

# Meteorology measurement visualization

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*User guide*

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## Introduction

The meteorology measurements visualization software is a Matlab GUI that establishes a connection to the DAQ2DB database where the data is stored, retrieves the data based on the inputs given by the user and visualizes (plots) it.

## Installation

The Matlab GUI has been compiled and deployed on the 2016b 64 bit version of Matlab.

There are three possibilities to install the Aalborg University's Meteorological Data Visualization software depending on the available software on the respective computer.

1. **If you have Matlab 2016b 64 bit version installed on your PC** download the light version of the application from here, and run DataGUI\_v1\_1.exe
2. If you have another version of Matlab or no Matlab
  - a. You can download the Matlab GUI web installer form here, which will automatically download the Matlab Compiler Runtime (MCR) 2016b 64bit version and follow the installation steps
  - b. Or you can download a standalone installer of the Matlab GUI (~655 MB) which contains the MCR, and follow the installation steps
  - c. Once installed you can start the Matlab GUI from  
***C:\Program Files\Aalborg University\DataGUI\_v1\_1\application\ DataGUI\_v1\_1.exe***

## Graphical user interface

The graphical user interface is presented on Figure 1.

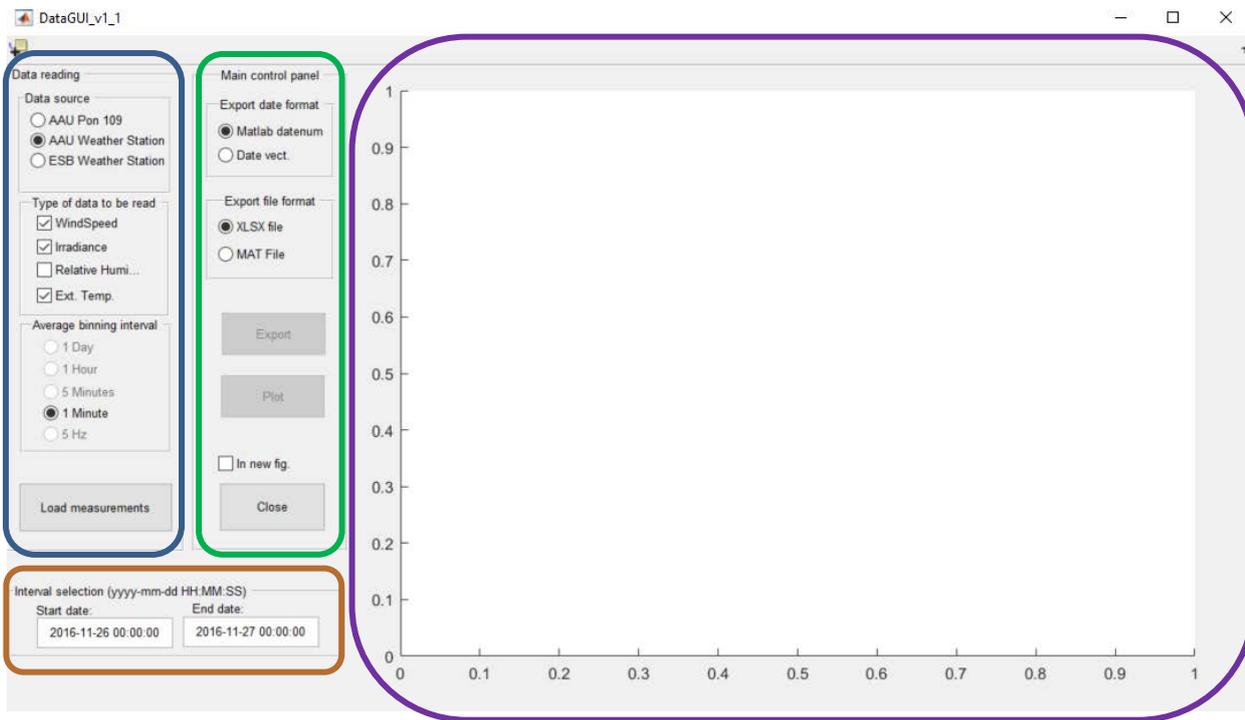


Figure 1 Graphical user interface

It consists of two main parts: control fields (1) and display fields (2). The process of working with the software should follow the sequence presented below.

1. Fields on the left of the GUI, marked with **blue**, **green** and **brown** represent the input fields.

### 1.1. Interval selection (**brown**)

For first, the user has to select the interval which needs to be analyzed. It has to be typed in the boxes called “Start date” and “End date” in the format “yyyy-mm-dd HH:MM:SS”, but it does not need to be complete. If the date is not complete, the software tries to complete it (starting from the greater time unit – year, to the smallest one – second) with the lowest possible date value. A default value is given (as an example) when the program starts.

### 1.2. Data reading (**blue**)

The data reading panel contains the data source, data type, the bin selection for the averaged values and the “Load measurements” button.

- Data source: we choose from which plant we want to load the measurements. There are three options:

- **AAU Pon 109**

- Latitude - 57,01541
- Longitude - 9,973344
- Azimuth - 180
- Tilt – 47.5
- Irradiance measured with c-Si reference cell
- Available data : 16/02/2011 – 02/12/2014

- **AAU Weather Station**
  - o Latitude - 57,01541
  - o Longitude - 9,973344
  - o global horizontal irradiance measured with pyranometer
  - o Available data : 25/11/2016 - present
- **ESB Weather Station**
  - o Latitude - 55.491015
  - o Longitude - 8.4437228
  - o global horizontal irradiance measured with pyranometer
  - o Available data : : 23/11/2016 - present

- Data type: the boxes have to be checked, depending on which data the user wants to load.
- The bin size also has to be selected. Besides the case when all data is loaded (“All data (sampled at 5 Hz)” radiobutton), the average values are taken for the specific bin (Daily, Hourly, Five minutes). After all the above mentioned settings are made, the measurement values can be loaded by pushing the “Load measurements” button.

Note: The loading process can be cancelled by pressing the cancel button on the window that popped up.

### 1.3. Main control panel (green)

After the desired data has been loaded using the above mentioned process, the next step is to visualize or save the result. The three buttons present on this panel are described below:

- Plot
 

By pressing this button, the loaded data will be plotted on the field marked with purple. If further plotting tools are needed, the “Plot in new figure” checkbox may be checked. Now, after plotting, Matlab opens a new figure with further tools, allowing the user to edit and save the figure.
- Export
 

This button is used for saving the loaded data on the hard drive. Before pressing this button, the user should choose a file type and format for the data. There are two possibilities of file type to export to:

  - XLS – Microsoft Excel worksheet
  - MAT – MATLAB formatted binary file

The format, of the date and time stamps, can also be chosen using the “Export date format” panel. After the export button is pushed a window pops up asking for a filename and a path for the file. Note that a filename is suggested containing the date interval selected by the user.
- Close
 

Use this button to close the GUI.

Notes:

- the “Export” and “Plot” buttons are inactive if no data is loaded.
- The query may take a long time, if the interval is wide. Warning messages are displayed if it is the case.

2. The field encircled with **purple** is the place where the data is plotted.

If further plotting tools are needed, the “Plot in new figure” checkbox may be checked. Now, after plotting, Matlab opens a new figure with further tools, allowing the user to edit and save the figure.

- The x axis displays the date and time in the “MM-DD hh:mm” format.
- In the upper left corner, a cursor button is available (Figure 2, encircled with **grey**). After enabling it, the user can click on the plot points to view their exact values.

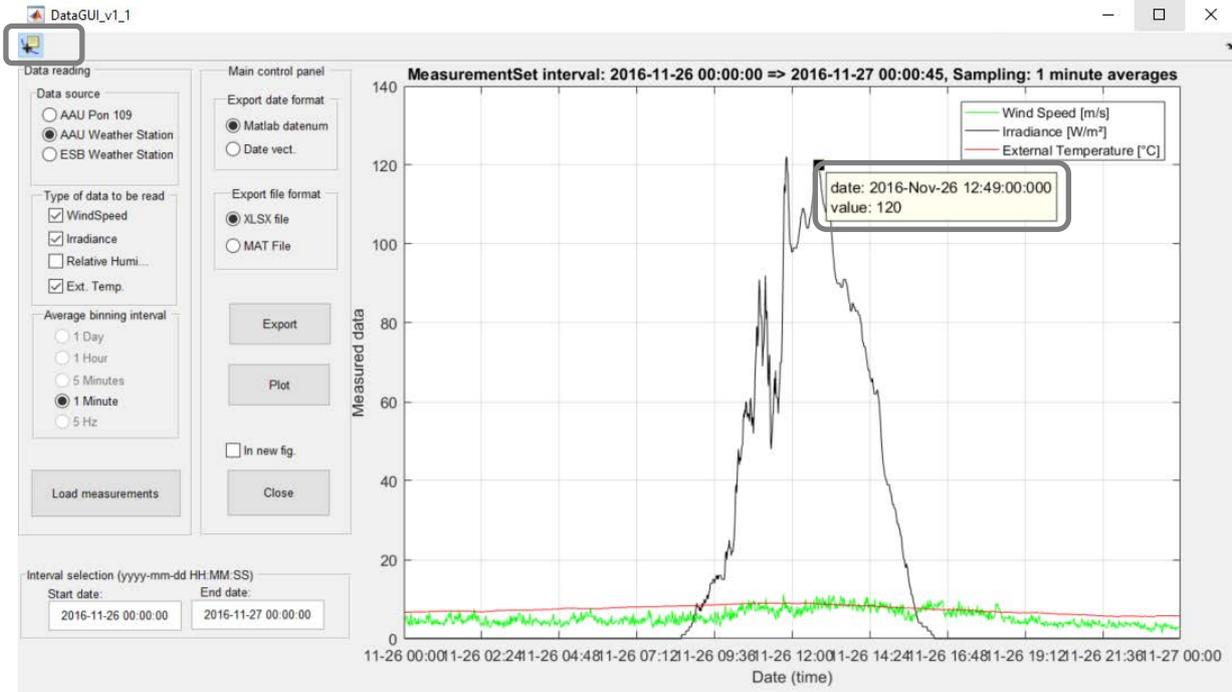


Figure 2 Cursor placement