentials	Description / How to Reproduce
00055139	Roaming an image displayed on top of OpenStreetMap basemap crashes ERDAS IMAGINE 2020	Reproduced this issue with a specific image: 1. Load the Gdansk_Lostowice_5cm.tif image to the 2D View 2. Open Home>Basemap>OpenStreetMap 3. Zoom in, zoom out, pan and after about 1 minute ERDAS IMAGINE will crash
00038767	ERDAS IMAGINE 2018 Update 2 gives error while opening a (GDAL created) IMG file in the Viewer	Customer reported that while opening an *.img file in IMAGINE 2018 update2 Viewer, IMAGINE gives the following error messages: Spatial Model failed in Raster Input. The error was "eimg_AllStatsStackRead failed eimg_AllStatsStackRead failed eimg_StatisticsGetSkipFactors failed eimg_LayerScalarStatisticsParametersRead failed StatisticsParametersRead failed FileDataRead failed emif_ConvertToHost failed emif_MIFtoObject failed emif_MIFtoBaseData failed No memory" IMAGINE opens the file in the viewer, but the error message is not desirable. Converting the GDAL IMG to another IMG using ERDAS IMAGINE solves the issue. Appears to be caused by GDAL not correctly populating the statistics node.
00009390	APOLLO Essentials ECWP slower in ERDAS IMAGINE than in other GIS applications	When opening any ECWP within ERDAS IMAGINE the display speed is considerably slower in comparison to other GIS applications.
00065411	S3 connection fails when region of S3 bucket is not ‘us-east-1’	A user located outside of the U.S. is experiencing a problem when trying to connect to their S3 bucket in ERDAS IMAGINE 2020. The error says: Unable to parse ExceptionName: AuthorizationHeaderMalformed Message: The authorization header is malformed; the region ‘us-east-1’ is wrong; expecting ‘eu-central-1’ They have tried to specify the region with a ‘config’ file in C:\Users\USERNAME\.aws, but it did not resolve the problem.
00070931	Inquire Box error - Datum undefined, unable to perform geodetic transformation	When using the Inquire Box with an image that is not projected to Geographic Lat/Lon, if you change the Inquire Box’s coordinate Type to Lat/Lon and click the Apply button it causes the error “Datum undefined, unable to perform geodetic transformation". The error does not occur in ERDAS IMAGINE 2018 Update 2 (v16.5.2).

00059178	Missing Auto Variable for World Files output in Image Command Batch Editor	A customer would like to generate hundreds of *.j2w world files (e.g. for *.jp2 files) using the Image Command in batch mode. The default setting in this command for the "World File" output variable seems to be "User". This setting forces the user to switch to "Auto" and define a pattern which, according to the rules for world files, cannot be other than the same path and name as the input, but with a different extension. The Auto Variable with pre-defined pattern works in other commands in batch mode, e.g. in the "Reproject" command after having selected "One or more inputs, one output". To reproduce: 1. Run Edit Image Metadata from Manage Data tab 2. Select one input file from data - lanier.jp2 3. Activate Map Model to World File option 4. Click Batch 5. In the Batch Command Editor you can see that WorldFile column populated with correct path and extension. 6. Use Add Files... to load the rest of the images. World File column for those will not be filled. Usually "One or more inputs, one output" option allows to use the pre-defined pattern. In this case you always need to manually define pattern for World Files along with extension: Next to the Variables line click Edit Select WorldFile variable. Define the Type to Auto and past following to the Pattern line $(Input.Path)$(Input.Root).j2w Once the pattern defined, click close. The WorldFile column will be populated with corresponding filenames.
00050270	Importer for ENVI HSI .hdr format fails with large input data	Import ENVI HSI .hdr format to IMG fails with larger input data (~30GB+) To see problem 1. Manage Data > Import Data 2. Format: ENVI/AISA Hyperspectral (Direct Read) 3. Input File: \\alpha\JIRA_data\IM-50434\SP_PD_P_160202_1941_A.hdr 4. Output File: (enter user specified location and filename) 5. After ENVI/AISA Hyperspectral (Direct Read) opens, select OK (using all defaults) Import starts, then recurring errors are thrown. Neither the OK and OK to All error dialogue or the Process List Kill are responsive to terminating the task. The imgcopy.exe task may have to be killed through Windows Task Manager. 23/08/19 15:35:17 SessionMgr(5044): ERROR: #8087 from efio_Seek 23/08/19 15:35:17 SessionMgr(5044): ERROR: Unable to perform seek on c:\data\sfdc\00050270_envi_hsi\data\sp_pd_p_160202_1941_a.img 23/08/19 15:35:17 SessionMgr(5044): ERROR: #7930 from efio_Win32Seek 23/08/19 15:35:17 SessionMgr(5044): ERROR: Unable to seek to byte offset -2135024896 in c:\data\sfdc\00050270_envi_hsi\data\sp_pd_p_160202_1941_a.img 23/08/19 15:35:17 Unknown error code - 131 23/08/19 15:35:17 SessionMgr(5044): ERROR: #8087 from efio_Seek 23/08/19 15:35:17 SessionMgr(5044): ERROR: Unable to perform seek on c:\data\sfdc\00050270_envi_hsi\data\sp_pd_p_160202_1941_a.img 23/08/19 15:35:17 SessionMgr(5044): ERROR: #7930 from efio_Win32Seek 23/08/19 15:35:17 SessionMgr(5044): ERROR: Unable to seek to byte offset -2127170560 in c:\data\sfdc\00050270_envi_hsi\data\sp_pd_p_160202_1941_a.img 23/08/19 15:35:17 Unknown error code - 131 The importer is reported to run successfully using smaller input data sizes (~400MB). Smaller data was not included with the sample data. Will request smaller working sample data.

00050270	ENVI Importer output image projection is defined differently from the HDR projection parameters	The projection parameters assigned to the output image from the ENVI importer are different than the projection parameters in the ENVI .hdr file. The Spheroid/Datum is expected to be assigned is WGS 84, not GRS 1980/NAD83
00058100	Stop the crash: ECW data cannot be saved after editing via Fill or Interpolate functions	To reproduce: 1. Open attached TheVillagesSubset2008.ecw image in 2DView 2. Follow the Edit Value of a Single Pixel workflow https://hexagongeospatial.fluidtopics.net/reader/XWswM6TZr3V__hu3iKjbGA/f7HPLVFqpmWzNyjg2YvpBQ 3. Right-click on the image in Contents window and click Save Layer As... . 4. Specify the output file name and pick ECW as file format. Right after creating output file, ERDAS IMAGINE will crash. The output file will have no edits applied. If you save the layer to IMG format, it will be processed successfully. But saving to ECW format is crashing ERDAS IMAGINE. Same behavior after editing using Interpolate tool (Multispectral Tab > Edit Group)
00067214	Map coordinate and projection information isn't written to output JPEG 2000 image file	Map and Projection information from the input raster isn't written to the .JP2 output raster file itself. Spatial information is written to the associated .aux file. This can be an issue when the JP2 raster is used outside of the ERDAS IMAGINE environment. This is a regression - ERDAS IMAGINE 2015 and earlier versions do write the spatial information directly to the JP2 output raster image. To recreate: Run any ERDAS IMAGINE application that writes raster output. Specify JPEG 2000 from the 'Files of Type' menu in the 'Output File' dialogue window.
00067272	Sentinel-1 data that is appended to long folder pathnames allowed by Windows, will not display in ERDAS IMAGINE	Sentinel 1A data that is appended to a (long) pathname length allowed by Windows, will not display in ERDAS IMAGINE. Errors are returned including "Could not open TIL file" in an error dialogue box. To recreate: Copy the Sentinel 1A scene (and it's et of child sub-directories) "S1A_IW_SLC_1SDV_20200522T083100_20200522T083129_032675_03C8D7_BCAF" to this pathname (or equivalent pathname length) "C:\Warehouses\Dataset\SMA_Imagens\Sentinel1A\S1A_IW_SLC_1SDV_20200522T083100_20200522T083129_032675_03C8D7_BCAF" Attempt to display the data in the 2D View by picking Files of type 'Sentinel-1 SLC' and selecting "s1a-iw1-slc-vh-20190811t070240-20190811t070305-028518-033965-001.xml" from the scene 'annotation' folder.
00049419	Issue reading JPEG 2000 raster format produced by IPP sdk	JP2 image reads improperly in ERDAS IMAGINE 2018 (as a noisy image), while correctly in ERDAS IMAGINE 2016 and other GIS applications. The Metadata tool shows that ERDAS IMAGINE 2018 changes pixel values when reading this image. To produce this image customer has used following: IPP sdk from Intel. Version 7.0 . build version 205.
00062796, 00061155	"ERROR: Unexpected byte count after conversion from ANSI Code Page (936)" with Chinese locale	Customer reports this error when running different programs (Layer Stack, Spatial Modeler). The errors seem to occur when the applications attempt to open the data. The problem was initially reported at the Hexagon Geospatial Community. A ticket was submitted, and testing indicates the problem is related to the Chinese Windows locale 'zh-CN'. The customer verified the problems are not seen after switching the system to locale 'en-US'. ERROR: Unexpected byte count after conversion from ANSI Code Page (936)

00008451	Printing map composition using "Fit to one Panel" option relocates North arrow and scale bar positions	Printing a map composition using the "Fit to one Panel" option moves the North arrow and scale bar to different map positions. Other map elements (symbols, text, map frames) maintain their relative map position.). This happens when printing to PDF, GeoPDF, and printers with a smaller page size than the map composition. The map frame is scaled to fit one panel, but the scale bar and North arrow are repositioned and resized.
00061924	Export lossy MrSID from an img/ige large input does not write a valid raster output	Export MrSID does not create a valid output if 'Lossless compression' is unselected. If 'Lossless compression' is selected a usable output is generated.
00038716	TIFF image (with Tie Points) that crosses over International Date Line does not display correctly	A TIFF image that crosses over the International Date Line does not display correctly. If you do not use the Orient Image to Map System raster option when opening the file then ERDAS IMAGINE will display the image, but the session log reports the error "RMS error for this polynomial approximation is too high: 89.999861." If you then try to display the OpenStreetMap basemap in the same 2D View the image becomes a long, thin horizontal line. If you use the Orient Image to Map System raster option when opening the file the image is displayed as a long, thin horizontal line and the session log reports the same error "RMS error for this polynomial approximation is too high: 89.999861." The image cannot be displayed in Geospatial Portal or ERDAS APOLLO Data Manager. The TIFF image supplied by the customer crosses over the International Date Line. The reference projection is Geographic Lat/Lon.
00057431	Coordinate Calculator crashes when setting output projection	The Coordinate Calculator tool crashes with the error "coordcalc.exe exited with status -1073741819" in the 64-bit version of ERDAS IMAGINE 2020 Update 1 when you set the output projection. The problem does not happen when using the 32-bit version of ERDAS IMAGINE 2020 Update 1 or ERDAS IMAGINE 2018 (the Coordinate Calculator is still a 32-bit app in the 64-bit version of ERDAS IMAGINE 2018). Steps to reproduce problem: 1. Start the Coordinate Calculator tool (Manage Data tab > Conversion group > Coordinate Calculator). 2. Load the provided coordinate file "atl_state_plane.gcc" (File > Load). 3. Set the output projection (Projection > Set Output Projection and Units) 4. In the Output Projection and Units Setup dialog click the Set Output Projection button. 5. In the Projection Chooser dialog set the projection to "UTM Clarke 1866 NAD27 North, Zone 16" and click OK. 6. Click OK in the Output Projection and Units Setup dialog. 7. The Coordinate Calculator crashes, and the session log reports "coordcalc.exe exited with status -1073741819".
00063017, 00062863, 00059127	Cannot read Sentinel-1 GRD image using the xml header file	ERDAS IMAGINE crashes when reading Sentinel-1 GRD using XML file. To recreate: Display the Sentinel-1 GRD image by selecting the xml file saved in the image "annotation" sub-folder. Imagery can be successfully opened directly from the TIFF files in the "measurement" folder.

00061905	Resample calculates invalid resample output parameters for cell size and number of columns and rows with specific data and the Rubber Sheet model	Resample calculates invalid resample output parameters for cell size and number of columns and rows with provided data. To replicate: 1. Open provided image in 2D View 2. Panchromatic tab > Transform & Orthocorrect group > Control Points 3. Select Rubber Sheeting from Model List 4. After GCP Tool Reference Setup dialogue opens, select GCP File (.gcc), OK 5. Select clip1ref.gcc, OK, then Close 6. File Menu > Load Input GCPs 7. Select clip1input.gcc, then OK 8. Select Resample icon Illogical calculations for Number rows, Number Cols, Output, and Cell size are generated. Repeat the exact same procedure using ERDAS IMAGINE 2018. Reasonable calculations are generated.
00002875	“Send View to JPG” from Office Tool in ERDAS IMAGINE is creating bad worldfile	Customer reported that the “Send View to JPG” from Office Tool in ERDAS IMAGINE is creating an incorrect worldfile. The customer wanted to use the 2D View content as a geo-registered JPEG that will work in other applications. According to the customer the World File that is generated has an error in the 2nd or 3rd line. The customer added that this appears to be similar to the problem described several years ago. Thought it important enough to encourage Intergraph to finally solve this problem. The issue is with the skew parameters in the world file, which appear to be given very, very small values rather than being 0.0.
00054109	“Raster to Shapefile” feature doesn’t create prj file with customer data.	Customer reported that “Raster to Shapefile” feature doesn’t create prj file along with the shapefile sets, even if the input raster file does have projection. According to the customer the raster thematic file was created by Supervised Classification in ERDAS IMAGINE.
00063822	ERDAS IMAGINE 2020 64-bit crashes with tbbmalloc.dll as faulting module	Customer reported an issue that they couldn’t start ERDAS IMAGINE 2020 64-bit from auto-save. Stated that an initial crash had occurred when just adding rasters to the 2D View. After that initial crash when launching ERDAS IMAGINE 2020, it prompts the user that there is an auto save file detected. When choosing YES to load the session file or NO to ignore (it doesn't matter) the software closes unexpectedly. Event Viewer shows: Faulting module path: C:\Program Files\Hexagon\ERDAS IMAGINE 2020\bin\x64URelease\tbb\tbbmalloc.dll The issue was tracked to a problem with the Locale setting for the computer, combined with a problem with installed Fonts.
00071304	Help page for Feature Count Tool doesn’t document shapefile output option	Feature Count Tool has options to write output to three formats: annotation, shapefile, and text file. Online Help did not include the shapefile output option.

IMAGINE Advantage

Issue ID	Summary – IMAGINE Advantage	Description / How to Reproduce
00069646	ERDAS IMAGINE 2020 crashes while saving edits to thematic image with shapefile on top	There are two actions that lead to a crash. Both scenarios provided below. Scenario 1. Recode tool: 1. Load 16th_naga_finalclass_83g.img to the 2D View 2. Load 17thcycle_nagaland_rcnf_83g.shp to the 2D View 3. Select thematic image and run Thematic tab > Edit group > Recode 4. In the Recode window make some edits. E.g. I have selected rows from 6 to 11, defined new value as 6. Click Change Selected Rows and Apply. Leave Recode window open 5. Select thematic image in Contents and run Table tab > View group > Show Attributes 6. Right click on thematic image and pick Remove Layer. Click Yes to save edits on both notification messages. ERDAS IMAGINE will crash Scenario 2. Thematic raster edits: 1. Load 16th_naga_finalclass_83g.img to the 2D View 2. Load 17thcycle_nagaland_rcnf_83g.shp to the 2D View 3. Select thematic image in Contents and run Table tab > View group > Show Attribute 4. Edit e.g. color of some class 5. Right click on thematic image and pick Remove Layer. Click Yes to save edits. ERDAS IMAGINE will crash
00054277	ERDAS IMAGINE 2020 compute statistics issue when using Recode	Computing statistics using Image Metadata in ERDAS IMAGINE 2020 produces result different from ERDAS IMAGINE 2018. Customer uses Raster>Thematic>Recode tool since it allows to generate output file within the GUI. This tool reads the Row number of the thematic image as original Value. Customer's data having mismatch of Row number and actual image file's value. That's why in his workflow, he firstly computing statistics for the input image to match the image file values with the Row number and then run a Recode. With the release of ERDAS IMAGINE 2020, computing statistics no longer matching those. To reproduce: compute statistics for the attached image using Image Metadata>Edit>Compute Pyramid Layers/Statistics... in ERDAS IMAGINE 2018 and in ERDAS IMAGINE 2020. ERDAS IMAGINE 2018 matches the image file value to the Row number, while ERDAS IMAGINE 2020 does not. Also, when running this image through a simple model having Raster Input -> Raster Output operators in ERDAS IMAGINE 2020, the histogram of the output raster changes so that Row number matches the image file value. Which works in the same way as ERDAS IMAGINE 2018 computes statistics.

00058219	Raster Thematic Recode does not write correct IMG output using specific TIFF input data	Raster Thematic Recode does not write correct IMG output using specific TIFF input data Problem can be recreated with customer data, but problem is not seen with every input file. Recode generates expected IMG output when using other TIFF and IMG input files. The sample input TIFF image is reportedly generated from other IMAGINE processes. To recreate: 1. Run Raster Thematic Recode 2. Input File: \\alpha\JIRA_data\IM-52611\wv2_4007_recode_3class_stk_v2.tif 3. Select Setup Recode… 4. Select Row Value = 2, Enter New Value = 1, then Change Selected Rows 5. Select OK to dismiss Thematic Recode dialogue 6. Select Output File icon 7. Be sure Files of Type is set to 'IMG' 8. Enter output filename 9. Then OK The process runs and throws an error at the end. Display the generated IMG output. The recoded image values appear as expected. Select Raster tab > *Table*. Then *Show Attributes*. The first three original rows from the input TIFF attribute table, but with NO Histogram column, are saved to the IMG output image. Calculating statistics of the IMG file using Metadata seems to repair the attribute table to the expected table result.
00058219	Raster Thematic Recode does not write TIFF output using specific TIFF input data	Raster Thematic Recode does not write TIFF output using specific TIFF input data Problem can be recreated with provided data but is not seen with every input file. Recode generates TIFF output using other TIFF and IMG input files. The sample input TIFF image is reportedly generated downstream from other IMAGINE 2020 processes. Recode does write IMG output using the same TIFF input. To recreate: 1. Run Thematic Recode 2. Input File: \\alpha\JIRA_data\IM-52608\wv2_4007_recode_3class_stk_v2.tif 3. Select Set Recode… 4. Select Row Value = 2, Enter New Value = 1, then Change Selected Rows 5. Select OK to dismiss Thematic Recode dialogue 6. Select Output File icon 7. Change Files of Type to 'TIFF' 8. Enter output filename 9. Then OK Progress meter shows successful completion of multiple subtasks, but error is thrown at the end No TIFF output is generated

00056784	Recode result is incorrect when output data values exceed bit-depth of input	When recoding data and the output data has a larger bit depth than the input (e.g. recoding from u4 bit to u16 bit, i.e., changing pixel value 3 to 300) the new values that are greater than 4-bits are not added to the attribute table, i.e., the attribute table of the output 16-bit data has the same number of rows as the input 4-bit data but the new values are not mapped correctly. The new values that are greater than 4-bits get combined into the last row of the attribute table. If you use the Inquire Cursor to inspect the recoded image you can observe that the new recoded pixel values are written to the file. Steps to reproduce the issue: 1. Open the Recode tool (Raster tab > Thematic menu > Recode) 2. Select the attached file lnlandc.img as the input and enter a name for output file. 3. Set the output data type to Unsigned 16-bit. 4. Click the Setup Recode button to display the Thematic Recode dialog. 5. Use the following values in the New Value column: 0, 1, 2, 250, 300, 305, 306, 307, 308, 309, 310. 6. Click OK in the Setup Recode dialog. 7. Click OK in the Recode tool. 8. Display the recoded image in a 2D View and open the attribute table to observe that the there is still only 11 rows. Any rows that were recoded with a value higher than 10 get squashed into the 10^th^ row. 9. Use the Inquire Cursor to check the actual pixel values in the image and observe that the pixel values have in fact been changed. This process works correctly with the Recode tool in ERDAS IMAGINE 2018.

00067176, 00057021	3D Measure tools do not work consistently	The 3D measuring tools usually work the first time they are started in an ERDAS IMAGINE session, but the tools become inconsistent after you close and reopen the 3D View. It is difficult to reproduce consistently, but it seems to happen when you close the 3D View and then show the point cloud in 3D again (without removing the point cloud data from the 2D View). The first time the point cloud data is shown in the 3D View the 3D measure tools work, but after closing and reopening the 3D View the 3D measure tools to not respond To reproduce the problem: 1. Display point cloud file “1815.las” in 2D View. 2. Display point cloud in 3D. 3. Click inside 3D View to ensure that view is selected. 4. Turn on 3D measurement tool (Measure Point) and click in 3D View to measure a point…success! 5. Without doing anything else, close the 3D View. 6. Display point cloud in 3D again. 7. Click inside 3D View to ensure that view is selected. 8. Turn on 3D measurement tool (Measure Point) …nothing happens.
00069944	Control points crashes trying to save camera .gms	This issue is present in ERDAS IMAGINE 2020 (build 1366) 64-bit, 32-bit version works fine as well as ERDAS IMAGINE 2018 64-bit/32-bit. To reproduce with attached data: 1. Open ps_napp.img in 2D View 2. Run Panchromatic tab>Transform & Orthocorrect group > Control Points 3. Select Camera geometric model 4. In GCP tool pick GCP file and select ps_camera.gcc 5. Within Camera Model Properties windows, select ps_dem.img as an Elevation Source. Click Yes to All for the notification message. 6. Click Save As to save geometric model. Provide filename and click OK. Multipoint Geometric Correction tool will crash.
00061258	“Make TOC” program for RPF data gives ERROR: Invalid index or value expression!	This has been reported by a customer in Canada Make sure there are no existing A.TOC files in \\alpha\Teamspace\args\Ian\RPF_Ian Call Manage Data tab > NITF/NSIF group > Make RPF ToC Specify a file in the directory \\alpha\Teamspace\args\Ian\RPF_Ian Click Make TOC Error Invalid index or value expression [OK] [OK to All] ...but if you OK that dialog the A.TOC seems to be created. Customer reports that this started happening at v16.5.1. 12/03/20 13:18:15 eWkspace_64(40824): Loading [makerpftoc.eml]... 12/03/20 13:19:51 SessionMgr(32192): ERROR: #5083 from eeci_SingleStepCode 12/03/20 13:19:51 SessionMgr(32192): ERROR: Problem occurred while executing script from C:/Program Files/Hexagon/ERDAS IMAGINE 2020/scripts/makerpftoc.eml at line 71 12/03/20 13:19:51 SessionMgr(32192): ERROR: #4 from eeci_PopSetArray 12/03/20 13:19:51 SessionMgr(32192): ERROR: Invalid index or value expression! 12/03/20 13:19:51 eWkspace_64(40824): Writing File c:/temp/attd40824 12/03/20 13:19:51 C:/Program Files/Hexagon/ERDAS IMAGINE 2020/bin/x64URelease/maketoc.exe c:/temp/attd40824 //alpha/teamspace/args/ian/rpf_ian/a.toc 1 12/03/20 13:19:51 eWkspace_64(40824): Unloading [makerpftoc.eml]... 12/03/20 13:20:07 SessionMgr(32192): maketoc.exe exited normally.

00022515	Surface Difference produces unexpected results in elevation difference statistics when Ignore Value and Skip is in use	If you run Surface Difference using the default preference for Image File (General) Continuous Statistics Coverage percent = 0.0. The resulting report file and image statistics are invalid. If the default is changed to Continuous Statistics Coverage percent = 100.0 the expected report file and image statistics are correct. In both cases, the raster difference image from the test model is correct . In the test case, the REFERENCE and TEST raster inputs are copies of the same raster, meaning zero difference is expected to be reflected in the report results. Continuous Statistics Coverage percent = 0.0 Minimum difference = -24575.25 Maximum difference = 0 Mean of difference = -5.840242359086706 Std Deviation of difference = 378.796596183834 Median of difference = -0.7499771118164063 Mode of difference = -0.7499771118164063 LE90 = 0.7499771118164063 Continuous Statistics Coverage percent = 100.0 Minimum difference = 0 Maximum difference = 0 Mean of difference = 0 Std Deviation of difference = 0 Median of difference = 0 Mode of difference = 0
00013124	MosaicPro Sort Images affects polygon holes	MosaicPro may get a seamline polygon hole (missing a whole single aerial image), depending on which direction you Sort Images according to Image Name, before redoing Most Nadir Seamlines. Note that when you sort images descending and then generate seams, I don't see the island polygons.
00040917	Grayscale TIFF output from MosaicPro has TIFF Tag for PhotometricInterpretation set to RGB	When outputting single-band grayscale TIFF data from MosaicPro 2020 the output TIFF data has its TIFF tag value for PhotometricInterpretation set to “RGB”. It should be set to “Min Value is Black”. ERDAS IMAGINE 2018 sets this TIFF tag value to “Min Value is Black”. To reproduce the problem: 1. Start MosaicPro 2020. 2. Add the image “vers2018_n6212a.tif”. 3. Run the mosaic process outputting to TIFF format.
00060262	MosaicPro output shows seam gap between overlapping images	MosaicPro writes a 1-pixel seam gap (value 0) between images that have overlapping borders. This gap is not seen in ERDAS IMAGINE 2018 when using the same MosaicPro options.
00058430	Weighted seamlines crash MosaicPro in ERDAS IMAGINE 2020	Replicated crash using a dataset with 220+ ortho images. It looks like it is calculating seamlines for each image, but when it gets to Generating Seamlines, the application will crash. "Cutline refine error. No next vertex found for Intersect " error messages are observed in the session log. But with the same dataset version 2018 works fine.
00056559	MosaicPro will not stitch adjacent tiles together for some images	Two adjacent side by side tiles can be displayed in the viewer. After mosaicking the two images together using MosaicPro, only one image is written in the mosaic output. The output image extent window is written for both images, but the output only contains pixel values from one image.

00060084, 00054862	Point Cloud Metadata tool crashes when assigning projection information to LAS file	The Point Cloud Metadata tool crashes when attempting to assign projection information to a LAS file. 1. Start the Point Cloud Metadata tool and open the attached file "no_pro.las". 2. Click on the Edit menu and select Add/Change Projection. 3. In the Projection Chooser set the projection to UTM GRS 1980 NAD83 North, UTM Zone 18 and click OK. 4. The Point Cloud Metadata tool crashes and the projection information is not added to the LAS file. The ERDAS IMAGINE Session log reports "pointcloudinfo.exe exited with status -1073740791."
00060084	Point Cloud Tools > Commands: Options to set the Elevation Info is not operational in 64-bit version	This issue is seen in ERDAS IMAGINE 2020 64-bit. To Reproduce: 1. Run ERDAS IMAGINE 2020 64-bit > Terrain tab > Point Cloud Tools > Commands 2. Select .las file provided 3. Activate Add/Change Elevation Information and click Options...
00054761	Point cloud data does not display with OpenStreetMap basemap	When displaying point cloud data over the OpenStreetMap basemap in a 2D View the point cloud data disappears and only a red boundary box is displayed. Steps to reproduce the problem: 1. Start ERDAS IMAGINE 2020 64-bit 2. Display the point cloud file provided in a 2D View. 3. Display the OpenStreetMap basemap in the same 2D View. The point cloud layer is no longer displayed, but its boundary is defined by a red box.
00054761	Point cloud data displayed over OpenStreetMap basemap crashes ERDAS IMAGINE	RDAS IMAGINE 2020 64-bit will crash after displaying point cloud data over the OpenStreetMap basemap and then panning and zooming in the 2D View. Steps to reproduce the problem: 1. Start ERDAS IMAGINE 2020 64-bit 2. Display the point cloud file provided in a 2D View. 3. Display the OpenStreetMap basemap in the same 2D View. The point cloud layer is no longer displayed, but its boundary is defined by a red box. 4. Close the point cloud layer by right-clicking on its name in the Contents panel and selecting Remove Layer. 5. Pan and zoom a little bit in the 2D View with OpenStreetMap basemap still displayed.
00043191	HPF Pansharpening process gives error message: "efio_fread failed" if the Panchromatic data size is bigger than 4GB created by GDAL	Customer reported that HPF Pansharpenning doesn't work. While performing HPF Pansharpenning , ERDAS IMAGINE gives the following error messages: "efio_fread failed". The customer found that similar panchromatic image size less than 4GB, ERDAS IMAGINE completes the process and results are good. Error message : "efio_fread failed" during the HPF PanSharpening process. BigTIFF files (> 4GB) created by packages other than GDAL appeared to work fine.
00046034	Warptool is unable to resample 271 band Headwall Hyperspectral data in ENVI hdr format or as the imported *img format	Customer reported that Warptool is unable to resample 271 band Headwall Hyperspectral data.

<table>
<tr><td>00062719</td><td>Warptool Camera model aborts when resample process is run with specific data</td><td>To recreate:

1. Display input raster ‘foto_input.img’.
2. Panchromatic tab > Transform group > Control Points
3. Select Saved Model > Camera model, then OK
4. Load Geometric Model ‘camera_es5.gms’
5. Substitute local file ‘dem.img’.
6. GCP Tool opens > select GCP File (.gcc) , then OK > from File Chooser select ‘coordinate_reference.gcc’, then OK
7. Select Close
8. Select Solve Geometric icon
9. Select Resample > enter output filename
10. Then select OK to run

Warptool crashes with error:

14/04/20 16:31:33 SessionMgr(27236): warptool.exe exited with status -1073741819.

Same process using same steps works in ERDAS IMAGINE 2018.</td></tr>
<tr><td>00039282</td><td>Export CADRG will not write files into folder name containing the character ‘ö’</td><td>Export CADRG fails to write RFP frames to a folder name containing special character ö. Problem is not seen with other special characters å and ä.</td></tr>
<tr><td>00061258</td><td>Make RPF TOC fails when attempting to create TOC file to mapped network drive</td><td>The Make RPF TOC fails when attempting to create TOC file across network.

1. Map network drive W: pointing to a UNC network location.
2. Make sure there are no existing A.TOC files in W:\CAN_VFR_250K.
3. Open the Make RPF TOC tool (ERDAS IMAGINE 2020 > Manage Data tab > NITF/NSIF group > Make RPF TOC).
4. Select the RPF directory W:\CAN_VFR_250K as the location to create the A.TOC file.
5. Click the Make TOC button.
6. The error message “Invalid index or value expression” pops up (see linked bug), but if you click OK the process continues.
7. The Process List reports the status “Parsing Attribute File” and the progress meter sits at 20% until it eventually fails.</td></tr>
<tr><td>00050423,
00041391,
00050423</td><td>Better DSM results needed from Semi-Global Matching (SGM)</td><td>Elevation data extracted from stereo imagery pairs using SGM was not as good as expected.</td></tr>
<tr><td>00068281,
00066818</td><td>3D ASCII file causes error when adding DTM to Terrain Prep Tool</td><td>A 3D ASCII file (*.xyz) that does not have negative X and Y coordinates will cause error when loading it into the Terrain Prep Tool. The error is:

Incorrect object type when accessing key "URL"

The same 3D ASCII files that cause this error in ERDAS IMAGINE 2020 can be loaded into ERDAS IMAGINE 2018’s Terrain Prep Tool without any problems.

Steps to reproduce the problem:

1. Start the Terrain Prep Tool.
2. Click the button for “Add DTM files to the list”.
3. Set the file type to “3D ASCII (*.xyz)”.
4. Select the provided file “3d_point_data.xyz” and the errors display</td></tr>
<tr><td>00016717</td><td>ECRG exporter does not write EPF frames with some data (thematic not a valid input)</td><td>The ECGR exporter was allowing non-RGB imagery to be input and spend time processing it even though it is not a valid input.

The exporter needs enhancing to disallow inputting non-RGB imagery.</td></tr>
</table>

IMAGINE Objective

Issue ID	Summary – IMAGINE Objective	Description / How to Reproduce
00066419	Typo in Association:Shadow VOP help documentation	There is a minor typo in the Help documentation for the Vector Object Processor Association:Shadow. Towards the bottom of the page it says: This cue metric is useful for classifying objects that case visible shadows such as buildings, trees, targets, etc. It should say “cast” instead of “case.”
00062294	IMAGINE Objective crashes when adding Raster Pixel Processor queues to project on system without Java installed	IMAGINE Objective crashes when adding raster pixel processor queues to Objective project. To recreate 1. Launch IMAGINE Objective 2. Dismiss the Attention warning dialogues indicating java Runtime Environment is missing 3. Create new Project and new Feature Model 4. Add New Variable of Raster type (residential.img), then click OK 5. Expand Project treeview and select Raster Pixel Processor 6. In the Properties panel > Properties tab, select Identity from the Pixel ques list > then click the Add button + the properties tab. You should see the crash 0/10/19 15:03:42 fe_workstation(5008): Exiting all editors 30/10/19 15:03:42 fe_workstation(5008): Opened layer c:/data/temp/residential.img(:Layer_1) 30/10/19 15:04:11 SessionMgr(4356): fe_workstation.exe exited with status -1073741819. Crash does not occur after installing Java Runtime environment v8u202.
00009668	sentinel2.dll error when running IMAGINE Objective Vector Cleanup Operator	When running an IMAGINE Objective project with just a Vector Cleanup Operator it caused an error stating “Could not load DLL D:\program_files\IMAGINE2016\usr\lib\x64URelease\RasterFormats\sentinel2.dll: Unknown error code – 127”. The process runs to completion and the output file is created successfully. Error message about the sentinel2.dll seems unrelated to the actual issue.
00012292	Dilate Raster Object Operator does not dilate complete image coverage	Dilate Raster Object Operator does not dilate the total image area for all classes. In the specific example project, the dilation does not extend through the total image for a specific class. Other classes appear to be dilated through the complete image extent.
00009384	Different results for output based on simple change in manner of processing	If the user processes Objective by doing half the processing, and then completes the processing from the point they first stopped, the resulting output is different from the output if they just let the entire process run. The resulting polygons are different. There are polygons missing.

IMAGINE Photogrammetry

Issue ID	Summary – IMAGINE Photogrammetry	Description / How to Reproduce
00046100	Import tool imports INPHO project with wrong flying height	When importing Inpho project to block file; at project import default unit is meters, and when you enter units as US Survey Feet importer makes a conversion from meters to US Survey feet which it shouldn't because project is triangulated in US Survey feet. Defining the INPHO projection units should not result in unit conversion.
00067721	PYRX pyramids not recognized as existent in IMAGINE Photogrammetry	When computing PYRX pyramids for use within IMAGINE Photogrammetry, they are not recognized as existent (green color) in the column "Pyr". However, the ViewPlex of the Terrain Editor and PRO600 is apparently able to work with the PYRX pyramids.
00058613	APM Crashing with ORIMA 2020	APM fails with projects containing 1000 to 3000 images or more.
00041391	XPro SGM has problems with new Vexcel sensor, Mark III	Several problems observed with new camera from Vexcel, the Mark III. This new sensor has an extreme high resolution, which allows the aerial photogrammetric companies to fly much higher than before and still get the same ground-pixel resolution. The camera generates such high resolution images, that AutoDTM has problems processing them. XPro requires to generate new TIF images, but these are not recognized afterwards. These issues are addressed by using IMAGINE DSM Extractor.
00050423	DSM generated by IMAGINE Photogrammetry against DSM generated by another software vendor	Tridicon SGM was producing results which were not comparable in quality to some other software vendors using WorldView-3 imagery. These issues are addressed by using IMAGINE DSM Extractor.

IMAGINE Professional

Issue ID	Summary – IMAGINE Professional	Description / How to Reproduce
00070492, 00070356, 00067255, 00062666, 00062056, 00061236, 00061293	Accuracy Assessment tool truncates reference values	When manually entering values in the Reference column of the Accuracy Assessment tool the digit in the ones decimal place gets removed. For example, entering a value between 0-9 becomes 0, while 15 becomes 1, 25 becomes 2, 255 becomes 25, etc. 1. Start the Accuracy Assessment tool (Raster tab > Classification group > Supervised > Accuracy Assessment) 2. Open the attached raster image eldoatm_class25.img (File menu > Open). 3. Create random points (Edit menu > Create/Add Random Points) 4. Number of Points: 10 5. Distribution Parameters: Random 6. Show the class values (Edit menu > Show Class Values). 7. For row 1 enter value 1 in Reference column. It becomes 0. 8. For row 2 enter value 22 in the Reference column. It becomes 2.
00049855	Area Frame Sampling Project Manager corrupts image paths of saved projects	Area Frame Sampling Project Manager corrupts the image paths of saved projects. Customer reports this works in ERDAS IMAGINE 2011. Problem is seen in ERDAS IMAGINE 2016 and ERDAS IMAGINE 2018. Image file paths are added to the Area Frame Sampling project during construction. These pathnames are corrupted after saving and reopening the project. The path of the project file (.spf) is inserted before the path of the project images. Example image file path and name while building the project: C:\temp\lnsoils.img Example image file path and name after saving and reopening the project: C:\Data\SFDC\00049855_frame_sampling\C:\temp\lnsoils.img The only workaround is to reinsert the images into the project after reopening the project. Basically, rebuilding the project.
00067397	Detect Objects Using Deep Learning producing shifted output (when coordinates go down by Y axis from origin?)	Working with the material from this demo: https://community.hexagongeospatial.com/t5/Spatial-Modeler-Tutorials/Mapping-Oil-Palms-using-Deep-Learning-Object-Detection/ta-p/38259 If BuildingFootprints_SpatialJoin_Damage_NE_Subset is run against the training tile BuildingFootprints_SpatialJoin_Damage_NE_Subset the shapefile output does not properly overlay on the raster input. The produced shapefile output will be shifted, so that upper left Y from the image becomes lower right in shapefile.
00068354	Help references the 'ML Model' menu name used in the 2018 Machine Layout interface	Machine Layout model pull down menu name was changed to Machine Intellect in ERDAS IMAGINE 2020. Machine Layout Online documentation references the ERDAS IMAGINE 2018 interface name ML Model. There are multiple references of ML Model listed in the Online documentation.

Spatial Modeler

<table>
<tr><th>Issue ID</th><th>Summary – Spatial Modeler</th><th>Description / How to Reproduce</th></tr>
<tr><td>00046042</td><td>Union Features states it accepts Lists (of Features), but it does not</td><td>The Help for Union Features states the following:
<table>
<tr><th>Name</th><th>DataType(s)</th><th>Description</th></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>FeaturesIn1</td><td>IMAGINE.Features
IMAGINE.List (of IMAGINE.Features)</td><td>The first input Features or List of input Features which will be appended to FeaturesOut.</td></tr>
</table>
However, if you try to feed a List of Features to the FeaturesIn1 port it will fail with the following message:

Spatial Model failed in Union Features 2. The error was "HexagonGeospatial::FeatureAnalysis::UnionFeaturesOperator::OnExecute
failed
No input features found.".</td></tr>
<tr><td>00054184</td><td>Classify Using Machine Learning workflow generates no classes with Pseudo Mercator data</td><td>Classify Using Machine Learning workflow will generate empty classes (i.e. min=0, max=0) in the classified output raster if the projection of the training input raster is registered to projection: Pseudo Mercator, Spheroid/Datum: WGS84, EPSG Code: 3857.

Classify Machine Using Machine Learning workflow will generate expected number of classes (i.e. min=0, max=4) in the classified output raster if the projection of the training input raster is registered to another projection: UTM Zone 36, Spheroid/Datum: WGS84, EPSG Code: 32636).</td></tr>
</table>

00061099	Classify Using Machine Learning fails with error: Buffer dtype mismatch, expected 'SIZE_t' but got 'long'	To reproduce run the classify_using_machine_learning.gmdx model with associated subset_1.img input image and trainingwaternietwater.miz. Initially partner has reported that this issue can be reproduced when running the process only in Batch mode, but it can be replicated on some computers via Run. It fails with the below error in ERDAS IMAGINE 2020 32-bit/64-bit and in ERDAS IMAGINE 2018 64-bit: 10/03/20 15:54:42 SessionMgr(14920): Connection success for the external process 'eWkspace_64' 10/03/20 15:57:54 SessionMgr(14920): Executing spatial model: d:/0sfdc/83machinelearning/classify_using_machine_learning.gmdx 10/03/20 16:08:19 SessionMgr(14920): Running command line: C:/Program Files/Hexagon/ERDAS IMAGINE 2020/bin/x64URelease/mlpywrapper.exe "C:/Program Files/Hexagon/ERDAS IMAGINE 2020/etc/MachineLearning/Operators/randomforestpredictraster.py" "d:/temp/SM-27a7-d52f-3c06-3c41-002344/mlpy_jsoninput_4513b634-8662-4c89-bc1a-cd0887c4593d.Json" "d:/temp/SM-27a7-d52f-3c06-3c41-002344/mlpy_jsonoutput_ef7ccef4-a66b-4877-ad61-db6dcd8b95dd.Json" \\.\pipe\6786d301-5f4e-45f4-be7c-8942640df7fa 10/03/20 16:08:47 SessionMgr(14920): Error occured while running randomforestpredictraster 10/03/20 16:08:47 SessionMgr(14920): Buffer dtype mismatch, expected 'SIZE_t' but got 'long' 10/03/20 16:08:47 SessionMgr(14920): D:\TEMP_MEI160602\sklearn\base.py:315: UserWarning: Trying to unpickle estimator LabelEncoder from version 0.18.1 when using version 0.18.2. This might lead to breaking code or invalid results. Use at your own risk. 10/03/20 16:08:47 SessionMgr(14920): D:\TEMP_MEI160602\sklearn\base.py:315: UserWarning: Trying to unpickle estimator DecisionTreeClassifier from version 0.18.1 when using version 0.18.2. This might lead to breaking code or invalid results. Use at your own risk. 10/03/20 16:08:55 SessionMgr(14920): Could not understand JSON for type: IMAGINE.File 10/03/20 16:08:55 SessionMgr(14920): Spatial model execution failed. 10/03/20 16:19:25 SessionMgr(14920): external process exited with status 1. Only ERDAS IMAGINE 2018 32-bit executes this model successfully. Have placed Replace NoData With operator due to the defined limitation for Classify Using Machine Learning operator. However, ERDAS IMAGINE 2018 32-bit successfully executes this model even with original data that has NoData pixels.
00070615, 00070399, 00069009, 00060855, 00056785	Changing input file in legacy model (.gmd) does not correctly update the function definition	If you change one of the input files in a model it does not update the input file in the function definition correctly. Instead, it attaches the new input file name to the original input file name. For example, if you have a model which adds two input raster files together the initial function definition looks like “$n1_input_one + $n2_input_two”, but if you go back and change the input file from “input_two.img” to “input_three.img” and check the function definition again it now looks like “$n1_input_one + $n2_input_twon2_input_three”. It does not remove the original input file name, and this causes the model to crash. This only occurs in the 64-bit version of ERDAS IMAGINE 2020 Update 1. The problem does not happen in the 32-bit version of ERDAS IMAGINE 2020 Update 1 or in ERDAS IMAGINE 2018.

00059887	ModelMaker: Function Definition doesn't properly update predefined band selection with values from new image	This works properly in ERDAS IMAGINE 2018. To reproduce issue in ERDAS IMAGINE 16.6 build 1366: 1. Open attached cb1.gmd in Model Maker 2. Double-click on Function, which will be shown as: EITHER 10000 IF (($n1_w10_20181120(7)==-10000) OR ($n1_w10_20181120(8)==-10000) OR ($n1_w10_20181120(9)==-10000)) OR ($n1_w10_20181120(8)$n1_w10_20181120(7) $n1_w10_20181120(9))0.001$n1_w10_20181120(7)*0.001(702-667)/(742-667) OTHERWISE 3. Close Function Definition. Double-click on Input Raster and pick input.img file (attached). Function will be updated to an invalid one: EITHER 10000 IF (($n1_w10_20181120(7)==-n1_input(7)==-10000) OR ($n1_w10_20181120(8)n1_input(8)==-10000) OR ($n1_w10_20181120(9)n1_input(9)==-10000)) OR ($n1_w10_20181120(8)$n1_input(8)$n1_w1n1_input(7) - $n1_w10n1_input(9))0.001$n1_w10_20181n1_input(7)*0.001(702-667)/(742-667) OTHERWISE In ERDAS IMAGINE 2018 it properly changes to new values: EITHER 10000 IF (($n1_input(7)==-10000) OR ($n1_input(8)==-10000) OR ($n1_input(9)==-10000)) OR ($n1_input(8)$n1_input(7) $n1_input(9))0.001$n1_input(7)*0.001(702-667)/(742-667) OTHERWISE
00060343	Problems reading stats should not cause Raster Input to fail	IMG format files downloaded from USGS website have StatisticsParameters that are incorrectly written which cause RasterInput to fail. This should be corrected.
00058591	Join Features operator: Select Attribute doesn't provide full list of attributes from Join Features result	To reproduce: 1. Open provided model 2. Double-click on Attribute Name port of Select Attribute operator. Notice that Corine_R attribute is not present 3. Double-click on Attribute Names of Select Attributes operator. Notice that Corine_R attribute is there 4. Manually type in the Corine_R attribute to the Attribute Name port of Select Attribute operator. Right-click on Select Attribute operator and pick Run Just This. Notice that it will output this attribute
00058591	Join Features operator: Doesn't output attributes from features with no geometry	Run original attribute_join_original.gmdx model with provided data. It will output attributes from the Left features only without matching attributes from Right.
00068887	Shapefile created with GDAL - Projection not recognized in Spatial Modeler	Error message that gets displayed in Spatial Model Editor is: “Dimensionality of CRS cannot be determined”. Session log adds: Failed to recognize Authority Code with Authority "PRJ" and Authority Code "D:/tmp/kws/problems_imagine2020u1/computed/searchArea.prj"

00069509	Spatial Model fails when reprojecting from EPSG:4326 to EPSG:32632	When using a spatial model to reproject a global DEM from EPSG:4326 to EPSG:32632 and subsetting the output to match the extent of a smaller reference image the process fails. E.g. when attempting to subset and reproject from a global DEM in EPSG:4326 to an area matching a reference image in EPSG:32632. Spatial Model Editor reports the following messages: Raster Input: Pixel Block Request failed: EFGA_DERIVEPOLYCOEFS failed Raster Output: Unknown exception. (`anonymous-namespace'::AsyncReadImpl::get_Result failed erdas::sblegacylib::PortGriddedDataSource::Read failed Session log shows these errors: 1/10/20 13:20:12 SessionMgr(24476): Executing spatial model: d:/tickets/00069509/reproject_resample_raster.gmdx 01/10/20 13:20:12 SessionMgr(24476): Unable to extract EPSG code from CRS with title 'ps1'; ignored 01/10/20 13:20:12 SessionMgr(24476): Unable to extract EPSG code from CRS with title 'g1674'; ignored 01/10/20 13:20:14 SessionMgr(24476): ERROR: #950 from eirf::ImageWarper::Impl::GeometricTransMagGet 01/10/20 13:20:14 SessionMgr(24476): ERROR: EFGA_DERIVEPOLYCOEFS failed 01/10/20 13:20:14 SessionMgr(24476): ERROR: #4 from EFGA_DERIVEPOLYCOEFS 01/10/20 13:20:14 SessionMgr(24476): ERROR: EFGA_SOLVELINEAREQS failed 01/10/20 13:20:14 SessionMgr(24476): ERROR: #4 from EFGA_SOLVELINEAREQS 01/10/20 13:20:14 SessionMgr(24476): ERROR: egda_MatrixDivide failed 01/10/20 13:20:14 SessionMgr(24476): ERROR: #6 from egda_MatrixDivide 01/10/20 13:20:14 SessionMgr(24476): ERROR: egda_MatrixDivideF64 failed 01/10/20 13:20:14 SessionMgr(24476): ERROR: #2 from egda_MatrixDivideF64 01/10/20 13:20:14 SessionMgr(24476): ERROR: egda_MatrixLUDecomposition failed 01/10/20 13:20:14 SessionMgr(24476): ERROR: #7 from egda_MatrixLUDecomposition 01/10/20 13:20:14 SessionMgr(24476): ERROR: egda_MatrixLUDecompositionF64 failed 01/10/20 13:20:14 SessionMgr(24476): ERROR: #1 from egda_MatrixLUDecompositionF64
00045305	Creating submodels may displace annotation and operator layout	Creating submodels from relatively complex models displaces the layout of text annotation and operators in the model. Product Manager observed similar model behavior when creating submodels and reports the amount of shifting correlates with the complexity of the model. The more complex the model, the greater the displacement of operators and text.
00052363	Running a model from the Ribbon will fail when using Map Boundary port	Running a model from the ribbon (e.g. Launch Spatial Model, My Models) will fail if the Map Boundary port coordinates are defined using the Inquire Box. Defining the Map Boundary by manual keyboard entry will work. Same model runs successfully using the Inquire Box if it’s run from the Spatial Model Editor window. Model errors: 24/09/19 10:20:50 Spatial Model failed in Raster Input. The error was "erdas::sb_raster::RasterInput::ResolveBBox failed 24/09/19 10:20:50 Bounds do not intersect image". 24/09/19 10:20:50 SessionMgr(34428): Spatial model failed. 24/09/19 10:20:50 24/09/19 10:20:51 SessionMgr(34428): smprocess.exe exited with status 1. Running the model from Spatial Model Editor using same model parameters from above will run successfully.
00050531	Schema Remodeler "Rename Attributes" is dropping coordinate system ID resulting in error	Schema Remodeler "Rename Attributes" is dropping coordinate system ID resulting in the following error. System Model failed in Union Features. The error was "The input geometry field 'Geometry' does not have a valid CoordinateReferenceSystemId. The input geometry cannot be transformed to target CRS without a known source CRS" It appears the "Rename Attributes" operator is dropping the coordinate system ID.

<table>
<tr><td>00064086,
00048695</td><td>Spatial Model changes datum of input feature data</td><td>When processing input feature data that are projected to Lambert Conformal Conic with the datum “MGI AT (EPSG: 1618)”, the output features and raster data have a different datum which causes a shift of approximately 300 meters in the X-direction. The output features data are assigned the datum “MGI”. The output raster data is assigned the datum “Militar-Geographische Insttut [To WGS 84 8]”.</td></tr>
<tr><td>00051840</td><td>Encode Height to Vertex Z spatial model is giving Z values all 0 with ESRI asc input file</td><td>Customer reported that they have created a spatial model on the basis of the following Encode Height to Vertex Z spatial model:

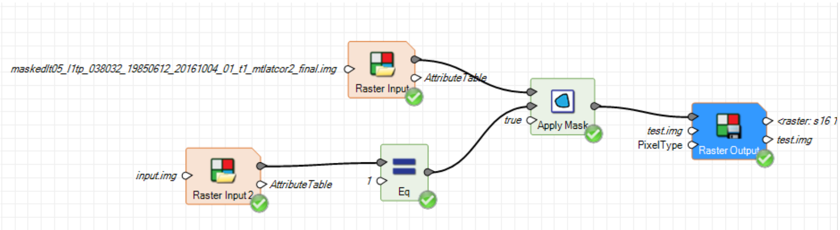
https://community.hexagongeospatial.com/t5/Spatial-Modeler-Tutorials/Encode-Height-to-Vertex-Z/ta-p/26083

If the customer runs the model with asc file as input, the model successfully ran and generated output shapefile. However, the geometry 'z' were all 0.
Running the same model with a tif raster DEM, the geometry 'z' gets populated.</td></tr>
<tr><td>00060388</td><td>Error in Spatial Modeler with GeoPackage dataset (containing features)</td><td>To Reproduce:

1. Run Toolbox tab > Spatial Model Editor
2. Add Features Input operator
3. Double-click on Filename port
4. Pick GeoPackage Features Proxy (*.gfb) and click Connect.
5. In the GeoPackage Data Source window browse for data.gpkg (provided) and provide the name
6. When you will select this data in Database Connections section, the error shows up saying "unrecognized token: "2019xxxx"

This data can be successfully opened in QGIS. However, other GIS applications throw the same error.</td></tr>
<tr><td>00058909</td><td>Missing "Verify Save on Close" dialogue when closing the Spatial Model Editor after editing text annotations</td><td>To reproduce:

1. Open provided test.gmdx
2. Edit the annotation text.
3. Close Spatial Model Editor. It will not offer to save edits and close the Editor window. As a result - no edits saved.</td></tr>
<tr><td>00065622,
00058966</td><td>Classify Ground operator may crash Spatial Modeler</td><td>A customer reports that Spatial Modeler is crashing when running a model containing the Classify Ground operator. They provided a dump file that indicates the cause is heap corruption during parallel processing of points.</td></tr>
<tr><td>00063198</td><td>Apply Mask fails with binary data unless you pick the class via "Eq" operator</td><td>If input.img is a u1 binary image, you should not require the Eq operator in a Spatial Model like this, which uses the Apply Mask operator:


</td></tr>
<tr><td>00070549</td><td>Spatial Modeler crashes when running with the Iterator operator</td><td>Spatial Modeler crashes when working with the Iterator operator with a sub-model that copies files from one folder to another if the model:

1. Is run repeatedly (more than once)
2. Clear Results is selected
3. Try to delete any operator using the Delete key

This problem is not observed running IMAGINE 2018 b1265</td></tr>
</table>

00066469	Apply AOI operator fails unexpectedly with some AOIs	Apply AOI operator fails with a customer supplied AOI (test.aoi). This same AOI works with other operators (e.g. Raster Input) and ERDAS IMAGINE programs (e.g. Subset). An AOI (hgd_1.aoi) that was manually screen digitized on top of the test image, works in the model. Session Log: 16/07/20 16:45:45 SessionMgr(54660): Executing spatial model: //alpha/jira_data/im-54785/apply_aoi.gmdx 16/07/20 16:45:46 SessionMgr(54660): HexGeo::SpatialModelerRaster::RasterUtils::BoxIntersection failed 16/07/20 16:45:46 Images do not Intersect. 16/07/20 16:45:46 SessionMgr(54660): Spatial model execution failed.
00064752	Operator "Focal Sum" crashes Spatial Modeler when input data has NoData defined	To reproduce run the focal_sum.gmdx model with provided data. The input data has NoData defined. Spatial Modeler will crash. The rest of Focal functions operate normally with that data, only Focal Sum leads to an application crash. If to replace NoData with valid value (e.g. 0), model will execute successfully.
00067504	IMAGINE.Directory value is not the same across all operators (causes Path Exists to fail)	Path Exists operator seems to accept string representation of IMAGINE.Directory object, but the value has to be in quotation marks (" ") . Port Input and Directory Input outputs IMAGINE.Directory value without those, so Path Exists fails with a "No appropriate data found on port(Path)." error. Get Containing Directory also outputs the IMAGINE.Directory, but in quotation marks, so Path Exists works, and also works when IMAGINE.Directory is first converted to String.
00069394	Classify Using Deep Learning operator does not correctly remember its "complete" status for re-running downstream operations	The provided Spatial Model takes an input NITF / BIIF image and runs a Deep Learning classifier to classify tiles that contain clouds. This is then used to estimate cloud cover. To reproduce the problem: 1. Open the model in a Spatial Model Editor 2. Start the Session Log 3. Click Preview 4. Wait for the deep learning to complete and the preview to show. 5. Note that the Classify Using Deep Learning operator is checked green. 6. Now pan to the tail end of the model, select the Report operator, right-click and select Run Just This 7. Normally what you would expect to happen is for just those un-run operators to have to run. Anything that's upstream that has already completed should not have to be executed again. 8. But Deep Learning classification starts all over again - you'll need to wait. As mentioned, only if something upstream of the Classify Using Deep Learning operator is modified would you expect anything downstream to be invalidated. In this instance we have not done that, so the Report should run in a matter of seconds. 9. Now click Run 10. Take all the defaults in the dialog again 11. This should invalidate all the current results and start from scratch. 12. But the model will fail 13. That shouldn't happen either. At this point you need to quit and restart ERDAS IMAGINE otherwise Spatial Modeler just isn't going to run correctly.
00003034	Spatial modeler Vector input operator cannot process shapefile with "-" in path	The older Vector Input operator would not parse filenames that included the “-“ character. The replacement Features Input operator has no such limitations. Note that this change happened many versions ago but the Issue has only recently been marked as Closed.

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