A SUMMARY OF

RAINFALL, PAN EVAPORATION and TEMPERATURE DATA

at PAN EVAPORATION STATIONS in

MALAŴI

ANNEX II

CENTRAL REGION

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A SUMMARY OF

RAINFALL, PAN EVAPORATION and TEMPERATURE DATA at PAN EVAPORATION STATIONS in MALAWI.

Annex II

CENTRAL REGION

by: J. van der Velden

MINISTRY OF AGRICULTURE AND NATURAL RESOURCES.

Water Resources Department
Dept. of Agricultural Development.

August 1979,
Lilongwe.

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Table 11. List of EVAPORATION STATIONS (closed and open) situated in the CENTRAL REGION.

Meteo. office nr.	Station name	Lat. (S)	Long. (E)	Grid ref.	Start year	End year	Alt. (m)	Pan type	Report nr.
742	Chipoka	13°59'	34°11'	XV 641 533	1952		475	A	21 ABCD
751 05	Chitedze	13°59'	33°38'	WV 692 546	1954		1095	A	22 ABCE
752 07	Dedza	14°22'	34°20'	XV 44 10	1956	1957	1585	K	23
752 04	Dedza - Chongoni	44°19'	34°16'	XV 362 167	1957		1615	K	23 ABCE
742 01	Dwangwa	12°33'	34°06'	XB 23 16	1971		490	A	24 AB
751	Kamuzu Dam	14°10'	33°29'	WV 692 334	1975		1095	K	25
731 13	Kasungu	13°02'	33°29'	XA 526 598	1961		1310	A	26 ABCD
731	Lifupa	13°03'	33°09'	WA 16 58	1978		1010	A	27
751	Lilongwe	13°59'	33°47'	WV 83 53	1951	1961	1035	K	28 AB
751 03	Lilongwe Airport	13°59'	33°42'	WV 754 565	1969		1135	A	29 AB
751	Lilongwe - Capital	13°57'	33°48'	WV 854 582	1974		1105	A	30
741	Malomo	13°09'	33°50'	WA 907 471	1978		1080	A	31
741 03	Mchinji	13°49'	32°52'	VV 874 748	1976		1190	A	32
772 01	Ntcheu	14°49'	34°38'	XU 765 613	1956		1130	A	33 ABCE
741 01	Nkhota Kota	12°56'	34°17'	XA 389 712	1952		475	A	34 ABCE
742 02	Salima	13°47'	34°28'	XV 5 7	1951	1961	500	A	35
742 02	Salima Airport	13°45'	34°35'	XV 712 792	1961		510	A	35 ABCE
77	Tsangano	15°04'	34°36'	XU 728 218	1978		1675	A	36

RAINFALL at CHIPOKA - Total for 10-day periods (in mm).

Year	January			February			March			April			May			June			July			August			September			October			November			December			Total
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1952																									0	0	0	0	0	5	34	19	0	9	15	5	x
1953	92	2	14	22	101	0	23	6	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	126	145	614
1954	38	161	46	4	104	8	30	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x	5	4	8	0	0	29	x
1955	x	x	x	233	173	64	93	64	0	0	7	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	x	x	x	x
1956	x	x	x	x	x	x	x	x	x	x	0	x	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	3	67	71	95	71	x
1957	64	170	137	103	109	21	35	65	57	100	22	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	36	64	55	1040
1958	197	29	106	x	x	x	x	x	x	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2	3	85	54	x
1959	13	111	80	130	87	116	84	16	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	1	15	136	9	802
1960	9	10	85	62	90	141	42	124	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0	1	0	0	18	1	30	127	770
1961	10	172	161	69	87	160	525	5	190	154	18	0	25	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	15	21	0	81	53	30	1779
1962	70	170	41	35	63	2	5	142	130	12	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	3	17	42	46	98	877
1963	104	44	30	181	96	42	120	74	12	1	12	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	87	121	5	13	47	69	1059
1964	167	49	50	36	41	0	3	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	7	29	14	456
1965	109	114	58	45	173	16	120	7	50	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	13	70	792
1966	19	68	18	33	193	74	32	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	27	18	23	85	29	630
1967	126	56	92	34	79	49	14	15	39	40	7	58	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	41	33	16	49	753
1968	29	80	83	24	110	22	21	6	0	73	35	5	0	0	8	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	40	32	x	x	x	x
1969	80	62	139	21	24	76	73	82	21	62	8	0	0	0	0	0	0	0	0	0	3	0	0	0	0	4	0	0	0	0	0	0	1	50	219	115	1041
1970	69	129	74	127	2	0	4	0	0	1	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	87	211	52	35	840
1971	126	27	74	72	96	21	13	8	44	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	21	6	78	74	667
1972	49	80	25	2	60	185	11	6	109	0	3	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	61	41	37	737
1973	57	30	64	4	80	52	2	54	31	80	8	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	123	20	66	721
1974	53	94	206	118	36	22	119	74	238	41	0	7	2	20	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	45	36	79	0	1209
1975	47	22	61	19	43	90	100	16	5	18	3	4	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	4	14	24	124	602
1976	169	163	75	54	230	18	230	108	33	313	33	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	1	0	43	12	70	1558
1977	72	69	38	76	4	107	55	55	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	14	20	32	1	80	80	740

Table 21A

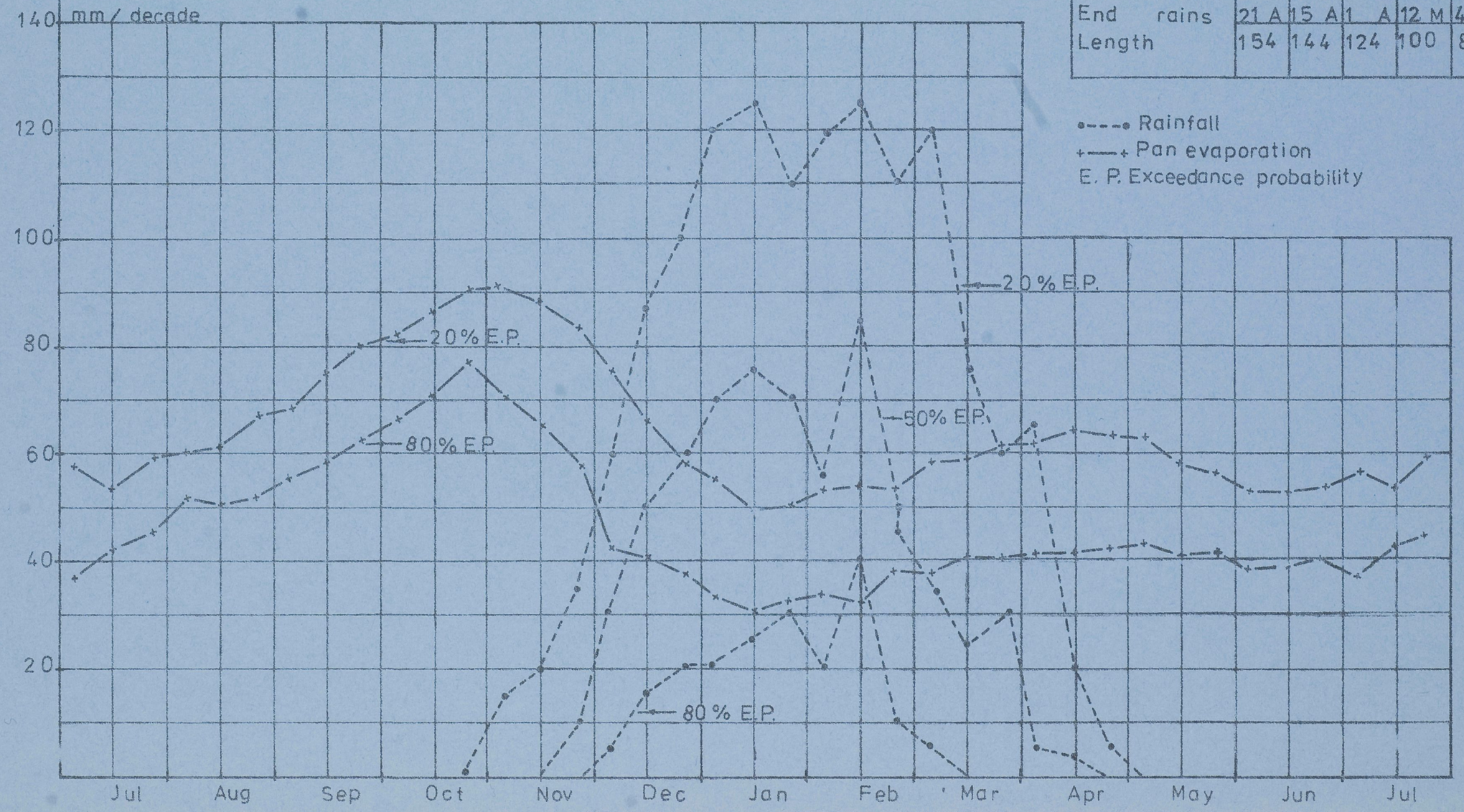
PAN EVAPORATION at CHIPOKA - average for 10-day periods (in mm/day).

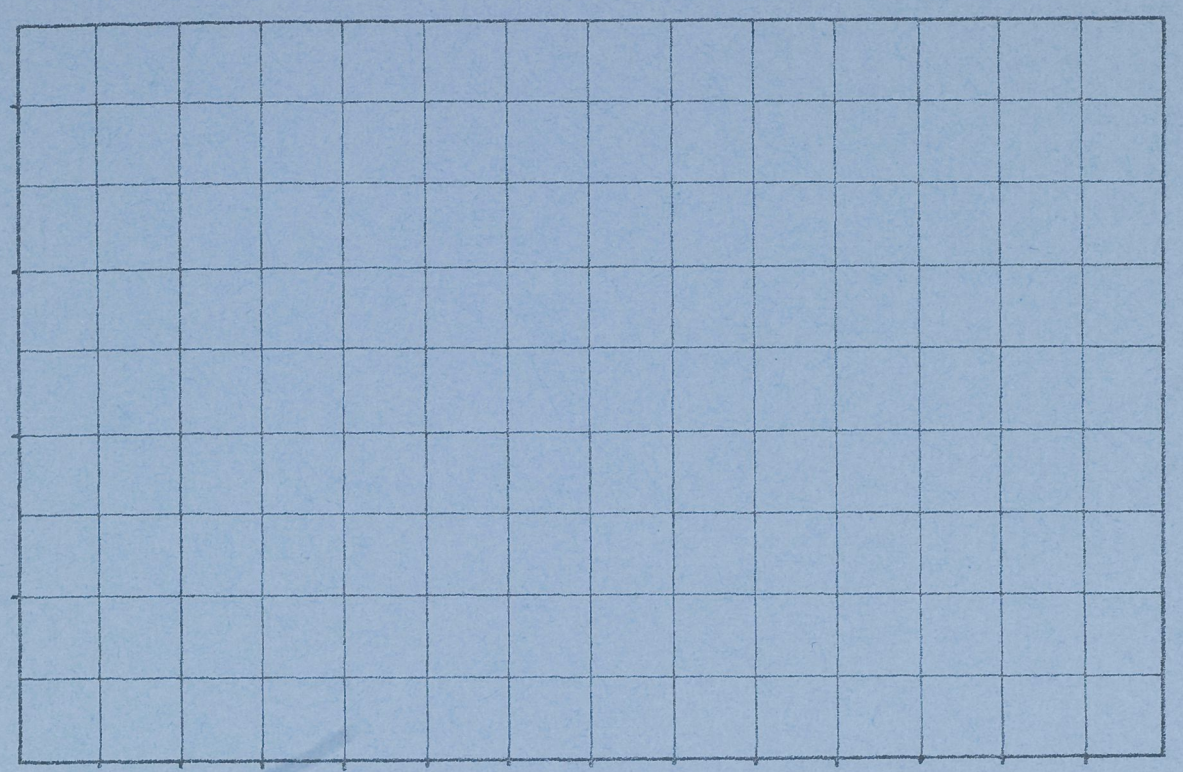
Year	January			February			March			April			May			June			July			August			September			October			November			December		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1952																									.	.	x	8.1	8.7	7.8	7.4	6.3	7.9	8.2	6.5	6.3
1953	4.3	3.2	5.0	6.0	5.4	5.5	4.5	3.7	5.1	6.3	7.0	7.3	5.7	5.8	5.6	5.5	5.3	4.5	6.0	5.6	5.5	5.9	5.7	6.2	6.7	7.5	8.2	8.7	8.1	9.0	9.8	10.1	9.9	5.7	4.9	5.0
1954	4.6	2.3	4.7	4.6	3.4	4.5	6.4	5.9	7.1	7.1	7.0	6.8	7.1	6.2	6.1	6.5	5.9	5.8	5.2	5.7	6.7	6.7	6.2	6.5	6.9	7.1	8.0	x	x	x	9.0	8.1	6.7	6.4	8.0	7.2
1955	x	x	x	1.5	4.1	3.9	5.1	5.2	6.1	7.0	6.5	6.0	6.0	5.6	5.2	5.2	5.3	5.0	6.5	6.1	6.0	6.2	5.9	6.5	6.9	6.8	6.0	7.5	9.0	9.7	6.4	6.2	6.4	4.1	5.1	3.6
1956	5.9	4.[illegible]	4.1	5.3	4.3	5.7	4.3	5.4	3.5	4.0	5.4	4.6	5.0	4.8	4.4	4.3	4.3	4.5	4.5	4.5	4.7	5.5	5.5	6.1	6.0	6.6	7.7	7.4	8.8	5.9	8.8	7.4	6.8	3.8	4.6	5.1
1957	5.7	3.1	6.0	5.0	4.6	4.4	4.8	6.4	4.7	4.7	3.4	4.1	3.5	4.0	4.1	4.3	4.8	5.4	4.4	4.8	4.9	5.1	5.1	5.7	5.9	6.1	7.0	7.4	8.2	8.6	9.8	9.7	10.8	6.2	3.9	4.6
1958	4.8	5.2	3.1	x	x	x	x	x	x	6.0	6.0	6.0	5.6	5.2	5.0	5.3	4.0	5.4	5.5	5.1	5.0	5.5	7.7	7.8	6.8	7.5	7.3	8.0	8.7	9.2	9.7	6.0	9.0	9.5	6.0	9.0
1959	6.3	6.5	6.1	x	x	x	x	x	x	x	x	6.2	5.4	5.5	5.7	4.9	4.9	5.3	5.1	4.9	5.8	5.5	6.4	5.8	6.7	6.8	7.7	5.8	8.6	8.2	7.9	9.1	8.9	8.1	3.3	6.0
1960	5.1	7.5	5.4	5.6	4.4	5.2	5.5	3.8	6.4	5.9	6.5	6.5	6.1	5.7	5.8	5.6	5.5	4.9	7.1	5.2	6.0	6.1	6.0	6.7	6.5	8.7	8.8	9.6	8.0	8.2	11.9	9.8	6.4	9.9	4.1	6.3
1961	7.5	7.3	4.9	5.2	4.8	5.9	6.1	4.7	3.7	5.1	5.9	5.1	5.4	5.1	5.2	5.2	4.8	5.4	5.5	5.4	5.5	6.2	5.7	6.7	7.0	7.9	8.4	8.1	8.6	8.7	8.0	6.9	7.2	4.0	4.6	5.1
1962	4.8	2.7	3.4	5.3	3.3	5.9	7.1	4.6	2.2	4.6	5.2	5.0	6.3	5.6	4.9	4.8	5.0	6.0	5.6	5.4	7.2	5.7	6.2	7.6	7.9	8.2	8.1	8.4	8.4	8.9	6.7	6.4	6.2	4.2	7.0	2.7
1963	4.1	4.0	3.4	2.6	1.6	3.8	3.8	4.0	5.5	5.0	5.1	5.7	6.9	4.3	4.6	5.2	4.4	4.8	3.8	4.5	5.1	5.6	4.8	5.6	5.7	6.9	7.4	7.5	8.6	9.8	4.7	5.0	4.7	5.5	3.7	3.8
1964	2.3	3.[illegible]	3.3	3.6	4.0	5.3	6.2	5.5	6.7	6.6	7.2	6.8	6.6	4.9	6.0	4.9	5.1	5.0	5.4	5.0	5.1	5.2	4.7	5.9	7.2	x	8.0	7.5	8.6	9.2	9.1	8.6	5.9	5.8	6.2	5.6
1965	3.1	2.8	3.5	4.2	3.0	4.5	3.8	4.8	4.3	5.3	6.1	5.1	5.6	5.0	4.6	5.2	4.3	4.2	4.7	5.0	5.1	5.2	6.1	6.8	6.5	7.0	7.5	7.4	7.7	8.0	8.1	7.8	8.3	6.3	7.4	4.6
1966	3.1	4.5	4.1	4.2	2.8	3.8	3.5	5.1	5.3	4.0	5.2	5.8	6.4	5.1	5.5	5.5	5.5	5.8	5.7	4.8	5.9	5.6	5.4	6.4	6.6	5.7	6.5	7.4	7.9	8.1	8.3	7.0	4.7	4.6	3.7	3.7
1967	4.2	3.5	2.9	4.8	3.5	3.5	4.4	3.5	3.2	4.2	4.3	3.8	4.2	4.2	3.6	3.8	3.2	4.2	3.8	4.0	4.7	5.6	5.5	5.8	6.0	6.6	7.4	7.3	7.1	7.8	7.1	7.7	7.7	5.2	6.3	5.6
1968	6.0	3.7	2.9	4.2	3.2	4.2	4.4	7.3	6.4	5.8	4.1	4.5	4.2	4.2	3.7	1.8	3.2	3.6	3.6	3.8	3.9	4.5	5.1	5.1	5.7	6.3	7.1	5.4	7.0	8.0	8.7	5.5	4.3	x	x	x
1969	3.6	3.8	3.6	2.5	3.8	3.9	3.6	4.4	4.7	4.3	4.1	4.2	4.3	4.2	3.9	3.1	3.2	3.3	3.5	3.8	4.5	5.0	5.9	5.9	6.4	5.4	7.0	6.6	6.9	8.0	8.4	8.2	7.5	6.8	4.7	3.4
1970	4.1	4.6	4.1	3.0	5.4	5.3	5.6	5.5	6.1	5.6	4.1	5.3	4.8	4.9	4.4	4.3	4.6	4.0	4.8	4.6	5.0	5.4	5.6	5.3	5.6	6.3	6.4	7.0	7.4	7.7	7.8	8.0	5.4	3.3	4.9	3.2
1971	3.0	2.7	2.5	4.4	3.7	4.8	4.0	5.1	4.9	4.5	4.9	4.9	5.2	4.1	3.7	4.3	4.0	4.0	3.7	4.5	4.9	5.1	5.8	5.4	5.5	6.7	6.6	7.1	7.5	7.7	7.0	6.5	7.3	6.6	6.5	5.1
1972	4.3	4.1	3.4	4.1	4.6	3.7	4.5	5.1	3.8	4.9	4.7	4.8	4.5	4.8	4.5	4.6	4.2	4.2	4.3	4.6	4.7	5.3	5.1	5.1	6.0	6.5	6.1	7.1	7.3	8.1	8.2	9.2	7.1	5.5	5.5	5.6
1973	4.6	4.7	4.0	4.6	5.5	4.6	5.5	4.6	4.1	4.7	4.5	4.5	4.5	4.2	4.3	4.2	4.0	4.7	4.6	4.6	5.0	4.7	5.4	5.3	6.2	6.1	6.3	6.7	8.0	8.0	8.7	8.8	7.9	5.8	5.5	4.2
1974	3.3	4.2	5.1	3.5	3.4	4.0	2.8	3.9	4.3	4.1	4.6	4.0	3.2	3.2	4.0	4.0	3.9	3.8	3.6	3.9	4.3	4.2	4.9	4.6	5.1	5.7	6.3	6.5	6.4	7.4	7.0	8.0	6.1	5.2	3.5	5.0
1975	4.6	4.6	4.3	5.9	4.0	2.6	6.0	5.1	5.5	4.1	4.8	4.9	4.9	5.6	4.4	4.6	4.7	4.6	4.2	4.4	5.0	5.2	5.7	6.0	6.3	6.1	7.0	7.5	7.1	8.3	8.3	7.1	6.9	6.9	5.9	4.7
1976	4.3	3.9	x	x	x	x	2.9	4.1	4.7	2.8	3.7	4.0	4.3	4.1	4.1	3.5	3.9	4.6	3.6	4.3	4.1	4.5	4.7	4.6	5.2	5.3	5.7	6.3	6.5	6.8	7.4	7.0	8.3	6.1	5.7	4.8
1977	4.7	4.1	3.3	5.1	5.6	4.6	3.7	4.9	5.0	4.6	4.8	4.9	4.5	3.8	4.3	3.8	4.1	3.6	4.2	4.5	4.2	5.1	4.7	5.0	5.6	5.6	6.5	6.8	7.8	8.0	5.6	7.6	5.8	5.5	5.5	4.3

Table 21 B

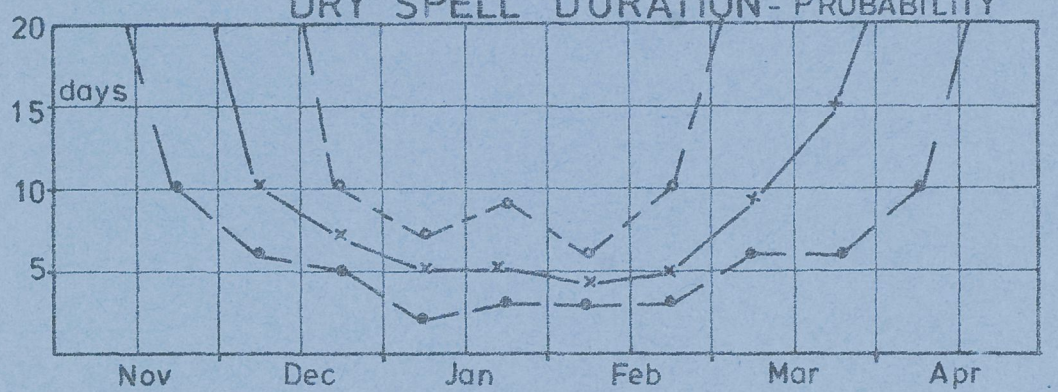
LOCATION: CHIPOKA (1952-1978)

PROBABILITY	10	20	50	80	90	%
Rainfall	1300	1050	800	630	550	mm
Onset rains	18 D	12 D	30 N	19 N	10 N	
End rains	21 A	15 A	1 A	12 M	4 M	
Length	154	144	124	100	80	days

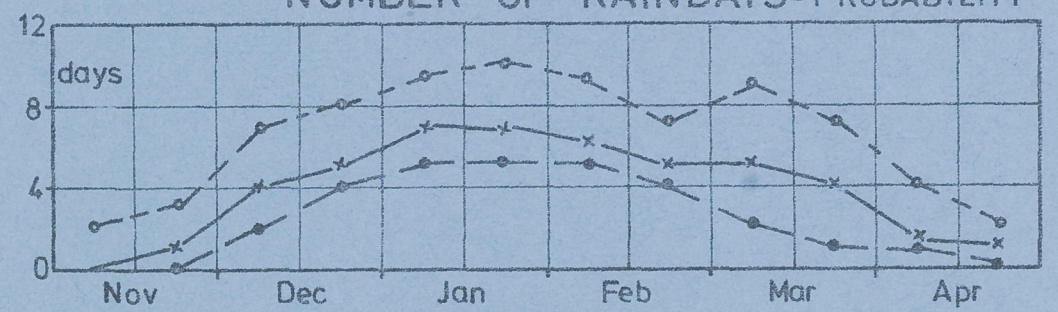




DRY SPELL DURATION - PROBABILITY



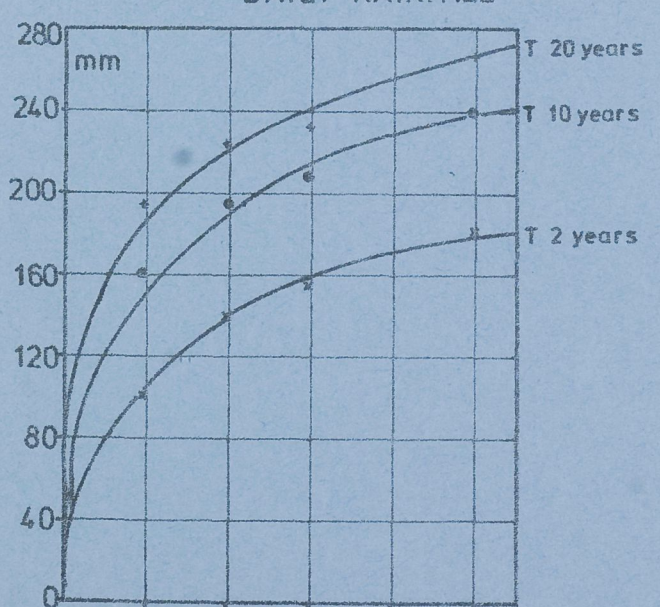
NUMBER OF RAINDAYS - PROBABILITY



RAINDAYS
1 Nov - 30 Apr
probability

20% E.P. 60 days
50% E.P. 50 days
80% E.P. 43 days

DEPTH DURATION FREQUENCY
DAILY RAINFALL



LEGEND

20% Exceedance Probability
50% Exceedance Probability
80% Exceedance Probability

CHIPOKA
CLIMATIC CHARACTERISTICS

RAINFALL at CHITEDZE - Total for 10-day periods (in mm).

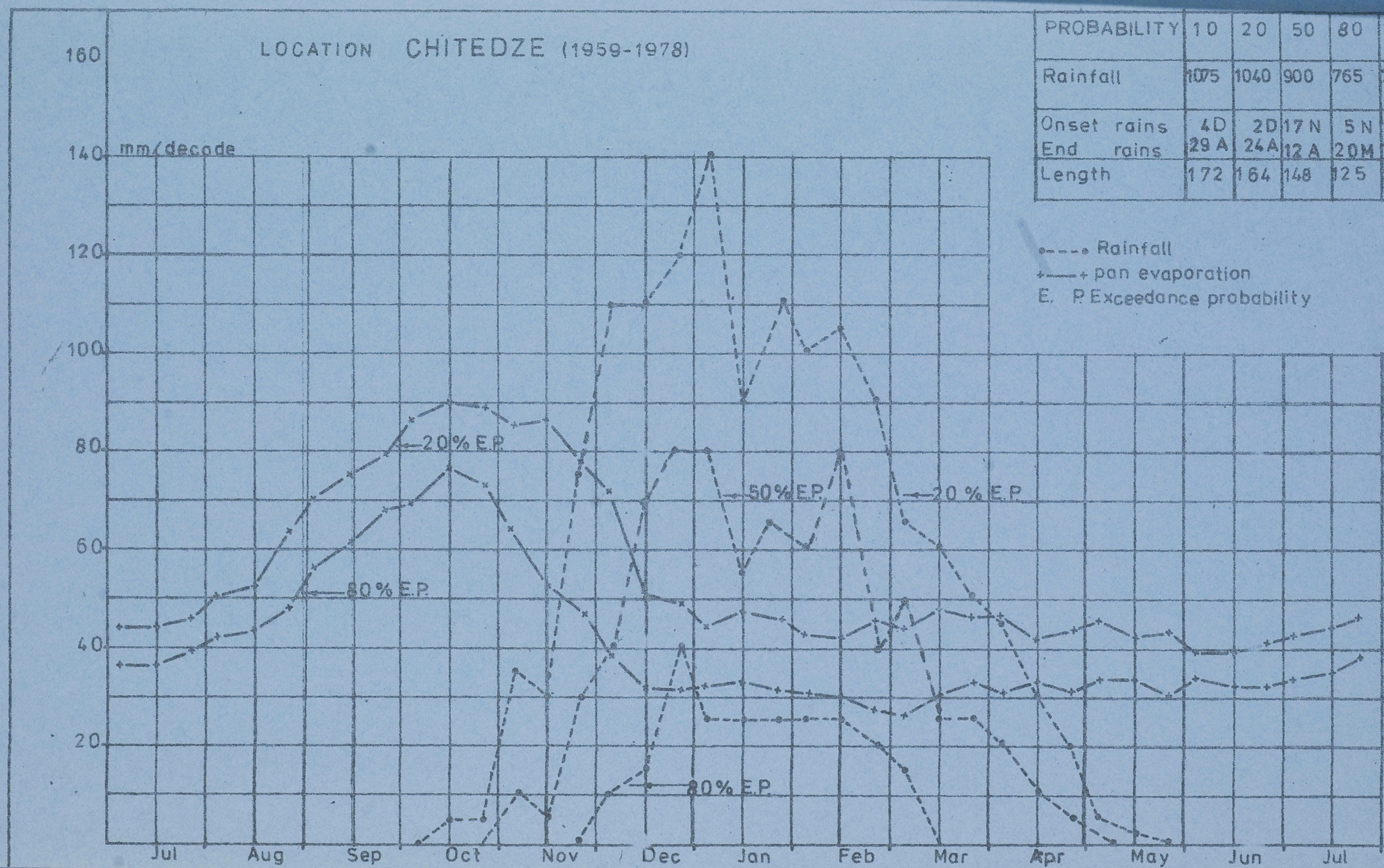
Year	January			February			March			April			May			June			July			August			September			October			November			December			Total
1959	x	x	x	x	x	x	x	x	x	1	7	0	12	0	0	0	1	0	0	0	0	3	1	0	0	0	6	0	0	7	17	0	3	18	111	116	x
1960	60	2	96	28	104	49	72	67	0	8	9	4	0	3	0	0	0	0	0	0	0	1	0	0	0	0	9	1	0	0	12	0	53	6	60	120	764
1961	137	37	37	24	87	78	47	23	44	25	59	16	6	0	0	0	3	31	0	0	2	0	0	0	1	0	0	0	0	1	27	122	23	42	91	41	1004
1962	185	88	56	57	79	34	13	59	61	14	33	12	0	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	2	53	23	8	147	5	105	1037
1963	86	36	24	75	35	88	62	40	33	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	28	88	9	53	82	798
1964	25	108	203	102	109	188	10	6	17	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	9	6	53	8	43	53	942
1965	80	56	64	147	126	15	52	12	27	6	9	31	3	0	2	0	0	0	0	0	0	0	0	0	24	0	0	2	0	0	5	0	6	74	12	83	836
1966	14	46	2	69	77	34	58	1	10	0	7	3	0	18	12	1	0	0	0	0	0	0	0	0	1	0	0	0	0	10	5	28	12	33	118	46	605
1967	22	58	49	22	81	39	31	178	22	10	33	9	1	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	1	2	32	1	33	37	11	103	688
1968	77	55	75	43	25	13	53	16	3	36	7	0	0	0	11	11	0	0	0	0	0	0	0	0	0	0	0	0	13	0	2	19	113	113	79	132	896
1969	155	44	68	42	24	2	7	0	20	60	14	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	7	2	0	2	3	100	215	73	841
1970	34	13	216	165	24	30	22	8	0	17	9	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	1	0	4	0	72	195	78	89	984
1971	172	23	82	102	128	60	61	1	38	0	29	14	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	35	47	127	21	53	10	1005
1972	92	71	80	19	38	89	52	0	47	47	42	40	12	4	1	0	0	0	0	1	0	0	0	0	0	0	0	2	14	0	20	0	60	32	29	102	894
1973	65	43	98	6	42	31	12	60	33	67	2	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	36	0	19	6	93	88	714
1974	90	56	145	64	116	33	8	63	166	42	17	5	37	54	1	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	13	0	29	112	98	20	1175
1975	28	50	25	81	125	43	210	65	21	40	23	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	55	64	12	67	67	982
1976	70	92	107	92	104	110	12	41	35	49	5	30	0	0	0	0	0	0	0	0	1	0	0	0	0	7	0	3	8	0	4	15	1	37	107	46	976
1977	95	118	101	29	11	124	76	36	94	40	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	14	16	1	40	109	121	76	1115

Table 22 A

PAN EVAPORATION at CHITEDZE - Average for 10-day periods (in mm/day).

Year	January			February			March			April			May			June			July			August			September			October			November			December		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1959	x	x	x	x	x	x	x	x	x	3.8	4.2	4.3	4.1	4.1	4.3	4.3	3.4	3.3	3.9	4.6	4.1	4.5	4.7	5.6	5.8	5.7	6.8	6.1	9.1	7.8	7.8	8.8	7.6	6.9	3.4	4.0
1960	4.4	6.2	4.5	4.4	3.8	3.7	3.2	2.9	4.6	4.6	3.8	4.4	4.5	4.2	4.3	3.7	3.8	4.1	3.7	4.1	3.9	5.1	5.1	5.6	6.4	6.1	6.9	8.2	8.2	8.8	7.2	8.9	6.3	7.7	3.2	4.5
1961	3.9	4.5	4.2	4.2	3.3	4.6	3.7	4.8	3.4	3.9	4.2	3.1	3.4	3.6	4.0	3.8	3.5	3.2	3.6	3.7	3.1	5.0	4.8	5.6	6.2	7.4	7.4	7.1	8.6	8.5	6.6	4.8	5.0	4.4	3.2	5.0
1962	3.2	3.6	3.1	4.4	4.6	4.6	2.0	x	3.2	3.8	3.9	3.4	4.0	3.6	3.1	3.7	3.8	4.1	4.4	3.1	4.1	3.6	4.3	4.7	5.5	6.7	7.4	6.7	7.4	7.8	6.7	6.1	4.9	4.0	4.6	4.2
1963	4.1	4.5	4.3	4.1	3.5	4.1	4.4	3.2	3.5	4.3	3.6	4.4	3.9	4.0	3.8	4.0	3.5	4.0	3.8	4.5	4.5	4.8	6.5	6.6	7.6	7.6	8.9	10.1	9.9	7.3	4.5	5.0	5.5	5.5	4.7	3.6
1964	4.2	4.3	6.6	3.6	4.1	5.7	5.8	6.3	5.1	5.9	5.7	4.8	4.9	4.3	4.0	4.3	4.2	4.6	3.8	4.4	4.8	4.7	4.9	6.4	5.7	6.8	7.8	7.7	8.8	9.9	8.7	9.0	3.8	5.1	6.8	3.9
1965	3.9	3.3	4.2	4.6	4.0	4.5	3.3	4.6	4.1	5.4	4.4	5.2	4.7	3.7	3.4	3.6	4.0	4.6	3.9	5.0	4.3	4.9	5.5	6.9	5.6	7.6	6.5	7.3	8.5	8.5	7.5	8.5	8.0	5.3	5.3	4.0
1966	3.2	4.4	4.8	4.0	3.1	2.7	4.3	5.3	4.5	4.9	4.4	4.5	4.7	4.1	3.8	3.6	4.1	3.4	4.0	3.8	4.7	4.8	5.0	5.5	6.1	7.5	8.3	8.5	8.1	7.0	8.9	6.2	5.2	8.6	4.5	5.3
1967	4.1	4.3	3.6	4.1	3.5	2.9	4.2	2.6	3.5	4.5	4.2	3.9	4.5	4.0	4.0	3.8	3.8	4.0	3.8	4.0	4.8	4.9	5.8	5.4	6.9	6.6	7.3	9.0	8.4	8.1	6.4	6.4	7.4	5.4	6.7	5.4
1968	6.1	4.3	4.2	4.3	3.8	3.8	3.5	3.9	3.6	3.9	2.7	3.4	4.3	4.3	2.8	2.7	3.5	3.6	3.9	4.2	4.3	5.2	5.0	6.3	6.3	6.9	7.0	7.6	8.2	9.4	7.9	5.6	4.5	4.7	3.1	3.2
1969	3.2	3.5	3.1	2.4	3.0	3.9	4.3	4.8	4.1	3.7	3.4	3.7	3.8	3.6	3.5	3.6	3.9	3.3	4.1	4.2	4.0	5.0	5.0	5.1	6.6	6.3	7.3	8.4	8.7	8.0	8.2	7.6	8.1	4.0	3.0	2.8
1970	3.9	4.1	4.1	2.3	4.8	5.3	4.6	4.5	5.2	4.4	3.4	4.3	4.6	4.3	4.5	3.9	3.9	3.5	4.1	4.1	4.6	4.6	4.7	5.7	7.0	7.2	7.7	7.5	9.0	7.8	6.3	8.3	4.5	3.1	3.1	4.3
1971	3.9	4.1	3.9	4.3	2.9	4.4	3.4	4.2	3.8	3.8	3.6	3.5	3.8	3.4	4.2	3.6	3.2	3.1	4.0	4.1	4.0	5.1	4.9	5.5	5.8	6.8	7.8	7.9	7.6	7.6	7.2	5.3	5.1	3.7	4.2	4.0
1972	3.5	3.3	3.0	4.2	3.7	2.6	3.6	4.2	3.6	4.2	3.5	3.1	3.5	3.3	3.1	3.6	3.6	3.6	3.6	3.8	4.1	4.8	5.2	5.9	7.0	6.1	7.7	7.5	7.2	7.3	7.0	8.0	5.9	4.6	4.8	5.5
1973	4.3	5.0	2.8	3.3	4.2	3.3	5.0	4.1	3.5	3.6	3.0	3.1	3.9	3.9	4.3	3.7	3.2	3.0	4.5	3.3	3.8	4.1	4.2	4.3	4.9	6.5	7.5	6.6	7.8	7.1	x	x	x	x	x	x
1974	2.1	2.9	3.4	2.7	2.0	2.9	2.6	3.0	3.3	2.5	3.9	3.5	1.8	2.4	2.6	2.5	3.1	3.1	3.0	3.0	3.6	3.7	4.0	4.8	5.1	5.7	6.5	6.9	7.1	6.8	6.5	8.0	5.2	3.4	2.6	3.0
1975	3.8	2.9	3.5	4.0	3.3	2.4	3.1	3.4	4.2	2.8	3.5	3.1	3.2	3.9	3.6	3.7	3.5	4.5	2.3	3.8	4.6	4.1	3.9	4.9	5.6	6.2	7.5	7.7	8.6	7.9	8.1	4.9	5.1	4.6	3.7	2.7
1976	3.2	3.5	3.6	2.8	2.4	2.8	2.6	1.5	3.2	2.7	3.1	3.1	3.3	x	3.0	3.1	3.5	3.2	4.5	4.3	4.6	4.5	4.3	4.6	x	x	x	x	xx	x	x	x	x	7.5	4.8	3.1
1977	4.4	3.9	2.2	3.8	5.7	2.1	1.7	3.4	2.7	2.6	3.3	3.5	3.2	3.0	3.0	3.4	2.1	3.3	3.3	3.0	3.0	3.2	3.7	4.2	5.9	6.0	6.0	7.0	8.6	7.3	6.0	6.7	5.0	4.1	3.3	2.7

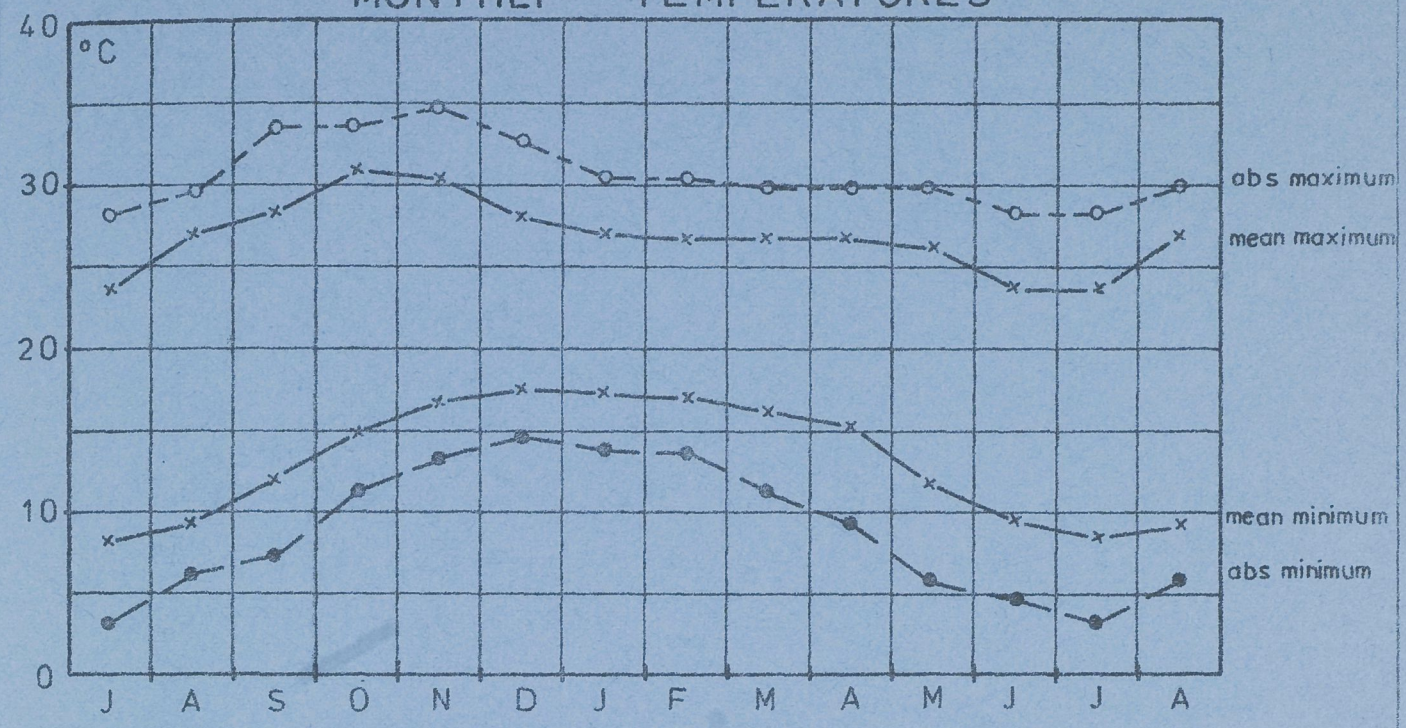
Table 22



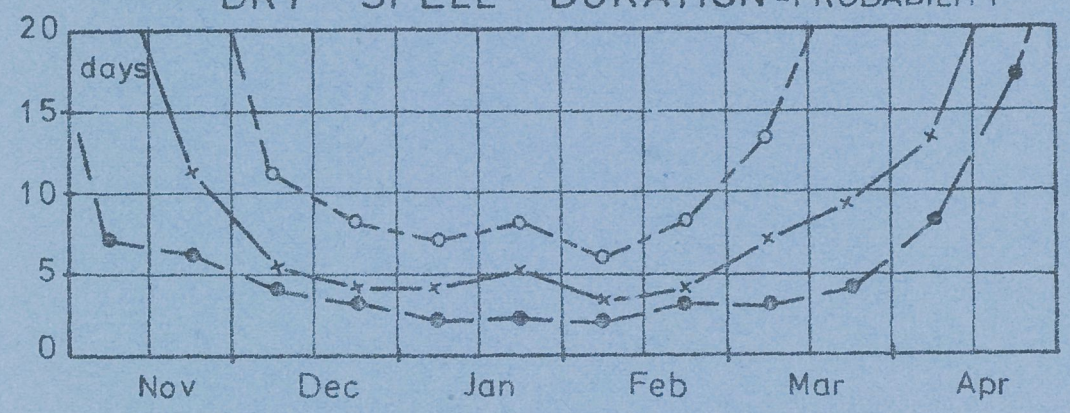
PROBABILITY	10	20	50	80	90	%
Rainfall	1075	1040	900	765	700	mm
Onset rains End rains	4D 29 A	2D 24A	17 N 12 A	5 N 20M	2 N 1 M	
Length	172	164	148	125	110	days

•----• Rainfall
+——+ pan evaporation
E. P. Exceedance probability

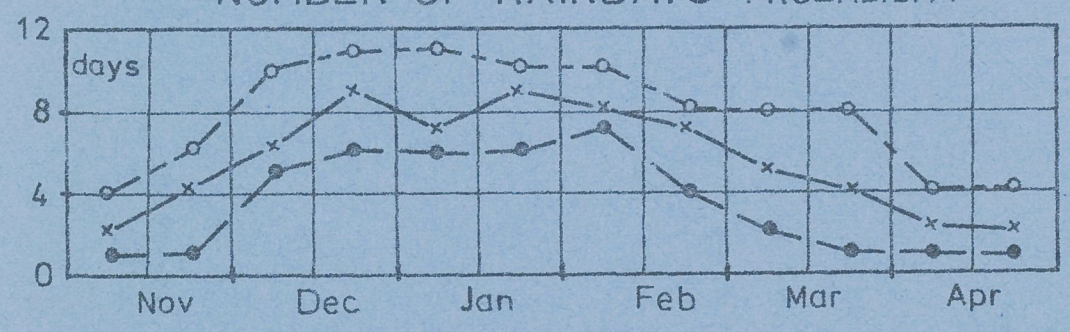
MONTHLY TEMPERATURES



DRY SPELL DURATION - PROBABILITY



NUMBER OF RAINDAYS - PROBABILITY



RAINDAYS
1 Nov - 30 Apr
(probability)

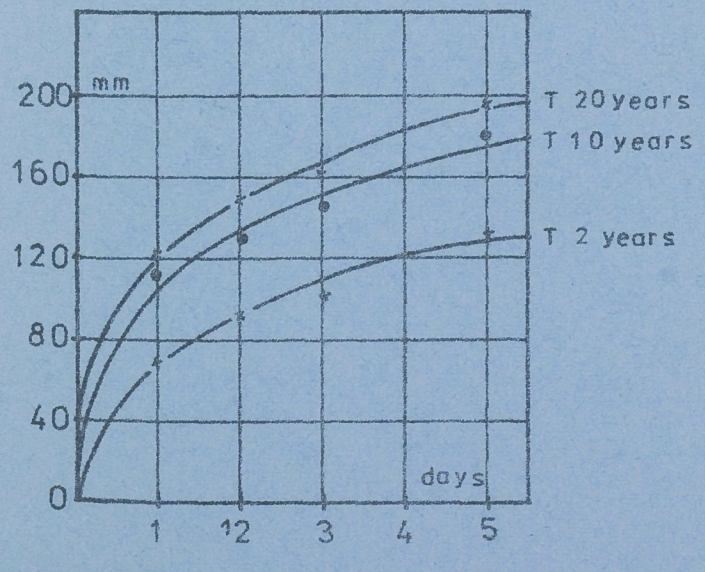
20 % E.P. : 75 days

50 % E.P. : 68 days

80 % E.P. : 56 days

DEPTH DURATION FREQUENCY

DAILY RAINFALL



LEGEND

o— – —o 20 % Exceedance Probability

x———x 50 % Exceedance Probability

●— —● 80 % Exceedance Probability

CHITEDZE

CLIMATIC CHARACTERISTICS

1964 - 1979

RAINFALL at DEDZA - Total for 10-day periods (in mm).

Year	January			February			March			April			May			June			July			August			September			October			November			December			Total
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1957	37	95	222	46	140	33	71	16	202	45	87	8	21	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	0	1	0	69	60	43	1200
1958	52	48	144	49	41	56	57	1	12	68	10	0	1	0	0	10	1	0	0	0	0	4	1	0	0	6	0	7	0	0	0	4	11	1	232	6	822
1959	88	64	100	43	50	90	75	19	2	46	2	0	13	0	0	0	1	0	0	0	1	4	4	0	0	0	0	17	0	3	27	30	2	10	105	62	864
1960	16	26	113	22	88	61	87	60	0	1	11	1	0	2	0	0	0	3	2	0	5	0	0	0	0	1	0	0	4	0	1	3	49	0	67	48	771
1961	57	36	60	29	165	43	121	123	36	16	96	1	10	0	0	0	1	12	5	0	3	1	3	1	9	0	0	0	11	1	14	35	48	30	96	105	1168
1962	63	142	137	42	91	5	3	60	142	87	1	45	1	0	1	1	0	0	1	2	0	0	1	2	0	0	0	0	1	1	13	7	3	93	3	74	1022
1963	204	59	85	108	62	47	44	47	10	4	48	5	1	0	0	0	0	0	0	0	5	0	0	0	0	0	16	0	0	7	108	58	64	17	46	50	1095
1964	57	81	159	82	124	15	27	8	5	0	0	1	2	0	0	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	1	1	49	40	43	96	796
1965	94	160	100	115	105	10	49	9	12	3	0	0	0	0	2	1	0	0	0	0	0	0	0	0	4	0	0	4	5	0	31	2	5	103	13	157	984
1966	62	48	15	21	118	94	17	62	7	3	7	3	2	1	40	1	0	4	0	0	3	0	0	0	0	0	0	0	0	8	0	16	7	20	42	43	644
1967	77	36	35	20	114	70	37	61	22	26	12	15	0	1	36	0	18	0	2	5	0	0	3	0	0	0	8	0	3	0	8	5	17	71	68	49	819
1968	51	56	95	42	80	8	65	65	7	26	12	0	0	0	7	6	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	21	99	42	144	110	939
1969	35	28	89	70	54	24	8	19	53	52	35	19	1	0	0	1	0	2	0	0	1	0	1	0	0	7	0	5	3	2	0	19	31	23	110	130	822
1970	79	92	101	144	18	22	5	10	6	3	51	3	0	0	0	0	1	10	0	0	0	0	0	0	0	0	0	3	0	0	16	0	76	132	20	54	846
1971	69	123	187	58	139	101	14	28	13	5	12	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4	1	3	15	19	27	66	55	945
1972	101	32	54	14	69	133	21	1	47	2	2	36	34	1	9	2	2	4	0	0	0	1	0	1	0	1	0	4	0	14	7	0	6	87	81	21	785
1973	28	55	90	18	110	9	2	56	30	60	9	3	0	0	0	0	1	0	3	0	0	0	0	1	0	0	0	2	0	1	19	0	3	63	55	81	699
1974	153	31	60	75	84	71	111	39	55	42	22	3	30	28	0	0	0	14	12	0	3	0	0	0	0	0	0	0	0	1	20	0	9	66	90	42	1061
1975	102	58	77	21	81	76	166	29	6	4	2	20	0	0	0	4	0	0	0	2	0	0	0	0	0	0	0	7	3	0	x	x	x	x	x	x	x
1976	x	x	x	x	x	x	17	56	4	100	19	14	2	0	6	0	0	30	0	1	3	0	0	0	0	0	0	0	39	0	2	9	0	154	66	33	x
1977	77	191	212	56	32	91	52	17	44	3	1	3	0	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	23	59	2	37	27	40	979

Table 23 A

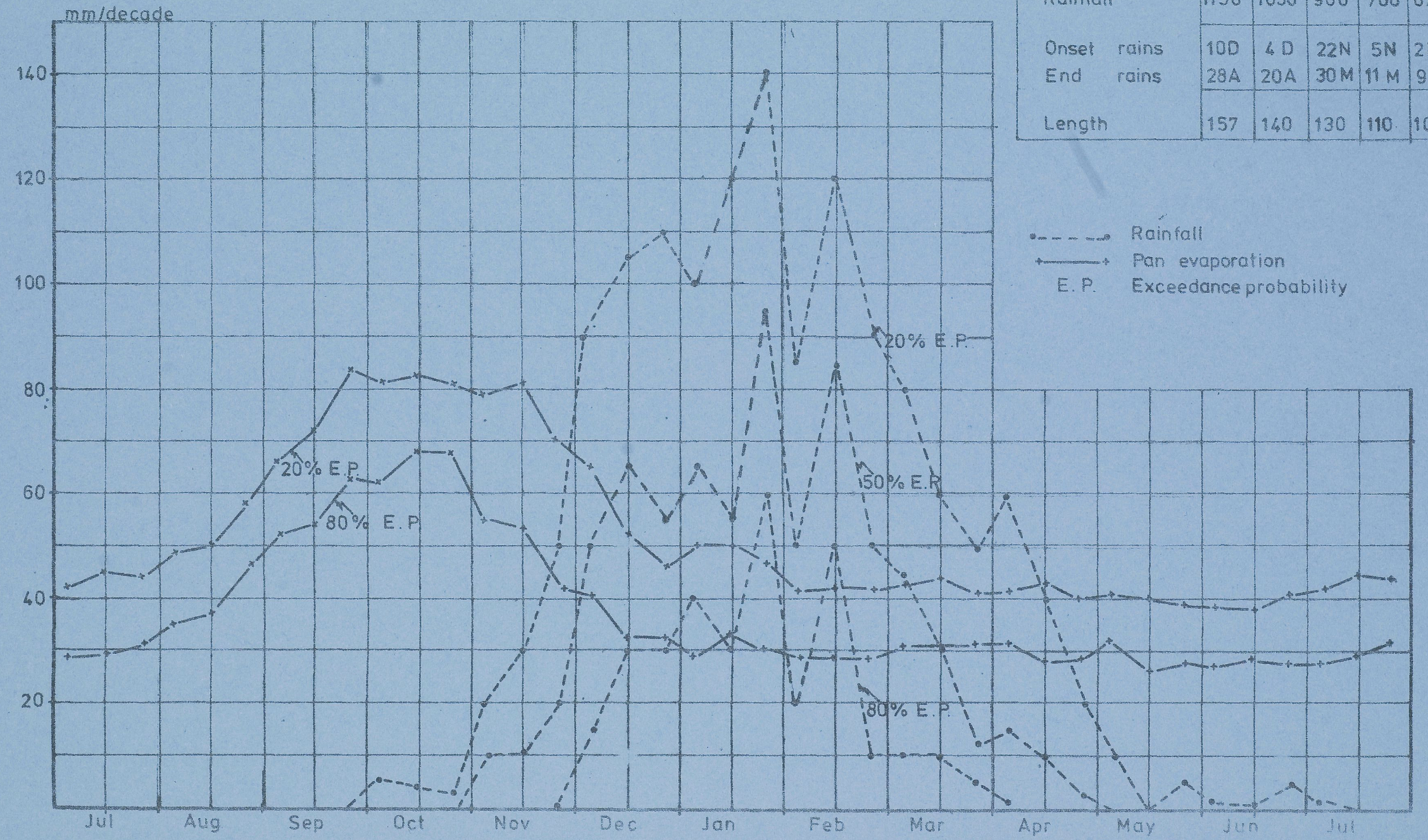
PAN EVAPORATION at DEDZA - Average for 10-day periods (in mm/day).

Year	January			February			March			April			May			June			July			August			September			October			November			December		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1957	2.7	2.7	3.2	3.0	3.2	1.8	3.3	2.2	3.7	3.6	1.8	2.2	3.5	2.4	1.6	1.8	1.2	1.0	4.2	4.7	4.0	3.5	4.9	5.3	5.8	7.1	8.6	9.0	7.8	8.2	9.0	8.9	10.8	4.6	2.7	3.2
1958	3.9	3.9	3.0	2.9	3.6	2.8	3.6	4.3	3.7	3.0	3.5	4.0	4.2	4.1	3.4	2.4	3.0	3.1	3.0	3.7	4.5	4.2	3.6	5.1	6.9	5.0	9.5	7.1	7.4	8.0	7.4	7.1	6.7	8.0	3.8	4.2
1959	4.3	5.1	4.7	3.1	3.0	4.5	3.2	3.6	4.0	3.8	3.4	4.1	3.9	4.9	5.0	4.3	2.8	3.0	3.8	4.5	3.3	4.7	3.4	4.2	5.2	5.7	6.2	5.3	9.0	6.8	6.7	7.7	4.6	4.8	3.2	3.6
1960	2.9	4.8	4.7	4.2	3.4	2.9	3.3	2.5	3.6	4.4	2.7	3.3	3.6	4.0	3.2	2.7	2.9	3.1	2.8	4.2	2.9	4.5	4.7	5.0	5.6	4.4	6.1	7.0	7.1	7.5	7.1	7.9	5.8	9.0	3.5	4.7
1961	3.9	3.2	5.0	3.7	4.0	3.6	4.4	4.4	3.2	4.2	4.2	2.9	3.3	3.3	3.6	3.1	3.0	2.8	2.5	2.8	2.7	4.2	2.8	5.0	5.3	7.3	7.3	6.9	7.9	8.8	5.6	3.6	4.6	3.9	2.6	4.1
1962	3.4	2.9	3.1	4.0	3.4	3.9	4.2	4.6	2.6	3.1	4.3	3.6	3.3	3.0	2.3	2.9	3.7	4.2	4.2	2.2	3.8	3.9	3.8	4.9	5.5	6.0	7.8	6.4	7.3	6.3	5.1	6.3	6.0	4.0	5.6	3.9
1963	5.2	4.1	3.4	1.9	2.1	3.3	4.1	2.0	3.3	4.0	2.8	3.0	2.9	3.5	3.0	3.8	3.2	3.5	3.3	3.4	3.6	4.4	6.5	5.5	6.2	7.5	7.5	8.6	8.1	6.8	3.8	4.0	4.4	4.5	3.9	2.1
1964	3.9	3.1	3.2	1.8	2.7	4.9	4.7	4.4	4.3	5.3	5.3	3.7	4.0	4.0	3.2	3.8	4.3	4.5	4.0	4.7	5.4	6.4	4.2	5.9	4.8	7.3	8.4	6.7	9.1	9.4	8.4	8.9	3.7	4.6	5.4	3.6
1965	2.2	3.7	4.1	3.4	2.9	4.4	3.1	3.8	3.8	3.3	3.5	4.8	4.3	3.2	3.1	3.2	3.8	4.8	3.8	3.5	4.0	4.2	3.8	5.7	4.7	6.7	6.4	4.9	5.6	7.9	7.0	6.8	6.5	4.3	3.9	3.8
1966	3.2	4.5	5.2	3.3	3.1	4.1	4.1	4.1	4.0	3.6	4.6	3.4	3.4	3.8	3.0	4.0	3.5	2.8	5.1	5.0	4.5	5.0	5.1	4.8	5.9	7.3	8.7	8.3	7.6	7.6	9.2	6.3	4.1	8.4	3.4	3.4
1967	5.0	4.0	2.5	5.5	3.1	3.5	2.2	4.0	5.0	4.6	4.5	3.6	3.6	3.0	2.9	3.9	3.2	3.5	2.6	2.9	3.1	3.4	5.5	4.2	5.2	5.4	6.3	7.9	6.7	7.5	4.9	6.7	6.7	5.5	7.8	4.7
1968	5.3	3.8	3.4	3.7	2.8	3.9	3.3	3.8	3.4	4.1	3.4	4.0	4.7	2.6	2.8	2.8	4.3	4.0	3.9	4.5	4.0	5.7	4.2	6.2	6.5	7.3	6.6	7.3	8.0	9.3	7.0	4.6	3.7	5.1	2.5	2.6
1969	3.4	3.6	3.1	3.0	3.9	4.2	4.4	4.5	3.2	3.6	3.0	3.4	3.7	3.6	3.4	3.3	4.8	3.1	4.1	4.2	3.0	3.8	4.4	4.7	6.3	5.3	7.2	7.5	8.3	7.4	7.4	6.8	8.0	5.4	3.3	4.1
1970	4.2	5.6	3.9	2.8	4.2	4.1	4.6	4.0	4.8	3.7	3.5	3.3	4.2	3.7	4.8	4.0	3.3	3.3	4.3	3.6	4.7	5.0	4.0	5.3	6.5	7.0	7.5	5.7	7.5	7.6	6.0	8.4	3.6	4.5	3.6	4.5
1971	4.3	5.0	3.0	3.8	3.5	3.4	4.1	4.3	4.5	3.8	3.7	4.0	3.8	3.1	3.4	3.3	3.1	3.0	3.7	4.6	4.0	8.4	5.0	5.8	5.9	6.0	8.4	8.2	7.6	6.8	6.8	6.2	5.1	4.3	4.6	4.2
1972	4.1	3.5	4.2	4.0	3.5	3.1	2.7	4.5	3.8	4.1	2.7	2.7	3.8	3.3	3.0	3.5	3.7	3.1	2.8	3.0	4.0	4.5	5.1	5.9	7.0	5.5	7.1	7.3	6.4	6.8	6.6	7.5	5.3	5.1	4.8	3.6
1973	3.5	3.7	2.7	2.9	4.5	3.8	4.4	3.2	3.5	3.7	2.8	2.5	3.6	4.2	4.0	3.6	3.0	3.7	2.8	3.6	3.7	3.4	4.2	4.1	6.0	6.5	8.2	6.7	7.9	7.5	6.4	6.0	7.3	6.1	3.2	4.9
1974	2.7	4.1	3.9	3.2	3.5	2.8	2.7	3.3	3.6	2.7	3.1	3.0	2.5	2.3	2.9	3.3	3.5	2.5	2.3	2.6	3.4	3.5	4.2	5.9	4.7	6.2	7.4	7.1	7.3	7.0	6.5	8.4	5.2	4.2	4.1	2.7
1975	5.2	3.5	4.7	4.1	3.7	3.8	4.7	3.3	4.0	2.6	4.2	2.6	3.6	3.7	4.3	2.6	2.8	3.2	3.1	2.9	4.4	3.1	3.3	5.2	6.7	6.0	7.2	6.4	7.1	8.9	x	x	x	x	x	x
1976	x	x	x	x	x	x	3.7	3.0	3.7	3.5	3.3	3.2	2.8	2.3	2.1	3.2	3.8	2.4	4.1	3.7	3.8	4.1	4.9	5.0	6.5	6.0	6.8	6.9	6.2	8.4	7.9	6.3	8.8	6.7	5.6	5.1
1977	2.8	5.2	2.9	4.1	4.7	3.6	3.2	4.4	3.2	3.7	3.1	3.2	x	x	3.8	4.4	3.3	4.2	3.6	3.3	3.1	4.4	4.4	5.1	7.0	6.0	5.7	6.2	9.0	8.6	5.0	7.3	5.5	4.4	4.7	3.7

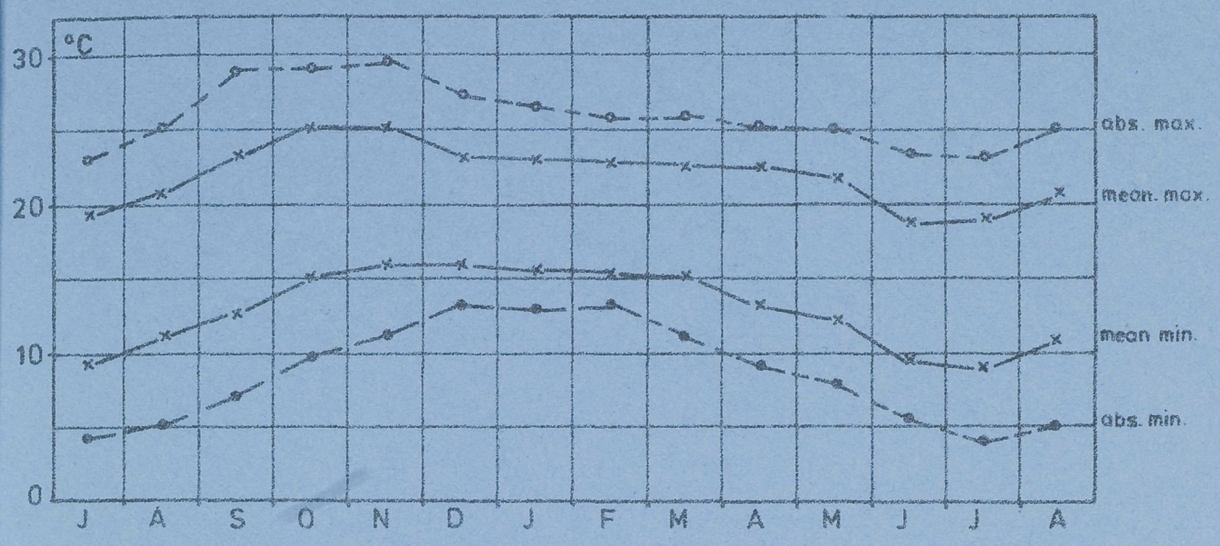
Table 23 B

STATION DEDZA (1957 - 1978)

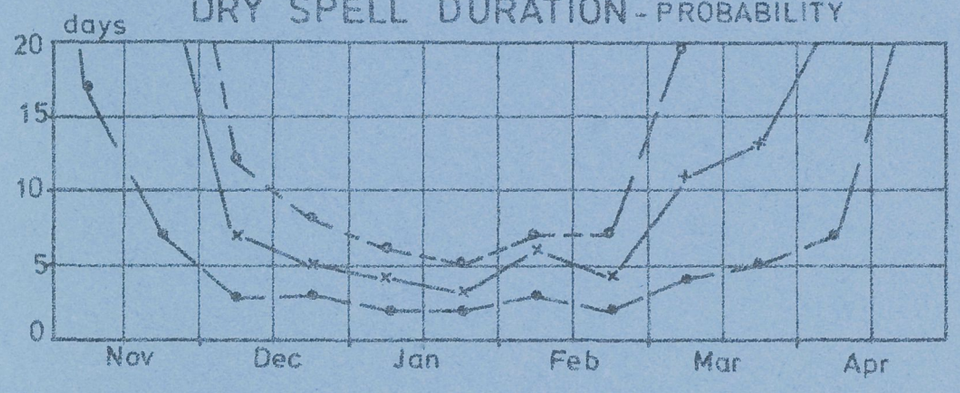
PROBABILITY	10	20	50	80	90	%
Rainfall	1150	1050	900	700	675	mm
Onset rains	10D	4 D	22N	5N	2N	
End rains	28A	20A	30M	11 M	9M	
Length	157	140	130	110	104	days



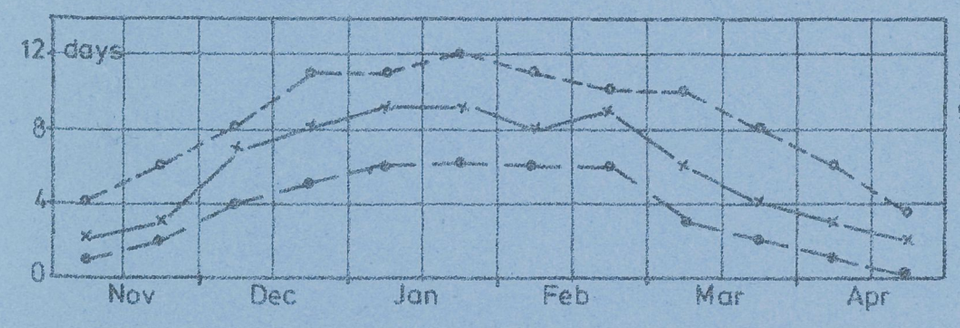
MONTHLY TEMPERATURES



DRY SPELL DURATION - PROBABILITY



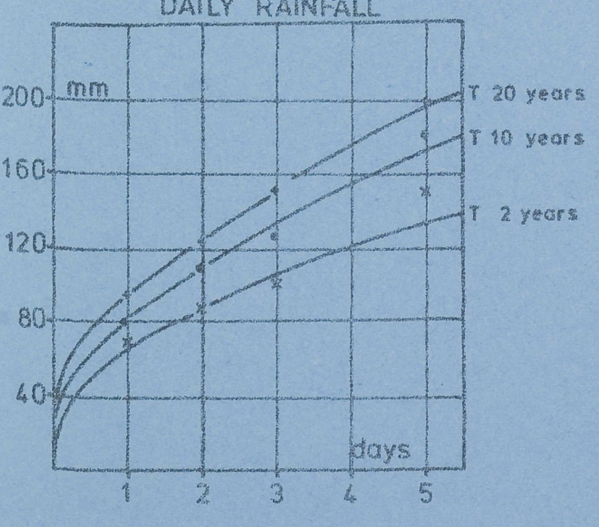
NUMBER OF RAINDAYS



RAINDAYS
1 Nov- 30 Apr
(probability)

20% E.P. 80 days
50% E.P. 70 days
80% E.P. 60 days

DEPTH DURATION FREQUENCY
DAILY RAINFALL



LEGEND

20% Exceedance Probability
50% Exceedance Probability
80% Exceedance Probability

DEDZA

CLIMATIC CHARACTERISTICS

Table 24 A

RAINFALL at DWANGWA SUGAR CORPORATION - Total for 10-day periods (in mm).

Year	January			February			March			April			May			June			July			August			September			October			November			December			Total
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1971																																					
1972	123	54	51	49	10	110	46	3	127	29	289	40	46	6	0	4	0	0	1	2	0	0	0	0	0	0	0	0	2	0	16	0	21	93	74	168	1364
1973	135	16	54	46	57	109	38	103	120	72	32	36	0	0	0	0	1	0	3	0	3	0	9	1	0	0	0	1	0	0	2	0	0	36	63	38	975
1974	56	91	209	39	79	12	102	80	320	121	1	16	152	8	26	0	0	0	5	0	2	0	0	0	0	0	0	0	0	0	5	0	29	73	29	40	1499
1975	47	73	1	100	35	62	144	67	28	185	77	52	15	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	20	3	32	98	50	1091
1976	157	101	69	106	90	88	170	162	163	131	240	93	2	0	1	0	0	9	0	0	0	0	0	0	0	0	0	0	17	0	0	9	38	20	42	112	1820
1977	123	102	137	17	1	77	114	53	149	145	0	5	13	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	16	75	32	33	240	1388
1978	95	144	66	259	18	191	105	134	229	54	65	71	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	112	7	90	133	106	1831

PAN EVAPORATION at DWANGWA SUGAR CORPORATION - Average for 10-day periods (in mm/day).

Year	January			February			March			April			May			June			July			August			September			October			November			December		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1971							x	x	x	7.8	5.5	4.4	5.4	4.4	5.6	5.4	4.8	4.7	5.4	6.2	5.6	6.2	7.4	7.7	7.0	7.5	8.3	9.8	8.4	8.7	9.7	7.4	7.3	8.3	6.2	5.0
1972	6.0	4.4	5.3	5.0	4.3	3.2	4.8	7.1	4.6	6.6	4.4	6.6	6.3	7.5	9.5	5.8	5.6	6.4	6.5	5.2	6.6	7.5	9.5	6.4	6.9	6.4	7.1	9.0	8.9	9.8	9.1	10.7	7.3	5.6	5.8	4.9
1973	3.9	6.4	5.1	5.6	5.9	4.8	4.4	4.4	4.4	4.5	5.4	7.5	7.8	6.0	5.7	5.7	4.7	5.0	6.4	5.8	5.9	6.6	7.0	6.8	7.8	8.5	9.1	8.8	9.9	8.9	10.6	12.0	12.3	8.3	5.4	4.2
1974	4.5	3.9	5.2	5.3	4.8	4.7	4.3	6.0	4.8	6.1	6.4	5.5	3.7	4.0	4.9	5.5	5.2	5.1	4.2	5.3	5.8	5.5	6.2	6.2	6.9	7.9	8.4	8.1	8.7	9.1	8.0	10.1	7.6	6.6	5.2	6.2
1975	5.7	4.8	6.5	5.4	4.9	5.2	3.8	5.0	5.8	4.8	6.3	4.5	4.7	5.9	5.3	5.1	5.0	4.9	4.1	5.0	6.1	5.3	5.1	5.7	6.0	6.2	6.5	7.6	8.2	9.1	9.5	6.5	8.2	7.3	5.4	5.8
1976	3.9	5.1	6.5	5.5	3.8	4.8	4.4	3.8	5.1	3.9	4.3	5.1	5.4	4.5	5.2	4.4	4.5	4.8	4.1	5.0	5.9	5.1	5.4	5.7	6.0	6.3	7.5	8.1	8.2	9.1	9.4	8.9	8.8	7.7	6.6	5.8
1977	4.3	4.9	4.2	4.7	6.6	3.6	4.0	4.6	4.3	3.5	5.4	4.6	3.9	4.6	5.0	4.7	4.7	4.4	4.3	5.0	4.6	5.3	5.5	4.7	6.1	7.0	7.3	8.4	8.7	9.6	6.2	8.5	5.2	4.8	5.0	2.7
1978	4.8	3.4	3.5	3.1	4.2	3.1	3.0	3.6	3.2	4.8	4.6	3.7	4.4	4.8	4.3	5.0	4.5	6.7	5.3	5.4	5.4	5.2	5.6	6.7	6.9	6.4	7.6	7.8	8.5	8.8	9.2	6.0	6.4	4.3	3.4	2.9

Table 24 B

RAINFALL at KASUNGU - Total for 10-day periods (in mm).

Year	January			February			March			April			May			June			July			August			September			October			November			December			Total
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1961	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	0	0	0	0	0	0	0	0	0	0	0	0	0	47	10	98	114	87	x
1962	75	43	143	101	47	40	3	85	91	36	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	20	107	6	3	907
1963	55	80	102	76	102	65	100	53	4	9	11	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	32	4	81	8	30	45	879
1964	28	77	134	52	30	145	25	58	10	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	56	5	74	12	709
1965	75	85	56	101	97	42	127	8	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	9	36	68	24	744
1966	39	72	18	65	217	49	29	18	5	0	10	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	61	6	5	52	45	712
1967	105	29	51	15	66	34	58	41	7	31	44	4	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	1	23	10	63	33	88	723
1968	54	27	46	57	36	27	82	20	2	4	37	0	0	0	24	21	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	36	89	63	98	727
1969	57	17	52	106	28	26	16	7	7	17	8	0	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	1	19	156	55	582
1970	80	90	86	113	15	1	10	16	37	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	5	0	45	118	18	36	693
1971	110	36	158	119	383	69	22	25	4	3	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	6	38	26	1046
1972	82	28	36	9	16	48	66	0	26	3	8	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0	9	15	19	65	454
1973	70	46	49	31	65	51	49	7	40	32	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	56	27	112	648
1974	93	87	113	82	46	55	70	47	19	20	0	22	46	34	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	3	0	60	60	33	21	924
1975	30	60	63	60	60	52	53	65	39	32	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	12	10	83	28	655
1976	45	134	124	35	66	44	14	52	17	58	5	19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	44	31	36	72[illegible]
1977	65	64	103	36	25	37	64	1	3	7	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	0	6	46	48	84	596

Table26 A

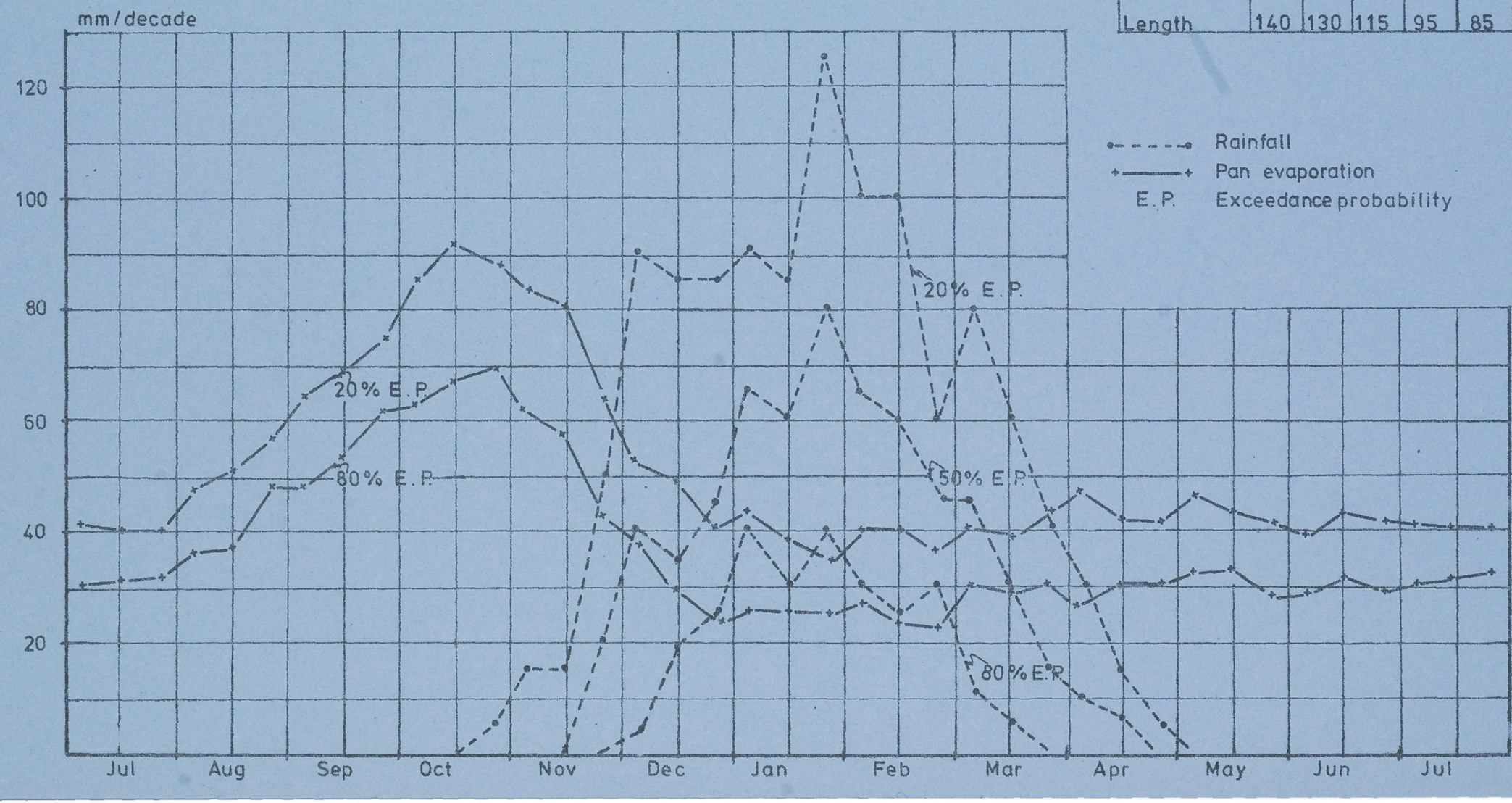
PAN EVAPORATION at KASUNGU - Average for 10-day periods (in mm/day).

Year	January			February			March			April			May			June			July			August			September			October			November			December		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1961																		3.5	4.1	4.0	3.6	5.0	4.2	5.2	6.7	6.8	7.6	8.3	8.2	9.5	8.3	5.5	5.3	4.4	2.8	4.2
1962	3.1	2.7	3.0	2.9	3.5	3.0	4.2	3.9	3.6	3.8	3.4	3.1	5.9	3.9	4.5	3.1	4.5	4.2	4.4	3.3	4.0	3.8	3.6	5.3	5.6	6.6	6.4	7.1	7.5	8.3	7.2	8.0	5.1	4.4	6.5	3.6
1963	2.8	3.7	3.5	2.6	2.6	3.6	3.3	3.5	3.7	5.5	4.0	4.6	4.3	4.4	3.9	3.8	4.6	4.0	4.0	3.8	3.9	3.9	6.0	5.8	4.9	7.0	102	9.4	10.1	10.2	5.5	5.5	3.8	5.1	2.8	2.6
1964	4.0	2.6	2.6	3.2	2.6	3.9	5.0	3.8	4.0	4.5	5.5	4.3	4.4	4.7	4.2	4.2	3.9	4.2	x	x	x	4.6	5.1	5.6	4.1	5.3	5.8	7.7	9.1	9.5	8.5	8.7	4.2	3.8	4.0	3.1
1965	4.0	3.8	3.0	3.0	1.4	1.3	3.2	3.7	3.4	3.7	4.3	3.4	4.8	4.2	3.7	3.6	3.5	4.1	4.0	4.2	4.1	4.9	4.6	5.8	5.5	6.1	7.5	6.3	7.8	7.2	7.4	8.1	7.7	3.2	5.7	2.7
1966	4.4	4.0	4.1	3.4	2.1	2.4	3.7	4.0	4.5	4.9	4.8	4.2	3.4	3.8	4.5	4.1	4.3	3.8	4.3	4.1	4.7	4.5	7.1	5.4	6.8	6.9	8.4	8.2	9.0	8.0	9.8	6.8	5.2	7.5	4.2	3.6
1967	2.6	3.4	3.0	5.2	3.8	3.5	3.5	3.0	2.8	4.3	3.3	3.6	4.2	3.8	3.2	3.9	3.7	4.1	3.7	3.7	4.5	5.8	5.2	4.3	6.0	6.3	6.9	9.7	9.3	8.5	6.0	7.3	6.3	4.3	4.7	4.3
1968	4.7	3.6	4.5	4.2	3.6	3.3	3.5	3.7	4.1	4.8	3.0	3.9	5.2	4.2	2.7	2.7	3.5	3.8	3.2	3.7	4.0	4.8	4.9	5.9	6.1	6.9	6.7	8.0	9.6	10.2	8.7	6.6	5.2	5.2	2.4	3.3
1969	2.9	3.9	3.1	2.5	3.3	3.3	4.1	4.4	3.9	2.6	3.7	4.0	3.8	3.6	3.8	3.9	4.4	3.4	4.2	3.5	3.5	4.3	4.2	5.3	6.1	6.7	7.0	8.9	8.4	7.2	7.5	6.3	6.3	4.5	3.4	3.1
1970	4.2	4.2	2.6	3.0	4.7	4.8	4.0	3.4	5.2	4.5	3.0	3.8	3.8	3.4	3.7	3.6	3.3	3.4	3.6	4.0	3.7	4.3	4.2	5.4	6.5	5.9	7.3	6.9	7.9	7.4	6.1	8.1	3.3	1.5	3.1	3.5
1971	1.8	3.0	1.5	2.7	2.0	1.5	2.9	3.8	3.6	2.9	3.6	3.8	3.5	2.6	2.7	x	3.6	3.0	3.8	3.7	3.2	4.8	4.2	5.1	6.3	6.5	6.4	6.7	6.9	6.8	7.7	6.6	5.4	4.9	3.5	3.4
1972	2.6	2.5	3.2	3.4	3.6	2.4	3.2	5.0	3.4	4.4	3.2	3.2	3.9	3.3	3.4	3.9	3.3	3.4	3.5	3.7	3.7	3.9	4.2	5.1	6.1	5.3	6.0	6.8	7.0	6.8	6.2	6.6	4.6	4.6	4.9	2.5
1973	3.8	2.5	2.3	2.5	4.0	2.9	4.0	3.8	4.8	3.1	2.9	2.5	3.3	3.3	3.2	3.1	3.0	2.9	3.5	2.8	3.2	3.5	3.3	4.1	5.2	5.4	6.8	6.0	6.7	6.7	6.7	6.0	5.7	5.1	3.6	2.3
1974	2.4	3.0	3.2	3.3	2.8	2.4	2.1	2.4	2.6	2.7	3.2	2.9	2.5	1.6	2.2	2.5	2.8	2.1	2.5	2.4	2.9	3.0	4.2	5.0	4.5	5.3	6.1	6.6	6.8	5.8	5.8	7.4	3.6	3.6	3.0	2.3
1975	3.4	2.5	3.3	3.8	4.4	2.8	3.5	2.7	3.2	2.4	3.6	3.4	3.4	4.4	3.7	2.8	2.3	2.6	2.8	3.1	3.6	3.5	3.5	4.6	4.8	5.3	6.4	6.1	6.4	7.0	6.8	5.5	5.9	5.5	3.4	4.2
1976	2.0	2.0	1.5	4.6	2.4	2.0	2.8	2.8	2.8	2.3	2.7	2.9	2.8	3.3	3.0	3.1	3.3	2.8	3.1	4.1	3.2	3.7	3.7	5.4	4.9	5.5	6.3	6.3	4.8	7.5	7.5	6.5	7.5	5.1	4.8	3.3
1977	2.9	3.4	2.9	3.6	3.9	3.6	3.1	3.7	3.2	2.8	3.6	3.3	3.3	3.9	3.5	3.8	3.2	3.3	3.7	3.2	3.4	3.9	3.8	5.2	6.0	6.1	6.5	6.4	7.5	7.6	6.6	5.9	5.8	4.6	4.3	4.0

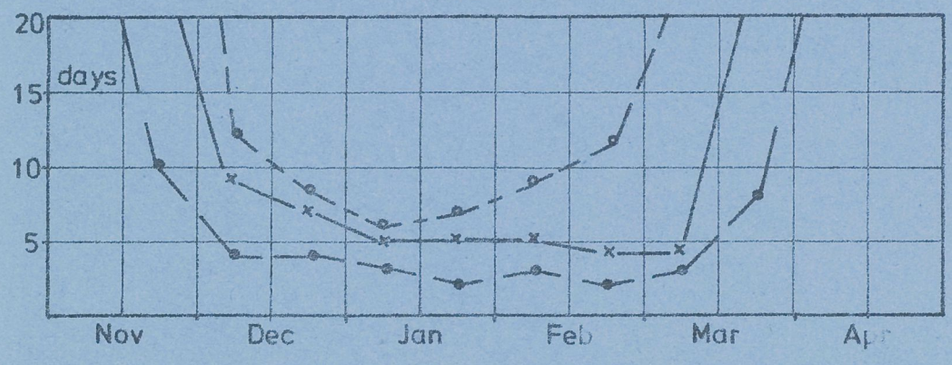
Table 26 B

STATION KASUNGU (1961 - 1978)

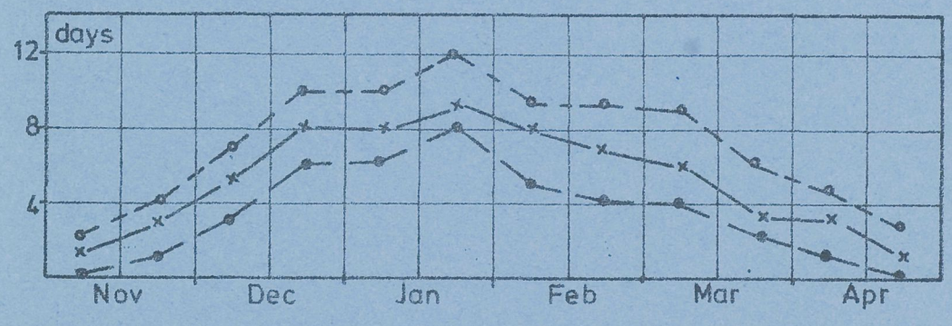
PROBABILITY	10	20	50	80	90	%
Rainfall	925	850	675	600	530	mm
Onset rains	13D	7D	23N	11N	5N	
End rains	18A	6A	13M	5M	1M	
Length	140	130	115	95	85	days



DRY SPELL DURATION - PROBABILITY



NUMBER OF RAINDAYS - PROBABILITY

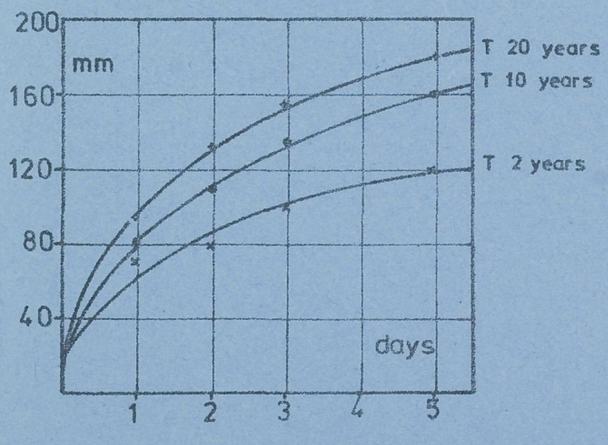


RAINDAYS
1 Nov - 30 Apr
probability

20 % E.P. 70 days
50% E.P. 60 days
80% E.P. 55 days

DEPTH DURATION FREQUENCY

DAILY RAINFALL



LEGEND

20% Exceedance Probability
50% Exceedance Probability
80% Exceedance Probability

KASUNGU

CLIMATIC CHARACTERISTICS

RAINFALL at LILONGWE - Total for 10-day periods (in mm).

Year	January			February			March			April			May			June			July			August			September			October			November			December			Total
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1951																																					
1952	50	57	157	89	178	111	116	0	31	0	41	14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	19	5	9	28	63	53	1023
1953	85	59	9	22	33	1	60	43	21	22	0	2	0	0	4	0	0	0	0	0	0	0	2	0	0	3	0	0	1	0	0	1	26	90	37	33	554
1954	47	46	61	109	18	48	95	65	7	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	25	16	60	30	82	16	733
1955	55	120	74	129	97	75	61	17	3	2	22	2	5	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	5	50	21	1	747
1956	80	141	114	131	111	8	12	123	127	55	28	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	30	58	128	88	1345
1957	10	84	150	72	79	38	21	58	47	65	27	0	12	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	42	140	70	915
1958	45	20	119	50	42	97	24	4	21	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	1	0	11	1	15	86	101	642
1959	48	83	117	43	118	137	69	18	40	15	9	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	9	0	0	2	0	3	19	123	58	905
1960	22	0	126	38	72	62	58	34	0	3	16	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	6	0	19	3	117	82	659
1961	120	64	37	15	81	11	23	60	100	0	4	8	8	0	0	0	1	0	x	x	x																

PAN EVAPORATION at LILONGWE - Average for 10-day periods (in mm/day).

Year	January			February			March			April			May			June			July			August			September			October			November			December		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1951																																				
1952	4.7	4.0	3.7	3.0	2.5	3.2	3.4	4.8	5.0	3.4	2.4	4.1	3.3	3.8	3.3	3.0	3.0	3.4	3.3	3.5	3.1	3.3	4.0	4.9	5.6	5.3	6.4	7.0	7.2	7.2	6.0	4.6	6.9	6.1	5.7	3.4
1953	4.1	3.3	4.5	3.5	4.4	4.4	3.3	3.5	4.1	4.5	4.4	3.9	4.6	3.9	3.3	3.5	3.3	3.9	4.1	3.8	4.9	4.4	4.7	5.4	5.9	5.8	6.5	7.4	7.5	7.9	8.1	8.1	6.0	3.0	3.3	3.6
1954	3.7	4.2	4.3	3.6	4.4	4.1	5.1	3.7	4.1	4.2	4.0	4.2	4.1	4.2	3.6	3.8	3.1	3.1	3.7	3.6	4.1	5.1	3.8	5.1	6.0	5.8	7.0	7.5	8.4	8.8	6.0	5.3	4.2	5.3	3.6	4.3
1955	4.4	3.2	3.2	2.7	3.4	3.6	3.2	2.9	3.2	4.0	3.5	3.2	3.6	3.0	3.0	3.1	2.9	3.3	3.0	3.8	3.9	4.4	4.5	5.0	5.2	4.9	6.0	6.7	7.6	7.9	7.6	9.0	6.0	5.1	4.3	5.7
1956	3.8	4.0	3.6	3.4	4.0	3.2	3.2	2.7	2.4	2.1	2.0	2.0	3.3	x	2.1	2.9	2.4	2.6	2.8	3.1	3.2	3.1	4.0	4.3	3.9	5.0	5.0	5.4	5.4	6.1	5.9	4.4	4.0	3.3	4.4	3.6
1957	3.2	2.9	4.7	3.8	3.4	3.2	3.2	3.4	3.1	4.4	3.1	3.0	2.6	3.2	2.9	2.9	2.8	2.5	2.9	3.1	3.0	3.2	3.5	3.8	4.2	5.0	5.9	6.3	7.1	6.3	6.9	7.2	7.4	4.6	3.6	3.9
1958	4.1	5.7	4.5	3.8	4.6	3.8	4.1	4.8	5.1	5.1	4.4	4.5	4.6	4.9	4.5	4.1	3.9	3.7	3.6	4.3	3.9	4.5	5.3	5.0	5.1	6.1	5.9	5.6	8.6	8.2	8.3	8.7	7.3	6.7	3.5	4.1
1959	4.8	3.5	2.8	2.5	3.5	3.3	4.1	4.6	4.6	4.1	4.1	5.1	4.0	4.3	3.7	3.6	4.0	4.0	3.7	4.8	5.4	4.5	5.5	5.6	6.3	6.0	7.8	8.0	7.9	8.8	8.2	7.4	6.5	7.5	4.0	4.0
1960	3.9	6.6	4.4	5.2	3.6	3.8	4.2	2.8	6.0	5.0	4.2	4.4	3.7	4.8	4.1	3.9	4.1	3.7	3.7	4.0	4.1	4.8	4.9	5.7	6.0	5.7	7.1	8.3	8.5	8.7	6.8	8.9	5.0	9.2	4.5	4.7
1961	4.0	3.8	4.2	5.3	3.3	xx	3.5	3.3	2.9	3.8	4.1	3.2	3.6	4.9	4.3	4.0	3.0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			

Table 28 A+B

RAINFALL at LILONGWE AIRPORT - Total for 10-day periods (in mm).

Year	January			February			March			April			May			June			July			August			September			October			November			December			Total
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1969													1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	1	7	0	40	172	82	x
1970	14	62	116	126	30	36	27	8	0	10	21	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	6	0	48	170	24	80	782
1971	119	20	92	65	159	36	65	6	21	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	18	0	37	42	74	26	28	22	x
1972	50	81	57	22	23	109	47	0	18	21	10	10	20	25	0	0	0	0	0	0	0	0	0	0	0	0	0	3	31	0	36	0	27	38	62	85	775
1973	32	39	32	2	55	14	27	21	29	55	5	20	2	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	9	x	x	x	13	60	95	x
1974	142	49	140	71	75	59	48	43	100	86	5	9	22	41	2	0	0	0	24	0	0	x	x	x	1	0	0	0	0	0	7	0	34	110	106	22	x
1975	50	72	15	75	79	79	178	41	0	18	3	9	0	0	0	0	0	0	3	0	0	0	0	2	0	0	0	0	0	0	17	7	10	x	x	x	x
1976	x	x	x	72	183	67	20	56	33	x	x	x	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	x	x	x	x	x	x	23	131	58	x
1977	140	121	129	30	49	163	91	5	74	90	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x	x	x	x	x

Table29 A

PAN EVAPORATION at LILONGWE AIRPORT - Average for 10-day periods (in mm/day).

Year	January			February			March			April			May			June			July			August			September			October			November			December		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1969													x	3.0	4.3	4.7	4.8	3.1	4.8	4.7	4.7	5.4	5.7	5.9	7.5	7.0	8.4	9.2	10.3	8.6	9.4	8.3	9.5	7.1	4.6	4.9
1970	4.9	6.1	4.8	4.0	5.8	5.0	5.6	4.8	5.6	5.2	4.9	5.0	5.1	4.5	5.1	4.6	4.6	4.0	4.5	4.6	5.1	5.2	5.1	7.7	7.9	7.3	8.3	8.5	10.1	8.6	8.7	8.3	4.9	3.0	3.0	4.4
1971	4.1	3.4	3.1	6.6	4.8	4.4	4.8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	8.4	7.8	8.7	6.6	6.7	4.5	5.3	4.1
1972	4.8	4.5	3.6	5.2	6.1	5.0	4.7	3.3	4.0	4.0	4.2	4.1	5.0	4.1	3.7	4.0	4.1	4.6	5.1	5.4	6.0	7.3	6.5	8.5	8.1	7.4	7.8	8.5	8.5	6.2	8.1	7.6	7.9	4.9	6.2	4.6
1973	4.5	5.4	3.6	4.1	5.2	4.5	6.0	4.5	4.7	3.1	4.6	4.0	4.5	4.2	5.1	4.4	3.4	4.7	4.9	4.6	4.0	5.6	5.3	6.0	7.5	7.7	8.7	8.0	8.7	9.3	x	x	x	7.7	7.1	4.7
1974	4.2	4.2	3.6	4.7	3.1	2.4	4.1	3.5	4.2	4.2	4.4	4.2	2.1	2.6	3.0	3.5	3.4	3.4	3.3	3.3	4.3	x	x	x	6.1	6.4	7.4	8.5	8.6	8.8	6.7	10.5	5.4	4.7	3.8	4.2
1975	4.1	3.9	4.6	4.9	3.3	4.6	5.3	4.2	5.1	3.5	x	3.7	4.5	4.6	4.3	4.0	3.2	3.6	3.7	3.3	4.9	4.7	4.7	6.0	6.9	7.0	7.9	8.9	8.9	9.0	9.5	6.4	7.1	x	x	x
1976	x	x	x	4.1	3.6	2.8	4.3	3.7	4.1	x	x	x	4.0	4.6	4.2	4.0	4.7	4.8	4.3	4.6	4.5	5.0	5.5	5.4	6.2	6.5	7.3	x	x	x	x	x	x	6.8	4.3	4.3
1977	4.3	4.0	3.4	5.0	6.3	3.1	3.0	4.5	3.1	3.5	3.9	5.0	5.0	5.0	4.9	4.7	3.5	4.4	3.8	4.3	3.9	4.8	4.4	5.4	6.8	6.9	7.3	7.9	9.1	8.1	x	x	x	x	x	x

Table 29B

RAINFALL at NCHEU - Total for 10-day periods (in mm).

Year	January			February			March			April			May			June			July			August			September			October			November			December			Total
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1956																			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	19	31	31	x
1957	79	84	94	66	77	41	15	11	53	16	59	0	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	59	7	103	54	828
1958	104	66	236	100	123	54	13	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	7	21	22	50	79	11	915
1959	49	43	238	91	66	66	64	0	0	4	1	0	5	0	0	0	0	0	0	0	0	7	3	0	0	13	0	6	0	19	0	20	21	51	96	78	941
1960	31	13	70	94	66	27	126	131	0	0	0	0	0	39	0	0	0	0	0	0	4	0	0	0	0	0	0	0	42	0	4	0	33	14	48	113	855
1961	191	125	56	69	81	65	85	77	46	83	23	0	25	0	0	0	0	8	0	0	10	0	0	0	4	0	0	0	4	22	13	9	47	33	90	87	1253
1962	101	173	61	99	38	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	28	80	48	10	55	2	58	765
1963	144	102	101	174	193	97	36	38	7	9	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	84	25	21	31	53	21	46	98	1316
1964	145	126	167	63	82	0	46	50	24	0	0	0	0	0	0	0	2	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	23	9	46	64	852
1965	73	94	89	39	123	12	73	[illegible]	96	7	31	0	0	0	5	0	0	0	0	2	0	0	0	0	18	0	0	10	0	0	30	0	54	25	31	27	854
1966	85	69	4	90	112	206	14	0	11	0	3	0	0	0	10	2	0	0	8	0	0	0	0	0	2	0	0	0	0	3	1	66	38	3	98	71	896
1967	86	136	31	24	8	63	70	142	55	0	2	40	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	34	0	28	33	0	64	16	67	901
1968	50	163	91	15	92	67	61	2	[illegible]	6	37	[illegible]	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	24	3	17	127	215	996
1969	97	29	137	74	38	15	93	29	21	37	14	6	1	0	0	0	0	0	0	0	0	0	0	1	0	3	0	3	18	22	0	0	52	80	88	80	938
1970	33	72	100	139	29	20	15	0	0	1	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	12	1	91	216	68	24	891
1971	154	112	100	29	102	16	33	53	11	17	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	7	2	22	53	81	74	915
1972	113	115	27	64	19	80	82	28	38	5	81	26	6	8	11	8	0	0	0	0	0	0	0	0	0	0	0	1	36	0	7	0	146	60	75	41	1077
1973	30	52	74	40	63	53	5	76	27	54	3	0	0	0	0	0	0	0	3	0	2	0	0	1	0	0	0	0	0	0	20	0	44	56	69	178	848
1974	x	x	x	92	135	158	140	7	198	44	0	8	21	13	6	0	1	6	3	4	1	0	1	0	0	0	0	0	0	0	2	6	27	157	110	28	x
1975	28	198	57	16	81	85	55	15	113	21	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	43	6	53	799
1976	58	64	58	113	121	69	82	121	102	48	46	10	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	42	87	1	3	0	0	x	x	x	x
1977	111	139	172	26	66	132	59	58	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0	8	72	30	108	134	1152

Table 33 A

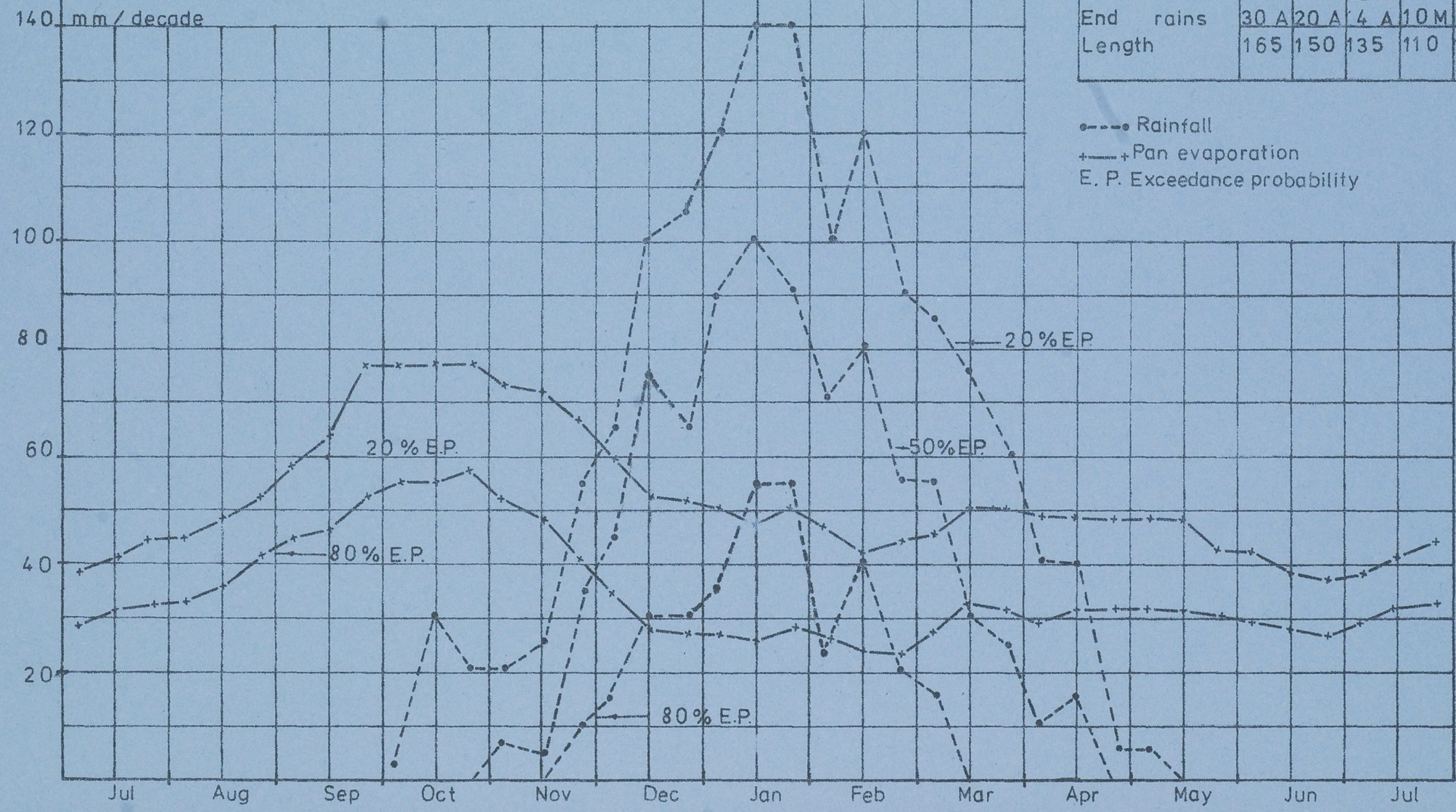
PAN EVAPORATION at NCHEU - Average for 10-day periods (in mm/day).

Year	January			February			March			April			May			June			July			August			September			October			November			December		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1956																																		2.9	3.6	3.3
1957	3.7	2.5	3.7	3.4	3.7	3.2	3.3	3.5	3.7	3.8	2.8	3.2	3.1	3.1	3.2	3.4	3.1	2.7	3.3	3.3	3.2	3.1	3.6	4.6	4.9	5.2	6.6	8.0	5.7	6.9	8.1	6.7	7.9	3.3	4.1	3.7
1958	4.8	2.9	2.6	3.2	3.8	1.9	2.8	4.8	4.3	5.1	5.1	5.0	3.6	3.7	3.1	2.9	2.8	2.8	3.1	3.7	4.5	3.5	5.6	6.1	5.7	4.5	6.0	6.2	6.2	6.3	5.2	5.6	5.6	5.7	3.9	4.1
1959	3.1	3.2	3.8	2.9	3.8	3.8	3.7	3.8	3.1	4.2	4.1	3.6	3.2	3.4	4.1	3.6	2.7	2.9	3.3	3.4	4.3	3.6	3.6	4.4	4.2	4.6	5.3	5.2	3.7	3.9	6.6	4.8	6.2	6.1	2.5	3.7
1960	3.8	5.6	4.2	3.8	3.4	4.1	3.7	4.7	5.0	x	x	x	4.4	3.3	3.1	3.1	2.1	3.1	3.0	2.6	3.4	3.7	4.0	4.9	4.7	4.6	6.6	7.4	6.0	6.6	6.5	7.6	4.0	7.9	3.0	5.1
1961	3.7	3.8	5.3	3.4	3.7	4.9	3.1	4.7	4.9	4.5	3.7	4.2	4.1	2.9	3.6	3.5	3.1	3.5	3.6	4.3	3.0	4.0	4.4	4.2	4.6	6.1	6.5	6.5	5.6	6.7	4.9	4.9	5.1	5.5	5.2	7.0
1962	3.2	3.9	5.9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	5.4	5.5	4.2	4.9	3.1	3.0	1.7	2.1	1.8
1963	2.4	3.7	3.4	1.5	2.1	1.4	1.5	2.6	3.4	2.9	3.1	3.8	3.4	3.1	3.3	3.7	2.8	2.6	3.0	3.4	3.4	3.3	4.7	4.9	4.8	5.6	5.6	6.3	5.8	5.6	4.0	3.4	4.1	2.8	2.5	2.5
1964	1.8	2.5	2.1	2.6	1.8	3.8	3.4	3.5	3.4	4.1	5.0	5.4	5.6	3.6	3.4	3.8	3.3	3.2	3.4	3.2	3.8	3.3	2.5	4.5	6.7	6.4	8.2	7.9	7.6	7.9	8.1	8.3	3.6	5.3	4.3	2.0
1965	4.1	1.9	4.5	3.3	2.9	4.4	2.8	5.1	4.5	4.1	4.0	5.4	5.3	4.7	5.1	6.2	5.2	5.0	3.8	3.4	5.7	4.5	4.7	5.4	5.4	6.6	7.9	6.0	7.7	8.3	6.7	4.6	6.4	4.9	6.3	5.7
1966	4.4	5.7	5.1	3.4	2.7	2.0	3.0	5.2	6.3	5.8	5.3	5.1	5.8	6.7	4.3	3.5	4.7	8.3	5.7	5.5	7.7	7.4	6.7	7.5	8.4	8.7	9.2	10.1	10.3	8.9	9.4	5.4	4.4	9.2	3.1	4.5
1968	6.8	3.6	4.0	5.6	2.6	4.0	4.5	5.0	7.0	4.5	3.0	3.1	4.5	4.6	3.2	2.6	3.5	3.1	3.1	3.4	3.0	4.0	4.0	4.5	4.9	5.2	5.2	6.6	8.2	9.1	5.7	5.1	4.8	4.4	2.5	1.8
1967	7.1	4.5	4.1	3.3	3.1	2.1	4.1	2.5	2.9	4.9	5.3	3.8	4.8	5.4	7.0	6.4	3.5	4.3	3.2	3.3	4.9	4.0	4.8	4.7	5.8	6.3	8.1	10.2	8.3	7.2	5.5	6.3	8.8	6.1	10.8	7.6
1969	2.7	3.5	2.9	3.9	3.3	3.8	2.7	3.8	3.4	2.8	3.1	3.9	4.6	4.3	3.7	4.2	4.0	2.4	3.9	3.8	4.1	4.0	4.8	4.3	5.2	4.5	6.3	6.4	7.5	6.4	6.8	7.9	8.3	5.5	3.0	3.1
1970	5.4	3.8	5.1	3.2	6.9	4.9	5.3	6.2	6.8	5.3	3.6	3.8	3.8	3.3	3.4	3.5	2.9	2.3	2.9	2.9	3.0	4.2	3.6	4.7	5.2	4.5	6.3	6.0	7.5	5.9	4.2	6.3	2.4	3.9	3.3	3.6
1971	3.3	2.8	2.8	4.1	2.7	5.0	4.3	4.3	3.6	3.6	3.8	3.6	3.6	4.0	4.1	4.1	3.8	3.1	2.5	4.2	3.2	4.3	4.3	4.8	4.6	5.5	7.0	6.4	6.0	6.2	5.5	4.9	5.4	4.6	5.1	5.1
1972	5.0	2.2	2.8	4.9	3.3	2.3	4.6	3.8	3.9	3.5	2.9	2.5	3.1	3.1	2.3	3.2	3.4	3.4	2.1	3.1	3.5	4.0	4.5	3.5	5.2	4.8	5.5	6.7	6.3	6.3	5.7	8.2	5.5	4.8	4.1	3.5
1973	2.6	4.5	3.2	3.1	4.1	4.2	4.6	3.6	3.9	3.6	3.8	4.2	4.2	4.5	4.2	4.3	2.4	3.5	3.4	3.2	3.2	2.8	3.6	3.8	5.6	5.7	6.7	6.1	6.3	6.1	5.9	6.3	4.7	4.2	3.7	x
1974	x	x	x	2.2	2.5	2.0	1.9	3.0	2.7	4.3	2.8	2.7	1.8	2.5	2.6	2.9	2.8	2.4	1.6	2.6	3.1	2.8	3.7	4.4	4.2	5.0	6.2	6.0	6.4	6.1	6.0	6.2	4.4	5.4	3.2	2.9
1975	4.2	3.0	4.1	4.5	2.3	2.4	3.8	3.2	3.5	2.4	3.0	3.5	4.1	3.8	2.7	2.9	2.9	3.1	4.2	4.8	5.4	5.9	6.2	5.7	2.7	2.9	3.3	2.7	3.1	4.7	6.2	5.9	3.9	3.9	6.1	3.1
1976	4.2	3.4	4.5	3.8	1.6	2.5	3.1	3.4	3.3	2.0	3.0	2.3	2.5	3.4	3.0	2.6	2.7	3.2	3.3	3.3	4.0	4.3	4.1	4.1	4.9	4.8	4.9	5.5	4.9	6.1	7.5	5.5	6.6	4.4	3.5	2.7
1977	2.2	3.7	2.7	3.3	3.8	3.3	2.1	3.6	2.9	3.1	4.0	3.8	3.4	4.2	3.6	4.2	3.1	3.6	3.7	3.4	3.6	4.3	3.7	4.1	5.9	5.1	5.3	5.6	7.4	7.8	5.7	6.3	4.8	3.9	5.2	4.4

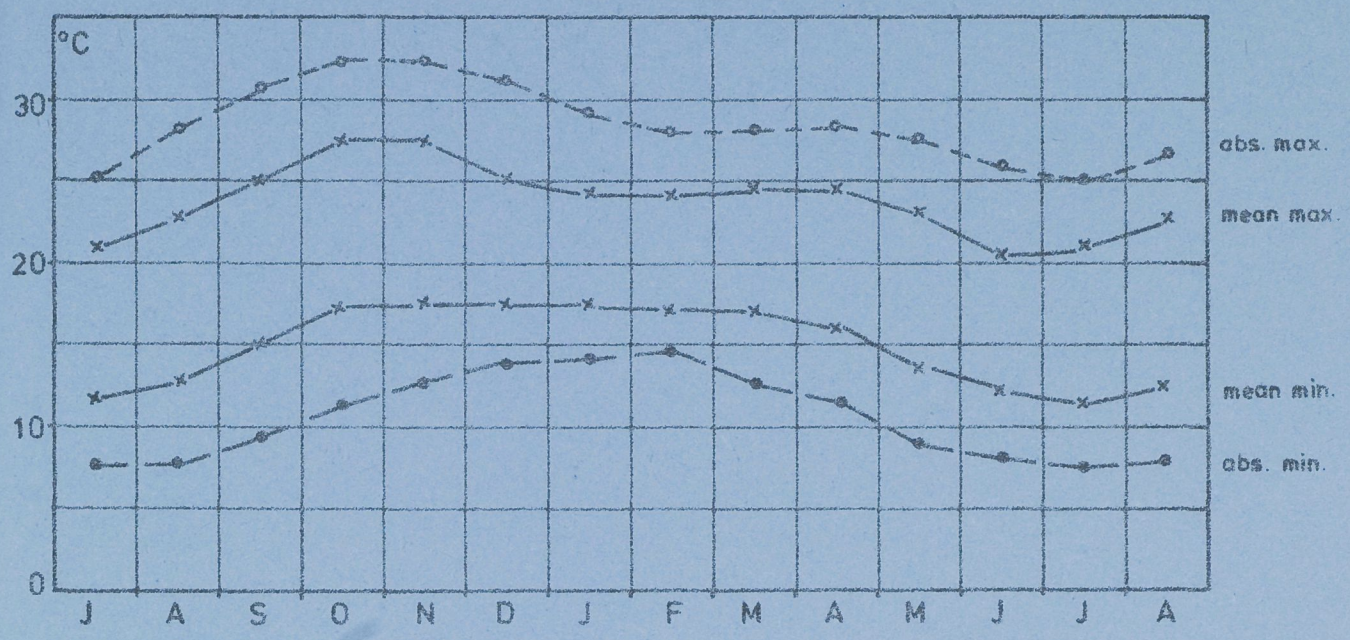
Table 33 B

LOCATION NCHEU (1956-1970)

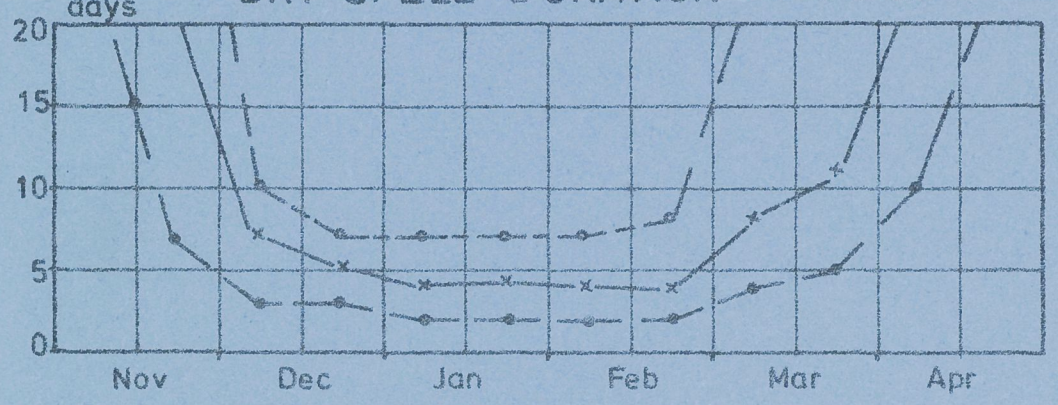
PROBABILITY	10	20	50	80	90	%
Rainfall	1120	1040	920	800	760	mm
Onset rains	30 N	27 N	22 N	1 N	24 O	
End rains	30 A	20 A	4 A	10 M	4 M	
Length	165	150	135	110	100	days



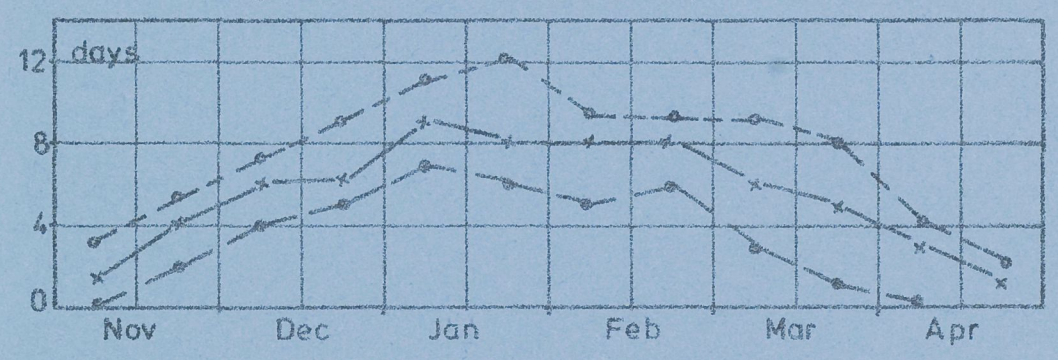
MONTHLY TEMPERATURES



DRY SPELL DURATION-PROBABILITY



NUMBER OF RAINDAYS - PROBABILITY

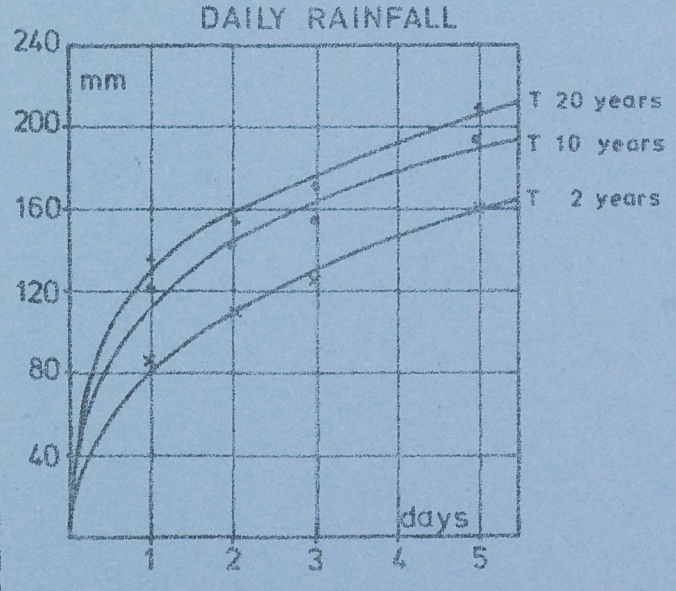


RAINDAYS
1 Nov - 30 Apr
(probability)

20% E. P. 70 days
50% E. P. 65 days
80% E. P. 54 days

DEPTH DURATION FREQUENCY

DAILY RAINFALL



LEGEND

20% Exceedance Probability
50 % Exceedance Probability
80 % Exceedance Probability

NTCHEU

CLIMATIC CHARACTERISTICS

RAINFALL at NKHOTA KOTA - Total for 10-day periods (in mm).

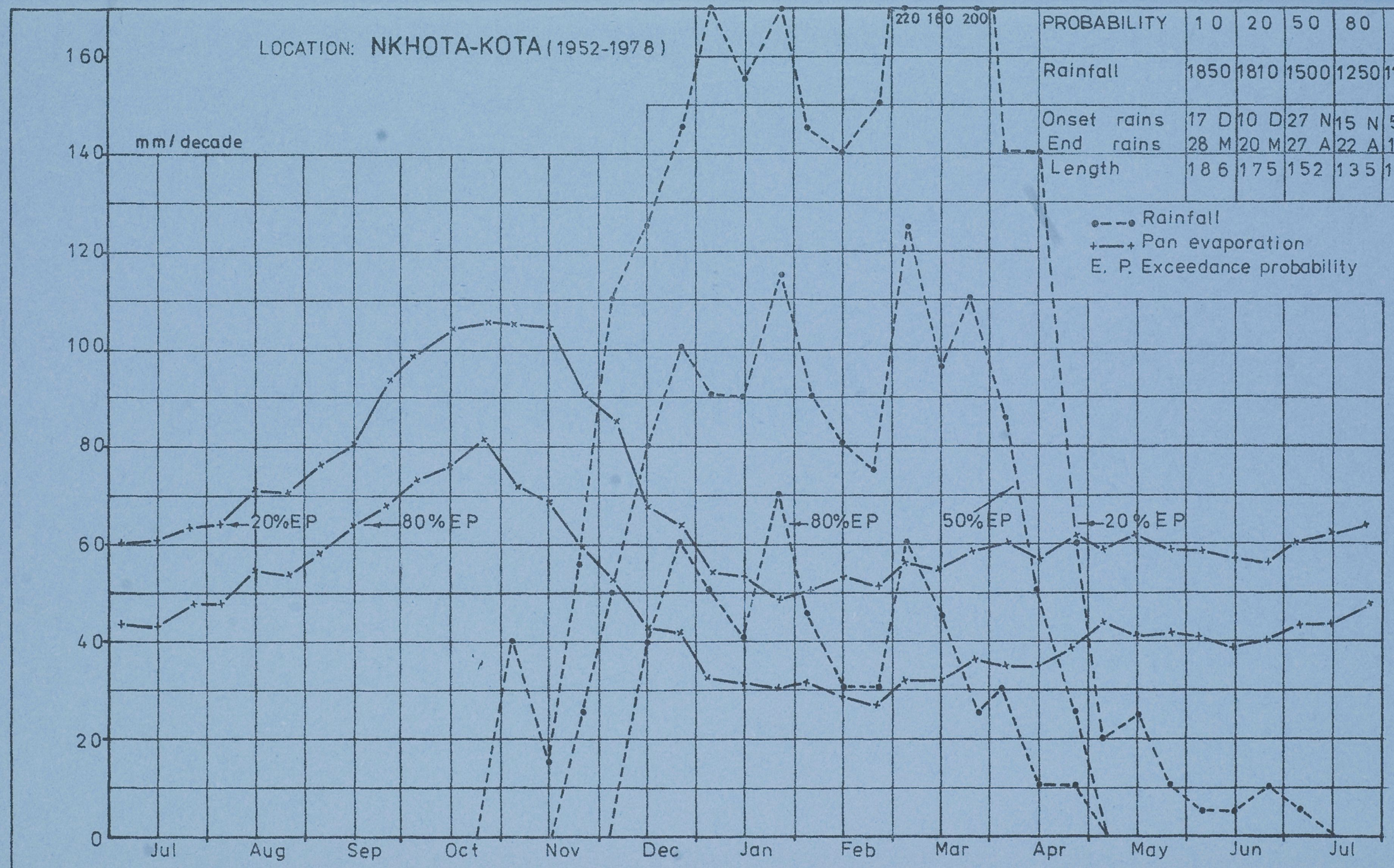
Year	January			February			March			April			May			June			July			August			September			October			November			December			Total
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1952	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	2	59	84	2	2	9	90	x
1953	183	46	71	120	15	21	243	197	206	121	9	11	13	0	0	0	4	0	0	0	19	0	0	0	0	12	0	0	0	0	0	0	2	124	160	183	1760
1954	64	29	122	79	79	12	58	94	2	51	2	2	0	0	9	0	2	0	0	0	0	0	0	0	0	29	0	0	0	0	13	9	0	70	19	146	891
1955	17	224	175	154	286	69	113	128	32	83	29	52	20	16	3	0	9	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	58	167	124	34	1806
1956	145	161	195	100	87	50	157	135	181	95	151	53	0	73	53	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	121	83	73	228	2205
1957	83	25	122	52	110	75	58	169	300	90	184	10	56	34	11	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x	18	70	114	x
1958	67	20	85	79	54	68	x	x	x	70	46	0	0	1	2	23	6	0	0	0	0	8	0	0	0	3	0	0	1	0	0	0	25	0	90	74	x
1959	18	131	90	163	75	125	35	76	147	49	9	55	0	0	0	0	4	0	0	0	3	0	0	0	0	0	0	1	0	0	1	0	11	3	246	0	1240
1960	18	0	138	144	93	152	120	103	17	1	34	42	0	0	11	0	9	3	32	0	18	0	0	0	0	0	0	0	0	0	0	0	5	0	102	41	1083
1961	60	99	143	109	79	114	249	118	205	107	21	6	31	0	0	0	0	20	1	2	2	5	0	1	0	0	0	0	0	0	8	16	27	122	137	228	2000
1962	264	95	66	150	20	74	46	86	105	85	119	130	0	11	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57	107	11	93	1596
1963	52	126	64	145	39	30	142	299	39	56	236	11	1	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	89	27	44	4	x	163	x
1964	251	185	214	116	6	73	0	53	58	4	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	44	0	60	134	1203
1965	182	94	173	46	67	173	231	104	255	52	32	105	0	7	0	11	0	0	4	0	0	0	0	0	0	0	0	1	0	0	41	0	15	70	79	86	1828
1966	128	58	132	125	204	26	231	15	33	22	0	8	0	0	0	3	0	5	0	0	2	0	0	0	0	0	0	0	5	16	0	9	28	36	78	87	1251
1967	75	54	74	37	145	44	170	30	23	80	262	112	20	27	28	0	1	0	9	16	0	0	5	0	0	0	0	0	0	97	20	54	55	83	80	63	1664
1968	92	97	55	28	84	132	114	22	36	56	12	26	1	0	39	33	0	3	9	0	0	0	0	0	0	0	0	0	0	0	0	7	60	38	63	120	1127
1969	61	71	85	100	279	73	53	138	121	274	96	17	7	0	0	8	0	20	0	0	14	0	1	0	0	0	0	0	0	0	12	0	10	2	207	85	1734
1970	117	49	154	20	69	66	126	89	6	27	78	15	0	53	0	0	1	4	0	0	0	0	0	0	0	0	0	7	0	4	36	0	114	232	128	51	1446
1971	216	36	150	40	113	191	181	63	36	35	41	82	4	27	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73	0	17	2	82	143	1533
1972	378	158	73	54	60	178	69	20	119	218	152	36	27	15	7	5	0	15	0	0	0	10	0	0	0	0	0	0	0	3	62	0	33	140	106	90	2028
1973	94	91	112	95	56	151	93	256	71	234	77	11	0	0	0	0	6	0	3	0	2	0	0	0	0	0	0	0	0	0	31	0	0	30	88	132	1632
1974	67	70	145	64	105	29	139	57	311	140	32	42	156	83	1	0	0	14	31	0	10	0	0	0	0	0	0	0	0	0	0	0	43	56	81	88	1764
1975	42	179	14	84	24	77	254	49	129	131	50	39	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	2	0	15	0	16	3	45	93	72	1323
1976	140	129	203	169	277	135	69	160	199	173	147	62	21	2	2	0	0	45	0	0	0	0	0	0	0	0	0	0	20	0	0	2	0	34	66	66	2121
1977	125	155	91	55	4	39				100	9	27	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	18	0	0	x	x	x	23	137	217	x

Table 34 A

PAN EVAPORATION at NKHOTAKOTA - Average for 10-day periods (in mm/day).

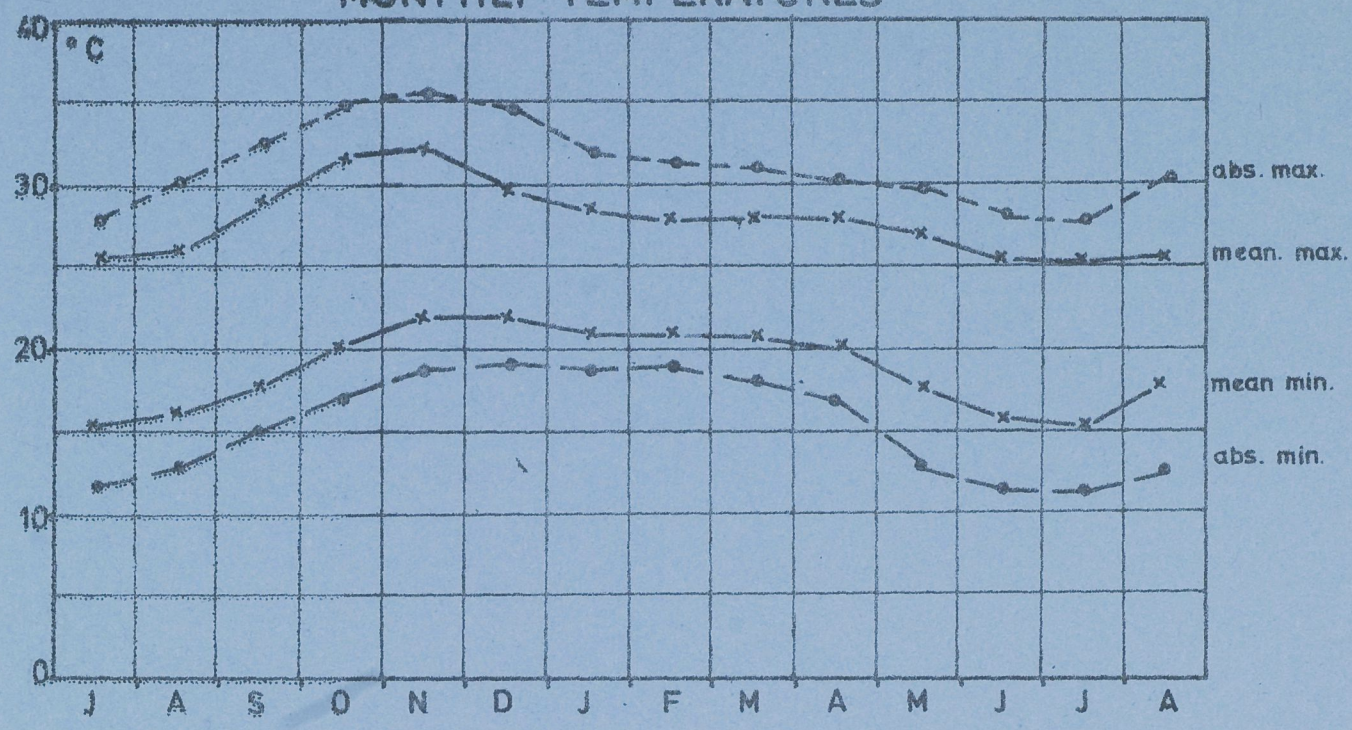
Year	January			February			March			April			May			June			July			August			September			October			November			December		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1952																						5.5	5.1	5.5	6.6	7.9	7.3	8.0	9.2	9.4	8.4	5.8	8.8	8.0	8.5	6.2
1953	3.2	3.1	2.7	3.2	5.3	5.7	3.4	4.2	4.8	4.8	5.7	6.1	5.6	5.2	5.4	5.1	4.6	4.3	4.4	5.3	5.1	5.7	6.0	6.4	5.9	6.5	7.4	9.1	10.2	10.5	11.6	11.5	9.1	6.8	4.2	5.0
1954	5.4	8.7	4.4	6.6	7.7	4.7	6.2	5.4	6.4	9.5	7.8	5.7	5.5	5.5	6.2	5.0	4.6	5.7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	6.8
1955	9.2	3.7	2.4	3.8	3.0	1.6	3.9	1.5	7.2	6.1	7.3	6.6	4.7	5.3	5.1	5.6	5.1	6.7	6.9	8.4	8.4	8.1	9.1	6.1	8.9	8.9	9.4	10.6	11.4	11.7	12.4	12.9	7.4	7.3	4.9	5.5
1956	3.6	4.6	3.6	3.6	3.1	4.8	2.5	3.0	3.5	3.1	4.1	3.5	x	x	4.0	4.1	3.6	3.7	4.5	4.1	4.8	4.3	4.9	5.7	5.2	6.7	7.3	7.0	7.6	8.2	8.3	7.0	5.9	4.3	4.5	4.9
1957	7.8	3.2	2.7	2.5	3.0	3.0	4.5	4.2	2.8	3.8	1.9	3.1	2.6	3.5	3.9	3.6	3.5	4.1	4.2	4.0	4.2	4.3	4.4	5.0	5.7	6.4	7.2	8.5	7.7	9.2	x	x	x	x	x	x
1958	3.6	6.2	3.0	3.0	4.1	2.1	x	x	x	4.3	3.6	4.6	4.7	3.7	3.5	4.0	3.7	4.1	4.2	4.4	4.8	3.9	5.5	4.8	5.2	5.7	6.5	6.2	7.0	7.2	8.3	7.7	7.5	8.0	3.4	5.2
1959	5.3	3.8	4.3	3.2	3.9	2.8	3.1	3.2	5.1	3.2	3.4	4.3	4.4	4.6	5.1	4.6	3.9	4.0	4.3	3.9	4.7	4.8	5.5	5.3	5.0	6.2	6.3	8.6	8.0	8.3	8.3	7.4	6.6	6.1	4.7	6.4
1960	4.2	5.7	4.0	5.2	2.2	1.8	3.7	3.4	4.0	6.0	4.7	3.8	4.5	4.7	4.7	3.7	4.3	3.9	3.8	4.3	4.0	4.7	5.2	5.6	6.5	6.8	6.3	6.0	6.4	6.9	7.1	7.8	6.9	8.4	3.0	4.8
1961	4.3	5.2	4.3	3.2	2.5	0.5	3.2	4.1	4.5	5.0	4.9	6.6	4.8	7.7	7.6	6.1	5.6	5.4	6.6	6.3	6.4	5.6	6.4	5.4	7.8	7.0	6.9	6.6	6.7	7.3	6.4	5.0	6.1	3.7	3.6	2.6
1962	0.9	2.5	3.0	2.5	3.8	1.7	4.3	3.8	3.2	3.9	3.5	3.9	5.8	5.2	4.5	5.7	5.2	5.7	6.0	6.5	5.4	6.5	5.7	6.0	6.4	6.5	6.5	7.7	8.7	7.3	7.0	7.9	6.3	6.6	6.1	4.7
1963	3.2	2.6	5.2	x	x	x	x	x	x	x	x	x	6.0	5.4	5.9	5.4	5.7	5.6	5.0	4.9	5.0	5.9	6.6	6.7	6.1	7.0	8.4	9.1	9.4	10.1	5.3	5.0	4.7	x	x	x
1964	x	x	x	4.8	7.1	7.7	8.6	5.8	4.7	5.4	7.3	9.9	6.4	6.6	6.6	6.1	5.7	6.1	6.0	6.1	6.4	6.0	5.7	6.7	7.0	7.6	9.3	10.1	10.9	10.9	11.4	12.1	8.5	7.2	6.3	1.3
1965	1.4	3.1	4.6	3.1	2.3	4.2	4.5	x	3.6	5.2	4.8	6.7	5.9	5.9	5.3	6.9	4.9	5.1	5.3	5.2	5.0	5.8	7.4	8.1	6.6	7.7	8.3	8.1	9.0	8.3	7.8	8.8	8.0	5.4	x	4.7
1966	5.2	4.7	4.5	2.8	4.7	4.0	6.2	6.2	6.2	6.5	6.0	6.6	6.6	5.4	7.0	5.0	6.5	5.5	5.4	5.8	7.0	5.2	6.1	6.5	7.4	8.0	7.3	7.9	8.0	7.4	8.1	8.3	5.8	7.0	4.9	5.5
1967	4.7	4.8	4.6	5.4	5.5	5.6	4.9	4.0	4.2	4.7	5.4	4.2	4.7	4.1	4.2	4.8	3.8	4.0	4.4	4.3	5.3	5.3	5.6	5.2	7.1	6.0	6.8	8.1	7.6	8.3	6.6	6.8	6.7	5.3	5.3	4.7
1968	6.2	5.1	4.6	4.7	4.5	5.1	3.7	5.1	5.7	4.5	3.8	3.6	4.7	5.0	4.2	3.3	4.6	5.3	4.3	5.2	4.9	5.5	5.8	6.4	x	x	x	x	7.7	9.5	10.5	8.5	5.7	6.4	4.2	4.6
1969	2.6	2.7	3.2	5.0	4.2	4.2	4.7	3.9	3.5	2.8	3.5	4.5	4.6	5.0	4.2	4.5	5.3	4.7	5.8	5.5	6.1	5.8	7.0	6.9	7.6	7.9	8.3	9.8	9.6	10.2	9.1	9.7	8.7	8.9	4.3	4.9
1970	5.4	5.7	4.2	3.6	5.4	6.7	6.5	4.7	6.7	6.2	5.3	5.9	5.4	5.3	5.3	5.9	5.5	5.2	5.7	6.1	6.3	6.1	7.1	7.0	7.7	8.1	9.4	8.3	10.4	10.4	9.4	10.1	5.1	2.5	4.7	4.9
1971	3.4	5.2	3.0	4.0	4.0	3.3	3.9	4.9	5.8	4.9	5.3	5.5	4.3	4.1	5.4	5.1	5.0	5.1	4.8	5.5	5.3	6.2	5.9	6.6	7.1	7.7	8.3	9.3	10.2	9.6	9.0	8.1	10.1	10.0	7.3	4.5
1972	4.5	5.3	5.1	4.9	4.5	3.1	4.6	5.9	5.1	5.7	3.3	5.1	5.1	6.2	4.4	5.1	x	5.0	5.4	5.5	6.0	5.9	5.7	6.1	7.0	7.1	7.9	8.4	8.2	9.6	7.7	9.0	7.1	6.0	5.8	5.1
1973	3.5	4.3	4.2	4.9	5.0	3.8	4.5	3.0	5.5	3.5	5.0	5.1	5.3	5.1	5.3	5.5	4.9	5.4	4.5	5.5	5.7	x	x	x	x	8.4	11.6	11.0	9.6	9.7	10.4	10.8	x	x	5.6	4.6
1974	3.8	x	4.5	3.8	4.3	4.4	2.4	4.4	3.6	3.5	5.4	4.4	2.9	3.5	4.7	5.3	4.3	4.0	3.8	5.0	4.2	5.3	6.9	6.7	6.8	7.7	7.8	8.2	9.6	11.2	10.1	10.8	9.8	6.1	6.2	8.5
1975	5.0	3.9	6.5	5.6	5.0	4.1	5.0	x	5.7	3.5	5.6	5.0	4.4	5.6	5.3	5.5	6.3	5.3	6.2	5.4	5.9	7.2	7.9	7.1	7.5	7.7	10.2	10.5	12.2	12.5	11.7	8.4	10.7	9.8	6.2	7.0
1976	4.1	3.6	5.8	4.3	3.0	4.7	3.1	5.5	4.6	3.3	3.9	4.4	6.1	6.4	5.8	6.9	6.9	5.6	6.8	7.1	7.7	7.9	7.8	7.7	8.1	7.7	9.0	x	x	x	x	x	x	10.2	7.7	6.7
1977	4.1	4.9	4.1	5.6	7.2	5.0	5.6	5.4	4.7	2.8	5.0	5.5	5.0	6.1	6.8	6.7	6.3	5.0	6.2	6.6	7.5	7.3	6.9	6.8	8.0	9.0	9.0	9.6	11.5	10.8	x	x	x	6.1	6.0	4.5

Table 34 B

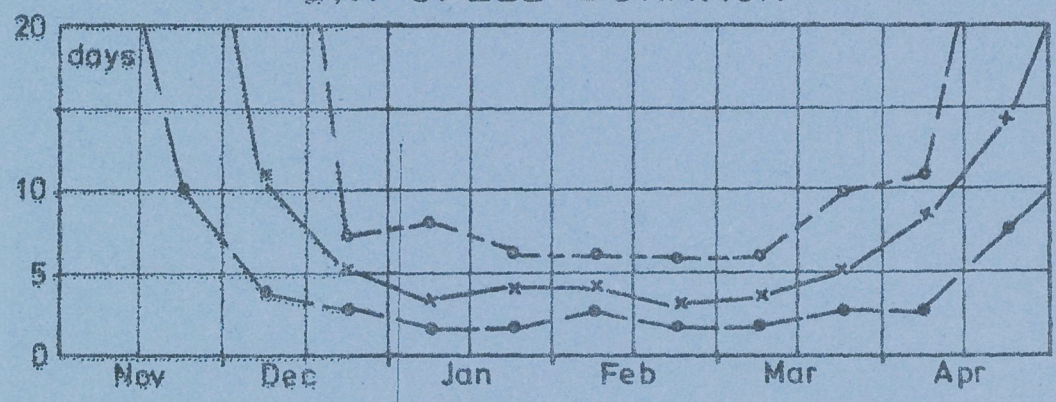


PROBABILITY	10	20	50	80	90	%
Rainfall	1850	1810	1500	1250	1150	mm
Onset rains	17 D	10 D	27 N	15 N	5 N	
End rains	28 M	20 M	27 A	22 A	1 A	
Length	186	175	152	135	125	days

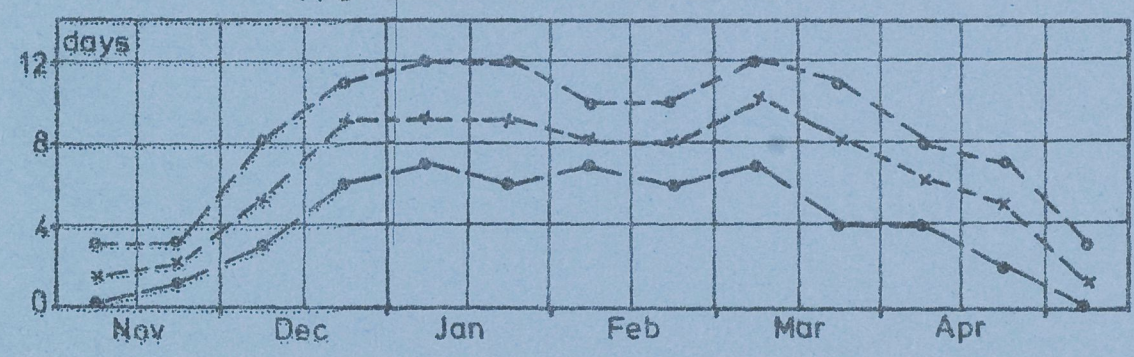
MONTHLY TEMPERATURES



DRY SPELL DURATION - PROBABILITY



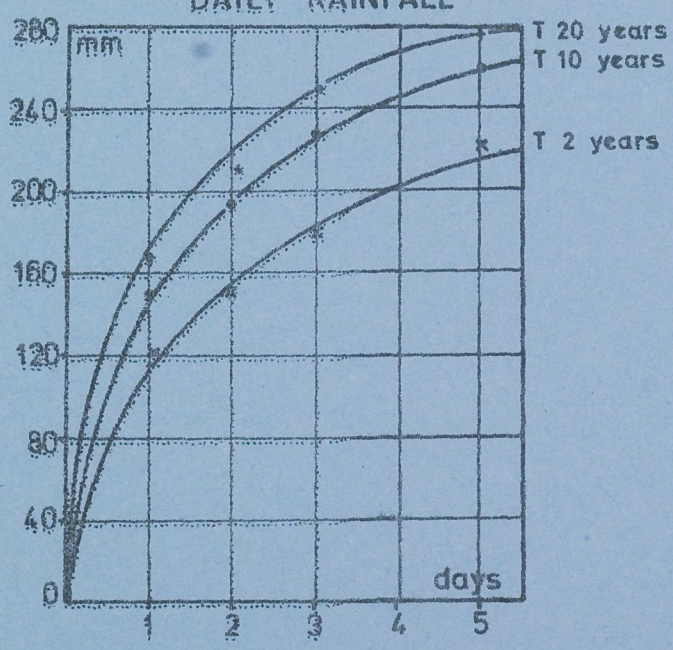
NUMBER OF RAINDAYS - PROBABILITY



RAINDAYS
1 Nov - 30 Apr
(probability)

20% E. P. 91 days
50% E. P. 79 days
80% E. P. 71 days

DEPTH DURATION FREQUENCY
DAILY RAINFALL



LEGEND

o- - -o 20% Exceedance Probability
x——x 50% Exceedance Probability
o— —o 80% Exceedance Probability

NKHOTAKOTA

CLIMATIC CHARACTERISTICS

RAINFALL at SALIMA - Total for 10-day periods (in mm).

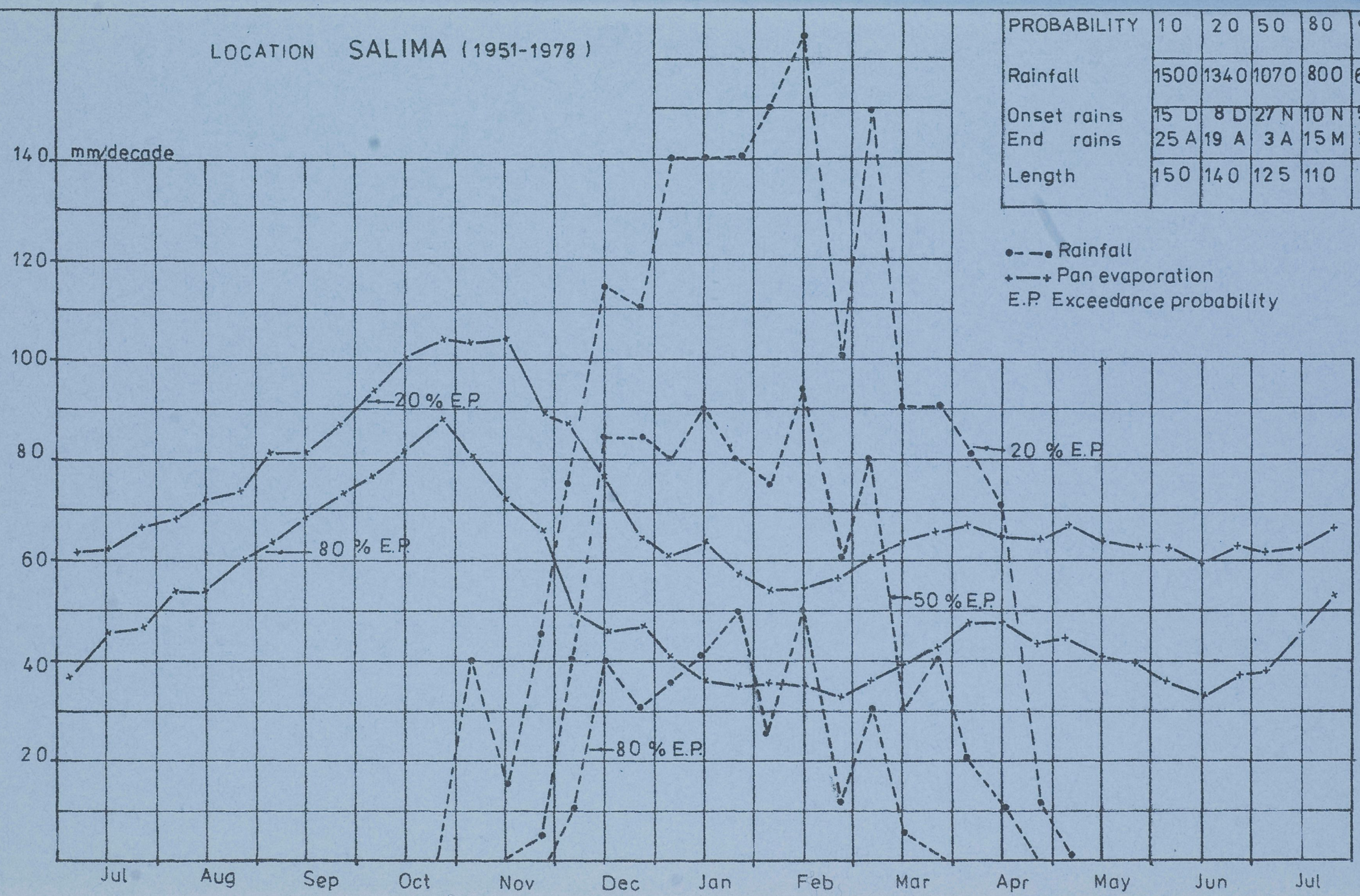
Year	January			February			March			April			May			June			July			August			September			October			November			December			Total
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1951	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	0	0	0	0	0	0	0	0	0	0	0	6	6	5	95	33	x
1952	36	20	21	7	5	4	70	0	56	14	43	0	0	0	0	x	x	x	x	x	x	0	0	0	0	0	0	0	0	0	39	20	0	0	6	30	x
1953	59	40	80	5	10	0	125	20	18	0	0	0	x	x	x	x	x	x	x	x	x	0	0	0	0	0	0	x	x	x	0	0	58	49	108	107	x
1954	x	x	x																0	0	0	0	0	0	0	28	0	0	0	0	61	9	6	44	18	19	x
1955	65	55	122	148	167	85	76	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	6	35	40	199	1039
1956	32	65	81	136	92	31	110	190	46	63	50	22	2	14	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	6	36	31	76	105	1200
1957	106	88	158	185	186	47	3	14	157	23	198	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	81	80	1378
1958	84	38	108	56	143	89	71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	26	84	97	798
1959	16	51	106	138	84	56	206	20	42	0	2	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5	0	1	35	0	0	44	147	33	990
1960	33	5	69	161	81	86	147	37	1	0	3	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	87	105	828
1961	10	88	79	76	116	95	145	102	84	86	1	10	5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	10	0	0	1	15	3	195	210	49	1381
1962	123	118	48	189	62	1	57	74	126	6	101	10	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	2	0	19	2	41	91	2	154	1235
1963	134	143	32	142	91	31	214	155	1	25	5	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	85	27	46	4	98	87	1323
1964	386	122	72	48	114	26	8	36	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	5	60	87	1015
1965	237	42	63	148	195	11	147	17	97	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	9	8	87	118	1224
1966	38	43	22	14	120	97	135	6	37	0	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	9	50	21	111	17	740
1967	77	42	99	84	63	50	6	22	42	23	52	36	17	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	2	0	30	23	28	126	32	80	941
1968	48	180	83	99	167	79	58	21	0	13	11	1	0	0	16	44	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	2	10	86	169	1090
1969	91	125	189	47	16	64	92	105	46	126	182	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	45	186	148	1468
1970	106	137	249	147	4	3	34	2	0	2	45	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	98	392	110	6	1337
1971	181	90	99	32	211	43	74	46	46	139	7	2	0	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	44	1	11	11	203	97	1436
1972	56	144	81	14	86	160	83	56	137	0	75	14	15	0	3	1	0	0	0	0	0	0	0	0	0	0	0	3	2	0	12	0	1	74	41	35	1093
1973	117	52	104	31	62	44	8	182	47	70	23	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	3	61	58	43	908
1974	106	254	146	126	179	72	135	14	294	94	0	14	34	42	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	3	115	57	27	1718
1975	9	106	40	22	105	131	187	50	21	29	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x	x	x	x	x	x	x	x
1976	326	122	268	90	195	76	234	73	29	220	81	9	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	16	29	48	2183
1977	129	189	67	34	96	114	35	165	32	22	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	14	0	0	52	2	56	60	153	217	1447

Table 35 A

PAN EVAPORATION at SALIMA - Average for 10-day periods (in mm/day).

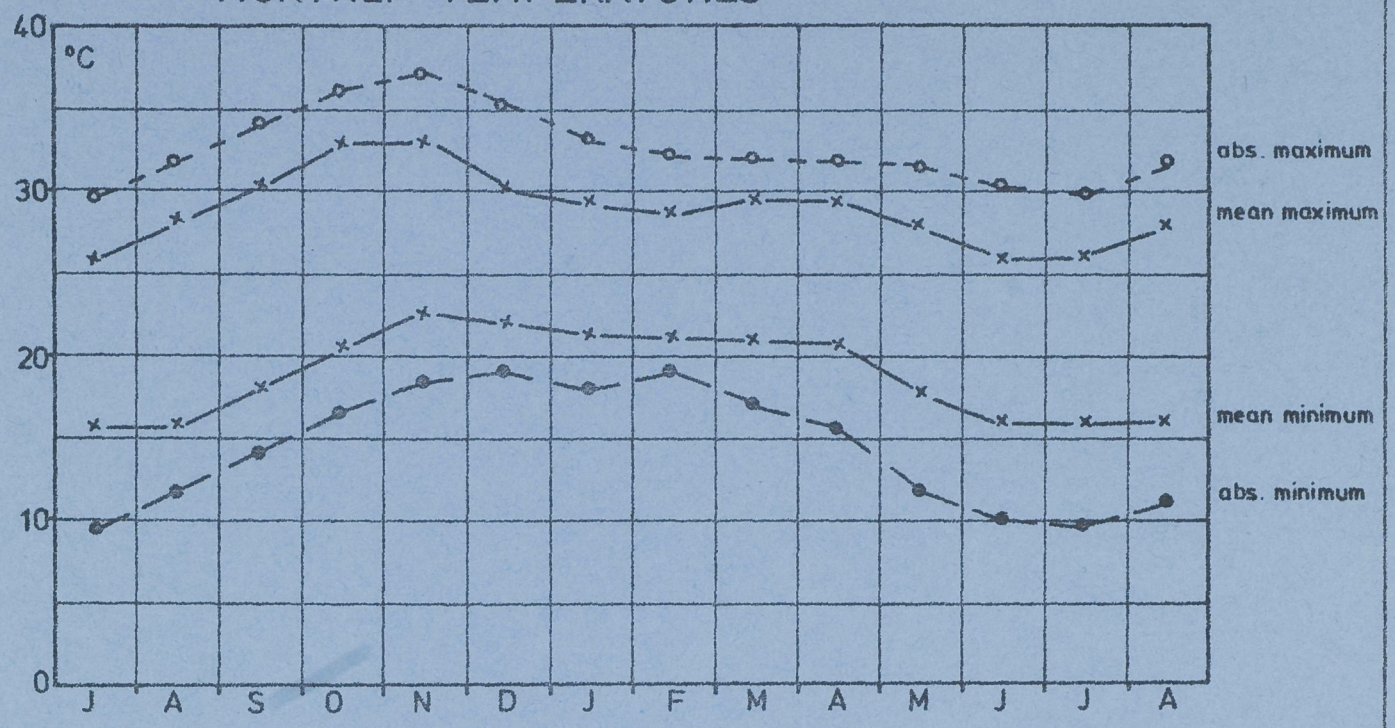
Year	January			February			March			April			May			June			July			August			September			October			November			December		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1951																					4.6	5.4	5.4	4.9	6.0	6.4	7.2	8.3	7.9	9.0	10.4	7.1	6.9	6.0	4.4	2.7
1952	3.3	4.4	4.6	3.8	3.2	4.3	2.8	4.8	5.2	4.8	4.5	4.3	5.9	4.8	5.7	x	x	x	x	x	x	6.3	5.9	6.0	6.5	6.6	8.4	8.1	8.1	8.8	7.5	6.6	8.1	8.1	6.8	6.4
1953	3.9	2.9	4.3	3.9	4.1	5.1	3.9	3.6	4.0	7.1	5.4	5.0	x	x	x	x	x	x	x	x	x	9.5	5.4	4.6	9.1	8.7	3.4	x	x	x	9.8	9.8	8.6	5.5	3.5	4.7
1954	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	4.6	5.1	4.7	6.8	6.4	6.6	5.7	7.3	7.3	7.5	8.4	8.1	7.9	6.6	6.1	4.7	4.9	5.9
1955	5.6	3.5	4.7	2.4	2.5	3.3	3.9	1.6	4.2	5.1	4.6	4.2	4.9	4.2	3.9	4.1	4.2	3.9	3.4	5.4	6.1	5.6	5.7	6.5	6.8	7.5	7.7	8.7	9.1	9.7	9.5	9.9	7.3	6.4	4.8	5.4
1956	4.0	4.0	3.3	3.7	3.0	3.7	3.1	3.1	3.5	2.7	3.9	3.7	4.1	3.9	4.1	3.4	3.1	3.6	3.7	4.1	4.5	4.6	5.3	6.2	4.8	5.7	7.0	7.4	7.7	7.7	8.0	7.2	5.5	4.0	4.3	3.8
1957	4.6	3.4	3.5	3.2	3.9	2.7	3.9	4.3	3.8	4.6	3.2	4.0	3.4	3.6	3.9	3.3	3.2	3.5	3.2	3.9	4.0	4.9	5.1	5.8	5.7	6.1	7.0	7.6	8.2	9.0	9.9	9.9	10.2	6.0	5.3	4.8
1958	4.0	5.2	3.4	3.3	3.7	3.5	5.2	6.1	5.8	5.4	5.5	5.5	5.1	4.3	3.7	3.5	3.0	3.4	5.1	6.2	5.8	6.0	6.4	6.7	6.9	7.1	8.7	8.8	9.1	10.2	8.6	8.4	8.8	7.3	4.5	5.1
1959	6.1	5.1	5.6	x	x	x	x	x	x	5.1	5.1	4.9	4.4	3.9	4.0	3.4	3.3	3.8	3.7	3.7	5.3	5.3	6.1	6.0	6.3	6.8	7.4	5.9	9.0	9.5	8.0	9.0	9.3	6.2	2.8	4.8
1960	5.3	6.6	4.8	3.2	3.5	2.7	3.5	2.2	3.2	4.9	5.2	4.4	4.4	4.1	3.7	3.5	3.1	3.3	3.6	3.6	4.4	5.3	5.4	6.2	6.4	7.4	7.5	8.0	8.1	8.6	9.2	9.4	8.1	10.8	2.9	4.7
1961	3.5	3.1	3.6	3.1	2.2	2.2	2.8	4.4	3.3	3.6	4.1	4.0	3.4	3.2	3.2	2.8	2.7	2.8	3.1	5.2	5.0	5.9	5.6	6.2	6.6	7.2	7.4	7.1	8.2	8.9	8.6	8.8	7.3	3.9	3.2	2.2
1962	4.0	3.5	3.1	3.3	4.4	3.2	5.5	4.1	3.0	5.5	5.0	4.4	4.8	4.5	4.4	3.9	3.9	4.4	6.2	5.4	4.1	5.7	6.0	5.9	6.9	7.2	8.3	7.9	8.8	9.1	8.3	7.6	7.9	5.5	8.2	4.6
1963	5.6	6.9	5.4	4.8	3.8	4.5	4.0	5.2	6.4	6.1	5.6	7.8	7.2	6.1	6.1	6.1	5.3	5.5	5.0	4.9	6.1	6.3	7.1	6.6	6.8	7.6	8.6	8.0	9.6	11.0	6.6	5.1	6.4	5.6	4.8	5.1
1964	4.1	4.1	3.3	4.9	5.0	6.5	6.5	5.6	6.3	7.3	7.5	7.6	6.7	5.7	6.8	5.6	5.8	6.0	6.7	5.9	5.9	6.3	6.5	7.8	8.7	8.7	9.7	9.4	9.4	10.5	10.6	10.9	7.1	8.7	8.3	5.7
1965	6.3	3.6	5.5	3.4	4.3	5.6	3.2	6.2	5.6	6.8	6.1	6.6	6.7	7.1	5.6	6.2	5.0	5.9	6.3	5.9	6.9	6.8	6.8	7.3	7.6	7.8	8.8	9.1	10.5	9.3	9.1	8.8	10.1	8.1	7.8	5.0
1966	4.3	4.7	5.0	4.5	3.4	4.3	5.2	7.7	7.1	7.0	6.3	9.4	7.2	5.6	6.4	5.2	7.7	7.6	5.9	6.1	6.9	6.7	6.6	8.0	7.6	8.7	8.6	9.8	10.6	9.9	10.6	10.2	6.2	8.7	5.3	6.3
1967	5.3	5.6	4.5	4.8	4.5	4.4	6.4	4.2	4.0	5.8	5.2	4.5	6.0	5.7	5.6	4.9	5.4	6.3	5.9	5.8	6.2	7.2	7.7	7.4	8.6	8.5	7.0	10.1	10.0	10.0	8.3	8.7	8.2	6.5	7.3	6.5
1968	6.2	6.3	5.6	4.8	3.9	5.2	5.5	6.6	7.4	6.0	4.8	5.0	5.3	6.0	4.5	3.9	4.6	5.7	4.8	5.3	5.0	5.6	6.3	6.3	7.9	6.9	7.1	8.9	9.4	10.0	10.3	8.7	7.9	7.5	5.1	4.4
1969	4.1	4.5	5.1	3.2	4.7	5.3	4.9	4.5	5.7	5.0	5.5	6.0	6.2	5.9	5.5	5.3	5.9	5.4	6.1	6.1	7.1	6.3	7.4	7.0	7.7	7.5	8.1	9.4	9.8	10.3	10.7	10.3	9.4	8.3	6.3	4.6
1970	5.4	5.2	4.8	4.2	7.5	7.6	6.5	7.5	8.7	8.0	5.1	7.6	6.7	7.4	6.2	6.2	6.7	6.2	6.0	6.3	8.8	7.0	8.7	7.2	10.4	9.3	8.7	9.0	9.9	10.7	10.3	11.2	5.0	3.5	5.3	8.5
1971	4.2	5.1	3.4	6.2	5.0	7.0	6.2	6.6	6.5	6.4	9.6	9.5	8.7	6.3	7.5	6.3	5.5	5.6	5.6	6.8	6.4	6.0	7.2	7.3	7.4	8.0	10.0	8.9	9.6	9.6	8.4	7.4	8.8	8.7	7.1	5.3
1972	4.5	5.0	5.0	5.3	6.0	3.0	5.8	5.8	5.7	6.2	5.3	5.5	5.8	6.0	5.1	5.4	5.2	5.6	5.9	5.8	6.2	7.9	6.8	6.3	7.7	7.4	8.1	9.4	9.4	10.5	9.4	11.4	8.6	6.8	7.2	6.3
1973	6.0	6.4	5.0	5.8	5.9	6.0	6.0	6.1	4.0	5.6	5.7	6.6	5.5	5.0	5.6	6.5	5.1	6.5	6.0	5.8	6.3	6.0	7.4	6.2	8.0	8.0	7.8	8.9	10.9	10.2	10.2	11.7	8.9	8.3	6.2	5.4
1974	3.4	5.5	5.0	3.9	5.2	5.0	4.5	5.3	6.2	5.4	6.3	5.3	4.1	4.1	4.9	4.7	5.2	5.0	4.3	5.5	6.2	5.4	6.6	6.3	7.3	7.5	8.2	8.6	9.1	10.2	9.1	10.4	8.1	0.9	0.6	5.8
1975	6.8	5.3	6.1	7.2	5.3	4.5	6.0	6.4	6.9	6.1	6.1	6.5	6.0	7.3	6.0	6.3	6.1	5.9	5.4	5.7	6.6	6.7	7.4	7.2	8.1	7.8	8.8	x	x	x	x	x	x	x	x	x
1976	5.8	5.5	7.1	5.2	4.4	4.3	4.5	4.9	6.5	5.0	5.9	6.0	6.1	6.6	6.1	5.6	5.8	6.8	5.5	6.4	6.2	6.8	7.2	7.4	7.4	7.4	7.5	8.9	9.6	9.6	x	x	x	9.0	8.0	7.0
1977	4.5	6.2	4.0	6.3	7.0	5.4	5.3	4.9	6.2	6.5	6.2	6.0	5.8	5.9	6.2	5.2	6.0	5.2	6.5	6.5	6.4	7.3	6.6	7.2	8.0	7.3	9.0	8.9	10.2	11.0	8.2	10.2	7.7	6.0	6.1	4.7

Table 35 B

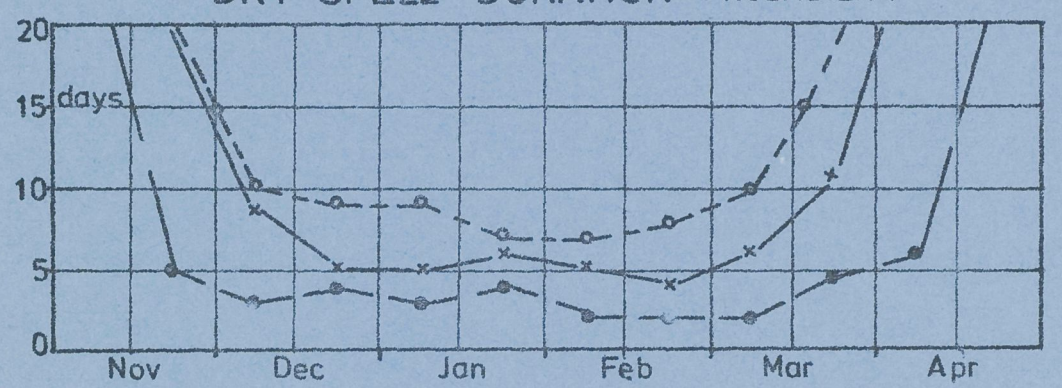


PROBABILITY	10	20	50	80	90	%
Rainfall	1500	1340	1070	800	640	mm
Onset rains	15 D	8 D	27 N	10 N	5 N	
End rains	25 A	19 A	3 A	15 M	3 M	
Length	150	140	125	110	90	days

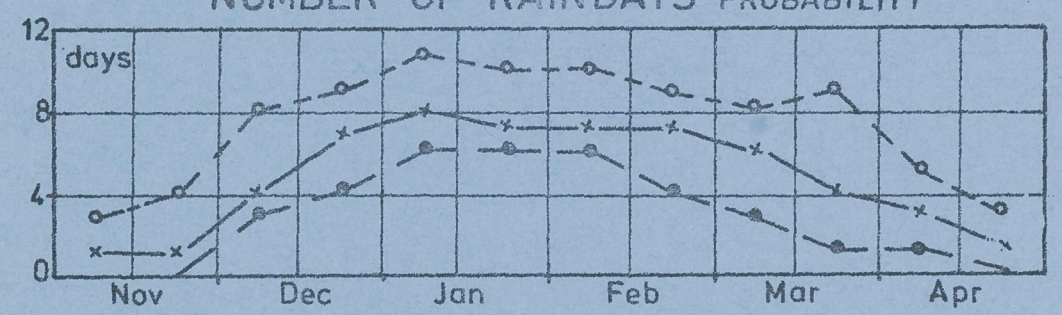
MONTHLY TEMPERATURES



DRY SPELL DURATION PROBABILITY



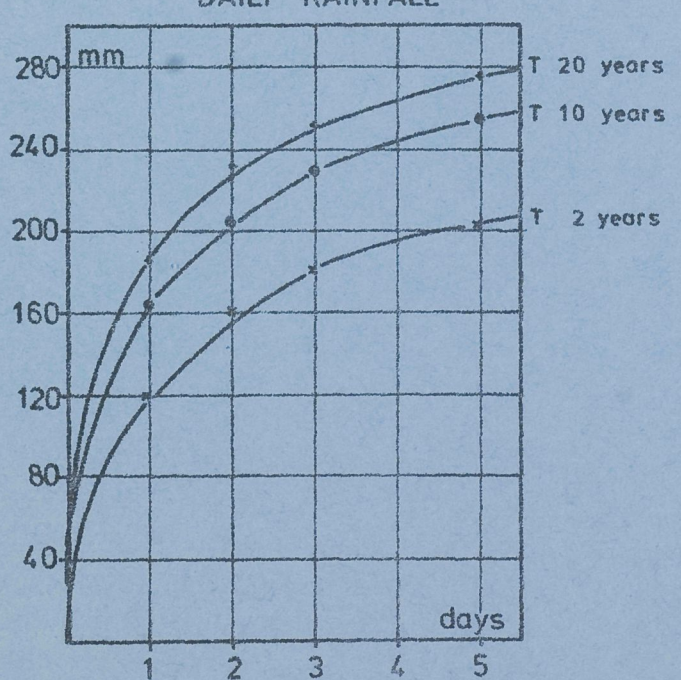
NUMBER OF RAINDAYS PROBABILITY



RAINDAYS
1 Nov - 30 Apr
(probability)

20% E.P. 71 days
50% E.P. 62 days
80% E.P. 81 days

DEPTH DURATION FREQUENCY
DAILY RAINFALL



LEGEND

o- -o 20% Exceedance Probability
x——x 50% Exceedance Probability
●- -● 80% Exceedance Probability

SALIMA

CLIMATIC CHARACTERISTICS