

FIGURES

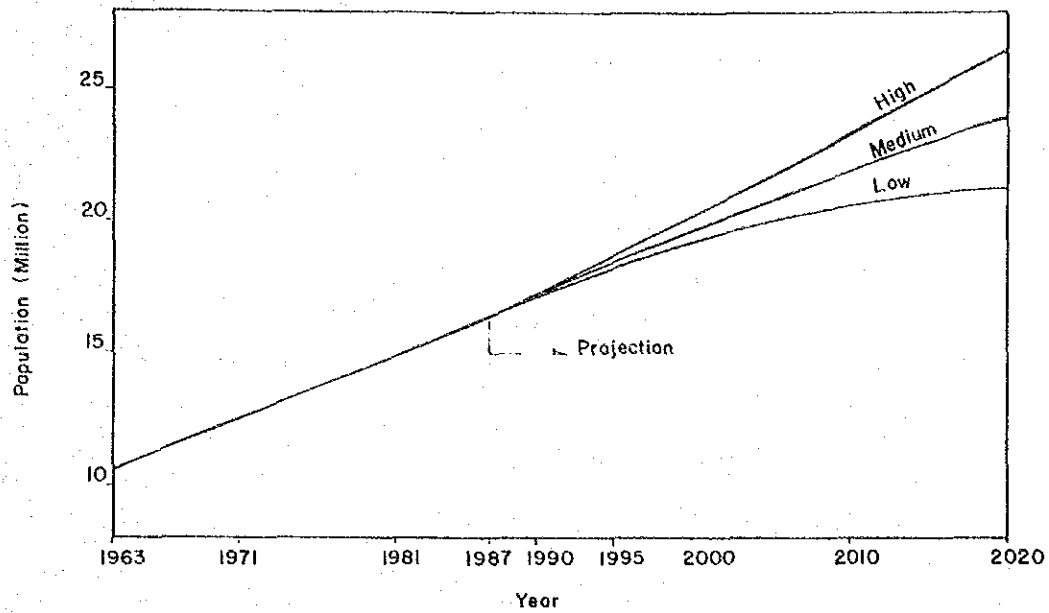


Fig. A.6-1 Population Growth

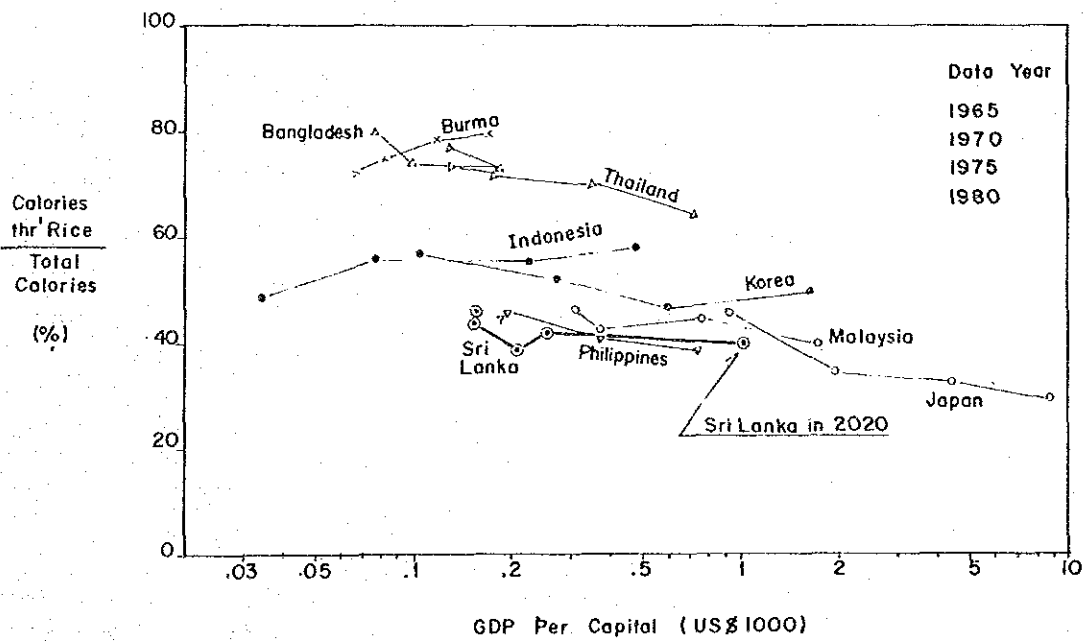


Fig. A.6-2 Trend of Calorie Availability through Rice by Country

GOVERNMENT OF DEMOCRATIC SOCIALIST
 REPUBLIC OF SRI LANKA
 MINISTRY OF LANDS, IRRIGATION AND MAHAWELE DEVELOPMENT

THE STUDY ON EXTENSION OF
 THE MORAGAHAKANDA AGRICULTURAL
 DEVELOPMENT PROJECT

JAPAN INTERNATIONAL COOPERATION AGENCY

ANNEX-B
METEOROLOGY AND HYDROLOGY

ANNEX - B

METEOROLOGY AND HYDROLOGY

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ANNEX-B METEOROLOGY AND HYDROLOGY

B.1 INTRODUCTION

Meteorological and hydrological studies were carried out for the Extension of the Moragahakanda Agricultural Development Project to provide basic data for planning the irrigation and drainage, as well as for the preliminary design of hydraulic structures.

This ANNEX-B presents information related to the meteorology and hydrology for the project, and consists of the following sections:

- Climate
- Rainfall
- Runoff
- Flood
- Sedimentation

B.2 CLIMATE

B.2.1 General

The climate in the study area is dominated by two monsoons: the south-west monsoon from April to September (Yala Season) and the north-east monsoon from October to March (Maha Season). The central hills impose a strong orographic influence which leads to the subdivision of Sri Lanka into three climatic zones : the Wet Zone, the Intermediate Zone, and the Dry Zone as shown on Fig. B.2-1. The Dry Zone is defined as the area where annual evaporation exceeds the annual rainfall. The Wet Zone is defined as the area where the annual rainfall exceeds 2,000 mm, and the Intermediate Zone is a transition zone between the Wet Zone and Dry Zone. The study area lies mainly in the Dry Zone where rainfall occurs predominantly during the Maha season, while the Yala season is very dry.

Figure B.2-2 shows the mean annual climatological pattern at typical locations in the study area.

B.2.2 Meteorological Observations

There are 7 meteorological stations in and around the study area. The locations are shown in Fig. B.2-3. Table B.2.1 shows the average data on climatic factors, i.e. temperature, rainfall, number of rainy days, sunshine hours, relative humidity, pan-evaporation and wind speed, for the seven meteorological stations.

B.2.3 Air Temperature

Air temperature is recorded at 7 meteorological stations, as shown in Table B.2.1. The annual mean daily average temperature of these stations shows little variation, ranging from 27°C to 28°C. Both the annual mean daily maximum and minimum temperatures range from 31°C to 33°C, and from 22°C to 25°C, respectively.

B.2.4 Relative Humidity

Relative humidity is also recorded at 7 meteorological stations as shown in Table B.2.1. The annual mean relative humidity of these stations ranges from 69% in Trincomalee to 78% in Alutharama and Kantalai.

B.2.5 Wind Speed

Wind speeds are observed at 3 stations, Anuradhapura, Trincomalee and Batticaloa, as shown in Table B.2.1. The annual mean wind speed of these stations range from 8 km per hour in Anuradhapura to 12 km per hour in Trincomalee. In Batticaloa mean annual wind speed is 9 km per hour.

B.2.6 Sunshine Hours

Sunshine hours are observed at 5 stations, excluding Anuradhapura and Vavuniya meteorological stations as shown in Table B.2.1. The annual mean sunshine hours of these stations shows little variation, ranging from 6 hrs/day in Alutharama to 8 hrs/day in Maha Illuppallama, Trincomalee and Batticaloa.

B.2.7 Evaporation

Pan-evaporation is recorded at 5 stations, Maha Illuppallama, Alutharama and Kantalai, as shown in Table B.2.1. Mean annual pan-evaporation of these stations ranges from 1,587 mm in Aluthrama to 2,184 mm in Kantalai. In Maha Illuppallama mean annual pan-evaporation is 1,864 mm.

B.3 RAINFALL

B.3.1 Available Rainfall Data

There are 37 rain gauge stations in and around the study area. Locations are shown in Fig. B.2-3. Figure B.3-1 illustrates the observation period of each rainfall gauging station.

Although records from 37 rainfall stations are available in and around the study area, taking continuation of the record into account, the following 11 rainfall stations were considered to be the most representative rainfall in the respective areas.

Station	Station No.	Area
1. Kal Aar	223	System A
2. Polonnaruwa	487	System B and D2
3. Horaborawewa	192	System C and E
4. Hingurakgoda	186	System D1
5. Bakamuna	40	System F
6. Angamedilla	21	System G
7. Maha Illuppallama	331	System H
8. Anuradhapura	26	System I, IH and MH
9. Kanakarayankulam	233	System J, K, L and M
10. Mahauswewa	335	NWDZ
11. Maha Oya	333	SEDZ (Only Reference)

B.3.2 Filling-in of Missing Monthly Rainfall Data

For the selected rainfall stations, missing monthly rainfall figures in the period of 1949-1986 were estimated by correlation analysis. Correlation is the process of determining the manner in which the changes in one or more independent variables affect another (dependent) variable. The dependent variable is the value sought and it is known to be physically related to various independent variables. Correlations can be linear or quad ratio, but linear regression suffices for this application.

In a simple correlation (only one independent variable), the linear regression equation is as follows:

$$Y = a + b \times X$$

Where, Y: the dependent variable
X: the independent variable
a: the regression constant
b: the regression coefficient

The calculated regression constant "a", the regression coefficient "b" and the correlation coefficient "r" for those of the selected rainfall stations with missing monthly data are presented in Table B.3.1.

The monthly rainfalls in and around the study area are shown in Table B.3.3, and summarized in Table B.3.2.

B.3.3 General Rainfall Characteristics

Based on 38 years records (1949-1986), average annual rainfalls in Mankulam, Anuradhapura and Polonnaruwa were 1,428 mm, 1,335 mm 1,788 mm respectively as shown in Fig. B.2-1 and Table B.3.2.

According to the rainfall data at Mankulam, Anuradhapura and Polonnaruwa, the distribution of monthly rainfall is concentrated in Maha Season (October to March, 72%, 70% and 77% respectively), and the monthly rainfall varies widely from approximately 10 mm in Yala season (April to September) to 330 mm in Maha season.

B.3.4 Catchment Rainfall

For the purpose of filling-in missing runoff data from selected stations by means of runoff-rainfall regression analysis, the catchment rainfall was computed according to the Thiessen polygon method.

Using the completed (filled-in) records of monthly rainfall of the selected stations and the coefficients of the Thiessen polygons, the Thiessen averaged catchment rainfall was calculated. The coefficient of the Thiessen polygons of selected stations are presented in Table B.3.4.

B.4 RUNOFF

B.4.1 River Systems

The water resources for the study area are the Mahaweli Ganga main stem, the Amban Ganga, a major tributary of the Mahaweli Ganga and several flows from catchment areas within the study area.

The Mahaweli Ganga originates in the Wet Zone central mountains, as shown in Fig. B.2-1. The Mahaweli Ganga is joined by the Kotmale Oya, before flowing north to Kandy where it turns to flow in an easterly direction out of the central hills. After leaving the hills at Minipe, it turns north, flowing through the Dry Zone past Polonnaruwa, finally entering the Bay of Bengal south of Trincomalee. The origin of the Mahaweli Ganga in the Wet Zone yields a streamflow pattern reflecting the influence of both monsoons.

The average annual runoff at Polgolla (catchment area of 1,292 km²) was estimated at approximately 2,141 MCM. The variation of annual runoff is large from year to year depending on rainfall pattern. Average annual runoff at Minipe (3,113 km² of catchment) and Manampitiya (7,418 km² of catchment) was estimated to be about 4,089 MCM and 8,330 MCM respectively.

The Amban Ganga, one of the major tributaries of the Mahaweli Ganga, has a catchment area of 782 km² at the proposed Moragahakanda dam site and about 1,363 km² at the existing Angamedilla anicut. Average annual runoffs at the proposed dam site and Angamedilla anicut are estimated to be about 843 MCM and 1,682 MCM, respectively.

In addition to the Mahaweli Ganga, the following rivers provide substantial flow for the agricultural development areas in the study area, and are characterized by significant flows in the Maha season only.

The Mi Oya which flows in the mid-west of island is located in the North-Western Dry Zone. The river originates in the hilly area of the Pallekele Forest Reserve, east of Dambulla in the North Central Province. The catchment area is about 557 km² at the existing Inginimitiya reservoir. Average annual runoff at this reservoir was estimated to be 105 MCM.

The Kala Oya is the most important river providing water for the System H area. In the upper reaches, the existing Kalawewa tank is located, and has an active storage capacity of 123 MCM. From the Kalawewa tank, a certain amount of water is diverted to System IH through the Kalawewa - Nachchaduwa - Tissawewa - Yoda Ela (Kalawewa RB Main Canal). Average annual runoff is estimated to be 163 MCM at the existing Kalawewa tank.

The Malwatu Oya is located in the North Central Province. The river rises in the Inamaluwa and Ritigala mountains, and runs in a north-westerly direction. The Malwatu Oya basin is rather flat or slightly rolling with some isolated hills. The Malwatu Oya which commands Systems I and IH has a catchment area of about 2,113 km² at the proposed Malwatu Oya reservoir, and annual runoff of approximately 298 MCM. In the upper reaches, there are two existing tanks constructed in ancient times: Nachchaduwa with

56 MCM, and Nuwarawewa with 45 MCM of active storage, located to irrigate about 3,400 ha.

The Yan Oya is located in the north - east of island. The origin of the Yan Oya is in the hilly areas of Sigiriya and Dambulla. The upper course of the river is called Sigiri Oya and Habarana Oya. The river finally debouches into the Indian Ocean south of Pulmoddai. The main part of the basin still consists of non-cultivated land covered by shrubs and bushes. The basin includes System MH and a large part of System M. The System MH area is located at the central part of this basin. The existing Huruluwewa tank with an active storage capacity of 65 MCM, located about 20 km north of Habarana, commands about 4,300 ha of paddy land in System MH. The catchment areas at the proposed Yan Oya reservoir and existing Huruluwewa tank are about 1,320 km² and 199 km² respectively. Average annual runoffs at the Yan Oya reservoir and the Huruluwewa tank were estimated to be about 253 MCM and 33 MCM, respectively.

The Parangi Aru originates in the Vavuniya District, north of the town of Vavuniya as Per Aru and runs in a north-westerly direction. The catchment area of the proposed Parangi Aru reservoir to supply System J with water is 427 km². System J is located in a part of the Parangi Aru, Naw Aru, Kinji Aru and Pali Aru basins. Average annual runoff at Parangi Aru reservoir was estimated to be 157 MCM.

The Kanagarayan Aru lies in the Vavuniya District, i.e. the region of Puliyankulam, north-east of the town of Vavuniya. The river first flows in NWW - direction at Mankulam, and its course changes to a strictly northern direction through the Mullaitive District. Near the village of Kokkuvil, the river discharges into the Iranamadu tank and continues its course through the Jaffna District till its finally debouches in the Jaffna Lagoon. The catchment area of the Kanagarayan Aru at the proposed Kanagarayan reservoir (to supply System K) is 85 km². System K lies in the basins of the Kanagarayan Aru and Per Aru. Average annual runoff was estimated to be 40 MCM at Kanagarayan reservoir.

The basins of the Gallodai Aru, Maha Oya and Rambukkan Oya are located in the South-Eastern Dry Zone of the island, north of Gal Oya National Park on the border of the Uva and Eastern Provinces. The Gallodai Aru with the Maha Oya and Rambukkan Oya are the main sources of the Mundeni Aru, which finally discharges in the lagoon near Batticaloa. The catchment area at the proposed Gallodai Aru reservoir, Maha Oya reservoir and Rambukkan Oya reservoir is 95 km², 230 km², and 140 km², and average annual runoff was estimated to be 63 MCM, 141 MCM and 86 MCM, respectively.

The Maduru Oya basin is bordered by the Ulhitiya basin, in the south by the Gal Oya, and in the east by the Gallodai Aru and Maha Oya basins. The Maduru Oya rises in the hilly to mountainous area of Ekiriyanakumbura, Wegama and Holike. The main direction of the river is northerly turning to the east near Welikanda, and the river debouches into the Vendeloos Bay. The catchment area is about 453 km² at the existing Maduru Oya reservoir. Average annual runoff at this reservoir was estimated to be 344 MCM.

B.4.2 Available Runoff Data

Location of hydrological stations in the Mahaweli Ganga and other rivers of relevance to the study are shown in Fig. B.4-1. The period of stream flow data at each station so far obtained is represented in Fig. B.3-1.

The following reports and data are made available in the study area:

- Hydrological Crash Programme
Mahaweli Development Project
Hydrology Division, Irrigation Department
August 1981, NEDECO.
- Hydrological Crash Programme - 2
Mahaweli Development Project
Hydrology Division, Irrigation Department
June 1982, NEDECO
- Mahaweli Water Resources Management Project
Studies of Operating Policy Options
Water Management Secretariat, MASL
June 1985, ACRES.

NEDECO prepared a report covering the first phase of the Hydrological Crash Programme (HCP-1). This report consists of 18 volumes, giving the rainfall reference base, operation and maintenance procedures for newly installed equipment, data collection and processing procedures and an analysis of the data from 17 key stations. The HCP had as its main objective the metering of medium and high flows at existing hydrometeorological stations, and the checking and upgrading of existing hydrological data, based on new flow metering data.

After completing HCP-1, the revised flow data from the hydrological stations was used to estimate local inflows at the reservoirs, power stations and control points in the Macro Model. These data, which were used as input to the Macro Model simulation, are documented in the report and reside in the WMS computer in the form of weekly inflow data. The period of these data ranges from 1949 to 1981 at each key station in the main Mahaweli river system as follows:

- Kotmale Reservoir
- Polgolla diversion
- Victoria Reservoir
- Randenigala Reservoir
- Upper and lower Uma Oya Reservoir
- Rantembe Reservoir
- Weragantota
- Rotalawela Reservoir
- Manampitiya
- Bowatenna Reservoir
- Moragahakanda Reservoir
- Angamedilla

For use with the Acres Reservoir Simulation Program (ARSP), these data were recompiled into monthly format by ACRES. The monthly incremental inflow data prepared for the reservoirs and control points in the main Mahaweli system were produced from 1949 to 1981.

As the HCP did not cover the irrigation areas that come under the Mahaweli development, ACRES carried out a rainfall-runoff correlation analysis for the selected stations as follows:

- Maduru Oya at Welikanda and Maduru Oya dam site (System B)
- Alut Oya and Gal Oya at Minneriya-Kantalai Yoda Ela crossing (System D1)
- Mi Oya at Mahauswewa (south of System H)
- Yan Oya at Horowupotana (System MH)

As a result, local inflow data were produced from 1949 to 1981 at each key station in the irrigation system as follows:

- System H : Kalawewa Tank
- System D1 : Minneriya and Giritale Tank, Kaudulla Tank, Kantalai Tank
- System D2 : Parakrama Samudra
- System B : Maduru Oya Reservoir
- System C : Ulhitiya/Ratkinda Reservoir
- System E :

In addition monthly local inflow data prepared for the above-mentioned reservoirs and control points in the main Mahaweli System, and other key stations situated at the irrigation areas, are produced for the period 1982 to 1986 by the Water Management Secretariat (WMS), MASL.

B.4.3 Rainfall-Runoff Regression Analysis

A rainfall - runoff regression analysis was carried out for stations which are not covered the irrigation areas for the ARSP. The stations selected for use in the regression analysis were represented as follows:

- Kalu Ganga at Pallegama (System F)
- Mi Oya at Mahauswewa (North-Western Dry Zone)
- Malwatu Oya at Kappachchi (System I)
- Parangi Aru at Chinnavalayan Kaddu (System J)
- Kanagarayan Aru at Parasan Kulam (System K)
- Mukunu Oya at Yakawewa (System L)
- Yan Oya at Horowupotana (System M)
- Gallodai Aru at Veragoda, Rambukkan Oya at Nilobe (South-Eastern Dry Zone)

The months of the year were grouped on the basis of wet (Maha season) and dry (Yala season) conditions. Alternative groupings of months were examined to determine the best regression equations. As the result of analyses, the period October to May inclusive was used to represent the Maha season, and the period June to September inclusive was used to represent the Yala season.

A linear equation, and second and third polynomial equations were fitted to the data. A second polynomial equation was ultimately adopted for use in estimating missing flow data. The second polynomial equation is as follows:

$$Y = a + b \times X + c \times X^2$$

Where, Y : Runoff in mm
 X : Rainfall in mm
 a : the regression constant
 b and c : the regression coefficients

The results of regression equations for the selected stations are presented in Table B.4.1. The derived rainfall-runoff equations were applied to the catchment rainfall data given in Section B.3.4 to estimate missing flow data. Average monthly runoff values are given in Table B.4.2.

B.4.4 Flow Data Base for Water Balance Study

There are 21 key points in the main Mahaweli System and 51 key points in the other systems situated in the irrigation areas for the Water Balance Study.

Based on the flow data at several key stations in the main Mahaweli system and the other systems situated in the irrigation areas, flow data base at each key point for the water balance study were made by applying a catchment factor for a nearby key station.

The monthly inflows at several key points in the study area are presented in Tables B.4.5 and the average monthly inflows at key points are summarized in Tables B.4.3 and B.4.4. The average monthly flow patterns at the major key points in the study area are shown in Fig. B.4-2.

B.4.5 Flow Duration

For the purpose of estimating the river maintenance flow at proposed Kandakadu diversion, flow duration of the Mahaweli Ganga at Manampitiya was produced based on these daily values for the period 1954 to 1987. Flow duration at Manampitiya is presented in Table B.4.6. Average flow duration figures for the period 1954 to 1975, 1954 to 1987 and 1976 to 1987 are shown in Fig. B.4-3 respectively.

Based on the average 355th-day (probability of exceedance of 97% in a year) discharge for the period 1976 to 1987 (about 10 years), after the commencement of the Polgolla diversion from the Mahaweli Ganga to the Amban Ganga, the river maintenance flow at the proposed Kandakadu diversion was estimated to be about 15 m³/s, considering the return flow from System D to the Mahaweli Ganga.

B.5. FLOOD

B.5.1 Flood Frequency Analysis

A flood frequency analysis was undertaken by fitting several frequency distributions to predict return period floods at selected stations. Records of annual maximum flood data at each stations, according to hydrological year together with data of occurrence; day, month, year, are shown in Table B.5.1.

The predicted magnitudes with return period of 20, 50, 100, 200 and 1,000 years, according to the Gumbel frequency distribution (Gumbel-Chow method), are shown in Table B.5.2. The linearization of a distribution and the formation of a probability paper at selected stations is shown in Fig. B.5-1. Hazen formula was adopted for plotting position formula as follows:

$$P = \frac{(2 \times m - 1)}{(2 \times N)}$$

where, P : probability
N : the number of years of record
m : the rank of the event in order of magnitude,
the largest event having $m = 1$

For a number of selected stations the specific discharges are plotted against catchment areas in Fig. B.5-2. Also included on this diagram are magnitude with return period 1,000 year at the proposed dam sites, according to the Unit Hydrograph.

B.5.2 Flood Analysis at Proposed Dam Sites

There are 21 proposed dam sites in the study area as shown in Fig. B.4-1. Since insufficient data on floods and corresponding rainfall are available for each proposed dam site, the synthetic unit hydrograph method was adopted for flood analysis.

A synthetic unit hydrograph was developed for ungauged areas, based on known physical characteristics of the basin. These synthetic unit hydrographs were computed either from direct analogy with basins of similar characteristics, or from an indirect analogy with a large number of other basins through the application of empirical relationships. The synthetic unit hydrographs for proposed dam sites were derived using Snyder's Method and the empirical relationships from flood studies by the Hydrology Division, ID in Sri Lanka.

The unit hydrograph is expressed as follows:

$$\begin{aligned} Q_p &= 640 \times C_p \times A/T_p \\ T_p &= C_t \times (L \times L_c) 0.3 \\ T_b &= b + c \times (T_p/24) \end{aligned}$$

Where, Q_p : peak discharge of unit hydrograph in cusecs
 C_p : a coefficient $C_p = 1.0$ (Mahaweli basin)
 $C_p = 2.0$ (Northern and other basin)
 $C_p = 2.0$ (Northern and other basin)
 A : catchment area in sq.miles
 T_p : unit hydrograph time to peak in hours
 C_t : a coefficient
 $C_t = 0.47$ (Mahaweli basin)
 $C_t = 0.84$ (Northern and other basin)
 L : the length from catchment outlet to the catchment boundary in miles.
 L_c : the length from the outlet to the nearest point on the river to the centre of the catchment in miles.
 T_b : the time base of unit hydrograph in days
 b, c : Coefficients
 $b = 0.77, c = 2.92$

The values of Q_p , T_p and T_b derived at each proposed dam site are presented in Table B.5.3.

Design rainfall for determining a flood hydrograph was developed as a centralized hydrograph based on rainfall depth-duration-frequency estimates for return periods. Rainfall depth-duration-frequency estimates prepared for Sri Lanka were used to select the return periods, 20-, 50-, 100-, 200- and 1,000-year return periods, for the proposed dam sites, respectively. To account for the losses due to infiltration and interception losses etc., 1.27mm/hr (0.05 in/hr) was deducted in the first 24 hours from hourly rainfall depths.

By using the unit hydrograph and the design rainfalls, flood hydrographs at proposed sites are shown in Fig. B.5-3. The obtained flood peak discharges at each proposed dam site for various return periods are presented in Table B.5.4.

B.6 SEDIMENTATION

B.6.1 Available Data for Sedimentation

Although continuous records on streamflow are available for long time periods, the records on sediment transport are neither long nor continuous.

Sediment field measurements have been carried out at some stream gauging stations by the Irrigation Department (ID).

The following reports and data are made available for the sedimentation in the study area.

- Mahaweli Ganga Irrigation and Hydro-power Survey (Volume II: Climate & Hydrology) 1968, FAO and ID
- Mahaweli Ganga Development Program, Implementation Strategy Study, (Annex A: Hydrology) July 1979, MDB
- Master Plan for the Electricity Supply of Sri Lanka, (Volume S-1 : Water Resources Data Base) July 1987, CEB

The majority of measurements have been made on request by the Project at various times. According to the Water Resources Data Base (CEB), the results of these measurement for stations of the Mahaweli Ganga, compiled mainly from project study reports, are extracted as follows:

Station	Period (months)	Area (km ²)	Annual Sediment Yield (m ³ /km ²)	Source
Gurudeniya	1968-68 (?)	1,418	112	(1)
	1970-72 (30)		112	(2)
	1949-74 (-)		329T	(3)*
Peradeniya	1983-83 (4)	1,167	156T	(4)
Elahera	1967-70 (39)	774	49	(2)
	1949-74? (-)		100T	(3)*
	?- ?		95T	(5)
Kandakadu-thurai	1952-58 (72)	7,529	186	(6)
	1952-54 (15)		91	(2)

- Source:
- (1) FAO Study 1968
 - (2) Bowatenna Study 1972
 - (3) MDB/NEDECO Impl. Study 1979
 - (4) ID/NEDECO Field Rep.
 - (5) JICA Moragahakanda Project 1979
 - (6) Three Basins Study 1968
- ? : Value unknown or doubtful
 - T : Total yield (suspended + bed load)
 - * : Expected valued as given in report

B.6.2 Annual Sediment Yield

On the basis of the observed data at Gurudeniya gauging station, the UNDP/FAO study proposed a total sediment yield of $333 \text{ m}^3/\text{km}^2/\text{year}$ for design of reservoirs on the Mahaweli Ganga.

The ISS recommended using a total sediment yield of $300 \text{ m}^3/\text{km}^2/\text{year}$ to check the adequacy of dead storage capacity in reservoirs on the Mahaweli Ganga. On the other hand, for total sediment yield a value of $100 \text{ m}^3/\text{km}^2/\text{year}$ has been recommended for tributaries of the Mahaweli Ganga.

Based on the above mentioned reports and information, the specific sediment yield was estimated to be $300 \text{ m}^3/\text{km}^2/\text{year}$ in the main Mahaweli Ganga, and $100 \text{ m}^3/\text{km}^2/\text{year}$ in the tributaries of Mahaweli Ganga and other basins in the study area.

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9. MASTER PLAN FOR THE ELECTRICITY SUPPLY OF SRI LANKA, WATER RESOURCES DATA BASE, JULY 1987, CEB

TABLES

Table B.2.1 AVERAGE CLIMATE DATA AT RESPECTIVE STATIONS (1/3)

‡ Mean daily maximum temperature (°C)														
Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual (Mean)	Records Periods
Maha Illupallama	29.3	31.3	33.6	33.8	32.7	32.4	32.6	33.0	33.2	31.9	30.1	29.0	31.9	1952-1987
Anuradhapura	29.3	31.3	33.8	34.0	32.8	32.7	32.9	33.2	33.3	31.9	30.2	28.8	32.0	1952-1987
Trincomalee	27.6	28.9	30.8	32.8	34.3	34.3	34.1	34.0	33.9	31.7	29.2	27.9	31.6	1952-1987
Vavuniya	29.1	31.0	33.5	34.4	33.5	33.6	33.9	34.0	33.7	31.8	30.0	28.8	32.8	1957-1987
Alutharama	29.8	31.4	33.2	34.7	35.6	36.0	36.1	35.9	35.1	33.2	31.1	29.2	33.4	1976-1986
Batticaloa	27.8	28.7	30.1	31.6	33.1	33.9	33.3	33.0	32.3	30.8	29.3	28.1	31.0	1952-1987
Kantalai	29.9	31.3	33.7	35.4	34.9	34.7	35.2	35.1	34.8	33.5	31.0	29.5	33.2	1975-1986

‡ Mean daily minimum temperature (°C)														
Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual (Mean)	Records Periods
Maha Illupallama	20.4	20.9	21.8	23.5	24.5	24.7	24.2	24.1	23.9	23.0	22.0	21.4	22.9	1952-1987
Anuradhapura	20.9	21.2	22.7	24.0	24.7	24.8	24.4	24.4	24.2	23.3	22.5	22.3	23.3	1952-1987
Trincomalee	24.4	24.6	25.1	25.8	26.4	26.4	25.8	25.5	25.1	24.6	24.1	24.3	25.2	1952-1987
Vavuniya	20.2	20.3	21.8	23.7	24.5	24.7	24.3	24.2	23.9	23.0	22.3	21.4	22.9	1957-1987
Alutharama	21.1	20.9	21.7	22.7	23.2	23.0	21.9	23.1	22.6	22.1	22.1	22.1	22.1	1976-1986
Batticaloa	23.2	23.3	24.1	25.2	25.7	25.6	25.2	25.0	24.7	24.3	23.7	23.5	24.5	1952-1987
Kantalai	22.7	20.8	22.4	24.5	25.1	26.0	25.5	24.9	24.9	23.5	23.2	22.2	23.8	1975-1986

‡ Mean daily average temperature (°C)														
Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual (Mean)	Records Periods
Maha Illupallama	24.9	26.1	27.7	28.6	28.6	28.5	28.4	28.6	28.5	27.4	26.1	25.2	27.4	1952-1987
Anuradhapura	25.1	26.2	28.2	29.0	28.7	28.8	28.7	28.8	28.7	27.6	26.3	25.6	27.6	1952-1987
Trincomalee	26.0	26.7	27.9	29.3	30.4	30.3	29.9	29.7	29.5	28.1	26.6	26.1	28.4	1952-1987
Vavuniya	24.7	25.6	27.7	29.0	29.0	29.2	29.1	29.1	28.8	27.4	26.2	25.1	27.6	1957-1987
Alutharama	25.5	26.1	27.5	28.7	29.4	29.5	28.9	29.5	28.7	27.7	26.6	25.2	27.8	1976-1986
Batticaloa	25.5	26.0	27.1	28.4	29.4	29.7	29.2	29.0	28.5	27.6	26.5	25.8	27.7	1952-1987
Kantalai	26.3	26.1	28.1	29.9	30.0	30.3	30.3	30.0	29.9	28.5	27.1	25.9	28.5	1975-1986

* Source : Meteorology of Department

Table B.2.1 AVERAGE CLIMATE DATA AT RESPECTIVE STATIONS (2/3)

‡ Mean monthly rainfall (mm)														
Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual (Total)	Records Periods
Maha Illupallama	90	59	83	175	92	17	35	31	87	244	262	237	1411.0	1949-1986
Anuradhapura	96	56	72	165	94	12	30	35	66	251	240	217	1335.0	1949-1986
Trincomalee	211	95	48	77	68	19	54	103	89	235	355	374	1728.0	(30 years)
Vavuniya	91	64	45	140	70	14	39	64	90	211	270	270	1367.0	1949-1986
Alutharama	335	212	118	142	74	16	43	60	76	211	345	455	2087.0	1949-1986
Batticaloa	279	178	85	22	31	19	38	62	48	178	285	430	1655.0	(30 years)
Kantalai	153	91	55	95	56	18	60	74	96	193	288	354	1535.0	1949-1986

‡ Mean no. of rainy days														
Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual (Total)	Records Periods
Maha Illupallama	8.7	5.0	7.0	13.7	8.0	4.2	4.7	3.8	6.6	15.7	17.9	16.3	111.6	1952-1987
Anuradhapura	9.5	5.0	6.6	14.4	7.5	3.4	4.3	4.1	6.4	15.8	18.7	16.4	112.1	1952-1987
Trincomalee	10.7	5.7	4.9	6.4	4.9	2.1	4.7	6.1	7.2	15.1	18.7	18.1	104.6	1952-1987
Vavuniya	7.4	4.8	5.5	11.5	7.8	2.1	4.0	4.8	7.4	16.5	19.0	16.5	107.3	1957-1987
Alutharama	12.2	10.4	8.3	9.2	7.4	1.1	4.8	3.8	7.8	14.4	19.9	19.6	118.9	1976-1986
Batticaloa	14.0	13.6	6.6	6.6	4.8	4.6	2.7	4.6	4.9	6.2	18.1	20.0	106.7	1952-1987
Kantalai	7.4	5.5	4.4	5.6	4.2	1.4	3.9	3.3	5.9	12.0	16.5	15.7	85.8	1975-1986

‡ Mean daily sunshine hours (hrs/day)														
Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual (Mean)	Records Periods
Maha Illupallama	7.4	8.7	9.0	8.8	8.5	8.0	7.7	8.3	7.6	7.0	6.0	5.8	7.7	1952-1987
Anuradhapura						Not available								
Trincomalee	7.1	8.4	9.1	8.9	8.2	7.8	7.5	8.0	7.5	7.0	5.9	5.5	7.6	1952-1987
Vavuniya						Not available								
Alutharama	4.7	6.4	7.1	7.0	7.5	7.0	6.6	6.6	6.5	6.0	4.3	6.1	6.3	1976-1986
Batticaloa	6.6	8.1	8.8	8.7	8.5	8.2	8.0	8.3	8.0	7.3	6.7	5.8	7.8	1952-1987
Kantalai	7.1	8.3	8.6	8.2	8.5	7.6	7.8	7.9	7.2	7.1	5.6	5.2	7.4	1975-1986

* Source : Meteorology of Department

Table B.2.1 AVERAGE CLIMATE DATA AT RESPECTIVE STATIONS (3/3)

Mean daily relative humidity (%)

Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual (Mean)	Records Periods
Maha Illupallama	79.4	74.6	71.3	74.6	74.9	72.9	70.8	69.5	69.1	76.1	81.2	83.1	74.8	1952-1987
Anuradhapura	75.0	69.1	64.5	69.1	71.7	66.4	64.9	63.0	63.8	72.1	78.8	80.3	69.9	1952-1987
Trincomalee	75.5	72.6	71.3	70.1	64.4	58.8	60.0	60.7	62.9	71.0	77.6	79.2	68.7	1952-1987
Vavuniya	76.4	72.5	68.2	69.6	70.8	66.2	64.9	65.9	66.7	74.5	80.8	82.2	71.6	1957-1987
Alutharama	87.0	85.2	84.1	81.7	77.9	66.6	66.0	64.4	68.3	79.4	85.8	87.3	77.8	1976-1986
Batticaloa	78.4	76.3	74.3	74.1	70.3	63.1	64.1	65.6	68.9	74.8	78.9	81.1	72.5	1952-1987
Kantalai	86.2	83.9	80.5	75.7	73.9	70.2	70.2	70.6	70.4	76.8	86.5	88.5	77.8	1975-1986

Mean daily wind speed (Km/h)

Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual (Mean)	Records Periods
Maha Illupallama						Not available							7.8	1970-1978
Anuradhapura	5.3	5.3	4.9	4.7	9.2	13.1	12.2	12.6	10.7	6.5	4.3	4.7	7.8	1970-1978
Trincomalee	15.4	11.1	7.8	7.7	12.7	15.8	14.0	13.6	12.0	10.0	10.8	15.5	12.2	1970-1978
Vavuniya						Not available								
Alutharama						Not available								
Batticaloa	11.4	11.5	10.0	8.7	8.2	7.9	8.0	8.0	8.4	8.2	8.9	12.3	9.3	1970-1978
Kantalai						Not available								

Mean monthly pan-evaporation (mm)

Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual (Total)	Records Periods
Maha Illupallama	117.8	136.0	174.9	171.8	157.5	178.6	194.7	200.1	181.6	150.5	105.0	95.5	1864.0	1952-1987
Anuradhapura						Not available								
Trincomalee						Not available								
Vavuniya						Not available								
Alutharama	97.2	104.3	129.1	131.0	127.0	166.6	186.9	181.6	162.6	124.9	98.0	77.6	1586.8	1976-1986
Batticaloa						Not available								
Kantalai	119.1	133.5	171.7	169.1	200.3	236.6	243.5	254.5	215.9	176.9	116.3	146.4	2183.8	1975-1986

* Source : Meteorology of Department

Table B.3.1 SUMMARY OF REGRESSION ANALYSIS FOR FILLING-IN OF MISSING MONTHLY RAINFALL

Rainfall Station No. (Y)	Rainfall Station (Y)	Rainfall Station NO. (X)	Rainfall Station (X)	Regression Constant a	Regression Coefficient b	Correlation Coefficient r
121	Ekiriyakubura	192	Horaborawewa	34.6	0.8	0.9
144	Galgamuwa Tank	367	Mediyawa Tank	9.4	0.9	0.9
186	Hingurakgoda Agr	382	Minneriya TANK	11.4	1.0	0.9
192	Horabarawewa	21	Angamedilla	31.6	1.0	0.9
198	Horowupotana	261	Kebetigollawa	22.1	1.0	0.9
201	Iddemekelle Estate	192	Horaborawewa	21.1	1.3	0.9
208	Iginiyagala	333	Maha Oya	21.3	0.8	0.9
223	Kal Aar	186	Hingurakgoda Agr	20.5	0.9	0.8
225	Kalawewa	331	Maha Illupalama Met.	31.6	0.8	0.8
233	Kanakarayankulam	348	Mankulam	13.9	0.9	0.9
247	Kantalai TANK	186	Hingurakgoda Agr	18.2	0.8	0.9
261	Kebetigollawa	198	Horowupotana	8.7	0.8	0.9
323	Medawachchiya	595	Vavuniya	18.0	0.8	0.9
331	Maha Illupalama	26	Anuradhapura Met.	13.2	0.9	0.9
333	Maha Oya	192	Horaborawewa	38.8	0.7	0.8
335	Mahauswewa	367	Mediyawa Tank	14.2	0.8	0.8
348	Mankulam	233	Kanakarayankulam	9.2	0.9	0.9
367	Mediyawa Tank	335	Mahauswewa	19.9	0.9	0.8
380	Minipe Irrigation	192	Horaborawewa	10.9	1.0	0.9
393	Morayaya	192	Horaborawewa	12.1	0.9	1.0
429	Nochchiyagama	331	Maha Illupalama Met.	14.6	0.7	0.9
438	Omantai	595	Vavuniya Aru	11.9	0.8	0.9
452	Pallegama	192	Horaborawewa	13.0	1.1	0.9
487	Polonnaruwa	21	Angamedilla	16.9	1.0	0.9
492	Paliyankulam	595	Vavuniya Aru	7.5	1.0	0.9
503	Puwaesankulam Forest	595	Vavuniya Aru	10.1	0.9	0.9
586	Unchalkaddi	347	Mankulam	13.6	1.3	0.9
594	Valachchanai	21	Angamedilla	18.2	1.0	0.8
595	Vavuniya Aru	323	Medawachchiya	7.6	1.0	0.9

Remarks: Regression Equation

$$Y = a + b * X$$

Table B.3.2 AVERAGE MONTHLY RAINFALL IN AND AROUND THE STUDY AREA

No.	Station	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Annual (Total)
21	Angamedilla	190	282	388	196	135	94	110	64	5	35	39	72	1609
26	Anuradhapura Met	251	240	217	96	56	72	165	94	12	30	35	66	1335
40	Bakamuna (Elahera)	181	286	420	226	146	96	151	48	4	17	28	42	1645
121	Ekiriyandumbura	210	312	433	318	223	108	160	100	42	66	92	110	2175
144	Galagamuwa Tank	264	242	189	73	49	87	198	93	33	35	28	66	1356
186	Hingurakgoda Agr	205	294	374	175	100	69	113	76	9	56	47	88	1605
192	Horaborawewa	211	345	455	335	212	118	142	74	16	43	60	76	2087
198	Horowupotana	217	310	353	141	95	55	118	87	14	62	82	102	1635
201	Iddemekell Estate	268	445	722	515	318	207	198	97	29	52	62	80	2993
208	Inginiyagala	191	292	384	260	184	88	115	104	37	83	75	95	1910
223	Kal Aar	201	337	393	179	104	59	76	65	18	73	99	110	1714
225	Kalawewa	235	236	245	115	60	86	171	98	45	61	51	93	1495
233	Kanakarayankulam	233	307	293	89	53	46	104	62	13	42	62	98	1391
247	Kantalai Tank	193	288	354	153	91	55	95	56	18	60	74	96	1535
261	Kebeleqollewa	224	269	307	125	71	51	119	75	14	62	57	94	1468
323	Medawachchiya	213	235	233	90	64	63	138	84	8	41	56	84	1309
331	Maha Illupallama Met	244	262	237	90	59	83	175	92	17	35	31	87	1411
333	Maha Oya	190	285	422	268	175	81	104	93	57	102	100	116	1992
335	Mahauswewa	250	246	150	55	44	103	195	104	35	35	24	65	1307
348	Mankulam	222	324	286	89	57	54	136	73	9	35	50	92	1428
355	Maradankadawela	233	255	254	109	59	83	181	82	11	35	36	79	1417
367	Mediyawa Tank	245	235	160	69	52	77	218	95	37	43	29	69	1330
374	Mihintale	228	256	241	111	57	69	157	80	8	38	40	88	1373
380	Minipe Irrigation	209	360	529	386	261	124	143	62	12	42	72	89	2287
382	Minneriya Tank	201	295	363	169	102	72	114	61	5	50	43	93	1576
393	Morayaya	181	328	452	342	216	144	139	71	17	38	46	74	2048
404	Nachchaduwa	224	230	209	81	50	71	155	80	8	32	38	55	1232
429	Nochchiyagama	200	233	172	72	39	65	158	90	17	29	26	74	1186
438	Omantai	183	237	234	89	54	39	115	61	16	44	64	889	1225
452	Pallegama	206	421	562	403	277	156	174	74	10	29	40	78	2428
473	Pelwehera	241	278	321	141	88	99	175	72	12	28	26	78	1559
487	Polonnaruwa Agr	207	317	431	195	135	86	125	60	13	65	57	96	1788
492	Puliyankulam	226	287	284	96	64	43	129	78	14	43	56	86	1406
503	Puwaeasankulam Forr:	208	248	237	86	56	50	138	75	16	39	57	75	1284
594	Varaichenai	218	348	440	250	155	99	58	51	24	52	54	66	1813
595	Vavuniya	211	270	270	91	64	45	140	70	14	39	64	90	1367

Table B.3.3 MONTHLY RAINFALL (1/11)

- STATION : KAL AAR
 - STATION NUMBER : 223

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1949	66	223	707	93	109	41	32	82	0	0	70	135	1558
1950	180	309	373	656	92	51	153	111	0	104	73	252	2354
1951	91	332	224	503	46	0	115	39	0	89	39	90	1568
1952	66	288	323	452	26	58	114	0	6	147	156	107	1743
1953	182	193	104	231	0	94	159	0	20	23	97	36	1139
1954	183	126	376	331	108	0	136	99	0	83	230	133	1805
1955	226	66	169	114	85	17	15	3	106	32	46	133	1012
1956	309	438	312	134	110	0	0	150	0	126	8	72	1659
1957	283	546	936	116	57	52	110	39	0	13	240	11	2403
1958	182	258	277	219	13	1	79	51	65	3	78	77	1303
1959	254	353	164	303	386	24	52	70	0	230	236	55	2127
1960	76	383	95	311	171	63	34	77	0	119	0	121	1450
1961	224	562	707	319	41	46	65	69	0	3	28	5	2069
1962	209	256	222	592	256	150	44	16	77	122	129	106	2179
1963	198	614	599	123	83	70	29	43	0	216	181	31	2187
1964	178	142	105	70	327	58	172	111	0	8	401	186	1758
1965	359	574	629	150	27	317	89	9	4	11	244	198	2611
1966	409	421	399	85	113	28	41	18	12	90	132	158	1906
1967	258	546	642	140	7	222	53	4	35	0	18	134	2059
1968	160	332	348	109	99	0	115	21	0	25	280	144	1633
1969	251	309	682	185	264	65	109	137	45	3	72	17	2139
1970	196	448	364	188	57	13	24	92	5	17	104	135	1643
1971	260	124	696	43	11	14	28	344	36	165	8	115	1844
1972	377	302	407	15	26	20	3	54	184	136	54	164	1742
1973	343	98	478	1	69	8	84	81	6	45	48	313	1574
1974	16	80	236	98	101	128	15	37	1	51	123	71	957
1975	212	383	222	28	10	11	178	67	0	83	134	67	1395
1976	135	184	606	75	78	73	21	43	23	66	42	257	1603
1977	264	301	228	174	29	47	94	116	0	113	0	133	1499
1978	390	612	443	75	90	70	96	19	0	12	44	246	2097
1979	228	640	169	2	0	1	133	69	7	0	13	21	1283
1980	148	123	168	143	115	22	71	81	20*	295	185	89	1460
1981	281	70	322	0	0	68	99	212	10	0	0	32	1094
1982	8	605	461	1	0	0	0	6	2	15	0	8	1106
1983	26	617	827	467	597	130	220	13	0	60	55	85	3097
1984	114	415	146	67	97	13	35	0	2	201	55	38	1183
1985	83	202	360	23	142	208	0	13	0	0	48	83	1162
MEAN	201	337	393	179	104	59	76	65	18	73	99	110	1714

Remarks: * Signifies filled-in monthly rainfall.

Table B.3.3 MONTHLY RAINFALL (2/11)

- STATION : POLONNARUWA AGR.
 - STATION NUMBER : 487

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1949	218	275	479	134	51	169	14	62	0	0	82	18	1502
1950	118	172	179	500	109	75	135	14	0	55	41	148	1546
1951	62	384	265	464	128	47	133	97	0	53	0	105	1738
1952	179	186	227	224	89	73	215	0	51	171	36	133	1584
1953	266	245	437	297	98	212	113	0	0	91	65	0	1824
1954	200	184	578	261	106	31	128	45	0	0	134	174	1841
1955	165	103	147	126	64	70	105	1	111	12	55	4	963
1956	224	312	301	113	316	0	71	127	2	52	18	15	1551
1957	178	613	1219	192	91	104	81	60	0	0	160	31	2729
1958	212	227	398	268	15	9	97	29	22	0	30	119	1426
1959	371	339	270	275	409	85	307	164	0	140	24	38	2422
1960	101	265	129	423	260	104	116	141	7	0	0	9	1555
1961	145	349	513	208	66	72	96	76	0	5	27	127	1684
1962	169	206	222	489	257	102	217	39	2	48	5	134	1890
1963	186	491	432	163	221	256	79	37	0	104	47	73	2089
1964	87	147	155	105	412	2	182	159	22	0	152	1	1424
1965	241	595	574	242	18	162	240	3	3	5	120	52	2255
1966	422	296	397	66	180	53	88	11	0	0	1	15	1529
1967	260	467	506	134	0	122	99	1	0	0	16	33	1638
1968	190	314	213	111	42	29	271	0	0	97	87	34	1388
1969	270	109	709	180	303	19	197	138	95	0	103	36	2159
1970	220	489	327	176	102	161	168	30	0	149	283	3	2108
1971	200	180	798	40	0	0	138	132	0	12	1	407	1908
1972	618	579	435	20	117	45	37	89	66	348	45	382	2781
1973	184	391	1257	0	55	33	145	65	0	0	8	151	2289
1974	25	192	237	148	174	204	192	113	0	508	97	0	1890
1975	210	286	382	230	15	4	59	0	45	17	79	105	1432
1976	126	607	686	154	50	145	191	121	5	166	84	155	2490
1977	261	670	516	58	70	109	14	8	0	24	0	0	1730
1978	333	383	468	60	133	62	55	13	0	5	75	122	1709
1979	216	433	335	16	0	3	147	47	0	0	0	70	1267
1980	233	252	207	147	148	31	57	84	0	94	50	141	1444
1981	216	123	286	18*	17*	121*	80*	175*	23*	23*	81	194	1357
1982	140	275	512*	28	0	0	14	82	12	125*	3	0	1191
1983	253	107	590	607	690	259	242	0	0	15	12	337	3112
1984	94	304	136	230	97	73	64	2	0	44	59	193	1296
1985	83	185	437	313	83	138	46	53	8	45	25	7	1423
MEAN	207	317	431	195	135	86	125	60	13	65	57	96	1788

Remarks: * Signifies filled-in monthly rainfall.

Table B.3.3 MONTHLY RAINFALL (3/11)

- STATION : HORABORAWEWA
- STATION NUMBER : 192

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1949	276	682	566	235	110	93	38	91	0	8	27	38	2164
1950	141	208	253	1051	109	67	75	30	0	32	130	108	2204
1951	194	514	581	666	88	34	268	131	0	77	19	164	2736
1952	126	321	246	423	241	124	191	0	31	57	47	63	1870
1953	201	264	545	347	375	178	147	51	0	10	41	0	2159
1954	343	263	603	871	345	209	179	13	0	0	60	110	2996
1955	70	172	284	289	81	107	122	0	83	0	19	0	1227
1956	190	652	456	376	281	17	34	33	6	33	9	89	2176
1957	302	637	1305	416	152	211	200	43	6	8	45	45	3370
1958	56	345	503	245	84	56	205	221	25	3	71	97	1911
1959	414	447	683	569	843	23	259	144	0	151	25	14	3572
1960	247	362	173	516	195	144	343	55	6	14	5	53	2113
1961	198	604	561	394	174	178	244	174	4	11	339	46	2927
1962	163	275	338	455	320	114	159	61	0	42	2	184	2113
1963	239	495	641	509	419	159	70	79	4	113	104	37	2869
1964	110	185	411	209	514	103	231	65	10	2	230	0	2070
1965	306	455	412	358	97	255	81	44	12	3	84	112	2219
1966	324	357	308	276	299	130	55	11	50	3	4	55	1872
1967	251	749	379	288	18	290	88	9	6	11	0	27	2116
1968	223	200	343	363	189	36	253	44	0	5	182	121	1959
1969	366	119	705	355	533	105	143	85	4	3	21	64	2503
1970	40	288	291	358	119	63	115	41	10	39	63	154	1581
1971	207	339	706	205	36	73	89	97	17	38	191	241	2239
1972	535	428	507	134	434	75	69	39	58	60	11	95	2445
1973	183	530	622	3	139	38	177	109	6	39	27	46	1919
1974	52	86	522	225	161	135	105	130	12	148	50	116	1742
1975	67	195	330	327	53	58	117	40	55	56	75	30	1403
1976	78	310	225	60	66	182	67	84	4	108	30	173	1387
1977	256	281	291	130	80	72	102	44	0	22	5	14	1297
1978	237	189	565	163	82	118	66	9	19	22	0	70	1540
1979	309	384	319	53	0	53	285	44	0	0	14	4	1465
1980	254	337	90	135	166	107	77	127	0	120	3	18	1434
1981	171	256	317	23	0	95	215	102	11	49	28	50	1317
1982	188	303	490	49*	32*	32*	45*	200*	38*	146*	32*	36*	1591
1983	271*	148*	618*	499*	634*	256*	157*	64*	32*	71*	54	156	2960
1984	79	231*	168	369	212	146	128	54	38	16	132	157	1730
1985	135	170	487	460*	155*	236*	62*	153*	47*	56*	37*	32*	2030
MEAN	211	345	455	335	212	118	142	74	16	43	60	76	2087

Remarks: * Signifies filled-in monthly rainfall.

Table B.3.3 MONTHLY RAINFALL (4/11)

- STATION : HINGURAKGODA AGR.
- STATION NUMBER : 186

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1949	206	269	493	132	94	165	19	128	0	6	98	47	1657
1950	92	197	167	560	106	38	144	152	6	8	32	94	1596
1951	88	494	183	404	56	27	111	92	1	31	0	139	1626
1952	134	165	181	243	48	15	259	2	2	233	70	70	1422
1953	309	193	465	273	34	172	181	1	0	88	34	0	1750
1954	185	165	416	267	124	53	190	49	0	1	92	103	1645
1955	68	158	177	163	46	18	76	1	71	1	28	1	808
1956	238	286	266	108	255	0	52	113	4	69	37	49	1477
1957	192	607	1341	235	114	114	64	68	1	11	157	50	2954
1958	123	214	211	175	11	7	114	114	53	3	13	50	1088
1959	288	349	267	281	422	60	207	227	3	161	29	147	2441
1960	182	486	104	454	217	156	125	61	10	7	1	31	1834
1961	254	307	503	197	74	91	103	52	0	0	93	130	1804
1962	139	220	210	455	195	184	121	16	0	86	21	141	1788
1963	121	587	501	141	134	125	34	114	0	103	16	57	1933
1964	178	119	134	93	180	16	216	225	0	10	121	0	1292
1965	412	400	546	173	25	154	138	2	1	4	54	157	2066
1966	532	411	215	33	92	89	68	44	5	2	10	74	1575
1967	345	488	577	148	0	139	62	12	0	0	85	134	1990
1968	187	229	213	85	63	3	159	16	0	103	60	161	1279
1969	329	281	852	122	225	54	188	84	42	1	116	48	2342
1970	60	285	332	223	93	46	226	120	12	36	59	25	1517
1971	89	133	643	74	2	17	125	137	0	0	0	369	1589
1972	312	373	309	0	58	51	40	54	76	227	13	94	1607
1973	140	94	476	0	57	10	103	167	0	0	3	85	1135
1974	6	116	423	142	57	66	173	133	0	213	70	128	1527
1975	49	240	181	32	22	5	160	16	0	36	48	29	818
1976	88	319	496	84	37	57	12	33	0	49	39	218	1432
1977	356	374	375	72	21	86	50	28	0	85	0	0	1447
1978	401	438	465	23	71	62	53	56	0	0	140	64	1773
1979	227	512	210	0	0	9	196	50	3	0	0	59	1266
1980	205	279	296	142	149	38	100	95	0	240	104	79	1727
1981	253	64	301	0	0	68	99	212	10	0	0	51	1058
1982	355	457	397	28	0	0	2	58	2	54	0	17	1370
1983	313	195	413	498	512	103	134*	0	0	79	42	198	2487
1984	92	194	99	271	74	73	41	33	1	94	4	128	1104
1985	23	169	396	146*	42*	181*	49*	53*	26*	29*	54*	11*	1179
MEAN	205	294	374	175	100	69	113	76	9	56	47	88	1605

Remarks: * Signifies filled-in monthly rainfall.

Table B.3.3 MONTHLY RAINFALL (5/11)

- STATION : BAKAMUNA(ELAHERA)
 - STATION NUMGBER : 40

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1949	153	356	339	162	133	135	33	48	0	0	6	21	1386
1950	75	156	212	665	143	130	124	134	9	12	80	120	1860
1951	158	512	295	437	170	24	211	110	0	19	0	144	2080
1952	99	187	364	300	96	64	380	0	2	43	105	44	1684
1953	319	346	359	395	134	307	216	0	0	25	81	0	2182
1954	210	148	527	450	114	49	208	36	0	5	26	116	1889
1955	29	95	191	188	75	89	91	0	0	0	0	0	758
1956	49	532	646	219	340	0	35	64	0	15	0	77	1977
1957	391	432	1312	173	114	222	127	95	0	2	0	0	2868
1958	56	140	320	83	26	11	133	90	69	6	15	4	953
1959	177	367	371	281	598	4	400	17	0	69	0	2	2286
1960	86	485	205	253	187	205	95	23	4	1	0	1	1545
1961	161	378	534	361	37	24	272	95	0	1	40	1	1904
1962	195	198	275	379	219	70	387	26	1	7	0	10	1767
1963	127	491	667	281	118	38	187	45	0	176	9	39	2178
1964	287	110	214	123	276	128	264	145	0	0	120	0	1667
1965	281	365	471	422	21	145	112	0	0	0	4	57	1878
1966	340	287	242	24	119	44	152	10	24	0	0	0	1242
1967	397	513	447	156	0	251	62	0	0	0	0	0	1826
1968	240	295	263	209	97	16	149	2	0	0	192	20	1483
1969	243	136	947	477	600	106	122	22	0	0	0	51	2704
1970	121	289	322	247	185	129	215	31	4	0	181	52	1776
1971	59	138	691	28	0	51	187	108	0	0	0	111	1373
1972	460	377	296	0	96	1	30	0	0	0	0	34	1294
1973	182	320	723	0	101	0	129	5	0	0	34	132	1626
1974	31	19	365	119	77	182	86	46	6	101	0	1	1033
1975	0	276	294	147	48	10	112	0	0	8	11	0	906
1976	151	317	467	21	11	36	126	42	0	37	28	66	1302
1977	267	320	308	63	53	58	60	33	0	46	0	0	1208
1978	329	352	223	157	44	135	73	49	0	0	20	21	1403
1979	202	195	253	20	0	15	86	54	0	0	0	5	830
1980	102	399	183	221	132	62	77	4	0	35	40	99	1354
1981	243	115	248	2	0	104	167	235	21	0	9	15	1159
1982	236	283	659	18	0	0	6	15	0	0	0	0	1217
1983	94	95	652	533	734	366	203	125	0	15	8	184	3009
1984	58	329	140	288	173	139	103	28	7	0	11	131	1407
1985	89	241	520	461	145	197	149	46	18	0	0	0	1866
MEAN	181	286	420	226	146	96	151	48	4	17	28	42	1645

Table B.3.3 MONTHLY RAINFALL (6/11)

- STATION : ANGAMEDILLA
 - STATION NUMGBER : 21

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1949	218	344	518	139	155	204	56	58	0	0	53	96	1841
1950	174	160	203	549	97	140	9	104	0	0	107	52	1595
1951	12	444	245	518	258	13	180	105	0	13	0	87	1875
1952	97	165	218	247	103	90	230	0	18	190	45	59	1462
1953	421	234	365	303	92	266	184	20	0	21	61	0	1967
1954	185	195	492	350	105	31	119	35	0	0	72	103	1687
1955	52	127	206	109	72	88	94	5	45	3	6	0	807
1956	160	350	370	144	343	0	56	122	0	38	10	100	1693
1957	360	434	1286	154	106	287	108	38	0	3	55	73	2904
1958	157	248	387	172	39	0	53	74	0	0	32	69	1231
1959	263	447	263	275	529	41	341	65	4	169	0	36	2433
1960	147	309	130	272	158	136	105	92	4	0	0	11	1364
1961	134	439	487	230	50	89	93	142	0	0	55	24	1743
1962	169	178	230	456	328	156	172	24	0	39	0	62	1814
1963	220	459	598	215	272	139	115	80	0	72	20	57	2247
1964	58	241	155	100	232	152	189	208	3	0	102	0	1440
1965	194	496	415	282	47	144	68	0	0	3	94	81	1824
1966	499	307	190	68	157	73	72	50	17	0	3	51	1487
1967	341	430	441	150	6	206	57	0	0	0	15	115	1761
1968	224	304	213	226	91	6	242	0	0	12	167	26	1511
1969	480	192	687	151	304	103	169	50	12	0	48	50	2246
1970	56	297	304	275	81	86	73	18	3	28	132	11	1364
1971	32	180	651	36	0	19	82	227	0	0	0	364	1591
1972	344	575	333	20	71	23	12	24	46	127	6	168	1749
1973	138	339	710	0	133	5	116	2	0	0	0	109	1552
1974	13	126	378	139	86	74	76	68	0	219	11	23	1213
1975	40	165	254	89	63	6	44	3	0	48	69	7	788
1976	131	239	450	126	29	37	48	19	0	55	25	124	1283
1977	298	195	340	95	27	90	11	18	0	0	0	0	1074
1978	354	262	520	124	39	61	88	90	0	5	42	119	1704
1979	186	394	308	21	0	33	333	34	0	0	0	62	1371
1980	197	259	214	147	120	20	104	59	0	49	119	94	1382
1981	147	83	291	1	0	106	64	161	6	6	5	35	905
1982	188	264	505	17	0	0	13	162	6	110	0	4	1269
1983	230	112	559	449	579	216	121	31	0	38	10	153	2498
1984	72	192	63	203	118	130	149	61	0	7	71	239	1305
1985	25	243	379	412	119	197	29	117	15	23	5	0	1564
MEAN	190	282	388	196	135	94	110	64	5	35	39	72	1609

Table B.3.3 MONTHLY RAINFALL (7/11)

- STATION : MAHA ILUPPALLAMA MET.
 - STATION NUMGBER : 331

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1949	275*	250*	200*	53*	84*	103*	47*	68*	26*	13*	29*	51*	1199
1950	123*	219*	181*	275*	92*	69*	185*	160*	13*	41*	35*	258*	1651
1951	193*	330*	75*	192*	44*	80*	212*	28*	13*	59*	13*	75*	1314
1952	183*	63	102	85	16	32	167	0	1	81	65	79	874
1953	400	177	233	88	5	205	242	44	1	56	43	0	1494
1954	235	273	405	201	34	60	180	123	1	0	71	321	1904
1955	196	174	48	52	9	123	43	3	102	5	7	9	771
1956	132	183	129	67	85	11	234	169	30	3	3	38	1084
1957	322	462	1076	194	16	142	269	137	9	5	66	0	2698
1958	188	189	87	70	43	38	173	195	37	9	0	87	1116
1959	145	400	165	133	195	21	405	89	9	217	2	69	1850
1960	176	409	161	213	119	46	212	67	72	30	7	22	1534
1961	308	261	265	129	18	34	157	148	5	10	6	77	1418
1962	522	107	241	237	78	126	281	47	17	12	3	61	1732
1963	326	510	468	64	43	99	110	64	5	74	12	128	1903
1964	183	189	110	53	70	121	162	174	5	2	186	0	1255
1965	418	360	399	58	18	209	239	1	5	24	38	160	1929
1966	302	406	230	18	129	132	68	85	22	7	4	32	1435
1967	308	222	334	45	0	100	110	10	47	9	0	49	1234
1968	244	307	140	59	40	120	224	14	2	3	130	19	1302
1969	324	113	350	83	144	73	136	115	1	18	1	81	1439
1970	166	344	148	201	84	23	294	98	39	2	119	74	1592
1971	191	124	384	25	0	18	169	163	1	21	0	81	1177
1972	320	193	168	5	13	9	96	36	13	54	31	119	1057
1973	232	74	383	1	98	38	265	95	1	9	7	204	1407
1974	29	99	174	60	26	118	265	132	15	86	65	50	1119
1975	133	207	142	16	0	74	282	0	0	4	5	45	908
1976	283	315	218	90	39	40	193	118	2	29	108	92	1527
1977	525	273	143	30	43	43	98	189	0	111	1	28	1484
1978	299	555	226	9	23	15	116	29	4	17	4	138	1435
1979	291	279	130	0	0	50	167	112	41	1	11	192	1274
1980	179	422	156	57	11	36	198	81	7	91	47	117	1402
1981	187	196	123	0	0	97	115	163	17	1	5	42	946
1982	266	243	146	6	0	0	74	219	21	27	1	27	1030
1983	123	153	495	186	474	381	153	32	0	63	0	279	2339
1984	115	306	157	79	68	30	12	65	27	88	10	66	1023
1985	178	302	159	201*	29*	153*	129*	117*	13*	22*	23*	34*	1360
MEAN	244	262	237	90	59	83	175	92	17	35	31	87	1411

Remarks: * Signifies filled-in monthly rainfall.

Table B.3.3 MONTHLY RAINFALL (8/11)

- STATION : ANURADHAPURA MET.
 - STATION NUMGBER : 26

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1949	278	252	198	42	75	95	36	58	13	0	17	40	1104
1950	117	219	178	278	84	59	182	156	0	29	23	260	1585
1951	191	337	65	190	33	71	211	15	0	49	0	65	1227
1952	180	124	113	73	42	60	374	0	0	123	20	63	1172
1953	441	141	209	154	2	259	294	69	0	51	71	5	1696
1954	217	131	380	150	31	120	362	114	1	47	146	187	1886
1955	146	169	65	60	31	45	64	8	47	12	11	0	658
1956	97	232	138	51	88	9	160	221	14	33	1	41	1085
1957	353	529	927	62	34	147	137	109	5	2	57	7	2369
1958	181	197	85	129	17	32	308	209	70	12	0	96	1336
1959	205	370	212	78	152	10	134	64	6	165	9	23	1428
1960	211	335	76	313	114	40	134	70	62	21	6	20	1402
1961	260	213	224	226	53	43	181	223	6	5	12	68	1514
1962	479	120	199	349	105	131	185	75	8	58	15	58	1782
1963	152	376	437	43	52	142	116	46	1	69	9	113	1556
1964	306	195	147	35	88	52	222	111	1	1	218	21	1397
1965	361	395	323	120	7	50	235	12	0	11	85	85	1684
1966	237	253	170	13	77	77	30	68	6	1	7	26	965
1967	275	182	257	39	1	46	156	17	10	7	0	90	1080
1968	226	175	104	40	47	38	158	30	0	3	89	34	944
1969	520	150	384	62	89	83	112	115	6	4	71	46	1642
1970	256	354	172	199	100	25	231	43	5	2	168	86	1641
1971	240	133	489	12	0	1	139	176	14	26	1	77	1308
1972	413	173	157	1	5	62	69	45	6	105	56	71	1163
1973	112	140	342	4	59	35	276	62	2	4	11	44	1091
1974	65	74	229	53	7	92	125	163	18	41	11	69	947
1975	141	234	69	7	0	180	139	1	0	2	5	15	793
1976	358	385	101	17	55	25	127	239	5	19	13	47	1391
1977	451	235	164	30	3	74	114	80	1	86	1	32	1271
1978	179	363	231	21	18	17	149	28	0	19	50	144	1219
1979	425	312	188	0	0	112	184	104	22	3	0	103	1453
1980	216	291	89	9	9	9	269	156	77	22	19	9	1175
1981	345	124	127	0	0	56	120	84	16	0	0	24	896
1982	330	211	144	8	0	0	47	214	9	17	32	52	1064
1983	165	121	428	363	492	119	140	24	0	53	0	196	2101
1984	103	290	61	132	69	82	59	159	10	17	65	119	1166
1985	48	356	161	200	17	149	123	110	0	9	10	22	1205
MEAN	251	240	217	96	56	72	165	94	12	30	35	66	1335

Table B.3.3 MONTHLY RAINFALL (9/11)

- STATION : KANAKARAYANKULAM
 - STATION NUMGBER : 233

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1949	218	198	490	88	61	19	33	67	0	1	60	34	1269
1950	201	215	124	255	142	60	98	32	0	22	83	234	1466
1951	163	415	177	269	15	0	121	103	0	69	67	103	1502
1952	96	220	298	65	27	0	259	3	0	29	85	45	1127
1953	244	186	169	280	33	180	147	29	0	0	104	23	1395
1954	227	130	534	239	54	24	172	47	0	6	145	383	1961
1955	254	146	115	53	21	28	23	0	71	38	59	51	859
1956	175	255	226	20	49	0	61	144	0	68	19	53	1070
1957	396	678	722	78	11	114	54	156	0	0	31	83	2323
1958	276	207	115	85	0	0	108	63	226	0	86	57	1223
1959	318	510	218	44	159	10	175	71	0	171	8	22	1706
1960	81	481	66	450	18	59	49	68	0	4	33	104	1413
1961	140	412	318	77	61	62	173	224	0	5	102	59	1633
1962	255	158	184	352	115	169	28	32	1	52	37	173	1556
1963	237	546	442	86	0	48	30	22	0	146	64	40	1661
1964	235	51	109	27	152	32	166	70	27	0	228	19	1116
1965	493	258	300	72	0	115	165	58	14	0	145	124	1744
1966	383	299	212	12	4	48	155	17	48	70	121	64	1433
1967	434	470	500	4	267	140	137	122	0	0	20	63	2157
1968	160	155	143	45	160	44	74	61	0	0	152	102	1096
1969	376	203	583	30	69	13	162	28	15	0	64	75	1618
1970	106	390	200	164*	0	56	226	119	7	63	179	134	1644
1971	224	94	608	13	0	0	122	66	0	0	0	144	1271
1972	207	102	453	4	33	14	92	80	0	165	41	141	1332
1973	269	168	563	5	34	8	125	41	0	26	92	203	1534
1974	59	85	231	14	0	68	189	146	13	177	53	65	1100
1975	154	406	224	1	0	0	108	6	0	18	83	0	1000
1976	71	545	449	0	0	0	119	100	3	66	99	101	1553
1977	434	388	87	0	0	174	127	78	0	99	0	0	1387
1978	227	214	429	14	8	23	34	43	0	34	11	268	1305
1979	366	499	219	1	0	120	39	3	0	0	0	25	1272
1980	173	241	17	1	1	25	5	36	0	25	33	213	770
1981	220	393	103	0	0	13	77	71	0	47	0	96	1020
1982	192	370	339	0	0	0	0	0	68	32	0	0	1001
1983	0	264	527	237	428	5	132	10	0	0	0	143	1746
1984	105	296	86	63	0	8	72	78	0	76	0	150	934
1985	68	693	245	145	26	15	0	0	0	50	0	25	1267
MEAN	223	307	293	89	53	46	104	62	13	42	62	98	1391

Table B.3.3 MONTHLY RAINFALL (10/11)

- STATION : MAHAUSWEWA
 - STATION NUMGBER : 335

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1949	287	149	66	17	2	118	44	98	99	1	0	0	881
1950	99	186	58	160	65	52	257	67	0	0	0	309	1253
1951	129	281	31	108	53	9	148	50	42	12	0	7	870
1952	134	135	61	35	140	108	233	0	5	147	3	114	1115
1953	449	176	148	50	7	257	198	82	6	69	4	1	1447
1954	456	260	292	56	17	240	286	142	12	0	37	167	1965
1955	224	298	51	18	18	249	109	15	80	0	0	4	1066
1956	145	399	138	40	64	11	117	148	97	0	0	0	1159
1957	259	389	608	44	14	334	425	51	13	13	138	0	2288
1958	163	178	69	106	4	1	287	263	56	45	20	91	1283
1959	235	260	87	74	97	22	281	123	9	144	0	0	1332
1960	192	418	40	190	39	62	154	74	123	85	25	91	1493
1961	243	138	131	107	96	51	109	249	65	39	51	50	1329
1962	637	230	149	208	88	86	157	162	54	37	4	84	1896
1963	209	474	219	29	29	219	128	57	8	107	36	179	1694
1964	164	262	146	15	63	12	275	138	6	0	144	13	1238
1965	150	168	234	31	15	77	359	17	13	0	61	71	1196
1966	287	375	151	57	22	161	166	62	64	38	0	29	1412
1967	289	222	213	31	22	129	169	5	30	41	0	56	1207
1968	276	110	210	41	35	11	184	51	11	0	90	0	1019
1969	491	144	221	66	81	112	413	203	0	30	0	76	1837
1970	220	213	102	72	78	77	273	87	83	8	82	76	1371
1971	219	104	194	0	0	69	184	337	0	7	0	139	1253
1972	370	323	131	0	8	128	189	26	74	28	12	70	1359
1973	264	184	316	0	59	105	298	37	8	26	37	25	1359
1974	8	69	84	2	80	41	140	109	12	123	15	74	757
1975	92	234	107	28	0	77	142	0	0	11	0	2	693
1976	316	422	74	46	18	171	182	247	18	25	15	0	1534
1977	647	348	61	7	14	138	42	217	8	30	7	11	1530
1978	247	408	159	11	87	41	121	0	5	13	8	153	1253
1979	174	221	121	0	0	57	135	44	95	25	12	205	1089
1980	202	221	59	30	3	134	42	186	52	62	11	149	1151
1981	244	135	79	0	0	21	248*	147*	52	0	8	14*	948
1982	270	117*	120*	14*	14*	14*	31*	104*	66*	53*	21*	29*	853
1983	100*	247*	387*	236	157	321	277	31	9	73	0	45	1883
1984	140	336	108	46	83	56*	192	122	38	8	8	83	1220
1985	235	283	121	77	48	49	202	81	0	0	24	4	1124
MEAN	250	246	150	55	44	103	195	104	35	35	24	65	1307

Remarks: * Signifies filled-in monthly rainfall.

Table B.3.3 MONTHLY RAINFALL (11/11)

- STATION : MAHA OYA
 - STATION NUMBER : 333

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1949	106	523	892	231	62	198	20	50	40	50	370	28	2570
1950	145	126	283	807	232	35	220	80	3	49	42	93	2115
1951	126	302	447	568	141	19	140	39	22	98	53	57	2012
1952	79	275	216	275	122	84	216	16	50	263	70	85	1751
1953	294	162	471	352	273	97	158	141	0	70	146	8	2172
1954	214	219	483	361	192	25	57	115	34	105	164	191	2160
1955	188	90	164	242	100	32	61	15	165	52	150	119	1378
1956	302	224	287	236	328	5	8	300	20	5	32	152	1899
1957	110	357	1149	220	114	79	188	165	25	64	165	152	2788
1958	185	167	296	279	63	23	229	115	66	30	117	109	1679
1959	367	270	463	402	1097	78	143	189	68	210	32	178	3497
1960	203	290	169	382	294	132	106	149	81	110	26	293	2235
1961	109	560	763	385	71	78	88	193	52	101	188	14	2602
1962	238	295	258	621	187	149	120	94	24	94	113	168	2361
1963	285	513	310	381	211	131	8	61	32	165	30	15	2142
1964	58	189	194	67	281	19	69	20	0	82	287	0	1266
1965	109	322	427	108	88	216	109	38	92	50	287	153	1999
1966	555	182	312	163	183	105	171	42	166	135	132	180	2326
1967	192	528	473	271	9	218	85	24	48	68	83	111	2110
1968	70	563	472	393	157	46	159	85	58	2	256	57	2318
1969	476	222	862	529	329	46	122	104	86	238	62	137	3213
1970	132	404	301	286	59	70	168	47	3	99	93	125	1787
1971	194	240	655	125	8	10	72	138	102	89	24	143	1800
1972	356	254	399	93	149	58	32	102	141	110	120	120	1934
1973	127	249	616	24	156	9	146	211	42	50	74	118	1822
1974	39	44	357	164	93	120	63	87	55	121	110	155	1408
1975	200	333	249	382	56	47	99	33	79	124	41	41	1684
1976	99	248	421	40	49	95	56	130	108	168	48	121	1583
1977	223	154	353	64	86	55	75	110	18	77	7	32	1254
1978	164	255	561	114	142	49	20	67	119	62	47	251	1851
1979	303	629	51	25	0	13	76	87	0	20	62	39	1305
1980	252	218	94	96	170	45	64	80	0	171	2	34	1226
1981	113	141	210	0	0	29	43	112*	35	74*	3	110	870
1982	72	275	573	53	46*	0	0	54	176	109	155	57	1570
1983	227	230	533*	473	628	67	178	100	0	195	0	280	2911
1984	51	311	80	147	213	144	145	0	69	163	49	253	1625
1985	75	181	779	552	86	355	132	65	17	95	57	105	2499
MEAN	190	285	422	268	175	81	104	93	57	102	100	116	1992

Remarks: * Signifies filled-in monthly rainfall.