Project Proposal

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Analyzing November Weather Patterns in Los Angeles from 2015 to 2024

RQ: Was November 2024 precipitation in Los Angeles statistically unusual compared to historical November precipitation patterns from the past decade?

Data Sources

This project uses historical daily weather data from the NOAA Climate Data Online (CDO) API, specifically the Global Historical Climatology Network – Daily (GHCND) dataset.

URL: https://www.ncei.noaa.gov/cdo-web/api/v2/data.

- Station: GHCND:USW00023174 (Los Angeles International Airport)
- Time range: November 2015 – November 2024
- Variables collected:
    - Daily precipitation (PRCP)
    - Daily maximum temperature (TMAX)
    - Daily minimum temperature (TMIN)
    - Average wind speed (AWND)

Data will be collected programmatically through the NOAA CDO API using Python. The raw data will be cleaned and processed to produce a daily dataset with consistent units and timestamps. Missing values will be handled as null.

- A historical November baseline will be constructed using daily precipitation data from 2015 to 2024, resulting in approximately 300 daily observations. This baseline will serve as a fixed reference for comparison.

Analysis

The analysis will include:

- Descriptive statistics of historical November precipitation (mean, standard deviation, percentiles)
- Comparison of November 2024 precipitation to the historical baseline
- Z-score–based anomaly detection to identify statistically significant precipitation events
- Rolling averages to visualize short-term trends
- Exploratory visualizations of temperature, wind speed, and precipitation relationships