

# Volume Viewer Documentation

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The Volume viewer project was initialized by the [Center for computation and visualization](#) (CCV) at Brown University as an opensource project to visualize [3D volume data](#) in the YURT ( Yurt Ultimate Reality Theater). It is build on top of [MinVR](#) which is a multiplatform library to run C++/OpenGL applications in multiple devices (Monitor, VR headsets, CAVE multi display systems), allowing it to render volumes on Desktops and VR headsets without chaging a single line of code. Nowadays it works as simple tool to visualize data for the [Rhode Island Discovery Center](#). Currently it works on multiple platforms:

- Windows (Desktop and VR)
- Macos (Desktop)
- LInux (Desktop)

## Installation

The most recent release can be found at [<https://github.com/brown-ccv/VR-Volumeviewer/releases>]. Download the version that works on your local O.S.

## Installation for devs

1. Clone the [VolumeViewer](#) repo
2. In a temrinal go to [VolumeViewer/superbuild](#) folder
3. For [debug](#) build type: `cmake -S . -B .` For [release](#) build type: `cmake -S . -B . -DCMAKE_BUILD_TYPE=Release` [RelWithDebInfo](#) can be used on Windows.
4. Once all the dependencies have been downloaded and installed: On Windows go to the [superbuild](#) folder and open the Visual studio [VR-VolumeViewer.sln](#) solution. Right click on the VR-VolumeViewer project and select [build](#) On Macos and Linix type [make](#)

You should find inside the fodler [superbuild/bin](#) the [VR-VolumeViewer](#) executable.

## For Windows-Visual Studio devs

If you want to run the application from Visual Studio:

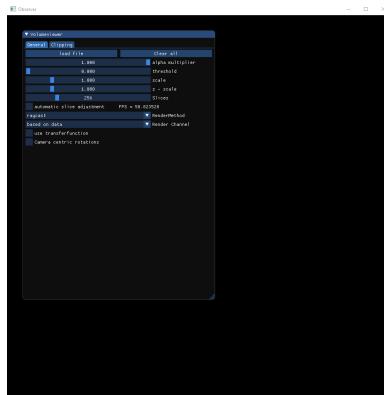
1. Open the [VR-VolumeViewer.sln](#) solution
2. Right click on the VR-VolumeViewer project and select [properties](#)
3. On the output folder section delete the last trail of the path so it points to the [bin](#) folder. i.e: Change [VR-Volumeviewer\bin\Debug](#) to [VR-Volumeviewer\bin](#)
4. Right click on the VR-VolumeViewer project and select [Set as Startup project](#)
5. You can run the application from the Visual Studio debugger.

## How to use it ?

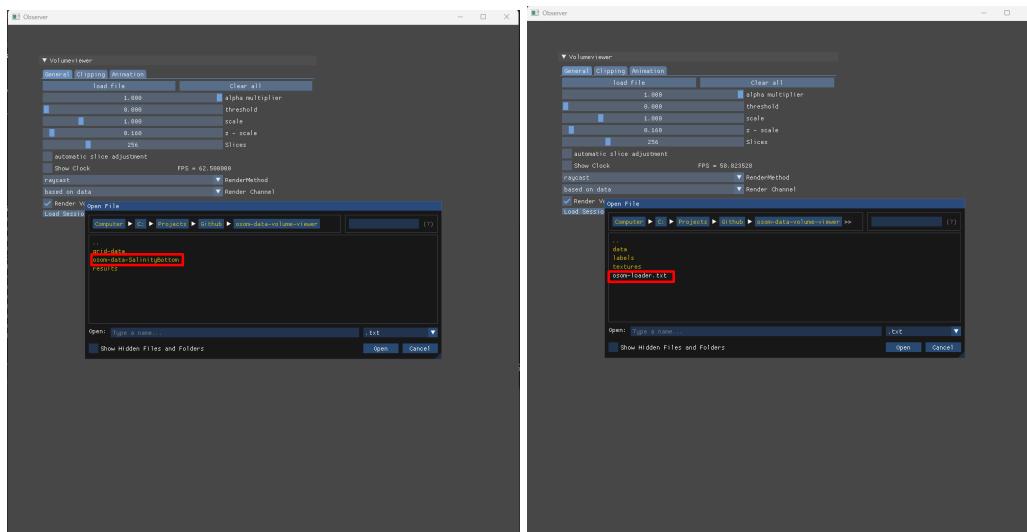
### RIDDC Osom data visualizer

1. Go to the [RIDDC website](#)
2. At the left side index, select [Visualize OSOM data using OSOM 3D volume viewer](#)

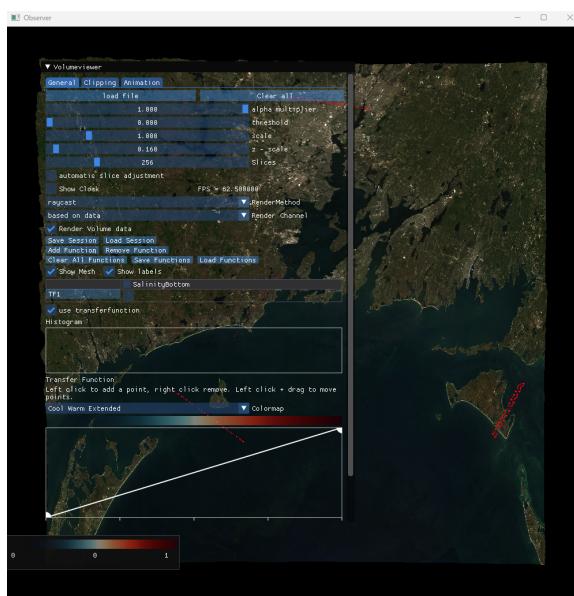
3. At the top use the link to open the notebook on [Google Collab](#)
4. Follow the steps to produce and download the volume viewer package
5. Open the volume viewer application In the volume viewer root folder execute the file [bin/VR-VolumeViewer](#)



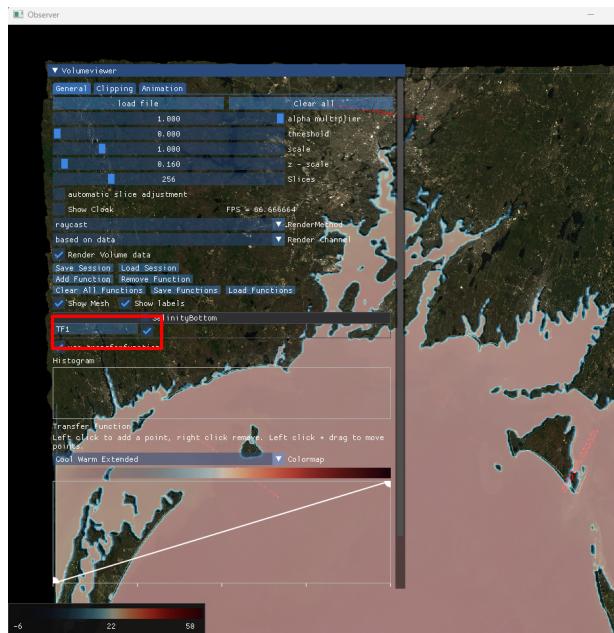
6. Click the [load file](#) button and locate the osom data folder you downloaded in step 4. Locate the [osom-loader.txt](#) file, and click [Open](#) (Or double click on the file)



7. Your RIDDC data has been loaded if you see the following image



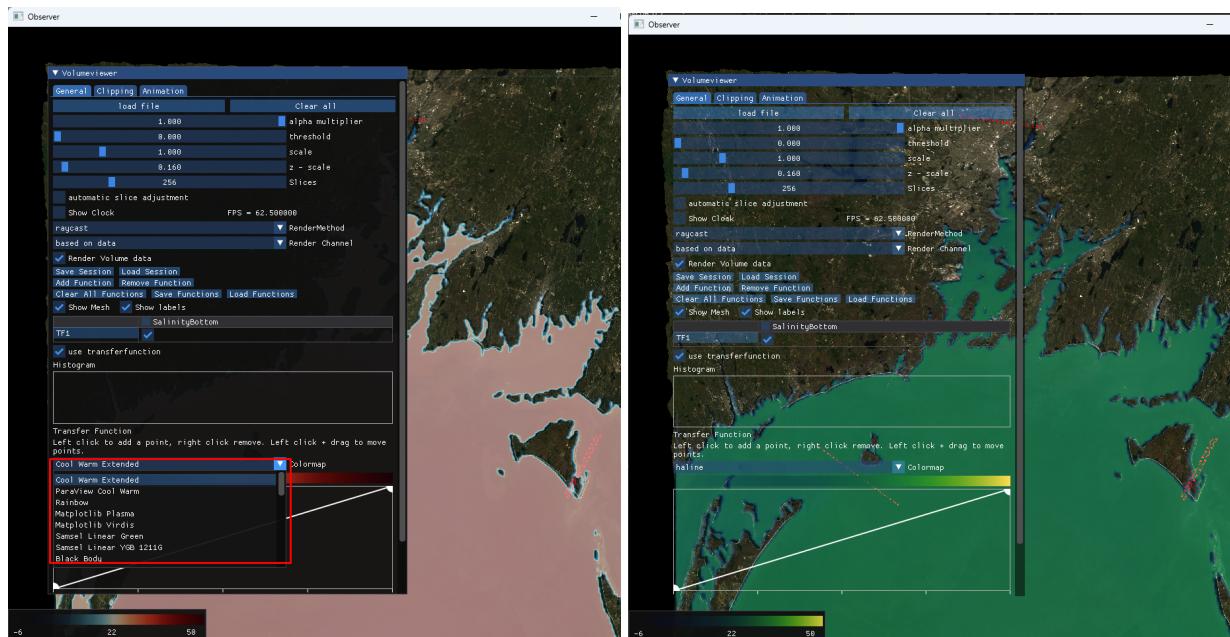
8. To visualize the volume, check the Transfer function to map on the volume data



9. The legend at the bottom left shows the minimum and maximum values of the dataset.

## Color Maps

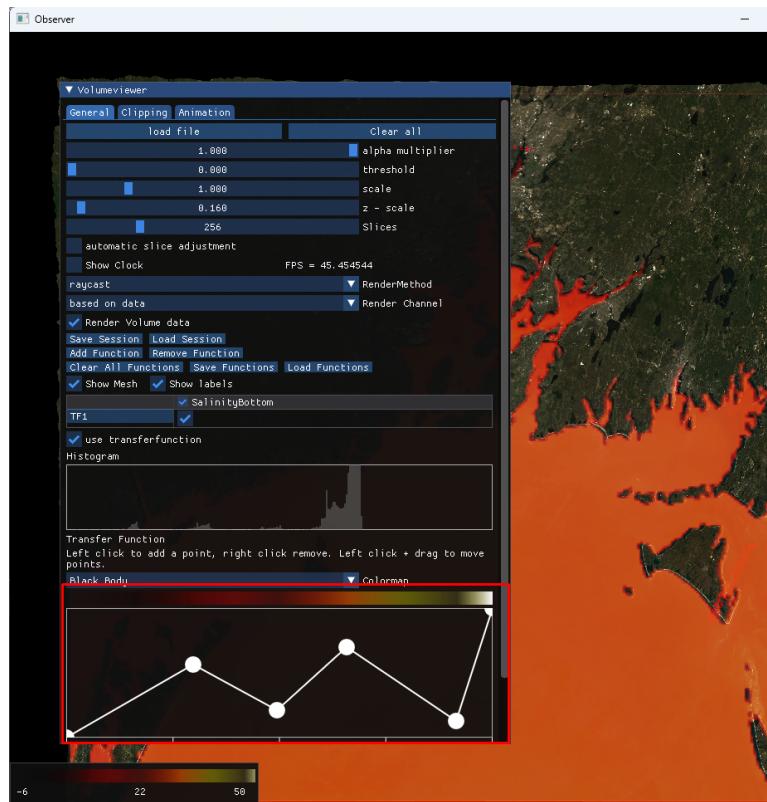
You can change the color mapping of the volume by selecting a texture from our list.



## Transfer functions

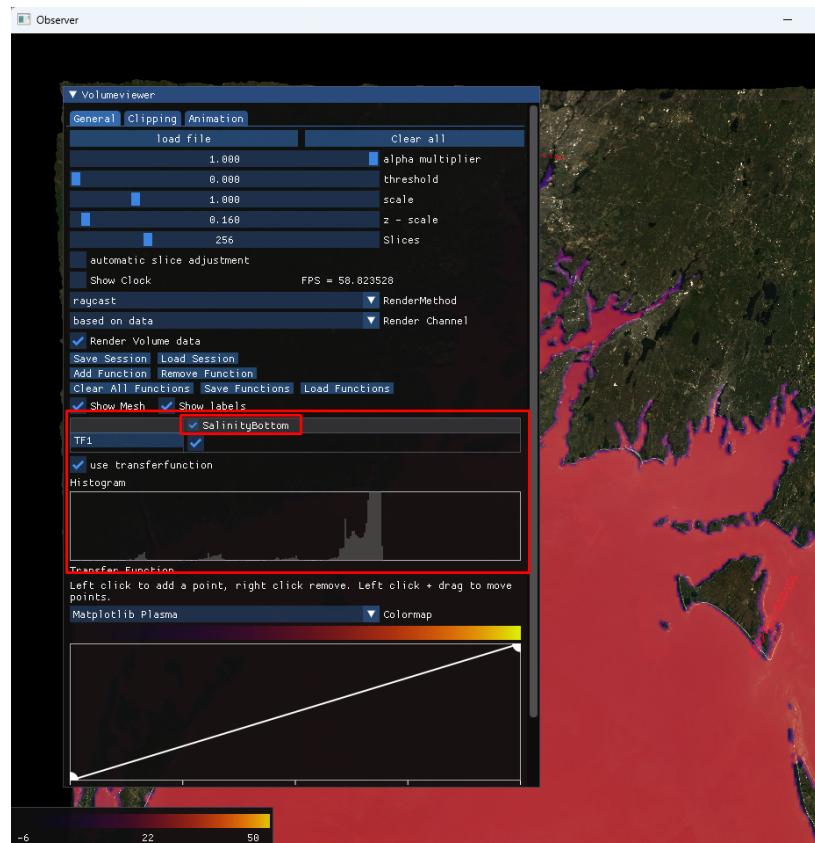
Play with the transfer function graph:

- To add points just press left click on the canvas and the function will be interpolated to the new point
- To remove points press right click on the point you want to delete.
- Press and hold left click on a point and move it across the canvas to modify the graph function



## Histograms

To observe the volume's histogram enable the checkbox right next to the data set's name.



## Save User session

You can save the modifications in the visualization by saving your session. Just click on the **Save session** button and select the folder you want to save it. To load the session click on **Load session** and select the **.usr** session file.

