

ADS-506 – Final Team Project Start Form

Fill out this form and submit it by the end of Module 2 in Canvas.

Team Number: 4

Team Leader/Representative:

Marinela Inguito

Full Names of Team Members:

1. Marinela Inguito
2. Robert Marriott
3. Jose Guarneros Padilla

Title of Your Time Series Final Project:

Forecasting Australian Rainfall Patterns for Improved Agricultural and Water Resource Management

Motivation for choosing this project:

Agriculture and water management in Australia are deeply impacted by rainfall patterns. Accurate rainfall forecasts can equip stakeholders with insights to make timely and informed decisions, helping to mitigate the risks of droughts, floods, and extreme weather events across the country's diverse climate zones.

Problem Statement: Short Description of Your Time Series Project and Objective(s):

This project aims to build a predictive model for Australian rainfall, focusing on monthly forecasts to support efficient resource allocation for agriculture, water management, and other industries. By analyzing historical weather data, we hope to identify patterns that can inform better planning and risk management strategies.

Name of Your Selected Dataset:

Dataset Name: weatherAUS.csv

Description of your selected dataset:

This dataset provides monthly aggregated rainfall data collected over 10 years from weather stations across Australia. Focus will be on the cities of Sydney, Melbourne, Darwin, and Perth, covering different geographical and climactic regions in Australia.

Data source, number of variables, size of dataset, etc:

Data Source: Australian Bureau of Meteorology.

Number of Variables: 23 variables, including rainfall, temperature, humidity, pressure, and wind-related measures.

Size of Dataset: Approximately 145,460 daily observations collected over 10 years from multiple weather stations across Australia.

Key variables: total monthly rainfall, maximum temperature, minimum temperature, and the target variable Rain Tomorrow.

Notable findings from your initial EDA:

Our initial analysis shows significant variability in monthly rainfall totals across Australia. There are peaks that indicate heavy periods of rainfall but no obvious long-term trend. Seasonal increases in rainfall suggest potential links to seasonal patterns. Australia's unique weather phenomena, including intense storms, may contribute to these rainfall spikes, offering valuable insights for further analysis. We will compare patterns across Sydney, Melbourne, Darwin, and Perth to examine differences between northern, southern, eastern, and western regions. This city-level comparison will highlight regional differences in rainfall, which are crucial for localized decision-making and risk management.

Github link:

<https://github.com/Chutacos/RainfallTimeSeries>