

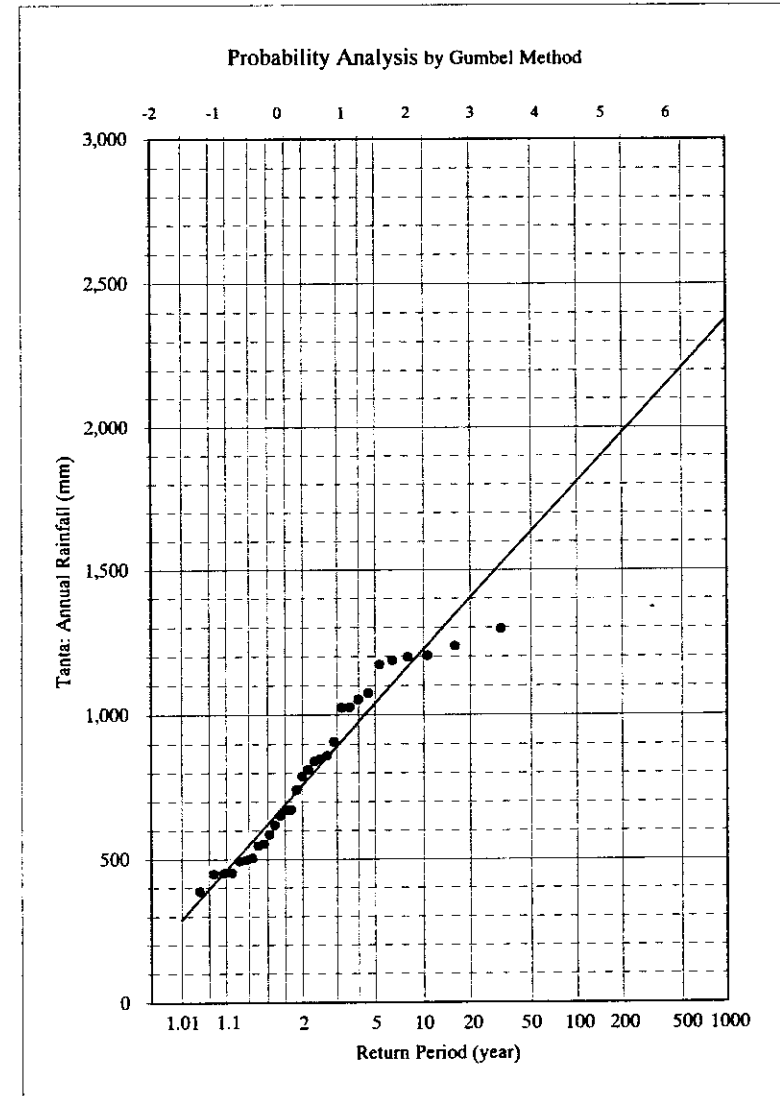
1.6 Probability Analysis of Rainfall

N = 31
 $X_{\text{mean}} = 799.23548$
 $S_x = 276.73553$
 $C_v = 0.3462503$
 $a = 0.0040324$
 $X_o = 666.03347$

Observed data		Observed data arranged in the order of magnitude			
Year	Tanta: Annual Rainfall (mm)	No.	Year	Tanta: Annual Rainfall (mm)	Plotting value
1964	788.2	1	1979	386.9	-1.2429
1965	741.0	2	1988	447.6	-1.0198
1966	906.9	3	1992	450.0	-0.8617
1967	858.9	4	1980	450.6	-0.7321
1968	810.9	5	1990	491.8	-0.6186
1969	1073.7	6	1978	496.5	-0.5152
1970	1170.7	7	1987	503.5	-0.4186
1971	839.8	8	1989	546.9	-0.3266
1972	1051.5	9	1991	552.9	-0.2378
1973	1235.7	10	1985	585.4	-0.1511
1974	1185.9	11	1984	617.3	-0.0656
1975	1023.0	12	1977	652.6	0.0194
1976	671.3	13	1981	671.2	0.1045
1977	652.6	14	1976	671.3	0.1903
1978	496.5	15	1965	741.0	0.2775
1979	386.9	16	1964	788.2	0.3665
1980	450.6	17	1968	810.9	0.4580
1981	671.2	18	1971	839.8	0.5528
1982		19	1995	848.1	0.6514
1983		20	1967	858.9	0.7550
1984	617.3	21	1966	906.9	0.8646
1985	585.4	22	1975	1023.0	0.9816
1986	1202.4	23	1996	1024.6	1.1079
1987	503.5	24	1972	1051.5	1.2459
1988	447.6	25	1969	1073.7	1.3989
1989	546.9	26	1970	1170.7	1.5720
1990	491.8	27	1974	1185.9	1.7726
1991	552.9	28	1994	1196.5	2.0134
1992	450.0	29	1986	1202.4	2.3183
1993	1294.0	30	1973	1235.7	2.7405
1994	1196.5	31	1993	1294.0	3.4499
1995	848.1	32			#N/A
1996	1024.6	33			#N/A
1997		34			#N/A
1998		35			#N/A

Calculation results		
Return period	Tanta: Annual Rainfall (mm)	Plotting value
1.01	286.8	-1.5293
2	756.9	0.3665
5	1038.0	1.4999
10	1224.1	2.2504
20	1402.6	2.9702
50	1633.7	3.9019
100	1806.8	4.6001
200	1979.3	5.2958
500	2206.9	6.2136
1000	2379.0	6.9073

Note)
Application limits depend on the sample size should be considered.

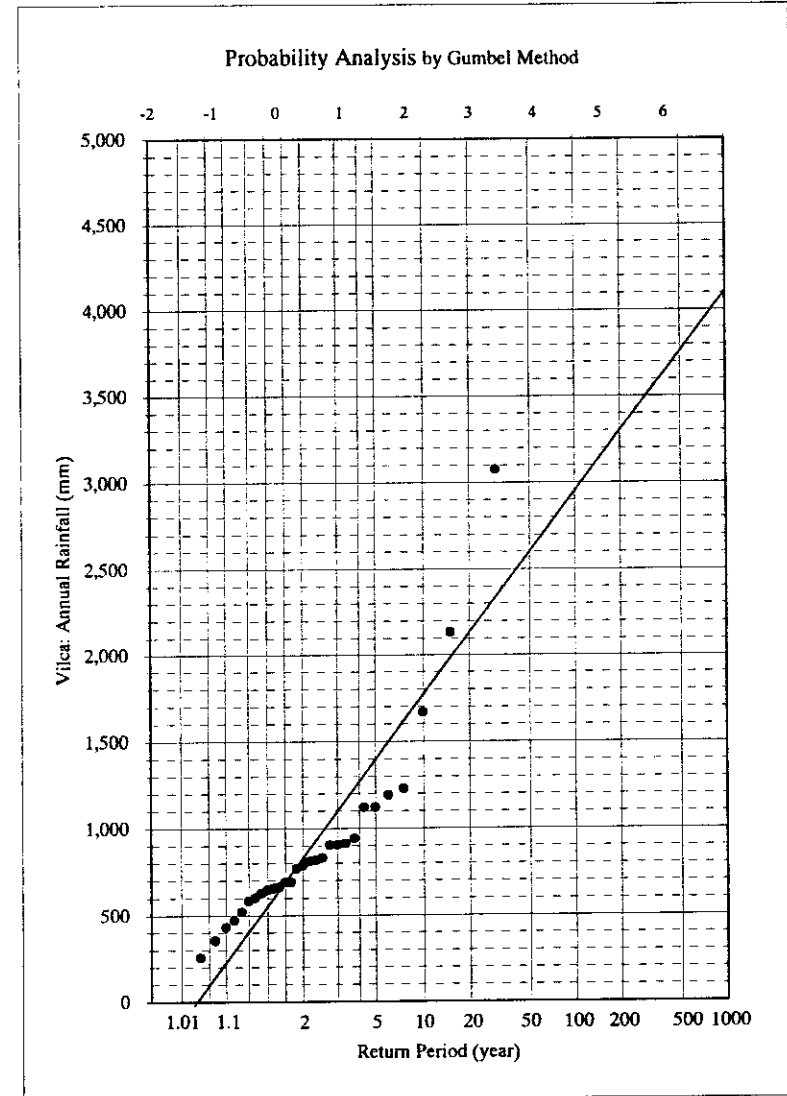


N = 29
 $X_{\text{mean}} = 909.78276$
 $S_x = 556.06883$
 $C_v = 0.6112106$
 $a = 0.0019937$
 $X_o = 641.30596$

Observed data			Observed data arranged in the order of magnitude		
Year	Vilca: Annual Rainfall (mm)	No.	Year	Vilca: Annual Rainfall (mm)	Plotting value
1964	903.0	1	1992	256.4	-1.2241
1965	910.7	2	1983	353.9	-0.9962
1966	1120.4	3	1991	429.0	-0.8340
1967	1666.0	4	1990	471.1	-0.7006
1968	645.4	5	1978	520.0	-0.5832
1969		6	1996	584.1	-0.4759
1970	688.3	7	1971	601.8	-0.3752
1971	601.8	8	1977	628.5	-0.2790
1972	661.4	9	1968	645.4	-0.1856
1973	785.1	10	1979	655.9	-0.0940
1974	817.1	11	1972	661.4	-0.0033
1975		12	1970	688.3	0.0874
1976	809.2	13	1985	689.0	0.1788
1977	628.5	14	1980	768.8	0.2716
1978	520.0	15	1973	785.1	0.3665
1979	655.9	16	1976	809.2	0.4642
1980	768.8	17	1974	817.1	0.5657
1981	1190.5	18	1989	829.0	0.6717
1982	902.7	19	1982	902.7	0.7836
1983	353.9	20	1964	903.0	0.9027
1984	1226.9	21	1965	910.7	1.0309
1985	689.0	22	1987	941.6	1.1707
1986		23	1966	1120.4	1.3254
1987	941.6	24	1988	1120.9	1.4999
1988	1120.9	25	1981	1190.5	1.7020
1989	829.0	26	1984	1226.9	1.9442
1990	471.1	27	1967	1666.0	2.2504
1991	429.0	28	1993	2133.1	2.6738
1992	256.4	29	1994	3073.9	3.3843
1993	2133.1	30			#N/A
1994	3073.9	31			#N/A
1995		32			#N/A
1996	584.1	33			#N/A
1997		34			#N/A
1998		35			#N/A

Calculation results		
Return period	Vilca: Annual Rainfall (mm)	Plotting value
1.01	-125.8	-1.5293
2	825.1	0.3665
5	1393.6	1.4999
10	1770.0	2.2504
20	2131.1	2.9702
50	2598.4	3.9019
100	2948.6	4.6001
200	3297.6	5.2958
500	3757.9	6.2136
1000	4105.8	6.9073

Note)
Application limits depend on the sample size should be considered.

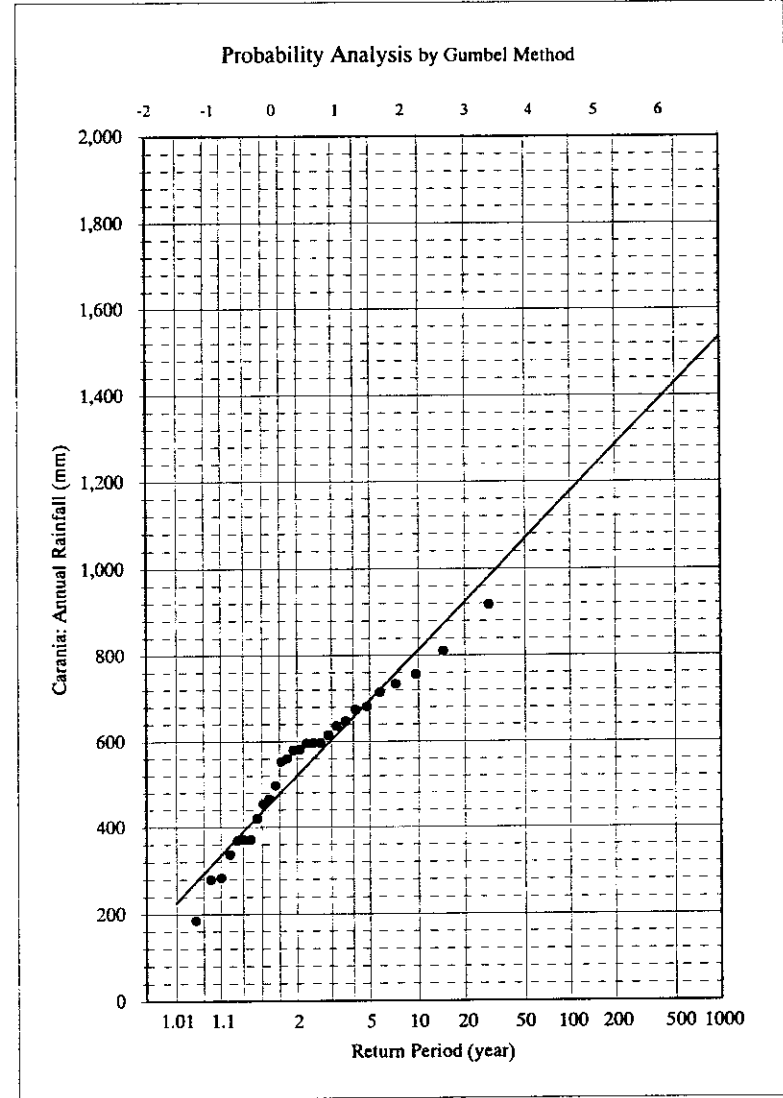


N = 28
 $X_{mean} = 545.23$
 $S_x = 171.42188$
 $C_v = 0.3144029$
 $a = 0.0064443$
 $X_o = 462.32681$

Observed data		Observed data arranged in the order of magnitude			
Year	Carania: Annual Rainfall (mm)	No.	Year	Carania: Annual Rainfall (mm)	Plotting value
1964		1	1992	184.7	-1.2141
1965	595.2	2	1995	278.7	-0.9836
1966	596.3	3	1979	282.8	-0.8192
1967	733.5	4	1980	336.1	-0.6836
1968		5	1991	369.2	-0.5641
1969	646.5	6	1974	370.4	-0.4546
1970	579.3	7	1983	370.5	-0.3516
1971	559.7	8	1977	420.0	-0.2530
1972	755.7	9	1987	453.0	-0.1571
1973	916.3	10	1990	465.0	-0.0627
1974	370.4	11	1994	496.3	0.0311
1975	713.1	12	1982	552.8	0.1251
1976	596.2	13	1971	559.7	0.2202
1977	420.0	14	1970	579.3	0.3171
1978		15	1981	580.5	0.4167
1979	282.8	16	1965	595.2	0.5197
1980	336.1	17	1976	596.2	0.6272
1981	580.5	18	1966	596.3	0.7404
1982	552.8	19	1989	614.7	0.8607
1983	370.5	20	1988	635.7	0.9900
1984		21	1969	646.5	1.1308
1985		22	1993	673.6	1.2864
1986		23	1997	681.0	1.4619
1987	453.0	24	1975	713.1	1.6647
1988	635.7	25	1967	733.5	1.9077
1989	614.7	26	1972	755.7	2.2146
1990	465.0	27	1996	809.6	2.6386
1991	369.2	28	1973	916.3	3.3498
1992	184.7	29			#N/A
1993	673.6	30			#N/A
1994	496.3	31			#N/A
1995	278.7	32			#N/A
1996	809.6	33			#N/A
1997	681.0	34			#N/A
1998		35			#N/A

Calculation results		
Return period	Carania: Annual Rainfall (mm)	Plotting value
1.01	225.0	-1.5293
2	519.2	0.3665
5	695.1	1.4999
10	811.5	2.2504
20	923.2	2.9702
50	1067.8	3.9019
100	1176.2	4.6001
200	1284.1	5.2958
500	1426.5	6.2136
1000	1534.2	6.9073

Note)
 Application limits depend on the sample size should be considered.

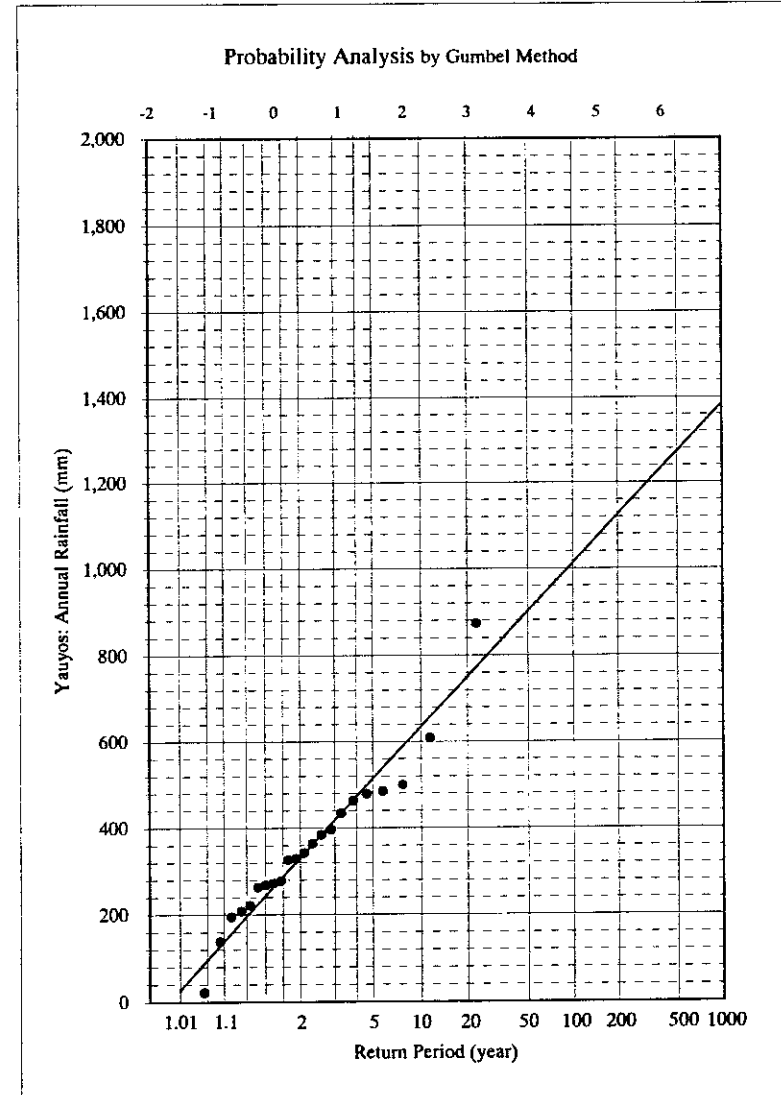


N = 22
 $X_{\text{mean}} = 356.35$
 $S_x = 173.12447$
 $C_v = 0.485827$
 $a = 0.0062121$
 $X_c = 271.5514$

Observed data		Observed data arranged in the order of magnitude			
Year	Yauyos: Annual Rainfall (mm)	No.	Year	Yauyos: Annual Rainfall (mm)	Plotting value
1964	342.4	1	1992	21.7	-1.1428
1965	329.1	2	1979	137.9	-0.8930
1966	383.7	3	1980	194.2	-0.7114
1967	608.0	4	1995	207.1	-0.5592
1968		5	1997	220.7	-0.4227
1969	433.4	6	1994	262.0	-0.2955
1970	363.5	7	1993	267.5	-0.1736
1971	499.4	8	1978	272.1	-0.0545
1972		9	1996	277.3	0.0637
1973	872.0	10	1977	326.2	0.1828
1974	484.8	11	1965	329.1	0.3044
1975	395.2	12	1964	342.4	0.4299
1976	463.3	13	1970	363.5	0.5612
1977	326.2	14	1966	383.7	0.7003
1978	272.1	15	1975	395.2	0.8499
1979	137.9	16	1969	433.4	1.0136
1980	194.2	17	1976	463.3	1.1964
1981	478.2	18	1981	478.2	1.4060
1982		19	1974	484.8	1.6552
1983		20	1971	499.4	1.9678
1984		21	1967	608.0	2.3972
1985		22	1973	872.0	3.1134
1986		23			#N/A
1987		24			#N/A
1988		25			#N/A
1989		26			#N/A
1990		27			#N/A
1991		28			#N/A
1992	21.7	29			#N/A
1993	267.5	30			#N/A
1994	262.0	31			#N/A
1995	207.1	32			#N/A
1996	277.3	33			#N/A
1997	220.7	34			#N/A
1998		35			#N/A

Calculation results		
Return period	Yauyos: Annual Rainfall (mm)	Plotting value
1.01	25.4	-1.5293
2	330.6	0.3665
5	513.0	1.4999
10	633.8	2.2504
20	749.7	2.9702
50	899.7	3.9019
100	1012.1	4.6001
200	1124.0	5.2958
500	1271.8	6.2136
1000	1383.5	6.9073

Note)
Application limits depend on the sample size should be considered.

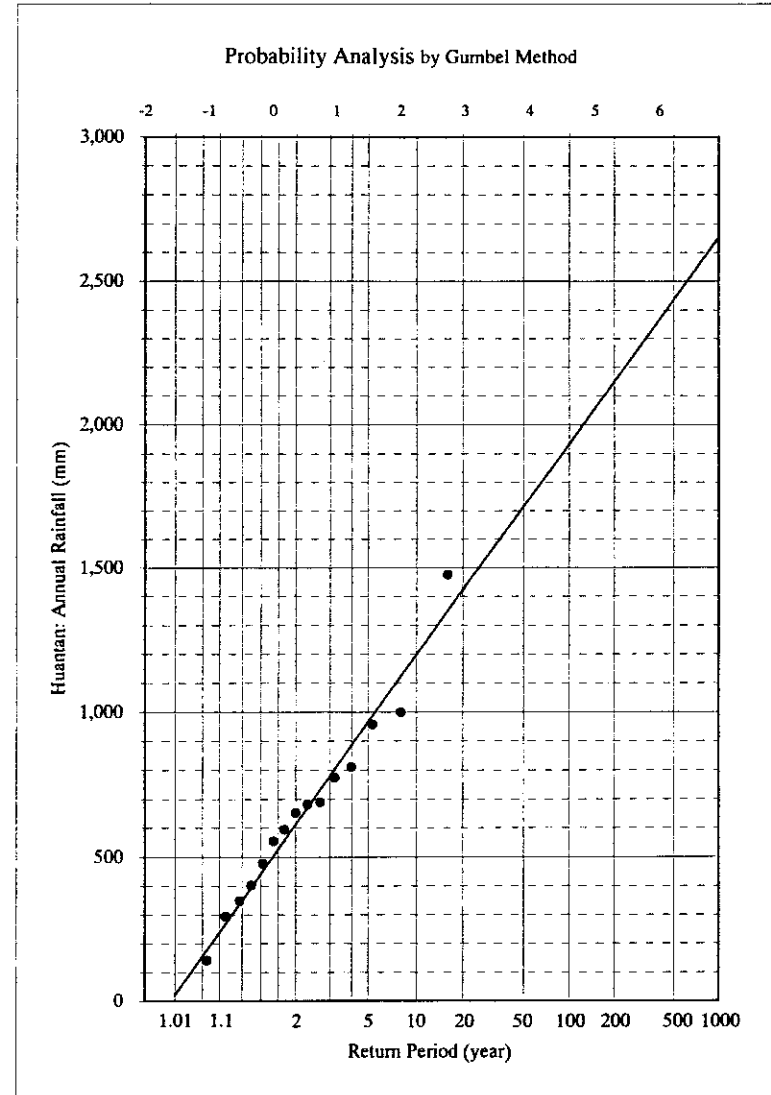


N = 15
 $X_{mean} = 656.21333$
 $S_y = 318.30501$
 $C_v = 0.4850633$
 $a = 0.0032063$
 $X_o = 496.26545$

Observed data		Observed data arranged in the order of magnitude			
Year	Huantan: Annual Rainfall (mm)	No.	Year	Huantan: Annual Rainfall (mm)	Plotting value
1964	651.7	1	1968	139.6	-1.0198
1965	477.8	2	1978	293.7	-0.7321
1966	773.0	3	1970	347.4	-0.5152
1967		4	1975	402.7	-0.3266
1968	139.6	5	1965	477.8	-0.1511
1969		6	1974	553.2	0.0194
1970	347.4	7	1976	593.6	0.1903
1971	688.9	8	1964	651.7	0.3665
1972	998.1	9	1989	682.1	0.5528
1973	957.1	10	1971	688.9	0.7550
1974	553.2	11	1966	773.0	0.9816
1975	402.7	12	1983	810.2	1.2459
1976	593.6	13	1973	957.1	1.5720
1977		14	1972	998.1	2.0134
1978	293.7	15	1986	1474.1	2.7405
1979		16			#N/A
1980		17			#N/A
1981		18			#N/A
1982		19			#N/A
1983	810.2	20			#N/A
1984		21			#N/A
1985		22			#N/A
1986	1474.1	23			#N/A
1987		24			#N/A
1988		25			#N/A
1989	682.1	26			#N/A
1990		27			#N/A
1991		28			#N/A
1992		29			#N/A
1993		30			#N/A
1994		31			#N/A
1995		32			#N/A
1996		33			#N/A
1997		34			#N/A
1998		35			#N/A

Calculation results		
Return period	Huantan: Annual Rainfall (mm)	Plotting value
1.01	19.3	-1.5293
2	610.6	0.3665
5	964.1	1.4999
10	1198.1	2.2504
20	1422.6	2.9702
50	1713.2	3.9019
100	1931.0	4.6001
200	2148.0	5.2958
500	2434.2	6.2136
1000	2650.6	6.9073

Note)
 Application limits depend on the sample size should be considered.



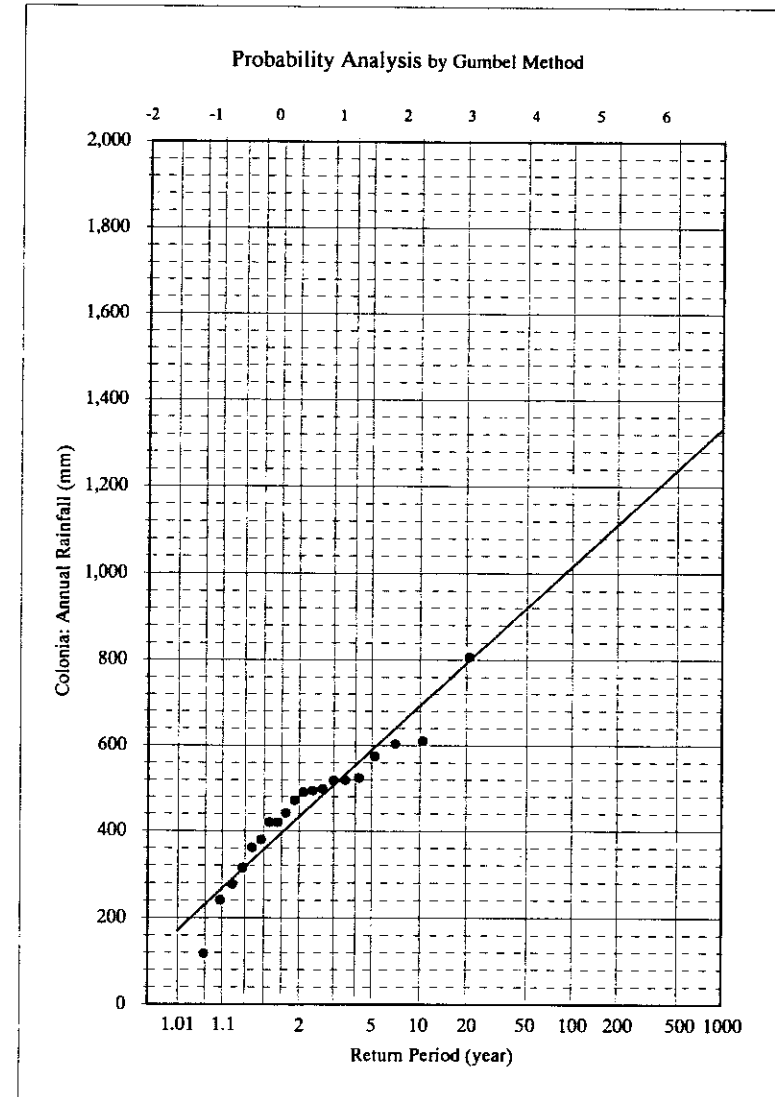
1-6-6

N = 20
 $X_{\text{mean}} = 453.52$
 $S_x = 146.49301$
 $C_v = 0.3230133$
 $a = 0.0072551$
 $X_o = 381.35681$

Observed data		Observed data arranged in the order of magnitude			
Year	Colonia: Annual Rainfall (mm)	No.	Year	Colonia: Annual Rainfall (mm)	Plotting value
1964	379.2	1	1985	116.9	-1.1133
1965	361.1	2	1987	240.3	-0.8550
1966	497.5	3	1968	276.5	-0.6657
1967	573.9	4	1986	314.4	-0.5057
1968	276.5	5	1965	361.1	-0.3612
1969	517.6	6	1964	379.2	-0.2254
1970	440.9	7	1983	419.3	-0.0940
1971	805.1	8	1978	419.6	0.0355
1972	603.1	9	1970	440.9	0.1657
1973	609.8	10	1975	470.5	0.2985
1974	523.5	11	1981	489.9	0.4360
1975	470.5	12	1977	493.2	0.5805
1976	518.1	13	1966	497.5	0.7349
1977	493.2	14	1969	517.6	0.9027
1978	419.6	15	1976	518.1	1.0892
1979		16	1974	523.5	1.3022
1980		17	1967	573.9	1.5544
1981	489.9	18	1972	603.1	1.8698
1982		19	1973	609.8	2.3018
1983	419.3	20	1971	805.1	3.0202
1984		21			#N/A
1985	116.9	22			#N/A
1986	314.4	23			#N/A
1987	240.3	24			#N/A
1988		25			#N/A
1989		26			#N/A
1990		27			#N/A
1991		28			#N/A
1992		29			#N/A
1993		30			#N/A
1994		31			#N/A
1995		32			#N/A
1996		33			#N/A
1997		34			#N/A
1998		35			#N/A

Calculation results		
Return period	Colonia: Annual Rainfall (mm)	Plotting value
1.01	170.6	-1.5293
2	431.9	0.3665
5	588.1	1.4999
10	691.5	2.2504
20	790.8	2.9702
50	919.2	3.9019
100	1015.4	4.6001
200	1111.3	5.2958
500	1237.8	6.2136
1000	1333.4	6.9073

Note)
 Application limits depend on the sample size should be considered.

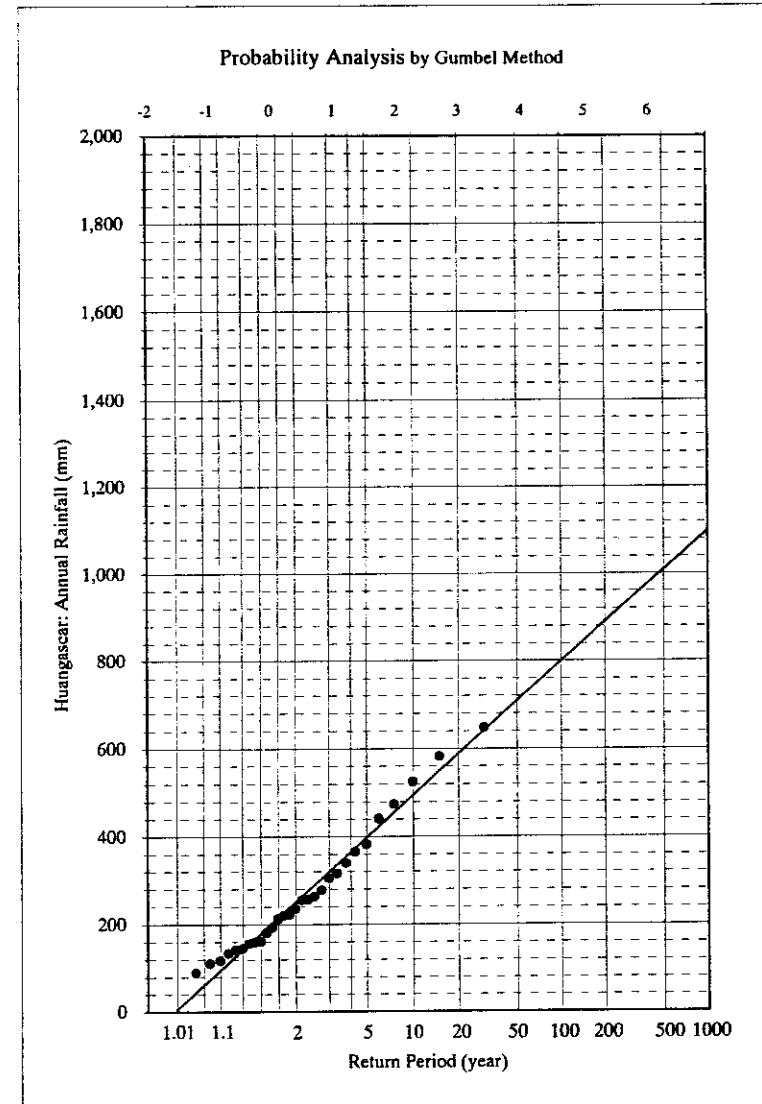


N = 29
 $X_{\text{mean}} = 272.21034$
 $S_x = 143.61838$
 $C_v = 0.5276007$
 $a = 0.0077194$
 $X_0 = 202.86964$

Observed data		Observed data arranged in the order of magnitude			
Year	Huangascar : Annual Rainfall (mm)	No.	Year	Huangascar : Annual Rainfall (mm)	Plotting value
1964		1	1983	89.4	-1.2241
1965	141.6	2	1980	110.3	-0.9962
1966	211.3	3	1978	117.3	-0.8340
1967	473.8	4	1987	133.9	-0.7006
1968		5	1965	141.6	-0.5832
1969	361.9	6	1991	144.9	-0.4759
1970	316.2	7	1990	155.8	-0.3752
1971	305.2	8	1996	159.4	-0.2790
1972	581.0	9	1997	159.8	-0.1856
1973	364.8	10	1995	179.9	-0.0940
1974	191.3	11	1974	191.3	-0.0033
1975	339.6	12	1966	211.3	0.0874
1976		13	1985	218.9	0.1788
1977	441.1	14	1979	220.9	0.2716
1978	117.3	15	1993	234.1	0.3665
1979	220.9	16	1994	254.2	0.4642
1980	110.3	17	1981	256.0	0.5657
1981	256.0	18	1988	263.2	0.6717
1982	276.8	19	1982	276.8	0.7836
1983	89.4	20	1971	305.2	0.9027
1984	524.4	21	1970	316.2	1.0309
1985	218.9	22	1975	339.6	1.1707
1986	647.1	23	1973	364.8	1.3254
1987	133.9	24	1969	361.9	1.4999
1988	263.2	25	1977	441.1	1.7020
1989		26	1967	473.8	1.9442
1990	155.8	27	1984	524.4	2.2504
1991	144.9	28	1972	581.0	2.6738
1992		29	1986	647.1	3.3843
1993	234.1	30			#/A
1994	254.2	31			#/A
1995	179.9	32			#/A
1996	159.4	33			#/A
1997	159.8	34			#/A
1998		35			#/A

Calculation results		
Return period	Huangascar: Annual Rainfall (mm)	Plotting value
1.01	4.8	-1.5293
2	250.3	0.3665
5	397.2	1.4999
10	494.4	2.2504
20	587.6	2.9702
50	708.3	3.9019
100	798.8	4.6001
200	888.9	5.2958
500	1007.8	6.2136
1000	1097.7	6.9073

Note)
Application limits depend on the sample size should be considered.

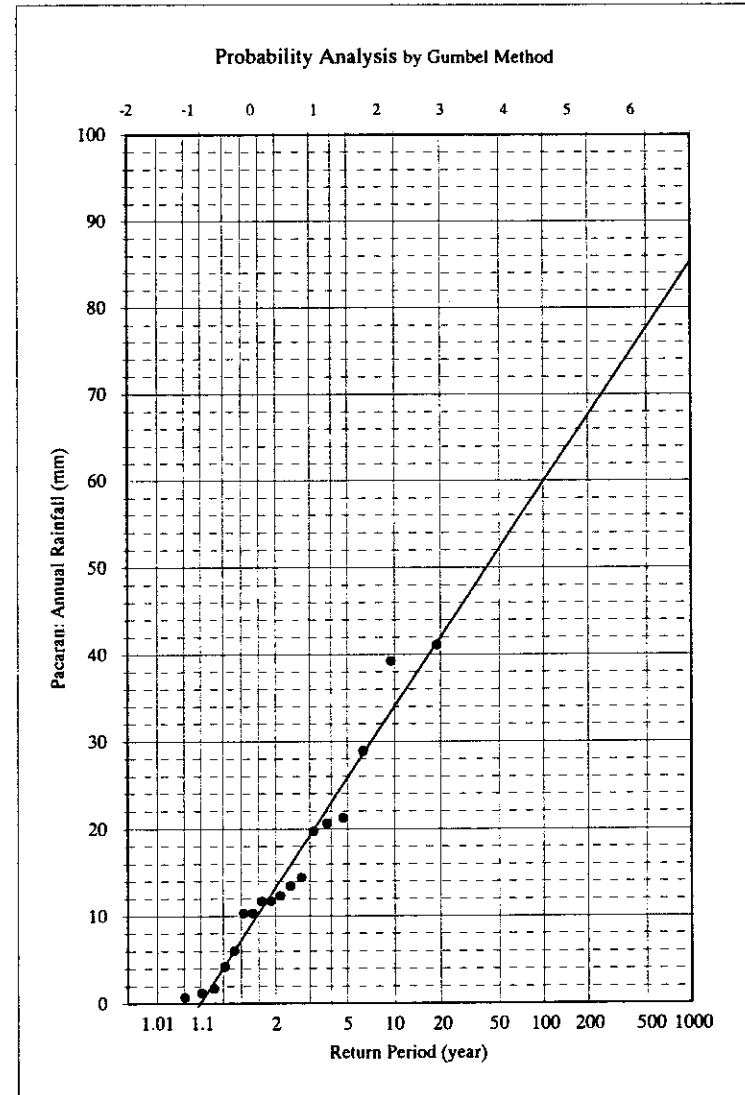


N = 18
 $X_{\text{mean}} = 14.922222$
 $S_x = 11.54092$
 $C_v = 0.7734049$
 $a = 0.0908139$
 $X_c = 9.1984483$

Observed data		Observed data arranged in the order of magnitude			
Year	Pacaran: Annual Rainfall (mm)	No.	Year	Pacaran: Annual Rainfall (mm)	Plotting value
1964		1	1976	0.7	-1.0799
1965		2	1990	1.2	-0.8115
1966	6.0	3	1992	1.7	-0.6129
1967	28.9	4	1991	4.2	-0.4435
1968		5	1966	6.0	-0.2889
1969		6	1973	10.3	-0.1421
1970	41.1	7	1973	10.3	0.0015
1971	11.7	8	1971	11.7	0.1450
1972	39.2	9	1971	11.7	0.2914
1973	10.3	10	1996	12.3	0.4434
1974	10.3	11	1988	13.4	0.6041
1975	19.7	12	1997	14.4	0.7775
1976	0.7	13	1975	19.7	0.9689
1977		14	1994	20.6	1.1862
1978		15	1986	21.2	1.4423
1979		16	1967	28.9	1.7611
1980		17	1972	39.2	2.1962
1981		18	1970	41.1	2.9175
1982		19			#N/A
1983		20			#N/A
1984		21			#N/A
1985		22			#N/A
1986	21.2	23			#N/A
1987	11.7	24			#N/A
1988	13.4	25			#N/A
1989		26			#N/A
1990	1.2	27			#N/A
1991	4.2	28			#N/A
1992	1.7	29			#N/A
1993		30			#N/A
1994	20.6	31			#N/A
1995		32			#N/A
1996	12.3	33			#N/A
1997	14.4	34			#N/A
1998		35			#N/A

Calculation results		
Return period	Pacaran: Annual Rainfall (mm)	Plotting value
1.01	-7.6	-1.5293
2	13.2	0.3665
5	25.7	1.4999
10	34.0	2.2504
20	41.9	2.9702
50	52.2	3.9019
100	59.9	4.6001
200	67.5	5.2958
500	77.6	6.2136
1000	85.3	6.9073

Note)
 Application limits depend on the sample size should be considered.

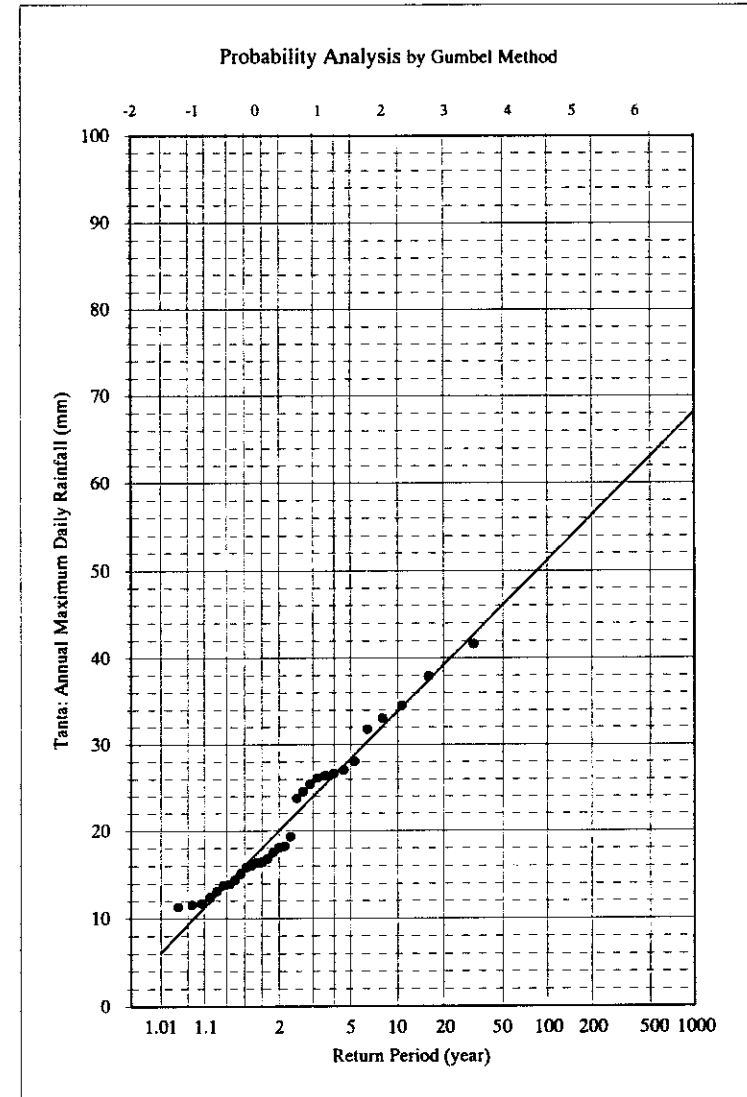


N = 31
 $X_{\text{mean}} = 21.222581$
 $S_x = 8.2155129$
 $C_v = 0.3871119$
 $a = 0.1358305$
 $X_0 = 17.268181$

Observed data		Observed data arranged in the order of magnitude			
Year	Tanta: Annual Maximum Daily Rainfall (mm)	No.	Year	Tanta: Annual Maximum Daily Rainfall (mm)	Plotting value
1964	25.4	1	1984	11.3	-1.2429
1965	34.5	2	1991	11.5	-1.0198
1966	26.6	3	1979	11.7	-0.8617
1967	28.0	4	1985	12.4	-0.7321
1968	23.7	5	1981	13.1	-0.6186
1969	33.0	6	1988	13.8	-0.5152
1970	37.9	7	1989	13.9	-0.4186
1971	24.5	8	1980	14.4	-0.3266
1972	26.1	9	1975	15.1	-0.2378
1973	18.2	10	1990	15.8	-0.1511
1974	19.3	11	1992	16.0	-0.0656
1975	15.1	12	1978	16.3	0.0194
1976	17.5	13	1977	16.4	0.1045
1977	16.4	14	1987	16.8	0.1903
1978	16.3	15	1976	17.5	0.2775
1979	11.7	16	1986	18.0	0.3665
1980	14.4	17	1973	18.2	0.4580
1981	13.1	18	1974	19.3	0.5528
1982		19	1968	23.7	0.6514
1983		20	1971	24.5	0.7550
1984	11.3	21	1964	25.4	0.8646
1985	12.4	22	1972	26.1	0.9816
1986	18.0	23	1994	26.4	1.1079
1987	16.8	24	1966	26.6	1.2459
1988	13.8	25	1995	27.0	1.3989
1989	13.9	26	1967	28.0	1.5720
1990	15.8	27	1996	31.7	1.7726
1991	11.5	28	1969	33.0	2.0134
1992	16.0	29	1965	34.5	2.3183
1993	41.6	30	1970	37.9	2.7405
1994	26.4	31	1993	41.6	3.4499
1995	27.0	32			#N/A
1996	31.7	33			#N/A
1997		34			#N/A
1998		35			#N/A

Calculation results		
Return period	Tanta: Annual Maximum Daily Rainfall (mm)	Plotting value
1.01	6.0	-1.5293
2	20.0	0.3665
5	28.3	1.4999
10	33.8	2.2504
20	39.1	2.9702
50	46.0	3.9019
100	51.1	4.6001
200	56.3	5.2958
500	63.0	6.2136
1000	68.1	6.9073

Note)
 Application limits depend on the sample size should be considered.

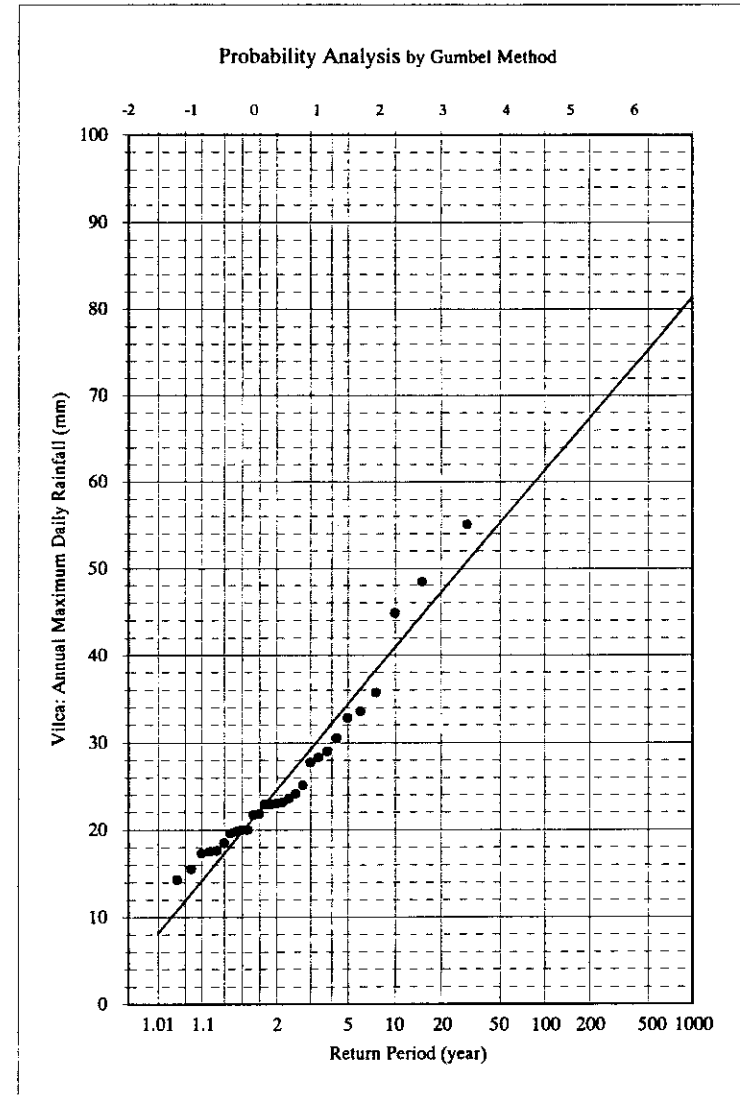


N = 29
 $X_{mean} = 26$
 $S_x = 9.6247526$
 $C_v = 0.3701828$
 $a = 0.1151865$
 $X_o = 21.353052$

Observed data		Observed data arranged in the order of magnitude			
Year	Vilca: Annual Maximum Daily Rainfall (mm)	No.	Year	Vilca: Annual Maximum Daily Rainfall (mm)	Plotting value
1964	17.6	1	1992	14.3	-1.2241
1965	19.6	2	1991	15.5	-0.9962
1966	33.5	3	1990	17.3	-0.8340
1967	44.8	4	1996	17.5	-0.7006
1968	29.0	5	1964	17.6	-0.5832
1969		6	1978	18.5	-0.4759
1970	20.0	7	1965	19.6	-0.3752
1971	23.0	8	1972	19.8	-0.2790
1972	19.8	9	1970	20.0	-0.1856
1973	22.9	10	1970	20.0	-0.0940
1974	25.1	11	1977	21.7	-0.0033
1975		12	1989	21.8	0.0874
1976	23.6	13	1973	22.9	0.1788
1977	21.7	14	1973	22.9	0.2716
1978	18.5	15	1971	23.0	0.3665
1979	24.1	16	1988	23.1	0.4642
1980	22.9	17	1976	23.6	0.5657
1981	28.3	18	1979	24.1	0.6717
1982	30.5	19	1974	25.1	0.7836
1983	20.0	20	1985	27.7	0.9027
1984	32.8	21	1981	28.3	1.0309
1985	27.7	22	1968	29.0	1.1707
1986		23	1982	30.5	1.3254
1987	35.7	24	1984	32.8	1.4999
1988	23.1	25	1966	33.5	1.7020
1989	21.8	26	1987	35.7	1.9442
1990	17.3	27	1967	44.8	2.2504
1991	15.5	28	1994	48.4	2.6738
1992	14.3	29	1993	55.0	3.3843
1993	55.0	30			#N/A
1994	48.4	31			#N/A
1995		32			#N/A
1996	17.5	33			#N/A
1997		34			#N/A
1998		35			#N/A

Calculation results		
Return period	Vilca: Annual Maximum Daily Rainfall (mm)	Plotting value
1.01	8.1	-1.5293
2	24.5	0.3665
5	34.4	1.4999
10	40.9	2.2504
20	47.1	2.9702
50	55.2	3.9019
100	61.3	4.6001
200	67.3	5.2958
500	75.3	6.2136
1000	81.3	6.9073

Note)
 Application limits depend on the sample size should be considered.

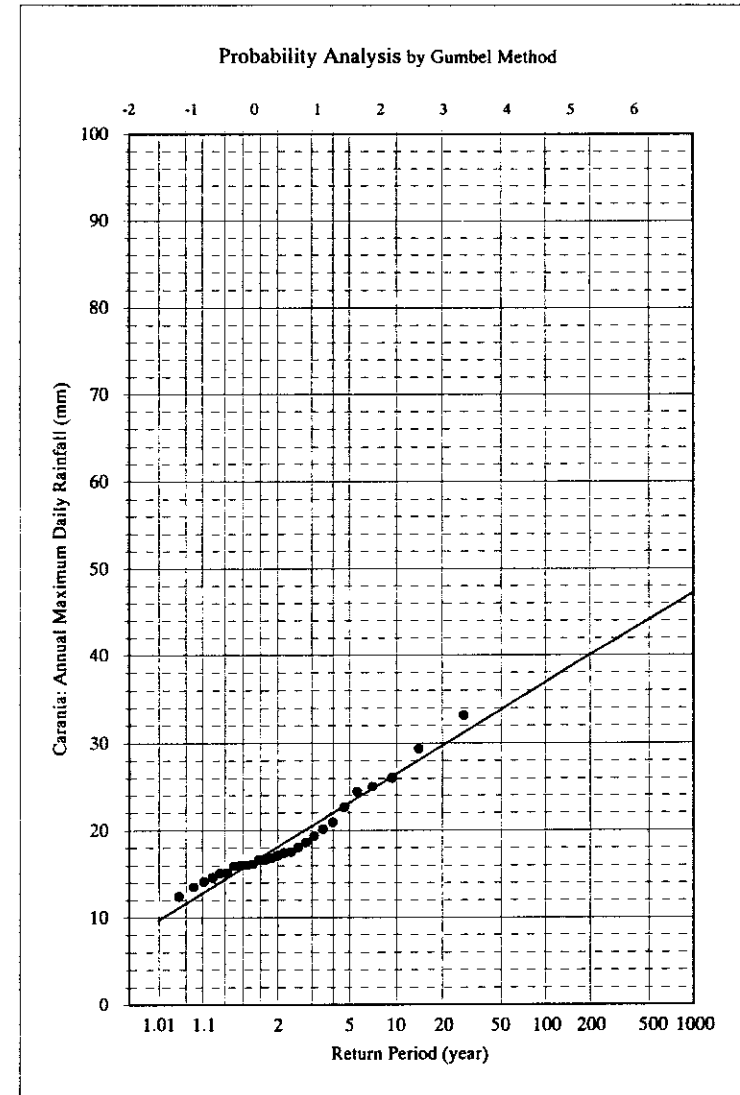


N = 27
 $X_{\text{mean}} = 18.818519$
 $S_x = 4.8899017$
 $C_v = 0.2598452$
 $a = 0.2250635$
 $X_0 = 16.449449$

Observed data		Observed data arranged in the order of magnitude			
Year	Carania: Annual Maximum Daily Rainfall (mm)	No.	Year	Carania: Annual Maximum Daily Rainfall (mm)	Plotting value
1964		1	1991	12.4	-1.2036
1965		2	1995	13.5	-0.9704
1966	25.0	3	1994	14.1	-0.8036
1967	18.6	4	1997	14.6	-0.6657
1968		5	1979	15.1	-0.5439
1969	29.3	6	1979	15.1	-0.4321
1970	16.6	7	1982	15.9	-0.3266
1971	18.0	8	1975	16.0	-0.2254
1972	20.1	9	1975	16.0	-0.1266
1973	22.6	10	1996	16.1	-0.0292
1974	16.8	11	1970	16.6	0.0679
1975	16.0	12	1970	16.6	0.1657
1976	19.3	13	1974	16.8	0.2649
1977	17.4	14	1980	17.1	0.3665
1978		15	1977	17.4	0.4714
1979	15.1	16	1981	17.5	0.5805
1980	17.1	17	1971	18.0	0.6952
1981	17.5	18	1967	18.6	0.8168
1982	15.9	19	1976	19.3	0.9474
1983	16.6	20	1972	20.1	1.0892
1984		21	1987	20.9	1.2459
1985		22	1973	22.6	1.4223
1986		23	1989	24.4	1.6260
1987	20.9	24	1966	25.0	1.8698
1988	33.1	25	1990	26.0	2.1775
1989	24.4	26	1969	29.3	2.6022
1990	26.0	27	1988	33.1	3.3141
1991	12.4	28			#N/A
1992	15.1	29			#N/A
1993	16.0	30			#N/A
1994	14.1	31			#N/A
1995	13.5	32			#N/A
1996	16.1	33			#N/A
1997	14.6	34			#N/A
1998		35			#N/A

Calculation results		
Return period	Carania: Annual Maximum Daily Rainfall (mm)	Plotting value
1.01	9.7	-1.5293
2	18.1	0.3665
5	23.1	1.4999
10	26.4	2.2504
20	29.6	2.9702
50	33.8	3.9019
100	36.9	4.6001
200	40.0	5.2958
500	44.1	6.2136
1000	47.1	6.9073

Note)
Application limits depend on the sample size should be considered.

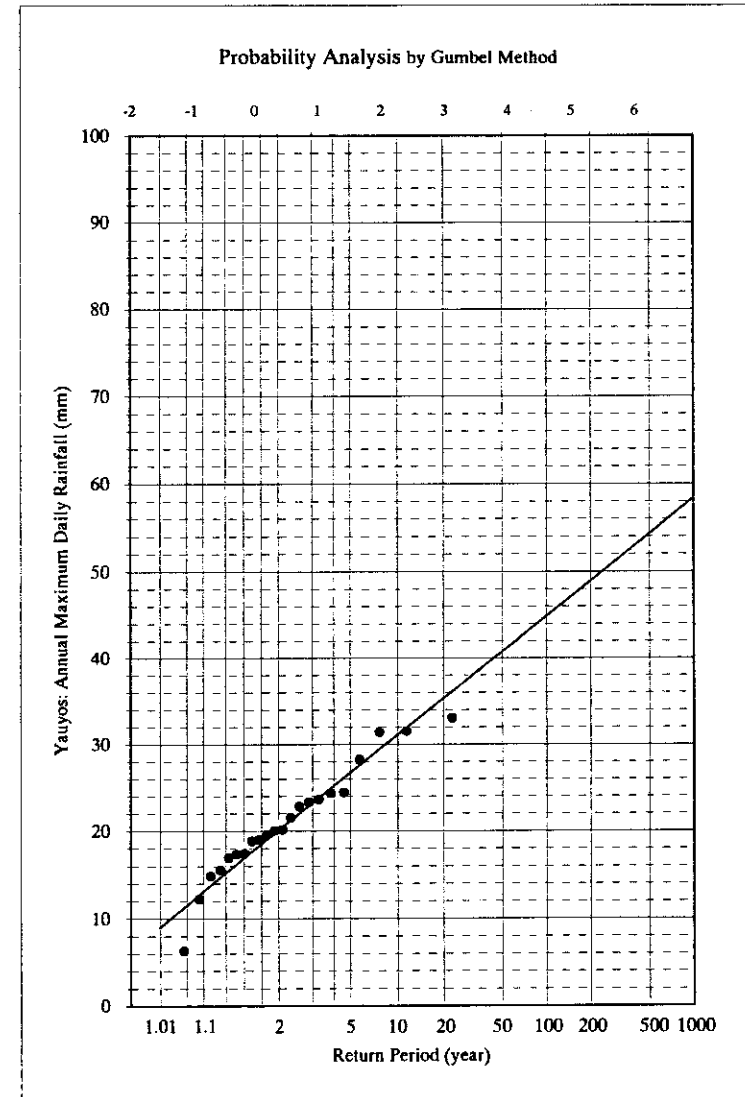


N = 22
 $X_{\text{mean}} = 20.990909$
 $S_x = 6.291474$
 $C_v = 0.2997237$
 $a = 0.1709409$
 $X_0 = 17.909264$

Observed data		Observed data arranged in the order of magnitude			
Year	Yauyos: Annual Maximum Daily Rainfall (mm)	No.	Year	Yauyos: Annual Maximum Daily Rainfall (mm)	Plotting value
1964	19.5	1	1992	6.3	-1.1428
1965	31.4	2	1995	12.2	-0.8930
1966	23.3	3	1977	14.8	-0.7114
1967	23.6	4	1980	15.5	-0.5592
1968		5	1979	16.9	-0.4227
1969	17.4	6	1993	17.3	-0.2955
1970	24.4	7	1969	17.4	-0.1736
1971	33.0	8	1997	18.8	-0.0545
1972		9	1975	19.0	0.0637
1973	28.2	10	1964	19.5	0.1828
1974	21.5	11	1976	20.0	0.3044
1975	19.0	12	1978	20.1	0.4299
1976	20.0	13	1974	21.5	0.5612
1977	14.8	14	1981	22.8	0.7003
1978	20.1	15	1966	23.3	0.8499
1979	16.9	16	1967	23.6	1.0136
1980	15.5	17	1996	24.3	1.1964
1981	22.8	18	1970	24.4	1.4060
1982		19	1973	28.2	1.6552
1983		20	1965	31.4	1.9678
1984		21	1994	31.5	2.3972
1985		22	1971	33.0	3.1134
1986		23			#N/A
1987		24			#N/A
1988		25			#N/A
1989		26			#N/A
1990		27			#N/A
1991		28			#N/A
1992	6.3	29			#N/A
1993	17.3	30			#N/A
1994	31.5	31			#N/A
1995	12.2	32			#N/A
1996	24.3	33			#N/A
1997	18.8	34			#N/A
1998		35			#N/A

Calculation results		
Return period	Yauyos: Annual Maximum Daily Rainfall (mm)	Plotting value
1.01	9.0	-1.5293
2	20.1	0.3665
5	26.7	1.4999
10	31.1	2.2504
20	35.3	2.9702
50	40.7	3.9019
100	44.8	4.6001
200	48.9	5.2958
500	54.3	6.2136
1000	58.3	6.9073

Note)
 Application limits depend on the sample size should be considered.

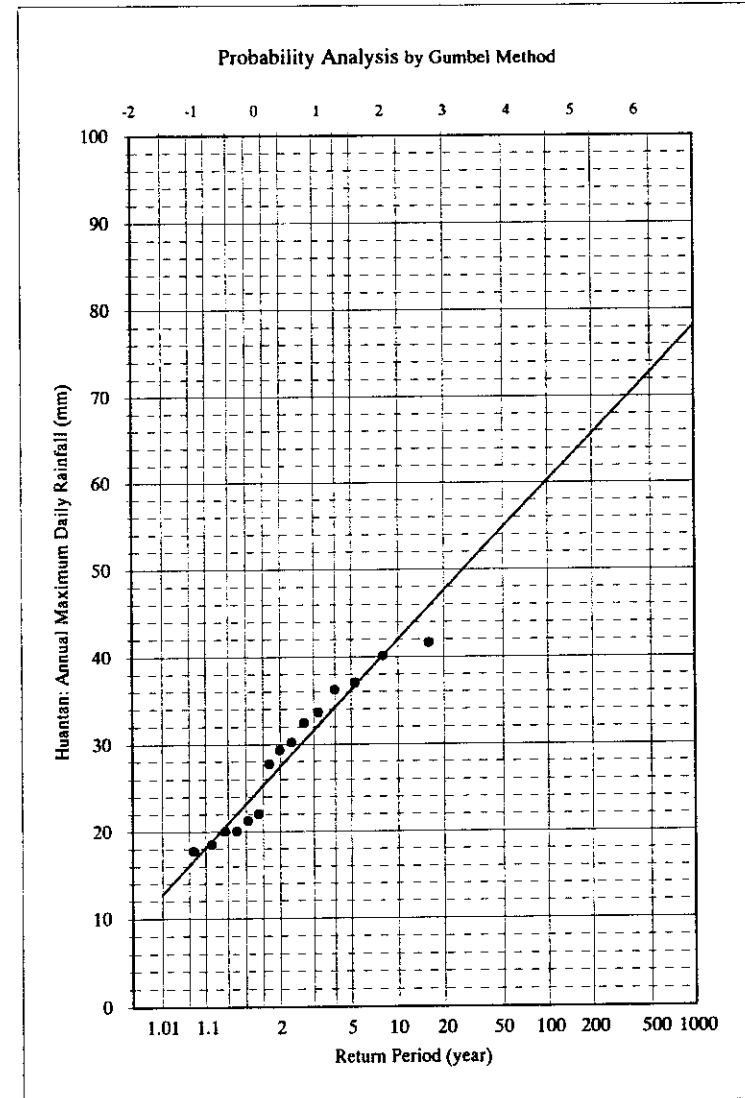


N = 15
 X_{mean} = 28.5
 S_x = 7.9153016
 C_v = 0.2777299
a = 0.1289365
 X_0 = 24.52257

Observed data		Observed data arranged in the order of magnitude			
Year	Huantan: Annual Maximum Daily Rainfall (mm)	No.	Year	Huantan: Annual Maximum Daily Rainfall (mm)	Plotting value
1964	37.0	1	1968	17.7	-1.0198
1965	41.6	2	1971	18.5	-0.7321
1966	20.0	3	1966	20.0	-0.5152
1967		4	1966	20.0	-0.3266
1968	17.7	5	1970	21.2	-0.1511
1969		6	1978	22.0	0.0194
1970	21.2	7	1989	27.7	0.1903
1971	18.5	8	1972	29.3	0.3665
1972	29.3	9	1973	30.2	0.5528
1973	30.2	10	1976	32.4	0.7550
1974	20.0	11	1983	33.6	0.9816
1975	40.1	12	1986	36.2	1.2459
1976	32.4	13	1964	37.0	1.5720
1977		14	1975	40.1	2.0134
1978	22.0	15	1965	41.6	2.7405
1979		16			#N/A
1980		17			#N/A
1981		18			#N/A
1982		19			#N/A
1983	33.6	20			#N/A
1984		21			#N/A
1985		22			#N/A
1986	36.2	23			#N/A
1987		24			#N/A
1988		25			#N/A
1989	27.7	26			#N/A
1990		27			#N/A
1991		28			#N/A
1992		29			#N/A
1993		30			#N/A
1994		31			#N/A
1995		32			#N/A
1996		33			#N/A
1997		34			#N/A
1998		35			#N/A

Calculation results		
Return period	Huantan: Annual Maximum Daily Rainfall (mm)	Plotting value
1.01	12.7	-1.5293
2	27.4	0.3665
5	36.2	1.4999
10	42.0	2.2504
20	47.6	2.9702
50	54.8	3.9019
100	60.2	4.6001
200	65.6	5.2958
500	72.7	6.2136
1000	78.1	6.9073

Note)
Application limits depend on the sample size should be considered.

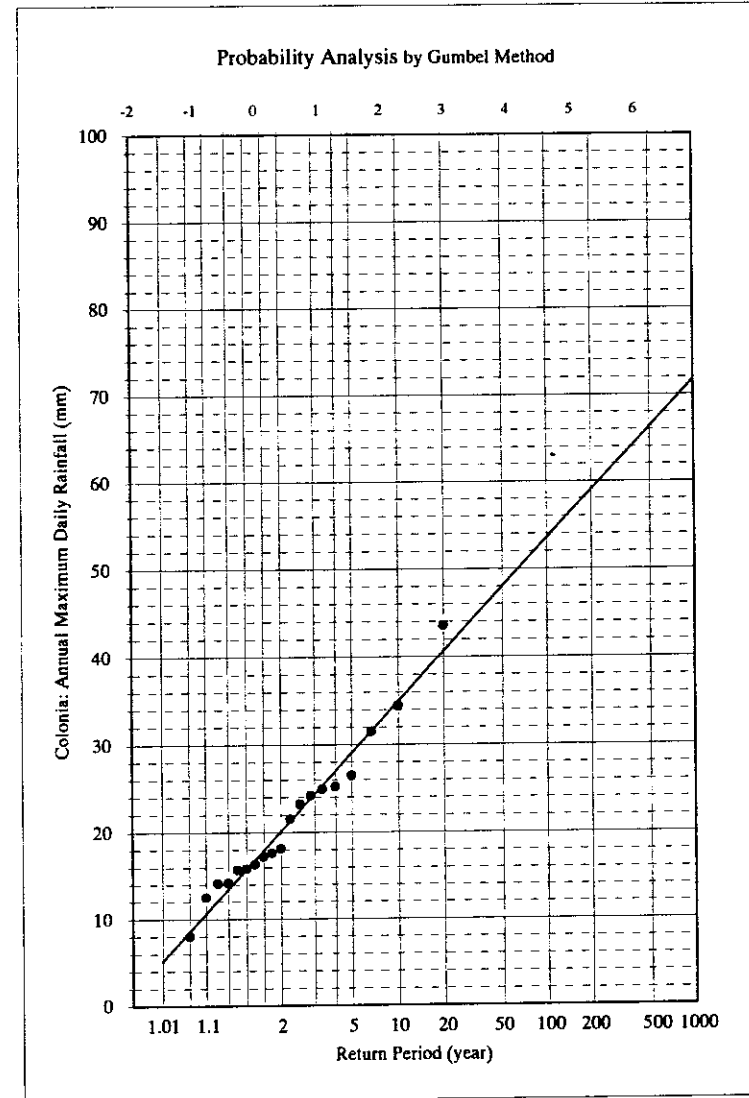


N = 19
 $X_{\text{mean}} = 21.284211$
 $S_x = 8.3340938$
 $C_v = 0.3915623$
 $a = 0.1266779$
 $X_0 = 17.165506$

Observed data		Observed data arranged in the order of magnitude			
Year	Colonia: Annual Maximum Daily Rainfall (mm)	No.	Year	Colonia: Annual Maximum Daily Rainfall (mm)	Plotting value
1964	14.2	1	1985	8.0	-1.0972
1965	43.5	2	1987	12.5	-0.8340
1966	34.4	3	1975	14.1	-0.6403
1967		4	1964	14.2	-0.4759
1968	18.1	5	1974	15.7	-0.3266
1969	17.2	6	1973	15.8	-0.1856
1970	24.2	7	1972	16.3	-0.0486
1971	31.5	8	1969	17.2	0.0874
1972	16.3	9	1981	17.6	0.2250
1973	15.8	10	1968	18.1	0.3665
1974	15.7	11	1983	21.5	0.5144
1975	14.1	12	1976	23.2	0.6717
1976	23.2	13	1970	24.2	0.8422
1977	24.9	14	1977	24.9	1.0309
1978	25.2	15	1978	25.2	1.2459
1979		16	1986	26.5	1.4999
1980		17	1971	31.5	1.8170
1981	17.6	18	1966	34.4	2.2504
1982		19	1965	43.5	2.9702
1983	21.5	20			#N/A
1984		21			#N/A
1985	8.0	22			#N/A
1986	26.5	23			#N/A
1987	12.5	24			#N/A
1988		25			#N/A
1989		26			#N/A
1990		27			#N/A
1991		28			#N/A
1992		29			#N/A
1993		30			#N/A
1994		31			#N/A
1995		32			#N/A
1996		33			#N/A
1997		34			#N/A
1998		35			#N/A

Calculation results		
Return period	Colonia: Annual Maximum Daily Rainfall (mm)	Plotting value
1.01	5.1	-1.5293
2	20.1	0.3665
5	29.0	1.4999
10	34.9	2.2504
20	40.6	2.9702
50	48.0	3.9019
100	53.5	4.6001
200	59.0	5.2958
500	66.2	6.2136
1000	71.7	6.9073

Note)
Application limits depend on the sample size should be considered.

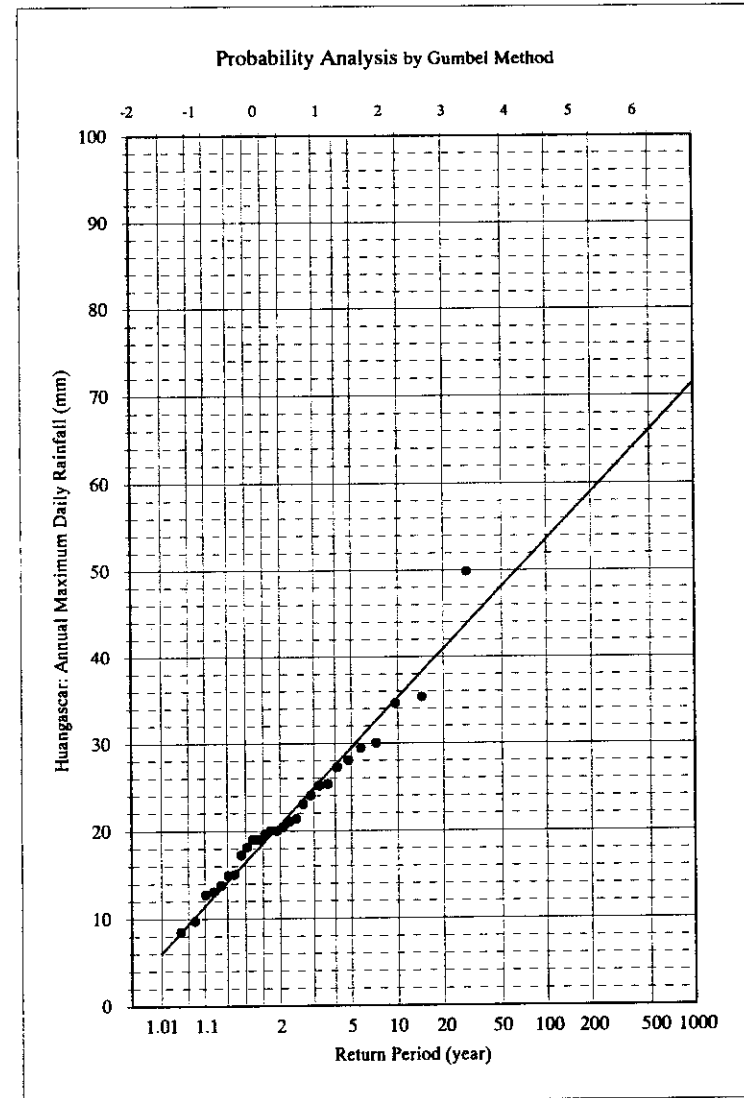


N = 28
 $X_{mean} = 21.964286$
 $S_x = 8.568431$
 $C_v = 0.3901074$
 $a = 0.128927$
 $X_o = 17.820414$

Observed data		Observed data arranged in the order of magnitude			
Year	Huangascar : Annual Maximum Daily Rainfall (mm)	No.	Year	Huangascar : Annual Maximum Daily Rainfall (mm)	Plotting value
1964		1	1980	8.5	-1.2141
1965	15.0	2	1983	9.7	-0.9836
1966	25.1	3	1974	12.7	-0.8192
1967	35.3	4	1987	13.1	-0.6836
1968		5	1985	13.8	-0.5641
1969	21.3	6	1984	14.9	-0.4546
1970	28.0	7	1965	15.0	-0.3516
1971	19.6	8	1982	17.2	-0.2530
1972		9	1979	18.1	-0.1571
1973	27.2	10	1986	19.0	-0.0627
1974	12.7	11	1986	19.0	0.0311
1975	34.6	12	1971	19.6	0.1251
1976		13	1990	20.0	0.2202
1977	29.4	14	1990	20.0	0.3171
1978	49.8	15	1988	20.4	0.4167
1979	18.1	16	1981	21.0	0.5197
1980	8.5	17	1969	21.3	0.6272
1981	21.0	18	1996	23.0	0.7404
1982	17.2	19	1994	24.0	0.8607
1983	9.7	20	1966	25.1	0.9900
1984	14.9	21	1997	25.3	1.1308
1985	13.8	22	1973	27.2	1.2864
1986	19.0	23	1970	28.0	1.4619
1987	13.1	24	1977	29.4	1.6647
1988	20.4	25	1995	30.0	1.9077
1989		26	1975	34.6	2.2146
1990	20.0	27	1967	35.3	2.6386
1991	19.0	28	1978	49.8	3.3498
1992		29			#N/A
1993	20.0	30			#N/A
1994	24.0	31			#N/A
1995	30.0	32			#N/A
1996	23.0	33			#N/A
1997	25.3	34			#N/A
1998		35			#N/A

Calculation results		
Return period	Huangascar : Annual Maximum Daily Rainfall (mm)	Plotting value
1.01	6.0	-1.5293
2	20.7	0.3665
5	29.5	1.4999
10	35.3	2.2504
20	40.9	2.9702
50	48.1	3.9019
100	53.5	4.6001
200	58.9	5.2958
500	66.0	6.2136
1000	71.4	6.9073

Note)
 Application limits depend on the sample size should be considered.



1.7 Monthly Discharge Based on the Daily Record

Monthly Discharge (m³/s)

Station: Tanta

Longitude: W 76° 00'41"

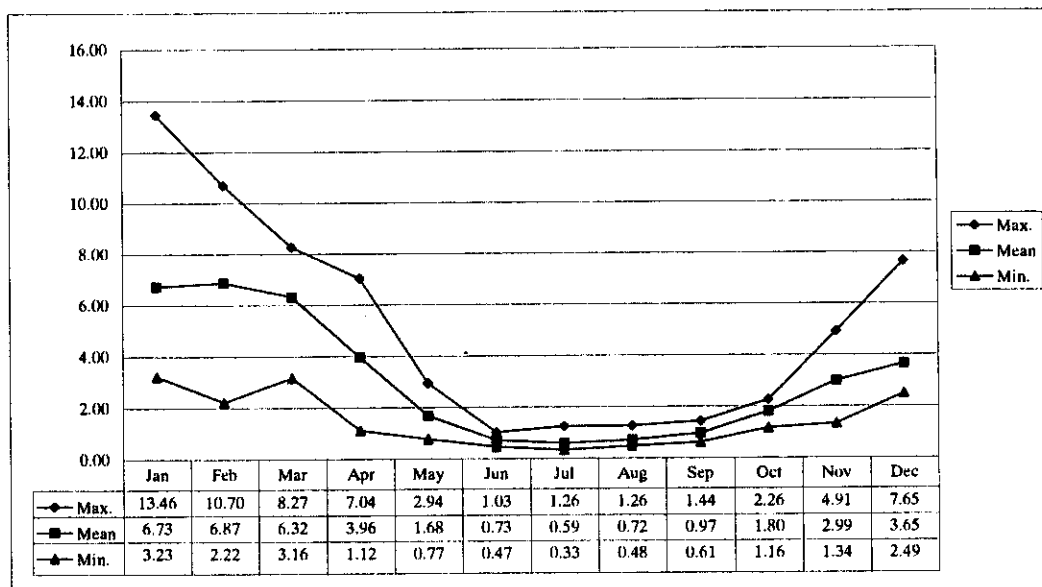
Latitude: S 12° 06'53"

Altitude: 4,278

Source: Cementos Lima / ELECTROPERU

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	-	-	-	-	-	-	1.26	0.97	0.98	1.55	3.00	-	-	7.75233
1987	8.55	7.47	4.60	2.63	1.32	1.03	0.86	1.26	1.44	2.19	3.64	4.86	3.32	39.8533
1988	6.88	8.10	6.85	6.30	2.94	0.79	0.51	0.73	0.89	2.01	2.00	3.73	3.48	41.7427
1989	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1990	-	-	-	2.82	-	-	-	-	-	2.26	3.85	3.20	-	12.1332
1991	3.84	5.34	6.95	3.20	1.95	0.72	0.35	0.49	0.87	2.02	2.90	2.61	2.60	31.2437
1992	3.23	2.22	5.00	2.87	1.40	0.66	0.52	0.69	1.18	1.84	1.82	2.49	1.99	23.9224
1993	4.25	6.60	7.72	4.91	1.37	0.60	0.33	-	0.61	2.07	4.91	7.65	-	41.0289
1994	8.74	9.17	6.68	5.22	2.79	1.00	0.44	0.48	1.02	1.37	2.88	2.79	3.55	42.5661
1995	6.26	3.24	7.62	3.49	0.97	0.47	0.58	0.78	1.10	1.49	2.95	3.02	2.67	31.9819
1996	13.46	10.70	8.27	7.04	1.63	0.75	0.51	0.56	0.72	1.16	1.34	2.50	4.06	48.6604
1997	5.33	8.95	3.16	1.12	0.77	0.53	0.54	0.49	0.88	1.88	3.60	-	-	27.2504
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1999	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	13.46	10.70	8.27	7.04	2.94	1.03	1.26	1.26	1.44	2.26	4.91	7.65	4.06	
Mean	6.73	6.87	6.32	3.96	1.68	0.73	0.59	0.72	0.97	1.80	2.99	3.65	3.09	
Min.	3.23	2.22	3.16	1.12	0.77	0.47	0.33	0.48	0.61	1.16	1.34	2.49	1.99	
N	9	9	9	10	9	9	10	9	10	11	11	9	7	

Check Sum. 60.5358 61.7963 56.871 39.5863 15.1429 6.53833 5.88323 6.45613 9.71433 19.8513 32.901 32.8587



Monthly Discharge (m³/s)

Station: Aguas Calientes

Longitude: W

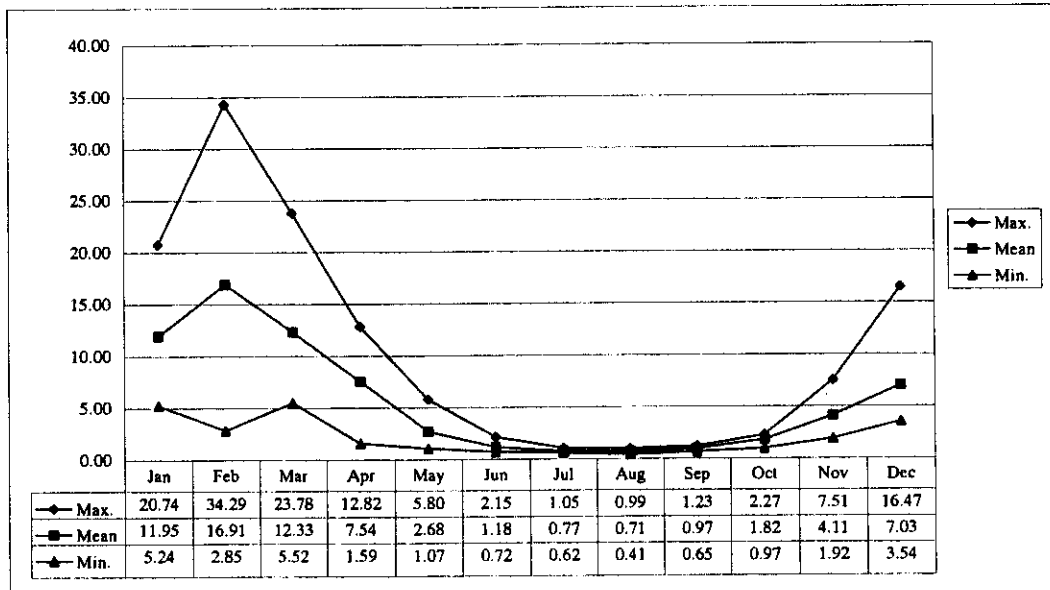
Latitude: S

Source: Cementos Lima / ELECTROPERU

Altitude:

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	-	-	-	-	-	-	-	-	-	-	-	8.11	-	8.10935
1987	20.74	19.96	9.26	3.49	1.61	-	0.71	0.86	1.22	2.01	4.58	5.99	-	70.4205
1988	13.41	17.77	10.70	11.08	4.31	1.34	0.75	0.71	1.23	2.12	2.76	5.56	5.98	71.7445
1989	14.30	-	-	-	-	-	-	-	-	-	-	-	-	14.3
1990	-	-	-	-	-	-	-	-	-	-	6.08	6.31	-	12.3815
1991	8.34	10.31	-	-	-	-	-	-	-	-	-	-	-	18.6494
1992	5.24	2.85	8.64	3.99	1.81	0.72	0.62	0.50	0.65	2.04	2.21	3.70	2.75	32.9631
1993	6.71	-	-	-	-	-	0.63	0.41	0.68	2.27	7.51	16.47	-	34.6739
1994	-	34.29	23.78	12.82	5.80	2.15	1.05	0.63	1.21	1.38	3.64	4.37	-	91.1155
1995	12.57	7.24	12.99	8.35	1.90	1.01	0.70	0.99	0.99	1.62	3.61	9.28	5.10	61.2458
1996	17.02	24.59	15.44	11.44	2.29	1.08	0.84	0.67	0.72	0.97	1.92	3.54	6.71	80.5114
1997	9.28	18.30	5.52	1.59	1.07	0.81	0.82	0.93	1.08	2.17	4.73	-	-	46.2951
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1999	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	20.74	34.29	23.78	12.82	5.80	2.15	1.05	0.99	1.23	2.27	7.51	16.47	6.71	
Mean	11.95	16.91	12.33	7.54	2.68	1.18	0.77	0.71	0.97	1.82	4.11	7.03	5.13	
Min.	5.24	2.85	5.52	1.59	1.07	0.72	0.62	0.41	0.65	0.97	1.92	3.54	2.75	
N	9	8	7	7	7	6	8	8	8	8	9	9	4	

Check Sum. 107.595 135.31 86.329 52.7597 18.7906 7.10733 6.12397 5.69935 7.77533 14.5813 37.0313 63.3074



Monthly Discharge (m³/s)

Station: Tinco de Alis

Longitude: W 75° 46'53"

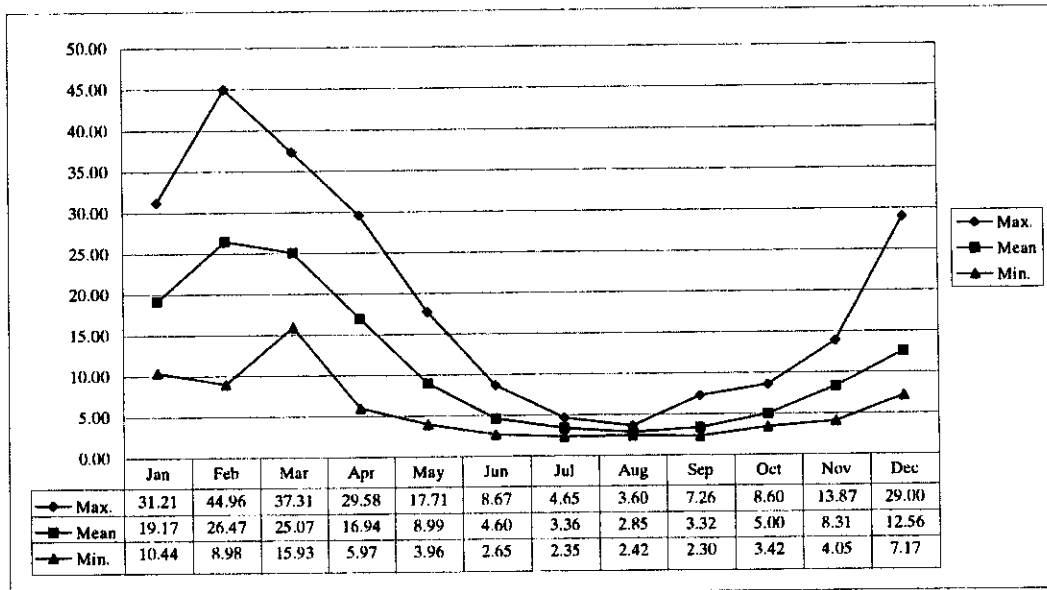
Latitude: S 12° 16'26"

Altitude: 3,350

Source: Cementos Lima / ELECTROPERU

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	-	-	33.85	-	-	3.79	-	-	-	-	8.05	12.60	-	58.2785
1987	-	-	-	10.95	6.30	4.11	3.23	2.85	3.01	3.98	7.52	11.70	-	53.6469
1988	20.55	28.65	21.07	23.37	12.48	5.57	3.30	2.84	2.88	5.02	6.13	8.68	11.71	140.539
1989	22.57	-	-	-	-	-	4.31	3.44	-	-	8.51	-	-	38.8404
1990	14.12	-	18.20	10.13	-	-	3.27	2.64	2.55	5.10	-	-	-	56.0041
1991	10.44	-	-	-	-	4.78	-	-	-	-	-	-	-	15.222
1992	14.20	8.98	18.78	9.94	4.83	3.24	3.04	2.59	2.67	4.17	5.65	7.17	7.10	85.2531
1993	12.83	26.94	28.68	23.01	10.85	4.63	3.53	2.54	2.30	4.04	-	29.00	-	148.362
1994	31.21	44.96	37.31	29.58	17.71	8.67	4.65	3.60	7.26	8.60	13.87	11.42	18.24	218.833
1995	19.52	15.41	24.21	16.04	5.76	3.39	2.71	2.82	3.20	4.24	9.55	9.92	9.73	116.768
1996	25.73	32.48	27.61	23.48	10.04	5.19	3.24	2.79	2.61	3.42	4.05	10.00	12.55	150.648
1997	20.57	27.88	15.93	5.97	3.96	2.65	2.35	2.42	3.39	6.45	11.45	-	-	103.022
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1999	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	31.21	44.96	37.31	29.58	17.71	8.67	4.65	3.60	7.26	8.60	13.87	29.00	18.24	
Mean	19.17	26.47	25.07	16.94	8.99	4.60	3.36	2.85	3.32	5.00	8.31	12.56	11.87	
Min.	10.44	8.98	15.93	5.97	3.96	2.65	2.35	2.42	2.30	3.42	4.05	7.17	7.10	
N	10	7	9	9	8	10	10	10	9	9	9	8	5	

Check Sum. 191.75 185.304 225.64 152.466 71.9177 46.016 33.6428 28.5339 29.8647 45.0129 74.778 100.491



Monthly Discharge (m³/s)

Station: Chavin

Longitude: W 75° 56'48"

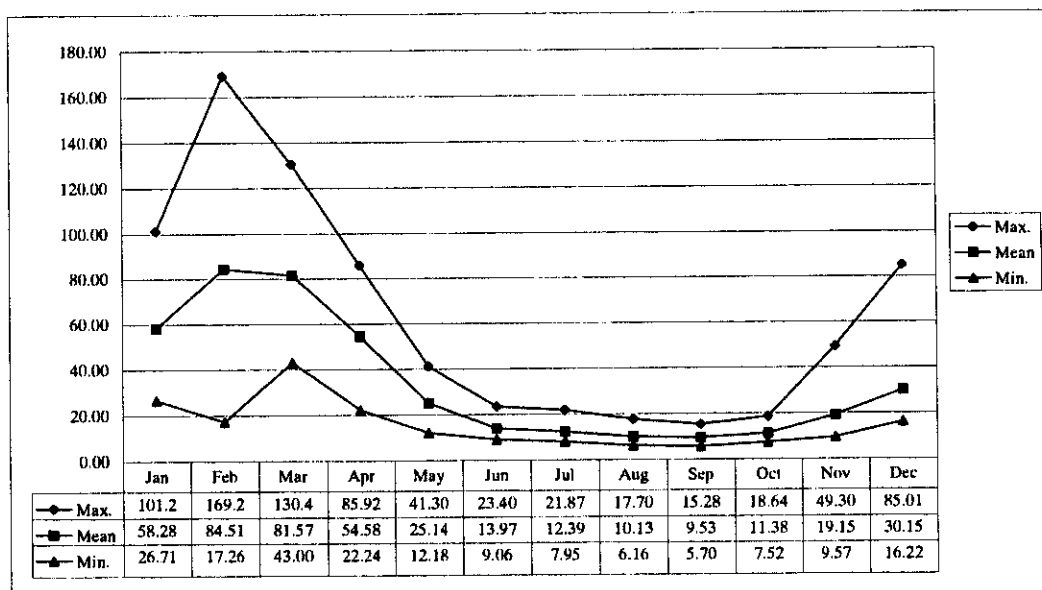
Latitude: S 12° 44'48"

Altitude: 1,350

Source: Cementos Lima / ELECTROPERU

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1987	97.14	94.83	55.09	32.65	14.14	9.11	7.95	6.16	6.76	8.99	12.96	21.81	30.63	367.565
1988	53.82	-	54.33	-	30.27	16.34	12.37	10.54	9.61	11.11	-	19.86	-	218.258
1989	70.57	96.09	130.48	85.92	41.30	-	21.87	17.70	9.81	14.01	17.26	16.22	-	521.231
1990	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1991	35.79	52.18	81.65	37.45	25.28	15.48	-	-	-	-	-	-	-	247.832
1992	26.71	17.26	43.00	22.24	13.54	10.03	8.63	8.03	7.04	-	9.57	-	-	166.045
1993	30.55	84.48	119.06	84.13	38.82	23.40	18.41	15.51	15.28	18.64	49.30	85.01	48.55	582.598
1994	101.24	169.23	110.09	61.23	29.63	13.72	9.54	6.93	12.91	12.91	16.88	24.46	47.40	568.755
1995	38.95	40.64	70.14	43.10	18.43	12.74	11.27	9.78	9.59	9.31	19.92	22.51	25.53	306.377
1996	78.45	121.38	91.53	69.93	27.82	15.87	12.65	9.58	9.04	8.56	11.12	21.20	39.76	477.13
1997	49.58	-	60.30	-	12.18	9.06	8.82	6.95	5.70	7.52	16.18	-	-	176.285
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1999	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	101.24	169.23	130.48	85.92	41.30	23.40	21.87	17.70	15.28	18.64	49.30	85.01	48.55	
Mean	58.28	84.51	81.57	54.58	25.14	13.97	12.39	10.13	9.53	11.38	19.15	30.15	38.37	
Min.	26.71	17.26	43.00	22.24	12.18	9.06	7.95	6.16	5.70	7.52	9.57	16.22	25.53	
N	10	8	10	8	10	9	9	9	9	8	8	7	5	

Check Sum. 582.79 676.092 815.668 436.645 251.394 125.76 111.521 91.1771 85.7307 91.0484 153.175 211.076



Monthly Discharge (m³/s)

Station: Sosci

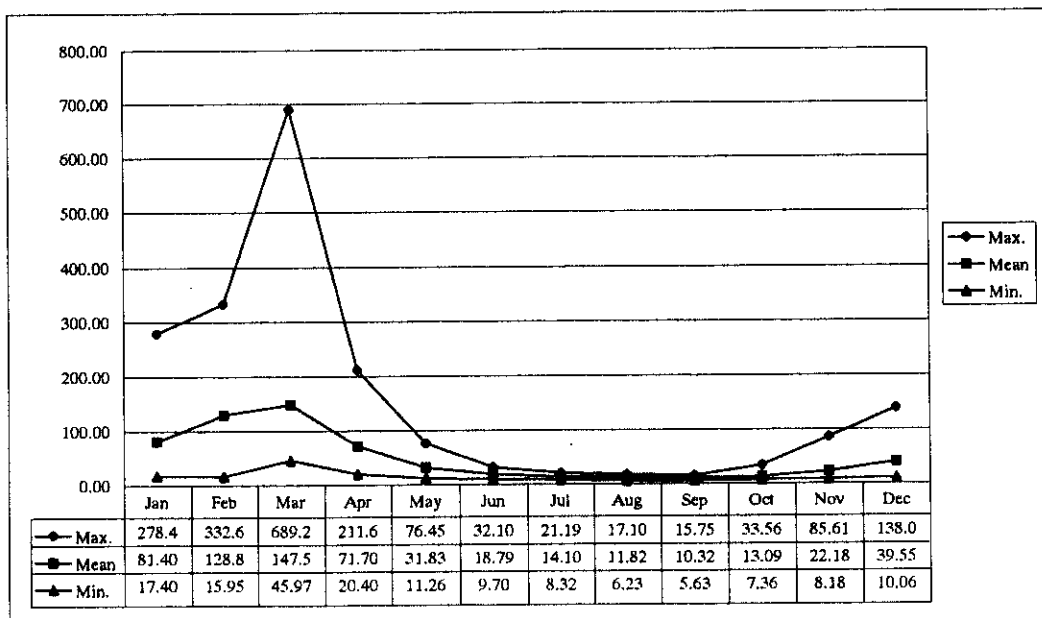
Longitude: W 76° 12'

Latitude: S 13° 00'

Altitude: 340

Source: Cementos Lima / INRENA

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.	
1965	37.80	123.95	120.29	60.78	35.75	15.23	9.49	12.64	10.39	10.79	16.31	20.94	39.53	474.353	
1966	30.20	26.40	49.10	26.60	15.20	11.00	9.50	8.80	8.80	10.30	21.70	30.20	20.65	247.8	
1967	101.15	288.96	164.97	69.47	38.29	26.06	19.86	15.86	15.75	33.56	25.69	31.41	69.25	831.038	
1968	17.40	41.90	49.20	21.90	16.70	13.00	9.90	9.20	9.60	10.60	16.00	14.70	19.18	230.1	
1969	31.21	49.60	94.65	52.45	22.44	14.09	12.15	10.31	7.47	19.30	13.71	138.07	38.79	465.442	
1970	278.48	131.39	85.71	27.04	16.77	-	-	-	-	13.59	15.96	31.83	-	600.773	
1971	113.69	155.46	-	-	23.72	13.82	15.17	15.18	13.99	11.14	8.71	46.33	-	417.216	
1972	169.44	251.14	689.23	211.69	40.15	20.42	11.15	11.86	-	-	-	66.62	-	1471.7	
1973	-	220.99	290.16	202.30	66.28	22.92	14.68	10.91	9.97	12.68	18.96	78.07	-	947.92	
1974	96.81	154.75	127.94	48.20	27.52	22.17	18.31	15.42	13.90	13.40	13.85	15.10	47.28	567.36	
1975	28.42	40.71	180.97	74.20	44.29	24.21	14.53	10.84	9.97	11.74	19.13	37.25	41.35	496.246	
1976	111.93	194.34	148.97	69.09	33.00	24.72	18.03	14.13	12.85	13.70	13.54	20.28	56.22	674.6	
1977	51.03	115.98	112.17	41.05	26.71	17.73	15.54	13.92	13.71	13.52	40.04	33.42	41.23	494.806	
1978	56.49	102.49	58.18	50.42	27.13	19.20	15.11	13.63	12.65	13.85	35.72	41.63	37.21	446.483	
1979	39.04	107.26	129.52	58.38	22.74	16.39	14.94	10.28	10.04	10.52	11.20	13.38	36.97	443.694	
1980	41.13	35.93	50.78	46.32	19.49	13.61	13.35	11.25	9.79	24.50	29.10	44.40	28.30	339.658	
1981	61.66	158.80	147.59	85.91	25.07	19.15	15.40	12.61	11.04	12.10	24.53	44.44	51.52	618.285	
1982	57.07	99.07	70.33	60.71	31.19	19.28	13.40	11.15	6.80	21.86	85.61	73.80	45.86	550.281	
1983	59.37	42.79	90.33	104.08	34.56	22.22	16.52	15.13	-	-	-	-	-	384.992	
1984	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	135.08	204.00	232.48	172.70	70.73	29.78	21.19	16.73	14.00	12.37	13.88	42.58	80.46	965.531	
1987	160.32	130.66	59.50	22.47	11.26	9.70	10.13	9.46	9.05	8.42	10.13	17.13	38.19	458.223	
1988	73.68	82.91	45.97	43.97	17.96	15.50	12.71	11.73	11.69	11.27	10.41	15.72	29.46	353.517	
1989	79.69	135.63	145.45	79.07	17.60	15.91	12.63	11.16	10.46	11.97	18.59	10.56	45.73	548.71	
1990	34.63	26.70	78.23	28.02	18.56	14.97	11.10	8.78	7.63	12.58	36.23	42.61	26.67	320.04	
1991	59.47	97.69	216.02	73.92	49.66	32.10	19.69	11.29	7.81	8.97	20.15	15.30	51.01	612.069	
1992	22.35	15.95	74.76	36.16	21.21	12.15	8.32	6.23	5.63	7.36	8.18	10.06	19.03	228.362	
1993	31.60	190.96	238.16	112.33	47.81	21.60	13.62	-	7.62	9.81	35.89	119.45	-	828.853	
1994	153.55	332.68	213.06	75.00	76.45	30.17	20.87	17.10	12.43	11.29	18.90	17.24	81.56	978.743	
1995	89.35	111.25	202.10	53.77	23.71	16.17	11.68	9.03	8.92	10.31	24.77	25.45	48.87	586.499	
1996	132.79	176.62	181.06	122.60	48.19	17.30	13.57	9.28	9.28	9.46	11.20	18.66	62.50	750.012	
1997	87.23	147.32	78.16	20.40	16.50	13.14	10.50	9.00	7.84	8.72	25.07	69.85	41.14	493.721	
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	278.48	332.68	689.23	211.69	76.45	32.10	21.19	17.10	15.75	33.56	85.61	138.07	81.56		
Mean	81.40	128.85	147.50	71.70	31.83	18.79	14.10	11.82	10.32	13.09	22.18	39.55	43.92		
Min.	17.40	15.95	45.97	20.40	11.26	9.70	8.32	6.23	5.63	7.36	8.18	10.06	19.03		
N	30	31	30	30	31	30	30	29	28	29	29	30	25		
Check Sum.	2442.06	3994.31	4425.02	2150.97	986.64	563.702	423.043	342.861	289.096	379.696	643.141	1186.48			



Monthly Discharge (m³/s)

Station: Toma Imperial

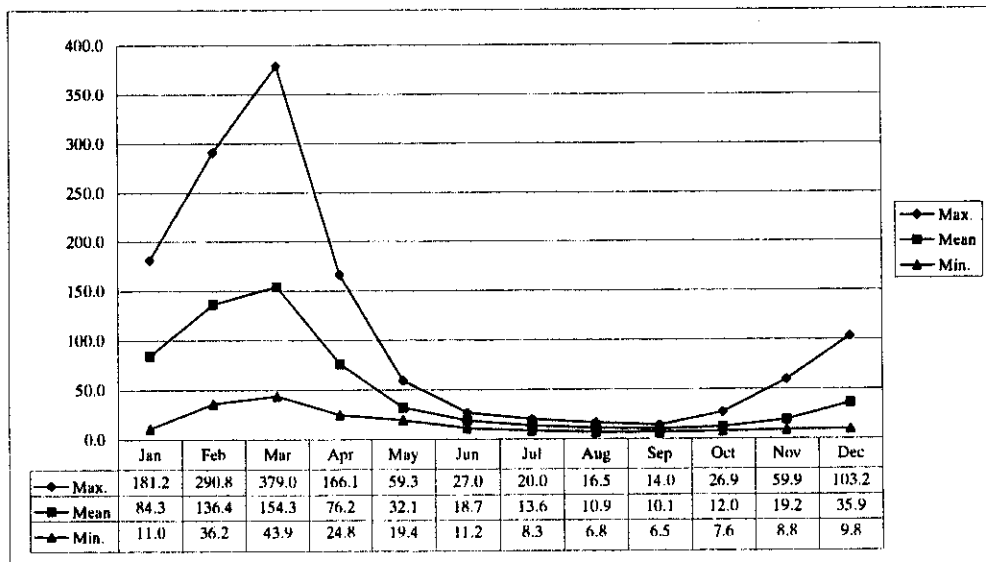
Longitude: W -

Latitude: S -

Altitude: -

Source: ELECTROPERU, El Platanal Feasibility Study 1987, Volume II-A, Annex 1.14

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1926	62.6	164.5	100.3	162.3	46.3	15.0	12.0	10.0	11.0	12.0	27.5	28.7	54.4	652.2
1927	72.0	63.1	81.6	50.4	35.7	19.7	17.3	10.0	-	-	-	-	-	349.8
1928	25.3	69.2	116.1	70.7	30.4	16.9	13.3	11.9	12.1	14.8	15.1	19.3	34.6	415.1
1929	56.5	66.3	202.9	95.8	26.9	16.4	12.7	11.6	12.1	13.6	17.5	31.8	47.0	564.1
1930	120.8	107.8	111.5	61.6	40.0	19.9	14.2	12.5	11.9	13.4	25.6	19.6	46.6	558.8
1931	36.2	36.2	61.4	50.0	23.2	15.0	12.6	11.8	11.7	12.6	14.4	46.1	27.6	331.2
1932	102.4	-	-	156.3	54.6	18.7	14.1	10.8	10.0	10.7	20.2	38.0	-	435.8
1933	74.2	83.4	122.2	64.0	24.7	17.6	14.5	13.0	11.7	11.5	12.0	26.2	39.6	475
1934	95.7	141.0	213.7	100.9	38.4	24.1	20.0	13.6	12.2	13.9	16.8	16.8	58.9	707.1
1935	78.5	93.4	271.8	108.7	42.4	24.8	19.2	13.1	12.7	14.0	16.2	62.7	63.1	757.5
1936	181.2	128.7	141.1	55.7	20.6	16.8	12.1	9.9	9.3	16.7	16.8	16.9	52.2	625.8
1937	85.6	109.5	164.5	51.8	27.0	19.7	13.3	9.8	9.1	9.9	16.2	53.0	47.5	569.4
1938	85.5	250.5	79.5	55.4	21.8	13.6	13.2	11.7	10.5	9.5	11.0	16.0	48.2	578.2
1939	51.1	99.1	193.5	106.6	34.4	17.0	13.4	11.4	9.5	9.3	13.2	32.9	49.3	591.4
1940	72.3	50.6	81.7	56.4	25.8	15.5	12.0	10.4	10.3	10.8	15.7	16.2	31.5	377.7
1941	110.4	110.4	90.3	26.1	21.8	13.6	9.8	9.0	8.7	11.5	13.8	36.8	38.5	462.2
1942	86.3	130.3	127.5	48.6	38.6	18.2	14.6	12.2	10.7	10.1	10.9	19.5	44.0	527.5
1943	115.0	220.2	126.6	98.7	29.5	18.2	13.1	11.0	10.5	12.4	12.6	43.8	59.3	711.6
1944	142.3	209.1	192.7	67.9	33.5	20.8	15.8	13.1	11.4	10.5	11.6	16.9	62.1	745.6
1945	65.3	100.9	188.1	73.2	24.4	15.2	11.9	9.5	8.6	8.0	20.6	61.9	49.0	587.6
1946	128.4	161.2	236.4	103.3	42.0	23.6	16.1	13.3	11.7	14.1	30.3	73.9	71.2	854.3
1947	100.4	88.9	167.1	57.6	35.7	22.6	13.6	11.2	10.0	11.7	12.0	21.1	46.0	551.9
1948	100.2	115.4	111.8	90.0	59.3	26.8	16.0	11.4	10.2	26.7	34.8	16.3	51.6	618.9
1949	55.6	85.6	118.5	73.6	33.6	18.7	12.2	10.1	9.3	9.1	23.9	13.5	38.6	463.7
1950	64.6	92.1	81.6	72.6	32.8	15.3	12.0	9.7	8.1	8.8	13.4	80.5	41.0	491.5
1951	99.7	183.7	269.0	90.5	29.1	21.0	14.9	12.4	10.7	9.9	48.0	60.7	70.8	849.6
1952	137.5	138.7	164.6	70.3	21.0	14.7	15.0	12.8	12.5	11.3	17.7	37.8	54.5	653.9
1953	98.8	254.1	127.5	51.0	22.9	17.2	14.9	11.7	10.8	11.3	48.4	64.4	61.1	733
1954	145.5	191.1	223.8	54.0	33.4	23.1	16.0	12.0	10.2	12.6	59.9	45.9	69.0	827.5
1955	139.4	246.7	379.0	124.9	40.8	21.9	16.7	12.2	10.1	14.2	11.2	16.7	86.2	1033.8
1956	35.8	265.5	116.4	79.7	35.6	23.7	12.9	9.9	8.5	8.4	8.8	9.8	51.3	615
1957	24.3	133.9	145.6	88.1	35.1	14.3	10.0	7.5	7.1	7.6	9.7	13.5	41.4	496.7
1958	30.9	59.5	105.3	45.7	19.4	11.8	9.3	7.8	7.0	8.6	8.9	11.1	27.1	325.3
1959	11.0	142.8	137.3	70.5	21.4	14.1	11.1	8.3	7.2	10.7	11.1	50.9	41.4	496.4
1960	134.4	126.2	43.9	24.8	19.4	11.2	8.3	6.8	6.5	8.8	10.3	11.3	34.3	411.9
1961	58.3	228.7	301.0	166.1	38.9	21.6	11.5	9.4	8.0	7.6	27.8	103.2	81.8	982.1
1962	106.4	128.9	207.3	55.3	19.6	14.7	13.4	11.4	10.4	8.8	9.3	17.4	50.2	602.9
1963	130.8	122.4	124.3	92.0	29.2	26.5	14.6	11.7	11.1	11.2	26.7	98.5	58.3	699
1964	54.6	107.9	121.9	100.6	48.2	24.2	13.2	9.8	9.3	8.6	11.0	14.0	43.6	523.3
1965	56.8	204.4	184.2	64.1	33.7	21.5	11.3	8.3	7.8	7.9	9.5	14.8	52.0	624.3
1966	53.7	71.2	113.3	33.9	19.4	13.3	10.9	9.2	8.2	26.9	30.1	74.5	38.7	464.6
1967	88.9	290.8	232.3	69.5	35.8	27.0	20.0	16.5	14.0	21.7	16.1	19.5	71.0	852.1
1968	51.7	56.7	100.4	38.9	-	-	-	-	-	-	-	-	-	247.7
Max.	181.2	290.8	379.0	166.1	59.3	27.0	20.0	16.5	14.0	26.9	59.9	103.2	86.2	
Mean	84.3	136.4	154.3	76.2	32.1	18.7	13.6	10.9	10.1	12.0	19.2	35.9	50.9	
Min.	11.0	36.2	43.9	24.8	19.4	11.2	8.3	6.8	6.5	7.6	8.8	9.8	27.1	
N	43	42	42	43	42	42	42	42	41	41	41	41	40	
Check Sum.	3626.9	5730.6	6479.5	3278.1	1346.3	785.5	573	459.7	412.7	491.7	786.6	1472.4		



Monthly Discharge (m³/s)

Station: Imperial / Soesi

Longitude: W -

Latitude: S -

Altitude: -

Source: before 1964:Toma Imperial; after 1965: Soesi

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1926	62.6	164.5	100.3	162.3	46.3	15.0	12.0	10.0	11.0	12.0	27.5	28.7	54.4	652.2
1927	72.0	63.1	81.6	50.4	35.7	19.7	17.3	10.0	-	-	-	-	-	349.8
1928	25.3	69.2	116.1	70.7	30.4	16.9	13.3	11.9	12.1	14.8	15.1	19.3	34.6	415.1
1929	56.5	66.3	202.9	95.8	26.9	16.4	12.7	11.6	12.1	13.6	17.5	31.8	47.0	564.1
1930	120.8	107.8	111.5	61.6	40.0	19.9	14.2	12.5	11.9	13.4	25.6	19.6	46.6	558.8
1931	36.2	36.2	61.4	50.0	23.2	15.0	12.6	11.8	11.7	12.6	14.4	46.1	27.6	331.2
1932	102.4	-	-	156.3	54.6	18.7	14.1	10.8	10.0	10.7	20.2	38.0	-	435.8
1933	74.2	83.4	122.2	64.0	24.7	17.6	14.5	13.0	11.7	11.5	12.0	26.2	39.6	475
1934	95.7	141.0	213.7	100.9	38.4	24.1	20.0	13.6	12.2	13.9	16.8	16.8	58.9	707.1
1935	78.5	93.4	271.8	108.7	42.4	24.8	19.2	13.1	12.7	14.0	16.2	62.7	63.1	757.5
1936	181.2	128.7	141.1	55.7	20.6	16.8	12.1	9.9	9.3	16.7	16.8	16.9	52.2	625.8
1937	85.6	109.5	164.5	51.8	27.0	19.7	13.3	9.8	9.1	9.9	16.2	53.0	47.5	569.4
1938	85.5	250.5	79.5	55.4	21.8	13.6	13.2	11.7	10.5	9.5	11.0	16.0	48.2	578.2
1939	51.1	99.1	193.5	106.6	34.4	17.0	13.4	11.4	9.5	9.3	13.2	32.9	49.3	591.4
1940	72.3	50.6	81.7	56.4	25.8	15.5	12.0	10.4	10.3	10.8	15.7	16.2	31.5	377.7
1941	110.4	110.4	90.3	26.1	21.8	13.6	9.8	9.0	8.7	11.5	13.8	36.8	38.5	462.2
1942	86.3	130.3	127.5	48.6	38.6	18.2	14.6	12.2	10.7	10.1	10.9	19.5	44.0	527.5
1943	115.0	220.2	126.6	98.7	29.5	18.2	13.1	11.0	10.5	12.4	12.6	43.8	59.3	711.6
1944	142.3	209.1	192.7	67.9	33.5	20.8	15.8	13.1	11.4	10.5	11.6	16.9	62.1	745.6
1945	65.3	100.9	188.1	73.2	24.4	15.2	11.9	9.5	8.6	8.0	20.6	61.9	49.0	587.6
1946	128.4	161.2	236.4	103.3	42.0	23.6	16.1	13.3	11.7	14.1	30.3	73.9	71.2	854.3
1947	100.4	88.9	167.1	57.6	35.7	22.6	13.6	11.2	10.0	11.7	12.0	21.1	46.0	551.9
1948	100.2	115.4	111.8	90.0	59.3	26.8	16.0	11.4	10.2	26.7	34.8	16.3	51.6	618.9
1949	55.6	85.6	118.5	73.6	33.6	18.7	12.2	10.1	9.3	9.1	23.9	13.5	38.6	463.7
1950	64.6	92.1	81.6	72.6	32.8	15.3	12.0	9.7	8.1	8.8	13.4	80.5	41.0	491.5
1951	99.7	183.7	269.0	90.5	29.1	21.0	14.9	12.4	10.7	9.9	48.0	60.7	70.8	849.6
1952	137.5	138.7	164.6	70.3	21.0	14.7	15.0	12.8	12.5	11.3	17.7	37.8	54.5	653.9
1953	98.8	254.1	127.5	51.0	22.9	17.2	14.9	11.7	10.8	11.3	48.4	64.4	61.1	733
1954	145.5	191.1	223.8	54.0	33.4	23.1	16.0	12.0	10.2	12.6	59.9	45.9	69.0	827.5
1955	139.4	246.7	379.0	124.9	40.8	21.9	16.7	12.2	10.1	14.2	11.2	16.7	86.2	1033.8
1956	35.8	265.5	116.4	79.7	35.6	23.7	12.9	9.9	8.5	8.4	8.8	9.8	51.3	615
1957	24.3	133.9	145.6	88.1	35.1	14.3	10.0	7.5	7.1	7.6	9.7	13.5	41.4	496.7
1958	30.9	59.5	105.3	45.7	19.4	11.8	9.3	7.8	7.0	8.6	8.9	11.1	27.1	325.3
1959	11.0	142.8	137.3	70.5	21.4	14.1	11.1	8.3	7.2	10.7	11.1	50.9	41.4	496.4
1960	134.4	126.2	43.9	24.8	19.4	11.2	8.3	6.8	6.5	8.8	10.3	11.3	34.3	411.9
1961	58.3	228.7	301.0	166.1	38.9	21.6	11.5	9.4	8.0	7.6	27.8	103.2	81.8	982.1
1962	106.4	128.9	207.3	55.3	19.6	14.7	13.4	11.4	10.4	8.8	9.3	17.4	50.2	602.9
1963	130.8	122.4	124.3	92.0	29.2	26.5	14.6	11.7	11.1	11.2	26.7	98.5	58.3	699
1964	54.6	107.9	121.9	100.6	48.2	24.2	13.2	9.8	9.3	8.6	11.0	14.0	43.6	523.3
1965	37.8	124.0	120.3	60.8	35.7	15.2	9.5	12.6	10.4	10.8	16.3	20.9	39.5	474.353
1966	30.2	26.4	49.1	26.6	15.2	11.0	9.5	8.8	8.8	10.3	21.7	30.2	20.7	247.8
1967	101.2	289.0	165.0	69.5	38.3	26.1	19.9	15.9	15.8	33.6	25.7	31.4	69.3	831.038
1968	17.4	41.9	49.2	21.9	16.7	13.0	9.9	9.2	9.6	10.6	16.0	14.7	19.2	230.1
1969	31.2	49.6	94.7	52.5	22.4	14.1	12.1	10.3	7.5	19.3	13.7	138.1	38.8	465.442
1970	278.5	131.4	85.7	27.0	16.8	-	-	-	-	13.6	16.0	31.8	-	600.773
1971	113.7	155.5	-	-	23.7	13.8	15.2	15.2	14.0	11.1	8.7	46.3	-	417.216
1972	169.4	251.1	689.2	211.7	40.1	20.4	11.2	11.9	-	-	-	66.6	-	1471.7
1973	-	221.0	290.2	202.3	66.3	22.9	14.7	10.9	10.0	12.7	19.0	78.1	-	947.92
1974	96.8	154.8	127.9	48.2	27.5	22.2	18.3	15.4	13.9	13.4	13.8	15.1	47.3	567.36
1975	28.4	40.7	181.0	74.2	44.3	24.2	14.5	10.8	10.0	11.7	19.1	37.3	41.4	496.246
1976	111.9	194.3	149.0	69.1	33.0	24.7	18.0	14.1	12.9	13.7	13.5	20.3	56.2	674.6
1977	51.0	116.0	112.2	41.1	26.7	17.7	15.5	13.9	13.7	13.5	40.0	33.4	41.2	494.806
1978	56.5	102.5	58.2	50.4	27.1	19.2	15.1	13.6	12.7	13.8	35.7	41.6	37.2	446.483
1979	39.0	107.3	129.5	58.4	22.7	16.4	14.9	10.3	10.0	10.5	11.2	13.4	37.0	443.694
1980	41.1	35.9	50.8	46.3	19.5	13.6	13.4	11.2	9.8	24.5	29.1	44.4	28.3	339.658
1981	61.7	158.8	147.6	85.9	25.1	19.2	15.4	12.6	11.0	12.1	24.5	44.4	51.5	618.285
1982	57.1	99.1	70.3	60.7	31.2	19.3	13.4	11.2	6.8	21.9	85.6	73.8	45.9	550.281
1983	59.4	42.8	90.3	104.1	34.6	22.2	16.5	15.1	-	-	-	-	-	384.992
1984	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	135.1	204.0	232.5	172.7	70.7	29.8	21.2	16.7	14.0	12.4	13.9	42.6	80.5	965.531
1987	160.3	130.7	59.5	22.5	11.3	9.7	10.1	9.5	9.1	8.4	10.1	17.1	38.2	458.223
1988	73.7	82.9	46.0	44.0	18.0	15.5	12.7	11.7	11.7	11.3	10.4	15.7	29.5	353.517
1989	79.7	135.6	145.5	79.1	17.6	15.9	12.6	11.2	10.5	12.0	18.6	10.6	45.7	548.71
1990	34.6	26.7	78.2	28.0	18.6	15.0	11.1	8.8	7.6	12.6	36.2	42.6	26.7	320.04
1991	59.5	97.7	216.0	73.9	49.7	32.1	19.7	11.3	7.8	9.0	20.2	15.3	51.0	612.069
1992	22.4	15.9	74.8	36.2	21.2	12.1	8.3	6.2	5.6	7.4	8.2	10.1	19.0	228.362
1993	31.6	191.0	238.2	112.3	47.8	21.6	13.6	-	7.6	9.8	35.9	119.5	-	828.853
1994	153.5	332.7	213.1	75.0	76.5	30.2	20.9	17.1	12.4	11.3	18.9	17.2	81.6	978.743

Monthly Discharge (m³/s)

Station: Imperial / Socsi

Longitude: W -

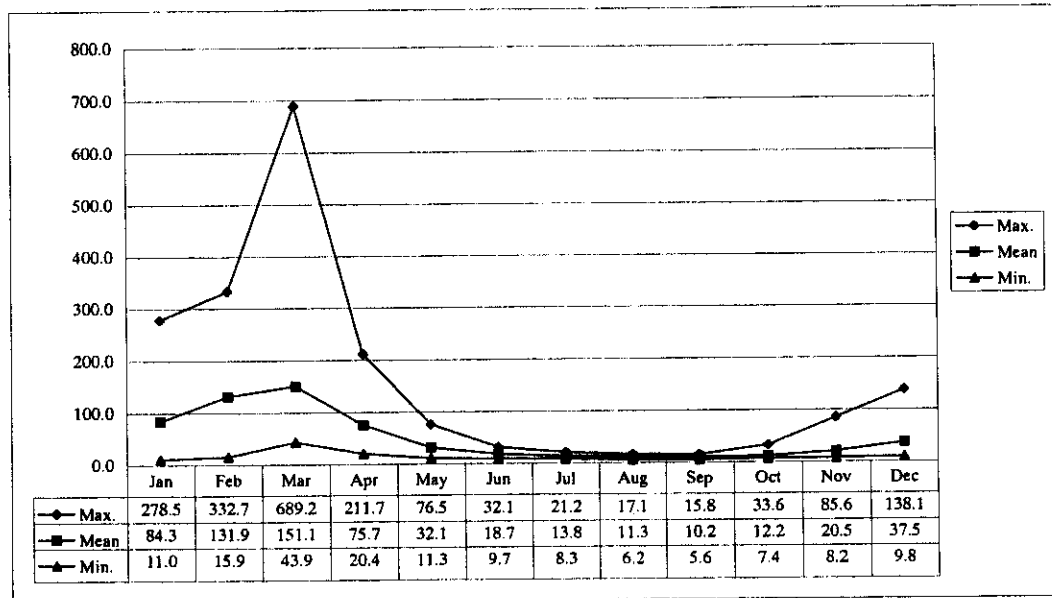
Latitude: S -

Altitude: -

Source: before 1964:Toma Imperial; after 1965: Socsi

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1995	89.4	111.3	202.1	53.8	23.7	16.2	11.7	9.0	8.9	10.3	24.8	25.5	48.9	586.499
1996	132.8	176.6	181.1	122.6	48.2	17.3	13.6	9.3	9.3	9.5	11.2	18.7	62.5	750.012
1997	87.2	147.3	78.2	20.4	16.5	13.1	10.5	9.0	7.8	8.7	25.1	69.8	41.1	493.721
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1999	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	278.5	332.7	689.2	211.7	76.5	32.1	21.2	17.1	15.8	33.6	85.6	138.1	86.2	
Mean	84.3	131.9	151.1	75.7	32.1	18.7	13.8	11.3	10.2	12.2	20.5	37.5	47.9	
Min.	11.0	15.9	43.9	20.4	11.3	9.7	8.3	6.2	5.6	7.4	8.2	9.8	19.0	
N	69	69	68	69	70	69	69	68	66	67	67	68	62	

Check Sum. 5817.86 9101.81 10274.3 5222.67 2244.04 1287.4 953.843 768.561 671.796 814.896 1374.04 2550.08



Monthly Discharge (m³/s)

Station: Tomas

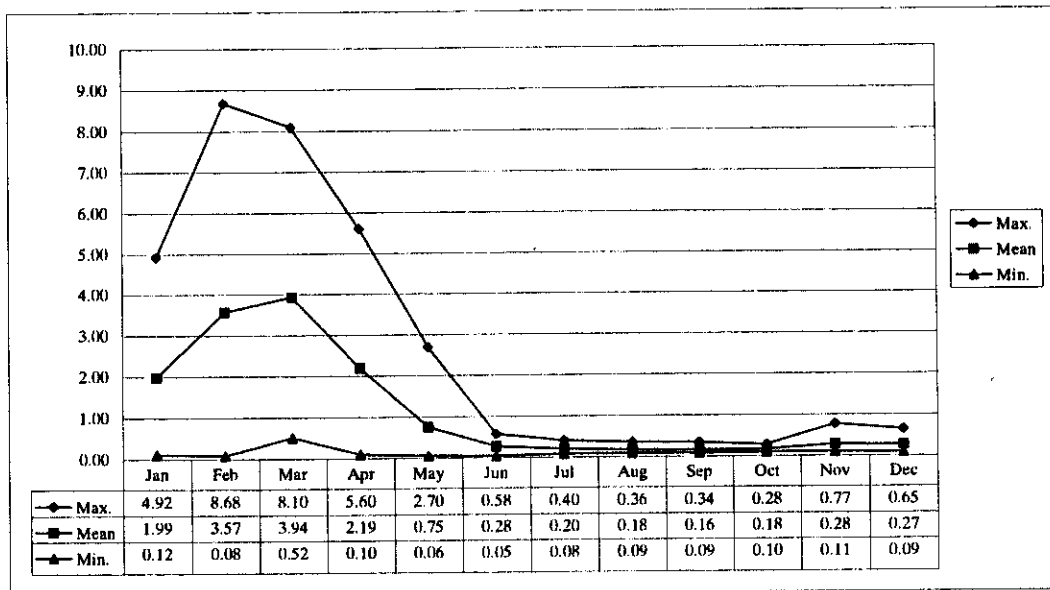
Longitude: W 75° 44'37"

Latitude: S 12° 13'02"

Altitude: 3,542

Source: Cementos Lima / ELECTROPERU

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	-	-	7.71	4.84	2.70	-	-	-	-	-	-	-	-	15.2416
1987	4.55	4.43	2.32	0.81	0.43	0.34	0.29	0.24	0.18	0.19	0.29	0.65	1.23	14.7318
1988	4.06	8.68	1.49	1.64	0.22	0.16	0.10	0.10	0.10	0.10	0.11	0.15	1.41	16.9164
1989	2.26	3.74	4.41	2.24	0.34	0.20	0.15	0.14	0.12	0.14	0.14	0.09	1.16	13.9587
1990	0.19	0.21	-	-	0.15	0.16	0.14	0.09	0.10	0.12	0.45	0.63	-	2.2523
1991	1.04	0.63	3.02	0.81	0.30	0.18	0.13	0.10	0.10	0.12	0.15	0.10	0.56	6.67527
1992	0.12	0.08	0.52	0.10	0.06	0.05	0.10	0.09	0.10	0.14	0.12	0.09	0.13	1.56188
1993	0.68	5.73	5.72	3.00	-	0.53	0.26	0.24	0.23	0.28	0.77	-	-	17.4458
1994	4.92	6.79	8.10	5.60	2.36	0.58	0.40	0.36	0.34	0.27	0.27	0.26	2.52	30.2509
1995	0.63	0.85	3.89	1.82	0.62	0.38	0.32	0.27	0.24	0.25	0.32	0.27	0.82	9.85325
1996	1.40	4.57	3.28	2.65	0.79	0.41	0.28	0.21	0.17	0.18	0.17	0.21	1.19	14.313
1997	-	-	2.84	0.59	0.34	0.08	0.08	0.10	0.09	0.18	0.33	-	-	4.63009
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1999	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	4.92	8.68	8.10	5.60	2.70	0.58	0.40	0.36	0.34	0.28	0.77	0.65	2.52	
Mean	1.99	3.57	3.94	2.19	0.75	0.28	0.20	0.18	0.16	0.18	0.28	0.27	1.13	
Min.	0.12	0.08	0.52	0.10	0.06	0.05	0.08	0.09	0.09	0.10	0.11	0.09	0.13	
N	10	10	11	11	11	11	11	11	11	11	11	9	8	
Check Sum.	19.8549	35.7125	43.3006	24.1183	8.2971	3.05067	2.24903	1.93226	1.77033	1.98065	3.11933	2.44542		



1.8 Annual Runoff Ratio

Annual Runoff Ratio

Station: Tanta

172 km²

Longitude: W 76° 00'41"

Latitude: S 12° 06'53"

Altitude: 4,278

Year	(1)	(2)	(3)	(4)	(5)	(4) / (2)
	Basin Average Rainfall mm/year	10 ⁶ m ³ /year	Discharge m ³ /s	10 ⁶ m ³ /year	(2) - (4) 10 ⁶ m ³ /year	Run-off Ratio
1964	782.3	135				
1965	737.6	127				
1966	899.9	155				
1967	860.7	148				
1968	798.5	137				
1969	1,060.1	182				
1970	1,152.1	198				
1971	831.8	143				
1972	1,041.3	179				
1973	1,224.9	211				
1974	1,163.1	200				
1975	1,015.6	175				
1976	670.0	115				
1977	646.2	111				
1978	495.5	85				
1979	385.9	66				
1980	448.6	77				
1981	671.7	116				
1982	515.8	89				
1983	417.5	72				
1984	617.8	106				
1985	580.5	100				
1986	1,192.2	205				
1987	504.4	87	3.32	105	-18	1.21
1988	455.5	78	3.48	110	-31	1.40
1989	549.4	94				
1990	490.3	84				
1991	548.0	94	2.60	82	12	0.87
1992	441.1	76	1.99	63	13	0.83
1993	1,283.7	221				
1994	1,190.7	205	3.55	112	93	0.55
1995	837.5	144	2.67	84	60	0.58
1996	1,017.0	175	4.06	128	47	0.73
1997	920.1	158				
1998						
Max.	1,283.7	221	4.1	128	93	1.40
Mean	777.9	134	3.1	98	25	0.88
Min	385.9	66	2.0	63	-31	0.55

Annual Runoff Ratio

Station: Aguas Calientes
352 km²

Longitude: W 75° 57'06"
Latitude: S 12° 04'55"
Altitude: 4,110

Year	(1)	(2)	(3)	(4)	(5)	(4) / (2)
	Basin Average Rainfall mm/year	10 ⁶ m ³ /year	Discharge m ³ /s	10 ⁶ m ³ /year	(2) - (4) 10 ⁶ m ³ /year	Run-off Ratio
1964	785.4	276				
1965	739.6	260				
1966	903.3	318				
1967	859.3	302				
1968	804.2	283				
1969	1,066.9	376				
1970	1,160.9	409				
1971	834.8	294				
1972	1,046.2	368				
1973	1,229.5	433				
1974	1,174.8	414				
1975	1,018.9	359				
1976	670.4	236				
1977	649.4	229				
1978	496.2	175				
1979	386.3	136				
1980	449.9	158				
1981	671.6	236				
1982	514.7	181				
1983	420.0	148				
1984	618.0	218				
1985	582.7	205				
1986	1,197.1	421				
1987	504.4	178				
1988	451.5	159	5.98	189	-30	1.19
1989	548.6	193				
1990	490.9	173				
1991	550.2	194				
1992	446.1	157	2.75	87	70	0.55
1993	1,288.1	453				
1994	1,192.1	420				
1995	843.0	297	5.10	161	136	0.54
1996	1,020.5	359	6.71	212	148	0.59
1997	922.9	325				
1998						
Max.	1,288.1	453	6.7	212	148	1.19
Mean	780.5	275	5.1	162	81	0.72
Min	386.3	136	2.8	87	-30	0.54

Annual Runoff Ratio

Station: Tinco de Alis

930 km²

Longitude: W 75° 48'16"

Latitude: S 12° 17'10"

Altitude: 3,350

Year	(1)	(2)	(3)	(4)	(5)	(4) / (2)
	Basin Average Rainfall mm/year	10 ⁶ m ³ /year	Discharge m ³ /s	10 ⁶ m ³ /year	(2) - (4) 10 ⁶ m ³ /year	Run-off Ratio
1964	804.8	748				
1965	791.4	736				
1966	954.3	887				
1967	1,171.2	1,089				
1968	689.0	641				
1969	833.2	775				
1970	899.6	837				
1971	707.3	658				
1972	854.7	795				
1973	1,011.7	941				
1974	932.3	867				
1975	962.2	895				
1976	717.2	667				
1977	612.6	570				
1978	500.1	465				
1979	483.0	449				
1980	565.7	526				
1981	870.1	809				
1982	675.7	628				
1983	387.1	360				
1984	849.6	790				
1985	598.8	557				
1986	1,147.7	1,067				
1987	675.9	629				
1988	745.8	694	11.71	369	324	0.53
1989	670.5	624				
1990	480.2	447				
1991	479.4	446				
1992	337.8	314	7.10	224	90	0.71
1993	1,554.9	1,446				
1994	1,869.5	1,739	18.24	575	1,163	0.33
1995	1,014.2	943	9.73	307	636	0.33
1996	817.6	760	12.55	396	365	0.52
1997	823.7	766				
1998						
Max.	1,869.5	1,739	18.2	575	1,163	0.71
Mean	808.5	752	11.9	374	516	0.48
Min	337.8	314	7.1	224	90	0.33

Annual Runoff Ratio

Station: Chavin

3265 km²

Longitude: W 75° 56'33"

Latitude: S 12° 44'48"

Altitude: 1,350

Year	(1)	(2)	(3)	(4)	(5)	(4) / (2)
	Basin Average Rainfall mm/year	10 ⁶ m ³ /year	Discharge m ³ /s	10 ⁶ m ³ /year	(2) - (4) 10 ⁶ m ³ /year	Run-off Ratio
1964	611.1	1,995				
1965	571.2	1,865				
1966	727.2	2,374				
1967	962.9	3,144				
1968	415.2	1,356				
1969	599.4	1,957				
1970	575.3	1,878				
1971	664.6	2,170				
1972	789.3	2,577				
1973	874.2	2,854				
1974	646.7	2,111				
1975	652.4	2,130				
1976	613.4	2,003				
1977	520.2	1,698				
1978	406.7	1,328				
1979	415.0	1,355				
1980	480.1	1,568				
1981	991.6	3,238				
1982	833.9	2,723				
1983	452.7	1,478				
1984	1,182.6	3,861				
1985	537.5	1,755				
1986	934.3	3,050				
1987	631.2	2,061	30.63	966	1,095	0.47
1988	775.2	2,531				
1989	601.1	1,963				
1990	400.6	1,308				
1991	391.7	1,279				
1992	203.1	663				
1993	997.9	3,258	48.55	1,531	1,727	0.47
1994	1,089.4	3,557	47.40	1,495	2,062	0.42
1995	596.9	1,949	25.53	805	1,144	0.41
1996	717.6	2,343	39.76	1,254	1,089	0.54
1997	660.5	2,157				
1998						
Max.	1,182.6	3,861	48.6	1,531	2,062	0.54
Mean	662.4	2,163	38.4	1,210	1,423	0.46
Min	203.1	663	25.5	805	1,089	0.41

Annual Runoff Ratio

Station: Socsi

5890 km²

Longitude: W 76° 12'

Latitude: S 13° 02'

Altitude: 350 m

Year	(1)	(2)	(3)		(4)	(5)	(4) / (2)
	Basin Average Rainfall mm/year	10 ⁶ m ³ /year	Discharge m ³ /s		10 ⁶ m ³ /year	(2) - (4) 10 ⁶ m ³ /year	Run-off Ratio
1964	429.7	2,531					
1965	379.2	2,233	39.53		1,247	987	0.56
1966	491.7	2,896	20.65		651	2,245	0.22
1967	688.3	4,054	69.25		2,184	1,870	0.54
1968	265.4	1,563	19.18		605	958	0.39
1969	457.7	2,696	38.79		1,223	1,473	0.45
1970	427.4	2,517					
1971	500.9	2,950					
1972	617.0	3,634					
1973	615.8	3,627					
1974	444.7	2,619	47.28		1,491	1,128	0.57
1975	474.2	2,793	41.35		1,304	1,489	0.47
1976	459.1	2,704	56.22		1,773	931	0.66
1977	426.1	2,510	41.23		1,300	1,209	0.52
1978	285.1	1,679	37.21		1,173	506	0.70
1979	313.6	1,847	36.97		1,166	681	0.63
1980	316.3	1,863	28.30		892	971	0.48
1981	657.3	3,871	51.52		1,625	2,247	0.42
1982	570.1	3,358	45.86		1,446	1,912	0.43
1983	308.3	1,816					
1984	836.9	4,929					
1985	362.1	2,133					
1986	689.5	4,061	80.46		2,537	1,524	0.62
1987	405.9	2,391	38.19		1,204	1,186	0.50
1988	524.6	3,090	29.46		929	2,161	0.30
1989	464.0	2,733	45.73		1,442	1,291	0.53
1990	270.2	1,591	26.67		841	750	0.53
1991	262.4	1,546	51.01		1,609	-63	1.04
1992	120.0	707	19.03		600	107	0.85
1993	631.3	3,718	69.91		2,205	1,514	0.59
1994	686.5	4,043	81.56		2,572	1,471	0.64
1995	391.8	2,308	48.87		1,541	767	0.67
1996	463.4	2,729	62.50		1,971	758	0.72
1997	426.4	2,511	41.14		1,297	1,214	0.52
1998							
Max.	836.9	4,929	81.6		2,572	2,247	1.04
Mean	460.7	2,713	44.9		1,417	1,203	0.56
Min	120.0	707	19.0		600	-63	0.22

Annual Runoff Ratio

Station: Imperial

5900 km²

Longitude: W 76° 12'

Latitude: S 13° 02'

Altitude: 250

Year	(1)	(2)	(3)	(4)	(5)	(4) / (2)
	Basin Average Rainfall mm/year	10 ⁶ m ³ /year	Discharge m ³ /s	10 ⁶ m ³ /year	(2) - (4) 10 ⁶ m ³ /year	Run-off Ratio
1964	428.0	2,525	43.61	1,375.3	1,150	0.54
1965	377.7	2,228	52.03	1,641	588	0.74
1966	490.2	2,892	38.72	1,221	1,671	0.42
1967	685.7	4,046	71.01	2,239	1,806	0.55
1968	264.5	1,561	32.28	1,018	543	0.65
1969	455.9	2,690				
1970	425.1	2,508				
1971	499.5	2,947				
1972	615.1	3,629				
1973	613.6	3,620				
1974	443.2	2,615				
1975	472.7	2,789				
1976	457.2	2,697				
1977	425.0	2,508				
1978	284.4	1,678				
1979	312.4	1,843				
1980	316.0	1,864				
1981	655.4	3,867				
1982	568.2	3,352				
1983	308.0	1,817				
1984	834.9	4,926				
1985	360.5	2,127				
1986	687.5	4,056				
1987	404.7	2,388				
1988	523.5	3,089				
1989	463.0	2,732				
1990	269.5	1,590				
1991	261.5	1,543				
1992	119.3	704				
1993	628.0	3,705				
1994	683.1	4,030				
1995	389.2	2,296				
1996	462.2	2,727				
1997	424.6	2,505				
1998						
Max.	834.9	4,926	71.0	2,239	1,806	0.74
Mean	459.1	2,709	47.5	1,499	1,151	0.58
Min	119.3	704	32.3	1,018	543	0.42

1.9 Monthly Discharge Estimated by the Correlation Method

Monthly Discharge (m³/s)

Station: Tanta

Longitude: W 76° 00'41"

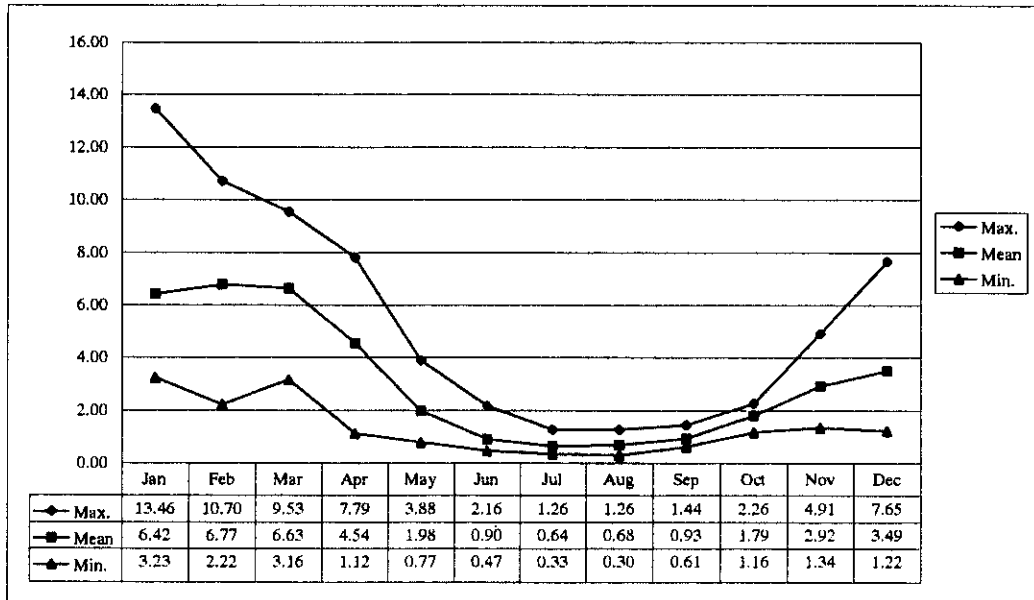
Latitude: S 12° 06'53"

Altitude: 4,278

Note: observed + estimated by correlation method

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum
1964	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1965	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1966	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1967	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1968	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1969	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1970	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1971	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1972	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1973	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1974	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1975	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1976	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1977	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1978	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1979	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1980	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1981	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1982	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1983	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1984	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	5.89	9.65	8.63	7.11	3.88	0.92	1.26	0.97	0.98	1.55	3.00	4.31	4.01	48.126
1987	8.55	7.47	4.60	2.63	1.32	1.03	0.86	1.26	1.44	2.19	3.64	4.86	3.32	39.8533
1988	6.88	8.10	6.85	6.30	2.94	0.79	0.51	0.73	0.89	2.01	2.00	3.73	3.48	41.7427
1989	6.94	7.37	9.53	7.79	3.07	2.16	1.05	0.83	0.81	1.57	2.10	1.22	3.70	44.4344
1990	3.66	2.40	4.58	2.82	1.62	1.21	0.79	0.63	0.61	2.26	3.85	3.20	2.30	27.6369
1991	3.84	5.34	6.95	3.20	1.95	0.72	0.35	0.49	0.87	2.02	2.90	2.61	2.60	31.2437
1992	3.23	2.22	5.00	2.87	1.40	0.66	0.52	0.69	1.18	1.84	1.82	2.49	1.99	23.9224
1993	4.25	6.60	7.72	4.91	1.37	0.60	0.33	0.30	0.61	2.07	4.91	7.65	3.44	41.3256
1994	8.74	9.17	6.68	5.22	2.79	1.00	0.44	0.48	1.02	1.37	2.88	2.79	3.55	42.5661
1995	6.26	3.24	7.62	3.49	0.97	0.47	0.58	0.78	1.10	1.49	2.95	3.02	2.67	31.9819
1996	13.46	10.70	8.27	7.04	1.63	0.75	0.51	0.56	0.72	1.16	1.34	2.50	4.06	48.6604
1997	5.33	8.95	3.16	1.12	0.77	0.53	0.54	0.49	0.88	1.88	3.60	3.51	2.56	30.757
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	13.46	10.70	9.53	7.79	3.88	2.16	1.26	1.26	1.44	2.26	4.91	7.65	4.06	
Mean	6.42	6.77	6.63	4.54	1.98	0.90	0.64	0.68	0.93	1.79	2.92	3.49	3.14	
Min.	3.23	2.22	3.16	1.12	0.77	0.47	0.33	0.30	0.61	1.16	1.34	1.22	1.99	
N	12	12	12	12	12	12	12	12	12	12	12	12	12	

Check Sum: 77.0188 81.216 79.6052 54.4891 23.7116 10.8239 7.71955 8.21737 11.1332 21.4214 35.0033 41.891



Monthly Discharge (m³/s)

Station: Aguas Calientes

Longitude: W

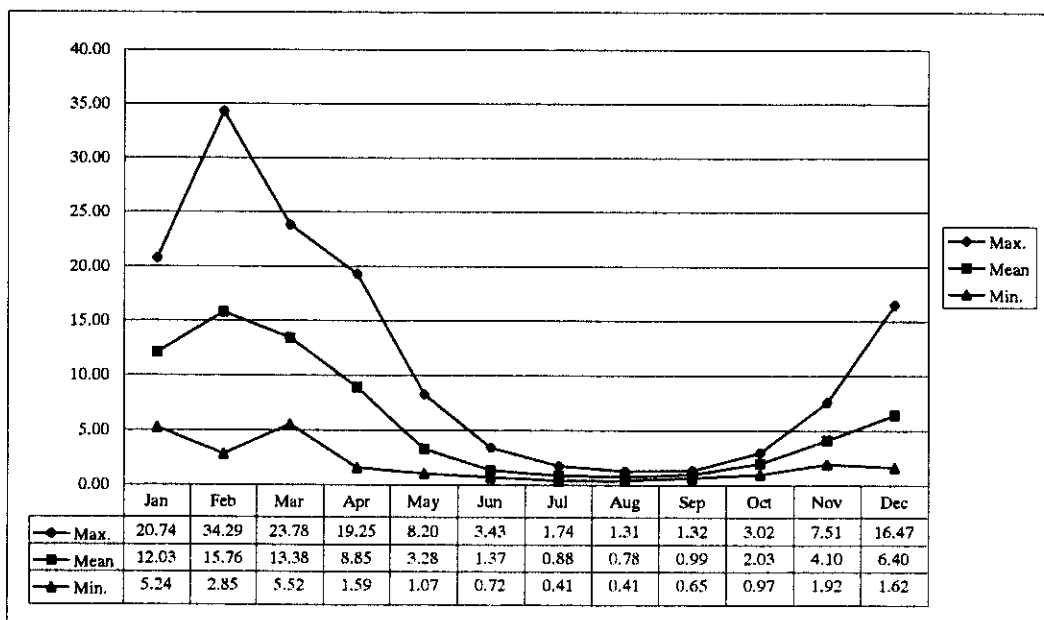
Latitude: S

Altitude:

Note: observed + estimated by correlation method

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1964	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1965	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1966	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1967	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1968	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1969	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1970	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1971	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1972	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1973	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1974	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1975	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1976	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1977	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1978	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1979	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1980	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1981	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1982	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1983	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1984	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	15.16	22.63	18.82	19.25	8.20	1.14	1.74	1.31	1.32	1.62	4.48	8.11	8.65	103.775
1987	20.74	19.96	9.26	3.49	1.61	1.19	0.71	0.86	1.22	2.01	4.58	5.99	5.97	71.6084
1988	13.41	17.77	10.70	11.08	4.31	1.34	0.75	0.71	1.23	2.12	2.76	5.56	5.98	71.7445
1989	14.30	16.05	21.69	16.94	5.28	3.43	1.34	1.00	0.96	2.25	3.24	1.62	7.34	88.0842
1990	6.42	3.94	8.60	4.31	2.31	1.60	0.94	0.71	0.68	2.84	6.08	6.31	3.73	44.7237
1991	8.34	10.31	11.78	4.93	2.86	0.93	0.41	0.61	1.16	3.02	4.44	3.95	4.40	52.7522
1992	5.24	2.85	8.64	3.99	1.81	0.72	0.62	0.50	0.65	2.04	2.21	3.70	2.75	32.9631
1993	6.71	11.22	13.32	8.02	1.94	1.07	0.63	0.41	0.68	2.27	7.51	16.47	5.85	70.25
1994	15.24	34.29	23.78	12.82	5.80	2.15	1.05	0.63	1.21	1.38	3.64	4.37	8.86	106.353
1995	12.57	7.24	12.99	8.35	1.90	1.01	0.70	0.99	0.99	1.62	3.61	9.28	5.10	61.2458
1996	17.02	24.59	15.44	11.44	2.29	1.08	0.84	0.67	0.72	0.97	1.92	3.54	6.71	80.5114
1997	9.28	18.30	5.52	1.59	1.07	0.81	0.82	0.93	1.08	2.17	4.73	7.96	4.52	54.254
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	20.74	34.29	23.78	19.25	8.20	3.43	1.74	1.31	1.32	3.02	7.51	16.47	8.86	
Mean	12.03	15.76	13.38	8.85	3.28	1.37	0.88	0.78	0.99	2.03	4.10	6.40	5.82	
Min.	5.24	2.85	5.52	1.59	1.07	0.72	0.41	0.41	0.65	0.97	1.92	1.62	2.75	
N	12	12	12	12	12	12	12	12	12	12	12	12	12	

Check Sum. 144.412 189.145 160.535 106.21 39.3733 16.4642 10.555 9.32909 11.8998 24.3111 49.1928 76.8381



Monthly Discharge (m³/s)

Station: Tinco de Alis

Longitude: W 75° 46'53"

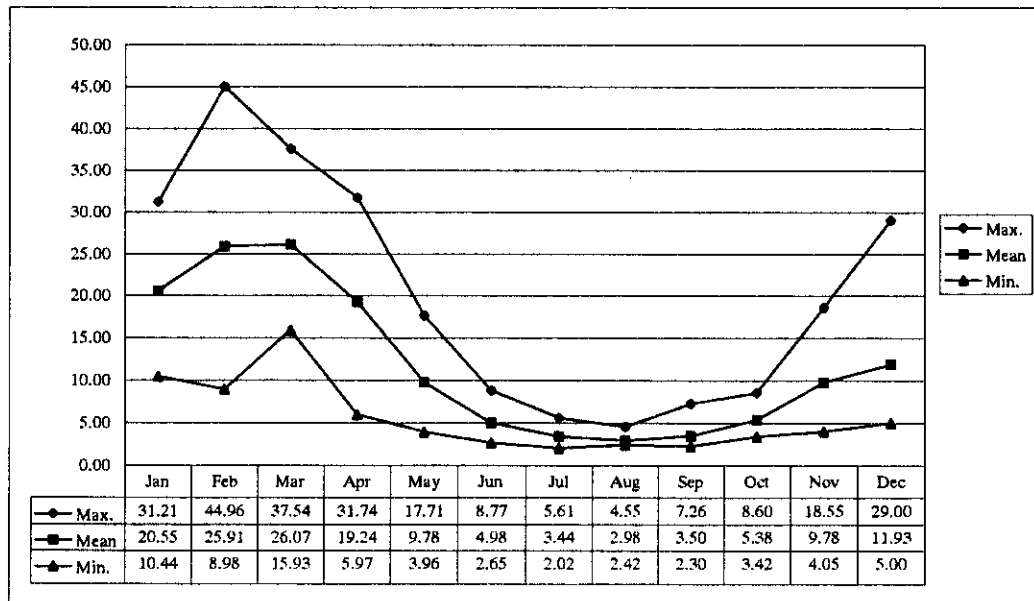
Latitude: S 12° 16'26"

Altitude: 3,350

Note: observed + estimated by correlation method

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum
1964	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1965	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1966	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1967	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1968	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1969	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1970	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1971	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1972	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1973	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1974	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1975	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1976	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1977	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1978	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1979	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1980	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1981	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1982	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1983	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1984	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	26.09	38.73	33.85	31.74	16.75	3.79	5.61	4.55	4.63	5.22	8.05	12.60	15.97	191.607
1987	28.80	29.50	20.78	10.95	6.30	4.11	3.23	2.85	3.01	3.98	7.52	11.70	11.06	132.725
1988	20.55	28.65	21.07	23.37	12.48	5.57	3.30	2.84	2.88	5.02	6.13	8.68	11.71	140.539
1989	22.57	29.23	37.54	30.81	12.37	8.77	4.31	3.44	3.33	6.40	8.51	5.00	14.36	172.291
1990	14.12	9.81	18.20	10.13	6.05	4.96	3.27	2.64	2.55	5.10	13.26	12.50	8.55	102.577
1991	10.44	18.28	28.91	15.83	10.23	4.78	2.02	2.69	4.17	7.98	10.82	9.98	10.51	126.148
1992	14.20	8.98	18.78	9.94	4.83	3.24	3.04	2.59	2.67	4.17	5.65	7.17	7.10	85.2531
1993	12.83	26.94	28.68	23.01	10.85	4.63	3.53	2.54	2.30	4.04	18.55	29.00	13.91	166.915
1994	31.21	44.96	37.31	29.58	17.71	8.67	4.65	3.60	7.26	8.60	13.87	11.42	18.24	218.833
1995	19.52	15.41	24.21	16.04	5.76	3.39	2.71	2.82	3.20	4.24	9.55	9.92	9.73	116.768
1996	25.73	32.48	27.61	23.48	10.04	5.19	3.24	2.79	2.61	3.42	4.05	10.00	12.55	150.648
1997	20.57	27.88	15.93	5.97	3.96	2.65	2.35	2.42	3.39	6.45	11.45	15.22	9.85	118.238
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	31.21	44.96	37.54	31.74	17.71	8.77	5.61	4.55	7.26	8.60	18.55	29.00	18.24	
Mean	20.55	25.91	26.07	19.24	9.78	4.98	3.44	2.98	3.50	5.38	9.78	11.93	11.96	
Min.	10.44	8.98	15.93	5.97	3.96	2.65	2.02	2.42	2.30	3.42	4.05	5.00	7.10	
N	12	12	12	12	12	12	12	12	12	12	12	12	12	

Check Sum. 246.637 310.861 312.87 230.847 117.316 59.7423 41.2715 35.7747 41.9996 64.6195 117.413 143.191



Monthly Discharge (m³/s)

Station: Chavin

Longitude: W 75° 56'48"

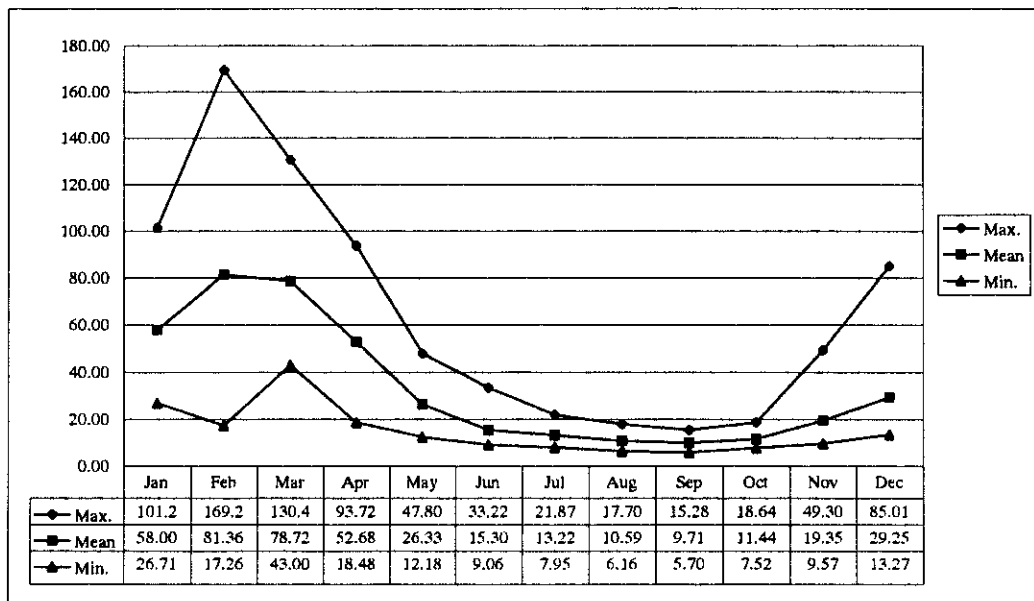
Latitude: S 12° 44'48"

Altitude: 1,350

Note: observed + estimated by correlation method

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum
1964	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1965	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1966	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1967	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1968	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1969	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1970	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1971	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1972	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1973	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1974	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1975	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1976	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1977	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1978	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1979	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1980	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1981	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1982	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1983	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1984	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	76.48	97.88	82.63	93.72	47.80	10.85	19.39	16.19	14.15	12.87	15.42	33.53	43.41	520.903
1987	97.14	94.83	55.09	32.65	14.14	9.11	7.95	6.16	6.76	8.99	12.96	21.81	30.63	367.565
1988	53.82	77.21	54.33	56.21	30.27	16.34	12.37	10.54	9.61	11.11	12.34	19.86	30.33	364.019
1989	70.57	96.09	130.48	85.92	41.30	33.22	21.87	17.70	9.81	14.01	17.26	16.22	46.20	554.447
1990	36.68	26.38	46.39	27.04	16.71	13.77	9.48	7.76	7.53	14.12	32.87	34.35	22.76	273.078
1991	35.79	52.18	81.65	37.45	25.28	15.48	18.24	11.98	9.07	9.94	18.43	15.04	27.54	330.532
1992	26.71	17.26	43.00	22.24	13.54	10.03	8.63	8.03	7.04	9.30	9.57	13.27	15.72	188.615
1993	30.55	84.48	119.06	84.13	38.82	23.40	18.41	15.51	15.28	18.64	49.30	85.01	48.55	582.598
1994	101.24	169.23	110.09	61.23	29.63	13.72	9.54	6.93	12.91	12.91	16.88	24.46	47.40	568.755
1995	38.95	40.64	70.14	43.10	18.43	12.74	11.27	9.78	9.59	9.31	19.92	22.51	25.53	306.377
1996	78.45	121.38	91.53	69.93	27.82	15.87	12.65	9.58	9.04	8.56	11.12	21.20	39.76	477.13
1997	49.58	98.78	60.30	18.48	12.18	9.06	8.82	6.95	5.70	7.52	16.18	43.75	28.11	337.292
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	101.24	169.23	130.48	93.72	47.80	33.22	21.87	17.70	15.28	18.64	49.30	85.01	48.55	
Mean	58.00	81.36	78.72	52.68	26.33	15.30	13.22	10.59	9.71	11.44	19.35	29.25	33.83	
Min.	26.71	17.26	43.00	18.48	12.18	9.06	7.95	6.16	5.70	7.52	9.57	13.27	15.72	
N	12	12	12	12	12	12	12	12	12	12	12	12	12	

Check Sum: 695.948 976.332 944.684 632.101 315.905 183.598 158.622 127.111 116.472 137.283 232.239 351.018



Monthly Discharge (m³/s)

Station: Socsi

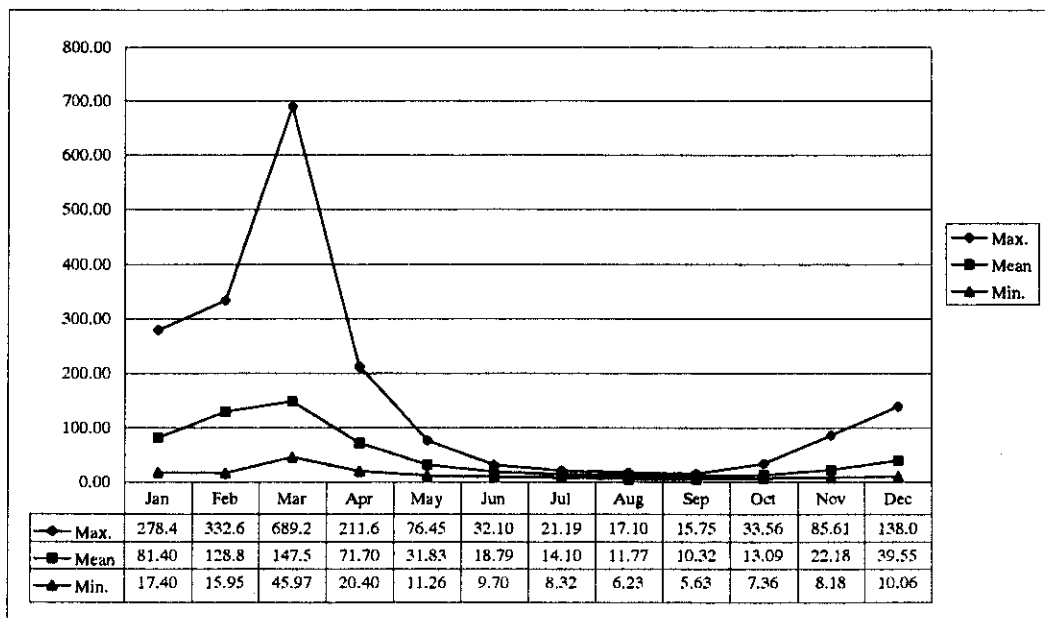
Longitude: W 76° 12'

Latitude: S 13° 00'

Note: observed + estimated by correlation method

Altitude: 340

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1964	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1965	37.80	123.95	120.29	60.78	35.75	15.23	9.49	12.64	10.39	10.79	16.31	20.94	39.53	474.353
1966	30.20	26.40	49.10	26.60	15.20	11.00	9.50	8.80	8.80	10.30	21.70	30.20	20.65	247.8
1967	101.15	288.96	164.97	69.47	38.29	26.06	19.86	15.86	15.75	33.56	25.69	31.41	69.25	831.038
1968	17.40	41.90	49.20	21.90	16.70	13.00	9.90	9.20	9.60	10.60	16.00	14.70	19.18	230.1
1969	31.21	49.60	94.65	52.45	22.44	14.09	12.15	10.31	7.47	19.30	13.71	138.07	38.79	465.442
1970	278.48	131.39	85.71	27.04	16.77	-	-	-	-	13.59	15.96	31.83	-	600.773
1971	113.69	155.46	-	-	23.72	13.82	15.17	15.18	13.99	11.14	8.71	46.33	-	417.216
1972	169.44	251.14	689.23	211.69	40.15	20.42	11.15	11.86	-	-	-	66.62	-	1471.7
1973	-	220.99	290.16	202.30	66.28	22.92	14.68	10.91	9.97	12.68	18.96	78.07	-	947.92
1974	96.81	154.75	127.94	48.20	27.52	22.17	18.31	15.42	13.90	13.40	13.85	15.10	47.28	567.36
1975	28.42	40.71	180.97	74.20	44.29	24.21	14.53	10.84	9.97	11.74	19.13	37.25	41.35	496.246
1976	111.93	194.34	148.97	69.09	33.00	24.72	18.03	14.13	12.85	13.70	13.54	20.28	56.22	674.6
1977	51.03	115.98	112.17	41.05	26.71	17.73	15.54	13.92	13.71	13.52	40.04	33.42	41.23	494.806
1978	56.49	102.49	58.18	50.42	27.13	19.20	15.11	13.63	12.65	13.85	35.72	41.63	37.21	446.483
1979	39.04	107.26	129.52	58.38	22.74	16.39	14.94	10.28	10.04	10.52	11.20	13.38	36.97	443.694
1980	41.13	35.93	50.78	46.32	19.49	13.61	13.35	11.25	9.79	24.50	29.10	44.40	28.30	339.658
1981	61.66	158.80	147.59	85.91	25.07	19.15	15.40	12.61	11.04	12.10	24.53	44.44	51.52	618.285
1982	57.07	99.07	70.33	60.71	31.19	19.28	13.40	11.15	6.80	21.86	85.61	73.80	45.86	550.281
1983	59.37	42.79	90.33	104.08	34.56	22.22	16.52	15.13	-	-	-	-	-	384.992
1984	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1986	135.08	204.00	232.48	172.70	70.73	29.78	21.19	16.73	14.00	12.37	13.88	42.58	80.46	965.531
1987	160.32	130.66	59.50	22.47	11.26	9.70	10.13	9.46	9.05	8.42	10.13	17.13	38.19	458.223
1988	73.68	82.91	45.97	43.97	17.96	15.50	12.71	11.73	11.69	11.27	10.41	15.72	29.46	353.517
1989	79.69	135.63	145.45	79.07	17.60	15.91	12.63	11.16	10.46	11.97	18.59	10.56	45.73	548.71
1990	34.63	26.70	78.23	28.02	18.56	14.97	11.10	8.78	7.63	12.58	36.23	42.61	26.67	320.04
1991	59.47	97.69	216.02	73.92	49.66	32.10	19.69	11.29	7.81	8.97	20.15	15.30	51.01	612.069
1992	22.35	15.95	74.76	36.16	21.21	12.15	8.32	6.23	5.63	7.36	8.18	10.06	19.03	228.362
1993	31.60	190.96	238.16	112.33	47.81	21.60	13.62	10.12	7.62	9.81	35.89	119.45	69.91	838.975
1994	153.55	332.68	213.06	75.00	76.45	30.17	20.87	17.10	12.43	11.29	18.90	17.24	81.56	978.743
1995	89.35	111.25	202.10	53.77	23.71	16.17	11.68	9.03	8.92	10.31	24.77	25.45	48.87	586.499
1996	132.79	176.62	181.06	122.60	48.19	17.30	13.57	9.28	9.28	9.46	11.20	18.66	62.50	750.012
1997	87.23	147.32	78.16	20.40	16.50	13.14	10.50	9.00	7.84	8.72	25.07	69.85	41.14	493.721
1998	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Max.	278.48	332.68	689.23	211.69	76.45	32.10	21.19	17.10	15.75	33.56	85.61	138.07	81.56	
Mean	81.40	128.85	147.50	71.70	31.83	18.79	14.10	11.77	10.32	13.09	22.18	39.55	44.92	
Min.	17.40	15.95	45.97	20.40	11.26	9.70	8.32	6.23	5.63	7.36	8.18	10.06	19.03	
N	30	31	30	30	31	30	30	30	28	29	29	30	26	
Check Sum.	2442.06	3994.31	4425.02	2150.97	986.64	563.702	423.043	352.984	289.096	379.696	643.141	1186.48		



1.10 Monthly Discharge Generated by the Runoff Analysis

Monthly Discharge (m³/s)

Station: Tanta

Longitude: W 76° 00'41"

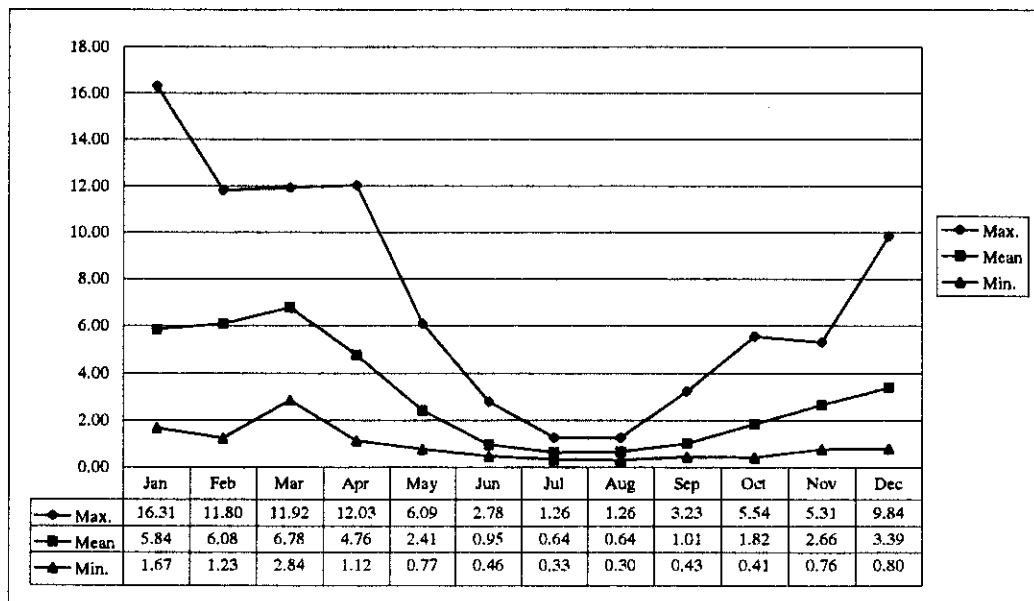
Latitude: S 12° 06'53"

Altitude: 4,278

Note: observed + estimated by correlation method + calculated by Tank model

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum
1964	-	-	-	-	-	-	0.47	0.46	0.51	0.88	3.12	2.74	-	8.18264
1965	4.55	8.84	8.74	3.65	2.06	0.83	0.54	0.50	0.49	1.56	1.00	1.43	2.85	34.1908
1966	6.00	5.58	7.57	5.10	2.76	0.65	0.47	0.49	0.62	3.16	3.17	6.19	3.48	41.7544
1967	6.33	10.30	9.02	3.33	2.60	0.95	0.78	0.53	0.67	3.62	1.64	2.35	3.51	42.1066
1968	4.63	5.38	5.69	4.09	1.10	0.51	0.50	0.57	2.20	4.21	4.57	3.04	3.04	36.4847
1969	3.47	5.05	6.99	5.43	2.14	0.56	0.54	0.53	1.10	3.29	5.31	9.84	3.69	44.2503
1970	16.31	5.33	5.34	5.05	5.97	1.19	0.66	0.56	3.23	2.35	3.56	6.98	4.71	56.527
1971	5.64	5.09	10.49	5.36	1.87	0.60	0.57	1.22	0.60	1.24	1.99	4.05	3.23	38.7112
1972	8.86	3.75	11.73	12.03	4.33	0.81	0.87	0.67	0.61	1.03	4.07	3.27	4.34	52.0368
1973	8.48	6.35	8.31	6.36	5.07	1.55	0.69	0.96	2.48	5.54	3.87	5.69	4.61	55.3582
1974	10.48	11.80	11.92	7.05	3.67	1.23	0.70	0.76	1.65	1.38	2.01	4.45	4.76	57.1166
1975	5.12	4.53	8.31	9.35	6.09	2.23	0.83	0.72	2.05	3.76	2.62	2.86	4.04	48.4632
1976	6.42	7.58	6.60	3.32	1.55	1.53	0.87	0.78	0.67	1.01	1.32	2.26	2.83	33.9266
1977	4.11	6.04	6.27	4.05	2.56	0.76	0.61	0.60	0.77	1.05	2.61	2.31	2.65	31.754
1978	2.60	3.97	3.81	4.38	2.40	0.72	0.56	0.63	0.97	1.82	1.85	0.96	2.06	24.6709
1979	1.67	4.10	4.02	3.29	1.93	0.64	0.54	0.51	0.53	0.77	0.77	0.80	1.63	19.5687
1980	2.11	2.29	2.84	2.72	0.78	0.46	0.52	0.55	0.62	1.20	3.32	3.70	1.76	21.1115
1981	2.68	7.05	9.47	4.72	0.96	0.46	0.45	0.47	0.83	0.82	1.95	1.88	2.65	31.7466
1982	2.96	4.04	3.39	2.96	1.58	0.58	0.44	0.43	0.70	0.58	2.97	2.96	1.97	23.5929
1983	2.58	1.23	4.42	2.98	1.98	0.69	0.55	0.49	0.94	0.46	0.76	1.56	1.55	18.6212
1984	3.45	4.87	5.04	2.61	2.04	2.78	1.20	0.41	0.43	0.41	1.35	2.45	2.25	27.0471
1985	3.58	4.70	4.18	4.89	2.49	0.83	0.61	0.83	0.53	0.46	1.71	1.75	2.21	26.5495
1986	5.89	9.65	8.63	7.11	3.88	0.92	1.26	0.97	0.98	1.55	3.00	4.31	4.01	48.126
1987	8.55	7.47	4.60	2.63	1.32	1.03	0.86	1.26	1.44	2.19	3.64	4.86	3.32	39.8533
1988	6.88	8.10	6.85	6.30	2.94	0.79	0.51	0.73	0.89	2.01	2.00	3.73	3.48	41.7427
1989	6.94	7.37	9.53	7.79	3.07	2.16	1.05	0.83	0.81	1.57	2.10	1.22	3.70	44.4344
1990	3.66	2.40	4.58	2.82	1.62	1.21	0.79	0.63	0.61	2.26	3.85	3.20	2.30	27.6369
1991	3.84	5.34	6.95	3.20	1.95	0.72	0.35	0.49	0.87	2.02	2.90	2.61	2.60	31.2437
1992	3.23	2.22	5.00	2.87	1.40	0.66	0.52	0.69	1.18	1.84	1.82	2.49	1.99	23.9224
1993	4.25	6.60	7.72	4.91	1.37	0.60	0.33	0.30	0.61	2.07	4.91	7.65	3.44	41.3256
1994	8.74	9.17	6.68	5.22	2.79	1.00	0.44	0.48	1.02	1.37	2.88	2.79	3.55	42.5661
1995	6.26	3.24	7.62	3.49	0.97	0.47	0.58	0.78	1.10	1.49	2.95	3.02	2.67	31.9819
1996	13.46	10.70	8.27	7.04	1.63	0.75	0.51	0.56	0.72	1.16	1.34	2.50	4.06	48.6604
1997	5.33	8.95	3.16	1.12	0.77	0.53	0.54	0.49	0.88	1.88	3.60	3.51	2.56	30.757
1998	9.62	7.67	-	-	-	-	-	-	-	-	-	-	-	17.2842
Max.	16.31	11.80	11.92	12.03	6.09	2.78	1.26	1.26	3.23	5.54	5.31	9.84	4.76	
Mean	5.84	6.08	6.78	4.76	2.41	0.95	0.64	0.64	1.01	1.82	2.66	3.39	3.08	
Min.	1.67	1.23	2.84	1.12	0.77	0.46	0.33	0.30	0.43	0.41	0.76	0.80	1.55	
N	34	34	33	33	33	33	34	34	34	34	34	34	33	

Check Sum: 198.688 206.747 223.744 157.188 79.646 31.3832 21.7094 21.9019 34.3246 62.0249 90.5383 115.411



Monthly Discharge (m³/s)

Station: Aguas Calientes

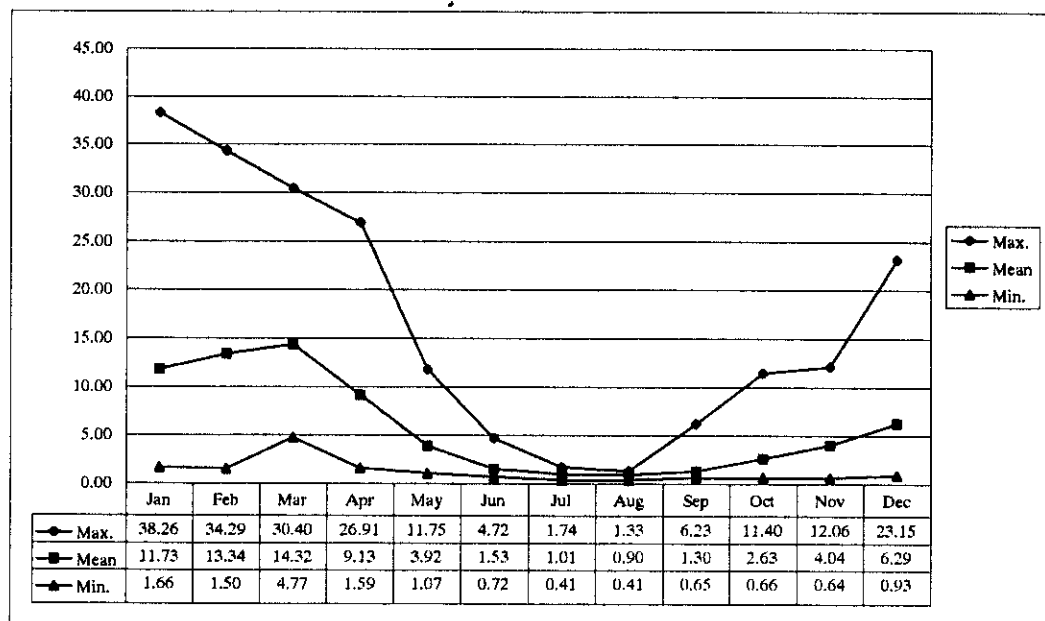
Longitude: W

Latitude: S

Note: observed + estimated by correlation method + calculated by Tank model

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1964	-	-	-	-	-	-	0.83	0.79	0.76	1.10	5.07	4.43	-	12.9953
1965	8.70	21.66	17.88	5.95	2.86	1.27	0.88	0.80	0.77	2.19	0.82	2.26	5.50	66.0493
1966	12.81	11.54	16.02	9.79	4.27	1.19	0.84	0.76	0.83	5.22	5.27	13.32	6.82	81.851
1967	13.20	25.24	18.40	5.37	3.91	1.42	1.04	0.86	0.83	6.48	1.79	3.21	6.81	81.746
1968	9.53	10.30	12.33	6.86	1.46	0.99	0.85	0.85	2.84	8.19	8.71	5.01	5.66	67.9198
1969	6.36	11.27	14.43	10.83	3.09	1.18	0.92	0.86	0.89	5.88	12.06	23.15	7.58	90.9238
1970	38.26	7.59	11.39	10.70	11.75	1.70	1.15	0.98	6.23	2.94	6.52	15.80	9.58	115.008
1971	10.76	12.28	23.72	9.16	2.72	1.31	1.04	1.33	0.99	1.54	2.44	9.76	6.42	77.0534
1972	18.47	5.94	30.40	26.91	6.09	1.58	1.23	1.04	1.00	1.31	7.43	5.35	8.90	106.75
1973	20.11	11.87	18.91	13.42	9.49	2.34	1.35	1.13	4.30	11.40	6.58	12.41	9.44	113.335
1974	25.56	28.29	27.23	13.48	6.38	1.90	1.46	1.33	1.54	1.30	2.72	8.62	9.98	119.806
1975	10.13	9.53	19.71	20.41	11.74	3.31	1.68	1.33	2.52	6.98	3.85	4.84	8.00	96.0225
1976	13.94	16.72	13.55	5.36	2.03	1.81	1.51	1.33	1.26	1.27	1.48	3.11	5.28	63.3533
1977	7.98	13.26	13.06	7.21	4.09	1.58	1.25	1.18	1.15	1.14	3.74	3.22	4.90	58.8591
1978	4.10	7.66	7.07	8.60	3.69	1.44	1.16	1.09	1.07	2.07	2.39	1.28	3.47	41.6115
1979	1.66	8.02	7.56	5.69	2.71	1.27	1.05	1.00	0.96	0.93	0.92	0.93	2.73	32.706
1980	3.03	3.18	4.77	4.18	1.17	0.89	0.84	0.81	0.79	1.79	5.55	6.67	2.81	33.684
1981	4.31	16.40	22.03	7.79	1.48	0.98	0.82	0.78	0.77	0.75	2.27	2.13	5.04	60.5113
1982	5.20	7.55	5.96	4.97	1.91	1.02	0.77	0.74	0.72	0.71	5.10	4.75	3.28	39.3867
1983	3.87	1.50	9.36	4.24	2.54	0.98	0.77	0.73	0.70	0.66	0.64	1.34	2.28	27.3385
1984	6.45	9.88	9.98	4.04	2.85	4.72	1.59	0.80	0.69	0.66	1.11	3.60	3.86	46.3661
1985	6.71	9.40	8.15	9.95	3.80	1.16	0.89	0.77	0.71	0.68	1.68	1.92	3.82	45.8091
1986	15.16	22.63	18.82	19.25	8.20	1.14	1.74	1.31	1.32	1.62	4.48	8.11	8.65	103.775
1987	20.74	19.96	9.26	3.49	1.61	1.19	0.71	0.86	1.22	2.01	4.58	5.99	5.97	71.6084
1988	13.41	17.77	10.70	11.08	4.31	1.34	0.75	0.71	1.23	2.12	2.76	5.56	5.98	71.7445
1989	14.30	16.05	21.69	16.94	5.28	3.43	1.34	1.00	0.96	2.25	3.24	1.62	7.34	88.0842
1990	6.42	3.94	8.60	4.31	2.31	1.60	0.94	0.71	0.68	2.84	6.08	6.31	3.73	44.7237
1991	8.34	10.31	11.78	4.93	2.86	0.93	0.41	0.61	1.16	3.02	4.44	3.95	4.40	52.7522
1992	5.24	2.85	8.64	3.99	1.81	0.72	0.62	0.50	0.65	2.04	2.21	3.70	2.75	32.9631
1993	6.71	11.22	13.32	8.02	1.94	1.07	0.63	0.41	0.68	2.27	7.51	16.47	5.85	70.25
1994	15.24	34.29	23.78	12.82	5.80	2.15	1.05	0.63	1.21	1.38	3.64	4.37	8.86	106.353
1995	12.57	7.24	12.99	8.35	1.90	1.01	0.70	0.99	0.99	1.62	3.61	9.28	5.10	61.2458
1996	17.02	24.59	15.44	11.44	2.29	1.08	0.84	0.67	0.72	0.97	1.92	3.54	6.71	80.5114
1997	9.28	18.30	5.52	1.59	1.07	0.81	0.82	0.93	1.08	2.17	4.73	7.96	4.52	54.254
1998	23.32	15.31	-	-	-	-	-	-	-	-	-	-	-	38.6279
Max.	38.26	34.29	30.40	26.91	11.75	4.72	1.74	1.33	6.23	11.40	12.06	23.15	9.98	
Mean	11.73	13.34	14.32	9.13	3.92	1.53	1.01	0.90	1.30	2.63	4.04	6.29	5.82	
Min.	1.66	1.50	4.77	1.59	1.07	0.72	0.41	0.41	0.65	0.66	0.64	0.93	2.28	
N	34	34	33	33	33	33	34	34	34	34	34	34	33	

Check Sum. 398.858 453.536 472.434 301.125 129.412 50.5199 34.4802 30.6283 44.2102 89.4925 137.336 213.944



Monthly Discharge (m³/s)

Station: Tinco de Alis

Longitude: W 75° 46'53"

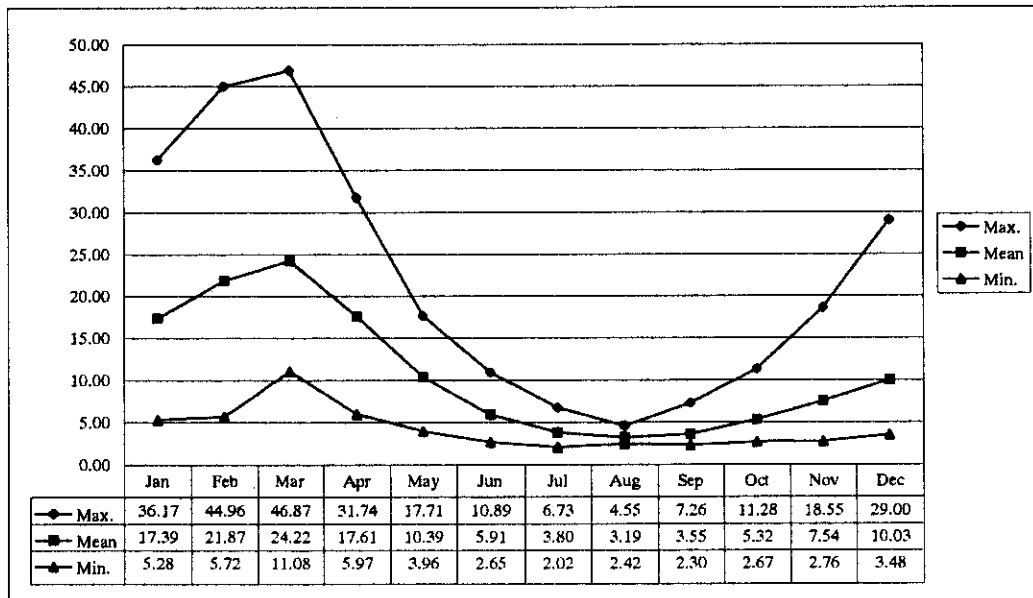
Latitude: S 12° 16'26"

Altitude: 3,350

Note: observed + estimated by correlation method + calculated by Tank model

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum
1964	-	-	-	-	-	-	2.98	2.92	3.12	3.32	6.53	5.34	-	24.218
1965	10.77	24.23	24.90	13.49	9.34	5.66	3.21	2.97	3.07	5.24	3.59	6.08	9.38	112.544
1966	15.62	16.61	23.88	15.44	10.85	6.23	3.31	2.92	3.28	11.28	11.11	19.36	11.66	139.893
1967	24.56	43.74	46.87	24.17	15.99	10.42	6.73	4.01	3.60	9.83	6.99	10.85	17.31	207.754
1968	15.23	19.27	18.64	13.75	7.49	4.35	3.27	3.26	4.06	7.00	9.26	6.35	9.33	111.92
1969	7.36	10.27	14.33	14.11	8.03	4.29	3.18	3.13	3.86	6.67	8.43	21.64	8.77	105.295
1970	36.17	20.76	20.20	16.87	15.76	7.93	4.38	3.27	6.49	6.25	7.09	14.11	13.27	159.288
1971	17.39	20.82	29.27	16.90	9.84	5.57	3.43	3.59	3.26	3.56	3.73	7.73	10.42	125.092
1972	18.20	12.25	29.51	26.03	14.01	7.76	4.51	3.30	3.23	4.71	8.38	8.78	11.72	140.678
1973	19.66	17.97	23.27	18.17	13.59	7.75	4.33	3.42	4.68	9.13	11.31	17.96	12.60	151.249
1974	30.17	32.95	34.48	22.29	14.85	9.18	5.56	4.35	3.93	3.68	4.31	6.96	14.39	172.702
1975	11.79	15.10	26.16	23.62	15.83	9.64	5.83	3.80	4.77	8.92	8.41	12.47	12.20	146.346
1976	24.45	26.98	25.18	17.61	10.69	7.24	4.31	3.94	4.26	3.73	3.86	4.40	11.39	136.663
1977	10.42	17.58	20.71	14.51	9.18	5.25	3.60	3.54	3.52	3.58	6.92	5.54	8.70	104.345
1978	8.51	16.16	13.16	11.62	7.37	4.15	3.42	3.40	3.44	3.87	3.82	4.38	6.94	83.2813
1979	5.28	15.19	20.75	13.33	7.92	4.53	3.25	3.19	3.14	3.12	3.21	3.48	7.20	86.3915
1980	7.06	5.72	14.05	11.43	5.87	3.29	2.97	2.92	2.87	7.28	8.94	11.02	6.95	83.4172
1981	13.94	26.10	34.50	23.83	12.30	7.14	3.76	3.00	3.03	3.73	5.39	6.73	11.95	143.441
1982	13.77	20.91	17.01	15.04	8.97	4.98	3.04	2.94	2.93	3.20	7.19	8.16	9.01	108.135
1983	7.70	6.24	11.08	7.11	5.41	3.11	2.82	2.88	2.75	2.67	2.76	3.61	4.84	58.1298
1984	10.03	22.07	22.18	17.01	13.14	10.89	6.35	3.21	2.70	2.81	3.92	9.10	10.28	123.418
1985	11.27	15.69	16.14	14.02	9.25	5.99	3.76	2.75	2.71	2.80	3.97	3.84	7.68	92.1789
1986	26.09	38.73	33.85	31.74	16.75	3.79	5.61	4.55	4.63	5.22	8.05	12.60	15.97	191.607
1987	28.80	29.50	20.78	10.95	6.30	4.11	3.23	2.85	3.01	3.98	7.52	11.70	11.06	132.725
1988	20.55	28.65	21.07	23.37	12.48	5.57	3.30	2.84	2.88	5.02	6.13	8.68	11.71	140.539
1989	22.57	29.23	37.54	30.81	12.37	8.77	4.31	3.44	3.33	6.40	8.51	5.00	14.36	172.291
1990	14.12	9.81	18.20	10.13	6.05	4.96	3.27	2.64	2.55	5.10	13.26	12.50	8.55	102.577
1991	10.44	18.28	28.91	15.83	10.23	4.78	2.02	2.69	4.17	7.98	10.82	9.98	10.51	126.148
1992	14.20	8.98	18.78	9.94	4.83	3.24	3.04	2.59	2.67	4.17	5.65	7.17	7.10	85.2531
1993	12.83	26.94	28.68	23.01	10.85	4.63	3.53	2.54	2.30	4.04	18.55	29.00	13.91	166.915
1994	31.21	44.96	37.31	29.58	17.71	8.67	4.65	3.60	7.26	8.60	13.87	11.42	18.24	218.833
1995	19.52	15.41	24.21	16.04	5.76	3.39	2.71	2.82	3.20	4.24	9.55	9.92	9.73	116.768
1996	25.73	32.48	27.61	23.48	10.04	5.19	3.24	2.79	2.61	3.42	4.05	10.00	12.55	150.648
1997	20.57	27.88	15.93	5.97	3.96	2.65	2.35	2.42	3.39	6.45	11.45	15.22	9.85	118.238
1998	25.18	26.1768	-	-	-	-	-	-	-	-	-	-	-	51.3524
Max.	36.17	44.96	46.87	31.74	17.71	10.89	6.73	4.55	7.26	11.28	18.55	29.00	18.24	
Mean	17.39	21.87	24.22	17.61	10.39	5.91	3.80	3.19	3.55	5.32	7.54	10.03	10.90	
Min.	5.28	5.72	11.08	5.97	3.96	2.65	2.02	2.42	2.30	2.67	2.76	3.48	4.84	
N	34	34	33	33	33	33	34	34	34	34	34	34	33	

Check Sum: 591.151 743.653 799.129 581.166 342.981 195.115 129.275 108.477 120.729 181.007 256.52 341.071



Monthly Discharge (m³/s)

Station: Chavin

Longitude: W 75° 56'48"

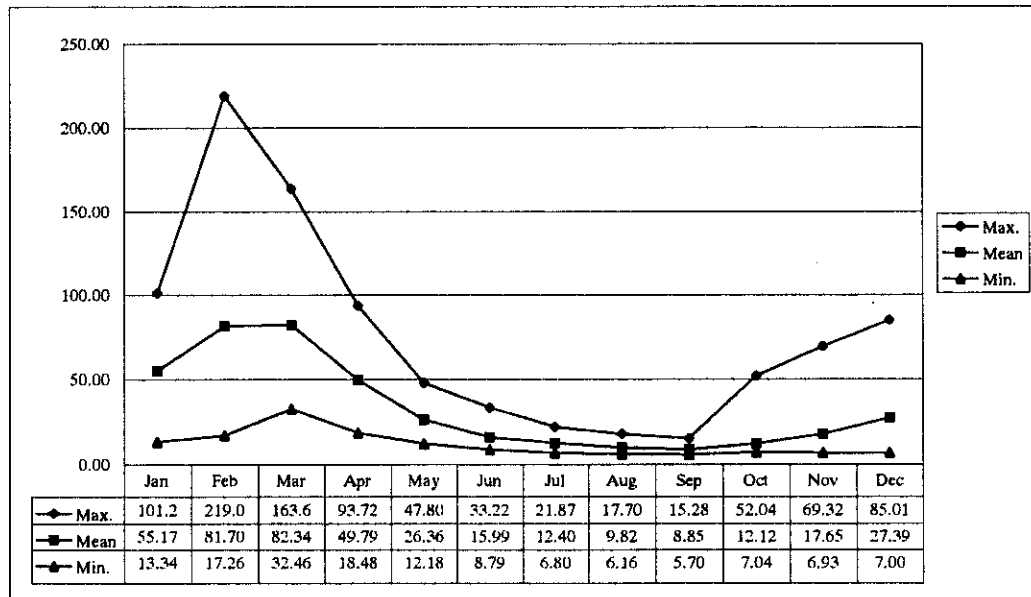
Latitude: S 12° 44'48"

Note: observed + estimated by correlation method + calculated by Tank model

Altitude: 1,350

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum
1964	-	-	-	-	-	-	7.47	7.29	7.27	7.24	10.32	14.34	-	53.9391
1965	31.74	96.34	65.59	34.26	19.08	12.91	9.44	7.26	7.11	8.50	7.36	13.30	26.08	312.902
1966	47.97	54.09	90.05	38.32	24.27	13.96	9.96	7.26	7.02	31.76	23.25	40.07	32.33	387.981
1967	87.99	205.57	163.61	64.09	36.76	22.89	17.99	13.83	11.26	16.49	13.07	21.80	56.28	675.374
1968	29.14	35.64	39.76	28.88	14.26	10.72	8.04	7.50	7.52	8.65	13.33	10.96	17.87	214.393
1969	13.34	22.13	46.96	38.10	17.93	10.63	7.89	7.21	7.27	10.68	12.96	65.99	21.76	261.085
1970	100.03	55.89	47.00	33.88	29.60	16.52	11.94	8.47	9.76	12.32	9.76	17.21	29.36	352.359
1971	46.74	69.50	112.28	49.88	30.10	16.71	12.31	9.14	7.45	7.35	7.24	30.19	33.24	398.902
1972	67.47	54.50	156.64	76.98	34.04	18.50	14.00	10.32	7.77	9.30	11.26	30.61	40.95	491.388
1973	76.02	58.16	116.70	68.57	41.09	21.40	15.61	11.79	9.90	13.58	19.36	45.72	41.49	497.904
1974	91.10	100.75	93.85	48.56	28.02	18.86	14.55	11.77	9.88	8.26	8.43	11.87	37.16	445.909
1975	24.64	35.15	83.10	46.92	30.11	16.77	12.43	9.36	8.57	10.85	12.89	37.03	27.32	327.815
1976	98.28	100.95	77.88	48.77	26.30	18.21	14.12	10.86	9.56	8.33	8.19	9.04	35.87	430.487
1977	19.96	73.44	69.05	39.24	19.82	13.08	9.55	8.07	7.93	7.84	20.01	17.51	25.46	305.486
1978	30.54	43.83	32.46	28.76	16.97	11.17	8.23	7.66	7.53	7.80	8.52	12.56	18.00	216.033
1979	16.35	61.18	83.75	41.36	17.96	12.27	8.84	7.32	7.19	7.04	6.93	7.00	23.10	277.189
1980	21.41	21.18	37.19	29.76	13.76	8.79	6.80	6.60	6.50	11.80	17.46	36.38	18.14	217.63
1981	80.78	219.07	135.09	87.64	34.35	20.87	15.60	11.51	9.12	8.15	12.01	24.30	54.87	658.498
1982	52.78	130.23	59.02	41.01	22.59	14.98	11.06	7.98	7.14	52.04	69.32	37.75	42.16	505.902
1983	25.30	19.99	60.05	45.12	21.81	13.52	10.17	7.61	7.37	7.05	7.01	24.56	20.80	249.559
1984	93.60	188.94	139.00	75.94	41.82	28.16	20.13	15.00	11.33	11.05	59.50	62.86	62.28	747.346
1985	40.48	72.23	63.59	44.81	33.21	23.16	16.72	12.99	10.04	8.57	9.80	9.04	28.72	344.634
1986	76.48	97.88	82.63	93.72	47.80	10.85	19.39	16.19	14.15	12.87	15.42	33.53	43.41	520.903
1987	97.14	94.83	55.09	32.65	14.14	9.11	7.95	6.16	6.76	8.99	12.96	21.81	30.63	367.565
1988	53.82	77.21	54.33	56.21	30.27	16.34	12.37	10.54	9.61	11.11	12.34	19.86	30.33	364.019
1989	70.57	96.09	130.48	85.92	41.30	33.22	21.87	17.70	9.81	14.01	17.26	16.22	46.20	554.447
1990	36.68	26.38	46.39	27.04	16.71	13.77	9.48	7.76	7.53	14.12	32.87	34.35	22.76	273.078
1991	35.79	52.18	81.65	37.45	25.28	15.48	18.24	11.98	9.07	9.94	18.43	15.04	27.54	330.532
1992	26.71	17.26	43.00	22.24	13.54	10.03	8.63	8.03	7.04	9.30	9.57	13.27	15.72	188.615
1993	30.55	84.48	119.06	84.13	38.82	23.40	18.41	15.51	15.28	18.64	49.30	85.01	48.55	582.598
1994	101.24	169.23	110.09	61.23	29.63	13.72	9.54	6.93	12.91	12.91	16.88	24.46	47.40	568.755
1995	38.95	40.64	70.14	43.10	18.43	12.74	11.27	9.78	9.59	9.31	19.92	22.51	25.53	306.377
1996	78.45	121.38	91.53	69.93	27.82	15.87	12.65	9.58	9.04	8.56	11.12	21.20	39.76	477.13
1997	49.58	98.78	60.30	18.48	12.18	9.06	8.82	6.95	5.70	7.52	16.18	43.75	28.11	337.292
1998	83.98	82.7758	-	-	-	-	-	-	-	-	-	-	-	166.757
Max.	101.24	219.07	163.61	93.72	47.80	33.22	21.87	17.70	15.28	52.04	69.32	85.01	62.28	
Mean	55.17	81.70	82.34	49.79	26.36	15.99	12.40	9.82	8.85	12.12	17.65	27.39	33.31	
Min.	13.34	17.26	32.46	18.48	12.18	8.79	6.80	6.16	5.70	7.04	6.93	7.00	15.72	
N	34	34	33	33	33	33	34	34	34	34	34	34	33	

Check Sum: 1875.63 2777.87 2717.3 1642.94 869.754 527.672 421.447 333.905 300.97 411.964 600.228 931.103



Monthly Discharge (m³/s)

Station: Socsi

Longitude: W 76° 12'

Latitude: S 13° 00'

Altitude: 340

Note: observed + estimated by correlation method + calculated by Tank model

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Check Sum.
1964	-	-	-	-	-	-	9.95	9.42	9.27	9.20	16.36	27.22	-	81.4134
1965	37.80	123.95	120.29	60.78	35.75	15.23	9.49	12.64	10.39	10.79	16.32	20.94	39.53	474.364
1966	52.63	64.24	104.35	32.50	20.77	13.22	10.46	9.38	9.56	32.57	35.89	84.35	39.16	469.939
1967	101.15	288.96	164.97	69.47	38.29	26.06	19.86	15.86	15.75	33.56	25.69	31.41	69.25	831.038
1968	50.18	57.91	94.32	37.36	20.27	14.58	12.25	9.68	9.90	12.35	26.17	34.25	31.60	379.22
1969	31.21	49.60	94.65	52.45	22.44	14.09	12.15	10.31	7.47	19.30	13.71	138.07	38.79	465.442
1970	278.48	131.39	85.71	27.04	16.77	20.07	15.68	12.04	16.76	13.59	15.96	31.83	55.44	665.32
1971	113.69	155.46	196.77	76.47	23.72	13.82	15.17	15.18	13.99	11.14	8.71	46.33	57.54	690.453
1972	169.44	251.14	689.23	211.69	40.15	20.42	11.15	11.86	11.45	14.99	17.31	66.62	126.29	1515.45
1973	146.23	220.99	290.16	202.30	66.28	22.92	14.68	10.91	9.97	12.68	18.96	78.07	91.18	1094.15
1974	96.81	154.75	127.94	48.20	27.52	22.17	18.31	15.42	13.90	13.40	13.85	15.08	47.28	567.341
1975	28.42	40.71	180.97	74.20	44.29	24.21	14.53	10.84	9.97	11.74	19.13	37.25	41.35	496.246
1976	111.93	194.34	148.97	69.09	33.00	24.72	18.03	14.13	12.85	13.70	13.54	20.28	56.22	674.6
1977	51.03	115.98	112.17	41.05	26.71	17.73	15.54	13.92	13.71	13.52	40.04	33.42	41.23	494.806
1978	56.49	102.49	58.18	50.42	27.13	19.20	15.11	13.63	12.65	13.85	35.72	41.63	37.21	446.483
1979	39.04	107.26	129.52	58.38	22.74	16.39	14.94	10.28	10.04	10.52	11.20	13.38	36.97	443.694
1980	41.13	35.93	50.78	46.32	19.49	13.61	13.35	11.25	9.79	24.50	29.10	44.40	28.30	339.658
1981	61.66	158.80	147.59	85.91	25.07	19.15	15.40	12.61	11.04	12.10	24.53	44.44	51.52	618.285
1982	57.07	99.07	70.33	60.71	31.19	19.28	13.40	11.15	6.80	21.86	85.61	73.80	45.86	550.281
1983	59.37	42.79	90.33	104.08	34.56	22.22	16.52	15.13	10.38	9.54	9.45	48.90	38.61	463.268
1984	189.64	329.94	221.12	107.16	40.86	28.79	23.19	18.23	14.65	18.02	88.54	106.86	98.92	1186.99
1985	54.78	116.05	94.40	52.85	36.96	26.48	20.74	17.05	14.20	13.21	15.60	25.11	40.62	487.424
1986	135.08	204.00	232.48	172.70	70.73	29.78	21.19	16.73	14.00	12.37	13.88	42.58	80.46	965.531
1987	160.32	130.66	59.50	22.47	11.26	9.70	10.13	9.46	9.05	8.42	10.13	17.13	38.19	458.223
1988	73.68	82.91	45.97	43.97	17.96	15.50	12.71	11.73	11.69	11.27	10.41	15.72	29.46	353.517
1989	79.69	135.63	145.45	79.07	17.60	15.91	12.63	11.16	10.46	11.97	18.59	10.56	45.73	548.71
1990	34.63	26.70	78.23	28.02	18.56	14.97	11.10	8.78	7.63	12.58	36.23	42.61	26.67	320.04
1991	59.47	97.69	216.02	73.92	49.66	32.10	19.69	11.29	7.81	8.97	20.15	15.30	51.01	612.069
1992	22.35	15.95	74.76	36.16	21.21	12.15	8.32	6.23	5.63	7.36	8.18	10.06	19.03	228.362
1993	31.60	190.96	238.16	112.33	47.81	21.60	13.62	10.12	7.62	9.81	35.89	119.45	69.91	838.975
1994	153.55	332.68	213.06	75.00	76.45	30.17	20.87	17.10	12.43	11.29	18.90	17.24	81.56	978.743
1995	89.35	111.25	202.10	53.77	23.71	16.17	11.68	9.03	8.92	10.31	24.77	25.45	48.87	586.499
1996	132.79	176.62	181.06	122.60	48.19	17.30	13.57	9.28	9.28	9.46	11.20	18.66	62.50	750.012
1997	87.23	147.32	78.16	20.40	16.50	13.14	10.50	9.00	7.84	8.72	25.07	69.85	41.14	493.721
1998	158.13	163.50	-	-	-	-	-	-	-	-	-	-	-	321.621
Max.	278.48	332.68	689.23	211.69	76.45	32.10	23.19	18.23	16.76	33.56	88.54	138.07	126.29	
Mean	89.59	136.99	152.66	72.99	32.53	19.48	14.59	12.08	10.79	13.78	23.96	43.18	51.74	
Min.	22.35	15.95	45.97	20.40	11.26	9.70	8.32	6.23	5.63	7.36	8.18	10.06	19.03	
N	34	34	33	33	33	33	34	34	34	34	34	34	33	

Check Sum. 3046.04 4657.64 5037.69 2408.81 1073.6 642.842 495.922 410.774 366.857 468.669 814.781 1468.26

