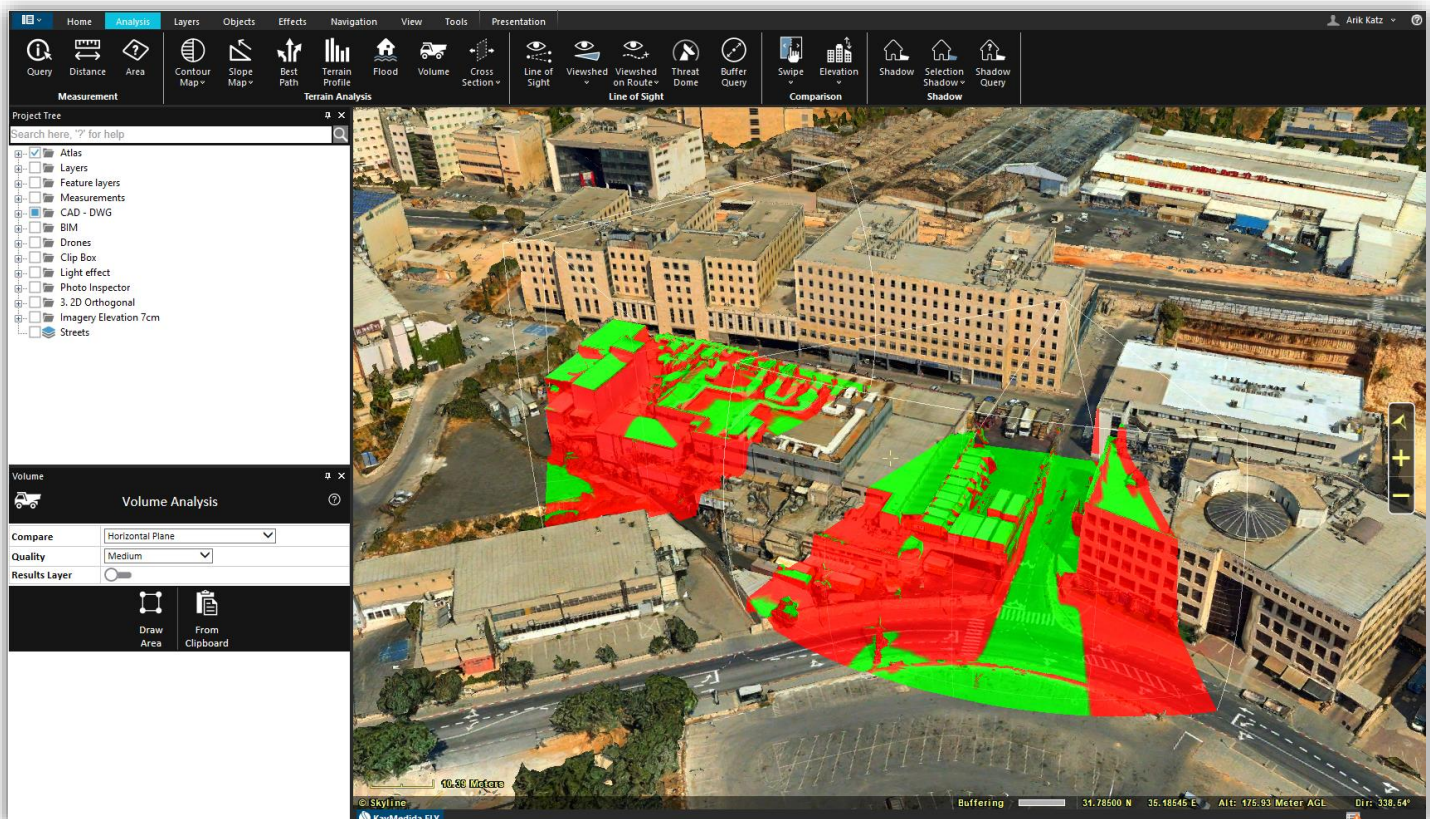


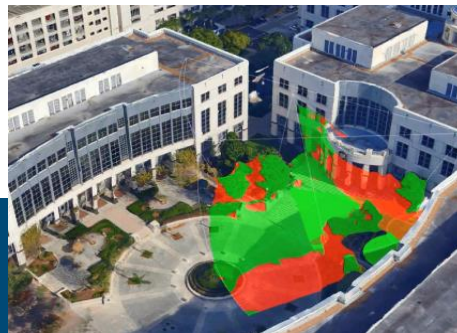
TerraExplorer

Release Notes

V7.3.1



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OVERVIEW

TerraExplorer is a cutting-edge 3D GIS desktop viewer and creator that provides powerful tools and a high-resolution 3D environment in which to view, query, analyze and present geospatial data. With TerraExplorer's robust and extensive capabilities, realistic 3D visualizations can be created by overlaying the terrain with unlimited data layers, 3D models, virtual objects and more.

- TerraExplorer supports a wide range of formats including WFS/WFS-T, DAE, 3DS, X, FLT, WMS/WMTS, FBX, Tiff, JPEG, MrSID, ECW, IMG Shapefile, KML/KMZ, SQLite and more!
- Complete set of powerful tools for all forms of 3D World analysis to increase understanding and improve decision making.
- Versatile and configurable drawing tools and vibrant visual effects bring to life your 3D visualization.
- Robust feature layer editing and powerful capabilities for precise adjustments and editing of objects, Advanced objects for modifying terrain and mesh.
- Rich application programming interface (API) allows you to easily develop powerful, customized 3D desktop, Web, and mobile applications or integrate TerraExplorer capabilities in OEM applications.



New TEZ Mechanism for Installation of GTX

7.3.1 is a minor update to TerraExplorer that adds TEZ functionality for GTX files. All other new features described below were part of the 7.3.0 release. GTX files packaged as TEZ can be installed without manually copying the GTX file into a specific folder. As with other TEZs, they can also be installed without administrator rights. After installing a TEZ file, all its add-ons/configurations are installed and applied to any TerraExplorer opened on the same device.

TerraExplorer uses vertical datum grid shift files (GTX) for shifting and transforming between some coordinate systems that have different datums. Generally, when one of the coordinate systems in your project references a particular GTX file that was not found on your computer, a notification will display in the coordinate system dialog box or in the Error/Message Log with a link to a page with the required GTX file. The GTX file on this page is packaged as a TEZ, a TerraExplorer zip file that enables the GTX to be installed without manually copying the file into a specific folder.



Adding Vertical Datum (GTX) Files

Vertical datum grid shift files (GTX) are used for shifting and transforming between vertical datums. Sometimes the Well-Known Text (WKT) of one of the coordinate systems in your project references a particular GTX file that was not bundled with your installation, or the reference itself is missing from the WKT. The steps below describe how to add the missing GTX information in both of these cases.

To add missing GTX information:

1. Download the required GTX file.

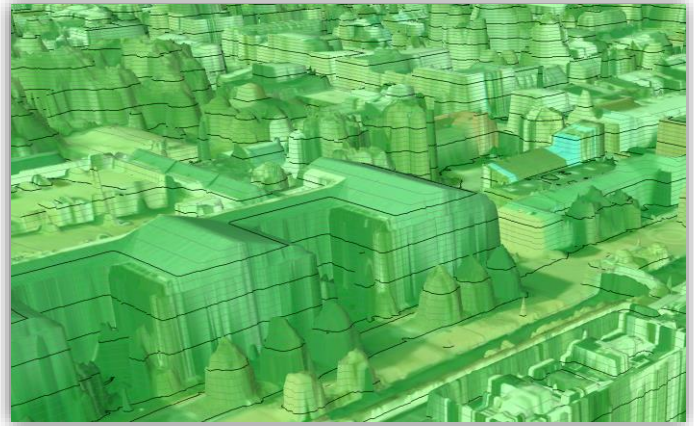
Note: Click [here](#) to download a self-installing TerraExplorer TEZ file (for TerraExplorer users), or [here](#) (other products, TerraExplorer lower than version 7.3.0) to download the corresponding ZIP, that includes most common GTX files.

Additional GTX files can be found on these websites:

- <https://github.com/OSGeo/proj-datumgrid/tree/master/>
- <https://vdatum.noaa.gov/download.php>
- <https://raw.githubusercontent.com/OSGeo/proj.4/gh-pages/proj.pdf>
- https://proj.org/resource_files.html#transformation-grids

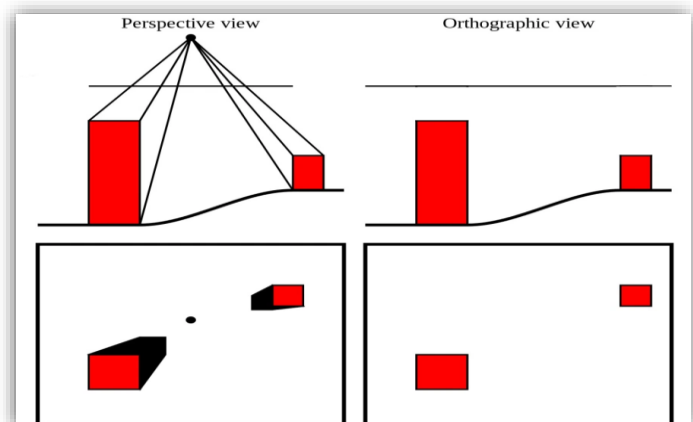
High Resolution Imagery and Elevation Layers

Ability to load offline and online imagery and elevation layers with resolution higher than 7 cm per pixel to globe Lat-Long project.



True 2D Orthographic Rendering Mode

TerraExplorer 7.3 2D and 2D North navigation modes now feature true orthographic rendering mode. This mode provides a clearer measure of distance between objects such as buildings and their relative sizes.



3D Mesh Supported Formats

New supported formats include:

- **SLPK v1.7** - TerraExplorer 7.3 can now export 3D mesh layers in ESRI i3S/SLPK v1.7, in addition to v1.5 supported by previous TerraExplorer versions.
- **Bentley 3MX** - TerraExplorer 7.3 can now export 3D mesh layers in Bentley 3MX format
- **3D Tiles reader** - TerraExplorer 7.3 expands the support of direct loading of 3D Tiles with the following formats and options:
 - Supports for models in gltf v2 format.
 - Tiles stored in archive .3TZ file format.
 - Tiles compressed in gzip archive format
 - Mesh models compressed in Draco format for reduced size and better streaming.
 - Mesh models in GLB Binary file format.
- **3D Tiles exporter** - TerraExplorer 7.3 expands the support of exporting 3D mesh layers to 3D Tiles format with the following :
 - Saves models in gltf v2 format
 - Save models with Draco compression

Output formats							
Input formats		3DML	Open3DML	Esri SLPK/i3S	3D Tiles	Bentley's 3MX/ <u>OpenCTM</u>	OBJ (models)
	3DML	✓	✓	✓	✓	✓	✓
	Open3DML	✓	✓	✓	✓	✓	✓
	3D Tiles	✓	✓	✓	✓	✓	V
	OSGB	✓	✓	✓	✓	✓	V
	DAE	✓	V	V	V	V	V
	LODTreeExport						
	BIM FBX	✓	V	V	V	V	V
	BIM IFC	✓	V	V	V	V	V
	Point layer with models (DAE,OBJ..)	✓	V	V	V	V	V

✓ - Direct conversion is available in TE Pro GUI.

✓ - Direct conversion is available using the SLMeshConverter command line

V - Direct conversion is not supported. The user can convert to 3DML and from 3DML to the other format

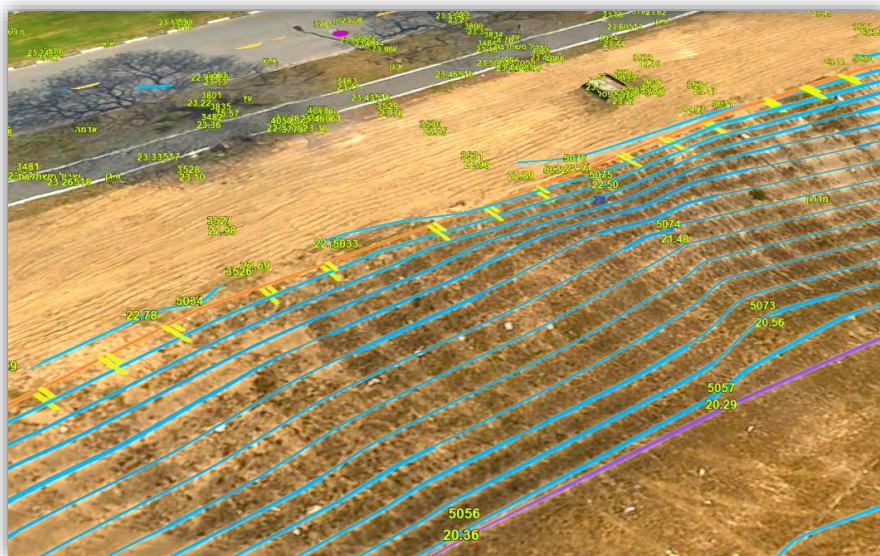
Open3DML

Open3DML is a new 3D mesh layer open source format supported by TerraExplorer, that is designed for streaming and rendering massive 3D geospatial content such as terrain surfaces, 3D city models, individual models and BIM. The Open3DML format contains hierarchically structured data that is stored in an open source SQLite database. The Open3DML is a binary file that packages all the dataset information: blocks of mesh models in a hierarchy of resolution levels, metadata, and coordinate system information, in a single file that can be easily copied and managed. TerraExplorer7.3 supports writing and reading of the new open3DML.

- Open standard (documented)
- Storage: SQLite (.o3dml), disk/folders
- Index tree format: json (similar to 3D Tiles)
- Model format: gltf v2, jpeg/dds – Fast conversion to other formats

Improved CAD Support

TerraExplorer 7.3 offers enhanced support for Autodesk AutoCAD models. Layers can now be loaded in DWG format, the native file format for Autodesk's AutoCAD® software, as well as Autodesk DXF, and they can be exported to DXF format.



NEW FEATURES IN V7.3



GDAL v3

The new TerraExplorer now utilizes the GDAL v3 engine for better 3D coordinate system conversions and improved feature layer and raster layer support.

Support for Mongo Database

TerraExplorer 7.3 adds to its ever-growing list of supported feature formats the option to stream feature layers from a Mongo database.

Volume Classification

New dynamic classification method allows you to associate areas of layers and objects, e.g., mesh layers, with polygon features and their attribute values, so that you can then access the attribute data of the classification features and perform spatial and attribute queries on the mesh layer. Classification layers are not pre-processed with any particular mesh, so multiple feature layers can classify a single mesh and multiple meshes can be classified by any particular classification feature layer.

The new volume classification method can classify buildings, floors and even small elements like windows.

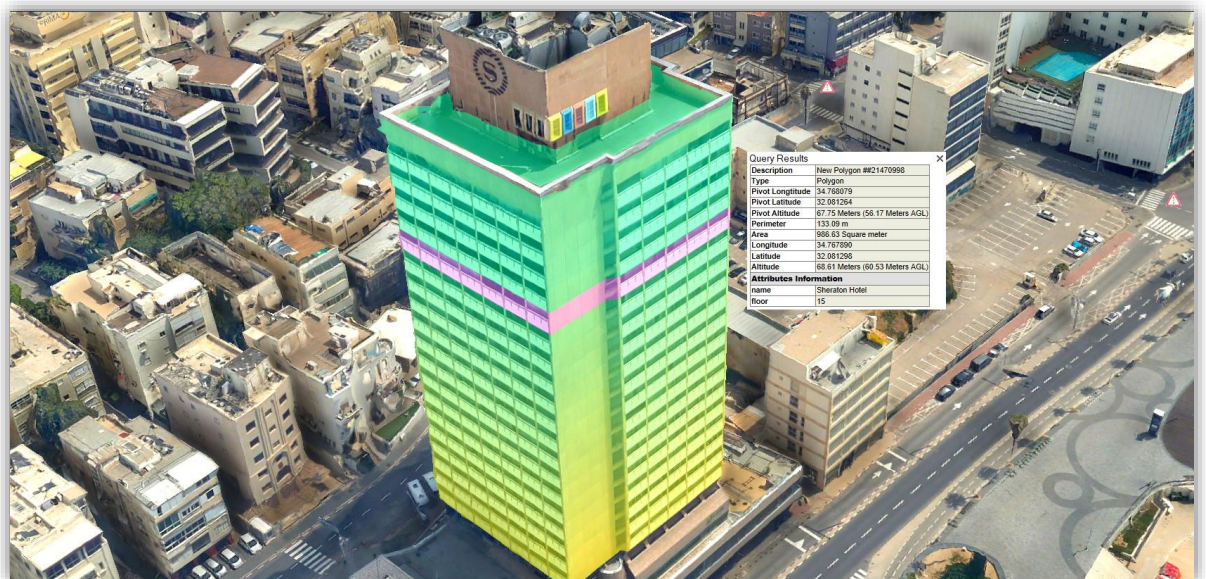
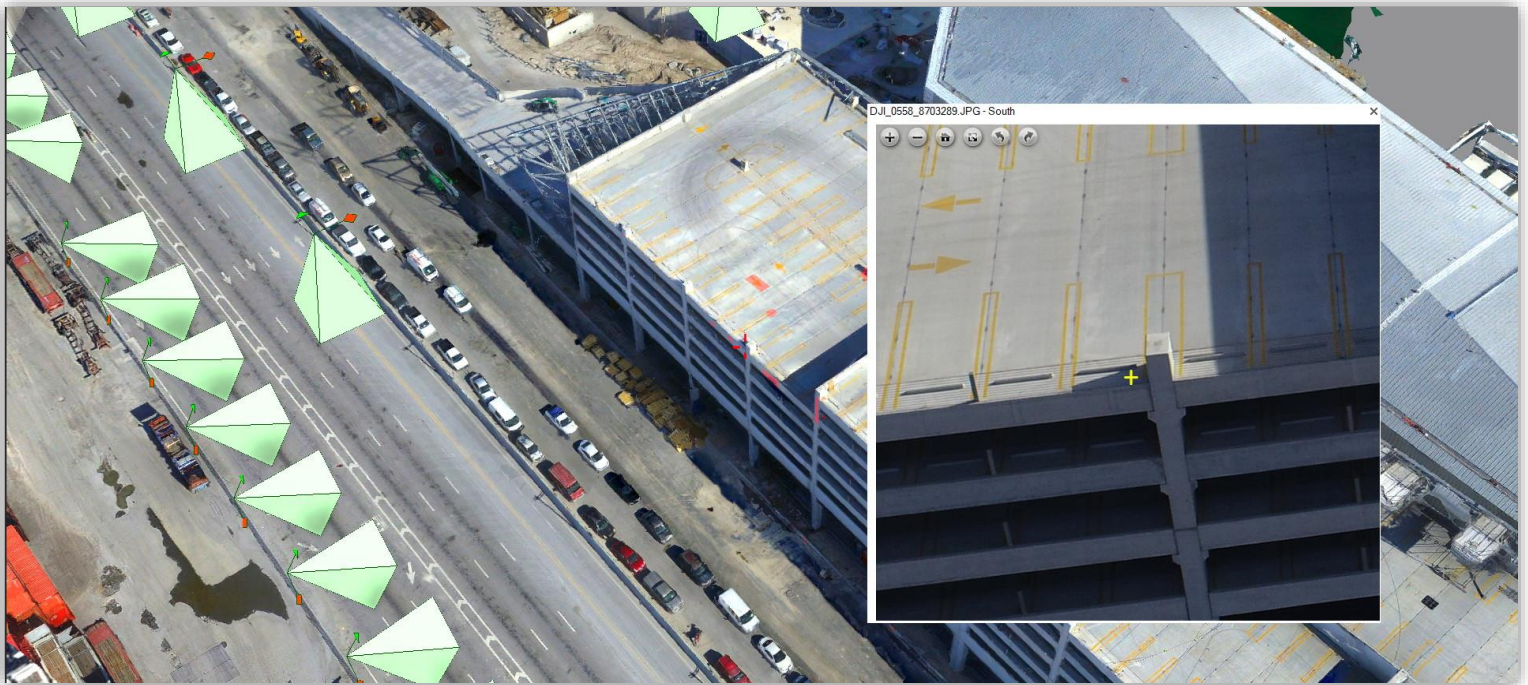


Photo Inspector Tool

New tool displays the photos used to generate a 3D PhotoMesh model so you can examine them and confirm the accuracy of the model, or create inspection layers in which you mark areas in your 3D model for future review.

- Load aerotriangulation output layer generated by PhotoMesh
- Display all photos or only photos that intersect with a selected point on the model
- Filter out photos that do not actually see the selected point, e.g., because a building is blocking the line of sight.
- Project photos on the terrain
- Show results in 3D Window and in photo list
- Create inspection layers in which you mark areas in your 3D model for future inspection



Drawing Tools

TerraExplorer 7.3 boasts powerful additions to its arsenal of drawing tools and capabilities:

- **New undo/redo functionality.** The undo and redo commands are supported for the following object types: text and image labels, video object, polyline, polygon, 2D and 3D shapes, and 3D model. Changes can be undone or redone, even after the property sheet is closed, and then reopened.
- **Improved copy-paste mechanism** allows you to copy and paste objects and features based on the cursor's location. After a copy is pasted in the current location of the cursor, you can drag the pasted object to the precise location you want, and then set it in its place.
- **Range of object snapping options** for more precise object positioning. Snap to any of the following: object node or line segment or dynamically-identified edges and corners of any element in the 3D World. You can also constrain the object line segments currently being drawn to pre-defined angle increments.

Snapping and other options

Node Snapping (5)

Snap object or node to nodes of other objects or features.

☒

Line Segment Snapping (6)

Snap object or node to line segments of other objects or features.

☒

3D Snapping (7)

Smart snap object or node to dynamically-identified edges and corners of any element in the 3D World.

☒

Directional Snapping (8)

Constrain the object line segments currently being drawn to pre-defined angle increments. The angle constraint can either be absolute, i.e., relative to true North, or relative to the previous line segment.

☐

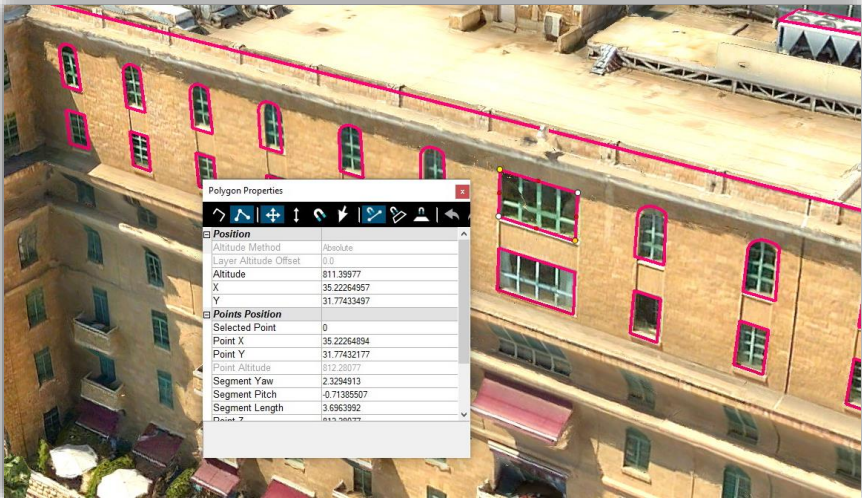
Snapping Degrees (0-180°):

90

Segment Distance on Edit (9)

Show segment lengths while editing a polygon/polyline.

☒



Drawing Surfaces

Drawing surfaces make it easy to draw objects on a particular plane - any polyline or polygon drawn on the surface in magnet mode is automatically aligned to the surface. TerraExplorer offers a range of options for the drawing surface alignment: auto-aligned to the area under the cursor, horizontal, vertical, or determined by a polygon you draw.



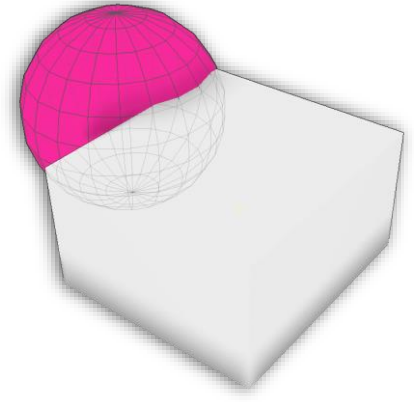
Align to Model

TerraExplorer 7.3 offers a new alignment option for polygon and polyline objects and features to vertically align all vertices to the model surface. This feature allows you to convert 2D drawings to accurate 3D drawings based on the model surface.



Show Through Option

New Maximum Show-Through Distance property enables objects to show through terrain, mesh layers, or models hiding them. This option is available for polygons, polylines, 2D shapes, 3D shapes and applied on outlines and fill (3D primitives - outline or fill). This new capability can be also used for displaying underground layers.



Line Textures

TerraExplorer 7.3 supports the application of texture files to polylines. You can set a transparent color for GIF and BMP files, so that pixels with this color appear as holes in the texture, as well as colorize the texture image.

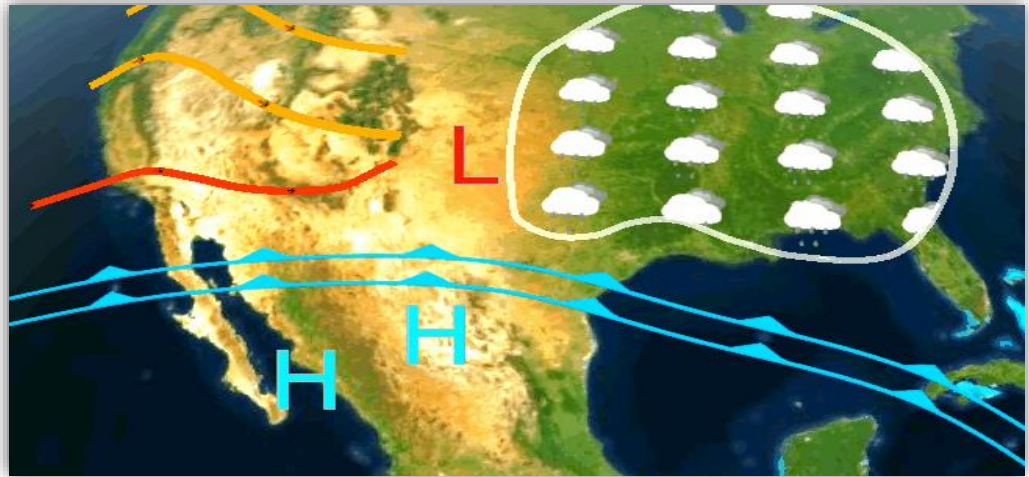


NEW FEATURES IN V7.3



Texture Animation

TerraExplorer 7.3 supports the addition of scrolling textures to polylines and polygons. Users can control the scroll rate for the X/Y axis. TerraExplorer also features a data library section with useful online and offline texture files.



Label Blend Mode and Light Effect

New label blend mode adds transparency to labels so they blend with the colors of the background terrain or model layers. This new mode is used for creating light effect labels that blend into the terrain and simulate local light effects.



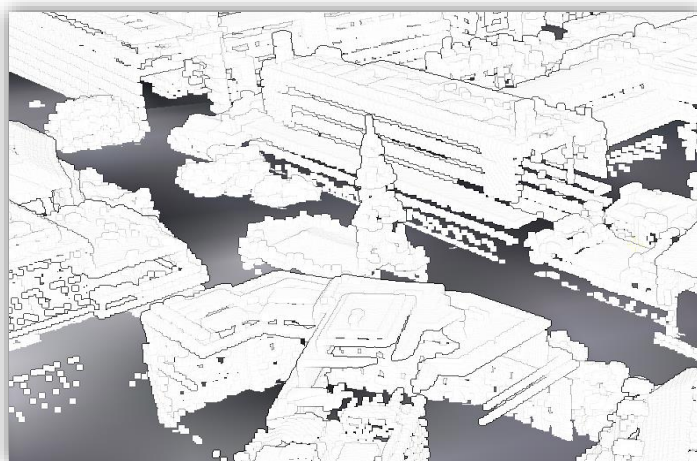
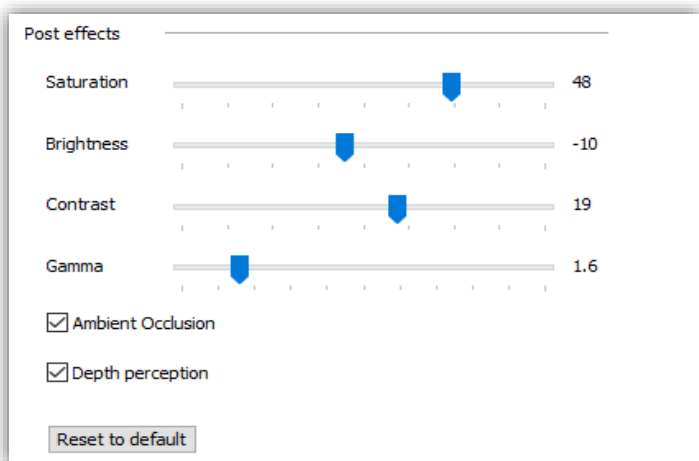
New Ambient Light

New ambient light for when “sunlight” mode is turned off uses a direct light source that still provides shading effect on 3D objects.

Display Effects

In addition to saturation and ambient occlusion effects that were available in previous TerraExplorer versions, the new version gives you increased control over brightness and contrast:

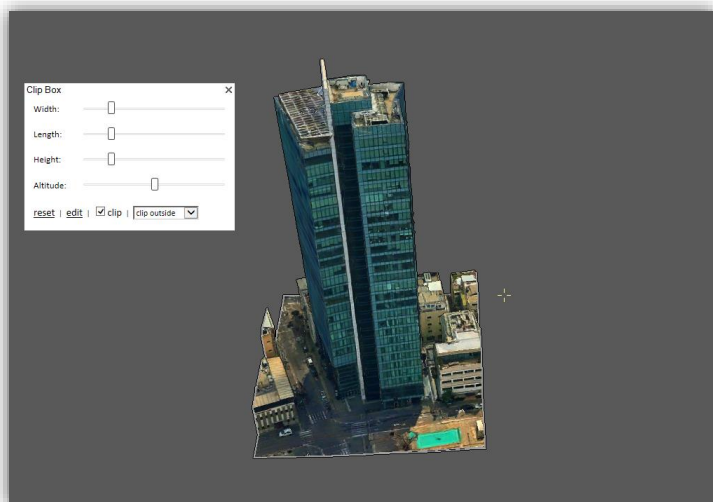
- **Brightness** – Adjust light intensity of the 3D view.
- **Contrast** – Adjust distinction between lighter and darker areas of the entire 3D view.
- **Gamma correction** – Adjust gamma of the 3D view.
- **Depth perception** - Highlight depth changes in the 3D model to make it easier to recognize the model's contours and shape. This can be especially useful for an untextured model or point cloud without colors.



Clip Box

New clip box tools allows you to focus on specific elements in your 3D project by defining a box as a clip volume and hiding all elements outside this box:

- Easily adjust the size of the box
- Option to clip area inside or outside of box



New Presentation's Movie Creator Mechanism

TerraExplorer presentation's movie creator now uses the FFmpeg, cross-platform compression library. This new mechanism is agnostic to installed codecs and the generated mp4 with H.264 codec can be viewed in most browsers. TerraExplorer 7.3 also expands the frame size options to include 1440p .

Improved Navigation

New zoom modes let you zoom in/out in the way that is most convenient for you: Choose between Zoom to center (of screen) – regardless of where the cursor is, or Zoom to cursor – which allows you to easily zoom in to a particular location in the 3D Window. Close range navigation has also improved in areas with both close and far objects e.g. meshes and point clouds, by scanning not only the objects under the cursor, but also those around the cursor, so that navigation sensitivity is balanced appropriately

Interface to SkylineGlobe Server and TerraExplorer for Web

- Enhanced support for publishing of styling properties to TerraExplorer for Web projects.
- Supports loading of secured project using the new SGS token mechanism (Viewer only). An SGS access token enables you to directly access SGS layers without entering a user name and password.
- New “My Site” read/edit permission (new default).

API Improvements

TerraExplorer 7.3 offers significant API improvements, including:

- Raster layer refresh in area – Optimal for dynamic imagery layer.
- Drawing API (IDrawing73) – This interface provides methods for interactive user drawing capabilities (2D objects and models). Events during and after the interactive drawing allow control over the drawing process and the object style.
- Volume classification API (IVolumeClassification73) – This interface allows the user to associate and classify areas of layers and objects, e.g., mesh layers, with polygons. The classification can be represented by colorizing the intersecting layers and objects or by displaying a 3D polygon based on an extrusion of the polygon.
- Pixel to world/ Pixel to objects – Returns the real world coordinates or a list of objects under a specified pixel on the 3D Window.

PhotoMesh Manual Retouch Tool

Mesh imperfections, such as bumps, irregular surfaces, or floating artifacts, can now be marked for editing in TerraExplorer using manual retouch layers, in which you mark surfaces for flattening and floating artifacts for removal. The output of the Manual Retouch tool is a polygonal feature "retouch layer" with attribute information that defines what retouch action should be performed in each area. The implementation is then performed in PhotoMesh.



REQUIREMENTS

Operating System	Windows® 8 / 10 – 64-bit required.
System Memory	2 GB RAM (4 GB or more recommended)
Video Card	1GB of video memory (2GB or more recommended). Pixel and vertex shader v3.0.
Processor	4 cores (8 cores recommended).
Additional Software	Microsoft Internet Explorer 9 or higher installed on the machine. .Net Framework 4.6.1 required.

[For additional information, check out our TerraExplorer knowledge base](#)



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