

INTERNATIONAL DEVELOPMENT REPORT

ANNUAL REPORT

AGRICULTURAL DEVELOPMENT
PROJECTS IN AFRICAN COUNTRIES

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JUNE 1977

INTERNATIONAL DEVELOPMENT REPORT

FEDERAL REPUBLIC OF NIGERIA
FEDERAL DEPARTMENT OF AGRICULTURE

FEASIBILITY REPORT
ON
THE AGRICULTURAL DEVELOPMENT
PROJECTS IN IMO AND BENDEL STATES

APPENDICES

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Table 1.1.1. Gross Domestic Product by Type of Activity
at Current Prices
(₹ million)

	1970	1971	1972	1973	1974	1975
Agriculture	2576	3034	3093	3123	3531	4176
Petroleum mining	490	944	1144	1899	5671	4600
Other mining & quarrying	45	63	76	90	110	147
Manufacturing	378	416	511	591	655	890
Construction	270	412	520	646	970	1360
Electricity & Water	37	41	48	52	59	70
Transport & Communication	149	188	238	268	360	468
General Government	343	377	339	463	766	1008
Health & Education	194	227	239	256	400	576
Other services	799	950	979	1065	1425	1875
<u>Gross Domestic Product at Factor Cost</u>	<u>5281</u>	<u>6651</u>	<u>7188</u>	<u>8453</u>	<u>13947</u>	<u>15170</u>
Indirect taxes less subsidies	400	500	480	460	520	600
<u>Gross Domestic Product at Market Prices</u>	<u>5281</u>	<u>7151</u>	<u>7668</u>	<u>8913</u>	<u>14467</u>	<u>15770</u>
Growth rate of GDP at factor cost		25.9%	7.2%	16.2%	62.3%	8.8%
Growth rate of non-oil GDP		19.1%	5.9%	8.4%	26.3%	27.7%

Sources: 1970-1973, Federal Office of Statistics
1974-1975, Estimated

Table 1.2 Balance of Payments

(\$ million)

	1970	1971	1972	1973	1974	1975
<u>Current Account</u>						
Exports: Oil	517	981	1186	2006	5671	4700
Non-Oil	374	364	251	364	435	350
Imports: Oil	52	51	45	41	52	100
Non-Oil	666	1009	914	1162	1614	3600
Trade Balance	<u>173</u>	<u>285</u>	<u>478</u>	<u>1167</u>	<u>4440</u>	<u>1350</u>
Net Non-factor service Payments:						
Oil	-81	-114	-140	-210	-253	-150
Non-Oil	-75	-77	-102	-297	-941	-800
Net factor Payments Received:						
Oil	-220	-320	-390	-415	-308	-300
Non-Oil	-112	-110	-155	-156	-67	150
(Interests on external reserves)	(-)	(-)	(10)	(16)	(98)	(300)
Net Transfers	45	2	-14	-35	-62	-40
Balance of Current Account	<u>-270</u>	<u>-334</u>	<u>-323</u>	<u>53</u>	<u>2809</u>	<u>210</u>
<u>Capital Account</u>						
Direct Investment: Oil	89	109	196	116	186	150
Non-Oil	94	129	102	71	-4	-20
Other Private	82	130	-64	7	63	50
Net Official: Oil	-	-	-	-51	-50	-100
Non-Oil	4	31	36	3	54	-100
Allocation of SDR	12	10	10	-	-	-
Changes in Reserves (- = addition)	<u>-59</u>	<u>-128</u>	<u>-39</u>	<u>-174</u>	<u>-3102</u>	<u>-190</u>
Errors and Omissions	47	55	4	-23	46	-

Source: 1970-1974, Central Bank of Nigeria
1975, Estimated figures

Table 1.3 Quantity, Value and Average Unit Value of Major Exports

Commodity	Unit of Quantity	Quantity in ('000)			Value in (₹ million)			Average Unit Value		
		1973	1974	1975/1	1973	1974	1975/1	1973	1974	1975/1
Groundnuts	m/ton	199	30	-	45.5	6.8	-	228.6	226.7	-
Groundnut Oil	"	111	24	-	23.6	11.4	0.2	212.6	435.1	666.7
Groundnut Cake	"	135	31	5	18.0	4.8	0.5	133.3	154.8	92.6
Cocoa Beans	"	211	180	215	112.4	159.0	180.6	532.7	883.3	839.2
Cocoa Butter	"	11	11	9	15.0	21.0	20.4	1,363.6	2,282.6	2,217.4
Other Cocoa Products	"	16	13	10	5.6	5.9	4.5	350.0	453.8	445.5
Petroleum Crude Oil	"	94,302	96,437	80,018	1,893.5	5,365.7	4,421.5	20.1	55.6	55.3
Palm Kernels	"	137	186	170	18.9	43.7	18.2	138.0	235.5	107.2
Palm Kernel Oil	"	40	39	20	7.7	21.6	5.0	192.5	568.4	246.3
Palm Kernel Cake or Meal	"	22	30	18	1.3	2.4	1.5	59.1	80.0	83.3
Palm Oil	"	-	-	313	-	-	3.9	-	-	124.6
Rubber	"	49	61	54	19.4	33.2	15.2	395.9	562.7	282.0
Raw Cotton	"	8	-	-	4.7	-	-	587.5	-	-
Cotton Seed	"	9	11	-	0.7	0.9	-	77.8	81.8	-
Tin Metal	"	5	6	5	15.5	26.4	19.4	3,100.0	5,280.0	4,311.1
Hides and Skins	"	5	5	3	12.5	10.6	6.8	2,500.0	2,100.0	2,344.8
Coffee	"	2	-	1	1.3	0.1	1.0	650.0	-	833.3
Timber and Plywood cu/m	"	370	305	105	14.3	14.0	4.6	38.6	45.9	44.0
Total Major Exports					2,209.9	5,727.5	4,703.3			
Other Commodities					58.5	56.4	71.2			
Total Domestic Exports					1,268.4	5,783.9	4,774.5			

/1 Provisional

Source: Federal Office of Statistics

Table 1.4. Composition of Imports by Commodity Sections

(₹ million)

Commodity Sections (S.I.T.C.)	1970	1971	1972	1973	1974	1975 ¹
0. Food and Live Animals	57.6	87.9	95.1	126.3	154.8	295.4
1. Beverages and Tobacco	4.0	4.4	4.4	5.2	9.1	47.5
2. Crude Materials, Inedible Except Fuels	16.6	20.6	20.7	27.0	63.7	70.9
3. Mineral Fuels, Lubricants and Related Materials	22.0	9.0	9.8	13.5	55.4	100.1
4. Oils and Fats	0.8	0.7	1.1	1.4	3.6	8.8
5. Chemicals	88.5	122.0	102.6	133.4	191.0	332.0
6. Manufactured Goods Classified Chiefly by Materials	226.0	319.4	267.9	323.9	523.3	1,009.3
7. Machinery and Transport Equipment	282.6	428.8	398.5	491.4	611.8	1,580.8
8. Miscellaneous Manufactured Articles	39.6	70.8	83.1	94.2	114.0	277.4
9. Miscellaneous Transactions	18.6	15.4	6.9	8.6	10.6	11.6
Total	756.4	1,078.9	990.1	1,224.8	1,737.3	3,733.8

¹ Provisional

Source: Federal Office of Statistics

Table 1.5 Imports of Food and Beverages (1975)

Item	(N)
Live Animals and Meat	7,328,000
Milk and Products	56,880,000
Fish	38,561,000
Wheet	54,957,000
Rice	2,378,000
Barley, Maize and Other Cereals	28,107,000
Fruits and Vegetables	9,216,000
Sugar	75,663,000
Beverages and Others	24,798,000
Total	297,888,000

Source: Nigeria Trade Summary, Dec. 1975

Imported Price of Rice (Av. of 1975)

Imported Volume	6,652.142 t
" Amount	2,378,879 N
Unit Price	358 N/t
	(= 360 N/t)

Table 1.6 Area Planted, Production and Yield per Hectare of Major Crops in Nigeria

Crops	Area in ('000) Hectare. Production in ('000) Tonne. Yield per Hectre in Kg.	Years			
		1971/72	1972/73	1973/74	1974/75
Millet	Area	4,788	3,692	5,651	4,787
	Production	2,835	2,391	3,794	5,554
	Yield	592	648	671	1,160
Yam	Area	1,197	788	855	671
	Production	9,766	6,900	6,936	7,160
	Yield	8,159	8,871	8,111	10,656
Maize	Area	1,197	1,050	1,130	579
	Production	1,274	639	808	528
	Yield	1,064	609	715	912
Cassava	Area	399	344	361	415
	Production	4,516	2,573	2,912	3,582
	Yield	11,318	7,478	8,066	8,631
Rice	Area	200	237	373	269
	Production	279	447	487	525
	Yield	1,395	1,886	1,304	1,952
Cocoyam	Area	200	266	167	108
	Production	800	1,357	1,106	480
	Yield	4,000	5,102	6,623	4,444
Soya Beans	Area	4	2	2	-
	Production	1	1	0	-
	Yield	250	500	0	-

1. Time Reference covers a period of 12 months, beginning from May of one year to April of the following year.
2. - Nil
3. 0 = Less than 0.5 thousand tonne

Table 1.7 Area Planted, Production and Yield per Hectare of Major Crops

East Central State

Crops	Area in ('000) Hectare. Production in ('000) Tonne. Yield per Hectare in Kg.	Years			
		1971/72	1972/73	1973/74	1974/75
Yam	Area	127	164	172	112
	Production	588	1,820	1,702	1,206
	Yield	4,625	11,097	9,895	10,768
Maize	Area	79	210	196	42
	Production	22	126	123	53
	Yield	278	600	627	1,261
Cassava	Area	61	108	54	88
	Production	258	742	518	936
	Yield	4,230	6,852	9,593	10,636
Rice	Area	-	22	16	9
	Production	-	63	64	128
	Yield	-	2,864	4,000	14,222
Cocoyam	Area	34	87	68	41
	Production	128	515	531	276
	Yield	3,765	5,805	7,809	6,732
Soya Beans	Area	-	-	-	-
	Production	-	-	-	-
	Yield	-	-	-	-

1. Time Reference covers a period of 12 months, beginning from May of one year to April of the following year.
2. - Nil.

Table 1.8 Area Planted, Production and Yield per Hectare of Major Crops

Mid - Western State

Crops	Area in ('000) Hectare Production in ('000) Tonne Yield per Hectare in Kg	Years			
		1971/72	1972/73	1973/74	1974/75
Yam	Area	101	148	125	111
	Production	896	1,474	1,000	1,394
	Yield	8,871	9,960	8,000	12,559
Maize	Area	98	215	148	63
	Production	82	170	132	63
	Yield	837	791	892	1,000
Cassava	Area	43	40	59	85
	Production	622	519	641	814
	Yield	14,465	12,975	10,864	9,577
Rice	Area	-	67	35	24
	Production	-	218	112	34
	Yield	-	3,254	3,200	1,420
Cocoyam	Area	17	10	9	9
	Production	27	45	52	16
	Yield	1,588	4,500	5,778	1,778
Soya Beans	Area	-	-	-	-
	Production	-	-	-	-
	Yield	-	-	-	-

1. Time Reference covers a period of 12 months, beginning from May of one year to April of the following year.
2. - Nil.
3. 0 = Less than 0.5 thousand tonne.

Table 1.9 Federal Government Capital Expenditure

(N million)

	Second National Development Plan (1970/1 - 1973/4)		Actual Expenditure
	Original Estimated Cost	Revised Cost	1970/1 - 1974/5
<u>Economic</u>			
Agriculture	68.1	79.0	161.2
Mining & Industry	86.8	104.0	94.1
Fuel & Power	90.7	90.7	233.4
Transport & Communication	419.5	774.7	704.8
Trade & Resettlement	41.9	32.0	83.3
<u>Sub-total</u>	<u>707.0</u>	<u>1,080.9</u>	<u>1,276.8</u>
<u>Social</u>			
Education	98.2	152.1	278.1
Health	20.3	37.7	52.3
Town Planning & Housing	10.6	22.6	211.0
Water & Sewerage	-	-	72.0
Information & Labor	15.6	81.0	84.4
<u>Sub-total</u>	<u>144.7</u>	<u>293.4</u>	<u>697.9</u>
<u>Administration & Security</u>			
General Administration	46.9	137.6	189.5
Defense & Security	192.7	346.2	437.7
<u>Sub-total</u>	<u>239.6</u>	<u>483.8</u>	<u>627.2</u>
<u>Total</u>	<u>1,091.3</u>	<u>1,858.1</u>	<u>2,601.8</u>
<u>Financial Obligations</u>	<u>19.0</u>	<u>73.6</u>	<u>314.0</u>
<u>Grand Total</u>	<u>1,110.2</u>	<u>1,931.7</u>	<u>2,916.0</u>

Source: Second National Development Plan;
Second Progress Report; and Official Gazette.

Table 1.10 Third National Development Plan,
1975/6 - 1979/80
Summary of Public Sector Capital Program

(N million)

Sector (1)	Total all Govts. (2)	Federal Govt. (3)	Total all States (4)	East- Central (5)	Mid- Western (6)
<u>Economic</u>					
Agriculture	1645.852	750.845	895.007	95.408	63.521
Livestock	344.046	173.176	170.869	15.227	8.383
Forestry	109.730	30.014	79.716	5.355	4.975
Fishery	101.554	58.561	42.993	1.398	2.289
Minings and Quarrying	2680.425	2680.425	-	-	-
Manufacturing and Craft	5315.871	4907.227	480.644	69.271	43.500
Power	1075.238	932.038	143.200	10.000	10.000
Commerce and Finance	559.355	323.433	235.922	25.700	12.180
Transport	7303.068	6274.342	1028.726	88.728	200.000
Communications	1338.944	1338.944	-	-	-
<u>Sub-total</u>	<u>20474.082</u>	<u>17469.005</u>	<u>3005.077</u>	<u>311.087</u>	<u>344.848</u>
<u>Social</u>					
Education	2463.822	1656.193	807.629	78.239	60.807
Health	759.928	314.160	455.768	62.621	39.690
Information	380.225	234.341	145.884	19.837	5.900
Labour	43.187	43.187	-	-	-
Social Development & Sports	139.603	24.950	114.633	22.592	3.920
<u>Sub-total</u>	<u>3786.765</u>	<u>2272.831</u>	<u>1513.934</u>	<u>183.289</u>	<u>110.317</u>
<u>Regional Development</u>					
Water Supply	930.038	317.413	612.625	57.540	73.975
Sewerage, Drainage & Ref. Disposal	428.495	154.499	273.996	28.000	58.000
Housing	1837.430	1650.000	187.430	20.500	30.000
Town & Country Planning	754.867	250.453	504.414	70.706	31.007
Co-operative and Community Dev.	193.294	16.187	177.107	17.000	11.851
<u>Sub-total</u>	<u>4144.124</u>	<u>2388.552</u>	<u>1755.572</u>	<u>193.746</u>	<u>204.833</u>
<u>Administration</u>					
Defence & Security	3325.517	3325.717	-	-	-
General Administration	1124.128	709.210	414.918	35.955	27.092
<u>Sub-total</u>	<u>4449.645</u>	<u>4034.727</u>	<u>414.918</u>	<u>35.955</u>	<u>27.092</u>
Nominal Total	32854.616	26165.115	6689.501	724.077	687.090

Source: Third National Development Plan.

Table 1.11 Third National Development Plan
Projected Food Supply 1974/75 - 1979/80

Crops	Estimated Pro- duction 1974/75 (million tons)	Target Production 1979/80 (million tons)	Target Imports 1979/80 (million tons)	Target Food Supply 1979/80 (million tons)	Target Rate of Growth of Production 1974/75 to 1979/80 % p.a.
1. Maize	1.62	2.35	-	2.30	7.5
2. Millet	3.05	3.57	-	3.57	3.2
3. Sorghum	4.02	4.71	-	4.71	3.2
4. Rice	0.42	0.80	(-0.150)	0.65	14.5
5. Wheat	0.020	0.20	0.575	0.775	160.0
6. Yam	14.4	16.80	-	16.80	3.1
7. Cassava	5.5	6.45	-	6.45	3.2
8. Pulses	1.08	1.50	-	1.50	6.8
9. Sugar	0.030	0.08	0.140	0.220	21.6
10. Cocoyam	1.63	1.78	-	1.78	1.6
11. Melon Seeds	0.11	1.55	-	0.155	6.0
12. Other Food Crops	n.a.	n.a.	n.a.	n.a.	2.9

Source: Third National Development Plan.

Table 1.12 Composite Consumer Price Indices^{/1}
(Base: average 1960 = 100)

Month	Consumer Price Index	Component Indices					
		Accommodation	Clothing	Food	Fuel and Light	Transport	Other Services
December 1970	155.8	130.9	167.9	172.9	143.4	146.3	128.3
December 1971	179.1	133.6	166.0	218.0	177.9	147.7	128.8
December 1972	172.9	137.5	173.8	199.9	173.5	153.8	130.9
December 1973	203.9	139.1	197.3	244.9	174.2	211.3	145.3
December 1974	224.0	143.1	237.6	269.8	193.2	214.9	168.8
1975							
January	237.6	142.3	241.5	293.0	199.8	220.2	166.3
February	251.9	146.8	251.4	316.4	230.5	220.2	167.5
March	262.4	144.0	273.9	324.2	258.3	243.8	178.5
April	272.6	144.7	285.3	337.4	274.5	246.2	174.3
May	284.8	145.7	280.8	362.0	275.1	246.0	176.1
June	295.7	147.5	275.7	381.4	306.9	248.6	177.1
July	299.2	153.1	280.8	387.8	292.5	251.6	176.2
August	303.9	155.1	291.1	392.4	294.1	250.8	176.2
September	305.0	146.8	300.9	395.8	281.5	252.0	185.4
October	305.7	146.1	306.1	394.0	287.9	254.0	189.3
November	314.2	145.4	327.0	406.0	301.8	268.5	191.2
December	320.6	146.8	324.3	422.7	254.5	267.6	195.9

^{/1} Weighted average of price indices in Benin, Ibadan, Ilorin, Kaduna, Kano, Lagos, Sapele, Warri, and Zaria.

APPENDIX 2 WATER REQUIREMENTS

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1. Radiation method

The Radiation method is dependent on air temperature and sunshine or cloudiness or radiation data. The formula to calculate the potential evapotranspiration is as follows:

$$E_{pt} = a + b \cdot W \cdot R_s$$

where: E_{pt} = Potential evapotranspiration in mm/day

R_s = Solar radiation expressed in equivalent evaporation in mm/day
= $(0.25 + 0.50 n/N) R_a$

W = Weighting factor which depends on temperature and altitude as given in Table 2.1

a, b = Coefficients for which the values are given in Fig. 2.1

n/N = Ratio actual to maximum possible sunshine hours. N values are given in Table 2.2

R_a = Extra-terrestrial radiation expressed in equivalent evaporation in mm/day as given in Table 2.3

2. Penman method

The Penman method uses such climatic data as temperature, humidity, wind speed and bright sunshine hours or radiation. The formula is expressed as follows:

$$E_{pt} = W \cdot R_n + (1-W) \cdot f(u) \cdot (e_a - e_d)$$

$$R_n = R_{ns} - R_{nl}$$

$$R_{ns} = 0.75(0.25 + 0.50 + n/N)R_a$$

$$R_{nl} = \delta T_k^4 \cdot (0.56 - 0.079/\sqrt{e_d}) \cdot (0.1 + 0.9n/N)$$

where: E_{pt} = Potential evapotranspiration in mm/day

W = Weighting factor which depends on temperature and altitude as given in Table 2.1

$f(u)$ = Wind function for wind velocity at a 2 m height above ground in km/day
= $0.27(1 + U^2/100)$

e_a = Saturation vapour pressure in millibar as function of mean air temperature as given in Table 2.4

- e_d = Vapour pressure = $e_a \times \frac{RH}{100}$
- R_a = Extra-terrestrial radiation expressed in equivalent evaporation in mm/day as given in Table 2.3
- n/N = Ratio actual to maximum possible sunshine hours
- δ = Boltzman constant
- δT_k^4 = Correction for temperature in milli bar as given in Table 2.5
- U_2 = Wind velocity at 2 m height above ground

3. Hargreaves method

The Hargreaves method was prepared primarily for computing a climate factor equal to the Class A pan evaporation. The equation is expressed as follows:

$$E_p = 17.4 \cdot d \cdot t \cdot (F_h \cdot F_w \cdot F_s \cdot F_e)$$

$$F_h = 0.59 - 0.55 H_n^2$$

$$F_w = 0.75 + 0.125 / \overline{U_2}$$

$$F_s = 0.478 + 0.58 n/N$$

$$F_e = 0.95 + 0.0001 \cdot E$$

where: H_n = Mean monthly relative humidity at noon
 $= 0.36RH + 0.64RH^2$

U_2 = Wind velocity at 2 m height

n/N = Sunshine percentage, expressed decimally

E = Altitude in m

RH = Mean relative humidity

Table 2.1 Values of Weighting Factor W for the Effect of Radiation at Different Temperatures and Altitudes

Temperature °C	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	
W at altitude m																					
0	0.43	.46	.49	.52	.55	.58	.61	.64	.66	.68	.71	.73	.75	.77	.78	.80	.82	.83	.84	.85	.85
500	.45	.48	.51	.54	.57	.60	.62	.65	.67	.70	.72	.74	.76	.78	.79	.81	.82	.84	.85	.86	.86
1,000	.46	.49	.52	.55	.58	.61	.64	.66	.69	.71	.73	.75	.77	.79	.80	.82	.83	.85	.86	.87	.87
2,000	.49	.52	.55	.58	.61	.64	.66	.69	.71	.73	.75	.77	.79	.81	.82	.84	.85	.86	.87	.88	.88
3,000	.52	.55	.58	.61	.64	.66	.69	.71	.73	.75	.77	.79	.81	.82	.84	.85	.86	.88	.88	.89	.89
4,000	.55	.58	.61	.64	.66	.69	.71	.73	.76	.78	.79	.81	.83	.84	.85	.86	.88	.89	.90	.90	.90

Table 2.2 Mean Daily Maximum Duration of Bright Sunshine
Hours N for Different Months and Latitudes

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Northern Lats.												
	8.5	10.1	11.8	13.8	15.4	16.3	15.9	14.5	12.7	10.8	9.1	8.1
	8.8	10.2	11.8	13.6	15.2	16.0	15.6	14.3	12.6	10.9	9.3	8.3
	9.1	10.4	11.9	13.5	14.9	15.7	15.4	14.2	12.6	10.9	9.5	8.7
	9.3	10.5	11.9	13.4	14.7	15.4	15.2	14.0	12.6	11.0	9.7	8.9
	9.4	10.6	11.9	13.4	14.6	15.2	14.9	13.9	12.9	11.1	9.8	9.1
	9.6	10.7	11.9	13.3	14.4	15.0	14.7	13.7	12.5	11.2	10.0	9.3
	10.1	11.0	11.9	13.1	14.0	14.5	14.3	13.5	12.4	11.3	10.3	9.8
	10.4	11.1	12.0	12.9	13.6	14.0	13.9	13.2	12.4	11.5	10.6	10.2
	10.7	11.3	12.0	12.7	13.3	13.7	13.5	13.0	12.3	11.6	10.9	10.6
	11.0	11.5	12.0	12.6	13.1	13.3	13.2	12.8	12.3	11.7	11.2	10.9
	11.3	11.6	12.0	12.5	12.8	13.0	12.9	12.6	12.2	11.8	11.4	11.2
	11.6	11.8	12.0	12.3	12.6	12.7	12.6	12.4	12.1	11.8	11.6	11.5
	11.8	11.9	12.0	12.2	12.3	12.4	12.3	12.3	12.1	12.0	11.9	11.8
Southern Lats.												
	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1

Table 2.3

Extra-Terrestrial Radiation Ra
Expressed in Equivalent Evaporation in mm/day
Northern Hemisphere

<u>Lat.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>
10	13.2	14.2	15.3	15.7	15.5	15.3	15.3	15.5	15.3	14.7	13.6	12.9
8	13.6	14.5	15.3	15.6	15.3	15.0	15.1	15.4	15.3	14.8	13.9	13.3
6	13.9	14.8	15.4	15.4	15.1	14.7	14.9	15.2	15.3	15.0	14.2	13.7
4	14.3	15.0	15.5	15.5	14.9	14.4	14.6	15.1	15.3	15.1	14.5	14.1
2	14.7	15.3	15.6	15.3	14.6	14.2	14.3	14.9	15.3	15.3	14.8	14.4
0	15.0	15.5	15.7	15.3	14.4	13.9	14.1	14.8	15.3	15.4	15.1	14.8

Table 2.4 Saturation Vapour Pressure e_a in Millibar as Function of Mean Air Temperature t in $^{\circ}\text{C}$

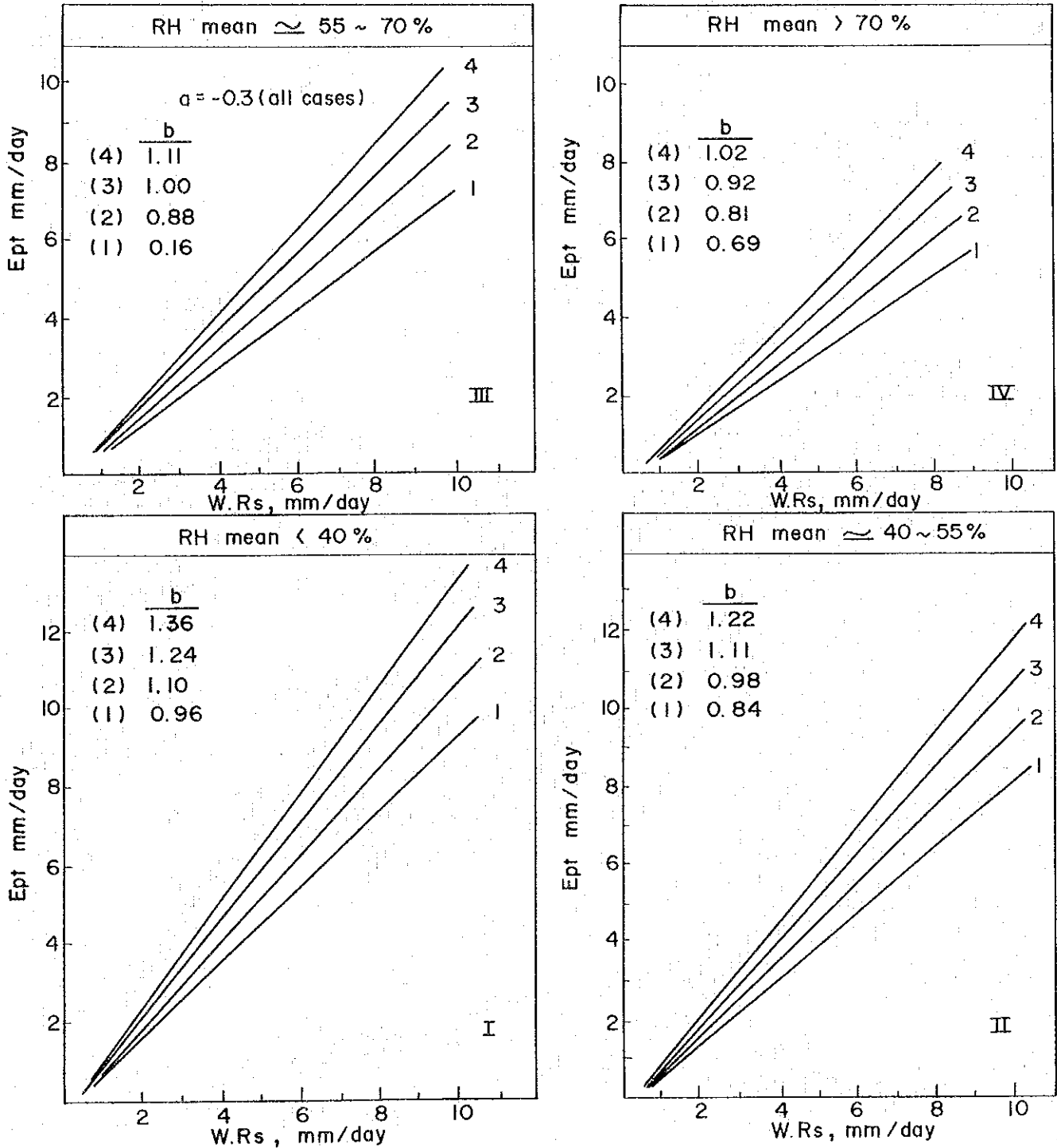
Temperature $^{\circ}\text{C}$	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
e_a mbar	6.1	6.6	7.1	7.6	8.1	8.7	9.4	10.0	10.7	11.5	12.3	13.1	14.0	15.0	16.1	17.0	18.2	19.4	20.6	22.0

Temperature $^{\circ}\text{C}$	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
e_a mbar	23.4	24.9	26.4	28.1	29.8	31.7	33.6	35.7	37.8	40.1	42.4	44.9	47.6	50.3	53.2	56.2	59.4	62.8	66.3	69.9

Table 2.5 Correction for Temperature δT_k^4 on Longwave Radiation Rnl

$t^{\circ}C$	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
δT_k^4	11.0	11.4	11.7	12.0	12.4	12.7	13.1	13.5	13.8	14.2	14.6	15.0	15.4	15.9	16.3	16.7	17.2	17.7	18.1

Fig.2.1 Relationships for Obtaining Ept from Calculated Values of W.R.s and General Knowledge of Mean Relative Humidity and Daytime Wind.



- Line 1. Daytime wind very strong, > 700 km/day
 2. " " strong, 400 ~ 700 km/day
 3. " " moderate, 200 ~ 400 km/day
 4. " " light, 0 ~ 200 km/day

APPENDIX 3 METEO-HYDROLOGICAL DATA

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Imo State

(1) Alavan Ikoku College of Education

Latitude : 5°29'N
Longitude : 7°01'E
Height : 230 ft

Daily Rainfall 1973 - 1976 without Aug. 1975
Temperature (Daily) 1973 - 1976 without Aug. 1975
Humidity (Daily) 1973 - 1976 without Aug. 1975
Sunshine (Daily) 1974 - 1976 without Aug. 1975

(2) Meteorological Services

Latitude : 5°29'N
Longitude : 7°02'E
Height : 300 ft

Daily Rainfall 1974 - 1976
Monthly Rainfall 1907 - 1962, 1974 - 1976

(3) Oguta

Monthly Rainfall 1951 - 1967

(4) Okigwi

Latitude : 5°50'N
Longitude: 7°21'E

Monthly Rainfall 1936 - 1966

(5) Umudike

Latitude : 5°29'N
Longitude : 7°33'E
Height : 400 ft

Daily Rainfall Apr. 1971 - 1976
Monthly Rainfall 1934 - 1963, 1971 - 1976
Temperature (Daily) 1972 - 1976
Humidity (Daily) 1972 - 1976
Sunshine (Daily) 1972 - 1976
Piche Evaporation 1972 - 1976

Bendel State

(1) Ilele Gov. Farm

Monthly Rainfall 1958 - 1976

(2) Irrua Gov. Farm

Latitude : 6.77°N
Longitude : 6.22°E
Height : 400 ft

Daily Rainfall 1970 - 1976
Monthly Rainfall 1952 - 1976
Temperature (Daily) 1974 - Jan. 1977
Humidity (Daily) 1974 - Jan. 1977

(3) Warrake Farm

Daily Rainfall 1976
Monthly Rainfall 1975 - 1976
Temperature (Daily) 1976
Humidity (Daily) 1976
Piche Evaporation 1976
(Pan)

(4) Auchi Gov. School

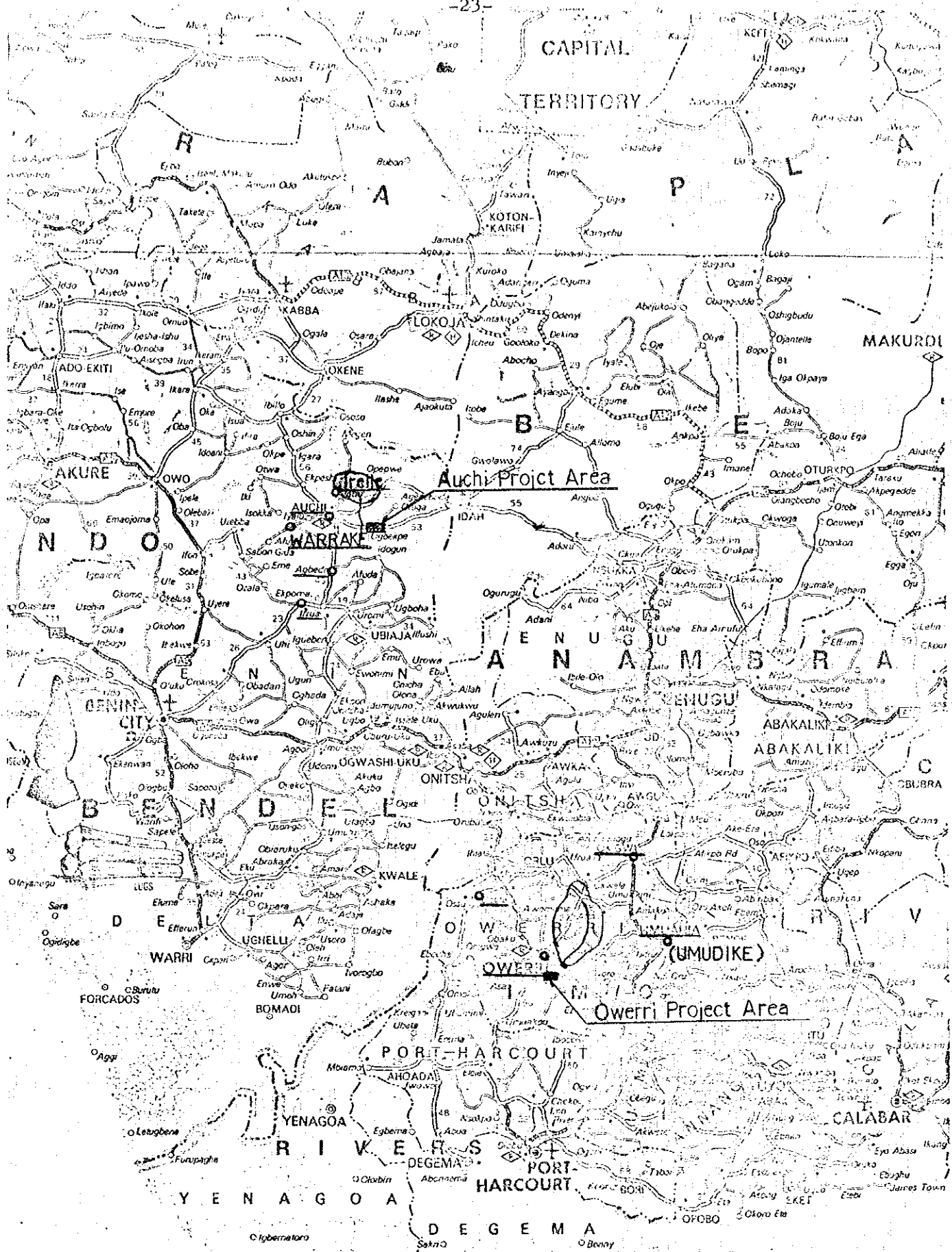
Latitude : 7°04'N
Longitude : 6°14'E
Height : 800 ft

Daily Rainfall 1961 - Jan. 1977

(5) Agbede Farm

Height : 300 ft

Daily Rainfall 1973 - 1976

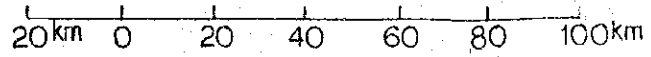


CAPITAL
TERRITORY

Auchi Project Area

Owerri Project Area

SCALE 1:1,525,000



DAILY RAINFALL RECORD

Station: ALAVAN IKOKU COLLEGE OF EDUCATION

River Basin Basin No. Station No. Location N. 5° 39' E. 7° 01' E.L. 230 ft.
 Station Site Drainage Area Km² Year 1973

Month Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
1						18.0	51.7	19.1	1.8				
2				0.8	1.0	1.3		6.3	66.3	8.1			
3				6.7					9.7	35.0	2.0	4.6	
4				15.2	7.4	22.9			16.0	17.8			
5					59.7	6.1		27.2					
6					7.4			10.2	1.8	1.0		4.1	
7					2.0		15.2	17.8	6.7		22.9	23.1	
8	38.1						12.7	20.8	9.4	9.1			
9							8.9	18.3		28.2			
10								2.5	51.6	48.5			
11				9.4		38.1	3.8	20.6	6.5	17.8			
12			0.6				9.7	4.1	27.7				
13				30.5		1.3		6.3	25.9	6.6			
14			17.8	2.8				4.1	51.6			3.0	
15			1.3		12.7			22.9	8.4	19.3			
16						12.7		28.2	2.0				
17				83.1	2.8	7.6		16.0	2.3				
18		0.8			49.3	17.8		5.3		12.2			
19	0.5			2.0		11.9	11.4		0.8	11.9			
20								40.9		1.0			
21		12.7		28.6		2.8	16.0	46.5	2.5				
22			12.7	12.2	13.5	63.9		67.1	0.3				
23						6.9	1.0	27.7	1.0	29.0			
24					41.1	12.7	63.2						
25			33.8		22.1	1.5	1.0	4.8					
26		8.7	1.0	12.7		16.5	9.1	14.0	6.1	2.0			
27						19.3	1.5	0.8	39.4	2.3			
28	19.6		30.5			19.3	11.7	1.5	39.4	0.5			
29			2.0	15.5	6.7		0.6	1.0	6.5				
30	18.8				19.1	19.3	56.9	2.0		1.5			
31					2.0		55.7	0.8		6.7		3.3	
Total	77.0	21.8	99.7	217.1	296.7	299.8	329.4	411.5	372.4	254.3	24.9	27.0	
Number of rainy day	4	3	8	12	14	19	17	27	23	19	2	5	
Max. within one recorded day (Date)	38.1 (8)	12.7 (21)	33.8 (25)	83.1 (17)	59.7 (5)	63.9 (22)	63.2 (24)	67.1 (22)	66.3 (2)	44.5 (10)	22.9 (7)	23.1 (7)	()
Max. intensity	6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Mar. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day	2-day		3-day			Original						

DAILY RAINFALL RECORD

Station: ALAYAN IKOKU COLLEGE OF EDUCATION

River Basin _____ Basin No. _____ Station No. _____ Location N. 5° 29' E. 7° 01' E.L. 230 ft

Station Site _____ Drainage Area _____ Km² Year 1974

Month Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
	1						32.3			33.1	5.3		
2				29.5	23.7	0.8			19.0	6.1			
3				21.6					1.8	26.2			
4					98.3	9.7	26.9			31.5			
5						0.9	10.2		14.0		21.8		
6						5.1	13.6		0.3				
7					3.8				1.8	2.3			
8				1.7	20.3	0.9			4.6	31.8			
9				47.0	2.0	29.2		76.2		29.2			
10			56.4						27.2	6.9			
11							5.1		15.5	25.4			
12			10.2		37.1		14.7	38.1	43.2	13.5			
13			10.2		1.0	0.6	1.5	5.8	1.8	2.8	10.2		
14					11.9	6.6	116.1	13.5	1.3				
15							28.2	88.9	4.3				
16					5.1	14.7	12.7	6.1	5.8				
17		5.1				14.7	3.8	8.4	4.1				
18						18.3				26.9			
19				30.2			78.2		5.3				
20		2.5				31.8	25.7		101.6				
21					7.9	14.7	7.1	26.2	0.8				
22				12.2	2.0		1.3	14.0	4.6	1.8			
23		22.1		3.0			5.8	1.8	2.3				
24						2.5	6.1	3.0	8.9				
25			27.7			6.1	18.5	9.1	3.0	7.4			
26					17.8	0.3	53.3	15.3	3.8				
27						85.1	27.4	6.4					
28					4.6	0.5	2.8	1.3	17.8				
29						17.3	12.7	14.7	2.3	19.5			
30					1.0	5.1		3.6	3.6				
31			6.4		50.8		63.5	52.3		28.2			
Total		29.7	110.7	145.2	286.5	296.0	536.4	386.6	316.5	253.1	32.0		
Number of rainy day		3	5	7	15	21	22	18	26	16	2		
Max. within one recorded day (Date)	()	22.1 (23)	56.4 (10)	47.0 (9)	50.8 (31)	85.1 (27)	116.1 (14)	88.9 (15)	101.6 (20)	31.8 (8)	21.8 (5)	()	()
Max. intensity	6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Mar. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day			2-day			3-day			Original			

DAILY RAINFALL RECORD

Station: ALAVAN IKOKU COLLEGE OF EDUCATION

River Basin Basin No. Station No. Location N. 5° 29' E. 7° 01' E.L. 230 ^{ft}

Station Site Drainage Area Km² Year 1975

Month Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
1					12.7		17.8	2.0	23.6	2.8			
2					54.4		0.1	0.3	0.6	27.7	0.3		
3			25.9			17.0		27.0	0.6				
4					8.4	19.6			10.4				
5					3.6	18.5		24.2	18.5	12.4			
6				7.6			69.6	11.8	8.9	16.5			
7				16.0	11.9			7.4	54.6	6.4	3.0		
8							16.3		2.1				
9					12.2			34.6			29.9		
10				18.5			2.0	1.2	0.0	9.7			
11					2.3		1.2	59.2	13.5		6.9		
12				5.1	3.0		21.3		22.9				
13				2.0			7.6		2.3	4.3			
14				6.9		21.6		2.2	7.6				
15				0.5			22.8	6.3	3.6	13.5			
16					10.7	0.5	0.8		3.8				
17			29.0		22.9	1.0				4.8	23.6		
18				28.2	15.2				67.1				
19					3.0	1.3		18.8	12.2				
20				2.5			43.7		0.1	1.5			
21			1.3			7.6	2.8		8.9				
22					6.4	2.3	10.4		50.9				
23					13.0			24	45.7				
24		36.8						7.3	1.8				
25				10.2		11.4		10.7	57.7	11.9		22.9	
26			27.4						15.5	38.1			
27		19.1		12.4				2.0		18.0			
28					1.8		43.2		67.1	0.2			
29						8.4	23.1		11.7	4.1			
30				19.3	14.7	0.5			18.3	46.0			
31					46.0		35.8	1.0		6.6			
Total		55.9	83.6	129.3	233.2	98.6	348.0		566.9	225.5	58.2	22.9	
Number of rainy day		2	4	12	16	12	17		27	17	5	1	
Max. within one recorded day (Date)	()	36.8 (24)	29.0 (17)	28.2 (18)	54.4 (2)	21.6 (14)	69.6 (6)	59.2 (11)	67.1 (8 or 29)	46.0 (30)	24.4 (9)	22.9 (25)	()
Max. intensity	6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Mar. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day			2-day			3-day			Original			

DAILY RAINFALL RECORD

Station: ALAVAN IKOKU COLLEGE OF EDUCATION

River Basin Basin No. Station No. Location N. $5^{\circ} 29'$ E. $7^{\circ} 01'$ E.L. 230 ft

Station Site Drainage Area Km² Year 1976

Month Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
	1		14.0				6.9	7.6	5.3			10.2	
2						82.8	1.0						
3							26.7			52.6			
4		51.4				25.9	18.0						
5						10.9	29.2	3.6			25.9		
6					8.9		7.6	3.8					
7				11.4	12.0		9.4			29.0	0.5		
8					27.9		28.2	5.6					
9					4.6	0.2		4.6	3.6				
10			102.4	8.4		68.3	7.4	20.8		19.8			
11						46.2				6.9			
12		2.2				4.8	7.1						
13						0.5			8.9	16.8			
14					1.7	29.5	7.4	8.9	9.7	20.8			
15				29.1	2.6		5.8	25.4		64.3			
16				4.6			3.0	11.9		64.3			
17			38.9	40.6	1.5	10.2		25.4		43.2			
18					10.2	40.6	6.4		29.5	35.8			
19						68.7	19.8	17.8		8.9			
20			20.3		3.6		29.1	0.3	65.0			22.9	
21							3.3	9.8		5.3		29.2	
22		15.2					1.8		19.1				
23				38.1		20.1	21.6	28.7				29.2	
24			25.4					33.5					
25		30.5				26.2	30.0	9.7	53.8	36.1			
26		28.2					10.7			7.6			
27					2.5		3.8		5.0				
28					22.0				8.4				
29			30.7	49.5	25.4				25.4				
30			6.9		3.6								
31			28.2		4.1		5.3			10.2			
Total		141.5	252.8	176.8	159.0	541.2	287.3	210.6	338.3	423.4	36.6	81.3	
Number of rainy day		6	7	7	14	15	23	16	10	15	3	3	
Max. within one recorded day (Date)	()	51.4 (4)	102.4 (10)	49.5 (29)	32.0 (28)	168.7 (19)	30.0 (25)	33.5 (24)	65.0 (20)	64.3 (15 or 16)	25.9 (5)	29.2 (20)	()
Max. intensity	6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Mar. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day	2-day		3-day			Original						

DAILY RAINFALL RECORD

Station: *Meteorological Services (Owerri)*

River Basin Basin No. Station No. Location N. $5^{\circ} 27'$ E. $7^{\circ} 03'$ E.L. 91 m

Station Site Drainage Area Km² Year 1974

Month Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
1	0.0	0.3	0.0	0.0	12.2	42.2	3.6	0.4	26.5	3.2	0.0	0.0	
2	0.0	0.0	0.0	64.0	Tr	1.2	0.0	0.0	12.1	6.6	0.0	0.0	
3	0.0	0.0	0.0	24.4	111.8	0.0	0.4	0.0	2.8	0.0	0.7	0.0	
4	0.0	0.0	0.0	4.5	5.0	5.0	15.7	0.0	0.2	27.7	0.1	0.0	
5	0.0	0.0	0.0	0.0	1.0	8.1	7.8	Tr	14.3	22.0	22.1	0.0	
6	0.0	0.0	0.0	0.0	2.4	3.5	14.1	0.4	0.5	0.4	0.0	0.0	
7	0.0	0.0	0.0	0.0	15.0	0.0	0.0	2.9	1.4	2.6	0.0	0.0	
8	0.0	0.0	0.0	3.0	2.0	0.2	0.0	0.4	5.1	13.5	0.0	0.0	
9	0.0	0.0	0.2	47.0	0.0	36.0	0.0	65.2	0.0	27.5	0.0	0.0	
10	0.0	0.0	37.4	0.0	0.0	0.0	0.0	0.0	23.5	6.5	0.0	0.0	
11	0.0	0.0	0.0	0.0	45.5	0.0	3.0	0.2	22.1	0.6	0.0	0.0	
12	0.0	0.0	5.6	1.0	0.0	Tr	19.9	36.8	40.1	Tr	0.5	0.0	
13	0.0	0.0	10.4	1.9	0.3	Tr	0.7	5.5	2.3	25.0	3.0	0.0	
14	0.0	2.8	0.0	2.5	10.5	6.0	75.8	18.4	1.1	12.0	0.0	0.0	
15	0.0	0.0	0.0	0.0	1.5	0.4	34.3	8.7	5.0	4.0	0.0	0.0	
16	0.0	0.0	0.0	Tr	6.7	7.2	22.2	12.7	5.7	Tr	0.0	0.0	
17	0.0	0.6	0.0	Tr	0.0	0.0	43.5	5.4	6.5	26.1	0.0	0.0	
18	0.0	0.0	0.0	0.0	0.0	20.3	0.0	0.0	Tr	Tr	0.0	0.0	
19	0.0	0.0	0.0	42.2	0.0	0.0	102.0	0.0	2.9	0.0	0.0	0.0	
20	0.0	15.0	0.0	0.0	8.1	34.7	30.6	0.0	81.1	0.0	0.0	0.0	
21	0.0	0.0	0.0	12.0	1.0	14.1	5.7	42.4	0.7	0.8	0.0	0.0	
22	0.0	0.5	0.0	2.8	2.0	0.0	2.0	24.4	3.7	0.8	0.0	0.0	
23	0.0	27.0	0.0	33.0	Tr	1.0	2.1	9.8	4.7	0.0	0.0	0.0	
24	0.0	0.0	0.0	1.3	0.3	4.6	6.8	3.9	3.8	0.8	0.0	0.0	
25	0.0	0.0	22.1	0.8	0.0	0.3	18.3	6.0	3.1	Tr	0.0	0.0	
26	0.0	0.0	0.0	Tr	15.6	53.6	50.2	15.5	2.1	0.7	0.0	0.0	
27	0.0	0.0	0.0	0.0	0.2	19.9	39.4	17.1	2.0	0.0	0.0	0.0	
28	0.0	0.0	0.0	Tr	3.0	1.0	1.2	0.9	9.4	0.0	0.0	0.0	
29	0.0	x	0.0	0.0	0.0	31.5	8.4	28.0	11.2	23.7	0.0	0.0	
30	0.0	x	9.7	0.0	0.3	0.0	1.3	1.5	6.0	2.7	0.0	0.0	
31	0.0	x	1.3	Tr	65.5	x	71.9	70.7	x	37.5	0.0	0.0	
Total	0.0	46.2	86.7	240.4	309.9	280.4	580.9	377.0	300.5	244.7	2.64	0.0	
Number of rainy day	0	5	7	14	17	18	25	22	27	21	4	0	
Max. within one recorded day (Date)	()	(23)	(10)	(2)	(3)	(26)	(19)	(31)	(20)	(31)	(5)	()	()
Max. intensity 6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Mar. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day			2-day			3-day				Original		

DAILY RAINFALL RECORD

Station: *Meteorological Services (Owerri)*

River Basin Basin No. Station No. Location N. $5^{\circ} 29'$ E. $9^{\circ} 02'$ EL. 91 m

Station Site Drainage Area km² Year 1975

Month Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
1	0.0	0.0	0.0	0.0	0.0	0.0	18.0	2.0	19.2	1.6	9.2	0.0	
2	0.0	0.0	27.7	0.0	0.0	0.0	0.3	0.3	0.0	26.6	0.0	0.0	
3	0.0	0.0	0.0	Tr	53.6	22.1	0.0	47.0	0.0	2.9	0.0	0.0	
4	0.0	0.0	0.0	0.0	0.0	6.7	11.3	0.0	4.0	Tr	0.0	0.0	
5	0.0	0.0	0.0	0.0	5.6	6.0	1.0	34.2	44.7	3.2	0.0	0.0	
6	0.0	0.0	0.0	2.0	Tr	7.2	68.5	11.8	13.2	23.0	0.0	0.0	
7	0.0	0.0	0.0	20.6	21.4	23.5	0.0	9.4	48.6	10.7	4.0	0.0	
8	0.0	Tr	0.0	Tr	0.0	Tr	22.3	0.0	10.5	0.0	0.1	0.0	
9	0.0	Tr	0.0	Tr	9.5	3.9	0.0	34.6	0.5	0.0	24.0	0.0	
10	0.0	0.0	0.0	12.9	Tr	0.0	1.8	1.2	0.0	2.8	Tr	0.0	
11	0.0	0.0	0.0	0.0	3.0	3.5	9.6	59.2	12.0	0.0	0.0	0.0	
12	0.0	0.0	0.0	0.0	4.3	0.0	32.5	0.0	19.8	Tr	5.0	0.0	
13	0.0	0.0	0.0	1.8	0.0	0.5	4.2	0.0	1.7	2.4	0.0	0.0	
14	0.0	0.0	0.0	10.3	0.0	29.7	0.0	2.2	6.2	0.0	0.0	0.0	
15	0.0	0.0	Tr	Tr	9.5	0.0	34.2	6.3	3.5	14.0	1.1	0.0	
16	0.0	0.0	0.0	Tr	26.4	1.2	1.2	Tr	5.0	0.0	0.0	0.0	
17	0.0	0.0	41.7	0.0	19.0	0.9	12.7	Tr	0.0	6.0	27.4	0.0	
18	0.0	0.0	0.0	41.3	3.5	0.0	Tr	0.0	53.1	Tr	0.0	0.0	
19	0.0	0.0	0.0	0.0	0.0	3.2	Tr	18.8	8.1	0.0	0.0	0.0	
20	0.0	0.0	0.0	0.0	0.0	0.0	35.2	0.0	0.7	1.2	0.0	0.0	
21	0.0	0.0	Tr	2.6	2.9	5.1	3.2	0.0	16.4	0.0	0.0	0.0	
22	0.0	22.9	0.0	0.0	8.9	9.4	11.1	0.0	45.0	1.2	0.0	0.0	
23	0.0	0.0	0.8	0.0	0.0	0.0	Tr	2.4	45.5	0.0	0.0	0.0	
24	0.0	0.0	0.0	0.0	0.0	0.4	0.0	7.3	6.0	0.0	0.0	0.0	
25	0.0	0.0	Tr	6.5	0.0	14.2	0.0	10.7	51.3	0.0	0.0	30.2	
26	0.0	22.2	25.4	0.0	0.0	Tr	0.0	0.0	7.8	15.0	0.0	0.0	
27	0.0	0.0	0.0	12.1	0.0	0.0	0.6	2.0	1.0	23.0	0.0	0.0	
28	0.0	0.0	0.0	0.0	2.4	0.0	24.5	Tr	49.0	18.6	0.8	0.0	
29	0.0	0.0	0.0	13.5	0.0	0.0	13.3	Tr	8.3	Tr	44.5	0.0	
30	0.0	0.0	0.0	0.0	0.0	18.4	0.2	0.0	17.0	12.0	0.0	0.0	
31	0.0	0.0	Tr	14.0	15.2	0.2	44.1	1.0	x	33.1	x	0.0	
Total	0.0	51.1	95.6	138.6	239.2	156.1	358.6	250.4	498.1	207.3	116.1	30.2	
Number of rainy day	0	3	4	11	15	18	19	17	26	17	8	1	
Max. within one recorded day (Date)	()	(22)	(17)	(18)	(3)	(14)	(6)	(11)	(18)	(2)	(29)	(25)	()
Max. intensity 6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Mar. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day			2-day			3-day			Original			

DAILY RAINFALL RECORD

Station: *Metacological Services (Owerri)*

River Basin Basin No. Station No. Location N. *5° 29'* E. *9° 02'* E.L. *91* m

Station Site Drainage Area Km² Year *1976*

Month Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
	1	0.0	0.0	0.0	Tr	4.6	5.3	5.1	0.6	0.0	18.6	0.6	0.0
2	0.0	9.4	0.0	Tr	0.5	20.3	Tr	2.5	Tr	1.3	Tr	0.0	
3	0.0	0.8	0.0	Tr	Tr	51.1	21.7	0.0	0.6	40.0	22.8	0.0	
4	0.0	56.6	0.0	Tr	0.0	0.0	1.4	0.0	8.2	0.5	Tr	0.0	
5	0.0	0.0	0.0	0.0	0.0	27.3	10.6	1.3	9.7	0.0	0.3	0.0	
6	0.0	0.0	0.0	0.0	5.5	0.5	2.7	3.5	0.2	0.0	3.5	0.0	
7	0.0	0.0	0.0	5.3	12.6	Tr	9.2	0.0	0.1	45.4	6.8	0.0	
8	0.0	0.0	0.0	14.0	3.5	0.0	21.5	12.6	4.3	0.3	0.0	0.0	
9	0.0	0.0	0.0	6.5	0.0	2.7	1.0	4.8	3.3	3.5	0.0	0.0	
10	0.0	0.0	93.9	0.5	3.2	105.3	3.3	20.6	0.0	30.5	0.8	0.0	
11	0.0	0.0	3.0	0.0	0.0	46.0	7.8	Tr	0.3	13.0	0.0	0.0	
12	0.0	17.7	Tr	0.0	0.0	4.4	6.8	0.0	Tr	0.0	0.0	0.0	
13	0.0	0.7	0.7	0.0	0.0	Tr	Tr	0.2	15.2	15.0	0.0	0.0	
14	0.0	0.0	Tr	27.4	12.6	22.0	5.0	18.3	3.9	22.4	0.0	0.0	
15	0.0	0.0	1.0	5.8	0.8	Tr	5.4	10.0	0.8	11.2	Tr	0.0	
16	0.0	0.0	26.0	42.7	2.3	0.0	2.4	23.5	2.8	43.8	0.0	0.0	
17	0.0	0.0	0.0	0.0	0.3	10.4	Tr	38.0	3.7	13.1	0.0	0.0	
18	0.0	0.0	0.0	0.0	0.0	30.2	3.3	0.4	21.5	24.8	18.0	0.0	
19	0.0	0.0	2.2	0.0	9.7	16.4	22.5	22.2	0.6	5.5	1.4	0.0	
20	Tr	0.0	0.0	0.0	3.8	0.0	27.9	2.6	54.9	7.8	0.0	33.3	
21	0.0	13.7	0.0	0.0	7.6	0.0	3.0	5.6	Tr	4.8	0.0	0.0	
22	0.0	0.0	0.0	0.0	0.0	17.8	0.0	0.0	11.6	2.4	0.0	0.0	
23	0.0	0.0	26.3	34.3	0.0	17.5	13.5	32.0	8.2	3.8	0.0	30.7	
24	0.0	0.0	0.0	0.0	0.4	Tr	0.8	6.5	63.3	38.8	0.0	0.0	
25	0.0	25.0	0.0	0.0	Tr	27.5	26.4	Tr	3.6	Tr	0.0	0.0	
26	0.0	29.5	0.0	0.7	Tr	0.0	5.7	1.3	0.1	26.0	Tr	0.0	
27	0.0	0.0	0.0	0.0	3.5	1.2	4.2	1.5	14.5	11.9	0.0	0.0	
28	0.0	1.0	19.5	0.0	13.9	Tr	0.5	7.4	5.5	0.6	0.0	0.0	
29	0.0	4.2	0.0	73.6	32.4	0.0	3.0	46.4	0.0	1.7	0.0	3.4	
30	0.0	X	9.3	0.0	4.5	3.6	0.6	0.2	0.0	0.0	0.0	35.2	
31	0.0	X	27.1	X	2.2	X	0.0	3.0	X	4.5	X	0.0	
Total	0.0	158.6	209.0	210.8	133.9	409.5	220.3	215.0	237.4	400.7	53.7	102.6	
Number of rainy day	0	10	10	10	17	18	21	24	21	26	8	4	
Max. within one recorded day (Date)	()	56.6 (4)	93.9 (10)	73.6 (29)	32.4 (29)	105.3 (10)	27.9 (20)	46.4 (29)	63.3 (24)	45.4 (7)	22.8 (3)	35.2 (30)	()
Max. intensity	6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Mar. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day	2-day		3-day			Original						

DAILY RAINFALL RECORD

Station: UMUDIKE

River Basin _____ Basin No. _____ Station No. _____ Location N. 5° 27' E. 7° 33' EL 410 ftm

Station Site _____ Drainage Area _____ Km² _____ Year 1971

Month Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
	1				0.50	0.00	0.00	0.00	59.90	86.60	0.00	0.00	0.00
2				3.80	0.00	36.80	15.20	2.50	20.60	1.30	0.00	1.20	
3				0.00	0.00	1.00	13.00	18.00	10.20	47.20	0.00	0.00	
4				3.80	0.00	0.30	36.80	18.00	18.30	0.00	0.00	0.00	
5				2.30	0.00	0.00	15.50	44.20	2.50	1.80	0.00	0.00	
6					0.00	10.70	9.40	29.90	47.80	0.00	0.00	0.00	
7				0.00	0.00	15.50	11.20	0.00	19.30	0.80	0.00	0.00	
8				0.00	2.80	16.80	4.60	109.40	4.80	75.40	0.00	0.00	
9				4.83	9.40	0.00	80.00	8.90	7.70	1.80	0.00	9.70	
10				6.40	2.50	18.50	0.50	4.60	0.00	0.00	0.00	0.00	
11				6.10	0.00	64.00	0.00	34.00	0.00	37.30	0.00	0.00	
12				0.80	0.00	0.00	6.60	31.80	1.80	0.00	0.00	0.80	
13				0.00	0.00	29.90	0.00	8.90	13.90	0.00	0.00	0.00	
14				0.00	0.00	25.70	0.25	0.00	7.10	0.00	0.00	0.00	
15				0.00		5.30	75.40	11.20	0.00	0.00	0.00	0.00	
16				7.60	0.00	0.00	16.80	22.10	26.40	34.80	0.00	0.00	
17				0.00	4.60	0.50	0.00	4.10	2.00	10.20	0.00	0.00	
18				4.10	0.00	5.80	43.70	0.00	0.00	0.00	1.00	0.00	
19				0.00	20.60	0.00	14.00	2.50	3.80	2.50	0.00	0.00	
20				0.00	2.00	0.00	4.20	3.00	2.00	0.00	0.00	0.00	
21				0.00	0.00	0.00	3.80	4.30	1.50	0.00	0.00	0.00	
22				2.80	39.60	6.60	0.00		35.80	5.30	0.00	0.00	
23				0.00	0.00	6.10	91.20	0.00	5.80	0.00	0.00	0.00	
24				0.00	5.10	0.00	14.00	16.30	2.30	0.00	0.00	0.00	
25				0.00	3.20	6.90	7.90	0.00	0.00	0.00	0.00	0.00	
26				2.30	0.00	2.30	0.00	0.80	0.50	0.00	0.00	0.00	
27				0.00	0.00	23.60	20.30	0.00	22.90	0.00	0.00	0.00	
28				0.00	76.10	0.00	4.60	0.00	0.00	0.00	0.00	0.00	
29				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
30				2.04	0.00	6.60	1.30	1.00	0.00	0.00	47.20	0.00	
31					56.40		11.40	86.00		0.00		0.00	
Total				100.30	216.90	277.10	202.20	503.70	348.00	215.40	45.30	11.40	
Number of rainy day				13	11	18	24	23	23	11	2	2	
Max. within one recorded day (Date)	()	()	()	34.3 (26)	56.4 (31)	64.0 (11)	91.2 (23)	104.4 (8)	86.6 (1)	75.4 (8)	47.2 (30)	9.7 (9)	()
Max. intensity 6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Mar. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day			2-day			3-day			Original			

DAILY RAINFALL RECORD

Station: UMUDIKE

River Basin Basin No. Station No. Location N. $5^{\circ} 29'$ E. $7^{\circ} 35'$ E.L. $400 \frac{ft}{m}$

Station Site Drainage Area Km² Year 1972

Month \ Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
1	0.00	0.00	0.00	5.10	0.00	0.00	1.00	1.50	24.90	11.40	1.50	0.00	
2	0.00	0.00	0.00	0.00	54.10	22.10	0.00	0.00	18.30	13.20	0.00	0.00	
3	0.00	0.00	1.30	0.00	76.20	8.40	1.00	31.50	17.80	1.50	0.00	0.00	
4	0.00	0.00	0.00	0.00	0.00	0.00	2.30	4.80	31.50	29.70	4.80	0.00	
5	0.00	0.00	15.20	47.50	0.00	14.20	19.60	1.50	19.10	0.00	0.00	0.00	
6	0.00	0.00	0.00	0.30	13.50	0.00	6.40	23.60	1.80	2.00	0.00	0.00	
7	0.00	0.00	0.00	66.30	0.80	0.00	0.00	7.40	4.60	10.40	0.00	0.00	
8	0.00	0.00	0.00	0.30	0.00	12.70	30.00		4.30	1.00	0.00	0.00	
9	0.00	0.00	0.00	55.40	9.10	0.00	0.80	13.00	2.80	0.00	0.00	0.00	
10	0.00	0.00	0.00	0.00	0.00	1.80	14.70	2.00	0.10	0.00	0.00	0.00	
11	0.00	0.00	0.00	0.00	36.60	3.00	0.50	11.20	1.50	2.00	0.00	0.00	
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.10	0.00	0.00	0.00	0.00	
13	0.00	0.00	2.30	0.30	0.00	5.60	0.00	0.00	0.00	19.20	0.00	0.00	
14	0.00	0.00	2.00	0.00	0.00	0.00	2.30	0.00	0.00	2.00	0.00	0.00	
15	0.00	0.00	5.10	6.10		0.50	11.20		8.10	16.30	0.00	0.00	
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.50	2.00	2.30	0.00	0.00	
17	0.00	0.00	2.30	53.10	0.50	2.50	1.50	0.80		0.00	0.00	0.00	
18	0.00	0.00	1.00	1.00	0.00	17.80	0.80	69.00	21.60	0.00	0.00	0.00	
19	0.00	0.00	51.60	3.60	1.30	0.00	0.00	4.80	4.60	2.50	0.00	0.00	
20	0.80	0.00	53.80	9.40	0.00	0.00	11.40	30.70	3.80	0.00	0.00	0.00	
21	0.00	0.00	0.00	0.00	7.90	1.30	78.50	70.40	0.00	0.00	0.00	0.00	
22	0.00	0.00	4.60	15.20	0.30	0.00	1.50	13.70	8.60	0.00	0.00	0.00	
23	0.00	0.00	0.00	0.00		0.00	5.60	7.90	0.00	0.00	0.00	0.00	
24	0.00	0.00	0.00	0.00	0.00	5.60	0.80	4.80	0.00	15.20	0.00	0.00	
25	0.00	4.10	0.00	1.00	0.00	0.00	3.00	0.80		10.20	0.00	0.00	
26	0.00	0.00	0.00	19.30	18.00	0.10	7.00	3.30	30.50		0.00	0.00	
27	0.00	43.10	0.00	2.30	1.00	0.00	11.40	0.00	9.90	11.40	0.00	0.00	
28	0.30	0.30	0.00	0.00	0.00	3.00	0.00	69.50	2.00	5.80	0.00	0.00	
29	0.00	0.00	0.00	0.00	0.00	2.00	4.10	56.90	0.00	0.00	0.00	0.00	
30	0.00		0.00	0.00	19.00	2.80	50.80	11.40	5.80	0.00	0.00	14.00	
31	0.00		0.00		20.80		36.80	39.80		0.00			
Total	1.00	48.00	138.20	285.00	224.00	101.30	275.90	461.30	294.40	151.40	6.90	14.00	
Number of rainy day	2	2	7	15	15	14	23	25	21	17	2	1	
Max. within one recorded day (Date)	0.8 (20)	43.1 (27)	53.8 (20)	66.3 (7)	54.1 (2)	22.1 (2)	78.5 (21)	69.3 (28)	31.5 (4)	29.7 (4)	4.8 (4)	14.0 (30)	()
Max. intensity 6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
Max. intensity 3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
Max. intensity 1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Mar. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day			2-day			3-day			Original			

DAILY RAINFALL RECORD

Station: UMUDIKE

River Basin _____ Basin No. _____ Station No. _____ Location N. 5°29' E. 7°33' E.L. 400 ft

Station Site _____ Drainage Area _____ Km² _____ Year 1975

Day	Month	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
1		0.00	0.00	0.00	16.80	0.30	22.90	16.30	2.00	6.40	0.00	0.00	0.00	
2		0.00	0.00	0.00	3.30	0.00	1.00	0.00	0.00	15.00	16.80	0.00	0.00	
3		0.00	0.00	0.00	0.00	3.00	1.00	0.00	1.80	58.70	2.90	0.00	0.00	
4		0.00	0.00	0.00	26.20	13.00	40.00	0.80	20.30	4.30	11.70	0.00	0.00	
5		0.00	0.00	0.00	0.00	27.90	30.20	0.00	24.10	0.00	0.00	1.00	0.00	
6		0.00	0.00	0.00	0.00	29.90	0.30		1.80	1.30	0.00	0.00	59.90	
7		0.00	0.00	0.00	0.00	0.00	1.30	4.80	0.00	5.10	0.00	9.10	1.00	
8		65.80	0.00	0.00	0.00	1.80	2.00			85.90	14.70	0.00	1.00	
9		0.50	0.00	0.00	0.00	0.00	0.00	4.80	25.10	11.90	19.60	0.00	0.00	
10		0.00	0.00	0.00	0.00	0.00	116.10	9.40	4.10	8.90	41.40	0.00	0.00	
11		0.00	0.00	0.00	78.50	0.00		45.00	1.50	0.50	18.00	0.00	0.00	
12		0.00	0.00	0.00	0.00	1.50	0.00		0.00	8.40	0.00	0.00	0.00	
13		0.00	0.00	0.00	3.80	0.00	0.00	0.00	11.40	4.60	3.60	0.00	1.00	
14		0.00	0.00	0.00	13.70	0.00	23.40	0.00	29.40	1.80		0.00	0.80	
15		0.00	0.00	11.00	0.00	65.30	38.10	0.00	10.20	8.90	16.30	0.00	0.00	
16		0.00	6.40	11.70	0.00	37.30	12.70	0.30	15.70	60.20	0.00	0.00	0.00	
17		0.00	0.00	0.00	4.60	42.40	0.00	8.40	13.50	8.60	0.00	0.00	0.00	
18		0.00	1.80	0.00	0.00	0.00	87.10	1.80	11.90	0.00	0.00	0.00	0.00	
19		0.00		0.00	23.60	0.00	9.70	4.10	45.70	0.00	8.60	0.00	0.00	
20		0.00	61.30	0.00	18.30	0.00	15.50	9.90	3.30	0.00	11.70	0.00	0.00	
21		0.00	1.20	0.00	29.80	0.00	65.50	0.50	19.10	0.00	0.00	0.00	0.00	
22		0.00	0.00	20.60	19.00	0.00	4.10	0.00	59.90	14.50	0.00	0.00	0.00	
23		0.00	0.00	0.80	1.00	10.40	0.80	0.00	19.10	49.70	21.30	0.00	0.00	
24		0.00	0.00	0.00	0.00	64.00	1.00	59.70	1.30	9.40	1.00	0.00	0.00	
25		0.00	0.00	14.70	0.00	0.00	25.90	27.70	10.90	0.00	0.50	0.00	0.00	
26		0.00	0.00	0.00	16.80	0.00	3.30	1.30	79.50	0.80	2.50	0.00	0.00	
27		0.00	0.00	0.00	2.30	2.30	5.80	0.00	1.00		7.40	0.00	0.00	
28		9.10	0.00	6.40	0.00	21.60	1.80	1.50	3.00	1.00	0.00	0.00	0.00	
29		0.00		7.10	67.60	0.00	0.00	7.60	4.80	1.30	2.00	0.00	0.00	
30		0.00		0.00	0.00	0.00	1.30	30.30	34.80	0.00	6.40	0.00	0.00	
31		0.00		0.00		0.00		4.80	8.60		0.00			
Total		75.40	70.3	72.60	325.10	315.70	516.40	254.30	459.00	362.00	208.50	9.10	62.70	
Number of rainy day		3	4	7	15	14	23	19	27	22	18	1	5	
Max. within one recorded day (Date)		65.8 (8)	61.3 (20)	20.6 (22)	78.5 (11)	65.3 (15)	65.5 (21)	59.7 (24)	72.5 (26)	85.9 (8)	41.4 (10)	21 (7)	52.9 (6)	()
Max. intensity	6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
	3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
	1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19														
Average														
Mar. (Year)		()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)		()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day	2-day			3-day			Original						

DAILY RAINFALL RECORD

Station: UMUDIKE

River Basin _____ Basin No. _____ Station No. _____ Location N. 5° 29' E. 7° 33' E.L. 400 ^{ft}_{BR}

Station Site _____ Drainage Area _____ Km² _____ Year 1974

Month Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
	1	0.00	0.80	0.00	0.00	0.00	8.90	2.30	3.60	3.80	3.80	0.30	0.00
2	0.00	1.00	0.00	5.80	0.00	0.00	0.00	1.00	2.00	1.30	0.00	0.00	
3	0.00	0.00	0.00	15.20	10.70	0.00	0.50	0.00	0.00	11.90	3.80	1.00	
4	0.00	0.00	0.00			23.90	22.80	0.50	11.90	14.20	0.80	0.00	
5	0.00	0.00	0.00	0.00	0.00	0.00	0.50	5.30	72.90	22.90	6.60	0.00	
6	0.00	0.00	0.00	0.00	2.00	11.70	0.00	14.20	0.00	0.00	0.00	0.00	
7	1.80	0.00	10.70	0.00	0.00	1.80	0.00	0.00	5.60	2.00	0.00	0.00	
8	0.00	0.00	0.00	0.00	1.80	0.00	0.00	2.00	1.50	3.00	0.00	0.00	
9	0.00	0.00	0.00	26.60	0.00	78.70	0.00	1.50	0.00	12.70	0.00	0.00	
10	0.00	0.00	14.00	0.00		0.00	0.80	0.00	51.80	26.20	0.00	0.00	
11	0.00	0.00	0.00	0.00	56.90	0.00	20.60	47.00	15.00		0.00	0.00	
12	0.00	0.00	83.80	2.30	0.00	0.00	3.60	18.00	18.00	27.70	7.10	0.00	
13	0.00	0.00	12.70	0.80	0.00	0.00	0.50	14.50	5.30	5.30	0.80	0.00	
14	0.00	0.00	0.00	0.80	81.50	1.50	6.90	2.30	9.70	0.80	0.00	0.00	
15	0.00	0.00	9.40	0.00	0.00	0.00	14.00	0.50	1.80	4.30	0.00	0.00	
16	0.00	0.00	0.00	4.30	15.20	6.10	9.00	1.50	18.80	1.00	0.00	0.00	
17	0.00		0.00	0.00	4.80	2.50	12.70	8.10	16.50	14.20	0.00	0.00	
18	0.00	0.00	0.50	0.00	0.00	50.00	0.00		0.00	0.00	0.00	0.00	
19	0.00	0.00	0.00	14.70	3.80	4.30	9.40	0.00		20.30	0.00	0.00	
20	0.00	0.00	0.00	0.00	18.50	65.00	0.00	0.00	55.90	0.00	0.00	0.00	
21	0.00	0.00	0.00	41.40		6.90	2.50	2.30	0.00	32.50	0.00	0.00	
22	0.00	1.50	4.30	24.90	14.00	0.00	0.00	50.30	15.50	2.80	0.00	0.00	
23	0.00	0.00	0.00	33.00	6.60	1.00	0.00	1.00	0.80	0.00	0.00	0.00	
24	0.00	0.00	0.00	0.00	0.00	40.40	9.00	0.80	0.80	4.60	0.00	0.00	
25	0.00	0.00	0.00	23.90	0.00	13.20	9.70	1.80	48.20	0.00	0.00	0.00	
26	0.00	0.00	0.00	0.00	1.00	11.40	27.40	1.30	13.70	5.80	0.00	0.00	
27	0.00	8.40	0.00	0.00	0.00	0.00	18.80	2.80	0.00	0.00	0.00	0.00	
28	0.00	0.00	0.00	0.00	4.60	4.80	11.20	2.00	11.20	0.00	0.00	0.00	
29	0.00		0.00	0.00	0.00	17.80	1.50	9.40		0.80	0.00	0.00	
30	0.00		0.50	0.00	0.00	0.50	5.30	6.90	1.30	17.50	0.00	0.00	
31	0.00		20.30		2.30		4.10	26.20		0.80		0.00	
Total	1.80	10.70	155.70	203.70	223.80	279.00	202.70	229.30	411.50	234.70	19.30	1.00	
Number of rainy day	1	3	8	12	15	19	23	25	22	22	6	1	
Max. within one recorded day (Date)	18 (7)	84 (27)	83.8 (12)	41.4 (21)	56.9 (11)	78.7 (9)	32.8 (5)	50.3 (22)	78.2 (25)	32.5 (31)	7.1 (12)	1.0 (3)	
Max. intensity	6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
	1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Max. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day			2-day			3-day						Original

DAILY RAINFALL RECORD

Station: UMUDIKE

River Basin Basin No. Station No. Location N. 5° 29' E. 7° 33' E.L. 400 ft

Station Site Drainage Area Km² Year 1975

Month Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
1	0.00	0.00	1.30	8.00	0.00	2.10	12.70	0.00	23.80	0.00	0.00	0.00	
2	0.00	0.00	4.10	0.00	25.70	0.00	0.40	0.00	5.60	0.00	0.00	0.00	
3	0.00	0.00	0.00	0.00	1.30	0.00	0.00	9.70	1.20	0.00	0.00	0.00	
4	0.00	0.00	0.00	0.00	1.00	1.30	22.30	0.00	8.30	8.10	0.00	0.00	
5	0.00	0.00	0.00	0.00	5.10	19.50	0.00	31.50	80.00	12.20	0.00	0.00	
6	0.00	0.00	0.00	34.30	0.50	0.90	5.00	1.90	2.80	2.80	0.00	0.00	
7	0.00	0.00	0.00	14.20	7.60	6.70	0.00	0.50	32.50	49.90	7.10	0.00	
8	0.00	0.00	7.90	0.00	0.00	3.40	0.40	1.00	7.90	1.10	0.00	0.00	
9	0.00		0.00	0.00	8.40	0.00	0.00	38.70	0.00	15.00	39.50	0.00	
10	0.00	0.00	0.00	22.90	0.00	0.00	0.20	0.00	5.10	0.00	0.00	0.00	
11	0.00	0.00	0.00	0.00	8.90	62.50	12.90	9.70	0.50	0.00	1.90	0.00	
12	0.00	0.00	0.00	9.10	18.80	0.70	8.30	0.00	25.00	41.30	0.00	1.00	
13	0.00	0.00	0.00	2.30	0.00	15.70	4.30	0.00	3.20	18.70	0.00	0.00	
14	0.00	0.00	0.00	4.30	0.00	17.80	0.00	13.90	0.40	0.00	0.00	0.00	
15	0.00	0.00	0.00	0.00	32.00	0.00	50.30	0.30	0.80	14.30	0.00	0.00	
16	0.00	0.00	1.80	0.00	4.30	45.00	5.20	0.00	9.70	11.90	0.00	0.00	
17	0.00	0.00	4.80	0.00	19.60	16.80	5.50	0.40	0.50	2.80	26.50	0.00	
18	0.00	0.00	0.00	93.90	55.90	0.00	0.40	0.00	11.50	6.30	0.00	0.00	
19	0.00	0.00	0.00	0.02		5.70	0.00	0.80	1.20	0.00	0.00	0.00	
20	0.00	0.00	0.00	5.10	0.00	2.10	14.00	2.10	1.30	0.00	3.20	0.00	
21	0.00	0.00	0.00	1.80	8.64	0.30	0.90	0.00	22.5	0.00	0.00	0.00	
22	0.00	0.00	0.00	0.00	13.20	3.20	23.20	0.00	13.7	1.10	0.00	0.00	
23	0.00	4.80	0.50	0.00	11.70	0.00	0.00	0.00	32.2	0.00	0.00	0.00	
24	0.00	1.00		34.80	3.30	0.00	0.00	39.50	12.3	0.00	0.00	1.00	
25	0.00	0.00	0.00	50.30	10.90	2.90	0.00	4.80	0.30	25.50	0.00	6.20	
26	0.00	49.50	2.80	2.00	0.00	8.00	0.00	0.00	26.20	30.60	0.00	0.00	
27	0.00	0.00	10.90		0.00	0.00	0.00	5.20	11.00	23.10	0.00	0.00	
28	0.00	0.00	0.00	5.60	12.70	0.00	6.10	0.00	43.90	0.00	4.00	0.00	
29	0.00		0.00	0.00	0.00	25.40	1.00	2.00	0.00	5.20	26.00	0.00	
30	0.00		12.20		4.10	0.00	0.00	0.00	10.5	1.30	0.00	0.00	
31	0.00		17.30	50.00	58.70		4.00	2.00		14.60		0.00	
Total	0.00	54.70	64.00	330.50	310.90	239.50	177.10	164.00	393.9	285.8	105.20	6.20	
Number of rainy day		2	10	15	21	19	19	17	28	19	7	1	
Max. within one recorded day (Date)	()	(20) 49.5	(31) 12.3	(18) 13.7	(31) 58.7	(11) 62.5	(15) 50.3	(20) 39.5	(5) 80.0	(7) 49.9	(9) 34.5	(25) 6.2	()
Max. intensity 6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
Max. intensity 3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
Max. intensity 1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Mar. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day			2-day			3-day						Original

DAILY RAINFALL RECORD

Station: UMUDIKE

River Basin _____ Basin No. _____ Station No. _____ Location N. 5° 29' E. 7° 33' E.L. 400 ^{ft}

Station Site _____ Drainage Area _____ Km² _____ Year 1976

Month \ Day	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.10	0.00	0.60	1.10	0.00	
2	0.00	14.90	2.60	0.20	1.80	9.70	2.90	3.30	1.70	5.20	23.80	0.00	
3	0.00	6.00	0.00	0.00	0.00	0.90	17.80	0.00	4.70	21.70	8.50	0.00	
4	0.00	24.80	0.00	0.00	0.00	0.00	13.70	0.00	23.10	1.10	10.40	0.00	
5	0.00	0.00	0.00	12.60	0.00	4.20	5.00	0.00	7.80	0.00	0.00	0.00	
6	0.00	0.00	0.00	1.10	15.10	1.10	12.00	0.00	35.10	0.00	32.00	0.00	
7	0.00	0.00	0.00	23.80	1.40	0.00	0.90	0.00	8.40	1.70	15.50	0.00	
8	0.00	0.00	0.00	0.20	0.00	0.60	0.00	2.00	0.00	0.00	0.00	0.00	
9	0.00	40.70	1.30	1.40	16.80	27.20	2.60	2.90	1.00	20.80	0.00	0.00	
10	0.00	0.00	4.00	0.00	1.20	1.00	7.40	5.20	0.00	32.20	0.00	0.00	
11	0.00	0.00	0.00	0.00	0.00	3.80	7.50	0.30	0.30	18.20	0.00	0.00	
12	0.00	0.00	0.00	0.00	0.00	3.10	29.10	0.00	0.30	0.00	0.00	0.00	
13	0.00	0.00	31.70	1.00	17.90	0.20	2.90	0.00	0.90	63.00	0.00	0.00	
14	0.00	8.50	0.00	0.80	0.00	49.30	0.30	27.80	15.10	6.30	0.00	0.00	
15	0.00	3.50	0.00	2.20	18.40	9.00	1.20	3.90	1.810	0.00	0.00	0.00	
16	0.00	0.00	57.00	50.00	0.50	0.00	1.90	0.40	0.00	1.00	0.00	0.00	
17	0.40	0.00	0.00	0.00	0.00	16.50	1.90	1.40	37.50	93.00	0.00	0.00	
18	0.00	0.00	0.00	23.80	7.50	45.30	0.60	0.00	36.90	0.00	18.90	0.00	
19	0.00	0.00	9.00	0.00	3.30	21.50	12.10	3.10	0.00	0.00	1.50	0.00	
20	0.00	0.00	0.00	0.00	7.00	0.00	31.20	3.30	8.40	23.2	0.00	0.00	
21	0.00	16.20	0.00	0.00	10.50	0.30	16.10	11.80	0.00	8.20	0.00	0.00	
22	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.50	25.80	11.00	0.00	0.00	
23	0.00	0.00	75.80	28.40	0.00	17.30	0.00	9.20	0.90	3.80	0.00	0.00	
24	0.00	0.00	0.00	0.00	0.00	9.00		74.60	0.70	1.00	1.30	0.00	
25	0.00	0.60	0.00	0.00	0.00	56.60	10.50	1.40	0.00	2.90	0.00	0.00	
26	0.00	13.60	0.00	0.00	1.00	0.00	31.50	1.30	0.00	9.70	0.00	0.00	
27	0.00	0.00	0.00	0.00	1.40	5.60	0.00	0.00	0.80	15.00	0.00	0.00	
28	0.91	0.00	25.40	0.00	10.10	0.50	0.50	28.00	4.80	0.00	1.00	0.00	
29	0.00	3.70	0.00	41.00	31.50	0.00	1.50	8.90	0.00	0.00	0.00	0.00	
30	0.00		36.40	0.00	0.00	1.60	0.00	0.00	19.70	0.00	0.00	0.00	
31	0.00		0.30		0.00		0.00	9.50		3.00		12.30	
Total	0.40	132.00	243.50	187.50	143.90	279.90	210.40	203.90	259.30	392.60	112.70	12.30	
Number of rainy day	1	10	10	13	16	23	23	21	21	21	10	1	
Max. within one recorded day (Date)	0.4 (17)	40.7 (9)	75.8 (23)	50.0 (16)	31.5 (29)	56.6 (25)	31.5 (26)	74.6 (24)	37.5 (17)	73.2 (20)	32.0 (6)	12.3 (31)	()
Max. intensity													
6 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
3 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
1 hr (Date)	()	()	()	()	()	()	()	()	()	()	()	()	()
Summary of all recorded years starting from 19 ~ 19													
Average													
Mar. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Min. (Year)	()	()	()	()	()	()	()	()	()	()	()	()	()
Daily Max.	1-day			2-day			3-day			Original			

