

Web Master Visual tRIBS User Guide

I. Installation

Visual tRIBS utilizes Python 3.7 and could be installed on your local computer (a) or using the web-based version (b).

a. Using Virtual Environment

1. Open a terminal tab.
2. Navigate to the project folder using command:

```
cd path/to/project/folder
```

3. Create a virtual environment using the command:

```
conda create -n VisualtRIBS python=3.7
```

4. Activate the virtual environment:

```
conda activate VisualtRIBS
```

5. Install required packages:

```
pip install -r requirements.txt
```

b. Using Web-Based Version

The web-based version of Visual tRIBS is hosted on Heroku at:

<https://visualtribs.herokuapp.com/>

No further installation is required.

II. User Guide

1. Start the program

To start Visual tRIBS, navigate to the folder using the command:

```
cd path/to/project/folder
```

Start the program with the command:

```
python index.py
```

Open an internet browser and type the address below in the search bar and hit enter:

```
127.0.0.1:8050/
```

2. Program Layout

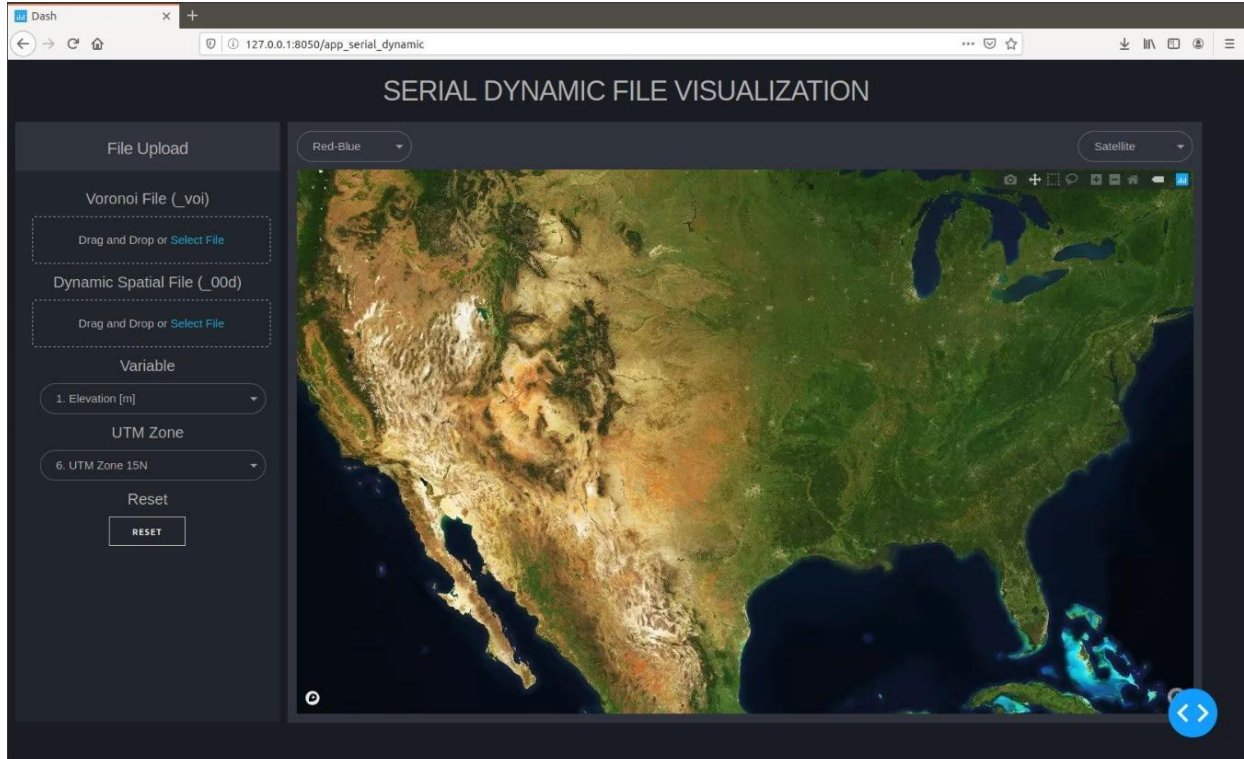


Figure 1: VisualRIBS Layout

The layout of VisualRIBS is illustrated in figure 1. The left panel shows the file upload options, variable to visualize, and the corresponding UTM zone of the simulated basin. The right panel shows the high-resolution map with color scheme option (top left) and the type of basemap (top right).

2. Select the Voronoi Polygon file (_voi, _voi.#)

To upload the voronoi polygon file, click the box below Voronoi File (_voi) on the left panel, a pop-up box will open and the selected _voi file will be uploaded.

To upload the voronoi polygon file from parallel simulation, select all the applicable voronoi polygon files (_voi.#) for the basin and upload them. It is necessary that the order of the uploaded voronoi polygon files be the same as the spatial files (_00d.#)

3. Select the Spatial Dynamic file (_00d)

To upload the spatial dynamic file, click the box below Spatial Dynamic (_00d) on the left panel, a pop-up box will open and the selected _00d file will be uploaded.

To upload the vo spatial dynamic file from parallel simulation, select all the applicable spatial dynamic files (_00d.#) for the basin and upload them. It is necessary that the order of the uploaded spatial dynamic files be the same as the voronoi polygon files (_00d.#)

Note: The order of the uploaded voronoi files must be the same as the order of the uploaded spatial file in parallel visualization, e.g: if you upload _voi.1, _voi.2, _voi.3 or _voi.2, _voi.3, _voi.1 for polygon files then the correct order for spatial files is _00d.1, _00d.2, _00d.3 or _00d.2, _00d.3, _00d.1, respectively.

4. Select the variable to visualize

To visualize a variable, click on the box below the Variable on the left panel, there are 54 variable options for the spatial dynamic file (_00d) and 55 variable options for the time-integrated spatial file (_00i).

5. Select Projection:

Since tRIBs utilizes Easting/Northing convention for projection, it is necessary to convert the coordinates to the Universal Transverse Mercator Coordinate System (UTM) to project the simulated basins onto the world map. To select corresponding UTM zone of the simulated watershed, click the UTM Zone option on the left panel.

6. Select Color Scheme

To select a color scheme, click the bar on the top left of the map.

7. Select Basemap

To select base map, click the bar on the top right of the map. There currently are 4 options for the basemap:

- Outdoor: Basemap with street names and elevation contour lines (Figure 2)

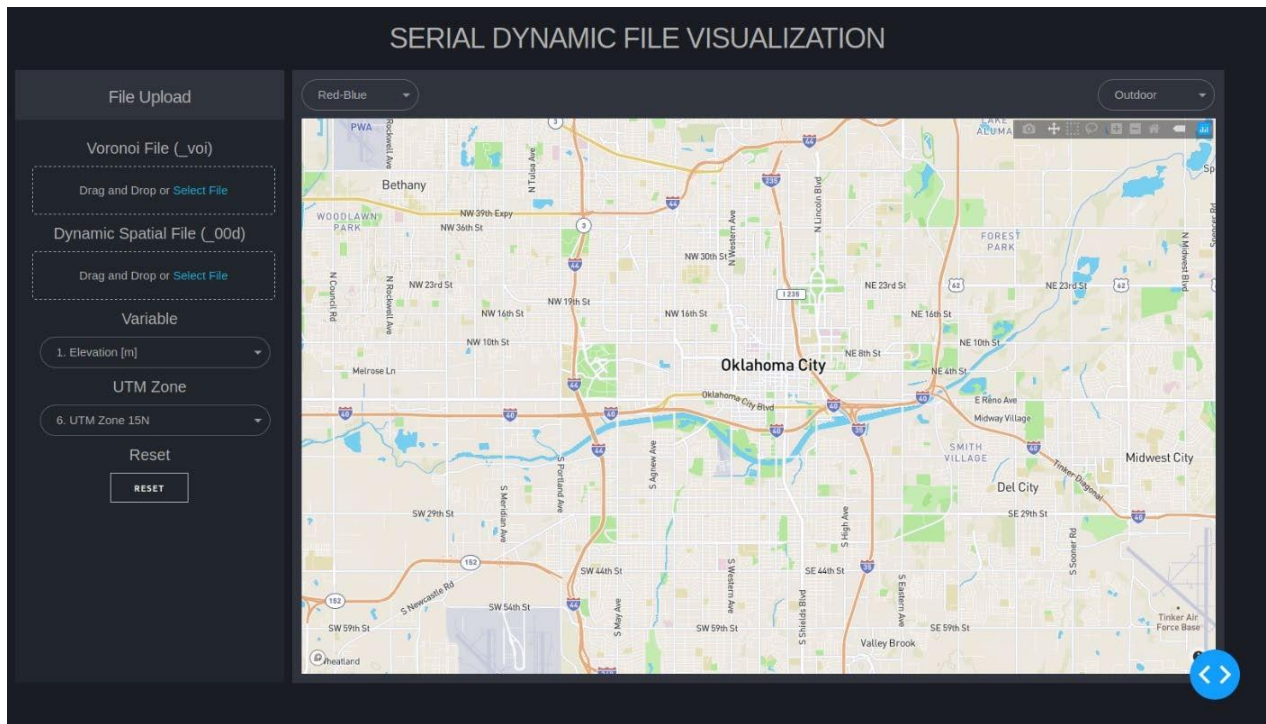


Figure 2: Outdoor Basemap

- Satellite: Basemap with high-resolution satellite images without street names (Figure 3)

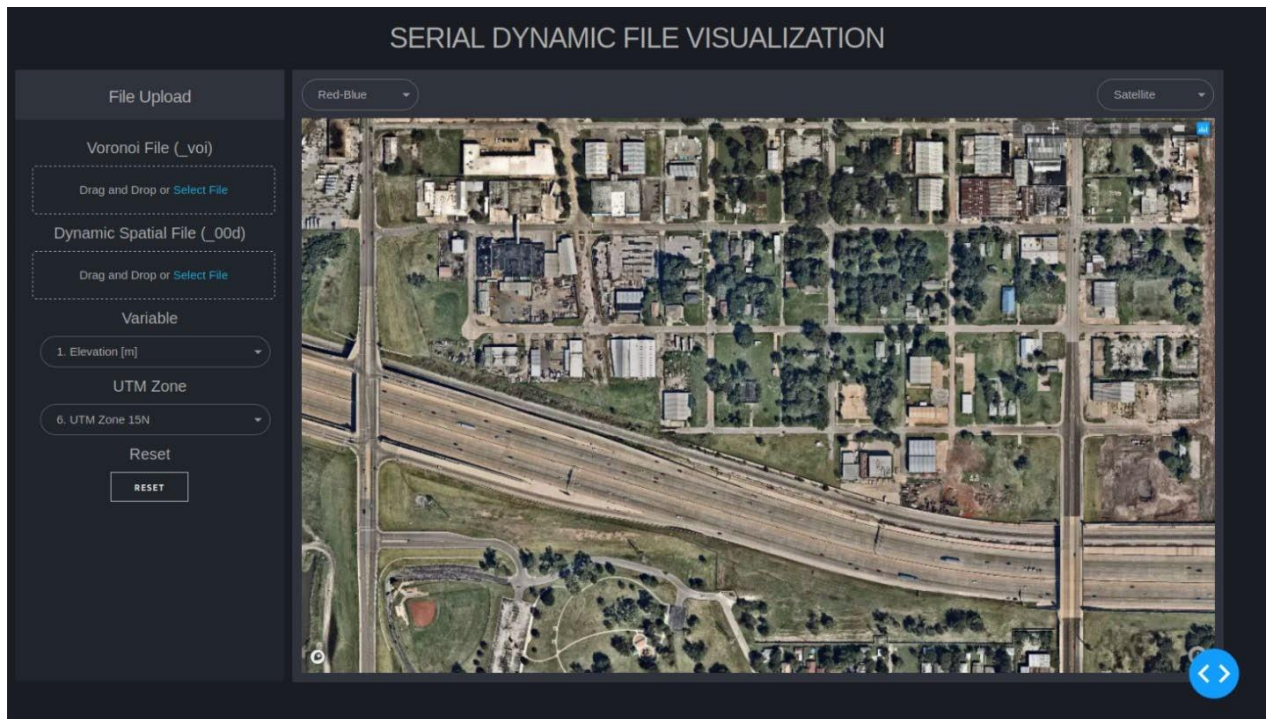


Figure 3: Satellite Basemap

- Open-Street: Basemap with detailed street names without elevation contour lines (Figure 4)

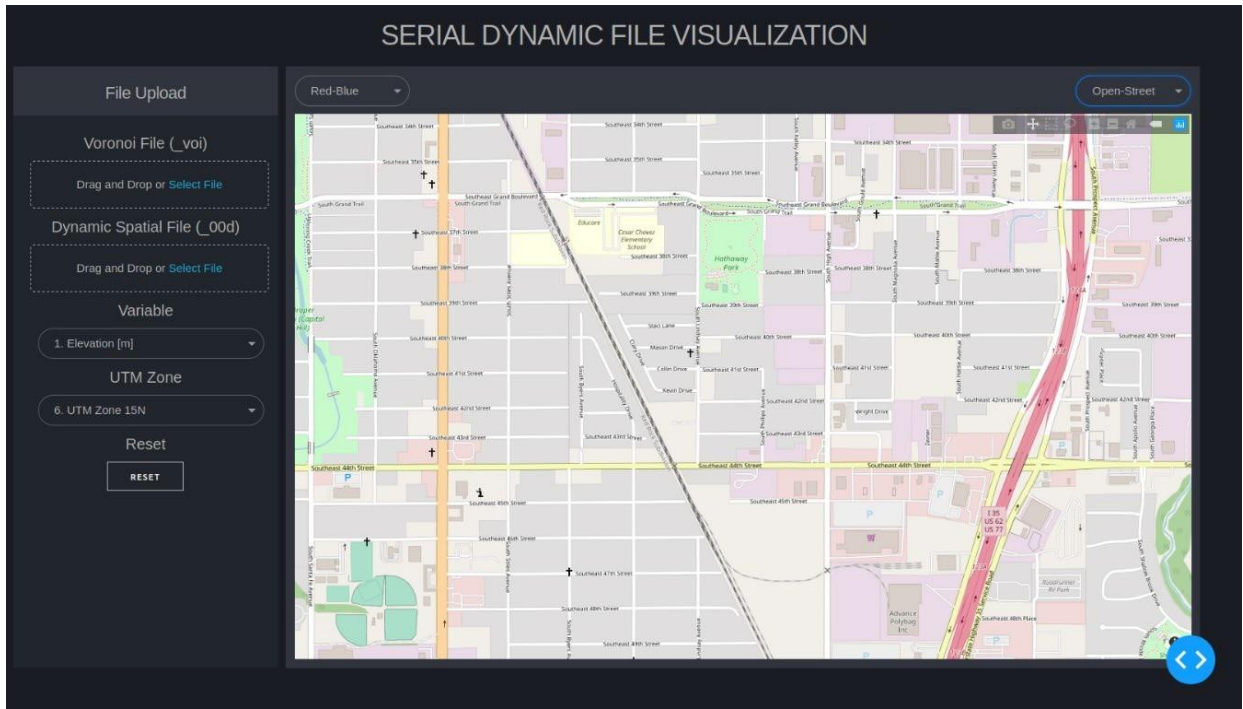


Figure 4: Open-Street Basemap

- Street: Basemap with high-resolution satellite images and street names (Figure 5)

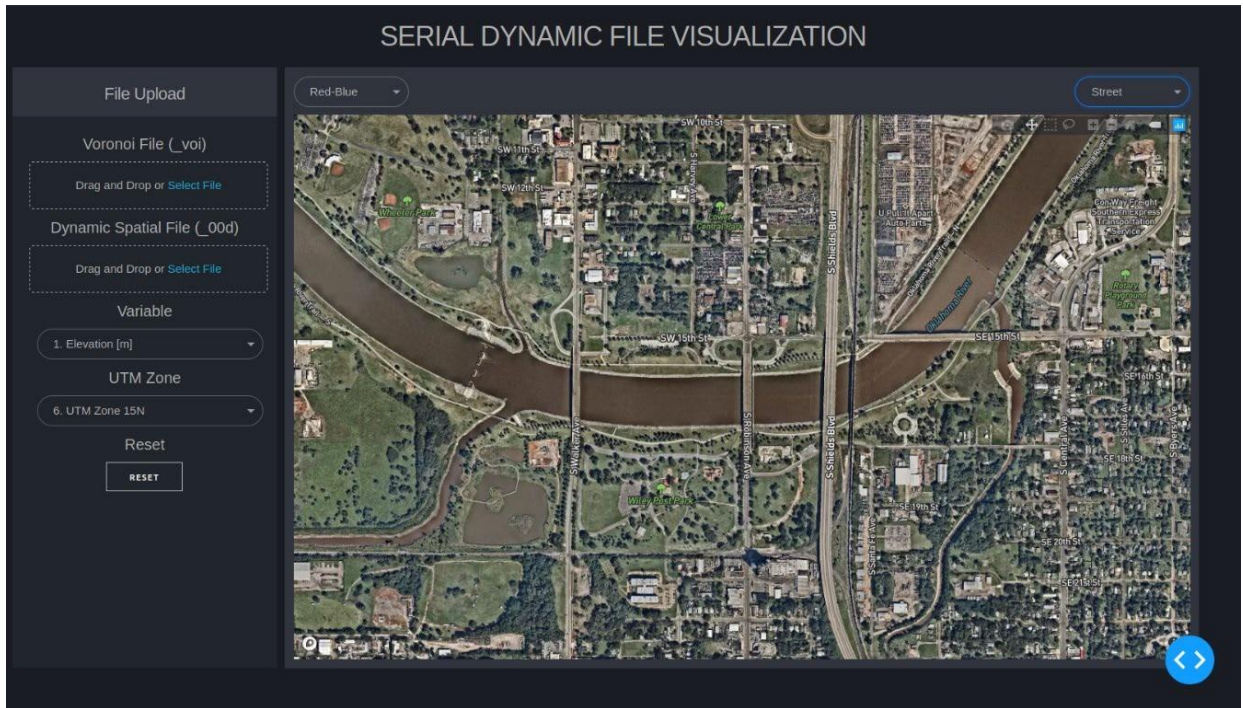


Figure 5: Street Basemap

8. Visualize the Variable

After all the options have been set, the tool will automatically read both the voronoi polygon files and the spatial output files, create a corresponding geojson in the background and project the results onto the basemap. To download the result, click on the camera icon at the top right of the basemap.

Note: Depend on the number of voronoi cells in the simulation basin, the visualization tool can take from 5 seconds (Peachcheater Creek) to 30 seconds (Redondo Creek) to complete the task, if you see VisualtRIBS shows “updating ...”, it means the tool is still running and please do not reload the page or uploaded data will be resetting.

III. Visualization Example

1. Actual Evaporation at Peachcheater Creek, OK

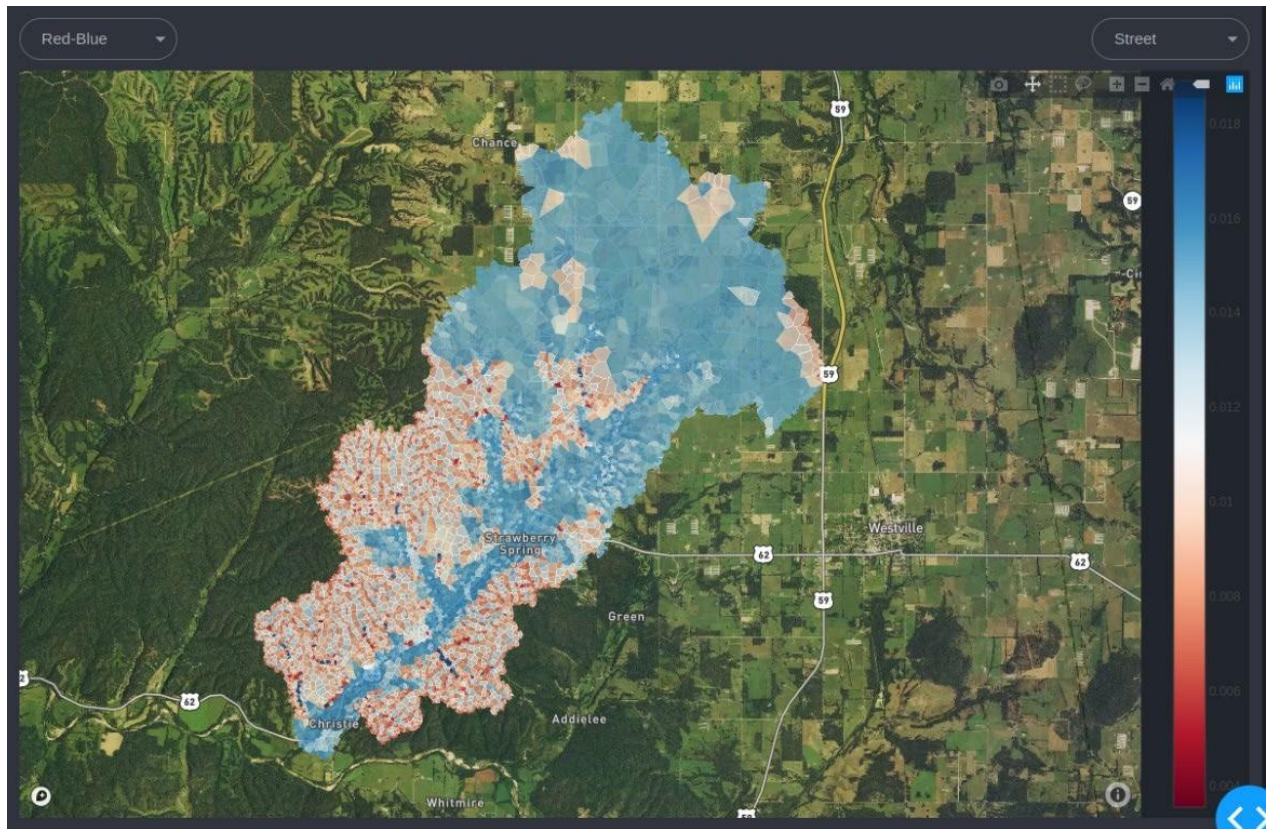


Figure 6: Actual Evaporation at Peachcheater Creek, OK with Red-Blue color scheme

2. Sensible Heat Flux at Redondo Creek, NM

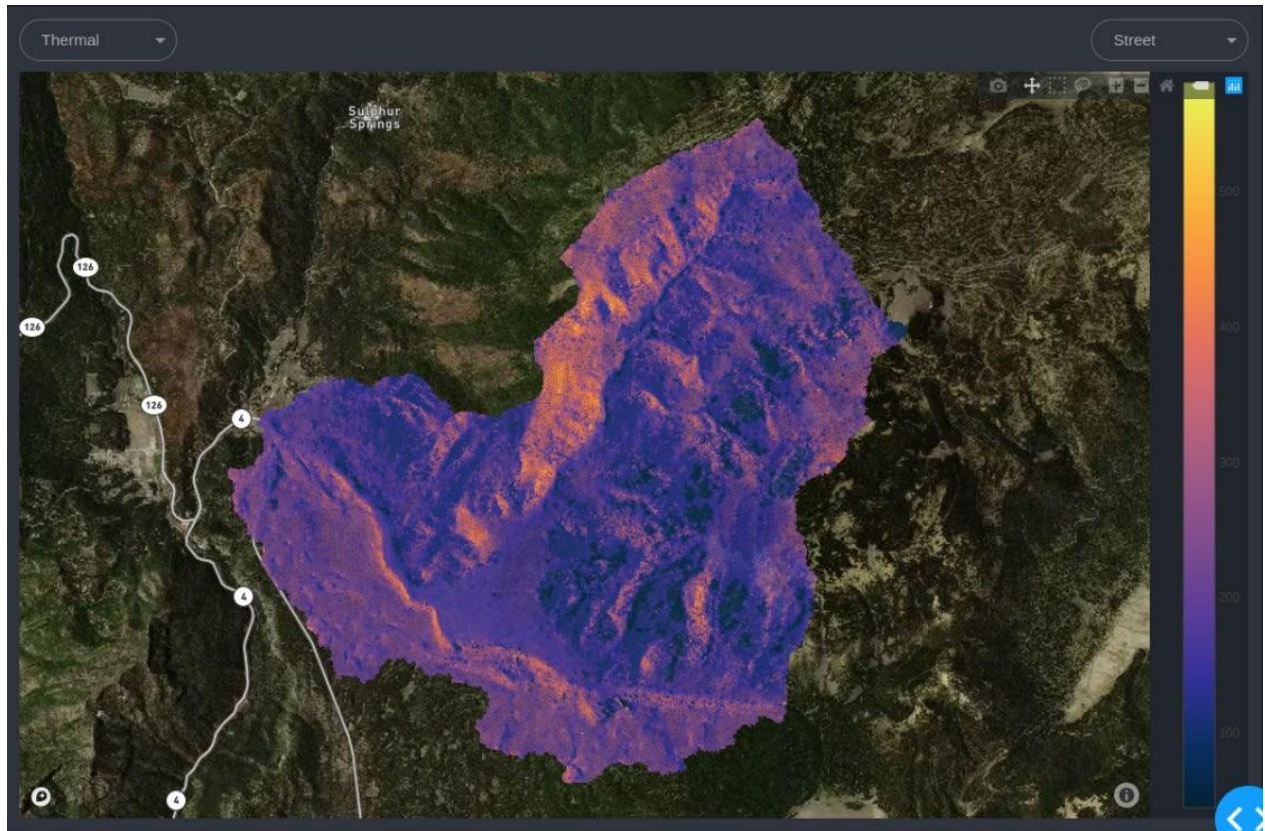


Figure 7: Sensible Heat Flux at Redondo Creek, NM with Thermal color scheme

IV. Contact Us

If you have any comments or suggestions about VisualtRIBS, please send an email to tri.g.pham@ou.edu.