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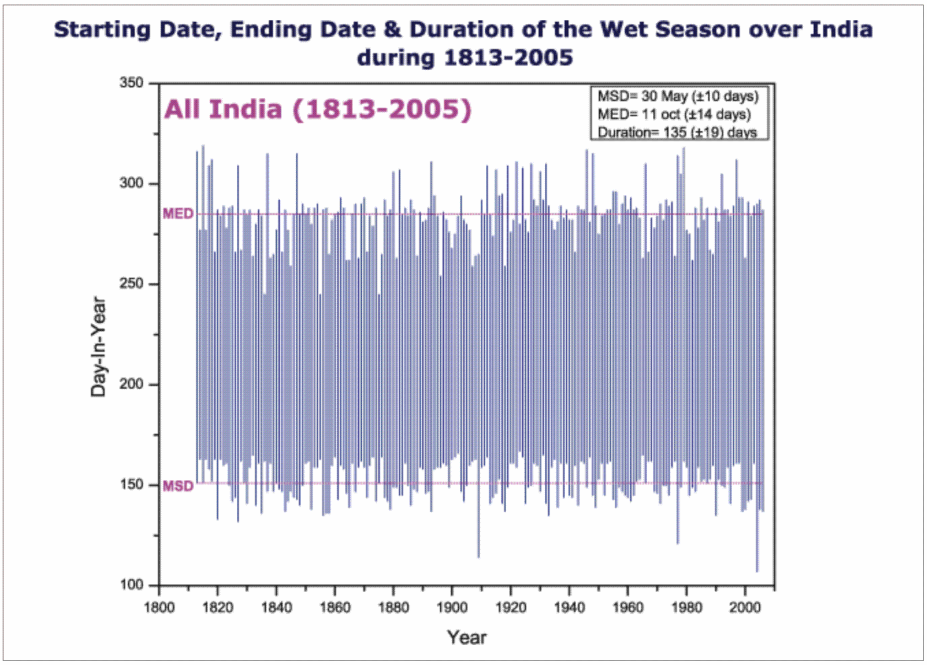

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ABSTRACT:

In tropical monsoonal climate rainfall is a seasonal phenomena. Further, features of wet (or rainy) season such as starting date, ending date and duration show large spatial and temporal variations. Very little effort is devoted to understand the nature of variation of the wet season over and across the country. The present study attempts to document climatological and fluctuation characteristics of the wet season over different basins as well as the whole country using longest instrumental records.

Longest possible instrumental area-averaged monthly, seasonal (winter JF, summer MAM, monsoon JJAS and post-monsoon OND) and annual rainfall series have been developed for each of the 11 major and 36 minor basins as well as the west coast drainage system of India using highly quality-controlled data from well spread network of 316 raingauges. For the period 1901-2005 with complete data of all stations the area-averaged series has been prepared from simple arithmetic mean of the gauges in the particular basin, and for period prior to 1901 (sometimes going back to 1813) with lesser observations the series is constructed by applying established objective method. (Wigley et.al., 1984). Fluctuation characteristics of the annual rainfall over different basins are briefly described.

Average standard deviation of interannual variation of the starting date is 10 days, that of ending date 14 days and that of duration 19 days. In majority of cases probability distribution of the parameters of wet season is near-normal. Fluctuation of parameters is homogeneous and random over all the basins.

1. INTRODUCTION

In recent years a new perspective has been added to hydrological investigations of India with the launch of the most ambitious Master Plan '*Interbasin Water Transfer – Interlinking of Rivers of India*'. The plan is intended to utilize the country's water resources to the fullest extent practicable by transferring water from the surplus basin to deficit areas. One of the important issues to be addressed amicably in the planning process of the program is the impact of global changes, particularly global warming, on the rainfall fluctuation over different basins across the country. Basin-scale characteristics of rainfall and wet season are expected to provide vital information to this plan.

Surrounded between the parallels of 8°4′28″ N and 37°17′53″ N, and between the meridians of 68°7′53″E and 97°24′47″E a beehive-shaped India occupies geographical area of 3,287,263 sq. km. (including territorial sea) on the southern plank of the Asian landmass. The contiguous land area of the country is 3,188,111 sq. km; its north-south length is about 3,214 km and east-west breadth about 2,933 km. The land frontier is 15,200 km and the coastline 7516.5 km. Andaman and Nicobar Islands in the Bay of Bengal and Lakshadweep in the Arabian Sea are parts of India. On the west of the country are Pakistan and Afghanistan, on the east Bangladesh and Burma, on the north Sinkiang province of China, Tibet, Nepal and Bhutan, and on the south Sri Lanka separated by a narrow channel of sea formed by the Palk Strait and the Gulf of Mannar.

With three large watersheds, the Himalayas, the Vindhyas and the Western Ghats, the country is drained by 11 major and 43 minor rivers and numerous rivulets. Besides this in the West Coast Drainage system there are 25 small rivers that originate in the Sahayadri range (Western Ghats) and discharge into the Arabian Sea (NATMO, 1996; Rao, 1975).

The climate of the country can be defined as tropical monsoonal characterized by large seasonal extremes in circulation regime from cool, dry, continental winter (frequently influenced by westerly waves and temperate fronts) during December through February to hot, moist, maritime summer (frequently influenced by easterly waves and tropical cyclones) during June through September caused by the south-north migration of the main monsoon convection zone from its winter position over Indonesian maritime continent to its summer position over head Bay of Bengal (extending over Indo-Gangetic plains towards northwest India-Pakistan-Afghanistan-Iran sector) that apparently follows the march of the sun through its Zenith in the torrid zone, between tropics of Cancer (23.5°N) and Capricorn (23.5°S). The two boreal monsoons are mirror image of each other. During winter sea level pressure is higher (1018 hPa) over northern India compared to peninsula and adjoining sea (1012 hPa). Temperature at all levels (surface to 300 hPa) over north is lower than that over peninsula. The prominent wind direction over north is westerly/northwesterly/northerly and over peninsula northeasterly. Opposite meteorological condition occurs during monsoon season. Sea level pressure is lowest (994 hPa) over northwest India and high over peninsula (1010 hPa). Temperature at all levels (surface to 300 hPa) is higher over north compared to peninsula. Westerly

and southwesterly are the prominent wind directions over peninsula and easterly over Ganga plains. During transition seasons of March-April-May and October-November-December meteorological conditions are somewhat complex. Extreme weather events are drought, flood, fog, smog, mist, frost, heat wave, cold wave, duststorm, thunderstorm, hailstorm, cyclonic storm, tornado, storm surges etc.

Climate of the Indian subcontinent is dominated by the Indian Ocean southwest monsoon. Derived from the Arabic word 'Mausim' (or 'season of winds') the monsoon refers to system of winds that changes direction drastically from winter to summer season. During boreal summer outflows from the southern hemisphere Mascarene High pressure area into a bowl-shaped area of low pressure (monsoon trough) over Indo-Gangetic Plains are concentrated into a jet pattern, often called as a monsoon jet, monsoon surge, a low-level jet, or a cross-equatorial jet. Moisture laden onshore monsoon winds are about three miles thick. The rising air along the monsoon trough diverges out of an upper-tropospheric (Tibetan) anticyclone along an upper-level jet-like (easterly) flow. The monsoon trough is typically associated with low-level convergence, cyclonic vorticity and cloudiness. Though monsoon is basic factor rainfall at a particular location is a function of thickness of monsoon currents, convergence processes, regional geography and orography. Rainfall shows large temporal variation at the same location. To understand physical and dynamical causes of rainfall occurrences and their spatio-temporal variation is one of the main problems of the Indian meteorologists. High quality-controlled, spatially detailed, long period rainfall data is vital for monsoon studies.

Annual rainfall is less than 100 mm over parts of Ladakh (Jammu & Kashmir State) and Jaisalmer district (Rajasthan State) and less than 400 mm over central peninsula but it is between 1000 mm and 3207.8 mm (Dharamsala [Upper] station, Kangra District), between 1000 mm and 1788.4 mm (Bhanupratappur station, Bastar District) over central highlands and eastern plateau, between 1000 mm and 11405.8 mm (Mawsynram station, East Khasi Hills District) over northeast, and between 1000 mm and 7445.7 mm (Amboli station, Ratnagiri District) over Sahayadri range. The mean annual rainfall of the whole country is 1165.9 mm of which 0.7% occurs during winter, 9.0% during summer, 77.4% during monsoon and 12.9% during post-monsoon. Maximum temperature exceeds 50°C in extreme northwest India, 47.5°C over Indo-Gangetic plains and central highlands, 40°C over northeast, 45-47.5°C along east coast and 37.5-40°C along west coast. Lowest recorded minimum temperature is less than -2.5°C over Thar Desert, Punjab and Haryana and it increases to 17.5°C in the east, southeast and southwards. Annual potential evapotranspiration varies from about 1000 mm in the extreme northeast and western Himalaya to more than 2000 mm in the extreme northwest. C. Warren Thornthwaite's type climatic classification of the country can be done using mean annual rainfall alone as: less than 560mm arid, 560-1040mm semiarid, 1040-1420mm dry subhumid, 1420-1630mm moist subhumid, 1630-2450mm humid and greater than 2450mm perhumid (Singh, 1984 and Singh et al, 1991 a). Twelve percent area of the country is arid, 37% semiarid, 28% dry subhumid, 9% moist subhumid, 9% humid and 5% perhumid. In other words 77% area with annual rainfall less than 1420 mm is dry (evapotranspiration more than rainfall) and 33% with rainfall more than 1420 mm is wet (rainfall more than evapotranspiration).

Due to large variation in intensity and frequency of rain-inducing disturbances (western disturbances, thunderstorms, monsoon/cyclonic storms/depressions, monsoon troughs etc.) and summer monsoon and post monsoon circulations over different parts of the country rainfall occurrences exhibit large spatial variability. Hence areal representation of the area averaged rainfall series for the whole country is limited. Spatial variation in rainfall over India is quite large therefore temporal variation of area averaged rainfall for the whole country is drastically suppressed. (Singh et al, 1991 b). The value of the IAR (Index of areal representativeness), which is defined as the ratio of variance of all India series and mean variance different series averaged and expressed in percent, is only about 14% (Singh, 1994). The National Atlas & Thematic Mapping Organization (NATMO, 1996) has published a map of India 'Drainage' on '*Conical Equal Area Projection with two Standard Parallels*' projection system and 1:6M scale showing boundary of major and other basins (Figure 1). For the present report classification of the country's river systems into major and minor basins by K. L. Rao (1975) is adopted. Longest possible monthly, seasonal and annual rainfall series could be developed for 11 major basins, 36 minor basins and the west coast drainage system as well as the whole country. Twenty seven of the 36 minor basins are the sub-basins of five major basins- the Indus 3 (*Chenab, Beas and Satluj*), the Ganga 13 (*Yamuna, Ramganga, Gomati, Ghaghara, Gandak, Kosi, Mahananda, Chambal, Sind, Betwa, Ken, Tons and Son*), the Brahmaputra 3 (*Tista, Brahmaputra and Dhansiri*), the Godavari 5 (*Wainganga, Wardha, Penganga, Godavari and Indravati*) and the Krishna 3 (*Bhima, Krishna and Tungabhadra*). The other nine minor basins are Luni, Surma, Kasai, Damodar, Suvarnarekha, Brahmani, Penner, Palar & Ponnaiyar and Vaigai. The Sabarmati, the Mahi, the Narmada, the Tapi, the Mahanadi and the Cauvery are the major basins without any distinct minor basin on the 1:6M scale map of India. In the present study Sikkim State (7,096 sq. km^2), Arunachal Pradesh State (83,743 sq. km^2), Andaman & Nicobar islands (8,249 sq. km^2) and Lakshadweep islands (32 sq. km^2) are not considered because of non-availability of long period rainfall data. Thus the geographical area of the country considered in the study is 3,188,111 sq. km^2.

In tropical monsoonal climate understanding basin-scale variability of wet (or rainy season) is as important as the variability of rainfall, very little attempt is made to study the former compared to later. Identification of wet season in the annual weather cycle is the crucial issue of the problem. Earlier attempts have been made to depict the climatological summer monsoon (or rainy) season across the Asian monsoon region (Tao and Chen, 1987; Tanaka, 1992; Lau and Yang, 1997; Wang, 1994; Wang and LinHo, 2002 and many others). Ananthakrishnan and Soman (1988) however identified yearwise (1980) onset date of southwest monsoon over Kerala (India) by applying an objective criterion to raingauge observations and studied variation and distribution characteristics of the onset date. It is not known whether the criterion can be applied in reverse order to obtain the withdrawal date. Further, this information is limited to Kerala. Singh (1986) has applied an objective criterion '*continuous period with each of the monthly rainfall greater than 50mm*' to obtain start and cessation dates of normal rainy (or wet) season at stations across India. The main objective of the present study is to apply this criterion to area-averaged monthly rainfall data on interannual basis to document climatology and fluctuation characteristics of the parameters of wet season (starting date, ending date and duration) across different river basins of India using longest available instrumental observations.

2. RAINFALL DATA USED

Instrumental monthly rainfall records from a well spread network of 316 raingauges (Figure 1) from earliest available year up to 2005 is used in preparing this report. For all the 316 stations data is available for the period 1901-2005. Prior to 1901 number of available stations from this network decreases back in time- for 314 raingauges the data extend back to 1900, for 312 back to 1871, for 196 back to 1870, for 101 back to 1861, for 80 back to 1860, for 70 back to 1851, for 60 back to 1846, for 57 back to 1844, for 13 back to 1842, for 6 back to 1829, for 4 (Chennai, Mumbai, Pune and Nagpur) back to 1826, for 2 (Chennai and Mumbai) back to 1817 and for sole station Chennai back to 1813. Missing observation in the continuous data sequence has been filled by the ratio method (Rainbird, 1967) using nearest available observation as reference value. Number of filled values is less than 2% of the total number of monthly rainfall records. Data up to 1900 is obtained from the India Meteorological Department (IMD) publication '*Monthly and Annual Rainfall of 457 Stations in India to the End of 1900*' (Eliot, 1902), and for the 1901-2005 period from the National Data Center and Hydrology Section of the IMD, Pune. An account of this dataset is described by Mooley and Parthasarathy (1984).

Blanford (1886) checked the reliability of data then available and concluded that selected data were 'free from any serious error'. In his attempt to compile and publish rainfall data for all the gauges over British India up to 1900 AD, Eliot (1902) also checked them thoroughly. Regarding reliability of rainfall data of the Indian region, Walker (1910) had stated that 'long established observatories like Madras (Chennai), Bombay (Mumbai) and Calcutta (Kolkata) which have rainfall records available for earlier periods in the nineteenth century are trustworthy'.

3. THE METHODS- DEVELOPMENT OF LONGEST RAINFALL SEQUENCE

The instrumental period area-averaged rainfall series is prepared in two parts, (i) simple arithmetic mean for the period with all available observations from the selected network and (ii) construction by applying established objective method for the period with lesser available observations. The complete process is described step by step for the Indus basin. Rainfall observation in the Indus basin started in 1844. In 1845 number of gauges increased to 2 which continued up to 1951, increased to 3 in 1952, increased to 5 during 1853-54, decreased to 4 during 1855-56, increased to 6 in 1857, to 7 during 1858-59, to 8 during 1860-1861, to 9 during 1862-68, to 10 during 1860-70, to 16 during 1871-1900 and to 19 during 1901 and remained so since then. For creation of longest area-averaged annual rainfall series for the basin the computational steps are as (Singh, 1994; Sontakke and Singh, 1996; Wigley et al., 1984), follows,

1. Prepare the representative area-averaged annual rainfall series for the period 1901-2005 from simple arithmetic mean of observations from all the 19 raingauges in the basin;

   (As indicated annual rainfall data of only 16 raingauges from the 19-gauge network extends back to 1900, and the representative mean.)

2. Prepare the mean annual rainfall series of the 16 raingauges for the period 1901-2005;
3. Estimate the linear regression (Y = a + bX) of 19-gauge mean series {Yi} on the 16-gauge mean series {Xi} based on data of the period 1901-2000;

   (All constructions in this report have been done with respect to the '*reference period*' 1901-2000.)

Theoretically derived mathematical expression for the correlation ($R_{m,M}$) between M-gauge mean rainfall series and m-gauge mean series (m is a subset of M) is given by (Wigley et al., 1984):

$$R_{m,M} = \frac{1}{m\, s(m)} \sum_{i=1}^{m} s_i r_{i,M}$$

In the present example M is 19 and m is 16; s(m) is the standard deviation of the 16-gauge (here m = 16) mean series; s_i is the standard deviation of each of the 16 series; $r_{i,M}$ the correlation coefficient between each of the 16 gauge series and the M-gauge mean series. The correlation coefficient directly calculated between 19-gauge mean series (Y_i) and the 16-gauge mean series (X_i) was equal to the $R_{m,M}$.

4. Substitute the mean rainfall of 16 gauges available during 1900 in the regression and estimate the representative mean annual rainfall for the basin for the year 1900;
5. Inflate the variance of the estimated rainfall amount of the year 1900 by dividing its departure from long term mean by correlation coefficient (r) between 19-gauge mean series (1901-2000) and the corresponding 16-gauge mean series (Klein et al, 1959), and get the constructed mean annual rainfall of the Indus basin for the year 1900;
6. Repeat the above process to estimate the rainfall of each of the four seasons (winter JF, summer MAM, monsoon JJAS and post-monsoon OND) for the year 1900;
7. Check if total of the estimated four seasonal rainfalls is equal to the estimated annual rainfall amount;
8. For any variation between the two figures proportionately increase/decrease the seasonal rainfall amounts to get their finally constructed amounts; and
9. Estimate the monthly rainfalls in a similar, compare them with corresponding constructed seasonal rainfall amount, and get the constructed monthly rainfalls after suitable correction for the year 1900.
10. Take up the year 1899 and repeat the above process sequentially.
11. Then take the year 1898, 1897 and so on till 1844.

Theoretical details of the construction method are given in Wigley et al. (1984). For pre-1901 period, the construction is retained if CC between all the gauges mean series and limited available gauges mean series based on the period 1901-2000 is significant at 5% level and above otherwise rejected. In the absence of anything this instrumental data might provide vital information. The rainfall series for the basin could be developed for the period 1844-2005. Similarly longest rainfall series have been constructed for the other basins.

4. DEFINITION OF THE WET SEASON

Annual weather cycle at stations across India can be divided into two periods, dry and wet. The wet period is also referred to as wet season or rainy season. Since the terminology 'rainy season' is generally used for summer monsoon season we will use the term '*hydrological wet season*' that is continuous wet period irrespective of the system(s) that bring the rainfall. Besides summer monsoon season, rainfall over northwestern India occurs due to western disturbances, over northeastern India due to thunderstorms during Mar-May, over extreme southwest due to thunderstorms in March-May and due to northeast monsoon during October-December, and over southeast mostly due to northeast monsoon. While some parts of the country experience good rainfall activities before and after the summer monsoon period, others experience rainfall during peak period of the summer monsoon season, July-August. There are large variations in the wet season (starting date, ending date and duration) across the country, and over the same place from one year to another. In an earlier study the normal duration of wet season at a station is identified as the continuous period with monthly rainfall greater than 50mm (Singh, 1986). Over extreme southwest and the northeastern India the wet season starts around 28th March and northwestern India around 28th July. Over most parts of the country the starting date progressively shifts between these two extremes. The wet season over the extreme southwest and northeast India starts much before the onset of the southwest monsoon due to heavy and reliable rainfall activities associated with thunderstorms. The late start over northwestern part is because of lesser rainfall activities of the onset phase of the southwest monsoon over the region. Due to rain-shadow effect for the southwest monsoon, the extreme southeast peninsula gets reliable rainfall only during post-monsoon (or northeast monsoon) season and the date varies between 15th August and 10th October, from north to south. Being the area outside the monsoon regime, Jammu and Kashmir gets rainfall from extra tropical systems like western disturbances and trough in the westerlies. The season over the region starts between 20th December and the 1st week of January. The cessation date is especially more consistant, organized and progressively shifting from northwest to southeast. The extreme dates are 10th August for northwestern India and 10th January for southeastern peninsula. For Jammu and Kashmir, the cessation date is 10th May. Consequently there is large variation in the duration of the wet season over different parts of the country, about 20 days over northwestern India to exceeding 240 days over southwestern peninsula.

In the present study the criterion 'continuous period with each of the monthly rainfall greater than 50 mm' is applied to monthly rainfall data of 11 major river basins,

36 minor basins, west coast drainage system and the whole country on interannual basis. In the first month of the continuous period the starting date of the actual wet season is determined by linear interpolation up to which, from the beginning of the month, 50 mm rainfall is expected. And the ending date is determined in the last month of the period so that between the linearly-interpolated date and the end of the month 50 mm rainfall is expected to occur. Experiences suggest that occurrence probability of zero elements in the monthly rainfall sequence whose mean is greater than 50 mm is almost nil. So in the wet season one can expect some rainfall during every month. This report provides documentation of statistics, distribution and fluctuation of starting date, ending date and duration of the wet season over each of the river basins.

Limitation of application of the criterion should be borne in mind. The criterion cannot be applied to interannual data of individual stations, particularly in arid and semiarid regions in which in large number of years monthly rainfall may not exceed the threshold of 50 mm. The criterion is however found applicable for area-averaged monthly rainfall data of different spatial units' viz. states, meteorological subdivisions, physiographic regions and hydrologic river basins.

5. RESULTS AND DISCUSSIONS

5.1 FEATURES OF LONGEST ANNUAL RAINFALL SEQUENCE AND WET SEASON OF DIFERENT BASINS AND THE WHOLE INDIA

The basins are arranged from north to northwest to northeast to south. The description of the Indus, the Ganga, the Brahmaputra, the Godavari and the Krishna is given first in order along with their minor basins. The remaining major basins are given afterwards followed by independent minor basins. The West Coast Drainage System is given thereafter. In the end description about the whole country longest rainfall series is given as general information. The annual potential evapotranspiration (PE) reported here is obtained from simple arithmetic mean of the stations in the particular basin. The normal monthly and annual PE at stations across India is given in Rao et al (1971). Number of rainy days (rainfall equal to or greater than 2.5mm) is extracted from IMD publication '*Monthly and Annual Normals of Rainfall and of Rainy Days*' (IMD, 1961).

The Indus Major Basin (drainage area: 291,749 km^2; annual potential evapotranspiration (PE): 1390.4 mm; mean annual rainfall: 860.3 mm- winter 10.5%, summer 11.5%, monsoon 72.1% and post-monsoon 5.9% and annual rainy days: 41.6)- The Indus rises in the Tibet near the Mansarovar Lake at an elevation of 5,180 m, passes through northern Kashmir and Gilgit, enters Pakistan and emerges out of the hills near Attock. The major tributaries are the Kabul, the Swat and the Kurram from the west and the Jhelum, the Chenab, the Ravi, the Beas and the Satluz from the east. Earliest rainfall record for Sirsa and Ferozepur is available from 1844. Data for all the 19 raingauge stations of the selected network is available from 1901 onwards. Monthly, seasonal and annual rainfall series for the period 1901-2005 have been prepared from simple arithmetic mean of rainfall of the 19 stations, and for the period 1844-1900 the different series have been constructed by applying the objective technique on lesser available

observations discussed in the previous section. Hence the rainfall sequence for the Indus River System is developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1844-1894 wet, 1895-1953 dry and 1954-2003 wet.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 1(a) and their time series plots are shown in Figure 2(a). The mean (±1 σ days) of the parameters are: starting date- 25 June (±12), ending date- 9 Sept (±13) and the duration- 77 days (± 17). According to g-statistic test (Rao, 1967) the distribution of starting date and duration is normal while ending date suffers from mild kurtosis. The fluctuation of different parameters is homogeneous and random as suggested by Swed-Eisenhart's run test for homogeneity and Mann-Kendall rank test for randomness against trend.(WMO, 1966). In fact fluctuation of different parameters over all the basins under investigation is homogeneous and random. This may be noted and will not be repeated for individual cases any more. During a normal wet season rainfall (P) is 505.6 mm and potential evapotranspiration (PE) 403.8 mm which shows excess rainfall of 101.8 mm available for soil moisture utilization, ground water recharge and runoff.

In 162 years (1844-2005) period there were 62 years (given in Table 11) with two wet seasons, one due to summer monsoon rains and another due to winter rains associated with western disturbances. The mean (± 1 σ days) of the parameters of the second wet season are: starting date- 3 Feb (± 18), ending date- 1 Mar (±25) and the duration- 27 days (± 23).

Jhelam Minor Basin – It starts as a spring from a mountain spur at Verinag. The river flows through the Kashmir Valley for a length of 400 km and crosses the Pirpanjal range through a deep gorge. The tributaries are the Liddar, the Sind and the Pohru Rivers, which rise in Kashmir and join the main river. The Jhelam River joins the Chenab at Trimmu. The catchment area up to the Indo-Pakistan border is 34,775 sq. km. There is no station in the catchment with long period data.

Chenab Minor Basin (drainage area: 54,501 km^2; annual PE: 874.0 mm; mean annual rainfall: 1084.4 mm- winter 15.7%, summer 19.8%, monsoon 56.3% and post-monsoon 8.2%; and annual rainy days: 57.9)- It is formed by the Chandra and the Bhaga which rise in Lahul. It flows through Himachal Pradesh and Kashmir and after 330 km down stream the river enters Pakistan at Akhnur. Its catchment area up to Indo-Pakistan border is 54,501 sq.km. Rainfall data for *Srinagar* is available from 1891 and *Jammu and Udhampur* stations were included in 1901. The rainfall series for the basin could be developed for the period 1891-2005. The major epochs in annual rainfall fluctuation are: 1893-1941 dry, 1942-1961 wet, 1962-1974 dry and 1975-2003 wet.

Yearly value of the wet season parameters for the period 1891-2005 is given in Table 1(b) and their time series plots are shown in Figure 2(b). The mean (±1 σ days) of the parameters are: starting date-29-May (±65), ending date- 11 Sept (±25) and the duration- 106 days (± 70). The distribution of the wet season parameters is significantly different from normal. During a normal wet season rainfall (P) is 593.4 mm and potential evapotranspiration (PE) 433.5 mm which shows excess rainfall of 159.9 mm available in the basin.

In 115 years (1891-2005) there were 75 years with two wet seasons and in that 7 years with 3 wet seasons (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date-29 Jan (±31), ending date- 26 Mar (±29) and the duration- 54 days (± 34), and that of third wet season are: starting date-25 Dec (±15), ending date- 18 Jan (±7) and the duration- 24 days (± 11).

Ravi Minor Basin – It rises in Kulu, flows westward through the Pirpanjal and Dhaola Dhar ranges and then enters Punjab plains near Madhopur and later enters Pakistan 26 km below Amritsar. The catchment area is 14,442 sq. km. There is no station in the catchment with long period data.

Beas Minor Basin (drainage area: 18,866 km^2; annual PE: 1445.9 mm; mean annual rainfall: 1379.4 mm- winter 10.5%, summer 11.7%, monsoon 72.3% and post-monsoon 5.5%; and annual rainy days: 61.4)- It rises near the Rohtang Pass in Kulu at a height of 3,960 m and flows through a gorge from Larji to Talwara and then enters the Punjab plains to meet the Sutlej at Harike. Its total length is 460 km and the catchmenrt area is 18,866 sq. km. Rainfall data from *Dharamsala* is available from 1853, *Gurudaspur* was included in 1857, *Amritsar* in 1860 and *Kulu* in 1868. The Longest rainfall sequence for the basin could be developed for the period 1853-2005. The major epochs in annual rainfall fluctuation are: 1857-1900 wet, 1901-1921 dry, 1922-1978 wet and 1979-2003 dry.

Yearly value of the wet season parameters for the period 1853-2005 is given in Table 1I and their time series plots are shown in Figure 2I. The mean (±1 σ days) of the parameters are: starting date-7 June (±34), ending date- 19 Sept (±16) and the duration- 105 days (± 42). The distribution of the wet season parameters is significantly different from normal. During a normal wet season rainfall (P) is 950.4 mm and potential evapotranspiration (PE) 572.7 mm which shows excess rainfall of 377.7 mm available in the basin.

In 151 years (1853-2005) there were 102 years with two wet seasons and in that 3 years with 3 wet seasons (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date-28 Jan (±28), ending date- 15 Mar (±33) and the duration- 47 days (± 35), and that of third wet season are: starting date-23 Dec (±13), ending date- 20 Jan (±4) and the duration- 28 days (± 10).

Sutluj Minor Basin (drainage area: 79,331 km^2; annual PE: 1471.5 mm; mean annual rainfall: 631.3 mm- winter 8.3%, summer 7.8%, monsoon 78.6% and post-monsoon 5.3%; and annual rainy days: 31.3)- It rises near the Darma Pass near Mansarovar Lake at a heght of 4,570 m, enters the Zarkar range and flows through Tibet before entering India. It cuts through the Great Himalayan range and the outer Himalayas, and enters the plains at Rupar. It forms the boundary between India and Pakistan for nearly 120 km. It finally enters Pakistan near Sulemanki. Rainfall for *Sirsa and Ferozepore* is available from 1844; the data for 10 more stations (*Ambala, Jullunder, Hosharpur, Rupar, Moga, Patiala, Ranike, Anupgarh and Kaithal*) became available from 1871 onwards. The longest rainfall series could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1844-1894 wet, 1895-1941 dry and 1942-2003 wet.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 1(d) and their time series plots are shown in Figure 2(d). During 1987 the wet season is undefined as the conditionality of the present criterion is not fulfilled. Based on remaining 161 years data the mean (±1 σ days) of the wet season parameters are: starting date- 30 June (±15), ending date- 5 Sept (±17) and the duration- 68 days (± 21). The distribution of different parameters of the wet season is normal. During a normal wet season rainfall (P) is 385.2 mm and potential evapotranspiration (PE) 368.9 mm which shows excess rainfall of 16.3 mm available in the basin.

In 161 years (1844-2005, excluding 1987) period there were 16 years with two wet seasons (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date-20 Feb (±29), ending date- 28 Mar (±30) and the duration- 7 days (± 6).

The Ganga Major Basin (drainage area: 860,884 km^2; annual PE: 1455.1 mm; mean annual rainfall: 1083.5 mm – winter 3.2%, summer 6.0%, monsoon 84.9% and post-monsoon 5.9%; and annual rainy days: 52.2) – The Ganga originates near the Gangotri glacier (Uttar Kashi disctrict, Uttarakhand) at an elevation of 7,010 m. The river flows through 250 km in the rugged terrain of Himalaya before descending into the plains at Rishikesh. After traversing through Uttar Pradesh and Bihar the Ganga bifurcates into Bhagirathi and Padma in West Bengal. The Bhagirathi is known as Hoogly beyond Kalna and up to '*Mouths of Ganga*' in the Bay of Bengal. The Padma enters Bangladesh and joins Brahmaputra and later Meghna in the downstream. The river further flows as Meghna. It breaks into number of estuaries that pass through Sunderban to join the Bay of Bengal. The total length of the Ganga along the Hoogly is 2,525 km- 1,450 km in Uttar Pradesh, 445 km in Bihar and 520 km in West Bengal. The important tributaries from north are Yamuna, Ramganga, Gomti, Ghaghara, Gandak and Kosi and from south Chambal, Ken, Betwa, Sind, Tons and Son. The Damodar joins the river in the last reaches along the Bhagirathi and the Hoogly. The drainage area of the Ganga system of rivers accounts 26.3% of India's geographical area. The drainage area is spread over the states of Uttar Pradesh, Uttarakhand, Himachal Pradesh, Punjab, Haryana, Rajasthan, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand and West Bengal and Union Territory of Delhi. Earliest rainfall record from Kolkata is available from 1829, Bankura was added in 1831, Darjeeling in 1837 and Patna in 1842. Data for 32 stations is available from 1844 and for all 131 stations of the selected network from 1889. The longest rainfall sequence for the basin could be developed for the period 1829-2005. The major epochs in the annual rainfall fluctuation are: 1829-1853 dry, 1854-1894 wet, 1895-1913 dry, 1914-1964 wet, 1965-1992 dry and 1993-2003 wet.

Yearly value of the wet season parameters for the period 1829-2005 is given in Table 2(a) and their time series plots are shown in Figure 3(a). The mean (±1 σ days) of the parameters are: starting date-9 June (±9), ending date- 28 Sept (±11) and the duration- 113 days (± 15). The distribution of the parameters suffers from skewness. During a normal wet season rainfall (P) is 859.9 mm and potential evapotranspiration (PE) 498.4 mm which shows excess rainfall of 361.5 mm available in the basin.

Yamuna Minor Basin (drainage area: 112,695 km^2; annual PE: 1375.1 mm; mean annual rainfall: 754.1 mm- winter 5.3%, summer 5.2%, monsoon 84.7% and post-monsoon 4.8%; and annual rainy days: 38.1)- It rises from Yamunotri Glacier in Tehri Garhwal (Uttarakhand) at an elevation of 6,330 m. The Rishiganga, the Uma, the Hanuman Ganga and numerous small streams join the river in the mountains. It emerges from the hills near Tajewala and after traversing a distance of 1,376 km it joins the Ganga at Allahabad. The Chambal, the Sarda, the Betwa and the Ken are the important tributaries joining the Yamuna in the plains. Rainfall data for 17 stations is available from 1844 and for all 28 stations of the selected network (*Dehradun, Saharanpur, Karnal, Hissar, Delhi, Gurgaon, Rohtak, Muzaffaarnagar, Mathura, Agra, Bulandshahar, Aligarh, Etawah, Mainpuri, Kanpur, Fatehpur, Allahabad, Etah, Simla, Bharatpur, Alwar, Kaithal, Jind, Sonepat, Jatusana, Bhiwani, Rajgarh, Jhunjhunu)* from 1871. The longest rainfall sequence for the basin could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1854-1894 wet, 1895-1941 dry and 1942-2003 wet.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 2(b) and their time series plots are shown in Figure 3(b). The mean (±1 σ days) of the parameters are: starting date-25 June (±13), ending date- 14 Sept (±16) and the duration- 82 days (± 19). The distribution of the all the three wet season parameters is normal. During a normal wet season rainfall (P) is 528.2 mm and potential evapotranspiration (PE) 349.0 mm which shows excess rainfall of 179.2 mm available in the basin.

Ramganga Minor Basin (drainage area: 31,572 km^2; annual PE: 1278.5 mm; mean annual rainfall: 1333.2 mm- winter 4.9%, summer 5.2%, monsoon 84.7% and post-monsoon 5.2%; and annual rainy days: 56.1) – It originates in the Garhwal district (Uttarakhand) at an elevation of 3,110 m. It traverses a distance of 596 km to join the Ganga at Kanauj. The Khoh, the Gangan, the Aril, the Kosi and the Deoha are the important tributaries. Rainfall data for 3 stations is available from 1844 and for all 5 stations of the selected network (*Moradabad, Bareilly, Shahajahanpur, Nainital and Pilibhit*) from 1864. The longest rainfall sequence for the basin could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1845-1859 wet, 1860-1867 dry, 1878-1894 wet, 1895-1913 dry, 1914-1978 wet and 1979-2003 dry.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 2I and their time series plots are shown in Figure 3I. The mean (±1 σ days) of the parameters are: starting date-8 June (±13), ending date- 24 Sept (±15) and the duration-109 days (± 19). The distribution of the all the three wet season parameters is normal. During a normal wet season rainfall (P) is 1078.5 mm and potential evapotranspiration (PE) 421.3 mm which shows excess rainfall of 657.2 mm available in the basin.

In 162 years (1844-2005) period there were 27 years with two wet seasons (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date-26 Jan (±18), ending date- 12 Feb (±18) and the duration- 15 days (± 9).

Gomati Minor Basin (drainage area: 77,152 km^2; annual PE: 1440.6 mm; mean annual rainfall: 984.5 mm- winter 3.4%, summer 3.1%, monsoon 87.7% and post-monsoon 5.8%; and annual rainy days: 48.1) – It rises near Pilibhit town (Uttar Pradesh) at an elevation 200 m and after traversing 940 km it joins the Ganga downstream of Varanasi City. The Gachai, the Sai, the Jomkai and the Barna, the Chuha and the Sarayu are its □ainguage□s. The Gomati system drains an area of 77,152 sq. km between the Ramganga and the Ghaghara basins. Rainfall data for 2 stations (Jaunpur and Ghazipur) is available from 1844 and for all 11 stations of the selected network (*Jaunpur, Ghazipur, Kheri, Sitapur, Hardoi, Lucknow, Unao, Nawabganj, Rai Bareli, Sultanpur and Pratapgarh*) from 1867. The longest rainfall sequence for the basin could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1844-1884 dry, 1885-1900 wet, 1901-1920 dry, 1921-1961 wet and 1962-2003 dry.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 2(d) and their time series plots are shown in Figure 3(d). The mean (±1 σ days) of the parameters are: starting date-19 June (±12), ending date- 27 Sept (±15) and the duration- 101 days (± 19). Ending date is showing positive kurtosis. The distribution of the other two wet season parameters is normal. During a normal wet season rainfall (P) is 760.6 mm and potential evapotranspiration (PE) 447.5 mm which shows excess rainfall of 313.1 mm available in the basin.

Ghaghara Minor Basin (drainage area: 50,431 km^2; annual PE: 1427.6 mm; mean annual rainfall: 1128.2 mm- winter 2.8%, summer 3.8%, monsoon 87.6% and post-monsoon 5.8%; and annual rainy days: 53.1) – It originates near Lake Mansarovar. It flows 1080 km to join the Ganga a few □ainguage downstream of Chapra town (Bihar). The Sarda, the Sarju, the Rapti and the Little Gandak are the main tributaries. Rainfall data for 2 stations (Gorakhpur and Azamgarh) is available from 1844 and for all 9 stations of the selected network (*Gorakhpur, azamgarh, Chapra, Basti, Bahraich, faizabad, Gonda, Deoria and Ballia)* from 1871. The longest rainfall sequence for the basin could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1844-1884 dry, 1885-1949 wet, 1950-1979 dry and 1980-2003 wet.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 2(e) and their time series plots are shown in Figure 3(e). The mean (±1 σ days) of the parameters are: starting date-10 June (±12), ending date- 30 Sept (±14) and the duration- 113 days (± 19). The distribution of ending date is normal while that of starting date and duration suffers from both skewness and kurtosis. During a normal wet season rainfall (P) is 933.5 mm and potential evapotranspiration (PE) 460.7 mm which shows excess rainfall of 472.8 mm available in the basin.

Gandak Minor Basin (drainage area: 28,001 km^2; annual PE: 1347.8 mm; mean annual rainfall: 1205.0 mm- winter 2.3%, summer 6.5%, monsoon 85.2% and post-monsoon 6.0%; and annual rainy days: 56.1)- It rises in Tibet at an elevation of 7,620 m, overlooking the Dhaulagiri peak. It debouches into the plains at Tribeni (Bihar) and after traversing another 300 km it joins the Ganga near Patna. Rainfall data for *Muzaffarpur* is

available from 1848, *Chhapra and Motihari* were added in 1849 and *Darbhanga* in 1871. From these 4 stations the rainfall sequence for the basin could be developed for the period 1848-2005. The major epochs in annual rainfall fluctuation are: 1849-1884 dry, 1885-1922 wet, 1923-1968 dry and 1969-2003 wet.

Yearly value of the wet season parameters for the period 1848-2005 is given in Table 2(f) and their time series plots are shown in Figure 3(f). The mean (±1 σ days) of the parameters are: starting date-31 May (±15), ending date- 1 Oct (±15) and the duration- 124 days (± 23). The distribution of all the wet season parameters is normal. During a normal wet season rainfall (P) is 994.5 mm and potential evapotranspiration (PE) 509.2 mm which shows excess rainfall of 485.3 mm available in the basin.

Kosi Minor Basin (drainage area: 13,364 km^2; annual PE: No data; mean annual rainfall: 1384.7 mm- winter 1.9%, summer 9.0%, monsoon 81.9% and post-monsoon 7.2%; and annual rainy days: 59.5)- It is formed by joining the three Himalayan Rivers the Sun, the Arun and the Tamur in Nepal. Mount Everest and Mount Kanchenjunga are in the catchment area of the Arun Kosi. After flowing through a narrow gorge for 10 km the Kosi River enters the plains at Chatra. It traverses 320 km in the plains to join the Ganga near Kursela. Catchment area of the basin in India is 13,364 sq. km. One of the characteristic features of the river is that it changes its course abruptly from one year to another which is an environmental hazard of serious concern in the area. In the last 200 years the course of Kosi has shifted westward by 125 km caused by the combined effect of tectonic, hydrologic and meteorologic factors (Singh and Sontakke, 2002). The river is called 'sorrow of Bihar'. Madhipura is the only station in the Kosi basin with long period data (1870-2005). The epochal pattern of the annual rainfall series is 1872-1897 dry, 1898-1938 wet, 1939-1969 dry and 1970- 2003 wet.

Yearly value of the wet season parameters for the period 1870-2005 is given in Table 2(g) and their time series plots are shown in Figure 3(g). The mean (±1 σ days) of the parameters are: starting date-20 May (±19), ending date- 4 October (±17) and the duration- 138 days (± 27). The distribution of all the wet season parameters is normal. During a normal wet season rainfall (P) is 1183.0 mm and potential evapotranspiration (PE) 592.1 mm which shows excess rainfall of 590.9 mm available in the basin.

In 136 years (1870-2005) period there were 2 years with two wet seasons (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date-5 Mar (±18), ending date- 25 Mar (±24) and the duration- 20 days (± 3).

Mahananda Minor Basin (drainage area: 11,530 km^2; annual PE: 1151.3 mm; mean annual rainfall: 2117.1 mm – winter 1.3%, summer 12.1%, monsoon 80.4% and post-monsoon 6.2%; and annual rainy days: 83.0)– It rises in the hills of Darjeeling district at an elevation of 2,100m and flows through the boundary between India and Bangladesh to join the Ganga at Godagiri (Bangladesh). The main tributaries are Balsan, Mechi, Ratna and Kankai. Its total drainage area is 20,600 sq. km of which 11,530 sq. km is in India. Earliest rainfall observation for Darjeeling is available from 1837, Malda was added in 1848, Jalpaiguri in 1869, Purnea in 1870 and Itahar in 1871. The areal

representative series for the period 1871-2005 has been prepared from arithmetic mean of the 5 raingauges. For the period 1837-1870 the different representative series have been constructed. The epochal pattern in the annual rainfall fluctuation is as 1865-1894 wet, 1895-1908 dry, 1910-1939 wet, 1940-1983 dry and 1984-2003 wet.

Yearly value of the wet season parameters for the period 1837-2005 is given in Table 2(h) and their time series plots are shown in Figure 3(h). The mean (±1 σ days) of the parameters are: starting date-25 April (±18), ending date- 11 October (±13) and the duration- 170 days (± 23). The distribution of all the wet season parameters is normal. During a normal wet season rainfall (P) is 1946.3 mm and potential evapotranspiration (PE) 630.9 mm which shows excess rainfall of 1315.4 mm available in the basin.

In 152 years (1848-1853 and 1860-2005) period there were two years with double wet season (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date- 18 Feb (±13), ending date- 2 Mar (±18) and the duration- 13 days (± 5).

Chambal Minor Basin (drainage area: 156,054 km^2; annual PE: 1588.3 mm; mean annual rainfall: 817.2 mm- winter 1.7%, summer 2.3%, monsoon 91.5% and post-monsoon 4.5%; and annual rainy days: 39.6)- It rises in the Vindhya ranges and flows for 965 m to join the Yamuna. Its drainage area is 156,054 sq. km. Rainfall data from Agra is available from 1844, Ajmer was added in 1856 and Udaipur in 1857. Data for all 21 stations of the selected network (*Agra, Ajmer, Udaipur, Neemuch, Bahratpur, Jaipur, Agar, Rutlam, Tonk, Sawai Madhopur, Shahpura, Bundi, Kotah, Shivpuri, Guna, Jhalwar, Khilchipur, Ujjain, Sonkach, Indore and Dhar*) is available from 1871. The longest rainfall sequence for the basin could be developed for the peiod 1844-2005. The major epochs in annual rainfall fluctuation are: 1856-1894 wet, 1895-1941 dry, 1942-1961 wet and 1962-2003 dry.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 2(i) and their time series plots are shown in Figure 3(i). The mean (±1 σ days) of the parameters are: starting date-20 June (±11), ending date- 14 Sept (±15) and the duration- 87 days (± 18). The distribution of all the wet season parameters is normal. During a normal wet season rainfall (P) is 635.0 mm and potential evapotranspiration (PE) 395.6 mm which shows excess rainfall of 239.4 mm available in the basin.

Sind Minor Basin (drainage area: 28,634 km^2; annual PE: 1507.7 mm; mean annual rainfall: 874.5 mm- winter 2.4%, summer 2.1%, monsoon 90.7% and post-monsoon 4.8%; and annual rainy days: 41.2) – It originates in the Vidisha district (Madhya Pradesh) at an elevation of 543 m. It traverses 415 km to join Yamuna eastward of Chambal. The Parvati, the Kunwari and the Pahuj are the important tributaries. The drainage area of the river system is 28,634 sq. km. Rainfall data for Jhansi is available from 1860 and for all 7 stations of the selected network (*Jhansi, Bhind, Sabalgarh, Gwalior, Datia, Shivpuri and Guna*) from 1871. The longest rainfall sequence could be developed for the period 1860-2005. The major epochs in annual rainfall fluctuation are: 1860-1894 wet, 1895-1954 dry, 1955-1988 wet and 1989-2003 dry.

Yearly value of the wet season parameters for the period 1860-2005 is given in Table 2(j) and their time series plots are shown in Figure 3(j). The mean (±1 σ days) of the parameters are: starting date-22 June (±12), ending date- 16 Sept (±15) and the duration- 87days (± 18). The distribution of starting date is suffered from negative kurtosis, while other wet season parameters is normal. During a normal wet season rainfall (P) is 693.6 mm and potential evapotranspiration (PE) 374.2 mm which shows excess rainfall of 319.4 mm available in the basin.

Betwa Minor Basin (drainage area: 44,479 km^2; annual PE: 1528.4 mm; mean annual rainfall: 1039.2 mm- winter 2.6%, summer 1.9%, monsoon 90.7% and post-monsoon 4.8%; and annual rainy days: 49.2)- It originates at an elevation of 470 m in the Bhopal district (Madhya Pradesh). The river flows 590 km to join the Yamuna near Hamirpur. The Dhasan River is an important tributary. Rainfall data from Hamirpur is available from 1844; Jalaun was added in 1861 and Nowgong and Bhopal in 1868. Data for all 7 stations of the selected network (*Hamirpur, Jalaun, Nowgong, Bhopal, Tikamgarh, Vidisha and Raisen*) is available from 1871. The longest rainfall sequence could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1861-1894 wet, 1895-1930 dry, 1931-1961 wet and 1962-2003 dry.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 2(k) and their time series plots are shown in Figure 3(k). The mean (±1 σ days) of the parameters are: starting date-17 June (±10), ending date- 22 Sept (±13) and the duration- 98days (± 16). The distribution of all the wet season parameters is normal. During a normal wet season rainfall (P) is 856.4 mm and potential evapotranspiration (PE) 423.0 mm which shows excess rainfall of 433.4 mm available in the basin.

Ken Minor Basin (drainage area: 30,100 km^2; annual PE: 1499.9 mm; mean annual rainfall: 1142.5 mm- winter 3.0%, summer 2.1%, monsoon 90.0% and post-monsoon 4.9%; and annual rainy days: 53.4)- It originates in the Kaimur hills of the Satna district (Madhya Pradesh). The river flows 360 km to join the Yamuna near Chilla. Rainfall data for 3 stations (Banda, Damoh and Sagar) is available from 1844 and for all 5 stations of the selected network (*Banda, Damoh, Sagar, Nowgong and Panna*) from 1871. The longest rainfall sequence for the basin could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1845-1876 wet, 1877-1883 dry, 1884-1894 wet, 1895-1921 dry, 1922-1961 wet and 1962-2003 dry.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 2(l) and their time series plots are shown in Figure 3(l). The mean (±1 σ days) of the parameters are: starting date-17 June (±11), ending date- 25 Sept (±17) and the duration- 101 days (± 19). The distribution of starting date is normal while that of ending date and duration significantly different from normal. During a normal wet season rainfall (P) is 948.6 mm and potential evapotranspiration (PE) 415.3 mm which shows excess rainfall of 533.3 mm available in the basin.

Tons Minor Basin (drainage area: 39,425 km^2; annual PE: 1531.1 mm; mean annual rainfall: 1060.0 mm- winter 3.7%, summer 2.6%, monsoon 88.6% and post-monsoon 5.1%; and annual rainy days: 53.6)- It originates at an elevation of 610 m at Tamakund in the Kaimur hills. The river flows 264 km the river joins the Ganga 31 km downstream of Allahabad. Rainfall data for 3 stations (Allahabad, Mirzapur and Varanasi) is available from 1844 and for all 5 stations of the selected network (*Allahabad, Mirzapur, Varanasi, Sutna and Rewa*) from 1871. The longest rainfall sequence could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1845-1898 wet, 1899-1913 dry, 1914-1956 wet and 1957-2003 dry.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 2(m) and their time series plots are shown in Figure 3(m). The mean (±1 σ days) of the parameters are: starting date-18 June (±12), ending date- 28 Sept (±16) and the duration- 103 days (± 20). The distribution of the wet season parameters is significantly different from normal. During a normal wet season rainfall (P) is 879.2 mm and potential evapotranspiration (PE) 434.9 mm which shows excess rainfall of 444.3 mm available in the basin.

Son Minor Basin (drainage area: 111,300 km^2; annual PE: 1475.4 mm; mean annual rainfall: 1211.0 mm- winter 3.5%, summer 4.3%, monsoon 86.2% and post-monsoon 6.0%; and annual rainy days: 61.5)- It originates at an elevation of 600 m in the Sonabhadra district (Madhya Pradesh) and join the Ganga about 16 km upstream of Dinapur (Patna district) after traversing 784 km The Mahanadi, the Banas, the Gopat, the Rihand, the Kanker and the Koel are the important tributaries. Rainfall data for Patna is available from 1842; Bhagalpur was included in 1848; Gaya and Arrah were included in 1849. Data for all 9 stations of the selected network (*Patna, Gaya, Arrah, Daltonganj, Jamui, Sidhi, Sohagpur, Bhagalpur and Ambikapur*) is available from 1871. The longest rainfall series could be developed for the period 1842-2005. The major epochs in annual rainfall fluctuation are: 1842-1884 dry, 1885-1949 wet, 1950-1992 dry and 1993-2003 wet.

Yearly value of the wet season parameters for the period 1842-2005 is given in Table 2(n) and their time series plots are shown in Figure 3(n). The mean (±1 σ days) of the parameters are: starting date-8 June (±10), ending date- 2 October (±12) and the duration- 117 days (± 17). The distribution of starting date and duration follows the Gaussian law while ending date suffers from both skewness and kurtosis. During a normal wet season rainfall (P) is 1004.0 mm and potential evapotranspiration (PE) 487.8 mm which shows excess rainfall of 516.2 mm available in the basin.

The Brahmaputra Major Basin (drainage area: 186,773 km^2; annual PE: 1147.4 mm; mean annual rainfall: 2478.3 mm – winter 1.8%, summer 22.1%, monsoon 68.9% and post-monsoon 7.2%; and annual rainy days: 112.4) The Brahmaputra River rises at an elevation of 5,150 m in the Kailas range of the Himalayas. After flowing 1,700 km in the Himalayas it enters India across the Sadiya frontiers. It flows 720 km in

Assam to enter Bangadesh. The main tributaries are the Ngangchu, the Dibang, the Luhit, the Subansiri, the Kameng, the Manas, the Buri Dihing, the Dhansiri, the Kopilli, the Tista, the Jaldhaka, the Torsa, the Kalyani and the Raidok. Earliest rainfall record is available from 1848 for 4 stations (Nowgong, Guwahati, Dibrugarh and Sibsagar). The data for all 11 stations of the selected network is available from 1871. The longest rainfall series could be developed for the period 1848-2005. The major epochs in annual rainfall fluctuation are: 1863-1901 dry, 1902-1958 wet, 1959-1982 dry and 1983-2003 wet.

Yearly value of the wet season parameters for the period 1848-2005 is given in Table 3(a) and their time series plots are shown in Figure 4(a). The mean (±1 σ days) of the parameters are: starting date-26 March (±13), ending date- 20 October (±12) and the duration- 209 days (± 17). The distribution of starting date and duration is normal while ending date suffers from positive kurtosis. The distribution of the wet season parameters is significantly different from normal. During a normal wet season rainfall (P) is 2304.1 mm and potential evapotranspiration (PE) 776.1 mm which shows excess rainfall of 1528.0 mm available in the basin.

Tista Minor Basin (drainage area: 10,444 km^2 (in West Bengal, India); annual PE: 1085.0 mm; mean annual rainfall: 3279.9 mm – winter 0.7%, summer 13.6%, monsoon 80.2% and post-monsoon 5.5%; and annual rainy days: 110.5)- It rises in Sikkim and flows through 309 km through India and Bangladesh to join Brahmaputra near Rangpur (Bangladesh). The main tributaries are Rajni, Great Ranjit, Lish, Gish and Ghel. Long period rainfall data for lone station Jalpaiguri is available from 1869. The major epochs in annual rainfall fluctuation are: 1878-1895 wet, 1896-1915 dry, 1916-1958 wet, 1959-1997 dry and 1998-2003 wet.

Yearly value of the wet season parameters for the period 1869-2005 is given in Table 3(b) and their time series plots are shown in Figure 4(b). The mean (±1 σ days) of the parameters are: starting date-14 April (±19), ending date- 15 October (±13) and the duration- 185 days (± 24). The distribution of the wet season parameters is normal. The wet season contributes about 95% rainfall to the annual total which is highest amongst the basins. During a normal wet season rainfall (P) is 3094.4 mm and potential evapotranspiration (PE) 652.9 mm which shows excess rainfall of 2441.5 mm available in the basin.

In 137 years (1848-1853 and 1860-2005) period there were two years with double wet season (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date- 11 Mar (±2), ending date- 19 Mar (±2) and the duration- 8 days (± 4).

Brahmaputra Minor Basin) (drainage area: 37,344 km^2; annual PE: 1149.1 mm; mean annual rainfall: 2238.7 mm- winter 1.7%, summer 25.1%, monsoon 65.3% and post-monsoon 7.9%; and annual rainy days: 105.4) – It is essentially the lower Brahmaputra Valley. Rainfall data of Nowgong and Guwahati are available from 1848; Tezpur and Goalpara were included in 1849 and Tura in 1870. From 1871 data for

6 raingauges is available. The longest rainfall sequence could be developed for the period 1848-2005. The major epochs in annual rainfall fluctuation are: 1848-1881 wet, 1882-1909 dry, 1910-1921 wet, 1922-1945 dry, 1946-1960 wet, 1961-1987 dry and 1988-2003 wet.

Yearly value of the wet season parameters for the period 1848-2005 is given in Table 3I and their time series plots are shown in Figure 4I. The mean (±1 σ days) of the parameters are: starting date-27 March (±14), ending date- 18 October (±13) and the duration- 206 days (± 19). The distribution of starting date and duration is normal while ending date suffers from skewness as well as kurtosis. During a normal wet season rainfall (P) is 2076.7 mm and potential evapotranspiration (PE) 766.4 mm which shows excess rainfall of 1310.3 mm available in the basin.

Dhansiri Minor Basin (drainage area: 17,956 km^2; annual PE: 939.8 mm; mean annual rainfall: 1843.6 mm- winter 2.3%, summer 17.5%, monsoon 71.3% and post-monsoon 8.9%; and annual rainy days: 123)- It drains 17,956 sq. km area in Assam, Meghalaya, Nagaland, Manipur, Tripura and Mizoram. Rainfall data of single station *Kohima* is available from 1871. Important epochs in the annual rainfall series 1874-1895 wet, 1896-1928 dry, 1929-1977 wet, 1978-1988 dry, 1989-1995 wet and 1996-2003 dry.

Yearly value of the wet season parameters for the period 1871-2005 is given in Table 3(d) and their time series plots are shown in Figure 4(d). The mean (±1 σ days) of the parameters are: starting date- 4 April (±25), ending date- 18 October (±16) and the duration- 198 days (± 30). The distribution of starting date and ending date is normal while that of duration suffers from positive kurtosis. During a normal wet season rainfall (P) is 1681.6 mm and potential evapotranspiration (PE) 590.0 mm which shows excess rainfall of 1091.6 mm available in the basin.

The Godavari Major Basin (drainage area: 330,628 km^2; annual PE: 1609.7 mm; mean annual rainfall: 1068.3 mm- winter 2.1%, summer 4.7%, monsoon 84.4% and post-monsoon 8.8%; and annual rainy days: 57.1)**-** The Godavari rises in the Nasik district (Maharashtra), flows for 1,465 km and falls into the Bay of Bengal. Its vast catchment area is spread over 5 states, the Maharashtra (48.6%), Madhya Pradesh (20.7%), Karnataka (1.4%), Orissa (5.5%) and Andhra Pradesh (23.8%). The important tributaries are the Wainganga, the Wardha, the Penganga, the Manjra and the Indravati. Earliest rainfall record from 1826 is available from Nagpur; Nasik and Seoni were included in 1844 and Amraoti in 1859. The data for all 22 raingauges of the selected network is available from 1871. The longest rainfall sequence for the basin could be developed for the period 1826-2005. The major epochs in annual rainfall fluctuation are: 1861-1895 wet, 1896-1930 dry, 1931-1963 wet and 1964-2003 dry.

Yearly value of the wet season parameters for the period 1826-2005 is given in Table 4(a) and their time series plots are shown in Figure 5(a). The mean (±1 σ days) of the parameters are: starting date-9 June (±7), ending date- 4 October (±16) and the duration- 118 days (± 19). Distribution of starting date suffers from positive kurtosis while that of ending date and duration from positive skewness. During a normal wet season rainfall (P) is 854.7 mm and potential evapotranspiration (PE) 468.1 mm which shows excess rainfall of 368.6 mm available in the basin.

Wainganga Minor Basin (drainage area: 65,899 km^2; annual PE: 1488.9 mm; mean annual rainfall: 1271.2 mm – winter 2.8%, summer 3.9%, monsoon 86.7% and post-monsoon 6.6%; and annual rainy days: 64.9)- Its drainage is spread over the Madhya Pradesh, the Maharashtra and the Andhra Pradesh states. Rainfall data for Seoni is available from 1844; Bhandara was included in 1861. From 1871 the data is available for all 6 stations of the selected network (*Seoni, Bhandara, Chhindwara, Chandrapur, Balaghat and Asifabad*). The longest rainfall sequence could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1861-1913 dry, 1914-1949 wet and 1950-2003 dry.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 4(b) and their time series plots are shown in Figure 5(b). The mean (±1 σ days) of the parameters are: starting date-9 June (±8), ending date- 2 October (±15) and the duration- 116 days (± 17). The distribution of duration is normal while that of ending date suffers from positive skewness and that of starting date suffers from both skewness and kurtosis. During a normal wet season rainfall (P) is 1051.9 mm and potential evapotranspiration (PE) 447.7 mm which shows excess rainfall of 604.2 mm available in the basin.

In 151 years (1844-1849 & 1849) period there were nine years with two wet seasons (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date- 28 Feb (±22), ending date- 18 Mar (±29) and the duration- 19 days (± 18).

Wardha Minor Basin (drainage area: 22,766 km^2; annual PE: 1771.3 mm; mean annual rainfall: 1050.2 mm- winter 2.6%, summer 3.9%, monsoon 85.5% and post-monsoon 8.0%; and annual rainy days: 56.3) – Its drainage area is confined in the Maharashtra state. Rainfall data for *Nagpur* is available from 1826; *Amraoti* was included in 1859, *Wardha* in 1861 and *Yeotmal* in 1865. Based on these 4 raingauges the longest rainfall sequence could be developed for the period 1826-2005. The major epochs in annual rainfall fluctuation are: 1855-1876 dry, 1877-1894 wet, 1895-1930 dry, 1931-1962 wet and 1963-2003 dry.

Yearly value of the wet season parameters for the period 1826-2005 is given in Table 4I and their time series plots are shown in Figure 5I. The mean (±1 σ days) of the parameters are: starting date-9 June (±8), ending date- 29 Sept (±18) and the duration- 113 days (± 20). The distribution of ending date and duration is normal while that of starting date suffers from positive kurtosis. During a normal wet season rainfall (P) is 840.1 mm and potential evapotranspiration (PE) 501.1 mm which shows excess rainfall of 339.0 mm available in the basin.

Sabar Minor Basin – It drains 27,468 sq. km. in the Chhatisgarh, the Andhra Pradesh and the Orissa states. There is no station in the catchment with long period data.

Penganga Minor Basin (drainage area: 24,282 km^2; annual PE: 1773.3 mm; mean annual rainfall: 1076.5 mm- winter 2.5%, summer 3.9%, monsoon 85.9% and post-monsoon 7.7%; and annual rainy days: 55.6)– Its drainage area is confined in the Maharashtra state. The nearest □ainguage station is *Yeotmal* with rainfall data available from 1865 onwards. Important epochs in the temporal features of the annual rainfall are 1865-1880 dry, 1881-1893 wet, 1894-1905 dry, 1906-1917 wet, 1918-1932 dry, 1932-1981 wet and 1982-2003 dry.

Yearly value of the wet season parameters for the period 1865-2005 is given in Table 4(d) and their time series plots are shown in Figure 5(d). The mean (±1 σ days) of the parameters are: starting date-10 June (±10), ending date- 28 Sept (±18) and the duration- 111 days (± 21). The distribution of ending date and duration is normal while that of starting date suffers from positive Kurtosis. During a normal wet season rainfall (P) is 870.9 mm and potential evapotranspiration (PE) 481.5 mm which shows excess rainfall of 389.4 mm available in the basin.

In 141 years (1865-2005) period there were three years with two wet seasons (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date- 25 Feb (±30), ending date- 10 Mar (±29) and the duration- 15 days (± 0).

Godavari Minor Basin (drainage area: 143,213 km^2; annual PE: 1719.0 mm; mean annual rainfall: 871.2 mm- winter 1.5%, summer 5.2%, monsoon 82.2% and post-monsoon 11.1%; and annual rainy days: 50.7)- Its drainage area is spread over the Maharashtra, the Andhra Pradesh and the Karnataka states. The Nasik rainfall data is available from 1844. The data for all 10 stations of the selected network (*Nashik, Aurangabad, Bhir, Parbhani, Nanded, Osmanabad, Nizamabad, Bidar, Medak and Hanamkonda*) is available from 1871 onwards. The longest rainfall sequence could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1861-1895 wet, 1896-1930 dry, 1931-1963 wet and 1964-2003 dry.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 4(e) and their time series plots are shown in Figure 5(e). The mean (±1 σ days) of the parameters are: starting date-11 June (±9), ending date- 2 October (±15) and the duration- 115 days (± 18). The distribution of ending date and duration is normal while that of starting date suffers from both skewness and kurtosis. During a normal wet season rainfall (P) is 681.5 mm and potential evapotranspiration (PE) 513.7 mm which shows excess rainfall of 167.8 mm available in the basin.

Indravati Minor Basin (drainage area: 46,605 km^2; annual PE: 1422.3 mm; mean annual rainfall: 1481.7 mm- winter 1.3%, summer 7.0%, monsoon 83.1% and post-monsoon 8.6%; and annual rainy days: 79.7)- It drainage area is spread over the Maharashtra, the Chhatisgarh and the Orissa states. The rainfall data for *Kondgaon and Koraput* is available from 1871. The area-averaged rainfall series is prepared for the period 1871-2005. The major epochs in annual rainfall fluctuation are: 1871-1895 wet, 1898-1909 dry, 1910-1963 wet and 1964-2003 dry.

Yearly value of the wet season parameters for the period 1871-2005 is given in Table 4(f) and their time series plots are shown in Figure 5(f). The mean (±1 σ days) of the parameters are: starting date-29 May (±20), ending date- 12 October (±18) and the duration- 137 days (± 28). The ending date is normally distributed while starting date is significantly different from normal. Duration is of having positive skewness. During a normal wet season rainfall (P) is 1272.3 mm and potential evapotranspiration (PE) 479.5 mm which shows excess rainfall of 792.8 mm available in the basin.

The Krishna Major Basin (drainage area: 295,650 km^2; annual PE: 1669.8 mm; mean annual rainfall: 825.7 mm- winter 1.2%, summer 9.5%, monsoon 70.4% and post-monsoon 18.9%; and annual rainy days: 50.9) – The river rises at an elevation of 1,360 m from a water spring near Mahabalesh Warat. It flows 1,400 km to join the Bay of Bengal. The drainage area is spread over three states as Maharashtra 26.8%, Karnataka 43.8% and Andhra Pradesh 29.4%. The important tributaries are the Ghatprabha, the Bhima and the Tungabhadra. The earliest rainfall record for Pune is available from 1826; Satara was added in 1836 and Shimoga in 1837. The data for 25 stations of the selected network is available from 1871. The longest rainfall sequence could be developed for the period 1836-2005. The major epochs in annual rainfall fluctuation are: 1836-1873 dry, 1874-1898 wet, 1899-1942 dry, 1943-1964 wet, 1965-1986 dry and 1987-2000 wet.

Yearly value of the wet season parameters for the period 1836-2005 is given in Table 5(a) and their time series plots are shown in Figure 6(a). The mean (±1 σ days) of the parameters are: starting date- 5 June (±14), ending date- 19 October (±17) and the duration- 137 days (± 24). The distribution of wet season parameters is normal. During a normal wet season rainfall (P) is 610.4 mm and potential evapotranspiration (PE) 580.4 mm which shows excess rainfall of 30.0 mm available in the basin.

Krishna Minor Basin (drainage area: 141,466 km^2; annual PE: 1661.9 mm; mean annual rainfall: 893.7 mm- winter 1.2%, summer 8.6%, monsoon 71.8% and post-monsoon 18.4%; and annual rainy days: 54.9)- Its drainage area is spread over the Maharashtra, the Karnataka and the Andhra Pradesh states. Earliest rainfall data for Satara is available from 1836; Belgaum was included in 1841 and Hyderabad in 1843. The data for all 15 stations of the selected network (*Satara, Belgaum, Hyderabad, Dharwar, Kolhapur, Bijapur, Guntur, Ellore, Masulipatnam, Sangli, Raichur,Mehbubnagar, Nalgonda, Khammam and Hanamkonda)* is available from 1871. The longest rainfall sequence could be developed for the period 1841-2005. The major epochs in annual rainfall fluctuation are: 1841-1952 dry and 1953-2003 wet.

Yearly value of the wet season parameters for the period 1841-2005 is given in Table 5(b) and their time series plots are shown in Figure 6(b). The mean (±1 σ days) of the parameters are: starting date-6 June (±14), ending date- 21 October (±17) and the duration- 138 days (± 24). The distribution of ending date and duration is normal while that of starting date suffers from significant negative skewness. During a normal wet season rainfall (P) is 686.0 mm and potential evapotranspiration (PE) 573.1 mm which shows excess rainfall of 112.9 mm available in the basin.

Bhima Minor Basin (drainage area: 76,772 km^2; annual PE: 1700.9 mm; mean annual rainfall: 703.7 mm- winter 1.0%, summer 7.5%, monsoon 75.3% and post-monsoon 16.2%; and annual rainy days: 42.5) – Its drainage area is spread over the Maharashtra and the Karnataka states. Earliest rainfall record for Pune is available from 1826; Ahmednagar was included in 1844 and Sholapur in 1853. The data for all 6 stations of the selected network (*Pune, Ahmednagar, Sholapur, Bigapur, Gulbarga and Osmanabad)* is available from 1871. The longest rainfall sequence for the basin could be developed for the period 1853-2005. The major epochs in annual rainfall fluctuation are: 1842-1895 wet, 1896-1952 dry and 1953-2003 wet.

Yearly value of the wet season parameters for the period 1853-2005 is given in Table 5I and their time series plots are shown in Figure 6I. The mean (±1 σ days) of the parameters are: starting date-9 June (±16), ending date- 28 Sept (±33) and the duration-112 days (±36). The distribution of ending date and duration is significantly different from normal while that of starting date suffers from significant negative skewness. During a normal wet season rainfall (P) is 504.8 mm and potential evapotranspiration (PE) 507.6 mm which shows deficit rainfall of 2.8 mm available in the basin.

In 165 years (1826-30 1842, 1844-1849 & 1853-2005) there were seventeen years with two wet seasons. The mean (±1 σ days) of the parameters of the second wet season are: starting date- 15 Sept (±20), ending date- 15 Oct (±21) and the duration-30 days (± 18).

Tungabhadra Minor Basin (drainage area: 77,412 km^2; annual PE: 1650.2 mm; mean annual rainfall: 745.4 mm- winter 1.4%, summer 13.0%, monsoon 64.2% and post-monsoon 21.4%; and annual rainy days: 49.5)- Its drainage is spread over the Karnataka and the Andhra Pradesh states. Earliest rainfall record is available for Shimoga from 1837; Bellary was included in 1847. The data for 7 raingauges of the selected network (*Shimoga, Bellary, Chikmagalur, Chitaldurg, Raichur, Kurnool and Karimnagar*) is available from 1871. The longest rainfall sequence could be developed for the period 1837-2005. The major epochs in annual rainfall fluctuation are: 1837-1876 dry, 1877-1917 wet, 1918-1942 dry, 1943-1964 wet, 1965-1986 dry and 1987-2000 wet.

Yearly value of the wet season parameters for the period 1837-2005 is given in Table 5(d) and their time series plots are shown in Figure 6(d). The mean (±1 σ days) of the parameters are: starting date-31 May (±21), ending date- 17 October (±19) and the duration- 141 days (± 31). The distribution of the wet season parameters is normal. During a normal wet season rainfall (P) is 534.4 mm and potential evapotranspiration (PE) 610.0 mm which shows deficit rainfall of 75.6 mm available in the basin.

The Sabarmati Major Basin (drainage area: 36,688 km^2; annual PE: 1676.8 mm; mean annual rainfall: 742.8 mm- winter 0.4%, summer 1.4%, monsoon 95.4% and post-monsoon 2.8%; and annual rainy days: 34.5)- The river rises in the Aravalli hills and flows 300 km through the Rajasthan and the Gujarat states to join the Arabian Sea. The Sei, the Wakul, the Harnar, the Hathmati and the Watrak are the main tributaries. Earliest rainfall record for Ahmedabad is available from 1843; Kaira was included in

1861. The data for 4 stations of the selected network (*Ahmedabad, Kaira, Idar and Wadhwan*) is available from 1871. Longest rainfall sequence for the basin could be developed for the period 1861-2005. The major epochs in annual rainfall fluctuation are: 1861-1898 wet, 1899-1925 dry, 1926-1959 wet and 1960-2003 dry.

Yearly value of the wet season parameters for the period 1861-2005 is given in Table 6(a) and their time series plots are shown in Figure 7(a). The mean (±1 σ days) of the parameters are: starting date-22 June (±14), ending date- 7 Sept (±18) and the duration- 78 days (± 23). The distribution of starting date is normal while that of ending date suffers from negative skewness and positive kurtosis and that of duration from positive kurtosis. During a normal wet season rainfall (P) is 519.8 mm and potential evapotranspiration (PE) 342.5 mm which shows excess rainfall of 177.3 mm available in the basin.

The Mahi Major Basin (drainage area: 41,179 km^2; annual PE: 1653.4 mm; mean annual rainfall: 836.1 mm- winter 0.7%, summer 1.5%, monsoon 93.5% and post-monsoon 4.3%; and annual rainy days: 40.1) – The river rises in the Vindhyas at an elevation of 500 m. It flows through the Madhya Pradesh, the Rajasthan and the Gujarat states a length of 533 km and falls eventually in the Arabian Sea. The Son, the Anas and the Panam are the main tributaries. Earliest rainfall record for Udaipur is available from 1857; Neemuch was included in 1860 and Baria in 1869. The data for all 8 raingauges of the selected network (*Udaipur, Neemuch, Baria, Pratapgarh, Dungarpur, Banswara, Jhabua and Baroda*) is available from 1871. The longest rainfall sequence for the basin could be developed for the period 1857-2005. The major epochs in annual rainfall fluctuation are: 1857-1898 wet, 1899-1940 dry, 1941-1963 wet and 1964-2003 dry.

Yearly value of the wet season parameters for the period 1857-2005 is given in Table 6(b) and their time series plots are shown in Figure 7(b). The mean (±1 σ days) of the parameters are: starting date-18 June (±12), ending date- 15 Sept (±17) and the duration- 90 days (± 21). The distribution of the different wet season parameters is normal. During a normal wet season rainfall (P) is 688.6 mm and potential evapotranspiration (PE) 380.8 mm which shows excess rainfall of 307.8 mm available in the basin.

The Narmada Major Basin (drainage area: 94,562 km^2; annual PE: 1466.7 mm; mean annual rainfall: 1107.3 mm- winter 2.3%, summer 2.2%, monsoon 90.1% and post-monsoon 5.4%; and annual rainy days: 54.1)**-** The river rises at an elevation of 900 m near Amarkantak (Madhya Pradesh). It flows through the Madhya Pradesh, the Maharashtra and the Gujarat states for a length of 1,312 km before falling into the Arabian Sea. The Burhner is the major tributaries. Rainfall data from 1844 is available for 4 stations Mandla, Jabalpur, Narsinhapur and Hoshangabad. The data for all 8 raingauges of the selected network (*Mandla, Jabalpur, Narsimhapur, Hoshangabad, Broach, Khandwa, Raisen and Barwani*) is available from 1871 onwards. The longest rainfall sequence could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1844-1868 dry, 1869-1894 wet, 1895-1913 dry, 1914-1949 wet and 1950-2003 dry.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 6I and their time series plots are shown in Figure 7I. The mean (±1 σ days) of the parameters are: starting date-12 June (±8), ending date- 25 Sept (±15) and the duration-106 days (± 17). The distribution of starting date is significantly different from normal however that of ending date and duration is near-normal. During a normal wet season rainfall (P) is 925.0 mm and potential evapotranspiration (PE) 409.7 mm which shows excess rainfall of 515.3 mm available in the basin.

The Tapi Major Basin (drainage area: 65,041 km^2; annual PE: 1665.3 mm; mean annual rainfall: 894.4 mm- winter 1.8%, summer 2.7%, monsoon 87.4% and post-monsoon 8.1%; and annual rainy days: 48.6)**-** The river rises near Multai (Betul district, Madhya Pradesh) at an elevation of 730 m. It flows 724 km through the Madhya Pradesh, the Maharashtra and the Gujarat states before falling into the Arabian Sea. The Purna, the Vaghur, the Girna, the Bori, the Panjhra and the Aner are the important tributaries. Earliest rainfall record is available from 1844 for Betul; Amraoti and Buldhana were included in 1861. The data for all 7 raingauges of the selected network (*Betul, Amraoti, Buldhana, Dhulia, Akola, Surat and Jalgaon*) is available from 1871. The longest rainfall sequence for the basin could be developed for the period 1844-2005. The major epochs in annual rainfall fluctuation are: 1859-1881 dry, 1882-1894 wet, 1895-1930 dry, 1931-1964 wet and 1965-2003 dry.

Yearly value of the wet season parameters for the period 1844-2005 is given in Table 7(a) and their time series plots are shown in Figure 8(a). The mean (±1 σ days) of the parameters are: starting date-11 June (±7), ending date- 24 Sept (±18) and the duration- 106 days (± 20). The distribution of starting date is significantly different from normal however that of ending date and duration is normal. During a normal wet season rainfall (P) is 700.3 mm and potential evapotranspiration (PE) 450.4 mm which shows excess rainfall of 249.9 mm available in the basin.

The Mahanadi Major Basin (drainage area: 145,040 km^2; annual PE: 1519.4 mm; mean annual rainfall: 1410.4 mm- winter 2.6%, summer 5.5%, monsoon 84.0% and post-monsoon 7.9%; and annual rainy days: 70.2)**-** The river originates from a pond near a village called 'Pharsiya' (Raipur district, Jharkhand). It flows for 587 km and beaks into two branches, the Katjuri and the Birupa, that fall into the Bay of Bengal. Its drainage area is spread over the Jharkhand, the Orissa, the Bihar and the Maharashtra states. Earliest rainfall record from 1848 is available for Puri; Sambalpur was included in 1861. The data for all 11 raingauge stations of the selected network (*Puri, Sambalpur, Bilaspur, raipur, Cuttack, Raigarh, Rajgangapur, Bolangir, Phulbani, Bhawanipatna and Durg*) is available from 1871. The longest rainfall sequence for the basin could be developed for the period 1848-2005. The major epochs in annual rainfall fluctuation are: 1848-1878 dry, 1879-1961 wet and 1962-2003 dry.

Yearly value of the wet season parameters for the period 1848-2005 is given in Table 7(b) and their time series plots are shown in Figure 8(b). The mean (±1 σ days) of the parameters are: starting date-4 June (±10), ending date- 11 October (±15) and the

duration- 130 days (± 19). The distribution of ending date is normal while that of starting date and duration is significantly different from normal. During a normal wet season rainfall (P) is 1193.0 mm and potential evapotranspiration (PE) 518.5 mm which shows excess rainfall of 674.5 mm available in the basin.

The Cauvery Major Basin (drainage area: 91,691 km^2; annual PE: 1499.1mm; mean annual rainfall: 1265.5 mm- winter 1.4%, summer 13.8%, monsoon 60.6% and post-monsoon 24.2%; and annual rainy days: 64.3)**-** The Cauvery rises at an elevation of 1,340 sq. km in the Brahmagiri range of the Western Ghats in the Coorg District of Karnataka. It flows 800 km and joins the Bay of Bengal at Kaveripatnam. State-wise drainage area of the basin is distributed as 3.3% in Kerala, 41.2% in Karnataka and 55.5% in Tamil Nadu. The Cauvery splits into two branches, the Cauvery and the Vennar, which feed the Tanjore delta. The important tributaries are the Harangi, the Hemavati, the Shimsha, the Arkavati, the Lakshmanatirtha, the Kabini and the Suvarnavati in Karnataka and the Bhavani, the Noyli and the Amaravati in Tamil Nadu. Earliest rainfall record from 1829 is available for Ootacamund; Tumkur and Mysore were included in 1837. The data for all 13 stations of the selected network (*Ootacamund, Tumkur, Mysore, Tiruchirapalli, Salem, Coimbataore, Bangalore, Tanjavore, Chikmagalur, Hassan, Mandya, Mercara and Dharampur*) is available from 1871. Longest reliable rainfall sequence for the basin could be prepared for the period 1837-2005. The major epochs in annual rainfall fluctuation are: 1837-1928 dry and 1929-1964 wet, 1965-1990 dry and 1991-2000 wet.

Yearly value of the wet season parameters for the period 1837-2005 is given in Table 7I and their time series plots are shown in Figure 8I. The mean (±1 σ days) of the parameters are: starting date-4 May (±15), ending date- 11 November (±18) and the duration- 192 days (± 20). The distribution of all parameters is normal. During a normal wet season rainfall (P) is 1064.5 mm and potential evapotranspiration (PE) 773.8 mm which shows excess rainfall of 290.7 mm available in the basin.

Independent Minor Basins

The Luni Minor Basin (drainage area: 79,456 km^2; annual PE: 1685.2 mm; mean annual rainfall: 487.7 mm- winter 1.7%, summer 3.5%, monsoon 91.4% and post-monsoon 3.4%; and annual rainy days: 24.4)- The River drains 79,456 sq. km area in Rajasthan and Gujarat. Earliest rainfall record from 1856 is available for Deesa and Ajmer; Pali was included in 1867. The data for all 8 stations of the selected network (*Ajmer, Deesa, Pali, Sikar, Jodhpur, Jalore, Sirohi and Radhanpur*) is available from 1871. The longest rainfall sequence for the basin could be developed for the period 1856-2005. The major epochs in annual rainfall fluctuation are: 1856-1897 wet, 1898-1939 dry and 1940-2003 wet.

Yearly value of the wet season parameters for the period 1856-2005 is given in Table 8(a) and their time series plots are shown in Figure 9(a). The mean (±1 σ days) of the parameters are: starting date-3 July (±14), ending date- 31 August (±19) and the duration- 60 days (± 24). In comparison to other basins it experiences shortest duration

of wet season. The distribution of ending date is normal while duration significantly different from normal. Starting date suffers from positive kurtosis. Wet season contribution to the annual rainfall is 65% which is the lowest amongst the basins. During a normal wet season rainfall (P) is 302.4 mm and potential evapotranspiration (PE) 288.9 mm which shows excess rainfall of 13.5 mm available in the basin.

In 150 years (1856-2005) period there were seven years for which wet season was undefined according to the present criterion as every month received rainfall less than 50 mm (Table 11).

The Surma Minor Basin (drainage area: 47,216 km^2; annual PE: 1012.5 mm; mean annual rainfall: 2519.5 mm- winter 1.9%, summer 25.8%, monsoon 63.0% and post-monsoon 9.5%; and annual rainy days: 120.2)- The river drains 47,216 sq. km area in Assam, Meghalaya, Manipur, Mizoram and Tripura. There are 3 raingauges in the basin. The data for *Silchar* is available from 1948, for Shillong from 1866 and for *Agartala* from 1871. Reliable rainfall sequence could be developed for the period 1848-2005. The major epochs in annual rainfall fluctuation are: 1863-1923 dry, 1924-1956 wet, 1957-1982 dry and 1983-2003 wet.

Yearly value of the wet season parameters for the period 1848-2005 is given in Table 8(b) and their time series plots are shown in Figure 9(b). The mean (±1 σ days) of the parameters are: starting date-16 March (±18), ending date- 25 October (±14) and the duration- 225 days (± 21). Compared to other basins this basin experiences longest duration of wet season. The distribution of starting date and ending date is normal while that of duration suffers from positive kurtosis. During a normal wet season rainfall (P) is 2314.0 mm and potential evapotranspiration (PE) 718.8 mm which shows excess rainfall of 1595.2 mm available in the basin.

The Kasai Minor Basin (drainage area: 21,625 km^2; annual PE: 1480.7 mm; mean annual rainfall: 1442.6 mm- winter 3.1%, summer 10.9%, monsoon 77.3% and post-monsoon 8.7%; and annual rainy days: 76.2)– The drainage area is confined to the West Bengal state. Earliest rainfall record for *Bankura* is available from 1931; observation at *Purulia* started in 1848 and at *Midnapore* in 1854. The longest rainfall sequence could be developed for the period 1831-2005. The major epochs in annual rainfall fluctuation are: 1859-1922 wet, 1923-1983 dry and 1984-2003 wet.

Yearly value of the wet season parameters for the period 1831-2005 is given in Table 8I and their time series plots are shown in Figure 9I. The mean (±1 σ days) of the parameters are: starting date-12 May (±22), ending date- 12 October (±16) and the duration- 154 days (± 26). The distribution of ending date is normal while that of starting date is different from normal distribution, suffering from both skewness and kurtosis. Duration is suffered by positive skewness. During a normal wet season rainfall (P) is 1213.6 mm and potential evapotranspiration (PE) 658.1 mm which shows excess rainfall of 555.5 mm available in the basin.

The Damodar Minor Basin (drainage area: 64,753 km^2; annual PE: 1428.7 mm; mean annual rainfall: 1473.4 mm- winter 2.6%, summer 11.9%, monsoon 76.3% and post-monsoon 9.2%; and annual rainy days: 78.8)- The river originates in the Palamau district (Jharkhand) and after flowing 541 km through Bankura and Burdwan districts it joins the Hoogly near Fulta point. Earliest rainfall record for Kolkata is available from 1829; Hazaribagh, Suri and Berhampore were included in 1848 and Hooghly was included in 1854. The data for all 11 stations of the selected network (*Kolkata, Hazaribagh, Suri, Hooghly, Burdwan, Krishnanagar, Howrah, Naya Dumka, Baripad, Berhampore and Gobindpur*) is available from 1871. The longest rainfall sequence could be developed for the period 1829-2005. The major epochs in annual rainfall fluctuation are: 1839-1871 wet, 1872-1896 dry, 1897-1950 wet, 1951-1967 dry and 1968-2003 wet.

Yearly value of the wet season parameters for the period 1829-2005 is given in Table 8(d) and their time series plots are shown in Figure 9(d). The mean (±1 σ days) of the parameters are: starting date-4 May (±22), ending date- 14 October (±14) and the duration- 164 days (± 26). The distribution of ending date is normal while that of starting date and duration significantly different from normal. During a normal wet season rainfall (P) is 1271.5 mm and potential evapotranspiration (PE) 692.0 mm which shows excess rainfall of 579.5 mm available in the basin.

In 177 years (1829-2005) period there were four years with two wet seasons (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date- 14 Feb (±19), ending date- 12 Mar (±27) and the duration- 27 days (± 21).

The Suvarnarekha Minor Basin (drainage area: 32,647 km^2; annual PE: 1416.8 mm; mean annual rainfall: 1509.4 mm- winter 3.3%, summer 10.3%, monsoon 76.0% and post-monsoon 10.4%; and annual rainy days: 79.1)- The river originates in the Jharkhand state, flows 395 km through the states of Jharkhand, Orissa and West Bengal before falling into the Bay of Bengal. The Kanchi, the Karffari and the Karkai are its important tributaries. There are 4 raingauges in the basin- rainfall record for *Ranchi* is available from 1848, for *Balasore* from 1859, for *Chaibassa* from 1869 and *Baripada* from 1871. Longest rainfall sequence for the basin could be developed for the period 1848-2005. The major epochs in annual rainfall fluctuation are: 1859-1900 wet, 1901-1939 dry, 1940-1952 wet and 1953-2003 dry.

Yearly value of the wet season parameters for the period 1848-2005 is given in Table 8(e) and their time series plots are shown in Figure 9(e). The mean (±1 σ days) of the parameters are: starting date-12 May (±24), ending date- 16 October (±15) and the duration- 158 days (± 28). The distribution of ending date and duration is normal whereas that of starting date significantly different from normal. During a normal wet season rainfall (P) is 1275.0 mm and potential evapotranspiration (PE) 641.5 mm which shows excess rainfall of 633.5 mm available in the basin.

In 151 years (1848-1851& 1859-2005) period there were 18 years with two wet seasons (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date- 18 Feb (±20), ending date- 7 Mar (±22) and the duration- 18 days (± 17).

The Brahmani Minor Basin (drainage area: 50,581 km^2; annual PE: 1539.9 mm; mean annual rainfall: 1434.3 mm – winter 3.4%, summer 8.4%, monsoon 79.5% and post-monsoon 8.7%; and annual rainy days: 76.3)- The river originates in the Ranchi district (Jharkhand) at an elevation of 600 m. It flows 800 km through the Jharkhand, the Chhattisgarh and the Orissa states before joining Bay of Bengal. The Kara, the Sankhad and the Tikra are the important tributaries. There are 3 raingauges (*Rajgangapur, Keonjhargarh and Dhenkanal*) in the basin with data from 1871. Longest rainfall sequence for the basin is prepared for the period 1871-2005 The major epochs in annual rainfall fluctuation are: 1871-1924 dry, 1925-1947 wet and 1948-2003 dry.

Yearly value of the wet season parameters for the period 1871-2005 is given in Table 8(f) and their time series plots are shown in Figure 9(f). The mean (±1 σ days) of the parameters are: starting date-21 May (±18), ending date- 11 October (±16) and the duration- 144 days (± 25). The distribution of ending date is normal whereas that of starting date and duration significantly different from normal. During a normal wet season rainfall (P) is 1209.3 mm and potential evapotranspiration (PE) 595.1 mm which shows excess rainfall of 614.2 mm available in the basin.

In 135 years (1871-2005) period there were eight years with two wet seasons (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date- 12 Feb (±2), ending date- 6 Mar (±22) and the duration- 23 days (± 13).

The Penner Minor Basin (drainage area: 96,538 km^2; annual PE: 1807.3mm; mean annual rainfall: 870.2mm- winter 2.4%, summer 8.3%, monsoon 42.3% and post-monsoon 47.0%; and annual rainy days: 45.6)- The river rises in the Chennakesava Hills (Karnataka state), flows through the Karnataka, the Andhra Pradesh and the Tamil Nadu states for 597 km and falls into the Bay of Bengal. The tributaries are the Jayamangdi, the Kunderu, the Sagileru, Chitravati, Papagni and Cheyyeru. Earliest rainfall record for *Chennai* is available from 1813; *Cuddapah* was included in 1852, *Nellore* in 1863, *Ongole* and *Chitradurg* in 1870 and *Anatapur* in 1871. Longest rainfall sequence for the basin could be developed for the period 1813-2005. The major epochs in annual rainfall fluctuation are: 1813-1869 dry, 1870-1925 wet, 1926-1954 dry and 1955-2003 wet.

Yearly value of the wet season parameters for the period 1813-2005 is given in Table 8(g) and their time series plots are shown in Figure 9(g). The mean (±1 σ days) of the parameters are: starting date-21 July (±43), ending date- 24 November (±21) and the duration- 127 days (± 48). The distribution of ending date and duration is normal whereas that of starting date suffers from positive skewness. During a normal wet season rainfall (P) is 620.1 mm and potential evapotranspiration (PE) 584.7 mm which shows deficit rainfall of 35.4 mm available in the basin.

In 193 years (1813-2005) period there were 35 years with two wet seasons and in that there were 3 years with 3 wet seasons. The mean (±1 σ days) of the parameters of the second wet season are: starting date- 9 Jun (±36), ending date- 13 Jul (±50) and the duration- 34 days (± 29), and that of third season: starting date- 30 Nov (±19), ending date- 16 Dec (±7) and the duration- 16 days (±12).

The Palar & Ponnaiyar Minor Basin (drainage area: 48,084 km^2; annual PE: 1590.8 mm; mean annual rainfall: 1194.4 mm- winter 3.9%, summer 6.9%, monsoon 36.4% and post-monsoon 52.8%; and annual rainy days: 56.1)- The system of Palar and Ponnaiyar rivers drains 48,084 sq. km area in the Karnataka, the Andhra Pradesh and the Tamilnadu states. There are 3 raingauges in the catchment. Earliest rainfall record for *Cuddalore* is available from 1853; *Vellore and Chingleput* were included in 1863. The longest rainfall sequence for the basin system of the two rivers could be developed for the period 1853-2005. The major epochs in annual rainfall fluctuation are: 1863-1883 dry, 1884-1925 wet, 1926-1953 dry, 1954-1978 wet, 1979-1992 dry and 1993-2003 wet.

Yearly value of the wet season parameters for the period 1853-2005 is given in Table 8(h) and their time series plots are shown in Figure 9(h). The mean (±1 σ days) of the parameters are: starting date-3 July (±32), ending date- 12 December (±21) and the duration- 163 days (± 39). Starting date is normaly distributed while ending date is significantly different from normal. Duration suffers from positive kurtosis. During a normal wet season rainfall (P) is 944.9 mm and potential evapotranspiration (PE) 673.2 mm which shows excess rainfall of 271.7 mm available in the basin.

In 145 years (1853-54 & 1863-2005) there were 11 years with two wet seasons (Table 11). The mean (±1 σ days) of the parameters of the second wet season are: starting date- 15 Mar (±2), ending date- 30 Mar (±54) and the duration- 15 days (± 9).

The Vaigai Minor Basin (drainage area: 39,522 km^2; annual PE: 1793.5mm; mean annual rainfall: 904.2mm- winter 5.7%, summer 15.5%, monsoon 28.3% and post-monsoon 50.5%; and annual rainy days: 53.0)- The catchment area of the Vagai River is confined to Tamilnadu state. Earliest rainfall record for *Madurai* is available from 1846; *Tirunelvelli* was included in 1854; *Pudukottai, Nagarcoil and Ramnathapuram* in 1871. Longest rainfall sequence for the basin could be developed for the period 1846-2005. The major epochs in annual rainfall fluctuation are: 1855-1918 dry, 1919-1984 wet and 1985-2003 dry.

Yearly value of the wet season parameters for the period 1846-2005 is given in Table 8(i) and their time series plots are shown in Figure 9(i). The mean (±1 σ days) of the parameters are: starting date-14 August (±50), ending date- 9 December (±21) and the duration- 118 days (± 54). Ending date and duration are significantly different from normal whereas starting date is of having significant negative skewness. During a normal wet season rainfall (P) is 544.5 mm and potential evapotranspiration (PE) 540.6 mm which shows excess rainfall of 3.9 mm available in the basin.

In 160 years (1846-2005) period there were 88 years with 2 wet seasons, in that there were 4 years with 3 wet seasons and in that there was one year with four wet seasons. The mean (±1 σ days) of the parameters of the second wet season are: starting date- 26 Apr (±28), ending date- 27 May (±32) and the duration- 31 days (± 21) and that of third wet season: starting date- 3 Aug (±16), ending date- 8 Aug (±14) and duration- 5 days (±5). In 1954 the fourth wet season started on 10 December and ended on 20 December giving rise to duration of 11 days.

The West Coast Drainage System (drainage area: 117,962 km^2; annual PE: 1564.3mm; mean annual rainfall: 2528.5mm- winter 0.7%, summer 9.0%, monsoon 77.4% and post-monsoon 12.9%; and annual rainy days: 102.2)– Twenty five small rivers originate in the Sahayadri Range and flow into the Arabian Sea. On any small size map it's difficult to delineate the catchment's area of different rivers. The combined area of all the catchments of the Sahayadri is referred to as the West Coast Drainage System (WCDS). Earliest record of Mumbai station in the drainage system is available from 1817; Tiruvanthapuram was included in 1838 and Cochin 1842. The data for all 21 raingauges of the selected network (*Mumbai, Trivandrum, Fort Cochin, Thana, Ratnagiri, Mangalore, Cannanore, Kozhokode, Goa, Karwar, Surat, Palghat, Ahwa, Bulsar, Alibag, Ponnani, Trichur, Kottayam, Haripad, Punalur and Nagarcoil*) is available from 1871. The longest monsoon rainfall series for the WCDS could be developed for the period 1838-2005. The major epochs in annual rainfall fluctuation are: 1838-1911 dry, 1912-1964 wet and 1965-2003 dry.

Yearly value of the wet season parameters for the period 1838-2005 is given in Table 9 and their time series plots are shown in Figure 10. The mean (±1 σ days) of the parameters are: starting date-30 April (±16), ending date- 11 November (±15) and the duration- 196 days (± 20). The distribution of ending date is normal whereas that of starting date and duration suffers from positive kurtosis. During a normal wet season rainfall (P) is 2292.9 mm and potential evapotranspiration (PE) 764.7 mm which shows excess rainfall of 1528.2 mm available in the basin system.

The Whole India (geographical area: 3,188,111 km^2; annual PE: 1519.4mm; mean annual rainfall: 1165.9mm- winter 2.7%, summer 8.7%, monsoon 77.8% and post-monsoon 10.8%; annual rainy days: 57.4)- As general information longest monthly, seasonal and annual rainfall series have also been prepared for the whole country. Details of the available rainfall data of 316 stations are given in '*Rainfall Data Used*'. The longest rainfall series for the whole country could be developed for the period 1813-2005. The major epochs in annual rainfall fluctuation are: 1813-1863 dry, 1864-1894 wet, 1895-1941 dry, 1942-1964 wet, 1965-1992 dry, 1993-1999 wet and 2000-2004 dry.

Yearly value of the wet season parameters for the period 1813-2005 is given in Table 10 and their time series plots are shown in Figure 11. The mean (±1 σ days) of the parameters are: starting date-30 May (±10), ending date- 11 October (±14) and the duration- 135 days (± 19). The distribution of ending date and duration is normal whereas that of starting date suffers from significant negative skewness. During a normal wet season rainfall (P) is 912.7 mm and potential evapotranspiration (PE) 582.48 mm which shows excess rainfall of 330.22 mm available over the country.

5.2 CORRELATION MATRIX FOR THE PARAMETERS OF THE WET SEASON

The product-moment correlation coefficient (CC) between pair of parameters of the wet season (starting date, ending date, duration and seasonal rainfall) for different basins and the whole country is given in Table 12. In general, the starting date is highly correlated with the duration which is highly correlated with ending date and the rainfall amount. But the starting date is weakly correlated with the ending date. Early start of wet season provides an indication that the season will be of longer duration and there will be good rainfall activities. It may be noted that results of application of this statistical relationship can be realized after trial of large number of years rather than on year to year basis. Generally, the correlation between the ending date and the duration is the highest and that between starting date and ending date lowest.

5.3 CORRELATION BETWEEN WET SEASON PARAMETERS OVER THE WHOLE COUNTRY AND RESPECTIVE PARMETERS OF THE INDIVIDUAL BASINS

In general seasonal rainfall over the whole country is highly correlated with the rainfall of individual basins (Table 13). Starting date, ending date and duration of the wet season over the country is significantly correlated with the respective parameter over Godavari major basin (and its minor basins), Krishna major basin (and its minor basins), Narmada, Tapi and Mahanadi major basins and Kasai, Suvarnarekha and Brahmani minor basins. The parameters of the wet season over Ganga Major and Indus Major Basin have shown significant correlation with the respective parameters of the whole country but the minor basins of these major basins did not show spatially coherent significant correlation with the whole country.

6. SUMMARY AND CONCLUSION

The present report documents the data, display and description of statistical and fluctuation characteristics of the parameters of the wet season over different basins of India. The chief characteristics features are:

1. Excluding south peninsula, northeast and extreme northern India, over remaining parts of the country starting and ending dates of the wet season are in close agreement with onset and withdrawal dates, respectively, of the summer monsoon (IMD, 1943).
2. Average standard deviation of the starting date of the wet season across the country is ±10 days that of ending date ±14 days and that of duration ±19 days.
3. For majority of river basins probability distribution of starting date, ending date and duration of the wet season is near-normal. However, it would be

interesting to know the unified probability distribution function which is the best fit for these parameters across the country which can be taken up as separate study.

4. There is no significant long term trend in the parameters of the wet season for any of the basins. But each one of them displayed domination of inter-decadal fluctuation characterized by short term rising and declining trends.

5. The starting date is highly correlated with the duration and the rainfall amount for different basins and the whole country. Generally, the correlation between the starting date and the duration is the highest. But the starting date and the ending date is weakly correlated.

6. On an average the wet season contributes about 78% rainfall to the annual total. Spatially it varies from 55% in the Chenab Basin to 94% in the Tista Basin.

7. Over large number of basins there were two wet seasons in considerable number of years, some times there were three wet seasons and in 1954 over Vaigai there were four wet seasons. Details of multiple wet seasons require a separate study.

8. For the country as a single unit 63.8% of the wet season rainfall evaporates and 36.2% becomes available for soil moisture storage, ground water recharge and runoff.

Fluctuation characteristics of the wet season and rainfall over different basins based on longest available instrumental observations documented in this report are expected to provide vital information to water resource managers including those working for '*interlinking of rivers*' program of the country. Further research in this area could be to refine this start and cessation dates of the wet season using shorter period rainfall data such as daily, pentad or weekly. Of course the shorter period rainfall data is available only from 1901 onwards.

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Figure 1: Location of 316 rainguage stations and boundary of major and minor river Basins of the country

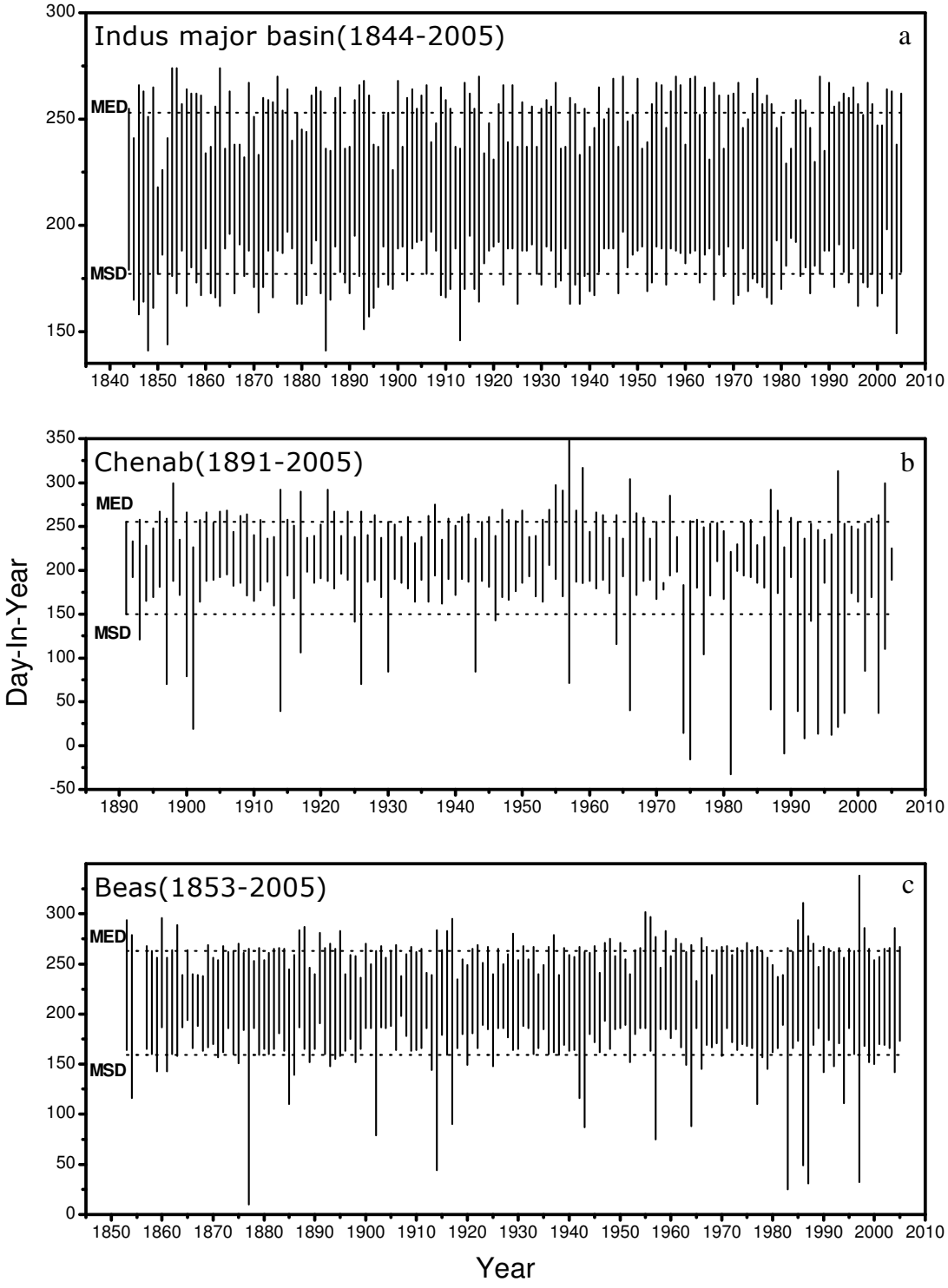

Figure 2 : Time Series plots of the starting date, ending date and duration of the wet season over (a) Indus major; (b) Chenab; & (c) Beas minor basins.
(-ve Day-In-Year indicates day in the previous year)

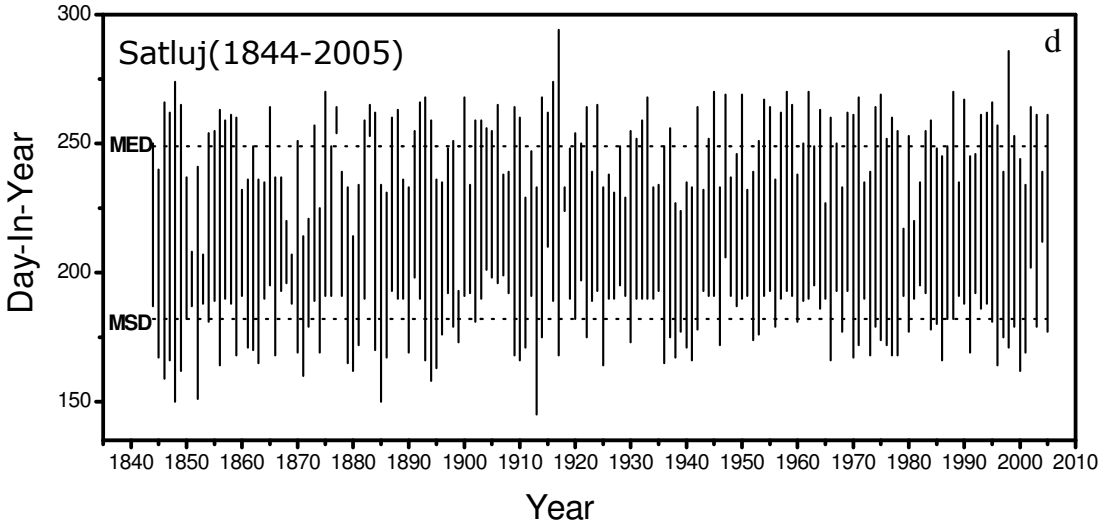

Figure 2: Contd…(d) Satluj minor basins.

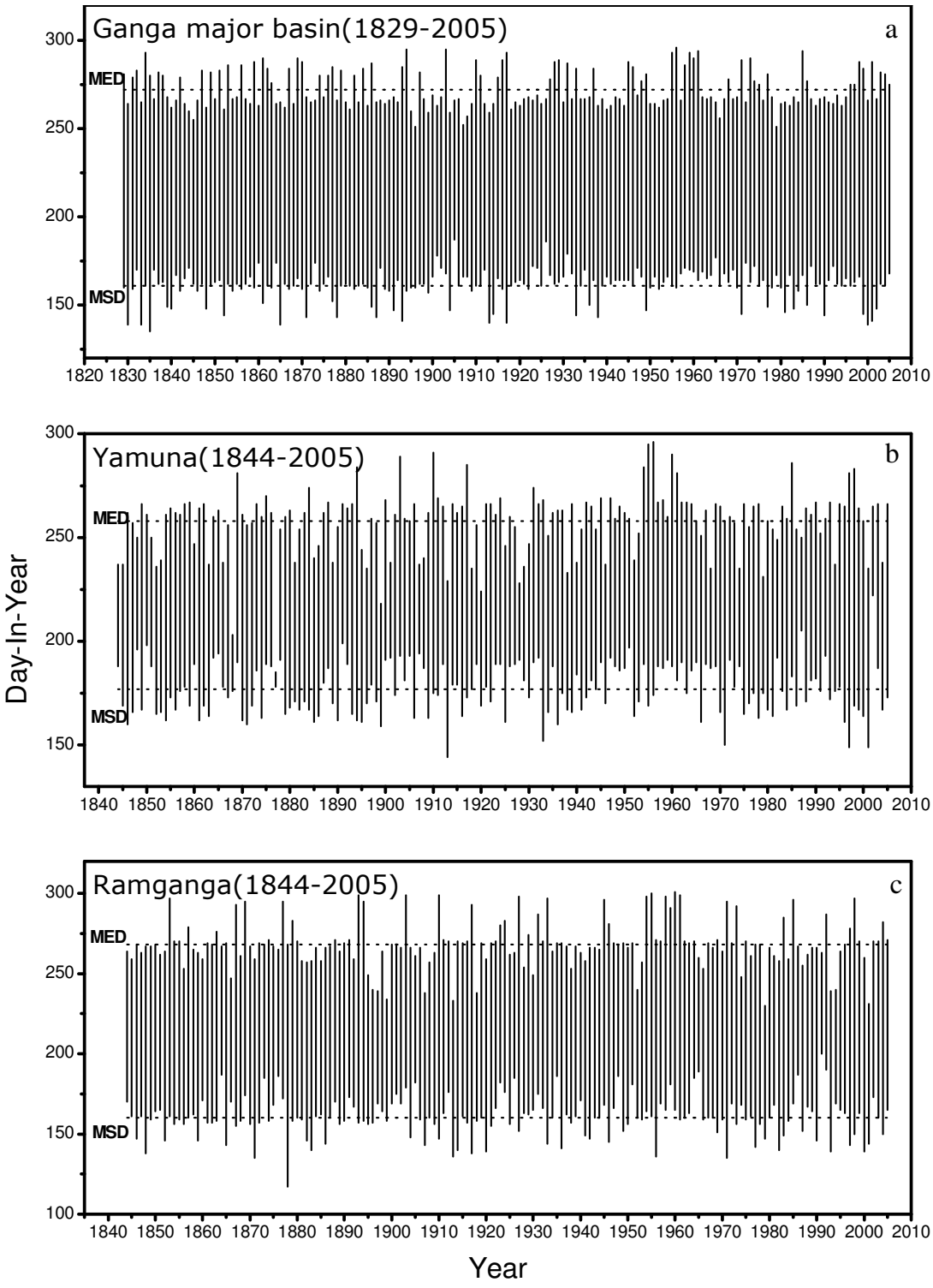

Figure 3 : Time Series plots of the starting date, ending date and duration of the wet season over (a) Ganga major ; (b) Yamuna; & (c) Ramganga minor basins.

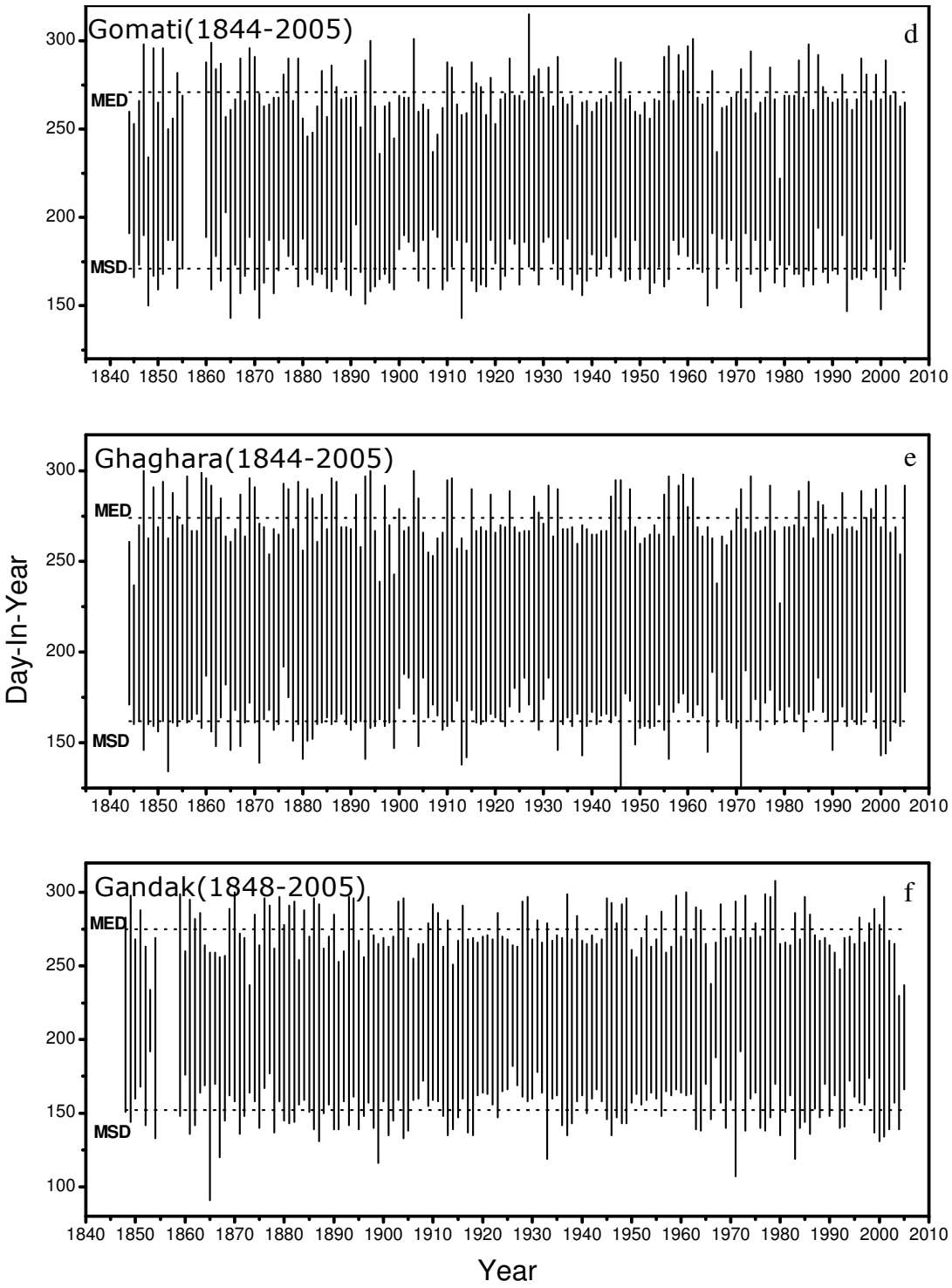

Figure 3 : contd… (d) Gomati; (e) Ghaghara & (f) Gandak minor basins

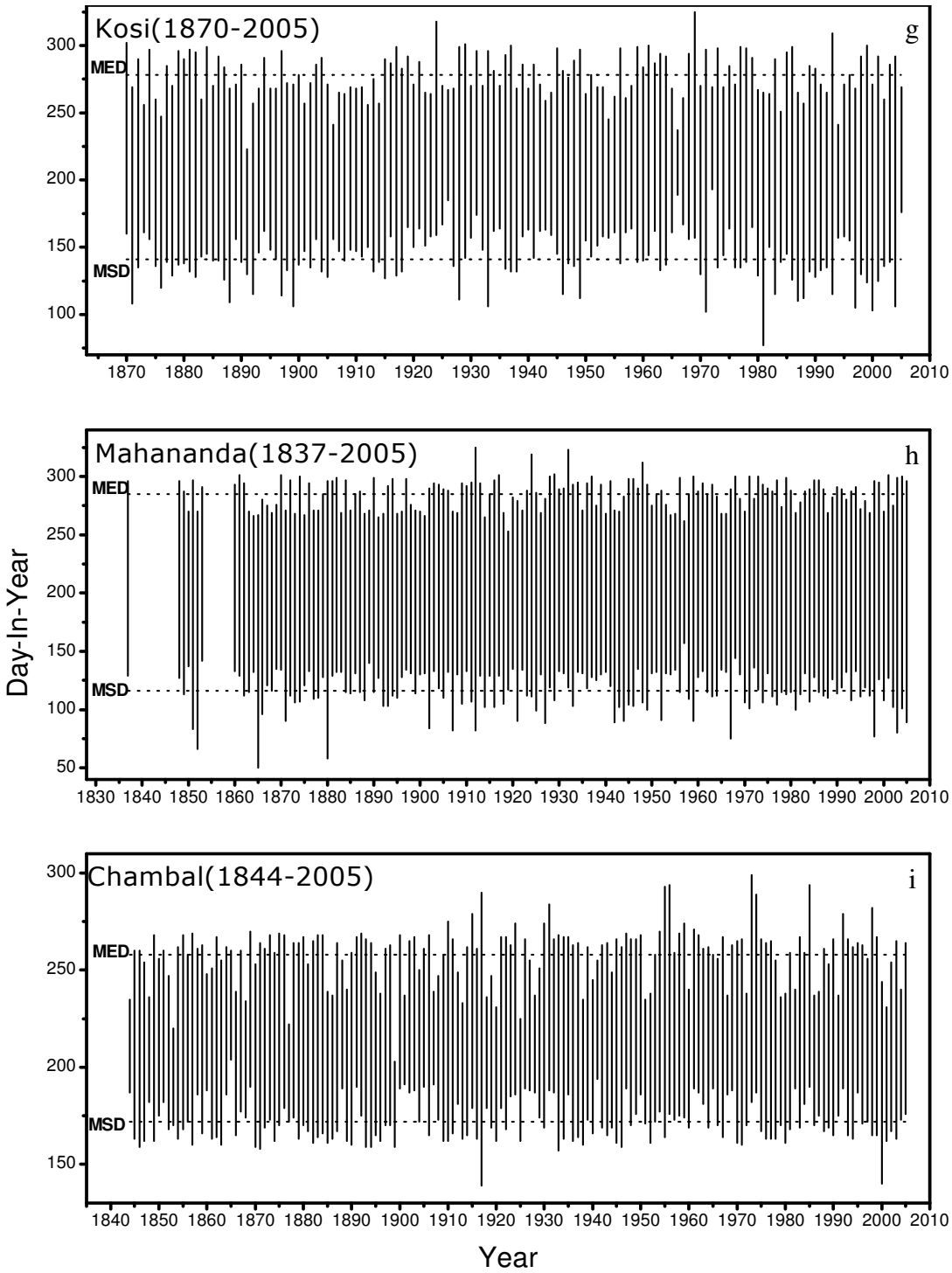

Figure 3 : contd… (g)Kosi; (h) Mahananda; & (i) Chambal minor basins

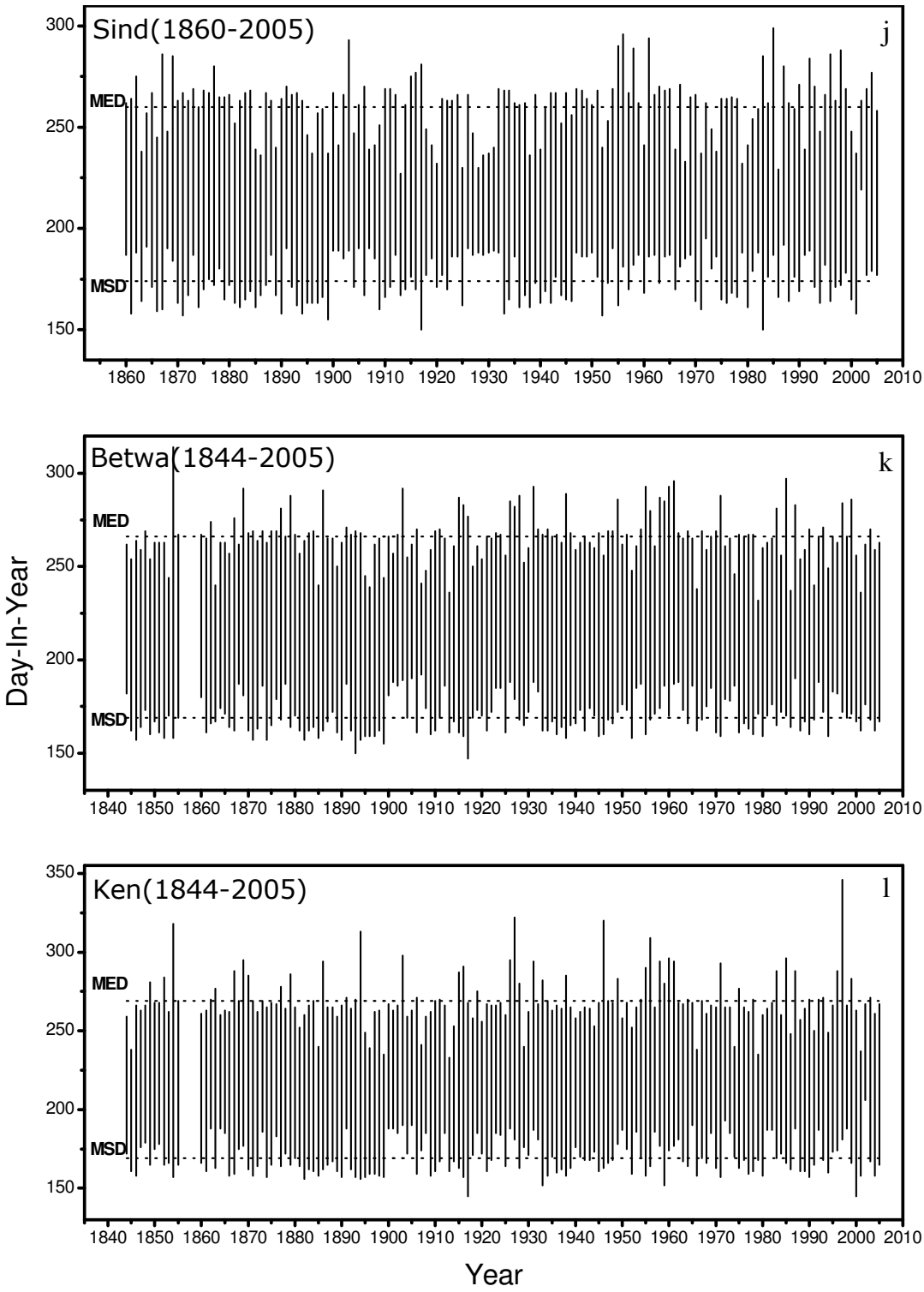

Figure 3 : contd… (j) Sind; (k) Betwa & (l) Ken minor basins.

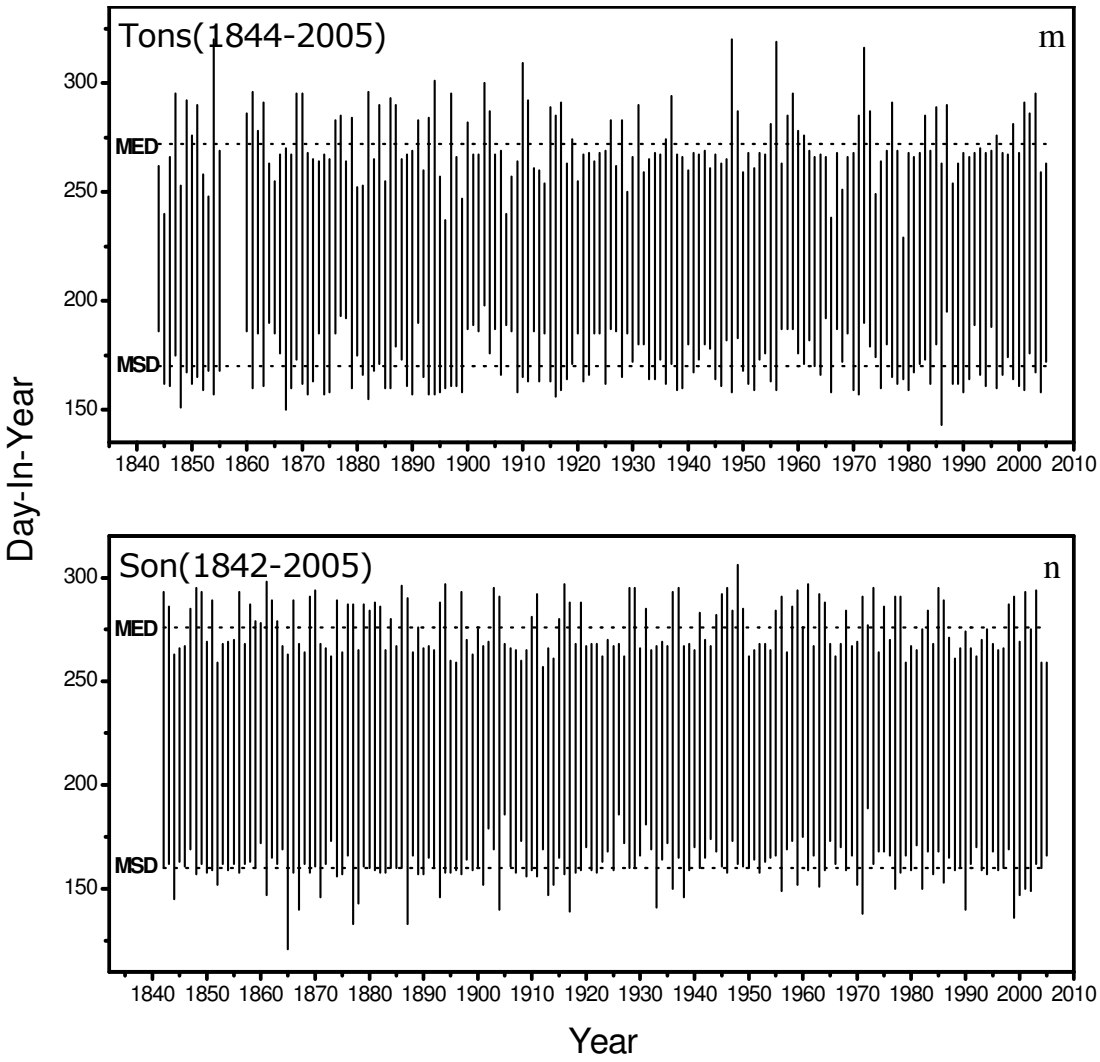

Figure 3 : contd… (m) Tons; & (n) Son minor basins.

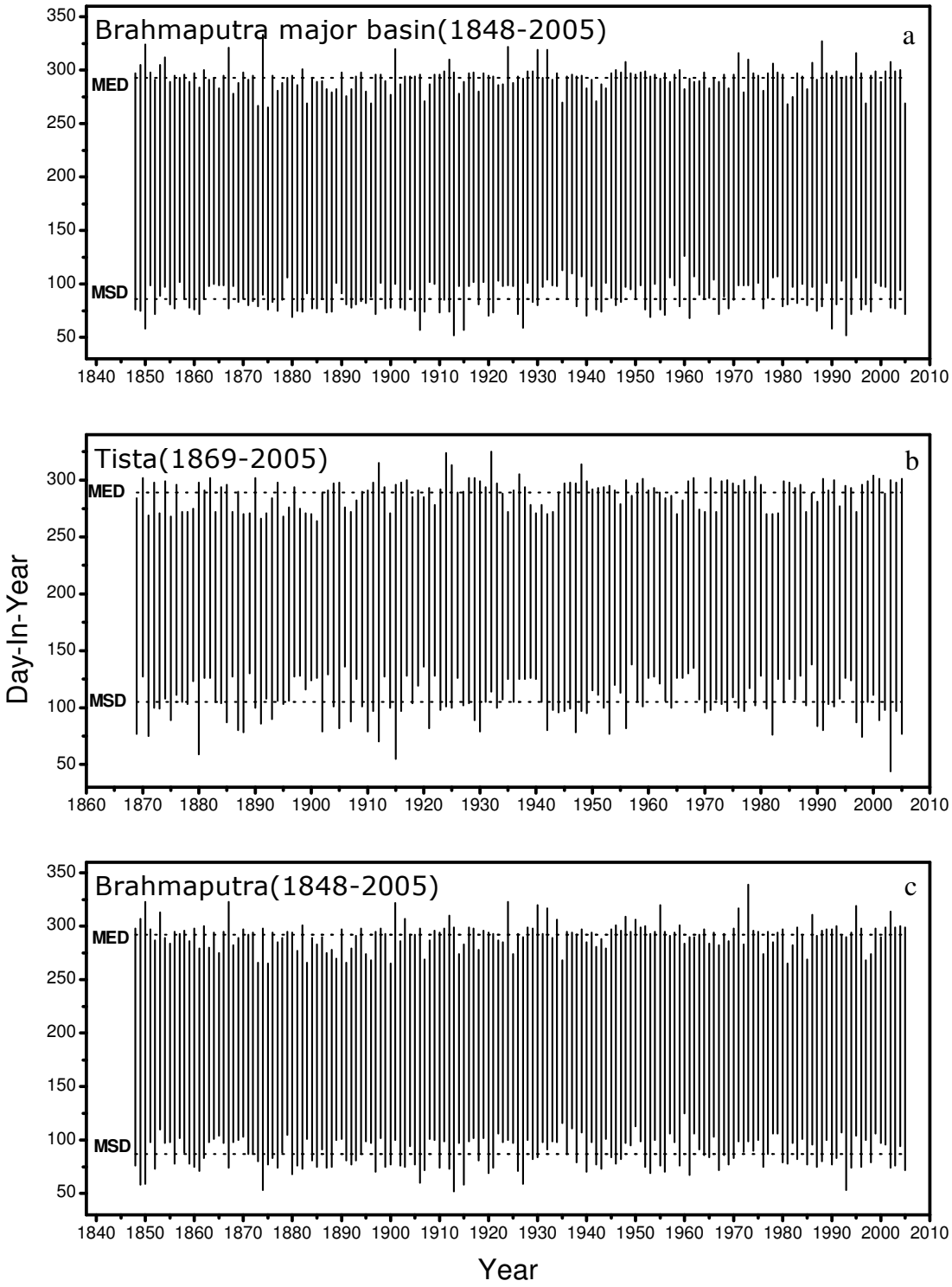

Figure 4 : Time Series plots of the starting date, ending date and duration of the wet season over (a) Brahmaputra major ; (b) Tista; & (c) Brahmaputra minor basins

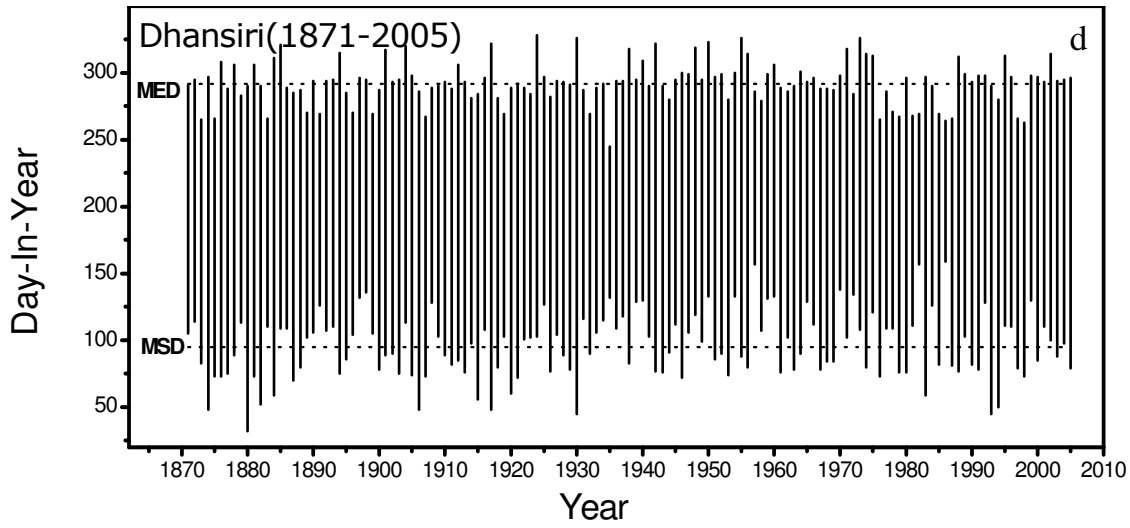

Figure 4 : contd… (d) Dhansiri minor basin

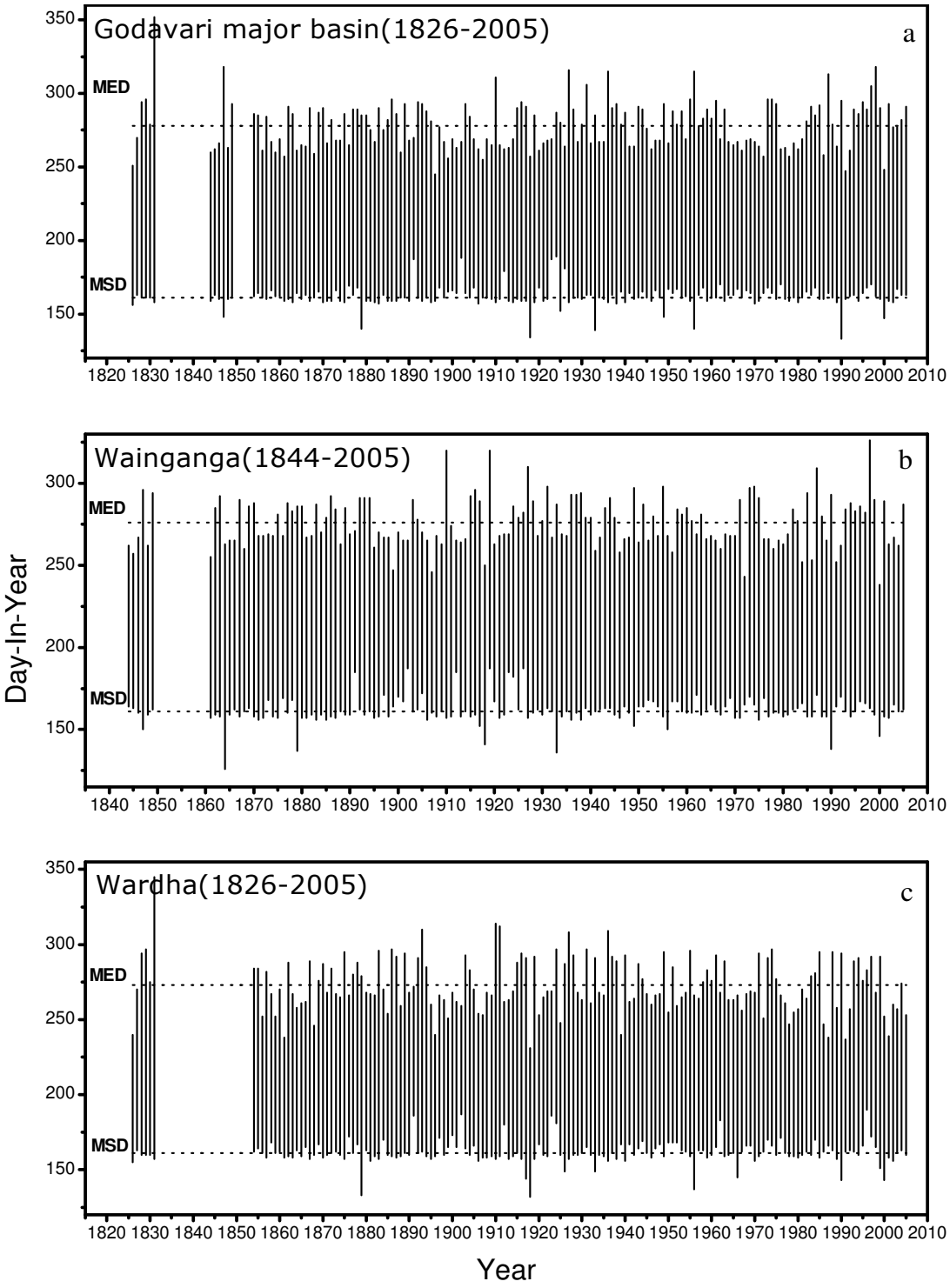

Figure 5 : Time Series plots of the starting date, ending date and duration of the wet season over (a) Godavari major ; (b) Wainganga; & (c) Wardha minor basins

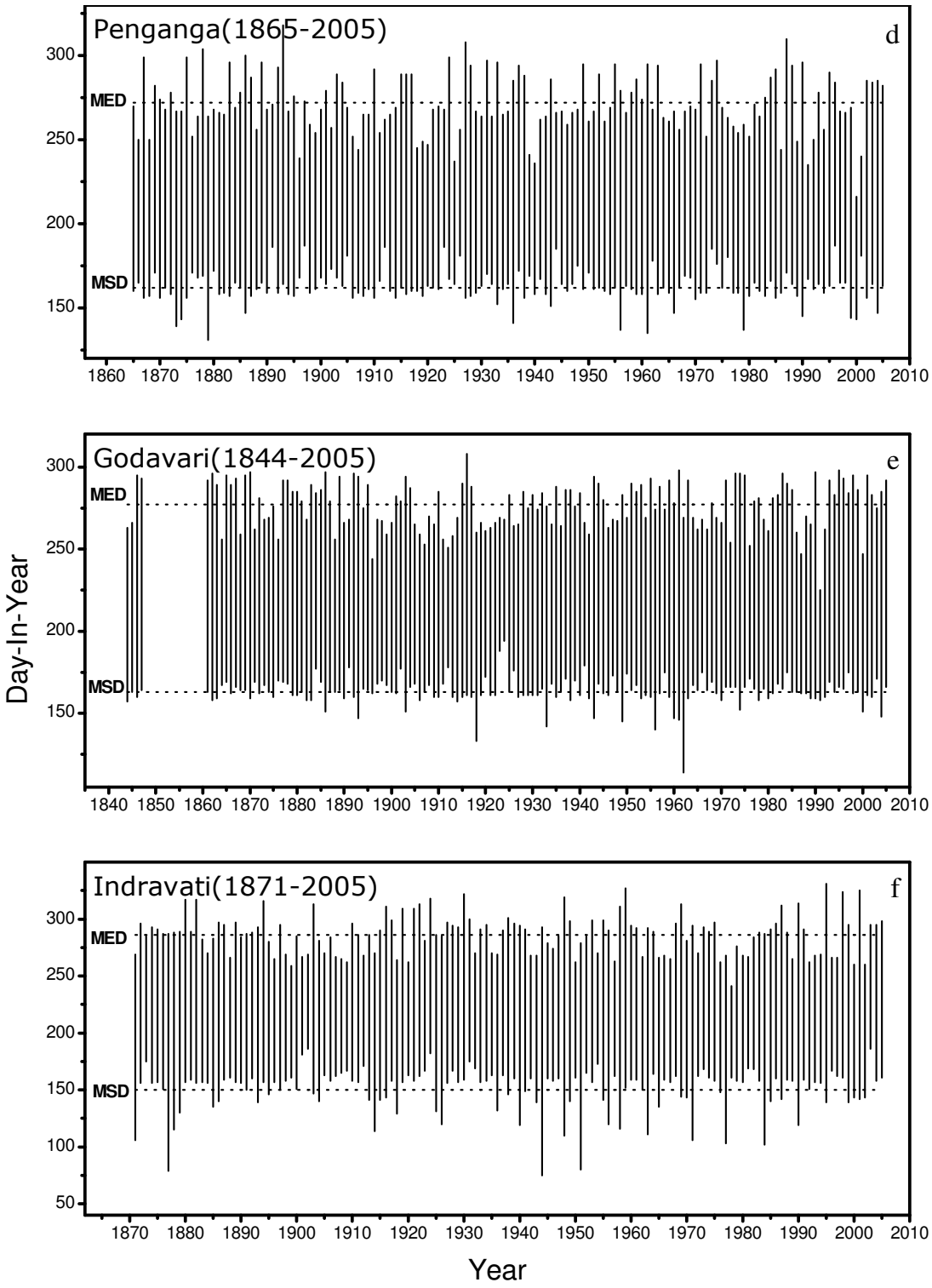

Figure 5 : contd… (d)Penganga; (e) Godavari; & (f) Indravati minor basin

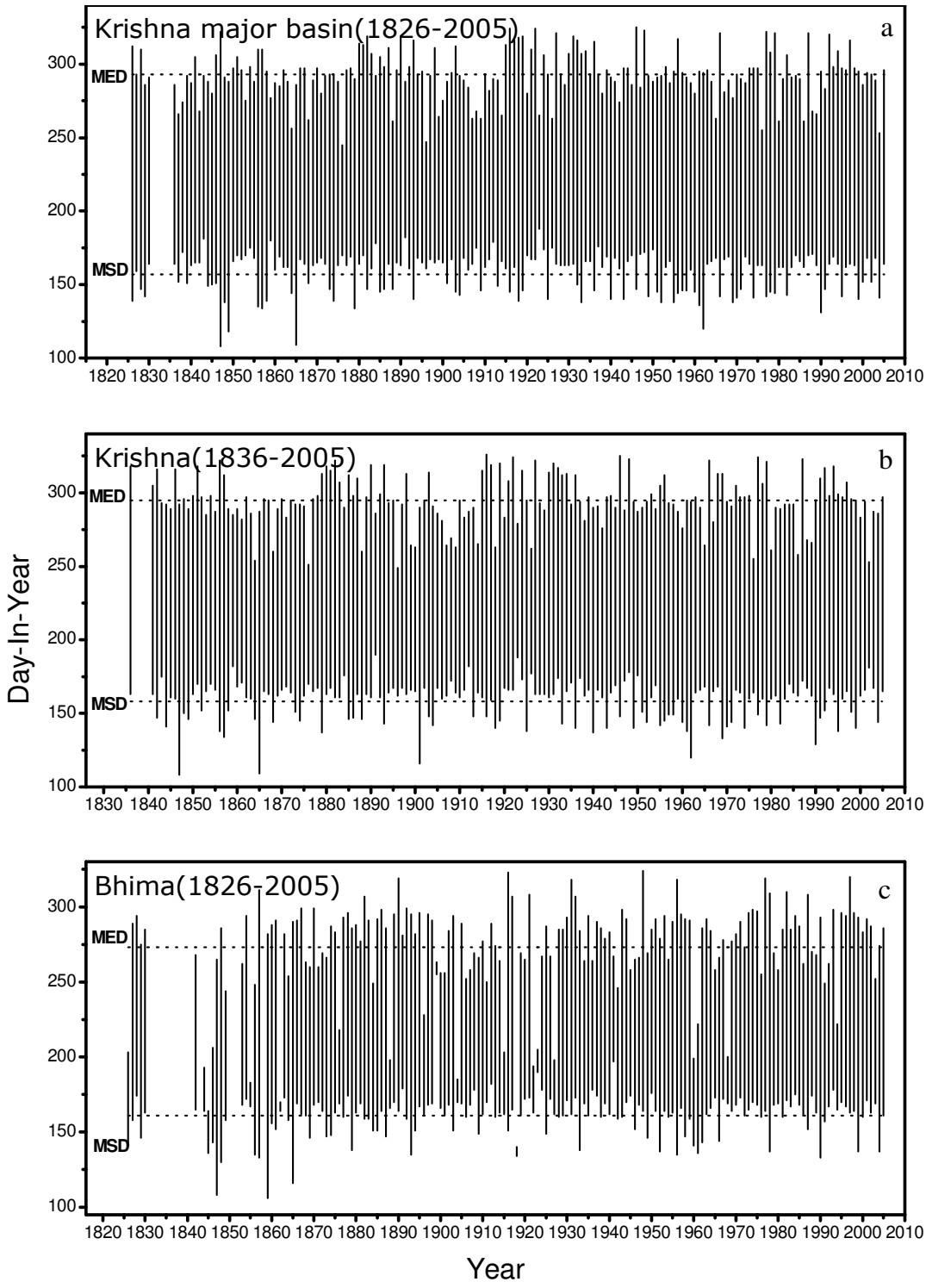

Figure 6 : Time Series plots of the starting date, ending date and duration of the wet season over (a) Krishna major ; (b) Krishna; & (c) Bhima minor basins

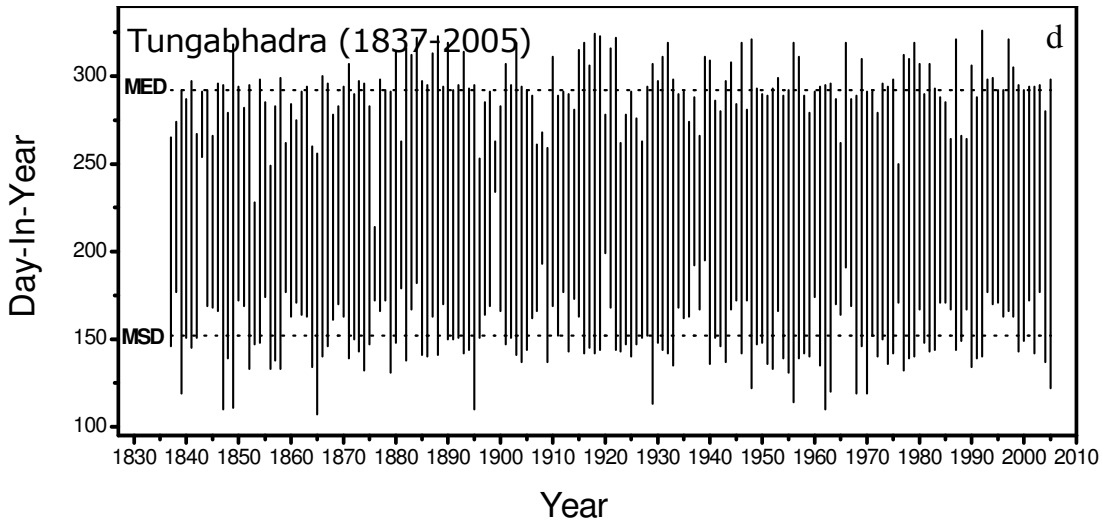

Figure 6 : contd… (d) Tungabhadra minor basin

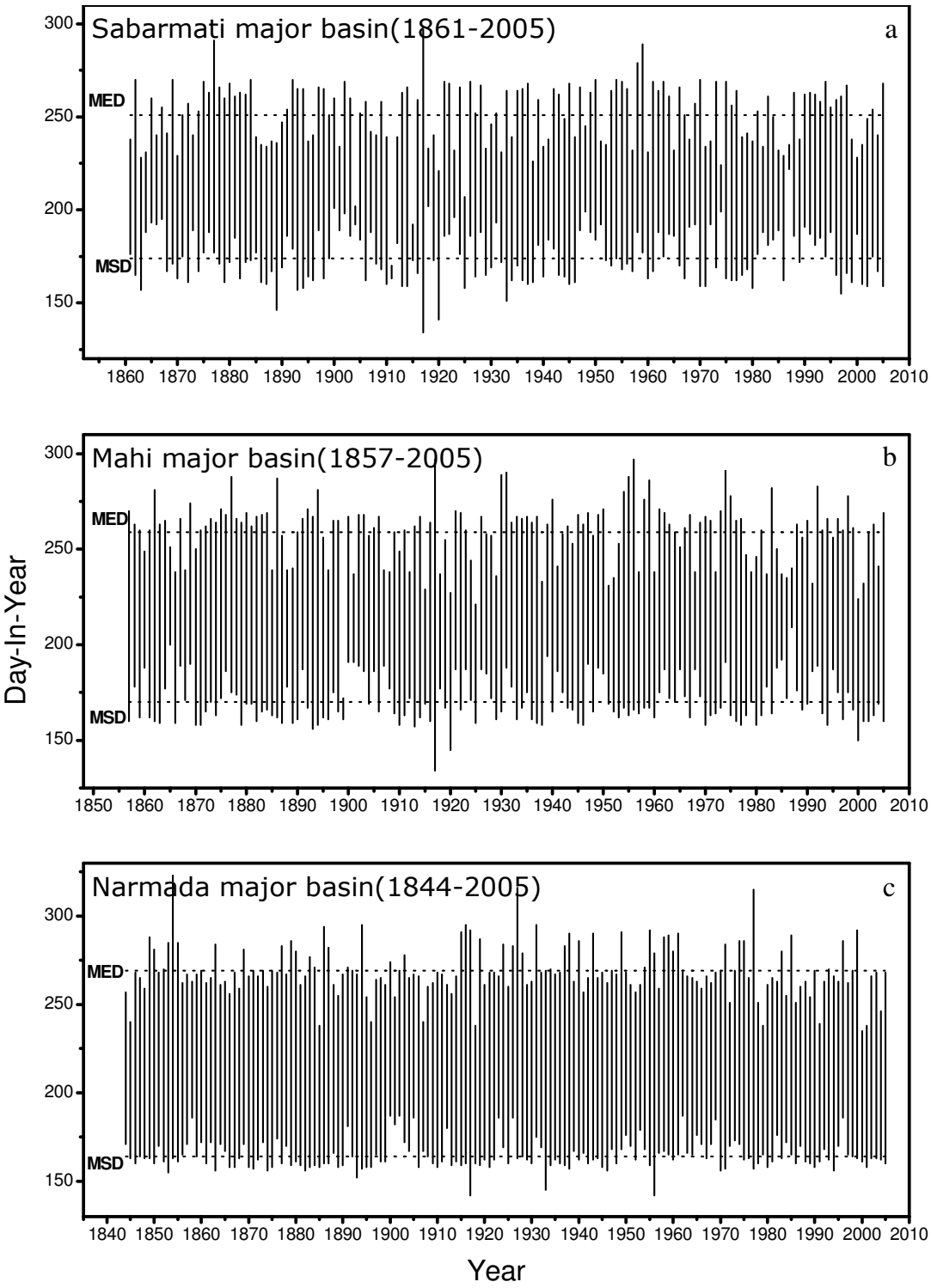

Figure 7 : Time Series plots of the starting date, ending date and duration of the wet season over (a) Sabarmati ; (b) Mahi; & (c) Narmada major basins

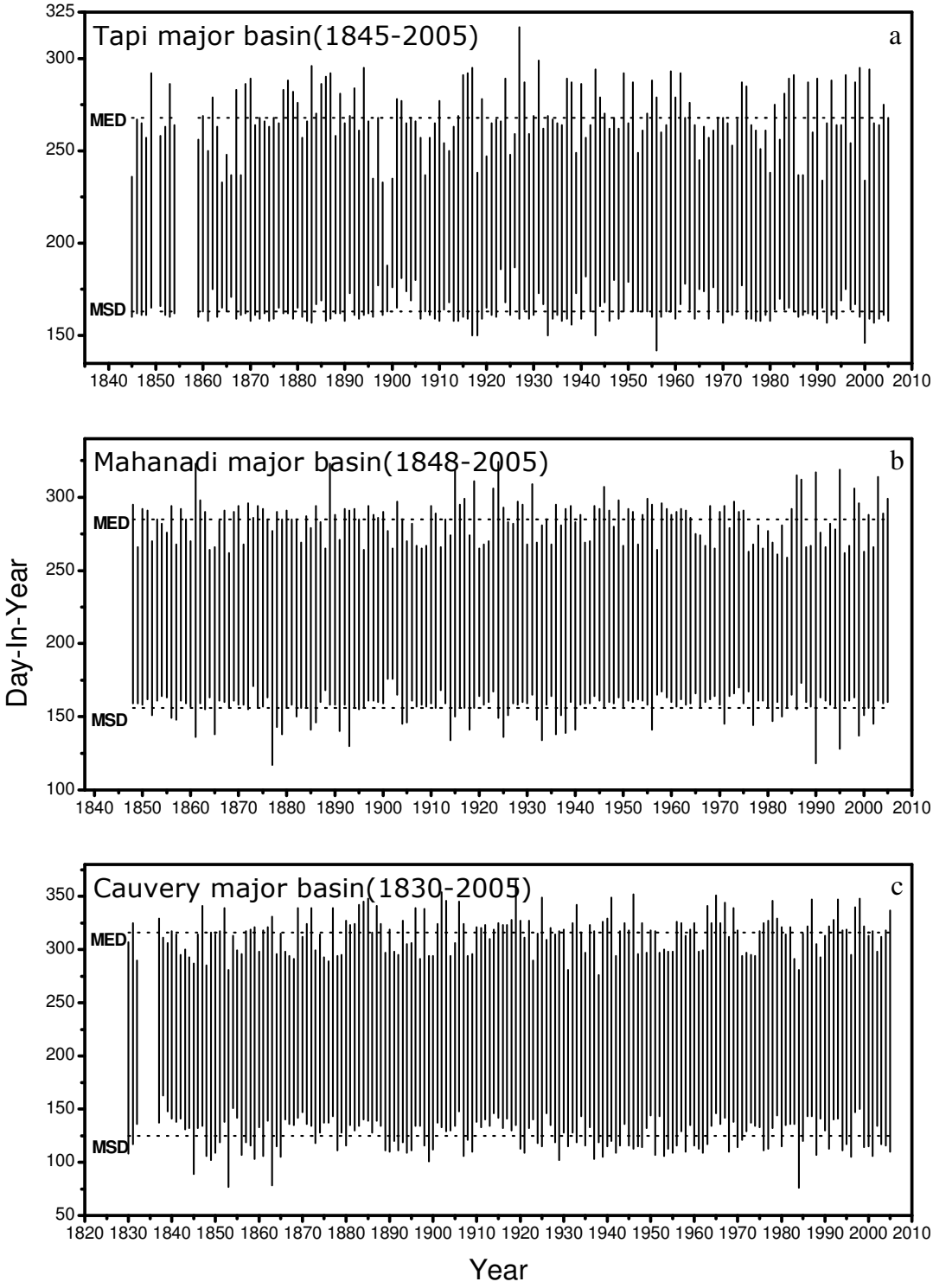

Figure 8 : Time Series plots of the starting date, ending date and duration of the wet season over (a) Tapi ; (b) Mahanadi; & (c) Cauvery major basins

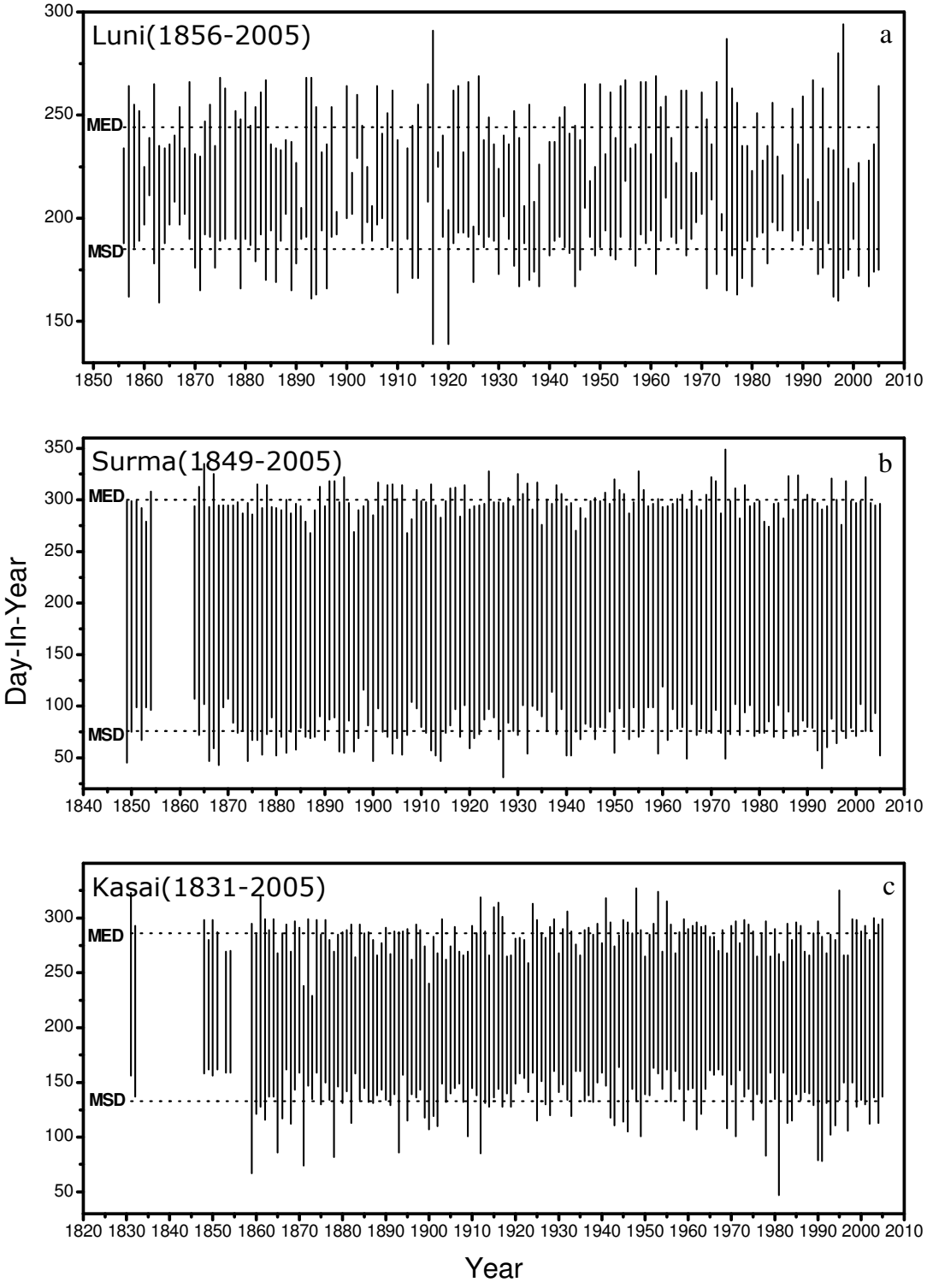

Figure 9 : Time Series plots of the starting date, ending date and duration of the wet season over (a) Lunii ; (b) Surma; & (c) Kasai independent basins

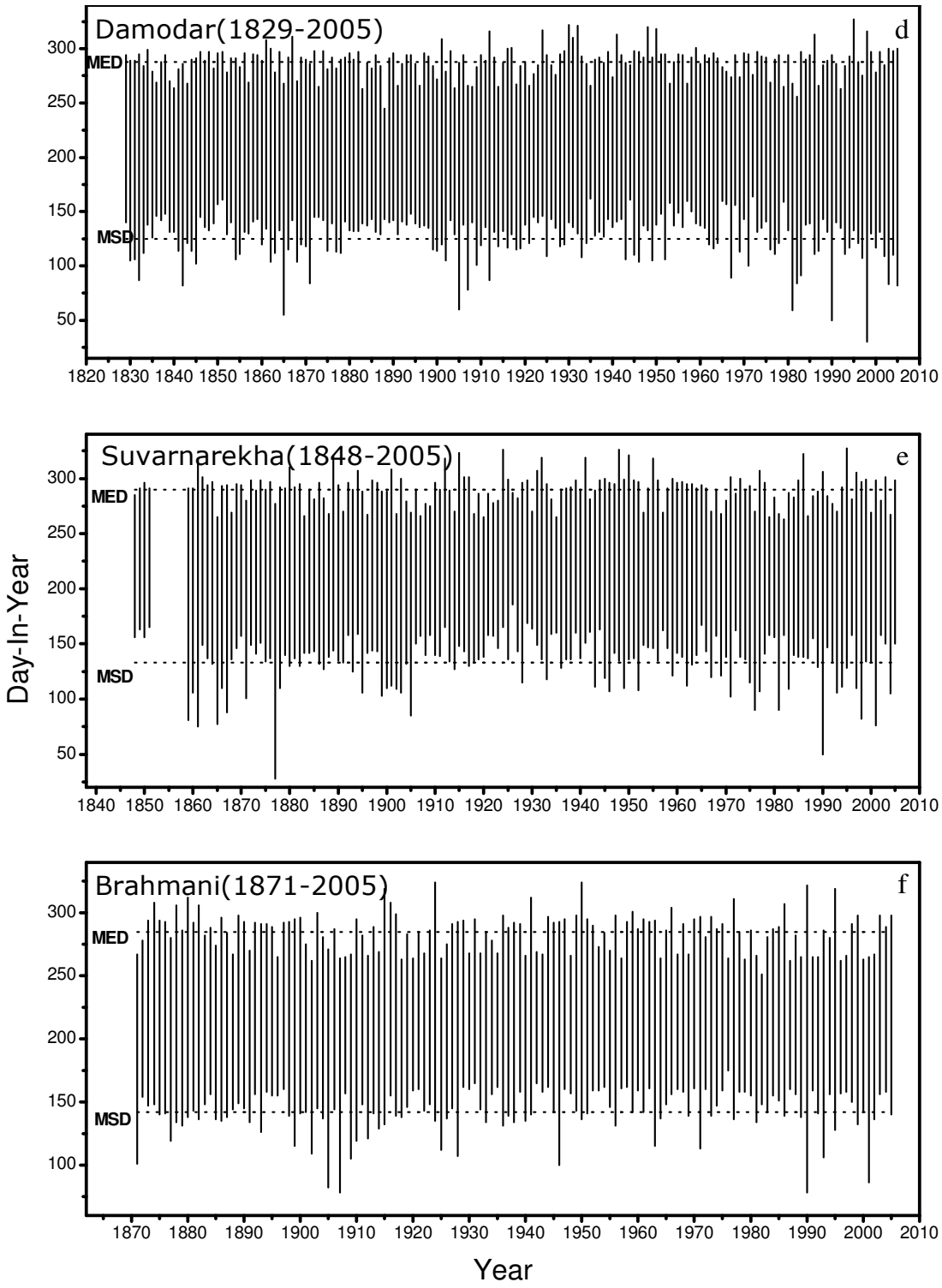

Figure 9 : contd (d) Damodar; (e) Suvarnarekha; & (f) Brahmani independent basins

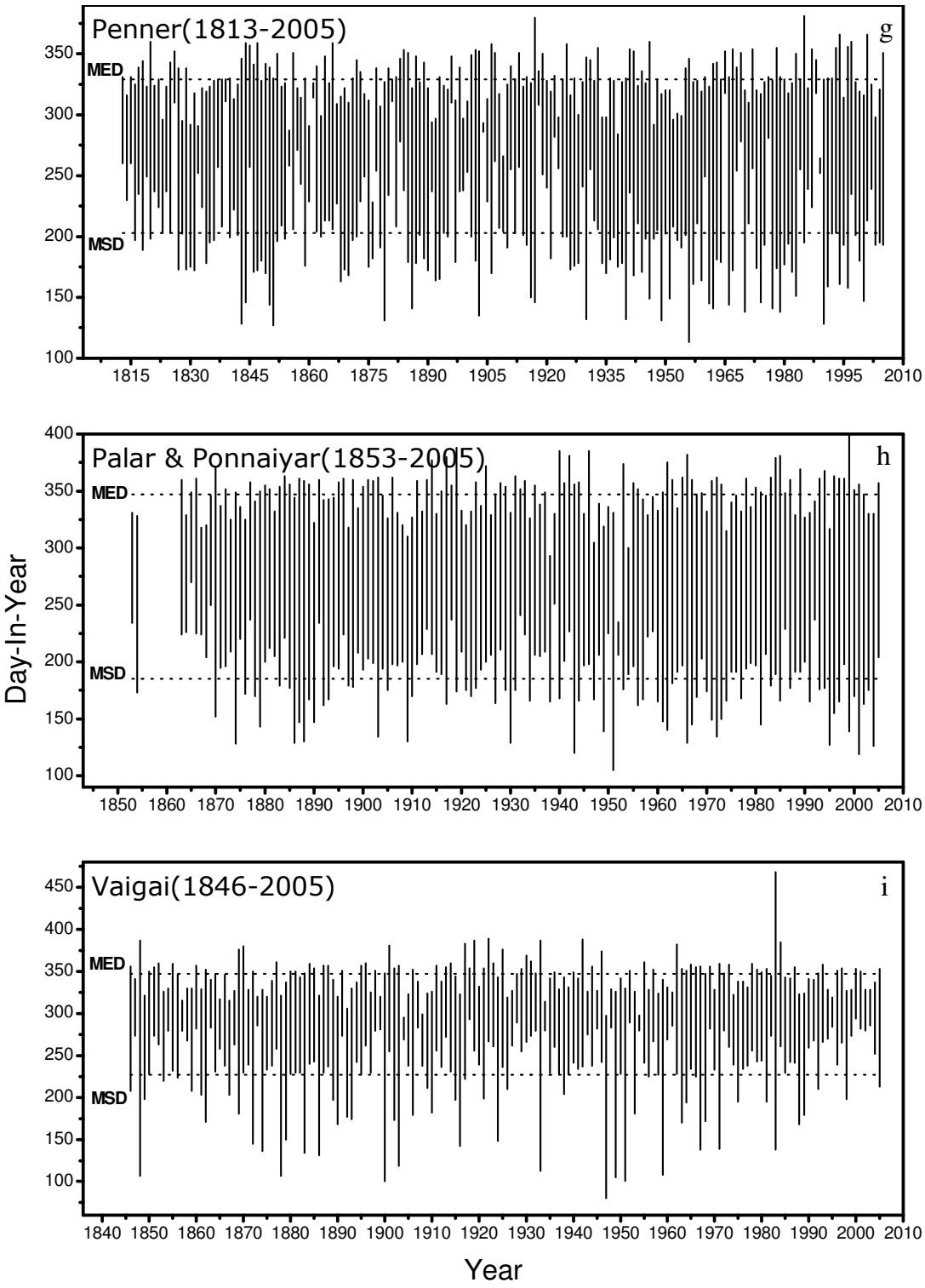

Figure 9 : contd… (g) Penner (h) Palar & Ponnaiyar; & (i) Vaigai independent basins

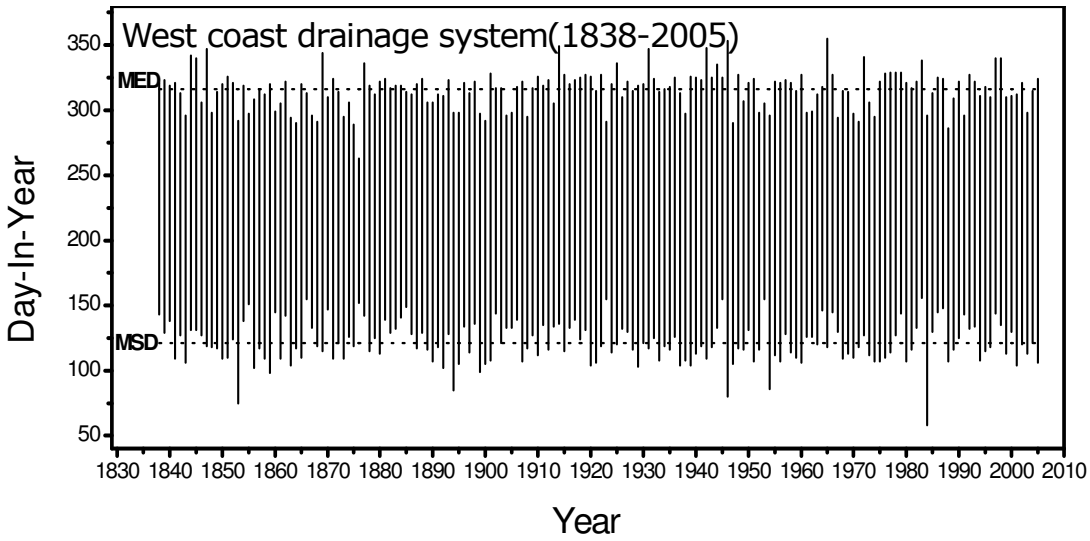

Figure 10 : Time Series plots of the starting date, ending date and duration of the wet season over West coast drainage system.

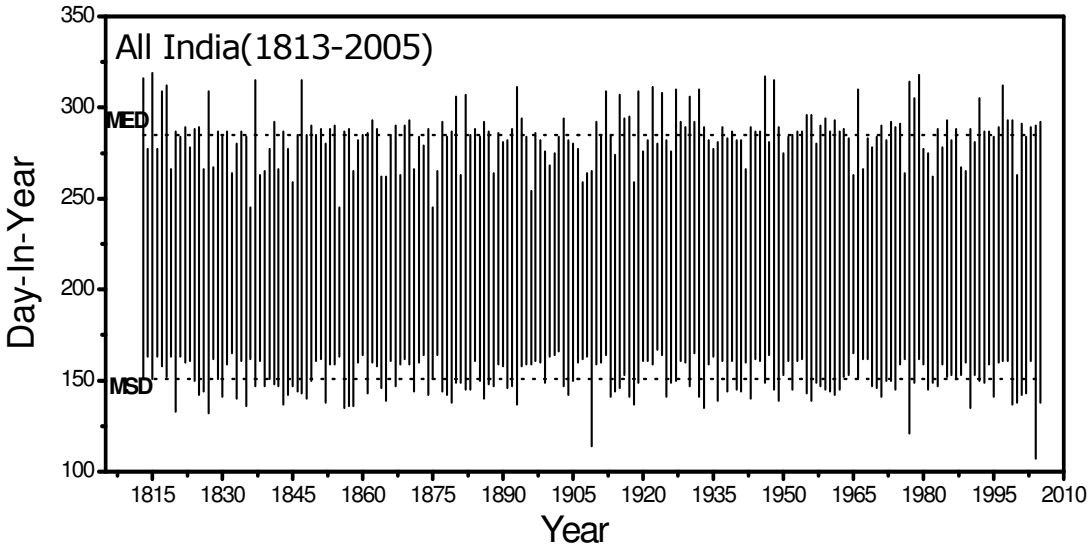

Figure 11 : Time Series plots of the starting date, ending date and duration of the wet season over the whole country.

Table 1(a): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Indus Major Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	27-Jun	11-Sep	77	665.7	**1900**	**7-Jul**	**24-Sep**	**80**	**788.1**
1845	13-Jun	28-Aug	77	785.8	1901	8-Jul	24-Aug	48	309.5
1846	6-Jun	22-Sep	109	723.8	1902	22-Jun	16-Sep	87	338.7
1847	12-Jun	19-Sep	100	653.7	1903	7-Jul	20-Sep	76	481.7
1848	20-May	7-Sep	111	591.8	1904	10-Jul	11-Sep	64	321.5
1849	9-Jun	21-Sep	105	748.3	1905	11-Jul	17-Sep	69	255.4
1850	**25-Jun**	**5-Aug**	**42**	**496.7**	1906	25-Jun	22-Sep	90	603.8
1851	4-Jul	13-Aug	41	346.2	1907	15-Jul	26-Aug	43	298.6
1852	23-May	28-Aug	98	779.1	1908	6-Jul	4-Sep	61	584.0
1853	24-Jun	30-Sep	99	443.2	1909	15-Jun	21-Sep	99	699.6
1854	16-Jun	30-Sep	107	633.1	**1910**	**14-Jun**	**15-Sep**	**94**	**577.6**
1855	6-Jul	13-Sep	70	346.2	1911	18-Jun	11-Sep	86	236.7
1856	10-Jun	20-Sep	103	774.6	1912	7-Jul	24-Aug	49	359.4
1857	28-Jun	18-Sep	83	512.6	1913	25-May	23-Aug	91	452.1
1858	21-Jun	18-Sep	90	524.1	1914	18-Jun	23-Sep	98	679.4
1859	15-Jun	17-Sep	95	363.8	1915	13-Jul	18-Sep	68	290.0
1860	**7-Jul**	**21-Aug**	**46**	**271.1**	1916	18-Jun	11-Sep	86	570.1
1861	16-Jun	24-Aug	70	526.0	1917	12-Jun	26-Sep	107	958.9
1862	14-Jun	12-Sep	91	699.8	1918	30-Jun	21-Aug	53	177.8
1863	10-Jun	30-Sep	113	713.2	1919	6-Jul	4-Sep	61	410.4
1864	7-Jul	23-Aug	48	306.3	**1920**	**8-Jul**	**18-Aug**	**42**	**228.2**
1865	14-Jul	19-Sep	68	439.1	1921	10-Jul	13-Sep	66	344.0
1866	16-Jun	25-Aug	71	479.7	1922	20-Jun	22-Sep	95	582.2
1867	9-Jul	25-Aug	48	314.6	1923	7-Jul	26-Aug	51	443.4
1868	24-Jun	19-Aug	57	278.0	1924	7-Jul	22-Sep	78	494.3
1869	6-Jul	23-Sep	80	494.4	1925	11-Jun	24-Aug	75	592.2
1870	**19-Jun**	**7-Sep**	**81**	**385.6**	1926	6-Jul	14-Sep	71	565.2
1871	7-Jun	20-Aug	75	505.1	1927	6-Jul	24-Aug	50	387.6
1872	19-Jun	16-Sep	90	681.8	1928	9-Jul	12-Sep	66	325.3
1873	6-Jul	15-Sep	72	454.0	1929	25-Jun	24-Aug	61	371.7
1874	14-Jun	14-Sep	93	446.0	**1930**	**20-Jun**	**11-Sep**	**84**	**514.6**
1875	6-Jul	26-Sep	83	826.2	1931	8-Jul	15-Sep	70	504.2
1876	5-Jul	10-Sep	68	448.3	1932	6-Jul	12-Sep	69	476.5
1877	15-Jul	20-Sep	68	199.9	1933	19-Jun	23-Sep	97	817.8
1878	7-Jul	27-Aug	52	487.4	1934	22-Jun	23-Aug	63	414.9
1879	11-Jun	9-Sep	91	515.4	1935	7-Jul	24-Aug	49	347.7
1880	**11-Jun**	**1-Sep**	**83**	**580.9**	1936	11-Jun	16-Sep	98	565.0
1881	15-Jun	31-Aug	78	521.7	1937	20-Jun	13-Sep	86	386.2
1882	30-Jun	17-Sep	80	526.1	1938	11-Jun	20-Aug	71	369.1
1883	11-Jul	21-Sep	73	301.3	1939	24-Jun	11-Sep	80	307.3
1884	16-Jun	19-Sep	96	593.0	**1940**	**17-Jun**	**24-Aug**	**69**	**428.0**
1885	20-May	23-Aug	96	393.6	1941	15-Jun	2-Sep	80	416.9
1886	13-Jun	22-Aug	71	491.1	1942	26-Jun	21-Sep	88	760.6
1887	8-Jul	16-Sep	71	527.8	1943	7-Jul	6-Sep	62	434.2
1888	26-Jun	21-Sep	88	669.5	1944	7-Jul	11-Sep	67	423.1
1889	21-Jun	23-Aug	64	455.8	1945	7-Jul	25-Sep	81	600.7
1890	**16-Jun**	**24-Aug**	**70**	**522.1**	1946	16-Jun	24-Aug	70	425.6
1891	13-Jul	15-Sep	65	310.7	1947	15-Jul	26-Sep	74	590.9
1892	24-Jun	22-Sep	91	773.0	1948	28-Jun	5-Sep	70	533.3
1893	30-May	24-Sep	118	736.2	1949	4-Jul	8-Sep	67	465.5
1894	5-Jun	17-Sep	105	847.6	**1950**	**6-Jul**	**25-Sep**	**82**	**791.3**
1895	9-Jun	25-Aug	78	446.8	1951	8-Jul	23-Aug	47	281.7
1896	19-Jun	24-Aug	67	354.2	1952	17-Jun	26-Aug	71	441.3
1897	8-Jul	8-Sep	63	412.2	1953	21-Jun	13-Sep	85	591.8
1898	20-Jun	9-Sep	82	468.3	1954	8-Jul	23-Sep	78	499.2
1899	18-Jun	13-Aug	57	224.0	1955	7-Jul	22-Sep	78	548.4

Table 1(a):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	20-Jun	2-Sep	75	581.8	1981	29-Jun	16-Aug	49	282.3
1957	7-Jul	19-Sep	75	477.4	1982	12-Jul	23-Aug	43	217.6
1958	6-Jul	26-Sep	83	749.8	1983	10-Jul	15-Sep	68	392.8
1959	5-Jul	22-Sep	80	658.5	1984	24-Jun	15-Sep	84	471.5
1960	**30-Jun**	**25-Aug**	**57**	**490.9**	1985	28-Jun	10-Sep	75	546.8
1961	5-Jul	25-Sep	83	671.0	1986	16-Jun	2-Sep	79	464.8
1962	6-Jul	26-Sep	83	680.1	1987	29-Jun	17-Aug	50	117.5
1963	21-Jun	8-Sep	80	484.1	1988	25-Jun	26-Sep	94	991.9
1964	4-Jul	21-Sep	80	745.8	1989	6-Jul	22-Aug	48	311.3
1965	7-Jul	18-Aug	43	243.4	**1990**	**6-Jul**	**23-Sep**	**80**	**601.4**
1966	13-Jun	23-Sep	103	688.0	1991	19-Jun	12-Sep	86	371.7
1967	4-Jul	17-Sep	76	792.0	1992	9-Jul	14-Sep	68	385.6
1968	24-Jun	23-Aug	61	450.5	1993	26-Jun	18-Sep	85	506.2
1969	8-Jul	17-Sep	72	403.6	1994	21-Jun	16-Sep	88	662.9
1970	**11-Jun**	**18-Sep**	**100**	**618.4**	1995	7-Jul	21-Sep	77	669.4
1971	15-Jun	23-Sep	101	790.7	1996	10-Jun	13-Sep	96	570.9
1972	7-Jul	2-Sep	58	336.9	1997	21-Jun	8-Sep	80	521.9
1973	17-Jun	6-Sep	82	638.8	1998	19-Jun	23-Sep	97	648.8
1974	23-Jun	18-Sep	88	491.8	1999	25-Jun	13-Sep	81	516.9
1975	21-Jun	25-Sep	97	834.1	**2000**	**10-Jun**	**3-Sep**	**86**	**433.2**
1976	19-Jun	13-Sep	87	627.4	2001	16-Jun	3-Sep	80	460.9
1977	14-Jun	17-Sep	96	625.9	2002	16-Jul	20-Sep	67	292.8
1978	11-Jun	13-Sep	95	637.3	2003	23-Jun	19-Sep	89	474.0
1979	11-Jul	2-Sep	54	184.1	2004	28-May	25-Aug	90	407.5
1980	**18-Jun**	**7-Sep**	**82**	**561.8**	2005	26-Jun	18-Sep	85	439.2
					Mean	**25-Jun**	**09-Sep**	**77**	**505.6**
					SD	**12**	**13**	**17**	**168**

Table 1(b): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Chenab Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1891	29-May	11-Sep	106	593.5	1936	12-Jun	18-Sep	99	667.9
1892	10-Jul	20-Aug	42	41.2	1937	12-Jul	1-Oct	82	241.6
1893	30-Apr	14-Sep	138	681.6	1938	10-Jun	22-Aug	74	458.0
1894	13-Jun	15-Aug	64	447.1	1939	8-Jul	15-Sep	70	348.8
1895	17-Jun	4-Sep	80	400.2	**1940**	**20-Jun**	**7-Sep**	**80**	**376.4**
1896	29-Jun	23-Sep	87	513.1	1941	8-Jul	17-Sep	72	361.8
1897	10-Mar	15-Sep	190	1002.7	1942	5-Jul	20-Sep	78	847.7
1898	6-Jul	25-Oct	112	728.8	1943	24-Mar	23-Aug	153	478.1
1899	20-Jun	22-Aug	64	319.0	1944	6-Jul	11-Sep	68	541.1
1900	**19-Mar**	**22-Sep**	**188**	**1098.5**	1945	29-Jun	17-Sep	81	411.5
1901	19-Jan	13-Aug	207	809.2	1946	22-May	26-Aug	97	636.3
1902	12-Jun	13-Sep	94	376.2	1947	17-Jun	25-Sep	101	789.1
1903	6-Jul	22-Sep	79	606.6	1948	14-Jun	13-Sep	92	824.8
1904	7-Jul	10-Sep	66	449.9	1949	24-Jun	12-Sep	81	450.4
1905	10-Jul	23-Sep	76	411.2	**1950**	**4-Jul**	**24-Sep**	**83**	**743.1**
1906	13-Jul	24-Sep	74	623.8	1951	11-Jul	25-Aug	46	329.4
1907	30-Jun	31-Aug	63	514.0	1952	18-Jun	26-Aug	70	561.7
1908	4-Jul	18-Sep	77	772.1	1953	12-Jun	14-Sep	95	711.0
1909	19-Jun	20-Sep	94	838.5	1954	24-Jul	25-Sep	64	444.9
1910	**13-Jun**	**27-Aug**	**76**	**500.5**	1955	8-Jul	23-Oct	108	958.0
1911	25-Jun	13-Sep	81	253.0	1956	18-Jun	17-Oct	122	880.4
1912	5-Jul	23-Aug	50	375.7	1957	11-Mar	13-Dec	278	1182.9
1913	8-Jun	25-Aug	79	590.4	1958	5-Jul	24-Sep	82	873.3
1914	8-Feb	18-Oct	253	1163.9	1959	3-Jul	12-Nov	133	1135.5
1915	12-Jul	14-Sep	65	345.7	**1960**	**6-Jul**	**31-Aug**	**57**	**442.8**
1916	16-Jun	7-Sep	84	713.9	1961	27-Jun	22-Sep	88	963.6
1917	15-Apr	16-Oct	185	1308.4	1962	7-Jul	19-Sep	75	400.3
1918	16-Jul	24-Aug	40	282.0	1963	22-Jun	24-Aug	64	292.2
1919	4-Jul	26-Aug	54	639.9	1964	25-Apr	19-Sep	148	770.7
1920	**9-Jul**	**8-Sep**	**62**	**250.**5	1965	11-Jul	23-Aug	44	247.9
1921	6-Jul	18-Oct	105	570.6	1966	9-Feb	30-Oct	264	1139.5
1922	27-Jun	23-Sep	89	650.0	1967	20-Jun	21-Sep	94	511.9
1923	14-Jul	26-Aug	44	331.5	1968	6-Jul	16-Sep	73	536.1
1924	7-Jul	23-Sep	79	611.4	1969	7-Jul	23-Aug	48	320.7
1925	20-May	25-Aug	98	708.4	**1970**	**15-Jun**	**11-Sep**	**89**	**495.3**
1926	10-Mar	23-Sep	198	1196.0	1971	26-Jun	4-Jul	9	14.4
1927	5-Jul	27-Aug	54	582.0	1972	12-Jul	11-Oct	92	319.1
1928	7-Jul	19-Sep	75	472.0	1973	16-Jul	25-Aug	41	271.8
1929	17-Jun	24-Aug	69	378.5	1974	14-Jan	1-Jul	169	390.7
1930	**24-Mar**	**11-Sep**	**172**	**719.3**	1975	14-Dec	12-Sep	273	1613.3
1931	8-Jul	8-Sep	63	478.8	1976	28-Jun	14-Sep	79	512.8
1932	4-Jul	25-Aug	53	52.0	1977	13-Apr	5-Sep	146	646.1
1933	27-Jun	17-Sep	83	699.4	1978	19-Jun	9-Sep	83	407.0
1934	12-Jun	18-Aug	68	444.4	1979	28-Jul	10-sep	45	142.3
1935	7-Jul	25-Aug	50	386.2	**1980**	**15-Jun**	**1-Sep**	**79**	**236.0**

Table 1(b): contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1981	27-Nov	8-Aug	256	1071.3	1994	13-Jan	2-Sep	233	1136.3
1982	17-Jul	17-Aug	32	135.8	1995	4-Jul	22-Aug	50	494.6
1983	12-Jul	10-Sep	61	255.0	1996	12-Jan	28-Aug	229	1384.1
1984	10-Jul	13-Sep	66	283.5	1997	21-Jan	8-Nov	292	1171.3
1985	4-Jul	16-Aug	44	269.3	1998	6-Feb	9-Sep	216	864.3
1986	28-Jun	25-Aug	59	495.9	1999	22-Jun	6-Sep	77	330.4
1987	10-Feb	18-Oct	251	944.5	**2000**	**12-Jun**	**3-Sep**	**84**	**361.2**
1988	22-Jun	24-Sep	95	645.6	2001	25-Mar	9-Sep	169	623.4
1989	21-Dec	13-Aug	237	888.0	2002	17-Jun	15-Sep	91	346.6
1990	**10-Jul**	**16-Sep**	**69**	**392.1**	2003	6-Feb	19-Sep	226	1129.8
1991	8-Feb	11-Sep	216	865.6	2004	19-Apr	25-Oct	190	577.6
1992	8-Jan	23-Aug	228	955.9	2005	7-Jul	12-Aug	37	336.7
1993	21-May	9-Sep	112	421.0					
					Mean	**29-May**	**11-Sep**	**106**	**593.4**
					SD	**65**	**25**	**70**	**323**

Table 1(c): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Beas Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1853	12-Jun	20-Oct	131	1058.1	1909	11-Jun	23-Sep	105	1114.7
1854	25-Apr	5-Oct	164	1447.7	**1910**	**12-Jun**	**18-Sep**	**99**	**1025.5**
1855		NO DATA			1911	14-Jun	21-Sep	100	463.0
1856					1912	4-Jul	28-Aug	56	689.7
1857	13-Jun	24-Sep	104	1070.2	1913	23-May	26-Aug	96	668.6
1858	8-Jun	19-Sep	104	880.4	1914	13-Feb	10-Oct	241	1531.1
1859	22-May	12-Sep	114	1095.3	1915	27-Jun	20-Sep	86	698.1
1860	**5-Jul**	**22-Oct**	**110**	**633.1**	1916	7-Jun	9-Oct	125	1012.4
1861	22-May	12-Sep	114	1095.3	1917	30-Mar	21-Oct	206	1903.5
1862	8-Jun	20-Sep	105	1307.9	1918	14-Jun	22-Aug	70	299.1
1863	6-Jun	15-Oct	132	1263.1	1919	28-Jun	11-Sep	76	781.3
1864	5-Jul	26-Aug	53	481.9	**1920**	**28-May**	**5-Sep**	**101**	**700.9**
1865	12-Jul	20-Sep	71	589.2	1921	29-Jun	21-Sep	85	738.9
1866	14-Jun	27-Aug	75	804.0	1922	14-Jun	25-Sep	104	1183.2
1867	6-Jul	26-Aug	52	494.4	1923	7-Jul	7-Sep	63	687.5
1868	11-Jun	25-Aug	76	674.0	1924	3-Jul	23-Sep	83	908.0
1869	15-Jun	25-Sep	103	931.9	1925	27-May	27-Aug	93	958.8
1870	**18-Jun**	**12-Sep**	**87**	**557.2**	1926	4-Jul	21-Sep	80	948.8
1871	5-Jun	10-Sep	98	1358.0	1927	4-Jul	6-Sep	65	817.8
1872	10-Jun	24-Sep	107	1041.7	1928	25-Jun	16-Sep	84	694.5
1873	4-Jul	18-Sep	77	723.6	1929	12-Jun	6-Oct	117	1011.8
1874	8-Jun	19-Sep	104	990.3	**1930**	**13-Jun**	**10-Sep**	**90**	**918.9**
1875	30-May	26-Sep	120	1541.4	1931	6-Jul	24-Sep	81	930.2
1876	2-Jul	17-Sep	78	1145.9	1932	4-Jul	11-Sep	70	797.2
1877	10-Jan	21-Sep	256	975.5	1933	8-Jun	23-Sep	108	1232.8
1878	4-Jul	9-Sep	68	929.4	1934	14-Jun	27-Aug	75	822.6
1879	7-Jun	22-Sep	108	1258.3	1935	3-Jul	5-Sep	65	834.9
1880	**13-Jun**	**10-Sep**	**90**	**929.6**	1936	8-Jun	23-Sep	108	991.7
1881	8-Jun	17-Sep	102	986.7	1937	10-Jun	5-Oct	118	906.4
1882	13-Jun	21-Sep	101	1112.3	1938	7-Jun	26-Aug	81	840.2
1883	29-Jun	22-Sep	86	613.8	1939	17-Jun	22-Sep	98	658.6
1884	11-Jun	21-Sep	103	1022.0	**1940**	**11-Jun**	**15-Sep**	**97**	**949.0**
1885	19-Apr	1-Sep	136	936.3	1941	12-Jun	13-Sep	94	809.8
1886	18-May	15-Sep	121	1179.9	1942	25-Apr	23-Sep	152	1344.7
1887	5-Jul	10-Oct	98	879.0	1943	27-Mar	18-Sep	176	1384.9
1888	13-Jun	13-Oct	123	1415.6	1944	28-Jun	17-Sep	82	862.2
1889	31-May	2-Sep	95	1006.2	1945	20-Jun	24-Sep	97	878.5
1890	**13-Jun**	**27-Aug**	**76**	**1026.9**	1946	10-Jun	28-Aug	80	885.4
1891	9-Jul	7-Oct	91	726.6	1947	11-Jul	27-Sep	79	857.0
1892	8-Jun	22-Sep	107	1315.6	1948	13-Jun	1-Oct	111	849.0
1893	27-May	26-Sep	123	1344.9	1949	3-Jul	14-Sep	74	853.4
1894	3-Jun	21-Sep	111	1652.4	**1950**	**4-Jul**	**27-Sep**	**86**	**1253.7**
1895	6-Jun	9-Oct	126	1045.3	1951	7-Jul	11-Sep	67	552.0
1896	11-Jun	27-Aug	78	758.7	1952	31-May	27-Aug	89	597.6
1897	23-Jun	15-Sep	85	909.2	1953	28-Jun	20-Sep	85	780.4
1898	31-May	14-Sep	107	998.8	1954	4-Jul	22-Sep	81	1054.7
1899	13-Jun	23-Aug	72	574.1	1955	4-Jul	28-Oct	117	1398.0
1900	**4-Jul**	**26-Sep**	**85**	**1253.3**	1956	11-Jun	23-Oct	135	1143.9
1901	4-Jul	6-Sep	65	696.0	1957	15-Mar	3-Oct	203	1186.7
1902	19-Mar	19-Sep	185	732.8	1958	3-Jul	2-Sep	62	1207.6
1903	5-Jul	24-Sep	82	878.1	1959	3-Jul	9-Oct	99	1146.7
1904	4-Jul	12-Sep	71	660.2	**1960**	**24-Jun**	**14-Sep**	**83**	**670.1**
1905	6-Jul	19-Sep	76	506.3	1961	3-Jul	1-Oct	91	1422.1
1906	12-Jun	25-Sep	106	1097.2	1962	15-Jun	26-Sep	104	1196.2
1907	16-Jul	25-Aug	41	266.1	1963	28-May	18-Sep	114	1120.6
1908	26-Jun	16-Sep	83	997.9	1964	28-Mar	25-Sep	182	1363.9

Table 1(c):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1965	4-Jul	20-Aug	48	399.1	1986	18-Feb	6-Nov	263	1151.6
1966	24-May	2-Oct	132	1466.1	1987	31-Jan	4-Oct	248	785.1
1967	17-Jun	23-Sep	99	2411.3	1988	17-Jun	26-Sep	102	1325.3
1968	15-Jun	26-Aug	73	718.9	1989	4-Jul	3-Sep	62	553.5
1969	19-Jun	20-Sep	94	902.9	**1990**	**21-May**	**23-Sep**	**126**	**1005.1**
1970	**6-Jun**	**23-Sep**	**110**	**1185.0**	1991	22-Jun	21-Sep	92	708.0
1971	4-Jul	24-Sep	83	1190.2	1992	27-May	18-Sep	115	750.6
1972	20-Jun	15-Sep	88	626.5	1993	19-Jun	22-Sep	96	775.6
1973	12-Jun	22-Sep	103	1008.4	1994	20-Apr	12-Sep	146	1051.3
1974	18-Jun	19-Sep	94	847.8	1995	4-Jul	21-Sep	80	903.1
1975	16-Jun	27-Sep	104	1263.9	1996	8-Jun	19-Sep	104	886.9
1976	14-Jun	20-Sep	99	1015.8	1997	1-Feb	3-Dec	307	1155.7
1977	19-Apr	23-Sep	158	1382.0	1998	16-Jun	12-Oct	119	1029.3
1978	5-Jun	18-Sep	106	1385.0	1999	31-May	21-Sep	114	974.9
1979	24-May	12-Sep	112	418.9	**2000**	**29-May**	**10-Sep**	**105**	**632.3**
1980	**10-Jun**	**5-Sep**	**88**	**928.1**	2001	18-Jun	13-Sep	88	743.8
1981	14-Jun	24-Aug	72	587.7	2002	17-Jun	21-Sep	97	600.7
1982	7-Jul	26-Aug	51	392.6	2003	14-Jun	22-Sep	101	541.7
1983	25-Jan	22-Sep	242	1124.7	2004	21-May	12-Oct	145	804.6
1984	14-Jun	18-Sep	97	821.6	2005	21-Jun	23-Sep	95	678.6
1985	21-Jun	20-Oct	122	965.2					
					Mean	**7-Jun**	**19-Sep**	**105**	**950.3**
					SD	**34**	**16**	**42**	**310**

Table 1(d): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Satluj Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	5-Jul	6-Sep	64	503.8	**1900**	**9-Jul**	**24-Sep**	**78**	**652.1**
1845	15-Jun	27-Aug	74	664.6	1901	10-Jul	21-Aug	43	202.0
1846	7-Jun	22-Sep	108	573.5	1902	29-Jun	15-Sep	79	268.8
1847	14-Jun	18-Sep	97	516.6	1903	8-Jul	15-Sep	70	318.2
1848	29-May	30-Sep	125	443.6	1904	19-Jul	12-Sep	56	176.5
1849	10-Jun	21-Sep	104	614.5	1905	16-Jul	11-Sep	58	132.8
1850	**30-Jun**	**24-Aug**	**56**	**401.0**	1906	14-Jul	21-Sep	70	381.0
1851	5-Jul	26-Jul	22	220.5	1907	17-Jul	25-Aug	40	268.2
1852	30-May	28-Aug	91	681.8	1908	10-Jul	26-Aug	48	395.1
1853	6-Jul	25-Jul	20	179.6	1909	16-Jun	20-Sep	97	526.6
1854	29-Jun	10-Sep	74	335.0	**1910**	**14-Jun**	**16-Sep**	**95**	**443.6**
1855	7-Jul	11-Sep	67	238.4	1911	19-Jun	16-Aug	59	109.7
1856	12-Jun	19-Sep	100	624.5	1912	9-Jul	3-Sep	57	300.0
1857	8-Jul	15-Sep	70	322.7	1913	24-May	20-Aug	89	335.3
1858	6-Jul	17-Sep	74	345.4	1914	23-Jun	24-Sep	94	551.4
1859	16-Jun	16-Sep	93	264.7	1915	28-Jul	18-Sep	53	158.6
1860	**9-Jul**	**19-Aug**	**42**	**205.3**	1916	7-Jul	30-Sep	86	367.8
1861	19-Jun	23-Aug	66	394.1	1917	16-Jun	20-Oct	127	816.9
1862	18-Jun	5-Sep	80	466.5	1918	11-Aug	20-Aug	10	39.6
1863	13-Jun	23-Aug	72	544.7	1919	8-Jul	4-Sep	59	248.8
1864	8-Jul	22-Aug	46	269.2	**1920**	**30-Jun**	**10-Sep**	**73**	**208.2**
1865	13-Jul	20-Sep	70	450.3	1921	15-Jul	6-Sep	54	195.2
1866	16-Jun	24-Aug	70	388.7	1922	23-Jun	20-Sep	90	364.8
1867	11-Jul	24-Aug	45	279.0	1923	7-Jul	26-Aug	51	417.4
1868	14-Jul	7-Aug	25	72.5	1924	11-Jul	21-Sep	73	327.2
1869	6-Jul	25-Jul	20	172.5	1925	12-Jun	20-Aug	70	479.7
1870	**17-Jun**	**7-Sep**	**83**	**349.6**	1926	8-Jul	25-Aug	49	328.8
1871	8-Jun	1-Aug	55	248.0	1927	8-Jul	18-Aug	42	221.4
1872	27-Jun	8-Aug	43	502.6	1928	13-Jul	5-Sep	55	185.8
1873	7-Jul	13-Sep	69	352.9	1929	9-Jul	16-Aug	39	170.4
1874	17-Jun	12-Aug	57	178.0	**1930**	**21-Jun**	**11-Sep**	**83**	**395.2**
1875	9-Jul	26-Sep	80	644.2	1931	8-Jul	8-Sep	63	368.5
1876	9-Jul	5-Sep	59	215.2	1932	8-Jul	15-Sep	70	346.9
1877	10-Sep	20-Sep	11	56.6	1933	8-Jul	24-Sep	79	663.8
1878	9-Jul	26-Aug	49	392.6	1934	8-Jul	20-Aug	44	229.3
1879	13-Jun	20-Aug	69	219.1	1935	11-Jul	21-Aug	42	203.5
1880	**10-Jun**	**1-Aug**	**53**	**423.6**	1936	13-Jun	5-Sep	85	396.9
1881	20-Jun	21-Aug	63	415.5	1937	23-Jun	12-Sep	82	266.1
1882	8-Jul	15-Sep	70	299.1	1938	15-Jun	14-Aug	61	189.8
1883	9-Sep	21-Sep	13	63.2	1939	25-Jun	11-Aug	48	137.5
1884	18-Jun	18-Sep	93	441.2	**1940**	**19-Jun**	**22-Aug**	**65**	**316.8**
1885	29-May	21-Aug	85	250.9	1941	14-Jun	20-Aug	68	264.6
1886	15-Jun	18-Aug	65	338.0	1942	26-Jun	20-Sep	87	575.2
1887	11-Jul	16-Sep	68	426.9	1943	11-Jul	19-Aug	40	178.5
1888	8-Jul	19-Sep	74	410.5	1944	9-Jul	8-Sep	62	265.2
1889	8-Jul	23-Aug	47	282.3	1945	9-Jul	26-Sep	80	592.9
1890	**17-Jun**	**20-Aug**	**65**	**354.4**	1946	20-Jun	20-Aug	62	248.2
1891	16-Jul	11-Sep	58	191.6	1947	24-Jul	25-Sep	64	474.1
1892	8-Jul	22-Sep	77	554.9	1948	9-Jul	24-Aug	47	291.5
1893	14-Jun	24-Sep	103	507.5	1949	5-Jul	2-Sep	60	355.7
1894	6-Jun	15-Sep	102	616.5	**1950**	**8-Jul**	**25-Sep**	**80**	**649.4**
1895	11-Jun	23-Aug	74	300.6	1951	9-Jul	19-Aug	42	214.4
1896	24-Jun	22-Aug	60	213.1	1952	22-Jun	26-Aug	66	375.8
1897	10-Jul	4-Sep	57	262.5	1953	24-Jun	7-Sep	76	499.1
1898	27-Jun	7-Sep	73	308.4	1954	9-Jul	23-Sep	77	327.5
1899	21-Jun	11-Jul	21	49.3	1955	11-Jul	20-Sep	72	377.4

Table 1(d):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	27-Jun	23-Aug	58	386.3	1981	8-Jul	7-Aug	31	151.7
1957	8-Jul	18-Sep	73	340.5	1982	13-Jul	22-Aug	41	178.7
1958	11-Jul	26-Sep	78	566.5	1983	10-Jul	11-Sep	64	375.7
1959	9-Jul	21-Sep	75	435.6	1984	26-Jun	15-Sep	82	392.9
1960	**29-Jun**	**25-Aug**	**58**	**474.6**	1985	28-Jun	4-Sep	69	515.3
1961	7-Jul	6-Sep	62	378.7	1986	14-Jun	1-Sep	80	298.3
1962	8-Jul	26-Sep	81	612.5	1987	30-Jun	5-Sep	68	385.2
1963	13-Jul	5-Sep	55	292.5	1988	30-Jun	26-Sep	89	967.3
1964	4-Jul	19-Sep	78	665.8	1989	9-Jul	22-Aug	45	249.8
1965	8-Jul	14-Aug	38	197.5	**1990**	**6-Jul**	**23-Sep**	**80**	**575.1**
1966	14-Jun	16-Sep	95	466.7	1991	17-Jun	1-Sep	77	241.1
1967	11-Jul	6-Sep	58	370.0	1992	10-Jul	2-Sep	55	296.9
1968	25-Jun	20-Aug	57	360.3	1993	4-Jul	17-Sep	76	412.9
1969	11-Jul	18-Sep	70	277.5	1994	6-Jul	18-Sep	75	548.0
1970	**15-Jun**	**17-Sep**	**95**	**460.2**	1995	29-Jun	22-Sep	86	688.5
1971	20-Jun	24-Sep	97	762.0	1996	12-Jun	13-Sep	94	414.1
1972	8-Jul	22-Aug	46	268.2	1997	23-Jun	26-Aug	65	409.6
1973	16-Jun	26-Aug	72	568.6	1998	19-Jun	12-Oct	116	638.4
1974	27-Jun	20-Sep	86	477.1	1999	27-Jun	9-Sep	75	427.9
1975	22-Jun	25-Sep	96	699.1	**2000**	**10-Jun**	**31-Aug**	**83**	**352.6**
1976	20-Jun	8-Sep	81	526.5	2001	17-Jun	21-Aug	66	333.3
1977	16-Jun	16-Sep	93	471.7	2002	20-Jul	20-Sep	63	228.2
1978	16-Jun	11-Sep	88	445.7	2003	27-Jun	17-Sep	83	451.2
1979	9-Jul	4-Aug	27	124.6	2004	30-Jul	26-Aug	28	234.7
1980	**25-Jun**	**9-Sep**	**77**	**508.3**	2005	25-Jun	17-Sep	85	399.7
					Mean	**30-Jun**	**5-Sep**	**68**	**371.2**
					SD	**15**	**17**	**21**	**165**

Table 2(a): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Ganga Major Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1829	8-Jun	7-Oct	122	855.2	1885	8-Jun	19-Sep	104	956.3
1830	**18-May**	**20-Sep**	**126**	**838.5**	1886	28-May	13-Oct	139	1008.2
1831	7-Jun	5-Oct	121	871.3	1887	22-May	21-Sep	123	956.9
1832	18-Jun	9-Oct	114	784.5	1888	19-Jun	22-Sep	96	927.0
1833	18-May	21-Sep	127	813.6	1889	7-Jun	20-Sep	106	930.2
1834	9-Jun	19-Oct	133	922.9	**1890**	**6-Jun**	**22-Sep**	**109**	**1025.9**
1835	14-May	6-Oct	146	1104.2	1891	26-May	24-Sep	122	832.5
1836	18-Jun	23-Sep	98	718.8	1892	12-Jun	21-Sep	102	900.4
1837	10-Jun	8-Oct	121	883.4	1893	20-May	11-Oct	145	1104.6
1838	11-Jun	6-Oct	118	796.1	1894	6-Jun	21-Oct	138	1166.1
1839	28-May	24-Sep	120	908.2	1895	8-Jun	16-Sep	101	746.1
1840	**27-May**	**18-Sep**	**115**	**873.4**	1896	8-Jun	7-Sep	92	644.8
1841	15-Jun	22-Sep	100	798.9	1897	10-Jun	8-Oct	121	914.9
1842	6-Jun	5-Oct	122	996.0	1898	10-Jun	23-Sep	106	940.6
1843	13-Jun	20-Sep	100	678.8	1899	5-Jun	15-Sep	103	819.6
1844	19-Jun	16-Sep	90	681.8	**1900**	**14-Jun**	**25-Sep**	**104**	**862.7**
1845	10-Jun	11-Sep	94	765.1	1901	26-Jun	19-Sep	86	678.4
1846	6-Jun	22-Sep	109	857.3	1902	19-Jun	24-Sep	98	778.2
1847	10-Jun	9-Oct	122	870.2	1903	16-Jun	21-Oct	128	852.1
1848	27-May	18-Sep	115	631.4	1904	26-May	15-Sep	113	861.0
1849	9-Jun	8-Oct	122	736.2	1905	5-Jul	22-Sep	80	627.3
1850	**11-Jun**	**23-Sep**	**105**	**779.8**	1906	9-Jun	23-Sep	107	856.5
1851	12-Jun	9-Oct	120	714.3	1907	14-Jun	8-Sep	87	570.6
1852	23-May	17-Sep	118	787.5	1908	14-Jun	13-Sep	92	764.0
1853	10-Jun	12-Oct	125	781.6	1909	6-Jun	20-Sep	107	914.5
1854	6-Jun	23-Sep	110	939.9	**1910**	**9-Jun**	**15-Oct**	**129**	**956.9**
1855	10-Jun	24-Sep	107	894.2	1911	9-Jun	6-Oct	120	811.1
1856	7-Jun	12-Oct	128	943.0	1912	18-Jun	20-Sep	95	736.7
1857	10-Jun	23-Sep	106	905.3	1913	19-May	15-Sep	120	768.1
1858	14-Jun	20-Sep	99	854.8	1914	24-May	20-Sep	120	875.4
1859	8-Jun	14-Oct	129	1009.4	1915	13-Jun	5-Oct	115	826.9
1860	**22-Jun**	**19-Sep**	**90**	**604.4**	1916	7-Jun	15-Oct	131	1127.8
1861	30-May	16-Oct	140	1167.8	1917	19-May	19-Oct	154	1233.3
1862	9-Jun	10-Oct	124	989.4	1918	9-Jun	17-Sep	101	619.8
1863	8-Jun	2-Oct	117	967.1	1919	11-Jun	21-Sep	103	897.7
1864	22-Jun	20-Sep	91	593.2	**1920**	**12-Jun**	**19-Sep**	**100**	**717.6**
1865	18-May	21-Sep	127	811.4	1921	10-Jun	23-Sep	106	870.8
1866	10-Jun	18-Sep	101	775.9	1922	7-Jun	24-Sep	110	1065.0
1867	7-Jun	10-Oct	126	1081.0	1923	20-Jun	22-Sep	95	833.6
1868	9-Jun	20-Sep	104	648.3	1924	19-Jun	25-Sep	99	977.8
1869	13-Jun	16-Oct	126	831.4	1925	9-Jun	20-Sep	104	847.9
1870	**7-Jun**	**14-Oct**	**130**	**1057.4**	1926	4-Jul	23-Sep	82	823.2
1871	22-May	24-Sep	126	1142.9	1927	15-Jun	4-Oct	112	786.8
1872	10-Jun	21-Sep	104	851.8	1928	10-Jun	14-Oct	127	726.8
1873	22-Jun	22-Sep	93	759.5	1929	11-Jun	15-Oct	127	810.2
1874	6-Jun	6-Oct	123	1057.6	**1930**	**14-Jun**	**21-Sep**	**100**	**791.7**
1875	10-Jun	24-Sep	107	906.3	1931	27-Jun	13-Oct	109	888.0
1876	14-Jun	6-Oct	115	869.7	1932	16-Jun	23-Sep	100	709.0
1877	31-May	11-Oct	134	526.9	1933	23-May	10-Oct	141	1052.0
1878	22-May	22-Sep	124	836.2	1934	9-Jun	23-Sep	107	896.8
1879	9-Jun	9-Oct	123	1087.5	1935	18-Jun	23-Sep	98	784.0
1880	**10-Jun**	**21-Sep**	**104**	**735.4**	1936	29-May	24-Sep	119	1096.8
1881	9-Jun	17-Sep	101	822.1	1937	12-Jun	10-Oct	121	862.0
1882	7-Jun	6-Oct	122	859.2	1938	22-May	19-Sep	121	970.7
1883	9-Jun	21-Sep	105	659.5	1939	9-Jun	23-Sep	107	806.7
1884	10-Jun	10-Oct	123	946.0	**1940**	**14-Jun**	**17-Sep**	**96**	**733.4**

Table 2(a):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1941	10-Jun	19-Sep	102	652.8	1974	20-Jun	3-Oct	106	798.7
1942	12-Jun	24-Sep	105	1000.3	1975	9-Jun	1-Oct	115	985.5
1943	12-Jun	23-Sep	104	881.8	1976	12-Jun	22-Sep	103	840.8
1944	12-Jun	19-Sep	100	786.3	1977	28-May	7-Oct	133	979.5
1945	12-Jun	14-Oct	125	931.2	1978	8-Jun	24-Sep	109	950.2
1946	9-Jun	11-Oct	125	964.6	1979	15-Jun	7-Sep	85	502.4
1947	19-Jun	25-Sep	99	857.6	**1980**	**8-Jun**	**20-Sep**	**105**	**973.0**
1948	14-Jun	3-Oct	112	1010.8	1981	25-May	21-Sep	120	849.6
1949	26-May	7-Oct	135	987.5	1982	15-Jun	19-Sep	97	704.1
1950	**8-Jun**	**20-Sep**	**105**	**888.5**	1983	27-May	24-Sep	121	918.0
1951	14-Jun	20-Sep	99	626.5	1984	6-Jun	21-Sep	108	934.9
1952	7-Jun	18-Sep	104	845.6	1985	15-Jun	20-Oct	128	981.3
1953	11-Jun	22-Sep	104	895.2	1986	29-May	3-Oct	128	793.3
1954	14-Jun	23-Sep	102	780.7	1987	20-Jun	23-Sep	96	741.9
1955	9-Jun	19-Oct	133	1038.4	1988	10-Jun	19-Sep	102	866.5
1956	8-Jun	22-Oct	137	1071.2	1989	10-Jun	23-Sep	106	742.6
1957	16-Jun	22-Sep	99	767.3	**1990**	**23-May**	**24-Sep**	**125**	**986.5**
1958	19-Jun	12-Oct	116	971.1	1991	12-Jun	21-Sep	102	726.8
1959	18-Jun	19-Oct	124	861.5	1992	20-Jun	20-Sep	93	664.9
1960	**17-Jun**	**16-Oct**	**122**	**956.3**	1993	10-Jun	25-Sep	108	811.9
1961	12-Jun	20-Oct	131	1087.5	1994	9-Jun	19-Sep	103	865.5
1962	17-Jun	24-Sep	100	779.3	1995	13-Jun	24-Sep	104	912.1
1963	13-Jun	23-Sep	103	842.8	1996	9-Jun	1-Oct	115	929.6
1964	15-Jun	24-Sep	102	881.2	1997	11-Jun	1-Oct	113	882.4
1965	25-Jun	21-Sep	89	608.4	1998	14-Jun	14-Oct	123	973.2
1966	9-Jun	12-Sep	96	652.3	1999	24-May	10-Oct	140	1036.9
1967	16-Jun	23-Sep	100	874.5	**2000**	**18-May**	**22-Sep**	**128**	**897.6**
1968	11-Jun	4-Oct	116	780.9	2001	20-May	14-Oct	148	919.1
1969	18-Jun	23-Sep	98	876.1	2002	27-May	23-Sep	120	683.6
1970	**8-Jun**	**24-Sep**	**109**	**854.5**	2003	10-Jun	8-Oct	121	938.6
1971	24-May	15-Oct	145	1212.0	2004	9-Jun	7-Oct	121	733.0
1972	22-Jun	21-Sep	92	637.4	2005	16-Jun	1-Oct	108	703.9
1973	11-Jun	16-Oct	128	983.4					
					Mean	**9-Jun**	**28-Sep**	**112**	**859.9**
					SD	**9**	**11**	**15**	**137**

Table 2(b): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Yamuna Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	6-Jul	24-Aug	50	354.4	**1900**	**9-Jul**	**24-Sep**	**78**	**538.6**
1845	17-Jun	24-Aug	69	506.7	1901	10-Jul	25-Aug	47	325.8
1846	8-Jun	18-Sep	103	504.5	1902	22-Jun	17-Sep	88	494.9
1847	14-Jun	13-Sep	92	506.3	1903	11-Jul	15-Oct	97	464.4
1848	14-Jul	6-Sep	55	215.5	1904	29-Jun	15-Sep	79	583.5
1849	15-Jun	22-Sep	100	488.9	1905	11-Jul	14-Sep	66	210.0
1850	**16-Jul**	**17-Sep**	**64**	**333.5**	1906	11-Jun	22-Sep	104	585.1
1851	6-Jul	6-Sep	63	399.3	1907	12-Jul	24-Aug	44	249.1
1852	13-Jun	23-Aug	72	370.7	1908	5-Jul	27-Aug	54	608.6
1853	14-Jun	26-Aug	74	358.0	1909	11-Jun	18-Sep	100	663.9
1854	10-Jun	17-Sep	100	646.4	**1910**	**23-Jun**	**17-Oct**	**117**	**666.3**
1855	21-Jun	20-Sep	92	471.5	1911	22-Jun	25-Sep	96	407.7
1856	15-Jun	18-Sep	96	593.4	1912	7-Jul	21-Sep	77	481.6
1857	24-Jun	17-Sep	86	509.3	1913	23-May	16-Aug	86	353.4
1858	26-Jun	22-Sep	89	639.5	1914	27-Jun	22-Sep	88	622.0
1859	17-Jun	23-Sep	99	553.3	1915	27-Jun	18-Sep	84	403.7
1860	**7-Jul**	**3-Sep**	**59**	**332.7**	1916	12-Jun	21-Sep	102	685.5
1861	10-Jun	20-Sep	103	750.7	1917	21-Jun	11-Oct	113	865.6
1862	17-Jun	22-Sep	98	729.9	1918	25-Jun	22-Aug	59	188.1
1863	12-Jun	24-Aug	74	640.6	1919	7-Jul	12-Sep	68	482.3
1864	10-Jul	16-Sep	69	355.8	**1920**	**17-Jun**	**11-Aug**	**56**	**389.2**
1865	12-Jul	19-Sep	70	438.8	1921	26-Jun	22-Sep	89	548.2
1866	26-Jun	25-Aug	61	485.5	1922	19-Jun	22-Sep	96	637.7
1867	21-Jun	12-Sep	84	630.5	1923	7-Jul	17-Sep	73	501.3
1868	24-Jun	21-Jul	28	116.2	1924	7-Jul	25-Sep	81	643.1
1869	8-Jul	7-Oct	92	489.6	1925	9-Jun	2-Sep	86	613.2
1870	**10-Jun**	**17-Sep**	**100**	**637.4**	1926	6-Jul	16-Sep	73	557.0
1871	8-Jun	12-Sep	97	640.2	1927	7-Jul	11-Sep	67	489.3
1872	17-Jun	13-Sep	89	623.0	1928	9-Jul	15-Aug	38	179.7
1873	4-Jul	22-Sep	81	612.4	1929	29-Jun	23-Aug	56	325.5
1874	11-Jun	16-Sep	98	621.2	**1930**	**21-Jun**	**3-Sep**	**75**	**479.2**
1875	7-Jul	26-Sep	82	648.4	1931	8-Jul	30-Sep	85	463.5
1876	6-Jul	18-Sep	75	433.8	1932	10-Jul	22-Sep	75	463.4
1877	26-Jun	3-Jul	8	12.8	1933	31-May	24-Sep	117	849.3
1878	9-Jul	10-Sep	64	412.5	1934	14-Jun	7-Sep	86	546.9
1879	13-Jun	16-Sep	96	653.6	1935	6-Jul	18-Sep	75	452.4
1880	**16-Jun**	**19-Sep**	**96**	**472.1**	1936	8-Jun	19-Sep	104	705.2
1881	19-Jun	25-Aug	68	538.2	1937	23-Jun	19-Sep	89	438.7
1882	15-Jun	10-Sep	88	521.7	1938	15-Jun	20-Aug	67	343.3
1883	19-Jun	18-Sep	92	338.0	1939	14-Jun	22-Sep	101	456.5
1884	15-Jun	30-Sep	108	731.6	**1940**	**2-Jul**	**25-Aug**	**55**	**306.1**
1885	9-Jun	27-Aug	80	722.4	1941	15-Jun	10-Sep	88	294.5
1886	12-Jun	2-Sep	83	523.2	1942	21-Jun	23-Sep	95	769.4
1887	28-Jun	18-Sep	83	779.5	1943	29-Jun	21-Sep	85	582.9
1888	5-Jul	23-Sep	81	652.3	1944	25-Jun	10-Sep	78	395.2
1889	18-Jun	25-Aug	69	511.2	1945	8-Jul	25-Sep	80	573.1
1890	**10-Jun**	**11-Sep**	**94**	**680.6**	1946	18-Jun	24-Aug	68	450.2
1891	17-Jul	22-Sep	68	569.9	1947	10-Jul	25-Sep	78	526.3
1892	7-Jul	20-Sep	76	625.7	1948	6-Jul	15-Sep	72	596.2
1893	13-Jun	22-Sep	102	630.5	1949	4-Jul	21-Sep	80	612.5
1894	10-Jun	10-Oct	123	825.2	**1950**	**5-Jul**	**18-Sep**	**76**	**577.2**
1895	9-Jun	31-Aug	84	476.9	1951	15-Jul	15-Sep	63	332.2
1896	18-Jun	22-Aug	66	319.6	1952	12-Jun	26-Aug	76	532.8
1897	27-Jun	15-Sep	81	562.7	1953	19-Jun	8-Sep	82	581.6
1898	19-Jun	13-Sep	87	544.7	1954	7-Jul	10-Oct	96	502.6
1899	7-Jun	5-Aug	60	362.6	1955	17-Jun	21-Oct	127	758.7

Table 2(b):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	22-Jun	22-Oct	123	773.5	1981	12-Jun	10-Sep	91	523.4
1957	6-Jul	23-Sep	80	533.3	1982	10-Jul	5-Sep	58	378.6
1958	5-Jul	24-Sep	82	727.9	1983	24-Jun	21-Sep	90	701.1
1959	9-Jul	16-Sep	70	445.5	1984	15-Jun	15-Sep	93	539.5
1960	**6-Jul**	**16-Oct**	**103**	**714.6**	1985	1-Jul	12-Oct	104	606.3
1961	29-Jun	7-Oct	101	792.5	1986	17-Jun	10-Sep	86	383.8
1962	8-Jul	23-Sep	78	504.5	1987	23-Jul	6-Sep	46	149.6
1963	23-Jun	23-Sep	93	672.5	1988	19-Jun	20-Sep	94	733.8
1964	4-Jul	22-Sep	81	730.6	1989	29-Jun	17-Sep	81	367.0
1965	8-Jul	14-Sep	69	355.3	**1990**	**30-Jun**	**23-Sep**	**86**	**615.3**
1966	9-Jun	7-Sep	91	615.8	1991	24-Jun	8-Sep	77	396.6
1967	7-Jul	19-Sep	75	678.6	1992	11-Jul	15-Sep	67	472.5
1968	5-Jul	22-Aug	49	375.9	1993	20-Jun	23-Sep	96	568.2
1969	6-Jul	22-Sep	79	556.0	1994	24-Jun	24-Aug	62	521.1
1970	**14-Jun**	**21-Sep**	**100**	**552.4**	1995	26-Jun	22-Sep	89	695.8
1971	29-May	14-Sep	109	727.5	1996	9-Jun	21-Sep	105	708.4
1972	9-Jul	16-Sep	70	418.5	1997	28-May	7-Oct	133	645.3
1973	26-Jun	13-Sep	80	548.0	1998	17-Jun	9-Oct	115	749.8
1974	6-Jul	22-Aug	48	333.9	1999	15-Jun	20-Sep	98	515.2
1975	13-Jun	22-Sep	102	756.6	**2000**	**12-Jun**	**14-Sep**	**95**	**590.1**
1976	18-Jun	11-Sep	86	647.8	2001	28-May	22-Aug	87	574.5
1977	23-Jun	21-Sep	91	715.8	2002	9-Aug	21-Sep	44	246.7
1978	11-Jun	22-Sep	104	753.5	2003	5-Jul	22-Sep	80	602.3
1979	23-Jun	18-Aug	57	277.4	2004	15-Jun	25-Aug	72	370.5
1980	**15-Jun**	**14-Sep**	**92**	**644.2**	2005	21-Jun	22-Sep	94	597.9
					Mean	**25-Jun**	**14-Sep**	**82**	**528.2**
					SD	**13**	**16**	**19**	**157**

Table 2(c): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Ramganga Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	18-Jun	20-Sep	95	965.5	**1900**	**17-Jun**	**24-Sep**	**100**	**947.3**
1845	9-Jun	15-Sep	99	881.3	1901	23-Jun	24-Sep	94	1118.0
1846	26-May	24-Sep	122	1639.4	1902	17-Jun	22-Sep	98	1019.0
1847	9-Jun	19-Sep	103	872.9	1903	27-Jun	25-Oct	121	1088.4
1848	17-May	23-Sep	130	798.7	1904	27-May	22-Sep	119	1060.7
1849	7-Jun	23-Sep	109	880.3	1905	30-Jun	17-Sep	80	613.7
1850	**12-Jun**	**24-Sep**	**105**	**902.2**	1906	7-Jun	22-Sep	108	1130.0
1851	13-Jun	18-Sep	98	755.8	1907	22-May	25-Aug	96	709.1
1852	25-May	20-Sep	119	1127.8	1908	8-Jun	13-Sep	98	949.6
1853	9-Jun	23-Oct	137	1174.9	1909	4-Jun	19-Sep	108	1330.7
1854	4-Jun	26-Sep	115	1377.3	**1910**	**26-May**	**25-Oct**	**153**	**1644.8**
1855	7-Jun	26-Sep	112	1419.7	1911	11-Jun	27-Sep	109	925.6
1856	4-Jun	9-Sep	98	1198.8	1912	24-Jun	26-Sep	95	961.5
1857	8-Jun	5-Oct	120	1129.1	1913	15-May	20-Aug	98	689.9
1858	10-Jun	21-Sep	104	1191.2	1914	19-May	26-Sep	131	1214.7
1859	25-May	19-Sep	118	1202.1	1915	9-Jun	25-Sep	109	1322.1
1860	**19-Jun**	**15-Sep**	**89**	**395.0**	1916	5-Jun	26-Sep	114	1434.7
1861	5-Jun	25-Sep	113	1365.0	1917	17-May	19-Oct	156	1550.4
1862	5-Jun	24-Sep	112	1107.3	1918	6-Jun	25-Aug	81	693.1
1863	6-Jun	2-Oct	119	960.3	1919	8-Jun	25-Sep	110	957.9
1864	5-Jul	23-Sep	81	678.6	**1920**	**18-May**	**15-Sep**	**121**	**1245.7**
1865	22-May	25-Sep	127	971.8	1921	3-Jun	25-Sep	115	1568.3
1866	18-Jun	3-Sep	78	759.5	1922	14-Jun	26-Sep	105	1708.9
1867	3-Jun	19-Oct	139	1483.4	1923	30-Jun	6-Oct	99	1062.1
1868	6-Jun	17-Sep	104	695.0	1924	24-Jun	9-Oct	108	1568.2
1869	22-Jun	21-Oct	122	948.5	1925	4-Jun	18-Sep	107	1403.9
1870	**4-Jun**	**23-Sep**	**112**	**1321.3**	1926	3-Jul	19-Sep	79	961.1
1871	14-May	15-Sep	125	1353.9	1927	31-May	24-Oct	147	1562.2
1872	5-Jun	25-Sep	113	1281.8	1928	11-Jun	10-Sep	92	901.2
1873	3-Jul	24-Sep	84	802.7	1929	10-Jun	30-Sep	113	794.5
1874	6-Jun	27-Sep	114	1475.2	**1930**	**13-Jun**	**5-Sep**	**85**	**966.5**
1875	16-Jun	23-Sep	100	1078.6	1931	23-Jun	13-Oct	113	1192.6
1876	4-Jul	21-Sep	80	756.0	1932	14-Jun	26-Sep	105	1078.9
1877	20-Jun	21-Oct	124	415.5	1933	23-May	23-Oct	154	1344.8
1878	26-Apr	24-Sep	152	1235.6	1934	8-Jun	20-Sep	105	1113.7
1879	6-Jun	9-Oct	126	2057.9	1935	4-Jul	25-Sep	84	888.1
1880	**8-Jun**	**26-Sep**	**111**	**1048.6**	1936	20-May	25-Sep	129	1900.3
1881	7-Jun	14-Sep	100	853.8	1937	10-Jun	23-Sep	106	117.2
1882	25-May	13-Sep	112	1335.2	1938	5-Jun	9-Sep	97	1161.5
1883	19-May	14-Sep	119	751.7	1939	9-Jun	23-Sep	107	840.8
1884	9-Jun	22-Sep	106	1103.5	**1940**	**19-Jun**	**19-Sep**	**93**	**1051.3**
1885	10-Jun	14-Sep	97	1414.5	1941	28-May	14-Sep	110	914.2
1886	23-May	22-Sep	123	1312.8	1942	26-May	22-Sep	120	1401.9
1887	9-Jun	23-Sep	107	961.9	1943	8-Jun	22-Sep	107	1147.1
1888	18-Jun	27-Sep	102	1423.7	1944	8-Jun	21-Sep	106	756.2
1889	4-Jun	20-Sep	109	1491.3	1945	16-Jun	22-Oct	129	1606.2
1890	**6-Jun**	**25-Sep**	**112**	**1458.5**	1946	24-May	7-Oct	137	1253.0
1891	21-Jun	27-Sep	99	1377.5	1947	14-Jun	25-Sep	104	1049.9
1892	15-Jun	15-Sep	93	1050.4	1948	4-Jul	24-Sep	83	1376.9
1893	5-Jun	25-Oct	143	1566.6	1949	31-May	25-Sep	118	1378.8
1894	6-Jun	21-Oct	138	1709.4	**1950**	**4-Jun**	**22-Sep**	**111**	**1335.5**
1895	4-Jun	5-Sep	94	1099.9	1951	29-Jun	25-Sep	89	785.4
1896	5-Jun	27-Aug	84	799.2	1952	8-Jun	27-Aug	81	725.7
1897	17-Jun	26-Aug	71	1202.7	1953	7-Jun	13-Sep	99	1035.9
1898	12-Jun	20-Sep	101	992.8	1954	12-Jun	24-Oct	135	1330.8
1899	6-Jun	21-Aug	77	821.2	1955	9-Jun	26-Oct	140	1287.9

Table 2(c): contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	15-May	27-Sep	136	991.2	1981	16-Jun	17-Sep	94	587.8
1957	17-Jun	26-Sep	102	1102.4	1982	19-May	14-Sep	119	891.9
1958	13-Jun	24-Oct	134	1358.5	1983	28-May	11-Oct	137	1255.9
1959	29-Jun	17-Oct	111	890.5	1984	6-Jun	15-Sep	102	819.0
1960	**13-Jun**	**27-Oct**	**137**	**1671.2**	1985	17-Jun	22-Oct	128	953.6
1961	7-Jun	25-Oct	141	1578.3	1986	5-Jul	23-Sep	81	608.5
1962	9-Jun	26-Sep	110	1160.2	1987	31-May	11-Sep	104	449.6
1963	11-Jun	25-Sep	107	1083.7	1988	15-Jun	18-Sep	96	1108.0
1964	3-Jul	26-Sep	86	1011.5	1989	12-Jun	22-Sep	103	673.9
1965	7-Jul	16-Sep	72	529.2	**1990**	**25-May**	**22-Sep**	**121**	**924.5**
1966	7-Jun	9-Sep	95	954.3	1991	18-Jul	19-Sep	64	457.2
1967	8-Jun	25-Sep	110	1500.5	1992	8-Jul	13-Oct	98	612.5
1968	8-Jun	22-Sep	107	1019.6	1993	18-May	26-Aug	101	536.6
1969	30-May	27-Sep	121	1401.0	1994	17-Jun	27-Aug	72	785.9
1970	**7-Jun**	**20-Sep**	**106**	**1003.4**	1995	13-Jun	20-Sep	100	773.4
1971	14-May	21-Oct	161	1535.8	1996	11-Jun	24-Sep	106	867.6
1972	17-Jun	25-Sep	101	902.9	1997	22-May	4-Oct	136	885.5
1973	4-Jun	18-Oct	137	1174.3	1998	29-May	23-Oct	148	1356.4
1974	16-Jun	4-Sep	81	833.7	1999	11-Jun	26-Sep	108	881.0
1975	7-Jun	26-Sep	112	1236.2	**2000**	**18-May**	**16-Sep**	**122**	**1352.1**
1976	9-Jun	17-Sep	101	1165.7	2001	23-May	18-Aug	88	709.0
1977	21-May	24-Sep	127	1177.2	2002	21-Jun	26-Sep	98	685.3
1978	4-Jun	24-Sep	113	1303.0	2003	8-Jun	26-Sep	111	1058.9
1979	26-May	17-Aug	84	314.7	2004	29-May	8-Oct	133	952.5
1980	**8-Jun**	**22-Sep**	**107**	**1015.8**	2005	13-Jun	27-Sep	107	999.2
					Mean	**8-Jun**	**24-Sep**	**109**	**1078.5**
					SD	**13**	**15**	**19**	**323**

Table 2(d): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Gomati Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	9-Jul	16-Sep	70	462.0	**1900**	**30-Jun**	**25-Sep**	**88**	**741.9**
1845	14-Jun	9-Sep	88	706.4	1901	8-Jul	24-Sep	79	603.5
1846	21-Jun	22-Sep	94	641.0	1902	4-Jul	24-Sep	83	642.5
1847	8-Jul	24-Oct	109	731.3	1903	29-Jun	27-Oct	121	963.3
1848	29-May	21-Aug	85	457.2	1904	12-Jun	16-Sep	97	785.3
1849	15-Jun	22-Oct	130	554.3	1905	5-Jul	20-Sep	78	626.5
1850	**7-Jun**	**21-Sep**	**107**	**695.8**	1906	8-Jun	17-Sep	102	793.2
1851	16-Jun	22-Oct	129	490.2	1907	11-Jul	24-Aug	45	313.6
1852	5-Jul	6-Sep	64	387.7	1908	7-Jul	3-Sep	59	443.1
1853	5-Jul	12-Sep	70	408.0	1909	7-Jun	18-Sep	104	811.5
1854	8-Jun	8-Oct	123	677.1	**1910**	**12-Jun**	**14-Oct**	**125**	**713.9**
1855	19-Jun	25-Sep	99	809.6	1911	20-Jun	11-Oct	114	689.5
1856					1912	5-Jul	20-Sep	78	597.6
1857		NO DATA			1913	22-May	14-Sep	116	597.5
1858					1914	4-Jul	15-Sep	74	778.4
1859					1915	12-Jun	14-Oct	125	1231.0
1860	**7-Jul**	**14-Oct**	**100**	**532.1**	1916	6-Jun	2-Oct	119	801.8
1861	7-Jun	25-Oct	141	829.0	1917	10-Jun	30-Sep	113	880.1
1862	26-Jun	10-Oct	107	1134.9	1918	9-Jun	14-Sep	98	454.9
1863	12-Jun	13-Oct	124	1102.2	1919	5-Jul	5-Oct	93	721.4
1864	21-Jul	13-Sep	55	177.8	**1920**	**22-Jun**	**9-Sep**	**80**	**618.3**
1865	22-May	17-Sep	119	899.1	1921	7-Jun	23-Sep	109	977.3
1866	21-Jun	23-Sep	95	776.7	1922	15-Jun	26-Sep	104	1300.3
1867	5-Jun	16-Oct	134	933.7	1923	6-Jul	16-Oct	103	960.5
1868	15-Jun	22-Sep	100	518.5	1924	3-Jul	25-Sep	85	881.0
1869	7-Jul	22-Oct	108	671.3	1925	10-Jun	25-Sep	108	1082.1
1870	**7-Jun**	**17-Oct**	**133**	**1085.7**	1926	4-Jul	22-Sep	81	707.7
1871	22-May	26-Sep	128	1335.2	1927	20-Jun	10-Nov	144	803.7
1872	11-Jun	19-Sep	101	832.6	1928	18-Jun	6-Oct	111	384.3
1873	5-Jul	20-Sep	78	620.2	1929	10-Jun	10-Oct	123	670.2
1874	5-Jun	24-Sep	112	1066.0	**1930**	**4-Jul**	**24-Sep**	**83**	**845.8**
1875	18-Jun	24-Sep	99	797.5	1931	7-Jul	11-Oct	97	817.3
1876	6-Jul	7-Oct	94	617.3	1932	22-Jun	19-Sep	90	500.2
1877	26-Jun	16-Oct	113	196.1	1933	13-Jun	17-Oct	127	518.1
1878	21-Jun	22-Sep	94	683.2	1934	10-Jun	24-Sep	107	874.2
1879	9-Jun	16-Oct	130	996.0	1935	6-Jul	20-Sep	77	596.8
1880	**6-Jul**	**12-Sep**	**69**	**345.2**	1936	7-Jun	25-Sep	111	1446.1
1881	13-Jun	2-Sep	82	624.4	1937	16-Jun	8-Sep	85	635.1
1882	10-Jun	4-Sep	87	481.1	1938	4-Jun	21-Sep	110	1213.6
1883	17-Jun	19-Sep	95	540.9	1939	12-Jun	22-Sep	103	685.8
1884	16-Jun	9-Oct	116	773.2	**1940**	**27-Jun**	**16-Sep**	**82**	**628.2**
1885	8-Jun	13-Sep	98	920.4	1941	15-Jun	21-Sep	99	495.2
1886	6-Jun	12-Oct	129	768.7	1942	19-Jun	23-Sep	97	890.5
1887	13-Jun	30-Sep	110	889.0	1943	26-Jun	25-Sep	92	941.0
1888	23-Jun	23-Sep	93	984.5	1944	14-Jun	21-Sep	100	781.4
1889	7-Jun	24-Sep	110	1030.6	1945	7-Jul	16-Oct	102	733.2
1890	**4-Jun**	**24-Sep**	**113**	**1151.9**	1946	18-Jun	14-Oct	119	672.7
1891	14-Jul	25-Sep	74	802.6	1947	12-Jun	23-Sep	104	897.8
1892	17-Jun	7-Sep	83	847.0	1948	13-Jun	25-Sep	105	1029.9
1893	30-May	15-Oct	139	1100.5	1949	5-Jul	16-Sep	74	926.3
1894	6-Jun	26-Oct	143	1128.3	**1950**	**13-Jun**	**14-Sep**	**94**	**678.5**
1895	9-Jun	19-Sep	103	694.7	1951	19-Jun	21-Sep	95	459.4
1896	13-Jun	23-Aug	72	440.3	1952	5-Jun	12-Sep	100	748.7
1897	16-Jun	19-Sep	96	800.6	1953	11-Jun	23-Sep	105	1095.8
1898	11-Jun	21-Sep	103	1052.9	1954	20-Jun	22-Sep	95	807.9
1899	7-Jun	1-Sep	87	754.8	1955	9-Jun	17-Oct	131	1092.0

Table 2(d):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	13-Jun	23-Oct	133	750.5	1981	21-Jun	25-Sep	97	875.5
1957	5-Jul	22-Sep	80	745.0	1982	16-Jun	25-Sep	102	802.9
1958	27-Jun	18-Oct	114	784.9	1983	16-Jun	15-Oct	122	796.4
1959	7-Jul	9-Oct	95	511.1	1984	9-Jun	24-Sep	108	834.2
1960	**26-Jun**	**23-Oct**	**120**	**1017.4**	1985	18-Jun	24-Oct	129	1070.6
1961	19-Jun	27-Oct	131	1197.5	1986	10-Jun	17-Sep	100	620.0
1962	22-Jun	24-Sep	95	764.3	1987	12-Jul	18-Oct	99	592.2
1963	17-Jun	20-Sep	96	769.5	1988	17-Jun	30-Sep	106	877.3
1964	29-May	24-Sep	119	770.0	1989	11-Jun	24-Sep	106	653.1
1965	9-Jul	9-Oct	93	492.3	**1990**	**18-Jun**	**21-Sep**	**96**	**769.1**
1966	8-Jun	24-Aug	78	526.8	1991	16-Jun	23-Sep	100	662.2
1967	6-Jul	18-Sep	75	712.8	1992	8-Jul	7-Oct	92	507.8
1968	22-Jun	19-Sep	90	649.8	1993	26-May	23-Sep	121	568.7
1969	5-Jul	24-Sep	82	781.8	1994	13-Jun	17-Sep	97	834.9
1970	**12-Jun**	**26-Sep**	**107**	**910.1**	1995	14-Jun	23-Sep	102	640.6
1971	28-May	10-Oct	136	1228.0	1996	13-Jun	16-Oct	126	812.9
1972	9-Jul	23-Sep	77	479.5	1997	18-Jun	7-Oct	112	718.2
1973	16-Jun	20-Oct	127	833.6	1998	6-Jul	22-Sep	79	705.6
1974	5-Jul	15-Sep	73	549.4	1999	14-Jun	7-Oct	116	719.7
1975	6-Jun	21-Sep	108	987.3	**2000**	**27-May**	**23-Sep**	**120**	**918.3**
1976	18-Jun	24-Sep	99	791.2	2001	7-Jun	15-Oct	131	596.1
1977	5-Jul	11-Oct	99	577.1	2002	30-Jun	25-Sep	88	593.2
1978	11-Jun	23-Sep	105	835.5	2003	15-Jun	27-Sep	105	959.0
1979	21-Jun	9-Aug	50	297.5	2004	7-Jun	19-Sep	105	584.9
1980	**9-Jun**	**25-Sep**	**109**	**1341.7**	2005	23-Jun	21-Sep	91	618.0
					Mean	**19-Jun**	**27-Sep**	**101**	**760.6**
					SD	**12**	**15**	**19**	**230**

Table 2(e): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Ghaghara Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	19-Jun	17-Sep	91	606.4	**1900**	**17-Jun**	**5-Oct**	**111**	**830.4**
1845	8-Jun	24-Aug	78	731.9	1901	6-Jul	23-Sep	80	648.2
1846	10-Jun	26-Sep	109	979.6	1902	4-Jul	25-Sep	84	814.6
1847	25-May	26-Oct	155	1408.1	1903	14-Jun	26-Oct	135	1298.8
1848	8-Jun	19-Sep	104	626.9	1904	27-May	11-Oct	138	988.2
1849	7-Jun	17-Oct	133	707.7	1905	4-Jul	22-Sep	81	981.7
1850	**4-Jun**	**25-Sep**	**114**	**969.3**	1906	12-Jun	11-Sep	92	894.2
1851	10-Jun	20-Oct	133	714.1	1907	19-Jun	9-Sep	83	404.9
1852	13-May	19-Sep	130	1075.8	1908	13-Jun	19-Sep	99	519.2
1853	9-Jun	14-Oct	128	1018.5	1909	5-Jun	22-Sep	110	1007.1
1854	7-Jun	1-Oct	117	1237.7	**1910**	**7-Jun**	**21-Oct**	**137**	**1266.3**
1855	11-Jun	26-Sep	108	844.1	1911	10-Jun	22-Oct	135	1171.5
1856	9-Jun	23-Oct	137	947.0	1912	21-Jun	13-Sep	85	789.8
1857	11-Jun	23-Sep	105	861.4	1913	17-May	19-Sep	126	904.5
1858	14-Jun	23-Sep	102	963.1	1914	21-May	12-Sep	115	830.4
1859	6-Jun	25-Oct	142	1137.2	1915	16-Jun	16-Oct	123	1200.3
1860	**5-Jul**	**22-Oct**	**110**	**635.9**	1916	9-Jun	23-Sep	107	1077.1
1861	4-Jun	18-Oct	137	1173.5	1917	8-Jun	25-Sep	110	946.7
1862	27-May	30-Sep	127	758.7	1918	10-Jun	23-Sep	106	669.9
1863	12-Jun	11-Oct	122	1074.0	1919	14-Jun	13-Oct	122	944.2
1864	30-Jun	20-Sep	83	484.6	**1920**	**12-Jun**	**22-Sep**	**103**	**847.1**
1865	25-May	17-Sep	116	824.2	1921	10-Jun	26-Sep	109	1082.7
1866	16-Jun	24-Sep	101	792.9	1922	7-Jun	25-Sep	111	1365.3
1867	27-May	13-Oct	140	1248.0	1923	18-Jun	15-Oct	120	837.2
1868	9-Jun	20-Sep	104	711.0	1924	28-Jun	25-Sep	90	1040.2
1869	20-Jun	22-Oct	125	906.9	1925	15-Jun	22-Sep	100	835.1
1870	**9-Jun**	**17-Oct**	**131**	**1266.4**	1926	4-Jul	23-Sep	82	780.9
1871	18-May	27-Sep	133	1720.4	1927	19-Jun	23-Sep	97	746.0
1872	11-Jun	25-Sep	107	1007.5	1928	10-Jun	12-Oct	125	605.5
1873	16-Jun	10-Sep	87	606.6	1929	5-Jun	3-Oct	121	848.9
1874	5-Jun	24-Sep	112	1095.0	**1930**	**22-Jun**	**27-Sep**	**98**	**931.6**
1875	8-Jun	21-Sep	106	842.4	1931	4-Jul	18-Oct	107	891.5
1876	10-Jul	19-Oct	102	648.2	1932	10-Jun	20-Sep	103	675.7
1877	23-Jun	16-Oct	116	365.6	1933	25-May	16-Oct	145	987.5
1878	30-May	24-Sep	118	749.2	1934	8-Jun	24-Sep	109	1056.7
1879	8-Jun	20-Oct	135	1385.3	1935	12-Jun	24-Sep	105	877.0
1880	**20-May**	**12-Sep**	**116**	**891.8**	1936	7-Jun	25-Sep	111	1269.2
1881	30-May	16-Oct	140	872.1	1937	14-Jun	16-Sep	95	808.4
1882	31-May	11-Oct	134	790.8	1938	22-May	26-Sep	128	1606.1
1883	8-Jun	17-Sep	102	606.9	1939	7-Jun	24-Sep	110	934.7
1884	9-Jun	13-Oct	127	873.2	**1940**	**15-Jun**	**21-Sep**	**99**	**772.6**
1885	12-Jun	24-Sep	105	1005.1	1941	8-Jun	21-Sep	106	866.5
1886	8-Jun	22-Oct	137	1105.7	1942	13-Jun	23-Sep	103	809.9
1887	11-Jun	20-Oct	132	911.6	1943	14-Jun	23-Sep	102	876.8
1888	14-Jun	25-Sep	104	929.7	1944	9-Jun	12-Oct	126	865.8
1889	8-Jun	25-Sep	110	1126.1	1945	13-Jun	21-Oct	131	931.4
1890	**5-Jun**	**24-Sep**	**112**	**1288.1**	1946	24-Apr	21-Oct	181	1194.7
1891	9-Jun	13-Oct	127	746.4	1947	25-Jun	23-Sep	91	854.2
1892	10-Jun	14-Sep	97	925.9	1948	21-Jun	16-Oct	118	1224.3
1893	20-May	23-Oct	157	1053.8	1949	28-May	25-Sep	121	1033.0
1894	6-Jun	26-Oct	143	1535.7	**1950**	**6-Jun**	**16-Sep**	**103**	**847.6**
1895	7-Jun	23-Sep	109	943.3	1951	7-Jun	19-Sep	105	649.9
1896	11-Jun	26-Aug	77	531.0	1952	6-Jun	21-Sep	108	811.2
1897	7-Jun	18-Oct	134	1088.5	1953	7-Jun	26-Sep	112	1361.0
1898	9-Jun	26-Sep	110	1231.3	1954	19-Jun	21-Sep	95	789.6
1899	26-May	30-Aug	97	1124.8	1955	5-Jun	13-Oct	131	1482.7

Table 2(e): contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	20-May	23-Oct	157	1253.4	1981	18-Jun	25-Sep	100	1190.2
1957	15-Jun	20-Sep	98	751.9	1982	10-Jun	26-Sep	109	938.9
1958	20-Jun	18-Oct	121	989.1	1983	14-Jun	15-Oct	124	1094.2
1959	25-Jun	24-Oct	122	786.4	1984	4-Jun	25-Sep	114	1242.8
1960	**15-Jun**	**6-Oct**	**114**	**921.8**	1985	15-Jun	20-Oct	128	1194.7
1961	12-Jun	22-Oct	133	864.0	1986	16-Jun	19-Sep	96	724.8
1962	19-Jun	25-Sep	99	1023.8	1987	4-Jul	9-Oct	98	1079.4
1963	13-Jun	20-Sep	100	867.1	1988	15-Jun	7-Oct	115	951.5
1964	24-May	25-Sep	125	1086.4	1989	10-Jun	24-Sep	107	986.4
1965	7-Jul	19-Sep	75	540.5	**1990**	**25-May**	**21-Sep**	**120**	**842.3**
1966	7-Jun	25-Aug	80	533.9	1991	10-Jun	25-Sep	108	812.1
1967	22-Jun	20-Sep	91	767.3	1992	18-Jun	14-Oct	119	667.6
1968	11-Jun	15-Sep	97	805.9	1993	7-Jun	24-Sep	110	832.7
1969	9-Jun	23-Sep	107	1005.1	1994	11-Jun	25-Sep	107	791.8
1970	**6-Jun**	**5-Oct**	**122**	**927.6**	1995	8-Jun	23-Sep	108	853.9
1971	18-Apr	16-Oct	182	1432.2	1996	8-Jun	15-Oct	130	1009.9
1972	8-Jul	24-Sep	79	620.9	1997	15-Jun	30-Sep	108	797.2
1973	10-Jun	23-Oct	136	1099.2	1998	26-Jun	5-Oct	102	1038.0
1974	22-Jun	22-Sep	93	889.4	1999	6-Jun	16-Oct	133	910.9
1975	5-Jun	23-Sep	111	1135.9	**2000**	**22-May**	**25-Sep**	**127**	**1178.2**
1976	20-Jun	25-Sep	98	795.8	2001	23-May	18-Oct	149	1218.8
1977	27-Jun	18-Oct	114	738.7	2002	30-May	22-Sep	116	582.9
1978	8-Jun	23-Sep	108	873.7	2003	9-Jun	25-Sep	109	911.2
1979	16-Jun	14-Aug	60	467.8	2004	7-Jun	10-Sep	96	662.3
1980	**9-Jun**	**25-Sep**	**109**	**1323.3**	2005	26-Jun	18-Oct	115	912.3
					Mean	**10-Jun**	**30-Sep**	**113**	**933.5**
					SD	**12**	**14**	**19**	**238**

Table 2(f): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Gandak Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1848	30-May	9-Oct	133	1006.4	1904	12-May	22-Oct	164	1118.0
1849	23-May	24-Oct	155	993.2	1905	17-May	25-Sep	132	1396.4
1850	**8-Jun**	**24-Sep**	**109**	**860.4**	1906	7-Jun	11-Sep	97	1221.5
1851	16-Jun	14-Oct	121	573.5	1907	8-Jun	21-Sep	106	748.8
1852	21-May	19-Sep	122	1071.1	1908	20-Jun	21-Sep	94	436.2
1853	10-Jul	21-Aug	43	211.6	1909	3-Jun	5-Oct	125	1169.9
1854	12-May	25-Sep	137	1210.0	**1910**	**7-Jun**	**18-Oct**	**134**	**1176.1**
1855					1911	6-Jun	12-Oct	129	1029.9
1856		NO DATA			1912	27-May	19-Sep	116	832.1
1857					1913	14-May	7-Oct	147	1490.2
1858					1914	18-May	7-Sep	113	936.3
1859	27-May	25-Oct	152	1478.8	1915	26-May	23-Sep	121	1171.9
1860	**24-Jun**	**16-Sep**	**85**	**426.9**	1916	8-Jun	17-Oct	132	1361.3
1861	15-May	21-Oct	160	1257.7	1917	16-May	24-Sep	132	980.6
1862	21-May	8-Oct	141	705.8	1918	14-May	25-Sep	135	1234.8
1863	12-Jun	12-Oct	123	1102.7	1919	10-Jun	22-Sep	105	761.6
1864	17-Jun	20-Sep	96	778.9	**1920**	**12-Jun**	**26-Sep**	**107**	**949.2**
1865	31-Mar	15-Sep	169	916.0	1921	11-Jun	27-Sep	109	1222.2
1866	18-Jun	15-Sep	90	626.2	1922	4-Jun	24-Sep	113	1292.6
1867	29-Apr	12-Sep	137	1311.4	1923	26-May	12-Oct	140	800.0
1868	24-May	13-Sep	113	556.7	1924	13-Jun	26-Sep	106	1118.5
1869	10-Jun	15-Oct	128	697.0	1925	14-Jun	24-Sep	103	991.2
1870	**6-Jun**	**26-Oct**	**143**	**1237.2**	1926	30-Jun	20-Sep	83	781.4
1871	15-May	28-Sep	137	1677.0	1927	17-Jun	19-Sep	95	557.6
1872	27-May	25-Sep	122	967.6	1928	9-Jun	20-Oct	134	1025.0
1873	12-Jun	24-Aug	74	559.6	1929	6-Jun	23-Oct	140	1006.1
1874	6-Jun	11-Oct	128	1060.6	**1930**	**8-Jun**	**24-Sep**	**109**	**737.9**
1875	19-May	20-Sep	125	866.0	1931	26-Jun	7-Oct	104	884.0
1876	15-Jun	22-Oct	130	893.5	1932	12-Jun	22-Sep	103	526.6
1877	25-Jun	17-Oct	115	599.1	1933	28-Apr	5-Oct	161	1232.4
1878	16-May	18-Sep	126	712.6	1934	8-Jun	23-Sep	108	980.6
1879	6-Jun	23-Oct	140	1301.1	1935	10-Jun	27-Sep	110	1078.7
1880	**24-May**	**4-Oct**	**134**	**1011.0**	1936	21-May	25-Sep	128	1150.6
1881	22-May	17-Oct	149	997.7	1937	14-May	25-Oct	165	1251.6
1882	23-May	20-Oct	151	951.0	1938	22-May	24-Sep	126	1482.7
1883	4-Jun	10-Sep	99	876.8	1939	6-Jun	10-Oct	127	942.9
1884	7-Jun	14-Oct	130	763.8	**1940**	**10-Jun**	**23-Sep**	**106**	**956.0**
1885	30-May	26-Sep	120	1181.1	1941	29-May	21-Sep	116	1017.3
1886	18-May	22-Oct	158	1447.6	1942	8-Jun	27-Sep	112	1033.4
1887	10-May	18-Oct	162	1146.5	1943	14-Jun	21-Sep	100	737.0
1888	29-May	18-Sep	113	833.6	1944	6-Jun	24-Sep	111	817.8
1889	4-Jun	26-Sep	115	1228.6	1945	25-May	22-Oct	151	930.9
1890	**18-May**	**11-Oct**	**147**	**1410.9**	1946	14-May	19-Oct	159	1158.3
1891	18-May	9-Sep	115	740.8	1947	26-May	5-Oct	133	911.2
1892	6-Jun	16-Sep	103	1093.7	1948	22-May	18-Oct	150	1270.4
1893	21-May	23-Oct	156	1380.6	1949	22-May	22-Oct	154	1360.0
1894	9-Jun	22-Oct	136	1057.9	**1950**	**5-Jun**	**17-Sep**	**105**	**794.4**
1895	18-May	23-Sep	129	1030.1	1951	11-Jun	12-Sep	94	754.7
1896	27-May	12-Sep	109	749.1	1952	4-Jun	25-Sep	114	1089.2
1897	5-Jun	23-Oct	141	1004.9	1953	7-Jun	10-Oct	126	1315.9
1898	19-May	27-Sep	132	1292.5	1954	12-Jun	19-Sep	100	816.4
1899	25-Apr	21-Sep	150	1493.2	1955	8-Jun	24-Sep	109	1129.7
1900	**6-Jun**	**25-Sep**	**112**	**858.1**	1956	27-May	13-Oct	140	1075.6
1901	14-May	19-Sep	129	908.0	1957	13-Jun	15-Sep	95	1252.8
1902	24-May	26-Sep	126	1095.3	1958	10-Jun	19-Sep	102	802.9
1903	7-Jun	20-Oct	136	831.5	1959	14-Jun	24-Oct	133	786.3

Table 2(f):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1960	**12-Jun**	**26-Sep**	**107**	**913.5**	1983	28-Apr	12-Oct	168	980.6
1961	10-Jun	26-Oct	139	760.6	1984	19-May	24-Sep	129	1377.9
1962	11-Jun	24-Sep	106	940.7	1985	23-May	23-Oct	154	1282.7
1963	18-May	16-Oct	152	1249.4	1986	15-May	11-Oct	150	1157.9
1964	17-May	14-Oct	151	1050.5	1987	1-Jun	27-Sep	119	1406.3
1965	18-Jun	21-Sep	96	763.4	1988	26-May	23-Sep	121	1144.3
1966	25-May	25-Aug	93	552.9	1989	18-Jun	25-Sep	100	793.9
1967	6-Jul	22-Sep	79	636.6	**1990**	**27-May**	**20-Sep**	**117**	**718.6**
1968	5-Jun	18-Oct	136	932.0	1991	10-Jun	15-Sep	98	702.7
1969	19-May	25-Sep	130	1228.0	1992	19-May	4-Sep	109	601.9
1970	**7-Jun**	**26-Sep**	**112**	**1074.1**	1993	20-May	25-Sep	129	1097.8
1971	16-Apr	20-Oct	188	1405.0	1994	20-Jun	26-Sep	99	918.3
1972	10-Jul	25-Sep	78	546.3	1995	9-Jun	21-Sep	105	944.6
1973	17-May	24-Oct	161	1252.8	1996	5-Jun	9-Oct	127	1009.1
1974	8-Jun	25-Sep	110	1319.8	1997	4-Jun	22-Sep	111	1160.9
1975	12-Jun	5-Oct	116	934.1	1998	22-Jun	5-Oct	106	961.4
1976	19-May	26-Sep	131	951.2	1999	16-May	15-Oct	153	1195.7
1977	17-May	25-Oct	162	1286.9	**2000**	**10-May**	**4-Oct**	**148**	**984.3**
1978	26-May	23-Oct	151	1005.3	2001	13-May	23-Oct	164	774.0
1979	18-Jun	3-Nov	139	979.6	2002	18-May	23-Sep	129	921.1
1980	**14-May**	**21-Sep**	**131**	**1116.6**	2003	5-Jun	21-Sep	109	963.8
1981	30-May	22-Sep	116	1242.9	2004	18-May	17-Aug	92	750.1
1982	10-Jun	20-Sep	103	593.9	2005	14-Jun	24-Aug	72	441.7
					Mean	**31-May**	**1-Oct**	**124**	**995**
					SD	**15**	**15**	**23**	**260**

Table 2(g): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Kosi Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1870	**8-Jun**	**28-Oct**	**143**	**940.7**	1926	3-Jul	23-Sep	83	851.9
1871	17-Apr	25-Sep	162	1094.5	1927	15-May	24-Sep	133	933.5
1872	14-May	16-Oct	156	999.4	1928	20-Apr	25-Oct	189	1541.7
1873	9-Jun	12-Sep	96	751.8	1929	21-May	27-Oct	160	1749.5
1874	4-Jun	23-Oct	142	1638.2	**1930**	**5-Jun**	**26-Sep**	**114**	**1169.3**
1875	15-May	16-Sep	125	900.7	1931	22-Jun	22-Oct	123	1874.4
1876	29-Apr	3-Sep	128	1085.6	1932	27-May	26-Sep	123	793.6
1877	18-May	11-Oct	147	1064.7	1933	15-Apr	22-Oct	191	1371.8
1878	8-May	26-Sep	142	1407.4	1934	10-Jun	7-Oct	120	1035.7
1879	16-May	22-Oct	160	1586.8	1935	12-Jun	26-Sep	107	1037.7
1880	**17-May**	**16-Oct**	**153**	**1127.1**	1936	13-May	19-Oct	160	1548.2
1881	11-May	23-Oct	166	1117.6	1937	11-May	26-Oct	169	1297.2
1882	7-May	21-Oct	168	866.5	1938	11-May	24-Sep	137	1480.1
1883	22-May	16-Sep	118	1333.7	1939	6-Jun	12-Oct	129	1101.0
1884	24-May	25-Oct	155	896.5	**1940**	**11-Jun**	**24-Sep**	**106**	**923.8**
1885	19-May	26-Sep	131	1018.3	1941	21-May	12-Oct	145	1136.0
1886	19-May	18-Oct	153	1177.2	1942	10-Jun	27-Sep	110	1094.7
1887	5-May	10-Oct	159	1279.7	1943	11-Jun	15-Sep	97	840.0
1888	18-Apr	24-Sep	160	1411.3	1944	7-Jun	21-Sep	107	816.5
1889	4-Jun	27-Sep	116	1408.8	1945	24-May	24-Oct	154	1041.0
1890	**18-May**	**12-Oct**	**148**	**1395.5**	1946	24-Apr	7-Oct	167	1324.2
1891	9-May	10-Aug	94	611.4	1947	17-May	2-Oct	139	1518.5
1892	24-Apr	13-Sep	143	1073.3	1948	15-May	15-Oct	154	1344.4
1893	25-May	24-Sep	123	1064.8	1949	21-Apr	23-Oct	186	1493.8
1894	10-Jun	17-Oct	130	1229.1	**1950**	**3-Jun**	**20-Sep**	**110**	**1230.1**
1895	27-May	24-Sep	121	1125.3	1951	22-May	4-Oct	136	820.3
1896	20-May	24-Sep	128	827.2	1952	30-May	25-Sep	119	985.6
1897	23-Apr	22-Oct	183	869.5	1953	6-Jun	25-Sep	112	1254.1
1898	12-May	28-Sep	140	1221.1	1954	5-Jun	1-Sep	89	1013.6
1899	15-Apr	27-Sep	166	1930.3	1955	9-Jun	18-Sep	102	1018.8
1900	**16-May**	**4-Oct**	**142**	**1375.3**	1956	17-May	24-Oct	161	1505.1
1901	26-May	13-Sep	111	816.1	1957	9-Jun	17-Sep	101	750.2
1902	14-May	28-Sep	138	1274.4	1958	12-Jun	26-Sep	107	864.1
1903	4-Jun	12-Oct	131	1127.8	1959	18-May	25-Oct	161	1019.1
1904	11-May	17-Oct	160	1043.5	**1960**	**19-May**	**10-Oct**	**145**	**1164.9**
1905	7-May	27-Sep	144	1583.2	1961	23-May	26-Oct	157	1594.3
1906	4-Jun	28-Aug	86	1310.7	1962	10-Jun	13-Oct	126	963.4
1907	26-May	21-Sep	119	749.8	1963	12-May	20-Oct	162	1274.7
1908	19-May	20-Sep	125	364.1	1964	16-May	18-Oct	156	1096.7
1909	27-May	25-Sep	122	1421.9	1965	9-Jun	24-Sep	108	1030.2
1910	**26-May**	**24-Sep**	**122**	**1338.1**	1966	7-Jul	24-Aug	49	323.9
1911	22-May	25-Sep	127	1084.7	1967	15-Jun	17-Sep	95	807.0
1912	29-May	12-Sep	107	810.5	1968	4-Jun	20-Oct	139	967.5
1913	11-May	1-Oct	144	1220.6	1969	5-Jun	20-Nov	169	819.2
1914	18-May	13-Sep	119	621.6	**1970**	**9-May**	**26-Sep**	**141**	**1298.9**
1915	6-May	16-Oct	164	1242.6	1971	11-Apr	23-Oct	196	1501.2
1916	6-Jun	13-Oct	130	1229.4	1972	11-Jul	25-Sep	77	499.7
1917	8-May	25-Oct	171	1288.9	1973	14-May	24-Oct	164	1206.7
1918	11-May	9-Oct	152	1384.1	1974	23-May	25-Sep	126	1226.8
1919	13-Jun	18-Oct	128	800.4	1975	12-Jun	11-Oct	122	949.1
1920	**29-May**	**27-Sep**	**122**	**1119.4**	1976	14-May	27-Sep	137	1145.0
1921	12-Jun	14-Oct	125	1705.1	1977	14-May	25-Oct	165	1300.8
1922	30-May	21-Sep	115	1181.1	1978	18-May	24-Oct	160	1255.9
1923	6-Jun	20-Sep	107	573.8	1979	13-Jun	17-Oct	127	905.2
1924	7-Jun	13-Nov	160	1274.2	**1980**	**8-May**	**23-Sep**	**139**	**1287.5**
1925	15-Jun	26-Sep	104	1295.5	1981	17-Mar	21-Sep	189	1800.4

Table 2(g): contd …

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1982	29-May	20-Sep	115	825.4	1994	5-Jun	28-Aug	85	899.3
1983	24-Apr	16-Oct	176	1477.6	1995	6-Jun	27-Sep	114	1479.0
1984	18-May	7-Sep	113	1331.6	1996	3-Jun	4-Oct	124	1443.9
1985	24-May	21-Oct	151	1267.4	1997	14-Apr	24-Sep	164	1374.3
1986	5-May	25-Oct	174	1577.8	1998	9-May	18-Oct	163	1645.6
1987	19-Apr	21-Sep	156	2329.6	1999	3-May	26-Oct	177	2285.5
1988	21-Apr	13-Sep	146	1313.2	**2000**	**12-Apr**	**27-Sep**	**169**	**1677.2**
1989	11-May	11-Oct	154	1399.8	2001	4-May	18-Oct	168	1329.9
1990	**7-May**	**9-Oct**	**156**	**1224.2**	2002	15-May	16-Sep	125	829.9
1991	12-May	27-Sep	139	1458.6	2003	18-May	12-Oct	148	1085.4
1992	14-May	21-Sep	131	901.4	2004	15-Apr	18-Oct	187	1182.7
1993	24-Apr	4-Nov	195	1571.0	2005	24-Jun	25-Sep	94	1085.6
					Mean	**20-May**	**4-Oct**	**138**	**1183.0**
					SD	**19**	**17**	**27**	**327**

Table 2(h):Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Mahananda Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1837	8-May	22-Oct	168	2110.6	1893	12-Apr	18-Oct	190	2235.4
1838					1894	21-Apr	24-Oct	187	2165.2
1839					1895	19-Apr	24-Sep	159	1844.8
1840					1896	7-May	26-Sep	143	1450.5
1841					1897	13-May	24-Oct	165	1745.0
1842		NO DATA			1898	10-May	2-Oct	146	1957.8
1843					1899	23-Apr	27-Sep	158	2482.6
1844					**1900**	**9-May**	**26-Sep**	**141**	**1862.2**
1845					1901	10-May	22-Sep	136	1547.5
1846					1902	24-Mar	16-Oct	207	2322.7
1847					1903	12-May	20-Oct	162	1618.6
1848	6-May	22-Oct	170	1546.5	1904	27-Apr	19-Oct	176	1655.1
1849	22-Apr	13-Oct	175	1478.4	1905	19-Apr	15-Oct	180	2300.5
1850	**16-May**	**26-Sep**	**134**	**1811.2**	1906	11-May	14-Oct	157	1834.4
1851	23-Mar	23-Oct	215	2013.2	1907	22-Mar	26-Sep	189	1730.7
1852	6-Mar	26-Sep	205	2027.7	1908	9-May	25-Sep	140	1191.3
1853	21-May	17-Oct	150	2088.3	1909	14-Apr	20-Oct	190	2154.6
1854					**1910**	**12-May**	**18-Oct**	**160**	**2106.6**
1855					1911	16-Apr	21-Oct	189	2264.3
1856		NO DATA			1912	22-Mar	20-Nov	244	2116.6
1857					1913	8-May	20-Oct	166	2069.8
1858					1914	11-Apr	21-Sep	164	1673.6
1859					1915	8-May	11-Oct	157	1692.5
1860	**12-May**	**19-Oct**	**161**	**2083.0**	1916	11-Apr	23-Oct	196	2611.6
1861	8-May	27-Oct	173	2307.5	1917	8-May	27-Oct	173	2307.6
1862	21-Apr	20-Oct	183	1851.6	1918	14-Apr	25-Sep	165	2442.9
1863	24-Apr	26-Sep	156	1623.3	1919	26-Apr	9-Sep	137	1881.5
1864	11-May	22-Sep	135	1497.3	**1920**	**14-May**	**8-Oct**	**148**	**1809.7**
1865	19-Feb	23-Sep	218	1952.5	1921	30-Mar	5-Oct	190	2022.4
1866	5-Apr	6-Oct	185	2065.9	1922	13-May	27-Sep	138	2095.9
1867	30-Apr	1-Oct	155	2071.5	1923	21-Apr	14-Oct	177	1893.0
1868	25-Apr	25-Sep	154	2105.0	1924	20-Apr	14-Nov	209	2318.3
1869	14-May	2-Oct	142	2084.6	1925	8-Apr	12-Oct	188	2215.5
1870	**13-May**	**27-Oct**	**168**	**2363.5**	1926	9-May	25-Sep	140	1806.3
1871	30-Mar	27-Sep	182	1905.8	1927	28-Mar	7-Oct	194	1917.6
1872	21-Apr	23-Oct	186	1934.5	1928	28-Apr	26-Oct	182	2158.7
1873	15-Apr	24-Sep	163	1267.8	1929	17-Apr	28-Oct	195	2211.0
1874	16-Apr	26-Oct	194	2332.5	**1930**	**12-May**	**15-Oct**	**157**	**1633.8**
1875	30-Apr	23-Sep	147	1739.7	1931	10-May	16-Oct	160	1836.3
1876	12-May	20-Oct	162	1919.5	1932	28-Apr	18-Nov	205	1834.0
1877	18-Apr	27-Sep	163	1733.4	1933	12-Apr	19-Oct	191	1990.1
1878	19-Apr	27-Sep	162	2120.2	1934	11-May	21-Oct	164	1809.0
1879	7-May	11-Oct	158	2818.4	1935	10-May	27-Sep	141	1944.3
1880	**27-Feb**	**22-Oct**	**239**	**2111.7**	1936	27-Apr	20-Oct	177	2262.9
1881	8-May	22-Oct	168	1898.2	1937	7-May	26-Oct	173	**1910.8**
1882	11-May	25-Oct	168	2017.2	1938	4-May	1-Oct	151	2555.3
1883	11-May	25-Sep	138	1696.6	1939	9-May	19-Oct	164	2059.7
1884	24-Apr	23-Oct	183	1675.0	**1940**	**11-May**	**24-Sep**	**137**	**1547.7**
1885	23-Apr	27-Sep	158	2077.0	1941	29-Apr	22-Oct	177	1787.0
1886	10-May	11-Oct	155	2269.3	1942	29-Mar	27-Sep	183	1717.1
1887	24-Apr	13-Oct	173	2115.7	1943	11-Apr	26-Sep	169	1879.5
1888	17-Apr	24-Sep	161	1653.5	1944	30-Mar	9-Oct	194	1843.6
1889	19-May	27-Sep	132	1973.4	1945	13-Apr	24-Oct	195	2046.0
1890	**24-Apr**	**25-Oct**	**185**	**2743.1**	1946	12-Apr	24-Oct	196	2198.1
1891	6-May	21-Sep	139	1226.2	1947	14-May	16-Oct	156	1676.8
1892	12-Apr	24-Sep	166	2260.5	1948	15-Apr	7-Nov	207	2070.8

Table 2(h): contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1949	9-Apr	19-Oct	194	2191.0	1978	24-Apr	30-Sep	160	1474.4
1950	**10-May**	**1-Oct**	**145**	**2426.1**	1979	22-Apr	25-Oct	187	1658.0
1951	11-May	11-Oct	154	1551.1	**1980**	**24-Apr**	**14-Oct**	**174**	**2120.0**
1952	31-Mar	14-Oct	198	2215.4	1981	9-Apr	25-Sep	170	1902.7
1953	10-May	2-Oct	146	1679.1	1982	22-Apr	4-Oct	166	1295.7
1954	9-May	23-Sep	138	1759.6	1983	10-May	13-Oct	157	1714.1
1955	13-May	24-Sep	135	1957.7	1984	16-Apr	15-Oct	183	2460.6
1956	24-Apr	25-Oct	185	2228.6	1985	7-May	23-Oct	170	2015.6
1957	5-Jun	18-Sep	106	1235.0	1986	24-Apr	23-Oct	183	1640.2
1958	18-Apr	11-Oct	177	2019.6	1987	21-Apr	15-Oct	178	2774.0
1959	30-Mar	26-Oct	211	1719.8	1988	19-Apr	25-Sep	160	1853.3
1960	**7-May**	**13-Oct**	**160**	**1837.5**	1989	5-May	8-Oct	157	2209.3
1961	12-May	20-Oct	162	1736.4	**1990**	**23-Apr**	**17-Oct**	**178**	**1926.1**
1962	24-Apr	11-Oct	171	1734.2	1991	28-Apr	15-Oct	171	2104.3
1963	20-Apr	19-Oct	183	2058.7	1992	11-May	6-Oct	149	1432.2
1964	21-Apr	9-Oct	172	2203.0	1993	17-Apr	13-Oct	180	1931.0
1965	13-May	24-Sep	135	1797.6	1994	12-May	17-Oct	159	1445.3
1966	11-May	24-Sep	137	1543.7	1995	20-Apr	28-Sep	162	2360.2
1967	15-Mar	15-Oct	215	1662.2	1996	28-Apr	5-Oct	161	1870.6
1968	23-May	26-Oct	157	1885.1	1997	21-Apr	25-Sep	158	1765.3
1969	9-May	7-Oct	152	1765.7	1998	17-Mar	22-Oct	220	2871.2
1970	**15-Apr**	**26-Sep**	**165**	**1850.8**	1999	5-May	21-Oct	170	2458.1
1971	10-Apr	26-Oct	200	2218.8	**2000**	**17-Apr**	**26-Sep**	**163**	**1993.9**
1972	15-May	7-Oct	146	1304.7	2001	6-May	27-Oct	175	1997.4
1973	26-Apr	26-Oct	184	1924.3	2002	11-Apr	1-Oct	174	1790.9
1974	15-Apr	19-Oct	188	2166.9	2003	20-Mar	25-Oct	220	1848.8
1975	10-May	16-Oct	160	1841.9	2004	10-Apr	26-Oct	200	2052.3
1976	20-Apr	13-Oct	177	1765.4	2005	29-Mar	22-Oct	208	1787.6
1977	13-Apr	23-Oct	194	1859.1					
					Mean	**25-Apr**	**11-Oct**	**170**	**1946.3**
					SD	**18**	**13**	**23**	**316**

Table 2(i): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Chambal Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	5-Jul	22-Aug	49	397.7	**1900**	**7-Jul**	**24-Sep**	**80**	**783.1**
1845	11-Jun	16-Sep	98	957.7	1901	9-Jul	24-Aug	47	317.6
1846	7-Jun	16-Sep	102	462.5	1902	5-Jul	21-Sep	79	508.1
1847	10-Jun	10-Sep	93	516.3	1903	6-Jul	23-Sep	80	602.1
1848	30-Jun	23-Aug	55	329.9	1904	20-Jun	6-Sep	79	522.2
1849	10-Jun	24-Sep	107	602.1	1905	8-Jul	17-Sep	72	291.0
1850	**23-Jun**	**12-Sep**	**82**	**435.2**	1906	13-Jun	24-Sep	104	694.5
1851	30-Jun	16-Sep	79	629.5	1907	9-Jul	26-Aug	49	403.9
1852	16-Jun	3-Sep	80	406.9	1908	21-Jun	3-Sep	75	741.3
1853	18-Jun	7-Aug	51	345.1	1909	10-Jun	14-Sep	97	652.4
1854	11-Jun	18-Sep	100	540.3	**1910**	**10-Jun**	**1-Oct**	**114**	**666.6**
1855	16-Jun	24-Sep	101	671.2	1911	14-Jun	22-Sep	101	384.2
1856	20-Jun	14-Sep	87	689.2	1912	29-Jun	5-Sep	69	581.5
1857	8-Jun	25-Sep	110	901.5	1913	11-Jun	20-Aug	71	372.4
1858	4-Jul	17-Sep	76	539.2	1914	13-Jun	18-Sep	98	660.2
1859	14-Jun	19-Sep	98	723.8	1915	27-Jun	5-Oct	101	330.8
1860	**6-Jul**	**4-Sep**	**61**	**421.0**	1916	11-Jun	17-Sep	99	853.7
1861	11-Jun	7-Sep	89	777.1	1917	18-May	16-Oct	152	1252.5
1862	12-Jun	23-Sep	104	925.6	1918	27-Jun	23-Aug	58	228.2
1863	8-Jun	11-Sep	96	736.3	1919	17-Jun	3-Sep	79	800.6
1864	4-Jul	18-Sep	77	692.8	**1920**	**10-Jun**	**18-Aug**	**70**	**487**.1
1865	22-Jul	16-Sep	57	512.2	1921	27-Jun	23-Sep	89	505.0
1866	13-Jun	26-Aug	75	632.8	1922	16-Jun	23-Sep	100	616.2
1867	25-Jun	16-Sep	84	693.3	1923	3-Jul	19-Sep	79	797.4
1868	22-Jun	21-Aug	61	403.9	1924	4-Jul	30-Sep	89	786.7
1869	8-Jul	26-Sep	81	566.9	1925	10-Jun	12-Aug	64	394.5
1870	**7-Jun**	**9-Sep**	**95**	**670.3**	1926	7-Jul	22-Sep	78	731.1
1871	6-Jun	20-Sep	107	876.5	1927	6-Jul	11-Sep	68	530.9
1872	17-Jun	17-Sep	93	727.0	1928	5-Jul	24-Aug	51	438.6
1873	21-Jun	24-Sep	96	775.9	1929	22-Jun	7-Sep	78	508.8
1874	10-Jun	15-Sep	98	782.7	**1930**	**17-Jun**	**30-Sep**	**106**	**625.3**
1875	18-Jun	25-Sep	100	797.2	1931	6-Jul	10-Oct	97	787.4
1876	27-Jun	24-Sep	90	775.0	1932	5-Jul	22-Sep	80	568.1
1877	20-Jun	9-Aug	51	163.9	1933	5-Jun	24-Sep	112	1029.5
1878	22-Jun	20-Sep	91	706.0	1934	11-Jun	23-Sep	105	888.7
1879	11-Jun	20-Sep	102	715.3	1935	4-Jul	23-Sep	82	604.4
1880	**18-Jun**	**23-Sep**	**98**	**624.6**	1936	10-Jun	19-Sep	102	500.0
1881	15-Jun	9-Sep	87	707.5	1937	12-Jun	20-Sep	101	721.0
1882	9-Jun	21-Sep	105	804.5	1938	8-Jun	22-Aug	76	555.7
1883	12-Jun	24-Sep	105	565.5	1939	21-Jun	18-Sep	90	482.8
1884	14-Jun	24-Sep	103	739.7	**1940**	**14-Jun**	**1-Sep**	**80**	**698.5**
1885	9-Jun	26-Aug	79	646.5	1941	12-Jul	11-Sep	62	423.1
1886	11-Jun	24-Aug	75	508.6	1942	17-Jun	19-Sep	95	1042.1
1887	15-Jun	20-Sep	98	889.6	1943	13-Jun	20-Sep	100	736.0
1888	7-Jul	11-Sep	67	497.3	1944	17-Jun	5-Sep	81	850.4
1889	10-Jun	27-Aug	79	709.2	1945	9-Jun	22-Sep	106	934.1
1890	**8-Jun**	**15-Sep**	**100**	**601.1**	1946	7-Jun	18-Sep	104	986.5
1891	8-Jul	23-Sep	78	573.2	1947	7-Jul	25-Sep	81	785.6
1892	23-Jun	25-Sep	95	840.2	1948	18-Jun	22-Sep	97	791.6
1893	7-Jun	22-Sep	108	736.0	1949	24-Jun	22-Sep	91	593.5
1894	7-Jun	20-Sep	106	711.6	**1950**	**4-Jul**	**24-Sep**	**83**	**729.2**
1895	13-Jun	5-Sep	85	496.7	1951	19-Jun	22-Aug	65	319.7
1896	10-Jun	25-Aug	77	568.0	1952	9-Jun	25-Aug	78	756.2
1897	18-Jun	17-Sep	92	615.9	1953	20-Jun	14-Sep	87	538.0
1898	18-Jun	19-Sep	94	573.3	1954	25-Jun	26-Sep	94	800.6
1899	7-Jun	21-Jul	45	275.8	1955	12-Jun	19-Oct	130	890.2

Table 2(i):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	24-Jun	20-Oct	119	847.2	1981	16-Jun	15-Sep	92	608.1
1957	21-Jun	15-Sep	87	634.6	1982	7-Jul	27-Aug	52	485.0
1958	23-Jun	25-Sep	95	839.7	1983	17-Jun	23-Sep	99	750.0
1959	22-Jun	30-Sep	101	797.1	1984	29-Jun	15-Sep	79	617.4
1960	**17-Jun**	**27-Aug**	**72**	**561.9**	1985	8-Jul	20-Oct	105	642.8
1961	7-Jul	27-Sep	83	857.4	1986	18-Jun	24-Aug	68	624.5
1962	5-Jul	24-Sep	82	620.5	1987	23-Jun	26-Aug	65	376.7
1963	29-Jun	17-Sep	81	633.4	1988	15-Jun	17-Sep	95	575.2
1964	17-Jun	18-Sep	94	600.6	1989	17-Jun	9-Sep	85	513.5
1965	7-Jul	14-Sep	70	361.2	**1990**	**13-Jun**	**22-Sep**	**102**	**796.1**
1966	18-Jun	12-Sep	87	480.9	1991	23-Jun	24-Aug	63	511.6
1967	12-Jun	23-Sep	104	660.3	1992	7-Jul	5-Oct	91	540.5
1968	4-Jul	24-Aug	52	481.8	1993	13-Jun	22-Sep	102	696.9
1969	6-Jul	19-Sep	76	655.4	1994	11-Jun	18-Sep	100	842.1
1970	**9-Jun**	**21-Sep**	**105**	**691.2**	1995	5-Jul	20-Sep	78	693.4
1971	8-Jun	22-Sep	107	865.1	1996	19-Jun	19-Sep	93	810.6
1972	18-Jun	25-Aug	69	358.8	1997	20-Jun	12-Sep	85	605.5
1973	30-Jun	25-Oct	118	1075.4	1998	13-Jun	8-Oct	118	752.9
1974	5-Jul	15-Oct	103	585.8	1999	13-Jun	23-Sep	103	601.0
1975	15-Jun	22-Sep	100	721.0	**2000**	**19-May**	**31-Aug**	**105**	**487.9**
1976	11-Jun	20-Sep	102	757.1	2001	10-Jun	18-Aug	70	444.0
1977	11-Jun	21-Sep	103	763.4	2002	15-Jun	10-Sep	88	321.6
1978	11-Jun	11-Sep	93	780.0	2003	11-Jun	21-Sep	103	652.5
1979	18-Jun	23-Aug	67	427.0	2004	21-Jun	27-Aug	68	520.3
1980	**9-Jun**	**25-Aug**	**78**	**539.6**	2005	24-Jun	20-Sep	89	540.0
					Mean	**20-Jun**	**14-Sep**	**87**	**635.0**
					SD	**11**	**15**	**18**	**180**

Table 2(j): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Sind Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1860	**5-Jul**	**18-Sep**	**76**	**499.3**	1916	18-Jun	3-Oct	108	941.5
1861	6-Jun	20-Sep	107	1031.4	1917	29-May	7-Oct	132	1202.9
1862	6-Jul	1-Oct	88	486.5	1918	25-Jun	5-Sep	73	332.6
1863	12-Jun	25-Aug	75	987.9	1919	3-Jul	28-Aug	57	993.0
1864	9-Jul	13-Sep	67	403.2	**1920**	**19-Jun**	**19-Aug**	**62**	**412.5**
1865	19-Jun	23-Sep	97	773.0	1921	25-Jun	20-Sep	88	553.7
1866	7-Jun	1-Sep	87	647.6	1922	18-Jun	19-Sep	94	706.7
1867	8-Jun	12-Oct	127	1094.7	1923	4-Jul	19-Sep	78	710.0
1868	8-Jul	4-Sep	59	188.0	1924	4-Jul	22-Sep	81	824.2
1869	2-Jul	11-Oct	102	1103.2	1925	10-Jun	17-Aug	69	605.1
1870	**11-Jun**	**19-Sep**	**101**	**629.5**	1926	8-Jul	22-Sep	77	679.9
1871	5-Jun	23-Sep	111	978.7	1927	5-Jul	3-Sep	61	535.3
1872	15-Jun	19-Sep	97	819.9	1928	6-Jul	17-Aug	43	284.2
1873	5-Jul	25-Sep	83	823.3	1929	5-Jul	23-Aug	50	385.8
1874	9-Jun	16-Sep	100	883.9	**1930**	**6-Jul**	**24-Aug**	**50**	**415.2**
1875	18-Jun	24-Sep	99	752.7	1931	7-Jul	27-Aug	52	513.8
1876	23-Jun	23-Sep	93	819.6	1932	6-Jul	25-Sep	82	638.7
1877	20-Jun	6-Oct	109	310.8	1933	6-Jun	24-Sep	111	827.3
1878	28-Jun	21-Sep	86	670.9	1934	13-Jun	24-Sep	104	953.1
1879	13-Jun	21-Sep	101	749.0	1935	4-Jul	18-Sep	77	643.9
1880	**20-Jun**	**22-Sep**	**95**	**535.1**	1936	9-Jun	17-Sep	101	630.7
1881	11-Jun	8-Sep	90	879.7	1937	15-Jun	18-Sep	96	672.6
1882	9-Jun	19-Sep	103	827.2	1938	9-Jun	23-Aug	76	564.8
1883	13-Jun	23-Sep	103	549.2	1939	21-Jun	22-Sep	94	593.0
1884	17-Jun	24-Sep	100	927.9	**1940**	**11-Jun**	**26-Aug**	**77**	**630.1**
1885	9-Jun	26-Aug	79	621.9	1941	17-Jun	16-Sep	92	338.3
1886	15-Jun	23-Aug	70	519.3	1942	11-Jun	23-Sep	105	1038.2
1887	20-Jun	23-Sep	96	970.7	1943	24-Jun	23-Sep	92	698.2
1888	5-Jul	19-Sep	77	715.0	1944	15-Jun	8-Sep	86	643.0
1889	15-Jun	27-Aug	74	681.2	1945	13-Jun	23-Sep	103	829.4
1890	**6-Jun**	**20-Sep**	**107**	**842.0**	1946	12-Jun	12-Sep	93	774.0
1891	8-Jul	26-Sep	81	839.8	1947	6-Jul	25-Sep	82	793.6
1892	19-Jun	22-Sep	96	780.9	1948	4-Jul	24-Sep	83	997.1
1893	10-Jun	23-Sep	106	646.4	1949	4-Jul	20-Sep	79	548.3
1894	6-Jun	19-Sep	106	907.4	**1950**	**6-Jul**	**17-Sep**	**74**	**568.4**
1895	11-Jun	2-Sep	84	492.6	1951	24-Jun	24-Sep	93	573.7
1896	11-Jun	24-Aug	75	536.3	1952	5-Jun	27-Aug	84	807.6
1897	11-Jun	13-Sep	95	749.4	1953	21-Jun	9-Sep	81	488.4
1898	14-Jun	15-Sep	94	675.2	1954	8-Jul	25-Sep	80	605.6
1899	3-Jun	24-Aug	83	595.1	1955	10-Jun	16-Oct	129	818.4
1900	**7-Jul**	**23-Sep**	**79**	**688.1**	1956	29-Jun	22-Oct	116	1010.9
1901	7-Jul	28-Aug	53	553.1	1957	18-Jun	23-Sep	98	850.6
1902	3-Jul	22-Sep	82	712.4	1958	30-Jun	15-Oct	108	1108.9
1903	7-Jul	19-Oct	105	720.2	1959	5-Jul	18-Sep	76	598.4
1904	19-Jun	3-Sep	77	774.4	**1960**	**16-Jun**	**28-Aug**	**74**	**746.9**
1905	8-Jul	17-Sep	72	327.4	1961	4-Jul	20-Oct	109	1458.4
1906	15-Jun	26-Sep	104	744.6	1962	5-Jul	22-Sep	80	555.4
1907	8-Jul	26-Aug	50	430.9	1963	21-Jun	26-Sep	98	961.5
1908	3-Jul	28-Aug	57	823.5	1964	4-Jul	24-Sep	83	905.7
1909	8-Jun	7-Sep	92	658.0	1965	5-Jul	25-Sep	83	722.2
1910	**14-Jun**	**25-Sep**	**104**	**719.8**	1966	18-Jun	26-Aug	70	444.0
1911	19-Jun	25-Sep	99	520.1	1967	29-Jun	27-Sep	91	1257.5
1912	5-Jul	22-Sep	80	647.1	1968	3-Jul	20-Aug	49	538.2
1913	15-Jun	14-Aug	61	239.8	1969	5-Jul	21-Sep	79	727.9
1914	18-Jun	17-Sep	92	626.5	**1970**	**12-Jun**	**22-Sep**	**103**	**662.5**
1915	24-Jun	1-Oct	100	440.2	1971	8-Jun	24-Aug	78	840.6

Table 2(j): contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1972	13-Jul	18-Sep	68	566.1	1989	24-Jun	15-Sep	84	506.5
1973	28-Jun	5-Sep	70	718.2	**1990**	**17-Jun**	**27-Sep**	**103**	**918.4**
1974	4-Jul	25-Aug	53	578.8	1991	5-Jul	26-Aug	53	516.9
1975	13-Jun	20-Sep	100	798.4	1992	7-Jul	10-Oct	96	678.0
1976	11-Jun	20-Sep	102	726.0	1993	19-Jun	26-Sep	100	634.8
1977	16-Jun	21-Sep	98	786.2	1994	11-Jun	4-Sep	86	675.3
1978	14-Jun	20-Sep	99	791.4	1995	30-Jun	22-Sep	85	813.0
1979	6-Jul	19-Aug	45	276.6	1996	12-Jun	12-Oct	123	1022.5
1980	**9-Jun**	**28-Aug**	**81**	**775.2**	1997	19-Jun	19-Sep	93	698.4
1981	27-Jun	10-Sep	76	459.2	1998	20-Jun	14-Oct	117	789.5
1982	6-Jul	15-Sep	72	767.7	1999	26-Jun	25-Sep	92	791.7
1983	29-May	11-Oct	136	974.5	**2000**	**13-Jun**	**4-Sep**	**84**	**515.4**
1984	24-Jun	18-Sep	87	611.5	2001	6-Jun	24-Aug	80	737.9
1985	5-Jul	25-Oct	113	928.1	2002	6-Aug	19-Sep	45	301.5
1986	14-Jun	16-Aug	64	407.7	2003	25-Jun	25-Sep	93	762.4
1987	10-Jul	6-Oct	89	489.2	2004	27-Jun	3-Oct	99	519.5
1988	12-Jun	18-Sep	99	567.8	2005	25-Jun	14-Sep	82	424.4
					Mean	**22-Jun**	**16-Sep**	**87**	**693.6**
					SD	**12**	**15**	**18**	**213**

Table 2(k): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Betwa Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	30-Jun	18-Sep	81	752.8	**1900**	**29-Jun**	**22-Sep**	**86**	**761.9**
1845	10-Jun	10-Sep	93	906.8	1901	6-Jul	13-Sep	70	751.0
1846	5-Jun	20-Sep	108	962.8	1902	4-Jul	23-Sep	82	712.5
1847	12-Jun	15-Sep	96	829.9	1903	7-Jul	18-Oct	104	836.0
1848	21-Jun	25-Sep	97	624.8	1904	17-Jun	11-Sep	87	849.3
1849	8-Jun	10-Sep	95	673.7	1905	8-Jul	18-Sep	73	376.1
1850	**15-Jun**	**19-Sep**	**97**	**799.6**	1906	9-Jun	26-Sep	110	944.4
1851	9-Jun	19-Sep	103	909.1	1907	10-Jul	28-Aug	50	504.8
1852	6-Jun	19-Sep	106	927.4	1908	22-Jun	4-Sep	75	894.6
1853	18-Jun	31-Aug	75	508.8	1909	8-Jun	15-Sep	100	752.0
1854	6-Jun	9-Nov	157	1038.5	**1910**	**10-Jun**	**25-Sep**	**108**	**773.1**
1855	17-Jun	23-Sep	99	806.4	1911	17-Jun	26-Sep	102	713.4
1856					1912	4-Jul	21-Sep	80	747.8
1857		NO DATA			1913	9-Jun	23-Aug	76	425.1
1858					1914	15-Jun	17-Sep	95	818.5
1859					1915	9-Jun	13-Oct	127	878.1
1860	**28-Jun**	**23-Sep**	**88**	**733.5**	1916	7-Jun	9-Oct	125	1095.3
1861	9-Jun	21-Sep	105	963.9	1917	26-May	3-Oct	131	1263.6
1862	14-Jun	30-Sep	109	953.2	1918	17-Jun	6-Sep	82	359.8
1863	15-Jun	27-Aug	74	884.6	1919	21-Jun	17-Sep	89	1173.7
1864	22-Jun	19-Sep	90	524.6	**1920**	**18-Jun**	**10-Sep**	**85**	**494.2**
1865	19-Jun	19-Sep	93	806.7	1921	10-Jun	22-Sep	105	751.8
1866	12-Jun	13-Sep	94	868.3	1922	20-Jun	21-Sep	94	786.7
1867	10-Jun	2-Oct	115	1188.3	1923	3-Jul	24-Sep	84	989.1
1868	5-Jul	18-Sep	76	404.9	1924	3-Jul	23-Sep	83	887.1
1869	29-Jun	18-Oct	112	1021.6	1925	9-Jun	12-Sep	96	755.0
1870	**10-Jun**	**24-Sep**	**107**	**1068.6**	1926	6-Jul	11-Oct	98	997.1
1871	5-Jun	25-Sep	113	1274.7	1927	27-Jun	8-Oct	104	733.4
1872	11-Jun	20-Sep	102	964.5	1928	16-Jun	14-Oct	121	674.5
1873	4-Jul	25-Sep	84	865.7	1929	13-Jun	8-Sep	88	707.5
1874	5-Jun	19-Sep	107	1228.0	**1930**	**20-Jun**	**16-Sep**	**89**	**837.5**
1875	13-Jun	25-Sep	105	1127.4	1931	6-Jul	19-Oct	106	909.5
1876	27-Jun	25-Sep	91	1054.0	1932	1-Jul	26-Sep	88	880.2
1877	16-Jun	7-Oct	114	399.5	1933	10-Jun	23-Sep	106	839.8
1878	5-Jul	22-Sep	80	728.2	1934	10-Jun	26-Sep	109	1071.1
1879	12-Jun	14-Oct	125	889.6	1935	15-Jun	22-Sep	100	687.8
1880	**18-Jun**	**23-Sep**	**98**	**625.3**	1936	8-Jun	23-Sep	108	979.7
1881	10-Jun	13-Sep	96	984.4	1937	12-Jun	19-Sep	100	894.0
1882	5-Jun	20-Sep	108	1011.6	1938	6-Jun	15-Oct	132	1065.2
1883	10-Jun	24-Sep	107	780.6	1939	13-Jun	24-Sep	104	981.8
1884	12-Jun	25-Sep	106	1240.9	**1940**	**14-Jun**	**15-Sep**	**94**	**880.0**
1885	6-Jun	27-Aug	83	859.5	1941	21-Jun	19-Sep	91	608.9
1886	10-Jun	17-Oct	130	848.2	1942	10-Jun	22-Sep	105	1129.9
1887	15-Jun	21-Sep	99	1016.1	1943	22-Jun	19-Sep	90	816.0
1888	20-Jun	21-Sep	94	1010.1	1944	18-Jun	16-Sep	91	1039.8
1889	9-Jun	6-Sep	90	887.8	1945	7-Jun	24-Sep	110	938.2
1890	**5-Jun**	**19-Sep**	**107**	**929.7**	1946	8-Jun	12-Sep	97	962.6
1891	5-Jul	27-Sep	85	1097.9	1947	16-Jun	25-Sep	102	1097.9
1892	10-Jun	23-Sep	106	1062.2	1948	14-Jun	25-Sep	104	1167.9
1893	29-May	25-Sep	120	623.6	1949	20-Jun	12-Oct	115	989.7
1894	5-Jun	24-Sep	112	1055.9	**1950**	**24-Jun**	**18-Sep**	**87**	**706.3**
1895	7-Jun	1-Sep	87	628.1	1951	21-Jun	23-Sep	95	729.8
1896	7-Jun	26-Aug	81	716.8	1952	6-Jun	4-Sep	91	860.9
1897	7-Jun	18-Sep	104	832.0	1953	3-Jul	17-Sep	77	801.8
1898	10-Jun	21-Sep	104	1015.4	1954	5-Jul	26-Sep	84	838.0
1899	3-Jun	31-Aug	90	764.7	1955	8-Jun	19-Oct	134	1096.7

Table 2(k): contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	16-Jun	6-Oct	113	1015.9	1981	18-Jun	19-Sep	94	699.1
1957	19-Jun	17-Sep	91	749.8	1982	24-Jun	21-Sep	90	1025.9
1958	22-Jun	13-Oct	114	983.3	1983	13-Jun	7-Oct	117	1120.6
1959	4-Jul	11-Oct	100	933.2	1984	20-Jun	12-Sep	85	806.6
1960	**18-Jun**	**19-Oct**	**124**	**957.7**	1985	18-Jun	23-Oct	128	1113.1
1961	5-Jul	22-Oct	110	1279.6	1986	12-Jun	24-Aug	74	772.6
1962	6-Jul	24-Sep	81	683.1	1987	8-Jul	9-Oct	94	589.2
1963	21-Jun	21-Sep	93	819.1	1988	10-Jun	10-Sep	93	715.8
1964	14-Jun	25-Sep	104	988.8	1989	15-Jun	15-Sep	93	625.6
1965	4-Jul	21-Sep	80	634.1	**1990**	**8-Jun**	**26-Sep**	**111**	**1200.7**
1966	10-Jun	25-Aug	77	574.7	1991	16-Jun	27-Aug	73	578.7
1967	16-Jun	25-Sep	102	1007.0	1992	6-Jul	22-Sep	79	763.4
1968	23-Jun	15-Sep	85	696.4	1993	20-Jun	27-Sep	100	821.2
1969	3-Jul	22-Sep	82	1053.1	1994	7-Jun	5-Sep	91	975.9
1970	**9-Jun**	**25-Sep**	**109**	**980.7**	1995	1-Jul	22-Sep	84	634.5
1971	7-Jun	14-Oct	130	1089.2	1996	30-Jun	19-Sep	82	845.8
1972	27-Jun	17-Sep	83	711.0	1997	20-Jun	10-Oct	113	838.3
1973	26-Jun	21-Sep	88	955.5	1998	17-Jun	22-Sep	98	870.8
1974	4-Jul	2-Sep	61	747.1	1999	19-Jun	12-Oct	116	1209.6
1975	9-Jun	23-Sep	107	1031.6	**2000**	**15-Jun**	**12-Sep**	**90**	**670.0**
1976	14-Jun	22-Sep	101	838.6	2001	10-Jun	23-Aug	75	576.6
1977	11-Jun	23-Sep	105	926.9	2002	24-Jun	18-Sep	87	537.2
1978	8-Jun	23-Sep	108	1134.0	2003	16-Jun	26-Sep	103	852.5
1979	19-Jun	19-Aug	62	304.5	2004	10-Jun	15-Sep	98	634.2
1980	**7-Jun**	**16-Sep**	**102**	**1028.4**	2005	15-Jun	19-Sep	97	815.0
					Mean	**17-Jun**	**22-Sep**	**98**	**856.4**
					SD	**10**	**14**	**16**	**200**

Table 2(l): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Ken Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	20-Jun	15-Sep	88	712.3	**1900**	**6-Jul**	**23-Sep**	**80**	**858.4**
1845	9-Jun	25-Aug	78	855.8	1901	6-Jul	19-Sep	76	900.2
1846	6-Jun	22-Sep	109	853.9	1902	3-Jul	22-Sep	82	788.4
1847	24-Jun	19-Sep	88	821.4	1903	8-Jul	24-Oct	109	961.4
1848	27-Jun	22-Sep	88	462.0	1904	20-Jun	15-Sep	88	1031.9
1849	13-Jun	7-Oct	117	862.8	1905	8-Jul	19-Sep	74	416.7
1850	**23-Jun**	**24-Sep**	**94**	**870.3**	1906	7-Jun	27-Sep	113	1248.3
1851	26-Jun	24-Sep	91	836.8	1907	22-Jun	28-Aug	68	648.2
1852	13-Jun	10-Oct	120	808.3	1908	3-Jul	15-Sep	75	1041.0
1853	14-Jun	18-Sep	97	636.4	1909	6-Jun	18-Sep	105	866.7
1854	5-Jun	13-Nov	162	1030.0	**1910**	**9-Jun**	**25-Sep**	**109**	**838.4**
1855	13-Jun	25-Sep	105	1000.0	1911	15-Jun	26-Sep	104	860.6
1856					1912	3-Jul	22-Sep	82	856.7
1857		NO DATA			1913	9-Jun	20-Aug	73	404.6
1858					1914	15-Jun	9-Sep	87	921.9
1859					1915	11-Jun	13-Oct	125	1064.2
1860	**14-Jun**	**17-Sep**	**96**	**760.5**	1916	5-Jun	17-Oct	135	1176.1
1861	9-Jun	19-Sep	103	944.4	1917	24-May	24-Sep	124	1205.5
1862	6-Jul	26-Sep	83	837.2	1918	19-Jun	14-Sep	88	453.5
1863	11-Jun	3-Oct	115	912.7	1919	3-Jul	1-Oct	91	1256.3
1864	6-Jul	16-Sep	73	480.6	**1920**	**20-Jun**	**12-Sep**	**85**	**630.9**
1865	3-Jul	19-Sep	79	897.9	1921	9-Jun	23-Sep	107	811.1
1866	6-Jun	18-Sep	105	1024.2	1922	16-Jun	22-Sep	99	1075.9
1867	7-Jun	14-Oct	130	1578.7	1923	3-Jul	22-Sep	82	1188.5
1868	23-Jun	25-Sep	95	564.0	1924	2-Jul	24-Sep	85	1128.1
1869	25-Jun	21-Oct	119	1147.9	1925	12-Jun	16-Sep	97	1020.3
1870	**10-Jun**	**11-Oct**	**124**	**1037.0**	1926	6-Jul	21-Oct	108	1375.3
1871	6-Jun	25-Sep	112	1151.0	1927	29-Jun	17-Nov	142	1003.8
1872	12-Jun	18-Sep	99	1016.5	1928	11-Jun	6-Oct	118	692.2
1873	4-Jul	25-Sep	84	954.2	1929	24-Jun	27-Aug	65	801.7
1874	5-Jun	21-Sep	109	1309.1	**1930**	**19-Jun**	**18-Sep**	**92**	**906.0**
1875	13-Jun	24-Sep	104	1202.7	1931	5-Jul	20-Oct	108	1056.7
1876	1-Jul	23-Sep	85	1159.0	1932	29-Jun	23-Sep	87	890.4
1877	12-Jun	4-Oct	115	482.8	1933	31-May	8-Oct	131	891.9
1878	20-Jun	20-Sep	93	621.0	1934	6-Jun	25-Sep	112	1311.4
1879	13-Jun	12-Oct	122	912.7	1935	18-Jun	19-Sep	94	972.0
1880	**17-Jun**	**21-Sep**	**97**	**675.1**	1936	8-Jun	22-Sep	107	986.5
1881	12-Jun	8-Sep	89	816.9	1937	10-Jun	20-Sep	103	909.2
1882	4-Jun	16-Sep	105	1112.8	1938	6-Jun	11-Oct	128	1004.7
1883	10-Jun	22-Sep	105	666.8	1939	11-Jun	21-Sep	103	913.2
1884	9-Jun	25-Sep	109	1493.8	**1940**	**24-Jun**	**14-Sep**	**83**	**764.4**
1885	6-Jun	27-Aug	83	881.4	1941	18-Jun	18-Sep	93	528.5
1886	10-Jun	20-Oct	133	945.5	1942	16-Jun	21-Sep	98	1101.6
1887	13-Jun	21-Sep	101	1029.5	1943	16-Jun	20-Sep	97	885.0
1888	15-Jun	21-Sep	99	1343.4	1944	21-Jun	9-Sep	81	852.5
1889	9-Jun	15-Sep	99	927.0	1945	9-Jun	24-Sep	108	901.9
1890	**5-Jun**	**22-Sep**	**110**	**1065.3**	1946	11-Jun	15-Nov	158	1131.3
1891	6-Jul	27-Sep	84	1139.9	1947	14-Jun	25-Sep	104	1225.7
1892	10-Jun	20-Sep	103	1046.2	1948	16-Jun	24-Sep	101	1027.9
1893	5-Jun	26-Sep	114	1184.4	1949	26-Jun	9-Oct	106	903.7
1894	4-Jun	8-Nov	158	1579.9	**1950**	**5-Jul**	**14-Sep**	**72**	**715.9**
1895	5-Jun	5-Sep	93	802.9	1951	23-Jun	24-Sep	94	982.6
1896	7-Jun	26-Aug	81	796.5	1952	7-Jun	8-Sep	94	1010.4
1897	7-Jun	18-Sep	104	903.3	1953	4-Jul	21-Sep	80	767.6
1898	6-Jun	19-Sep	106	1393.1	1954	18-Jun	26-Sep	101	951.6
1899	5-Jun	22-Aug	79	723.1	1955	6-Jun	16-Oct	133	1159.3

Table 2(l):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	12-Jun	4-Nov	146	1395.5	1981	5-Jul	20-Sep	78	610.3
1957	4-Jul	21-Sep	80	864.0	1982	5-Jul	24-Sep	82	1251.3
1958	25-Jun	20-Oct	118	1122.1	1983	17-Jun	14-Oct	120	1068.6
1959	31-May	6-Oct	129	1140.7	1984	20-Jun	16-Sep	89	762.3
1960	**22-Jun**	**22-Oct**	**123**	**1155.1**	1985	14-Jun	22-Oct	131	1180.3
1961	25-Jun	20-Oct	118	1138.0	1986	10-Jun	4-Sep	87	623.5
1962	29-Jun	24-Sep	88	868.3	1987	6-Jul	14-Oct	101	982.2
1963	15-Jun	23-Sep	101	905.8	1988	9-Jun	13-Sep	97	753.9
1964	12-Jun	26-Sep	107	1005.6	1989	9-Jun	20-Sep	104	733.7
1965	8-Jul	24-Sep	79	547.2	**1990**	**5-Jun**	**26-Sep**	**114**	**1455.4**
1966	6-Jun	25-Aug	81	643.5	1991	13-Jun	6-Sep	86	973.4
1967	17-Jun	25-Sep	101	1079.5	1992	5-Jul	26-Sep	84	1073.5
1968	14-Jun	17-Sep	96	760.7	1993	16-Jun	27-Sep	104	870.0
1969	3-Jul	22-Sep	82	1114.9	1994	8-Jun	5-Sep	90	1130.1
1970	**11-Jun**	**21-Sep**	**103**	**757.6**	1995	21-Jun	22-Sep	94	862.1
1971	5-Jun	19-Oct	137	1246.3	1996	22-Jun	14-Oct	115	900.7
1972	11-Jul	21-Sep	73	734.1	1997	29-Jun	11-Dec	166	988.2
1973	3-Jul	21-Sep	81	907.9	1998	6-Jul	22-Sep	79	750.0
1974	18-Jun	27-Aug	71	706.4	1999	14-Jun	9-Oct	118	1493.2
1975	11-Jun	3-Oct	115	1034.7	**2000**	**24-May**	**19-Sep**	**119**	**888.8**
1976	16-Jun	21-Sep	98	959.6	2001	6-Jun	24-Aug	80	859.6
1977	7-Jun	18-Sep	104	1133.0	2002	24-Jul	23-Sep	62	614.1
1978	9-Jun	26-Sep	110	1334.0	2003	15-Jun	27-Sep	105	1117.7
1979	16-Jun	22-Aug	68	463.8	2004	6-Jun	17-Sep	104	830.8
1980	**6-Jun**	**16-Sep**	**103**	**1417.0**	2005	13-Jun	23-Sep	103	1113.6
					Mean	**17-Jun**	**25-Sep**	**101**	**948.6**
					SD	**11**	**17**	**19**	**237**

Table 2(m): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Tons Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	4-Jul	18-Sep	77	863.0	**1900**	**5-Jul**	**8-Oct**	**96**	**712.8**
1845	10-Jun	27-Aug	79	783.1	1901	7-Jul	23-Sep	79	761.8
1846	9-Jun	22-Sep	106	769.9	1902	4-Jul	23-Sep	82	703.3
1847	23-Jun	21-Oct	121	1074.0	1903	16-Jul	26-Oct	103	916.7
1848	30-May	9-Sep	103	955.8	1904	24-Jun	13-Oct	112	921.6
1849	15-Jun	18-Oct	126	640.9	1905	5-Jul	23-Sep	81	704.6
1850	**10-Jun**	**2-Oct**	**115**	**868.4**	1906	14-Jun	25-Sep	104	799.7
1851	13-Jun	16-Oct	126	978.2	1907	7-Jul	27-Aug	52	540.3
1852	7-Jun	14-Sep	100	783.0	1908	4-Jul	13-Sep	72	824.7
1853	16-Jun	4-Sep	81	683.1	1909	6-Jun	20-Sep	107	879.0
1854	5-Jun	15-Nov	164	1114.9	**1910**	**13-Jun**	**4-Nov**	**145**	**767.0**
1855	16-Jun	25-Sep	102	877.1	1911	11-Jun	18-Oct	130	818.1
1856					1912	4-Jul	17-Sep	76	626.2
1857		NO DATA			1913	11-Jun	16-Sep	98	588.2
1858					1914	3-Jul	10-Sep	70	850.8
1859					1915	11-Jun	15-Oct	127	1012.1
1860	**4-Jul**	**12-Oct**	**101**	**731.2**	1916	4-Jun	11-Oct	130	1124.9
1861	8-Jun	22-Oct	137	1298.6	1917	7-Jun	17-Oct	133	1204.6
1862	3-Jul	4-Oct	94	1072.9	1918	12-Jun	19-Sep	100	585.4
1863	9-Jun	17-Oct	131	1041.6	1919	19-Jun	30-Sep	104	990.4
1864	8-Jul	19-Sep	74	466.0	**1920**	**3-Jul**	**11-Sep**	**71**	**714.0**
1865	3-Jul	11-Sep	71	647.3	1921	11-Jun	23-Sep	105	831.3
1866	24-Jun	23-Sep	92	745.4	1922	14-Jun	24-Sep	103	1243.1
1867	29-May	26-Sep	121	1113.9	1923	3-Jul	20-Sep	80	966.7
1868	8-Jun	23-Sep	108	661.1	1924	3-Jul	24-Sep	84	866.3
1869	21-Jun	21-Oct	123	891.7	1925	10-Jun	25-Sep	108	1041.0
1870	**10-Jun**	**21-Oct**	**134**	**1221.4**	1926	5-Jul	9-Oct	97	1061.0
1871	5-Jun	24-Sep	112	1150.7	1927	4-Jul	18-Sep	77	734.1
1872	11-Jun	21-Sep	103	921.1	1928	13-Jun	9-Oct	119	547.1
1873	3-Jul	20-Sep	80	919.0	1929	3-Jul	6-Sep	66	881.1
1874	5-Jun	23-Sep	111	1175.1	**1930**	**20-Jun**	**22-Sep**	**95**	**970.7**
1875	6-Jun	21-Sep	108	1341.7	1931	28-Jun	16-Oct	111	954.2
1876	3-Jul	9-Oct	99	999.4	1932	28-Jun	15-Sep	80	657.6
1877	11-Jul	11-Oct	93	417.7	1933	12-Jun	21-Sep	102	554.6
1878	10-Jul	20-Sep	73	498.8	1934	12-Jun	24-Sep	105	989.4
1879	8-Jun	10-Oct	125	1089.3	1935	21-Jun	23-Sep	95	892.8
1880	**23-Jun**	**8-Sep**	**78**	**444.4**	1936	10-Jun	30-Sep	113	1160.7
1881	14-Jun	9-Sep	88	774.4	1937	19-Jun	20-Oct	124	1088.1
1882	3-Jun	22-Oct	142	1202.8	1938	7-Jun	23-Sep	109	913.9
1883	16-Jun	21-Sep	98	627.3	1939	8-Jun	22-Sep	107	894.0
1884	19-Jun	16-Oct	120	1027.7	**1940**	**28-Jun**	**16-Sep**	**81**	**747.0**
1885	8-Jun	11-Sep	96	766.0	1941	15-Jun	24-Sep	102	634.3
1886	8-Jun	19-Oct	134	938.2	1942	21-Jun	23-Sep	95	845.7
1887	27-Jun	16-Oct	112	967.3	1943	28-Jun	25-Sep	90	1082.0
1888	21-Jun	21-Sep	93	1182.3	1944	26-Jun	17-Sep	84	914.3
1889	9-Jun	23-Sep	107	949.8	1945	12-Jun	23-Sep	104	747.8
1890	**5-Jun**	**25-Sep**	**113**	**1184.1**	1946	9-Jun	19-Sep	103	982.0
1891	8-Jul	9-Oct	94	867.9	1947	30-Jun	21-Sep	84	716.5
1892	13-Jun	16-Sep	96	900.6	1948	6-Jun	15-Nov	163	1541.3
1893	5-Jun	10-Oct	128	1112.0	1949	1-Jul	13-Oct	105	813.3
1894	5-Jun	27-Oct	145	1468.6	**1950**	**16-Jun**	**15-Sep**	**92**	**986.9**
1895	6-Jun	13-Sep	100	737.9	1951	10-Jun	24-Sep	107	863.2
1896	8-Jun	24-Aug	78	494.0	1952	7-Jun	17-Sep	103	794.5
1897	9-Jun	21-Oct	135	1067.5	1953	21-Jun	24-Sep	96	1048.5
1898	9-Jun	22-Sep	106	1196.3	1954	24-Jun	23-Sep	92	661.2
1899	6-Jun	3-Sep	90	806.0	1955	11-Jun	7-Oct	119	1041.6

Table 2(m):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	7-Jun	14-Nov	161	1299.7	1981	15-Jun	22-Sep	100	847.4
1957	5-Jul	19-Sep	77	546.4	1982	19-Jun	24-Sep	98	923.4
1958	5-Jul	11-Oct	99	792.7	1983	21-Jun	11-Oct	113	804.5
1959	5-Jul	21-Oct	109	840.5	1984	10-Jun	25-Sep	108	837.1
1960	**24-Jun**	**4-Oct**	**103**	**920.2**	1985	28-Jun	15-Oct	110	864.8
1961	19-Jun	2-Oct	106	880.7	1986	22-May	19-Sep	121	765.7
1962	30-Jun	25-Sep	88	941.3	1987	13-Jul	16-Oct	96	799.3
1963	18-Jun	22-Sep	97	831.7	1988	10-Jun	10-Sep	93	753.0
1964	14-Jun	23-Sep	102	825.2	1989	10-Jun	19-Sep	102	677.0
1965	10-Jul	22-Sep	75	405.0	**1990**	**6-Jun**	**24-Sep**	**111**	**1091.6**
1966	6-Jun	25-Aug	81	510.8	1991	12-Jun	22-Sep	103	920.9
1967	5-Jul	24-Sep	82	1018.5	1992	7-Jul	24-Sep	80	794.4
1968	20-Jun	7-Sep	80	412.9	1993	14-Jun	26-Sep	105	666.4
1969	3-Jul	22-Sep	82	815.1	1994	9-Jun	24-Sep	108	936.9
1970	**7-Jun**	**24-Sep**	**110**	**963.8**	1995	6-Jul	25-Sep	82	791.9
1971	5-Jun	11-Oct	129	1359.1	1996	8-Jun	2-Oct	117	894.0
1972	8-Jul	11-Nov	127	788.5	1997	14-Jun	24-Sep	103	986.8
1973	27-Jun	13-Oct	109	907.2	1998	22-Jun	23-Sep	94	956.7
1974	22-Jun	5-Sep	76	660.4	1999	12-Jun	7-Oct	118	1093.3
1975	8-Jun	20-Sep	105	972.5	**2000**	**9-Jun**	**24-Sep**	**108**	**867.5**
1976	28-Jun	25-Sep	90	781.6	2001	7-Jun	17-Oct	133	1070.6
1977	13-Jun	17-Oct	127	909.6	2002	24-Jun	12-Oct	111	798.1
1978	10-Jun	25-Sep	108	927.2	2003	15-Jun	21-Oct	129	1162.7
1979	12-Jun	16-Aug	66	326.5	2004	6-Jun	15-Sep	102	657.2
1980	**7-Jun**	**24-Sep**	**110**	**1270.4**	2005	20-Jun	19-Sep	92	825.3
					Mean	**18-Jun**	**28-Sep**	**103**	**879.2**
					SD	**12**	**16**	**20**	**217**

Table 2(n): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Son Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1842	8-Jun	19-Oct	134	1141.2	1898	12-Jun	26-Sep	107	1202.6
1843	10-Jun	12-Oct	125	692.7	1899	7-Jun	19-Sep	105	1007.7
1844	24-May	19-Sep	119	851.3	**1900**	**9-Jun**	**1-Oct**	**115**	**1064.6**
1845	11-Jun	22-Sep	104	798.2	1901	31-May	23-Sep	116	897.9
1846	9-Jun	23-Sep	107	897.4	1902	27-Jun	25-Sep	91	992.3
1847	17-Jun	11-Oct	117	993.4	1903	17-Jun	21-Oct	127	729.8
1848	5-Jun	21-Oct	139	1212.3	1904	19-May	17-Oct	152	1293.6
1849	10-Jun	19-Oct	132	814.2	1905	4-Jul	24-Sep	83	962.9
1850	**6-Jun**	**25-Sep**	**112**	**1242.9**	1906	9-Jun	22-Sep	106	917.7
1851	7-Jun	15-Oct	131	880.7	1907	6-Jun	21-Sep	108	979.3
1852	31-May	15-Sep	108	821.0	1908	21-Jun	16-Sep	88	802.1
1853	10-Jun	24-Sep	107	770.3	1909	4-Jun	21-Sep	110	1057.7
1854	7-Jun	25-Sep	111	969.7	**1910**	**7-Jun**	**7-Oct**	**123**	**1106.9**
1855	10-Jun	26-Sep	109	1033.8	1911	4-Jun	18-Oct	137	1295.7
1856	6-Jun	19-Oct	136	1144.0	1912	17-Jun	13-Sep	89	765.1
1857	10-Jun	24-Sep	107	1094.5	1913	26-May	22-Sep	120	1190.1
1858	11-Jun	13-Oct	125	947.1	1914	31-May	17-Sep	110	1008.3
1859	8-Jun	5-Oct	120	999.1	1915	13-Jun	6-Oct	116	1026.3
1860	**20-Jun**	**4-Oct**	**107**	**988.3**	1916	5-Jun	23-Oct	141	1313.5
1861	26-May	24-Oct	152	1400.6	1917	18-May	14-Oct	150	1292.9
1862	13-Jun	15-Oct	125	1001.0	1918	6-Jun	24-Sep	111	1105.3
1863	10-Jun	5-Oct	118	1311.5	1919	7-Jun	14-Oct	130	1230.2
1864	17-Jun	23-Sep	99	742.0	**1920**	**18-Jun**	**23-Sep**	**98**	**1070.8**
1865	30-Apr	19-Sep	143	999.9	1921	7-Jun	24-Sep	110	1158.4
1866	6-Jun	15-Oct	132	1146.9	1922	6-Jun	24-Sep	111	1193.4
1867	19-May	24-Sep	129	1148.7	1923	11-Jun	18-Sep	100	969.2
1868	10-Jun	20-Sep	103	717.2	1924	16-Jun	26-Sep	103	1183.7
1869	6-Jun	17-Oct	134	1067.7	1925	7-Jun	23-Sep	109	1083.4
1870	**9-Jun**	**20-Oct**	**134**	**1064.7**	1926	4-Jul	24-Sep	83	961.9
1871	25-May	24-Sep	123	1164.0	1927	20-Jun	18-Sep	91	804.5
1872	10-Jun	22-Sep	105	814.9	1928	8-Jun	21-Oct	136	905.1
1873	21-Jun	18-Sep	90	826.9	1929	9-Jun	21-Oct	135	1167.1
1874	4-Jun	15-Oct	134	1295.4	**1930**	**14-Jun**	**22-Sep**	**101**	**898.7**
1875	5-Jun	20-Sep	108	991.2	1931	29-Jun	11-Oct	105	981.8
1876	14-Jun	13-Oct	122	1043.5	1932	17-Jun	21-Sep	97	765.1
1877	12-May	13-Oct	155	838.4	1933	20-May	23-Sep	127	985.0
1878	22-May	21-Sep	123	857.3	1934	12-Jun	25-Sep	106	1033.7
1879	9-Jun	13-Oct	127	1088.1	1935	20-Jun	23-Sep	96	986.7
1880	**8-Jun**	**10-Oct**	**125**	**997.3**	1936	29-May	19-Oct	144	1492.5
1881	7-Jun	14-Oct	130	1103.2	1937	13-Jun	21-Oct	131	1104.7
1882	6-Jun	12-Oct	129	944.3	1938	25-May	23-Sep	122	1130.2
1883	6-Jun	21-Sep	108	832.3	1939	7-Jun	24-Sep	110	1108.4
1884	8-Jun	6-Oct	121	1006.1	**1940**	**18-Jun**	**21-Sep**	**96**	**837.1**
1885	8-Jun	23-Sep	108	1121.2	1941	8-Jun	9-Oct	124	917.6
1886	8-Jun	22-Oct	137	1261.4	1942	13-Jun	26-Sep	106	1163.1
1887	12-May	16-Oct	158	1117.1	1943	22-Jun	23-Sep	94	1007.5
1888	14-Jun	20-Sep	99	1174.5	1944	16-Jun	8-Oct	115	939.0
1889	5-Jun	2-Oct	120	1087.6	1945	9-Jun	18-Oct	132	939.4
1890	**5-Jun**	**22-Sep**	**110**	**1247.7**	1946	6-Jun	21-Oct	138	1149.2
1891	13-Jun	23-Sep	103	798.8	1947	21-Jun	10-Oct	112	934.1
1892	9-Jun	21-Sep	105	982.2	1948	10-Jun	1-Nov	145	1159.4
1893	25-May	14-Oct	143	1229.8	1949	9-Jun	11-Oct	125	1190.9
1894	6-Jun	23-Oct	140	1395.3	**1950**	**8-Jun**	**18-Sep**	**103**	**940.4**
1895	6-Jun	16-Sep	103	860.1	1951	12-Jun	21-Sep	102	766.0
1896	7-Jun	15-Sep	101	854.9	1952	6-Jun	24-Sep	111	1049.5
1897	5-Jun	19-Oct	137	1203.0	1953	11-Jun	24-Sep	106	1009.1

Table 2(n):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1954	13-Jun	21-Sep	101	715.6	**1980**	**7-Jun**	**23-Sep**	**109**	**1027.4**
1955	14-Jun	10-Oct	119	865.5	1981	19-Jun	21-Sep	95	807.6
1956	28-May	17-Oct	143	1292.7	1982	29-May	1-Oct	126	856.4
1957	17-Jun	20-Sep	96	782.4	1983	16-Jun	10-Oct	117	841.8
1958	21-Jun	12-Oct	114	842.5	1984	5-Jun	24-Sep	112	1186.9
1959	31-May	20-Oct	143	935.1	1985	16-Jun	21-Oct	128	1149.1
1960	**23-Jun**	**2-Oct**	**102**	**1021.8**	1986	1-Jun	15-Oct	137	951.6
1961	7-Jun	23-Oct	139	1202.5	1987	13-Jun	27-Sep	107	1261.5
1962	14-Jun	23-Sep	102	779.9	1988	7-Jun	17-Sep	103	830.2
1963	30-May	18-Oct	142	1003.0	1989	9-Jun	22-Sep	106	906.7
1964	7-Jun	14-Oct	130	1055.0	**1990**	**19-May**	**30-Sep**	**135**	**1144.2**
1965	21-Jun	24-Sep	96	766.4	1991	10-Jun	22-Sep	105	841.0
1966	10-Jun	18-Sep	101	585.2	1992	18-Jun	18-Sep	93	696.6
1967	18-Jun	24-Sep	99	875.0	1993	7-Jun	26-Sep	112	988.2
1968	7-Jun	10-Oct	126	779.7	1994	5-Jun	1-Oct	119	1147.6
1969	14-Jun	23-Sep	102	1015.1	1995	16-Jun	24-Sep	101	851.4
1970	**31-May**	**25-Sep**	**118**	**972.7**	1996	7-Jun	21-Sep	107	862.4
1971	17-May	17-Oct	154	1428.7	1997	8-Jun	22-Sep	107	1177.1
1972	7-Jul	3-Oct	89	695.5	1998	17-Jun	13-Oct	119	937.0
1973	10-Jun	21-Oct	134	978.4	1999	15-May	17-Oct	156	1222.3
1974	16-Jun	20-Sep	97	769.8	**2000**	**26-May**	**25-Sep**	**123**	**1052.5**
1975	16-Jun	12-Oct	119	922.7	2001	29-May	19-Oct	144	1186.9
1976	14-Jun	26-Sep	105	957.7	2002	28-May	1-Oct	127	872.0
1977	29-May	17-Oct	142	1155.9	2003	10-Jun	20-Oct	133	1061.6
1978	6-Jun	17-Oct	134	1091.9	2004	8-Jun	15-Sep	100	701.6
1979	14-Jun	15-Sep	94	635.8	2005	14-Jun	15-Sep	94	717.6
					Mean	**8-Jun**	**2-Oct**	**117**	**1004.0**
					SD	**10**	**12**	**17**	**177**

Table 3(a):Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Brahmaputra Major Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1848	16-Mar	23-Oct	222	2560.6	1904	4-Apr	20-Oct	200	2304.4
1849	15-Mar	31-Oct	231	2298.9	1905	15-Mar	20-Oct	220	2548.6
1850	**27-Feb**	**19-Nov**	**267**	**2407.8**	1906	26-Feb	22-Oct	240	2606.1
1851	8-Apr	24-Oct	200	2258.7	1907	14-Mar	27-Sep	198	2231.1
1852	12-Mar	17-Oct	220	2295.8	1908	11-Apr	13-Oct	186	1969.1
1853	29-Mar	31-Oct	217	2206.5	1909	9-Apr	22-Oct	197	2158.9
1854	6-Apr	7-Nov	216	2124.1	**1910**	**13-Mar**	**22-Oct**	**224**	**2491.6**
1855	21-Mar	15-Oct	209	1916.7	1911	25-Mar	25-Oct	215	2563.2
1856	17-Mar	21-Oct	219	2189.1	1912	14-Mar	5-Nov	237	2334.3
1857	11-Apr	19-Oct	192	2246.0	1913	21-Feb	24-Oct	247	2376.1
1858	26-Mar	22-Oct	211	2874.5	1914	7-Apr	4-Oct	181	1993.5
1859	18-Mar	15-Oct	212	2806.8	1915	26-Feb	15-Oct	233	2586.3
1860	**16-Mar**	**23-Oct**	**222**	**2734.6**	1916	7-Apr	23-Oct	200	2470.8
1861	12-Mar	10-Oct	213	2865.3	1917	11-Apr	24-Oct	197	2217.3
1862	26-Mar	26-Oct	215	2675.0	1918	21-Mar	6-Oct	200	2717.0
1863	7-Apr	17-Oct	194	2143.8	1919	11-Apr	23-Oct	196	2041.9
1864	9-Apr	19-Oct	194	2144.0	**1920**	**10-Mar**	**21-Oct**	**226**	**2427.3**
1865	8-Apr	9-Oct	185	1924.5	1921	13-Mar	20-Oct	222	2908.6
1866	8-Apr	21-Oct	197	2528.0	1922	12-Apr	12-Oct	184	1983.9
1867	17-Mar	16-Nov	245	2433.6	1923	7-Apr	13-Oct	190	2217.7
1868	7-Apr	4-Oct	181	2271.3	1924	8-Apr	17-Nov	224	2487.0
1869	23-Mar	14-Oct	206	2397.4	1925	7-Apr	14-Oct	191	2246.7
1870	**27-Mar**	**24-Oct**	**212**	**2716.5**	1926	12-Mar	20-Oct	223	2174.7
1871	20-Mar	17-Oct	212	2261.9	1927	28-Feb	18-Oct	234	2373.3
1872	24-Mar	21-Oct	212	2488.7	1928	10-Apr	25-Oct	199	2246.0
1873	19-Mar	23-Sep	189	1772.9	1929	23-Mar	25-Oct	217	2537.1
1874	30-Mar	28-Nov	244	2582.4	**1930**	**20-Mar**	**14-Nov**	**240**	**2166.5**
1875	16-Mar	21-Sep	190	2155.8	1931	6-Apr	19-Oct	197	2464.6
1876	23-Mar	21-Oct	213	2069.6	1932	13-Apr	14-Nov	216	2336.0
1877	15-Mar	7-Oct	207	2057.4	1933	8-Apr	17-Oct	193	2072.4
1878	25-Mar	14-Oct	204	2795.9	1934	7-Apr	23-Oct	200	2474.1
1879	15-Apr	19-Oct	188	2667.4	1935	22-Apr	26-Sep	158	2200.2
1880	**9-Mar**	**21-Oct**	**227**	**2482.1**	1936	27-Mar	20-Oct	208	2309.0
1881	15-Mar	12-Oct	212	2352.3	1937	19-Apr	22-Oct	187	2091.5
1882	14-Mar	27-Oct	228	2320.0	1938	19-Mar	20-Oct	216	2392.0
1883	31-Mar	25-Sep	179	2100.7	1939	16-Apr	21-Oct	189	2100.1
1884	17-Mar	18-Oct	216	1894.6	**1940**	**10-Mar**	**9-Oct**	**214**	**2149.5**
1885	17-Mar	15-Oct	213	2250.7	1941	7-Apr	17-Oct	194	2298.2
1886	27-Mar	16-Oct	204	2324.0	1942	16-Mar	27-Sep	196	2226.0
1887	13-Mar	8-Oct	210	2257.8	1943	14-Mar	13-Oct	214	2465.8
1888	14-Mar	5-Oct	206	2072.3	1944	10-Apr	9-Oct	183	2075.0
1889	10-Apr	8-Oct	182	2446.6	1945	27-Mar	23-Oct	211	2337.1
1890	**31-Mar**	**24-Oct**	**208**	**2533.2**	1946	20-Mar	26-Oct	221	2309.9
1891	21-Mar	2-Oct	196	1850.3	1947	23-Mar	24-Oct	216	2418.8
1892	18-Mar	8-Oct	205	2643.5	1948	6-Apr	3-Nov	212	2904.4
1893	21-Mar	20-Oct	214	2219.8	1949	4-Apr	23-Oct	203	2628.1
1894	24-Mar	24-Oct	215	2393.2	**1950**	**26-Mar**	**22-Oct**	**211**	**2263.0**
1895	22-Mar	6-Oct	199	2208.9	1951	8-Apr	24-Oct	200	2349.9
1896	28-Mar	25-Sep	182	1743.5	1952	16-Mar	25-Oct	224	2554.8
1897	12-Mar	22-Oct	225	2239.4	1953	9-Mar	20-Oct	226	2348.4
1898	10-Apr	22-Oct	196	2243.7	1954	9-Apr	22-Oct	197	2366.4
1899	17-Mar	16-Oct	214	2427.7	1955	16-Mar	18-Oct	217	2529.2
1900	**18-Mar**	**3-Oct**	**200**	**1827.7**	1956	11-Mar	23-Oct	227	2494.6
1901	9-Apr	15-Nov	221	2121.9	1957	15-Apr	15-Oct	184	1949.1
1902	18-Mar	13-Oct	210	2705.3	1958	8-Apr	22-Oct	198	2393.8
1903	16-Mar	20-Oct	219	2268.3	1959	19-Mar	26-Oct	222	2182.0

Table 3(a):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1960	**5-May**	**8-Oct**	**157**	**2101.3**	1983	22-Mar	23-Oct	216	2282.9
1961	8-Mar	18-Oct	225	2175.4	1984	9-Apr	20-Oct	195	2311.7
1962	16-Apr	15-Oct	183	1919.9	1985	20-Mar	8-Oct	203	2214.4
1963	30-Mar	16-Oct	201	2338.4	1986	6-Apr	2-Nov	211	1931.9
1964	27-Mar	24-Oct	212	2553.5	1987	15-Mar	17-Oct	217	2314.5
1965	27-Mar	9-Oct	197	2251.8	1988	19-Mar	22-Nov	249	2995.1
1966	13-Apr	18-Oct	189	2411.4	1989	10-Apr	23-Oct	197	2344.1
1967	12-Mar	15-Oct	218	2018.9	**1990**	**27-Feb**	**21-Oct**	**238**	**2369.2**
1968	28-Mar	22-Oct	209	2256.7	1991	21-Mar	25-Oct	219	2303.5
1969	17-Mar	9-Oct	207	2158.2	1992	12-Apr	18-Oct	190	1910.6
1970	**25-Mar**	**22-Oct**	**212**	**2343.3**	1993	21-Feb	20-Oct	243	2654.5
1971	8-Apr	11-Nov	218	2164.5	1994	12-Mar	20-Oct	223	2181.2
1972	8-Apr	5-Oct	181	1924.6	1995	15-Apr	11-Nov	211	2375.3
1973	8-Apr	5-Nov	212	2305.6	1996	16-Mar	23-Oct	222	2057.9
1974	26-Mar	23-Oct	212	2749.0	1997	21-Mar	25-Sep	189	1857.0
1975	10-Apr	21-Oct	195	2090.6	1998	14-Mar	21-Oct	222	2649.4
1976	17-Mar	7-Oct	205	2137.1	1999	10-Apr	25-Oct	199	2491.3
1977	27-Mar	23-Oct	211	2520.5	**2000**	**7-Apr**	**15-Oct**	**192**	**2478.4**
1978	15-Apr	1-Nov	201	1787.4	2001	6-Apr	25-Oct	203	2055.8
1979	16-Apr	24-Oct	192	1944.2	2002	18-Mar	3-Nov	231	2358.3
1980	**19-Mar**	**22-Oct**	**218**	**2100.7**	2003	17-Mar	25-Oct	223	2300.2
1981	21-Mar	24-Sep	188	1908.9	2004	3-Apr	26-Oct	207	2581.7
1982	6-Apr	1-Oct	179	1906.4	2005	12-Mar	25-Sep	198	2098.7
					Mean	**26-Mar**	**20-Oct**	**209**	**2306.4**
					SD	**13**	**12**	**17**	**254**

Table 3(b): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Tista Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1869	17-Mar	10-Oct	208	3981.2	1925	9-Apr	8-Nov	214	3444.6
1870	**6-May**	**28-Oct**	**176**	**4036.8**	1926	5-May	15-Oct	164	3151.0
1871	15-Mar	25-Sep	195	2193.8	1927	11-Apr	16-Oct	189	3876.7
1872	9-Apr	24-Oct	199	3058.8	1928	13-Apr	28-Oct	199	3448.6
1873	8-Apr	27-Sep	173	2117.7	1929	29-Mar	28-Oct	214	3368.6
1874	17-Apr	25-Oct	192	3574.3	**1930**	**19-Mar**	**25-Oct**	**221**	**2839.8**
1875	29-Mar	24-Sep	180	2572.9	1931	14-Apr	20-Oct	190	3558.3
1876	20-Apr	22-Oct	186	2767.8	1932	23-Apr	20-Nov	212	3131.4
1877	14-Apr	28-Sep	168	2229.3	1933	9-Apr	23-Oct	198	2932.2
1878	12-Apr	28-Sep	170	3478.7	1934	16-Apr	14-Oct	182	3534.5
1879	2-May	1-Oct	153	3314.0	1935	4-May	28-Sep	148	3163.4
1880	**28-Feb**	**24-Oct**	**240**	**3358.9**	1936	14-Apr	17-Oct	187	3431.3
1881	5-May	17-Oct	166	2877.2	1937	4-May	31-Oct	181	2575.3
1882	5-May	28-Oct	177	3721.0	1938	4-May	20-Oct	170	4164.8
1883	15-Apr	28-Sep	167	3448.8	1939	5-May	4-Oct	153	3248.7
1884	13-Apr	20-Oct	191	2676.6	**1940**	**4-May**	**27-Sep**	**147**	**3281.1**
1885	27-Mar	22-Oct	210	3128.8	1941	14-Apr	4-Oct	174	3243.9
1886	6-May	28-Sep	146	3141.3	1942	20-Mar	26-Sep	191	2608.7
1887	20-Mar	16-Oct	211	3338.0	1943	7-Apr	28-Sep	175	3277.2
1888	18-Mar	26-Sep	193	2859.2	1944	5-Apr	14-Oct	193	3083.7
1889	9-May	27-Sep	142	2999.8	1945	6-Apr	23-Oct	201	3293.9
1890	**9-Apr**	**28-Oct**	**203**	**4132.2**	1946	8-Apr	24-Oct	200	2885.4
1891	26-Mar	22-Sep	181	1556.1	1947	18-Mar	23-Oct	220	2177.5
1892	17-Apr	27-Sep	164	3975.5	1948	6-Apr	9-Nov	218	3925.7
1893	30-Mar	10-Oct	195	2962.7	1949	4-Apr	25-Oct	205	3514.9
1894	15-Apr	24-Oct	193	3420.4	**1950**	**24-Apr**	**18-Oct**	**178**	**4052.2**
1895	12-Apr	24-Sep	166	3021.2	1951	20-Apr	19-Oct	183	3056.4
1896	15-Apr	2-Oct	171	1961.3	1952	9-Apr	20-Oct	195	3493.6
1897	6-May	20-Oct	168	2685.4	1953	17-Mar	21-Oct	219	2423.6
1898	7-May	1-Oct	148	3066.4	1954	29-Apr	17-Oct	172	3432.4
1899	25-Apr	27-Sep	156	2784.7	1955	22-Apr	5-Oct	167	3934.3
1900	**3-May**	**26-Sep**	**147**	**2488.5**	1956	22-Mar	26-Oct	219	3919.0
1901	5-May	20-Sep	139	2667.4	1957	17-May	12-Oct	149	2505.9
1902	19-Mar	15-Oct	211	3788.4	1958	15-Apr	23-Oct	192	3669.6
1903	8-May	17-Oct	163	2918.5	1959	10-Apr	27-Oct	201	2543.5
1904	10-Apr	23-Oct	197	2494.9	**1960**	**5-May**	**17-Oct**	**166**	**2555.4**
1905	22-Mar	24-Oct	217	3310.3	1961	6-May	19-Oct	167	2271.3
1906	15-May	2-Oct	141	3014.3	1962	30-Apr	15-Oct	169	2745.9
1907	28-Mar	28-Sep	185	2980.0	1963	15-Apr	10-Oct	179	3591.8
1908	4-May	8-Oct	158	2047.3	1964	9-Apr	12-Oct	187	4026.4
1909	10-Apr	16-Oct	190	2962.3	1965	5-May	26-Sep	145	3127.4
1910	**19-Mar**	**17-Oct**	**213**	**3506.5**	1966	5-May	8-Oct	157	3164.3
1911	6-Apr	24-Oct	202	3072.6	1967	9-May	25-Oct	170	2673.4
1912	10-Mar	10-Nov	246	2845.9	1968	14-May	28-Oct	168	2721.3
1913	6-May	20-Oct	168	2747.2	1969	16-Apr	30-Sep	168	2656.3
1914	9-Apr	27-Sep	172	2307.7	**1970**	**5-Apr**	**28-Sep**	**177**	**3017.0**
1915	24-Feb	22-Oct	242	2557.9	1971	7-Apr	28-Oct	205	2896.0
1916	6-Apr	24-Oct	202	4033.6	1972	16-Apr	28-Sep	166	2560.2
1917	7-May	26-Oct	173	3160.0	1973	12-Apr	25-Oct	197	2721.0
1918	13-Apr	11-Oct	182	3395.3	1974	6-Apr	26-Oct	204	4097.2
1919	28-Apr	17-Oct	173	2290.6	1975	18-Apr	23-Oct	189	3440.2
1920	**15-May**	**11-Oct**	**150**	**3012.8**	1976	9-Apr	21-Oct	196	2686.4
1921	22-Mar	19-Oct	212	3402.8	1977	6-Apr	26-Oct	204	3027.2
1922	7-May	4-Oct	151	2919.4	1978	26-Apr	16-Oct	174	2237.5
1923	7-Apr	18-Oct	195	3929.4	1979	11-Apr	29-Oct	202	3296.7
1924	10-Apr	19-Nov	224	4070.6	**1980**	**7-May**	**22-Oct**	**169**	**3292.0**

Table 3(b):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1981	8-Apr	26-Sep	172	2625.8	1994	17-Apr	3-Oct	170	2015.4
1982	16-Mar	26-Sep	195	2742.8	1995	5-May	21-Oct	170	3091.5
1983	4-May	27-Sep	147	3172.0	1996	3-May	19-Oct	170	2973.6
1984	14-Apr	25-Oct	195	3753.7	1997	27-Mar	28-Sep	186	2678.8
1985	4-May	24-Oct	174	3028.8	1998	14-Mar	22-Oct	223	4706.8
1986	16-Apr	19-Oct	187	2275.7	1999	14-Apr	25-Oct	195	4123.6
1987	7-May	22-Oct	169	3415.9	**2000**	**20-Apr**	**30-Oct**	**194**	**3842.8**
1988	11-Apr	28-Sep	171	3235.7	2001	29-Mar	27-Oct	213	3638.4
1989	17-May	14-Oct	151	3443.9	2002	7-Apr	14-Oct	191	3153.1
1990	**24-Mar**	**7-Oct**	**198**	**3014.4**	2003	13-Feb	26-Oct	257	2755.1
1991	20-Mar	27-Oct	222	2360.7	2004	6-Apr	24-Oct	202	3148.2
1992	12-Apr	17-Oct	189	1316.5	2005	17-Mar	27-Oct	225	2754.5
1993	10-Apr	26-Oct	200	3309.4					
					Mean	**14-Apr**	**15-Oct**	**185**	**3094.0**
					SD	**19**	**13**	**24**	**576**

Table 3(c):Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Brahmaputra Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1848	16-Mar	24-Oct	223	2385.0	1904	3-Apr	17-Oct	198	2301.1
1849	27-Feb	2-Nov	250	2167.4	1905	17-Mar	18-Oct	216	2341.9
1850	**28-Feb**	**18-Nov**	**265**	**2150.4**	1906	29-Feb	24-Oct	239	2360.9
1851	7-Apr	23-Oct	200	2123.3	1907	12-Mar	25-Sep	198	1862.5
1852	13-Mar	13-Oct	215	1960.8	1908	10-Apr	13-Oct	187	1740.3
1853	19-Apr	8-Nov	204	2077.5	1909	9-Apr	22-Oct	197	1827.7
1854	6-Apr	15-Oct	193	1806.8	**1910**	**14-Mar**	**20-Oct**	**221**	**2075.4**
1855	7-Apr	10-Oct	187	1753.8	1911	8-Apr	24-Oct	200	2314.3
1856	18-Mar	21-Oct	218	1949.6	1912	13-Mar	5-Nov	238	2118.3
1857	11-Apr	19-Oct	192	1968.3	1913	21-Feb	25-Oct	248	2097.4
1858	28-Mar	22-Oct	209	2726.4	1914	6-Apr	30-Sep	178	1900.3
1859	18-Mar	12-Oct	209	2646.1	1915	27-Feb	9-Oct	226	2586.4
1860	**15-Mar**	**24-Oct**	**224**	**2563.3**	1916	8-Apr	25-Oct	201	2097.6
1861	11-Mar	5-Oct	209	2715.0	1917	11-Apr	24-Oct	197	1978.5
1862	23-Mar	26-Oct	218	2468.3	1918	21-Mar	4-Oct	198	2765.4
1863	7-Apr	6-Oct	183	1835.3	1919	11-Apr	22-Oct	195	1793.8
1864	10-Apr	20-Oct	194	1648.0	**1920**	**9-Mar**	**20-Oct**	**226**	**2112.8**
1865	13-Apr	1-Oct	172	1687.5	1921	14-Mar	19-Oct	220	2559.0
1866	6-Apr	21-Oct	199	2533.1	1922	15-Apr	13-Oct	182	1587.9
1867	14-Mar	18-Nov	250	2369.4	1923	7-Apr	11-Oct	188	1821.0
1868	7-Apr	8-Oct	185	1929.7	1924	9-Apr	18-Nov	224	1989.6
1869	9-Apr	15-Oct	190	1917.2	1925	6-Apr	30-Sep	178	1878.5
1870	**12-Apr**	**23-Oct**	**195**	**2457.1**	1926	11-Mar	19-Oct	223	1805.8
1871	27-Mar	18-Oct	206	2141.4	1927	28-Feb	16-Oct	232	1931.8
1872	27-Mar	20-Oct	208	2358.7	1928	9-Apr	25-Oct	200	1914.3
1873	20-Mar	22-Sep	187	1594.5	1929	22-Mar	24-Oct	217	2163.9
1874	22-Feb	24-Oct	246	2225.5	**1930**	**24-Mar**	**15-Nov**	**237**	**1963.6**
1875	17-Mar	21-Sep	189	2049.7	1931	7-Apr	19-Oct	196	2144.0
1876	23-Mar	20-Oct	212	1853.0	1932	31-Mar	12-Nov	227	2070.2
1877	14-Mar	11-Oct	212	1854.1	1933	8-Apr	15-Oct	191	1795.3
1878	28-Mar	15-Oct	202	2583.3	1934	7-Apr	1-Nov	209	2334.2
1879	14-Apr	21-Oct	191	2440.8	1935	25-Apr	24-Sep	153	1827.4
1880	**8-Mar**	**20-Oct**	**227**	**2320.9**	1936	27-Mar	21-Oct	209	2014.3
1881	16-Mar	3-Oct	202	2139.2	1937	20-Apr	20-Oct	184	1991.0
1882	13-Mar	27-Oct	229	2141.0	1938	19-Mar	18-Oct	214	1990.9
1883	10-Apr	22-Sep	166	1713.3	1939	16-Apr	23-Oct	191	1879.6
1884	21-Mar	15-Oct	209	1567.8	**1940**	**10-Mar**	**11-Oct**	**216**	**1903.8**
1885	15-Mar	9-Oct	209	1987.4	1941	7-Apr	20-Oct	197	2066.1
1886	31-Mar	16-Oct	200	2225.7	1942	17-Mar	7-Oct	205	2180.0
1887	14-Mar	1-Oct	202	1934.7	1943	13-Mar	14-Oct	216	2247.7
1888	15-Mar	4-Oct	204	1905.1	1944	10-Apr	5-Oct	179	1765.4
1889	9-Apr	26-Sep	171	2090.7	1945	24-Mar	23-Oct	214	2042.8
1890	**10-Apr**	**23-Oct**	**197**	**2058.5**	1946	18-Mar	27-Oct	224	2299.1
1891	21-Mar	22-Sep	186	1645.8	1947	22-Mar	22-Oct	215	2343.4
1892	17-Mar	5-Oct	203	2246.3	1948	6-Apr	4-Nov	213	2885.1
1893	21-Mar	17-Oct	211	2057.9	1949	4-Apr	21-Oct	201	2541.1
1894	28-Mar	24-Oct	211	2070.2	**1950**	**22-Apr**	**1-Nov**	**194**	**1765.2**
1895	8-Apr	30-Sep	176	1751.8	1951	8-Apr	25-Oct	201	2319.3
1896	6-Apr	24-Sep	172	1554.5	1952	15-Mar	26-Oct	226	2594.6
1897	10-Mar	21-Oct	226	2063.1	1953	9-Mar	19-Oct	225	2185.9
1898	11-Apr	24-Oct	197	1870.9	1954	9-Apr	21-Oct	196	1968.9
1899	15-Mar	19-Oct	219	2278.6	1955	16-Mar	15-Nov	245	2376.3
1900	**17-Mar**	**21-Sep**	**189**	**1655.8**	1956	10-Mar	21-Oct	226	2368.6
1901	9-Apr	17-Nov	223	1922.5	1957	15-Apr	17-Oct	186	1774.3
1902	16-Mar	12-Oct	211	2430.9	1958	7-Apr	20-Oct	197	2103.1
1903	15-Mar	2-Nov	233	1991.8	1959	16-Mar	27-Oct	226	2086.3

Table 3(c):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1960	**4-May**	**10-Oct**	**160**	**2100.0**	1983	22-Mar	25-Oct	218	1985.9
1961	7-Mar	16-Oct	224	1895.6	1984	10-Apr	17-Oct	191	1998.5
1962	15-Apr	16-Oct	185	1705.5	1985	17-Mar	25-Sep	193	1825.3
1963	31-Mar	18-Oct	202	2178.4	1986	5-Apr	6-Nov	216	1850.0
1964	26-Mar	23-Oct	212	2327.9	1987	15-Mar	17-Oct	217	2046.1
1965	24-Mar	10-Oct	201	2084.4	1988	20-Mar	22-Oct	217	2759.8
1966	12-Apr	20-Oct	192	2223.2	1989	9-Apr	23-Oct	198	2147.1
1967	12-Mar	8-Oct	211	1771.5	**1990**	**17-Mar**	**23-Oct**	**221**	**2119.5**
1968	26-Mar	19-Oct	208	1954.4	1991	23-Mar	26-Oct	218	2123.4
1969	17-Mar	12-Oct	210	1960.2	1992	16-Apr	17-Oct	185	1875.6
1970	**23-Mar**	**24-Oct**	**216**	**2116.8**	1993	22-Feb	16-Oct	238	2255.5
1971	8-Apr	12-Nov	219	1824.8	1994	14-Mar	20-Oct	221	2185.1
1972	29-Mar	9-Oct	195	1867.4	1995	13-Apr	14-Nov	216	2081.3
1973	8-Apr	4-Dec	241	2204.0	1996	15-Mar	24-Oct	224	1614.5
1974	30-Mar	22-Oct	207	2479.8	1997	9-Apr	24-Sep	169	1655.3
1975	9-Apr	21-Oct	196	1742.1	1998	19-Mar	30-Sep	196	2057.4
1976	15-Mar	30-Sep	200	1838.6	1999	15-Apr	24-Oct	193	2148.3
1977	27-Mar	21-Oct	209	2408.2	**2000**	**6-Apr**	**16-Oct**	**194**	**2335.2**
1978	15-Apr	11-Oct	180	1720.4	2001	5-Apr	25-Oct	204	1919.6
1979	15-Apr	20-Oct	189	1764.7	2002	14-Mar	9-Nov	241	2322.1
1980	**19-Mar**	**23-Oct**	**219**	**1896.2**	2003	16-Mar	25-Oct	224	2222.8
1981	18-Mar	21-Sep	188	1595.2	2004	3-Apr	26-Oct	207	2581.7
1982	6-Apr	8-Oct	186	1669.3	2005	12-Mar	25-Oct	228	2358.0
					Mean	**27-Mar**	**18-Oct**	**206**	**2076.7**
					SD	**14**	**13**	**19**	**283**

Table 3(d): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Dhansiri Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1871	14-Apr	17-Oct	187	1473.1	1927	13-Apr	20-Oct	191	1582.5
1872	23-Apr	21-Oct	182	1868.6	1928	29-Mar	19-Oct	205	1365.6
1873	23-Mar	21-Sep	183	1339.4	1929	18-Mar	17-Oct	214	2423.5
1874	17-Feb	23-Oct	250	1937.3	**1930**	**14-Feb**	**21-Nov**	**282**	**2579.7**
1875	13-Mar	22-Sep	194	2111.6	1931	25-Apr	13-Oct	172	1493.0
1876	13-Mar	3-Nov	236	1917.2	1932	30-Mar	25-Sep	180	1475.1
1877	15-Mar	14-Oct	214	2027.9	1933	15-Apr	15-Oct	184	1642.2
1878	29-Mar	1-Nov	218	2289.8	1934	24-Apr	18-Oct	178	1666.5
1879	22-Apr	9-Oct	171	2383.1	1935	11-May	1-Sep	114	1563.2
1880	**1-Feb**	**16-Oct**	**259**	**1790.5**	1936	18-Apr	20-Oct	186	1997.2
1881	13-Mar	1-Nov	234	2064.3	1937	27-Apr	20-Oct	177	1619.3
1882	21-Feb	16-Oct	239	1529.1	1938	23-Mar	13-Nov	236	1937.3
1883	19-Apr	22-Sep	157	1568.8	1939	8-May	21-Oct	167	1614.9
1884	28-Feb	6-Nov	253	1569.5	**1940**	**9-May**	**4-Nov**	**180**	**1760.5**
1885	18-Apr	16-Nov	213	1759.4	1941	12-Apr	16-Oct	188	1774.0
1886	18-Apr	15-Oct	181	1782.6	1942	17-Mar	17-Nov	246	2053.3
1887	10-Mar	11-Oct	216	1819.5	1943	16-Mar	16-Oct	215	1744.0
1888	20-Mar	13-Oct	208	1616.5	1944	31-Mar	6-Oct	190	1574.9
1889	11-Apr	26-Sep	169	1618.5	1945	21-Apr	21-Oct	184	1776.1
1890	**15-Apr**	**20-Oct**	**189**	**1733.7**	1946	12-Mar	26-Oct	229	1655.9
1891	5-May	25-Sep	144	2003.1	1947	15-Apr	25-Oct	194	1954.3
1892	16-Apr	20-Oct	188	1602.7	1948	28-Apr	14-Nov	201	1849.2
1893	19-Apr	21-Oct	186	1962.8	1949	8-Apr	21-Oct	197	2113.9
1894	15-Mar	10-Nov	241	2122.4	**1950**	**12-May**	**18-Nov**	**191**	**1835.5**
1895	26-Mar	11-Oct	200	1751.1	1951	26-Mar	23-Oct	212	1490.7
1896	13-Apr	26-Sep	167	1305.5	1952	30-Mar	25-Oct	210	1706.2
1897	11-May	22-Oct	165	1269.0	1953	14-Mar	6-Oct	207	1866.4
1898	15-May	21-Oct	160	1685.6	1954	12-May	26-Oct	168	1729.5
1899	14-Apr	25-Sep	165	1845.7	1955	28-Mar	21-Nov	239	1672.1
1900	**18-Mar**	**13-Oct**	**210**	**1265.7**	1956	20-Mar	9-Nov	235	1778.6
1901	29-Mar	12-Nov	229	1902.2	1957	5-Jun	12-Oct	130	1227.4
1902	30-Mar	19-Oct	204	1631.5	1958	16-Apr	5-Oct	173	1639.7
1903	15-Mar	21-Oct	221	1820.8	1959	10-May	25-Oct	169	1614.4
1904	22-Apr	15-Nov	208	1804.8	**1960**	**12-May**	**1-Nov**	**174**	**1465.2**
1905	14-Mar	24-Oct	225	2047.2	1961	16-Mar	15-Oct	214	1487.4
1906	17-Feb	12-Oct	239	1477.5	1962	11-Apr	12-Oct	185	1770.5
1907	13-Mar	23-Sep	195	1360.3	1963	18-Mar	16-Oct	213	1489.4
1908	7-May	15-Oct	162	1372.7	1964	30-Mar	27-Oct	212	2032.7
1909	12-Apr	16-Oct	188	1779.6	1965	8-May	19-Oct	165	1542.5
1910	**29-Mar**	**19-Oct**	**205**	**1978.5**	1966	21-Apr	22-Oct	185	1781.0
1911	22-Mar	14-Oct	207	1549.3	1967	18-Mar	14-Oct	211	1474.8
1912	25-Mar	1-Nov	222	1915.8	1968	24-Mar	14-Oct	205	1859.1
1913	16-Mar	19-Oct	218	1440.6	1969	24-Mar	13-Oct	204	1568.3
1914	7-Apr	7-Oct	184	1679.5	**1970**	**17-May**	**24-Oct**	**161**	**1605.9**
1915	25-Feb	10-Oct	229	1995.7	1971	11-Apr	13-Nov	217	1509.5
1916	17-Apr	22-Oct	189	1528.3	1972	13-May	10-Oct	151	1200.4
1917	17-Feb	17-Nov	275	2018.2	1973	17-Apr	21-Nov	219	1688.5
1918	20-Mar	7-Oct	202	1934.2	1974	20-Mar	9-Nov	235	1623.2
1919	12-Apr	25-Sep	167	1420.9	1975	30-Apr	8-Nov	193	1856.5
1920	**29-Feb**	**15-Oct**	**230**	**1407.7**	1976	13-Mar	21-Sep	193	1543.7
1921	12-Mar	18-Oct	221	1644.6	1977	18-Apr	12-Oct	178	1730.1
1922	10-Apr	15-Oct	189	2035.7	1978	18-Apr	27-Sep	163	1501.2
1923	11-Apr	10-Oct	183	1396.6	1979	16-Mar	23-Sep	192	1345.8
1924	12-Apr	23-Nov	226	1767.4	**1980**	**16-Mar**	**22-Oct**	**221**	**1335.1**
1925	6-May	23-Oct	171	1730.8	1981	20-Apr	24-Sep	158	1365.0
1926	17-Mar	8-Oct	206	1563.4	1982	5-Jun	25-Sep	113	1063.8

Table 3(d):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1983	28-Feb	23-Oct	239	1570.3	1995	20-Apr	8-Nov	203	1544.2
1984	5-May	16-Oct	165	1422.4	1996	19-Apr	23-Oct	188	1433.4
1985	22-Mar	25-Sep	188	1616.9	1997	19-Mar	22-Sep	188	1108.2
1986	7-Jun	20-Sep	106	971.4	1998	13-Mar	19-Sep	191	1148.6
1987	21-Mar	22-Sep	186	1319.9	1999	9-May	24-Oct	169	1638.6
1988	17-Mar	7-Nov	236	1139.1	**2000**	**25-Mar**	**23-Oct**	**213**	**1819.2**
1989	12-Apr	25-Oct	197	1574.4	2001	19-Apr	19-Oct	184	1478.4
1990	**22-Mar**	**19-Oct**	**212**	**1908.3**	2002	9-Apr	9-Nov	215	1410.3
1991	18-Mar	24-Oct	221	1991.6	2003	28-Mar	20-Oct	207	1505.4
1992	7-May	24-Oct	171	2163.1	2004	7-Apr	21-Oct	198	1743.4
1993	14-Feb	16-Oct	246	2393.2	2005	19-Mar	22-Oct	218	1455.9
1994	19-Feb	6-Oct	231	1829.6					
					Mean	**4-Apr**	**18-Oct**	**198**	**1681.6**
					SD	**25**	**16**	**30**	**284**

Table 4(a): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Godavari Major Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1826	4-Jun	7-Sep	96	1025.3	1882	6-Jun	23-Sep	110	876.1
1827	11-Jun	26-Sep	108	891.4	1883	5-Jun	16-Oct	134	1264.6
1828	9-Jun	20-Oct	134	877.6	1884	11-Jun	1-Oct	113	1073.6
1829	9-Jun	22-Oct	136	944.3	1885	7-Jun	8-Oct	124	794.8
1830	**9-Jun**	**5-Oct**	**119**	**653.4**	1886	7-Jun	22-Oct	138	949.0
1831	6-Jun	17-Dec	195	1260.4	1887	7-Jun	12-Oct	128	1090.5
1832					1888	9-Jun	16-Sep	100	680.5
1833					1889	9-Jun	19-Oct	133	1005.7
1834					**1890**	**7-Jun**	**24-Sep**	**110**	**921.8**
1835					1891	5-Jul	26-Sep	84	903.2
1836					1892	9-Jun	20-Oct	134	1211.3
1837		NO DATA			1893	7-Jun	19-Oct	135	1121.2
1838					1894	9-Jun	14-Oct	128	1021.4
1839					1895	6-Jun	7-Oct	124	907.4
1840					1896	7-Jun	1-Sep	87	752.8
1841					1897	16-Jun	3-Oct	110	828.7
1842					1898	9-Jun	23-Sep	107	812.2
1843					1899	13-Jun	12-Sep	92	332.0
1844	7-Jun	16-Sep	102	633.0	**1900**	**14-Jun**	**25-Sep**	**104**	**868.2**
1845	11-Jun	18-Sep	100	691.1	1901	12-Jun	19-Sep	100	766.8
1846	8-Jun	22-Sep	107	759.0	1902	6-Jul	23-Sep	80	522.6
1847	27-May	13-Nov	171	996.1	1903	12-Jun	19-Oct	130	1098.4
1848	8-Jun	19-Sep	104	608.9	1904	9-Jun	10-Oct	124	661.5
1849	10-Jun	19-Oct	132	779.2	1905	16-Jun	25-Sep	102	714.2
1850					1906	5-Jun	18-Sep	106	919.2
1851					1907	9-Jun	11-Sep	95	718.8
1852		NO DATA			1908	9-Jun	25-Sep	109	963.2
1853					1909	8-Jun	21-Sep	106	767.5
1854	10-Jun	12-Oct	125	976.1	**1910**	**6-Jun**	**6-Nov**	**154**	**1193.2**
1855	12-Jun	11-Oct	122	569.9	1911	8-Jun	21-Sep	106	730.7
1856	9-Jun	17-Sep	101	875.0	1912	27-Jun	18-Sep	84	725.9
1857	8-Jun	10-Oct	125	724.4	1913	7-Jun	19-Sep	105	809.1
1858	14-Jun	23-Sep	102	666.7	1914	6-Jun	25-Sep	112	1001.5
1859	10-Jun	16-Sep	99	661.5	1915	8-Jun	16-Oct	131	906.1
1860	**10-Jun**	**25-Sep**	**108**	**890.2**	1916	7-Jun	20-Oct	136	1087.7
1861	7-Jun	13-Sep	99	856.4	1917	7-Jun	17-Oct	133	1084.2
1862	8-Jun	17-Oct	132	738.1	1918	13-May	13-Sep	124	669.5
1863	6-Jun	12-Oct	129	823.6	1919	6-Jun	11-Oct	128	873.6
1864	12-Jun	17-Sep	98	608.7	**1920**	**16-Jun**	**17-Sep**	**94**	**441.6**
1865	8-Jun	21-Sep	106	821.9	1921	7-Jun	22-Sep	108	759.4
1866	11-Jun	20-Sep	102	758.1	1922	8-Jun	24-Sep	109	743.7
1867	7-Jun	16-Oct	132	1018.1	1923	5-Jul	25-Sep	83	723.8
1868	9-Jun	15-Sep	99	555.8	1924	7-Jul	13-Oct	99	657.6
1869	13-Jun	13-Oct	123	854.2	1925	31-May	6-Oct	129	849.0
1870	**6-Jun**	**16-Oct**	**133**	**968.9**	1926	29-Jun	20-Sep	84	751.5
1871	7-Jun	22-Sep	108	605.9	1927	6-Jun	11-Nov	159	912.5
1872	7-Jun	8-Oct	124	983.3	1928	9-Jun	15-Oct	129	892.2
1873	14-Jun	24-Sep	103	668.3	1929	9-Jun	23-Sep	107	705.9
1874	7-Jun	24-Sep	110	885.0	**1930**	**8-Jun**	**5-Oct**	**120**	**747.4**
1875	6-Jun	12-Oct	129	1028.4	1931	11-Jun	1-Nov	144	1125.8
1876	17-Jun	21-Sep	97	642.3	1932	11-Jun	22-Sep	104	839.7
1877	11-Jun	15-Oct	127	654.4	1933	18-May	11-Oct	147	1223.4
1878	16-Jun	15-Oct	122	1111.1	1934	9-Jun	23-Sep	107	912.6
1879	19-May	11-Oct	146	799.1	1935	8-Jun	23-Sep	108	852.3
1880	**7-Jun**	**11-Oct**	**127**	**872.4**	1936	6-Jun	10-Nov	158	1013.4
1881	7-Jun	1-Oct	117	826.8	1937	11-Jun	16-Oct	128	877.5

Table 4(a):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1938	5-Jun	19-Oct	137	1154.5	1972	12-Jun	13-Sep	94	474.2
1939	13-Jun	5-Oct	115	746.8	1973	16-Jun	22-Oct	129	1032.8
1940	**6-Jun**	**13-Oct**	**130**	**1033.4**	1974	12-Jun	22-Oct	133	750.7
1941	12-Jun	20-Sep	101	601.0	1975	8-Jun	19-Oct	134	1082.5
1942	8-Jun	20-Sep	105	946.2	1976	18-Jun	18-Sep	93	760.3
1943	9-Jun	17-Oct	131	847.5	1977	8-Jun	19-Sep	104	766.4
1944	13-Jun	15-Oct	125	989.0	1978	7-Jun	13-Sep	99	817.4
1945	9-Jun	2-Oct	116	968.3	1979	9-Jun	22-Sep	106	708.9
1946	7-Jun	18-Sep	104	790.8	**1980**	**6-Jun**	**18-Sep**	**105**	**850.8**
1947	14-Jun	24-Sep	103	945.1	1981	9-Jun	25-Sep	109	922.1
1948	9-Jun	24-Sep	108	827.2	1982	13-Jun	7-Oct	117	743.4
1949	27-May	19-Oct	146	1187.1	1983	11-Jun	17-Oct	129	1163.7
1950	**15-Jun**	**22-Sep**	**100**	**670.4**	1984	16-Jun	11-Oct	118	675.3
1951	12-Jun	14-Oct	125	789.0	1985	8-Jun	18-Oct	133	763.2
1952	15-Jun	5-Oct	113	656.6	1986	8-Jun	14-Sep	99	739.8
1953	9-Jun	14-Oct	128	968.8	1987	12-Jun	8-Nov	150	753.2
1954	10-Jun	25-Sep	108	918.5	1988	9-Jun	5-Oct	119	1166.6
1955	7-Jun	22-Oct	138	1230.8	1989	6-Jun	20-Sep	107	898.4
1956	19-May	10-Nov	176	1136.2	**1990**	**12-May**	**21-Oct**	**163**	**1247.5**
1957	11-Jun	4-Oct	116	817.4	1991	8-Jun	3-Sep	88	672.2
1958	16-Jun	9-Oct	116	967.3	1992	10-Jun	17-Sep	100	762.5
1959	7-Jun	15-Oct	131	1145.4	1993	11-Jun	15-Oct	127	860.2
1960	**9-Jun**	**9-Oct**	**123**	**775.1**	1994	7-Jun	12-Oct	128	1076.5
1961	9-Jun	21-Oct	135	1163.2	1995	12-Jun	20-Oct	131	822.4
1962	18-Jun	25-Sep	100	838.1	1996	16-Jun	15-Oct	122	731.8
1963	7-Jun	15-Oct	131	997.4	1997	18-Jun	31-Oct	136	650.2
1964	11-Jun	23-Sep	105	870.0	1998	10-Jun	13-Nov	157	1030.3
1965	11-Jun	21-Sep	103	693.7	1999	8-Jun	16-Oct	131	822.8
1966	15-Jun	23-Sep	101	736.0	**2000**	**26-May**	**4-Sep**	**102**	**810.2**
1967	9-Jun	17-Sep	101	769.5	2001	7-Jun	19-Oct	135	783.4
1968	14-Jun	24-Sep	103	679.0	2002	6-Jun	3-Oct	120	702.7
1969	12-Jun	25-Sep	106	868.8	2003	15-Jun	3-Oct	111	806.2
1970	**5-Jun**	**23-Sep**	**111**	**1073.5**	2004	11-Jun	8-Oct	120	668.0
1971	7-Jun	20-Sep	106	597.5	2005	11-Jun	17-Oct	129	1033.0
					Mean	**9-Jun**	**4-Oct**	**118**	**854.7**
					SD	**7**	**16**	**19**	**178**

Table 4(b):Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Wainganga Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	12-Jun	18-Sep	99	682.3	**1900**	**18-Jun**	**26-Sep**	**101**	**1097.0**
1845	11-Jun	13-Sep	95	833.9	1901	15-Jun	21-Sep	99	1069.2
1846	8-Jun	23-Sep	108	934.6	1902	5-Jul	21-Sep	79	538.5
1847	29-May	22-Oct	147	1157.3	1903	9-Jun	16-Oct	130	1236.7
1848	7-Jun	18-Sep	104	742.3	1904	10-Jun	4-Oct	117	682.0
1849	10-Jun	20-Oct	133	933.2	1905	20-Jun	26-Sep	99	936.7
1850					1906	4-Jun	21-Sep	110	1174.8
1851					1907	8-Jun	2-Sep	87	893.5
1852					1908	6-Jun	24-Sep	111	1302.7
1853					1909	9-Jun	19-Sep	103	922.1
1854					**1910**	**5-Jun**	**15-Nov**	**164**	**1275.1**
1855		NO DATA			1911	6-Jun	30-Sep	117	996.5
1856					1912	3-Jul	21-Sep	81	962.3
1857					1913	6-Jun	20-Sep	107	984.7
1858					1914	9-Jun	22-Sep	106	1053.5
1859					1915	6-Jun	18-Oct	135	1109.6
1860					1916	7-Jun	22-Oct	138	1222.5
1861	5-Jun	11-Sep	99	1014.1	1917	31-May	15-Oct	138	1269.0
1862	7-Jun	11-Oct	127	864.5	1918	20-May	6-Sep	110	891.0
1863	6-Jun	18-Oct	135	1010.5	1919	5-Jul	15-Nov	134	1281.2
1864	5-May	19-Sep	138	1104.7	**1920**	**15-Jun**	**19-Sep**	**97**	**627.6**
1865	7-Jun	21-Sep	107	980.6	1921	5-Jun	24-Sep	112	1053.9
1866	10-Jun	21-Sep	104	932.2	1922	7-Jun	25-Sep	111	946.4
1867	6-Jun	16-Oct	133	1202.8	1923	3-Jul	25-Sep	85	1034.3
1868	9-Jun	16-Sep	100	621.9	1924	30-Jun	12-Oct	105	891.8
1869	11-Jun	12-Oct	124	1165.5	1925	10-Jun	5-Oct	118	983.6
1870	**6-Jun**	**14-Oct**	**131**	**1128.0**	1926	5-Jul	8-Oct	96	1038.9
1871	4-Jun	24-Sep	113	971.9	1927	5-Jun	5-Nov	154	1095.5
1872	5-Jun	24-Sep	112	1142.3	1928	8-Jun	15-Oct	130	1025.2
1873	16-Jun	25-Sep	102	808.2	1929	10-Jun	24-Sep	107	970.4
1874	6-Jun	24-Sep	111	1094.5	**1930**	**7-Jun**	**3-Oct**	**119**	**992.3**
1875	5-Jun	7-Oct	125	1223.2	1931	11-Jun	24-Oct	136	1322.7
1876	17-Jun	24-Sep	100	858.0	1932	9-Jun	23-Sep	107	1043.6
1877	8-Jun	14-Oct	129	856.4	1933	15-May	13-Oct	152	1522.4
1878	16-Jun	9-Oct	116	1220.3	1934	6-Jun	25-Sep	112	1105.4
1879	16-May	12-Oct	150	1227.9	1935	9-Jun	24-Sep	108	1026.3
1880	**5-Jun**	**12-Oct**	**130**	**1235.6**	1936	4-Jun	19-Oct	138	1363.7
1881	5-Jun	23-Sep	111	1124.3	1937	8-Jun	19-Oct	134	1184.3
1882	7-Jun	24-Sep	110	1063.8	1938	4-Jun	20-Oct	139	1445.0
1883	4-Jun	13-Oct	132	1362.5	1939	11-Jun	5-Oct	117	1017.0
1884	7-Jun	26-Sep	112	1451.0	**1940**	**7-Jun**	**5-Oct**	**121**	**1325.4**
1885	4-Jun	5-Oct	124	1084.4	1941	9-Jun	15-Sep	99	745.4
1886	6-Jun	18-Oct	135	983.1	1942	10-Jun	23-Sep	106	1196.6
1887	5-Jun	10-Oct	128	1500.1	1943	11-Jun	11-Oct	123	1003.0
1888	9-Jun	19-Sep	103	972.4	1944	11-Jun	17-Oct	129	1333.4
1889	7-Jun	11-Oct	127	1193.1	1945	7-Jun	5-Oct	121	1294.3
1890	**7-Jun**	**25-Sep**	**111**	**1207.4**	1946	5-Jun	14-Sep	102	1026.8
1891	3-Jul	27-Sep	87	1320.9	1947	12-Jun	22-Sep	103	1202.3
1892	10-Jun	17-Oct	130	1283.8	1948	8-Jun	23-Sep	108	1006.2
1893	7-Jun	17-Oct	133	1123.4	1949	31-May	23-Oct	146	1387.7
1894	9-Jun	17-Oct	131	1187.3	**1950**	**12-Jun**	**20-Sep**	**101**	**855.5**
1895	5-Jun	17-Sep	105	890.1	1951	12-Jun	13-Oct	124	895.3
1896	6-Jun	26-Sep	113	1059.3	1952	16-Jun	21-Sep	98	662.7
1897	19-Jun	23-Sep	97	945.8	1953	15-Jun	6-Oct	114	1016.2
1898	6-Jun	23-Sep	110	1140.7	1954	12-Jun	24-Sep	105	1107.5
1899	12-Jun	3-Sep	84	413.0	1955	6-Jun	24-Oct	141	1452.7

Table 4(b):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	29-May	24-Sep	119	1196.3	1981	7-Jun	25-Sep	111	1191.8
1957	15-Jun	14-Sep	92	883.7	1982	10-Jun	10-Oct	123	952.3
1958	15-Jun	10-Oct	118	1080.7	1983	11-Jun	3-Oct	115	1244.5
1959	9-Jun	7-Oct	121	1300.6	1984	14-Jun	8-Sep	87	763.7
1960	**8-Jun**	**11-Oct**	**126**	**984.6**	1985	6-Jun	20-Oct	137	1162.3
1961	8-Jun	3-Oct	118	1591.2	1986	6-Jun	9-Sep	96	1068.1
1962	19-Jun	25-Sep	99	920.8	1987	19-Jun	4-Nov	139	696.8
1963	7-Jun	7-Oct	123	1219.4	1988	6-Jun	6-Oct	123	1124.0
1964	10-Jun	22-Sep	105	1096.6	1989	6-Jun	21-Sep	108	836.2
1965	13-Jun	24-Sep	104	679.7	**1990**	**17-May**	**19-Oct**	**156**	**1304.7**
1966	10-Jun	21-Sep	104	954.6	1991	12-Jun	8-Sep	89	805.7
1967	7-Jun	16-Sep	102	1031.8	1992	18-Jun	18-Sep	93	823.2
1968	12-Jun	25-Sep	106	902.5	1993	9-Jun	10-Oct	124	1037.5
1969	17-Jun	24-Sep	100	1090.6	1994	6-Jun	14-Oct	131	1665.3
1970	**5-Jun**	**24-Sep**	**112**	**1281.6**	1995	9-Jun	9-Oct	123	1050.4
1971	5-Jun	16-Oct	134	944.9	1996	15-Jun	12-Oct	120	871.1
1972	13-Jun	30-Aug	79	527.8	1997	14-Jun	8-Oct	117	834.2
1973	18-Jun	23-Oct	128	1302.2	1998	11-Jun	21-Nov	164	1279.8
1974	13-Jun	24-Oct	134	937.2	1999	7-Jun	16-Oct	132	1014.2
1975	4-Jun	17-Oct	136	1328.9	**2000**	**25-May**	**25-Aug**	**93**	**791.0**
1976	17-Jun	22-Sep	98	1005.1	2001	6-Jun	15-Oct	132	986.5
1977	6-Jun	22-Sep	109	1099.3	2002	5-Jun	19-Sep	107	956.0
1978	8-Jun	16-Sep	101	977.3	2003	13-Jun	23-Sep	103	1042.2
1979	8-Jun	21-Sep	106	821.9	2004	9-Jun	18-Sep	102	636.0
1980	**6-Jun**	**19-Sep**	**106**	**1030.5**	2005	10-Jun	13-Oct	126	1149.6
					Mean	**9-Jun**	**2-Oct**	**116**	**1051.9**
					SD	**8**	**15**	**17**	**215**

Table 4(c): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Wardha Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1826	3-Jun	27-Aug	86	1068.2	1882	7-Jun	22-Sep	108	822.4
1827	11-Jun	26-Sep	108	913.7	1883	5-Jun	22-Oct	140	1421.1
1828	8-Jun	20-Oct	135	867.4	1884	18-Jun	26-Sep	101	1078.9
1829	8-Jun	23-Oct	138	948.6	1885	8-Jun	10-Sep	95	608.8
1830	**8-Jun**	**1-Oct**	**116**	**592.8**	1886	7-Jun	23-Oct	139	755.1
1831	5-Jun	10-Dec	189	1338.1	1887	6-Jun	18-Oct	135	1234.8
1832					1888	7-Jun	15-Sep	101	736.8
1833					1889	9-Jun	20-Oct	134	907.1
1834					**1890**	**8-Jun**	**24-Sep**	**109**	**841.5**
1835					1891	4-Jul	28-Sep	87	1062.9
1836					1892	9-Jun	17-Oct	131	1006.0
1837					1893	10-Jun	5-Nov	149	930.5
1838					1894	7-Jun	11-Oct	127	1018.4
1839					1895	5-Jun	16-Sep	104	850.4
1840					1896	7-Jun	27-Aug	82	789.3
1841		NO DATA			1897	19-Jun	22-Sep	96	735.5
1842					1898	8-Jun	19-Sep	104	688.4
1843					1899	13-Jun	7-Sep	87	238.7
1844					**1900**	**21-Jun**	**24-Sep**	**96**	**897.8**
1845					1901	13-Jun	18-Sep	98	705.9
1846					1902	5-Jul	15-Sep	73	575.3
1847					1903	12-Jun	19-Oct	130	1058.6
1848					1904	8-Jun	9-Oct	124	568.8
1849					1905	14-Jun	26-Sep	105	812.7
1850					1906	4-Jun	10-Sep	99	1050.8
1851					1907	6-Jun	9-Sep	96	782.7
1852					1908	6-Jun	24-Sep	111	972.2
1853					1909	7-Jun	22-Sep	108	784.7
1854	10-Jun	10-Oct	123	992.8	**1910**	**5-Jun**	**9-Nov**	**158**	**1323.4**
1855	12-Jun	10-Oct	121	479.5	1911	7-Jun	7-Nov	154	708.6
1856	9-Jun	8-Sep	92	891.0	1912	28-Jun	18-Sep	83	836.3
1857	6-Jun	8-Oct	125	679.4	1913	5-Jun	19-Sep	107	946.5
1858	16-Jun	23-Sep	100	623.7	1914	7-Jun	25-Sep	111	828.7
1859	9-Jun	8-Sep	92	626.4	1915	9-Jun	14-Oct	128	916.6
1860	**10-Jun**	**26-Sep**	**109**	**904.9**	1916	5-Jun	20-Oct	138	1231.4
1861	6-Jun	25-Aug	81	813.4	1917	23-May	17-Oct	148	1130.7
1862	7-Jun	14-Oct	130	652.0	1918	11-May	18-Aug	100	429.0
1863	6-Jun	23-Sep	110	783.8	1919	5-Jun	18-Oct	136	901.6
1864	11-Jun	14-Sep	96	571.3	**1920**	**15-Jun**	**9-Sep**	**87**	**406.7**
1865	7-Jun	17-Sep	103	861.1	1921	8-Jun	21-Sep	106	760.4
1866	13-Jun	18-Sep	98	769.0	1922	7-Jun	25-Sep	111	869.2
1867	5-Jun	15-Oct	133	1111.6	1923	4-Jul	25-Sep	84	719.2
1868	8-Jun	2-Sep	87	568.8	1924	29-Jun	23-Oct	117	709.4
1869	15-Jun	2-Oct	110	665.7	1925	8-Jun	4-Sep	89	686.6
1870	**6-Jun**	**13-Oct**	**130**	**1015.7**	1926	28-May	13-Oct	139	898.5
1871	8-Jun	24-Sep	109	657.7	1927	5-Jun	3-Nov	152	956.3
1872	9-Jun	10-Oct	124	843.7	1928	8-Jun	19-Oct	134	791.7
1873	10-Jun	23-Sep	106	600.1	1929	8-Jun	24-Sep	109	621.1
1874	8-Jun	21-Sep	106	724.1	**1930**	**9-Jun**	**19-Sep**	**103**	**589.8**
1875	5-Jun	21-Oct	139	1089.5	1931	13-Jun	23-Oct	133	1245.7
1876	20-Jun	22-Sep	95	693.0	1932	8-Jun	17-Sep	102	837.9
1877	9-Jun	6-Oct	120	690.9	1933	28-May	17-Oct	143	1351.6
1878	15-Jun	14-Oct	122	1242.4	1934	8-Jun	24-Sep	109	1011.3
1879	12-May	5-Oct	147	1006.7	1935	7-Jun	22-Sep	108	896.1
1880	**11-Jun**	**24-Sep**	**106**	**528.1**	1936	4-Jun	4-Nov	154	1143.7
1881	4-Jun	23-Sep	112	1053.8	1937	9-Jun	18-Oct	132	1072.2

Table 4(c):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1938	5-Jun	15-Oct	133	1102.9	1972	10-Jun	7-Sep	90	534.0
1939	15-Jun	27-Aug	74	586.5	1973	18-Jun	17-Oct	122	1075.7
1940	**4-Jun**	**19-Oct**	**138**	**1199.4**	1974	14-Jun	23-Oct	132	759.7
1941	15-Jun	18-Sep	96	758.8	1975	8-Jun	3-Oct	118	968.9
1942	8-Jun	20-Sep	105	1017.1	1976	19-Jun	22-Sep	96	659.8
1943	12-Jun	13-Oct	124	684.6	1977	9-Jun	17-Sep	101	777.7
1944	17-Jun	3-Oct	109	1132.1	1978	7-Jun	3-Sep	89	834.4
1945	9-Jun	23-Sep	107	890.9	1979	7-Jun	11-Sep	97	881.8
1946	6-Jun	16-Sep	103	860.3	**1980**	**6-Jun**	**13-Sep**	**100**	**867.5**
1947	12-Jun	22-Sep	103	876.7	1981	8-Jun	26-Sep	111	1081.4
1948	15-Jun	23-Sep	101	868.0	1982	10-Jun	20-Sep	103	546.1
1949	7-Jun	21-Oct	137	1229.7	1983	8-Jun	5-Oct	120	976.3
1950	**16-Jun**	**11-Sep**	**88**	**568.2**	1984	18-Jun	7-Oct	112	604.0
1951	16-Jun	11-Oct	118	773.0	1985	6-Jun	21-Oct	138	817.2
1952	16-Jun	15-Sep	92	523.0	1986	10-Jun	3-Sep	86	641.7
1953	11-Jun	21-Sep	103	852.3	1987	14-Jun	25-Aug	73	396.2
1954	10-Jun	24-Sep	107	968.6	1988	11-Jun	21-Oct	133	1151.4
1955	7-Jun	22-Oct	138	1208.4	1989	5-Jun	14-Sep	102	736.5
1956	16-May	22-Sep	130	803.8	**1990**	**22-May**	**20-Oct**	**152**	**1219.1**
1957	11-Jun	20-Sep	102	683.2	1991	10-Jun	24-Aug	76	535.2
1958	11-Jun	1-Oct	113	872.4	1992	11-Jun	13-Sep	95	817.7
1959	6-Jun	9-Oct	126	1015.3	1993	10-Jun	15-Oct	128	843.2
1960	**8-Jun**	**2-Oct**	**117**	**793.3**	1994	8-Jun	17-Oct	132	1148.3
1961	13-Jun	19-Oct	129	1128.6	1995	14-Jun	2-Oct	111	766.4
1962	1-Jul	24-Sep	86	737.0	1996	8-Jul	9-Oct	94	563.4
1963	7-Jun	15-Oct	131	807.6	1997	20-Jun	18-Oct	121	671.9
1964	8-Jun	19-Sep	104	882.7	1998	13-Jun	24-Sep	104	656.8
1965	9-Jun	19-Sep	103	582.3	1999	30-May	18-Oct	142	981.1
1966	24-May	22-Sep	122	761.4	**2000**	**22-May**	**8-Sep**	**110**	**859.6**
1967	10-Jun	12-Sep	95	614.3	2001	6-Jun	26-Aug	82	477.8
1968	14-Jun	23-Sep	102	692.6	2002	4-Jun	16-Sep	105	672.2
1969	14-Jun	25-Sep	104	756.5	2003	9-Jun	13-Sep	97	793.3
1970	**4-Jun**	**24-Sep**	**113**	**1292.8**	2004	11-Jun	30-Sep	112	630.9
1971	7-Jun	20-Oct	136	707.4	2005	8-Jun	9-Sep	94	926.2
					Mean	**9-Jun**	**29-Sep**	**113**	**840.1**
					SD	**8**	**18**	**20**	**219**

Table 4(d): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Penganga Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1865	8-Jun	26-Sep	111	843.7	1921	10-Jun	24-Sep	107	822.0
1866	13-Jun	6-Sep	86	817.0	1922	9-Jun	26-Sep	110	973.3
1867	4-Jun	25-Oct	144	1656.4	1923	4-Jul	24-Sep	83	764.4
1868	5-Jun	6-Sep	94	691.1	1924	15-Jun	25-Oct	133	759.4
1869	19-Jun	8-Oct	112	828.3	1925	12-Jun	24-Aug	74	448.1
1870	**4-Jun**	**30-Sep**	**119**	**1383.4**	1926	29-Jun	12-Sep	76	917.6
1871	10-Jun	24-Sep	107	532.5	1927	4-Jun	3-Nov	153	836.3
1872	6-Jun	4-Oct	121	978.7	1928	5-Jun	20-Oct	138	912.2
1873	18-May	23-Sep	129	597.8	1929	7-Jun	23-Sep	109	610.2
1874	22-May	23-Sep	125	867.2	**1930**	**11-Jun**	**20-Sep**	**102**	**670.4**
1875	4-Jun	25-Oct	144	1331.3	1931	18-Jun	23-Oct	128	1096.8
1876	19-Jun	8-Sep	82	603.3	1932	12-Jun	20-Sep	101	755.3
1877	16-Jun	20-Sep	97	641.8	1933	31-May	22-Oct	145	1248.1
1878	17-Jun	30-Oct	136	1019.4	1934	9-Jun	21-Sep	105	929.0
1879	10-May	20-Sep	134	983.6	1935	12-Jun	23-Sep	104	860.1
1880	**20-Jun**	**24-Sep**	**97**	**526.6**	1936	20-May	11-Oct	145	1149.4
1881	6-Jun	22-Sep	109	890.5	1937	20-Jun	20-Oct	123	1047.6
1882	7-Jun	21-Sep	107	811.3	1938	4-Jun	14-Oct	133	982.1
1883	5-Jun	22-Oct	140	1451.9	1939	17-Jun	28-Aug	73	687.3
1884	13-Jun	25-Sep	105	1083.9	**1940**	**6-Jun**	**23-Aug**	**79**	**1010.1**
1885	10-Jun	4-Oct	117	574.7	1941	15-Jun	18-Sep	96	806.5
1886	26-May	26-Oct	154	933.0	1942	6-Jun	20-Sep	107	966.6
1887	5-Jun	13-Oct	131	1304.1	1943	30-May	12-Oct	136	811.2
1888	9-Jun	12-Sep	96	712.0	1944	3-Jul	22-Sep	82	806.3
1889	13-Jun	22-Oct	132	989.0	1945	12-Jun	23-Sep	104	880.5
1890	**7-Jun**	**24-Sep**	**110**	**824.5**	1946	8-Jun	15-Sep	100	798.0
1891	4-Jul	27-Sep	86	1150.2	1947	12-Jun	22-Sep	103	594.8
1892	7-Jun	19-Oct	135	1078.9	1948	23-Jun	24-Sep	94	999.8
1893	12-Jun	13-Nov	155	1004.2	1949	9-Jun	21-Oct	135	1239.4
1894	6-Jun	23-Sep	110	780.1	**1950**	**19-Jun**	**17-Sep**	**91**	**571.8**
1895	5-Jun	2-Oct	120	795.6	1951	9-Jun	23-Sep	107	883.5
1896	16-Jun	26-Aug	72	630.0	1952	10-Jun	15-Oct	128	879.1
1897	5-Jul	29-Sep	87	596.2	1953	8-Jun	17-Sep	102	856.7
1898	7-Jun	15-Sep	101	570.7	1954	6-Jun	25-Sep	112	949.3
1899	9-Jun	10-Sep	94	280.0	1955	10-Jun	21-Oct	134	1530.7
1900	**16-Jun**	**24-Sep**	**101**	**856.9**	1956	16-May	5-Oct	143	1051.6
1901	12-Jun	5-Oct	116	810.4	1957	11-Jun	22-Sep	104	625.4
1902	21-Jun	13-Sep	85	762.3	1958	9-Jun	4-Oct	118	1043.2
1903	16-Jun	15-Oct	122	915.5	1959	6-Jun	12-Oct	129	1243.6
1904	11-Jun	10-Oct	122	525.9	**1960**	**6-Jun**	**30-Sep**	**117**	**926.8**
1905	29-Jun	25-Sep	89	653.9	1961	14-May	21-Oct	161	1237.5
1906	4-Jun	8-Sep	97	965.3	1962	26-Jun	24-Sep	91	815.1
1907	7-Jun	31-Aug	86	834.6	1963	6-Jun	20-Oct	137	903.1
1908	5-Jun	21-Sep	109	1049.8	1964	10-Jun	19-Sep	102	931.4
1909	9-Jun	21-Sep	105	742.8	1965	7-Jun	17-Sep	103	712.2
1910	**4-Jun**	**18-Oct**	**137**	**1524.3**	1966	26-May	23-Sep	121	844.0
1911	14-Jun	10-Sep	89	522.7	1967	10-Jun	12-Sep	95	477.3
1912	4-Jul	18-Sep	77	971.6	1968	17-Jun	23-Sep	99	764.2
1913	8-Jun	21-Sep	106	997.3	1969	16-Jun	26-Sep	103	935.1
1914	4-Jun	25-Sep	114	939.3	**1970**	**3-Jun**	**24-Sep**	**114**	**1426.2**
1915	10-Jun	15-Oct	128	892.5	1971	7-Jun	21-Oct	137	665.7
1916	6-Jun	15-Oct	132	1314.3	1972	7-Jun	8-Sep	94	510.7
1917	8-Jun	15-Oct	130	1388.1	1973	3-Jul	11-Oct	101	1101.7
1918	8-Jun	1-Sep	86	457.3	1974	24-Jun	23-Oct	122	568.8
1919	5-Jun	5-Sep	93	645.8	1975	10-Jun	25-Sep	108	1048.0
1920	**11-Jun**	**3-Sep**	**85**	**413.5**	1976	28-Jun	19-Sep	84	605.9

Table 4(d):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1977	7-Jun	14-Sep	100	938.9	1992	9-Jun	6-Sep	90	789.0
1978	7-Jun	10-Sep	96	792.4	1993	12-Jun	4-Oct	115	723.1
1979	16-May	15-Sep	123	931.3	1994	7-Jun	12-Sep	98	895.9
1980	**5-Jun**	**8-Sep**	**96**	**1099.0**	1995	11-Jun	16-Oct	128	931.9
1981	13-Jun	27-Sep	107	1177.1	1996	5-Jul	10-Oct	98	744.0
1982	8-Jun	20-Sep	105	619.4	1997	13-Jun	23-Sep	103	533.1
1983	5-Jun	1-Oct	119	970.0	1998	13-Jun	22-Sep	102	645.6
1984	14-Jun	13-Oct	122	571.7	1999	23-May	25-Sep	126	1049.4
1985	4-Jun	18-Oct	137	741.4	**2000**	**22-May**	**3-Aug**	**74**	**920.2**
1986	7-Jun	31-Aug	86	697.9	2001	29-Jun	27-Aug	60	476.9
1987	19-Jun	5-Nov	140	589.2	2002	4-Jun	11-Oct	130	980.7
1988	12-Jun	20-Oct	131	1368.9	2003	12-Jun	10-Oct	121	968.8
1989	5-Jun	5-Sep	93	779.5	2004	26-May	11-Oct	139	630.2
1990	**24-May**	**22-Oct**	**152**	**1283.8**	2005	11-Jun	8-Oct	120	1080.0
1991	15-Jun	22-Aug	69	429.5					
					Mean	**10-Jun**	**28-Sep**	**111**	**870.9**
					SD	**10**	**18**	**21**	**256**

Table 4(e): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Godavari Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	5-Jun	19-Sep	107	693.1	**1900**	**11-Jun**	**22-Sep**	**104**	**673.9**
1845	11-Jun	22-Sep	104	566.4	1901	10-Jun	8-Oct	121	631.2
1846	8-Jun	21-Oct	136	774.1	1902	25-Jun	5-Oct	103	541.2
1847	12-Jun	19-Oct	130	563.2	1903	30-May	20-Oct	144	1016.5
1848					1904	14-Jun	13-Oct	122	582.9
1849					1905	16-Jun	21-Sep	98	438.9
1850					1906	6-Jun	15-Sep	102	654.7
1851					1907	11-Jun	9-Sep	91	512.3
1852					1908	15-Jun	26-Sep	104	731.8
1853					1909	8-Jun	21-Sep	106	655.3
1854		NO DATA			**1910**	**8-Jun**	**11-Oct**	**126**	**906.2**
1855					1911	16-Jun	12-Sep	89	458.9
1856					1912	26-Jun	7-Sep	74	428.8
1857					1913	8-Jun	14-Sep	99	576.6
1858					1914	5-Jun	25-Sep	113	942.4
1859					1915	8-Jun	16-Oct	131	742.5
1860					1916	9-Jun	3-Nov	148	1002.3
1861	11-Jun	18-Oct	130	834.7	1917	8-Jun	14-Oct	129	964.4
1862	6-Jun	22-Oct	139	825.1	1918	12-May	16-Sep	128	432.5
1863	7-Jun	15-Oct	131	704.5	1919	9-Jun	22-Sep	106	518.2
1864	15-Jun	12-Sep	90	429.1	**1920**	**20-Jun**	**17-Sep**	**90**	**270.3**
1865	17-Jun	21-Oct	127	614.0	1921	9-Jun	19-Sep	103	516.7
1866	10-Jun	15-Oct	128	652.1	1922	9-Jun	22-Sep	106	472.6
1867	14-Jun	19-Oct	128	735.8	1923	6-Jul	25-Sep	82	556.8
1868	12-Jun	15-Sep	96	531.0	1924	12-Jul	24-Sep	75	517.7
1869	12-Jun	21-Oct	132	722.1	1925	11-Jun	9-Oct	121	556.4
1870	**7-Jun**	**23-Oct**	**139**	**863.0**	1926	24-Jun	20-Sep	89	543.6
1871	17-Jun	18-Sep	94	269.0	1927	8-Jun	21-Sep	106	525.0
1872	10-Jun	7-Oct	120	822.6	1928	9-Jun	11-Oct	125	755.5
1873	15-Jun	24-Sep	102	563.9	1929	9-Jun	1-Oct	115	424.4
1874	11-Jun	25-Sep	107	731.9	**1930**	**9-Jun**	**9-Oct**	**123**	**601.5**
1875	8-Jun	2-Oct	117	802.9	1931	9-Jun	30-Sep	114	729.8
1876	18-Jun	12-Sep	87	402.6	1932	13-Jun	10-Oct	120	703.8
1877	17-Jun	18-Oct	124	449.8	1933	21-May	2-Oct	135	943.9
1878	16-Jun	18-Oct	125	1001.7	1934	16-Jun	21-Sep	98	679.1
1879	9-Jun	11-Oct	125	689.6	1935	8-Jun	14-Oct	129	752.2
1880	**9-Jun**	**11-Oct**	**125**	**666.4**	1936	11-Jun	20-Sep	102	465.0
1881	11-Jun	5-Oct	117	557.6	1937	19-Jun	12-Oct	116	543.7
1882	6-Jun	24-Sep	111	752.7	1938	6-Jun	12-Oct	129	939.7
1883	6-Jun	15-Oct	132	1161.5	1939	18-Jun	2-Oct	107	475.8
1884	25-Jun	10-Oct	108	718.6	**1940**	**9-Jun**	**10-Oct**	**124**	**688.8**
1885	17-Jun	12-Oct	118	600.7	1941	27-Jun	22-Sep	88	409.8
1886	30-May	23-Oct	147	1024.9	1942	7-Jun	15-Sep	101	702.8
1887	11-Jun	5-Oct	117	707.3	1943	26-May	20-Oct	148	823.4
1888	11-Jun	12-Sep	94	414.8	1944	16-Jun	16-Oct	123	616.5
1889	12-Jun	20-Oct	131	844.9	1945	10-Jun	6-Oct	119	649.2
1890	**7-Jun**	**22-Sep**	**108**	**680.4**	1946	9-Jun	19-Sep	103	553.6
1891	26-Jun	24-Sep	91	542.7	1947	21-Jun	24-Sep	96	706.1
1892	8-Jun	22-Oct	137	1248.6	1948	11-Jun	23-Sep	105	635.9
1893	26-May	20-Oct	148	1182.7	1949	24-May	9-Oct	139	961.1
1894	13-Jun	1-Oct	111	774.1	**1950**	**22-Jun**	**25-Sep**	**96**	**552.4**
1895	12-Jun	15-Oct	126	815.4	1951	12-Jun	16-Oct	127	622.3
1896	10-Jun	31-Aug	83	466.4	1952	15-Jun	11-Oct	119	525.8
1897	16-Jun	24-Sep	101	622.0	1953	7-Jun	15-Oct	131	851.6
1898	18-Jun	23-Sep	98	592.9	1954	9-Jun	25-Sep	109	774.7
1899	15-Jun	15-Sep	93	239.2	1955	8-Jun	19-Oct	134	1061.7

Table 4(e):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	19-May	30-Sep	135	812.7	1981	10-Jun	7-Oct	120	800.4
1957	10-Jun	14-Oct	127	726.9	1982	16-Jun	9-Oct	116	658.9
1958	23-Jun	30-Sep	100	787.7	1983	13-Jun	22-Oct	132	1191.1
1959	8-Jun	18-Oct	133	985.1	1984	23-Jun	16-Oct	116	503.4
1960	**26-May**	**4-Oct**	**132**	**624.6**	1985	11-Jun	12-Oct	124	477.2
1961	25-May	24-Oct	153	913.7	1986	11-Jun	16-Sep	98	495.0
1962	23-Apr	25-Sep	156	840.5	1987	10-Jun	3-Sep	86	505.9
1963	7-Jun	18-Oct	134	879.4	1988	10-Jun	26-Sep	109	1189.1
1964	15-Jun	25-Sep	103	677.7	1989	7-Jun	21-Sep	107	965.5
1965	12-Jun	18-Sep	99	707.0	**1990**	**7-Jun**	**23-Oct**	**139**	**1008.7**
1966	23-Jun	24-Sep	94	583.7	1991	6-Jun	12-Aug	68	490.1
1967	12-Jun	18-Sep	99	608.9	1992	8-Jun	18-Sep	103	555.8
1968	17-Jun	4-Oct	110	553.0	1993	17-Jun	18-Oct	124	652.1
1969	10-Jun	25-Sep	108	711.5	1994	11-Jun	9-Oct	121	514.2
1970	**6-Jun**	**22-Sep**	**109**	**838.6**	1995	14-Jun	24-Oct	133	632.4
1971	14-Jun	18-Oct	127	510.8	1996	13-Jun	19-Oct	129	705.9
1972	14-Jun	10-Sep	89	278.6	1997	23-Jun	10-Oct	110	450.1
1973	14-Jun	22-Oct	131	854.6	1998	10-Jun	21-Oct	134	924.5
1974	31-May	22-Oct	145	695.1	1999	11-Jun	12-Oct	124	662.7
1975	14-Jun	21-Oct	130	959.1	**2000**	**30-May**	**3-Sep**	**97**	**770.1**
1976	19-Jun	8-Sep	82	619.8	2001	9-Jun	21-Oct	135	641.7
1977	13-Jun	5-Oct	115	493.8	2002	8-Jun	9-Oct	124	547.6
1978	6-Jun	7-Oct	124	762.2	2003	19-Jun	1-Oct	105	600.2
1979	13-Jun	24-Sep	104	595.2	2004	27-May	11-Oct	138	606.9
1980	**7-Jun**	**17-Sep**	**103**	**671.9**	2005	14-Jun	18-Oct	127	931.3
					Mean	**11-Jun**	**3-Oct**	**115**	**681.5**
					SD	**9**	**15**	**18**	**196**

Table 4(f):Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Indravati Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1871	15-Apr	25-Sep	164	1250.1	1927	4-Jun	23-Oct	142	1465.1
1872	4-Jun	22-Oct	141	1471.2	1928	15-Jun	20-Oct	128	1378.7
1873	23-Jun	11-Oct	111	986.2	1929	5-Jun	19-Oct	137	1614.6
1874	4-Jun	19-Oct	138	1477.6	**1930**	**7-Jun**	**17-Nov**	**164**	**1105.0**
1875	5-Jun	17-Oct	135	1450.3	1931	23-Jun	26-Oct	126	1494.8
1876	30-May	13-Oct	137	1228.5	1932	17-Jun	26-Sep	102	1278.4
1877	19-Mar	13-Oct	209	1341.6	1933	5-Jun	17-Oct	135	1333.5
1878	24-Apr	14-Oct	174	1241.4	1934	6-Jun	21-Oct	138	1459.8
1879	9-May	15-Oct	160	1218.2	1935	11-Jun	26-Sep	108	1189.4
1880	**5-Jun**	**12-Nov**	**161**	**1495.9**	1936	11-May	25-Sep	138	1655.9
1881	7-Jun	15-Oct	131	1225.3	1937	11-Jun	16-Oct	128	1236.4
1882	4-Jun	12-Nov	162	1197.0	1938	25-May	27-Oct	156	1521.7
1883	5-Jun	8-Oct	126	1174.2	1939	8-Jun	22-Oct	137	1481.9
1884	4-Jun	26-Sep	115	1502.8	**1940**	**28-Apr**	**20-Oct**	**176**	**1700.5**
1885	14-May	9-Oct	149	1288.9	1941	28-May	17-Oct	143	973.1
1886	19-May	23-Oct	158	1197.1	1942	8-Jun	24-Sep	109	1269.1
1887	7-Jun	21-Oct	137	1490.0	1943	18-May	24-Sep	130	1169.0
1888	9-Jun	22-Sep	106	1020.0	1944	15-Mar	19-Oct	219	1737.2
1889	5-Jun	23-Oct	141	1444.6	1945	8-Jun	5-Oct	120	1691.0
1890	**4-Jun**	**10-Oct**	**129**	**1505.7**	1946	6-Jun	30-Sep	117	1130.0
1891	29-May	13-Oct	138	1272.5	1947	8-Jun	11-Oct	126	1582.0
1892	8-Jun	14-Oct	129	1217.2	1948	19-Apr	14-Nov	210	1454.0
1893	18-May	19-Oct	155	1694.2	1949	19-May	24-Oct	159	1558.0
1894	5-Jun	11-Nov	160	1589.3	**1950**	**9-Jun**	**18-Sep**	**102**	**908.3**
1895	25-May	6-Oct	135	1427.3	1951	20-Mar	5-Oct	200	1521.7
1896	5-Jun	21-Sep	109	1471.4	1952	13-Jun	11-Oct	121	1369.8
1897	30-May	21-Oct	145	1302.5	1953	5-Jun	25-Oct	143	1554.1
1898	6-Jun	25-Sep	112	1172.1	1954	21-Jun	26-Sep	98	970.0
1899	9-Jun	15-Sep	99	740.1	1955	20-May	25-Oct	159	1532.5
1900	**30-May**	**11-Oct**	**135**	**1222.2**	1956	29-Apr	16-Oct	171	1800.0
1901	29-Jun	23-Sep	87	1000.6	1957	10-Jun	19-Sep	102	1173.9
1902	4-Jul	25-Sep	84	874.7	1958	25-Apr	6-Nov	196	1569.2
1903	26-May	8-Nov	167	1558.6	1959	31-May	22-Nov	176	1791.4
1904	19-May	7-Oct	142	1259.3	**1960**	**7-Jun**	**20-Oct**	**136**	**1159.7**
1905	11-Jun	26-Sep	108	1225.1	1961	7-Jun	18-Oct	134	1511.1
1906	6-Jun	10-Oct	127	1287.5	1962	29-May	23-Sep	118	1286.5
1907	10-Jun	23-Sep	106	1099.1	1963	20-Apr	18-Oct	182	1451.3
1908	13-Jun	21-Sep	101	1083.4	1964	12-Jun	15-Oct	126	1221.8
1909	15-Jun	18-Sep	96	830.1	1965	14-May	22-Sep	132	1007.4
1910	**6-Jun**	**22-Oct**	**139**	**1882.9**	1966	7-Jun	24-Sep	110	921.2
1911	5-Jun	12-Oct	130	1635.8	1967	5-Jun	21-Sep	109	1096.3
1912	19-Jun	24-Sep	98	1148.6	1968	10-Jun	22-Oct	135	1075.6
1913	20-May	12-Oct	146	1328.8	1969	23-May	8-Nov	170	1390.8
1914	23-Apr	26-Sep	157	1655.4	**1970**	**22-May**	**7-Oct**	**139**	**1321.2**
1915	20-May	16-Oct	150	1169.6	1971	15-Apr	20-Oct	189	1330.6
1916	22-May	6-Nov	169	1238.8	1972	10-Jun	26-Sep	109	1027.0
1917	6-Jun	25-Oct	142	1321.4	1973	16-Jun	19-Oct	126	1030.5
1918	8-May	20-Sep	136	1245.7	1974	9-Jun	15-Oct	129	696.9
1919	5-Jun	4-Nov	153	1182.7	1975	6-Jun	23-Oct	140	1188.7
1920	**11-Jun**	**18-Sep**	**100**	**808.2**	1976	27-May	18-Sep	115	987.0
1921	6-Jun	4-Nov	152	1221.2	1977	12-Apr	24-Sep	166	1615.3
1922	10-Jun	8-Nov	152	1381.5	1978	9-Jun	28-Aug	81	863.1
1923	15-Jun	7-Oct	115	910.6	1979	6-Jun	2-Oct	119	645.1
1924	30-Jun	13-Nov	137	920.4	**1980**	**5-Jun**	**24-Sep**	**112**	**1172.5**
1925	10-May	12-Oct	156	1781.1	1981	17-Jun	23-Sep	99	721.3
1926	29-Apr	11-Oct	166	1213.6	1982	16-Jun	10-Oct	117	884.4

Table 4(f):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1983	6-Jun	14-Oct	131	1159.1	1995	18-May	26-Nov	193	1646.0
1984	11-Apr	13-Oct	186	1508.1	1996	15-Jun	22-Sep	100	721.1
1985	19-May	17-Oct	152	969.2	1997	10-Jun	22-Sep	105	1015.2
1986	8-Jun	22-Oct	137	1344.8	1998	9-Jun	19-Nov	164	1176.3
1987	21-May	7-Nov	171	1406.5	1999	18-May	21-Oct	157	924.0
1988	7-Jun	14-Oct	130	1140.2	**2000**	**22-May**	**16-Sep**	**118**	**852.9**
1989	6-Jun	21-Sep	108	1072.9	2001	21-May	20-Nov	184	1149.7
1990	**28-Apr**	**9-Nov**	**196**	**1622.3**	2002	22-May	16-Sep	118	604.8
1991	7-Jun	17-Oct	133	1333.5	2003	4-Jul	21-Oct	110	929.4
1992	30-May	18-Sep	112	1554.7	2004	6-Jun	21-Oct	138	1222.8
1993	5-Jun	24-Sep	112	1367.0	2005	9-Jun	24-Oct	138	1255.3
1994	4-Jun	25-Sep	114	1931.7					
					Mean	**29-May**	**12-Oct**	**137**	**1272.3**
					SD	**20**	**18**	**28**	**274**

Table 5(a): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Krishna Major Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1826	18-May	7-Nov	174	599.4	1882	26-May	14-Nov	173	861.8
1827	7-Jun	19-Oct	135	586.7	1883	9-Jun	2-Nov	147	767.9
1828	26-May	5-Nov	164	742.1	1884	26-Jun	18-Oct	115	541.7
1829	21-May	12-Oct	145	496.2	1885	24-May	31-Oct	161	652.2
1830	**12-Jun**	**17-Oct**	**128**	**451.5**	1886	26-May	24-Oct	152	808.6
1831					1887	12-Jun	6-Nov	148	644.8
1832					1888	26-May	17-Sep	115	441.6
1833		NO DATA			1889	13-Jun	22-Oct	132	746.9
1834					**1890**	**11-Jun**	**14-Nov**	**157**	**644.0**
1835					1891	30-Jun	14-Oct	107	410.5
1836	12-Jun	12-Oct	123	541.8	1892	9-Jun	24-Oct	138	913.3
1837	31-May	22-Sep	115	396.1	1893	19-May	11-Nov	177	856.6
1838	20-Jun	30-Sep	103	291.6	1894	16-Jun	19-Oct	126	625.9
1839	30-May	18-Oct	142	585.1	1895	13-Jun	21-Oct	131	712.7
1840	**11-Jun**	**13-Oct**	**125**	**478.0**	1896	9-Jun	3-Sep	87	486.1
1841	13-Jun	31-Oct	141	536.2	1897	15-Jun	18-Oct	126	618.7
1842	13-Jun	24-Sep	104	688.7	1898	13-Jun	6-Nov	147	666.1
1843	29-Jun	18-Oct	112	566.5	1899	15-Jun	20-Sep	98	254.7
1844	28-May	14-Oct	140	581.3	**1900**	**13-Jun**	**1-Oct**	**111**	**566.9**
1845	29-May	6-Oct	131	527.7	1901	30-May	14-Oct	138	527.6
1846	30-May	1-Nov	156	756.6	1902	15-Jun	20-Oct	128	537.2
1847	17-Apr	17-Nov	215	709.9	1903	24-May	7-Nov	168	931.3
1848	17-May	17-Oct	154	557.7	1904	22-May	18-Oct	150	518.7
1849	27-Apr	14-Oct	171	756.3	1905	16-Jun	15-Oct	122	411.0
1850	**14-Jun**	**23-Oct**	**132**	**674.4**	1906	8-Jun	10-Oct	125	626.9
1851	18-Jun	31-Oct	136	498.7	1907	12-Jun	19-Sep	100	529.2
1852	15-Jun	22-Oct	130	631.7	1908	23-Jun	24-Sep	94	561.1
1853	18-Jun	1-Oct	106	370.7	1909	25-May	19-Sep	118	571.6
1854	23-Jun	24-Oct	124	666.7	**1910**	**10-Jun**	**19-Oct**	**132**	**698.9**
1855	16-Jun	14-Oct	121	358.6	1911	15-Jun	8-Oct	116	444.9
1856	14-May	5-Nov	176	644.5	1912	27-Jun	16-Oct	112	574.3
1857	13-May	5-Nov	177	602.1	1913	28-May	15-Oct	141	516.5
1858	18-May	21-Oct	157	535.7	1914	14-Jun	21-Sep	100	677.7
1859	28-Jun	3-Oct	98	483.4	1915	9-Jun	8-Nov	153	754.5
1860	**8-Jun**	**13-Oct**	**128**	**513.1**	1916	24-May	19-Nov	180	994.2
1861	17-Jun	11-Oct	117	669.1	1917	10-Jun	11-Nov	155	799.5
1862	10-Jun	22-Oct	135	618.2	1918	18-May	13-Nov	180	409.5
1863	10-Jun	14-Oct	127	506.1	1919	25-May	14-Nov	174	679.3
1864	23-May	12-Sep	113	565.5	**1920**	**18-Jun**	**6-Oct**	**111**	**386.9**
1865	18-Apr	12-Oct	178	639.9	1921	15-Jun	5-Nov	144	570.7
1866	15-Jun	23-Oct	131	548.7	1922	15-Jun	19-Nov	158	518.7
1867	12-Jun	23-Oct	134	610.3	1923	6-Jul	21-Sep	78	404.1
1868	30-May	18-Sep	112	567.1	1924	22-Jun	1-Nov	133	585.1
1869	11-Jun	15-Oct	127	508.0	1925	19-May	19-Oct	154	622.0
1870	**13-Jun**	**23-Oct**	**133**	**737.7**	1926	23-Jun	19-Sep	89	457.9
1871	16-Jun	6-Oct	113	379.2	1927	12-Jun	16-Nov	158	639.3
1872	12-Jun	18-Oct	129	615.6	1928	11-Jun	18-Oct	130	620.5
1873	26-May	19-Oct	147	543.7	1929	11-Jun	12-Oct	124	490.3
1874	18-May	19-Oct	155	807.4	**1930**	**11-Jun**	**2-Nov**	**145**	**633.4**
1875	11-Jun	14-Oct	126	605.4	1931	12-Jun	14-Nov	156	701.9
1876	18-Jun	1-Sep	76	227.9	1932	29-May	11-Nov	167	815.4
1877	11-Jun	22-Oct	134	558.5	1933	17-May	2-Nov	170	868.1
1878	17-Jun	23-Oct	129	881.4	1934	14-Jun	4-Nov	144	610.0
1879	13-May	16-Oct	157	700.0	1935	14-Jun	19-Oct	128	575.4
1880	**12-Jun**	**9-Nov**	**151**	**579.9**	1936	25-May	10-Nov	170	593.4
1881	18-Jun	8-Nov	144	496.3	1937	24-Jun	19-Oct	118	476.6

Table 5(a):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1938	10-Jun	6-Oct	119	673.2	1972	17-Jun	13-Oct	119	350.2
1939	17-Jun	22-Oct	128	561.2	1973	12-Jun	23-Oct	134	652.8
1940	**19-May**	**17-Oct**	**152**	**476.3**	1974	20-May	23-Oct	157	703.2
1941	16-Jun	14-Oct	121	470.0	1975	11-Jun	23-Oct	135	822.0
1942	9-Jun	30-Sep	114	468.0	1976	11-Jun	11-Sep	93	497.1
1943	19-May	23-Oct	158	706.6	1977	21-May	17-Nov	181	714.6
1944	14-Jun	23-Oct	132	653.8	1978	24-May	3-Nov	164	822.1
1945	18-Jun	12-Oct	117	527.1	1979	23-May	16-Nov	178	691.7
1946	26-May	20-Nov	179	772.8	**1980**	**10-Jun**	**17-Sep**	**100**	**501.2**
1947	19-Jun	10-Oct	114	659.8	1981	10-Jun	16-Oct	129	692.1
1948	20-Jun	18-Nov	152	645.5	1982	22-May	1-Nov	164	571.7
1949	21-May	18-Oct	151	677.6	1983	10-Jun	17-Oct	130	761.1
1950	**22-Jun**	**14-Oct**	**115**	**638.2**	1984	18-Jun	18-Oct	123	507.4
1951	24-May	17-Oct	147	603.8	1985	14-Jun	16-Oct	125	440.7
1952	17-May	18-Oct	155	526.8	1986	10-Jun	17-Sep	100	410.2
1953	10-Jun	24-Oct	137	827.5	1987	18-Jun	16-Nov	152	606.5
1954	14-Jun	13-Oct	122	666.3	1988	19-Jun	24-Sep	98	731.3
1955	17-May	21-Oct	158	612.1	1989	11-Jun	22-Sep	104	619.3
1956	23-May	12-Nov	174	969.9	**1990**	**10-May**	**21-Oct**	**165**	**749.4**
1957	25-May	20-Oct	149	481.4	1991	26-May	9-Oct	137	604.0
1958	25-May	17-Oct	146	521.1	1992	12-Jun	15-Nov	157	610.6
1959	8-Jun	13-Oct	128	777.6	1993	17-Jun	24-Oct	130	647.6
1960	**24-May**	**6-Oct**	**136**	**604.4**	1994	12-Jun	4-Nov	146	700.3
1961	15-May	21-Oct	160	858.8	1995	21-May	23-Oct	156	707.7
1962	29-Apr	20-Oct	175	631.8	1996	10-Jun	22-Oct	135	708.2
1963	12-Jun	22-Oct	133	675.6	1997	12-Jun	11-Nov	153	628.3
1964	14-Jun	14-Oct	123	755.8	1998	11-Jun	23-Oct	135	859.6
1965	16-Jun	19-Sep	96	498.6	1999	19-May	21-Oct	156	659.9
1966	21-May	16-Nov	180	675.9	**2000**	**31-May**	**12-Oct**	**135**	**668.6**
1967	15-Jun	7-Oct	115	592.0	2001	16-Jun	20-Oct	127	514.5
1968	17-Jun	15-Oct	121	484.5	2002	31-May	19-Oct	142	485.3
1969	17-May	3-Oct	140	723.2	2003	16-Jun	15-Oct	122	425.9
1970	**20-May**	**19-Oct**	**153**	**724.3**	2004	20-May	9-Sep	113	480.0
1971	26-May	16-Oct	144	550.6	2005	12-Jun	22-Oct	133	836.4
					Mean	**5-Jun**	**19-Oct**	**137**	**610.4**
					SD	**14**	**17**	**24**	**136**

Table 5(b): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Krishna Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1836	11-Jun	13-Nov	156	694.7	1892	9-Jun	25-Oct	139	1013.1
1837					1893	22-May	14-Nov	177	964.2
1838					1894	12-Jun	19-Oct	130	721.1
1839		NO DATA			1895	15-Jun	21-Oct	129	773.9
1840					1896	10-Jun	5-Sep	88	528.0
1841	11-Jun	31-Oct	143	625.9	1897	15-Jun	18-Oct	126	689.5
1842	26-May	11-Nov	170	755.4	1898	11-Jun	8-Nov	151	715.7
1843	23-Jun	19-Oct	119	742.0	1899	14-Jun	20-Sep	99	301.6
1844	20-May	18-Oct	152	710.4	**1900**	**13-Jun**	**19-Sep**	**99**	**597.4**
1845	9-Jun	15-Oct	129	682.3	1901	25-Apr	16-Oct	175	627.1
1846	8-Jun	11-Nov	157	819.4	1902	15-Jun	21-Oct	129	570.9
1847	17-Apr	18-Oct	185	640.1	1903	27-May	9-Nov	167	951.0
1848	29-May	22-Oct	147	554.1	1904	21-May	17-Oct	150	535.5
1849	25-May	15-Oct	144	792.3	1905	15-Jun	12-Oct	120	426.8
1850	**11-Jun**	**24-Oct**	**136**	**704.3**	1906	8-Jun	7-Oct	122	667.6
1851	18-Jun	13-Nov	149	751.0	1907	10-Jun	20-Sep	103	585.0
1852	31-May	23-Oct	146	684.8	1908	20-Jun	25-Sep	98	693.4
1853	13-Jun	11-Oct	121	508.1	1909	12-Jun	19-Sep	100	558.3
1854	18-Jun	24-Oct	129	686.0	**1910**	**9-Jun**	**21-Oct**	**135**	**720.9**
1855	14-Jun	13-Oct	122	477.8	1911	14-Jun	9-Oct	118	478.2
1856	17-May	17-Nov	185	824.5	1912	30-Jun	13-Oct	106	650.7
1857	13-May	7-Nov	179	688.9	1913	27-May	16-Oct	143	569.5
1858	31-May	15-Oct	138	526.6	1914	12-Jun	21-Sep	102	844.5
1859	30-Jun	11-Oct	104	433.5	1915	9-Jun	10-Nov	155	866.8
1860	**16-Jun**	**15-Oct**	**122**	**478.4**	1916	27-May	21-Nov	179	1112.2
1861	19-Jun	8-Oct	112	710.6	1917	7-Jun	14-Nov	161	896.1
1862	9-Jun	23-Oct	137	702.1	1918	19-May	19-Sep	124	356.7
1863	8-Jun	12-Oct	127	571.8	1919	24-May	15-Nov	176	696.7
1864	25-May	10-Sep	109	595.6	**1920**	**15-Jun**	**9-Oct**	**117**	**445.5**
1865	18-Apr	13-Oct	179	663.9	1921	14-Jun	3-Nov	143	671.5
1866	13-Jun	22-Oct	132	553.0	1922	14-Jun	19-Nov	159	604.1
1867	11-Jun	21-Oct	133	655.5	1923	6-Jul	5-Oct	92	500.2
1868	23-May	16-Sep	117	586.3	1924	21-Jun	10-Nov	143	671.2
1869	10-Jun	15-Oct	128	539.9	1925	17-May	21-Oct	158	738.2
1870	**14-Jun**	**22-Oct**	**131**	**725.7**	1926	25-Jun	18-Sep	86	492.9
1871	16-Jun	9-Oct	116	439.6	1927	11-Jun	17-Nov	160	744.4
1872	12-Jun	21-Oct	132	653.3	1928	11-Jun	19-Oct	131	664.1
1873	30-May	18-Oct	142	548.8	1929	11-Jun	14-Oct	126	559.8
1874	24-May	18-Oct	148	803.8	**1930**	**9-Jun**	**9-Nov**	**154**	**731.6**
1875	10-Jun	17-Oct	130	679.7	1931	11-Jun	15-Nov	158	824.7
1876	18-Jun	7-Sep	82	365.4	1932	22-Jun	12-Nov	144	834.8
1877	13-Jun	22-Oct	132	565.1	1933	22-May	7-Nov	170	923.7
1878	15-Jun	24-Oct	132	1002.9	1934	13-Jun	8-Nov	149	696.3
1879	16-May	8-Nov	177	829.1	1935	19-Jun	18-Oct	122	574.7
1880	**11-Jun**	**13-Nov**	**156**	**587.5**	1936	19-May	7-Nov	173	717.7
1881	15-Jun	10-Nov	149	570.1	1937	22-Jun	20-Oct	121	510.9
1882	9-Jun	17-Nov	162	901.4	1938	10-Jun	7-Oct	120	697.1
1883	9-Jun	2-Nov	147	752.0	1939	14-Jun	23-Oct	132	677.8
1884	24-Jun	16-Oct	115	620.5	**1940**	**16-May**	**16-Oct**	**154**	**708.4**
1885	25-May	7-Nov	167	738.0	1941	14-Jun	17-Oct	126	502.8
1886	26-May	24-Oct	152	883.4	1942	9-Jun	2-Oct	116	568.3
1887	11-Jun	5-Nov	148	675.4	1943	19-May	23-Oct	158	744.6
1888	25-May	16-Sep	115	500.9	1944	12-Jun	24-Oct	135	787.9
1889	11-Jun	23-Oct	135	837.8	1945	17-Jun	16-Oct	122	640.8
1890	**9-Jun**	**14-Nov**	**159**	**734.7**	1946	27-May	20-Nov	178	856.0
1891	8-Jul	12-Oct	97	437.3	1947	20-Jun	14-Oct	117	723.9

Table 5(b):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1948	26-Jun	18-Nov	146	633.8	1977	28-May	19-Nov	176	760.7
1949	19-May	20-Oct	155	763.6	1978	8-Jun	1-Nov	147	853.6
1950	**24-Jun**	**13-Oct**	**112**	**694.7**	1979	21-May	16-Nov	180	725.6
1951	30-May	16-Oct	140	636.0	**1980**	**8-Jun**	**17-Sep**	**102**	**610.6**
1952	23-May	20-Oct	151	594.2	1981	10-Jun	16-Oct	129	737.5
1953	9-Jun	25-Oct	139	896.2	1982	22-May	15-Oct	147	661.7
1954	17-Jun	15-Oct	121	744.1	1983	8-Jun	18-Oct	133	832.8
1955	21-May	31-Oct	164	872.6	1984	18-Jun	18-Oct	123	539.9
1956	24-May	7-Nov	168	1017.1	1985	12-Jun	18-Oct	129	511.2
1957	28-May	19-Oct	145	727.5	1986	10-Jun	14-Sep	97	448.3
1958	28-May	18-Oct	144	785.1	1987	20-Jun	18-Nov	152	648.7
1959	8-Jun	13-Oct	128	876.4	1988	15-Jun	24-Sep	102	801.8
1960	**23-May**	**2-Oct**	**133**	**678.1**	1989	10-Jun	22-Sep	105	680.2
1961	17-May	21-Oct	158	984.7	**1990**	**8-May**	**21-Oct**	**167**	**772.1**
1962	29-Apr	20-Oct	175	901.6	1991	26-May	5-Nov	164	918.2
1963	12-Jun	23-Oct	134	758.1	1992	31-May	12-Nov	166	659.0
1964	14-Jun	16-Oct	125	839.9	1993	15-Jun	24-Oct	132	699.7
1965	16-Jun	20-Sep	97	586.1	1994	11-Jun	13-Nov	156	800.5
1966	21-May	17-Nov	181	727.2	1995	17-May	25-Oct	162	812.8
1967	13-Jun	6-Oct	116	688.0	1996	8-Jun	23-Oct	138	783.4
1968	16-Jun	8-Nov	146	586.3	1997	13-Jun	2-Nov	143	663.7
1969	12-May	8-Nov	181	901.2	1998	30-May	22-Oct	146	917.0
1970	**20-May**	**20-Oct**	**154**	**803.4**	1999	19-May	21-Oct	156	724.7
1971	23-May	17-Oct	148	636.7	**2000**	**10-Jun**	**9-Oct**	**122**	**670.9**
1972	14-Jun	31-Oct	140	421.5	2001	14-Jun	20-Oct	129	575.3
1973	12-Jun	23-Oct	134	681.2	2002	29-Jun	9-Sep	73	306.5
1974	19-May	23-Oct	158	746.9	2003	15-Jun	13-Oct	121	473.7
1975	8-Jun	24-Oct	139	951.3	2004	23-May	12-Oct	143	569.3
1976	12-Jun	11-Sep	92	598.4	2005	13-Jun	23-Oct	133	845.6
					Mean	**6-Jun**	**21-Oct**	**138**	**686.0**
					SD	**14**	**17**	**24**	**148**

Table 5(c): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Bhima Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1826	20-May	21-Jul	63	236.7	1882	7-Jun	2-Nov	149	687.6
1827	6-Jun	15-Oct	132	517.8	1883	7-Jun	17-Oct	133	819.5
1828	22-Jun	20-Oct	121	553.0	1884	30-May	5-Sep	99	311.9
1829	25-May	1-Oct	130	310.4	1885	30-May	18-Oct	142	591.6
1830	**11-Jun**	**11-Oct**	**123**	**330.1**	1886	12-Jun	24-Oct	135	713.3
1831					1887	26-May	12-Oct	140	636.7
1832					1888	14-Jun	16-Jul	33	109.3
1833					1889	18-Jun	21-Oct	126	639.9
1834					**1890**	**12-Jun**	**14-Nov**	**156**	**519.7**
1835					1891	27-Jun	7-Oct	103	315.8
1836		NO DATA			1892	7-Jun	25-Oct	141	934.4
1837					1893	14-May	21-Oct	161	689.7
1838					1894	30-May	8-Oct	132	580.8
1839					1895	15-Jun	22-Oct	130	689.1
1840					1896	10-Jun	15-Aug	67	300.8
1841					1897	16-Jun	21-Oct	128	492.3
1842	13-Jun	24-Sep	104	1033.9	1898	17-Jun	17-Oct	123	535.4
1843		NO DATA			1899	11-Sep	19-Sep	9	40.4
1844	12-Jun	11-Jul	30	98.7	**1900**	**14-Jun**	**12-Sep**	**91**	**374.0**
1845	15-May	12-Jun	29	91.5	1901	9-Jun	12-Sep	96	367.0
1846	22-May	24-Jul	64	364.5	1902	16-Jun	10-Oct	117	462.1
1847	17-Apr	21-Sep	158	496.6	1903	30-May	20-Oct	144	837.1
1848	9-May	12-Oct	157	532.0	1904	18-Jun	3-Jul	16	40.8
1849	6-Jun	31-Aug	87	494.4	1905	17-Jun	15-Oct	121	349.4
1850					1906	8-Jun	8-Sep	93	499.0
1851		NO DATA			1907	16-Jun	14-Sep	91	490.8
1852					1908	26-Jun	25-Sep	92	451.0
1853	16-Jun	18-Sep	95	397.1	1909	28-May	22-Sep	118	601.6
1854	20-Jun	20-Oct	123	586.0	**1910**	**10-Jun**	**3-Oct**	**116**	**713.8**
1855	15-Jun	1-Jul	17	53.6	1911	18-Jun	6-Sep	81	359.3
1856	14-May	4-Sep	114	400.9	1912	30-Jun	15-Oct	108	328.6
1857	12-May	6-Nov	179	617.7	1913	8-Jun	30-Sep	115	327.3
1858	17-May	20-Jul	65	200.0	1914	11-Jun	20-Sep	102	491.8
1859	15-Apr	8-Oct	177	810.0	1915	10-Jun	21-Jul	42	214.7
1860	**4-Jun**	**14-Oct**	**133**	**772.9**	1916	30-May	18-Nov	173	966.0
1861	31-May	17-Oct	140	849.8	1917	13-Jun	2-Nov	143	701.3
1862	12-Jun	18-Jun	7	28.8	1918	13-May	19-May	7	22.3
1863	21-Jun	8-Oct	110	409.7	1919	9-Jun	25-Sep	109	478.4
1864	6-Jun	10-Sep	97	478.3	**1920**	**20-Jun**	**21-Sep**	**94**	**256.4**
1865	25-Apr	16-Oct	175	558.4	1921	21-Jun	3-Nov	136	410.5
1866	17-Jun	17-Oct	123	459.2	1922	11-Jun	12-Jul	32	121.2
1867	10-Jun	25-Oct	138	637.9	1923	8-Jul	23-Jul	16	93.3
1868	9-Jun	19-Sep	103	508.2	1924	26-Jun	23-Sep	90	361.2
1869	25-May	16-Sep	115	558.2	1925	28-May	13-Oct	139	460.3
1870	**16-Jun**	**25-Oct**	**132**	**817.0**	1926	20-Jun	23-Sep	96	443.6
1871	18-Jun	16-Sep	91	198.4	1927	10-Jun	16-Jul	37	158.1
1872	12-Jun	25-Sep	106	605.0	1928	8-Jun	11-Oct	126	665.3
1873	26-May	22-Sep	120	505.6	1929	9-Jun	11-Oct	125	412.9
1874	27-May	13-Oct	140	786.6	**1930**	**19-Jun**	**19-Oct**	**123**	**482.2**
1875	11-Jun	9-Oct	121	604.0	1931	10-Jun	13-Nov	157	579.4
1876	17-Jun	5-Aug	50	112.8	1932	21-Jun	2-Nov	135	613.1
1877	8-Jun	19-Oct	134	591.8	1933	17-May	10-Oct	147	647.9
1878	22-Jun	22-Oct	123	905.6	1934	17-Jun	20-Sep	96	497.2
1879	17-May	12-Oct	149	611.1	1935	9-Jun	20-Oct	134	608.3
1880	**11-Jun**	**14-Oct**	**126**	**565.3**	1936	26-Jun	20-Sep	87	188.7
1881	17-Jun	3-Oct	109	405.2	1937	22-Jun	16-Oct	117	435.4

Table 5(c):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1938	8-Jun	12-Oct	127	815.0	1972	9-Jun	29-Sep	113	504.5
1939	17-Jun	5-Oct	111	346.0	1973	13-Jun	22-Oct	132	661.8
1940	**10-Jun**	**9-Oct**	**122**	**459.0**	1974	18-Jun	24-Oct	129	658.4
1941	15-Jul	23-Sep	71	307.6	1975	16-Jun	23-Oct	130	769.3
1942	7-Jun	2-Sep	88	410.5	1976	8-Jun	11-Sep	96	496.9
1943	8-Jun	24-Oct	139	694.9	1977	12-Jun	14-Nov	156	470.3
1944	18-Jun	18-Oct	123	453.3	1978	16-May	4-Nov	173	664.6
1945	22-Jun	14-Sep	85	347.2	1979	16-Jun	25-Sep	102	513.7
1946	31-May	21-Sep	114	473.6	**1980**	**17-Jun**	**14-Sep**	**90**	**335.8**
1947	16-Jun	22-Sep	99	523.2	1981	8-Jun	11-Oct	126	739.6
1948	12-Jun	19-Nov	161	708.3	1982	19-Jun	5-Nov	140	496.9
1949	25-May	25-Sep	124	587.0	1983	15-Jun	11-Oct	119	723.2
1950	**24-Jun**	**11-Oct**	**110**	**502.4**	1984	23-Jun	20-Oct	120	512.6
1951	12-Jun	18-Oct	129	501.6	1985	16-Jun	13-Oct	120	356.5
1952	16-May	5-Oct	143	419.6	1986	9-Jun	18-Sep	102	323.3
1953	12-Jun	20-Oct	131	645.2	1987	31-May	3-Nov	157	596.8
1954	8-Jun	21-Sep	106	590.1	1988	22-Jun	26-Sep	97	722.9
1955	11-Jun	16-Oct	128	716.5	1989	11-Jun	24-Sep	106	653.8
1956	14-May	13-Nov	184	993.0	**1990**	**12-May**	**19-Oct**	**161**	**844.5**
1957	14-Jun	21-Oct	130	606.7	1991	5-Jun	5-Sep	93	448.4
1958	26-May	18-Oct	146	622.4	1992	15-Jun	18-Sep	96	344.7
1959	7-Jun	17-Oct	133	640.0	1993	26-Jun	24-Oct	121	612.1
1960	**20-May**	**17-Jul**	**59**	**187.6**	1994	13-Jun	9-Aug	58	199.8
1961	15-May	9-Aug	87	451.9	1995	18-Jun	22-Oct	127	499.0
1962	22-May	12-Oct	144	660.2	1996	15-Jun	20-Oct	128	636.1
1963	10-Jun	18-Oct	131	580.7	1997	11-Jun	15-Nov	158	495.1
1964	14-Jun	10-Oct	119	705.0	1998	12-Jun	22-Oct	133	841.4
1965	21-Jun	14-Sep	86	357.9	1999	16-May	19-Oct	157	570.4
1966	23-May	22-Sep	123	447.9	**2000**	**8-Jun**	**9-Oct**	**124**	**550.0**
1967	20-Jun	4-Oct	107	528.5	2001	19-Jun	18-Oct	122	474.7
1968	17-Jun	18-Jul	32	108.8	2002	11-Jun	13-Oct	125	429.9
1969	12-Jun	3-Oct	114	588.2	2003	17-Jun	8-Sep	84	275.2
1970	**16-Jun**	**8-Oct**	**115**	**582.2**	2004	16-May	30-Sep	138	542.8
1971	21-Jun	16-Oct	118	436.9	2005	9-Jun	12-Oct	126	816.4
					Mean	**9-Jun**	**28-Sep**	**112**	**503.0**
					SD	**16**	**33**	**36**	**207**

Table 5(d):Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Tungabhadra Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1837	25-May	21-Sep	120	317.4	1893	21-May	9-Nov	173	791.4
1838	25-Jun	30-Sep	98	211.0	1894	23-May	19-Oct	150	548.9
1839	28-Apr	18-Oct	174	553.5	1895	19-Apr	21-Oct	186	694.8
1840	**30-May**	**13-Oct**	**137**	**440.3**	1896	30-May	9-Sep	103	466.3
1841	24-May	23-Oct	153	463.0	1897	12-Jun	11-Oct	122	593.4
1842	30-May	23-Sep	117	508.4	1898	17-Jun	17-Oct	123	548.1
1843	10-Sep	17-Oct	38	160.4	1899	21-Aug	19-Sep	30	110.6
1844	17-Jun	18-Oct	124	489.3	**1900**	**14-Jun**	**9-Oct**	**118**	**509.3**
1845	16-Jun	22-Sep	99	310.4	1901	26-May	2-Nov	161	541.0
1846	14-Jun	22-Oct	131	509.3	1902	30-May	21-Oct	145	509.1
1847	19-Apr	21-Oct	186	556.3	1903	20-May	14-Nov	179	830.9
1848	18-May	5-Oct	141	546.5	1904	16-May	20-Oct	158	544.3
1849	20-Apr	13-Nov	208	722.2	1905	23-May	18-Oct	149	493.1
1850	**20-Jun**	**20-Oct**	**123**	**567.0**	1906	10-Jun	15-Oct	128	599.7
1851	17-Jun	8-Oct	114	357.4	1907	14-Jun	17-Sep	96	393.8
1852	12-May	21-Oct	163	706.5	1908	11-Jul	24-Sep	76	369.4
1853	26-May	15-Aug	82	276.8	1909	16-May	15-Sep	123	463.4
1854	27-May	24-Oct	151	648.5	**1910**	**17-Jun**	**6-Nov**	**143**	**644.0**
1855	22-Jun	11-Oct	112	305.7	1911	31-May	15-Oct	138	435.4
1856	12-May	5-Sep	117	406.7	1912	25-Jun	17-Oct	115	514.0
1857	17-May	9-Oct	146	356.1	1913	22-May	16-Oct	148	455.4
1858	12-May	25-Oct	167	506.6	1914	21-Jun	7-Oct	109	534.7
1859	25-Jun	18-Sep	86	358.5	1915	11-Jun	10-Nov	153	565.9
1860	**11-Jun**	**10-Oct**	**122**	**314.3**	1916	21-May	14-Nov	178	788.5
1861	19-Jun	1-Oct	105	313.5	1917	24-May	1-Nov	162	751.8
1862	12-Jun	17-Oct	128	391.8	1918	21-May	19-Nov	183	407.5
1863	11-Jun	20-Oct	132	417.7	1919	23-May	18-Nov	180	636.6
1864	13-May	16-Sep	127	625.6	**1920**	**17-Jul**	**4-Oct**	**80**	**241.7**
1865	16-Apr	12-Sep	150	613.8	1921	16-Jun	11-Nov	149	508.3
1866	19-May	26-Oct	161	699.9	1922	23-May	17-Nov	179	484.1
1867	25-May	22-Oct	151	558.6	1923	22-May	18-Sep	120	441.6
1868	9-Jun	4-Oct	118	566.8	1924	26-May	4-Oct	132	518.0
1869	18-Jun	9-Oct	114	351.5	1925	19-May	17-Oct	152	528.8
1870	**11-Jun**	**20-Oct**	**132**	**611.8**	1926	26-May	2-Oct	130	438.0
1871	18-May	2-Nov	169	483.3	1927	30-May	19-Sep	113	397.6
1872	29-May	16-Oct	141	521.1	1928	31-May	20-Oct	143	564.8
1873	22-May	23-Oct	155	478.5	1929	22-Apr	2-Nov	195	588.4
1874	11-May	22-Oct	165	811.3	**1930**	**27-May**	**23-Oct**	**150**	**508.1**
1875	26-May	9-Oct	137	435.9	1931	23-May	6-Nov	168	588.7
1876	20-Jun	1-Aug	43	73.4	1932	21-May	14-Nov	178	732.0
1877	14-Jun	24-Oct	133	498.2	1933	14-May	24-Oct	164	808.3
1878	20-Jun	18-Oct	121	568.2	1934	16-Jun	16-Oct	123	397.0
1879	10-May	17-Oct	161	611.9	1935	10-Jun	17-Oct	130	555.8
1880	**27-May**	**9-Nov**	**167**	**608.0**	1936	11-Jun	30-Sep	112	327.6
1881	27-Jun	19-Sep	85	263.3	1937	10-Jul	14-Oct	97	324.3
1882	17-May	11-Nov	179	712.6	1938	15-Jun	22-Sep	100	485.7
1883	15-Jun	7-Nov	146	681.3	1939	13-Jul	6-Nov	117	469.3
1884	30-Jun	17-Nov	141	423.1	**1940**	**15-May**	**4-Nov**	**174**	**717.0**
1885	20-May	23-Oct	157	622.1	1941	30-May	12-Oct	136	440.9
1886	19-May	21-Oct	156	707.5	1942	25-May	6-Oct	135	530.4
1887	11-Jun	8-Nov	151	556.3	1943	16-May	23-Oct	161	575.7
1888	20-May	18-Nov	183	542.0	1944	15-Jun	3-Nov	142	543.4
1889	18-Jun	20-Oct	125	613.1	1945	20-Jun	10-Oct	113	397.7
1890	**29-May**	**14-Nov**	**170**	**640.8**	1946	21-May	14-Nov	178	644.5
1891	29-May	18-Oct	143	354.9	1947	20-Jun	7-Oct	110	551.2
1892	30-May	21-Oct	145	706.1	1948	1-May	16-Nov	200	622.2

Table 5(d):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1949	26-May	19-Oct	147	574.9	1978	18-May	5-Nov	172	743.4
1950	**27-May**	**16-Oct**	**143**	**645.6**	1979	19-May	14-Nov	180	581.0
1951	15-May	15-Oct	154	598.3	**1980**	**15-Jun**	**2-Nov**	**141**	**488.6**
1952	12-May	19-Oct	161	431.4	1981	27-May	16-Oct	143	587.6
1953	14-Jun	25-Oct	134	787.1	1982	22-May	2-Nov	165	581.9
1954	18-May	15-Oct	151	576.2	1983	23-May	19-Oct	150	740.4
1955	10-May	18-Oct	162	827.9	1984	19-Jun	14-Oct	118	393.7
1956	23-Apr	14-Nov	206	893.6	1985	19-Jun	11-Oct	115	341.4
1957	18-May	6-Nov	173	651.5	1986	15-Jun	20-Sep	98	372.0
1958	21-May	15-Oct	148	618.2	1987	23-May	16-Nov	178	667.8
1959	19-May	5-Oct	140	735.5	1988	28-May	22-Sep	118	652.1
1960	**22-Jun**	**17-Oct**	**118**	**435.2**	1989	15-Jun	20-Sep	98	481.8
1961	14-May	20-Oct	160	707.1	**1990**	**13-May**	**1-Nov**	**173**	**584.8**
1962	19-Apr	21-Oct	186	663.5	1991	18-May	14-Oct	150	559.7
1963	29-Apr	22-Oct	177	657.2	1992	19-May	21-Nov	187	781.1
1964	18-Jun	13-Oct	118	659.0	1993	25-Jun	24-Oct	122	561.4
1965	12-Jun	18-Sep	99	400.0	1994	18-Jun	25-Oct	130	584.8
1966	9-Jul	14-Nov	129	548.0	1995	19-Jun	18-Oct	122	509.9
1967	17-Jun	13-Oct	119	412.5	1996	11-Jun	18-Oct	130	561.9
1968	28-Apr	15-Oct	171	547.1	1997	14-Jun	16-Nov	156	543.0
1969	25-May	5-Nov	165	647.4	1998	11-Jun	31-Oct	143	708.9
1970	**28-Apr**	**17-Oct**	**173**	**650.7**	1999	22-May	21-Oct	153	581.5
1971	31-May	17-Oct	140	423.0	**2000**	**28-May**	**18-Oct**	**144**	**602.7**
1972	19-May	5-Oct	140	393.4	2001	20-Jun	20-Oct	123	417.2
1973	29-May	22-Oct	147	609.3	2002	21-May	20-Oct	153	413.3
1974	15-May	20-Oct	159	613.8	2003	25-Jun	21-Oct	119	368.4
1975	21-May	24-Oct	157	712.7	2004	16-May	6-Oct	144	435.7
1976	19-Jun	6-Sep	80	270.5	2005	1-May	24-Oct	177	740.9
1977	11-May	7-Nov	181	715.6					
					Mean	**31-May**	**18-Oct**	**141**	**534.4**
					SD	**21**	**19**	**31**	**147**

Table 6(a):Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Sabarmati Major Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1861	24-Jun	25-Aug	63	570.8	1917	13-May	23-Oct	164	1148.7
1862	13-Jun	26-Sep	106	428.6	1918	20-Jul	20-Aug	32	117.9
1863	5-Jun	15-Aug	72	526.8	1919	21-Jun	27-Aug	68	658.4
1864	6-Jul	18-Aug	44	295.5	**1920**	**20-May**	**8-Aug**	**81**	**565.1**
1865	11-Jul	16-Sep	68	501.6	1921	4-Jul	25-Sep	84	775.1
1866	10-Jul	27-Aug	49	498.9	1922	5-Jul	24-Sep	82	562.7
1867	13-Jul	11-Sep	61	316.0	1923	14-Jul	19-Aug	37	142.3
1868	15-Jun	28-Aug	75	744.1	1924	24-Jun	22-Sep	91	449.8
1869	19-Jun	26-Sep	100	580.3	1925	6-Jun	25-Jul	50	383.4
1870	**11-Jun**	**16-Aug**	**67**	**620.1**	1926	4-Jul	25-Sep	84	910.5
1871	23-Jun	7-Sep	77	199.5	1927	12-Jun	8-Sep	89	1281.6
1872	9-Jun	13-Sep	97	484.3	1928	6-Jul	23-Sep	80	577.0
1873	7-Jul	27-Aug	52	501.5	1929	13-Jun	20-Aug	69	466.7
1874	15-Jun	9-Sep	87	422.5	**1930**	**17-Jun**	**2-Sep**	**78**	**404.1**
1875	25-Jun	25-Sep	93	597.6	1931	11-Jul	8-Sep	60	553.5
1876	6-Jul	19-Sep	76	515.1	1932	20-Jun	18-Aug	60	544.1
1877	25-Jun	17-Oct	115	282.7	1933	30-May	20-Sep	114	966.2
1878	19-Jun	22-Sep	96	647.5	1934	10-Jun	26-Aug	78	641.7
1879	9-Jun	16-Sep	100	314.9	1935	18-Jun	20-Sep	95	421.8
1880	**20-Jun**	**24-Sep**	**97**	**693.6**	1936	10-Jun	21-Sep	104	341.0
1881	3-Jul	17-Sep	77	832.5	1937	8-Jun	24-Sep	109	826.7
1882	11-Jun	19-Sep	101	712.4	1938	9-Jun	13-Aug	66	378.9
1883	20-Jun	18-Sep	91	395.1	1939	29-Jun	15-Sep	79	157.7
1884	21-Jun	26-Sep	98	809.3	**1940**	**12-Jun**	**21-Aug**	**71**	**317.2**
1885	25-Jun	26-Aug	63	511.2	1941	2-Jul	25-Aug	55	1027.9
1886	9-Jun	22-Aug	75	749.4	1942	27-Jun	21-Sep	87	482.0
1887	8-Jun	21-Aug	75	671.9	1943	13-Jun	18-Sep	98	714.6
1888	15-Jun	24-Aug	71	321.3	1944	12-Jun	5-Sep	86	612.7
1889	25-May	23-Aug	91	646.5	1945	8-Jun	24-Sep	109	737.6
1890	**17-Jun**	**3-Sep**	**79**	**269.8**	1946	9-Jun	26-Aug	79	580.3
1891	4-Jul	10-Sep	69	525.1	1947	7-Jul	22-Sep	78	573.8
1892	27-Jun	26-Sep	92	662.7	1948	17-Jul	1-Sep	47	90.2
1893	5-Jun	21-Sep	109	680.8	1949	6-Jul	19-Sep	76	525.0
1894	6-Jun	21-Sep	108	1002.3	**1950**	**2-Jul**	**26-Sep**	**87**	**950.3**
1895	12-Jun	24-Aug	74	549.8	1951	10-Jul	24-Aug	46	262.6
1896	10-Jun	27-Aug	79	657.2	1952	21-Jun	22-Aug	63	622.1
1897	7-Jul	22-Sep	78	635.4	1953	18-Jun	20-Sep	95	355.4
1898	11-Jun	21-Sep	103	523.9	1954	22-Jun	26-Sep	97	691.0
1899	22-Jun	7-Sep	78	519.8	1955	16-Jun	25-Sep	102	352.0
1900	**19-Jul**	**16-Sep**	**60**	**391.5**	1956	19-Jun	21-Sep	95	762.2
1901	7-Jul	21-Aug	46	273.6	1957	15-Jun	19-Aug	66	363.5
1902	16-Jul	25-Sep	72	566.8	1958	6-Jul	5-Oct	92	705.7
1903	4-Jul	16-Sep	75	545.7	1959	25-Jun	15-Oct	113	1124.5
1904	10-Jul	20-Jul	11	59.1	**1960**	**11-Jun**	**18-Aug**	**69**	**338.2**
1905	2-Jul	8-Sep	69	730.0	1961	15-Jun	25-Sep	103	564.1
1906	10-Jun	14-Sep	97	494.6	1962	6-Jul	20-Sep	77	434.4
1907	6-Jul	29-Aug	55	879.1	1963	23-Jun	25-Sep	95	479.2
1908	19-Jun	27-Aug	70	905.4	1964	5-Jul	17-Sep	75	497.8
1909	16-Jun	14-Sep	91	341.0	1965	4-Jul	19-Aug	47	433.1
1910	**8-Jun**	**26-Aug**	**80**	**583.2**	1966	18-Jun	22-Sep	97	453.3
1911	11-Jun	18-Jun	8	38.6	1967	11-Jun	7-Sep	89	470.3
1912	30-Jun	26-Aug	58	812.8	1968	9-Jul	25-Aug	48	337.3
1913	7-Jun	19-Sep	105	597.7	1969	10-Jul	13-Sep	66	243.2
1914	7-Jun	22-Sep	108	583.8	**1970**	**7-Jun**	**26-Sep**	**112**	**747.2**
1915	21-Jun	10-Jul	20	45.8	1971	7-Jun	21-Aug	76	473.3
1916	14-Jun	15-Sep	94	229.0	1972	10-Jul	24-Aug	46	281.9

Table 6(a):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1973	17-Jun	25-Sep	101	533.1	**1990**	**9-Jul**	**18-Sep**	**72**	**644.9**
1974	17-Jul	11-Aug	26	67.4	1991	5-Jul	19-Sep	77	497.9
1975	11-Jun	25-Sep	107	507.1	1992	29-Jun	18-Sep	82	276.8
1976	10-Jun	12-Sep	95	416.1	1993	3-Jul	14-Sep	74	458.0
1977	10-Jun	20-Sep	103	615.0	1994	23-Jun	25-Sep	95	609.5
1978	13-Jun	26-Aug	75	485.0	1995	6-Jul	11-Sep	68	331.6
1979	16-Jun	28-Aug	74	561.7	1996	13-Jun	15-Sep	95	397.4
1980	**6-Jun**	**24-Aug**	**80**	**599.1**	1997	3-Jun	17-Sep	107	579.2
1981	24-Jun	9-Sep	78	324.5	1998	14-Jun	23-Sep	102	450.6
1982	6-Jul	21-Aug	47	329.2	1999	9-Jun	25-Aug	78	354.0
1983	29-Jun	17-Sep	81	389.7	**2000**	**5-Jul**	**15-Aug**	**42**	**314.8**
1984	2-Jul	6-Sep	67	1090.1	2001	8-Jun	22-Aug	76	513.5
1985	7-Jul	19-Aug	44	244.4	2002	7-Jun	5-Sep	91	203.9
1986	10-Jun	16-Aug	68	227.6	2003	23-Jun	10-Sep	80	405.9
1987	9-Aug	22-Aug	14	72.4	2004	15-Jun	27-Aug	74	559.4
1988	4-Jul	19-Sep	78	671.5	2005	7-Jun	24-Sep	110	762.0
1989	20-Jun	25-Aug	67	504.7					
					Mean	**22-Jun**	**7-Sep**	**78**	**519.8**
					SD	**14**	**18**	**23**	**230**

Table 6(b): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Mahi Major Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1857	8-Jun	26-Sep	111	907.0	1913	5-Jun	18-Sep	106	967.9
1858	26-Jun	19-Sep	86	456.2	1914	10-Jun	23-Sep	106	724.1
1859	10-Jun	16-Sep	99	671.7	1915	17-Jun	16-Aug	61	195.7
1860	**6-Jul**	**5-Sep**	**62**	**516.4**	1916	8-Jun	20-Sep	105	829.0
1861	10-Jun	16-Sep	99	873.9	1917	13-May	23-Oct	164	1312.2
1862	8-Jun	7-Oct	122	1008.5	1918	25-Jun	24-Aug	61	254.5
1863	7-Jun	19-Sep	105	713.1	1919	15-Jun	11-Sep	89	786.1
1864	25-Jun	21-Sep	89	971.8	**1920**	**24-May**	**14-Aug**	**83**	**509.7**
1865	18-Jul	7-Sep	52	565.6	1921	5-Jul	26-Sep	84	785.3
1866	7-Jun	25-Aug	80	656.0	1922	14-Jun	25-Sep	104	713.1
1867	7-Jul	22-Sep	78	658.9	1923	5-Jul	16-Sep	74	476.7
1868	19-Jun	26-Aug	69	519.1	1924	19-Jun	31-Aug	74	508.5
1869	8-Jul	30-Sep	85	660.0	1925	7-Jun	8-Aug	63	401.0
1870	**6-Jun**	**6-Sep**	**93**	**753.9**	1926	5-Jul	23-Sep	81	811.7
1871	6-Jun	16-Sep	103	803.8	1927	3-Jul	14-Sep	74	776.9
1872	13-Jun	18-Sep	98	760.8	1928	20-Jun	13-Sep	86	725.2
1873	18-Jun	22-Sep	97	742.7	1929	9-Jun	23-Aug	76	549.1
1874	11-Jun	20-Sep	102	791.9	**1930**	**13-Jun**	**15-Oct**	**125**	**834.8**
1875	20-Jun	27-Sep	100	937.1	1931	6-Jul	16-Oct	103	880.0
1876	4-Jul	24-Sep	83	683.3	1932	26-Jun	20-Sep	87	571.2
1877	23-Jun	14-Oct	114	280.5	1933	9-Jun	23-Sep	107	1046.1
1878	22-Jun	22-Sep	93	1016.0	1934	15-Jun	22-Sep	100	768.4
1879	6-Jun	20-Sep	107	776.6	1935	23-Jun	23-Sep	93	569.9
1880	**17-Jun**	**25-Sep**	**101**	**791.9**	1936	9-Jun	20-Sep	104	386.8
1881	17-Jun	18-Sep	94	911.8	1937	7-Jun	23-Sep	109	966.2
1882	8-Jun	23-Sep	108	898.4	1938	6-Jun	20-Aug	76	589.8
1883	13-Jun	24-Sep	104	738.1	1939	12-Jul	19-Sep	70	461.3
1884	14-Jun	25-Sep	104	879.4	**1940**	**13-Jun**	**2-Oct**	**112**	**636.4**
1885	11-Jun	26-Aug	77	564.6	1941	4-Jul	28-Aug	56	752.0
1886	10-Jun	13-Oct	126	789.8	1942	23-Jun	14-Sep	84	737.2
1887	7-Jun	13-Sep	99	874.4	1943	15-Jun	18-Sep	96	672.2
1888	26-Jun	26-Aug	62	441.4	1944	14-Jun	9-Sep	88	1136.0
1889	7-Jun	27-Aug	82	745.3	1945	7-Jun	24-Sep	110	980.9
1890	**9-Jun**	**15-Sep**	**99**	**728.9**	1946	6-Jun	19-Sep	106	1016.2
1891	5-Jul	22-Sep	80	607.4	1947	8-Jul	25-Sep	80	629.7
1892	15-Jun	27-Sep	105	901.0	1948	13-Jun	13-Sep	93	510.6
1893	4-Jun	23-Sep	112	1009.8	1949	6-Jul	24-Sep	81	545.9
1894	6-Jun	7-Oct	124	975.2	**1950**	**3-Jul**	**27-Sep**	**87**	**1059.9**
1895	10-Jun	12-Sep	95	581.9	1951	17-Jun	18-Aug	63	307.6
1896	9-Jun	26-Aug	79	677.4	1952	13-Jun	22-Aug	71	914.8
1897	23-Jun	21-Sep	91	657.0	1953	10-Jun	9-Sep	92	693.1
1898	13-Jun	21-Sep	101	767.8	1954	15-Jun	6-Oct	114	1018.5
1899	9-Jun	20-Jun	12	74.5	1955	11-Jun	14-Oct	126	932.2
1900	**9-Jul**	**23-Sep**	**77**	**721.5**	1956	14-Jun	23-Oct	132	933.2
1901	9-Jul	24-Aug	47	295.3	1957	12-Jun	25-Aug	75	513.1
1902	7-Jul	24-Sep	80	630.2	1958	15-Jun	2-Oct	110	995.2
1903	4-Jul	24-Sep	83	724.4	1959	15-Jun	12-Oct	120	1144.8
1904	17-Jun	13-Sep	89	345.2	**1960**	**10-Jun**	**25-Aug**	**77**	**540.7**
1905	4-Jul	17-Sep	76	441.2	1961	23-Jun	27-Sep	97	907.0
1906	13-Jun	23-Sep	103	804.3	1962	5-Jul	25-Sep	83	709.3
1907	7-Jul	26-Aug	51	428.4	1963	20-Jun	19-Sep	92	772.1
1908	25-Jun	25-Aug	62	574.9	1964	18-Jun	15-Sep	90	521.2
1909	12-Jun	15-Sep	96	651.7	1965	5-Jul	7-Sep	65	409.6
1910	**6-Jun**	**5-Sep**	**92**	**847.1**	1966	21-Jun	17-Sep	89	389.4
1911	11-Jun	16-Sep	98	269.8	1967	10-Jun	24-Sep	107	690.6
1912	20-Jun	25-Aug	67	678.2	1968	5-Jul	25-Aug	52	475.9

Table 6(b):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1969	21-Jun	20-Sep	92	698.4	1988	24-Jun	19-Sep	88	648.6
1970	**6-Jun**	**23-Sep**	**110**	**813.6**	1989	14-Jun	12-Sep	91	602.7
1971	11-Jun	21-Sep	103	731.4	**1990**	**17-Jun**	**21-Sep**	**97**	**859.9**
1972	12-Jun	25-Aug	75	431.6	1991	4-Jul	19-Aug	47	469.1
1973	15-Jun	26-Sep	104	1154.4	1992	7-Jul	9-Oct	95	492.2
1974	9-Jul	17-Oct	101	440.9	1993	12-Jun	16-Sep	97	705.9
1975	11-Jun	4-Oct	116	786.3	1994	6-Jun	22-Sep	109	1001.5
1976	8-Jun	21-Sep	106	970.4	1995	5-Jul	12-Sep	70	438.4
1977	6-Jun	22-Sep	109	922.2	1996	23-Jun	22-Sep	92	751.9
1978	11-Jun	3-Sep	85	896.0	1997	9-Jun	16-Sep	100	695.1
1979	18-Jun	25-Aug	69	409.4	1998	23-Jun	4-Oct	104	580.9
1980	**6-Jun**	**2-Sep**	**89**	**671.9**	1999	14-Jun	17-Sep	96	394.3
1981	11-Jun	16-Sep	98	731.0	**2000**	**29-May**	**11-Aug**	**75**	**336.9**
1982	26-Jun	24-Aug	60	402.8	2001	8-Jun	19-Aug	73	459.1
1983	12-Jun	8-Oct	119	872.1	2002	8-Jun	15-Sep	100	413.6
1984	6-Jul	6-Sep	63	759.4	2003	11-Jun	19-Sep	101	672.9
1985	10-Jul	24-Aug	46	268.2	2004	17-Jun	28-Aug	73	688.0
1986	20-Jun	22-Aug	64	440.9	2005	8-Jun	25-Sep	110	940.2
1987	27-Jul	27-Aug	32	356.2					
					Mean	**18-Jun**	**15-Sep**	**90**	**688.6**
					SD	**12**	**17**	**21**	**224**

Table 6(c): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Narmada Major Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1844	19-Jun	13-Sep	87	601.2	**1900**	**5-Jul**	**30-Sep**	**88**	**888.6**
1845	11-Jun	27-Aug	78	841.7	1901	30-Jun	10-Sep	73	752.8
1846	8-Jun	24-Sep	109	1005.6	1902	5-Jul	25-Sep	83	748.3
1847	12-Jun	21-Sep	102	709.6	1903	20-Jun	4-Oct	107	955.8
1848	11-Jun	15-Sep	97	527.2	1904	15-Jun	21-Sep	99	616.9
1849	11-Jun	14-Oct	126	798.9	1905	4-Jul	23-Sep	82	712.5
1850	**8-Jun**	**7-Oct**	**122**	**830.1**	1906	6-Jun	22-Sep	109	954.6
1851	18-Jun	24-Sep	99	716.7	1907	15-Jun	27-Aug	74	643.1
1852	9-Jun	26-Sep	110	1024.1	1908	12-Jun	16-Sep	97	887.7
1853	3-Jun	11-Oct	131	1220.7	1909	8-Jun	18-Sep	103	816.5
1854	11-Jun	18-Nov	161	964.3	**1910**	**6-Jun**	**24-Sep**	**111**	**941.6**
1855	9-Jun	11-Oct	125	976.9	1911	9-Jun	23-Sep	107	645.3
1856	13-Jun	18-Sep	98	768.6	1912	28-Jun	17-Sep	82	797.6
1857	19-Jun	23-Sep	97	934.4	1913	7-Jun	12-Sep	98	785.0
1858	4-Jul	19-Sep	78	702.9	1914	9-Jun	22-Sep	106	932.9
1859	12-Jun	23-Sep	104	868.3	1915	7-Jun	17-Oct	133	930.2
1860	**20-Jun**	**25-Sep**	**98**	**898.8**	1916	8-Jun	21-Oct	136	1182.3
1861	8-Jun	18-Sep	103	806.2	1917	21-May	18-Oct	151	1250.8
1862	20-Jun	21-Sep	94	786.9	1918	8-Jun	25-Aug	79	553.7
1863	4-Jun	10-Oct	129	1034.2	1919	7-Jun	13-Oct	129	1225.2
1864	19-Jun	17-Sep	91	605.1	**1920**	**10-Jun**	**17-Sep**	**100**	**692.7**
1865	15-Jun	19-Sep	97	833.6	1921	6-Jun	24-Sep	111	961.1
1866	6-Jun	12-Sep	99	965.7	1922	10-Jun	24-Sep	107	827.0
1867	6-Jun	24-Sep	111	1345.3	1923	4-Jul	22-Sep	81	973.0
1868	11-Jun	15-Sep	97	611.2	1924	17-Jun	10-Oct	116	892.9
1869	19-Jun	7-Oct	111	1042.4	1925	8-Jun	16-Sep	101	749.8
1870	**6-Jun**	**22-Sep**	**109**	**865.7**	1926	4-Jul	9-Oct	98	1099.9
1871	5-Jun	25-Sep	113	1048.0	1927	11-Jun	11-Nov	154	906.9
1872	10-Jun	22-Sep	105	1001.0	1928	12-Jun	5-Oct	116	850.8
1873	20-Jun	25-Sep	98	876.3	1929	10-Jun	17-Sep	100	876.0
1874	4-Jun	16-Sep	105	1183.7	**1930**	**8-Jun**	**19-Sep**	**104**	**965.8**
1875	6-Jun	25-Sep	112	1220.7	1931	23-Jun	21-Oct	121	1196.2
1876	22-Jun	24-Sep	95	929.9	1932	17-Jun	24-Sep	100	964.3
1877	8-Jun	9-Oct	124	657.7	1933	24-May	25-Sep	125	1096.8
1878	18-Jun	23-Sep	98	996.8	1934	7-Jun	26-Sep	112	1203.1
1879	7-Jun	12-Oct	128	1003.7	1935	10-Jun	23-Sep	106	900.8
1880	**9-Jun**	**6-Oct**	**120**	**998.2**	1936	8-Jun	24-Sep	109	952.3
1881	7-Jun	17-Sep	103	1028.9	1937	7-Jun	9-Oct	125	1059.6
1882	4-Jun	22-Sep	111	1162.3	1938	5-Jun	16-Oct	134	1081.8
1883	6-Jun	3-Oct	120	1075.7	1939	15-Jun	19-Sep	97	1014.8
1884	7-Jun	27-Sep	113	1378.4	**1940**	**10-Jun**	**12-Oct**	**125**	**1010.3**
1885	6-Jun	25-Aug	81	831.1	1941	14-Jun	13-Sep	92	676.1
1886	8-Jun	20-Oct	135	849.0	1942	8-Jun	21-Sep	106	1204.7
1887	8-Jun	8-Oct	123	1221.2	1943	10-Jun	16-Oct	129	1011.7
1888	14-Jun	17-Sep	96	774.6	1944	11-Jun	21-Sep	103	1270.3
1889	6-Jun	11-Sep	98	1034.1	1945	6-Jun	24-Sep	111	1067.4
1890	**7-Jun**	**23-Sep**	**109**	**867.2**	1946	4-Jun	18-Sep	107	1161.6
1891	29-Jun	27-Sep	91	1314.9	1947	16-Jun	25-Sep	102	1210.3
1892	12-Jun	25-Sep	106	1073.5	1948	8-Jun	23-Sep	108	1121.5
1893	31-May	23-Sep	116	1058.8	1949	16-Jun	17-Oct	124	985.0
1894	5-Jun	21-Oct	139	1278.2	**1950**	**24-Jun**	**24-Sep**	**93**	**883.9**
1895	6-Jun	10-Sep	97	709.3	1951	18-Jun	17-Sep	92	614.4
1896	6-Jun	27-Aug	83	1062.3	1952	10-Jun	13-Sep	96	808.4
1897	13-Jun	20-Sep	100	896.2	1953	27-Jun	17-Sep	83	763.0
1898	9-Jun	21-Sep	105	1054.3	1954	16-Jun	27-Sep	104	1101.4
1899	9-Jun	17-Sep	101	434.4	1955	7-Jun	18-Oct	134	1223.9

Table 6(c):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1956	21-May	5-Oct	138	1153.1	1981	9-Jun	21-Sep	105	813.1
1957	14-Jun	15-Sep	94	729.2	1982	24-Jun	19-Sep	88	720.5
1958	15-Jun	14-Oct	122	968.9	1983	11-Jun	6-Oct	118	1156.7
1959	13-Jun	15-Oct	125	1230.8	1984	20-Jun	11-Sep	84	850.1
1960	**10-Jun**	**6-Oct**	**119**	**818.5**	1985	13-Jun	15-Oct	125	914.7
1961	13-Jun	16-Oct	126	1389.5	1986	8-Jun	7-Sep	92	795.7
1962	5-Jul	24-Sep	82	678.7	1987	18-Jun	16-Sep	91	618.6
1963	14-Jun	22-Sep	101	813.7	1988	9-Jun	19-Sep	103	886.1
1964	13-Jun	21-Sep	101	953.9	1989	8-Jun	10-Sep	95	781.7
1965	24-Jun	19-Sep	88	616.8	**1990**	**6-Jun**	**25-Sep**	**112**	**1139.2**
1966	19-Jun	15-Sep	89	570.8	1991	9-Jun	26-Aug	79	733.5
1967	11-Jun	22-Sep	104	896.5	1992	16-Jun	19-Sep	96	783.8
1968	19-Jun	18-Sep	92	819.4	1993	10-Jun	26-Sep	109	1004.1
1969	3-Jul	24-Sep	84	990.2	1994	4-Jun	22-Sep	111	1430.9
1970	**4-Jun**	**25-Sep**	**114**	**1218.0**	1995	18-Jun	19-Sep	94	748.4
1971	5-Jun	10-Oct	128	1085.1	1996	4-Jul	12-Oct	101	733.9
1972	18-Jun	7-Sep	82	704.0	1997	13-Jun	18-Sep	98	804.8
1973	21-Jun	25-Sep	97	1123.6	1998	12-Jun	25-Sep	106	873.3
1974	19-Jun	12-Oct	116	802.9	1999	11-Jun	18-Oct	130	1305.3
1975	10-Jun	12-Oct	125	1047.9	**2000**	**9-Jun**	**22-Aug**	**75**	**550.6**
1976	11-Jun	21-Sep	103	877.8	2001	6-Jun	25-Aug	81	718.6
1977	5-Jun	10-Nov	159	1153.9	2002	11-Jun	22-Sep	104	844.5
1978	8-Jun	7-Sep	92	903.9	2003	11-Jun	24-Sep	106	977.2
1979	13-Jun	25-Aug	74	438.0	2004	10-Jun	2-Sep	85	812.5
1980	**6-Jun**	**17-Sep**	**104**	**904.0**	2005	8-Jun	24-Sep	109	1054.6
					Mean	**12-Jun**	**25-Sep**	**106**	**925.0**
					SD	**8**	**15**	**17**	**202**

Table 7(a): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Tapi Major Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1845	8-Jun	23-Aug	77	517.1	1901	13-Jun	4-Oct	114	601.8
1846	10-Jun	23-Sep	106	684.1	1902	29-Jun	3-Oct	97	631.9
1847	9-Jun	21-Sep	105	619.9	1903	22-Jun	21-Sep	92	746.6
1848	9-Jun	13-Sep	97	472.5	1904	17-Jun	24-Sep	100	453.3
1849	13-Jun	18-Oct	128	874.1	1905	28-Jun	22-Sep	87	532.0
1850		NO DATA			1906	7-Jun	13-Sep	99	751.8
1851	14-Jun	14-Sep	93	530.0	1907	11-Jun	24-Aug	75	478.7
1852	9-Jun	19-Sep	103	363.8	1908	9-Jun	13-Sep	97	726.0
1853	8-Jun	12-Oct	127	644.6	1909	7-Jun	21-Sep	107	685.4
1854	10-Jun	20-Sep	103	590.5	**1910**	**6-Jun**	**3-Oct**	**120**	**819.9**
1855					1911	12-Jun	10-Sep	91	346.4
1856					1912	16-Jun	6-Sep	83	553.1
1857		NO DATA			1913	6-Jun	19-Sep	106	695.9
1858					1914	6-Jun	25-Sep	112	835.1
1859	8-Jun	12-Sep	97	599.2	1915	8-Jun	17-Oct	132	654.3
1860	**11-Jun**	**25-Sep**	**107**	**737.4**	1916	7-Jun	18-Oct	134	1086.0
1861	6-Jun	6-Sep	93	850.1	1917	29-May	21-Oct	146	828.9
1862	23-Jun	5-Oct	105	446.5	1918	29-May	25-Aug	89	284.5
1863	8-Jun	19-Sep	104	477.3	1919	7-Jun	4-Oct	120	708.9
1864	13-Jun	20-Aug	69	372.3	**1920**	**13-Jun**	**3-Sep**	**83**	**325.8**
1865	11-Jun	4-Sep	86	678.7	1921	9-Jun	21-Sep	105	768.2
1866	19-Jun	24-Aug	67	483.6	1922	8-Jun	23-Sep	108	628.7
1867	7-Jun	9-Oct	125	712.0	1923	4-Jul	22-Sep	81	600.6
1868	9-Jun	24-Aug	77	457.3	1924	16-Jun	15-Oct	122	716.6
1869	10-Jun	12-Oct	125	669.3	1925	9-Jun	4-Sep	88	410.1
1870	**6-Jun**	**15-Oct**	**132**	**784.0**	1926	5-Jul	15-Sep	73	654.8
1871	9-Jun	20-Sep	104	405.9	1927	7-Jun	12-Nov	159	712.5
1872	7-Jun	24-Sep	110	800.0	1928	12-Jun	13-Oct	124	666.8
1873	10-Jun	22-Sep	105	626.8	1929	7-Jun	15-Sep	101	596.7
1874	6-Jun	19-Sep	106	632.6	**1930**	**9-Jun**	**25-Sep**	**109**	**722.2**
1875	7-Jun	24-Sep	110	796.4	1931	21-Jun	25-Oct	127	1109.0
1876	13-Jun	21-Sep	101	671.7	1932	15-Jun	18-Sep	96	682.7
1877	10-Jun	9-Oct	122	501.1	1933	29-May	25-Sep	120	926.0
1878	10-Jun	14-Oct	127	1163.9	1934	7-Jun	23-Sep	109	907.8
1879	7-Jun	8-Oct	124	739.1	1935	9-Jun	21-Sep	105	799.5
1880	**13-Jun**	**2-Oct**	**112**	**522.6**	1936	6-Jun	20-Sep	107	537.0
1881	8-Jun	13-Sep	98	609.1	1937	7-Jun	15-Oct	131	891.2
1882	6-Jun	22-Sep	109	776.4	1938	4-Jun	13-Oct	132	973.4
1883	5-Jun	22-Oct	140	1183.4	1939	21-Jun	5-Sep	77	596.5
1884	15-Jun	26-Sep	104	832.6	**1940**	**7-Jun**	**12-Oct**	**128**	**920.6**
1885	17-Jun	12-Oct	118	587.3	1941	30-Jun	13-Sep	76	560.4
1886	6-Jun	16-Oct	133	789.5	1942	11-Jun	20-Sep	102	859.7
1887	7-Jun	18-Oct	134	995.2	1943	29-May	20-Oct	145	706.8
1888	10-Jun	14-Sep	97	556.3	1944	14-Jun	5-Oct	114	1143.6
1889	10-Jun	7-Oct	120	709.8	1945	16-Jun	26-Sep	103	865.7
1890	**6-Jun**	**21-Sep**	**108**	**792.4**	1946	6-Jun	18-Sep	105	786.1
1891	21-Jun	25-Sep	97	919.0	1947	28-Jun	24-Sep	89	730.7
1892	9-Jun	10-Oct	124	1023.4	1948	7-Jun	18-Sep	104	695.0
1893	7-Jun	17-Sep	103	624.3	1949	11-Jun	18-Oct	130	1125.4
1894	9-Jun	21-Oct	135	914.7	**1950**	**27-Jun**	**21-Sep**	**87**	**461.7**
1895	10-Jun	22-Sep	105	615.8	1951	11-Jun	13-Oct	125	561.4
1896	8-Jun	22-Aug	76	656.9	1952	11-Jun	5-Sep	87	396.2
1897	25-Jun	24-Sep	92	714.9	1953	11-Jun	17-Sep	99	749.9
1898	9-Jun	20-Aug	73	442.3	1954	11-Jun	26-Sep	108	977.2
1899	11-Jun	6-Jul	26	103.8	1955	8-Jun	14-Oct	129	819.1
1900	**24-Jun**	**22-Aug**	**60**	**522.5**	1956	21-May	5-Oct	138	833.3

Table 7(a):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1957	8-Jun	16-Sep	101	571.4	1982	18-Jun	12-Sep	87	548.1
1958	11-Jun	20-Sep	102	736.8	1983	12-Jun	7-Oct	118	965.8
1959	11-Jun	19-Oct	131	1166.9	1984	13-Jun	15-Oct	125	649.0
1960	**7-Jun**	**5-Oct**	**121**	**668.5**	1985	11-Jun	17-Oct	129	532.1
1961	15-Jun	18-Oct	126	926.9	1986	8-Jun	24-Aug	78	613.0
1962	26-Jun	24-Sep	91	632.2	1987	9-Jun	24-Aug	77	408.0
1963	12-Jun	2-Oct	113	661.6	1988	10-Jun	13-Oct	126	1182.3
1964	7-Jun	20-Sep	106	911.9	1989	9-Jun	16-Sep	100	581.1
1965	23-Jun	1-Sep	71	472.7	**1990**	**7-Jun**	**15-Oct**	**131**	**938.2**
1966	22-Jun	19-Sep	90	556.1	1991	13-Jun	21-Aug	70	510.8
1967	7-Jun	13-Sep	99	689.1	1992	5-Jun	21-Sep	109	832.6
1968	24-Jun	17-Sep	86	656.5	1993	9-Jun	14-Oct	128	767.9
1969	12-Jun	24-Sep	105	710.9	1994	7-Jun	20-Sep	106	917.0
1970	**5-Jun**	**24-Sep**	**112**	**1003.8**	1995	17-Jun	20-Sep	96	609.7
1971	11-Jun	21-Sep	103	495.3	1996	23-Jun	17-Oct	117	687.1
1972	9-Jun	9-Sep	93	538.8	1997	12-Jun	10-Sep	91	591.4
1973	12-Jun	23-Sep	104	889.1	1998	15-Jun	13-Oct	121	904.6
1974	25-Jun	13-Oct	111	576.3	1999	8-Jun	21-Oct	136	840.4
1975	7-Jun	11-Oct	127	957.0	**2000**	**25-May**	**21-Aug**	**89**	**537.9**
1976	7-Jun	20-Sep	106	842.4	2001	7-Jun	20-Oct	136	632.8
1977	6-Jun	17-Sep	104	681.5	2002	5-Jun	21-Sep	109	744.7
1978	6-Jun	7-Sep	94	739.9	2003	7-Jun	20-Sep	106	798.6
1979	9-Jun	17-Sep	101	801.4	2004	9-Jun	1-Oct	115	737.0
1980	**6-Jun**	**25-Aug**	**81**	**570.4**	2005	6-Jun	24-Sep	111	835.3
1981	12-Jun	1-Oct	112	787.0					
					Mean	**11-Jun**	**24-Sep**	**106**	**700.3**
					SD	**7**	**18**	**20**	**193**

Table 7(b): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Mahanadi Major Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1848	7-Jun	21-Oct	137	1024.3	1904	24-May	11-Oct	141	1298.0
1849	7-Jun	22-Sep	108	910.4	1905	25-May	26-Sep	125	1040.7
1850	**6-Jun**	**18-Oct**	**135**	**1083.3**	1906	9-Jun	8-Oct	122	1044.8
1851	10-Jun	17-Oct	130	1073.0	1907	5-Jun	23-Sep	111	1156.8
1852	30-May	26-Sep	120	1280.1	1908	6-Jun	21-Sep	108	1249.8
1853	9-Jun	11-Oct	125	1067.8	1909	5-Jun	23-Sep	111	1160.2
1854	12-Jun	8-Oct	119	1443.5	**1910**	**7-Jun**	**20-Oct**	**136**	**1333.3**
1855	11-Jun	2-Oct	114	1222.3	1911	4-Jun	15-Oct	134	1297.8
1856	28-May	20-Oct	146	1222.7	1912	16-Jun	22-Sep	99	1012.5
1857	27-May	24-Sep	121	1194.5	1913	7-Jun	11-Oct	127	1027.4
1858	9-Jun	18-Oct	132	1173.3	1914	13-May	30-Sep	141	1222.7
1859	7-Jun	11-Oct	127	1218.5	1915	29-May	14-Nov	170	1133.6
1860	**5-Jun**	**26-Sep**	**114**	**1528.3**	1916	4-Jun	21-Oct	140	1203.7
1861	15-May	18-Nov	188	1906.5	1917	4-Jun	25-Oct	144	1500.8
1862	7-Jun	24-Oct	140	1266.3	1918	20-May	30-Sep	134	1295.7
1863	3-Jun	16-Oct	136	1276.4	1919	4-Jun	6-Nov	156	1508.4
1864	11-Jun	20-Sep	102	691.6	**1920**	**12-Jun**	**21-Sep**	**102**	**1119.2**
1865	17-May	22-Sep	129	826.1	1921	6-Jun	24-Sep	111	1013.8
1866	9-Jun	10-Oct	124	1182.2	1922	8-Jun	26-Sep	111	1196.9
1867	8-Jun	17-Oct	132	1011.4	1923	15-Jun	1-Nov	140	1011.3
1868	4-Jun	18-Sep	107	880.3	1924	28-May	19-Nov	176	1056.1
1869	9-Jun	16-Oct	130	1157.5	1925	15-May	19-Oct	158	1654.0
1870	**6-Jun**	**20-Oct**	**137**	**1045.9**	1926	30-May	9-Oct	133	1289.2
1871	6-Jun	24-Sep	111	933.8	1927	7-Jun	8-Oct	124	1203.7
1872	3-Jun	22-Oct	142	1441.2	1928	6-Jun	23-Oct	140	1189.7
1873	19-Jun	12-Oct	116	905.2	1929	8-Jun	21-Oct	136	1483.3
1874	4-Jun	20-Oct	139	1446.6	**1930**	**7-Jun**	**24-Sep**	**110**	**1092.8**
1875	5-Jun	18-Oct	136	1350.6	1931	13-Jun	4-Nov	145	1198.4
1876	11-Jun	11-Oct	123	1030.3	1932	27-May	25-Sep	122	1141.3
1877	26-Apr	3-Oct	161	1082.1	1933	13-May	7-Oct	148	1656.4
1878	22-May	16-Oct	148	985.0	1934	6-Jun	11-Oct	128	1353.5
1879	17-May	11-Oct	148	1292.3	1935	12-Jun	24-Sep	105	1104.1
1880	**4-Jun**	**17-Oct**	**136**	**1430.2**	1936	17-May	21-Oct	158	1706.4
1881	6-Jun	11-Oct	128	1255.8	1937	30-May	7-Oct	131	1358.1
1882	29-May	10-Oct	135	1258.1	1938	18-May	18-Oct	154	1272.6
1883	4-Jun	25-Sep	114	1172.5	1939	8-Jun	20-Oct	135	1422.5
1884	5-Jun	13-Oct	131	1502.5	**1940**	**20-May**	**9-Oct**	**143**	**1409.7**
1885	20-May	5-Oct	139	1071.1	1941	6-Jun	14-Oct	131	1061.9
1886	25-May	20-Oct	149	1132.6	1942	7-Jun	25-Sep	111	1279.2
1887	8-Jun	9-Oct	124	1108.0	1943	7-Jun	26-Sep	112	1443.5
1888	16-Jun	21-Sep	98	997.1	1944	12-Jun	20-Oct	131	1364.6
1889	6-Jun	18-Nov	166	1466.7	1945	9-Jun	18-Oct	132	1373.8
1890	**6-Jun**	**14-Oct**	**131**	**1335.5**	1946	5-Jun	2-Nov	151	1358.1
1891	19-May	27-Sep	132	1264.4	1947	8-Jun	17-Oct	132	1334.3
1892	6-Jun	18-Oct	135	1312.1	1948	7-Jun	6-Oct	122	1208.9
1893	9-May	17-Oct	162	1488.6	1949	11-Jun	24-Oct	136	1194.3
1894	5-Jun	18-Oct	136	1332.9	**1950**	**5-Jun**	**23-Sep**	**111**	**1125.3**
1895	3-Jun	11-Oct	131	1405.0	1951	9-Jun	18-Oct	132	1062.9
1896	4-Jun	20-Sep	109	1523.2	1952	8-Jun	16-Oct	131	1260.8
1897	9-Jun	20-Oct	134	1202.9	1953	10-Jun	24-Sep	107	1073.8
1898	9-Jun	14-Oct	128	1048.7	1954	9-Jun	14-Oct	128	1100.1
1899	8-Jun	12-Oct	127	800.7	1955	6-Jun	25-Oct	142	1376.0
1900	**7-Jun**	**16-Oct**	**132**	**1383.9**	1956	20-May	21-Oct	155	1598.4
1901	24-Jun	3-Oct	102	939.2	1957	13-Jun	20-Sep	100	894.3
1902	24-Jun	21-Sep	90	963.8	1958	15-Jun	22-Oct	130	1320.8
1903	13-Jun	23-Oct	133	1119.7	1959	11-Jun	18-Oct	130	1195.4

Table 7(b):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1960	**8-Jun**	**14-Oct**	**129**	**1218.7**	1983	29-May	7-Oct	132	1111.9
1961	5-Jun	16-Oct	134	1596.1	1984	5-Jun	15-Sep	103	1073.0
1962	10-Jun	18-Oct	131	1016.3	1985	13-Jun	18-Oct	128	1316.8
1963	6-Jun	17-Oct	134	1312.2	1986	3-Jun	10-Nov	161	1245.9
1964	7-Jun	12-Oct	128	1277.9	1987	21-Jun	7-Nov	140	916.3
1965	14-Jun	1-Oct	110	870.8	1988	8-Jun	22-Sep	107	826.1
1966	5-Jun	30-Sep	118	925.0	1989	5-Jun	23-Sep	111	1049.0
1967	8-Jun	23-Sep	108	1089.0	**1990**	**27-Apr**	**12-Nov**	**200**	**1408.4**
1968	10-Jun	20-Oct	133	1043.9	1991	11-Jun	2-Oct	114	1214.1
1969	12-Jun	21-Sep	102	937.3	1992	9-Jun	22-Sep	106	1113.9
1970	**6-Jun**	**16-Oct**	**133**	**1056.2**	1993	6-Jun	8-Oct	125	1205.7
1971	24-May	20-Oct	150	1330.5	1994	5-Jun	4-Oct	122	1600.3
1972	12-Jun	5-Oct	116	1042.8	1995	7-May	14-Nov	192	1379.1
1973	14-Jun	23-Oct	132	1369.8	1996	9-Jun	18-Sep	102	825.8
1974	18-Jun	16-Oct	121	757.1	1997	9-Jun	23-Sep	107	1108.8
1975	7-Jun	17-Oct	133	1143.3	1998	11-Jun	1-Nov	144	1005.4
1976	15-Jun	19-Sep	97	956.8	1999	16-May	22-Oct	160	1280.7
1977	23-May	24-Sep	125	1105.8	**2000**	**30-May**	**19-Sep**	**113**	**803.2**
1978	9-Jun	7-Oct	121	995.9	2001	4-Jun	14-Oct	133	1363.6
1979	9-Jun	21-Sep	105	747.5	2002	24-May	22-Sep	122	822.2
1980	**5-Jun**	**3-Oct**	**121**	**1308.6**	2003	9-Jun	9-Nov	154	1505.9
1981	26-May	25-Sep	123	1056.0	2004	7-Jun	15-Oct	131	1039.9
1982	8-Jun	17-Sep	102	1025.7	2005	8-Jun	25-Oct	140	1373.0
					Mean	**4-Jun**	**11-Oct**	**130**	**1193.0**
					SD	**10**	**15**	**19**	**211**

Table 7(c): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Cauvery Major Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1830	**17-Apr**	**2-Nov**	**200**	**1231.4**	1886	7-May	11-Nov	189	1105.0
1831	26-Apr	20-Nov	209	1086.4	1887	18-May	6-Dec	203	1163.3
1832	15-May	16-Oct	155	862.8	1888	13-May	19-Nov	191	964.1
1833					1889	20-Apr	23-Oct	187	1250.1
1834					**1890**	**19-Apr**	**14-Nov**	**210**	**1004.0**
1835		NO DATA			1891	29-Apr	24-Oct	179	821.0
1836					1892	20-Apr	21-Oct	185	1081.9
1837	16-May	24-Nov	193	940.1	1893	28-Apr	22-Nov	209	1153.3
1838	11-Jun	6-Nov	149	688.0	1894	18-Apr	31-Oct	197	914.9
1839	27-May	1-Nov	159	837.4	1895	20-Apr	1-Nov	196	1133.9
1840	**20-May**	**12-Nov**	**177**	**811.7**	1896	13-May	4-Dec	206	1221.5
1841	17-May	9-Nov	177	1080.7	1897	13-May	17-Oct	158	1206.2
1842	20-May	21-Oct	155	893.6	1898	25-Apr	3-Dec	223	1272.2
1843	10-May	26-Oct	170	1005.8	1899	10-Apr	20-Oct	194	828.6
1844	11-May	19-Oct	162	847.8	**1900**	**21-Apr**	**20-Oct**	**183**	**1092.1**
1845	29-Mar	13-Oct	199	917.0	1901	16-May	19-Nov	188	1005.9
1846	11-May	9-Nov	183	1215.9	1902	12-May	19-Dec	222	1207.2
1847	13-May	6-Dec	208	1013.3	1903	8-May	11-Dec	218	1479.7
1848	15-Apr	11-Oct	180	911.7	1904	9-May	20-Oct	165	907.4
1849	11-Apr	11-Nov	215	1061.1	1905	13-May	1-Nov	173	895.1
1850	**18-Apr**	**9-Nov**	**206**	**1193.7**	1906	27-May	10-Dec	198	1150.1
1851	28-Apr	12-Nov	199	1006.3	1907	15-Apr	19-Nov	219	1119.7
1852	17-May	4-Dec	202	1504.8	1908	30-Apr	20-Oct	174	927.1
1853	17-Mar	7-Oct	205	900.5	1909	19-Apr	22-Oct	187	1232.6
1854	30-May	8-Nov	163	998.7	**1910**	**17-May**	**16-Nov**	**184**	**1180.8**
1855	21-May	25-Oct	158	813.7	1911	12-May	15-Nov	188	968.1
1856	16-Apr	22-Oct	190	1261.6	1912	19-May	18-Nov	184	1133.5
1857	28-Apr	12-Nov	199	1119.9	1913	13-May	5-Nov	177	929.9
1858	25-Apr	14-Nov	204	1193.2	1914	25-May	14-Nov	174	992.3
1859	12-Apr	16-Nov	219	1116.7	1915	21-May	20-Nov	184	1055.3
1860	**12-May**	**24-Oct**	**166**	**857.8**	1916	11-May	18-Nov	192	1224.0
1861	15-Apr	13-Nov	213	1147.8	1917	20-May	18-Nov	183	1089.4
1862	18-May	16-Nov	183	977.9	1918	9-May	23-Nov	199	756.5
1863	18-Mar	26-Nov	254	1214.6	1919	14-May	31-Dec	232	1166.7
1864	24-Apr	22-Oct	182	1079.9	**1920**	**22-Apr**	**22-Nov**	**215**	**1109.8**
1865	14-Apr	10-Nov	211	1207.1	1921	18-Apr	6-Nov	203	1095.4
1866	19-May	24-Oct	159	836.4	1922	11-May	22-Nov	196	1109.0
1867	15-May	20-Oct	159	771.1	1923	19-May	16-Oct	151	916.5
1868	14-May	17-Oct	157	852.4	1924	27-Apr	10-Nov	198	1237.9
1869	21-May	4-Dec	198	961.9	1925	24-Apr	14-Dec	235	1096.2
1870	**26-May**	**7-Nov**	**166**	**1055.6**	1926	25-May	4-Nov	164	859.9
1871	15-May	19-Nov	189	959.4	1927	14-May	15-Nov	186	962.4
1872	13-May	4-Dec	206	1033.7	1928	28-Apr	9-Nov	196	891.9
1873	27-Apr	25-Oct	182	979.6	1929	11-Apr	12-Nov	216	1119.1
1874	7-May	9-Nov	187	1230.8	**1930**	**7-May**	**14-Nov**	**192**	**1160.7**
1875	16-May	19-Oct	157	717.6	1931	24-Apr	7-Oct	167	939.2
1876	16-May	15-Oct	153	689.2	1932	7-May	20-Nov	198	1212.1
1877	22-May	4-Dec	197	1081.1	1933	28-Apr	7-Dec	224	1405.0
1878	20-Apr	20-Oct	184	1079.9	1934	22-May	11-Nov	174	865.9
1879	7-May	21-Oct	168	1054.3	1935	25-Apr	23-Oct	182	952.8
1880	**25-Apr**	**22-Nov**	**212**	**1185.9**	1936	12-May	18-Nov	191	1091.1
1881	14-May	18-Nov	189	819.7	1937	12-Apr	12-Nov	215	1104.9
1882	9-May	19-Nov	195	1454.6	1938	28-Apr	2-Oct	158	900.1
1883	13-May	7-Dec	209	1234.7	1939	14-Apr	21-Nov	222	1167.0
1884	19-May	10-Dec	206	996.2	**1940**	**24-Apr**	**24-Nov**	**215**	**1335.7**
1885	18-May	13-Dec	210	1083.7	1941	29-Apr	14-Dec	230	1019.2

Table 7(c):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1942	18-Apr	20-Oct	186	1033.5	1974	13-May	20-Oct	161	948.1
1943	25-Apr	12-Nov	202	1259.3	1975	12-May	12-Nov	185	1387.7
1944	15-May	20-Nov	190	1043.9	1976	20-Apr	20-Nov	215	844.0
1945	25-Apr	13-Nov	203	936.3	1977	22-Apr	22-Nov	215	1357.8
1946	22-Apr	17-Dec	240	1438.2	1978	11-May	11-Dec	215	1329.9
1947	24-Apr	22-Oct	182	1002.8	1979	23-May	24-Nov	186	1163.4
1948	23-Apr	20-Nov	212	1087.5	**1980**	**24-Apr**	**16-Nov**	**207**	**1101.7**
1949	11-May	23-Oct	166	1030.1	1981	14-May	9-Nov	180	1115.7
1950	**23-May**	**13-Nov**	**175**	**1020.3**	1982	15-May	16-Nov	186	883.1
1951	16-Apr	12-Nov	211	1053.8	1983	15-May	17-Oct	156	972.4
1952	22-May	23-Oct	155	735.2	1984	16-Mar	7-Oct	206	1002.9
1953	15-Apr	26-Oct	195	1275.9	1985	29-Apr	10-Nov	196	839.3
1954	22-Apr	24-Oct	186	1208.5	1986	22-May	17-Nov	180	962.6
1955	18-Apr	24-Oct	190	1134.6	1987	22-May	12-Dec	205	948.7
1956	25-Apr	21-Nov	211	1249.4	1988	16-Apr	31-Oct	199	979.2
1957	8-May	20-Nov	197	1064.9	1989	20-May	19-Oct	153	980.3
1958	19-Apr	8-Nov	204	1141.6	**1990**	**9-May**	**8-Nov**	**184**	**917.0**
1959	14-May	14-Nov	185	1223.1	1991	22-Apr	17-Nov	210	1308.9
1960	**25-Apr**	**20-Nov**	**210**	**1096.1**	1992	19-May	23-Nov	189	1230.5
1961	22-Apr	24-Oct	186	1531.5	1993	20-May	12-Dec	207	1208.0
1962	18-Apr	25-Oct	191	1277.3	1994	20-Apr	13-Nov	208	1272.3
1963	26-Apr	6-Dec	225	1101.5	1995	26-Apr	14-Nov	203	1091.3
1964	13-May	20-Nov	192	1208.7	1996	14-Apr	21-Oct	191	1174.5
1965	25-May	16-Dec	206	773.4	1997	26-May	5-Dec	194	1270.1
1966	15-May	20-Nov	190	1113.8	1998	29-May	13-Dec	199	1161.7
1967	21-May	9-Dec	203	954.1	1999	23-Apr	17-Nov	209	1179.9
1968	19-Apr	7-Nov	203	989.1	**2000**	**24-Apr**	**8-Nov**	**199**	**1084.3**
1969	17-May	4-Dec	202	960.3	2001	15-Apr	12-Nov	212	971.8
1970	**23-Apr**	**13-Nov**	**205**	**1145.9**	2002	13-May	24-Oct	165	779.2
1971	30-Apr	20-Oct	174	1061.8	2003	26-Apr	7-Nov	196	926.8
1972	8-May	23-Oct	169	985.3	2004	25-Apr	13-Nov	203	1091.2
1973	16-May	21-Oct	159	981.6	2005	19-Apr	2-Dec	228	1225.8
					Mean	**4-May**	**11-Nov**	**192**	**1064.5**
					SD	**15**	**18**	**20**	**166**

Table 8(a): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Luni Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1856	6-Jul	21-Aug	47	321.5	1912	8-Jul	21-Aug	45	252.7
1857	10-Jun	20-Sep	103	487.3	1913	19-Jun	1-Sep	75	266.3
1858	4-Jul	11-Sep	70	277.5	1914	19-Jun	11-Sep	85	320.5
1859	7-Jul	8-Sep	64	277.2	1915	UNDEFINED SEASON			
1860	**15-Jul**	**12-Aug**	**29**	**89.9**	1916	26-Jul	21-Sep	58	321.5
1861	29-Jul	26-Aug	29	289.2	1917	18-May	17-Oct	153	972.7
1862	26-Jun	21-Sep	88	642.6	1918	12-Aug	19-Aug	8	29.3
1863	7-Jun	22-Aug	77	489.9	1919	9-Jul	27-Aug	50	437.1
1864	6-Jul	21-Aug	47	304.7	**1920**	**18-May**	**22-Jul**	**66**	**273.1**
1865	15-Jul	23-Aug	40	191.2	1921	6-Jul	18-Sep	75	210.9
1866	26-Jul	27-Aug	33	306.8	1922	11-Jul	20-Sep	72	108.4
1867	15-Jul	10-Sep	58	213.8	1923	11-Jul	19-Aug	40	173.9
1868	20-Jul	21-Aug	33	127.7	1924	9-Jul	22-Sep	76	228.5
1869	8-Jul	22-Sep	77	167.5	1925	17-Jun	14-Jul	28	80.1
1870	**24-Jun**	**18-Aug**	**56**	**235.7**	1926	10-Jul	25-Sep	78	329.6
1871	13-Jun	17-Aug	66	333.1	1927	4-Jul	25-Aug	53	519.3
1872	10-Jul	3-Sep	56	331.5	1928	9-Jul	5-Sep	59	242.2
1873	9-Jul	11-Sep	65	255.8	1929	7-Jul	23-Aug	48	310.1
1874	24-Jun	22-Aug	60	298.5	**1930**	**21-Jun**	**11-Aug**	**52**	**201.4**
1875	7-Jul	24-Sep	80	201.4	1931	19-Jul	27-Aug	40	367.5
1876	8-Jul	19-Sep	74	224.6	1932	8-Jul	23-Aug	47	302.1
1877	UNDEFINED SEASON				1933	25-Jun	8-Sep	76	460.6
1878	8-Jul	8-Sep	63	412.9	1934	15-Jun	26-Aug	73	423.1
1879	14-Jun	4-Sep	83	468.4	1935	6-Jul	24-Jul	19	140.0
1880	**8-Jul**	**17-Sep**	**72**	**225.2**	1936	18-Jun	11-Sep	86	178.8
1881	5-Jul	1-Sep	59	422.9	1937	22-Jun	26-Jul	35	277.2
1882	27-Jun	10-Sep	76	433.7	1938	15-Jun	13-Aug	60	274.3
1883	10-Jul	17-Sep	70	85.3	1939	UNDEFINED SEASON			
1884	18-Jun	23-Sep	98	616.5	**1940**	**30-Jun**	**24-Aug**	**56**	**240.6**
1885	12-Jul	23-Aug	43	213.7	1941	7-Jul	24-Aug	49	328.9
1886	17-Jun	21-Aug	66	318.3	1942	9-Jul	5-Sep	59	278.8
1887	7-Jul	20-Aug	45	251.0	1943	4-Jul	10-Sep	69	303.5
1888	20-Jul	25-Aug	37	248.1	1944	1-Jul	28-Aug	59	701.6
1889	13-Jun	24-Aug	73	320.7	1945	15-Jun	1-Sep	79	514.6
1890	**26-Jun**	**14-Aug**	**50**	**195.4**	1946	23-Jun	25-Aug	64	339.8
1891	8-Jul	23-Jul	16	105.2	1947	23-Jul	21-Sep	61	167.4
1892	9-Jul	24-Sep	78	330.3	1948	9-Jul	5-Aug	28	131.3
1893	9-Jun	24-Sep	108	614.2	1949	30-Jun	12-Aug	44	191.5
1894	11-Jun	10-Sep	92	457.2	**1950**	**4-Jul**	**21-Sep**	**80**	**327.4**
1895	12-Jul	19-Aug	39	156.4	1951	12-Jul	18-Aug	38	146.6
1896	14-Jun	23-Aug	71	356.1	1952	30-Jun	17-Sep	80	394.6
1897	9-Jul	10-Sep	64	287.3	1953	28-Jun	26-Aug	60	372.2
1898	10-Jul	21-Jul	12	53.4	1954	9-Jul	20-Sep	74	162.0
1899	UNDEFINED SEASON				1955	5-Aug	23-Sep	50	432.9
1900	**18-Jul**	**20-Sep**	**65**	**248.7**	1956	4-Jul	21-Aug	49	466.1
1901	20-Jul	9-Aug	21	49.3	1957	25-Jun	23-Aug	60	256.4
1902	16-Aug	16-Sep	32	102.8	1958	10-Jul	22-Sep	75	129.1
1903	6-Jul	1-Sep	58	277.1	1959	6-Jul	22-Sep	79	326.3
1904	16-Jul	12-Aug	28	81.5	**1960**	**12-Jul**	**18-Aug**	**38**	**148.2**
1905	7-Jul	24-Jul	18	116.7	1961	21-Jun	25-Sep	97	505.7
1906	15-Jul	20-Sep	68	114.7	1962	7-Jul	10-Sep	66	199.4
1907	18-Jul	28-Aug	42	445.8	1963	28-Jul	15-Sep	50	129.8
1908	4-Jul	7-Sep	66	587.5	1964	9-Jul	26-Aug	49	365.1
1909	7-Jul	18-Sep	74	286.0	1965	6-Jul	14-Aug	40	262.9
1910	**12-Jun**	**25-Aug**	**75**	**351.0**	1966	13-Jul	18-Sep	68	95.5
1911	UNDEFINED SEASON				1967	30-Jun	18-Sep	81	430.6

Table 8(a):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1968	8-Jul	9-Aug	33	162.5	1987	UNDEFINED SEASON			
1969	16-Jul	9-Aug	25	70.4	1988	7-Jul	9-Sep	65	278.0
1970	**20-Jul**	**17-Sep**	**60**	**408.7**	1989	12-Jul	23-Aug	43	234.1
1971	14-Jun	4-Sep	83	365.7	**1990**	**5-Jul**	**15-Sep**	**73**	**682.1**
1972	27-Jul	23-Aug	28	155.9	1991	13-Jul	6-Aug	25	83.2
1973	21-Jun	22-Sep	94	676.4	1992	7-Jul	23-Sep	79	498.9
1974	12-Jul	20-Jul	9	32.0	1993	21-Jun	26-Jul	36	278.5
1975	13-Jun	13-Oct	123	776.5	1994	24-Jun	19-Sep	88	546.0
1976	30-Jun	19-Sep	82	488.3	1995	6-Jul	21-Aug	47	297.3
1977	11-Jun	12-Sep	94	639.7	1996	10-Jun	20-Aug	72	306.0
1978	19-Jun	22-Aug	65	434.7	1997	8-Jun	6-Oct	121	590.3
1979	7-Jul	22-Aug	47	284.9	1998	19-Jun	20-Oct	124	527.1
1980	**15-Jun**	**10-Aug**	**57**	**267.8**	1999	23-Jun	11-Aug	50	158.6
1981	9-Jul	7-Sep	61	235.3	**2000**	**8-Jul**	**4-Aug**	**28**	**162.9**
1982	11-Jul	15-Aug	36	132.9	2001	20-Jun	14-Aug	56	260.4
1983	26-Jun	22-Aug	58	414.3	2002	UNDEFINED SEASON			
1984	16-Jul	12-Sep	59	281.4	2003	15-Jun	15-Aug	62	387.1
1985	12-Jul	17-Aug	37	138.5	2004	22-Jun	23-Aug	63	205.9
1986	12-Jul	8-Aug	28	97.7	2005	23-Jun	20-Sep	90	326.3
					Mean	**3-Jul**	**31-Aug**	**60**	**302.4**
					SD	**14**	**19**	**24**	**165**

Table 8(b): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Surma Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1849	14-Feb	25-Oct	255	2831.0	1905	9-Mar	27-Oct	233	2503.4
1850	**15-Mar**	**25-Oct**	**225**	**2109.9**	1906	22-Feb	9-Nov	262	2674.1
1851	8-Apr	25-Oct	201	1960.7	1907	12-Mar	24-Sep	197	2069.8
1852	7-Mar	18-Oct	226	2056.3	1908	13-Apr	7-Oct	178	1795.6
1853	8-Apr	5-Oct	181	1823.1	1909	7-Apr	5-Nov	213	2190.2
1854	5-Apr	3-Nov	213	1767.9	**1910**	**20-Mar**	**25-Oct**	**220**	**2657.2**
1855					1911	14-Mar	24-Oct	225	2496.1
1856					1912	26-Feb	10-Nov	259	2339.6
1857					1913	21-Feb	21-Oct	244	2595.3
1858		NO DATA			1914	16-Feb	9-Oct	237	2273.3
1859					1915	14-Mar	25-Oct	226	3107.2
1860					1916	21-Mar	6-Nov	231	2175.3
1861					1917	6-Apr	7-Nov	216	1931.8
1862					1918	10-Mar	10-Oct	215	2623.5
1863	16-Apr	20-Oct	188	1507.4	1919	10-Apr	9-Nov	214	1707.3
1864	12-Mar	8-Nov	242	1979.8	**1920**	**28-Feb**	**17-Oct**	**233**	**2145.1**
1865	11-Apr	30-Nov	234	2705.9	1921	9-Mar	20-Oct	226	2349.1
1866	16-Feb	19-Oct	247	2794.0	1922	13-Mar	21-Oct	223	2033.8
1867	28-Feb	20-Nov	267	2513.2	1923	27-Mar	22-Oct	210	2205.4
1868	12-Feb	21-Oct	253	2087.6	1924	6-Apr	23-Nov	232	2430.2
1869	8-Apr	21-Oct	197	1988.6	1925	29-Mar	24-Oct	210	2282.1
1870	**16-Apr**	**21-Oct**	**189**	**1993.1**	1926	8-Mar	24-Oct	231	2361.5
1871	24-Mar	21-Oct	212	1868.7	1927	31-Jan	23-Oct	267	3207.6
1872	14-Mar	24-Oct	225	2287.6	1928	24-Mar	28-Oct	219	2404.0
1873	16-Mar	13-Oct	212	1665.5	1929	16-Mar	20-Oct	219	2692.8
1874	16-Feb	23-Oct	251	2202.9	**1930**	**12-Mar**	**20-Nov**	**254**	**2439.5**
1875	7-Mar	12-Oct	220	2659.3	1931	10-Apr	1-Nov	206	2272.3
1876	7-Mar	10-Nov	249	2515.8	1932	23-Feb	11-Nov	263	2460.1
1877	22-Feb	18-Oct	240	2511.1	1933	9-Apr	17-Oct	192	2017.8
1878	13-Mar	9-Nov	242	2480.7	1934	5-Apr	12-Nov	222	3104.6
1879	29-Mar	19-Oct	205	2134.1	1935	30-Mar	2-Oct	187	2033.0
1880	**21-Feb**	**18-Oct**	**241**	**2418.0**	1936	17-Mar	25-Oct	223	2683.0
1881	10-Mar	16-Oct	221	2378.7	1937	23-Apr	22-Oct	183	1980.9
1882	24-Feb	26-Oct	246	2253.9	1938	13-Mar	9-Nov	242	2559.3
1883	15-Mar	13-Oct	213	2346.9	1939	6-Apr	1-Nov	210	2351.0
1884	27-Feb	22-Oct	239	2098.4	**1940**	**21-Feb**	**20-Oct**	**243**	**2371.8**
1885	19-Mar	20-Oct	216	2171.9	1941	21-Feb	23-Oct	246	2718.4
1886	10-Mar	5-Oct	210	2576.3	1942	15-Mar	26-Sep	196	2415.7
1887	9-Mar	24-Sep	200	1822.4	1943	8-Mar	18-Oct	225	2337.1
1888	10-Mar	16-Oct	221	2522.6	1944	23-Mar	8-Oct	200	2088.4
1889	30-Mar	8-Nov	224	2082.8	1945	20-Mar	25-Oct	220	2491.1
1890	**7-Mar**	**20-Oct**	**228**	**2188.9**	1946	8-Mar	28-Oct	235	2561.8
1891	27-Mar	13-Nov	232	2040.6	1947	20-Mar	25-Oct	220	2806.9
1892	29-Mar	13-Nov	230	2503.3	1948	19-Mar	2-Nov	229	2672.5
1893	25-Feb	24-Oct	243	2680.3	1949	4-Apr	22-Oct	202	2230.5
1894	24-Feb	17-Nov	268	2590.8	**1950**	**24-Feb**	**15-Nov**	**266**	**2229.1**
1895	26-Mar	23-Oct	212	2239.8	1951	7-Apr	5-Nov	213	2172.2
1896	25-Feb	25-Sep	214	1632.1	1952	20-Mar	1-Nov	227	2919.2
1897	9-Mar	16-Oct	222	2409.3	1953	8-Mar	13-Oct	220	2566.5
1898	25-Apr	20-Oct	179	1594.7	1954	8-Apr	24-Oct	200	2200.3
1899	21-Mar	25-Oct	219	2230.3	1955	10-Mar	23-Nov	259	2467.7
1900	**16-Feb**	**11-Oct**	**239**	**2050.3**	1956	19-Mar	5-Nov	232	2753.8
1901	7-Apr	12-Nov	220	2009.4	1957	8-Apr	20-Oct	196	2048.2
1902	15-Mar	20-Oct	220	2286.5	1958	8-Apr	22-Oct	198	1886.5
1903	10-Mar	9-Nov	245	2187.7	1959	23-Feb	27-Oct	248	2400.7
1904	23-Feb	10-Nov	262	2550.3	**1960**	**28-Apr**	**19-Oct**	**175**	**2260.6**

Table 8(b):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1961	7-Mar	20-Oct	228	2117.6	1984	10-Apr	23-Oct	197	2333.3
1962	6-Apr	22-Oct	200	1885.9	1985	9-Mar	8-Oct	214	2238.0
1963	18-Mar	27-Oct	224	2545.4	1986	4-Apr	18-Nov	229	2323.7
1964	20-Mar	31-Oct	226	2498.7	1987	11-Mar	17-Oct	221	2399.5
1965	18-Feb	17-Oct	243	2175.2	1988	12-Mar	19-Nov	253	2718.2
1966	11-Apr	4-Nov	208	2901.0	1989	26-Mar	26-Oct	215	2759.7
1967	12-Mar	20-Oct	223	2077.8	**1990**	**20-Mar**	**31-Oct**	**226**	**2220.7**
1968	18-Mar	16-Oct	213	2461.1	1991	19-Mar	27-Oct	223	2743.4
1969	14-Mar	31-Oct	232	2007.8	1992	26-Feb	23-Oct	241	2011.1
1970	**14-Mar**	**17-Nov**	**249**	**2662.8**	1993	9-Feb	17-Oct	252	2557.8
1971	5-Apr	13-Nov	223	2150.3	1994	29-Feb	20-Oct	235	1876.3
1972	14-Mar	13-Oct	214	1911.5	1995	28-Mar	16-Nov	234	2190.6
1973	18-Feb	14-Dec	301	2718.1	1996	4-Mar	26-Oct	237	2432.8
1974	13-Mar	25-Oct	227	2922.1	1997	17-Mar	2-Oct	200	2157.9
1975	11-Apr	6-Nov	210	1966.7	1998	9-Mar	13-Nov	250	2338.9
1976	12-Mar	8-Oct	211	2425.1	1999	19-Mar	25-Oct	221	2198.5
1977	3-Apr	9-Nov	221	2448.0	**2000**	**11-Mar**	**23-Oct**	**227**	**2424.9**
1978	10-Apr	20-Oct	194	2123.4	2001	11-Apr	25-Oct	198	2166.9
1979	11-Mar	23-Oct	227	2530.7	2002	16-Mar	17-Nov	247	2367.7
1980	**14-Mar**	**25-Oct**	**226**	**2082.5**	2003	16-Mar	23-Oct	222	2121.4
1981	14-Mar	5-Oct	206	1974.2	2004	2-Apr	21-Oct	203	2772.1
1982	25-Mar	30-Sep	190	1937.2	2005	21-Feb	22-Oct	245	2371.5
1983	10-Mar	22-Oct	227	2482.3					
					Mean	**16-Mar**	**25-Oct**	**225**	**2314.0**
					SD	**18**	**14**	**21**	**317**

Table 8(c): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Kasai Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1831	4-Jun	18-Nov	168	1357.5	1887	10-May	6-Oct	150	1070.1
1832	16-May	19-Oct	157	1217.7	1888	17-May	22-Sep	129	1298.9
1833					1889	22-May	3-Oct	135	998.5
1834					**1890**	**13-May**	**17-Oct**	**158**	**1175.9**
1835					1891	8-May	23-Sep	139	1117.0
1836					1892	18-May	14-Oct	150	868.5
1837					1893	26-Mar	13-Oct	202	1738.0
1838					1894	5-Jun	14-Oct	132	1267.5
1839					1895	24-Apr	16-Oct	176	1105.6
1840	NO DATA				1896	18-May	18-Sep	124	1123.2
1841					1897	15-May	20-Oct	159	1243.8
1842					1898	22-May	15-Oct	147	1605.5
1843					1899	27-Apr	30-Sep	157	1338.3
1844					**1900**	**16-Apr**	**27-Aug**	**134**	**791.0**
1845					1901	28-Apr	9-Oct	165	1141.9
1846					1902	19-Apr	24-Sep	159	1059.0
1847					1903	28-May	25-Oct	151	1035.5
1848	6-Jun	24-Oct	141	850.3	1904	11-May	18-Sep	131	1227.7
1849	10-Jun	6-Oct	119	697.9	1905	19-May	30-Sep	135	1066.0
1850	**4-Jun**	**24-Oct**	**143**	**1149.1**	1906	24-May	18-Oct	148	1128.1
1851	10-Jun	13-Oct	126	655.2	1907	28-May	25-Sep	121	1150.9
1852		NO DATA			1908	11-May	22-Sep	135	1228.5
1853	7-Jun	25-Sep	111	928.9	1909	10-Apr	25-Sep	169	1474.1
1854	7-Jun	26-Sep	112	969.2	**1910**	**24-May**	**19-Oct**	**149**	**952.9**
1855					1911	17-May	12-Oct	149	1185.4
1856		NO DATA			1912	25-Mar	14-Nov	235	1348.3
1857					1913	10-May	14-Oct	158	1351.1
1858					1914	7-May	22-Sep	139	1190.9
1859	7-Mar	21-Oct	229	1468.1	1915	15-May	5-Nov	175	1075.2
1860	**30-Apr**	**11-Oct**	**165**	**1004.3**	1916	23-May	9-Nov	171	1486.1
1861	7-May	15-Nov	193	1472.2	1917	7-May	27-Oct	174	1691.0
1862	25-Apr	25-Oct	184	1514.1	1918	19-May	21-Sep	126	1027.3
1863	16-May	15-Oct	153	1303.5	1919	7-May	22-Sep	139	1517.4
1864	16-May	25-Oct	163	1146.5	**1920**	**28-May**	**7-Oct**	**133**	**1153.0**
1865	26-Mar	24-Sep	183	1370.0	1921	6-Jun	8-Oct	125	1023.4
1866	26-Apr	12-Oct	170	1388.4	1922	2-Jun	6-Oct	127	1515.9
1867	10-Jun	20-Oct	133	1168.9	1923	20-May	15-Sep	119	1005.5
1868	21-Apr	25-Sep	158	1347.5	1924	7-Jun	8-Nov	155	1191.9
1869	22-May	23-Oct	155	976.2	1925	24-Apr	24-Oct	184	1136.4
1870	**7-Jun**	**17-Oct**	**133**	**957.3**	1926	30-May	12-Oct	136	1441.5
1871	14-Mar	25-Aug	165	1243.5	1927	9-May	8-Oct	153	1027.8
1872	26-May	25-Oct	153	1092.1	1928	29-Apr	18-Oct	173	1397.1
1873	14-May	16-Aug	95	806.2	1929	8-Jun	25-Oct	140	1413.1
1874	7-Jun	24-Oct	140	997.4	**1930**	**20-May**	**24-Sep**	**128**	**1097.4**
1875	9-May	11-Oct	156	1142.7	1931	27-May	16-Oct	143	892.8
1876	29-May	24-Oct	149	1564.3	1932	13-May	1-Nov	173	1019.4
1877	13-May	6-Oct	147	1082.1	1933	28-Apr	14-Oct	170	1421.3
1878	22-Mar	25-Sep	188	1169.1	1934	8-Jun	2-Oct	117	805.9
1879	25-May	11-Oct	140	880.9	1935	8-Jun	22-Sep	107	848.1
1880	**10-May**	**13-Oct**	**157**	**1427.8**	1936	12-May	15-Oct	157	1343.8
1881	21-May	15-Oct	148	1527.5	1937	17-May	17-Oct	154	1307.7
1882	22-Apr	20-Oct	182	1305.6	1938	11-May	11-Oct	154	1021.7
1883	6-Jun	20-Sep	107	1056.8	1939	29-May	21-Oct	146	1353.4
1884	13-May	20-Oct	161	1177.4	**1940**	**7-Jun**	**3-Oct**	**119**	**1108.4**
1885	24-May	12-Oct	142	1547.0	1941	26-May	13-Nov	172	1453.1
1886	11-May	13-Oct	156	1124.1	1942	27-Apr	22-Oct	179	1335.0

Table 8(c):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1943	20-Apr	30-Sep	164	1279.6	1975	25-Apr	14-Oct	173	1127.4
1944	12-Jun	10-Oct	121	1125.9	1976	18-May	21-Sep	127	777.7
1945	23-Apr	24-Oct	185	1025.0	1977	10-May	11-Oct	155	1228.2
1946	14-Apr	22-Oct	192	1676.0	1978	23-Mar	23-Oct	215	1872.5
1947	23-May	12-Oct	143	1057.9	1979	7-Jun	21-Sep	107	805.9
1948	12-May	22-Nov	195	1519.5	**1980**	**14-May**	**16-Oct**	**156**	**1178.7**
1949	10-Apr	15-Oct	189	1542.9	1981	16-Feb	23-Sep	221	1381.3
1950	**18-May**	**21-Sep**	**127**	**1301.6**	1982	7-Jun	16-Sep	102	740.3
1951	17-May	11-Oct	148	1131.4	1983	22-Apr	21-Oct	183	1011.4
1952	11-Jun	21-Oct	133	1099.6	1984	24-Apr	6-Oct	166	1659.6
1953	6-Jun	19-Nov	167	1334.3	1985	18-May	22-Oct	158	1285.4
1954	23-May	25-Sep	126	790.2	1986	13-May	19-Oct	160	1270.5
1955	10-Jun	10-Nov	154	960.9	1987	20-May	25-Sep	129	1451.4
1956	12-May	20-Oct	162	1391.4	1988	19-May	22-Sep	127	1120.3
1957	8-Jun	24-Sep	109	908.3	1989	8-May	12-Oct	158	1435.0
1958	23-May	13-Oct	144	1084.0	**1990**	**19-Mar**	**23-Oct**	**219**	**1779.4**
1959	24-Apr	25-Oct	185	1397.5	1991	18-Mar	9-Oct	206	1563.7
1960	**22-May**	**16-Oct**	**148**	**1058.0**	1992	10-May	24-Sep	138	1313.7
1961	24-May	19-Oct	149	1302.1	1993	11-Apr	11-Oct	184	1716.3
1962	16-Apr	22-Oct	190	1200.2	1994	20-Apr	6-Oct	170	1314.3
1963	30-Apr	18-Oct	172	1043.1	1995	13-May	20-Nov	192	1399.4
1964	23-May	19-Oct	150	1054.6	1996	29-May	22-Sep	117	1176.6
1965	9-Jun	9-Oct	123	911.2	1997	15-Apr	22-Sep	161	1344.5
1966	5-Jun	9-Oct	127	752.0	1998	29-May	25-Oct	150	1027.9
1967	10-Jun	26-Sep	109	1123.6	1999	7-May	24-Oct	171	1587.3
1968	5-Jun	15-Oct	133	1230.2	**2000**	**13-May**	**14-Oct**	**155**	**951.9**
1969	17-Apr	24-Sep	161	1097.6	2001	9-May	19-Oct	164	1306.9
1970	**27-May**	**19-Oct**	**146**	**1185.9**	2002	21-Apr	6-Oct	169	1552.8
1971	10-Apr	23-Oct	197	1858.8	2003	15-May	26-Oct	165	1416.2
1972	9-Jun	3-Oct	117	1063.7	2004	22-Apr	20-Oct	182	1456.3
1973	16-May	24-Oct	162	1288.0	2005	16-May	25-Oct	163	1223.5
1974	23-May	20-Oct	151	1357.7					
					Mean	**12-May**	**12-Oct**	**154**	**1213.6**
					SD	**22**	**16**	**26**	**244**

Table 8(d): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Damodar Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1829	19-May	20-Oct	155	1217.7	1885	22-May	8-Oct	140	1249.8
1830	**14-Apr**	**15-Oct**	**185**	**1288.1**	1886	10-May	20-Oct	164	1415.5
1831	15-Apr	15-Oct	184	1162.0	1887	8-May	10-Oct	156	1083.4
1832	27-Mar	21-Oct	209	939.4	1888	22-May	1-Sep	103	1190.7
1833	21-Apr	10-Oct	173	1202.9	1889	19-May	17-Oct	152	1080.0
1834	17-May	25-Oct	162	1330.2	**1890**	**21-May**	**22-Oct**	**155**	**1381.3**
1835	5-May	5-Oct	154	1583.6	1891	8-May	22-Sep	138	982.3
1836	25-May	25-Sep	124	940.4	1892	20-May	12-Oct	146	975.4
1837	21-May	14-Oct	147	921.7	1893	17-May	20-Oct	157	1687.3
1838	27-May	20-Oct	147	1096.5	1894	27-May	20-Oct	147	1245.2
1839	10-May	26-Sep	140	1239.3	1895	18-May	12-Oct	148	958.0
1840	**10-May**	**20-Sep**	**134**	**1178.6**	1896	15-May	22-Sep	131	1084.5
1841	23-Apr	7-Oct	168	1227.8	1897	16-May	22-Oct	160	1247.4
1842	22-Mar	12-Oct	205	1389.1	1898	14-May	19-Oct	159	1418.1
1843	30-Apr	24-Sep	148	1249.7	1899	24-Apr	10-Oct	170	1417.1
1844	23-Apr	16-Oct	177	1494.6	**1900**	**23-Apr**	**28-Sep**	**159**	**1503.3**
1845	11-Apr	17-Oct	190	1221.8	1901	29-Apr	4-Nov	190	1140.2
1846	24-May	23-Oct	153	1398.9	1902	14-Apr	5-Oct	175	1208.3
1847	15-May	15-Oct	154	1329.7	1903	21-May	24-Oct	157	1134.6
1848	12-May	23-Oct	165	1187.7	1904	8-May	20-Sep	136	1244.5
1849	18-May	8-Oct	144	919.0	1905	29-Feb	13-Oct	228	1611.2
1850	**5-Jun**	**22-Oct**	**140**	**1306.2**	1906	17-May	20-Oct	157	1041.3
1851	9-Jun	23-Oct	137	858.3	1907	18-Mar	22-Sep	189	1076.1
1852	8-May	4-Oct	150	1397.7	1908	19-May	21-Sep	126	1265.4
1853	19-May	17-Oct	152	1106.2	1909	10-Apr	9-Oct	183	1515.9
1854	15-Apr	17-Oct	186	1328.6	**1910**	**28-Apr**	**20-Oct**	**176**	**1265.5**
1855	20-Apr	9-Oct	173	1406.8	1911	15-May	15-Oct	154	1182.5
1856	10-May	22-Oct	166	1255.5	1912	27-Mar	11-Nov	230	1158.8
1857	9-May	25-Sep	140	1322.8	1913	10-May	18-Oct	162	1590.7
1858	20-May	21-Oct	155	1196.3	1914	27-Apr	21-Sep	148	1186.2
1859	22-May	20-Oct	152	1251.8	1915	11-May	13-Oct	156	1065.8
1860	**29-Apr**	**15-Oct**	**170**	**1223.8**	1916	26-Apr	26-Oct	184	1532.4
1861	13-May	3-Nov	175	1708.3	1917	8-May	27-Oct	173	1685.3
1862	13-Apr	26-Oct	197	1504.1	1918	24-Apr	23-Sep	153	1286.5
1863	21-Apr	4-Oct	167	1317.0	1919	25-Apr	10-Oct	169	1282.3
1864	12-May	23-Oct	165	1363.1	**1920**	**17-May**	**14-Oct**	**151**	**1096.4**
1865	24-Feb	24-Sep	214	1362.5	1921	30-Apr	22-Sep	146	1093.3
1866	24-Apr	18-Oct	178	1251.0	1922	24-May	3-Oct	133	1514.4
1867	21-May	6-Nov	170	1251.7	1923	19-May	11-Oct	146	1054.5
1868	13-Apr	26-Sep	167	1761.8	1924	25-May	12-Nov	172	1199.8
1869	29-Apr	18-Oct	173	1210.4	1925	18-Apr	20-Oct	186	1166.3
1870	**27-Apr**	**16-Oct**	**173**	**1246.7**	1926	22-May	11-Oct	143	1350.7
1871	24-Mar	12-Oct	203	1643.0	1927	14-May	2-Oct	142	1020.9
1872	24-May	24-Oct	154	1104.7	1928	27-Apr	21-Oct	178	1532.8
1873	24-May	21-Sep	121	1015.0	1929	29-Apr	24-Oct	179	1232.9
1874	21-May	24-Oct	157	1191.8	**1930**	**19-May**	**17-Nov**	**183**	**1341.4**
1875	23-Apr	7-Oct	168	1224.3	1931	15-May	5-Nov	175	1233.1
1876	18-May	18-Oct	154	1300.4	1932	9-May	16-Nov	192	1164.3
1877	22-Apr	8-Oct	170	1217.1	1933	17-Apr	19-Oct	186	1679.4
1878	21-Apr	16-Oct	179	1416.9	1934	30-Apr	12-Oct	166	1008.2
1879	20-May	18-Oct	152	1159.6	1935	10-Jun	22-Sep	105	881.1
1880	**12-May**	**22-Oct**	**164**	**1393.3**	1936	7-May	16-Oct	163	1459.0
1881	11-May	16-Oct	159	1313.0	1937	10-May	18-Oct	162	1330.9
1882	11-May	23-Oct	166	1157.8	1938	6-May	13-Oct	161	1195.6
1883	18-May	19-Sep	125	1029.2	1939	22-May	23-Oct	155	1605.1
1884	16-May	13-Oct	151	981.8	**1940**	**15-May**	**30-Sep**	**139**	**967.0**

Table 8(d):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1941	20-May	8-Nov	173	1639.2	1974	14-May	19-Oct	159	1296.4
1942	22-May	20-Oct	152	1427.5	1975	20-May	18-Oct	152	1194.9
1943	15-Apr	13-Oct	182	1394.5	1976	24-Apr	25-Sep	155	1142.0
1944	9-Jun	11-Oct	125	1119.6	1977	20-Apr	16-Oct	180	1593.5
1945	19-Apr	24-Oct	189	1254.9	1978	30-Apr	20-Oct	174	1562.3
1946	13-Apr	23-Oct	194	1415.3	1979	7-Jun	21-Sep	107	774.4
1947	16-May	18-Oct	156	1219.5	**1980**	**12-May**	**20-Oct**	**162**	**1290.1**
1948	12-May	15-Nov	188	1273.5	1981	28-Feb	24-Sep	210	1392.7
1949	14-Apr	18-Oct	188	1394.5	1982	24-Mar	12-Sep	173	809.3
1950	**17-May**	**13-Nov**	**181**	**1293.6**	1983	31-Mar	23-Oct	207	1214.0
1951	27-May	21-Oct	148	1087.4	1984	17-May	16-Oct	153	1581.9
1952	15-Apr	21-Oct	190	1305.5	1985	18-May	20-Oct	156	1181.7
1953	6-Jun	24-Sep	111	1162.2	1986	20-Apr	8-Nov	203	1203.6
1954	16-May	14-Oct	152	1053.5	1987	23-Apr	22-Sep	153	1068.7
1955	28-May	21-Oct	147	1052.1	1988	22-May	11-Oct	143	1218.9
1956	15-May	20-Oct	159	1432.9	1989	10-May	15-Oct	159	1373.1
1957	8-Jun	24-Sep	109	894.4	**1990**	**19-Feb**	**20-Oct**	**245**	**1758.3**
1958	29-May	18-Oct	143	1008.7	1991	19-May	12-Oct	147	1190.1
1959	18-May	27-Oct	163	1656.0	1992	14-May	19-Sep	129	999.2
1960	**16-May**	**12-Oct**	**150**	**1147.5**	1993	20-Apr	10-Oct	174	1355.3
1961	14-May	20-Oct	160	1160.9	1994	26-Apr	19-Oct	177	1434.6
1962	29-Apr	17-Oct	172	1002.1	1995	12-May	22-Nov	195	1895.6
1963	25-Apr	22-Oct	181	1228.8	1996	30-Apr	14-Oct	168	1236.1
1964	30-Apr	17-Oct	171	1106.6	1997	16-Apr	1-Oct	169	1601.1
1965	8-Jun	9-Oct	124	1004.2	1998	30-Jan	11-Nov	287	1523.2
1966	5-Jun	5-Oct	123	901.7	1999	9-May	23-Oct	168	1819.3
1967	29-Mar	30-Sep	186	1110.6	**2000**	**26-Apr**	**4-Oct**	**162**	**1361.6**
1968	4-Jun	20-Oct	139	1353.0	2001	10-May	23-Oct	167	1350.4
1969	22-Apr	30-Sep	162	1166.8	2002	18-Apr	11-Oct	177	1369.1
1970	**22-May**	**22-Oct**	**154**	**1443.2**	2003	23-Mar	26-Oct	218	1535.3
1971	9-Apr	21-Oct	196	1888.3	2004	19-Apr	24-Oct	189	1451.7
1972	12-Jun	2-Oct	113	1011.4	2005	22-Mar	26-Oct	219	1412.1
1973	10-May	23-Oct	167	1439.4					
					Mean	**4-May**	**14-Oct**	**164**	**1271.5**
					SD	**22**	**14**	**26**	**216**

Table 8(e):Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Suvarnarekha Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1848	4-Jun	11-Oct	130	1053.7	1904	11-May	5-Oct	148	1408.1
1849	11-Jun	17-Oct	129	918.0	1905	25-Mar	25-Sep	185	1205.3
1850	**4-Jun**	**22-Oct**	**141**	**1076.7**	1906	29-May	16-Oct	141	1101.1
1851	13-Jun	17-Oct	127	673.1	1907	5-Jun	22-Sep	110	956.1
1852					1908	19-May	3-Oct	138	1152.9
1853					1909	6-Jun	1-Oct	118	1108.7
1854					**1910**	**19-May**	**22-Oct**	**157**	**1218.6**
1855		NO DATA			1911	18-May	16-Oct	152	1035.6
1856					1912	13-Jun	13-Nov	154	1107.5
1857					1913	13-May	15-Oct	156	1659.8
1858					1914	6-May	26-Sep	144	1212.6
1859	21-Mar	17-Oct	211	1408.5	1915	27-May	18-Nov	176	1039.3
1860	**15-Apr**	**17-Oct**	**186**	**957.7**	1916	22-May	27-Oct	159	1228.0
1861	15-Mar	13-Nov	244	1364.9	1917	9-May	27-Oct	172	1665.0
1862	28-May	27-Oct	153	1628.2	1918	13-May	24-Sep	135	963.6
1863	16-May	20-Oct	158	1419.4	1919	15-May	12-Oct	151	1479.7
1864	11-May	23-Oct	166	1273.7	**1920**	**17-May**	**21-Sep**	**128**	**1217.1**
1865	17-Mar	21-Sep	189	992.4	1921	6-Jun	12-Oct	129	1174.0
1866	19-Apr	19-Oct	184	1190.5	1922	5-Jun	4-Oct	122	1380.5
1867	28-Mar	20-Oct	207	1199.2	1923	25-May	6-Oct	135	1272.7
1868	15-May	25-Sep	134	1306.9	1924	13-Jun	21-Nov	162	1111.4
1869	25-May	21-Oct	150	1023.2	1925	15-May	25-Oct	164	1242.2
1870	**5-Jun**	**20-Oct**	**138**	**1184.6**	1926	4-Jul	13-Oct	102	1201.3
1871	10-Apr	6-Oct	180	1365.5	1927	22-May	8-Oct	140	1230.3
1872	28-May	24-Oct	150	1379.1	1928	24-Apr	22-Oct	182	1348.5
1873	20-May	15-Oct	149	998.7	1929	17-Jun	24-Oct	130	1340.8
1874	30-May	24-Oct	148	1271.4	**1930**	**12-Jun**	**26-Sep**	**107**	**1245.2**
1875	13-May	16-Oct	157	1387.9	1931	28-May	2-Nov	159	1161.1
1876	16-May	23-Oct	161	1485.4	1932	15-May	14-Nov	184	1100.4
1877	28-Jan	3-Oct	250	1486.4	1933	27-Apr	21-Oct	178	1662.6
1878	19-Apr	18-Oct	183	1168.0	1934	7-Jun	7-Oct	123	976.7
1879	19-May	17-Oct	152	1175.5	1935	8-Jun	21-Sep	106	881.7
1880	**9-May**	**5-Nov**	**181**	**1522.5**	1936	7-May	16-Oct	163	1412.0
1881	16-May	18-Oct	156	1479.1	1937	15-May	17-Oct	156	1418.4
1882	9-May	21-Oct	166	1456.6	1938	15-May	18-Oct	157	1037.7
1883	21-May	22-Sep	125	1271.7	1939	8-Jun	24-Oct	139	1233.0
1884	21-May	15-Oct	148	1362.8	**1940**	**16-May**	**15-Oct**	**153**	**1511.2**
1885	22-May	7-Oct	139	1163.5	1941	30-May	14-Nov	169	1819.7
1886	11-May	22-Oct	165	1334.4	1942	9-Jun	7-Oct	121	1451.4
1887	6-May	8-Oct	156	1230.8	1943	20-Apr	15-Oct	179	1573.4
1888	17-May	24-Sep	131	1131.8	1944	11-Jun	24-Oct	136	1183.3
1889	23-May	16-Nov	178	1297.2	1945	28-Apr	26-Oct	182	1498.8
1890	**14-May**	**20-Oct**	**160**	**1248.9**	1946	16-Apr	22-Oct	190	1306.4
1891	12-May	26-Sep	138	1151.2	1947	21-May	21-Oct	154	1144.1
1892	6-Jun	22-Oct	139	1128.6	1948	14-May	21-Nov	192	1367.4
1893	4-May	16-Oct	166	1764.5	1949	19-Apr	25-Oct	190	1322.7
1894	7-Jun	2-Nov	149	1353.4	**1950**	**15-May**	**16-Nov**	**186**	**1449.4**
1895	15-Apr	14-Oct	183	1332.5	1951	16-May	24-Oct	162	1289.5
1896	21-May	23-Sep	126	1470.8	1952	17-Apr	23-Oct	190	1535.9
1897	23-May	24-Oct	155	1118.0	1953	28-May	25-Sep	121	1191.3
1898	22-May	22-Oct	154	1201.1	1954	26-May	17-Oct	145	923.6
1899	12-Apr	14-Oct	186	1195.9	1955	25-May	13-Nov	173	1342.9
1900	**19-Apr**	**14-Oct**	**179**	**1557.7**	1956	14-May	24-Oct	164	1810.4
1901	21-Apr	3-Nov	197	1115.1	1957	10-Jun	25-Sep	108	1014.3
1902	18-Apr	24-Sep	160	1187.4	1958	25-May	17-Oct	146	1104.6
1903	15-Apr	26-Oct	195	1451.0	1959	30-Apr	26-Oct	180	1604.6

Table 8(e):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1960	**21-May**	**22-Oct**	**155**	**1332.4**	1983	18-Apr	13-Oct	179	1213.2
1961	17-May	23-Oct	160	1573.1	1984	19-May	9-Oct	144	1263.5
1962	21-Apr	21-Oct	184	1181.1	1985	17-May	24-Oct	161	1334.3
1963	10-May	21-Oct	165	1246.3	1986	17-May	17-Nov	185	1297.8
1964	19-May	17-Oct	152	1214.5	1987	16-May	22-Sep	130	977.8
1965	15-Jun	20-Oct	128	1111.4	1988	3-Jun	10-Oct	130	1160.2
1966	22-May	17-Oct	149	975.6	1989	8-May	14-Oct	160	1450.0
1967	29-Apr	26-Sep	151	1159.6	**1990**	**19-Feb**	**1-Nov**	**257**	**1697.5**
1968	5-Jun	16-Oct	134	1152.0	1991	26-May	10-Oct	138	1091.8
1969	30-Apr	24-Sep	148	1127.2	1992	12-May	3-Oct	145	1186.4
1970	**17-May**	**6-Oct**	**143**	**1214.8**	1993	15-Apr	26-Sep	165	1252.8
1971	11-Apr	27-Oct	200	1780.6	1994	20-Apr	18-Oct	182	1629.3
1972	10-Jun	12-Oct	125	1142.9	1995	7-May	22-Nov	200	1462.5
1973	17-May	26-Oct	163	1554.5	1996	6-Jun	7-Oct	124	985.6
1974	15-May	16-Oct	155	1212.0	1997	19-Apr	31-Oct	196	1521.5
1975	24-Apr	19-Oct	179	1534.6	1998	22-Mar	23-Oct	216	1322.4
1976	30-Mar	26-Sep	181	1285.4	1999	13-May	25-Oct	166	1560.6
1977	16-Apr	2-Nov	201	1677.7	**2000**	**13-May**	**25-Sep**	**136**	**1209.6**
1978	20-May	22-Oct	156	1408.1	2001	16-Mar	24-Oct	223	1454.9
1979	6-Jun	21-Sep	108	785.0	2002	6-Jun	6-Oct	123	903.0
1980	**4-Jun**	**9-Oct**	**128**	**1080.0**	2003	29-May	27-Oct	152	1339.0
1981	30-Mar	24-Sep	179	1317.3	2004	14-Apr	23-Sep	163	1295.4
1982	6-Jun	19-Sep	106	929.2	2005	29-May	24-Oct	149	1371.9
					Mean	**12-May**	**16-Oct**	**158**	**1275.0**
					SD	**24**	**15**	**28**	**213**

Table 8(f): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Brahmani Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1871	10-Apr	23-Sep	167	1057.0	1927	24-May	17-Oct	147	1280.7
1872	2-Jun	4-Oct	125	1471.2	1928	16-Apr	19-Oct	187	1524.0
1873	26-May	20-Oct	148	966.1	1929	10-Jun	20-Oct	133	1378.7
1874	27-May	3-Nov	161	1357.9	**1930**	**8-Jun**	**24-Sep**	**109**	**1040.5**
1875	19-May	20-Oct	155	1427.3	1931	13-Jun	21-Oct	131	1128.0
1876	20-May	19-Oct	153	1115.8	1932	23-May	24-Sep	125	1005.0
1877	28-Apr	6-Oct	162	1052.2	1933	13-May	10-Oct	151	1491.2
1878	13-May	1-Nov	173	1153.3	1934	4-Jun	4-Oct	123	1341.8
1879	10-May	12-Oct	156	1246.0	1935	10-Jun	24-Sep	107	1125.4
1880	**17-May**	**7-Nov**	**175**	**1578.7**	1936	10-May	24-Oct	168	1616.9
1881	22-May	18-Oct	150	1275.1	1937	18-May	14-Oct	150	1214.1
1882	15-May	1-Nov	171	1301.1	1938	13-May	18-Oct	159	1398.4
1883	27-May	8-Oct	135	1341.4	1939	6-Jun	17-Oct	134	1337.4
1884	4-Jun	14-Oct	133	1274.3	**1940**	**14-May**	**22-Sep**	**132**	**1433.2**
1885	15-May	30-Sep	139	871.4	1941	19-May	7-Nov	173	1486.7
1886	14-May	22-Oct	162	1314.6	1942	13-Jun	25-Sep	105	1239.2
1887	17-May	10-Oct	147	1094.1	1943	6-Jun	23-Sep	110	1497.1
1888	23-May	23-Sep	124	1003.3	1944	10-Jun	23-Oct	136	1445.8
1889	28-May	24-Oct	150	1326.8	1945	21-May	18-Oct	151	1453.0
1890	**24-May**	**19-Oct**	**149**	**1434.0**	1946	9-Apr	19-Oct	194	1779.7
1891	13-May	26-Sep	137	1205.7	1947	8-Jun	21-Oct	136	1249.7
1892	4-Jun	18-Oct	137	1230.5	1948	5-Jun	22-Sep	110	997.5
1893	5-May	17-Oct	166	1619.4	1949	22-May	24-Oct	156	1079.7
1894	6-Jun	17-Oct	134	1201.9	**1950**	**15-May**	**19-Nov**	**189**	**1360.3**
1895	3-Jun	15-Oct	135	1375.9	1951	20-May	21-Oct	155	1225.5
1896	3-Jun	21-Sep	111	1402.1	1952	7-Jun	16-Oct	132	1180.3
1897	8-Jun	18-Oct	133	981.3	1953	7-Jun	29-Sep	115	1068.6
1898	18-May	19-Oct	155	1121.0	1954	10-Jun	10-Oct	123	843.7
1899	24-Apr	21-Oct	181	1054.4	1955	25-May	26-Sep	125	978.6
1900	**20-May**	**22-Oct**	**156**	**1589.1**	1956	10-May	24-Oct	168	1607.6
1901	21-May	1-Oct	134	985.0	1957	9-Jun	20-Sep	104	871.7
1902	18-Apr	18-Sep	154	1220.2	1958	10-Jun	19-Oct	132	1049.9
1903	24-May	26-Oct	156	1361.3	1959	21-May	27-Oct	160	1534.2
1904	16-May	7-Oct	145	1397.2	**1960**	**7-Jun**	**13-Oct**	**129**	**1238.0**
1905	22-Mar	27-Sep	190	1143.1	1961	21-May	21-Oct	154	937.2
1906	23-May	13-Oct	144	1172.3	1962	9-Jun	19-Oct	133	940.6
1907	18-Mar	20-Sep	187	1496.8	1963	24-Apr	20-Oct	180	1384.5
1908	5-Jun	21-Sep	109	1283.7	1964	16-May	20-Sep	128	1115.1
1909	14-Apr	23-Sep	163	1416.8	1965	27-May	12-Oct	139	1044.1
1910	**28-Apr**	**21-Oct**	**177**	**1431.1**	1966	4-Jun	30-Oct	149	958.2
1911	27-May	8-Oct	135	1119.1	1967	8-Jun	23-Sep	108	950.2
1912	30-Apr	22-Sep	146	1173.2	1968	6-Jun	17-Oct	134	1120.0
1913	20-May	15-Oct	149	1284.7	1969	18-May	23-Sep	129	1081.7
1914	8-May	25-Sep	141	1297.0	**1970**	**9-Jun**	**21-Oct**	**135**	**718.6**
1915	11-May	14-Nov	188	1061.7	1971	22-Apr	23-Oct	185	1442.0
1916	3-Jun	3-Nov	154	1157.8	1972	8-Jun	7-Oct	122	1132.1
1917	18-May	25-Oct	161	1628.6	1973	18-May	23-Oct	159	1452.3
1918	17-May	19-Sep	126	887.2	1974	26-May	13-Oct	141	852.8
1919	25-May	9-Oct	138	1224.4	1975	7-Jun	17-Oct	133	1143.8
1920	**7-Jun**	**20-Sep**	**106**	**1413.1**	1976	23-Jun	20-Sep	90	803.6
1921	8-Jun	11-Oct	126	1028.1	1977	15-May	6-Nov	176	1219.6
1922	22-May	24-Sep	126	1056.6	1978	6-Jun	11-Oct	128	1024.0
1923	27-May	12-Oct	139	1124.5	1979	6-Jun	19-Sep	106	820.0
1924	14-May	19-Nov	190	1076.5	**1980**	**3-Jun**	**12-Oct**	**132**	**1264.6**
1925	21-Apr	20-Sep	153	1392.2	1981	13-May	22-Sep	133	970.5
1926	16-May	1-Oct	139	1396.0	1982	27-May	7-Sep	104	791.3

Table 8(f):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1983	21-May	7-Oct	140	1019.3	1995	7-May	14-Nov	192	1230.5
1984	3-Jun	13-Oct	133	1328.4	1996	5-Jun	18-Sep	106	929.1
1985	30-May	15-Oct	139	1114.4	1997	6-Jun	22-Sep	109	971.8
1986	18-May	2-Nov	169	1264.3	1998	29-May	17-Oct	142	1007.3
1987	8-Jun	18-Sep	103	1055.9	1999	11-May	24-Oct	167	1332.1
1988	4-Jun	8-Oct	127	1016.1	**2000**	**21-May**	**19-Sep**	**122**	**815.5**
1989	17-May	21-Sep	128	1265.6	2001	26-Mar	21-Sep	180	1376.1
1990	**18-Mar**	**17-Nov**	**245**	**1561.0**	2002	15-May	23-Sep	132	856.4
1991	7-Jun	21-Sep	107	1162.9	2003	4-Jun	24-Oct	143	1276.6
1992	20-May	21-Sep	125	896.8	2004	6-Jun	15-Oct	132	1133.5
1993	15-Apr	12-Oct	181	1355.8	2005	19-May	24-Oct	159	1398.6
1994	4-Jun	6-Oct	125	1549.2					
					Mean	**21-May**	**11-Oct**	**144**	**1209.3**
					SD	**18**	**16**	**25**	**217**

Table 8(g): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Penner Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1813	16-Sep	26-Nov	72	458.4	1869	21-Jun	17-Nov	150	479.8
1814	17-Aug	11-Nov	87	388.0	**1870**	**16-Jun**	**5-Nov**	**143**	**845.1**
1815	16-Sep	26-Nov	72	532.3	1871	15-Jul	25-Nov	134	560.4
1816	15-Jul	20-Nov	129	551.3	1872	18-Jul	10-Dec	146	793.7
1817	22-Aug	4-Dec	105	795.2	1873	16-Aug	30-Nov	107	551.8
1818	7-Jul	9-Dec	156	995.3	1874	5-Sep	12-Nov	69	653.6
1819	5-Sep	18-Nov	75	385.6	1875	23-Jun	7-Nov	138	502.7
1820	**16-Jul**	**25-Dec**	**163**	**604.0**	1876	30-Jun	15-Aug	47	93.4
1821	24-Aug	19-Nov	88	488.6	1877	10-Sep	3-Dec	85	447.5
1822	11-Aug	24-Nov	106	686.4	1878	9-Jul	2-Nov	117	605.1
1823	21-Jul	22-Oct	94	332.6	1879	10-May	22-Nov	197	776.6
1824	24-Aug	18-Nov	87	388.8	**1880**	**21-Aug**	**3-Dec**	**105**	**694.1**
1825	21-Jul	8-Dec	141	685.6	1881	6-Nov	24-Nov	19	134.4
1826	5-Nov	17-Dec	43	339.8	1882	26-Jul	26-Nov	124	723.7
1827	21-Jun	3-Dec	166	796.5	1883	4-Oct	11-Dec	69	512.3
1828	20-Jul	21-Oct	94	401.8	1884	25-Aug	18-Dec	116	777.5
1829	21-Jun	3-Dec	166	485.3	1885	27-Jun	16-Dec	173	626.2
1830	**23-Jun**	**18-Oct**	**118**	**402.6**	1886	20-May	17-Nov	182	794.6
1831	20-Jun	13-Nov	147	615.2	1887	26-Jun	13-Dec	171	955.9
1832	8-Sep	17-Oct	40	185.4	1888	19-Jul	22-Nov	127	514.6
1833	11-Aug	17-Nov	99	431.8	1889	30-Jun	8-Dec	162	764.7
1834	26-Jun	14-Nov	142	518.8	**1890**	**20-Jun**	**17-Nov**	**151**	**409.5**
1835	13-Jul	18-Nov	129	486.1	1891	24-Aug	20-Oct	58	172.9
1836	15-Jul	23-Nov	132	594.5	1892	12-Jun	23-Oct	134	726.1
1837	13-Sep	23-Nov	72	469.4	1893	13-Jun	26-Nov	167	833.1
1838	26-Jul	24-Nov	122	627.5	1894	21-Jul	19-Nov	122	655.4
1839	6-Nov	24-Nov	19	152.4	1895	18-Jul	16-Nov	122	549.2
1840	**17-Jul**	**25-Nov**	**132**	**788.5**	1896	5-Nov	13-Dec	39	310.1
1841	9-Aug	8-Nov	92	601.7	1897	27-Jun	7-Nov	134	581.8
1842	19-Jul	20-Nov	125	474.0	1898	24-Aug	4-Dec	103	675.1
1843	7-May	11-Dec	219	667.4	1899	25-Aug	23-Oct	60	312.3
1844	25-May	24-Dec	214	919.6	**1900**	**9-Sep**	**6-Nov**	**59**	**253.4**
1845	13-Sep	22-Dec	101	342.4	1901	18-Jul	14-Dec	150	557.7
1846	19-Jun	6-Dec	171	1032.5	1902	28-Jun	18-Dec	174	832.4
1847	20-Jun	24-Dec	188	1080.5	1903	14-May	17-Dec	218	1164.1
1848	28-Jun	23-Nov	149	663.2	1904	12-Oct	19-Oct	8	31.0
1849	18-Jun	7-Dec	173	533.6	1905	16-Aug	8-Nov	85	391.9
1850	**23-May**	**4-Dec**	**196**	**510.2**	1906	18-Jun	23-Dec	189	689.8
1851	6-May	25-Nov	204	905.5	1907	18-Sep	16-Dec	90	368.3
1852	14-Jul	15-Dec	155	857.3	1908	25-Jul	12-Nov	111	590.9
1853	27-Jul	18-Nov	115	342.6	1909	22-Jul	22-Sep	63	355.7
1854	16-Jul	21-Nov	129	459.2	**1910**	**9-Jul**	**20-Nov**	**135**	**752.9**
1855	14-Sep	13-Oct	30	96.6	1911	11-Sep	5-Dec	86	454.6
1856	24-Jul	16-Dec	146	618.0	1912	21-Jul	24-Nov	127	707.4
1857	27-Sep	17-Nov	52	531.5	1913	13-Sep	16-Dec	95	479.6
1858	30-Aug	9-Nov	72	420.5	1914	19-Jul	18-Nov	123	504.2
1859	24-Jun	25-Nov	155	731.9	1915	11-Jul	26-Nov	139	720.5
1860	**16-Aug**	**17-Oct**	**63**	**241.2**	1916	29-May	21-Nov	177	851.7
1861	9-Nov	21-Nov	13	73.9	1917	25-May	14-Jan	235	1051.5
1862	22-Jul	5-Dec	137	512.0	1918	3-Nov	1-Dec	29	379.1
1863	18-Jul	25-Oct	100	392.5	1919	7-Sep	15-Dec	100	578.1
1864	31-Jul	13-Dec	136	470.6	**1920**	**27-Aug**	**23-Nov**	**89**	**597.7**
1865	31-Jul	21-Nov	114	347.6	1921	30-Jun	14-Nov	138	701.6
1866	24-Jul	24-Dec	154	609.4	1922	8-Oct	27-Nov	51	536.6
1867	14-Aug	4-Nov	83	257.9	1923	12-Sep	24-Oct	43	234.7
1868	11-Jun	10-Nov	153	557.8	1924	18-Jul	24-Nov	130	590.8

Table 8(g):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1925	18-Jul	23-Dec	159	796.9	1966	23-May	26-Nov	188	1007.9
1926	21-Jun	11-Nov	144	420.1	1967	20-Jun	19-Dec	183	607.8
1927	24-Jun	25-Nov	155	604.4	1968	10-Sep	4-Dec	86	344.3
1928	26-Jun	26-Oct	123	534.6	1969	4-Oct	16-Dec	74	570.5
1929	28-Aug	22-Nov	87	457.4	**1970**	**17-May**	**15-Nov**	**183**	**637.1**
1930	**11-May**	**12-Dec**	**216**	**1054.6**	1971	29-Jul	5-Nov	100	447.4
1931	11-Sep	10-Dec	91	467.9	1972	12-Sep	19-Dec	99	601.2
1932	31-Jul	23-Nov	116	589.0	1973	22-Jun	15-Nov	147	604.7
1933	24-Jul	20-Dec	150	664.4	1974	25-May	12-Nov	172	593.5
1934	26-Jun	24-Oct	121	384.7	1975	11-Jul	22-Nov	135	818.1
1935	18-Jun	24-Oct	129	540.9	1976	7-Oct	26-Nov	51	459.1
1936	29-Jun	25-Nov	150	588.6	1977	20-May	23-Nov	188	697.9
1937	17-Jul	23-Nov	130	583.3	1978	22-Jun	20-Dec	182	830.6
1938	23-Jun	10-Oct	110	550.7	1979	17-May	26-Nov	194	738.4
1939	26-Jun	22-Nov	150	659.0	**1980**	**25-Jun**	**24-Nov**	**153**	**581.0**
1940	**11-May**	**25-Nov**	**199**	**931.7**	1981	12-Jul	13-Nov	125	664.7
1941	23-Aug	19-Dec	119	604.0	1982	19-Jun	21-Nov	156	495.5
1942	16-Jun	17-Dec	185	494.5	1983	30-May	15-Dec	200	942.2
1943	29-Jul	19-Nov	114	681.4	1984	11-Sep	23-Nov	74	332.4
1944	19-Jun	1-Dec	166	863.5	1985	13-Jul	15-Jan	187	701.7
1945	16-Jul	21-Nov	129	440.7	1986	26-Aug	17-Nov	84	436.3
1946	28-May	25-Dec	212	1120.3	1987	11-Aug	19-Dec	131	732.4
1947	16-Jul	18-Oct	95	426.0	1988	13-Nov	10-Dec	28	92.6
1948	23-Jul	23-Nov	124	491.6	1989	8-Sep	20-Sep	13	75.6
1949	10-May	12-Nov	187	736.1	**1990**	**7-May**	**24-Nov**	**202**	**991.6**
1950	**20-Jul**	**15-Nov**	**119**	**536.1**	1991	7-Jun	25-Nov	172	898.3
1951	28-May	15-Nov	172	455.0	1992	20-Jul	25-Nov	129	601.7
1952	26-Jul	22-Oct	89	228.1	1993	21-Jul	20-Dec	153	765.0
1953	15-Jul	27-Oct	105	559.4	1994	9-Jun	31-Dec	206	924.5
1954	9-Jul	25-Oct	109	518.9	1995	11-Jul	9-Nov	122	544.1
1955	19-Jul	3-Dec	138	513.3	1996	6-Jun	21-Dec	199	1177.6
1956	22-Apr	11-Dec	234	1023.4	1997	22-Aug	25-Dec	126	897.4
1957	9-Jun	22-Nov	167	693.9	1998	19-Jul	22-Nov	127	617.1
1958	29-Jul	23-Nov	118	684.4	1999	28-Jun	14-Nov	140	545.5
1959	12-Jun	14-Nov	156	533.4	**2000**	**26-May**	**11-Nov**	**170**	**690.4**
1960	**5-Sep**	**26-Nov**	**83**	**638.7**	2001	31-Jul	31-Dec	154	805.7
1961	24-May	18-Nov	179	731.5	2002	26-Aug	20-Nov	87	443.1
1962	20-May	7-Dec	202	831.2	2003	11-Jul	24-Oct	106	454.3
1963	29-Jun	8-Dec	163	621.2	2004	13-Jul	16-Nov	127	559.5
1964	27-Jun	24-Nov	151	710.3	2005	11-Jul	16-Dec	159	1030.0
1965	13-Nov	17-Dec	35	123.6					
					Mean	**21-Jul**	**24-Nov**	**127**	**620.1**
					SD	**43**	**21**	**48**	**226**

Table 8(h)): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Palar & Ponnaiyar Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1853	21-Aug	26-Nov	98	701.6	1908	18-Jul	15-Nov	121	810.7
1854	21-Jun	23-Nov	156	589.2	1909	9-May	5-Nov	181	945.1
1855					**1910**	**18-Jun**	**22-Nov**	**158**	**1100.2**
1856					1911	16-Jul	24-Dec	162	904.9
1857					1912	25-Jul	27-Nov	126	1077.5
1858					1913	16-Aug	25-Dec	132	1314.9
1859		NO DATA			1914	25-Jul	11-Jan	171	1254.1
1860					1915	9-Jul	25-Nov	140	709.0
1861					1916	7-Jul	15-Dec	162	1180.0
1862					1917	11-Jun	14-Jan	218	953.9
1863	11-Aug	25-Dec	137	885.4	1918	24-Aug	20-Dec	119	826.0
1864	13-Aug	24-Nov	104	509.3	1919	22-Jun	22-Jan	215	1197.0
1865	26-Sep	14-Dec	80	345.2	**1920**	**27-Jul**	**28-Nov**	**125**	**1036.4**
1866	12-Aug	26-Dec	137	732.3	1921	23-Jun	15-Nov	146	921.1
1867	11-Aug	13-Nov	95	287.2	1922	18-Jun	27-Nov	163	1136.8
1868	22-Jul	15-Nov	117	401.3	1923	25-Jun	23-Dec	182	1164.8
1869	6-Sep	11-Dec	97	612.4	1924	11-Jul	2-Dec	145	874.9
1870	**31-May**	**5-Jan**	**220**	**1096.5**	1925	18-Jul	6-Jan	173	1253.2
1871	13-Jul	2-Dec	143	1079.9	1926	24-Jul	24-Nov	124	608.7
1872	14-Jul	17-Dec	157	1215.1	1927	12-Jun	12-Dec	184	524.3
1873	27-Jul	20-Nov	117	639.4	1928	29-Jul	22-Dec	147	1028.1
1874	7-May	14-Dec	222	1325.9	1929	23-Jun	19-Dec	180	947.4
1875	7-Aug	1-Dec	117	540.4	**1930**	**8-May**	**26-Nov**	**203**	**1342.8**
1876	20-Jun	20-Nov	154	421.1	1931	23-Jun	28-Dec	189	1249.4
1877	24-Aug	23-Dec	122	863.0	1932	28-Aug	17-Dec	112	715.6
1878	18-Jun	6-Dec	172	746.3	1933	11-Aug	24-Dec	136	545.2
1879	22-May	15-Dec	208	968.0	1934	14-Jun	21-Nov	161	969.2
1880	**18-Jul**	**20-Dec**	**156**	**958.8**	1935	24-Jul	20-Dec	150	807.3
1881	30-Jul	17-Dec	141	670.7	1936	23-Jul	3-Dec	134	712.7
1882	23-Jul	27-Nov	128	807.1	1937	27-Jul	14-Dec	141	1108.3
1883	27-Jun	19-Dec	176	918.2	1938	13-Jun	19-Oct	129	571.9
1884	8-Aug	28-Dec	143	1745.8	1939	7-Sep	25-Nov	80	746.0
1885	25-Jun	21-Dec	180	943.2	**1940**	**16-Jun**	**19-Jan**	**218**	**1239.5**
1886	8-May	9-Dec	216	1144.4	1941	19-Jul	22-Dec	157	965.5
1887	26-May	26-Dec	215	1679.7	1942	14-Aug	15-Jan	155	668.9
1888	9-May	24-Dec	230	1478.6	1943	29-Apr	21-Dec	237	1208.0
1889	15-Jun	21-Dec	190	977.4	1944	14-Jun	23-Dec	193	1304.6
1890	**26-May**	**17-Nov**	**176**	**863.9**	1945	15-Jul	25-Nov	134	587.1
1891	21-Aug	25-Dec	127	818.8	1946	16-Jul	19-Jan	188	1668.8
1892	10-Jun	7-Dec	181	853.9	1947	15-Jun	31-Oct	139	679.2
1893	15-Jun	8-Dec	177	1139.7	1948	24-Jul	4-Dec	134	734.3
1894	14-Jul	9-Dec	149	900.8	1949	18-May	14-Nov	181	804.2
1895	12-Jul	23-Dec	165	1162.6	**1950**	**12-Aug**	**1-Dec**	**112**	**421.0**
1896	11-Aug	26-Dec	138	1078.7	1951	14-Apr	26-Nov	227	903.6
1897	27-Jun	13-Nov	140	670.9	1952	24-Jul	22-Aug	30	138.1
1898	26-Jun	25-Dec	183	1543.2	1953	24-Jun	8-Jan	199	810.8
1899	26-Jul	30-Nov	128	635.9	1954	7-Jul	26-Oct	112	575.4
1900	**11-Jul**	**19-Dec**	**162**	**761.3**	1955	14-Jul	22-Dec	162	664.5
1901	21-Jul	25-Dec	158	985.2	1956	10-Jun	17-Dec	191	1023.7
1902	17-Jul	24-Dec	161	1232.0	1957	15-Jun	8-Dec	177	842.8
1903	13-May	27-Dec	229	1336.4	1958	9-Aug	24-Nov	108	778.5
1904	12-Jul	11-Dec	153	442.6	1959	14-Aug	10-Dec	119	702.9
1905	23-Jun	21-Nov	152	906.8	**1960**	**13-Jun**	**28-Nov**	**169**	**1274.5**
1906	16-Jul	27-Dec	165	1131.0	1961	27-May	14-Dec	202	1050.2
1907	15-Jul	26-Nov	135	791.9	1962	19-May	9-Jan	236	1102.4

Table 8(h):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1963	29-Jun	25-Dec	180	1256.2	1985	14-Jun	15-Jan	216	1227.8
1964	9-Jul	30-Nov	145	938.0	1986	16-Aug	13-Dec	120	391.9
1965	15-Jul	27-Dec	166	1044.7	1987	25-Jun	25-Dec	184	907.7
1966	8-May	16-Jan	254	1772.1	1988	9-Jul	24-Nov	139	724.7
1967	24-May	25-Dec	216	1111.5	1989	9-Jul	3-Jan	179	759.7
1968	17-Jun	12-Dec	179	559.2	**1990**	**18-Jul**	**22-Nov**	**128**	**785.9**
1969	21-Jul	13-Dec	146	1260.5	1991	13-Jun	26-Nov	167	914.5
1970	**22-Jun**	**27-Nov**	**159**	**1006.7**	1992	24-Aug	6-Dec	105	609.8
1971	28-May	24-Dec	211	986.0	1993	24-Jun	26-Dec	186	1506.0
1972	13-May	27-Dec	229	1235.4	1994	25-Jun	2-Jan	192	1063.4
1973	29-May	21-Dec	207	921.1	1995	6-May	12-Nov	191	976.4
1974	14-Jun	10-Nov	150	596.3	1996	3-Jun	28-Dec	209	1535.2
1975	9-Jul	5-Dec	150	1034.1	1997	13-Jun	26-Dec	197	1394.8
1976	9-Jul	11-Dec	156	1232.5	1998	16-Jul	26-Dec	164	991.0
1977	16-Jun	27-Nov	165	1467.5	1999	18-May	14-Feb	273	998.3
1978	12-Jul	26-Dec	168	1273.2	**2000**	**18-Jun**	**16-Dec**	**182**	**856.5**
1979	17-Jul	1-Dec	138	925.4	2001	28-Apr	21-Dec	238	702.0
1980	**15-Jul**	**18-Dec**	**157**	**752.7**	2002	11-Jun	12-Dec	185	764.1
1981	24-May	14-Dec	205	1101.0	2003	23-Jun	25-Nov	156	830.9
1982	25-Jul	11-Dec	140	629.5	2004	5-May	25-Nov	205	1478.4
1983	27-Jun	27-Dec	184	1153.7	2005	22-Jul	22-Dec	154	1220.3
1984	7-Jul	13-Jan	191	889.3					
					Mean	**3-Jul**	**12-Dec**	**163**	**944.9**
					SD	**32**	**21**	**39**	**306**

Table 8(i): Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over Vaigai Minor Basin

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1846	26-Jul	21-Dec	149	516.1	1902	21-Jun	19-Dec	182	918.3
1847	29-Sep	6-Dec	69	534.2	1903	28-Apr	22-Dec	239	843.6
1848	16-Apr	21-Jan	281	1078.0	1904	25-Sep	21-Oct	27	115.6
1849	16-Jul	16-Nov	124	408.4	1905	25-Aug	18-Nov	86	342.3
1850	**15-Aug**	**15-Dec**	**123**	**548.5**	1906	27-Jun	17-Dec	174	675.6
1851	29-Sep	20-Dec	83	490.3	1907	9-Oct	3-Dec	56	319.3
1852	19-Sep	25-Dec	98	444.2	1908	25-Aug	25-Oct	62	359.7
1853	7-Aug	21-Nov	107	968.9	1909	29-Jul	19-Nov	114	469.0
1854	5-Oct	25-Nov	52	522.9	**1910**	**30-Jun**	**21-Nov**	**145**	**642.1**
1855	19-Aug	24-Dec	128	534.5	1911	12-Sep	22-Dec	102	482.1
1856	11-Aug	11-Dec	123	534.2	1912	23-Aug	3-Dec	103	653.4
1857	5-Oct	10-Nov	37	288.8	1913	28-Sep	20-Dec	84	501.2
1858	24-Sep	25-Nov	63	674.3	1914	18-Aug	25-Dec	130	794.2
1859	26-Jul	25-Nov	123	608.9	1915	15-Jul	9-Dec	148	658.7
1860	**8-Oct**	**22-Dec**	**76**	**313.6**	1916	21-May	18-Nov	182	587.3
1861	21-Jul	24-Nov	127	582.0	1917	9-Aug	17-Jan	162	558.2
1862	19-Jun	17-Dec	182	830.6	1918	19-Oct	19-Dec	62	356.7
1863	9-Oct	5-Dec	58	347.3	1919	12-Sep	21-Jan	132	694.4
1864	18-Aug	12-Dec	117	493.2	**1920**	**26-Aug**	**27-Nov**	**94**	**682.6**
1865	14-Sep	12-Nov	60	307.5	1921	17-Jul	19-Dec	156	632.3
1866	25-Aug	11-Dec	109	642.7	1922	23-Sep	23-Jan	123	799.0
1867	21-Jul	10-Nov	113	598.9	1923	17-Sep	25-Dec	100	581.2
1868	19-Sep	22-Nov	65	433.3	1924	27-May	8-Dec	196	723.1
1869	29-Jun	10-Jan	196	827.1	1925	23-Aug	10-Jan	141	694.3
1870	**17-Aug**	**14-Jan**	**151**	**510.9**	1926	28-Jul	14-Nov	110	390.0
1871	26-Aug	23-Nov	90	378.6	1927	18-Sep	22-Nov	66	326.1
1872	24-May	15-Dec	206	754.7	1928	15-Oct	12-Dec	59	294.9
1873	12-Oct	15-Nov	35	129.7	1929	11-Sep	18-Dec	99	492.6
1874	15-May	23-Nov	193	591.5	**1930**	**22-Sep**	**3-Jan**	**104**	**649.6**
1875	20-Aug	15-Nov	88	386.4	1931	29-Sep	27-Dec	90	596.4
1876	25-Aug	4-Dec	102	212.3	1932	5-Oct	13-Dec	70	505.3
1877	14-Sep	26-Dec	104	833.3	1933	22-Apr	21-Jan	275	965.0
1878	16-Apr	16-Nov	215	601.3	1934	6-Oct	9-Nov	35	231.0
1879	29-May	2-Dec	188	653.8	1935	17-Aug	7-Dec	113	459.2
1880	**15-Aug**	**15-Dec**	**123**	**673.3**	1936	16-Sep	14-Dec	90	418.1
1881	17-Aug	15-Dec	121	472.1	1937	15-Aug	24-Nov	102	534.3
1882	16-Aug	8-Dec	115	481.4	1938	22-Jul	8-Dec	140	408.7
1883	13-May	13-Dec	215	760.9	1939	15-Aug	26-Nov	104	544.2
1884	27-Aug	24-Dec	120	784.0	**1940**	**28-Aug**	**14-Dec**	**109**	**654.8**
1885	30-Aug	19-Dec	112	498.5	1941	21-Aug	7-Dec	109	501.6
1886	10-May	16-Nov	191	774.9	1942	24-Aug	22-Jan	152	764.8
1887	17-Aug	22-Dec	128	656.7	1943	1-Oct	21-Nov	52	350.7
1888	24-Aug	22-Dec	121	709.8	1944	25-Aug	21-Dec	119	608.3
1889	15-Jul	5-Dec	144	376.4	1945	8-Oct	22-Nov	46	289.4
1890	**16-Jun**	**15-Nov**	**153**	**543.8**	1946	29-Aug	8-Jan	133	851.6
1891	29-Sep	16-Dec	79	621.4	1947	20-Mar	23-Oct	218	696.0
1892	25-Jun	1-Nov	130	446.1	1948	9-Oct	24-Nov	47	342.7
1893	22-Jun	25-Nov	157	627.9	1949	14-Apr	21-Nov	222	697.1
1894	29-Aug	2-Dec	96	410.9	**1950**	**15-Aug**	**7-Dec**	**115**	**401.1**
1895	14-Aug	22-Dec	131	663.7	1951	10-Apr	25-Nov	230	829.5
1896	18-Sep	25-Dec	99	735.2	1952	15-Oct	16-Dec	63	178.0
1897	16-Aug	20-Nov	97	367.9	1953	29-Jun	21-Nov	146	633.1
1898	5-Oct	16-Dec	73	476.6	1954	6-Oct	24-Oct	19	152.4
1899	7-Oct	15-Nov	40	229.3	1955	28-Aug	26-Dec	121	740.2
1900	**9-Apr**	**13-Dec**	**249**	**846.6**	1956	12-Aug	23-Nov	104	488.6
1901	11-Sep	15-Jan	127	576.0	1957	23-Sep	17-Dec	86	495.5

Table 8(i):contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1958	14-Aug	19-Nov	98	297.3	1982	29-Sep	10-Dec	73	396.0
1959	17-Apr	5-Dec	233	743.2	1983	17-May	12-Apr	331	1504.2
1960	**25-Sep**	**26-Nov**	**63**	**466.1**	1984	17-Sep	19-Jan	125	447.8
1961	11-Oct	20-Nov	41	200.2	1985	16-Aug	8-Dec	115	446.3
1962	15-Aug	16-Jan	155	650.8	1986	29-Aug	7-Dec	101	315.6
1963	18-Jun	18-Dec	184	771.9	1987	28-Aug	20-Dec	115	612.9
1964	12-Jul	16-Dec	158	541.3	1988	16-Jun	18-Nov	156	482.2
1965	21-Aug	23-Dec	125	599.9	1989	27-Jun	19-Nov	146	452.4
1966	12-Aug	20-Dec	131	693.2	**1990**	**15-Sep**	**6-Dec**	**83**	**528.1**
1967	17-May	21-Dec	219	876.9	1991	24-Sep	5-Dec	73	359.1
1968	20-Jun	12-Dec	176	627.0	1992	28-Jul	13-Dec	139	685.1
1969	8-Oct	21-Dec	75	355.2	1993	22-Sep	23-Dec	93	713.7
1970	**20-Aug**	**23-Nov**	**96**	**426.2**	1994	26-Sep	23-Nov	59	352.3
1971	18-May	24-Dec	221	733.6	1995	10-Oct	14-Nov	36	154.1
1972	6-Oct	13-Dec	69	382.3	1996	26-Aug	16-Dec	113	336.2
1973	16-Sep	23-Dec	99	515.7	1997	21-Sep	19-Dec	90	559.8
1974	26-Aug	17-Nov	84	340.8	1998	16-Jul	22-Nov	130	677.4
1975	13-Jul	3-Dec	144	499.2	1999	29-Sep	23-Nov	56	313.0
1976	21-Aug	3-Dec	105	444.3	**2000**	**20-Oct**	**18-Dec**	**60**	**297.0**
1977	25-Aug	26-Nov	94	815.5	2001	8-Oct	15-Dec	69	314.5
1978	12-Sep	24-Dec	104	625.9	2002	6-Oct	23-Nov	49	386.3
1979	30-Aug	17-Dec	110	712.4	2003	12-Oct	23-Nov	43	258.4
1980	**31-Aug**	**14-Dec**	**106**	**428.6**	2004	8-Sep	2-Dec	86	574.3
1981	13-Jul	18-Dec	159	724.5	2005	31-Jul	18-Dec	141	591.2
					Mean	**14-Aug**	**9-Dec**	**118**	**544.5**
					SD	**50**	**21**	**54**	**202**

Table 9: Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over West Coast Drainage System

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1838	22-May	16-Nov	179	1854.8	1894	25-Mar	24-Oct	214	2033.7
1839	8-May	18-Nov	195	2359.5	1895	14-Apr	24-Oct	194	1847.2
1840	**17-May**	**14-Nov**	**182**	**1766.3**	1896	13-May	16-Nov	188	2245.9
1841	18-Apr	16-Nov	213	2643.8	1897	23-Apr	8-Nov	200	2644.4
1842	6-May	8-Nov	187	2131.7	1898	15-May	17-Nov	187	2103.2
1843	15-Apr	22-Oct	191	2405.8	1899	8-Apr	23-Oct	199	1450.1
1844	10-May	7-Dec	212	2001.1	**1900**	**14-Apr**	**18-Oct**	**188**	**2164.3**
1845	10-May	5-Dec	210	2001.1	1901	17-Apr	23-Nov	221	2157.9
1846	6-May	1-Nov	180	2245.0	1902	23-May	12-Nov	174	2346.1
1847	28-Apr	12-Dec	229	2573.9	1903	30-Apr	12-Nov	197	2484.8
1848	27-Apr	24-Oct	181	2021.0	1904	12-May	22-Oct	164	2050.6
1849	26-Apr	9-Nov	198	2889.8	1905	12-May	24-Oct	166	1655.7
1850	**18-Apr**	**15-Nov**	**212**	**1958.2**	1906	18-May	13-Nov	180	1889.2
1851	19-Apr	21-Nov	217	2701.2	1907	16-Apr	17-Nov	216	2524.3
1852	3-May	16-Nov	198	2457.2	1908	26-Apr	21-Oct	179	2175.4
1853	15-Mar	18-Oct	218	2128.6	1909	6-May	12-Nov	191	2233.2
1854	17-May	14-Nov	182	2127.5	**1910**	**21-Apr**	**21-Nov**	**215**	**2144.9**
1855	30-May	23-Oct	147	1611.0	1911	14-May	14-Nov	185	1794.5
1856	11-Apr	3-Nov	207	2502.0	1912	25-Apr	18-Nov	208	2629.6
1857	26-Apr	11-Nov	200	2230.3	1913	13-May	31-Oct	172	1947.6
1858	18-Apr	7-Nov	204	2248.4	1914	15-May	14-Dec	214	2599.4
1859	7-Apr	15-Nov	223	2506.9	1915	24-Apr	22-Nov	213	2332.3
1860	**24-May**	**25-Oct**	**155**	**1736.6**	1916	12-May	15-Nov	188	2486.5
1861	18-Apr	31-Oct	197	2477.5	1917	18-May	18-Nov	185	2442.3
1862	21-May	17-Nov	181	2297.5	1918	3-May	20-Nov	202	1687.9
1863	13-Apr	20-Oct	191	2355.1	1919	10-May	22-Nov	197	2299.2
1864	26-Apr	16-Oct	174	2030.4	**1920**	**13-Apr**	**21-Nov**	**223**	**2234.5**
1865	19-Apr	15-Nov	211	2293.1	1921	15-Apr	10-Nov	210	2286.5
1866	3-Jun	8-Nov	159	1960.2	1922	28-Apr	22-Nov	209	2569.8
1867	12-May	22-Oct	164	2004.8	1923	3-Jun	17-Oct	137	2305.8
1868	28-Apr	17-Oct	173	2059.6	1924	23-Apr	15-Nov	207	2695.4
1869	24-Apr	9-Dec	230	2485.4	1925	29-Apr	1-Dec	217	2143.8
1870	**26-May**	**5-Nov**	**164**	**1938.5**	1926	11-May	5-Nov	179	2363.3
1871	18-Apr	19-Nov	216	2088.9	1927	9-May	17-Nov	193	2227.5
1872	30-Apr	9-Nov	194	2329.2	1928	25-Apr	10-Nov	200	2073.0
1873	18-Apr	21-Oct	187	2059.1	1929	12-Apr	14-Nov	217	2520.0
1874	5-May	1-Nov	181	2631.7	**1930**	**30-Apr**	**15-Nov**	**200**	**2291.3**
1875	28-Apr	15-Oct	171	2100.9	1931	26-Apr	12-Dec	231	2746.8
1876	31-May	19-Sep	112	1569.5	1932	4-May	19-Nov	200	2576.9
1877	21-May	1-Dec	195	2097.0	1933	17-Apr	9-Nov	207	3018.0
1878	24-Apr	14-Nov	205	3392.9	1934	28-Apr	11-Nov	198	2099.7
1879	4-May	7-Nov	188	2173.4	1935	25-Apr	13-Nov	203	2008.4
1880	**22-Apr**	**17-Nov**	**210**	**2025.**7	1936	5-May	20-Nov	200	2334.7
1881	18-May	19-Nov	186	1692.4	1937	13-Apr	8-Nov	210	2416.8
1882	8-May	12-Nov	189	2641.5	1938	17-Apr	23-Oct	190	2202.9
1883	11-May	14-Nov	188	2347.0	1939	13-Apr	21-Nov	223	2208.0
1884	20-May	14-Nov	179	2044.6	**1940**	**22-Apr**	**20-Nov**	**213**	**2654.8**
1885	28-May	9-Nov	166	2295.8	1941	28-Apr	18-Nov	205	2034.0
1886	7-May	7-Nov	185	2216.1	1942	18-Apr	13-Dec	240	2528.6
1887	26-Apr	15-Nov	204	2281.9	1943	27-Apr	20-Nov	208	2637.8
1888	8-May	19-Nov	196	2214.8	1944	12-May	30-Nov	203	2059.8
1889	25-Apr	1-Nov	191	2354.9	1945	3-Jun	20-Nov	171	2232.5
1890	**16-Apr**	**1-Nov**	**200**	**1928.6**	1946	20-Mar	18-Dec	274	2939.0
1891	27-Apr	7-Nov	195	2091.6	1947	14-Apr	16-Oct	186	2294.1
1892	11-Apr	6-Nov	210	2824.2	1948	26-Apr	22-Nov	211	2369.9
1893	7-May	18-Nov	196	1991.7	1949	25-Apr	2-Nov	192	2594.5

Table 9:contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1950	**10-May**	**16-Nov**	**191**	**2392.1**	1978	6-May	24-Nov	203	2554.6
1951	16-Apr	19-Nov	218	2213.9	1979	23-May	24-Nov	186	2177.9
1952	25-Apr	24-Oct	183	1789.1	**1980**	**16-Apr**	**16-Nov**	**215**	**2263.6**
1953	3-Jun	31-Oct	151	2185.0	1981	25-Apr	12-Nov	202	2775.2
1954	26-Mar	22-Oct	211	2738.0	1982	12-May	17-Nov	190	2190.5
1955	21-Apr	17-Nov	211	2776.7	1983	4-Jun	3-Dec	183	2647.0
1956	16-Apr	16-Nov	215	2526.8	1984	27-Feb	22-Oct	239	2181.7
1957	7-May	18-Nov	196	2319.1	1985	9-May	8-Nov	184	2150.8
1958	23-Apr	16-Nov	208	2654.2	1986	24-May	20-Nov	181	1739.9
1959	19-Apr	10-Nov	206	2823.9	1987	27-May	19-Nov	177	1998.4
1960	**15-Apr**	**22-Nov**	**222**	**2599.6**	1988	16-Apr	12-Oct	180	2503.9
1961	5-May	24-Oct	173	3098.1	1989	25-Apr	4-Nov	194	2185.8
1962	5-May	25-Oct	174	2382.6	**1990**	**4-May**	**17-Nov**	**198**	**2313.9**
1963	29-Apr	7-Nov	193	2335.0	1991	22-May	22-Oct	154	2438.6
1964	25-May	13-Nov	173	2335.2	1992	11-May	22-Nov	196	2610.1
1965	27-Apr	20-Dec	238	1980.4	1993	13-May	17-Nov	189	2408.4
1966	24-May	22-Nov	183	1942.7	1994	17-Apr	6-Nov	204	2831.3
1967	9-May	20-Oct	165	2246.1	1995	24-Apr	13-Nov	204	2239.2
1968	18-Apr	10-Nov	207	2320.5	1996	27-Apr	5-Nov	193	2357.2
1969	22-Apr	9-Nov	202	2201.6	1997	23-May	5-Dec	197	2554.1
1970	**19-Apr**	**23-Oct**	**188**	**2543.8**	1998	14-May	5-Dec	206	2722.1
1971	27-Apr	17-Oct	174	2388.8	1999	22-Apr	5-Nov	198	2475.0
1972	6-May	6-Dec	215	1995.9	**2000**	**9-May**	**6-Nov**	**182**	**2039.9**
1973	21-Apr	1-Nov	195	2126.8	2001	13-Apr	7-Nov	209	2170.8
1974	16-Apr	21-Oct	189	2380.3	2002	29-Apr	16-Nov	202	2120.3
1975	16-Apr	17-Nov	216	3098.7	2003	22-Apr	24-Oct	186	2122.0
1976	19-Apr	23-Nov	219	2109.3	2004	30-Apr	10-Nov	195	2434.9
1977	23-Apr	24-Nov	216	2646.7	2005	15-Apr	19-Nov	219	2413.8
					Mean	**30-Apr**	**11-Nov**	**196**	**2292.9**
					SD	**16**	**15**	**20**	**314**

Table 10: Yearwise starting date, ending date and duration (in days) of the wet season as well as seasonal rainfall(in mm) over the Whole Country

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1813	30-May	11-Nov	166	935.0	1869	10-Jun	16-Oct	129	863.6
1814	11-Jun	3-Oct	115	793.2	**1870**	7-Jun	19-Oct	135	1000.6
1815	30-May	14-Nov	169	1010.8	1871	23-May	22-Sep	123	928.4
1816	11-Jun	3-Oct	115	848.8	1872	8-Jun	10-Oct	125	942.5
1817	6-Jun	4-Nov	152	1037.0	1873	12-Jun	5-Oct	116	778.5
1818	31-May	7-Nov	161	1167.3	1874	21-May	14-Oct	147	1096.9
1819	11-Jun	22-Sep	104	764.9	1875	30-May	1-Sep	95	948.3
1820	**12-May**	**13-Oct**	**155**	**1030.8**	1876	12-Jun	21-Sep	102	730.6
1821	11-Jun	10-Oct	122	862.8	1877	23-May	18-Oct	149	692.6
1822	8-Jun	15-Oct	130	960.1	1878	21-May	10-Oct	143	1086.3
1823	9-Jun	4-Oct	118	752.6	1879	17-May	13-Oct	150	1051.8
1824	29-May	14-Oct	139	814.8	**1880**	**28-May**	**1-Nov**	**158**	**951.4**
1825	21-May	15-Oct	148	991.8	1881	28-May	19-Sep	115	855.9
1826	23-May	22-Sep	123	945.2	1882	24-May	2-Nov	163	1057.3
1827	11-May	4-Nov	178	1165.2	1883	24-May	11-Oct	141	912.5
1828	10-Jun	23-Sep	106	791.4	1884	9-Jun	14-Oct	128	959.8
1829	30-May	13-Oct	137	853.0	1885	29-May	10-Oct	135	953.4
1830	**20-May**	**11-Oct**	**145**	**833.9**	1886	19-May	18-Oct	153	1038.3
1831	7-Jun	13-Oct	129	948.0	1887	27-May	13-Oct	140	1005.0
1832	13-Jun	20-Sep	100	675.1	1888	26-May	20-Sep	118	862.6
1833	19-May	6-Oct	141	860.9	1889	7-Jun	12-Oct	128	973.6
1834	9-Jun	13-Oct	127	869.1	**1890**	**6-Jun**	**7-Oct**	**124**	**951.3**
1835	15-May	10-Oct	149	1034.4	1891	25-May	8-Oct	137	874.3
1836	10-Jun	1-Sep	84	748.4	1892	26-May	14-Oct	142	1098.5
1837	26-May	10-Nov	169	923.4	1893	16-May	6-Nov	175	1147.1
1838	9-Jun	19-Sep	103	597.5	1894	6-Jun	20-Oct	137	1075.1
1839	26-May	21-Sep	119	841.4	1895	7-Jun	10-Oct	126	830.5
1840	**30-May**	**3-Oct**	**127**	**780.8**	1896	7-Jun	10-Sep	96	742.4
1841	27-May	18-Oct	145	978.0	1897	9-Jun	12-Oct	126	940.3
1842	26-May	22-Sep	120	891.4	1898	8-Jun	8-Oct	123	908.9
1843	16-May	13-Oct	151	890.3	1899	28-May	2-Oct	128	704.3
1844	21-May	3-Oct	136	818.6	**1900**	**11-Jun**	**24-Sep**	**106**	**852.8**
1845	26-May	15-Sep	113	807.8	1901	12-Jun	1-Oct	112	723.4
1846	23-May	11-Oct	142	985.7	1902	14-Jun	10-Oct	119	829.6
1847	22-May	10-Nov	173	995.8	1903	26-May	20-Oct	148	995.6
1848	19-May	11-Oct	146	743.9	1904	21-May	8-Oct	141	854.3
1849	29-May	16-Oct	141	852.6	1905	29-May	6-Oct	131	762.6
1850	**9-Jun**	**11-Oct**	**125**	**840.0**	1906	8-Jun	3-Oct	118	900.6
1851	10-Jun	14-Oct	127	737.6	1907	10-Jun	15-Sep	98	704.9
1852	17-May	6-Oct	143	934.9	1908	11-Jun	20-Sep	102	831.2
1853	7-Jun	14-Oct	130	790.7	1909	23-Apr	21-Sep	152	987.0
1854	7-Jun	16-Oct	132	938.7	**1910**	**7-Jun**	**18-Oct**	**134**	**988.4**
1855	11-Jun	1-Sep	83	645.4	1911	8-Jun	11-Oct	126	745.3
1856	14-May	13-Oct	153	993.8	1912	12-Jun	4-Nov	146	896.0
1857	15-May	14-Oct	153	924.7	1913	20-May	11-Oct	145	869.1
1858	15-May	21-Sep	130	817.3	1914	23-May	30-Sep	131	932.4
1859	8-Jun	8-Oct	123	880.9	1915	25-May	2-Nov	162	950.1
1860	**12-Jun**	**11-Oct**	**122**	**712.4**	1916	1-Jun	20-Oct	142	1073.9
1861	22-May	12-Oct	144	1101.4	1917	20-May	21-Oct	155	1216.9
1862	8-Jun	19-Oct	134	998.6	1918	16-May	15-Sep	123	656.1
1863	6-Jun	14-Oct	131	930.7	1919	28-May	4-Nov	161	1025.7
1864	25-May	18-Sep	117	710.5	**1920**	**9-Jun**	**2-Oct**	**116**	**739.5**
1865	18-May	18-Sep	124	806.3	1921	9-Jun	8-Oct	122	901.7
1866	9-Jun	11-Oct	125	825.5	1922	7-Jun	6-Nov	153	998.4
1867	26-May	16-Oct	144	1021.8	1923	15-Jun	6-Oct	114	860.8
1868	7-Jun	19-Sep	105	677.3	1924	12-Jun	3-Nov	145	996.7

Table 10:contd…

Year	Start	End	Dur	Rain	Year	Start	End	Dur	Rain
1925	20-May	8-Oct	142	915.4	1966	30-May	5-Nov	160	877.5
1926	28-May	2-Oct	128	968.2	1967	10-Jun	22-Sep	105	854.1
1927	29-May	5-Nov	161	970.1	1968	10-Jun	9-Oct	122	802.4
1928	9-Jun	18-Oct	132	809.9	1969	26-May	4-Oct	132	919.6
1929	8-Jun	15-Oct	130	847.0	**1970**	**25-May**	**10-Oct**	**139**	**1028.0**
1930	**26-May**	**1-Nov**	**160**	**968.1**	1971	20-May	16-Oct	150	1084.9
1931	13-Jun	18-Oct	128	955.6	1972	29-May	8-Oct	133	727.8
1932	20-May	5-Nov	170	959.6	1973	29-May	18-Oct	143	1050.1
1933	14-May	15-Oct	155	1153.5	1974	24-May	15-Oct	145	885.6
1934	7-Jun	8-Oct	124	916.8	1975	7-Jun	17-Oct	133	1066.2
1935	11-Jun	3-Oct	115	826.9	1976	10-Jun	20-Sep	103	808.5
1936	18-May	7-Oct	143	1040.3	1977	30-Apr	9-Nov	194	1142.1
1937	9-Jun	15-Oct	129	888.1	1978	28-May	31-Oct	157	1000.7
1938	23-May	9-Oct	140	992.8	1979	10-Jun	13-Nov	157	759.8
1939	9-Jun	13-Oct	127	828.9	**1980**	**7-Jun**	**3-Oct**	**119**	**923.3**
1940	**24-May**	**8-Oct**	**138**	**923.7**	1981	24-May	1-Oct	131	888.0
1941	23-May	8-Oct	139	819.3	1982	28-May	18-Sep	114	744.5
1942	8-Jun	22-Sep	107	937.3	1983	26-May	14-Oct	142	1065.2
1943	19-May	15-Oct	150	1010.7	1984	7-Jun	4-Oct	120	877.4
1944	10-Jun	13-Oct	126	918.0	1985	31-May	19-Oct	142	931.1
1945	9-Jun	13-Oct	127	947.9	1986	1-Jun	8-Oct	130	747.4
1946	28-May	12-Nov	169	1092.4	1987	30-May	14-Oct	138	780.4
1947	12-Jun	7-Oct	118	948.5	1988	1-Jun	23-Sep	115	947.3
1948	24-May	10-Nov	171	1058.5	1989	8-Jun	21-Sep	106	792.8
1949	18-May	15-Oct	151	1035.5	**1990**	**14-May**	**14-Oct**	**154**	**1060.1**
1950	**1-Jun**	**1-Oct**	**123**	**862.8**	1991	1-Jun	7-Oct	129	835.5
1951	9-Jun	10-Oct	124	734.9	1992	29-May	31-Oct	156	859.5
1952	24-May	11-Oct	141	879.4	1993	28-May	13-Oct	139	949.1
1953	9-Jun	13-Oct	127	966.4	1994	7-Jun	13-Oct	129	1007.3
1954	10-Jun	13-Oct	126	936.8	1995	20-May	10-Oct	144	966.0
1955	22-May	22-Oct	154	1131.6	1996	8-Jun	15-Oct	130	917.4
1956	18-May	22-Oct	158	1164.6	1997	9-Jun	7-Nov	152	955.9
1957	28-May	6-Oct	132	859.6	1998	9-Jun	19-Oct	133	1001.4
1958	26-May	16-Oct	144	1042.6	1999	16-May	19-Oct	157	1013.4
1959	24-May	20-Oct	150	1081.1	**2000**	**17-May**	**19-Sep**	**126**	**845.5**
1960	**23-May**	**13-Oct**	**144**	**959.3**	2001	21-May	17-Oct	150	908.3
1961	21-May	19-Oct	152	1195.3	2002	22-May	10-Oct	142	758.3
1962	24-May	13-Oct	143	932.4	2003	9-Jun	15-Oct	129	918.9
1963	31-May	14-Oct	137	972.5	2004	16-Apr	16-Oct	184	1024.7
1964	1-Jun	9-Oct	131	964.3	2005	17-May	18-Oct	155	1018.9
1965	13-Jun	19-Sep	99	641.1					
					Mean	**30-May**	**11-Oct**	**135**	**912.7**
					SD	**10**	**14**	**19**	**121**

Table 11 : Years with multiple wet seasons over some basins of the country

Sr. No.	Basin Name	Years with 2 wet seasons	Years with 3 wet seasons	Years with 4 wet season	Years with undefined wet season
1	Indus major basin	*62 years* (1844, 1849-52, 1857, 1865, 1868-69, 1871, 1874, 1877, 1885, 1889, 1891, 1893-94, 1898, 1901, 1805-07, 1911, 1913, 1915, 1918-19, 1923, 1928, 1933, 1935-39, 1942, 1944, 1948, 1954, 1957, 1959, 1961, 1965, 1968, 1975-76, 1978-79, 1981-83, 1986-88, 1990-92, 1995-96, 1998, 2000, 2003 & 2005)	-	-	-
	Minor basin				
2	Chenab	*75 years* (1893-95, 1897-99, 1903-07, 1909-10, 1911-13, 1915, 1980-20, 1923-25, 1927-28, 1930, 1933, 1935-40, 1942-45, 1948-49, 1950-53, 1954-57, 1959-63, 1965, 1967-69, 1972-73, 1976, 1978-80, 1982-85, 1986, 1988, 1990, 1993, 1995, 1999, 2000, 2002 & 2005)	*7 years* (1911-12, 1930,1945, 1950, 1953 & 1985)	-	-
3.	Beas	*102 years* (1854, 1957-61, 1864-69, 1871-74, 1876-78, 1880, 1884-86, 1888-91, 1893-98, 1901, 1905-07, 1909, 1911-13, 1915, 1918-20, 1922-24, 1926-28, 1930-33, 1935-40, 1942-45, 1946, 1948-52, 1954-57, 1959, 1961-63, 1965-69, 1972-73, 1975-76, 1978-82, 1988, 1990-92, 1994-96, 1998, 2000, 2002 & 2005)	*3 years* (1886,1911 & 1945)	-	-
4	Satluj	*16 years*(1852, 1865, 1877-78, 1889, 1893, 1898, 1901, 1911, 1937, 1939, 1948, 1954, 1961, 1982 & 1983)	-	-	-
5.	Ramganga	*27 years* (1845, 1851, 1872, 1877-78, 1883, 1889, 1893, 1898, 1901, 1905-6, 1911, 1913-15, 1919, 1928, 1937, 1942, 1944, 1954, 1961, 1978, 1990, 1996 & 2002)	-	-	-
6	Kosi	*2 years* (1891 &1967)	-	-	-
7.	Mahananda	*2 years* (1866 & 1940)	-	-	-
8.	Tista	*3 years* (1881, 1940 & 1967)			
9.	Wainganga	*9 years* (1845, 1865, 1893, 1919, 1926, 1937, 1944, 1957 & 1967)	-	-	-
10.	Penganga	*3 years* (1893, 1919 & 1957)	-	-	-
11.	Bhima	*18 years* (1826, 1844-47, 1855, 1862, 1888, 1904, 1915, 1922-23, 1927, 1960-61, 1968 & 1994)	-	-	-
	Independent basins				
12.	Luni	-	-	-	*7 years* (1877,1899 ,1911,1915, 1939, 1987 & 2002)
13.	Damodar	*4 years* (1866, 1893, 1906, 1920)			
14.	Suvarnarekha	*18 years* (1861, 1891, 1893, 1901, 1906, 1912-13, 1923, 1926, 1931, 1937, 1940, 1944, 1956, 1961, 1965, 1978, 1982)	-	-	-
15.	Brahmani	*8 years* (1901, 1906, 1933, 1944, 1961-62, 1970, 1982)			
16	Pennar	*35 years* (1813, 1815, 1820, 1826, 1839, 1841, 1845, 1857, 1861, 1863, 1874, 1877, 1881, 1883, 1896, 1909, 1913, 1918, 1919, 1922, 1925, 1931, 1943-44, 1952, 1955, 1965, 1969, 1972, 1976, 1984, 1988-89, 1995 & 2004)	*3 years* (1863,1952 & 1989)	-	-
17.	Palar & Ponnaiyar	*11 years* (1872-73, 1877, 1899, 1909, 1918, 1921, 1923, 1931, 1933 & 1939)	-	-	-
18.	Vaigai	*88 years* (1847, 1849-54, 1856-61, 1863-65, 1867-68, 1871, 1873, 1875, 1877, 1879-80, 1882, 1885, 1887-89, 1892-93, 1897-99, 1901, 1904-5, 1907, 1909, 1912, 1917, 1919, 1922, 1925, 1927, 1929-30, 1932, 1936, 1938-43, 1946, 1948, 1952-55, 1957-58, 1960-63, 1968, 1970, 1972-77, 1988, 1992-93, 1995, 1997-2004 & 2005	*3 years* (1932,1958 & 1960)	*1 year* (1954)	-

Table 12 : Correlation among parameters of wet season over India and Major and Minor basins
Bold figures are significant at 1% level and above.

		Start vs			End vs		Dur vs
	Name of basins	End	Dur	Rain	Dur	Rain	Rain
1	**Indus major basin**	0.06	**-0.65**	**-0.31**	**0.72**	**0.66**	**0.71**
	1) Chenab	-0.02	**-0.93**	**-0.69**	**0.37**	**0.46**	**0.80**
	2) Beas	**-0.42**	**-0.95**	**-0.34**	**0.69**	**0.51**	**0.45**
	3) Satluj	-0.01	**-0.64**	**-0.35**	**0.77**	**0.67**	**0.73**
2	**Ganga major basin**	-0.09	**-0.69**	**-0.45**	**0.78**	**0.58**	**0.70**
	1) Yamuna	0.08	**-0.62**	**-0.40**	**0.73**	**0.61**	**0.75**
	2) Ramganga	0.11	**-0.60**	**-0.27**	**0.73**	**0.55**	**0.62**
	3) Gomati	0.04	**-0.62**	**-0.34**	**0.76**	**0.32**	**0.47**
	4) Ghaghara	-0.09	**-0.73**	**-0.40**	**0.75**	**0.47**	**0.59**
	5) Gandak	-0.21	**-0.77**	**-0.48**	**0.78**	**0.39**	**0.56**
	6) Kosi	**-0.26**	**-0.83**	**-0.55**	**0.75**	**0.38**	**0.59**
	7) Mahananda	-0.19	**-0.83**	**-0.34**	**0.71**	**0.31**	**0.42**
	8) Chambal	0.11	**-0.53**	**-0.29**	**0.79**	**0.57**	**0.66**
	9) Sind	0.06	**-0.55**	**-0.26**	**0.80**	**0.55**	**0.61**
	10) Betwa	0.12	**-0.52**	**-0.26**	**0.79**	**0.56**	**0.64**
	11) Ken	0.11	**-0.48**	-0.22	**0.82**	**0.47**	**0.54**
	12) Tons	0.00	**-0.59**	**-0.28**	**0.80**	**0.53**	**0.59**
	13) Son	**-0.25**	**-0.74**	**-0.51**	**0.84**	**0.48**	**0.62**
3	**Brahmaputra major basin**	0.10	**-0.78**	**-0.35**	**0.55**	**0.32**	**0.50**
	1) Tista	-0.19	**-0.87**	-0.06	**0.65**	0.23	0.16
	2) Brahmaputra	0.07	**-0.74**	**-0.30**	**0.61**	**0.25**	**0.40**
	3) Dhansiri	-0.02	**-0.84**	**-0.29**	**0.56**	**0.43**	**0.48**
4	**Godavari major basin**	-0.12	**-0.53**	**-0.44**	**0.90**	**0.53**	**0.64**
	1) Wainganga	0.02	**-0.44**	**-0.34**	**0.89**	**0.50**	**0.61**
	2) Wardha	0.00	**-0.44**	**-0.28**	**0.90**	**0.58**	**0.64**
	3) Penganga	-0.05	**-0.52**	**-0.29**	**0.88**	**0.42**	**0.50**
	4) Godavari	-0.07	**-0.61**	**-0.36**	**0.84**	**0.47**	**0.58**
	5) Indravati	-0.13	**-0.78**	**-0.46**	**0.73**	**0.38**	**0.55**
5	**Krishna major basin**	-0.22	**-0.70**	**-0.31**	**0.85**	**0.44**	**0.49**
	1) Krishna	-0.20	**-0.70**	**-0.37**	**0.84**	**0.49**	**0.56**
	2) Bhima	0.04	**-0.32**	**-0.28**	**0.93**	**0.73**	**0.79**
	3) Tungabhadra	-0.24	**-0.81**	**-0.54**	**0.76**	**0.53**	**0.68**
6	**Sabarmati major basin**	-0.05	**-0.62**	**-0.28**	**0.82**	**0.50**	**0.55**
7	**Mahi major basin**	-0.02	**-0.60**	**-0.35**	**0.81**	**0.58**	**0.67**
8	**Narmada major basin**	-0.06	**-0.54**	**-0.34**	**0.88**	**0.59**	**0.67**
9	**Tapi major basin**	-0.03	**-0.45**	-0.21	**0.91**	**0.56**	**0.59**
10	**Mahanadi major basin**	-0.17	**-0.63**	**-0.43**	**0.88**	**0.43**	**0.55**
11	**Cauvery major basin**	**0.29**	**-0.46**	-0.23	**0.72**	**0.32**	**0.47**
12	**Independent basins**						
	1) Luni	0.01	**-0.59**	**-0.49**	**0.80**	**0.52**	**0.71**
	2) Surma	0.03	**-0.77**	**-0.33**	**0.61**	**0.25**	**0.42**
	3) Kasai	-0.02	**-0.82**	**-0.55**	**0.59**	**0.31**	**0.62**
	4) Damodar	-0.04	**-0.86**	**-0.33**	**0.54**	**0.42**	**0.50**
	5) Suvarnarekha	-0.04	**-0.83**	**-0.45**	**0.59**	**0.41**	**0.59**
	6) Brahmani	-0.08	**-0.79**	**-0.46**	**0.68**	**0.34**	**0.55**
	7) Pennar	0.00	**-0.90**	**-0.67**	**0.43**	**0.51**	**0.82**
	8) Palar and Ponnaiyar	-0.03	**-0.80**	**-0.36**	**0.63**	**0.47**	**0.56**
	9) Vaigai	-0.05	**-0.91**	**-0.63**	**0.46**	**0.62**	**0.82**
13	**West coast drainage system**	0.11	**-0.71**	**-0.26**	**0.62**	0.12	**0.29**
14	**The Whole India**	-0.10	**-0.68**	**-0.43**	**0.80**	**0.49**	**0.62**

Table 13: Correlation between wet season parameters of the whole country and respective parameters of the individual Basins. Bold figures are significant at 1% level and above

No.	*Name of the Basin*	*Starting date*	*Ending date*	*Duration*	*Seasonal rainfall*
1	**Indus major basin**	**0.33**	0.16	**0.30**	**0.64**
	1) Chenab	0.01	0.08	0.09	**0.32**
	2) Beas	0.12	**0.27**	0.20	**0.57**
	3) Satluj	0.08	0.09	0.16	**0.51**
2	**Ganga major basin**	**0.43**	**0.35**	**0.42**	**0.79**
	1) Yamuna	0.22	0.16	0.23	**0.70**
	2) Ramganga	**0.31**	**0.27**	**0.31**	**0.52**
	3) Gomati	0.23	**0.26**	**0.29**	**0.48**
	4) Ghaghara	**0.30**	0.23	**0.32**	**0.46**
	5) Gandak	**0.33**	0.22	0.22	0.15
	6) Kosi	**0.28**	**0.25**	**0.29**	0.20
	7) Mahananda	0.10	**0.39**	0.23	0.17
	8) Chambal	0.23	**0.27**	**0.27**	**0.72**
	9) Sind	0.18	0.13	0.17	**0.56**
	10) Betwa	0.24	0.21	**0.27**	**0.67**
	11) Ken	**0.27**	**0.32**	**0.35**	**0.55**
	12) Tons	0.24	0.19	**0.34**	**0.51**
	13) Son	**0.36**	**0.29**	**0.31**	**0.32**
3	**Brahmaputra major basin**	0.00	**0.32**	0.13	0.10
	1) Tista	0.04	**0.42**	**0.29**	0.11
	2) Brahmaputra	0.01	**0.30**	0.16	0.06
	3) Dhansiri	-0.04	0.08	0.11	0.22
4	**Godavari major basin**	**0.41**	**0.31**	**0.34**	**0.63**
	1) Wainganga	**0.36**	**0.33**	**0.29**	**0.61**
	2) Wardha	**0.39**	0.24	**0.27**	**0.58**
	3) Penganga	**0.33**	**0.26**	**0.35**	**0.56**
	4) Godavari	**0.43**	**0.25**	**0.35**	**0.51**
	5) Indravati	0.29	**0.32**	**0.31**	**0.36**
5	**Krishna major basin**	**0.60**	**0.69**	**0.64**	**0.64**
	1) Krishna	**0.43**	**0.74**	**0.59**	**0.65**
	2) Bhima	**0.47**	0.18	**0.31**	**0.43**
	3) Tungabhadra	**0.41**	**0.54**	**0.52**	**0.54**
6	**Sabarmati major basin**	0.14	0.10	0.17	**0.29**
7	**Mahi major basin**	0.22	0.22	**0.28**	**0.60**
8	**Narmada major basin**	**0.32**	**0.36**	**0.43**	**0.73**
9	**Tapi major basin**	**0.32**	**0.31**	**0.36**	**0.56**
10	**Mahanadi major basin**	**0.48**	**0.31**	**0.36**	**0.48**
11	**Cauvery major basin**	0.05	0.22	0.14	**0.53**
12	**Independent basins**				
	1) Luni	0.13	0.13	0.20	**0.47**
	2) Surma	-0.01	**0.31**	0.20	0.01
	3) Kasai	**0.30**	**0.37**	**0.40**	**0.33**
	4) Damodar	0.20	**0.34**	0.20	**0.40**
	5) Suvarnarekha	**0.29**	**0.43**	**0.37**	**0.54**
	6) Brahmani	**0.27**	**0.28**	**0.29**	**0.28**
	7) Pennar	0.18	0.19	**0.35**	**0.42**
	8) Palar and Ponnaiyar	0.23	0.08	0.18	0.15
	9) Vaigai	-0.09	0.11	-0.03	0.21
13	**West coast drainage system**	-0.01	0.22	0.07	**0.65**
14	**The Whole India**	1.00	1.00	1.00	1.00