

Rainfall Prediction Data Analysis Report

Introduction

This project involves analyzing the average rainfall data across different states in India over the years 2020 to 2024. The analysis aims to provide insights into the rainfall patterns and trends, which can be used for various purposes including agricultural planning, water resource management, and disaster preparedness.

Data Description

The dataset contains the following columns:

- State: The name of the state.
- Year: The year of the recorded data.
- avg_avgrain: The average rainfall recorded in the state for the specified year.

Data Summary

State	Year	avg_avgrain
A.P	2024	7.238561
A.P	2023	5.128567
A.P	2022	5.987308
A.P	2021	7.244671
A.P	2020	1.76732
Maharastra	2024	26.02749
Maharastra	2023	16.39861
Maharastra	2022	21.09392
Maharastra	2021	15.645612
Maharastra	2020	1.836159
Tamil Nadu	2024	4.257981
Tamil Nadu	2023	2.715752
Tamil Nadu	2022	4.992746

Tamil Nadu	2021	5.392853
Tamil Nadu	2020	1.908289
Kerala	2024	27.819762
Kerala	2023	17.32986
Kerala	2022	23.462974
Kerala	2021	17.641905
Kerala	2020	2.48317
Goa	2024	77.609631
Goa	2023	52.515169
Goa	2022	50.87991
Goa	2021	41.731233
Goa	2020	0.690986
Gujarat	2024	24.896338
Gujarat	2023	15.768252
Gujarat	2022	19.149504
Gujarat	2021	12.3232
Gujarat	2020	0.893332

Analysis

Key Observations:

- Andhra Pradesh (A.P):
 - The average rainfall has fluctuated over the years, with a noticeable increase in 2021 and 2024 compared to 2023.
 - The lowest recorded average rainfall was in 2020.
- Maharashtra:
 - There has been a significant increase in average rainfall in 2024.
 - The year 2020 recorded the lowest average rainfall.
- Tamil Nadu:
 - The average rainfall has remained relatively stable, with slight fluctuations.
 - The highest average rainfall was recorded in 2021.

- Kerala:
 - Kerala shows a significant increase in average rainfall in 2024.
 - The lowest average rainfall was recorded in 2020.
- Goa:
 - Goa has the highest average rainfall among the states, with a dramatic increase in 2024.
 - The year 2020 recorded the lowest average rainfall.
- Gujarat:
 - There has been a consistent increase in average rainfall from 2020 to 2024.
 - The lowest average rainfall was recorded in 2020.

Conclusion:

The analysis highlights the varying rainfall patterns across different states over the years. Goa and Kerala experienced significant increases in average rainfall in 2024, while states like Andhra Pradesh and Maharashtra also showed notable increases. The data can be utilized for further studies on climate change impacts, agricultural planning, and water resource management.

Future Work

Further analysis can include:

- Predicting future rainfall patterns using machine learning models.
- Analyzing the impact of climate change on rainfall distribution.
- Comparing rainfall data with other environmental and socio-economic factors.

Usage

The data and analysis can be utilized by researchers, meteorologists, and policymakers to better understand and predict rainfall trends. This information can aid in developing strategies to mitigate the impacts of extreme weather events and optimize resource allocation.