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# **Qgis2threejs Plugin Document**

*Release 2.4*

**Minoru Akagi**

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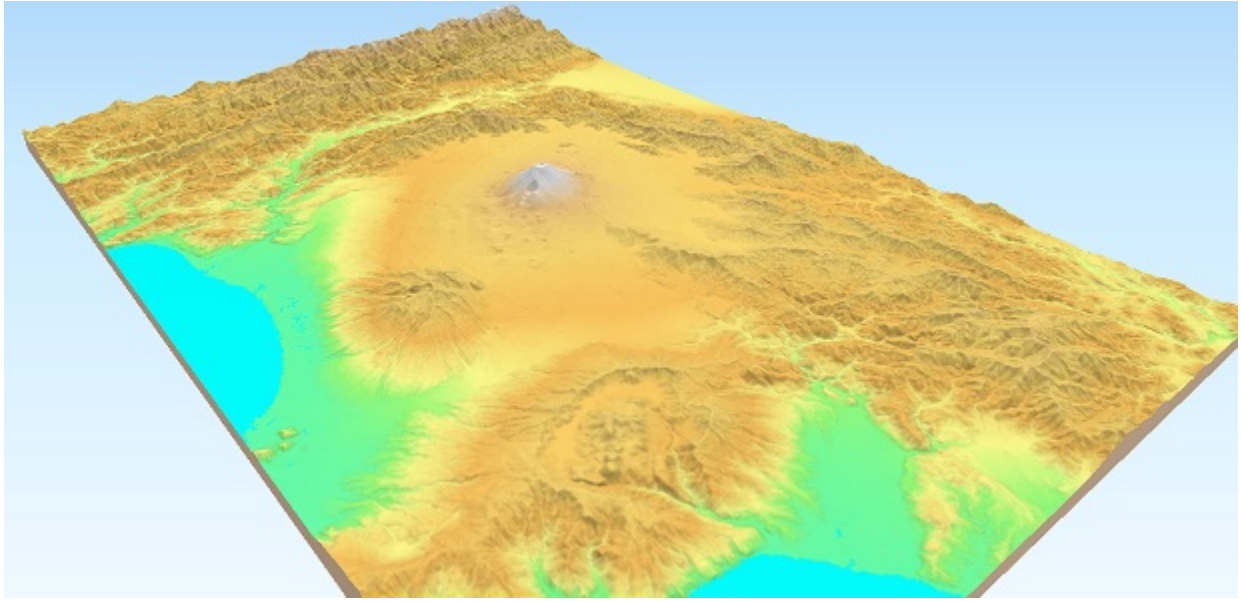
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Qgis2threejs plugin is a QGIS plugin, which visualizes DEM data and vector data in 3D on a web view. You can build various kinds of 3D objects with simple settings panels and generate files for web publishing in simple procedure. In addition, you can save the 3D model in glTF format for 3DCG or 3D printing.

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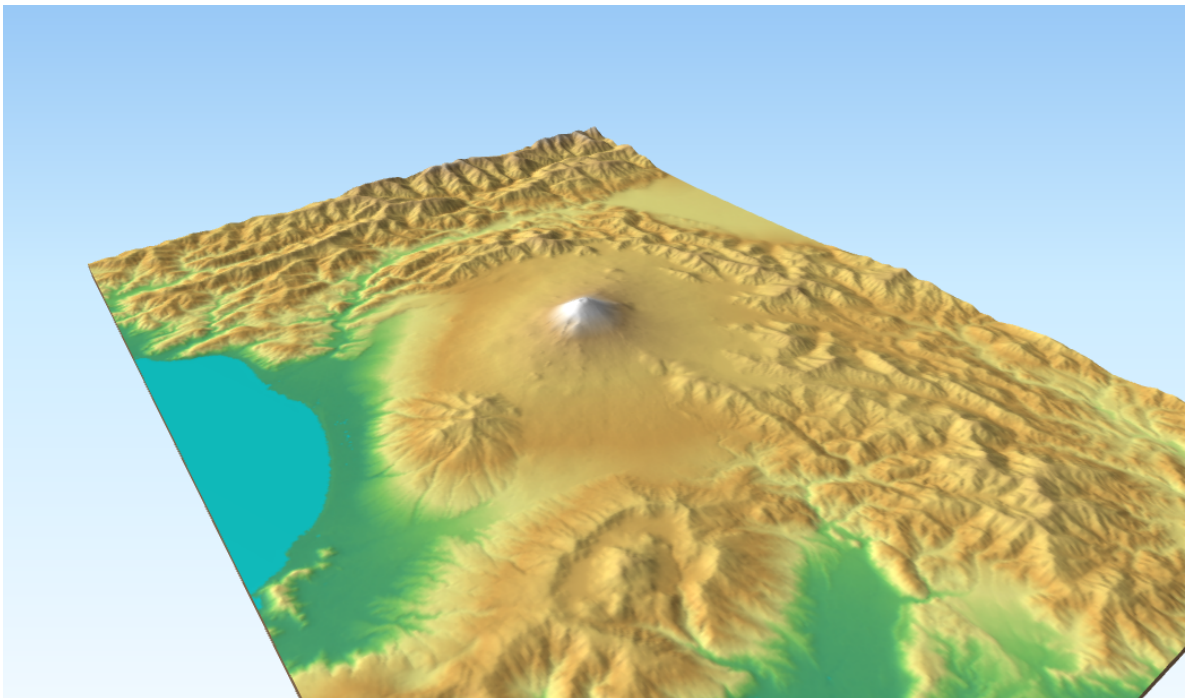
# CHAPTER 1

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## Examples

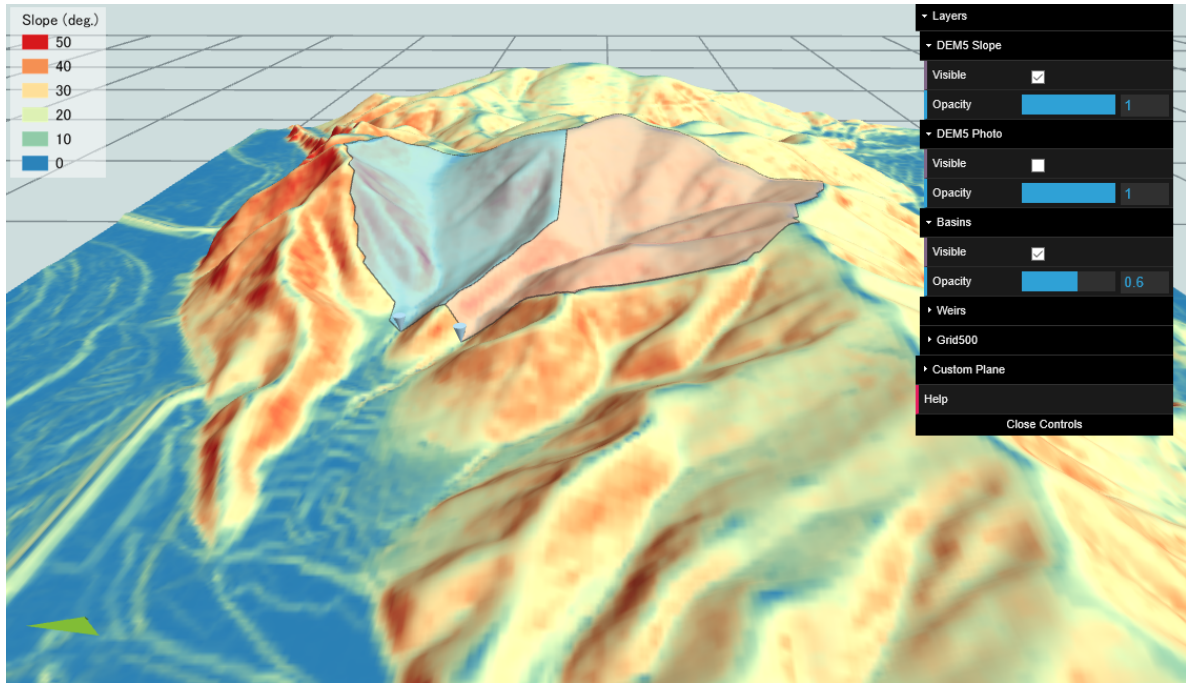
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- **Mt. Fuji:** Shaded relief map made with SRTM3 data



Source: U.S. National Aeronautics and Space Administration (NASA) and National Geospatial-Intelligence Agency (NGA). SRTM elevation data (SRTM V2.1. Filled small voids using `gdal_fillnodata.py`)

- **Forest Basins:** Polygon overlay and grid



Sources: Geospatial Information Authority of Japan. 5m DEM of Fundamental Geospatial Data and GSI Tiles (ort)



Let's start using Qgis2threejs plugin!

### 2.1 Install the plugin

Open the Plugin Manager (Plugins > Manage and Install Plugins...) and install Qgis2threejs plugin.

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**Hint:** Need help? See the [10.1. Installing and Managing Plugins](#) section of the QGIS training manual.

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### 2.2 Obtain elevation data

If you already have raster DEM data, you can skip this step.

NASA published elevation data generated from NASA's [Shuttle Radar Topography Mission](#) digital topographic data. We can use the data freely. Elevation data version 2.1 can be downloaded from the [distribution site](#).

Download a zip file that contains elevation data of the area you are interested in from under the `version2_1/SRTM3` directory. The zip file contains a `.hgt` file, which is readable by the GDAL.

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**Tip:** Do you have time to explore new high-resolution SRTM elevation data? You can download 1 arc-second SRTM data from the [EarthExplorer](#) (User registration required).

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### 2.3 Load DEM data

Unzip the downloaded zip file, and then drag & drop `.hgt` file to QGIS window.

## 2.4 CRS setting

Horizontal unit of SRTM data is degree, whereas vertical unit is meter. For appropriate visualization, you need to transform the DEM data to a projected CRS. QGIS can perform the CRS transformation on the fly.

So, let's change the *current project CRS* to a *projected CRS*.

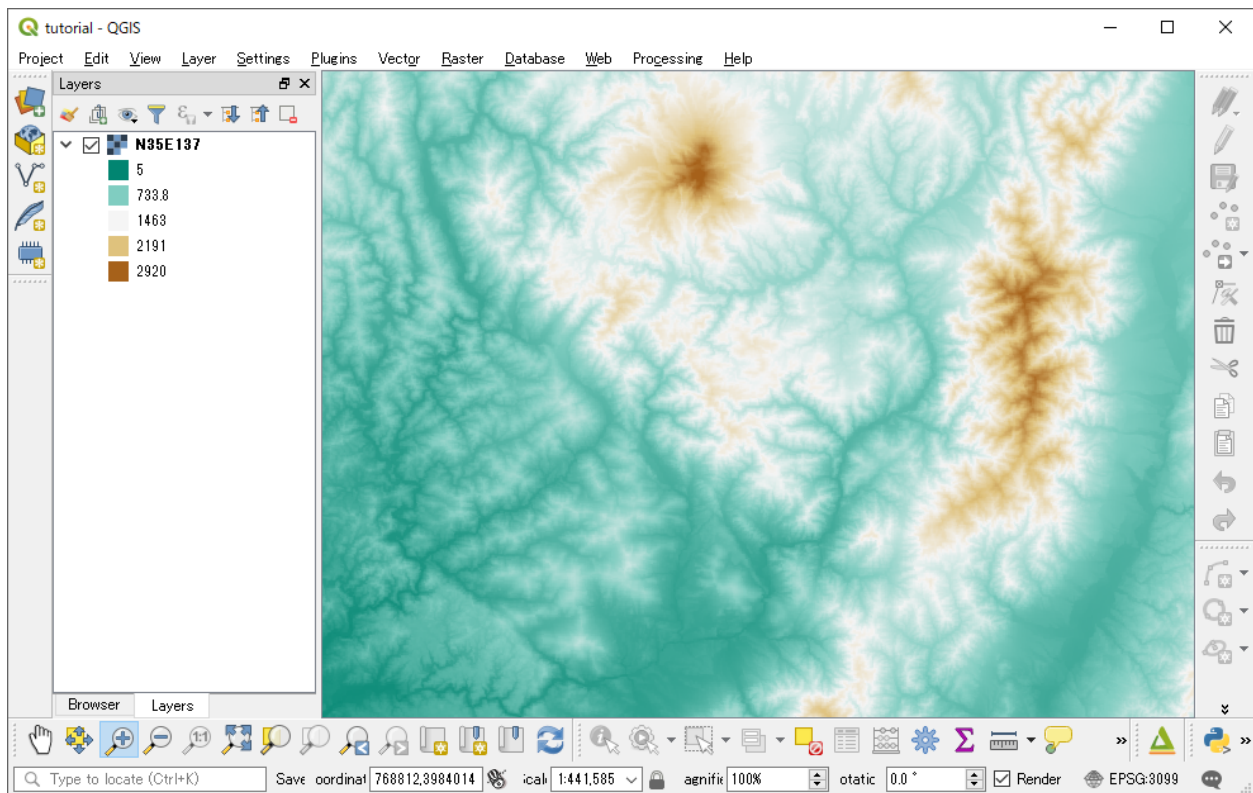
Click the CRS status icon  in the bottom-right corner of the window to open the project properties dialog, and then select a suitable CRS for the DEM extent. If you don't know which CRS is best suited, select the Spherical Mercator projection (EPSG:3857), which is adopted by many web maps.

**Note:** In the Spherical Mercator projection, every feature size is horizontally larger than actual size except those of features on the equator. At latitude 40 degrees it is enlarged 1.3 times, at 60 degrees enlarged twice.


## 2.5 Layer styling

Open the Layer Properties dialog for the DEM layer and colorize the DEM layer richly.

An example (Singleband pseudocolor render type and inverted BrBG color map):



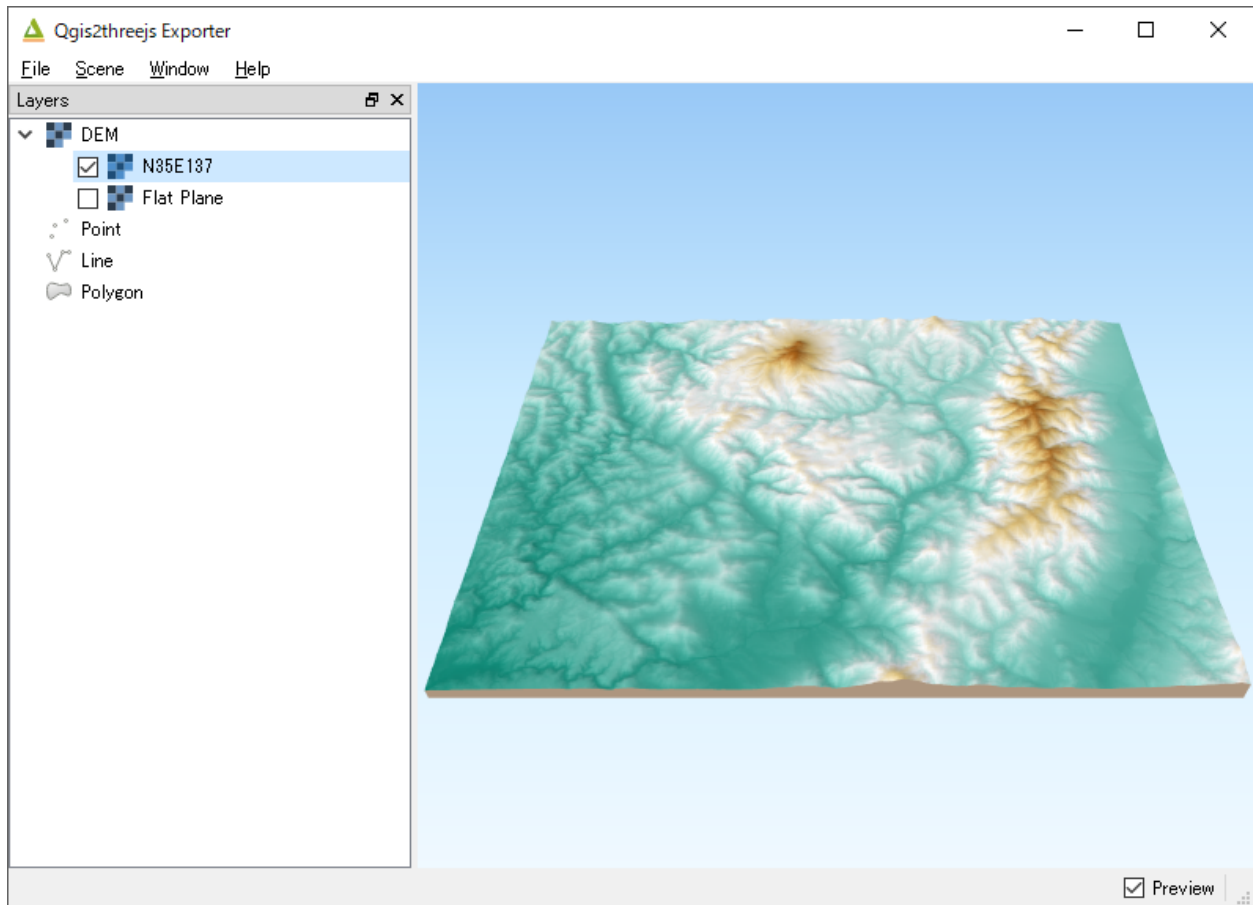
## 2.6 Open the Exporter

Zoom to a part of the DEM layer extent as the map canvas is filled by the colorized DEM layer, and then click the plugin icon  in the web toolbar to open the Qgis2threejs exporter.

There is Layers panel on the left side of the window, which lists map layers in current QGIS project. Layer items are grouped into DEM, Point, Line and Polygon. DEM layer group has 1-band raster layers (GDAL provider) in current QGIS project and *Flat Plane* (a flat plane at zero altitude).

There is a preview on the right side. Now scene doesn't contain any 3D objects.

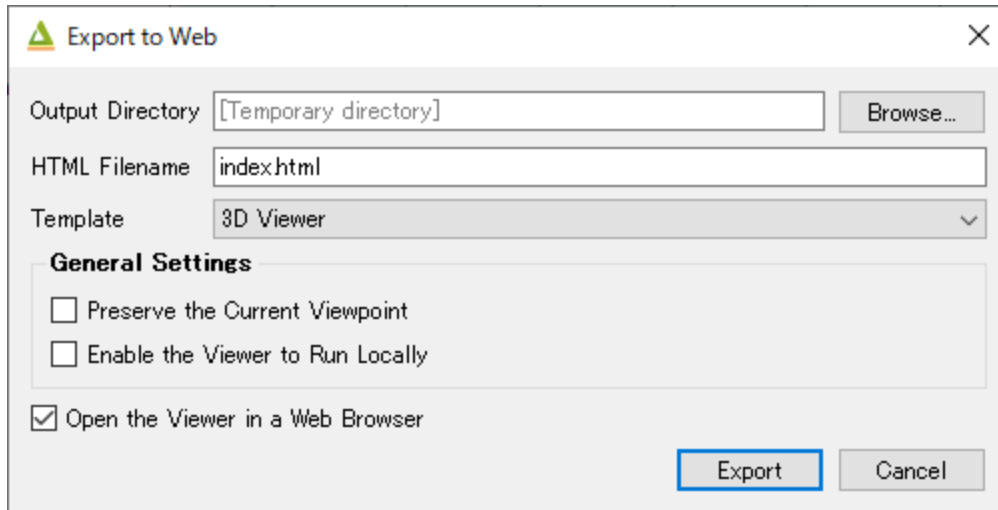
Let's add the DEM layer into the scene. Just click the checkbox on the left of the DEM layer under the DEM layer group.



A 3D terrain object with map canvas image draped on it shows up in the preview.

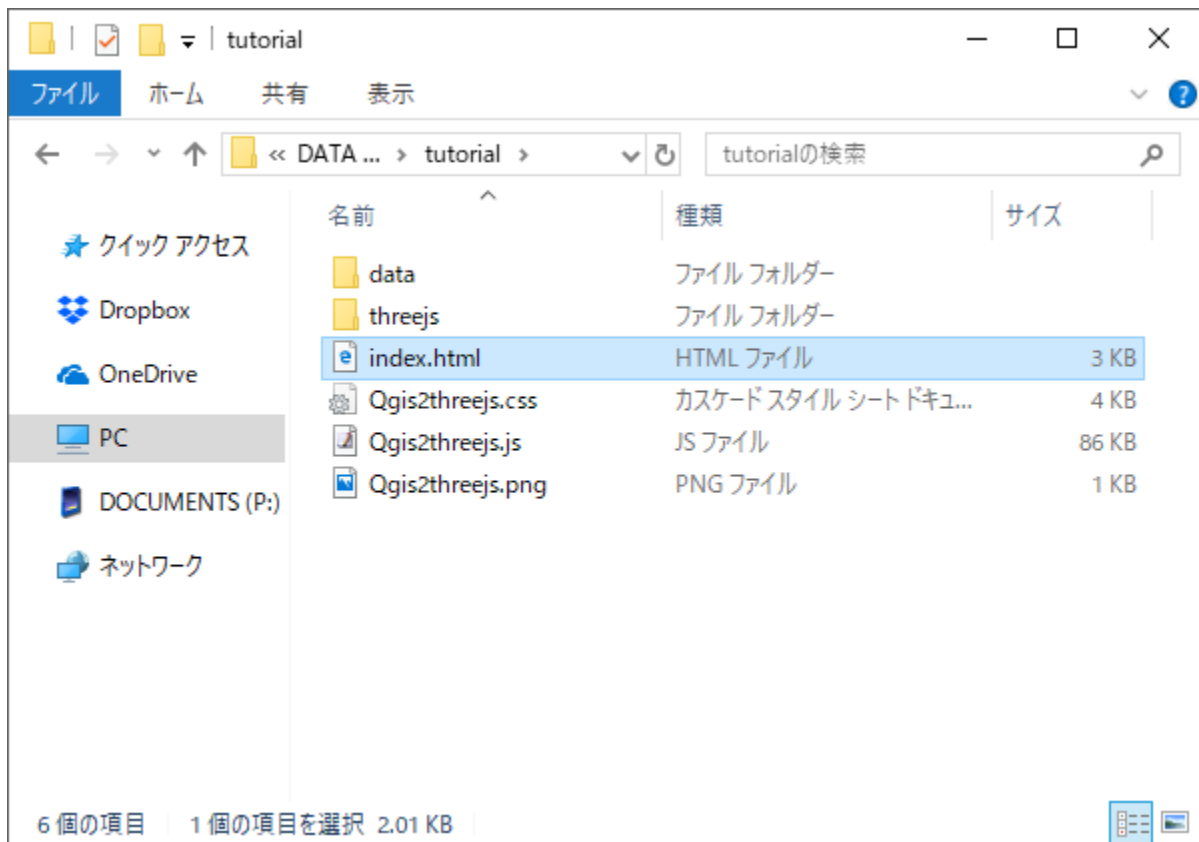
## 2.7 Exporting the Scene to Web

Click on the `File - Export to Web...` menu entry to open this dialog.

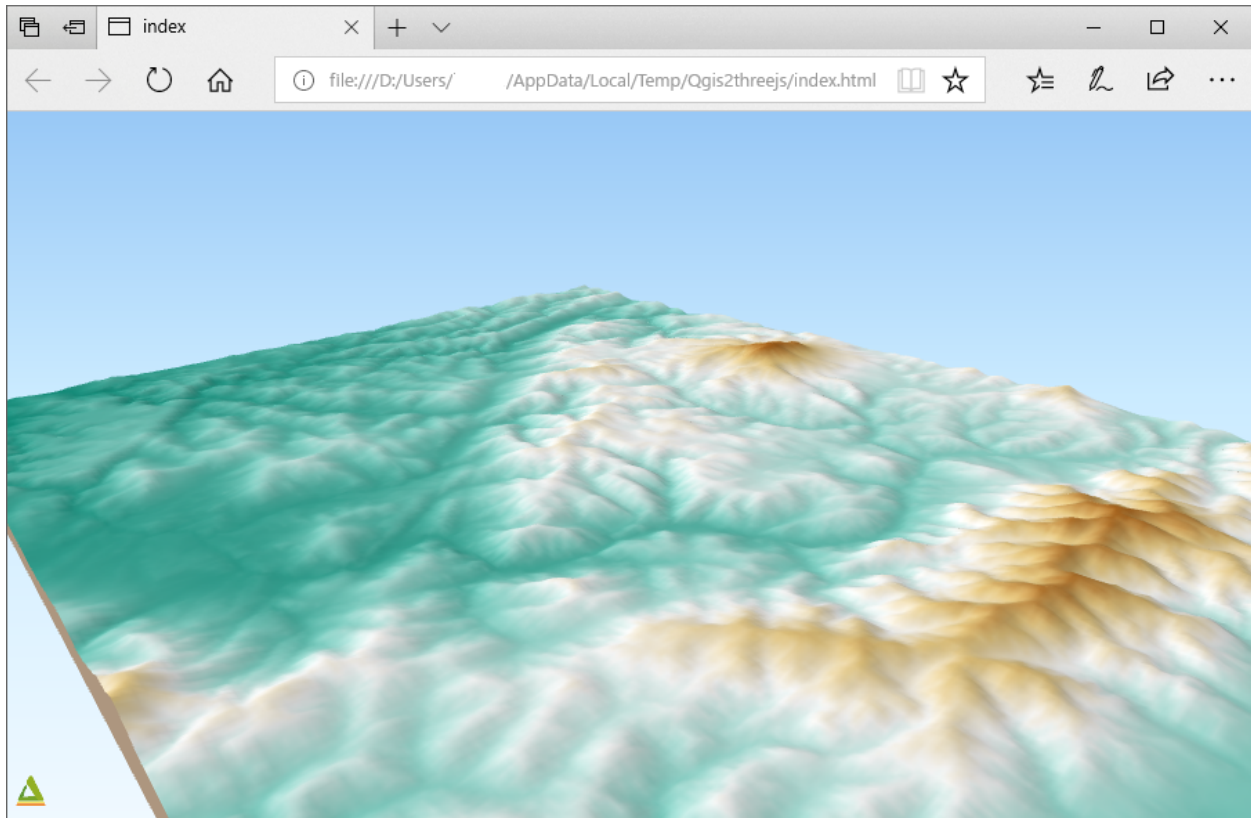


Select a directory to export the scene, check Enable the Viewer to Run Locally option and press Export button.

**Note:** Many web browsers do not allow loading data files on local file system via Ajax. With Enable the Viewer to Run Locally option the plugin outputs geometry and image data into a js file.



Open the .html file with a web browser. You can see exported scene in web browser.



You can publish the exported viewer and data just by uploading the generated folder to a web hosting service such as Netlify and GitHub Pages.

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**Note:** Please do not forget to ensure that you comply with the Terms and use for the data before publishing the data to the web.

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## 2.8 Save the Scene as glTF

Are you satisfied with the scene rendering of Qgis2threejs web application? No? If so, let's export the scene to a glTF file. The glTF (GL Transmission Format) is a file format for 3D scenes and models ([Wikipedia](#)). You can load it to 3D graphics softwares that can render high quality graphics such as Blender.

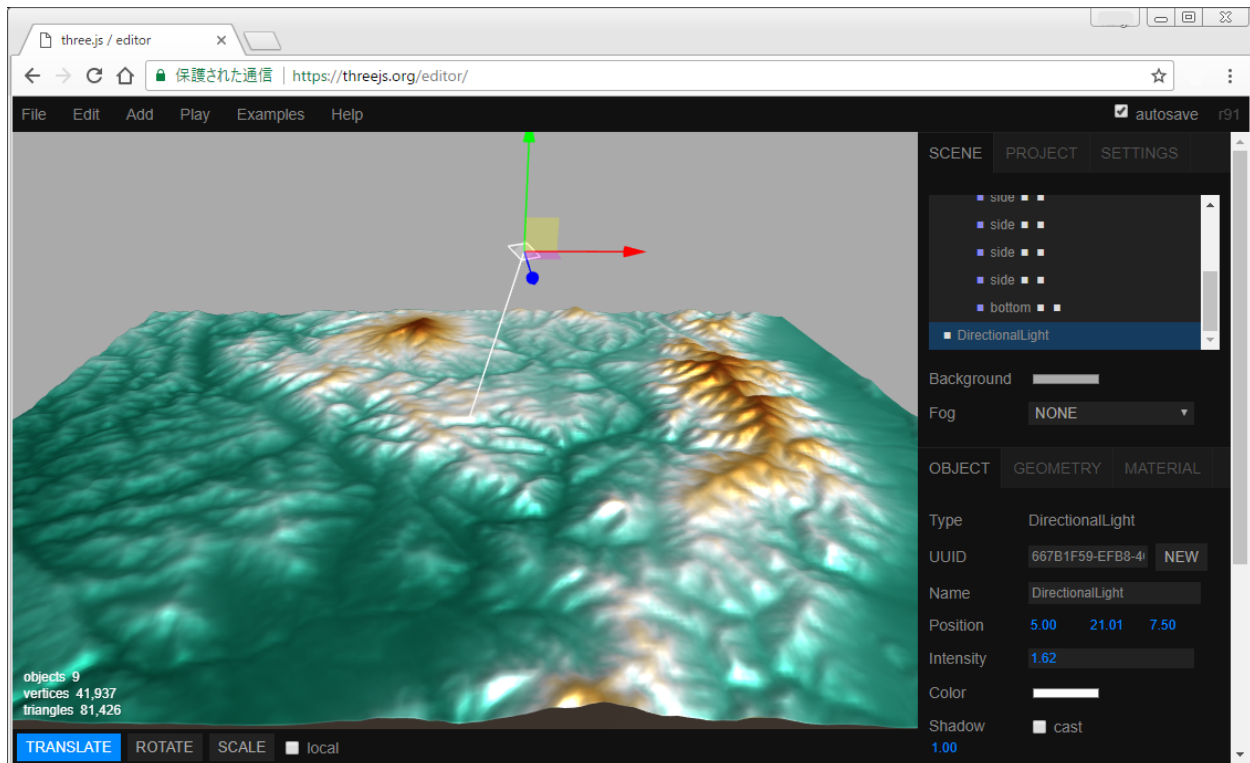
Here we export the scene to a glTF file and load it into the [three.js](#) editor.

Click on the `File - Save Scene As - glTF (.gltf, .glb)` menu entry, and select a filename to save the 3D model.

When the model has been saved, a message will be displayed at the top of the exporter window. Then, Click [here](#) to open the [three.js](#) editor.

Click on the `File - Import` menu entry and select the exported `.gltf` file to load it to the scene.

As there is no light, the object looks black. Click the `Add - DirectionalLight` menu entry to add a directional light to the scene.



## 2.9 In Conclusion

Tutorial is over. Now you know 3D visualization with QGIS is very easy. If you can use high-quality data, you can create beautiful 3D scenes!

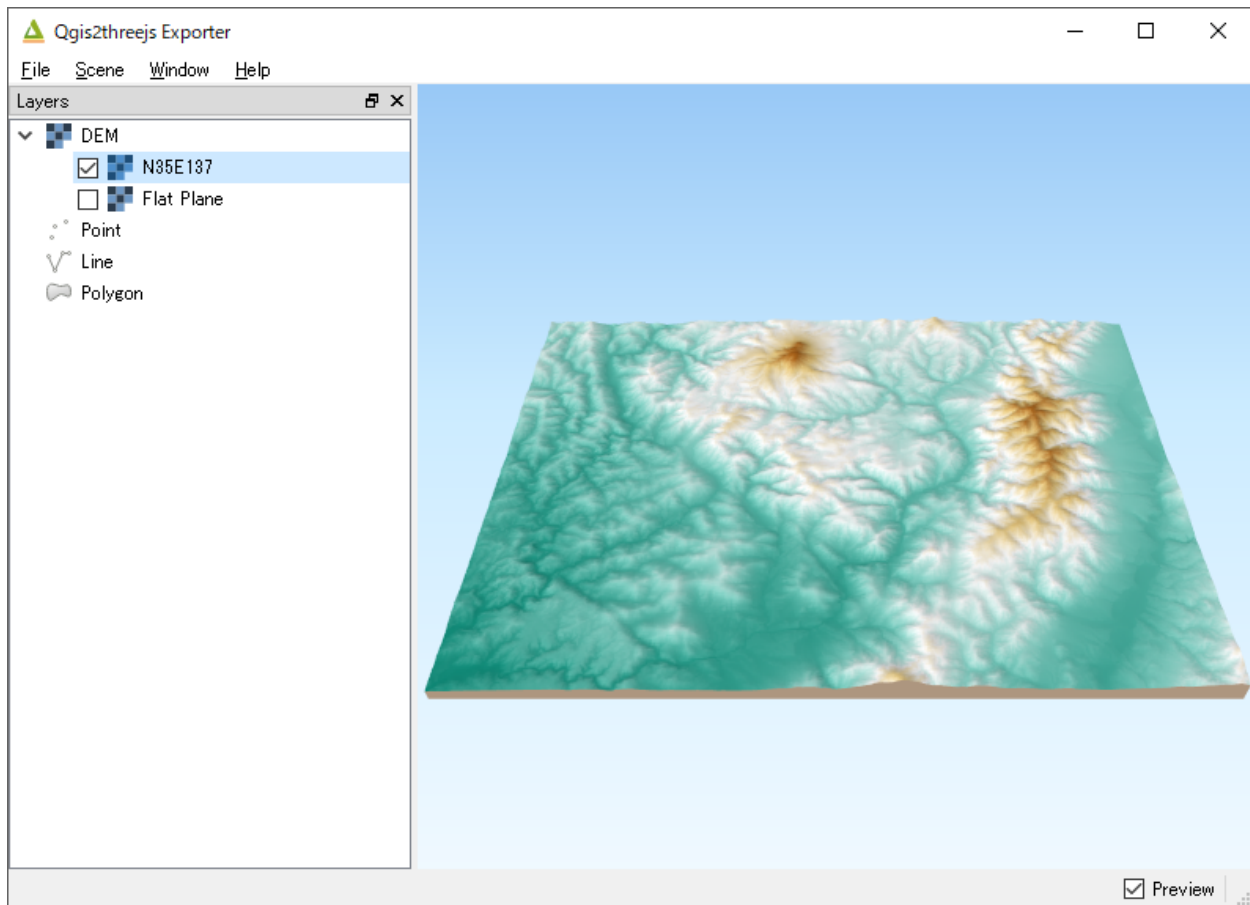
**Tip:** Next, how about adding a background map layer to the map canvas. You can do it easily with [QuickMapServices plugin](#). Also, how about adding vector data to the scene. [Object Types](#) page has example images of various object types. See [Exporter](#) for the detail.

### Contents

- *Window*
- *Scene Settings*
- *Camera Settings*
- *Controls Settings*
- *Decorations*
- *DEM Layer Settings*
- *Vector Layer Settings*
- *Export to Web Dialog*
- *Exporter Settings*

## 3.1 Window

Qgis2threejs exporter window has *Layers* panel on the left side and preview on the right side.



In this plugin, the word “export settings” means all configuration settings for a 3D scene, which consist of scene settings, camera settings, each layer settings and so on. You can configure them via *Scene* menu, *Layers* panel and *Export to Web* dialog.

In the *Layers* panel, each layer item has a checkbox on its left. Check the checkbox to add the layer to current scene. To open layer properties dialog and configure settings for the layer, double-click on the layer item or click on *Properties* from context menu (right click menu).

Export settings are automatically saved to a `.qto3settings` file under the same directory as the currently open project file if you are working with a project file. When you open the exporter later, the export settings of the project will be restored.

If you don't want to use preview, uncheck *Preview* checkbox in the lower right corner of the window. For example, you might want to uncheck it to avoid waiting for updating 3D objects in the scene for each export settings update,

### 3.1.1 Menu

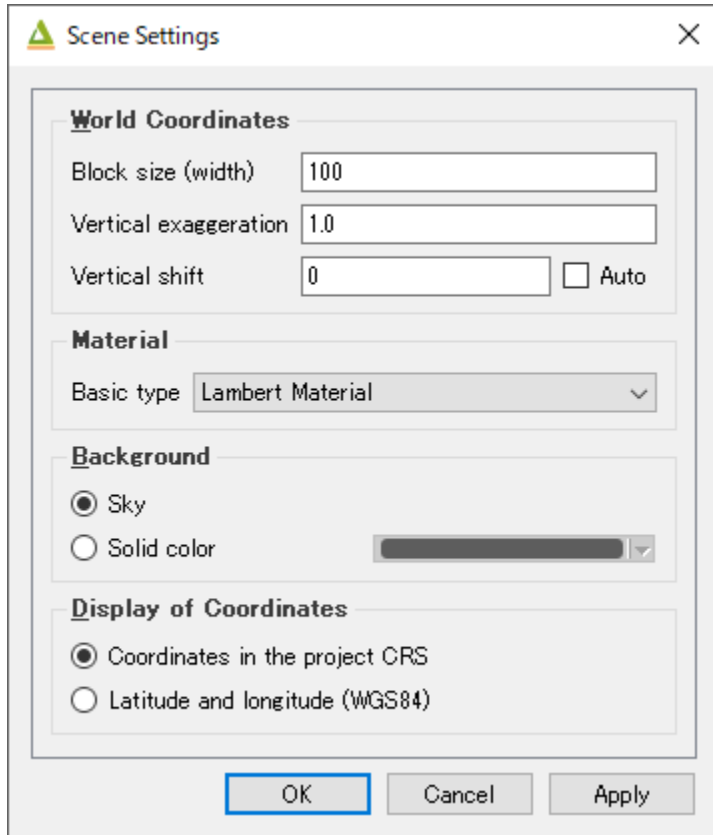
- File
  - **Export to Web...** Exports files necessary for publishing current scene to web. See *Export to Web Dialog* section.
  - **Save Scene As - Image (.png)** Saves rendered scene image to a PNG file.
  - **Save Scene As - glTF (.gltf,.glb)** Saves 3D model of current scene in glTF format.
  - **Exporter Settings...** Opens Exporter Settings dialog. See *Exporter Settings Dialog*



- **Close Exporter** Closes Qgis2threejs Exporter.
- Scene
  - **Scene Settings...** Opens Scene settings dialog. See *Scene Settings* section.
  - **Camera** Changes the camera. See *Camera Settings* section.
  - **Controls** Changes the controls. See *Controls Settings* section.
  - **Decorations** Add decorations to the view, such as North arrow and footer label. See *Decorations* section.
  - **Clear All Settings** Clears current export settings.
  - **Reload (F5)** Reloads current scene.
  - **Reset Camera Position (Shift+R)** Returns camera position to initial position and resets its view target to initial point (3D world origin).
- Window
  - **Panels**
    - \* **Layers** Toggles Layers panel visibility.
    - \* **Console** Toggles console panel visibility. Console panel displays information for debugging, mainly JavaScript side information. Python side debug information is logged to log messages panel in QGIS window. You can enter and execute JavaScript statements.
  - **Always on Top** Brings the exporter window to front of all other application windows.
- Help
  - **Help** Opens the plugin document in default browser. Internet connection is required.
  - **Plugin Homepage** Opens the plugin homepage in default browser. Internet connection is required.
  - **Send feedback** Opens the plugin issue tracking system in default browser. Internet connection is required.
  - **About Qgis2threejs Plugin** Displays the plugin version you are using.

## 3.2 Scene Settings

Scene settings dialog controls some basic configuration settings for current scene. Click on `Scene - Scene Settings...` menu entry to open the dialog.



- World Coordinates
  - Base size (width)
 

Size (width) in 3D world that corresponds to the map canvas width. The default value is 100.
  - Vertical exaggeration
 

Vertical exaggeration factor. This value affects terrain shape and z positions of all vector 3D objects. This also affects 3D object height of some object types with volume. Object types to be affected:

Point : Cylinder, Cube, Cone  
 Polygon : Extruded

3D objects of the following types have volume, but their heights aren't affected by this factor:

Point : Sphere  
 Line : Pipe, Cone, Box

The default value is 1.0.
  - Vertical shift
 

Vertical shift for all objects. If you want to export high altitude and narrow area, you should adjust the object positions to be displayed at the center of browser by changing this value. If you set the value to -1000, all objects are shifted down by 1000 in the unit of map CRS.
- Material
  - Basic type

MateMaterial type applied to most 3D objects, except for Point, Icon, Model File and Line type objects. Select a material type from [Lambert material](#), [Phong material](#) and [Toon material](#). Default is Lambert material.

- Background

Select either sky-like gradient or a solid color for the scene background. Default is Sky.

- Display of coordinates

If the `Latitude and longitude (WGS84)` option is selected, coordinates of clicked position on a 3D object are displayed in longitude and latitude (WGS84). If [Proj4js](#) doesn't support current map CRS, this option is disabled.

### 3.3 Camera Settings

- Perspective Camera

Renders closer objects as bigger and farther objects as smaller.

- Orthographic Camera

Rendered object size doesn't depend on the distance from the camera.

### 3.4 Controls Settings

OrbitControls is available.

Ctrl	Mouse / Keys	Touch
Orbit	Left mouse	One-finger move
Zoom	Middle mouse, or mousewheel	Two-finger spread or squish
Pan	Right mouse, or left mouse + ctrl/metaKey, or arrow keys	Two-finger move

### 3.5 Decorations

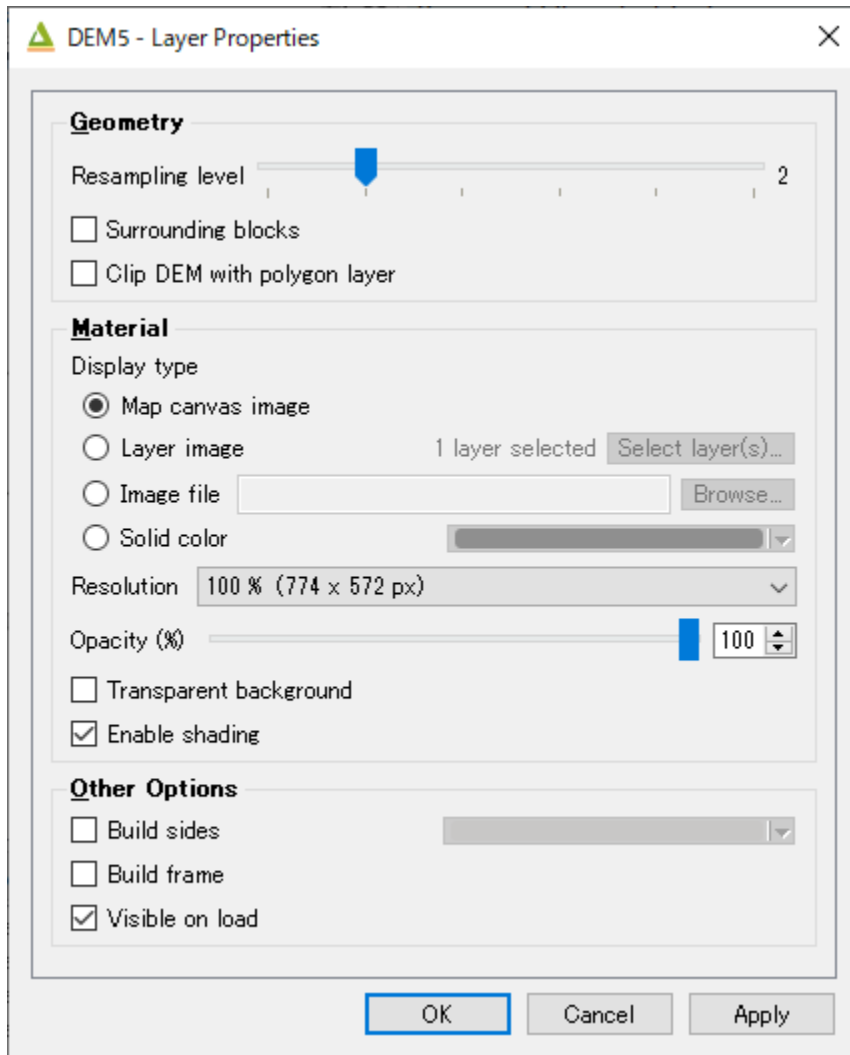
- North arrow

Adds an arrow that indicates the direction of grid North at the lower-left corner of the web page.

- Header/Footer label

Adds a header label to top-left corner of the web page and/or a footer label to lower-left corner. Label text can contain valid HTML tags for styling.

## 3.6 DEM Layer Settings



### 3.6.1 Geometry

- Resampling level

Select a DEM resolution from several levels. This resolution is used to resample the DEM, but is not for texture.

- Surrounding blocks

This option enlarges output DEM by placing DEM blocks around the main block of the map canvas extent. Size can be selected from odd numbers in the range of 3 to 9. If you select 3, total 9 (=3x3) blocks (a center block and 8 surrounding blocks) are output. Roughness can be selected from powers of 2 in the range of 1 to 64. If you select 2, grid point spacing of each surrounding block is doubled. It means that the number of grid points in the same area becomes 1/4.

- Clip DEM with polygon layer

Clips the DEM with a polygon layer. If you have a polygon layer that represents the area that elevation data exist or represents drainage basins, you might want to use this option.

### 3.6.2 Material

- Display type

You can choose from map canvas image, layer image, a image file or a solid color.

- Map canvas image

Render a texture image with the current map settings for each DEM block.

- Layer image

Render a texture image with the selected layer(s) for each DEM block.

- Image file

Textures the main DEM block with existing image file such as PNG file and JPEG file. TIFF is not supported by some browser. See [Image format support](#) for details.

- Solid color

To select a color, press the button on the right side.

- Resolution

Increases the size of image applied to each DEM block. This option is enabled when either `Map canvas image` or `Layer image` is selected. You can select a ratio to map canvas size from 100, 200 and 400 (%). Image size in pixels follows the percent.

- Opacity

Sets opacity of DEM object. 100 is opaque, and 0 is transparent.

- Transparent background (When map canvas image or layer image is chosen)

Makes image background transparent.

- Enable transparency (When image file is chosen)

Enables image transparency.

- Enable shading

Adds a shading effect to DEM surface.

### 3.6.3 Other Options

- Build sides

This option adds sides and bottom to each DEM block. The z position of bottom in the 3D world is fixed. You can adjust the height of sides by changing the value of vertical shift option in the World panel. If you want to change color, edit the output JS file directly.

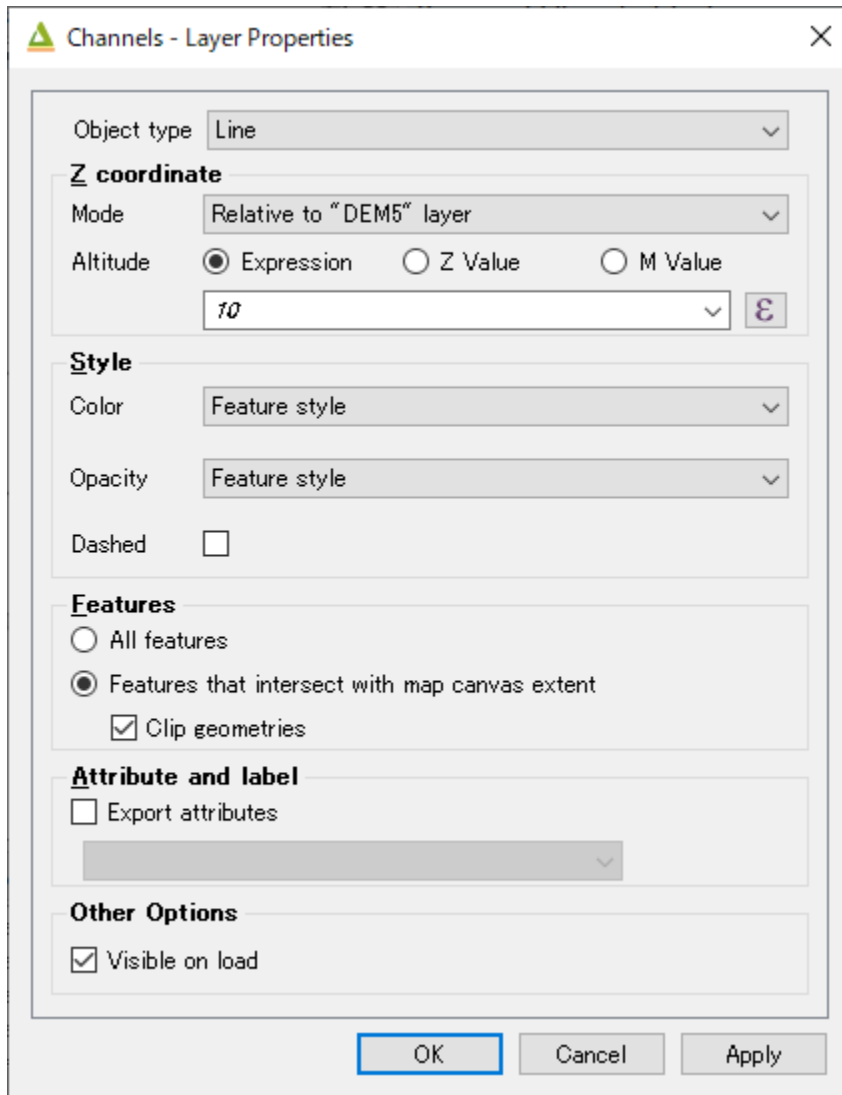
- Build frame

This option adds frame to the DEM. If you want to change color, edit the output JS file directly.

- Visible on Load

Whether the layer is visible on page load or not.

## 3.7 Vector Layer Settings



Vector layers are grouped into three types: Point, Line and Polygon. Common settings for all types:

- Z coordinate

- Altitude Mode

- \* Absolute

Altitude is distance above zero-level.

- \* Relative to (a DEM layer)

Altitude is distance above surface of selected DEM.

- Altitude

You can use an expression to define altitude of objects above zero-level or surface of selected DEM layer. This means that object altitude can be defined using field values. The unit is that of the map CRS.

- \* Expression

A numeric value, field or more complex expression (QGIS expressions).

- \* Z value / M value

Uses z coordinate or m value of each vertex. the evaluated value is added to it.

These options can be chosen when the layer geometries have z coordinates or m values.  
Cannot be chosen when the object type is Extruded or Overlay.

- Style

Usually, there are options to set object color and transparency. Refer to the links below for each object type specific settings. The unit of value for object size is that of the map CRS.

- Feature

Select the features to be exported.

- All features

All features of the layer are exported.

- Features that intersect with map canvas extent

Features on the map canvas are exported.

- \* Clip geometries

This option is available with Line/Polygon layer. If checked, geometries are clipped by the extent of map canvas.

- Attribute and label

If the export attributes option is checked, attributes are exported with feature geometries. Attributes are displayed when you click an object on web browser.

If a field is selected in the label combobox, a label is displayed above each object and is connected to the object with a line. This combo box is not available when layer type is line.

### 3.7.1 Point

Point layers in the project are listed as the child items. The following object types are available:

Sphere, Cylinder, Cone, Box, Disk, Plane, Model File

See *Point Layer* section in *Object Types* page for each object type specific settings.

### 3.7.2 Line

Line layers in the project are listed as the child items. The following object types are available:

Line, Pipe, Cone, Box, Wall

See *Line Layer* section in *Object Types* page for each object type specific settings.

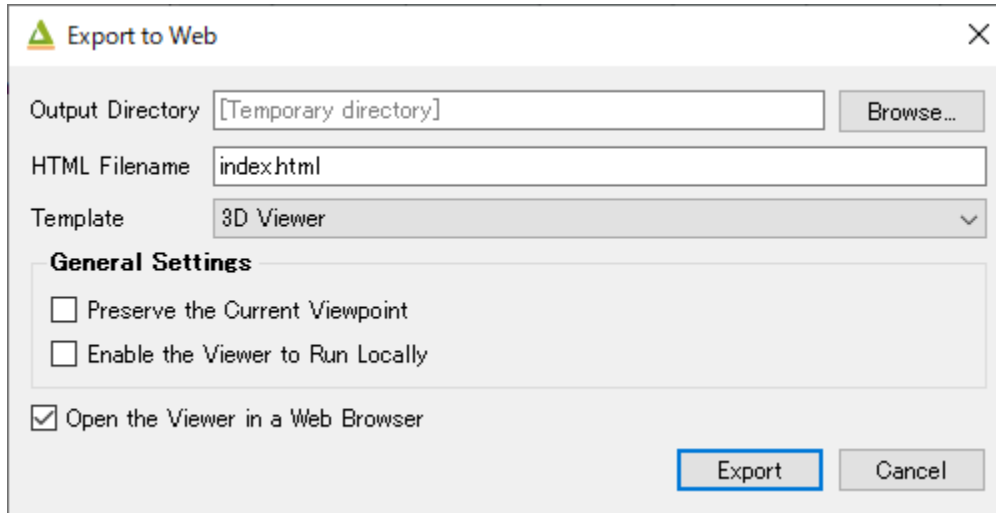
### 3.7.3 Polygon

Polygon layers in the project are listed as the child items. The following object types are available:

Polygon, Extruded, Overlay

See *Polygon Layer* section in *Object Types* page for each object type specific settings.

## 3.8 Export to Web Dialog



- Output directory and HTML Filename

Select output HTML file path. Usually, a js file with the same file title that contains whole data of geometries and images is output into the same directory, and some JavaScript library files are copied into the directory. Leave this empty to output into temporary directory. Temporary files are removed when you close the QGIS application.

- Export button

Exporting starts when you press the Export button. When the exporting has been done and *Open exported page in web browser* option is checked, the exported page is opened in default web browser (or a web browser specified in *Exporter Settings*).

- Template

Select a template from available templates:

- 3DViewer

This template is a 3D viewer without any additional UI library.

- 3DViewer(dat-gui)

This template has a *dat-gui* panel, which makes it possible to toggle layer visibility, adjust layer opacity and add a horizontal plane movable in the vertical direction.

- Mobile

This is a template for mobile devices, which has mobile friendly GUI, device orientation controls and AR feature. In order to use the AR feature (Camera and GPS), you need to upload exported files to a web server that supports SSL.

Option

- \* **Magnetic North Direction** Magnetic North direction clockwise from the upper direction of the map, in degrees. This value will be set to 0 if map canvas is rotated so that magnetic North direction is same as the map upper direction. Otherwise,



the value should be determined taking account of grid magnetic angle (angle between grid North and magnetic North) and map rotation. Used to determine device camera direction.

- General Settings

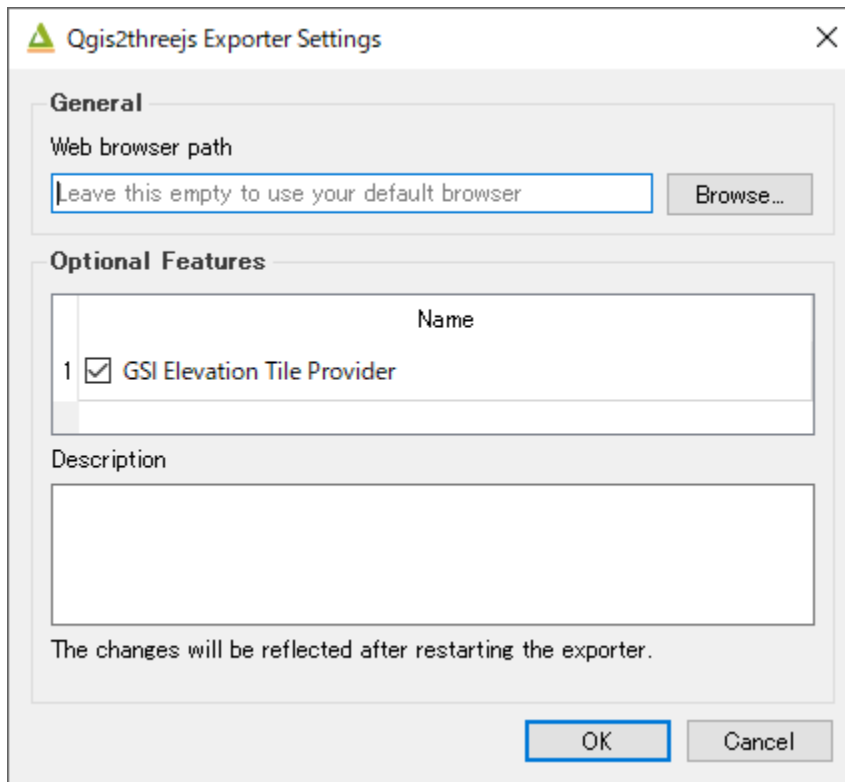
- Preserve the Current Viewpoint

If checked, the current viewpoint of the preview is used as initial viewpoint.

- Enable the Viewer to Run Locally

If checked, export all scene data to a .js file to avoid web browser's same origin policy security restrictions. You can view the exported scene without uploading it to a web server, although the total file size will increase and it will take longer to load.

## 3.9 Exporter Settings



- Web browser path

If you want to run the exported viewer with a web browser other than the default browser, enter path to the web browser in this input box. See [Browser Support](#) wiki page.

- Optional Features

See [Plugins](#) wiki page.



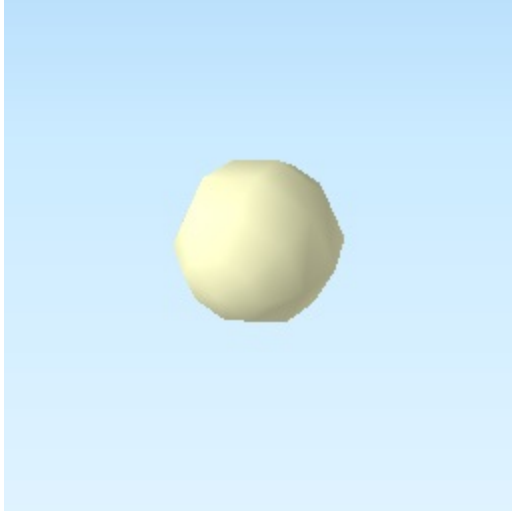
- *Point Layer*
  - *Line Layer*
  - *Polygon Layer*
- 

## 4.1 Point Layer

*Sphere | Cylinder | Cone | Box | Disk | Plane | Point | Icon | Model File*

### 4.1.1 Sphere

Sphere with specified radius, color and opacity



**Specific settings :**

- **Radius** Numerical value.

**Origin :**

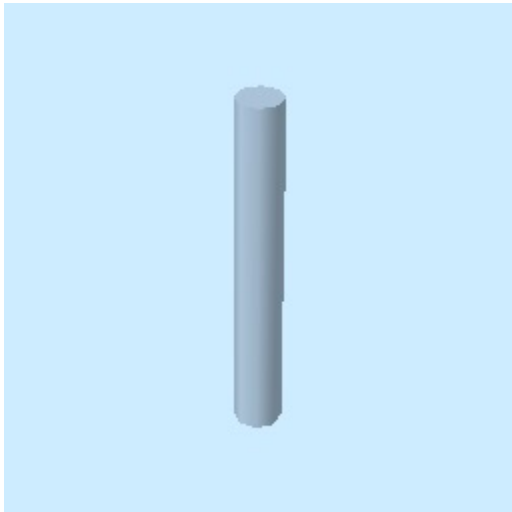
center of sphere

**three.js geometry class:**

`SphereBufferGeometry`

## 4.1.2 Cylinder

Cylinder with specified radius, height, color and opacity



**Specific settings :**

- **Radius** Numerical value.
- **Height** Numerical value.

**Origin :**

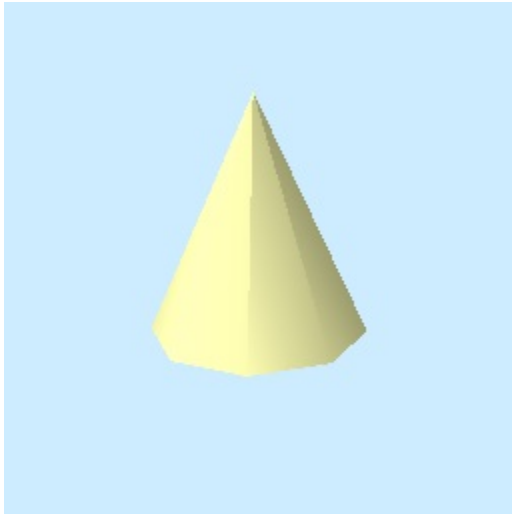
center of bottom (if height > 0)

**three.js geometry class:**

`CylinderBufferGeometry`

### 4.1.3 Cone

Cone with specified radius, height, color and opacity



**Specific settings :**

- **Radius** Numerical value.
- **Height** Numerical value.

**Origin :**

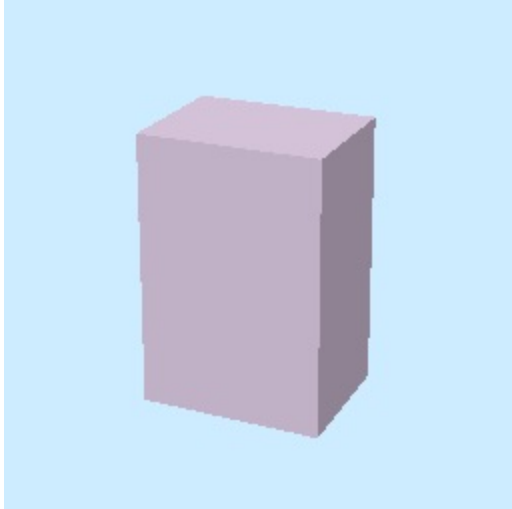
center of bottom (if height > 0)

**three.js geometry class:**

`CylinderBufferGeometry`

### 4.1.4 Box

Box with specified width, depth, height, color and opacity



**Specific settings :**

- **Width** Numerical value.
- **Depth** Numerical value.
- **Height** Numerical value.

**Origin :**

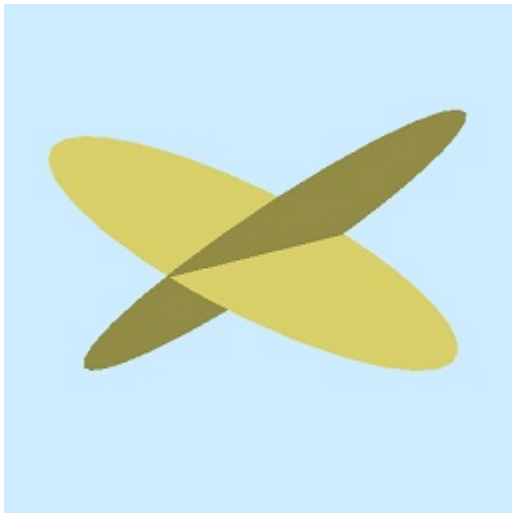
center of bottom (if height > 0)

**three.js geometry class:**

`BoxBufferGeometry`

### 4.1.5 Disk

Disk with specified radius, orientation, color and opacity



**Specific settings :**

- **Radius** Numerical value.

- **Dip** Numerical value in degrees. See [Strike and dip - Wikipedia](#).
- **Dip direction** Numerical value in degrees.

**Origin :**

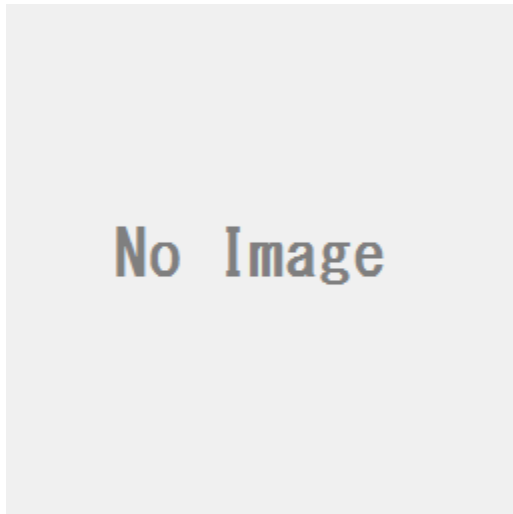
center of disk

**three.js geometry class:**

`CircleBufferGeometry`

### 4.1.6 Plane

Plane with specified length, width, orientation, color and opacity



**Specific settings :**

- **Width** Numerical value.
- **Length** Numerical value.
- **Dip** Numerical value in degrees. See [Strike and dip - Wikipedia](#).
- **Dip direction** Numerical value in degrees.

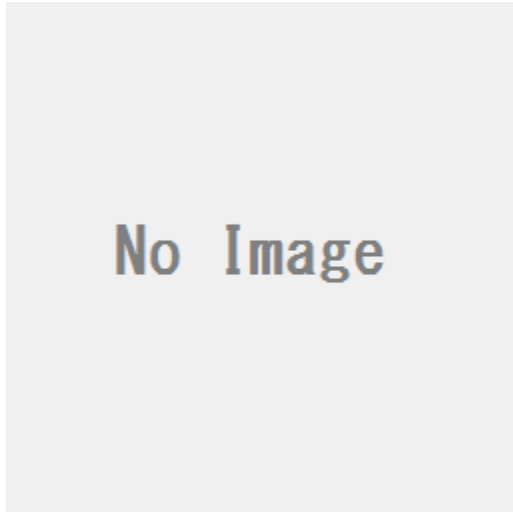
**Origin :**

center of plane

**three.js geometry class:**

`PlaneBufferGeometry`

### 4.1.7 Point



**Specific settings :**

- **Radius** Numerical value.

**Origin :**

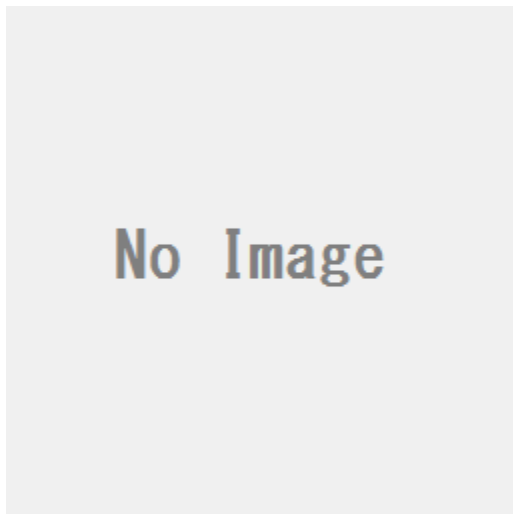
center of sprite

**three.js geometry class:**

`SphereBufferGeoemtry`

### 4.1.8 Icon

Image which always faces towards the camera. When an image file on local file system is specified, the image file is copied to the export destination. When an image file on a web server is specified, the model file is not copied.



**Specific settings :**

- **Image file** File path or URL.



- **Scale** Numerical value.

**Origin :**

center of sprite

**three.js object class:**

Sprite

### 4.1.9 Model File

Load 3D model from supported format model file. COLLADA (\*.dae) and glTF (\*.gltf, \*.glb) are supported. When a model file on local file system is specified, the model file is copied to the export destination. You need to copy the relevant files such as texture image after export. When a model file URL is specified, the model file is not copied.



**Specific settings :**

- **Model file** File path or URL.
- **Scale** Numerical value.
- **Rotation (x)** Numerical value in degrees.
- **Rotation (y)** Numerical value in degrees.
- **Rotation (z)** Numerical value in degrees.
- **Rotation Order** The options are XYZ, YZX, ZXY, XZY, YXZ and ZYX. See [Euler - three.js docs](#).

**Origin :**

origin of model

---

## 4.2 Line Layer

*Line | Pipe | Cone | Box | Wall*

### 4.2.1 Line



**Specific settings :**

no specific settings

**three.js object class:**

Line

Image was created with GSI Tiles (ort, dem).

### 4.2.2 Pipe

Places a cylinder to each line segment and a sphere to each vertex.



**Specific settings :**

- **Radius** Numerical value.

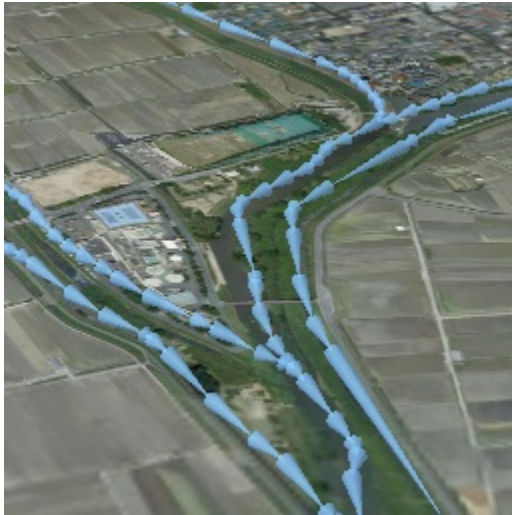
**three.js geometry classes:**

CylinderBufferGeometry and SphereBufferGeoentry

Image was created with GSI Tiles (airphoto, dem).

### 4.2.3 Cone

Places a cone to each line segment. Heading of cone is forward direction.



Specific settings :

- **Radius** Numerical value.

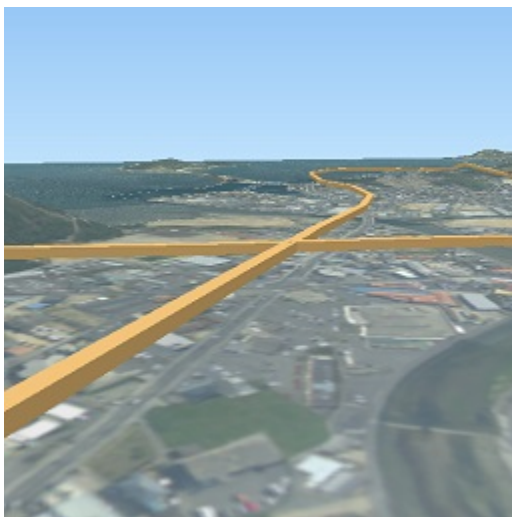
three.js geometry class:

`CylinderBufferGeometry`

Image was created with GSI Tiles (ort, dem) and National Land Numerical Information (Rivers. MILT of Japan).

### 4.2.4 Box

Places a box to each line segment.



Specific settings :

- **Width** Numerical value.
- **Height** Numerical value.

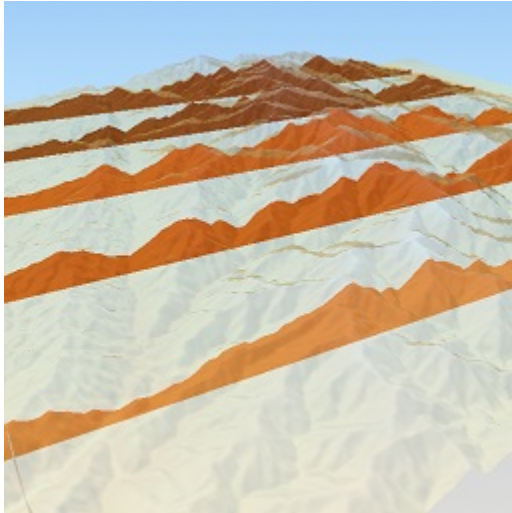
**three.js geometry class:**

`BoxGeometry`

Image was created with [GSI Tiles](#) (airphoto, dem).

### 4.2.5 Wall

Makes a vertical wall under each line segment.



**Specific settings :**

- **Other side Z** Z coordinate of the other side edge.

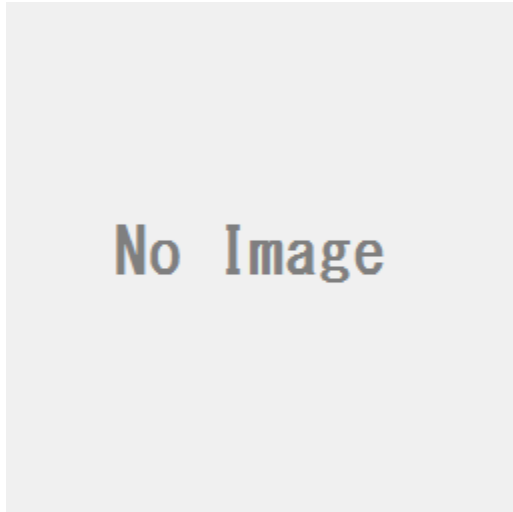
Image was created with SRTM3 elevation data.

---

## 4.3 Polygon Layer

*Polygon | Extruded | Overlay*

### 4.3.1 Polygon



Specific settings :

### 4.3.2 Extruded

Extruded polygon with specified height, color and opacity



Specific settings :

- **Height** Numerical value.

Image was created with [GSI Tiles](#) (ort, dem) and [OpenStreetMap](#) (© OpenStreetMap contributors, [License](#)).

### 4.3.3 Overlay

Overlay polygon draped on the main DEM with specified color, border color and opacity. When the altitude mode is *Relative to DEM layer*, each polygon is located at the relative height from the DEM surface. Otherwise, creates a flat polygon at specified altitude.



**Specific settings :**

- **Border** No border, feature style, random color or expression.

Image was created with [GSI Tiles](#) (ort, dem) and [National Land Numerical Information](#) (Sediment Disaster Hazard Area. Provided by Okayama prefecture, Japan).

---

## Web Viewer Templates

---

In Export to Web dialog, you can choose one from following available web viewer templates:

- *3D Viewer Template*
- *3D Viewer(dat-gui) Template*
- *Mobile Template*

### 5.1 Common Functions

There is a list of mouse/keyboard controls in about box. Press `I` key to show the box.

#### 5.1.1 Identifying Features

When you click on a 3D object, layer name that the object belongs to and the clicked coordinates (in order of x, y, z) are displayed. If `Latitude and longitude (WGS84)` option in `World Settings` is selected, longitude and latitude are in DMS format (degrees, minutes and seconds). If `Export attributes` option of each vector layer is selected, attribute values of the clicked feature follows them.

#### 5.1.2 Rotate Animation (Orbiting)

Pressing `R` key starts/stops rotate animation. Camera rotates around the camera target clockwise.

#### 5.1.3 Save Image

Press `Shift + S` to show save image dialog, then enter image size and click the OK button. In addition, with some web browsers, you need to click a link to save image. The image file format is PNG. To change label color and/or adjust label size, edit `Qgis2threejs.css` (`print-label` class).

---

**Note:** A known issue: Wrong image output if the size is too large ([issue #42](#))

---

## 5.1.4 URL Parameters

You can get current view URL in the about box, and later restore the view by entering the URL in the URL box of web browser.

Parameters used in view URL:

- cx, cy, cz: camera position
- tx, ty, tz: camera target

For example, `file:///D:/example.html#cx=-64.8428840144039&cy=-40.75234765087484&cz=24.603200058346065`

Other parameters:

- width: canvas width (pixels)
- height: canvas height (pixels)
- popup: pop up another window with specified width and height

## 5.2 3D Viewer Template

This template is a simple 3D viewer. Regardless of “Visible on load” layer setting, all exported layers are displayed on page load.

## 5.3 3D Viewer(dat-gui) Template

This template has a dat-gui panel, which allows changing layer visibility and opacity, and adding a horizontal plane.

### 5.3.1 Controls Box

The controls box has:

- layer sub menus
  - Each sub menu has:
    - a check box to toggle layer visibility
    - a slider to change layer opacity
- sub menu to control a vertically movable plane
- help button to show the about box

## 5.4 Mobile Template

This is a template for mobile devices, which has mobile friendly GUI and experimental AR feature. In order to use the AR feature (Camera and GPS), you need to upload exported files to a web server supporting SSL.



---

## Export Scenes using Processing Algorithm

---

Do you want to export many scenes as web pages, image files or 3D model files? You can do them using Qgis2threejs algorithms in Processing tool box. Qgis2threejs provides three algorithms - “Export as Web Page”, “Export as Image” and “Export as 3D Model”.

### 6.1 Step 1

Add a DEM layer that covers the whole area you are going to export, a vector layer to point out area of interest for each scene and any other layers to project. The vector layer is called as coverage layer and should have title field that contains string used as title of file to export.

### 6.2 Step 2

Open Qgis2threejs exporter and set up a scene.

### 6.3 Step 3

1. Open one of the Qgis2threejs algorithms from Processing toolbox.
2. Select the coverage layer and the title field, and configure other parameters. Coverage layer must be visible in QGIS project when “Current Feature Filter” option is checked.
3. Click on Run button.

**[|processing\\_export\\_web\\_dialog|](#)**

## 6.4 Algorithm Parameters

### 6.4.1 Common Parameters

- Coverage Layer

A vector layer. Creates and exports scenes focused on each feature of this layer.
- Title Field

A field that contains string used as title of file to export.
- Current Feature Filter

Hides coverage layer features other than currently focused feature from texture image to be rendered.
- Output Directory

Path to output directory.

### Advanced Parameters

- Scale Mode
  - Fit to Geometry

Zoom to current feature geometry.
  - Fixed scale (based on map canvas)

Use current map canvas scale.
- Buffer (%)

Default value is 10.
- Texture base width (px)

Default value is 1024.
- Texture base height (px)

In “Fit to Geometry” scale mode, leave this zero to respect aspect ratio of buffered geometry bounding box. In “Fixed scale” scale mode, aspect ratio of map canvas size is respected when this is set to zero. Default value is 0.
- Header Label

An expression which represents header label in HTML.
- Footer Label

An expression which represents footer label in HTML.
- Export Settings File (.qto3settings)

Optional. Path to export settings file. Leave this empty to use current export settings.

### 6.4.2 Export as Web Page

- Template

Select one of web page templates. See *Export to Web Dialog* in *Exporter* page and *Web Viewer Templates*.

### 6.4.3 Export as Image

- Image width  
Output image width in pixel. Default value is 2480.
- Image height  
Output image height in pixel. Default value is 1748.

### 6.4.4 Export as 3D Model

No specific settings.



---

## Export Scenes Programmatically using Python

---

You can also export many scenes programmatically using Python!

### 7.1 Step 1

You need to prepare an export settings file. The export settings contains various settings, so you might want to create the settings file using the Qgis2threejs exporter.

1. Open a QGIS project and click the Qgis2threejs icon in the web tool bar to open the Qgis2threejs exporter.
2. Add layers to scene, configure their settings, scene settings and decorations.
3. Click on the File - Export Settings - Save... menu entry, and then select a filename to save the export settings (file extension is `.qto3settings`).

### 7.2 Step 2

You are ready to play with Python. Let's open the QGIS Python console.

```
from PyQt5.QtCore import QSize
from Qgis2threejs.export import ThreeJSExporter, ImageExporter      # or ModelExporter
from Qgis2threejs.mapextent import MapExtent

# texture base size
TEX_WIDTH, TEX_HEIGHT = (1024, 1024)

path_to_settings = None      # path to .qto3settings file

# get map settings from current map canvas
mapSettings = iface.mapCanvas().mapSettings()

# extent to export
```

(continues on next page)

(continued from previous page)

```
center = mapSettings.extent().center()
width = mapSettings.extent().width()
height = width * TEX_HEIGHT / TEX_WIDTH
rotation = 0

# apply the above extent to map settings
MapExtent(center, width, height, rotation).toMapSettings(mapSettings)

# texture base size
mapSettings.setOutputSize(QSize(TEX_WIDTH, TEX_HEIGHT))

#
# 1. export scene as web page
#

filename = "D:/export/html_filename.html"

exporter = ThreeJSExporter()
exporter.loadSettings(path_to_settings)      # export settings (for scene, layers,
↳decorations and so on)
exporter.setMapSettings(mapSettings)        # extent, texture size, layers to be
↳rendered and so on
exporter.export(filename)

#
# 2. export scene as image
#

filename = "D:/export/image_filename.png"

# camera position and camera target in world coordinate system (z-up)
CAMERA = {"position": {"x": -50, "y": 50, "z": 30},    # above left front of DEM block
          "target": {"x": 0, "y": 0, "z": 0}}        # origin

exporter = ImageExporter()
exporter.loadSettings(path_to_settings)
exporter.setMapSettings(mapSettings)

exporter.initWebPage(1024, 768)              # output image size
exporter.export(filename, cameraState=CAMERA)
```

## CHAPTER 8

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### Development

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This plugin is now being developed personally by [Minoru Akagi](#), and received many contributions.

Many thanks to all the [contributors](#)! Thanks also to bug reporters and everyone who gave me constructive suggestions!

Source Code: <https://github.com/minorua/Qgis2threejs/>

Issue Tracker: <https://github.com/minorua/Qgis2threejs/issues>





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