



Highlights of TNTmips 2015 New Features

For all of the over 350 new features in TNTmips 2015 see:

<http://www.microimages.com/documentation/html/whatsnew2015.htm>

For the Technical Guides available for TNTmips 2015 see:

<http://www.microimages.com/documentation/html/version/2015.htm>

Highlight Features

- *Processes redesigned with added capabilities:* Image Spatial Filtering, Buffer Zone Generation, Image Statistics by Geometric Element, Image Statistics by Category Raster, Surface Properties by Geometric Element, Geometric Element Statistics, Polygon Shape Properties, and Raster Calculation.
- Compute Rational Polynomial Coefficient (RPC) model for orthorectification from image 3D control points in the Georeference process.
- The Auto-Register operation in Georeference automatically assigns Z values for new 3D control points from a DEM using the Default Z from Surface option.
- Faster RPC orthorectification in the Image Resample process using the Image Processing Pipeline.
- New multi-band raster image layer allows RGB display of any set of three bands from the image; the display band choice can be changed at any time in the Layer Controls.
- Mosaic grayscale, RGB, or multi-band images with contrast matching to an input image or separate reference image.
- The Raster Calculation process includes a new Vegetation Indices category allowing computation of many broadband vegetation indices from multi-band images.
- The Geometric Buffer Zone process provides many new features including options to merge buffer polygons, the option to buffer vector nodes, and new polygon buffer options: Expand, Shrink, Outer Ring, Inner Ring, and Border.
- The Database Table Properties window has been redesigned for easier use.

System



[link to Technical Guide](#)

- Run TNT products in Mac OS X 10.10 Yosemite.
- Allow user to specify interface language during first use.
- *Enlarge Controls* option in General System Preferences for use with small touch screen tablets.
- Job Manager's Schedule window has been redesigned to provide more intuitive controls, and provides the option to perform a job once at a particular time in addition to repeat scheduling.
- Project File Recovery provides the option to save the original file with a backup name and use the original name for the output.
- Uniform Perceptual Contrast color palettes for raster objects have been added to provide uniform discrimination of local features regardless of the local brightness.
- The Palette selection window provides a preview of each palette.
- Color palettes can be imported from a text or CSV file.




Spatial Display

General

- Set sidebar to be on either left or right side of View window (Options / View Options from Display Manager).
- Layer Info Window (formerly View Extents) has been redesigned with expandable sections showing layer info and extents, coordinate , reference system, object information, and georeference details.



Raster Layer

- Display RGB layers using rasters with different cell sizes and/or extents. 
- New multi-band raster image layer allows RGB display of any set of three bands from the image; the display band choice can be changed at any time in the Layer Controls. 
- Use Add Objects to select any number of image bands for display with the choice of adding as separate layers, as an RGB layer, or as a multi-band layer. 
- Explicitly add a multiband image layer from the Add Raster menu.
- A View Options setting is provided for automatically adding named Red, Green, and Blue objects as an RGB layer when using the Add Objects icon button.

Vector Layer

- Optionally show line/polygon vertex locations with choice of symbol.
- Line/polygon vertex symbols are only shown in the main View and not in the Locator.
- The Nodes panel of the Vector Layer Controls window provides the choice of showing node symbols in the Locator or not.

Marking Geometric Elements

- The right mouse-button menu for a table in the Display Manager provides the option to mark elements that share records in the table.

GeoFormula Layer


- The GeoFormula Layer Controls window has been redesigned for clarity and now uses icon buttons for script actions.
- DataTips are now available to show values from GeoFormula layers.
- Optionally apply auto-contrast to the output display for RGB and numeric GeoFormula layers.
- Optionally apply the color spread of your choice to the output display for numeric GeoFormulas.

GeoToolbox and Regions

- Save a region as a vector object from the GeoToolbox Region panel.
- The Profile View window provides the option to hide the crosshairs.

Database Tables / Operations

Table Properties Window

- The Table Properties window has been redesigned for easier use. 
- Create auto-increment numeric fields.
- Choice of bit-depth for integer and floating-point numeric fields.
- "Computed" and "String Expression" fields are now termed "Computed Numeric" and "Computed Text".
- Set Text and Numeric field properties (e.g., integer type, floating point) first with the option to set either as Computed.
- Choose "Simple Computed" field type for field that returns the value of a field in another table.
- Set default value for logical and string fields in addition to numeric fields.
- Allow changing field type among compatible types (32-bit integer, date, and auto-increment) for existing fields.

Database Table Views

- Edit computed field expression from tables using right mouse-button menu on the field name.
- Sequential values created automatically in new Auto-Increment field for all existing records.


Tabular View

- Right mouse-button option on field to select all records that have same value.
- Field menu options to move column all the way to the left or right.
- Create and attach new records with or without the option to populate fields.




- Sort records on multiple fields with mixed ascending and descending order.
- Create new record using Record / New menu option or using New Record icon button.
- Field name and description shown as ToolTip over column heading.

Editor




- The Line/Polygon tool manual mode provides option to extend the line by distance and bearing.
- The Snap operation uses an arc-wedge graphic to show and change the snap distance and snap-back angle and provides a preview option to step through the gaps with choice to snap or skip. 
- A line being edited is allowed to cross another line and can be snapped to another element.
- The Automatic line editing mode automatically switches to Add Start if the end node is outside the View extents, and can be toggled between Add Start / Add End using the "f" hotkey.

Georeferencing

- Compute Rational Polynomial (RPC) model for orthorectification from image 3D control points. 
- The Auto-Register operation automatically assigns Z values for new 3D control points from a DEM using the Default Z from Surface option.
- Use the Model button to open the Select Model dialog with listing and description of all coordinate transformation models.

Geometric Object Operations

Buffer Zone Generation

- The Buffer Zone window has been redesigned to show all process parameters on one panel. 
- Buffer nodes in addition to points, lines, and polygons.
- New polygon buffer options: Expand, Shrink, Outer Ring (Expand - Original), Inner Ring (Original - Shrink), and Border (Outer Ring + Inner Ring) 
- Create buffers as vector, CAD, or region.
- Options to merge overlapping buffer polygons (all or by attribute).
- Option to assign buffer distance by attribute. 

Geometric Element Statistics by Polygon (formerly Polygon Properties)

- Redesigned process window for easier use in computing element statistics for polygon areas.
- Use any geometric object type (vector, CAD, shape) or database pinmap points as source.
- Compile statistics for source lines as well as polygons and points.
- Optionally attach the output tables to a copy of the destination vector/CAD object or as CSV file.
- Summarize statistics for any numeric field and table with any record attachment type.

Polygon Shape Properties (formerly Fuzzy Properties)

- Process provides an expanded choice of statistics to compute and new shape measures.
- Compute shape properties for elements in CAD and shape objects in addition to vector objects.
- Optionally create the output table as CSV text file.

Image Statistics and Surface Properties by Geometric Element

Image Statistics by Geometric Element (formerly Geometric Raster Properties)

- Redesigned process window with new statistics and choice of which to compute.
- Choice of element type to use, now including lines in addition to polygons and points, from vector, CAD, or shape object.
- Options to output results in tables in input object, to a copy of the input object, or to CSV text file.
- Compute texture Gray Level Co-occurrence statistics by polygon.
- Optionally summarize statistics "by attribute" to create a separate record for each attribute.






Surface Properties by Geometric Element



- Process window redesigned, providing new statistics and a choice of which to compute.
- Compute surface properties for elements in CAD and shape objects in addition to vector objects.
- Compute measures of surface roughness: 3D/2D area ratio and elevation standard deviation.
- Options to output results in tables in input object, to a copy of the input object, or to CSV text file.

Image and Raster Operations

Mosaic

- Contrast-match grayscale, RGB, and multi-band images to any reference image (which doesn't need to be part of the mosaic). 
- Specify the contrast option for the source image selected as reference for contrast matching.
- Apply contrast after mosaic assembly.
- Mosaic RGB separates to either RGB composite or RGB separates. 
- Set user-defined extents in View using Output Extents rectangle tool. 
- Apply scale and offset when different for various input rasters (such as DEMs in different elevation units)





Raster Calculation

- Operations have been reorganized into four groups: Algebraic, Logical, General Indices, and Broadband Vegetation Indices. 
- The new Broadband Vegetation Indices group provides 14 common indices, including NDVI, ARVI (Atmospherically Resistant Vegetation Index), EVI (Enhanced Vegetation Index), SAVI (Soil Adjusted Vegetation Index), and MSAVI2 (Modified Soil Adjusted Vegetation Index). 

Resample/Reproject

- Faster Rational Polynomial Coefficient orthorectification using the Image Processing Pipeline.
- Null masks are supported for source and target images when using the RPC model.

Spatial Filtering

- Process window updated with easier-to-use controls and resizable display of filter kernels. 
- All filters allow variable blending of source and filter result to create output image.
- Select from predefined filter window sizes (up to 21 x 21) or set a custom size.
- Apply Gray Level Co-occurrence Matrix Texture filters (Contrast, Dissimilarity, Homogeneity, Entropy, and others) and Gaussian filter.  
- Import/export a filter kernel from/to a text file.
- Optionally apply contrast (auto or saved table) to grayscale or RGB input before filtering.
- View window with graphic tools to restrict filtering to a designated image area for output or for testing. 
- Define output or test area by drawing, by selecting a region object, or by selecting a binary mask raster object.

Statistics for Category Raster


- Process window redesigned, providing new statistics and a choice of which to compute for the class values in a category raster.
- Compute statistics from separate raster objects or from bands in a hyperspectral object.
- Option to put statistics of multiple rasters into one table.

Terrain Operations

- The Extract Points or Mesh process includes the option to create regularly-spaced 3D points from the input raster.
- The Lidar Manager provides a method to adjust X, Y, and Z values by a fixed amount.



Import / Export

- Updated to use GDAL 1.11.
- GeoTIFF import/link automatically recognizes and ingests an RPC coefficient file and stores the parameters as part of the georeference.
- Raster import includes a visual interface to crop and/or sample single and multiband/multifile images to the specified dimensions and cell size, including to TNTmips Basic and Free limits. 
- Export TNT geometric objects to Well Known Text (WKT).
- GML export allows selection of element types, including labels, and preserves 3D coordinates.

Tilesets

- Create geometric tilesets from CAD, shape, or vector objects.
- Specify Z values for 3D extruded elements or as surface for Google Earth geometric tilesets.
- Create web terrain tilesets in the comma-separated text format used by the Geospatial Information Authority of Japan.

Assemble Geomashup

Geometric Tilesets (Google Maps and Open Layers)

- Optional sidebar search box to find map features by text contained in name or description.
- Option to make a layer not clickable, so that no info balloons are shown for the layer.
- The map view zooms and pans to elements selected in the sidebar legend.
- Sidebar legend entries are sorted alphabetically.
- Choose the shape of the legend samples (rectangle or polygon).
- Option to use Bing Maps base layer (hybrid, roads, aerial) in Open Layers geomashups.

Geospatial Scripting

GeoFormula Object Combinations

- The GeoFormula window has been redesigned for clarity and uses icon buttons for actions.
- Input objects can be reselected, added, or removed while editing a GeoFormula.
- Option to match cell grid to a reference raster without matching its extents.
- All Output Panel settings are saved in the GeoFormula file.
- Open the GeoFormula process from Image / Combine / GeoFormula or Script / GeoFormula

Script Reference

- All classes are organized into categories that can be expanded/contracted in list.
- Class method listings show parameter lists and all variants of the methods.
- Functions/methods with "index" parameter show whether indexing starts at 0 or 1.

Functions and Classes

- Ability to add a region layer to a display created by script.
- Ability to create and save null masks using Write methods in the RVC_NULLMASK class.
- Functions to convert vector objects to CAD and to merge CAD objects.
- Improved support for regular expressions used in searching/matching character strings.

Coordinate Reference Systems and Components

- Support for the NTv2 datum transformation method using national grid-shift files.
- NTv2 datum transformations added for the United Kingdom, Ireland, The Netherlands, France, Germany, Austria, Switzerland, Spain, Portugal, Canada, Brazil, Venezuela, Australia, and New Zealand.
- Added Democratic Republic of Congo datum and Laos 1997 datum.

