Skyline[®] it's your world[™]

TerraExplorer for Desktop Quick Start Guide



Opening, Creating, and Saving a Project and Connecting to SkylineGlobe Server

TerraExplorer basic commands are available from the File menu located in the upper-left corner of the application.

Opening an Existing Project

Click **Deen** > **Open** Project from File OR **Open Project from SkylineGlobe** > Browse to an existing .Fly file or connect to a SG server. You can open a US demo project by clicking the link on the **Start** page.

Saving a Project as a FLY File

A .Fly file is a compressed binary file that contains all the project settings and content, and pointers to terrain databases (MPT) or other loaded files. Click III and then click **Save or Save As**...

Creating a New Project

Click Lead then click **New** > In dialog, browse to required terrain database (MPT), and click **OK** > Define project settings.

Connecting to a SkylineGlobe Server

Layers tab > click Disconnected > In SkylineGlobe Server dialog box enter connection information and click Connect.





Navigating in the 3D Window

Navigate through the 3D World in the way you find most natural and intuitive: navigate freely using on-screen navigation controls or any of the three mouse modes, or fly to predefined locations or objects.

Viewing or Flying to a Location or Object (Using the Project Tree)

- 1. In the **Project Tree**, double-click the location or object, or right-click and select **Fly to**, **Jump to**, or **View**. If you view the object, you can select one of the pre-defined flight patterns that compass about the object.
- 2. To stop a flight to a location right-click in **3D Window**, and select **Stop** or press the **Spacebar**.

Free Flight

Using the mouse to navigate:

In Drag mode, do the following:

Note: This is the default mode. Other navigation modes can be set in the Options dialog.

- To **pan** Click and drag the mouse to the sides, forward, or backward.
- To **zoom** in and out Roll the middle mouse wheel.
- To change **direction and tilt** Click and drag the middle mouse wheel.

Using HUD navigation controls:

View tab > Select Graphic HUD to display.



Underground Navigation

- **1.** Home tab > Underground Mode.
- 2. Navigate in the 3D environment. You can freely go through the terrain surface in any direction.

Following a Dynamic Object

• In the **Project Tree** > Double-click the required dynamic object.



Managing Projects - Using the Project Tree

The Project Tree provides a list of elements in the terrain that can be sorted and arranged into groups. Using this list, you control the appearance of information in the 3D Window. The **Omni search tool** at the top of the Project Tree enables you to search everything (Project Tree, ribbon commands, SkylineGlobe Server and addresses server) in one-click for the commands, layers, objects and locations you need.

Searching the Project Tree, Ribbon Commands, Address Server, and SkylineGlobe Server

In the **Project Tree**, **Search here** field, type a search term. When clicking on a search result, the operation TE performs depends on the result type selected:

- **Commands:** Activates the command.
- **Project:** Selects the item on the project tree and flies to its location.
- Addresses: Flies to the address location.
- SkylineGlobe: Loads the layer.
- [Feature Layer]: Flies to the feature location.

Showing and Hiding Objects or Layers in the 3D Window

In **Project Tree**, click the object or layer's **show/ hide** icon \checkmark to display or hide it in the 3D Window.

Selecting a Tree Item

In **Project Tree**, click the item. Double-clicking performs the activation action (fly to, jump to, circle/ oval pattern, etc.) set in the item's property sheet.

Creating and Working with Groups

- Right-click blank area (root) of Project Tree (for subgroup, right-click parent group) > Select Create Group.
- 2. Type the name of the new group and press ENTER.
- 3. To move an item into a new group, click and drag it onto a group folder.
- To add a new element to a group, right-click group > Point to New > Select Location, Presentation or Message.
- 5. To set group properties, right click <group> > Properties. In property sheet, set parameters.

Creating Locations in the Current Camera Position

- 1. In the **Project Tree**, right-click > **New** > **Location**. Type a name for the location and click.
- 2. Open property sheet to set activation action or add a message: In Project Tree, right-click location > Properties.

System Requirements

System requirements for installing and using TerraExplorer:

- **Operating System** Windows[®] 7/8/10-64 bit.
- System Memory 2GB of RAM (4 GB or more recommended).
- Video Card 512MB of video memory (1024 MB or more recommended). Pixel and vertex shader v3.0.
- **Processor** Dual-Core (4 or 8 cores recommended).
- Browser Microsoft Internet Explorer 9 or higher.

Project Tree	д×
Search here, '?' for help	q
🖃 🗉 🔚 World Data	
🏭 🗹 🖢 Borders and Pla	ices
🕀 🗌 🔚 OSM Map	
🕀 🗌 🔚 OSM Roads	
🗄 🔲 🔚 Points of Intere	st
🚊 🔲 🖢 3D City Models	
	Air
🔤 🗹 👕 Devils Tower ©	Woolpert
🛛 🗹 👕 🛛 Frederick ©lcar	ros
	University © Fugro
🗹 👕 Madison, WI ©	Dat'Air
	Air
···· ✔ 🗁 Oxford ©S'	Elv to Group
🖉 👕 Reston ©f	
	Jump to Group
Washingto	Display Message
	Create Group
Presentations	Laura
Auburn - I	Layer
Devils Tov	Save as Layer
Frederick	New
George M	Co.d.
Viadison,	Sort
	Unlock Group
	Delete
Washingto	Pename
Washingto	Kename
- Washingt	Properties

Skyline

Basic Project Settings

Project Settings, including general settings, terrain parameters, flight model, and application layout are saved in the .Fly file and applied each time this file is used.

To open Settings dialog: Home tab > Click Project Settings > Click required tab.

Environment Tab

- Select a Sky Color.
- Select Sky Texture and Clouds Map to apply.

Terrain Database Tab

- Select the local or remote Terrain (MPT) Database currently used by this project.
- Enter the **Number of Terrain Imaginary** (resolution) **Levels** that are used to enhance the visual quality when the camera is close to the ground.
- Set the project's Terrain Coordinate System.

Date and Light Tab

- Select the **Use Sunlight** option button if you want the sun to serve as the light source for the project.
- Select a range for the Date and Time Slider.

General Tab

Set basic parameters for the .Fly file, including startup message parameters:

- Click Set as Home to set the current camera location as the default startup position for this .Fly file.
- Click Add Message to determine the message to be shown when the project is opened.
- Click **Wait** to set the number of seconds TerraExplorer waits at the beginning of the session before starting the Auto-Start procedure or allowing manual flight.

Controlling Date and Time

When the sun is used as a project's light source, displayed light on the terrain corresponds to the date/ time selected on the Time Slider. Project data containing timespan tags displays on the terrain according to the timespan set.

1. View tab > Select Time Slider. The Time Slider displays in the 3D

Window. Drag the blue marker and yellow arrow to gether to the required date and time on the slider. If you want to display data whose timespans fall anywhere in a time range, drag the blue marker to the start point of the time range and the yellow arrow to the endpoint of the

		a de	-
	3:02 P	M	
4/16/2011			

time range

- 2. Click **Date and** Time **Settings** icon ito the right of the slider to select a time zone, and time slider range. (When a one-year range is selected, two sliders display, one for the date, and one for the time of day).
 - **Note:** Project startup settings for the date and time can be set in the Date and Light tab in the Project Settings dialog box and are saved in the .Fly file. Any date and time settings made using the **Date and Time Settings** icon are not saved to the .Fly.



Analysis Tools

TerraExplorer measurement and terrain analysis tools deliver extensive topographical and strategic information, enabling a more accurate geospatial understanding of the terrain.

Measurement, Line of Sight and Shadow Tools



Horizontal/ Aerial/ Vertical Distance

- 1. Analysis tab > Distance > Click Horizontal/ Aerial/ Vertical.
- 2. Click any point in the terrain or on an object to define the start point and other segments. Right-click to finish.



Terrain Area (and Perimeter)

- 1. Analysis tab > Area > Click Terrain Area.
- 2. Click to define start point. Drag to additional points and click to define a region. Right-click to finish. > In open dialog select either:
 - Horizontal Plane (for horizontal projection).
 - Terrain Surface (for surface area) > Enter Sample interval > Click Calculate.





3D Plane Area and Perimeter (of a polygon on an arbitrary plane) 1. Analysis tab > Area > Click 3D Plane Area.

2. Click to define start point. Drag to additional points and click to define a region. Right-click to finish.







Line of Sight - Indicates whether specific locations in the 3D World can be seen (green line) from a selected position or not (red).

- 1. Analysis tab > Click Line of Sight.
- 2. In property sheet, set parameters > In 3D Window, click to define observer viewpoint, then click additional times for targets. Right click to finish.

3D Viewshed - Create a 3D viewshed on buildings/ models and bare terrain.

- 1. Analysis tab > Viewshed > Click 3D Viewshed.
- 2. In 3D Window, click to define your viewpoint for the 3D viewshed, and then click again to define your desired endpoint.
- 3. In property sheet, set parameters such as visible/hidden area color and viewshed Distance and FOV.

Viewshed Query - Analyze the visibility from multiple viewshed observer viewpoints to a selected area.

- 1. Analysis tab > Viewshed > Select 3D Viewshed Query.
- 2. In the dialog box, set the Query parameter defining which viewsheds are analyzed, and all other parameters.
- 3. Select a method of designating the area for the viewshed query (Follow Line, Fill Area, Selected Group, From Clipboard, or Viewshed Area).



Viewshed on Route - Represent the view from a series of points (route).

1. Analysis tab > Click **Viewshed on Route** > Select any of the following:

- **3D Viewshed on Route By Speed/ 3D Viewshed on Route By Time** -Animated representation of visible terrain/ objects as object moves on defined route based on set speed/ over set time frame.
- **3D Viewshed on Route Query** Analyzes the visibility of a selected area from multiple viewshed observer viewpoints along a route.
- **2.** Click in **3D Window** to mark route's waypoints. Right-click to finish.







Threat Dome - Indicates the volume visible from a given point on the terrain.1. Analysis tab > Click Threat Dome.

2. In **property sheet**, set parameters > In 3D Window, click to define pivot point.

Shadow/Selection Shadow – Cast a shadow from all buildings and 3D models or only for selected objects.

Global shadow:

Analysis tab > Shadow

Selection shadow:

- **1.** Select the objects from which to cast a shadow.
- 2. Analysis tab > Selection Shadow > Click Show Selection Shadow.

Shadow Query - Calculate and graphically represent overall shadow coverage or a particular object's shadow effect in a specified area.

- **1.** Analysis tab > Click Shadow Query.
- 2. Set the Query parameter defining which objects' shadows are queried.
- **3.** Select a method of designating the area for the shadow query (Follow Line, Fill Area, Selected Group, or From Clipboard).





Terrain Analysis Tools









Slope Map - Apply palette colors according to degree of slope and slope arrows to indicate slope direction.

1. Analysis tab > Click the arrow next to Slope Map and select either:

- Global Slope Map Applies default slope map to entire terrain and 3DML
- **Custom Slope Map** Advanced slope map with customizable parameters (e.g. coverage area, palette): select: Slope Colors/Slope Dir./Both
- 2. For Custom Slope Map, in property sheet, set Coverage Area and Palette.
- 3. If you selected Rectangle Coverage Area, click in 3D Window to add opposite corners of the coverage rectangle.

Contour Map - Apply palette colors to each elevation level and connect points of equal elevation with contour lines.

- 1. Analysis tab > Click the arrow next to Contour Map and select either:
 - **Global Contour Map** Applies contour map to entire terrain and 3DML.
 - **Custom Contour Map Object -** Advanced map, customizable parameters. ۲
- 2. For Custom Contour Map, in property sheet, set Coverage Area, Palette, etc..
- 3. If Coverage Area set to Rectangle, click in 3D Window to draw rectangle.

Flood Tool - Calculate land covered by flooding.

- 1. Analysis tab > Click Flood.
- 2. In property sheet, set single instance of water level rising or continuous and related parameters.
- 3. In 3D Window, click center of coverage area, and drag mouse to required radius size and click.

Volume Tool - Analyzes volume of terrain/model modified by Modify Terrain/ 3DML objects or volume difference between elevation layer & base terrain.

- 1. Analysis tab > Click Volume.
- 2. Compare field > Select an analysis mode.
- **3.** Perform the steps relevant to the selected mode:
 - Modify Terrain Draw New: Click Create Modify > In 3D Window, draw polygon.
 - Modify Terrain Select Existing: Select a modify object & click Start Calculation.
 - Elevation Layer: Mark your area of interest by drawing area or in location of all polygon clipboard objects.





- 1. Analysis tab > Click Best Path.
- 2. In property sheet, set parameters > In 3D Window, click to define start and endpoint.



Terrain Profile - Display terrain elevation profile along a defined path, and related information (e.g. maximum/ minimum elevation values, slope).

- 1. Analysis tab > Click Terrain Profile.
- 2. Select profile mode: Normal Display profile for selected polyline(s) OR Compare - Compare polyline's profile to specified elevation layer's.
- 3. If you selected **Compare** mode, select elevation layer for comparison.
- 4. Select methods of designating the polyline(s) for terrain profile:
 - **a** Follow Line Terrain profile created along line drawn in **3D Window**.
 - **b** Selected Group Terrain profile created for polylines in selected group.
 - **c** From Clipboard Terrain profile created for polylines in clipboard.



Comparison Tools







Snapshot Comparison - Create and compare snapshots showing different versions of the area in view in the 3D Window by showing or hiding objects in the Project Tree.

- **1.** Navigate to required area and click **Snapshot Comparison**.
- 2. Show/hide objects in the Project Tree, and click Compare.
- 3. Mode selection Choose between 4 clipping modes and Transparency
- **4. Slider control** Define the clipping or transparency level extent.

Imagery Comparison - Compare 2 imagery layers or an imagery layer to base terrain by dynamically clipping or modifying transparency of overlaying layer.

- **1.** Zoom in on an area with a visible imagery layer.
- 2. Analysis tab > Click Imagery Comparison.
- **3. Mode selection** Choose between 4 clipping modes and Transparency mode.
- **4. Slider control** Define the clipping or transparency level extent.

Cross Section – Exposes obscured sections of the 3D View by making a horizontal or vertical straight cut.

- **1.** Analysis tab > Click Cross Section.
- 2. Set the required settings (e.g. Transparency) and then click Start.
- 3. In the 3D Window, click to create a cross section. Then use the Cross Section slider to adjust the position of the cross section plane.
- 4. Click Stop to exit the particular cross section.





Creating and Editing a Presentation

Easily share your 3D visualization with others by creating a multi-step presentation that can be replayed, in which you combine a customized flight route with a particular display of the project.

Step 1: Create a flight route - Animate movement over the terrain by recording your navigation or by adding locations

Creating a Recorded Route

- 1. Presentation tab > Record Flight.
- 2. Navigate freely in the 3D Window to any location or point of interest.
- 3. Adjust zoom, tilt, etc.
- 4. Presentation tab > Stop Record.

Creating a Locations Route

- Fly to the required location, and then Presentation tab > Add Location OR
- Presentation tab > Add Location > Select Location. Select a location from the list of project locations.

Step 2: Animate what is displayed on the terrain:

- Determine what is visible on the terrain and in the 3D Window **Show** or **Hide**: objects, groups, TE tools, and messages.
- Animate data through time Visualize time-based data over time, so that you can see a pattern or trend emerge (e.g. flood progression or city growth). You can also set the Presentation time or Adjust Time Slider Range to Group to affect the visibility of objects and groups with timespan tags.
- Change the speed of the presentation steps or launch a different presentation from the current one.

In **Presentation Editor**, right-click step > Click **Add Operation** > Select an operation.

Step 3: Edit the presentation

- 1. Presentation tab > Edit Presentation.
- Add captions when required: right-click step> Add Caption.
- **3.** Use Move Up and Move Down commands to reorder steps.
- 4. To delete a step, select it and click **Delete**.
- 5. For each step, select mode for advancing the step: Continue trigger >
 - Immediate Next step follows immediately.
 - **Click Button** Next step follows when Next command on the Ribbon is clicked.
 - Wait Next step follows automatically after waiting the number of seconds set in the Seconds column.

Step 4: View Presentation



Click **Presentation** tab > **Play**. Use the toolbar to start, stop, pause, rewind, and fast forward.



Show Group or Object Hide Group or Object Set Underground Mode On Set Underground Mode Off Adjust Time Slider Range to Group Set Time Play Time Animation Activate a Message Open Tool Restart Dynamic Object Set Flight Speed Play Another Presentation





Creating Movies

Share your 3D visualization even with people who do not have TerraExplorer installed, by creating a movie in AVI format from any presentation in your project. Your movie can then be shown using any standard AVI Viewer.



- **1.** Create a presentation.
- 2. **Presentatio**n tab > Set frame size and number of frames per second.
- **3. Presentation** tab > **Create Movie**.
- 4. Browse to location for movie file.
- 5. Set Video Compression properties.

Basic Objects

Add and edit graphic entities, each with its own styling properties. Objects include: labels, lines, polygons, 2D/ 3D shapes, 3D models, and buildings. Available objects depend on TerraExplorer license level. Objects can be organized in Project Tree groups.

Creating an Object

- 1. **Objects** tab > Click <required object>.
- 2. Click and draw the object in the **3D Window**. Right-click to finish. For 2D and 3D shapes, left-click to finish.

Selecting an Object

After selecting a single object, a yellow frame surrounds the object and the object's property sheet opens. When selecting multiple objects, a yellow frame surrounds each of the selected objects and the Multi Edit property sheet opens.

Selecting a Single Object

- From **Project Tree**: In **Project Tree**, right-click object > from the shortcut menu, select **Properties**.. OR
- From 3D Window: On Home tab, click Select > In 3D Window, select object.

Selecting Multiple Objects

- From **Project Tree**: In **Project Tree**, select the required objects (Use SHIFT and CTRL to select sequential and nonsequential tree items) > right-click > from the shortcut menu, select **Properties**.
- From 3D Window: On Home tab, click Select > Press and hold the CTRL key > In 3D Window, select each of the objects you want > In 3D Window, right-click and select Properties.
- From 3D Window (all objects in a selected area): On Home tab > Select > Area Selection > In 3D Window, draw area polygon by clicking (at least three points) and right-click to finish > In 3D Window, right-click and select Properties.





Editing an Object

- 1. Project Tree > Right-click object and select Properties.
- 2. On the top of the **property sheet**, click \frown to edit the entire object. Then:
 - 🚓 To move the object. Drag to required location.
 - ¹_z To change the object's altitude. Drag to required height.
 - To move the object based on where the mouse is pointing (rather than according to XYZ offset).
- To edit object nodes (of polylines, 2D polygons, and 3D polygons), click
 Then:
 - To move a node. Then click required node and drag to new location.
 - 🗘 To change node's altitude. Then click required node and drag to new height.
 - Some To move a node based on where the mouse is pointing (rather than according to XYZ offset).
 - To delete a node, point to the node, right-click, and select **Delete Node**.
 - To add a node, point to one of the object's lines, and click anywhere a red node appears.
- Set properties such as color, altitude, timespan, tooltip, and texture in the object's property sheet.

Adding 3D Models

- **1. Objects** tab > Click **3D Model**.
- 2. In dialog, browse to the required file to load.
- **3.** In **3D Window**, click mouse to define position of model's pivot point on terrain.
- Adjust the model's position and size in the 3D Window or from property sheet. See: "Editing an Object."
- 5. Using the **property sheet**, set the parameters of the 3D object.
- 6. Drag any of the three arrow resizers in/ out to adjust any of the model's dimensions.

Polygon Properties





Advanced Objects

Create advanced objects: e.g., dynamic objects, modify terrain objects, video, buildings, and 3D models.

Creating and Editing Dynamic Objects

- 1. Objects tab> Dynamic Objects group> Click <required object >.
- 2. Property sheet > File Name field > Browse for a model file.
- 3. In property sheet, set Motion Style and other properties.
- 4. In **3D Window**, click mouse to define waypoints. Right-click to finish.
- 5. For editing, see: "Editing an Object." Note that object nodes correspond to object's route waypoints.

Creating Buildings

- **1. Objects** tab > Click **Building**.
- 2. In **3D Window**, click the mouse to define roof polygon. Right-click to finish.
- **3.** If there is no horizontal offset between roof and base, right click to finish. If there is an offset, drag base to place and left-click.
- **4.** In **property sheet**, set building's properties including height, texture, and roof style.

Video on Terrain and Video Billboard

Play a video file on an area of the terrain or on a floating billboard.

- 1. Objects tab > Video on Terrain/ Video Billboard.
- 2. Browse to a video file. For a streaming video, click Cancel, and in property sheet, type the URL.
- **3.** Set location of video:
 - In property sheet, set Use Telemetry File to No, and in 3D Window, click to define location. OR
 - In property sheet, set Use Telemetry File to Yes, and browse to file
- 4. In property sheet, set projector properties and other video parameters.
- 5. To play, pause, and stop video, right-click in Project Tree and select required option.





Loading Raster Layers

Raster layers include imagery layers containing geo-referenced, satellite or aerial images that overlay the terrain imagery, and elevation layers containing geo-referenced elevation raster that replaces the elevation data of the terrain.

- Home tab > Click Raster Layer > Select Elevation/ Imagery Layer from file or from server.
- In the dialog, browse to the required file, and click Open.
- **3.** If loading from server, select the required server, and click **Select**. In the dialog that displays, enter the information required for the selected server, and select the required layer.
 - Note: If the source file is geo-referenced it is positioned accordingly on the terrain. Otherwise, it is placed at the center of the 3D Window. You can then manually edit its position, or reproject it.
- 4. If the source file does not include **coordinate system** information or TerraExplorer cannot read it from the file, the Coordinate System dialog box opens. Specify the coordinate system of the layer. TerraExplorer then reprojects (converts) the layer data to the project's coordinate system. Although the source file retains its



original coordinate system, it is placed on the terrain according to the reprojection parameters.

5. After the object has been placed on the terrain, you can change its properties using the property sheet. To clip a subsection of the raster, click the Draw button in the Imagery/ Elevation section of the property sheet. Place at least three polygon points in the 3D Window by clicking in the desired location. Finish by right-clicking.

Creating Resolution Pyramids

To enable the display of a layer at different altitudes, TerraExplorer requires a number of resolution levels per layer, also known as a resolution pyramid. If a layer does not have sufficient resolution levels, TerraExplorer can create them.

- 1. In Project Tree, select layers that require a resolution pyramid.
- 2. Tools tab > Click Resolution Pyramid.
- 3. In dialog, select layers, and click Create Pyramid.



Loading Feature Layers

A feature layer is a visual representation of a geographic data set using geographic features such as points, lines, and polygons. In contrast to objects, all the features in a layer share the same properties and behavior. These properties can be modified from the layer's property sheet.

- **1.** Home tab > Click Feature layer.
- 2. If loading from file, in dialog, browse to required file and click **Open**.
- **3.** If loading from server, select the server type, and click **Connect**. Fill in the required Connection parameters for the specific server or database, and click **Connect**.
- 4. Select a layer from the Select Layer dialog box and click Next.
- 5. Set the layer's General Settings. Then click Next.
- 6. If the layer's coordinate system is different from the terrain's, select the **Reproject** check box.
- 7. Then click the **Set Coordinate System** button to open the Coordinate System dialog page to specify the **coordinate system** of the layer.
- 8. Select Stream to retrieve layer information dynamically based on the camera's position.
- 9. Select Entire Layer to load the entire layer when the .Fly file opens.
- **10.** Select the **Annotation Symbol** check box to automatically add a point annotation object in the center of each layer feature.
- **11.** In the **Predefined Visibility** section, select the viewer altitude from which visibility distance and scale is set to optimum.
- **12.** Select the attribute fields to load. In the **property sheet**, set layer parameters, and apply different properties such as line color or cylinder height, based on the attribute field values of the objects.





Loading 3D Mesh Layers (3DML)

A 3D mesh layer (3DML) is a fully textured urban model that has been compressed and streamoptimized to accelerate loading speed and efficiently handle memory. 3DMLs are created in CityBuilder by merging 3D mesh models generated by PhotoMesh and/or layers with individually referenced 3D models.

- 1. Layers tab > Click 3DML.
- 2. If loading from file, in dialog, browse to required file and click **Open**.
- If loading from SG or a different server, select the server type, and click Select. Fill in the required Connection parameters, and click Connect.
- **4.** After the layer has been placed on the terrain, you can change its properties using the **property sheet**.



Loading Building Information Modeling (BIM) Layers

TerraExplorer reads FBX BIM files and converts them to the 3DML format for optimized viewing and

streaming on desktop and mobile applications, with full support for spatial and attribute queries.

- **1.** Layers tab > Click BIM.
- Click Add Files. Then browse to the required file, and click Open.
- Using the property sheet, set the BIM parameters as required.
- 4. Click Import.





Feature and 3DML Layer Operations

Spatial operations on a layer's features include: merging features into a single feature, clipping one polygon from another, exploding a multi-part feature into its individual component features, and exporting selected features to a new file. Feature layer operations are only enabled for TerraExplorer Pro users. Most operations are also available for 3DML layers.



Selecting Features (Individual Selection)

- 1. In Project Tree, select required layer.
- 2. Select the individual features required:
- 3. Layer Edit tab > Click Select Feature.
- 4. In the 3D Window, select the required feature. (To select multiple features, press and hold the CTRL key) OR

Selecting Features by Spatial Query

- 1. Layer Edit tab > Click Spatial Query. Select Area (polygon), Line, Point or Object.
- In the Type dropdown list > Select Intersect to select all features whose geometry intersects at any point with the selection geometry. Select Completely Within to select only features whose entire geometry falls within the selection geometry.
- 3. In the **Buffer** dropdown list, enter a buffer radius outside the selection.
- 4. In the **3D Window**, click to draw a polygon, line or point or select the required object for feature selection.

Using the Attribute Table: Searching for Features and Editing Attributes

- 1. In **Project Tree**, select required layer. Then **Layer Edit** tab > **Attribute Table**.
- 2. In the Query builder section, enter an attribute, condition, and value and click Insert String.
- If you want to include additional strings in your search expression, click one of the connector buttons: (And, Or, ()) and repeat step 2 for the next condition. Then click Search.
- To display on the terrain only filtered features, click
 Operation > Select Show Exclusive.
- To create a new layer of filtered features, click
 Operation > Add as new layer entry.
- To save the selected features to a new shapefile or .Fly file, click Operation > Select Save As.
- **7.** To modify attribute properties, double-click the attribute value and modify as required.

1				+ Ca ocaicit
			<u>Jear</u> In	vert
Query Build	er			
T ST				
- 01				
And				
And				
alay Inv				
In velos	teme of Link	00000		
pidy pi	tona or onic	10411		
	itema or or ite	nown		
eat /	STATE_NAME	STATE_ABBR		
eat /	STATE_NAME Montana	STATE_ABBR MT		× E
eat /	STATE_NAME Montana Maine	STATE_ABBR MT ME		A E
ieat /	STATE_NAME Montana Maine North Dakota	STATE_ABBR MT ME ND		-
ieat /	STATE_NAME Montana Maine North Dakota South Dakota	STATE_ABBR MT ME ND SD		E
ieat /	STATE_NAME Montana Maine North Dakota South Dakota Wyoming	STATE_ABBR MT ME ND SD WY		H
Feat /	STATE_NAME Montana Maine North Dakota South Dakota Wyoming Wisconsin	STATE_ABBR MT ME ND SD WY WI		
ieat /	STATE_NAME Montana Maine North Dakota South Dakota Wyoming Wisconsin Idaho	STATE_ABBR MT ME ND SD WY WI ID		
ieat /	STATE_NAME Montana Maine North Dakota South Dakota Wyoming Wisconsin Idaho Vermont	STATE_ABBR MT ME ND SD WY WI ID VT		
ieat /	STATE_NAME Montana Maine North Dakota South Dakota Wyoming Wisconsin Idaho Vermont Minnesota	STATE_ABBR MT ME ND SD WY WI ID UD VT MN		-
eat /	STATE_NAME Montana Maine North Dakota South Dakota Wyoming Wisconsin Idaho Vermont Minnesota Oregon	STATE_ABBR MT ME ND SD WY WI ID VT VT MN OR		



Exporting Selected Features to a New File

- 1. Select the required features. See: "Selecting Features."
- 2. Layer Edit tab > Click Export Layer > Select Save Selected Features As.
- 3. In dialog, type a File name. Browse to the required Save location and click Save.

Adding a Feature to a Layer

- 1. Select the layer. Then Layer Edit tab > Click Add [Polyline, Point, or Polygon].
- 2. In property sheet, set the parameters of the geographic feature. In **3D Window**, place the object's points. Rightclick to finish.

Editing Features (Merge, Clip, Intersection, Explode)

- 1. Select required features (Merge: Only polylines/ polygons, Intersection, Clipping: Only polygons).
- 2. On the Layer Edit tab > Click Editing and select one of the following:
 - To merge features into one feature: select Merge > In 3D Window, click feature whose attributes should be used for merged object.
 - To **clip**: select **Clip** > In the **3D Window**, click the polygon to clip from the other polygons.
 - To create new feature from intersection of features: select Intersection > In 3D Window, click polygon that will determine attributes.
 - To explode a multi-part feature into component features: Layer Edit tab > Click Editing > To explode all features: select Explode All. To separate out only specific features: select Explode. Then, in 3D Window, select features to separate out.

Saving a Layer

On the Layer Edit tab, click Save Layer to save changes to original layer or Click Export Layer > Save As to save to a new file.





Collaborating over the Network with Other TerraExplorer Users

Connecting over the internet/intranet, multiple users can work together in the 3D environment: chat, annotate the terrain with text labels and free hand drawing, synchronize flight, and share content by dragging any object/layer to a shared folder. One user serves as the manager of the session, while the rest connect to the session as clients.

The collaboration server can run on a local computer of one of the session members, or as part of an existing collaboration server (to enable better management and control and to solve security problems when accessing end-user computers behind firewalls).

When a collaboration server is activated, using the Start Local Session request, it serves the current session on a local machine and after the termination of the session the server shuts down. When the collaboration server is set up as part of an existing collaboration server it is always up and running.

Joining or Opening a Session

- **1.** Tools tab > Click Collaboration.
- 2. Select a connection type:
 - Create local session To start a communication server on your local computer, and serve as session manager/leader.
 - **Create session** on server To create a new session on a collaboration server of which you are the manager and leader. Then type the **Server host** name (name or IP address of the server).
 - Join session To join an ongoing session opened by another user on a local computer or on a collaboration server. Then type the Server host name (name or IP address of the Manager's local computer or the collaboration server).
- 3. In the **Choose Session Name** field, type the session's name. If you join an ongoing session, type the session name that was given by the manager.
- 4. In the Choose User Name field, type a user name.
- 5. If you started a local or a server session, from the **On User Connection** drop-down list, select whether to send the Fly project or link to users who join the session.
- Click the Start Session button to create the session or Join Session to join an ongoing session. A second Collaboration dialog box opens.

Managing a Session

If you created the session:

- To appoint a different leader, in **Participants** list, select name > Click **Set as Leader**.
- To send your camera position to other participants, select Broadcast location.

If you joined a session:

- To attach your 3D Window to leader's view, select the Follow leader check box. Clear to navigate freely.
- To invite participants to session, click **Invite** button. Then in the **Enter Email(s)** field, type the e-mail address. Click **Invite**.
- Follow the instructions in the message body and send the mail.

Collaborating with Other Session Participants

You can chat, point, draw freehand, add and place text labels, and share content with other participants in the session.





Loading .Fly and KML/ KMZ Files

When another TerraExplorer project (.Fly layer) or KML/KMZ file is loaded in TerraExplorer, the geographic content is read and put in the Project Tree as a group.

- 1. Home tab > Click Feature layer > Select .fly or kml/ kmz.
- 2. In dialog, browse to required file and click **Open**.

Effects and Animation

Simulation of weather, animation, and water effects enhance realism of the 3D visualization.



Weather Effects (clouds, wind, sky, sun, rain, snow, and fog)

On the **Effects** tab, in the **Weather** group, set any of the following: sky color, sky texture, dynamic clouds covering, wind direction, wind speed, fog intensity, rain intensity, and snow intensity.

Animation Effects (e.g. fire, smoke, explosions).

- Effects tab > Animation group, click required effect, and then from drop-down menu, select required shape.
- In Effect property sheet, set the effect's parameters. To modify particle properties such as base image, color, size, and lifetime, click Set in the Effect Setting field, and then modify required parameters in Particle Editor.
- **3.** Place effect object in **3D Window** by clicking desired location.

Water Effects (river, ocean, waterfall, fountain, pool)

- 1. Effects tab > Water group> Water Animation (e.g. fountain, pipe) OR Water Body (e.g. lake, pool), and select required effect. Then from drop-down menu, select required shape.
- 2. In **property sheet**, set effect's parameters. To modify particle properties, click **Set** in the Effect Setting field, and then modify required parameters in Particle Editor.
- 3. For Water Animation, place effect object in 3D Window by clicking in desired location.
- 4. For Water Body, place the polygon points in the **3D Window** by clicking in at least three locations. Finish by right-clicking.



Loading from SkylineGlobe Server (SGS)

SkylineGlobe Server 7 is a private cloud solution that provides a comprehensive set of web services for publishing, storing, managing and streaming 3D spatial data. SkylineGlobe Server provides streaming services for all your spatial data types including terrain (MPT/TBP), map (raster-WMS/WMTS), feature (WFS/WFS-T), 3D Mesh (3DML, 3D Cesium tiles), and point cloud (CPT, 3D Cesium tiles).

Load Layers

Connecting to a SkylineGlobe Server

- **1.** Home tab > Click Disconnected.
- 2. Enter connection information > click Connect.

Loading a Project or Layer

- For Project: File menu > point to Open and select Open Project from SkylineGlobe.
- 2. For Layer: Layers tab > click Load Layers.
- **3.** <u>Search</u> for required layer.
- 4. Select required layer and click Load.

Searching SkylineGlobe Server for Layers

In SkylineGlobe Layers dialog box:

- 1. To search for string: In the Search String field, type a search string or enter an attribute, condition, and value and click Insert String ▲.
- 2. To search according to geographic location: Click **Set Bounding Box** > select required region by drawing a rectangle on the map on the right side of the page.
- 3. Click Search.

Publishing to SkylineGlobe Server (SGS)

All publishing and uploading of layers and projects to the server can be done directly from

TerraExplorer. Through a single publishing operation, data is made ready for consumption for all TerraExplorer clients: Desktop, Mobile, and TE for Web.

Publishing a Project or Layer to SkylineGlobe Server

- 1. For Project: Home tab > click Publish to SG.
- For Layer: In Project Tree, right-click required layer > select Upload to SkylineGlobe.
- TerraExplorer automatically checks for similar layers already on the server. If similar layers are found, you can select to Republish or Use Existing.
- 4. Clear the Use Existing check box for each layer you want to republish instead of using copy on the server. Then click OK.
- 5. Click Publish.

Edit access:	Everyone	\sim		
View access:	Publish to Skyl	ineGlobe Server - Lay	er duplicati	on
Tags:	The following la Clear the Use I	ayers already exist on t Existing check box for la	he SkylineGla ayers you wa	obe server. ant to republish instead of
	Name	Use Existing	Owner	View/Edit Permissions
Ipload Layers	Feature1.sl	hp		
Scanning progress f	\otimes	✓	admin	Everyone/None
Name				
C reature 1.anp				

Other Publishing Options

The Publish TerraExplorer Kit process collects all the files that are used in the project and stores them in the target directory for distribution to external users by local media such as USB flash drive or uploaded to SkylineGlobe Server or a different server. When publishing a TerraExplorer project, a mobile .FLY and a desktop .FLY are automatically created.

Publishing a Kit

- **1.** Save project.
- Home tab > Click Publish Offline > Select either Publish Project as Local Kit or Extract and Publish Area as Offline Kit.
- For <u>Publish Project as Local Kit</u>: > In the dialog that opens, in Kit field, browse to folder for kit files.

Kit	C:\skyline\data\publish\publish4 Browse
Terrain	Keep link to original terrain database 🔻
	Include TerraExplorer install kit (for first time users)
	Convert model layers to 3DML

82

- In the Terrain field, select whether to copy the terrain database to kit, to keep a link to database, or not copy (to save space).
- 5. Select the Include TerraExplorer install kit check box for user who doesn't have TE installed > Click OK.
- 6. For Extract and Publish Area as Offline Kit (Create a directory for offline use that contains the terrain, layers, objects, and resources of a selected subset of the TerraExplorer project): > In the dialog that opens, in Kit field, browse to folder for kit files.
- In the Output Project section of dialog, click Create and mark area of interest by drawing a clip polygon in 3D Window.
- 8. When updating existing offline kit, if want to accelerate process by skipping terrain and layer extraction for existing files, select relevant check boxes. > Click **Publish**.

Uploading an Existing Kit

For Android Device:

- **1.** Connect your device to your computer.
- Home tab > Click Publish Offline > Select Upload Existing Kit to Mobile Device > In dialog box > Connected Mobile Devices > Select device.
- 3. Browse to kit location on your computer, and click Upload.

For iOS Device:

- 1. Connect your iOS device to your computer and then open iTunes.
- 2. Select your device, and click Apps.
- 3. In File Sharing, from the list on the left, select the TerraExplorer application.
- 4. Drag and drop the mobile kit folder on your computer to TerraExplorer Documents.





Information contained in this document is subject to change without notice and does not represent a commitment on behalf of Skyline Software Systems Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying without the written permission of Skyline Software Systems Inc., 13873 Park Center Road, Suite 201 Herndon, VA 20171 USA.

Copyright © 2017 Skyline Software Systems Inc. All rights reserved.

Skyline, It's your world, the Skyline logo, TerraExplorer, TerraExplorer Pro, TerraExplorer Plus, TerraDeveloper, TerraBuilder, TerraGate, SFS, and the TerraExplorer logo are trademarks of Skyline Software Systems Inc. All other trademarks are the property of their respective holders. Trademark names are used editorially, to the benefit of the trademark owner, with no intent to infringe on the trademark. Protected by U. S. Patents 6111583, 6433792, 6496189, 6704017, 7551172. Other patents pending.

C Office: (703) 378 3780

🖶 Fax: (703) 378 3760

www.skylinesoft.co m

Technical Support: support@SkylineGlobe.com

General information: info@SkylineGlobe.com LinkedIn: Skyline Software Systems, Inc.

YouTube: skylinesoft