Module: Time-Series Analysis of Precipitation Data

Question

Download 5 to 10-yrs of daily precipitation data (e.g., 2010-2015) recorded at a weather station from any region of your choice.

1. Provide location details (location map, lat/long, station name, city, State, etc.)
2. Display the data distribution for annual (histogram), monthly (line graph) and daily (line graph) time-series. Plot one graph in each category, for example, plot all daily data of all years in one graph.
3. Provide descriptive statistics (mean, standard deviation, median, mode, sum, average, etc.) to summarize the distributions of daily data each year in a tabular format and compare the annual variations.
4. Use boxplots to display the distributions of precipitation data in each year in the same chart.

Make sure to label the graph correctly with proper title, x- and y-labels, units, legend, etc.

Note: You are expected to search the precipitation data on your own for the location of your interest. Some of the suggested sources are provide below:

USGS Water Data for the Nation
https://waterdata.usgs.gov/nwis/current/?type=precip&group_key=state_cd
State Climate Office of North Carolina: CRONOS Database
http://www.nc-climate.ncsu.edu/cronos
National Climatic Data Source (NCDC): Global Historical Climate Network
http://www.ncdc.noaa.gov/cdo-web/search?datasetid=GHCND
USDA Agriculture Research Service (USDA-ARS): Climate Data for the U.S.
http://www.ars.usda.gov/Research/docs.htm?docid=19388).

Scoring

Total points = 40 [10+10+10+10 points]

Evaluation Rubrics

Criteria	Poor 70-79%	Average 80-89%	Good 90-99%	Excellent 100%
1. Location details provided	Limited information is provided, missing location maps, etc.	Half of the answers are correct and there were few miss-representation of locations/maps	More than half of the answers are correct, and majority of the map representations are correct	No errors are found. Location information was completely provided
2. Visual data presentation	Graphing of data attempted but with wrong data; missing units; missing labels, etc.	All three graphs are presented, but with missing and/or incorrect data, etc.	All graphs are correct, but some minor errors are present such as missing or wrong units, labeling, etc.	All graphs are presented correctly without any errors
3. Descriptive statistics	Attempted with summary statistics but did not provide the complete information; wrong information; no comparison, etc.	Correctly presented both the tabular data and comparison, but wrong data or calculation efforts	Correctly presented both the tabular data and comparison with minor errors	No error found in data presentation and comparative analysis
4. Boxplots	Attempted to present the box plot, but with wrong data information, method, unit, labeling, etc.	Boxplots are presented correctly but with wrong datasets or wrong calculations	Boxplots are accurately presented with minor errors	Boxplots are well done with no errors