


POWERED BY  ERGO

WITH THE COLLABORATION OF THE FOLLOWING ORGANIZATIONS

Location: CaribEViz (C:\Program Files (x86)\CaribEViz\caribeviz)

 INITIATIVE  UWI Reduction Centre  UWI SEISMIC RESEARCH CENTRE

 National Center for  
Supercomputing  
Applications

## CaribEViz Manual

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## *Getting Started*

### DRRC Data Manager

In order to effectively install Caribeviz you will need to first install DRRC Data Manager. A crucial component of the software is an add-in called tomcat which relies on Java Virtual Machine to run. Verify if your unit has Java installed using

<https://java.com/en/download/installed.jsp>

Browsers such as Chrome are not Java enabled so you may have to use either Safari or Internet Explorer in order to facilitate the download of Java.

Copy the file directory for the Java program as it will be required during the installation of Tomcat. You may also select the file path using the drop down available when prompted.

Having installed tomcat ensure the run option is selected as this is required for the installation of subsequent components of DRRC Data Manager (Maria DB)

You will be prompted to create a password be sure to select one that you will remember and one which has at least 10 characters inclusive of figures. Leave all other boxes unchecked.

### *Trouble Shooting*

DRRC Data Manager is in essence a web application hosted on the Tomcat virtual server.

Successful installation of Tomcat relies heavily on how quickly the software can communicate with the server hosting the data. Save for instances wherein a fast internet connection is available you will need to manually tell the program where to look for the data.

Go to C:\Program Files\Apache Software Foundation\Tomcat 8.0\webapps and manually copy the root.war file into the ROOT folder. This function requires administrative privileges,

contact your IT department. Upon successful install the app can be accessed here <http://localhost:8080> using your browser.

## Installing CaribEviz

Launch setup for CaribEviz. The installation of CaribEviz may tax the RAM of your device, for increased efficiency close all other applications.

When prompted check all components. Providing the installation was successful you should be able to launch CaribEviz.

### *Trouble Shooting*

Error JAVA was started but returned exit code 1.

Check to ensure the correct version of java was installed 32vs 64bit.

You will need to edit the configuration file within C:\Program Files (x86)\CaribEviz\caribeviz

Choose run as administrator and input the following

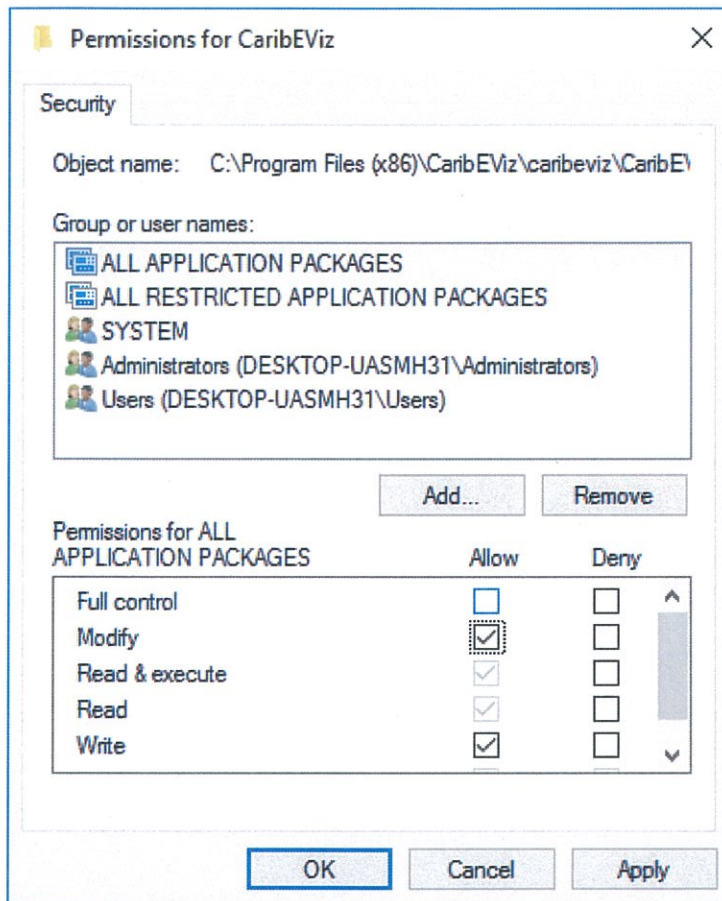
```
vm
```

```
C:/Program Files/Java/jre1.8.0_144/bin/javaw.exe
```

This should be inputted above the line that says “-vmargs”

If there is no option for run as administrator copy and paste the configuration file to the desktop and edit it as shown above. Drag and drop back the file into the folder and click continue as administrator when prompted. Note this requires administrator privileges and as such those without will need the help of someone within the organisation that has such privileges such as an IT rep.

It is useful to modify the permissions for CaribEviz which allow for efficient trouble shooting should the need arise.



#### Useful links

<https://www.youtube.com/watch?v=JCVnysH4V0I>

<http://troubleshooter.xyz/wiki/fix-java-was-started-but-returned-exit-code-1/>

<https://java.com/en/download/manual.jsp>

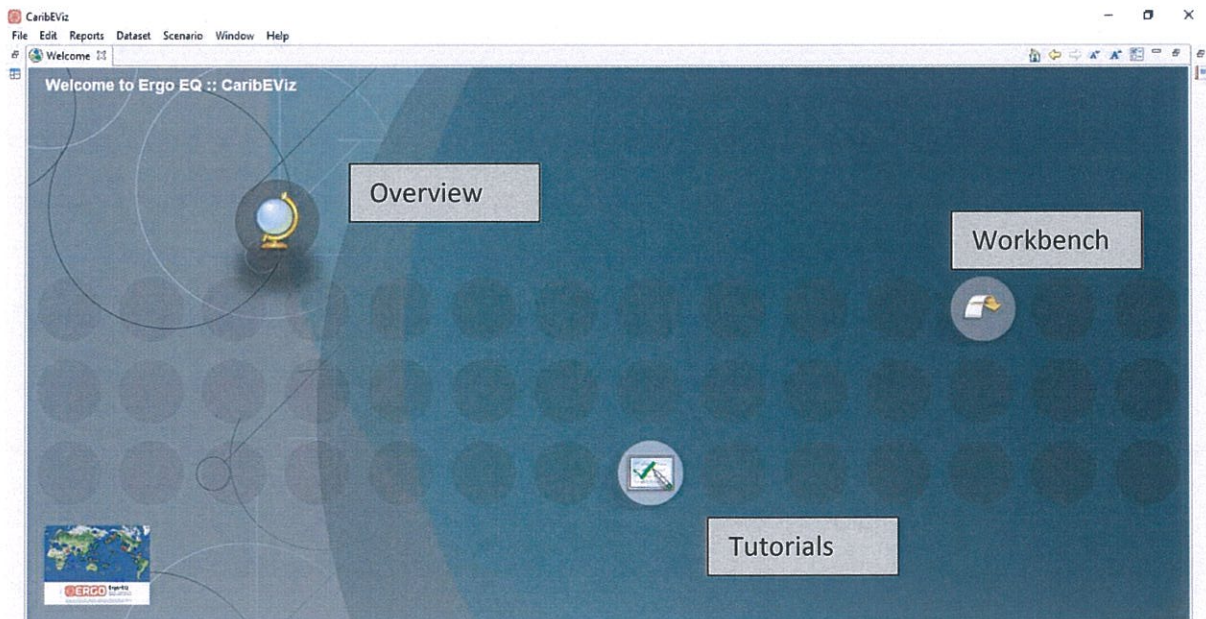
## *Launching CaribEviz*

### Getting to Know the Software

Having successfully installed CARIBEVIZ you will be able to access the welcome tab. Click on each tab and you will be directed to the associated webpage within the app. Navigation of the tabs may be achieved using the arrows at the top right hand of the screen.

There are three tabs available:

- The Overview Tab provides a general description of the functionalities of Ergo EQ as well as a few tutorials related to CaribEviz.
- The Tutorial Tab provides step by step introduction to the capabilities of the software.
- The Workbench tab launches the program.

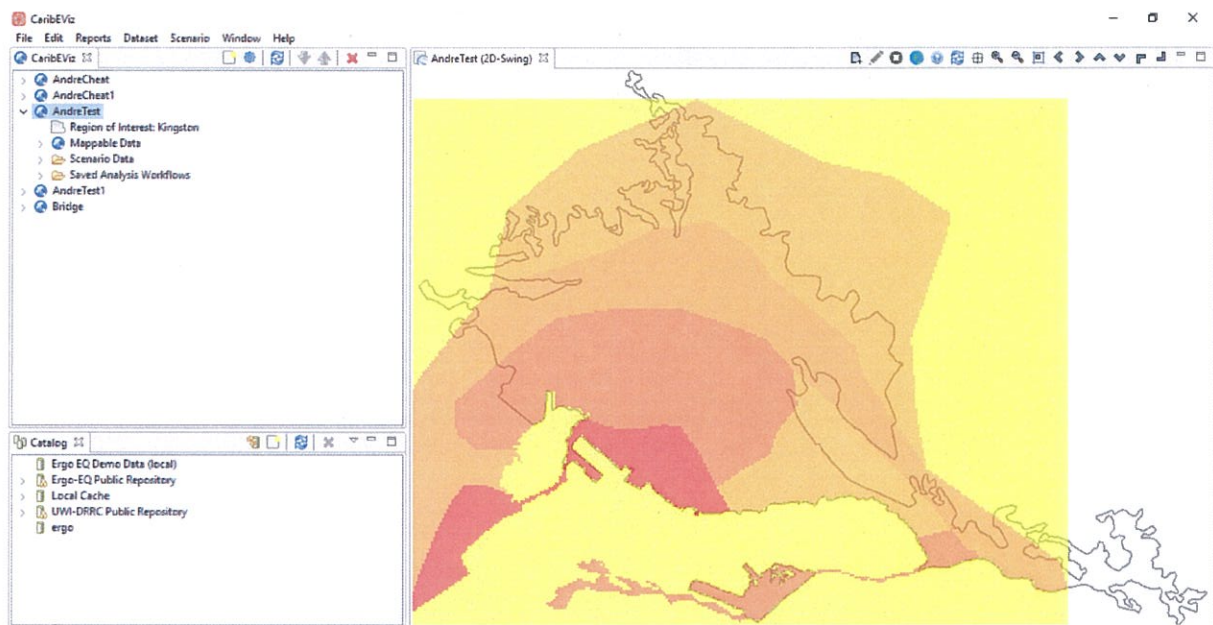


The welcome tab once closed will no longer auto populate but can be restored using help=>welcome.

If the Tutorial Tab fails to connect useful links may be found here

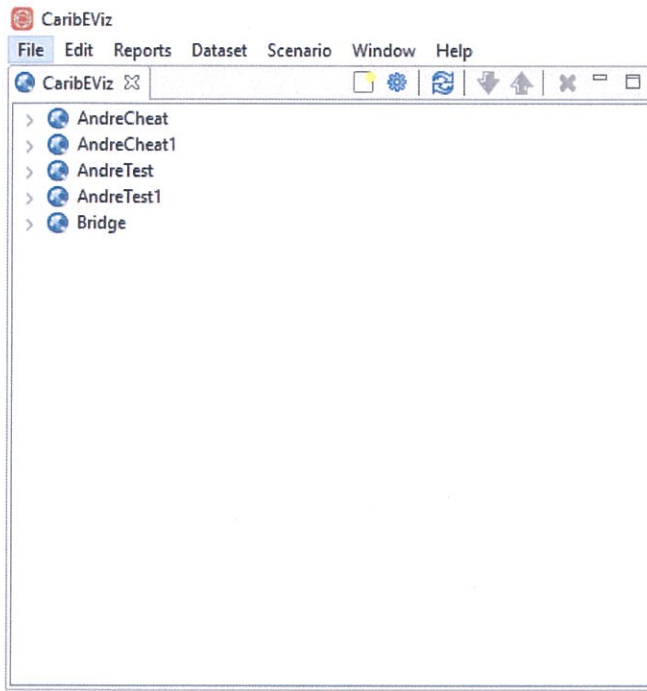
[http://ergo.ncsa.illinois.edu/?page\\_id=365](http://ergo.ncsa.illinois.edu/?page_id=365)

## The Workbench Tab




Within the workbench of CaribEviz there are four main windows which when combined facilitates most of the processing capabilities of the software. These windows are namely: Scenario View, Visualisation View, Data Catalogue View and Style Editor View.

## Scenario View



Scenario View provides an overview of all scenarios that have been created thus far within the software.

### *Creating a Scenario*

In order to create a scenario you will need to click the icon . A window will pop up prompting you to give the scenario a name. A valid unused name must be inputted.

Descriptions though not mandated will be useful. Click Next.

You will be prompted by the region selector window. Select the region of interest from the available dropdown list (Country). In some instances you will be able to further define the region of interest by selecting the drop down beside the selected state, county or city. The region preview provides a basic outline of the boundary as per the selected region. The final window should be left with the defaults.



### Create Scenario

Please enter a name and description for this scenario...

Name

Author, Institution, or other Description

Options

Use Region of Interest

View on Completion

### Select a Region of Interest

Please select a region of interest for this scenario...

Region Selector

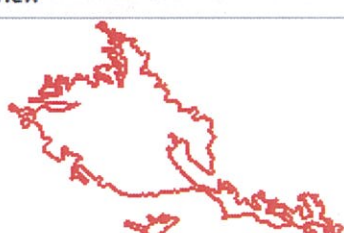
Country

- >  Kingston city
- >  Portmore city
- >  Montego Bay city
- >  Spanish Town city

Regions Selected

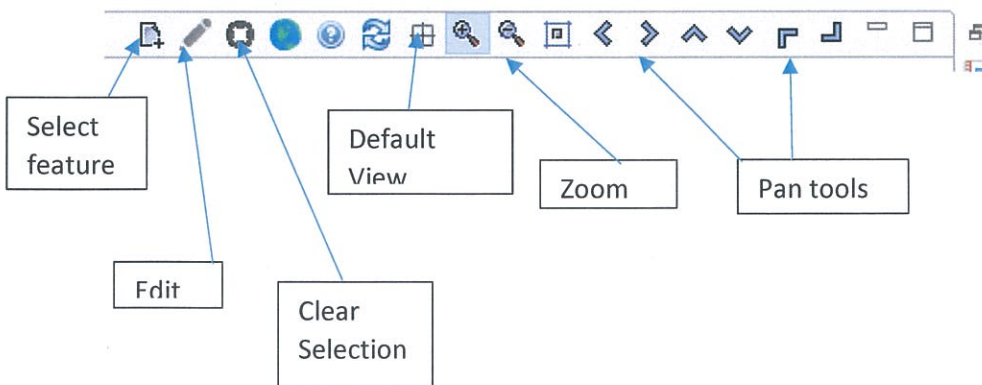
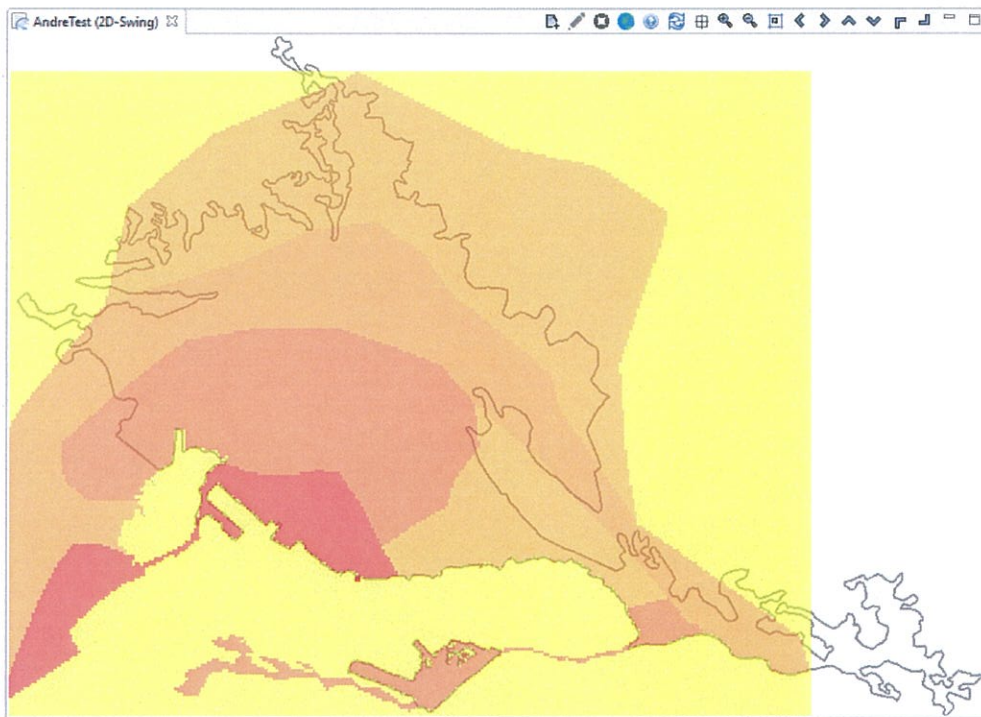
Kingston

Region Preview

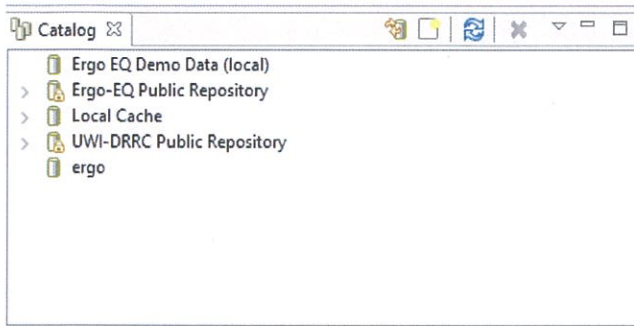



## Visualisation View

The visualisation view acts as a point via which scenarios and their associated datasets are presented in mapped form. This view auto populates after creating a scenario or having successfully added data to the view. It may also be populated by right clicking the desired scenario and selecting 2d or 3d renders.



## Data Catalogue View

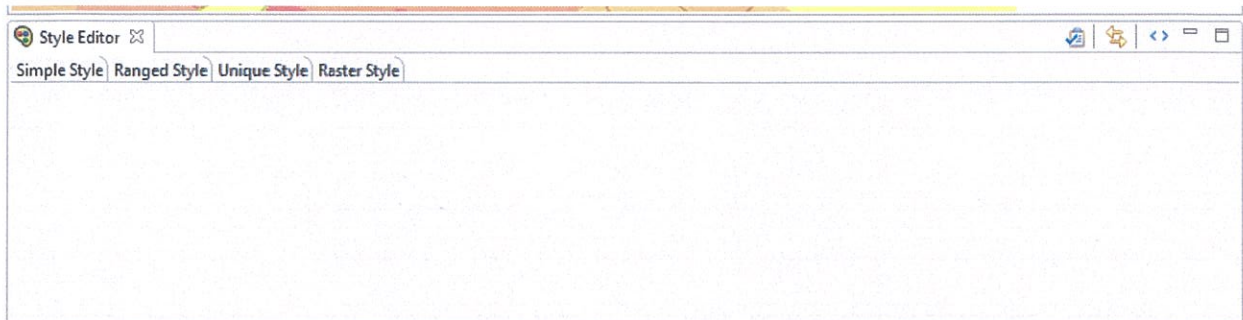


Data Catalogue View contains a list of repositories to which the CaribEviz software is communicating. Upon installation there is a possibility that you will only see Local Cache within this view. To add other available repositories to the list, ensure that your device is connected to the internet then click the add repository icon .

### *Trouble Shooting*

java.lang.NullPointerException error: Software communicated with the repository but found no data within the given file path. Solution: ensure correct path was chosen if yes close and re-enter software.

## Style Editor



Unlike the three previous interfaces discussed, style editor will not automatically start when the workbench is accessed. To access this window, select **Windows>Show View>Style Editor**. Using this tab display attributes for the datasets being displayed within the visualization view can be modified to allow for better representation and viewing.

If at any time you need to reassess these aforementioned windows you can do so by selecting **Windows>Show View>”window you which to populate”**.

## ***Tutorials- Creating an Analysis***

### **Building Structure Damage**


Create a New Scenario.

Under Region Selector, select United States of America, and further select Tennessee State followed by Shelby County.

Leave the final pop up window as the default setting. (Ergo 4.0.0 Beta 1).

You will now need to add buildings to the scenario. To do this expand Ergos repository followed by buildings. Under building inventory V4 select Shelby County No SF. To select you may choose to drag and drop the item over unto the visualization window or right click the item followed by load dataset.

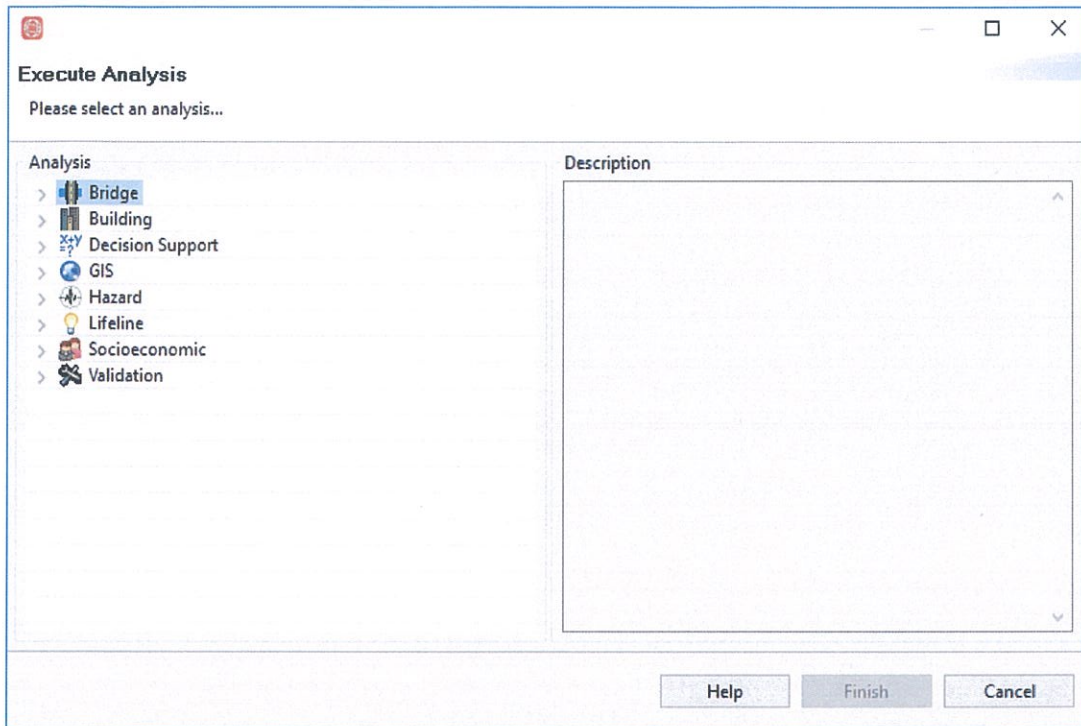
Also required for this scenario is the topographic information for the area. This can be found in Topography>Digital Elevation Model.

Select the execute analysis icon .

The analysis Tab should then populate with the various form of analysis available through the software.

Select Building>Structural Damage

Ergo and thus by extension CaribEviz will not allow for the execution of analysis without all parameters required for the analysis having been satisfied. You will therefore have to resolve each parameter. Parameter that are properly defined will be highlighted in red.



In order to develop an understanding of building structure damage, one must first define the hazard to which the buildings will be subjected. In this scenario the hazard will be defined as an earthquake. Click on the icon “create scenario earthquake”. Input the field as shown below.

**Create Scenario Earthquake** All required fields must be completed

Required | Optional

**Basic Information**

Result Name:

Period Spectrum Method: Best Match

Attenuation: CEUS Characteristic Event

**Earthquake Location**

[Select from Source Event](#)

[Select from USGS Latest Earthquakes](#)

[Select by clicking on the map](#)

Latitude (deg): 35.927

Longitude (deg): -89.919

Magnitude: 7.9

Depth (km): 10.0

**Raster Display Information**

Grid Points: 1025

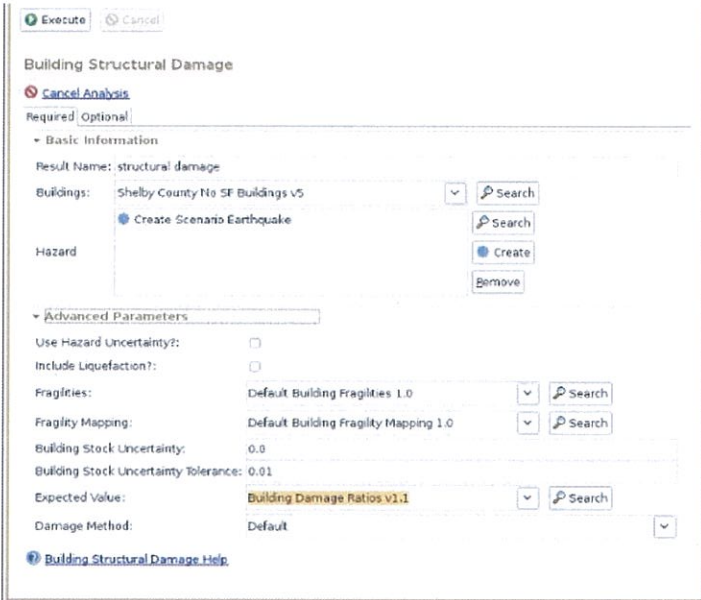
[Reset to region of interest](#)

Displacement Parameter: PGA

Having inputted the fields the icon for create scenario earthquake should have now turned to green.

Click on the icon for building structural damage then input the fields as indicated below. To populate the fields, select search the left click the option that comes up. Once all field turn green, you are then able to click on the execute analysis icon.

**Note: file paths within the ergo repository and by extension UWI-DRRC public repository are subject to change. If at any point in time an error is returned, select the option that most closely relates to the values as seen below.**



The screenshot shows a software interface for configuring a "Building Structural Damage" analysis. At the top, there are "Execute" and "Cancel" buttons. Below the title, there is a "Cancel Analysis" button with a red 'X' icon. The interface is divided into "Required" and "Optional" sections. Under "Basic Information", the "Result Name" is "structural damage". The "Buildings" field is set to "Shelby County No SF Buildings v5" with a search icon. The "Hazard" field has a radio button selected for "Create Scenario Earthquake" and a search icon. Below this, there are "Create" and "Remove" buttons. The "Advanced Parameters" section includes checkboxes for "Use Hazard Uncertainty?" and "Include Liquefaction?". It also has dropdown menus for "Fragilities" (set to "Default Building Fragilities 1.0"), "Fragility Mapping" (set to "Default Building Fragility Mapping 1.0"), "Expected Value" (set to "Building Damage Ratios v1.1"), and "Damage Method" (set to "Default"). Search icons are present for the dropdown menus. A help link "Building Structural Damage Help" is at the bottom.

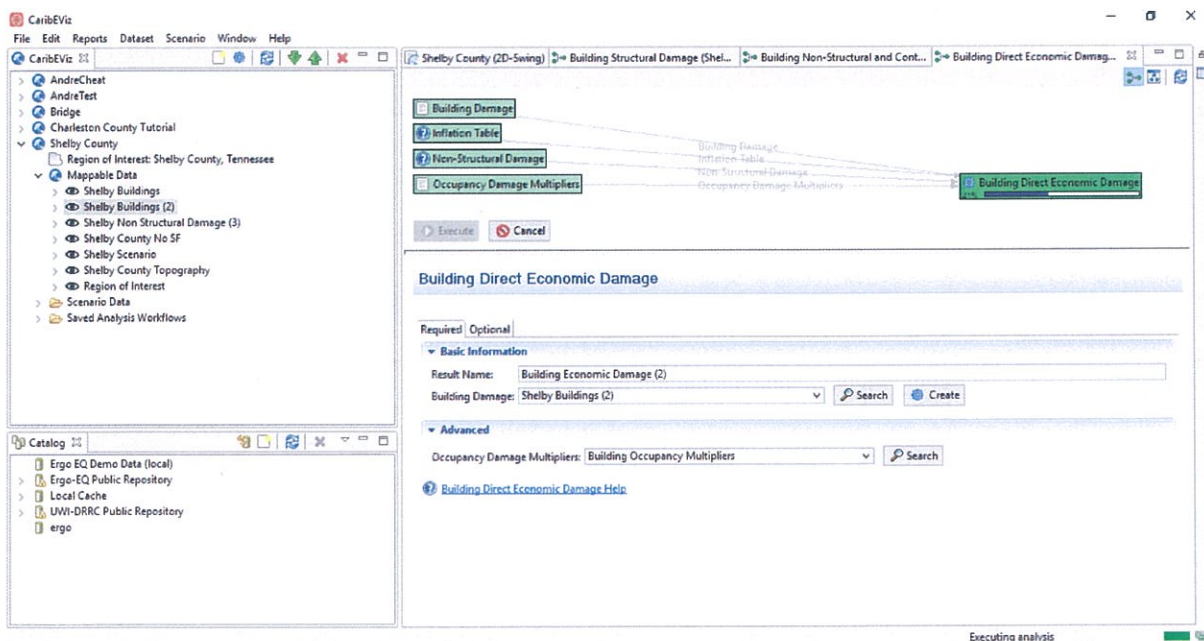
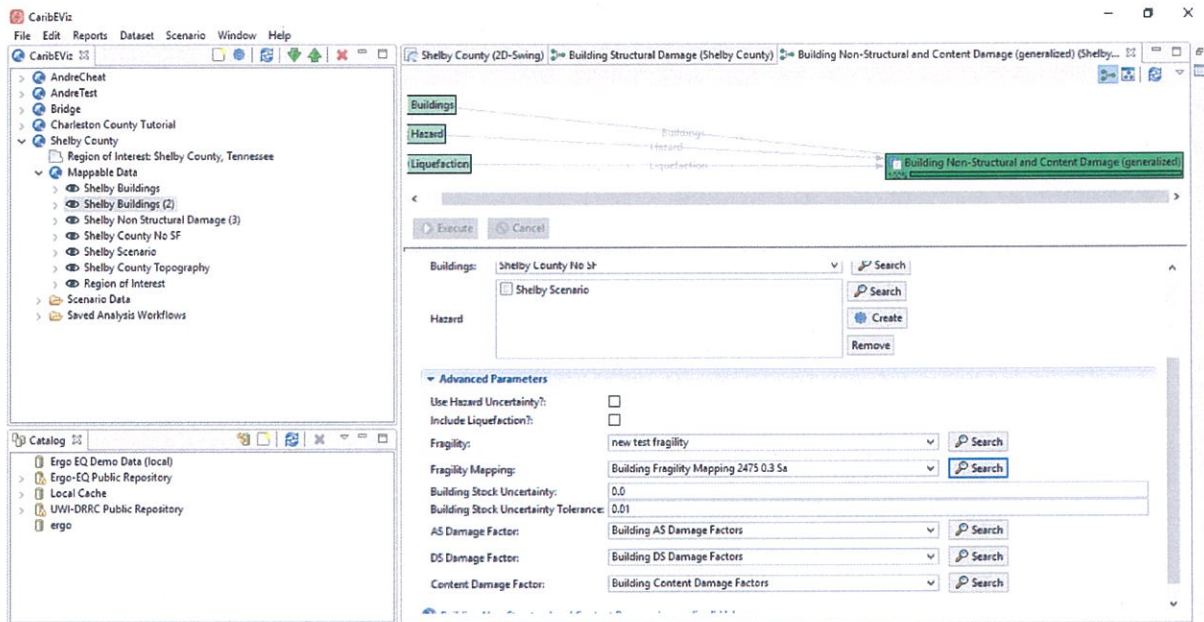
The screenshot shows the CaribEViZ software interface. On the left, a tree view displays the project structure for 'Shelby County', including 'Region of Interest: Shelby County, Tennessee' and 'Mappable Data'. Below this is a 'Catalog' window listing data sources like 'Ergo EQ Demo Data (local)'. The main workspace shows a workflow diagram with steps: 'Site Class Map', 'F<sub>0</sub> Site Earthquake', 'Generate hazard map', 'Liquefaction Susceptibility Map', 'Create Scenario Earthquake', 'Hazard', 'Liquefaction', 'Retrofit Cost Estimation', and 'Building Structural Damage'. A dialog box for 'Create Scenario Earthquake' is open, with the following parameters:

- Select from USGS Latest Earthquakes
- Select by clicking on the map
- Latitude (deg): 35.927
- Longitude (deg): -89.919
- Magnitude: 7.9
- Depth (km): 0.0
- Raster Display Information
  - Grid Points: 1025
  - Display Raster: PGA
  - Grid Spacing (deg): 0.016750662305804555
  - Minimum Lat: 34.99419947005884
  - Minimum Long: -90.30988294914631
  - Maximum Lat: 35.40859055813116
  - Maximum Long: -89.63278178611615
- Advanced Parameters
  - Create Scenario Earthquake Help

This screenshot shows the same CaribEViZ software interface, but the main workspace displays a map of Shelby County. The map features a grid overlay and numerous small blue square markers representing building footprints. The map is color-coded with a gradient from yellow to red, likely representing different hazard or damage levels. The left-hand navigation and catalog windows remain visible, showing the same project structure and data sources as in the previous screenshot.



Damages to building may also be non-structural and to an extent be quantified economically. Below are two such analysis which may be produced by populating the fields as shown using the search icon. The Hazard data having already been created in the previous analysis will be available from the search field.



The screenshot displays the CaribEvo software interface. The top menu bar includes File, Edit, Reports, Dataset, Scenario, Window, and Help. The main workspace is divided into three panes:

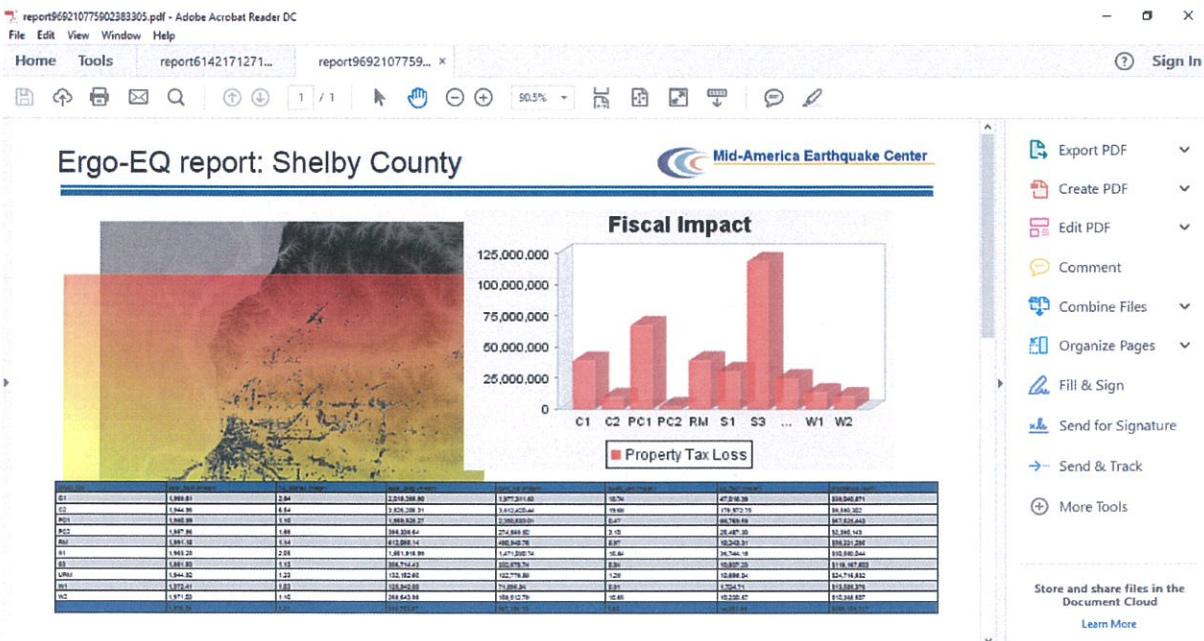
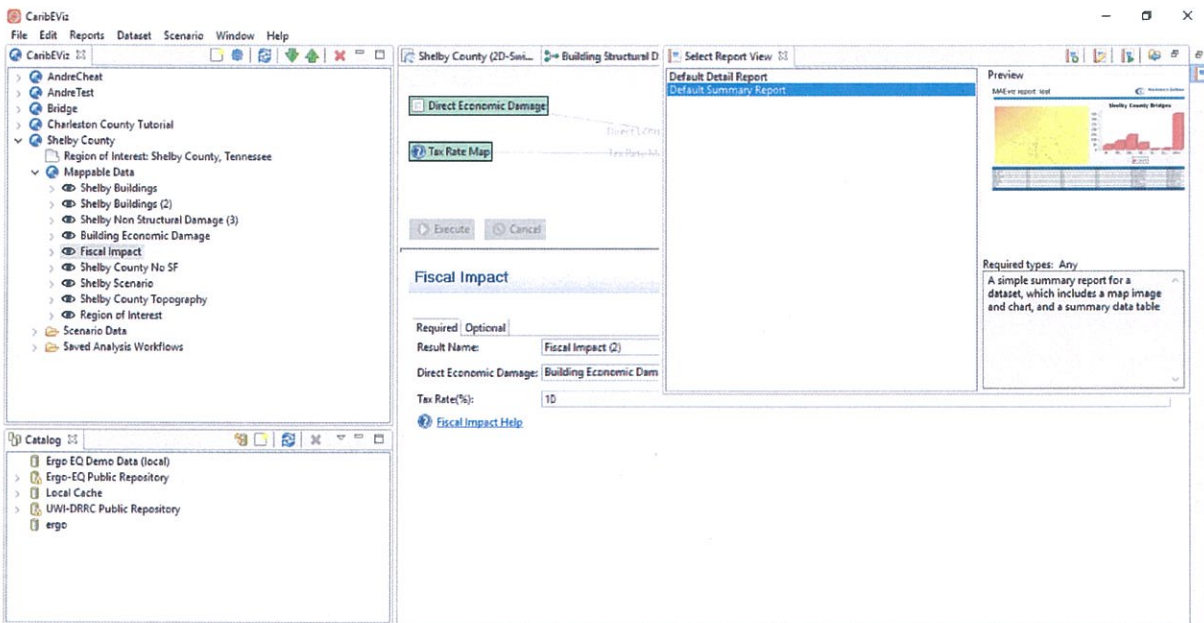
- Left Pane (Project Tree):** Shows a hierarchical view of the project structure. Under 'Shelby County', there is a 'Region of Interest: Shelby County, Tennessee' containing 'Mappable Data' (Shelby Buildings, Shelby Buildings (2), Shelby Non Structural Damage (3), Building Economic Damage, Fiscal Impact, Shelby County No SF, Shelby Scenario, Shelby County Topography, Region of Interest) and 'Scenario Data' (Saved Analysis Workflows).
- Top Right Pane (Workflow Diagram):** A diagram showing the flow of data. 'Direct Economic Damage' and 'Tax Rate Map' are inputs that feed into 'Fiscal Impact'. The connections are labeled 'Direct Economic Damage' and 'Tax Rate Map'.
- Bottom Right Pane (Fiscal Impact Configuration):** A configuration window for the 'Fiscal Impact' process. It includes:
  - Required | Optional:** A tab selector.
  - Result Name:** A text field containing 'Fiscal Impact (2)'.
  - Direct Economic Damage:** A dropdown menu set to 'Building Economic Damage' with 'Search' and 'Create' buttons.
  - Tax Rate(%):** A text field containing '10'.
  - Help:** A link labeled 'Fiscal Impact Help'.

At the bottom left, there is a 'Catalog' pane showing data sources: Ergo-EQ Demo Data (local), Ergo-EQ Public Repository, Local Cache, UWI-DRRC Public Repository, and ergo.

## Creating a Report

Rick Click on the Desired Model output under the scenario window, eg. Fiscal Impact->Show Reports

You will be prompted with two options, one for a detailed report and the other for a Summarized version. Reports comprise of three components: a map of the dataset, a chart and the associated attribute table.



**If at any point you lose connection to the repository delete it then reconnect to it using the sync repository option.**

### ***Ingesting Datasets***

There is at present a wealth of datasets within both ergo and UWI-DRRC public repositories.

If however the need does arise for additional data set to incorporated and subsequently used

here are a few tips:

1. Creation of the data set must be done using appropriate tools eg. ARC GIS, Q-GIS.
2. When creating attributes for the data set ensure that the format of the table matches formats as seen within the public repositories. This ensures that the software communicates with the relevant path during subsequent analysis.
3. To import, select Go to File > Import>Expand Data category and select Dataset, Click Next.
4. Select the type of file followed by the file path. When prompted for data type select the best suited folder eg. Building data should be ingested within Building Inventory.