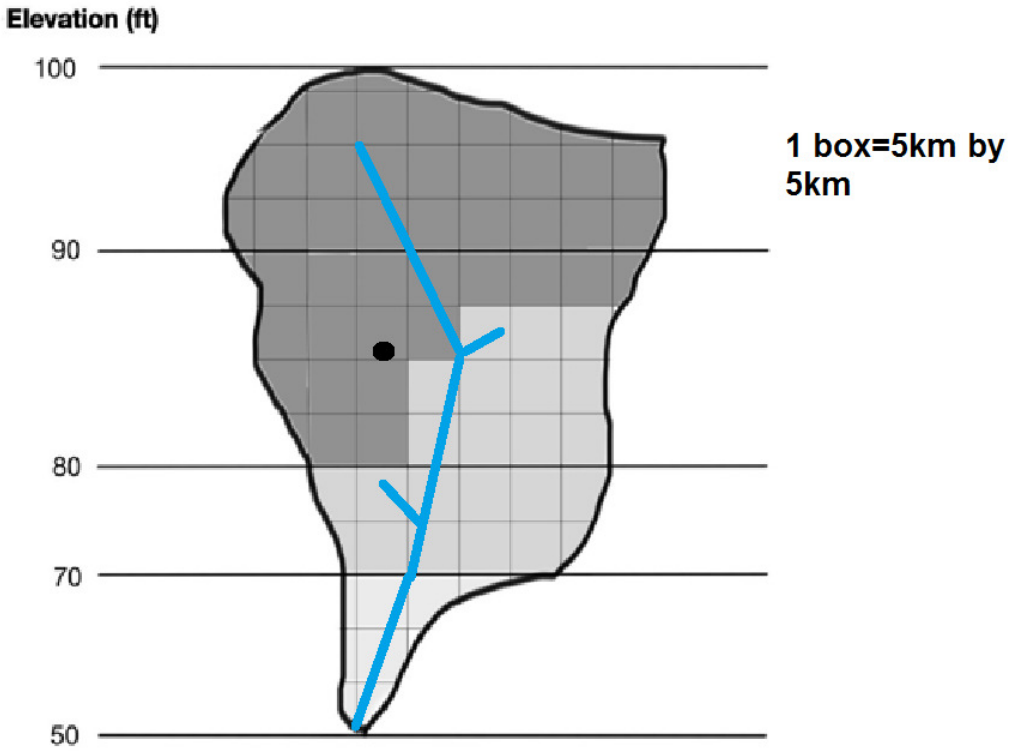
CVG3120-FALL 2015 – Assignment 2

Problem One:

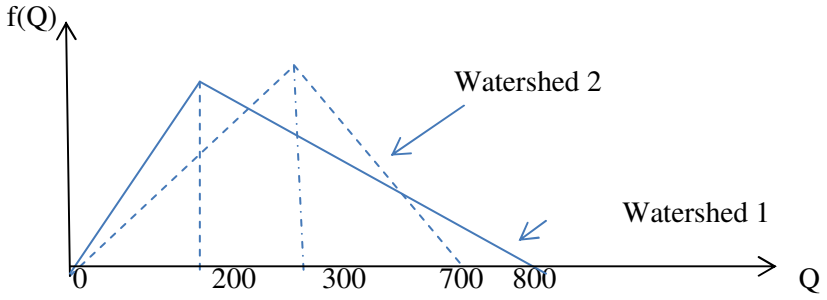
For the following hypothetical watershed,

a) Calculate the watershed circularity ratios and shape factor
b) Compute the hypsometric curve and compute D_m, L_d, F_p and Ha.



Problem Two:

The distribution of floods (Q) on two watersheds is given in the following figure:



For watersheds 1 and 2, find the following probabilities a) P(Q>300); b) P(Q<400); c) P(Q=200); d) P(100<Q<450).

Problem Three:

Assuming a log-normal distribution, make a frequency analysis of the mean August temperature at Wildcat Creek for the 1954-1971 period. Plot the data using the Weilbull plotting-position formula. Based on the frequency curve, estimate the following:

a) The August temperature that can be expected to be exceeded once in 10 years
b) The probability that the mean temperature will exceed 83 F in any one year.
c) The probability that the mean August temperature will not exceed 72 F.

Year	T	year	T	Year	T	year	T
1954	82.5	1959	80.6	1964	76.1	1969	76.2
1955	80.1	1960	78.9	1965	77.7	1970	79.1
1956	80.4	1961	74.1	1966	76.6	1971	76.7
1957	79.5	1962	75.7	1967	74.6		
1958	78.9	1963	78	1968	79.6		

Problem Four:

Calculate the 5- and 50- year return period annual maximum discharge of the Gaudalupe River near Victoria, Texas, using the lognormal and log-Pearson type III distributions. The data from 1935 to 1978 are given as follows.

Year	1930	1940	1950	1960	1970
0		55900	13300	23700	9190
1		58000	12300	55800	9740
2		56000	28400	10800	58500
3		7710	11600	4100	33100
4		12300	8560	5720	25200
5	38500	22000	4950	15000	30200
6	179000	17900	1730	9790	14100
7	17200	46000	25300	70000	54500
8	25400	6970	58300	44300	12700
9	4940	20600	10100	15200	