Analysis Techniques: Flood Analysis Example with Daily Data (Log-Perason Type III Distribution)

Information to get started:

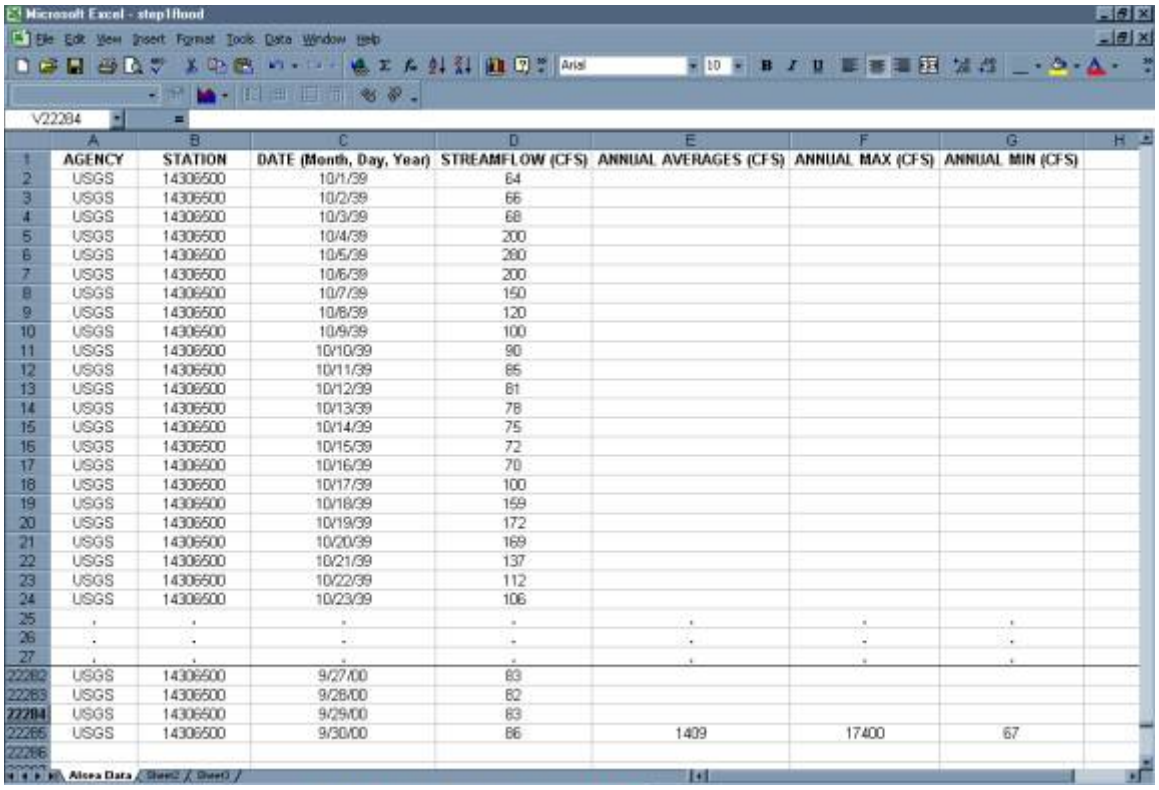
- The lesson below contains step-by-step instructions and "snapshots" of what each step looks like when carried out in a Microsoft Excel workbook. Blue shading of information in the Excel illustrations denotes changes made from the previous step. Dots placed in three consecutive rows indicate that a portion of data is hidden from sight.
- You can download an Excel workbook containing the complete data set by clicking on the "Download Data" link below. It contains each calculation step on a separate worksheet. To move between steps, click on the tabs at the bottom of the excel window.
- When you download the file, it may open in your browser window. You may wish to use the "save as" function to save the file to a local drive and then reopen it in Excel. This will make it easier to flip between the online lesson and the example workbook.
- Finally, we want to remind you that the techniques explained on this site are statistically based; therefore results must be viewed as predictions and not as facts. Please use the techniques and the information obtained from them responsibly!

Download Data

Step 1: Obtain streamflow data

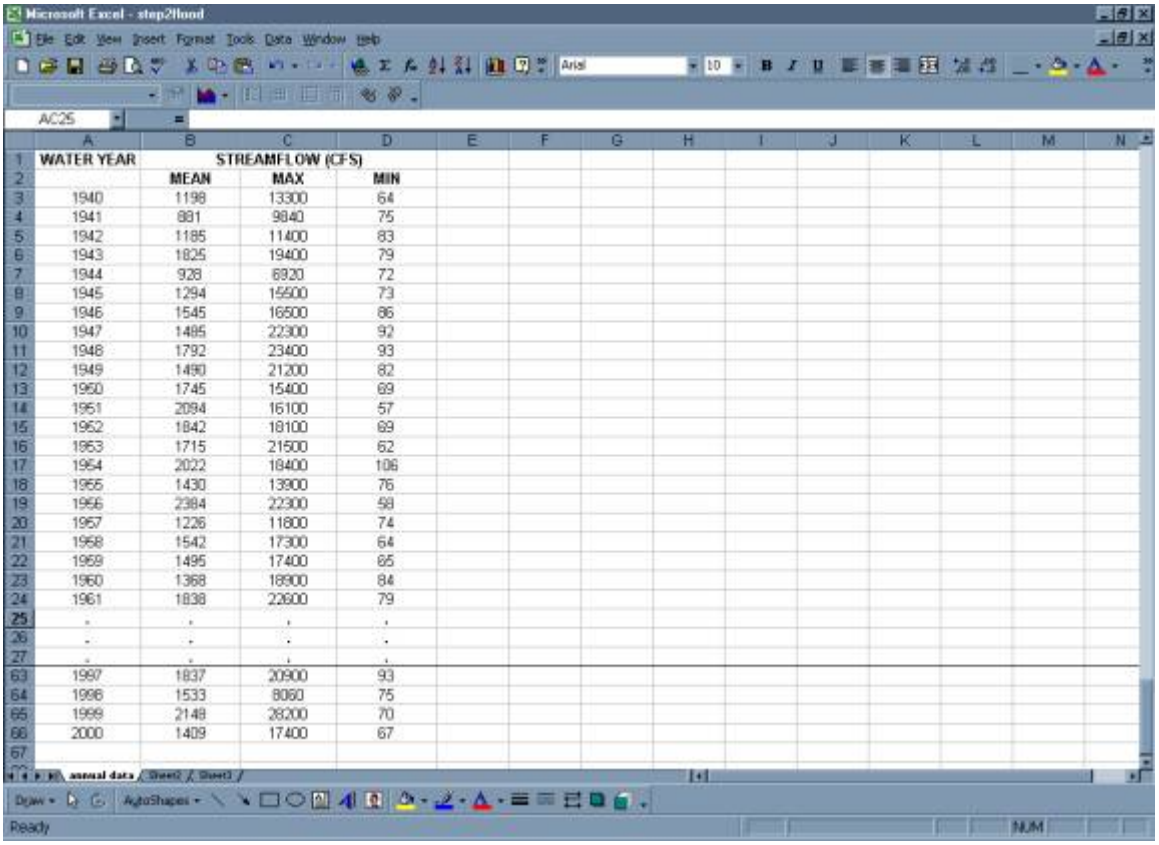
- Obtain daily streamflow data from the USGS web site.
  - Go to **http://oregon.usgs.gov**
  - Select Historical Water Data
  - Select Surface Water
  - Select Daily Data
  - Check box under Site Identifier for Site Name and Submit
  - Type in Alsea under Site Name and select match any part and Submit
  - Select gage at TIDEWATER (140306500)
  - Select Tab-separated data
  - Copy entire data set into Excel worksheet
  - Paste special as text (this will separate the data into columns)

- Calculate the maximum discharge for each water year in the period of record.
- The AVERAGE, MAX, and MIN functions in excel can be used to calculate these values for each water year. It may be more efficient to calculate the mean, maximum, and minimum flows for each water year in the period of record at one time.



	A	B	C	D	E	F	G	H
1	AGENCY	STATION	DATE (Month, Day, Year)	STREAMFLOW (CFS)	ANNUAL AVERAGES (CFS)	ANNUAL MAX (CFS)	ANNUAL MIN (CFS)	
2	USGS	14306500	10/1/39	64				
3	USGS	14306500	10/2/39	66				
4	USGS	14306500	10/3/39	68				
5	USGS	14306500	10/4/39	200				
6	USGS	14306500	10/5/39	280				
7	USGS	14306500	10/6/39	200				
8	USGS	14306500	10/7/39	150				
9	USGS	14306500	10/8/39	120				
10	USGS	14306500	10/9/39	100				
11	USGS	14306500	10/10/39	90				
12	USGS	14306500	10/11/39	85				
13	USGS	14306500	10/12/39	81				
14	USGS	14306500	10/13/39	78				
15	USGS	14306500	10/14/39	75				
16	USGS	14306500	10/15/39	72				
17	USGS	14306500	10/16/39	70				
18	USGS	14306500	10/17/39	100				
19	USGS	14306500	10/18/39	169				
20	USGS	14306500	10/19/39	172				
21	USGS	14306500	10/20/39	169				
22	USGS	14306500	10/21/39	137				
23	USGS	14306500	10/22/39	112				
24	USGS	14306500	10/23/39	106				
25	.	.	.	.	.	.	.	
26	.	.	.	.	.	.	.	
27	.	.	.	.	.	.	.	
22282	USGS	14306500	9/27/00	83				
22283	USGS	14306500	9/28/00	82				
22284	USGS	14306500	9/29/00	83				
22285	USGS	14306500	9/30/00	86	1409	17400	67	
22286								

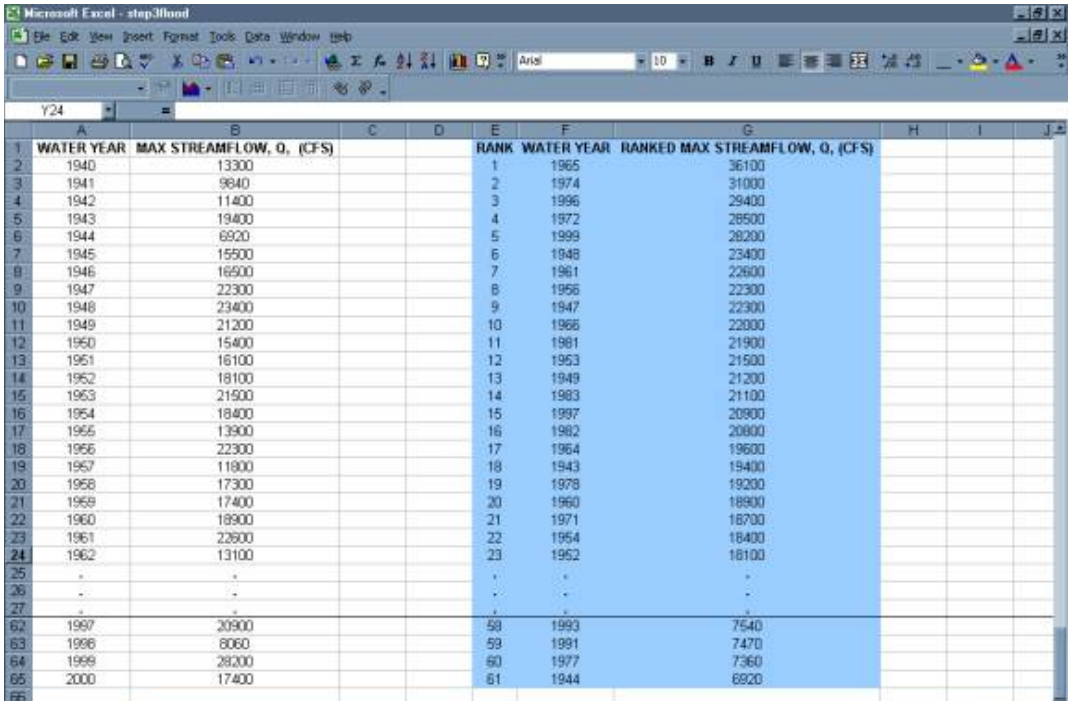
Step 2: Organize the information in a table.



	A	B	C	D
1	WATER YEAR	STREAMFLOW (CFS)		
2		MEAN	MAX	MIN
3	1940	1198	13300	64
4	1941	881	9840	75
5	1942	1185	11400	83
6	1943	1825	19400	79
7	1944	928	6920	72
8	1945	1294	15900	73
9	1946	1545	16500	86
10	1947	1485	22300	92
11	1948	1792	23400	93
12	1949	1490	21200	82
13	1950	1745	15400	69
14	1951	2094	16100	57
15	1952	1842	18100	69
16	1953	1715	21500	62
17	1954	2022	18400	106
18	1955	1430	13900	76
19	1956	2384	22300	98
20	1957	1226	11800	74
21	1958	1542	17300	64
22	1959	1495	17400	65
23	1960	1368	18900	84
24	1961	1838	22600	79
25	.	.	.	.
26	.	.	.	.
27	.	.	.	.
63	1997	1837	20900	93
64	1998	1533	8060	75
65	1999	2148	28200	70
66	2000	1409	17400	67
67				

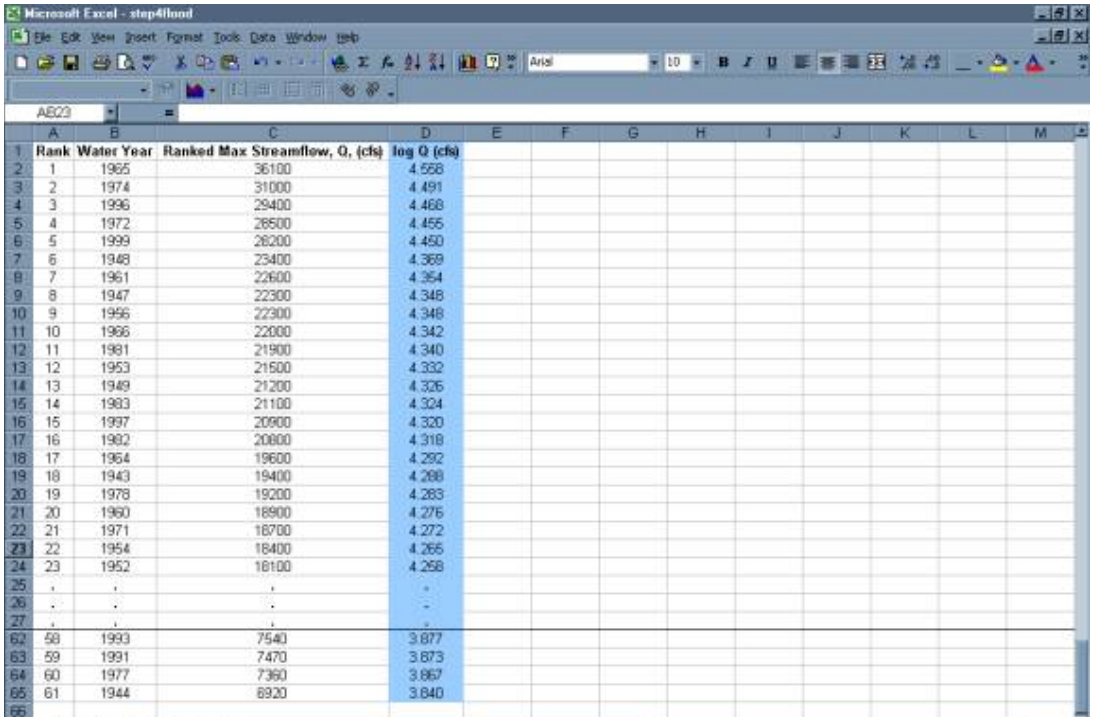
Step 3: Rank the data from largest discharge to smallest discharge.

- Add a column for Rank and number each streamflow value from 1 to n (the total number of values in your dataset).



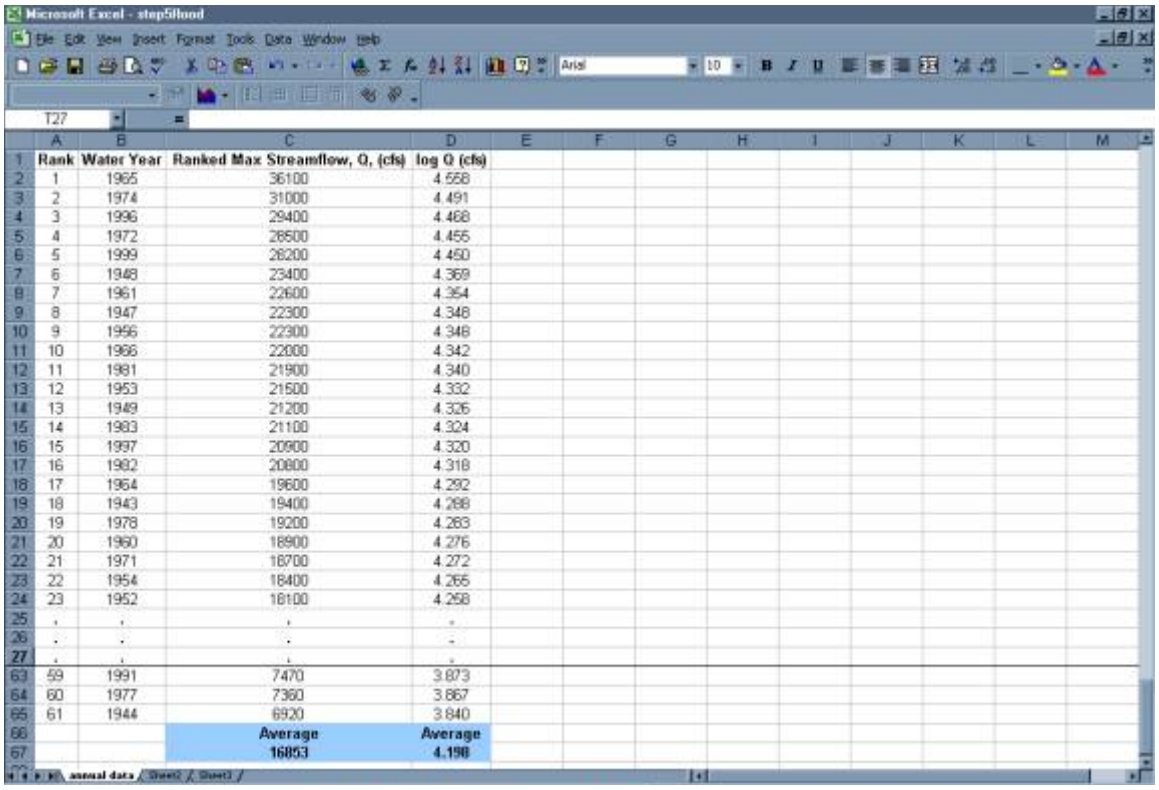
	A	B	C	D	E	F	G	H	I	J
1	WATER YEAR	MAX STREAMFLOW, Q, (CFS)			RANK	WATER YEAR	RANKED MAX STREAMFLOW, Q, (CFS)			
2	1940	13300			1	1965	36100			
3	1941	9840			2	1974	31000			
4	1942	11400			3	1996	29400			
5	1943	19400			4	1972	28500			
6	1944	6920			5	1999	28200			
7	1945	15500			6	1948	23400			
8	1946	16500			7	1961	22600			
9	1947	22300			8	1956	22300			
10	1948	23400			9	1947	22300			
11	1949	21200			10	1966	22000			
12	1950	15400			11	1981	21900			
13	1951	16100			12	1953	21500			
14	1952	18100			13	1949	21200			
15	1953	21500			14	1983	21100			
16	1954	18400			15	1997	20900			
17	1955	13900			16	1982	20800			
18	1956	22300			17	1964	19600			
19	1957	11800			18	1943	19400			
20	1958	17300			19	1978	19200			
21	1959	17400			20	1960	18900			
22	1960	18900			21	1971	18700			
23	1961	22600			22	1954	18400			
24	1962	13100			23	1952	18100			
25	.	.			.	.	.			
26	.	.			.	.	.			
27	.	.			.	.	.			
62	1997	20900			58	1993	7540			
63	1998	8060			59	1991	7470			
64	1999	28200			60	1977	7360			
65	2000	17400			61	1944	6920			

Step 4: Create a column with the log of each max or peak streamflow using the Excel formula {log (Q)} and copy command.



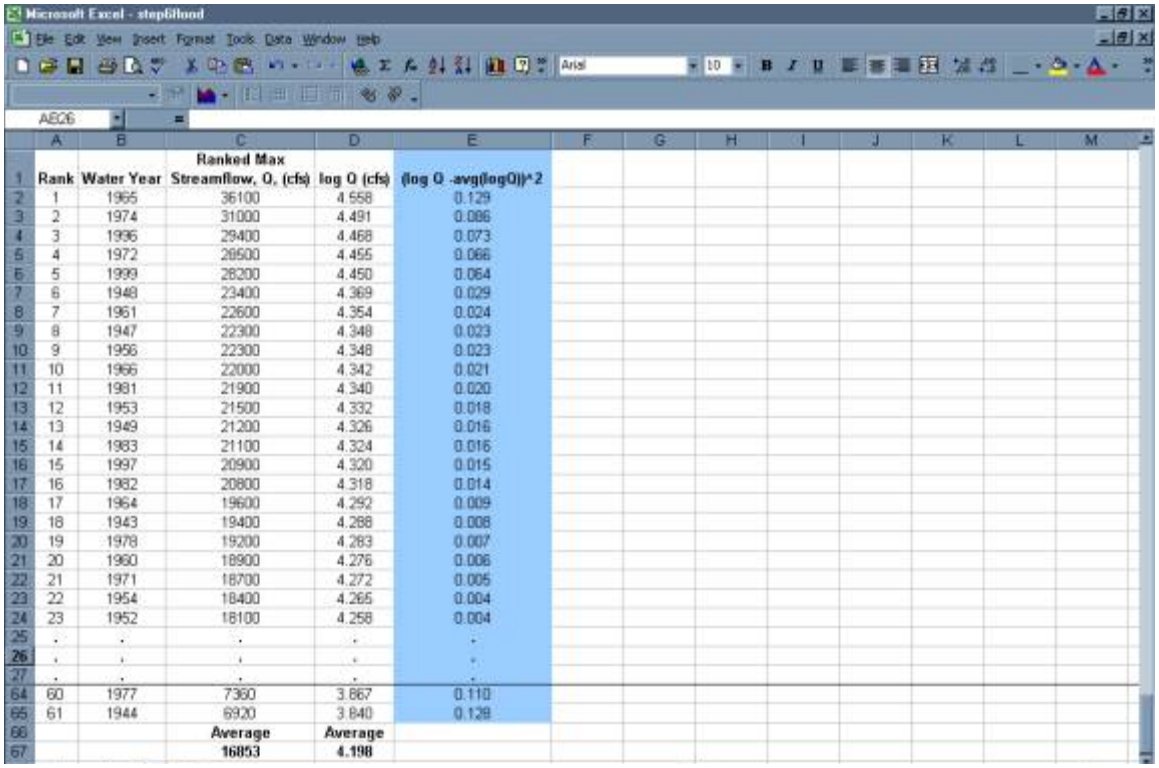
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Rank	Water Year	Ranked Max Streamflow, Q, (cfs)	log Q (cfs)									
2	1	1965	36100	4.558									
3	2	1974	31000	4.491									
4	3	1996	29400	4.468									
5	4	1972	28500	4.455									
6	5	1999	28200	4.450									
7	6	1948	23400	4.369									
8	7	1961	22600	4.354									
9	8	1947	22300	4.348									
10	9	1956	22300	4.348									
11	10	1966	22000	4.342									
12	11	1981	21900	4.340									
13	12	1953	21500	4.332									
14	13	1949	21200	4.326									
15	14	1983	21100	4.324									
16	15	1997	20900	4.320									
17	16	1982	20800	4.318									
18	17	1964	19600	4.292									
19	18	1943	19400	4.288									
20	19	1978	19200	4.283									
21	20	1960	18900	4.276									
22	21	1971	18700	4.272									
23	22	1954	18400	4.265									
24	23	1952	18100	4.258									
25	.	.	.	.									
26	.	.	.	.									
27	.	.	.	.									
62	58	1993	7540	3.877									
63	59	1991	7470	3.873									
64	60	1977	7360	3.867									
65	61	1944	6920	3.840									

Step 5: Calculate the Average Max Q or Peak Q and the Average of the log (Q)



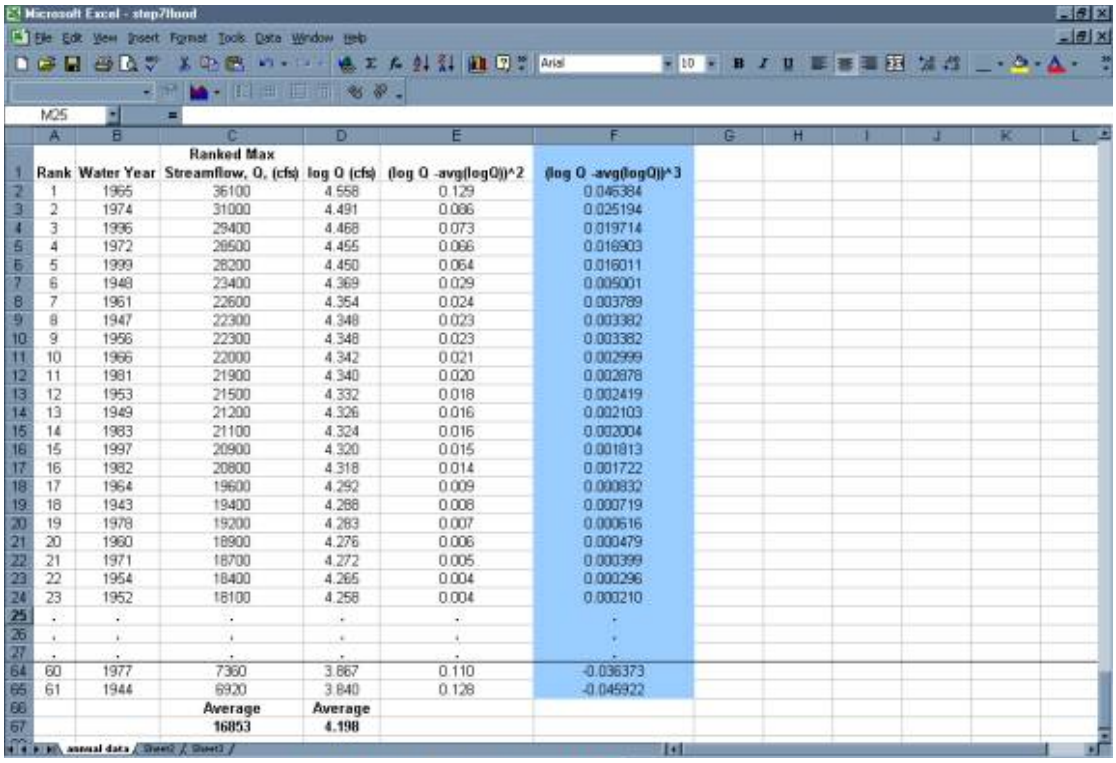
Rank	Water Year	Ranked Max Streamflow, Q, (cfs)	log Q (cfs)
1	1965	36100	4.558
2	1974	31000	4.491
3	1996	29400	4.468
4	1972	28500	4.455
5	1999	28200	4.450
6	1948	23400	4.369
7	1961	22600	4.354
8	1947	22300	4.348
9	1956	22300	4.348
10	1966	22000	4.342
11	1981	21900	4.340
12	1953	21500	4.332
13	1949	21200	4.326
14	1983	21100	4.324
15	1997	20900	4.320
16	1982	20800	4.318
17	1964	19600	4.292
18	1943	19400	4.288
19	1978	19200	4.283
20	1960	18900	4.276
21	1971	18700	4.272
22	1954	18400	4.265
23	1952	18100	4.258
59	1991	7470	3.873
60	1977	7360	3.867
61	1944	6920	3.840
		Average	Average
		16853	4.198

Step 6: Create a column with the excel formula {(log Q – avg(logQ))^2}



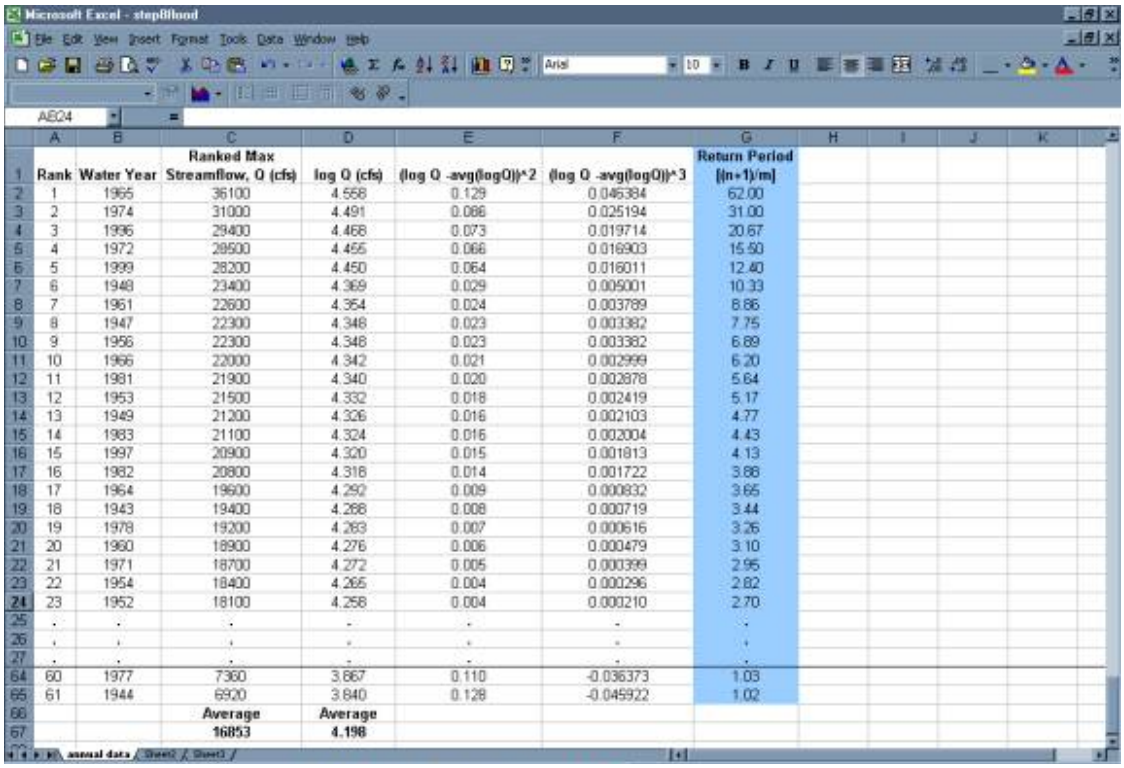
Rank	Water Year	Ranked Max Streamflow, Q, (cfs)	log Q (cfs)	(log Q -avg(logQ))^2
1	1965	36100	4.558	0.129
2	1974	31000	4.491	0.086
3	1996	29400	4.468	0.073
4	1972	28500	4.455	0.066
5	1999	28200	4.450	0.064
6	1948	23400	4.369	0.029
7	1961	22600	4.354	0.024
8	1947	22300	4.348	0.023
9	1956	22300	4.348	0.023
10	1966	22000	4.342	0.021
11	1981	21900	4.340	0.020
12	1953	21500	4.332	0.018
13	1949	21200	4.326	0.016
14	1983	21100	4.324	0.016
15	1997	20900	4.320	0.015
16	1982	20800	4.318	0.014
17	1964	19600	4.292	0.009
18	1943	19400	4.288	0.008
19	1978	19200	4.283	0.007
20	1960	18900	4.276	0.006
21	1971	18700	4.272	0.005
22	1954	18400	4.265	0.004
23	1952	18100	4.258	0.004
60	1977	7360	3.867	0.110
61	1944	6920	3.840	0.128
		Average	Average	
		16853	4.198	

Step 7: Create a column with the excel formula {(log Q – avg(logQ))^3



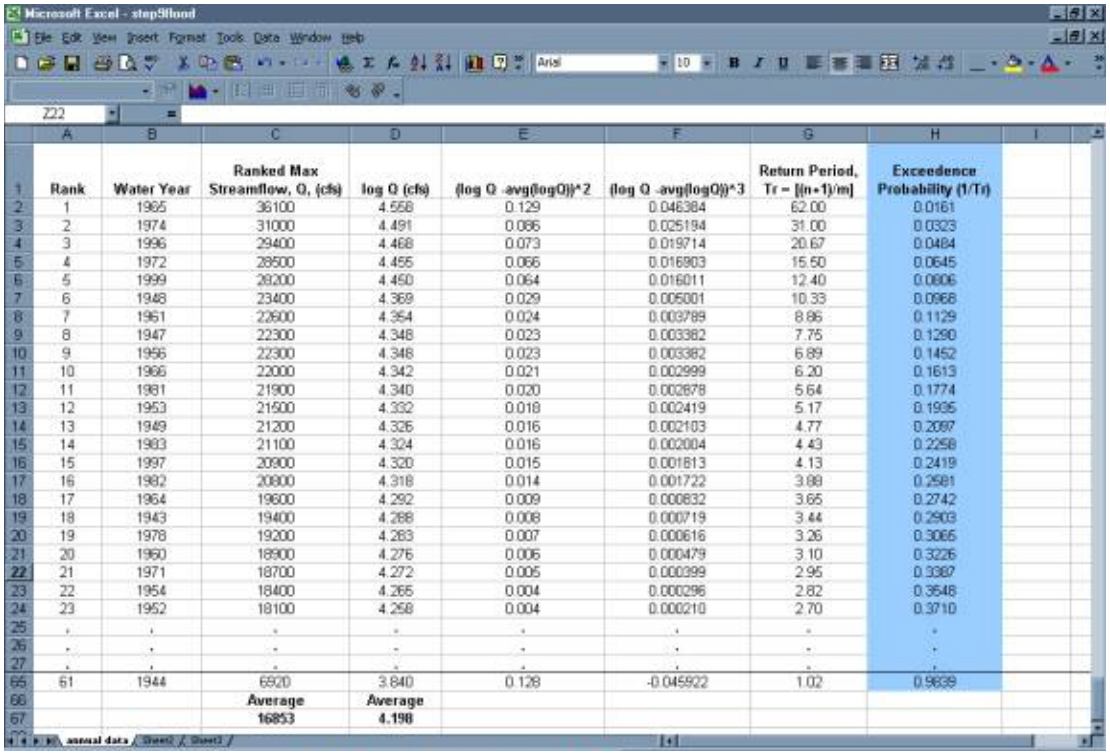
Rank	Water Year	Ranked Max Streamflow, Q, (cfs)	log Q (cfs)	(log Q -avg(logQ))^2	(log Q -avg(logQ))^3
1	1965	36100	4.558	0.129	0.046384
2	1974	31000	4.491	0.086	0.025194
3	1996	29400	4.468	0.073	0.019714
4	1972	28500	4.455	0.066	0.016903
5	1999	28200	4.450	0.064	0.016011
6	1948	23400	4.369	0.029	0.005001
7	1961	22600	4.354	0.024	0.003789
8	1947	22300	4.348	0.023	0.003382
9	1956	22300	4.348	0.023	0.003382
10	1966	22000	4.342	0.021	0.002999
11	1981	21900	4.340	0.020	0.002878
12	1953	21500	4.332	0.018	0.002419
13	1949	21200	4.326	0.016	0.002103
14	1983	21100	4.324	0.016	0.002004
15	1997	20900	4.320	0.015	0.001813
16	1982	20800	4.318	0.014	0.001722
17	1964	19600	4.292	0.009	0.000832
18	1943	19400	4.288	0.008	0.000719
19	1978	19200	4.283	0.007	0.000616
20	1960	18900	4.276	0.006	0.000479
21	1971	18700	4.272	0.005	0.000399
22	1954	18400	4.265	0.004	0.000296
23	1952	18100	4.258	0.004	0.000210
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
60	1977	7360	3.867	0.110	-0.036373
61	1944	6920	3.840	0.128	-0.045922
		Average	Average		
		16853	4.198		

Step 8: Create a column with the return period (Tr) for each discharge using Excel formula {(n+1)/m}.Where n = the number of values in the dataset and m = the rank.



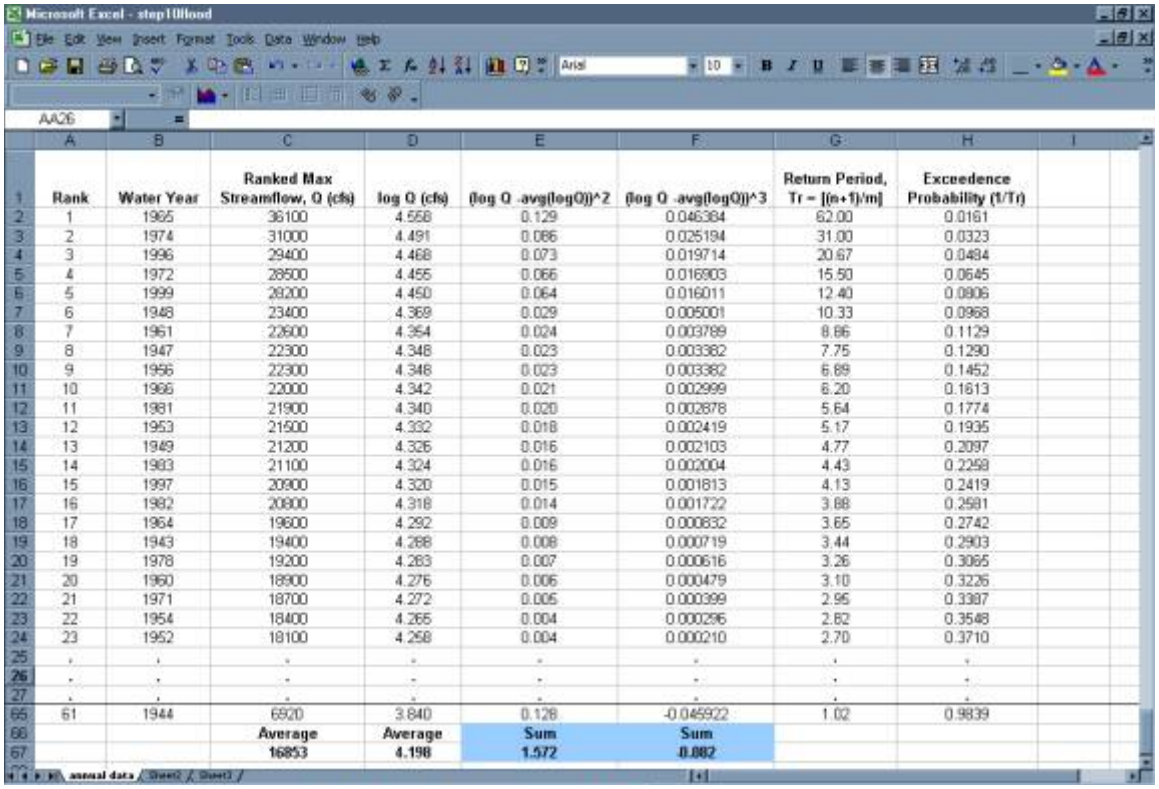
Rank	Water Year	Ranked Max Streamflow, Q (cfs)	log Q (cfs)	(log Q -avg(logQ))^2	(log Q -avg(logQ))^3	Return Period [(n+1)/m]
1	1965	36100	4.558	0.129	0.046384	62.00
2	1974	31000	4.491	0.086	0.025194	31.00
3	1996	29400	4.468	0.073	0.019714	20.67
4	1972	28500	4.455	0.066	0.016903	15.50
5	1999	28200	4.450	0.064	0.016011	12.40
6	1948	23400	4.369	0.029	0.005001	10.33
7	1961	22600	4.354	0.024	0.003789	8.86
8	1947	22300	4.348	0.023	0.003382	7.75
9	1956	22300	4.348	0.023	0.003382	6.89
10	1966	22000	4.342	0.021	0.002999	6.20
11	1981	21900	4.340	0.020	0.002878	5.64
12	1953	21500	4.332	0.018	0.002419	5.17
13	1949	21200	4.326	0.016	0.002103	4.77
14	1983	21100	4.324	0.016	0.002004	4.43
15	1997	20900	4.320	0.015	0.001813	4.13
16	1982	20800	4.318	0.014	0.001722	3.88
17	1964	19600	4.292	0.009	0.000832	3.65
18	1943	19400	4.288	0.008	0.000719	3.44
19	1978	19200	4.283	0.007	0.000616	3.26
20	1960	18900	4.276	0.006	0.000479	3.10
21	1971	18700	4.272	0.005	0.000399	2.95
22	1954	18400	4.265	0.004	0.000296	2.82
23	1952	18100	4.258	0.004	0.000210	2.70
.	.	.	-	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
60	1977	7360	3.867	0.110	-0.036373	1.03
61	1944	6920	3.840	0.128	-0.045922	1.02
		Average	Average			
		16853	4.198			

Step 9: Complete the table with a final column showing the exceedence probability of each discharge using the excel formula {=1/Return Period or 1/Tr} and the copy command.



Rank	Water Year	Ranked Max Streamflow, Q, (cfs)	log Q (cfs)	(log Q -avg(logQ))^2	(log Q -avg(logQ))^3	Return Period, Tr = [(n+1)/m]	Exceedence Probability (1/Tr)
1	1965	36100	4.558	0.129	0.046384	62.00	0.0161
2	1974	31000	4.491	0.086	0.025194	31.00	0.0323
3	1996	29400	4.468	0.073	0.019714	20.67	0.0484
4	1972	28500	4.455	0.066	0.016903	15.50	0.0645
5	1999	28200	4.450	0.064	0.016011	12.40	0.0806
6	1948	23400	4.369	0.029	0.005001	10.33	0.0968
7	1961	22600	4.354	0.024	0.003789	8.86	0.1129
8	1947	22300	4.348	0.023	0.003382	7.75	0.1290
9	1956	22300	4.348	0.023	0.003382	6.89	0.1452
10	1966	22000	4.342	0.021	0.002999	6.20	0.1613
11	1981	21900	4.340	0.020	0.002878	5.64	0.1774
12	1953	21500	4.332	0.018	0.002419	5.17	0.1935
13	1949	21200	4.326	0.016	0.002103	4.77	0.2097
14	1983	21100	4.324	0.016	0.002004	4.43	0.2258
15	1997	20900	4.320	0.015	0.001813	4.13	0.2419
16	1982	20800	4.318	0.014	0.001722	3.88	0.2581
17	1964	19600	4.292	0.009	0.000832	3.65	0.2742
18	1943	19400	4.288	0.008	0.000719	3.44	0.2903
19	1978	19200	4.283	0.007	0.000616	3.26	0.3065
20	1960	18900	4.276	0.006	0.000479	3.10	0.3226
21	1971	18700	4.272	0.005	0.000399	2.95	0.3387
22	1954	18400	4.265	0.004	0.000296	2.82	0.3548
23	1952	18100	4.258	0.004	0.000210	2.70	0.3710
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
61	1944	6920	3.840	0.128	-0.045922	1.02	0.9839
		Average	Average				
		16853	4.198				

Step 10: Calculate the Sum for the {(logQ – avg(logQ))^2} and the {(logQ – avg(logQ))^3} columns.



Rank	Water Year	Ranked Max Streamflow, Q (cfs)	log Q (cfs)	(log Q -avg(logQ))^2	(log Q -avg(logQ))^3	Return Period, Tr = [(n+1)/m]	Exceedence Probability (1/Tr)
1	1965	36100	4.558	0.129	0.046384	62.00	0.0161
2	1974	31000	4.491	0.086	0.025194	31.00	0.0323
3	1996	29400	4.468	0.073	0.019714	20.67	0.0484
4	1972	28500	4.455	0.066	0.016903	15.50	0.0645
5	1999	28200	4.450	0.064	0.016011	12.40	0.0806
6	1948	23400	4.369	0.029	0.005001	10.33	0.0968
7	1961	22600	4.354	0.024	0.003789	8.86	0.1129
8	1947	22300	4.348	0.023	0.003382	7.75	0.1290
9	1956	22300	4.348	0.023	0.003382	6.89	0.1452
10	1966	22000	4.342	0.021	0.002999	6.20	0.1613
11	1981	21900	4.340	0.020	0.002878	5.64	0.1774
12	1953	21500	4.332	0.018	0.002419	5.17	0.1935
13	1949	21200	4.326	0.016	0.002103	4.77	0.2097
14	1983	21100	4.324	0.016	0.002004	4.43	0.2258
15	1997	20900	4.320	0.015	0.001813	4.13	0.2419
16	1982	20800	4.318	0.014	0.001722	3.88	0.2581
17	1964	19600	4.292	0.009	0.000832	3.65	0.2742
18	1943	19400	4.288	0.008	0.000719	3.44	0.2903
19	1978	19200	4.283	0.007	0.000616	3.26	0.3065
20	1960	18900	4.276	0.006	0.000479	3.10	0.3226
21	1971	18700	4.272	0.005	0.000399	2.95	0.3387
22	1954	18400	4.265	0.004	0.000296	2.82	0.3548
23	1952	18100	4.258	0.004	0.000210	2.70	0.3710
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
61	1944	6920	3.840	0.128	-0.045922	1.02	0.9839
		Average	Average	Sum	Sum		
		16853	4.198	1.572	-0.082		

Step 11: Calculate the variance, standard deviation, and skew coefficient as follows:

variance =

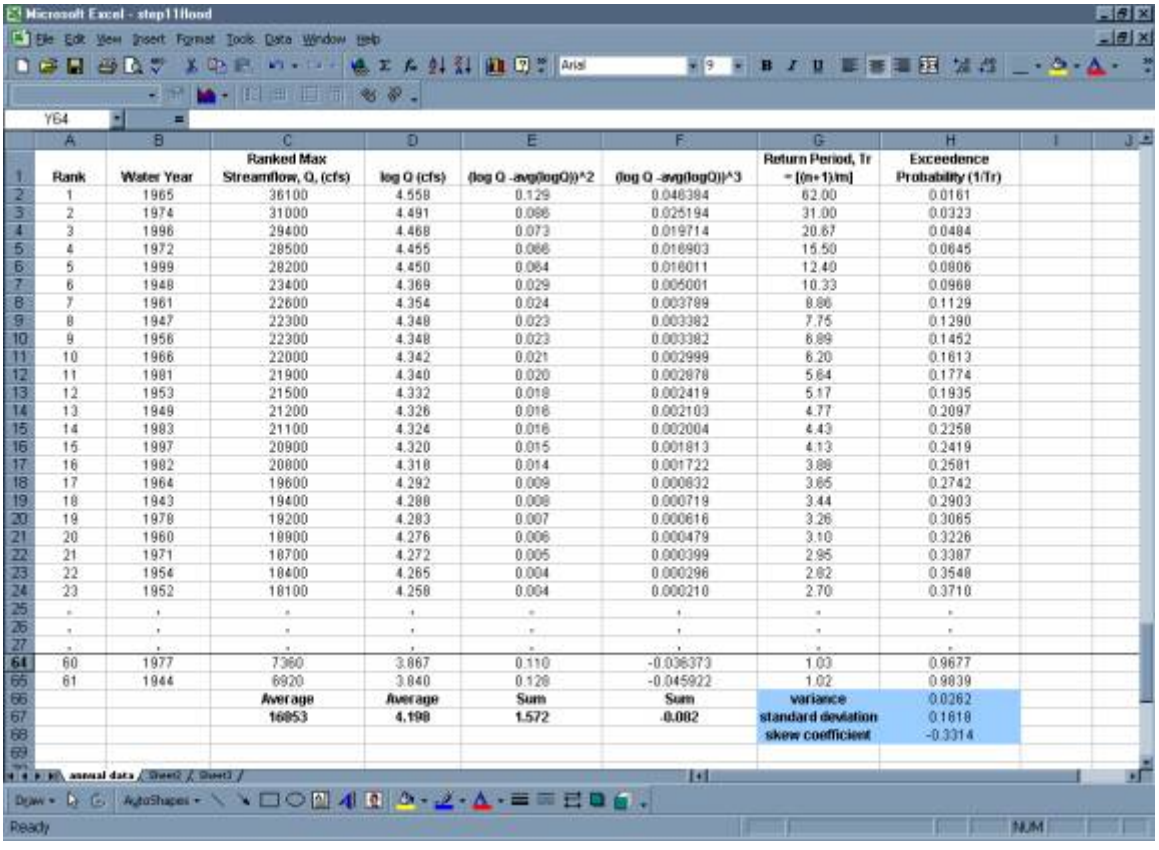
$$\frac{\sum_{i}^{n}(\log Q - avg(\log Q))\,\hat{}\,2}{n-1}$$

standard deviation =

$$\sigma \log Q = \sqrt{variance}$$

skew coefficient =

$$\frac{n \times \sum_{i}^{n}(\log Q - avg(\log Q))\,\hat{}\,3}{(n-1)(n-2)(\,\sigma \log Q)\hat{}3}$$



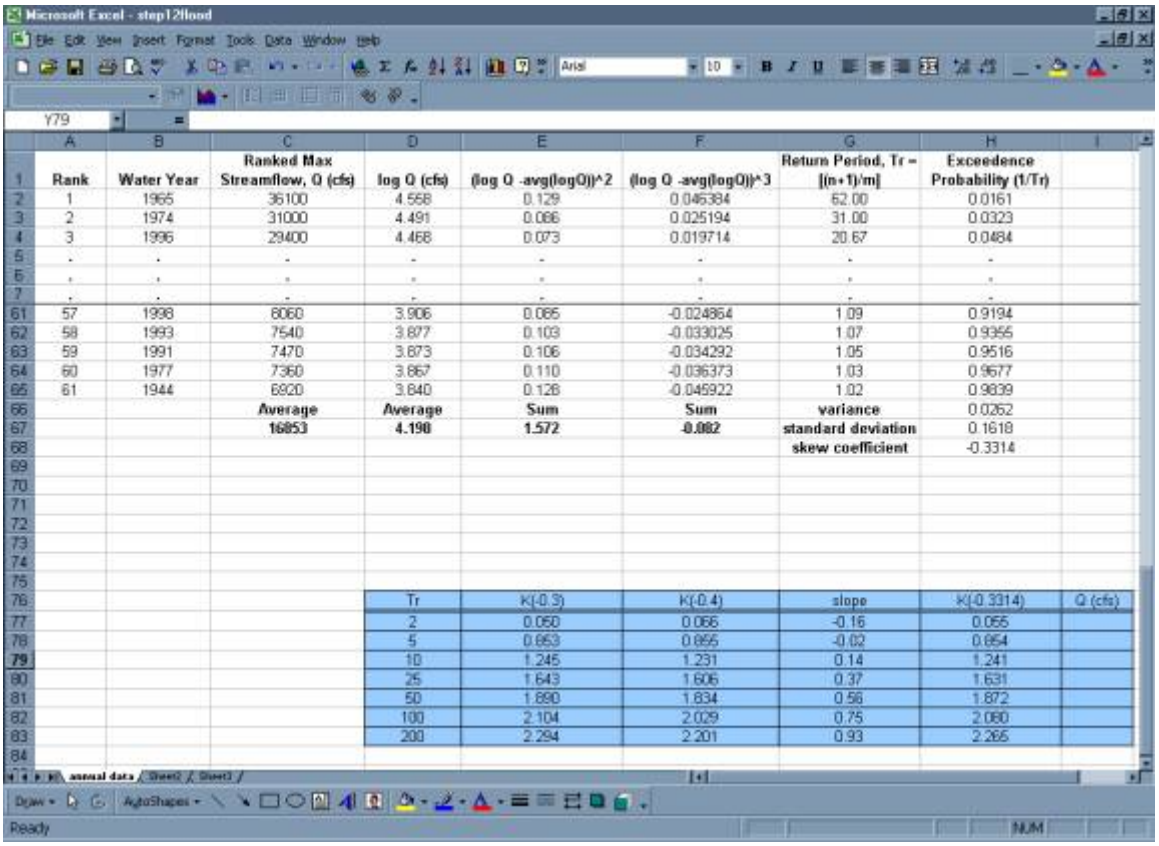
Microsoft Excel - step11flood

Rank	Water Year	Ranked Max Streamflow, Q, (cfs)	log Q (cfs)	(log Q -avg(logQ))^2	(log Q -avg(logQ))^3	Return Period, Tr = [(n+1)/m]	Exceedence Probability (1/Tr)
1	1965	36100	4.558	0.129	0.046384	62.00	0.0161
2	1974	31000	4.491	0.086	0.025194	31.00	0.0323
3	1996	29400	4.468	0.073	0.019714	20.67	0.0484
4	1972	28500	4.455	0.066	0.016903	15.50	0.0645
5	1999	28200	4.450	0.064	0.016011	12.40	0.0806
6	1948	23400	4.369	0.029	0.005001	10.33	0.0968
7	1961	22600	4.354	0.024	0.003789	8.86	0.1129
8	1947	22300	4.348	0.023	0.003382	7.75	0.1290
9	1956	22300	4.348	0.023	0.003382	6.89	0.1452
10	1966	22000	4.342	0.021	0.002999	6.20	0.1613
11	1981	21900	4.340	0.020	0.002878	5.64	0.1774
12	1953	21500	4.332	0.018	0.002419	5.17	0.1935
13	1949	21200	4.326	0.016	0.002103	4.77	0.2097
14	1983	21100	4.324	0.016	0.002004	4.43	0.2258
15	1997	20900	4.320	0.015	0.001813	4.13	0.2419
16	1982	20800	4.318	0.014	0.001722	3.88	0.2581
17	1964	19600	4.292	0.009	0.000832	3.65	0.2742
18	1943	19400	4.288	0.008	0.000719	3.44	0.2903
19	1978	19200	4.283	0.007	0.000616	3.26	0.3065
20	1960	18900	4.276	0.006	0.000479	3.10	0.3226
21	1971	18700	4.272	0.005	0.000399	2.95	0.3387
22	1954	18400	4.265	0.004	0.000296	2.82	0.3548
23	1952	18100	4.258	0.004	0.000210	2.70	0.3710
60	1977	7360	3.867	0.110	-0.036373	1.03	0.9677
61	1944	6920	3.840	0.128	-0.045922	1.02	0.9839
		Average	Average	Sum	Sum	variance	0.0262
		16853	4.198	1.572	-0.082	standard deviation	0.1618
						skew coefficient	-0.3314

Step 12: Calculate k values

- Use the **frequency factor table** and the skew coefficient to find the **k values** for the 2,5,10,25,50,100, and 200 **recurrence interval**
- If the skew coefficient is between two given skew coefficients in the table than you can linearly extrapolate between the two numbers to get the appropriate k value. To view the frequency factor table click on the button below.

Show Me



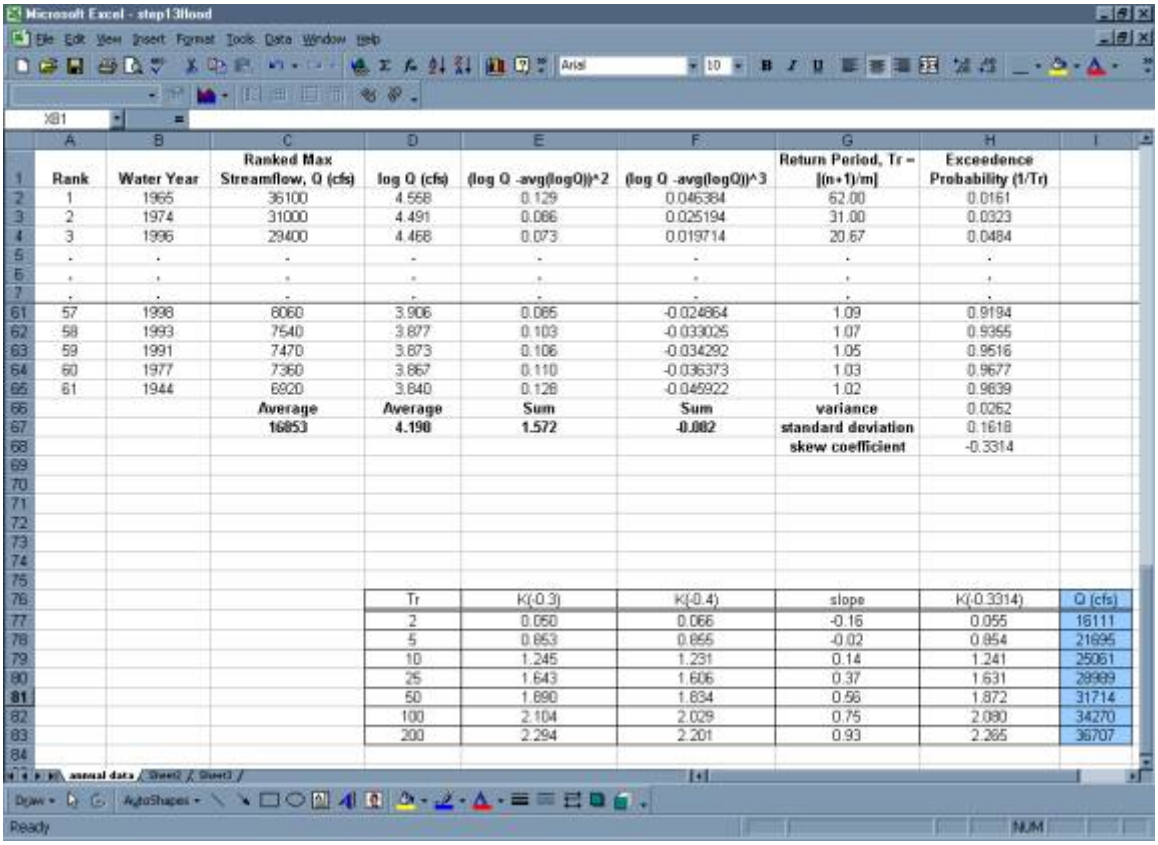
	A	B	C	D	E	F	G	H	I
1	Rank	Water Year	Ranked Max Streamflow, Q (cfs)	log Q (cfs)	(log Q -avg(logQ))^2	(log Q -avg(logQ))^3	Return Period, Tr = [(n+1)/m]	Exceedence Probability (1/Tr)	
2	1	1965	36100	4.558	0.129	0.046384	62.00	0.0161	
3	2	1974	31000	4.491	0.086	0.025194	31.00	0.0323	
4	3	1996	29400	4.468	0.073	0.019714	20.67	0.0484	
5	.	.	-	-	-	-	-	-	
6	.	.	-	-	-	-	-	-	
7	.	.	-	-	-	-	-	-	
61	57	1998	8060	3.906	0.085	-0.024864	1.09	0.9194	
62	58	1993	7540	3.877	0.103	-0.033025	1.07	0.9355	
63	59	1991	7470	3.873	0.106	-0.034292	1.05	0.9516	
64	60	1977	7360	3.867	0.110	-0.036373	1.03	0.9677	
65	61	1944	6920	3.840	0.128	-0.045922	1.02	0.9839	
66			Average	Average	Sum	Sum	variance	0.0262	
67			16853	4.198	1.572	-0.082	standard deviation	0.1618	
68							skew coefficient	-0.3314	

Tr	K(-0.3)	K(-0.4)	slope	K(-0.3314)	Q (cfs)
2	0.050	0.066	-0.16	0.055	
5	0.853	0.855	-0.02	0.854	
10	1.245	1.231	0.14	1.241	
25	1.643	1.606	0.37	1.631	
50	1.880	1.834	0.56	1.872	
100	2.104	2.029	0.75	2.060	
200	2.294	2.201	0.93	2.265	

Step 13: Using the general equation, list the discharges associated with each recurrence interval

- general equation =

$$\log QTr = avg(\log Q) + [K\ (Tr, Cs)] \times \sigma \log Q$$



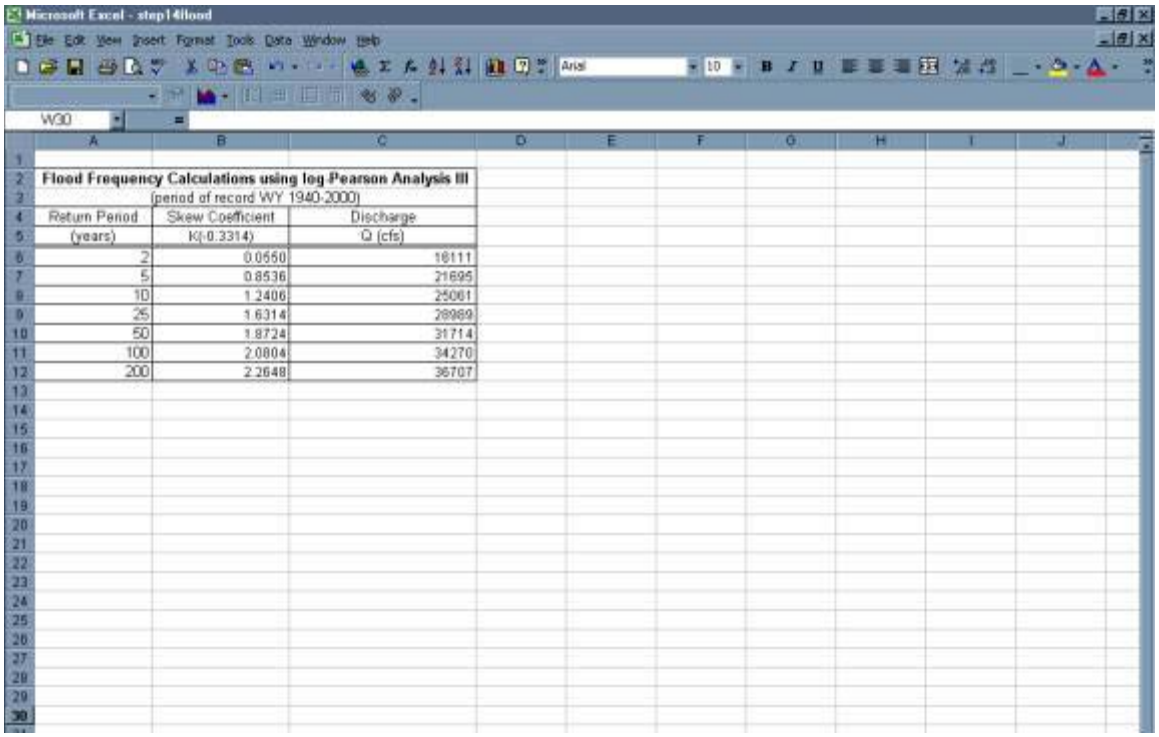
Microsoft Excel - step13flood

	A	B	C	D	E	F	G	H	I
1	Rank	Water Year	Ranked Max Streamflow, Q (cfs)	log Q (cfs)	(log Q -avg(logQ))^2	(log Q -avg(logQ))^3	Return Period, Tr = [(n+1)/m]	Exceedence Probability (1/Tr)	
2	1	1965	36100	4.558	0.129	0.046384	62.00	0.0161	
3	2	1974	31000	4.491	0.086	0.025194	31.00	0.0323	
4	3	1996	29400	4.468	0.073	0.019714	20.67	0.0484	
5	.	.	-	-	-	-	.	.	
6	.	.	-	-	-	-	.	.	
7	.	.	-	-	-	-	.	.	
61	57	1998	8060	3.906	0.065	-0.024864	1.09	0.9194	
62	58	1993	7540	3.877	0.103	-0.033025	1.07	0.9355	
63	59	1991	7470	3.873	0.106	-0.034292	1.05	0.9516	
64	60	1977	7360	3.867	0.110	-0.036373	1.03	0.9677	
65	61	1944	6820	3.840	0.128	-0.045922	1.02	0.9839	
66			**Average**	**Average**	**Sum**	**Sum**	**variance**	0.0262	
67			**16853**	**4.198**	**1.572**	**-0.082**	**standard deviation**	0.1618	
68							**skew coefficient**	-0.3314	

Tr	K(-0.3)	K(-0.4)	slope	K(-0.3314)	Q (cfs)
2	0.050	0.066	-0.16	0.055	16111
5	0.853	0.855	-0.02	0.854	21695
10	1.245	1.231	0.14	1.241	25061
25	1.643	1.606	0.37	1.631	28989
50	1.890	1.834	0.56	1.872	31714
100	2.104	2.029	0.75	2.080	34270
200	2.294	2.201	0.93	2.265	36707

Ready

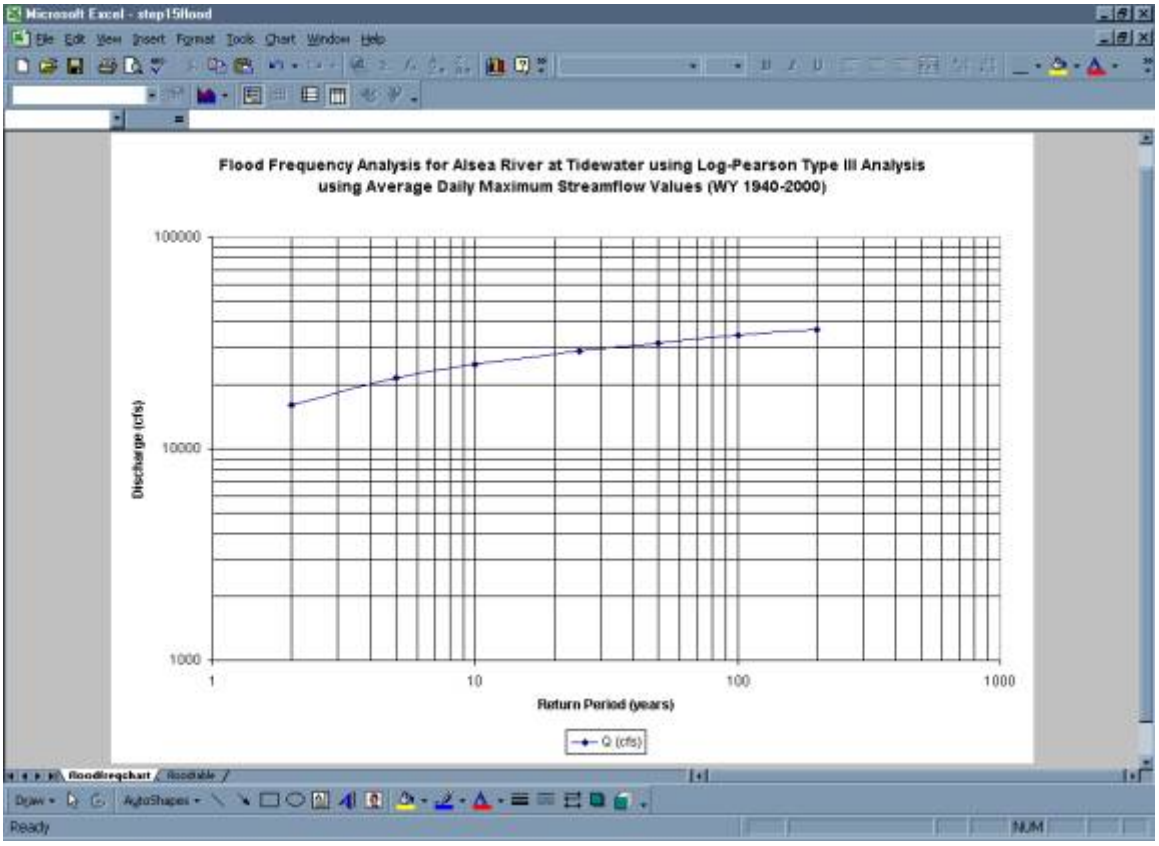
Step 14: Create table of Discharge values found using the log – Pearson analysis



Flood Frequency Calculations using log-Pearson Analysis III
(period of record WY 1940-2000)

Return Period (years)	Skew Coefficient K(-0.3314)	Discharge Q (cfs)
2	0.0550	18111
5	0.8536	21695
10	1.2406	25061
25	1.6314	28989
50	1.8724	31714
100	2.0804	34270
200	2.2648	36707

Step 15: Create Plot



- Below is a comparison of flood frequency analysis completed using mean daily data versus instantaneous discharge data. As can be seen, had you completed this analysis using instantaneous peak discharge data, the result would have been a more conservative estimation of the discharges associated with each return period.