Flood Monitoring App (V1.0) User Guide

This python script is built using a flood monitoring API available at (link to api). The script provides you with a means to find a Station's unique identifier and then to plot the station's available readings.

Running the script

The script requires an install of python (>V3.10) and certain libraries to run. A list of these libraries is provided in the requirements.txt document. The dependencies can be installed using pip as follows

```
pip install -r requirements_flood_monitoring.txt
```

If you do not have python installed, information about installation can be found at link to install guide .

Finding a Station Identifier

When you first run the script by using command
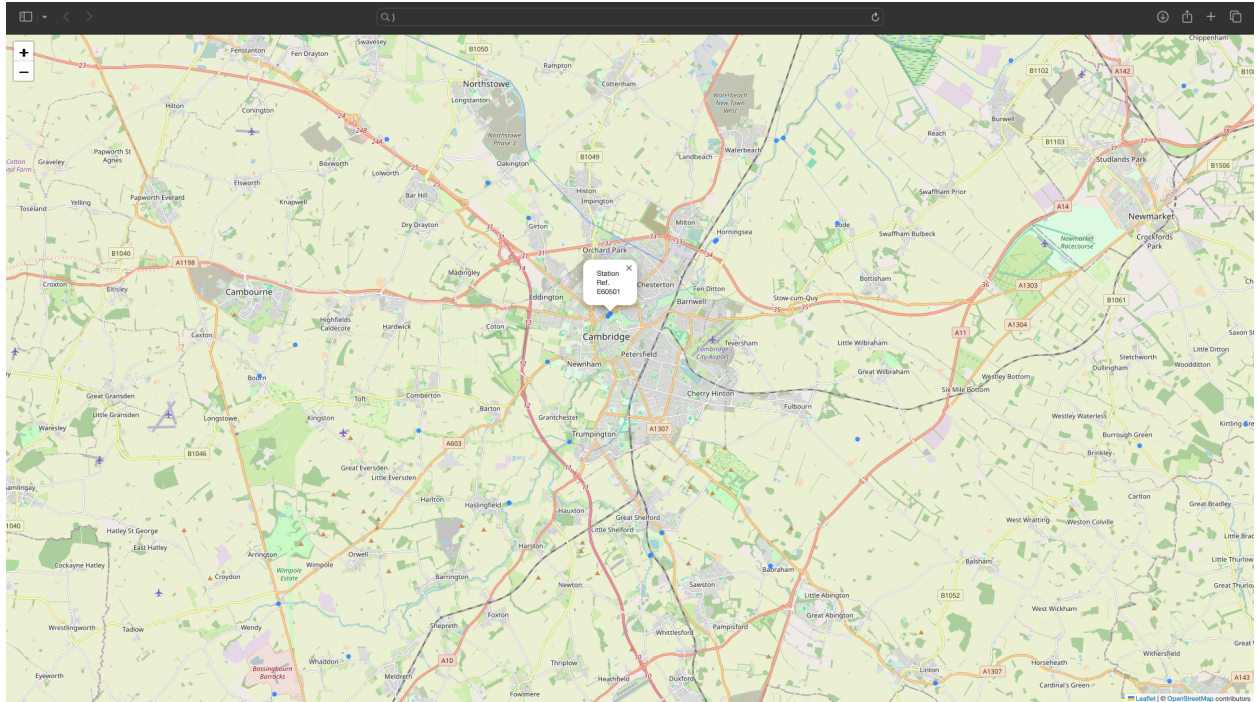
```
python3 flood_monitoring_app.py
```

you will be prompted with the following options

```
This app will help you find a station and plot its recorded values over the last 24 hours.
If a station reference is alrady known, please enter it below in the [Enter Station Reference] input field below to see plots of all available params

If you would like to find your station reference using filters, please leave the Enter Station Reference input field empty and press enter to continue

To instead view a map with station references marked and exit for now please type out MAP in the Enter Station Reference input field below

Enter Station Reference, If unknown leave blank and press enter:
```

Let's assume we that a station reference id is unknown. You can either look at a map showing the locations of different stations and their ids by typing out MAP (all CAPS) in the input field as shown below

Enter Station Reference, If unknown leave blank and press enter:MAP

This will show you a map in your browser as shown below. You can navigate this map to find a location you are interested in monitoring. The Blue dots represent available stations and hovering or clicking on these dots shows you the corresponding Station reference ID.

Alternatively if you would like to find your station using the filters that the API provides - 'search', 'parameterName', 'parameter', 'qualifier', 'label', 'town', 'catchmentName', 'riverName', 'stationReference', 'RLOIid', 'type', 'status' - then you can leave the Enter Station Reference field empty and press enter. You will then be prompted with the following text and input fields.

After you have chosen and entered a Filter Name in the input field, a second input field will appear and allow you to enter the value you would like to assign to the filer.

```
To help you find a station reference, the following filters are available


['search', 'parameterName', 'parameter', 'qualifier', 'label', 'town', 'catchmentName', 'riverName', 'stationReference', 'RLOIid', 'type', 'status']


In the field below, please enter the name of one filter you would like to use.
The field will appear again if you would like to add more filters later
If you want to try and enter a station reference directly, please press enter and leave fields blank


Filter Name (e.g.parameter):parameter
Filter Value (e.g.level):
```

Once a value has been entered, a list of station id's that satisfy the filter condition will be displayed as shown below. If you find the station you are looking for here, simply copy and type out the station ID in the input field provided to view a data table from the station and generate plots of available parameters.

```
Filter Name (e.g.parameter):parameter
Filter Value (e.g.level):flow
https://environment.data.gov.uk/flood-monitoring/id/stations?parameter=flow
The stations that satisfy the provided filters are:
['F1906', '3400TH', '4036', '4435', 'F2102', '700306', '2200TH', '2128', '4083', '2928TH', '700325', '4074', '2606', '4093', '4427', '1980TH', '692726', '1800TH', '2604TH', 'F3803', '3290TH', 'E2300', '4085', '2032
', '2490TH', '2005', '2989TH', '4086', '5280TH', '2250TH', '5190TH', '3090TH', '4012', '2894TH', '2900TH', '4022', '3280TH', '2898TH', '3100TH', '4189TH', '0680TH', '2427TH', '2170', 'F2809', '5390TH', 'F2702', '27
00TH', '4024', '2210TH', 'F2002', '2134', '4015', 'F2313', '1100TH', '693976', '3080TH', '690503', 'E1660', '0390TH', '4081', '4007', 'E2896', '3210TH', '2603TH', '1080TH', '4091', '2001', '3069TH', '4082', 'E22745
', '44142', '2448TH', 'E21897', 'E22300-anglian', '1490TH', '48198', 'E2997', '3078TH', '52244', '45163', 'E21863', '46134', 'E21188', '53128', '47174', 'E22042', 'E3013', 'E24964', 'E21739', '46136', '43229', '530
0_w2TH', '45142', '49168', '692421', '5300_w1TH', 'E22561', '3399TH', 'E24492', '43235', '43237', '1489TH', '45165', '43161', 'E1293', '44140', '44146', '43234', 'E2834', '531117', '43218', 'E21606', 'E21648', 'E30
06', 'E23278', 'E21441', 'E21412', 'E21404', 'E21722', 'E22346', 'E1935', 'E21830', 'E2663', 'E21509', 'E21501', 'E24518', 'E22353', 'E19862', 'E1097', 'E19866', 'E3055', 'E2992', 'E4835', 'E3043', 'E22698', 'E2221
1', 'E21194', 'E22890', 'E1488', 'E1492', 'E22564', 'E1658', 'E3026', 'E3057', 'E22519', 'E22552', 'E23069', 'E2993', 'E40135', 'E22834', 'E22476', 'E22571', 'E22505', 'E3041', 'E2991', 'E3053', 'E22870', 'E3068',
'48195', 'E3042', 'E22779', 'E2986', 'E3025', 'E3012', 'E3049', 'E2987', 'E22844', 'E3044', 'E3015', 'E1551', '52231', 'E3054', 'E12382', 'E12411', 'E8313', 'E12782', 'E14723', 'E12792', 'E12443', 'E8263', 'E1154',
'E4372', 'E9184', 'E14552', 'E13512', 'E12402', 'E12552', 'E641', 'E4362', 'E9132', 'E13821', 'E13822', 'E602', '5300TH', 'E12802', 'E14812', 'E14541', 'E16124', 'E1922', 'E3403', 'E6619', 'E12432', 'E9252', 'E500
', 'E13850', 'E4423', 'E4417', 'E15262', '8207TH', '45181', 'E13546', 'E41646', 'E22512', '481100', 'E13826', 'E13825', '2517SO', '2170a', '3327SE', 'E8242', '', 'E6154', 'E7852', 'E29203', 'E11692', 'E11302', 'E15
061', '0900SO', 'E14262', '2701SO', 'E7100', 'E14563', 'E14822', 'E3010', '2270_w1TH', '448301', 'SX56F056', 'SX65F051', 'SX75F010', 'SW85F055', 'SX74F051', 'SX25F064', 'SW53F051', 'SS51F004', 'SY29F052', 'E13401',
'E13423', 'E13292', 'E12446', 'E14752', '3305SE', 'E1902', 'E5082', 'E46493', 'E10823', 'E12793', '444510', '432520', '713115', '9012', 'E5850', '3702SO', 'E7090', 'E7060', 'E7080', 'F7070', 'E8653', 'E8222', 'E19
32', '3345THF', '3350THF', 'E5092', 'E12022', 'E3952', '2765', 'E7843', 'E70404', 'E15621', 'E41847', 'E15252', 'E552', 'E82185', 'E2176', '6c72f76a-b76c-4a28-8701-71cdca25c0f5', 'E2897', 'E3004', 'E10016', 'E9882
', 'E30004', 'E2534', '3123SO', 'E23015', 'E19865']


If you're ready to make a selection enter a station reference below
otherwise if you would like to add filters press enter and leave the field blank
You have so far added filters: ['parameter'] with values ['flow']


to erase all filters and start again please enter the word RESTART (all caps) in the station reference field below
Enter Station Reference:
```

If you would like to continue adding filters simply leave this field empty and press enter. This will show you the same screen again as well as the filters you have applied.

Viewing Data and Plots

Entering a station reference

Enter Station Reference:3400TH

gives you the following outputs

1. Separate data tables showing the values of each of the available parameters over time. Short snippet of table shown below.

```
Enter Station Reference: 3400TH
https://environment.data.gov.uk/flood-monitoring/id/stations
['flow' 'level']
Table for param flow
+----+--------------------------+--------------------------------------------------------------------------------+--------+
|    | dateTime                 | measure                                                                        | value  |
|----+--------------------------+--------------------------------------------------------------------------------+--------|
|  0 | 2025-03-09 09:45:00+00:00 | http://environment.data.gov.uk/flood-monitoring/id/measures/3400TH-flow-water-i-15_min-m3_s | 96.871 |
|  1 | 2025-03-09 10:00:00+00:00 | http://environment.data.gov.uk/flood-monitoring/id/measures/3400TH-flow-water-i-15_min-m3_s | 96.558 |
|  2 | 2025-03-09 10:15:00+00:00 | http://environment.data.gov.uk/flood-monitoring/id/measures/3400TH-flow-water-i-15_min-m3_s | 97.051 |
|  3 | 2025-03-09 10:30:00+00:00 | http://environment.data.gov.uk/flood-monitoring/id/measures/3400TH-flow-water-i-15_min-m3_s | 97.018 |
|  4 | 2025-03-09 10:45:00+00:00 | http://environment.data.gov.uk/flood-monitoring/id/measures/3400TH-flow-water-i-15_min-m3_s | 96.947 |
```

2. Plots of available parameter values over the last 24 hours.