

Visualization of weather data for cities in Morocco

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Abstract

This article presents a visualization of weather data for cities in Morocco. This article presents a visual analysis of weather data for cities in Morocco. The data shows the Weather history of Moroccan cities during the day 15/03/2022. It includes any facts or numbers about the state of the atmosphere, including temperature, wind speed, humidity, pressure, and the visualization techniques used to display this information include horizontal bars, side-by-side-bars, and pie charts. The goal of the article is to provide a clear and informative representation of the weather patterns in these cities, which can be used for a variety of purposes, such as climate research, weather forecasting, and urban planning.

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1 Introduction

The weather in Morocco can have a significant impact on various aspects of life, such as agriculture, tourism, and urban planning. To better understand the weather patterns in Morocco, it is important to have accurate and easily accessible data. In this article, we present a visual analysis of weather data for several cities in Morocco. The article aims to enhance the understanding of the weather patterns in Morocco through the use of data visualization, and help decision makers, researchers, and other stakeholders to access accurate and useful weather information about the country.

2 Data Visualization

Data visualization is the process of representing data in a graphical or pictorial format. It helps to make complex data more easily understandable and allows users to identify patterns, trends, and insights that may not be immediately apparent from looking at raw data. There are various types of data visualization techniques such as:

1. Bar charts and histograms: used to compare values across different categories.
2. Line charts and time series plots: used to show changes in values over time.
3. Scatter plots: used to identify relationships and correlations between two or more variables.
4. Pie charts: used to show proportions of different categories in relation to the whole.
5. Dashboards: used to present multiple types of data in a single, easy-to-understand format.

These visualization techniques can be created using a variety of software tools such as Tableau, QlikView, Microsoft Power BI, and D3.js. It's important to note that, good data visualization should be able to effectively convey the story behind the data, be legible and easily understood, and be designed with the user in mind.

3 Experimental Results

3.1 Data Set

This dataset shows the Weather history of Moroccan cities during the day 15/03/2022. It includes any facts or numbers about the state of the atmosphere, including temperature, wind speed, humidity, and pressure.

| lon,lat,weather_id,weather_main,weather_description,weather_icon,base,temp,feels_like,temp_min,temp_max,pressure,humidity,sea_level,grnd_level,visibility,wind_speed,wind_deg,wind_gust,clouds,dt,country | | |
|---|--|--|
| 7,0,33.8833,800,Clear,clear sky,01n,stations,278.96,278.96,278.96,278.96,1011,90,1011,947,10000,0.84,103,1.13,10,1647381647,MA,1647325980,1647368967,3600,6546578,Meknes,200,-5.55 | | |
| 8,0,34.25,800,Clear,clear sky,01n,stations,284.52,283.72,284.52,284.52,1011,77,1011,1008,10000,1.49,98,1.89,5,1647381468,MA,1647326231,1647369211,3600,2544571,Kenitra,200,-6.5833 | | |
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| 18,0,32.3394,804,Clouds,overcast clouds,04n,stations,282.08,280.98,282.08,282.08,1012,83,1012,951,10000,2.14,243,3.2,100,1647381648,MA,1647326159,1647369177,3600,2555745,Beni Mellal,200,-6.3608 | | |
| 19,0,33.2566,804,Clouds,overcast clouds,04n,stations,285.97,285.19,285.97,285.97,1011,72,1011,1010,10000,5.67,83,7.77,100,1647381648,MA,1647326681,1647369682,3600,2550078,El Jadida,200,-8.5025 | | |
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| 30,0,32.93,803,Clouds,broken clouds,04n,stations,279.95,277.75,279.95,279.95,1011,78,1011,912,10000,3.1,225,4.11,84,1647381648,MA,1647325996,1647369003,3600,6546573,Khenifra,200,-5.66 | | |
| 31,0,34.9167,804,Clouds,overcast clouds,04n,stations,285.9,284.95,285.9,285.9,1010,66,1010,988,10000,3.44,163,5.51,100,1647381649,MA,1647325215,1647368179,3600,2555467,Berkane,200,-2.3167 | | |
| 33,0,32.5,804,Clouds,overcast clouds,04n,stations,281.79,280.2,281.79,281.79,1012,84,1012,960,10000,2.74,274,4.46,100,1647381649,MA,1647326241,1647369257,3600,2548830,Al Fqih Ben Âtalah,200,-6.7 | | |
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| 39,0,23.7141,800,Clear,clear sky,01n,stations,289.75,289.32,289.75,289.75,1019,71,1019,1018,10000,5.29,21,8.53,0,1647381649,EH,1647328373,1647371558,3600,2463447,Dakhla,200,-15.9368 | | |

Fig 1: An overview of the dataset we used

3.2 Results and Discussions

In this graph we represent relation between median of Wind Speed and median of wind Gust for each cities using bar. Wind gust is a sudden increase in wind speed. It is common to see that when the wind speed is high, the wind gusts are also high.

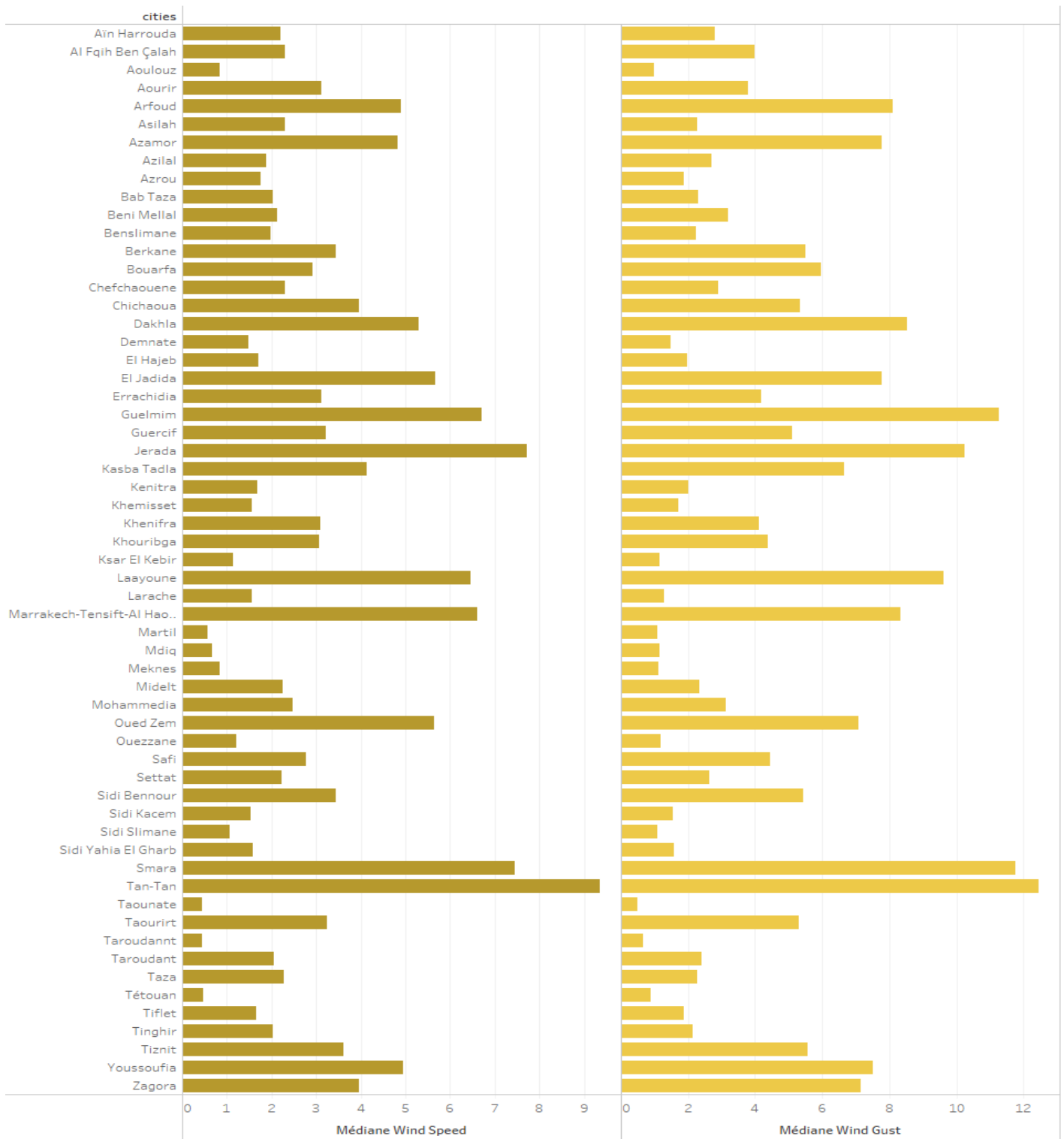


Fig 2: Graph of median Wind Speed and median of wind Gust for each city

In this graph we represent median of Humidity for each city, Color orange-gold shows different levels of median of Humidity and we can see where the humidity is higher or lower across the city. The marks are labeled by median of Humidity

Median of Humidity for cities

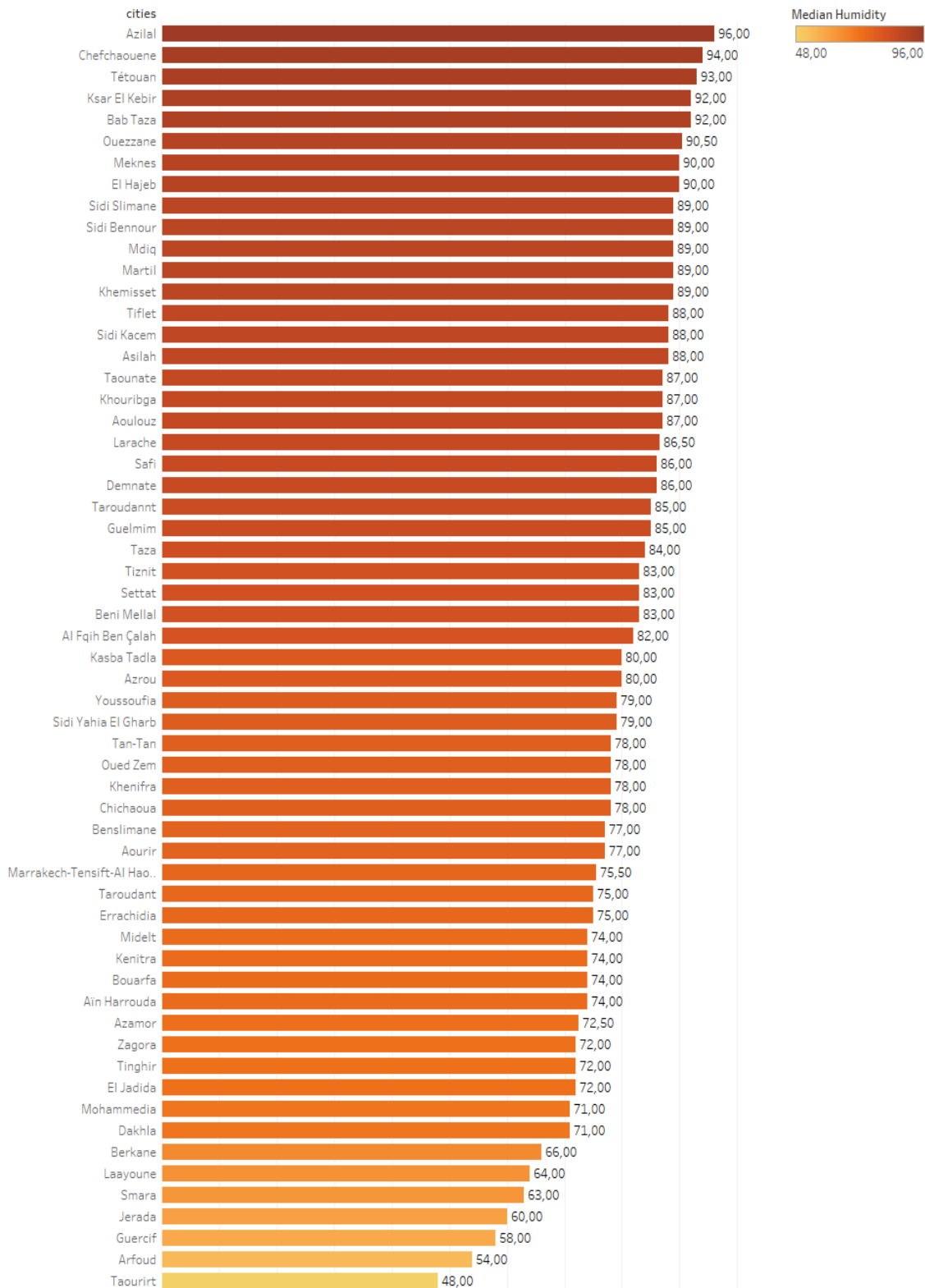


Fig3: Graph of median of Humidity for each city

In this graph we represent Median of Clouds for each city broken down by Weather Description. Color shows details about Weather Description. The view is filtered on cities

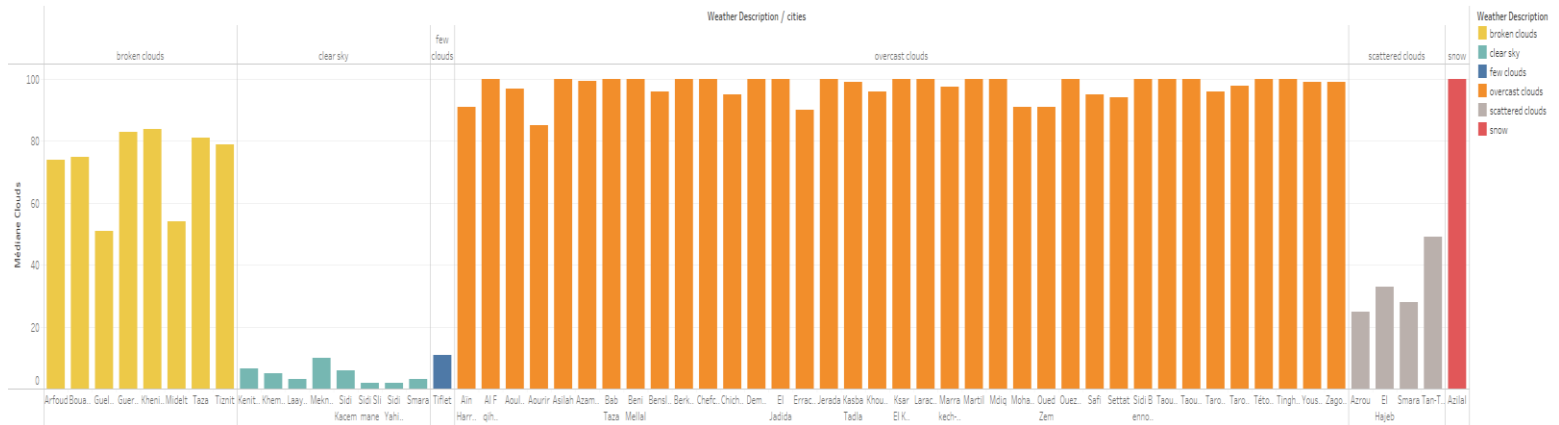


Fig4: Graph of Median of Clouds for each city broken down by Weather Description

3.3 Dashboard

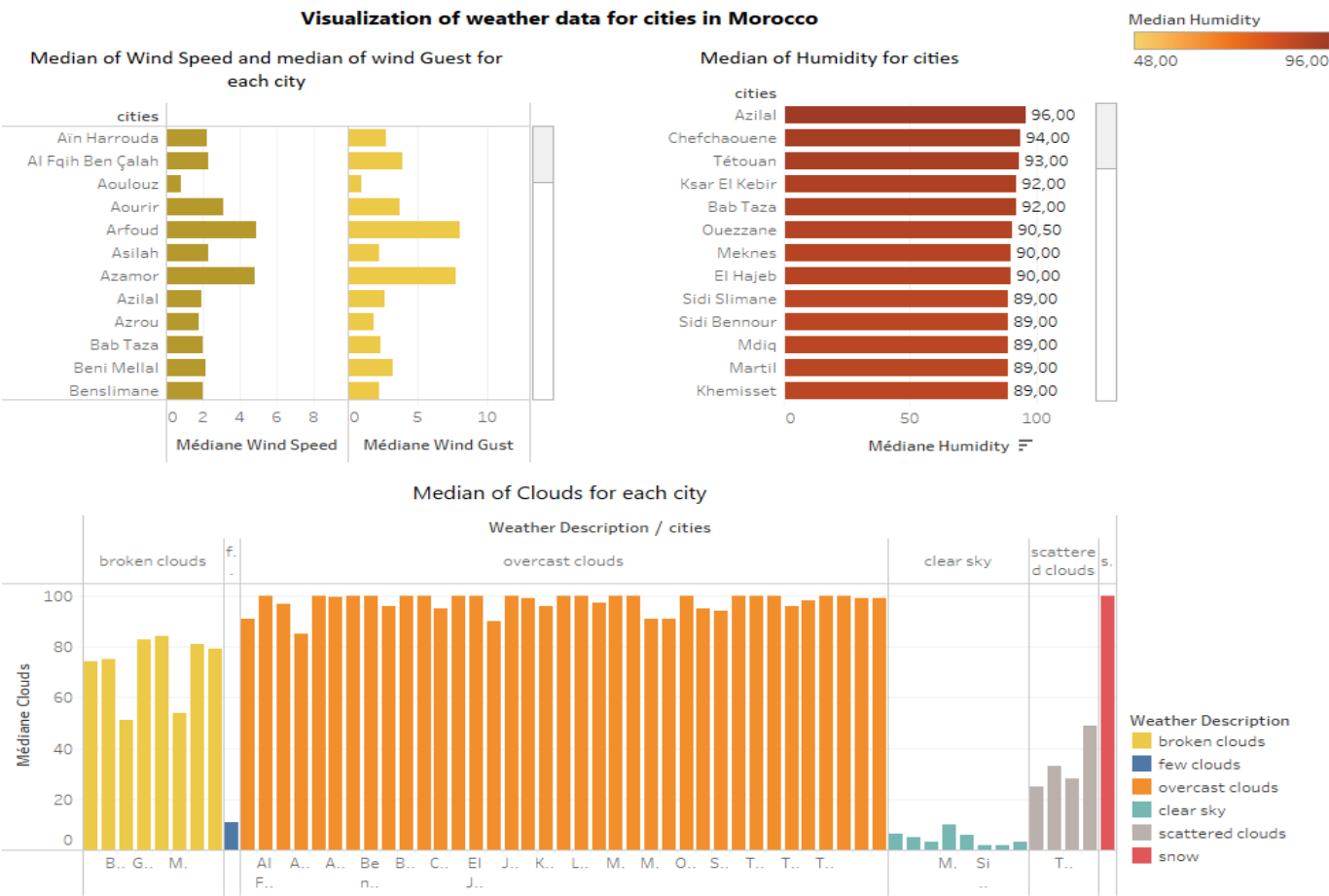


Fig5: Dashboard of Visualization of weather data for cities in Morocco

4 Conclusion

In conclusion, visualizing weather data for cities in Morocco is an important task that can provide valuable insights into the climate and meteorological conditions of the region. By using various data visualization techniques we can effectively represent the data in a way that is easy to understand and interpret. By comparing weather data across different cities in Morocco, we can gain a more comprehensive understanding of the regional climate. Overall, visualizing weather data can help us to make better-informed decisions and improve our ability to plan for and respond to weather-related events.

References

<https://www.kaggle.com/datasets/mohamedelatillah/weather-morocco-15032022?resource=download>