



POINT CLOUD VIEWER INSTRUCTIONS

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1.0 OVERVIEW

Welcome to the Cal Engineering & Geology Point Cloud Viewer. The Point Cloud Viewer is a tool used within a browser to display georeferenced and/or scaled point clouds without the need to purchase or install any specialized hardware or software. Our viewer gives you unprecedented access to your site digitally and provides tools that allow you to navigate data, measure distances, create path profile sections, view points colored based on attributes (e.g. coloring schemes based on LiDAR standard classification, elevation, or image color (RGB)), and export data. The viewer will run in most internet browsers, but Google Chrome is recommended for viewing the data.

The intent of this brief guide is to give the user basic instructions for the functions available with the Point Cloud Viewer. Developing our viewer and complementing instructions is an ongoing process and some functions are discussed in detail while others are left for the user to discover themselves.

2.0 ACCESSING THE POINT CLOUD VIEWER

The Point Cloud Viewer location is exclusive for each individual client and will only be made available to those with whom you permit access. (See *4.0 Disclaimer* for details). To get started.

1. Open your web browser.
2. **Navigate to the Point Cloud Viewer at:** <http://www.caleng.com/Point-Cloud-Viewer>
3. Select a point cloud to view.
4. Begin navigating the point cloud!

3.0 POINT CLOUD VIEWER NAVIGATION AND TOOLS

3.1 EXPLORING YOUR POINT CLOUD

3.1.1 Mouse Navigation Functions

The mouse has three functions:

- Click and hold the left-mouse button to spin the model about the origin (center of the screen) in three dimensions.
- Click and hold the right-mouse button to pan across the screen, moving the point of origin.
- Zoom in and out of the point cloud using the scroll wheel.

3.2 EXPLORING THE SIDEBAR

In the upper left corner of the viewer, there is a three-horizontal-bar button. Clicking the button will expand the sidebar to reveal five tabs: Appearance; Tools; Scene; Classification Filter; and About.

3.2.1 Appearance Tab

Click on the *Appearance* tab to expand the toolbar. In general, the features in this tab will increase/decrease the resolution of the model.

- Adjust the *Point Budget* sidebar to the right to increase and to the left to decrease the viewable points. Point clouds can be large (>40,000,000 points); adjust to the user's desired resolution.
 - Default setting displays 1,000,000 points.
- Adjust the *Field of View* sidebar to the right to increase and to the left to decrease the scope of the viewer. It is different than zooming with the mouse.
 - Default field of view setting = 60.
- Press any of the four *Background* buttons to change the background color or scene of the viewer.

- Skybox – default setting
 - Gradient
 - Black
 - White
 - None
- Press either of the two *Splat Quality* buttons to adjust the sampling density and lighting computations for each point. Holes in the rendered image (e.g. when zooming) are avoided by splatting.
 - Standard – The default setting.
 - High Quality – Increases the quality of the splatting, which can slow your rendering time (i.e. slow the viewer down) depending on your internet speed.
 - Adjust the *Node Size* sidebar to the right to increase and to the left to decrease the point radius.

3.2.1 Tools Tab

Click on the *Tools* tab to expand the toolbar.

- Features under *Measurements* will do just that - take measurements. Hovering over each icon will show the name of each function.
 - The *Distance Measurement* tool measures the distance between selected points.
 1. Click the tool.
 2. Left click the mouse at a starting point.
 3. Move the mouse to the point you want to measure.
 4. Left click the mouse to create another starting point.
 5. Right click the mouse to end use of the *Distance Measurement* tool.
The measurement will be displayed on the scene in ft.
 - The *Height Profile* tool draws a profile path that can be transformed into a 2D cross section.

1. Select the *Height Profile* tool.
 2. Click on the cloud to begin drawing a path.
 3. Click a second time to create another point.
 4. Right click to end the path. A red line will follow the topography of the cloud along your path.
 5. Expand the *Scene* tab and click the *Show 2D Profile* button to open the profile window.
- The *Clipping* section allows cross section cuts, and volume clips to highlight and/or remove desired areas.

3.2.2 Scene Tab

Click on the *Scene* tab to expand the toolbar. Any point clouds and measurements you have created will be available here and their visibility can be turned on and off by checking or unchecking, respectively, their boxes.

- Under *Export*, the data can be exported to a java script format or CAD DXF format.
- *Objects* highlight the imported and created datasets, clips, and measurements. Under point clouds, select the displayed point cloud. Three new sections will appear: *Properties*; *Attribute*; and *RGB*.
 - The *Properties* section has a scrollbar to adjust the size of the displayed points and menus to:
 - allow/prevent point resizing based on view, and
 - change the shape of the point.
 - The *Attribute* section has a drop down menu that changes the color scheme of the point cloud based on RGB, orthoimagery colors, RGB and Elevation, Elevation, and Classification. **Note – Option availability will vary and will depend on point cloud acquisition and scope of work.*
 - The *RGB* slidebars adjust the colors of your point cloud.

3.2.3 Classification Filter Tab

Click on the *Classification* Filter tab to expand the toolbar. Listed here is the standard LiDAR point classification scheme. **Note – Option availability will depend on point cloud acquisition and scope of work.*

- The *Classification* setting under *Attribute* (see *Scene* Section) should be selected. Points can be turned on and off based on standard LiDAR classifications. For example, leaving *Ground* enabled while disabling all other classifications will display all ground points in the viewer.

4.0 DISCLAIMER

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