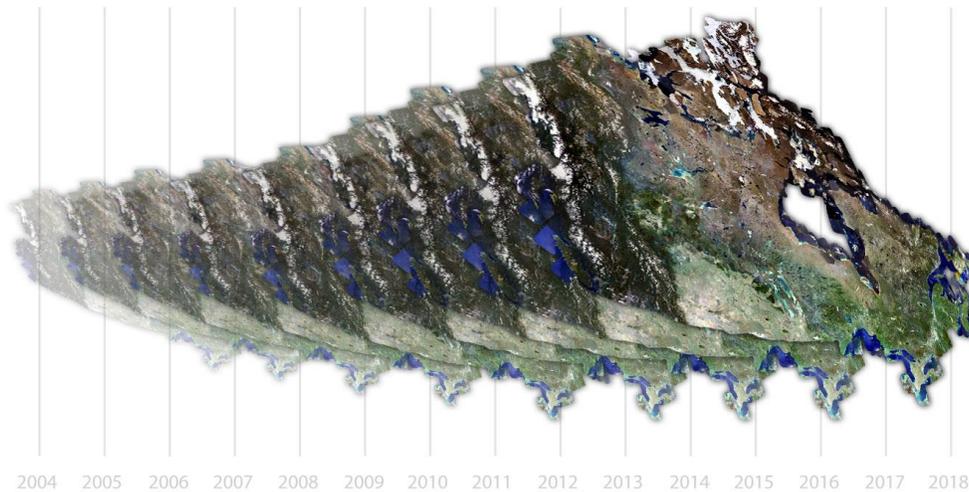


Highlights

New! Analysis Ready Data Tools

Add-on package for image preprocessing for multi-temporal analysis



Example of satellite imagery time series of Canada

Rigorous scientific preprocessing

A new industry leading set of tools specifically designed to produce geometrically and radiometrically corrected data at scale. This new package provides you with the capabilities to generate standardized illumination conditions and surface reflectance products to perform meaningful multi-temporal analysis through new big data architectures such as the Open Data Cube.

Automatically preprocess large volumes of data

Analysis Ready Data tools were developed to leverage the built-in automation available across the Geomatica platform. Through the Geomatica Python API, users can deploy workflows to automatically and rapidly preprocess large volumes of data, building deep temporal imagery stacks over their areas of interest.

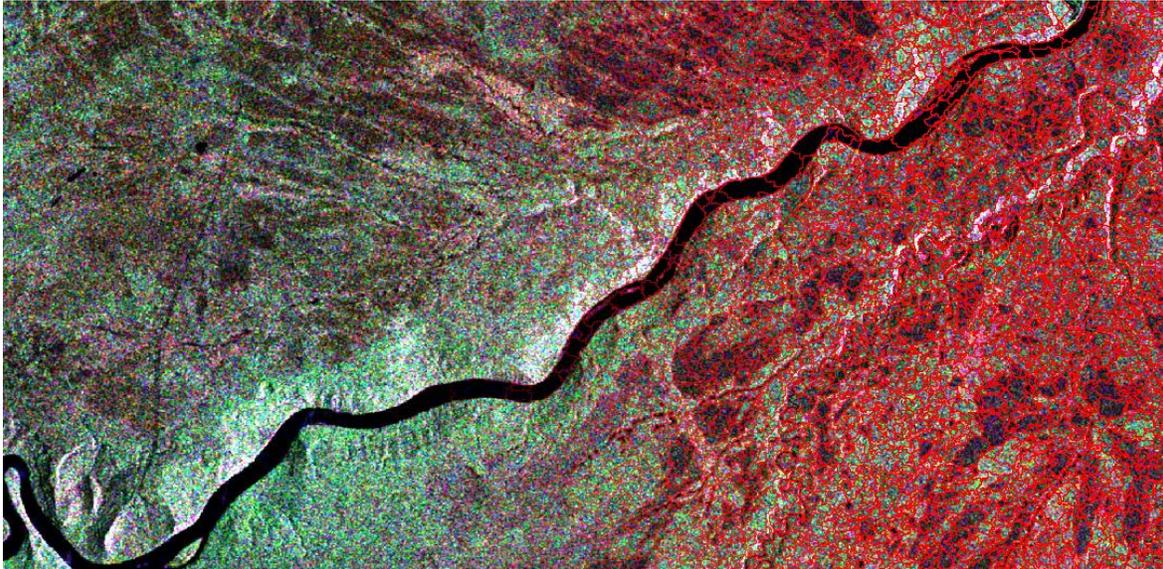
Intuitive atmospheric model calibration

Dedicated graphical and statistical tools are at your disposal for guidance on the calibration and validation of your atmospheric models. Geomatica now includes improved and easier to use tools for comparing target and reference spectra from different sources.

Highlights

New: SAR Object Analyst Workflow

Additional functionality at no additional cost



SAR image with segmentation defined by scattering mechanisms and more

Easy-to-learn and easy-to-use

Object-based classification for SAR imagery using the existing Object Analyst module is now possible, through the integration of complex SAR image pre-processing requirements. SAR object-based classification is now accessible to non-SAR experts.

Segmentation adapted to SAR imagery

We've developed a SAR specific image-segmentation procedure to delineate homogenous regions based on statistical region-growing. This innovative technique makes use of polarimetric information and SAR specific statistical analysis to assist in the segmentation process to generate meaningful objects.

Predefined attribute calculation

The calculation of SAR attributes is easily performed through an easy-to-use interface that leverages SAR specific texture analysis, analysis of scattering mechanisms, and much more.

Comprehensive support for SAR data

Take advantage of different types of SAR data in Object Analyst. Support is provided for complex and detected data, and different types of polarisations such as: dual, compact, and quad polarimetric data.

Highlights

New: MRA Fusion

Analysis Ready Pan-Sharpener



10m Pan-sharpened Sentinel-2A image (right) vs 20m image (left) over Fort McMurray, AB

Advanced Multi Resolution Analysis (MRA) based pan-sharpening

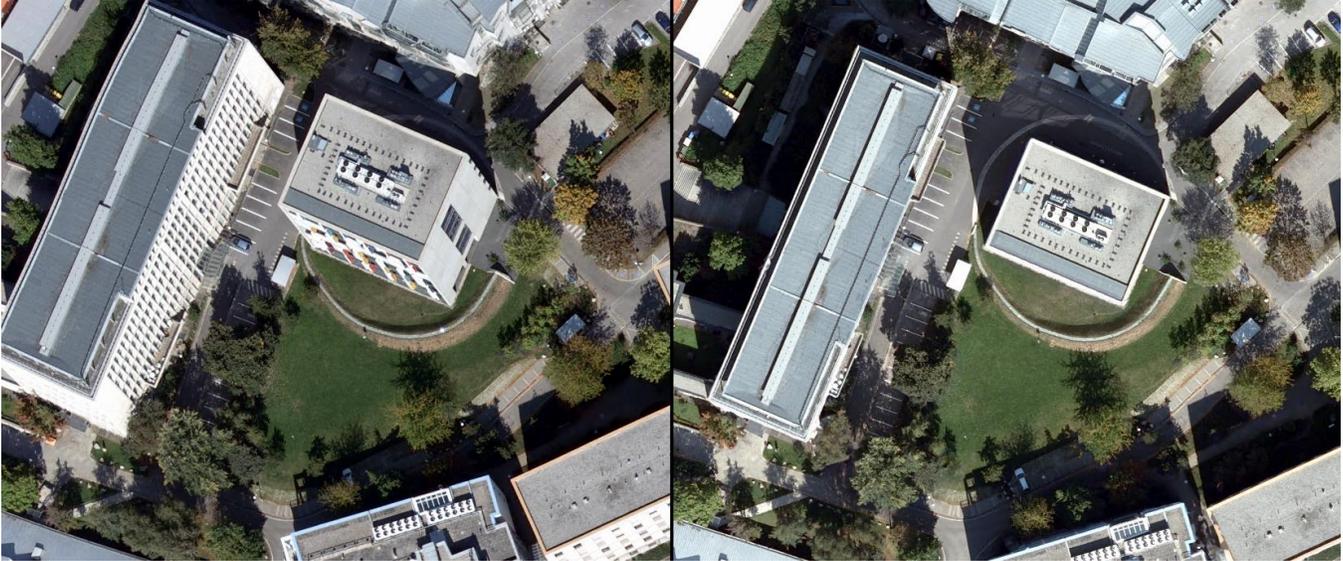
New algorithm has been developed in-house based on advanced wavelet analysis to perform high quality image pan-sharpening that maintains multispectral consistency. The new MRA fusion algorithm ensures high spectral fidelity and can vastly improve multi-temporal analysis.

Scientifically validated

Through extensive research and analysis, the new MRA fusion algorithm has been validated and proven to maintain high spectral fidelity of multispectral bands. Statistical analysis has been conducted across multiple images, varying land cover, and different multispectral bands to verify the MRA fusion algorithm and its ability to preserve radiometric content.

New: DSM True-Ortho Workflow

Digital aerial camera workflow for generating DSM True-Ortho products.



DTM Ortho (left) and DSM True-Ortho (right)

Automated True Ortho generation with DSMs

The DSM True-Ortho workflow was designed to guide you through the process of generating true-ortho products with minimal interaction. The generation of true-ortho products is completely automated by using digital surface models that eliminates the time-consuming requirement of manually digitizing buildings.

Advanced multi-view DSM extraction

Leverage sophisticated technology to generate high resolution digital surface models that are required for high quality true orthorectification. Our technology leverages newly developed elevation selection methods from digital surface models at different angles to achieve a completely nadir perspective of the surface, removing occlusions and artefacts.

Stop using DTMs to generate orthos in challenging areas

Generate perfectly nadir perspective DSM Ortho products that provide the best possible landscape representation without building lean in incorrect locations, no visible distortions in occluded regions, and increased visibility of streets.

More Highlights

Mosaic Tool

The 2018 release includes a new independent and redesigned Mosaic Tool. The independent Mosaic Tool now includes a step-by-step interface for easily creating and defining a mosaic project along with many other new features. Existing ortho images can be mosaicked using streamlined workflows within the Mosaic Tool.

New Mosaic Tool Features

- Now includes an intuitive and easy-to-use tiling feature
- Provides multi-user mosaic editing capabilities
- Support provided for images with different input pixel resolutions, projections, and bit depths

Performance Improvements

- An improvement to the rendering and editing performance of the dodging point feature
- A performance improvement for managing large-scale mosaic projects

InSAR

Many interferometric SAR improvements have been implemented for the 2018 release of Geomatica. These improvements further enhance existing technology to produce higher quality results and improved user experience

New & improved InSAR features

- Support for bistatic acquisition mode to generate digital elevation models and deformation products
- New modified Goldstein filter for adaptive filtering of interferometric fringes to reduce processing time (phase unwrapping) and improve results
- Addition of small baseline (SBAS) support to define reference image for accurate time-series analysis in slant-range
- Improved orbital calculations from state vectors for better accuracy and faster processing
- Phase unwrapping introduces tiling control to greatly reduce processing and improving accuracy between tiles

DSM Extraction

In Geomatica 2018 the DSM extraction technology includes many new additions and updates that allow users to more quickly generate higher quality results.

New DSM extraction features

- New multi-view DSM creation functionality to combine different view angles for nadir perspective DSMs with less artefacts and occluded regions
- Tri-stereo support for generating better quality DSMs
- New pattern function reduces errors in regions with strong patterns, such as: roof tiles, and agriculture fields

Performance and quality improvements

- Newly exposed parameters for greater control over the DSM extraction process
- A 2x speed up in DSM extraction processing
- Improved extraction of urban features for sharper building edges
- Better pixel matching and extraction performed in shadow regions
- Greatly reduced terracing and cross-hatching artefacts in DSMs

DEM Editing

The DEM Editing tool has a new Hilly option feature for improved filtering of landscape features. The hilly option identifies natural slopes prior to filtering that makes it easier to filter features and preserve the natural landscape.

Object Analyst

The 2018 version of Object Analyst includes new features and performance improvements. These new additions allow users to more rapidly and accurately classify their imagery.

New Object Analyst features

- Segmentation is now possible over smaller AOIs within images – this allows users to experiment with different parameters to generate optimal results more quickly
- No need to clip subsets, simply segment using a vector defined AOI within your image
- A ground truth import feature has been added for training and validation data
- This new feature includes conflict resolution logic to manage ground truth data of different classes located within the same object
- The support vector machine algorithm now provides the option to choose different kernels
- Also included is a routine to automatically optimize parameters for the selected kernel

Object Analyst performance improvements

- A significant reduction in the memory usage of the segmentation process has been implemented in 2018 - this greatly alleviates memory limitations when processing larger images
- The speed of the segmentation process is now 4 x faster in Geomatica 2018

Sensor Support Updates

The following sensor is newly supported:

- FORMOSAT-5: L1A/L4TWD97 support including data visualization, orthorectification, and pan-sharpening
- Landsat 4-7 Surface Reflectance (LEDAPS): support including for data visualization of surface reflectance, azimuth / zenith, and pixel quality assessment layers
- LANDSAT 4-8 Analysis-ready data (ARD): support including for data visualization of top-of-atmosphere brightness temperature, top-of-atmosphere reflectance, surface reflectance, and pixel quality assessment layers
- Landsat-8 Surface Reflectance (LASRC): support including for data visualization of surface reflectance, azimuth / zenith, and pixel quality assessment layers
- SkySat: Basic products support includes data visualization, orthorectification, and pan-sharpening
- SuperView-1: Level 1B or 2A products supported for data visualization, orthorectification, pan-sharpening, and DSM extraction

The following sensors have been updated for InSAR processing:

- Supported stripmap beam mode:
 - ALOS Palsar-2
 - Cosmo-SkyMed
 - Kompsat-5
 - RADARSAT-2
 - RISAT-1
 - Sentinel-1
 - TerraSAR-X
 - TanDEM-X
- Supported spotlight beam mode:
 - RADARSAT-2,
 - TerraSAR-X,
 - TanDEM-X
- Supported bistatic acquisition mode:
 - TerraSAR-X / TanDEM-X

Details on improvements and new capabilities

The following functions have been added or updated in Geomatica 2018:

ADS functions:

- **ADSADJUST:** This new function applies adjustments to existing ADS models

Analysis Ready Data functions:

- **DN2RADIANCE:** New function takes an image in reflectance or digital numbers and calibrates to radiance. Includes ability to control scaling of image
- **DN2REFLECTANCE:** New function takes an image in radiance or digital numbers and calibrates to reflectance. Includes ability to control scaling of image
- **SOLVIEWZAZ:** This new function is responsible for calculating the solar and viewing geometry of an image on a per-pixel basis
- **SPECLASS:** A multi-level spectral pre-classification is performed on an image in reflectance. The new spectral pre-classification serves as an input to guide many processes. Layers generated by SPECLASS can also be leveraged by users in new and innovative ways.
- **QLTY2MASK:** New function takes an input quality layer bitmap layer and generates bitmap masks that can be applied for excluding pixels in processes like color balancing, GCP/TP collection, and other processes.
- **TOPOSOLNORM:** This new function performs topographic normalization that normalizes illumination conditions that might vary due to relief and solar geometry during acquisition.

DEM functions

- **DSM2DTM:** Update to function now includes hilly option to identify and account for natural slopes prior to filtering
- **DSMMERGE:** New function for combining multiple DSMs to generate a multi-view DSM
- **EPIPOLAR:** An update to the function was provided to include the ability to generate tri-stereo epipolar images
- **EPIPOLARDSM:** A series of quality and performance updates were implemented in 2018, and new parameters are now available to allow for greater control over the DSM extraction process
- **SGMMERGE:** New function to combine tri-stereo DSMs

InSAR functions

- INSCOREG: Function updated to include Small Baseline (SBAS) feature for improved co-registration of SAR images
- INSMODGOLD: New modified Goldstein filter to perform adaptive filtering of the interferogram fringes
- INSUNWRAP: User now has the capability to modify tile dimensions and overlap when unwrapping the interferometric phase

Other Geomatica functions:

- AUTOTIE / AUTOGCP: These functions have been updated to include the ability to provide an exclusion mask to prevent points from being collected in certain locations
- CHIPIMPORT: This new function creates a chip database by ingesting a group of existing chips
- EDGEBLUR: This new function receives an input DSM and ortho-mosaic to identify building edges. Afterwards, it eliminates and smooths jagged building edges in the ortho-mosaic for improved aesthetic appeal
- MRAFUSION: The new multiresolution analysis (MRA) algorithm is an image pan-sharpening technique that provides high spectral consistency. The pan-sharpened products of the MRA technique are suitable for analytical applications.
- PANSHARP2: This function has been updated to improve stability, quality of results, and now provides an option for resampling
- TASSEL: Function has been updated to enable tasseled-cap transformations on numerous satellite sensors
- VEGINDEX: This function has been updated to include new spectral indices, improved scaling and visualization by generating pseudo-color tables



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