PNUAIRNOW:

AIR QUALITY DASHBOARD

201924451 Kim Taehun


About the project...

- Using HTML, CSS and JS
- Create a responsive web application to monitor and display real-time air quality data
- Including temperature, feelslike temperature, humidity, wind
- PM2.5, PM10, CO, O3, NO2, SO2
- Visualize trends for temperature and humidity over time
- Represent the distribution of various pollutants using Bar charts and Doughnut chart
- Implement color coding to indicate air quality levels

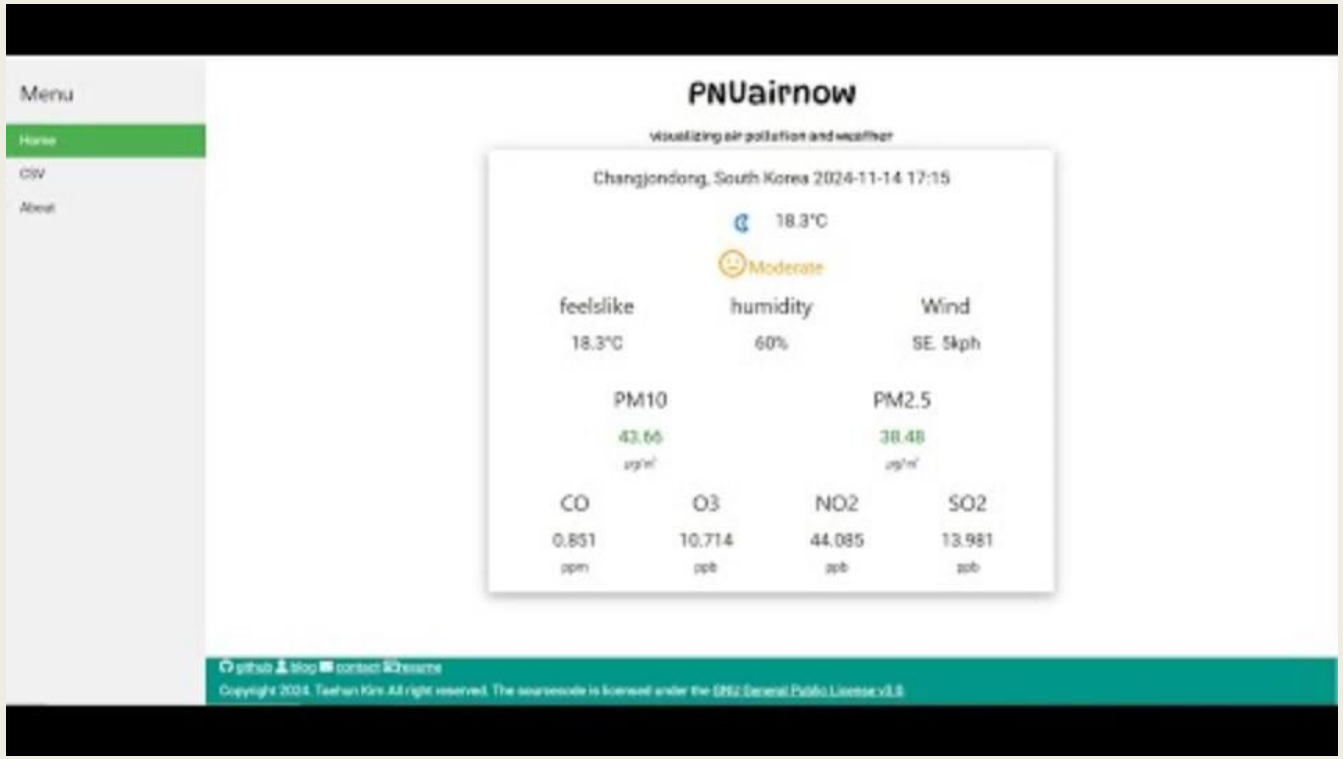
Air quality web page link

- https://minchocoin.github.io/air-quality-dashboard/

- You can download source code on
- https://github.com/minchoCoin/air-quality-dashboard

Demo video

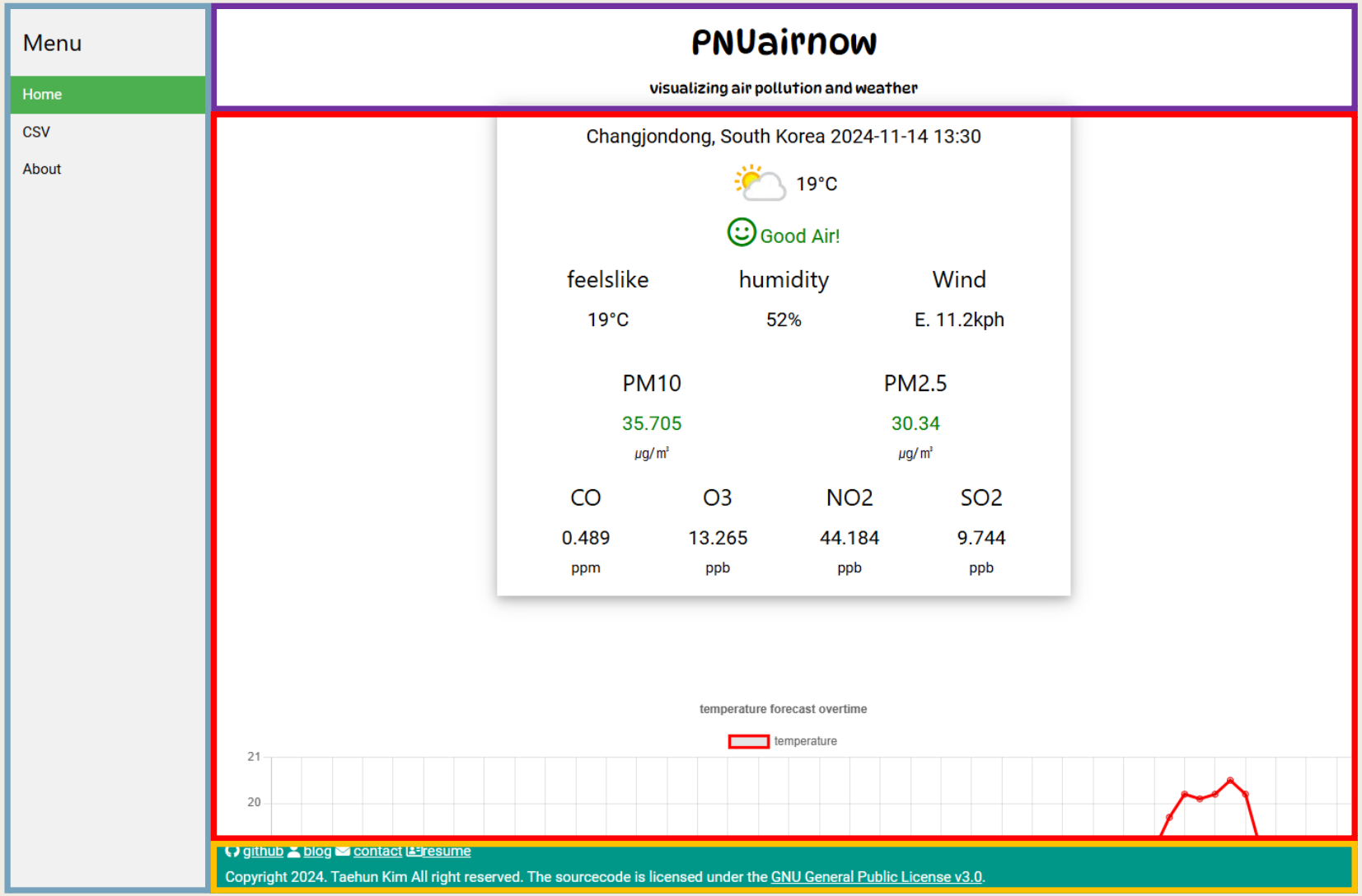
https://youtu.be/VFPmD9clYjk



layout

Header

Navigation Bar



Main Dashboard

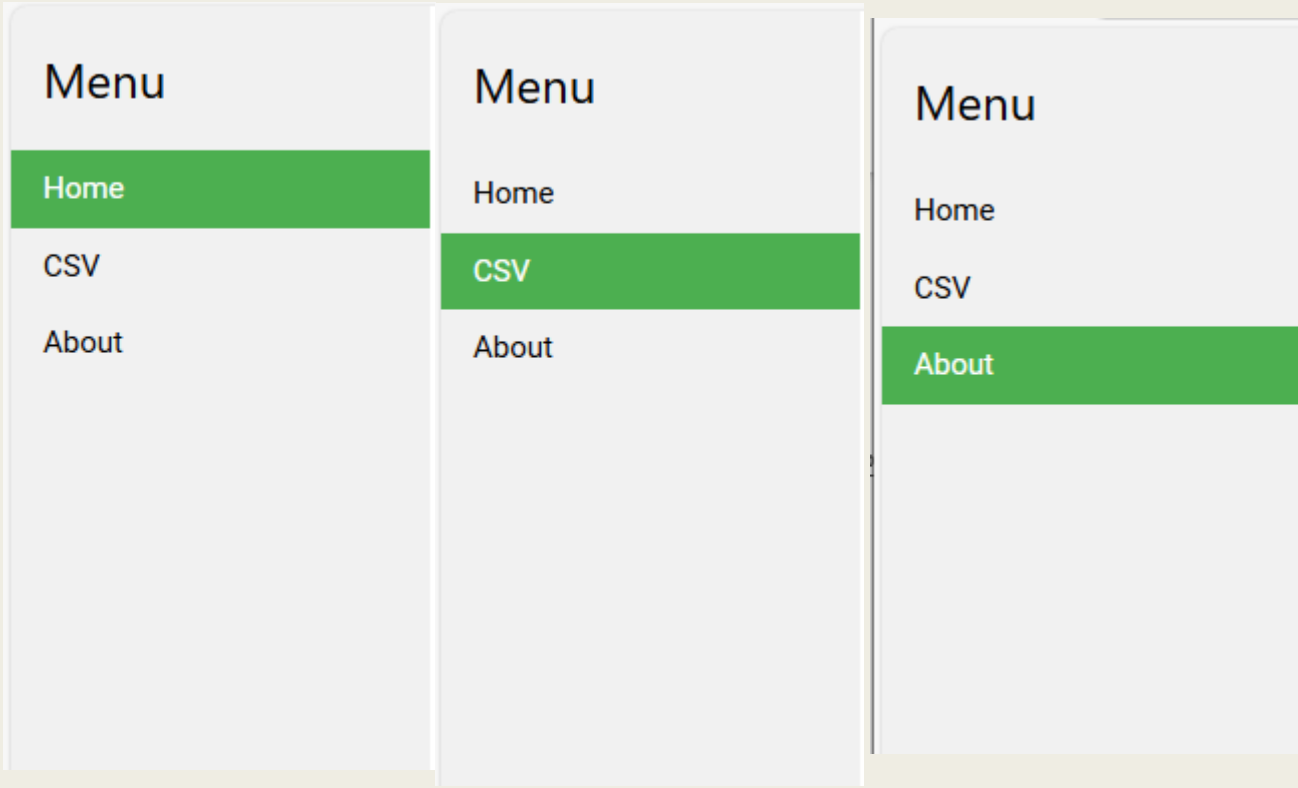
Footer

layout-header

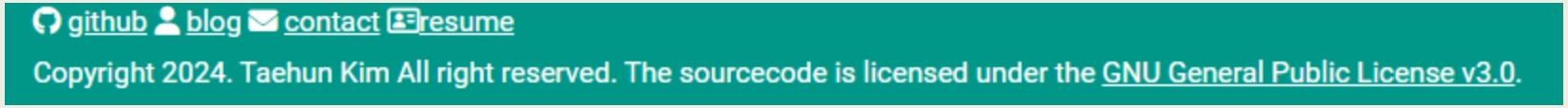
- Title of the application and a brief description.

Layout-navigation bar

- You can switch the page
- through this navigation bar.

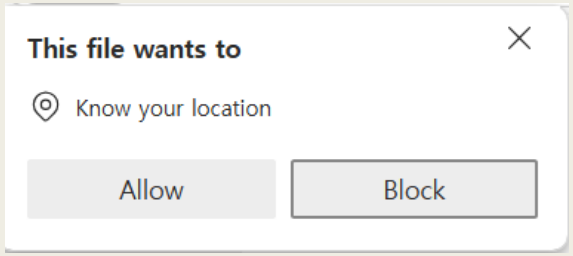


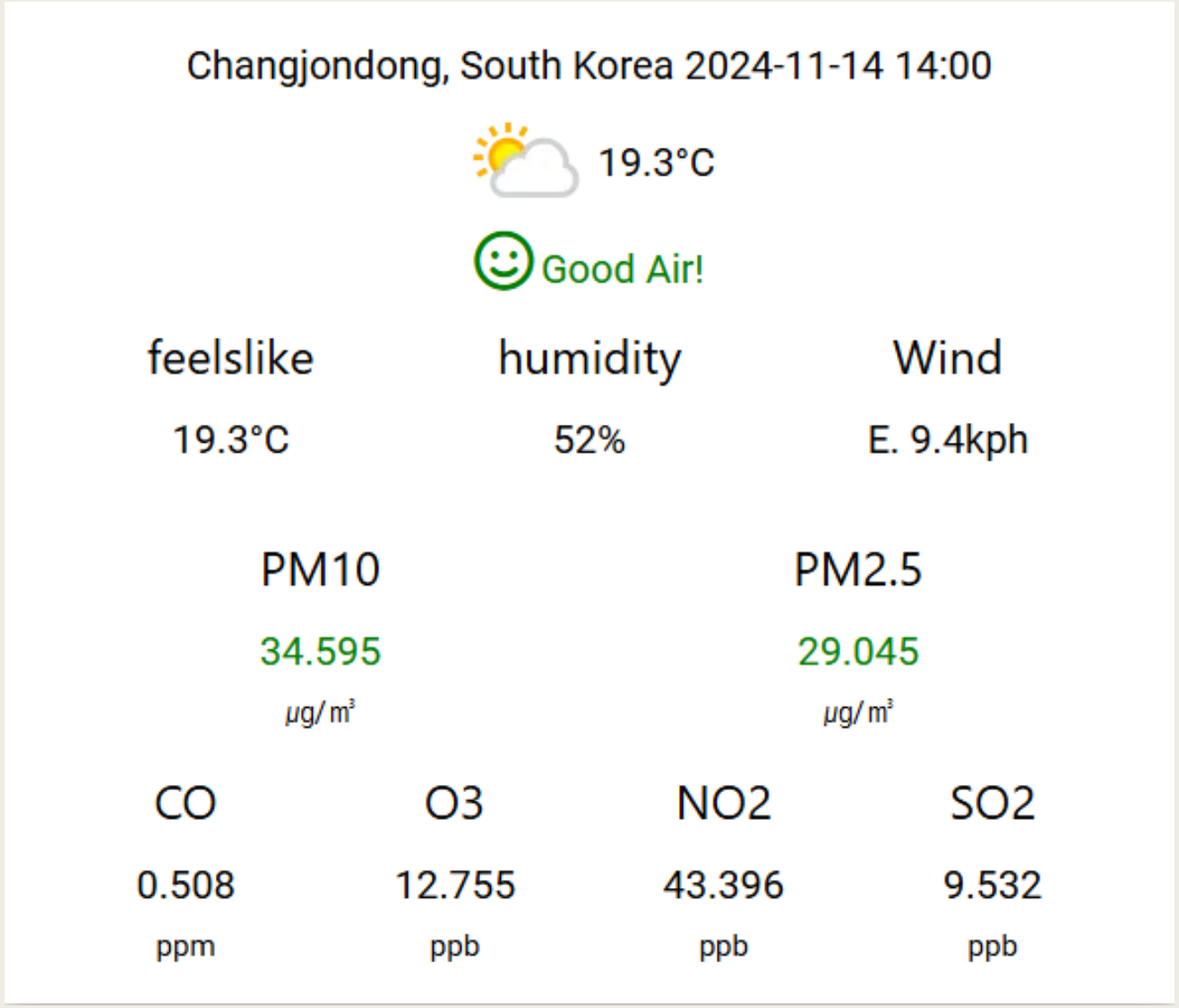
Layout- footer



- You can view my github, blog, contact, resume link
- License link(GNU General Public License v3.0)

Feature1. real-time dashboard





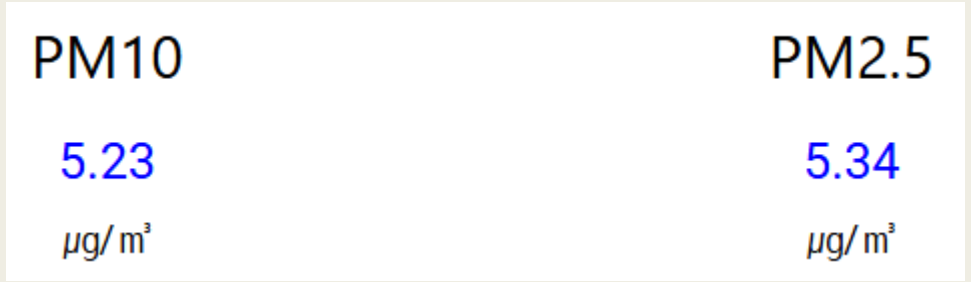
Using Free Weather API, jquery and AJAX
Get real-time data

- City
- Country
- Last updated
- Weather image
- Air quality
- Temperature
- Feelslike temperature
- Humidity
- Wind
- Pm10
- Pm2.5
- CO
- O3
- NO2
- SO2

Featur1-1. color of PM10 and PM2.5

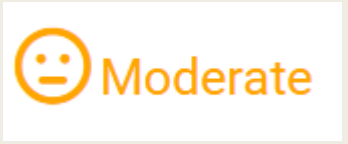
- PM10 and PM2.5
  - *Good: blue*
  - *Moderate: green*
  - *Bad: orange*
  - *Very bad: red*

	good	moderate	bad	very bad
pm10	0-30	31-80	81-150	151-
pm2.5	0-15	16-50	51-100	101-



Feature 1-2. color of air quality

- UK DEFRA INDEX
  - *Good: blue*
  - *Moderate: green*
  - *Bad: orange*
  - *Very bad: red*

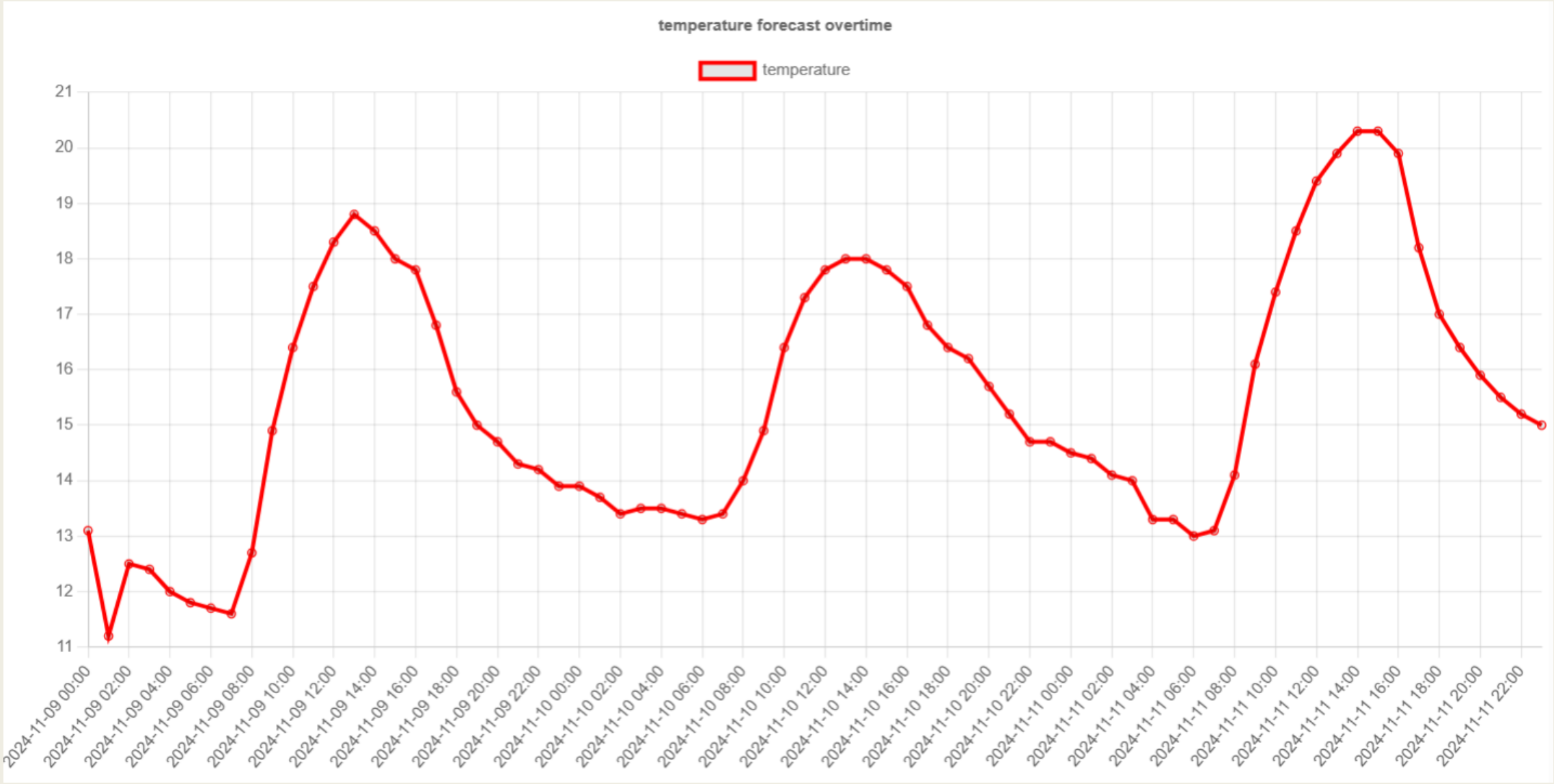


UK DEFRA INDEX Table

Index	1	2	3	4	5	6	7	8	9	10
Band	Low	Low	Low	Moderate	Moderate	Moderate	High	High	High	Very High
μgm^{-3}	0-11	12-23	24-35	36-41	42-47	48-53	54-58	59-64	65-70	71 or more

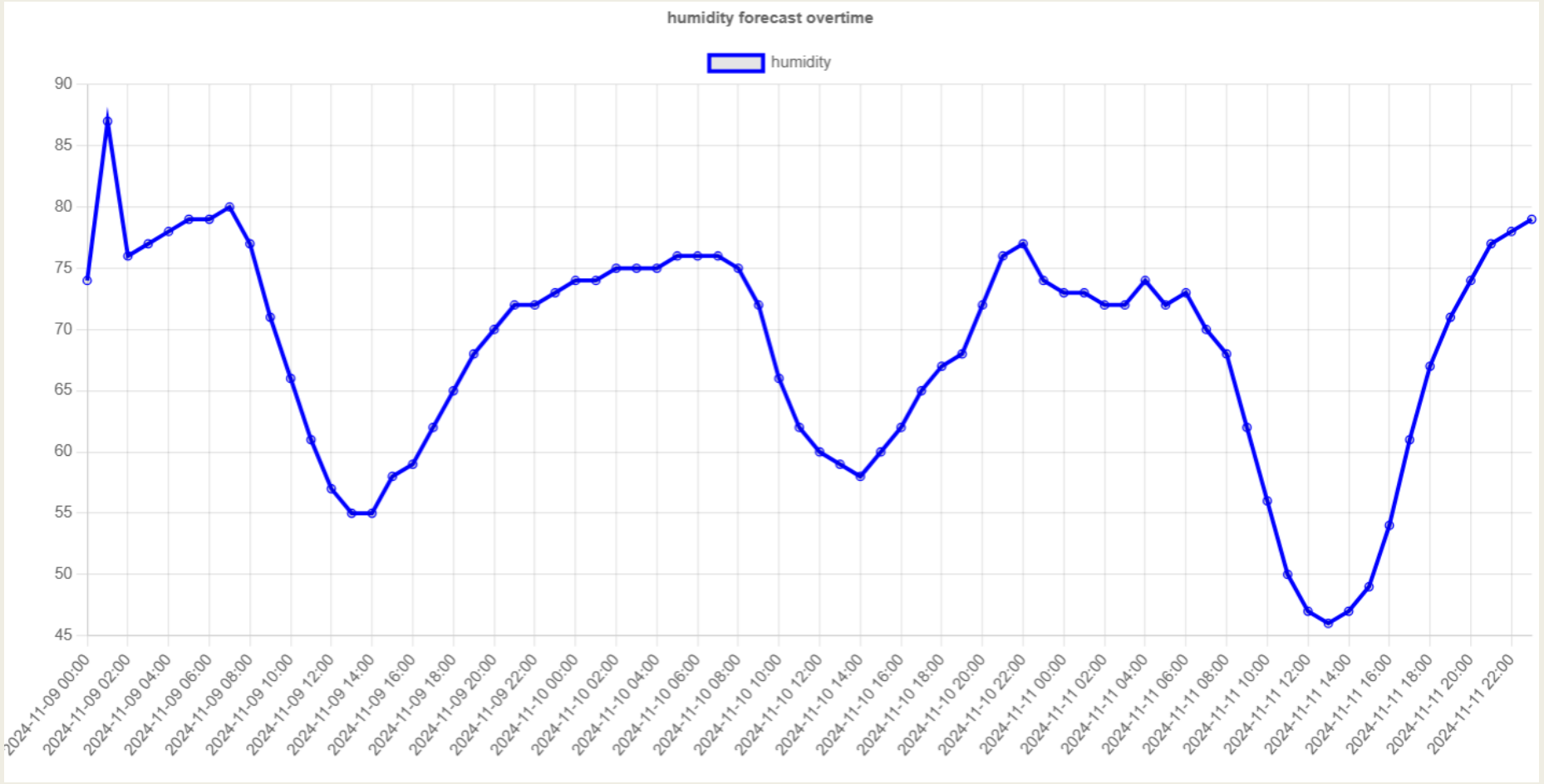
Feature2. temperature & humidity chart

Temperature 3day forecast chart by hour

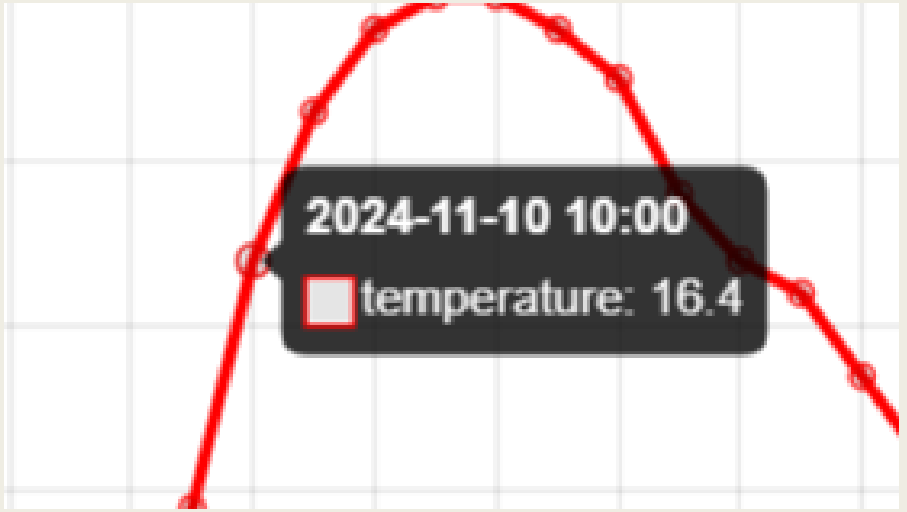


Feature2. temperature & humidity chart

humidity 3day forecast chart by hour

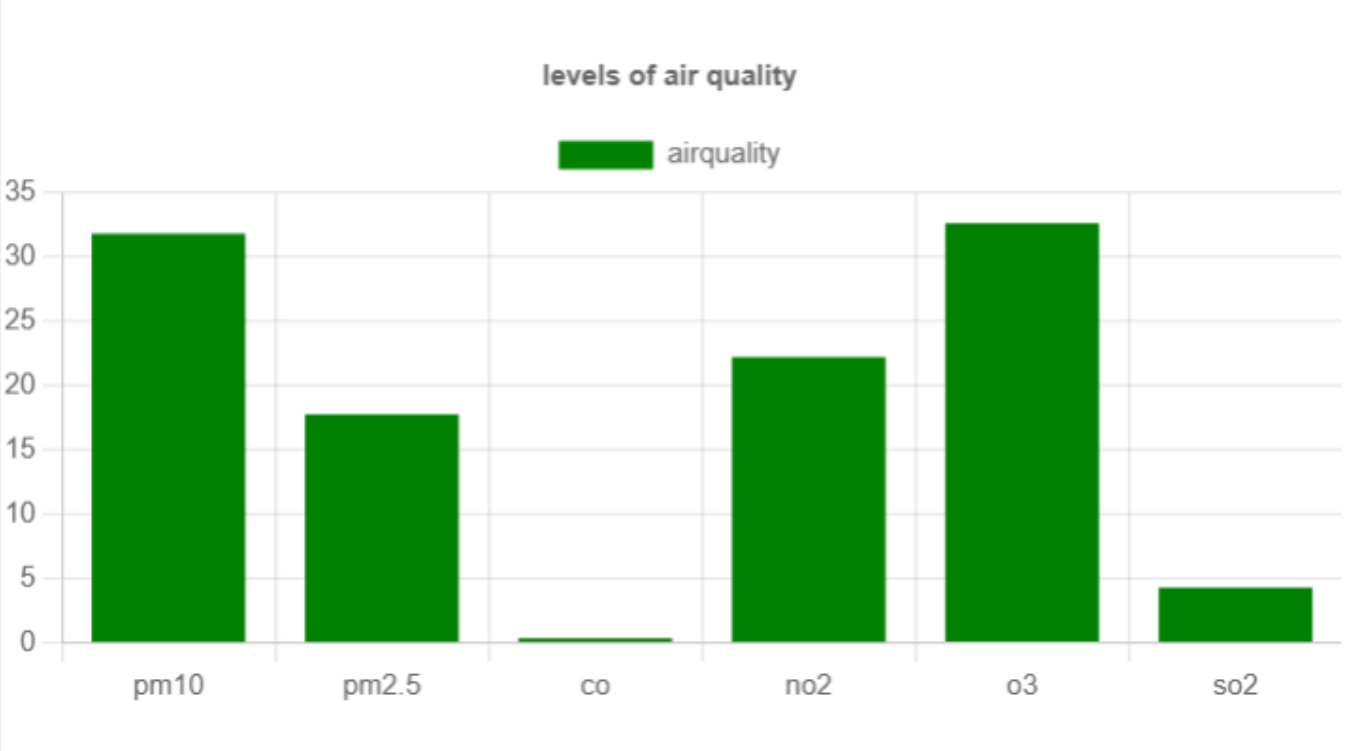


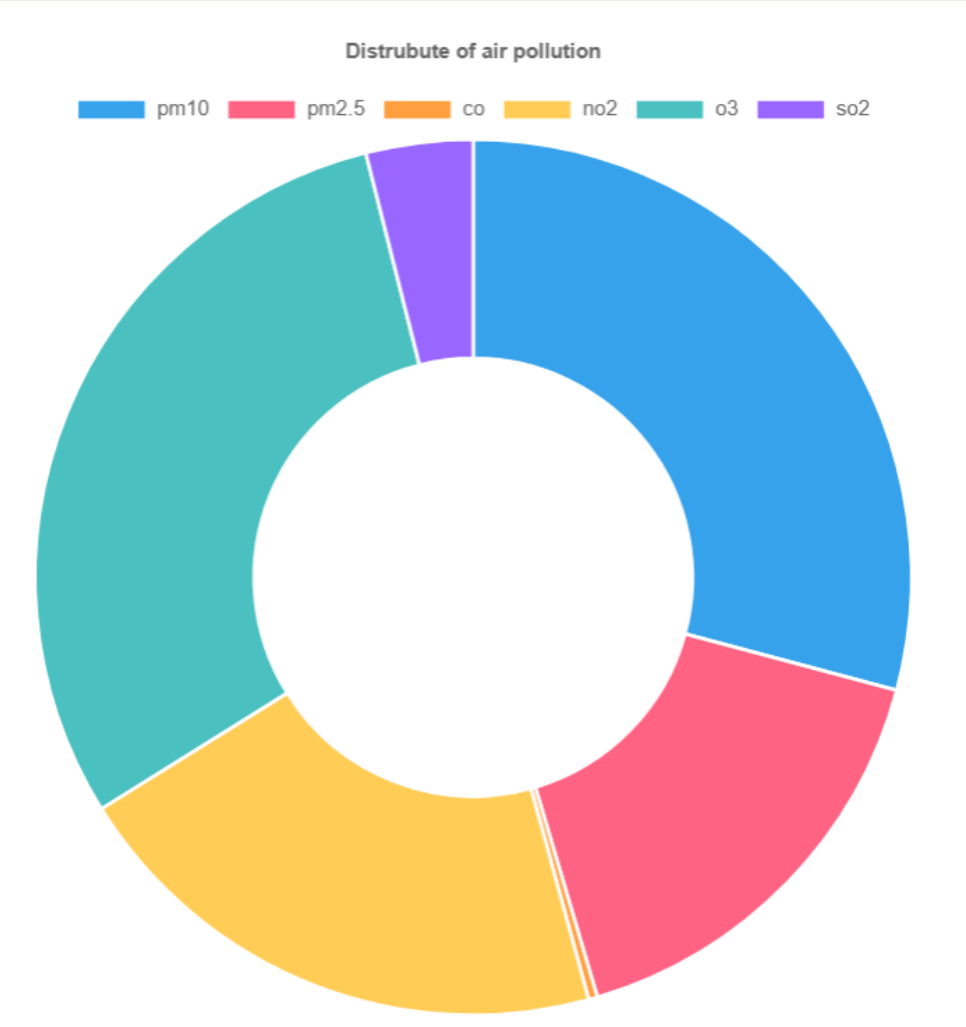
Feature2. temperature & humidity chart

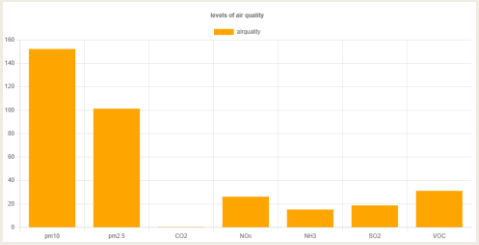


You can check the value of the chart by hover the chart

Feature3. Air pollutants chart





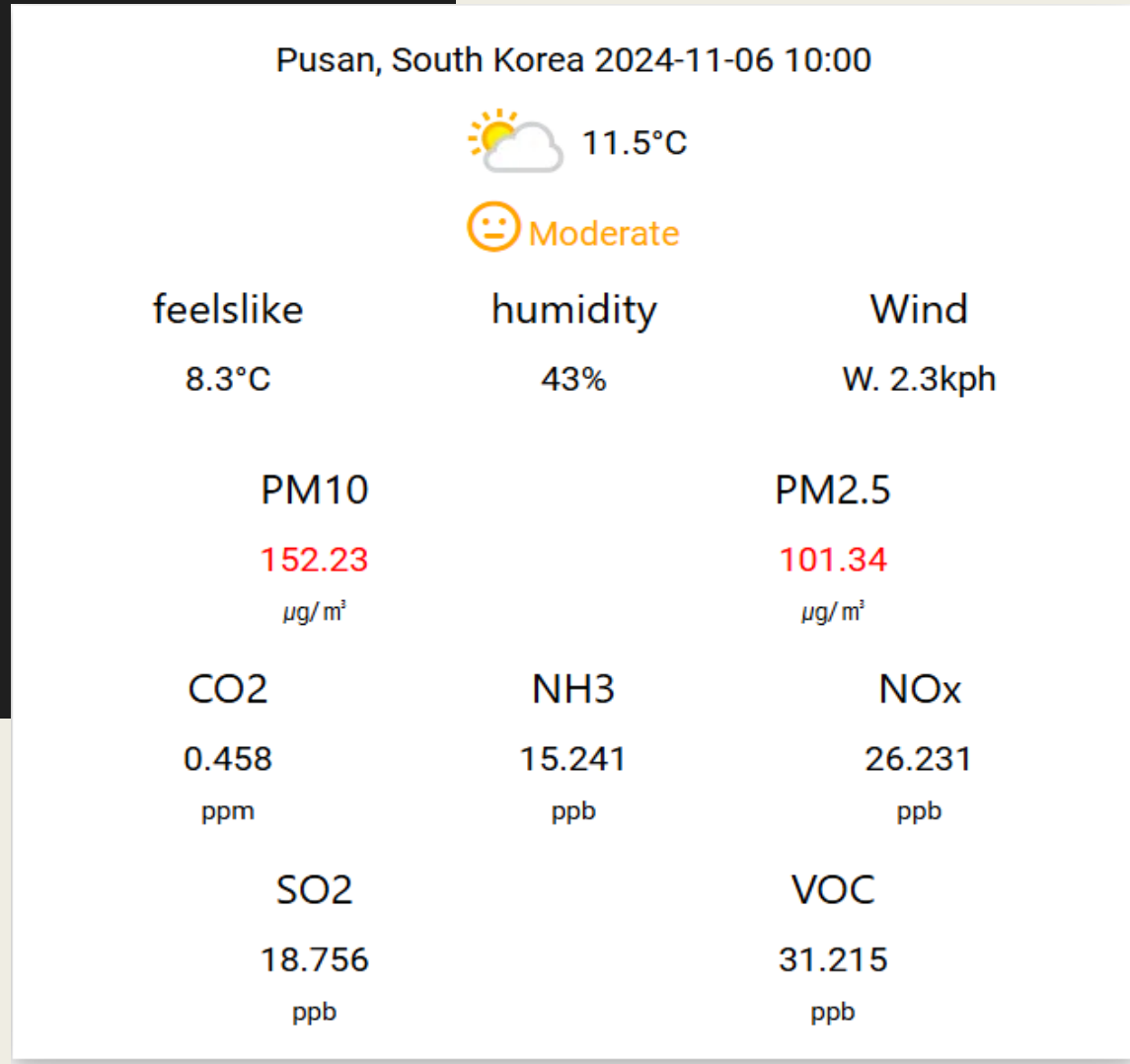


The color of air quality bar chart is the color of air quality

Feature4. CSV file dashboard

```
time,cityname,country,current,temperature,humidity,feelslike,wind_dir,wind_kph,pm10,pm2_5,co2,Nox,NH3,SO2,VOC,gb_defra_index
2024-11-06 0:00,Pusan,South Korea,,9.8,62,,,,,,,,,,
2024-11-06 1:00,,,,9.2,62,,,,,,,,,,
2024-11-06 2:00,,,,8.7,55,,,,,,,,,,
2024-11-06 3:00,,,,8,48,,,,,,,,,,
2024-11-06 4:00,,,,7.7,46,,,,,,,,,,
2024-11-06 5:00,,,,7.4,48,,,,,,,,,,
2024-11-06 6:00,,,,7.4,50,,,,,,,,,,
2024-11-06 7:00,,,,7,52,,,,,,,,,,
2024-11-06 8:00,,,,8.3,34,,,,,,,,,,
2024-11-06 9:00,,,,10.1,47,,,,,,,,,,
2024-11-06 10:00,,,0,11.5,43,8.3,W,2.3,152.23,101.34,0.458,26.231,15.241,18.756,31.215,5
2024-11-06 11:00,,,,12.5,40,,,,,,,,,,
2024-11-06 12:00,,,,13.1,37,,,,,,,,,,
2024-11-06 13:00,,,,13.5,37,,,,,,,,,,
2024-11-06 14:00,,,,13.7,37,,,,,,,,,,
2024-11-06 15:00,,,,13.5,37,,,,,,,,,,
2024-11-06 16:00,,,,12.9,39,,,,,,,,,,
2024-11-06 17:00,,,,11.8,42,,,,,,,,,,
2024-11-06 18:00,,,,10.6,45,,,,,,,,,,
2024-11-06 19:00,,,,9.9,48,,,,,,,,,,
2024-11-06 20:00,,,,9.3,52,,,,,,,,,,
2024-11-06 21:00,,,,8.8,55,,,,,,,,,,
2024-11-06 22:00,,,,8.4,58,,,,,,,,,,
```

Read csv file and visualize
Time, cityname, country, temperature, humidity ,feelslike, wind, pm10,pm2.5, co2, Nox, NH3, SO2,VOC,defra_index



Sample of csv file

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
time	cityname	country	current	temperatu	humidity	feelslike	wind_dir	wind_kph	pm10	pm2_5	co2	Nox	NH3	SO2	VOC	gb_defra_index	
2024-11-06 0:00	Pusan	South Korea		9.8	62												
2024-11-06 1:00				9.2	62												
2024-11-06 2:00				8.7	55												
2024-11-06 3:00				8	48												
2024-11-06 4:00				7.7	46												
2024-11-06 5:00				7.4	48												
2024-11-06 6:00				7.4	50												
2024-11-06 7:00				7	52												
2024-11-06 8:00				8.3	34												
2024-11-06 9:00				10.1	47												
2024-11-06 10:00			O	11.5	43	8.3	W	2.3	152.23	101.34	0.458	26.231	15.241	18.756	31.215	5	
2024-11-06 11:00				12.5	40												
2024-11-06 12:00				13.1	37												
2024-11-06 13:00				13.5	37												
2024-11-06 14:00				13.7	37												
2024-11-06 15:00				13.5	37												
2024-11-06 16:00				12.9	39												
2024-11-06 17:00				11.8	42												

Feature5. about

- Video about air pollutions
- Information of air pollutions

PNUairnow

visualizing air pollution and weather

you can download source code of this webpage on this link

Real time weather and air pollution data is received from Free Weather API

Air Quality

Particulate Matter(PM_{10},$PM_{2.5}$)

Particulate Matter is classified into PM10 and PM2.5 depending on their diameters, PM10 is a dust less then 10/1000㎜ and PM2.5 is a dust less than 2.5/1000㎜ which are smaller then 1/20~1/30 of the hair diameter(about 60㎛). Particulate Matter is a mixture of airborne solid particles and liquid droplets. These particles take various shapes and sizes as they are emitted not only from natural sources, but also from various fixed or mobile sources. PM2.5 is either directly emitted from such sources or indirectly generated from gases such as SOx and NOx.

They aggravate respiratory diseases like asthma and weaken the functions of the lungs. Furthermore, they reduce visibility, disturb the metabolism of plants after remaining on the leaf, and particularly cause the corrosion of historic relics or statues.

	good	moderate	bad	very bad
pm10	0-30	31-80	81-150	151-
pm2.5	0-15	16-50	51-100	101-

O_3

Ozone(O3) is a photochemical oxidant such as PANs, aldehyde, and acrolein which are formed during the photochemical reaction of NOx and VOCs in the presence of sunlight, and is classified as a secondary pollutant. VOCs, a precursor, are emitted from various sources such as motor vehicles and industrial facilities including chemical plants and refineries. They are

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