

# Annual Rainfall Distribution Analysis for Maharashtra – 2024

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## 1. Introduction

Rainfall is a critical climatic factor influencing agriculture, water resource management, and cropping patterns in Maharashtra. This project aims to visualize and interpret the spatial distribution of annual rainfall across the state for the year 2024 using geospatial techniques.

## 2. Objectives

- To create a rainfall distribution map of Maharashtra for 2024.
- To classify the rainfall into meaningful categories to assess regional variability.
- To support agricultural planning and water resource decisions based on spatial rainfall patterns.

## 3. Data & Methodology

- Data Source: Satellite-derived rainfall data (e.g., CHIRPS, IMD, NASA GPM, etc.).
- Software Used: Google Earth Engine for data processing and map visualization.
- Method:
  1. Extracted annual rainfall values for Maharashtra region.
  2. Classified data into five ranges:
    - <600 mm (Very Low)
    - 600–1200 mm (Low)
    - 1200–1800 mm (Moderate)
    - 1800–2400 mm (High)
    - >2400 mm (Very High)
  3. Visualized the data on an interactive satellite base map with a legend.

## 4. Results & Observations

- High rainfall (>2400 mm): Observed along the Konkan coast (Mumbai, Ratnagiri) due to western ghats.
- Moderate rainfall (1200–1800 mm): Found in central districts like Pune, Nashik.
- Low rainfall (<1200 mm): Eastern and interior regions including Marathwada and parts of

Vidarbha.

- Very low rainfall (<600 mm): Noted in patches, indicating drought-prone areas.
- The spatial pattern aligns with orographic influence and monsoon wind directions.

Figure 1. Annual Rainfall Map (2024) – Maharashtra

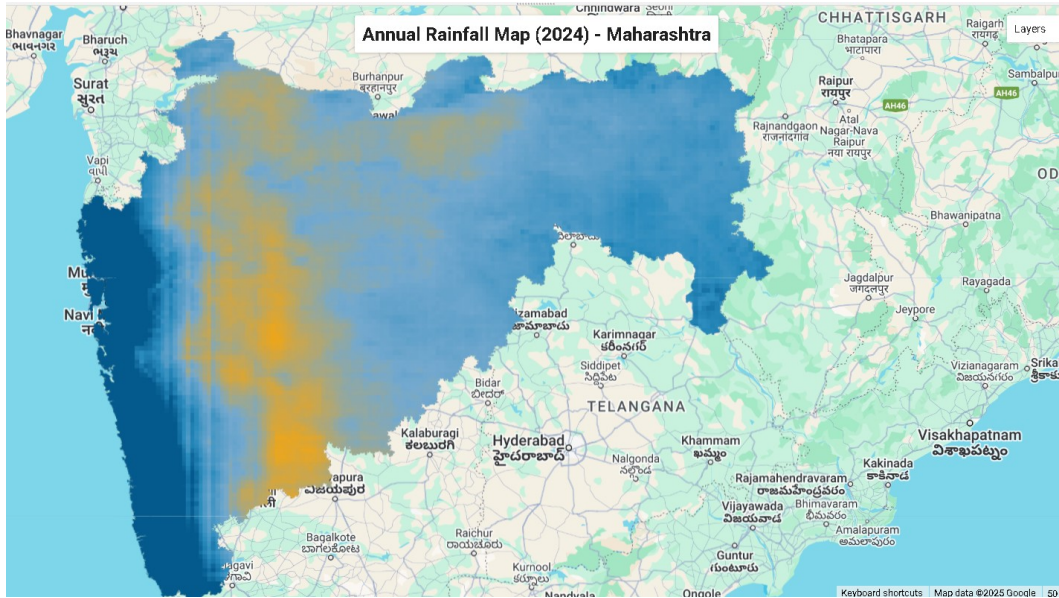
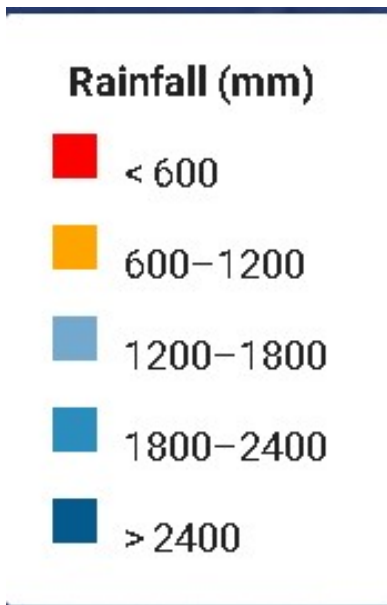


Figure 2. Rainfall Classification Legend



## 5. Conclusion

The 2024 rainfall distribution map provides vital insights into the hydrological variability across Maharashtra. Such spatial analysis can aid farmers, planners, and policymakers in

better agricultural decision-making, particularly in rainfed zones. This approach highlights the power of remote sensing and GIS for climate-smart agriculture.

## **6. Future Scope**

- Integrate with crop yield data to assess rainfall impact.
- Extend analysis to 10-year trends for climate change studies.
- Use district-level stats to prepare farmer advisory services.