FORECASTING FOR THE NEXT FLOOD IN LAGOS

Introduction

This report presents an analysis of weather data for Lagos, focusing on the time period from January 2022 to June 2024. The dataset contains 46 entries with various meteorological parameters, including temperature (T, TM, Tm), sea level pressure (SLP), humidity (H), precipitation (PP), visibility (VV), wind speed (V, VM), and weather conditions (RA, TS).

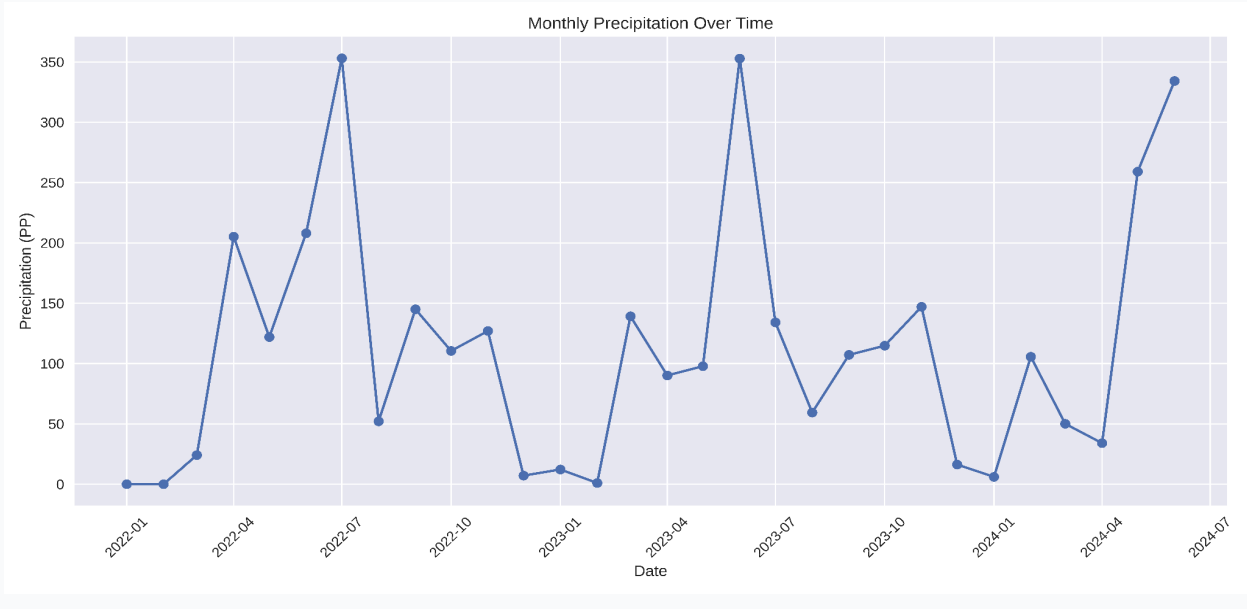
Data Overview

The dataset consists of the following columns:

- **T**: Average temperature
- **TM**: Maximum temperature
- **Tm**: Minimum temperature
- **SLP**: Sea level pressure
- **H**: Humidity
- **PP**: Precipitation
- **VV**: Visibility
- **V**: Wind speed
- **VM**: Maximum wind speed
- **RA**: Rainfall occurrence
- **TS**: Thunderstorm occurrence

Monthly Precipitation Over Time

The graph below shows the monthly precipitation from January 2022 to June 2024. Significant fluctuations in precipitation can be observed, with some months experiencing very high precipitation and others very low.



Precipitation Statistics

Summary statistics for the rainfall (PP) column are as follows:

Statistic	Value
Count	30
Mean	114.51 mm
Std	101.74 mm
Min	0.0 mm
25%	26.61 mm
50%	101.74 mm
75%	143.58 mm
Max	353.06 mm

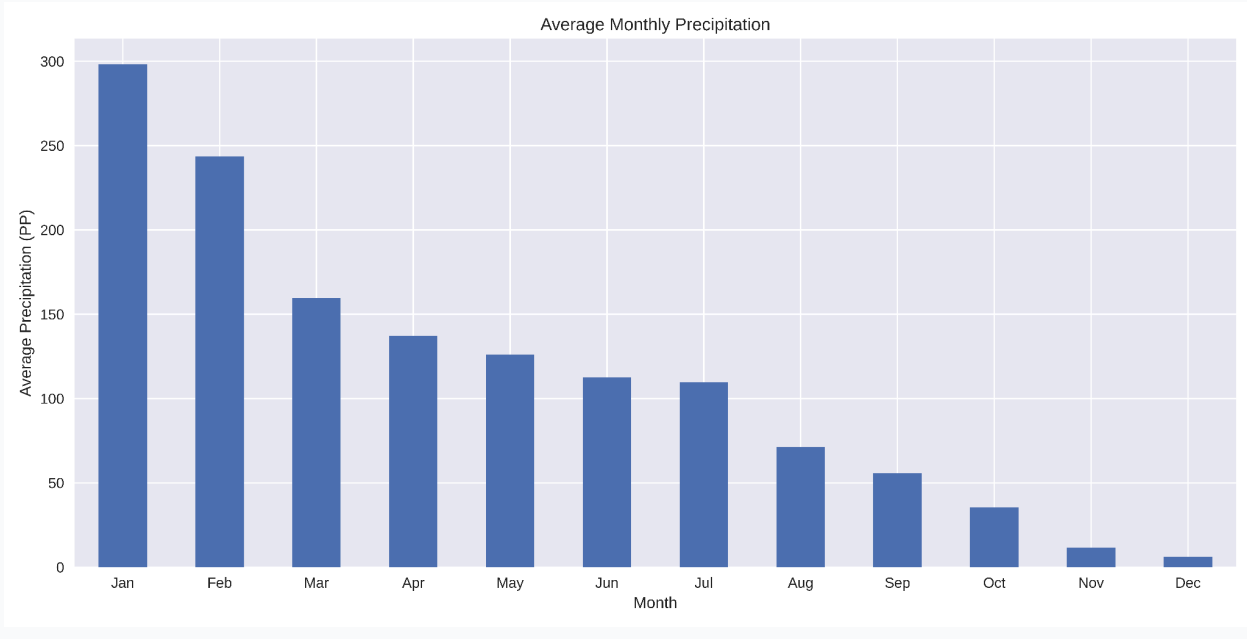
Key Insights

- The average monthly rainfall is approximately 114.51 mm.
- The rainfall distribution is right-skewed, with some months having very high precipitation (up to 353.06 mm).
- The median rainfall is 101.74 mm, indicating that half of the months have rainfall below this value.

- There is high variability in rainfall, as indicated by the large standard deviation of 101.74 mm.
- The highest recorded monthly precipitation was in July 2022 (353.06 mm), and the lowest was in January 2022 (0.0 mm).

Average Precipitation by Month

Bar chart



Month	Average Precipitation (mm)
6	298.37
7	243.59
5	159.62
11	137.04
9	126.12
10	112.64
4	109.81
3	71.12
8	55.75

2	35.56
12	11.69
1	6.10

Observations

- June and July have the highest average precipitation.
- December and January have the lowest average precipitation.
- The rainy season appears to be from May to July, with peak precipitation in June and July.
- The dry season seems to be from December to February.

Average Monthly Precipitation (Bar Plot)

A bar plot visualizing the average precipitation for each month shows the following trends:

- June and July are the peak months for rainfall.
- December and January are the driest months.

Conclusion

The precipitation pattern in Lagos suggests a tropical or subtropical climate with monsoon characteristics. The trend in the previous years shows a high precipitation in June and July. The trend for the year actually follows the same pattern which means there is a high chance of flooding in Lagos in the month of July. There is a distinct wet season from May to July and a dry season from December to February. This high variability in monthly rainfall, with significant peaks in the wet season, indicates the potential for flooding during these months. Understanding these patterns is crucial for effective water resource management and urban planning in Lagos.

Recommendations

- Implementing flood management and control measures, especially for the peak rainy months (June and July).
- Developing water conservation strategies during the dry season (December to February).
- Continuous monitoring and updating of weather data to improve prediction accuracy and response strategies.

This comprehensive analysis provides valuable insights into the precipitation patterns in Lagos, which can be used for better planning and management of resources.

Link to data

https://docs.google.com/spreadsheets/d/1FX9Z4uRjecz-9mbJnQMbpGozmzW_QuDFYpDxhewiBP8/edit?usp=sharing