

## Visualization and interaction system help document

In this help section, the discussion is on the visual parts of the system used for visualization and interaction approaches for visual analysis of the input datasets against time-series.

The main view of the visualization tool has two sidebars; left and right sidebars. The left sidebar show Home, Baseline data, Present Stations (These are Tanzania regions specific data) and help as presented in Figure 1 and Figure 2.

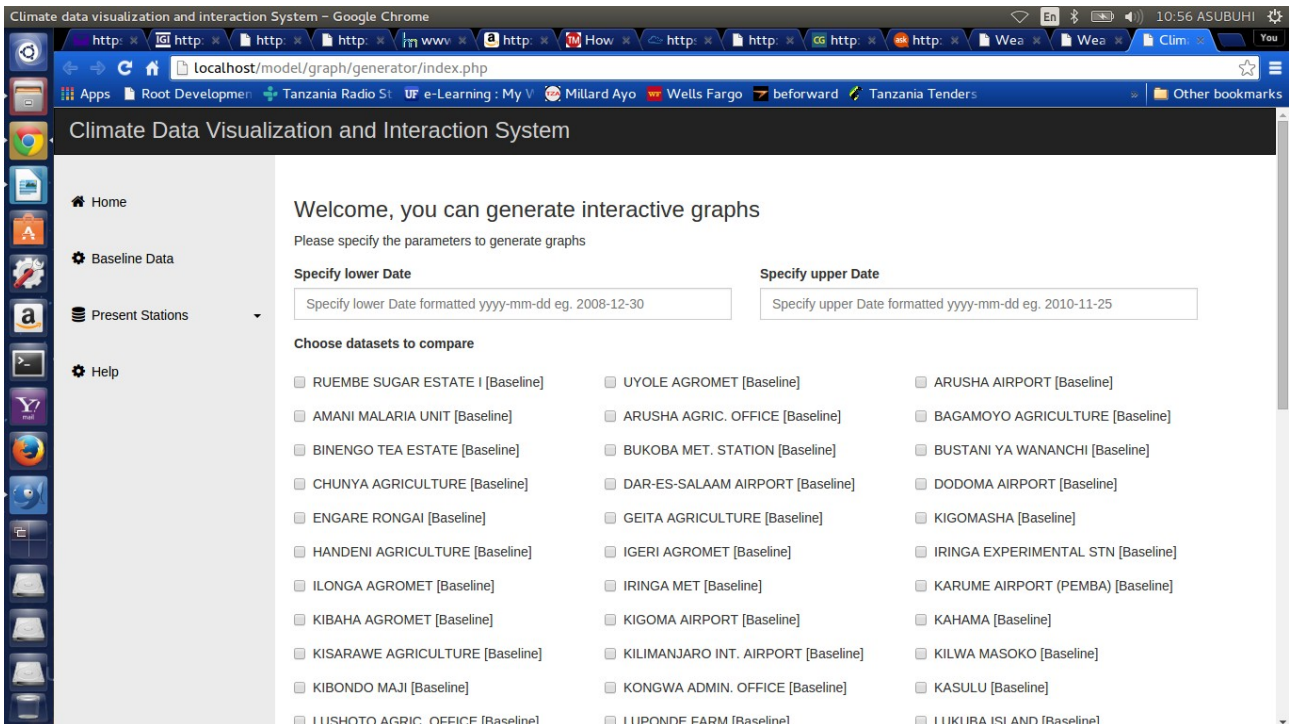


Figure 1: The Main view of the visualization Tool

The right side shows all the climate baseline dataset stations that has been

read from the climate database. The user is able to choose the dates desired to be generated by this tool.

The user can then choose desired dates and places for comparison as in figure 3, Figure 4 and Figure 5. The date panel allows user to go back years using << or monthly using < and also g forward by using the opposite signs.

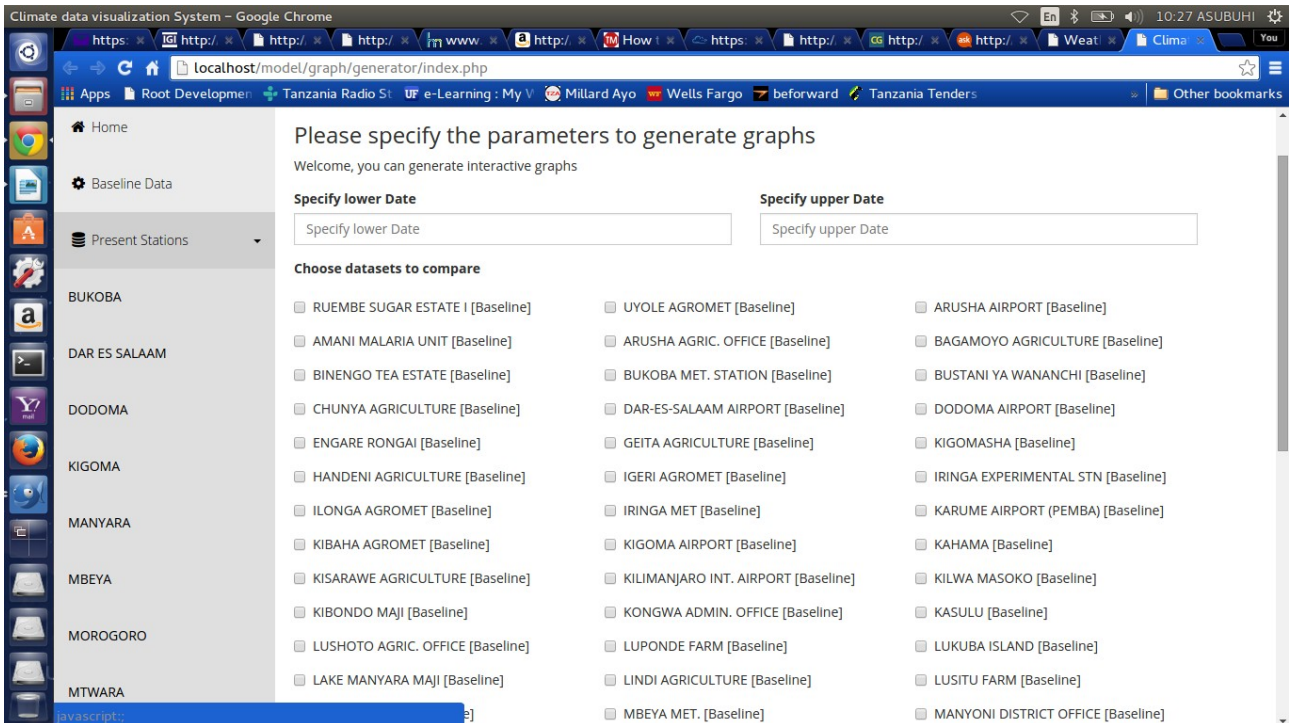


Figure 2: The Main view with present stations show on the left sidebar

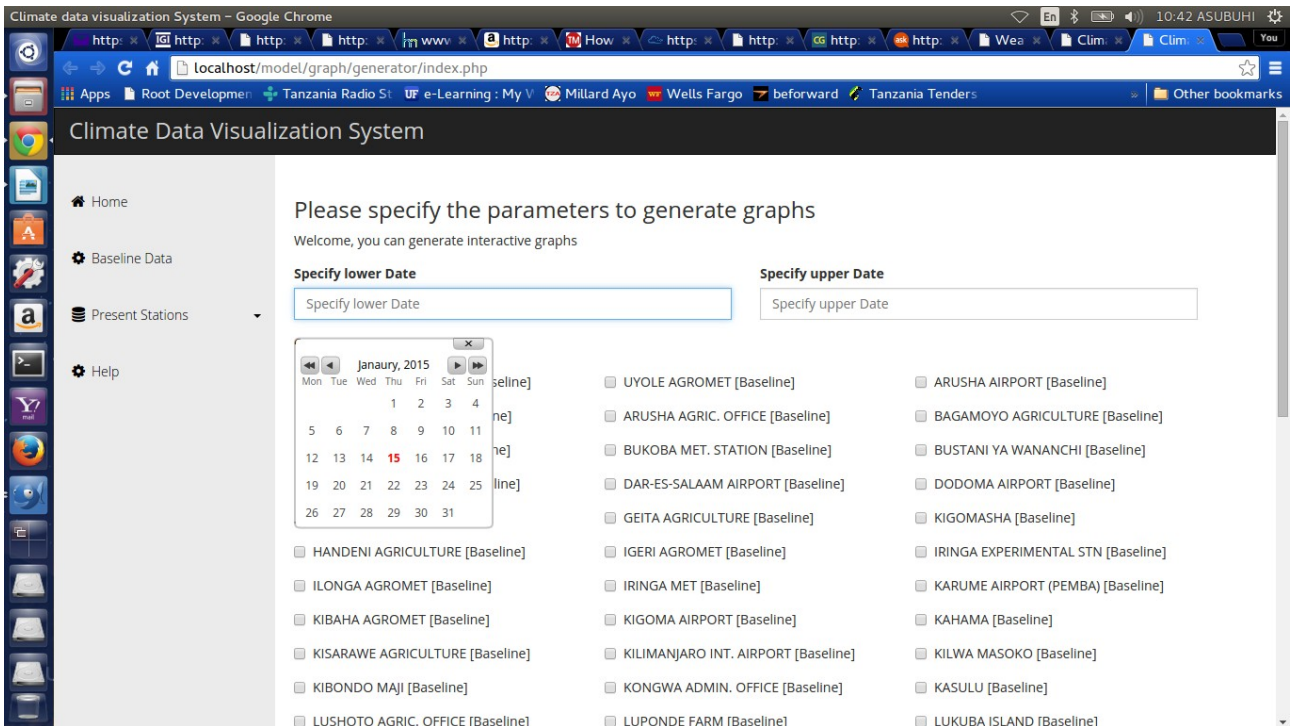


Figure 3: The desired dates and places choose by the user

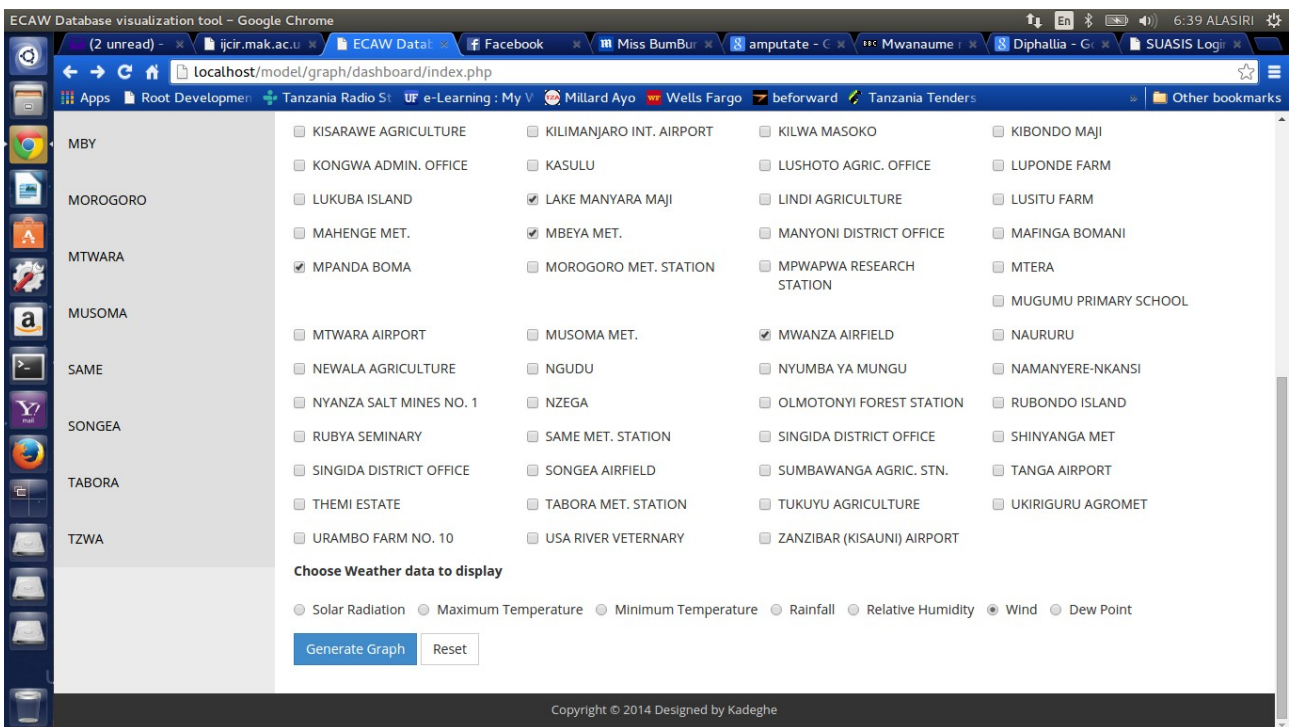


Figure 4: The user specifies the weather data type to be generated

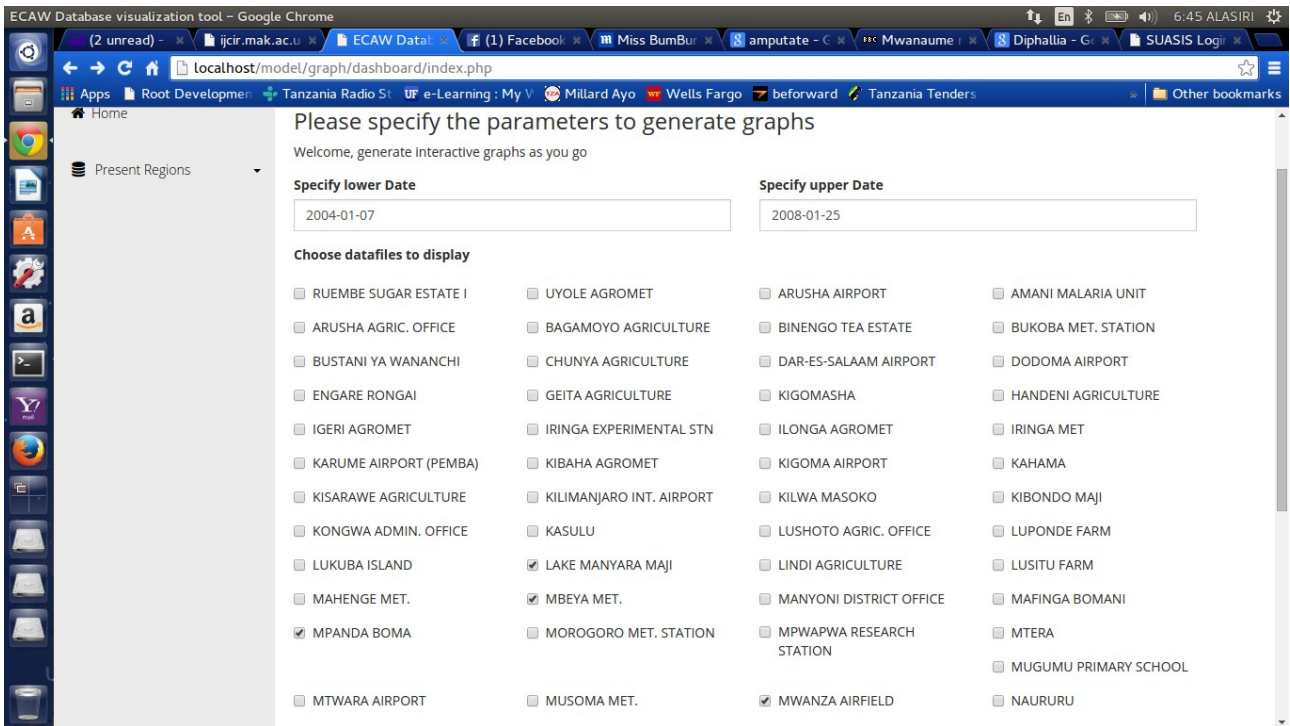


Figure 5: The Main view just before the user presses generate button to generate interactive graphs

The user can now press GENERATE button to instruct the visualization tool to generate the interactive graphs.

For instance, if the user chooses four stations to visualize the information, then the system is going to show years only as shown in Figure 6.

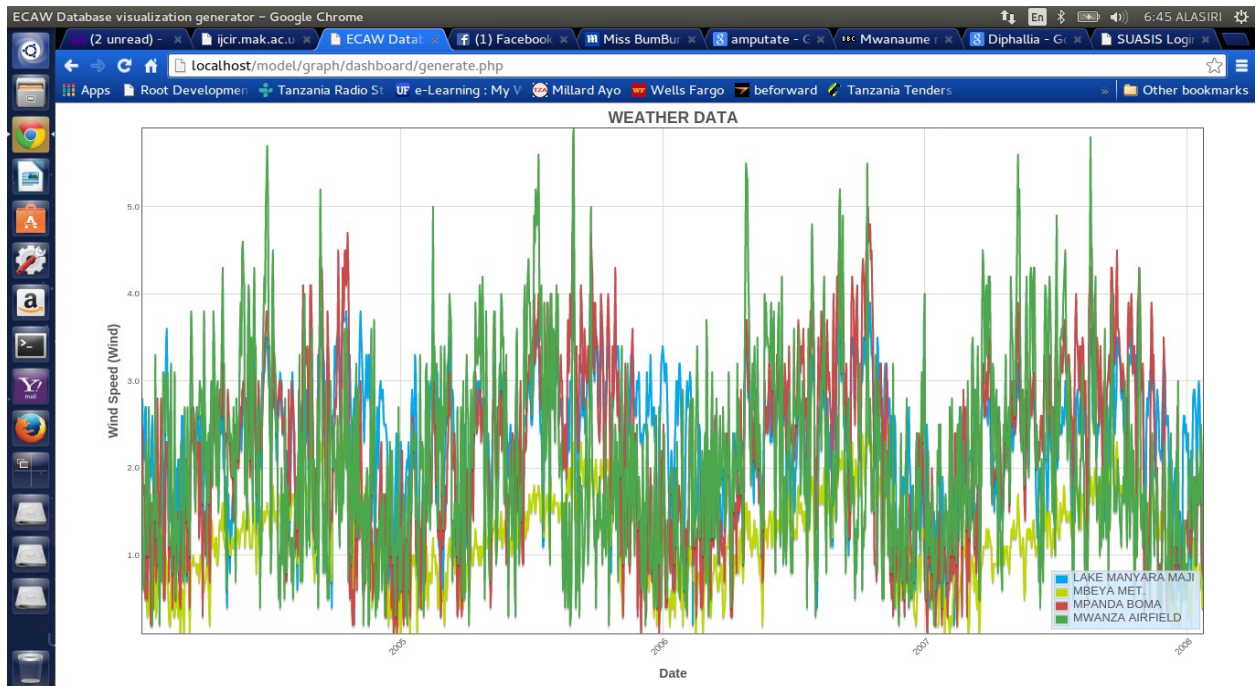


Figure 6: Weather data generator has generated the dataset between 2005-01-04 to 2009-01-23

Now, the user may decide to drag between the dates by holding left click and

moving the cursor to visualize the information in detail as shown in Figure 7. Figure 8 visualize the the chosen date from Figure 7.

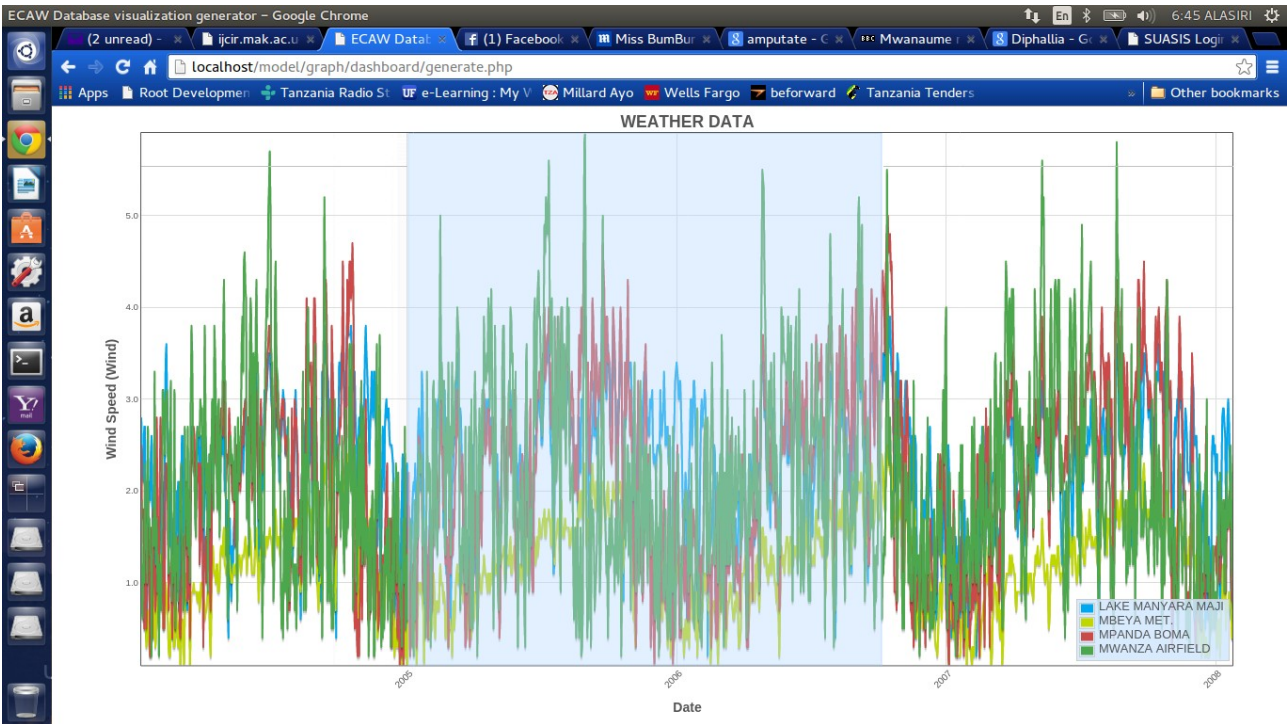


Figure 7: The weather data visualized in detail by dragging between the time-series

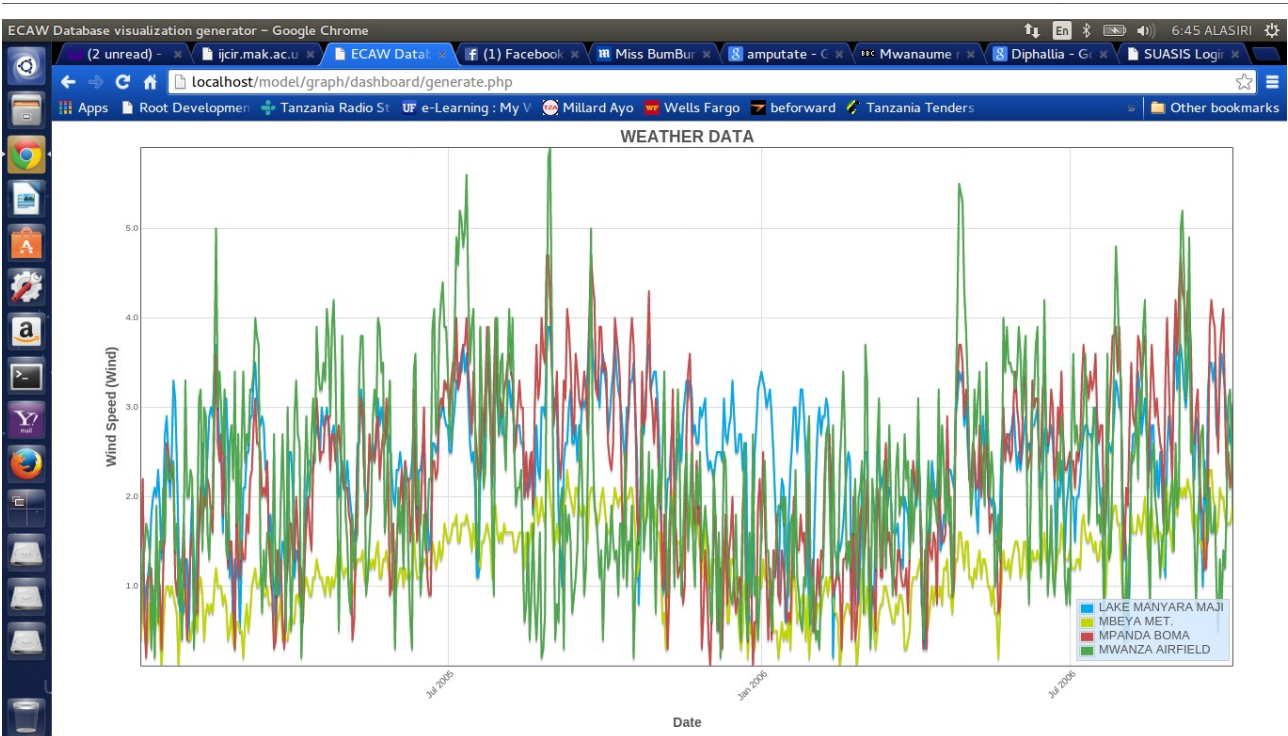


Figure 8: Detailed weather data as displayed by the visualization tool

Figure 8 includes more detailed information that is why the time series now show month with year instead of the years only. If you go further it will show date and then time as shown in figure 9.



Figure 9: Very detailed weather information show the dates of the month april 2006

Rainfall information is visualized using bar graphs as shown in Figure 10.

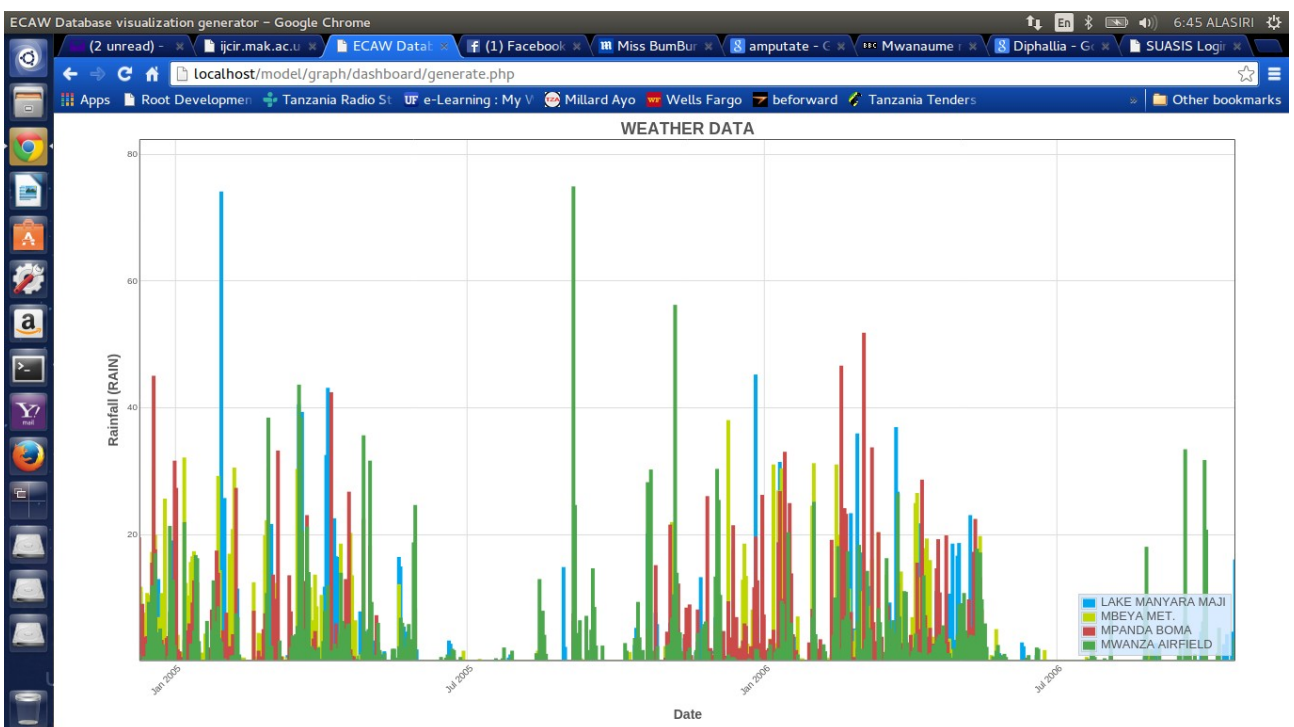


Figure 10: Rainfall data visualization

The rainfall data can be seen in each time, the rainfall was recorded. The detailed data will separate the information so that the differences of rainfall data of the same day can easily be visualized by the user as shown in Figure 11.

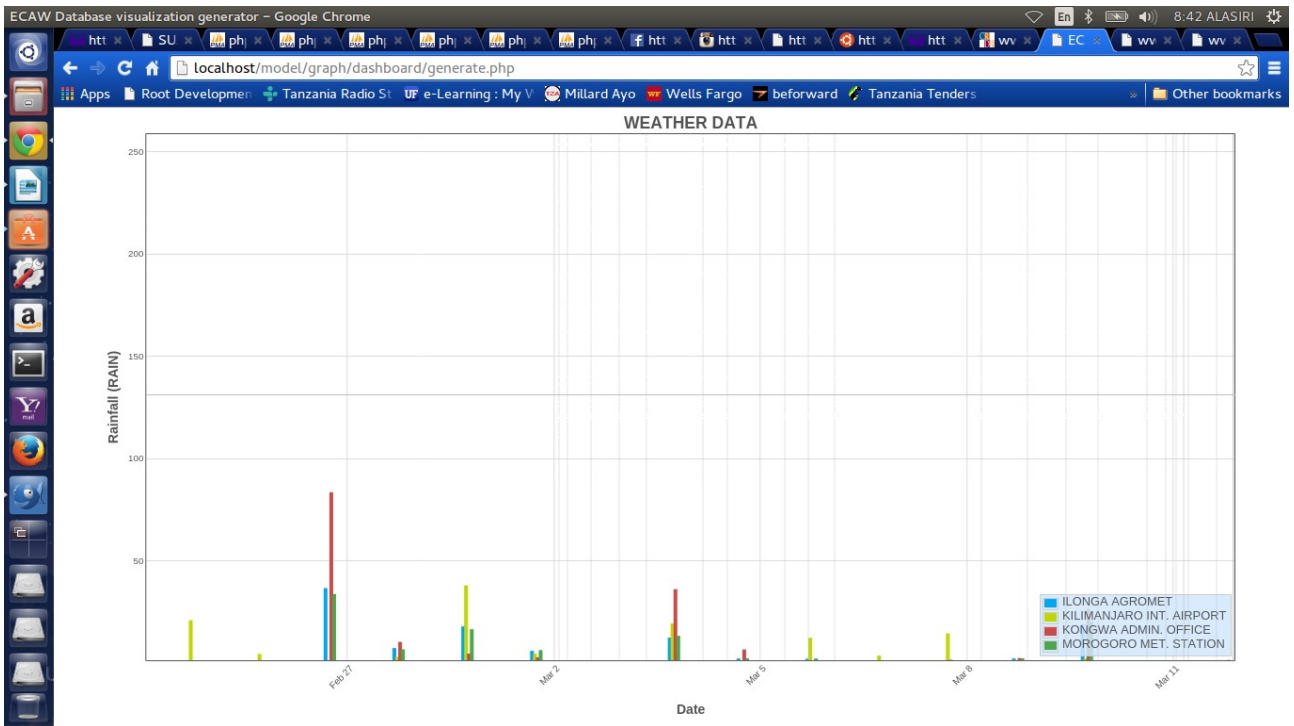


Figure 11: Very detailed rainfall data visualized as bar graph

Also, the system can be used to compare current weather conditions to modeled weather conditions as shown in Figure 12. It means it is possible to compare baseline information to the near-term conditions(2010-2039), Mid-Century (2040-2069) or End-of-Century(2070-2099) using RCP2.6, RCP4.5, RCP6.0 or RCP8.5 as shown in Figure 13. The left sidebar has present stations which present data for different regions. As the matter of fact, the years are maintained 1980-2009 for compatibility reasons. Near-term means plus 30 years, Mid-century means plus 60 years while End-of\_century means plus 90 years. All the months correspond to each month across years.

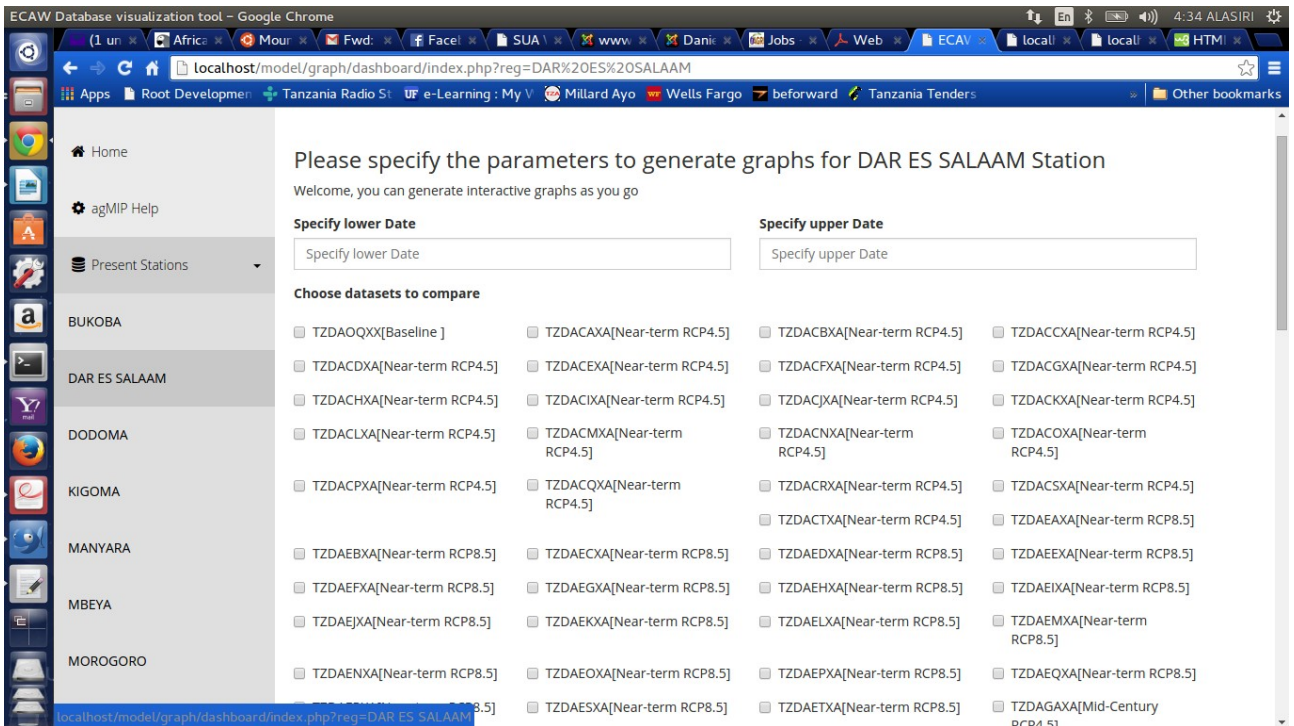


Figure 12: Choosing station to compare the baseline with the predicted weather conditions

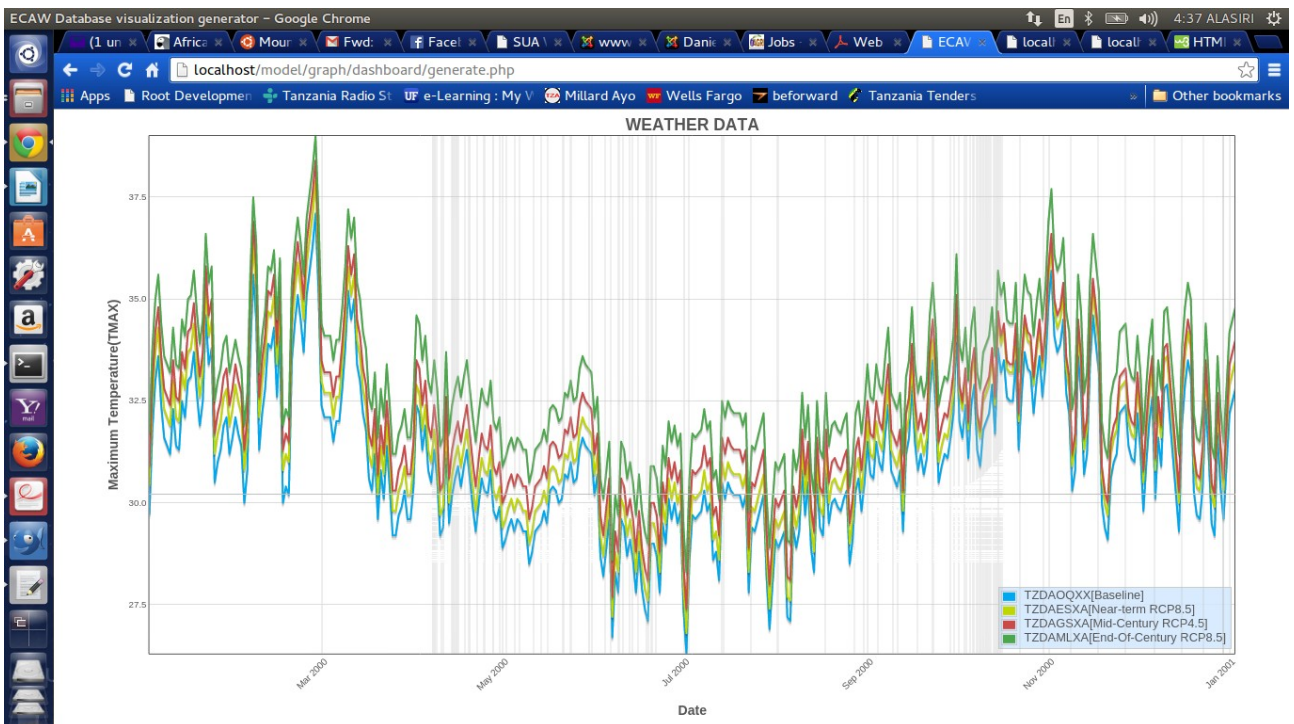


Figure 13: Generated graph for all year 2000, 2030[near-term], 2060[Mid-Century], 2090[End-of-Century]