



Statistical Hydrology (HWR 314)

HWR 1

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For the given data of the discharge over some years at a watershed in Saudi Arabia, it is required to:

Q 1(20 marks) : Plot the time series of precipitation depth.

Q 2(20 marks): Draw the histogram of:

1. absolute frequency,
2. relative frequency, and
3. cumulative absolute and
4. relative frequencies for different class intervals.

[Use # of classes $< 5 \log(\# \text{ of observations})$].

Q 3(20 marks): Calculate the different means:

1. arithmetic,
 2. geometric,
 3. harmonic,
 4. median,
 5. mode
- of the data use grouping and ungrouping and
6. check your results with spreadsheet,
 7. plot the means on the time series plot of Task 1.
 8. Notice the differences and explain.

Q 4(20 marks): Calculate :

1. the variance and
2. standard deviation of both data and check your results with spreadsheet for grouped and ungrouped data.
3. Notice the differences and explain.
4. Plot the arithmetic mean $\pm$ standard deviation on the time series plot of Task 1.



Q 5(20 marks): Calculate:

1. the skewness, and
2. the kurtosis coefficients of the for grouped and ungrouped data
3. compare with the corresponding values of the normal distribution. Use Excel to check your results..



TIME- YEAR	CFS
1940	272.5
1941	455
1942	3500
1943	3400
1944	3425
1945	1975
1946	2900
1947	3125
1948	2030
1949	1835
1950	4325
1951	2775
1952	1470
1953	1295
1954	2575
1955	940
1956	517.5
1957	1950
1958	4400
1959	2050
1960	1450
1961	1375
1962	1752.5
1963	920
1964	300
1965	2347.5
1966	2162.5
1967	1927.5
1968	4200
1969	1117.5
1970	4200
1971	1187.5
1972	2000
1973	3000
1974	2312.5
1975	1770
1976	2085
1977	1167.5
1978	1390
1979	3325
1980	3050
1981	2492.5
1982	2550
1983	5600