Characteristics of long-term variability of precipitation in selected river catchment areas in India based on GPCC data for the years 1901–2010

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Abstract: This study contains an analysis of mean monthly precipitation values, covering multiple profiles, in 13 Indian river catchment areas: Brahmaputra, Indus, Ganga, Mahi, Narmada, Tapti, Damodar, Brahmani, Krishna, Penner, Cauvery, Mahanadi and Godavari. The analysis covers data for the period 1901–2010 with a spatial resolution of $0.5^{\circ}x^{\circ}0.5^{\circ}$ of geographic longitude and latitude (GPCC data). The data is analysed in monthly and calendar year profiles. The periodical nature of precipitation is assessed and the trends in climate changes calculated. The characteristics of trend in climate changes are described by linear equations with indicated boundary values of coefficients determined at a 5% significance level. The analyses discussed confirm spatial and temporal variability of precipitation in the key river catchment areas in India, feeding the country's surface and underground water resources. The statistics contained in this study demonstrate the regional nature of water supply, indicate the need to complete regional analyses of temporal and spatial variations in the volumes of water feeding Indian resources, and confirm that regional and local plans must be developed to adapt to climate change, based on the accepted scenarios aimed to compensate climate change effects.

Keywords: GPCC data, monthly precipitation, annual precipitation, frequency analysis, climate trend in precipitation, territory of India.

I. Introduction

This study aims at supplementing necessary information about the characteristics of long-lasting precipitation series, precipitation total and mean values in the areas of surface water catchment areas of key importance for the feeding of Indian water resources. The study is focused on regional analyses showing clear interrelations between precipitation structures and volumes and the resultant effects in parts of river basins, distinguished areas in a hydrographic system or local drainage areas. The need to complete such analyses is emphasised in the reports prepared under the United Nations Framework Convention² on Climate Change that provide a basis for scenarios developed to compensate climate change effects.

The detailed knowledge of precipitation volumes reaching the Earth land surface is particularly important for an assessment of the quantity of fresh water available, for water management as necessary to meet the demand for water and to mitigate the risks of floods and draughts. There is a growing body of scientific evidence confirming the hypothesis proposing climate changes caused by human activities. The intensity of those changes depends on the region and varies in time and space. The analyses of climate changes at a regional level demonstrate a strong correlation with anthropogenic impacts. The climate changes observed are characterised by shortened period of high-intensity precipitation and more frequent periods of long-lasting precipitation that cause great floods. Also the periods characterised by high temperatures and reduced precipitations in and intensity of human activities. This study contains the results of my analyses of GPCC data for selected Indian river catchment areas. The approach used in the analyses enabled the author to characterize and estimate certain changes in the process of feeding the water resources available in selected Indian river catchment areas, resulting from variability of precipitation.

The water resources development programme implemented following India independence resulted in an increase in the available irrigation potential by five times, a progress was also reported in supplies of potable water and water for industrial purposes. However, the population growth rate, urbanization and industrial development have resulted in a significant increase in water demand and consumption. Extensive policies followed in some regions have led to excessive exploitation of available resources and consequently to durable

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depletion of water resources. Additionally, the growth of the industrial sector and a rapid urbanization process resulted in contamination of surface water and groundwater. The low efficiency of use of water intakes represents another problem in water management.

The total estimated volume of available resources reaches 4000 BCM; taking into account losses due to evaporation, an estimated total annual volume of available water amounts to 1869 BCM. However, considering the geomorphological and hydrological conditions, only 1123 BCM may be effectively used, including 61% from surface water and about 39% from renewable groundwater resources. Attention should be paid to significant spatial and temporal differences in access to water. The Ganga and Brahmaputra river basins are characterised by the highest availability rates reaching about 60% of total annual volume of available water.

The government strategy implemented by the Ministry of Water Resources in India pays particular attention to an increase in the demand for water by about 20% over the next 10 years and by about 70% over the next 40 years, assessing the demand by the year 2050 at 1180 [km³] [BCM], compared to the current demand amounting to 700 [BCM]. These ambitious objectives, requiring considerable involvement of government and non-government institutions, open up another great growth opportunity to society of India. Social development achieved by education and qualification programmes carried out as part of the strategy may represent another desirable synergy outcome. Training programmes accompanying expenditures on infrastructure development are indispensable to improve the efficiency of use of water intakes.

Drainage area	Stations	GRDC_NO river basin ID	Area catchment	Mean annual precipitation	Precipitation volume	Trend	Trend [mln m ³]	Mean outflow for the long-term period	Runoff coefficient for the long-term period	Forecast precipitat	change in ion volume
			[km ²]	[mm]	[km ³]	[mm/year]	[million m ³ /year]	[m ³ /s]	Π	15 years [km ³]	25 years [km ³]
BRAHMAPUTRA	BAHADURABAD	2651100	505270.6	1532.59	774.4	-0.1590	-80.36	2826.4	0.238	-1.205	-2.009
INDUS	KOTRI	2335950	1125733.6	450.61	507.3	0.0134	15.04	12111.8	0.409	0.226	0.376
GANGES	FARAKKA	2846800	901751.6	1118.70	1008.8	-0.0333	-30.05	384.3	0.435	-0.451	-0.751
MAHI RIVER	SEVALIA	2853150	35896.8	827.48	29.7	0.0601	2.16	1223.5	0.376	0.032	0.054
NARMADA	GARUDESHWAR	2853200	88075.9	1148.46	101.2	0.0436	3.84	491.9	0.293	0.058	0.096
TAPTI RIVER	KATHORE	2853300	64098.8	859.15	55.1	0.1356	8.69	298.3	0.381	0.130	0.217
DAMODAR RIVER	RHONDIA	2854050	20413.2	1284.36	26.2	0.0385	0.79	no data	no data	0.012	0.020
BRAHMANI RIVER (BHAHMANI)	BARKOT BR.	2854080	30090.1	1515.30	45.6	-0.0239	-0.72	1657.5	0.250	-0.011	-0.018
KRISHNA	VIJAYAWADA	2854300	255880.4	831.12	212.7	0.0648	16.59	74.5	0.067	0.249	0.415
PENNER RIVER	NELLORE	2854500	54737.8	663.07	36.3	0.0450	2.47	207.8	0.087	0.037	0.062
CAUVERY RIVER	GRAND ANICUT	2854800	70315.9	1014.09	71.3	-0.0138	-0.97	1883.4	0.323	-0.015	-0.024
MAHANADI RIVER (MAHAHADI)	KAIMUNDI	2855800	118002.2	1390.58	164.1	-0.0307	-3.62	3061.1	0.281	-0.054	-0.090
GODAVARI	POLAVARAM	2856900	309378.3	1145.78	354.5	0.0449	13.90	21545.2	0.697	0.208	0.347
INDIA			3287590.0	1126.68	3704.1	0.0206	67.72			1.016	1.693

 Table 1. A statement of annual balances of water resources in India for the period 1901 – 2010



Figure 1. GPCC gauge-based gridded monthly precipitation data for the territory of India, [mm] May 2010



II. The role of GPCC Precipitation Climatology Centre in collecting and providing precipitation data

The Global Precipitation Climatology Centre(GPCC) was established in 1989 by the World Meteorological Organization (WMO). The Centre is supported and operated by the DeutscherWetterdienst (DWD, the German Meteorological Office) as a German contribution to the World Climate Research Programme (WCRP). The main objective of the GPCC is a global analysis of monthly precipitation on Earth land surface based on data provided by "in-situ" precipitation stations. In 1994, GPCC was requested by the WMO to support climate monitoring activities carried out by the Global Climate Observing System (GCOS). The GPCC has joined the GCOS network (GSNMC) in 1999, focusing on atmospheric precipitation while temperature monitoring is conducted by the Japan Meteorological Agency (JMA)

The objective of the GPCC is to meet the users' demand for accurate analyses, current and readily available datasets. For example: The WCRP, as part of the Global Energy and Water Cycle Exchanges Project (GEWEX), requires high spatial resolution and accuracy of data for the last two decades while the priorities of the GCOS and IPCC focus on long-term uniformity of time series showing climate changes. All GPCC products represent gridded near and non-real-time datasets of precipitation on the Earth land surface. Only monthly data is made available in spatial resolutions $0.5^{\circ}x \ 0.5^{\circ}$ to $2.5^{\circ}x \ 2.5^{\circ}$ of geographic longitude and latitude. The datasets are made available on the Internet (<u>http://gpcc.dwd.de</u>). The products are developed based on complete sets of information from the world precipitation database originating from more than 97000 stations that provide protected and classified raw records.

III. Characteristics of data for 1901-2010

The GPCC data representing total precipitation volumes in individual months in the period 1901-2010, with a spatial resolution of $0.5^{\circ}x \ 0.5^{\circ}$ of geographic longitude and latitude, are converted to the analysed Indian drainage basin and key analysed river catchment areas. Thus a sequence of monthly precipitation values was obtained that is analysed in this study. The GIS interpolation methods are used in the spatial analysis of data. The calculated sequence values were subject to a simple statistical analysis in order to determine the basic statistics: the minimum and maximum values, the mean value, standard deviation of the sample and the value of the coefficient of variation. The data is analysed in calendar year profiles. The analyses of monthly precipitation values cover the years 1901-2010.

IV. An assessment of accuracy of the GPCC data for the period 1901-2010

An analysis of error in monthly and annual values of total precipitation for the entire territory of India was completed to verify the data. The period subject to verification based on comparative data includes the years 1901–2010. The results of the analysis are shown in a graphic format. The relative error in the analysed total monthly precipitation values amounted on average from (-1%) in July to 27% in November, resulting in a 4% mean value of relative error for the total of annual precipitation.

able 2. Values of relati	ve erro	ors in th	ne long-t	erm pe	eriod 190	01–201	0 in in	dividual	month	ns, the t	territory	of India
Months	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mean realtive error	4%	7%	11%	8%	8%	8%	1%	0%	-1%	11%	27%	22%

The positive value of error indicates underestimated totals of monthly precipitation published by the GPCC, compared to the precipitation values officially published in materials of the India Meteorological Department [2]

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Table 3. A statement of precipitation total values and selected statistics for the long-term period 1901–2010 in the territory of India

YEAR	JAN	FEB	MAK	APK	MAY	JUN	JUL	AUG	SEP	UCI	NUV	DEC [mm]	ANN	JAN-FEB	MAR-MAY	JUN-SEP	UCI-DEC	MIN	MAX	MLAN	SD	UV II
1901	37.20	39.02	17.63	34.99	48.91	103.17	249.83	289.80	123.94	45.08	27.83	5.73	1023.12	76.22	101.53	766.74	78.64	5.73	289.80	85.26	88.90	1.04
1902	7.60	5.73	21.93	47.15	46.51	105.40	292.32	208.48	202.18	54.15	20.68	21.18	1033.30	13.33	115.59	808.38	96.01	5.73	292.32	86.11	91.60	1.06
1903	16.06	9.10	27.31	20.10	20.70	120.97	2/2.16	282.77	194.08	118.40 61 on	31.61 9.84	11.29	1160.55	25.16	104.11	869.98 782.50	101.30	9.10	282.77	96.71	97.44	1.01
1905	23.10	20.02	39.69	34.13	53.71	89.23	250.53	223.98	173.94	42.76	7.81	9.22	968.10	43.12	127.52	737.67	59.79	7.81	250.53	80.68	82.45	1.02
1906	18.04	48.22	32.05	27.66	35.93	175.22	286.95	256.11	172.73	43.61	12.12	21.38	1130.01	66.25	95.64	891.01	77.11	12.12	286.95	94.17	95.87	1.02
1907	15.87	43.34	37.66	61.42	30.66	148.52	228.53	302.97	105.23	15.08	15.01	9.88	1014.17	59.21	129.74	785.25	39.98	9.88	302.97	84.51	91.40	1.08
1908	18.63	18.28	9.91	34.33	46.09	215.02	320.90	305.88	156.19	32.21	2.95	6.02	1079.30	36.91	90.34	910.88	41.18	2.95	320.90	89.94	110.07	1.22
1910	13.63	11.48	19.31	30.88	40.74	208.01	259.66	283.03	196.00	107.88	27.91	6.62	1205.14	25.10	90.93	946.70	142.40	6.62	283.03	100.43	101.63	1.01
1911	37.72	6.40	43.15	29.25	50.93	195.49	178.72	228.67	191.88	68.04	37.50	7.82	1075.58	44.12	123.33	794.76	113.36	6.40	228.67	89.63	79.44	0.89
1912	18.25	24.64	19.54	37.13	42.61	101.76	331.72	270.20	125.00	48.63	44.21	5.43	1069.13	42.89	99.28	828.69	98.28	5.43	331.72	89.09	101.10	1.13
1913	0.18	40.70	26.90	39.37	64.84	206.90	256.54	195.87	115.78	35.22	10.39	13.18	1058.62	40.88	144.13	927.07	92.51	0.18	256.54	88.22	82.27	0.93
1915	18.49	37.20	45.05	31.72	63.43	147.74	241.98	246.83	177.55	81.26	32.28	7.26	1130.79	55.69	140.20	814.10	120.80	7.26	246.83	94.23	83.04	0.88
1916	4.93	18.49	11.49	30.53	53.36	216.30	273.99	300.79	193.34	125.96	39.55	2.68	1271.40	23.41	95.38	984.42	168.19	2.68	300.79	105.95	106.74	1.01
1917	6.42	37.06	21.52	34.35	72.78	216.44	278.11	275.05	272.31	144.30	21.69	6.53	1386.55	43.49	128.65	1041.91	172.52	6.42	278.11	115.55	109.34	0.95
1918	9.54	4.68	32.70	30.98	52.00	192.87	100.73	239.21	109.82	14.81	33.63	11.18	926.27	14.22	143.80	708.63	59.62	4.68	239.21	77.19	97.71	1.01
1920	19.56	17.40	45.75	31.37	46.88	138.81	295.70	175.27	118.48	35.32	14.78	2.63	941.95	36.96	124.00	728.26	52.73	2.63	295.70	78.50	84.14	1.07
1921	33.03	6.52	15.40	41.88	46.17	175.20	260.59	268.65	192.81	56.64	13.48	11.74	1122.09	39.55	103.44	897.24	81.86	6.52	268.65	93.51	96.53	1.03
1922	26.86	8.56	13.16	25.17	41.68	181.26	300.84	225.38	197.50	44.49	43.44	11.90	1120.22	35.42	80.01	904.97	99.83	8.56	300.84	93.35	98.29	1.05
1923	16.05	35.23	18.38	26.58	51.43	85.04	315.71	266.13	173.17	49.01	10.43	13.12	1060.29	51.29	96.39	840.05	72.56	10.43	315.71	88.36	102.27	1.14
1924	9.57	8.77	13.44	40.39	86.50	183.29	306.55	240.13	133.38	55.32	32.81	11.71	1114.23	18.35	140.33	855.71	99.84	8.77	306.55	92.85	95.61	1.08
1926	25.83	9.10	53.36	33.33	54.91	80.70	301.13	320.37	187.30	48.94	7.87	7.32	1130.17	34.93	141.60	889.51	64.13	7.32	320.37	94.18	107.51	1.14
1927	10.38	30.25	22.50	28.36	42.76	153.44	310.28	246.23	158.41	56.91	51.55	9.60	1120.68	40.63	93.62	868.36	118.06	9.60	310.28	93.39	96.19	1.03
1928	17.91	37.22	18.20	31.16	46.22	158.99	287.77	208.66	137.38	111.47	14.43	20.77	1090.18	55.13	95.58	792.80	146.66	14.43	287.77	90.85	86.44	0.95
1929	17.98	16.60	21.69	39.71	43.95	158.19	284.00	209.70	167.85	82.18	43.23	8.70	1090.00	34.58	105.35	819.75	134.11	8.70	284.00	91.15	87.28	0.96
1931	9.62	28.95	16.77	33.58	50.60	117.19	298.67	291.08	197.11	110.70	33.89	14.71	1202.89	38.58	100.96	904.05	159.31	9.62	298.67	100.24	101.84	1.02
1932	6.63	18.19	16.60	24.56	68.72	124.17	306.53	232.99	183.70	59.67	49.27	12.81	1103.84	24.82	109.88	847.39	121.75	6.63	306.53	91.99	94.87	1.03
1933	14.92	26.87	19.31	42.22	84.50	200.40	266.31	301.49	205.50	85.50	14.55	14.09	1275.68	41.79	146.04	973.71	114.14	14.09	301.49	106.31	102.70	0.97
1934	23 68	18.63	15.55	33.84	31 32	140.56	303.67	240.71	174.00	39,84	11 36	2.91	1056.01	42.31	24.17	871 35	61.57	10.36	303.67	75.20 88.00	98.64	1.07
1936	10.28	38.11	31.04	27.39	70.16	230.07	286.52	241.40	188.84	57.42	49.39	19.53	1250.14	48.39	128.59	946.82	126.33	10.28	286.52	104.18	97.05	0.93
1937	6.06	48.94	16.90	52.31	48.74	142.34	319.77	209.37	169.88	86.12	12.06	13.04	1125.52	54.99	117.95	841.36	111.22	6.06	319.77	93.79	93.63	1.00
1938	27.87	24.11	26.28	26.97	61.00	250.67	291.01	249.58	160.07	68.52	11.49	4.18	1201.75	51.97	114.26	951.33	84.19	4.18	291.01	100.15	102.64	1.02
1939	11.64	24 64	43.30	23.28	68.27	155.92	200.18	200.43	137.00	61.79 54.70	28.30	1.00	1001.00	40.07	91.19 134.84	839.70	97.84	11.22	205.18	92.40	00.8U 95.61	1.01
1941	22.13	14.22	16.60	25.07	64.35	151.95	211.03	231.56	148.82	53.05	17.28	14.92	971.00	36.35	106.03	743.37	85.25	14.22	231.56	80.92	78.47	0.97
1942	21.12	43.58	18.53	37.42	53.34	170.40	338.54	286.15	181.31	27.23	11.63	18.57	1207.81	64.70	109.29	976.39	57.43	11.63	338.54	100.65	109.92	1.09
1943	49.70	9.16	25.48	42.22	77.05	148.86	287.88	240.19	207.33	77.87	10.95	4.24	1180.93	58.86	144.74	884.27	93.07	4.24	287.88	98.41	94.26	0.96
1944	23.28	20.19	22.37	29.02	21.03	1.34.75	30.09 309.02	261.49	108.10	04.23 74.00	20.05	3.60	1215.84	01.47	133.02	904.48	110.60	3.60	300.09	94.85	101.07	1.00
1946	3.40	15.88	16.44	41.90	62.24	197.47	299.09	282.52	140.78	74.93	65.30	22.70	1222.63	19.27	120.58	919.85	162.93	3.40	299.09	101.89	100.03	0.98
1947	18.72	14.70	22.08	29.27	44.02	110.94	299.72	268.53	232.99	63.54	4.92	18.05	1127.47	33.41	95.37	912.18	86.50	4.92	299.72	93.96	104.42	1.11
1948	23.61	24.85	30.78	37.38	76.09	143.22	321.28	278.12	175.75	58.09	62.44	7.64	1239.25	48.46	144.25	918.37	128.17	7.64	321.28	103.27	100.26	0.97
1949	21.02	20.85	32.33	43.69	46.0.9	142.90	319.75	238.40	224.89	90.97	21.14	4.07	1179.69	41.87	97.33	902.40	73.97	4.07	319.75	98.31	98.02	1.00
1951	12.67	8.90	37.08	40.16	48.95	144.44	246.68	221.74	120.94	63.47	23.96	2.90	971.91	21.58	126.20	733.80	90.33	2.90	246.68	80.99	80.12	0.99
1952	7.87	16.36	31.09	28.47	61.12	155.25	269.75	255.90	129.10	68.84	5.82	16.02	1045.60	24.23	120.68	810.01	90.68	5.82	269.75	87.13	90.73	1.04
1953	26.72	8.51	25.24	32.76	42.92	150.98	314.51	280.89	174.57	77.60	7.64	5.80	1148.12	35.23	100.92	920.94	91.04	5.80	314.51	95.68	104.75	1.09
1955	22.64	5.97	26.58	29.26	62.29	174.10	246.74	307.98	209.60	143.08	16.74	6.58	1251.57	28.61	118.13	938.42	166.41	5.97	307.98	104.30	102.56	0.98
1956	16.27	11.05	31.78	31.88	85.48	198.41	335.40	246.29	166.56	144.30	39.57	11.75	1318.74	27.33	149.14	946.66	195.61	11.05	335.40	109.89	103.11	0.94
1957	41.23	12.60	28.87	36.50	67.02	135.80	288.97	259.99	134.23	55.15	20.62	15.09	1096.06	53.84	132.38	818.98	90.86	12.60	288.97	91.34	91.13	1.00
1958	29.38	21.18	14.09	25.57	07.11	104.00	308.21	265.19	210.14	96.80	22.83	3.83	1240.80	25.70	114.02	924.15	131.10	3.83	308.21	99.59	107.29	1.08
1960	13.93	3.34	30.96	17.03	51.62	139.42	298.41	258.01	171.51	64.60	21.95	6.45	1077.23	17.27	99.61	867.35	93.00	3.34	298.41	89.77	98.57	1.10
1961	22.73	32.20	20.18	26.18	67.73	164.12	316.25	279.32	221.16	118.69	14.96	8.98	1292.50	54.93	114.09	980.84	142.63	8.98	316.25	107.71	106.57	0.99
1962	12.45	18.29	15.01	37.26	58.50	117.71	265.01	260.40	203.73	59.50	15.96	24.87	1088.68	30.74	110.76	846.85	100.32	12.45	265.01	90.72	93.35	1.03
1963	0.32	9.03	28.59	30.72	51.23	147.48	246.27	306.48	153.14	85.20	19.05	10.29	1099.84	15.35	02.21	853.30	21.26	0.32	300.48	91.05	90.45	1.05
1965	8.75	22.01	22.36	35.19	43.22	134.91	264.03	194 79	138.16	28.32	14.91	0.07	893 71	30.76	100.77	707.23	54.96	8.75	264.18	74.48	80.47	1.15
1966	12.79	17.99	13.34	24.82	52.98	171.79	243.29	224.07	134.64	46.01	41.07	12.57	995.36	30.78	91.14	773.80	99.65	12.57	243.29	82.95	82.93	1.00
1967	8.24	11.60	54.11	23.39	39.56	132.19	284.28	271.14	170.24	33.85	8.79	46.26	1083.66	19.84	117.07	857.85	88.91	8.24	284.28	90.31	96.41	1.07
1968	23.63	20.31	23.36	30.44	45.83	137.25	297.53	206.13	133.52	62.69	15.12	8.56	1004.39	43.94	99.63	774.44	86.38	8.56	297.53	83.70	87.75	1.05
1909	24 79	21.12	23.46	28.17	6535	205.30	240.81	209.40	211.35	65 44	947	1.13	1188.18	45.91	116.98	949.25	76.03	113	291.80	99.01	101.04	1.10
1971	17.41	19.79	10.93	46.79	69.41	223.55	278.60	273.33	156.04	102.90	12.11	6.51	1217.38	37.20	127.14	931.52	121.51	6.51	278.60	101.45	100.73	0.99
1972	10.55	26.02	17.90	34.55	51.54	114.00	225.38	235.64	142.95	58.15	25.74	15.93	958.35	36.57	103.98	717.98	99.82	10.55	235.64	79.86	77.72	0.97
1973	20.81	18.31	17.37	26.45	54.95	154.02	292.44	309.24	196.96	121.46	12.68	12.30	1236.98	39.12	98.77	952.65	146.44	12.30	309.24	103.08	106.46	1.03
1975	19.42	22.48	27.00	23.12	48.14	165.73	322.51	279.85	224.59	100.24	13.99	2.40	1258.15	41.91	98.27	992.68	125.29	2.40	322.51	104.85	109.87	1.00
1976	11.17	21.96	20.74	31.54	41.61	146.45	296.18	292.65	153.61	29.53	41.94	3.31	1090.69	33.13	93.89	888.88	74.79	3.31	296.18	90.89	102.34	1.13
1977	18.06	8.78	12.09	54.84	79.85	173.31	321.37	256.61	151.44	81.12	56.07	12.24	1225.78	26.83	146.78	902.74	149.42	8.78	321.37	102.15	98.61	0.97
1978	13.14	29.32	34.98	21.71	50.73	200.57	302.58	282.87	176.78	49.57	37.85	15.01	981.00	42.46	95.33	962.79	102.43	13.14	302.58	101.76	103.48	1.02
1980	12.23	15.26	22.31	27.59	46.10	208.64	305.71	269.79	154.05	43.19	16.50	12.92	1134.28	27.49	95.99	938.18	72.61	12.23	305.71	94.52	105.02	1.11
1981	26.56	17.40	39.15	33.90	60.35	138.30	311.94	234.15	193.98	40.81	21.25	11.06	1128.86	43.96	133.40	878.37	73.12	11.06	311.94	94.07	96.72	1.03
1982	30.64	24.00	43.28	46.33	57.72	128.75	232.89	276.11	134.14	47.52	35.75	10.31	1067.44	54.64	147.34	771.88	93.58	10.31	276.11	88.95	82.96	0.93
1983	12.62	19.66	29.37	40.78	55.66	1.34.06	282.74	280.47	201.80	84.93 56.04	0.84	9.76	1240.74	37.43	135.73	959.06	108.52	0.84	282.74	91 01	104.75	1.01
1985	21.69	9.00	16.85	35.27	47.61	146.66	299.77	239.65	165.68	112.59	10.70	16.75	1122.19	30.69	99.72	851.75	140.03	9.00	299.77	93.52	95.18	1.04
1986	14.92	35.20	21.09	39.63	45.00	173.60	276.78	226.91	128.99	63.86	35.68	23.21	1084.87	50.12	105.72	806.27	122.76	14.92	276.78	90.41	85.72	0.95
1987	14.83	19.55	23.79	34.11	61.76	118.64	241.27	253.58	157.36	85.39	37.25	15.14	1062.68	34.38	119.66	770.85	137.78	14.83	253.58	88.56	82.81	0.94
1988	6.42	12 4.10	41.47	30.82	53.02	104.96	303.09	295.83	200.10	41.87	11.10	13.42	1/247.17	32.51	135.05	1005.23	74.38 62.07	8.42 12 47	348.33	103.93	97.82	1.09
1990	11.66	39.51	37.06	35.54	108.02	188.76	305.91	272.48	197.89	93.29	22.96	17.97	1331.04	51.17	180.62	965.03	134.22	11.66	305.91	110.92	100.22	0.90
1991	12.35	19.82	22.48	39.18	60.66	170.42	275.85	254.09	135.84	53.43	24.63	14.81	1083.54	32.17	122.31	836.20	92.87	12.35	275.85	90.29	91.40	1.01
1992	21.22	19.88	20.23	21.90	49.89	122.59	245.28	266.94	155.67	53.91	33.87	2.70	1014.09	41.11	92.03	790.48	90.48	2.70	266.94	84.51	88.16	1.04
1993	15.98	20.14	36.10	25.42	51.62	156.79	298.54	220.66	216.01	76.91	20.62	13.05	1157.12	36.12	118.42	892.00	110.58	13.05	298.54	96.43	95.67	0.99
1994	31.23	20.00	24.78	24.66	75.27	133.10	300.75	258.51	201.73	71.93	28.50	7.13	1181 67	47.12	124.71	894.07	107.08	7.13	300.75	98.47	97.39	0.99
1996	25.03	27.35	26.09	30.88	60.68	168.87	270.63	292.71	156.80	93.32	8.25	11.10	1171.72	52.38	117.65	889.02	112.67	8.25	292.71	97.64	97.13	0.99
1997	15.81	9.31	23.71	43.02	44.29	149.22	273.47	278.75	167.86	60.64	52.65	54.89	1173.61	25.12	111.02	869.30	168.17	9.31	278.75	97.80	92.34	0.94
1998	17.09	26.31	35.56	34.59	52.71	154.54	292.50	262.84	214.30	114.06	34.51	0.67	1245.69	43.41	122.85	924.18	155.25	6.67	292.50	103.81	98.15	0.95
2000	14.20	24 64	0.93	32.92	09.03	104.42	268.54	223.01	209.50	38.49	9.24	6.03	1035.55	20.61	120.51	825 71	53.24	5.51	268 54	70.04 86.30	70.10	1.00
2001	7.92	10.44	17.95	45.40	68.69	188.89	264.66	191.28	126.98	92.25	16.53	5.87	1036.85	18.36	132.04	771.81	114.64	5.87	264.66	86.40	84.13	0.97
2002	19.83	24.23	20.14	36.36	60.10	151.36	165.33	248.82	132.49	56.83	11.17	5.71	932.37	44.05	116.60	698.01	73.71	5.71	248.82	77.70	74.71	0.96
2003	13.11	37.39	29.36	32.69	37.31	158.41	297.98	229.60	187.92	91.10	9.52	14.58	1138.96	50.50	99.36	873.91	115.20	9.52	297.98	94.91	94.56	1.00
2004	28.72	25.48	33.60	38 37	4838	133.48	339.63	244.03	202.74	105.94	11.40 16.84	7.44	1067.01	54.26	120.00	879 79	130.22	744	339.63	98 72	98 70	1 0.90
2006	10.56	13.49	38.09	37.22	85.88	148.51	278.51	247.90	176.96	49.11	30.97	7.40	1124.59	24.04	161.20	851.87	87.48	7.40	278.51	93.72	91.71	0.98
2007	5.59	44.18	25.39	34.97	56.38	181.89	302.72	254.69	212.68	49.69	12.21	8.85	1189.23	49.77	116.74	951.99	70.74	5.59	302.72	99.10	102.75	1.04
2008	19.84	18.62	45.88	31.94	55.64	225.53	265.49	263.09	172.63	42.39	22.86	7.10	070.07	38.45	133.46	926.75	72.36	7.10	265.49	97.58	98.08	1.01
2009	8.93	16.87	19.64	47.56	64.26	134.11	305.58	273.39	218.36	70.93	40.32	2.00	770.07	24.62	20.09	931.43	117.42	8.93	305.58	102.49	04.22	0.99
MIN	3.40	3.34	6.93	17.03	30.66	80.70	165.33	175.27	105.23	14.81	2.78	1.13	893.71	13.33	80.01	698.01	39.98					-199
MAX	49.70	48.94	54.11	65.70	108.02	250.67	348.33	320.37	272.31	144.30	65.30	54.89	1386.55	76.22	180.62	1041.91	195.61	1				
MEAN	17.85	20.83	24.43	34.08	57.34	155.69	285.15	254.97	1/2.34	09.06	23.12	11.82	03.44	38.67	115.85	868.15	104.00	1				
CV	0.49	0.51	0.42	0.25	0.24	0.22	0.12	0.12	0.20	0.40	0.64	0.66	0.08	0.33	0.16	0.09	0.30	1				
-					-																	



Characteristics of long-term variability of precipitation in selected river catchment areas in India ..





Figure 4. Histogram of relative error in monthly precipitation totals, the territory of India

V. Precipitation variability in the territory of India

A long-term mean annual total of precipitation based on the analyses is estimated at 1126 mm in India. The mean values in the analysed period of 110 years vary from 894 mm to 1387 mm, with the largest volume of precipitation in India amounting to about 11690 mm – in Mawsynram near Cherrapunji in the state of Meghalaya in north-eastern India (R. Kumar, R. D. Singh and K. D. Sharma, 2005). On the other hand, in Jaisalmer in the Thar Desert in Rajasthan, the annual precipitation volume is as low as 150 mm. 75% of total

annual precipitation is recorded in the period from June to September. 750 mm of rain p.a. falls on about 21% of the India territory, and the total of annual precipitation exceeds 1500 mm on about 15% of the territory. The areas characterised by low volumes of precipitation, below 500 mm, include the western region of Rajasthan, Gujarat, Haryana and Punjab, the interior of the Deccan Plateau east of Sahyadris and the region near Leh in Kashmir. The standard deviation of mean value of annual total precipitation reaches 10% and the coefficient of variation amounts to 0.08. The sum of mean precipitation volume in the long-term period amounts to 3704 km³, showing a positive trend of 68 [million m³/year].

VI. Precipitation periodicity in the territory of India

The periodicity of precipitation in the territory of India was assessed using signal processing theory with a harmonic analysis applied. The procedures necessary to calculate the values of predominating frequencies were developed in Matlab. The inverses of those values represent the predominating period of repeatability of an event. The analysis was completed for various profiles of the analysed dataset. The results are shown in graphic and tabular formats.

The periodicity of monthly precipitation, considered using monthly profiles of calendar years in the analysed period 1901–2010, may be described as follows: November is characterised by a long predominating period of repeatability: 16 years while predominating periods of repeatability for the remaining months amount to 2 to 14 years. Period of repeatability of minimum values: 55 years, maximum values: 2 years, medium values: 2.5 years

VII. Premises for an analysis of climate changes observed in precipitation

The trend in climate changes considered using monthly precipitation profiles for the calendar year is described by linear equations with indicated boundary values of coefficients determined at a 5% significance level. The slope values are both negative and positive for the analysed period 1901–2010. The months of January, February, April, August and December are characterised by a decreasing trend in precipitation while the remaining months by a positive trend. The values vary between -0.035 in August and +0.098 [mm/year] in October.



Figure 5. Inverses of predominating frequencies of monthly precipitation values and their statistics for the territory of India

1. Analyses of selected catchment areas

1.1. **GRDC** data³

The GRDC has created and manages a large bank of hydrological data, including watercourses, their topology, flows in selected water-level gauge locations, and catchment area boundaries on Earth. The GRDC website makes available both hydrographic and hydrological data. Access to the database is regulated by the Policy guidelines for the dissemination of data. This analysis uses GRDC data describing the catchment areas of rivers located in whole or in part in the territory of India, with closing cross-sections indicated.

1.2. Application

The monthly precipitation values for selected river catchment areas in the territory of India area are calculated using GIS interpolation methods. The GPCC data representing total precipitation volumes in individual months in the period 1901–2010, with a spatial resolution of $0.5^{\circ}x 0.5^{\circ}$ of geographic longitude and latitude, converted to the analysed river catchment areas. A sequence of monthly precipitation values was obtained and is analysed below, like in the analysis covering the territory of India. The calculated sequence values were subject to a simple statistical analysis in order to determine the basic statistics: the minimum and maximum values, the mean value, standard deviation of the sample and the value of the coefficient of variation. The data is analysed in calendar year profiles. The analyses of monthly precipitation values cover the years 1901–2010.

The mean total of precipitation in the analysed river catchment areas in the long-term period varies from 1532 in the Brahmaputra catchment area to 450 mm in the Indus catchment area at coefficients of variation of 0.13 for the Brahmaputra river and of 0.17 for the Indus river. The greatest value of coefficient of variation in total annual precipitation in the analysed long-term period is observed in the catchment area of the Mahi river (0.28) at a mean total of precipitation amounting to 827 mm. The greatest mean values are recorded in the Brahmaputra catchment area and the lowest – in the Indus catchment area (about 314 mm).

Table 4. A statement of periodicity values (inverses of predominating frequencies) for mean monthly prec	cipitation sequences in the period
1901–2010 by months in the territory of India	
	the second state and the second state of the s

					Mont	ths of the	calend	ar year					Р	eriodict	ivity stati	stics of	,
Analysed sequence profile	'I'	'II'	ΊΠ	TV'	'V'	'VI'	'VII'	'VIII'	'TX	'X'	'XI'	'XII'	MIN	MAX	MEAN	SD	CV
									[years	5]							
edominating period in years	12.111	4.192	7.786	6.813	4.739	21.800	2.096	2.319	7.267	13.625	15.571	4.955	54.500	2.096	2.422	2.725	3.759

	1000 01 p							, p. co.			e anany	ocu pe				.,	ala	
						Mor	nths of the	calendar	year						S	tatistics of	of	
	Units	T'	Ίľ	'III'	'TV'	'V'	'VI'	'VII'	'VIII'	'IX'	'X'	'XI'	'XII'	MIN	MAX	MEAN	SD	CV
Slope value a		-0.022	-0.011	0.006	-0.010	0.086	0.026	0.047	-0.035	0.065	0.098	0.000	-0.002	0.009	-0.015	0.021	-0.006	0.000
Lower limit at a 95% confidence level	[mm/year]	-0.074	-0.075	-0.055	-0.061	0.004	-0.178	-0.156	-0.217	-0.142	-0.067	-0.088	-0.049	-0.011	-0.166	-0.026	-0.059	-0.001
Upper limit at a 95% confidence level		0.031	0.052	0.068	0.040	0.167	0.230	0.250	0.147	0.272	0.263	0.088	0.045	0.029	0.137	0.067	0.046	0.000
Coefficient value b		60.42	43.16	11.81	54.60	-110.07	105.33	192.59	323.24	45.79	-122.87	23.29	16.05	-9.34	321.14	53.61	108.01	1.62
Lower limit at a 95% confidence level	[mm]	-41.90	-80.65	-108.62	-44.49	-269.58	-293.92	-204.22	-33.24	-358.85	-445.69	-149.38	-75.92	-48.84	24.56	-37.55	5.02	0.92
Upper limit at a 95% confidence level		162.74	166.96	132.24	153.69	49.44	504.59	589.39	679.72	450.43	199.96	195.96	108.02	30.16	617.72	144.77	211.01	2.32

Table 5. Values of parameters of the linear trend in monthly precipitation in the analysed period for the territory of India

Table 6. Statistics of mean annual precipitation in the analysed river catchment areas in the period 1901–2010

Drainage	Station	GRDC_NO	AREA	MIN	MAX	MEAN	SD	CV
			[km ²]		[m	m]		[]
BRAHMAPUTRA	BAHADURABAD	2651100	505270.6	1206	2235	1533	199	0.130
INDUS	KOTRI	2335950	1125733.6	314	643	451	75	0.167
GANGES	FARAKKA	2846800	901751.6	860	1448	1119	129	0.115
MAHI RIVER	SEVALIA	2853150	35896.8	341	1480	827	229	0.277
NARMADA	GARUDESHWAR	2853200	88075.9	675	1690	1148	202	0.176
TAPTI RIVER	KATHORE	2853300	64098.8	409	1365	859	173	0.201
DAMODAR RIVER	RHONDIA	2854050	20413.2	743	1914	1284	226	0.176
BRAHMANI RIVER (BHAHMANI)	BARKOT BR.	2854080	30090.1	1054	2030	1515	199	0.131
KRISHNA	VIJAYAWADA	2854300	255880.4	561	1186	831	126	0.151
PENNER RIVER	NELLORE	2854500	54737.8	398	1084	663	141	0.213
CAUVERY RIVER	GRAND ANICUT	2854800	70315.9	697	1340	1014	134	0.133
MAHANADI RIVER (MAHAHADI)	KAIMUNDI	2855800	118002.2	885	1994	1391	197	0.142
GODAVARI	POLAVARAM	2856900	309378.3	645	1635	1146	167	0.146
INDIA			3287590.0	894	1387	1127	93	0.083

³ The GRDC operates under the auspices of the World Meteorological Organization (WMO) and is hosted by the Federal Institute of Hydrology (BfG) in Koblenz, Germany

6											Brahm	aputra	1									
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ocr	NOV	DEC	ANN	JAN-	MAR-	JUN-	OCI-	MIN	MAX	MEAN	SD	cv
1901	29.2	23.9	22.0	96.4	80.3	204.4	273.5	311.5	108.3	46.7	72.6	3.4	1272.2	53.1	198.7	897.7	122.7	3.38	311.46	106.01	102.50	097
1902	8.5	13.0	71.3	168.9	91.8 95.0	270.0	326.8	434.6	433.5	41.9	9.4 24.6	2.4	1872.2	21.6 30.0	332.0	1464.9	53.7	2.39	434.64	156.02	167.48	1.07
1904	13.2	28.2	46.6	235.3	162.5	169.7	256.4	332.5	104.3	70.9	27.0	59	1462.4	41.3	444.3	872.8	103.9	5.93	332.49	121.87	110.22	0.90
1905	23.8	18.1	88.3 20.1	105.4	101.3	218.0	270.0	629.4 556.6	143.5	56.4	20.4	25.3	1700.0	419	295.1	1280.9	102.1	18.07	629.45	141.67	173.39	1.22
1907	27.3	38.3	75.2	163.7	73.0	182.4	402.7	193.4	262.3	15.3	5.1	4.8	1443.5	65.6	311.9	1040.8	25.2	4.79	402.69	120.29	123.68	1.03
1908	93	19.8	20.2	114.3	160.6	175.0	357.1	143.4	226.3	62.1	1.7	18	1291.6	292	295.1	901.8 1164.9	65.5	1.68	357.07	107.64	110.58	1.03
1910	89	27.0	128.4	81.5	83.0	387.2	563.9	255.9	150.9	189.7	9.1	16.6	1902.1	35.8	292.9	1357.9	215.4	8.86	563.90	158.51	171.06	1.08
1911	40.8	15.6	61.6 60.0	147.0	223.3	309.5	534.3	282.3	222.9	152.3	26.4	3.7	2019.9	56.4	431.9	1349.0	182.5	3.74	534.26	168.33	157.17	0.93
1913	11.9	74.2	76.4	256.2	225.1	328.0	261.4	236.5	195.1	108.7	5.4	60.7	1839.6	86.1	557.7	1021.0	174.8	5.41	328.00	153.30	109.22	0.71
1914	4.8	74.6 52.0	50.5 51.7	91.6 65.7	238.3	169.7	235.5	449.3 461.5	199.3	32.8	20.9	35	1446.3	79.4 57.4	256.0	1053.7	57.2 70.8	3.50	449.27	120.53	128.81	1.07
1916	21.2	24.1	41.6	133.2	164.0	319.7	399.8	211.9	189.3	92.0	10.2	6.0	1613.2	452	338.9	1120.8	108.3	5.99	399.83	134.43	128.63	0.96
1917	3.6	8.9	85.0	68.0	248.8	529.5	426.4	387.0	172.9	28.0	8.9	22	1969.5	12.6	401.8	1515.9	39.2	2.87	529.54	164.12	189.12	1.15
1919	11.8	18.1	13.4	91.7	125.7	289.7	310.1	116.1	276.6	243.2	19.2	49	1520.5	29.8	230.8	992.6 042.6	267.2	4.87	310.09	126.71	121.30	0.96
1923	36.9	14.3	72.0	186.7	373.6	315.5	518.7	375.6	212.3	116.6	4.1	9.1	2235.4	51.2	632.3	1422.1	129.8	4.11	518.70	186.28	174.04	0.87
1922	17.5	78	47.2	83.9	114.4	340.3	250.7	250.2	113.4	97.7 35.8	5.7	13.7	1352.6	25.3	245.5	964.7 926.0	117.1	5.70	340.30	112.71	112.52	1.00
1924	14.6	15.3	17.8	81.9	152.2	311.9	342.9	280.9	192.6	106.0	579	3.7	1577.6	29.9	251.9	1128.3	167.5	3.67	342.86	131.47	123.83	0.94
1925	24.6	25.9	37.9 94.2	153.0 63.5	234.8	246.1	391.2	306.3	342.3 84.3	40.0	5.4	2.0	1554.5	25.9	425.7	1031.0 921.9	47.3	2.01 6.59	342.34	129.55	122.89	0.95
1927	21.6	68.7	46.3	119.6	90.0	316.8	236.2	210.8	417.5	134.3	26.3	1.8	1689.9	90.3	255.9	1181.3	162.4	1.81	417.48	140.82	129.81	0.92
1928	76.6	79	52.5	04.7	253.4	396.1	206.0	340.1 208.1	159.3	186.0	24.9	45.5	1792.7	352 845	482.3	969.6	256.4	7.93	396.09	140.65	129.17	0.76
1930	16.5	21.4	65.7 50.9	150.7	59.0 127.9	254.5	140.0 405.5	369.7	196.1 210.6	132.0	55.5	89	1470.2	379	275.4	960.4	196.5	8.88	369.73	122.51	109.24	0.89
1932	16.1	24.1	23.3	69.1	239.1	433.1	172.5	410.0	242.4	54.9	106.8	30.9	1822.4	40.2	331.6	1258.0	192.6	16.10	433.14	151.87	149.59	0.99
1933	15.9	17.8	13.6	96.6 198.0	133.2	234.4	236.8	266.1	116.1	96.0	8.0	3.4	1237.7	33.6	243.4	853.3	107.4	3.36	266.06	103.14	97.57	0.95
1935	8.4	43.1	40.1	47.5	122.5	392.0	214.8	402.5	233.0	99	14.7	63	1534.8	51.5	210.2	1242.2	30.9	6.25	402.45	127.90	147.99	1.16
1936	21.0	50.3 48.2	39.1 14.7	111.4 59.6	156.6 144.0	224.0	395.2 222.8	271.0 358.9	189.5 123.1	69.1 116.8	31.0 5.8	36.3	1594.4 1242.2	71.3 51.4	307.1 218.3	1079.7 843.5	136.4 128.9	20.98	395.19 358.89	132.87	117.68	0.89
1938	33.9	27.3	77.9	103.5	124.6	501.3	433.5	303.2	257.6	83.4	27.5	18	1975.5	61.2	306.0	1495.6	112.6	1.76	501.30	164.62	169.01	1.03
1939	3.7	94.5 65.9	136.6	31.5	119.6	206.5	265.6	136.0	251.2	36.1	11.8	14.5	1455.0	69.6	318.2	932.2	62.4	3.66	409.84	115.20	107.79	0.94
1941	8.0	21.2	32.6	81.4	249.5	193.7	238.9	259.1	253.4	45.9	11.1	13.7	1408.5	29.2	363.5	945.1	70.7	8.03	259.12	117.37	110.16	0.94
1942	49.4	27.3	91.7	131.3	203.8	285.1	108.9	248.6	244.7	45.9	7.8	6.0	1947.8	40.8	427.3	9775	24.7 59.6	5.95	285.06	120.05	103.29	0.80
1944	28.4	21.6	50.2 34.0	66.5 79.0	241.1	284.0	190.9	142.1	307.8	90.1	8.2	11.5	1442.5	50.0	357.8	924.8 1024.6	109.8	8.16	307.81	120.21	110.08	0.92
1946	13	25.0	40.0	87.0	209.9	234.8	354.6	155.0	187.6	139.8	6.8	23	1444.1	263	336.9	932.0	148.9	1.34	354.63	120.34	112.72	0.94
1947	62 99	10.3	56.7 37.7	128.9	149.6 447.6	184.2	426.2	146.5 227.5	209.5	127.6	2.1	7.8	1455.8 2186.0	16.5	335.2 647.8	966.5 1353.2	137.6	2.13 6.77	426.24 651.38	121.32	121.77	1.00
1949	24.0	28.5	88.6	214.2	193.4	342.7	336.0	365.4	216.2	128.3	10.8	16.9	1964.8	52.5	496.1	1260.2	156.0	10.85	365.36	163.73	134.22	0.82
1950	62	11.3	57.5	116.7	123.7	275.9	346.1	250.0	144.9	108.2	34.2	7.0	1448.4	46.5	256.6	1003.4	141.8	6.22	346.09	120.70	115.01	0.92
1952	5.7	15.8	77.5	84.8	183.1	211.7	268.9	342.0	293.4	125.1	24.5	6.7	1639.2	21.5	345.5	1115.9	156.3	5.71	341.98	136.60	120.43	0.88
1953	17.4	38.6	27.9	126.4	213.2	328.3	414.6	318.8	158.0	87.6	4.2	19.1	1754.1	56.0	367.5	1219.8	110.8	4.17	414.61	146.17	142.06	0.89
1955	8.1	12.4	74.0	77.6	241.3	282.9	444.7	277.8	148.3	102.4	16.8	8.6	1574.7	20.6	272.7	1153.6 910.2	127.8	8.13	444.68	131 23	137.35	1.05
1957	40.0	27.2	22.4	75.2	195.5	242.4	325.8	219.6	133.0	49.8	13.5	13.6	1358.0	67.2	293.1	920.8	76.8	13.47	325.80	113.16	107.33	0.95
1958	18.5	22.6 30.4	21.4 53.1	85.2 92.5	240.9 235.9	199.5 315.1	209.3	436.9	176.8	130.9	5.0 9.8	6.4 2.1	1553.4	41.1 54.4	347.5 381.4	1022.5 963.6	142.3	4.98	436.87	129.45	130.89	1.01 0.86
1960	5.1	12.3	32.4	44.0	139.8	222.2	374.3	214.9	273.7	44.8	9.8	38	1377.2	17.3	216.2	1085.1	58.5	3.85	374.27	114.76	126.97	1.11
1962	19.2	24.9	24.6	66.0	202.1	325.3	243.0	379.2	115.6	49.9	8.8	6.7	1450.6	44.0	292.7	1048.5	65.3	6.66	379.24	120.88	131.16	1.08
1963	53	12.0	43.9	93.8 113.4	146.7	256.1	307.7	328.5	124.4	69.S	152	65	1409.6	17.3	284.4 204.5	1016.7	91.2 100.6	5.27	328.46	117.47	118.93	1.01
1965	7.0	36.5	38.1	87.0	155.3	264.9	257.3	316.2	183.7	45.2	39.5	6.6	1436.7	43.5	279.8	1022.0	91.3	6.63	316.17	119.73	1111.21	0.93
1966	15.1	19.0 22.9	23.8 62.9	82.3 51.3	132.9	335.9	291.1 300.6	303.1 175.5	144.1 183.8	55.3 52.8	14.7	5.6	1423.0 1205.7	34.2	239.1 225.3	1074.2	75.6	5.60	335.94 300.61	118.59	124.45 98.06	1.05
1968	21.5	20.0	47.7	91.1	192.5	291.2	305.8	204.1	178.1	84.3	5.2	2.8	1444.2	41.5	331.3	979.1	92.3	2.83	305.81	120.35	110.15	0.92
1969	22.2	90 36.6	52.3	101.7	149.1	312.6	330.1	231.9	231.9	101.0	7.3	15	1.610.1	20.1	335.0	1029.4	109.8	1.49	330.07	134.17	119.04	0.89
1971	17.6	20.2	30.3	75.1	128.5	286.1	273.1	267.0	156.4	132.9	35.2	43	1426.6	37.8	234.0	962.6	172.3	4.28	286.14	118.89	106.72	0.90
1972	16.5	38.4	30.5	1165	169.4	356.0	217.9	253.4	212.8	96.2	23.8	17.5	1548.8	54.9	316.4	1040.0	137.5	16.49	355.96	129.07	112.35	0.87
1974	21.4	13.3	46.7	119.0	167.5	328.4	439.0	327.9 196.6	233.8	93.6 105.0	10.0	43	1805.1 1383.6	34.8 40.0	333.2 299.1	1329.2 928.9	107.9	4.34	439.03	150.42	149.30	0.99
1976	59	31.3	55.1	85.1	122.1	323.5	246.2	252.5	108.8	52.4	179	4.4	1305.1	372	262.2	930.9	74.8	4.44	323.45	108.76	107.93	0.99
1977	9.7	20.0	40.4	66.7	165.1	296.8	285.2	185.3	135.1	52.9	32.3	2.7	1629.2	29.7	428.0	933.4	87.8	2.66	296.81	135.77	104.59	0.85
1979	75	15.9	33.7	80.0	116.2	172.3	352.5	222.4	210.5	156.4	129	30.1	1410.6	23.5	230.0	957.6	199.5	7.55	352.46	117.55	108.19	0.92
1980	19.8	26.7	59.2	88.2	145.4	219.0	329.9	229.6	165.6	33.5	11.4	21.4	1349.7	46.5	292.8	944.1	66.3	11.42	329.86	112.47	104.60	0.90
1982 1983	52 16.0	27.2 29.8	42.9 48.8	128.9 83.8	117.4 136.0	254.5	301.9 274.4	173.2 216.7	205.4	43.8	21.2	13.6 16.0	1335.1 1418.3	32.4 45.8	289.1 268.5	935.0 988.5	78.6	5.17	301.86 274.38	111.26	102.29	0.92
1984	18.4	17.4	31.9	108.8	222.1	257.7	403.6	195.3	273.8	72.9	4.8	17.7	1624.3	35.8	362.7	1130.3	95.5	4.81	403.56	135.36	131.75	0.97
1985	68 68	18.1	75.7 35.4	127.0	139.7 90.1	295.3 219.6	259.9	214.3 220.0	203.9	01.4	0.8	19.9	1346.4	24.3	267.1	913.4	88.1 141.6	0.84 6.79	269.94	152.54	120.46 96.69	0.95
1987	8.6	28.7	62.8	108.8	120.9	235.0	393.9	289.7	250.4	78.3	9.5	83	1594.9	37.2	292.5	1169.0	96.2	8.32	393.93	132.91	128.85	0.97
1968	9.1	39.7	31.6	92.0	163.4	203.4	331.5	215.9	240.3	90.9 89.0	18.0	83	1518.5	555	296.9	1050.7	132.6	8.33	331.49	126.54	112.61	0.89
1990	18.5	39.2 22.4	49.0 49.7	134.7	151.0	313.8	343.0 320.2	207.5	2679 228.0	88.9	7.0	65 204	1627.0	57.7 35.8	334.6 363.6	1132.3 1104.4	102.4	6.52 9.06	342.99	135.58	121.95	0.90
1992	99	34.3	46.5	85.9	128.0	211.4	265.6	218.6	144.1	62.6	8.0	5.8	1220.7	44.2	260.5	839.7	76.3	5.78	265.56	101.72	90.86	0.89
1993	29.6	44.4 29.3	58.9 84.5	79.8 106.0	177.5	295.9	315.7	331.2 232.2	196.1 147.0	66.5 69.8	9.9	32	1608.7	74.0 49.6	316.2 365.1	1139.0 839.4	79.5 84.8	3.17	331.21 262.43	134.06	123.75 90.09	0.92
1995	10.8	34.4	39.3	76.4	177.2	308.0	301.1	234.4	228.5	49.7	36.5	92	1505.5	45.1	292.9	1072.0	95.4	9.23	308.04	125.46	115.91	0.92
1990	13.5	26.0	66.5	68.9	133.7	289.2	242.4	189.7	237.9	26.0	17.5	22.7	1909.4	444 Z 35.0	269.1	959.3	66.1	1.32	289.22	144.45	103.10	092
1998	95	27.8	80.9 21.9	72.9	161.3	364.8	350.8	400.3	141.5	95.6	158	29	1724.0	372	315.1	1257.4	114.3	2.86	400.26	143.67	146.74	1.02
2000	13.1	16.6	37.8	125.6	180.8	298.9	272.2	294.3	207.9	37.8	13.7	3.0	1501.5	29.7	344.1	1073.2	54.4	2.96	298.86	125.13	119.59	0.96
2001	78	23.7	32.2	98.3 131.7	156.8	254.1	269.1	199.1 247.6	2265 1482	93.7 36.8	16.4	5.0	1382.8	31.5	287.3	948.9 1002.7	115.1 67.1	5.01	269.12	115.24	101.63	0.88
2003	12.5	30.9	48.0	96.8	121.4	293.2	320.8	237.8	209.8	84.8	7.3	96	1475.1	43.4	268.2	1061.7	101.8	7.31	320.85	122.92	114.19	0.93
2004	13.1	18.0 30.9	63.5 85.3	144.1 108.0	230.6	246.8	391.4 268.9	202.9 279.7	159.5	128.1	6.1 10.5	7.1	1611.2 1391.2	31.1 48.3	438.2 340.2	1000.6 886.8	141.3	6.08	391.37	134.27 115.93	120.35 96.48	0.90
2006	4.0	37.9	31.4	107.5	176.4	247.7	214.7	164.4	169.4	52.0	21.2	7.4	1234.2	41.9	315.3	796.3	80.7	4.05	247.75	102.85	87.71	0.85
2008	21.8	44.3	26.2	94.7	138.7	239.2	_301.0 _282.3	210.4 290.7	139.1	74.6	7.3	42	1496.5	46.0 39.4	256.2 319.4	1056.8 964.0	86.2	4.21	290.71	124.87	116.51	093
2009	11.6	21.6	34.5	87.3	123.4	210.1	255.0	320.2	123.4	90.1 65.4	10.7	5.1	1292.9	33.1	245.1	908.7	106.0	5.12	320.16	107.74	104.67	0.97
MIN	1.34	7.83	8.86	31.49	59.00	138.67	139.98	114.26	84.25	9.92	1.68	1.32	1205.72	12.56	198.69	796.32	24.67	1.32	246.09	100.48	87.71	0.71
MAX	76.58	74.64 28.30	219.82 53.05	256.24	447.58	529.54 274.81	651.38 312.99	629.45 272.41	433.51 194.25	243.18 85.02	106.81	60.74 9.11	2235.37	90.31 43.48	647.77	1515.94	267.23	20.98	651.38 364.52	186.28	199.61 122.23	122
SD	10.63	14.84	29.58	41.01	5791	72.85	87.87	93.15	59.84	40.88	15.55	9.04	198.61	16.59	80.40	150.32	46.38	3.63	78.55	16.55		
CV	0.70	U.5Z	0.56	U.33	0.35	0.27	0.28	0.34	0.31	0.48	0.95	0.99	0.13	0.35	0.25	0.14	0.42	0.62	0.22	0.13		

Table 7. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901 – 2010 in the Brahmaputra river catchment areas

		555		3/8	ec			<u>.</u>			It	ndus	(a)					<u>10 – </u> 1		21 22	<u> </u>
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	oci	NOV	DEC	ANN	JAN-	MAR-	JUN-	OCI-	MIN	MAX	MEAN	SD CV
1901	47.6	33.9	35.0	19.7	54.5	13.8	80.1	75.5	23.3	5.8	2.3	5.4	396.8	81.4	109.2	192.7	13.5	2.27	80.06	33.07	25.61 0.80
1902	4.6	8.4	36.3	35.2	26.6	42.6	59.8	59.4	35.6	11.0	9.4	4.6	333.5	13.0	98.1	197.3	25.0	4.62	59.77	27.79	20.22 0.73
1903	46.8	9.8	84.2 79.8	19.3	25.1	10.3	61.4	65.1	28.9	4.2	4.6	22.1	454.6	4.5.7	1.90.8	173.3	44.6	9.82	79.84	33.30	<u>35.39</u> 0.93 23.94 0.72
1905	55.4	37.9	672	22.3	29.2	14.5	64.2	38.3	73.1	2.8	2.3	37.5	444.7	93.3	118.6	190.1	42.6	2.29	73.12	37.06	24.22 0.65
1908	33.4	63.7	50.3	51.3	16.6	20.2	55.6	96.2	80.3	5.2	2.1	3.2	466.6	99.8	90.6	258.3	10.7	2.11	96.21	39.06	33.61 0.85
1908	36.1	22.5	14.8	69.4	20.8	19.0	124.5	184.2	46.4	3.9	3.3	20.1	564.9	58.5	105.0	374.1	27.3	3.29	184.19	47.07	54.82 1.16
1909	46.5	45.0	19.5	36.0 36.6	119	39.4	126.1	82.7	81.9 31.1	7.7	2.5	35.5	515.4	72.3	67.3 78.0	330.1 319.6	45.7	2.49	126.13	42.95	36.65 0.85 37.14 0.88
1911	99.1	13.8	125.0	22.6	11.7	30.3	28.1	47.0	38.8	9.5	28.1	10.0	464.0	112.9	159.4	144.1	47.6	9.45	124.99	38.67	36.61 0.95
1912	13.0	47.3	24.1 35.3	28.5	31.2	49.5	70.7	91.7 60.5	23.9	4.0	8.4 9.6	20.9	394.4	60.3	90.2	204.7	24.8 34.5	4.03	97.0s 70.68	34.36 32.87	20.67 0.63
1914	17.8	59.9	42.8	51.4	25.4	37.6	166.6	66.4	71.0	42.1	16.6	22.3	619.9	77.6	119.6	341.6	81.0	16.63	166.59	51.66	40.64 0.79
1915	14.8	35.4	21.6	27.6	23.1	44.1	42.1	150.4	43.9	15.4	2.6	3.6	483.6	50.3	72.4	339.4	21.8	2.61	150.36	40.30	43.38 1.08
1917	14.5	11.2	363	40.4	34.1	54.0 25.6	83.7	155.0	146.6	44.7	2.1	20.0	642.6	25.7	110.8	439.3	66.7 35.0	2.07	154.98	53.55	50.34 0.94 25.27 0.91
1910	51.3	24.4	40.0	24.9	20.0	19.7	110.2	106.0	25.9	2.0	3.9	41.4	469.8	75.8	84.9	261.8	47.4	2.02	110.25	39.15	35.21 0.90
1920	29.2	29.7	64.7 14.0	27.7	32.2	23.3	74.5	38.4	16.0	5.7	2.5	6.5	350.4	58.9	124.5	152.2	14.7	2.49	74.52	29.20	22.15 0.76
1922	24.3	30.2	28.3	20.3	17.5	30.6	83.4	77.6	91.2	6.4	2.8	19.4	432.0	54.4	66.1	282.7	28.7	2.83	91.20	36.00	30.33 0.84
1923	43.2	56.1	30.1 29.9	19.3 30.6	35.9 48.6	12.0	84.0 89.8	133.4 73.2	18.8	16.7	4.2 6.2	18.0	471.4	99.3 86.0	85.3	248.1 291.1	38.8	4.17 6.19	133.38	39.29 44.47	36.94 0.94 35.71 0.80
1925	17.4	24.3	17.3	25.6	38.9	56.2	117.3	67.0	18.5	15.1	18.6	2.4	418.7	41.7	81.9	259.0	36.1	2.42	117.26	34.89	31.74 0.91
1926	14.7	38.4	285	22.0	22.1	13.6	81.5	81.2	45.6	7.1	5.2	24.4	384.3	50.0	72.5	225.2	36.7	5.17	137.90	32.03	32.14 1.00
1928	26.3	55.9	45.4	30.9	10.6	14.4	62.1	78.4	31.3	2.8	32.5	31.2	421.7	82.2	86.9 52 s	186.1	66.6 66.4	2.83	78.39	35.15	22.03 0.63
1929	39.6	29.0	35.9	61.0	17.5	29.0	132.6	51.1	23.0	9.1	3.7	7.2	438.7	68.6	114.4	235.7	19.9	3.68	132.62	36.56	34.91 0.95
1931	31.5	45.6	24.0 45.0	21.5	38.8	11.5	83.3	111.9	33.1	23.1	4.1	4.8	433.3	77.2	84.3	239.8	32.0	4.11	111.90	36.11	31.96 0.89 35.90 1.06
1933	22.1	32.2	52.1	34.6	19.7	34.2	92.4	136.3	58.6	13.8	4.2	5.4	505.5	54.3	105.4	321.5	23.3	4.15	136.29	42.12	38.70 0.92
1934	25.8	41.3	40.5	28.3 54.3	10.4	<u>33.1</u> 11.0	80.1 89.2	90.5 78.8	13.0	2.9	2.7	7.4	317.1 428.0	57.2 95.4	89.8 98.2	216.7	3.4 29.7	2.65	90.47	31.43 35.66	28.28 0.79
1936	14.2	62.0	60.4	28.2	153	54.4	80.9	79.6	30.1	6.0	13.3	41.7	486.3	76.2	104.0	245.1	61.0	6.00	80.90	40.52	26.52 0.65
1937	19.3 58.0	69.1 40.1	38.8	45.5	135	45.7 52.6	105.5 66.8	41.2 63.2	.90.7 9.0	10.2 6.5	4.5	30.0	4.90.1 383.5	88.4 98.1	89.8 71.9	191.5	30.7 22.0	4.46 4.00	105.54 66.79	.30.34 31.96	21.60 0.76 24.15 0.76
1939	21.4	83.1	80.1 41 <	24.2	10.2	30.0	57.7	38.3	21.8	12.3	2.3	4.1	385.5	104.5	114.5	147.8	18.8	2.28	83.10	32.13	27.68 0.86 25.00 0.00
1941	25.0	16.3	32.6	21.4	24.1	31.5	59.7	60.4	41.9	4.9	4.4	22.4	344.5	41.3	78.1	193.5	31.6	4.39	60.35	28.71	18.09 0.63
1942 1943	59.8	72.9	18.1 45.4	29.7 35.4	25.8	26.2	123.5 85.2	102.0	57.0 32.9	5.8	4.9	23.8	549.5 409.6	132.7 78.2	73.6 109.0	308.8 209.6	34.5	4.92	123.52	45.79	37.92 0.83 28.79 0.84
1944	39.1	59.7	44.3	39.5	15.4	19.9	117.8	139.5	25.7	10.2	8.0	21.9	541.1	98.8	99.2	302.9	40.1	7.97	139.55	45.09	42.11 0.93
1945	43.9	10.2	42.1 24.9	34.1	152	23.1 40.7	99.1 71.2	69.2 81.7	75.8 10.8	11.3	5.5	5.5	435.0 357.6	54.1 46.1	91.3 55.8	267.3 204.3	22.3 51.4	5.46	99.12 81.67	36.25	30.92 0.85 23.33 0.78
1947	20.6	29.7	28.6	56	17.7	10.4	53.3	76.5	92.1	5.8	3.0	20.7	364.0	50.3	51.9	232.3	29.5	3.00	92.15	30.33	28.89 0.95
1948	22.4	51.8	56.3	18.2	19.3	27.1	99.0	62.2	38.5	8.9	3.6	6.6	460.5	74.2	93.8	226.9	19.0	3.58	99.01	40.34 34.49	28.30 0.82
1950	68.2	23.2	41.9	32.1	21.3	16.1	104.9	94.5	100.9	3.9	2.0	2.7	511.6	91.4	95.2	316.3	8.6	1.98	104.89	42.63	39.33 0.92
1951	21.7	34.7	55.3	14.5	172	33.2	85.0	93.9	75	2.2	1.9	12.1	379.0	56.4	87.0	219.6	16.1	1.86	93.90	31.59	31.07 0.98
1953 1954	47.6	21.5	28.7	25.5	16.4	30.6	110.9 85.2	107.6	33.0 92.7	7.5	3.0	13.9	446.2	69.0 135.4	70.7 56.8	282.1 251.3	24.4 25.9	3.00	110.92 92.73	37.19 39.11	35.72 0.96 32.90 0.84
1955	24.9	10.0	54.3	20.4	42.8	18.8	63.1	146.3	59.1	65.4	0.9	13.2	519.1	34.8	117.5	287.3	795	0.91	146.34	43.26	39.48 0.91
1956	85.4	22.6	79.3 52.8	72.7	5.5	44.8	178.0 86.1	96.0 77.6	26.0 45.9	6 <i>3</i> .1 33.8	2.5	43.5	610.7	53.1	125.8	347.4 232.5	83.3	2.51	86.10	50.89	49.40 0.97 24.36 0.47
1958	20.5	13.2	33.1	23.2	179	12.2	100.6	73.5	94.4	12.2	5.6	52.8	459.2	33.8	74.2	280.6	70.6	5.59	100.56	38.27	33.74 0.88
1939	22.5	9.7	61.9	36.0	13.6	20.7	144.6	85.3	17.6	5.0	4.0	21.8	410.2	32.2	95.5	235.8	30.8	3.97	112.14	49.84 34.19	34.37 1.01
1961	43.3	37.6	23.8	52.5 32.8	14.8	42.5	110.2	88.4 75.0	54.8 81.1	15.2	13.2	11.5	507.8	80.9 41.8	91.1 82.1	295.9 260.1	399 387	11.45	110.22	42.32	31.11 0.74 28.90 0.82
1963	3.8	17.2	65.0	35.9	34.9	16.5	58.6	87.9	30.1	4.1	19.3	16.2	389.5	21.0	135.8	193.1	39.7	3.83	87.91	32.46	25.92 0.80
1964	45.8	26.1	26.1	33.2 65.9	21.1 40.9	25.0	127.4	95.7 50.8	44.2	1.9	2.6	15.6	464.6	71.8	80.4	292.2	20.1	1.92	127.37	38.72	37.20 0.96 24.47 0.76
1966	2.5	57.6	44.2	38.9	31.1	35.9	68.9	83.2	51.2	17.4	2.4	6.9	440.2	60.1	114.2	239.2	26.7	2.36	83.18	36.68	26.19 0.71
1967	4.8	35.0	32.2	24.2	22.7	20.7	80.7	60.0	6.0 6.0	13.5	0.5	20.4	491.3 364.1	40.4	78.0	169.6	84.9 40.8	6.03	82.93	40.94	<u>52.95</u> 0.80 22.37 0.74
1969	20.2	34.5	28.8	42.4	30.1	92	68.7 64.3	62.5	35.7	15.5	3.2	1.5	352.3	54.7 57.2	101.4	176.1	20.2	1.47	68.74	29.36 32.10	21.39 0.73
1971	13.0	31.1	9.7	22.7	24.0	62.7	73.7	82.8	24.6	6.7	3.5	4.0	358.4	44.1	56.3	243.9	14.1	3.47	82.83	29.87	27.83 0.93
1972	32.0	34.4	39.9 38.7	38.4	24.6	19.9 21.9	70.6 95.7	70.4	25.0 31.6	16.7	11.6	28.5	412.1	66.4 74.8	102.8	185.9 305.2	569 300	11.65	70.63	34.34	18.88 0.55 43.16 1.05
1974	31.4	31.0	16.8	17.9	19.8	32.0	81.1	54.0	17.0	5.5	0.9	22.0	329.4	62.4	54.6	184.1	28.3	0.86	81.11	27.45	21.79 0.79
1975	28.3	43.2 51.4	54.1 49.1	23.7	139	34.5 40.6	97.9	124.7	64.8 66.0	5.8	1.5	3.8	534.2	78.9	86.5	345.7 348.1	14.0	1.52	124.72	44.52	41.47 0.93 42.04 0.95
1977	49.0	5.8	6.1	40.8	26.8	45.5	120.6	75.7	60.6 40.3	12.7	10.0	16.6	470.2	54.9	73.7	302.3	393	5.83	120.56	39.18	34.34 0.88
1979	34.9	51.1	67.2	29.3	38.5	15.2	59.7	66.7	30.7	7.0	17.9	15.3	433.5	86.0	135.1	172.3	40.2	7.04	67.19	36.13	20.93 0.58
1980 1981	28.0	36.9	46.0 66.4	11.5 31.0	11.8 24.8	36.2	113.7	47.3 55.2	28.8 20.8	14.5 6.8	11.2	16.5	402.6	64.9 80.0	69.3 122.2	226.1	42.3	3.44	113.71	33.55 37.85	26.52 0.85 34.03 0.90
1982	44.1	47.5	85.9	47.0	48.8	12.6	49.6	92.8	11.9	21.0	20.7	33.1	515.0	91.7	181.8	166.9	74.7	11.90	92.81	42.92	25.96 0.60
1963	9.3	40.9	263	30.9	11.7	24.0	66.4 83.8	95.5	34.0 45.0	2.6	9.2	0.7	394.8	02.5 50.2	68.9	218.9	26.8	2.64	95.46	45.51 32.90	29.61 0.90
1985	23.1	6.6	139	31.2	19.8	17.7	114.4	78.8	23.4	27.8	2.0	40.0	398.5	29.7	64.9 114.6	234.2	69.7 71 <	1.96	114.36	33.21	32.22 0.97
1987	13.1	35.2	53.1	30.9	63.7	27.9	34.4	47.9	13.7	32.6	0.8	5.3	358.6	48.3	147.7	123.9	38.7	0.81	63.72	29.89	19.21 0.64
1988 1989	22.0	33.5	92.3 48.2	13.3	6.8 23.5	27.9	142.9	98.5 82.8	90.7 19.7	3.6	1.7	33.3	566.4 423.1	55.5 51.1	112.4	359.9 243.2	38.7 40.7	1.70	142.86	47.20	46.56 0.99 34.03 0.97
1990	28.0	66.1	60.1	25.4	14.3	18.3	81.9	105.3	53.4	7.3	4.0	53.3	517.5	94.1	99.8	259.0	64.6	3.99	105.34	43.13	31.92 0.74
1991	71.5	40.5	512	38.0	25.5	12.4	95.4	123.2	40.9	12.4	9.4	7.8	408.4	112.0	142.8	319.7	29.6	7.84	123.16	48.39	38.69 0.80
1993	32.8	23.4	83.7	17.5	19.1	33.1	136.7	24.8	45.6	3.1	10.3	1.6	431.7	56.2	120.3	240.2	15.0	1.60	136.66	35.98	38.56 1.07
1994	23.7	40.8	35.6	47.2	12.2	31.0	138.1	118.9	59.3	12.2	6.8	11.5	539.0	66.1	95.0	347.4	30.7	6.80	138.12	44.92	42.45 0.95
1996	34.3	43.9	569 472	26.4	41.0	83.0 51.1	56.9	118.3	33.0 26.1	29.0	3.4	5.0	531.1	78.2	124.4	291.2	37.4	3.40	118.26	44.26	32.05 0.72
1998	19.0	61.6	38.8	45.4	22.0	32.1	78.4	59.1	74.7	34.5	1.5	2.4	469.4	80.5	106.3	244.3	38.3	1.46	78.39	39.12	25.74 0.66
1999 2000	46.5	30.0 25.0	23.0 17.2	18.6 4.9	263 14.1	20.0 41.3	75.6 91.8	68.8 52.3	33.1 24.7	4.0	13.1 6.4	1.7	360.7 324.6	76.5	68.0 36.2	197.5 210.1	18.8 20.1	1.68	75.57 91.82	30.06 27.05	23.20 0.77 25.39 0.94
2001	12.5	14.6	22.1	24.9	26.3	56.8	107.0	52.9	20.5	4.1	7.0	8.8	357.7	27.1	73.4	237.3	199	4.09	107.04	29.81	29.49 0.99
2003	10.8	70.2	45.3	24.7	25.6	23.7	134.0	87.5	40.4	4.7	10.3	14.1	513.8	89.5	99.6	293.5	219	6.50	134.03	42.64	13.29 0.38 37.96 0.89
2004	44.8	20.6	11.0	34.8	22.6	38.4	50.4	85.2	16.7	33.3	5.5	22.4	385.7	65.4	68.3	190.8	61.2	5.50	85.20	32.14	21.47 0.67
2006	37.4	23.3	393	28.2	22.6	18.5 35.2	92.5	40.9 99.8	- 54.1 - 46.8	15.2	21.5	4.4	498.9	60.7	83.9	274.2	80.1	4.45	94.20	36.46 41.58	20.32 0.74 27.40 0.66
2007	9.7	76.8	775	13.7	19.1 31.2	63.1	82.0 78.2	72.3	35.6	2.4	3.3	10.3	465.6	86.5	110.3	253.0	15.9	2.36	81.97	38.80 44 %	32.74 0.84
2009	49.4	47.9	365	45.1	18.7	12.9	61.2	49.2	36.9	7.3	9.5	8.4	383.1	97.3	100.4	160.3	25.1	7.29	61.24	31.92	19.40 0.61
2010 MTN	15.2	54.1	20.3	21.3	31.0	37.5	154.1	147.7	69.4 6.03	7.6	5.0	11.6	574.7	69.4	72.5	408.6	24.2	5.01	154.06	47.89	51.74 1.08
MAX	99.10	85.37	124.99	79.91	63.72	85.28	177.97	184.19	146.63	65.38	38.32	64.09	642.59	135.36	185.16	439.30	106.07	16.63	184.19	53.55	54.82 1.16
MEAN SD	31.10	36.09	43.67	31.34	23.67	28.37	90.51 30.81	86.61 30.48	41.76	11.99	7.75	17.75	450.61	67.19	96.68 29.10	247.25	37.49	4.60	105.74	37.55	<i>s</i> 1.62 0.84
CV	0.56	0.53	0.49	0.45	0.47	0.54	0.34	0.35	0.63	0.99	0.97	0.77	0.17	0.36	0.29	0.25	0.56	0.72	0.27	0.17]

Table 8. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901 – 2010 in the Indus river catchment areas

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YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	oci	NOV	DEC	ANN	JAN-	MAR-	JUN-	-130	MIN	MAX	MEAN	SD	CV
1901	57.3	31.4	18.4	8.8	36.5	54.9	257.5	368.1	136.2	9.0	2.9	7.5	988.5	FEB 88.7	MAY 63.6	SEP 816.8	DEC 19.4	2.91	368.11	82.38	116.05	1.41
1902	8.4	8.1 58	20.3	18.5	38.4	73.9	390.3 126.0	208.5	249.1 213.0	21.5	6.2 1.6	4.4 4.6	1047.7	16.4	77.2 60.4	921.9 858.1	32.1 198.3	4.42	390.31 390.25	87.30 91.36	126.05	1.44
1904	10.8	8.0	29.2	11.0	61.8	145.7	382.2	339.1 205.5	90.8	45.4	15.7	19.9	1159.7	18.9	102.0	957.8	81.0	8.05	382.20	96.64	130.08	1.35
1905	99	61.9	19.7	7.2	28.8	156.0	200.1 344.4	313.8	211.4	9.9	2.1	5.5	1170.7	719	55.7	1025.6	17.5	2.09	344.38	97.56	126.93	1.30
1907	10.6	65.6 25.8	43.4 13.6	30.4	30.6 28.7	99.2 97.6	218.9 329.0	316.7 336.8	60.5 98.7	2.9 10.6	2.7	3.5 4.3	885.1 979.1	762 46.8	104.4 53.3	695.4 862.1	9.1 16.9	2.66	316.69	73.76	97.53 121.88	1.32
1909	17.8	115	6.7	72.9	20.2	267.2	343.1 293.8	293.2 330.6	1111.1 218.6	12.7	1.6	27.4	1185.5	29.3 18.5	99.9 50.0	1014.6	41.7	1.61	343.09	98.79 103.43	127.00	1.29
1911	48.5	42	44.2	13.1	27.7	173.7	145.3	301.5	275.2	59.8	38.1	3.1	1134.5	52.8	85.0	895.7	101.0	3.05	301.45	94.54	104.86	1.11
1912	3.0	45.0	33.7	9.3	75.8	253.3	214.5	212.9	98.8	8.2 19.5	4.5.4	24.4	993.2	479	118.8	838.3 779.5	46.9	4.99 2.96	253.29	85.27	91.97	1.34
1914	23 162	25.0 56.8	33.1 46.0	26.3	57.6	87.7	403.3 264.8	344.5 374.8	151.6 201.9	8.7 66.9	9.4 9.3	3.7	1153.2 1209.2	73.0	117.0 103.8	987.1 9 <i>5</i> 0.8	21.8 81.6	2.33	403.27 374.84	96.10 100.76	137.21 118.18	1.43
1916	22	21.3 29.8	6.5 230	21.8	24.7	255.8	323.2 364.0	368.8	224.7	76.1 86.3	8.0 1.6	3.0	1356.1 1448.4	23.5	53.0 129.6	1192.4 1186.6	87.1 95.1	2.24	388.77	113.01	143.24	1.27
1918	52	4.0	20.1	27.0	52.9	172.5	166.9	315.6	111.8	3.8	7.5	5.3	892.6	92	100.0	766.9	16.6	3.75	315.64	74.38	96.82	1.33
1919	72	14.5	28.6	20.4 9.6	37.2	142.2	393.7	201.8	120.7	4.7	1.6	3.2	965.0	21.6	75.4	8.58.4	95	1.93	393.71	80.42	118.90	1.48
1921 1922	42.8 29.3	4 <u>3</u> 82	12.2	20.3	18.9	161.6 185.2	247.3 393.1	392.6 363.1	234.1 247.5	18.1 6.9	1.7	3.8 20.3	1157.8 1300.0	47.1 37.6	51.4 37.5	1035.7 1188.8	23.6 36.1	1.68	392.63 393.10	96.48 108.34	130.61 148.64	1.35
1923	9.6 17.0	45.0	9.1 9.4	11.3	23.2	75.0	337.1 441.1	347.3 305.2	197.3 324.0	47.1	3.6	19.6 19.7	1125.2	54.6 35.8	43.6	956.7 1154.3	70.2 95.3	3.60	347.29 441.07	93.76 110.55	127.49	1.36
1925	93	5.0	7.6	33.7	36.1	191.7	383.6	261.0	150.7	11.7	22.3	2.9	1115.5	14.3	77.4	986.9	369	2.91	363.61	92.96	125.86	1.35
1923	8.6	36.4	26.6	13.0	36.6	96.7	310.3	329.5	150.1	50.1	65.1	12.9	1136.0	45.0	76.2	886.7	128.1	8.64	329.53	94.67	112.72	1.19
1928	26.4 32.1	9.0	9.0	20.4	21.8	130.9	330.5	309.9	78.4	82.0	1.9	42.8	995.1 1073.9	92.8	59.8	730.8 846.3	108.2	1.87	330.52	82.93	111.69	1.18
1930	18.2 3.5	19.4 35.9	16.4 14.9	15.0 8.4	27.1 35.8	93.7 56.7	363.8 317.3	250.3 304.7	172.4 260.2	39.5 92.4	10.3	12.8	1038.9 1141.2	37.6 39.4	58.5 59.1	880.2 938.9	62.6 103.8	10.33 3.49	363.75	86.57 95.10	115.71 123.37	1.34
1932	23	10.5	14.7	15.0	25.6	93.0 206.2	255.1	266.1 312.0	203.0	15.3	31.1	15.0	946.6 1290.2	12.8	55.3	817.1	61.4 02.6	2.28	266.09	78.88	101.66	1.29
1934	275	10.9	17.2	11.0	21.4	172.4	343.2	3479	225.6	21.4	8.8	13.2	1220.4	38.4	49.6	1089.1	43.4	8.80	347.92	101.70	134.09	1.32
1935	62	21.6	9.2 18.8	17.5	16.4 57.5	239.3	420.5	304.2 306.4	252.5	6.8 27.9	3.3 22.0	15.5 25.4	1057.3	51.0 31.8	43.0 92.0	937.5	25.7 75.3	5.34 6.15	420.51	88.11 118.16	125.51	1.40
1937 1938	3.1 33.5	60.4 22.3	7.5	20.8 9.6	44.9 67.8	133.4 284.7	323.4 351.5	318.4 321.8	148.4 137.0	74.4	2.8 2.3	12.5 3.0	1150.1 1271.2	63.5 55.8	73.2 84.9	923.7 1095.0	89.7 35.5	2.75	323.44 351.46	95.84 105.93	115.79 134.69	1.21
1939 1940	13.4	29.2 39.1	16.6 41.6	8.5 14.2	24.7 29.6	162.5 104.6	303.8 317.9	225.4 313.6	196.4 105.6	26.7 10.3	1.7	3.0 20.6	1012.0	42.6 54.9	49.8 85.4	888.2 841.7	31.4 34.9	1.73	303.82 317.91	84.33 84.74	106.81	1.27
1941	26.7	15.8	9.5	10.6	50.2 21.1	136.6	172.2	314.0	129.4	16.4	3.4	5.9	890.7	42.5	70.3	752.2	25.7	3.37	313.98	74.22	96.08	1.29
1943	38.1	13.6	11.5	36.6	29.9	127.8	299.4	375.3	196.1	18.7	1.8	3.2	1152.0	51.7	78.1	998.6	23.7	1.75	375.31	96.00	127.58	1.33
1944	30.7 50.8	295 85	62.7	27.6	22.9	125.0	305.6	303.0 284.6	142.8 258.8	36.4 76.9	2.5	5.8 4.9	1125.6	592	65.3	896.4 983.0	46.7	2.49	305.62	93.88 99.24	111.74 117.29	1.19
1946	1.8	27.1	9.5 21.1	39.8 9.4	593 329	163.4 84.9	371.5 347.2	326.8 275.9	148.9 259.7	71.2	30.0 1.9	13.1	1262.3	28.9 32.7	108.6 63.4	1010.6	114.2 42.9	1.75	371.49 347.23	105.20 92.23	125.40 125.26	1.19
1948 1949	273	21.4	21.7	16.5	363	98.4 95.4	358.4	382.2 306.4	249.8 231.6	54.6 61.9	33.1	3.6	1303.2	48.6	74.5	1088.8	91.2 67.7	3.60	382.24 344.70	108.60	138.98	1.28
1950	22.8	132	29.7	7.0	30.1	157.6	321.6	357.4	133.2	5.8	1.5	13.4	1093.4	360	66.9	969.9	20.7	1.45	357.44	91.12	126.81	1.39
1951	82	20.3	37.2	14.2	30.8	217.5	210.8	356.9	146.5	8.0	3.0	7.4	1105.0	28.5	84.1	974.1	18.4	3.00	356.92	92.08	123.29	1.25
1953 1954	37.6 29.6	6.7 38.6	14.1 9.6	15.2	30.5 21.5	129.1 104.9	421.3 324.4	265.4 296.6	183.3 214.1	8.1 40.5	1.6 1.5	5.2 3.5	1118.0 1091.8	44.3 68.2	59.8 38.2	9999.0 939.9	14.9 45.5	1.60	421.27 324.38	93.16 90.98	133.80 118.82	1.44
1955	38.3 19.5	82	11.6	14.3 11.6	19.1	175.3	327.1	343.8 298.8	224.9	109.7	1.4	3.6 11.9	1277.2	46.5	45.0	1071.0	114.7 197.3	1.40	343.77	106.43	129.62	1.22
1957	60.6 16.0	42	31.1	11.5	16.3	80.5	346.7	297.5	157.8	17.4	3.2	14.9	1041.8	64.8	58.9 46.5	882.5	35.5	3.24	346.70	86.81 06.34	118.81	1.37
1959	49.0	13.8	14.3	13.1	472	92.7	303.8	307.1	166.6	96.3	6.4	0.9	1113.1	62.7	74.6	870.2	105.6	0.94	307.13	90.34	110.62	1.19
1960	36.4	40.7	38.0	8.7	28.2	143.8	318.4	390.4	248.4	86.1 135.6	5.8	3.5 15.8	1375.9	77.1	40.5	985.1	157.3	5.84	390.40	114.66	131.23	1.34
1962 1963	28.8 9.9	26.3 8.4	20.6 30.0	18.2 19.9	24.7 33.8	112.7	283.1 286.3	337.2 353.5	233.5 196.2	13.8 37.9	3.5	10.2	1112.6 1129.5	55.1 18.3	63.5 83.6	966.6 965.1	27.5 62.5	3.51 6.53	337.19 353.51	92.72 94.13	121.03 120.68	1.31
1964 1965	68 83	92 212	8.3 25.6	19.0	44.6 15.2	109.1 68.0	383.2 272.0	287.7 232.8	235.6	20.3 29.0	2.4	8.5	1134.7 861.0	16.0 29.4	72.0 62.5	1015.6	31.2 39.4	2.39	383.20	94.56 71.75	132.38 94.60	1.40
1966	14.9	19.7	4.0	5.5	28.8	160.2	229.1	303.3	77.3	14.5	13.9	5.5	876.7	34.5	38.3	769.9	33.9	4.03	303.34	73.05	101.81	1.39
1968	35.9	14.3	15.9	10.5	14.6	134.2	351.0	253.9	103.7	47.2	4.2	5.5	987.7	50.2	40.9	842.8	53.7	1.47	351.03	82.31	112.60	1.35
1969	36.7	333	13.3	7.8	30.9	78.5		349.7 301.8	204.4 221.9	9.4 29.1	19.1	0.4 0.6	1114.8	23.4	68.0 55.2	994.6 962.8	289 309	0.40	361.92	92.90	134.93	1.45
1971	22.0 10.7	17.8 34.2	13.4 11.2	59.2 17.3	66.4 14.8	282.9 71.8	377.5 233.6	332.2 296.8	181.6 178.7	86.7 39.3	5.4 17.9	0.6 2.4	1445.7 930.5	39.8 44.9	139.0 43.3	1174.2 782.8	92.7 59.5	0.55	377.45 298.76	120.48	137.55	1.14
1973	28.9 13.6	22.6 9.3	15.9 11.8	7.0	40.9 26.2	163.8 83.3	294.7 373.9	343.6 296.1	216.0	102.6	4.1	3.7	1243.6 991.5	51.5 22.9	63.8 48.6	1018.0	110.4 62.3	3.66	343.55	103.64	121.85	1.18
1975	27.2	19.5	20.6	6.0	19.5	179.6	366.8	319.1	233.2	54.6	0.8	0.6	1247.6	46.8	46.1	1098.7	56.0 26.3	0.59	366.76	103.96	134.25	1.29
1977	20.3	85	6.6	33.1	51.8	126.0	381.2	288.2	158.0	62.3	13.3	16.2	1165.6	289	91.5	953.5	91.8	6.57	381.24	97.13	122.35	1.26
1978	28.5	40.7	47.4	20.8	262 302	206.2	297.5	327.1 181.7	211.0 58.5	31.4	42.0	10.7	859.9	36.1 73.4	96.4 60.7	639.0	54.4 86.8	10.72	347.12 297.45	71.66	85.66	1.10
1980 1961	10.3 32.1	14.7 11.0	24.2 26.9	6.4 21.5	31.0 48.0	190.0 114.2	372.1 383.0	351.0 241.7	166.1 171.9	22.6 8.5	1.5 20.1	12.9 6.9	1203.0 1085.7	25.0 43.0	61.6 96.4	1079.3 910.9	37.1 35.5	1.55 6.90	372.14 383.04	100.25 90.48	137.31 118.58	1.37
1982 1983	42.3 25.4	21.3	51.2	29.8 45.0	42.7 56.6	111.9 94.3	248.6 307.6	373.5 273.9	158.0 283.6	25.0 78.7	26.4	7.0	1137.8 1204.0	63.6 36.8	123.8	892.0 959.4	58.4 90.2	7.05	373.52	94.82 100.34	112.77	1.19
1984	275	32.5	5.7	16.8	28.5	207.9	295.6	305.7	173.9	16.9	1.1	5.3	1117.4	60.0	51.0	983.1	23.3	1.14	305.72	93.12	118.13	1.27
1986	11.4	39.2	14.4	21.2	50.0	142.1	351.4	242.2	134.4	45.7	5.6	27.9	1085.4	50.6	85.6	870.1	792	5.58	351 35	90.45	108.67	1.20
1967	19.4 8.8	20.4	34.9	24.U 22.8	435	07.5	203.9 354.4	د لهد 351.2	<u>مارم</u> 127.1	25.5	2.0	21.9	1056.6	40.5	79.7 85.9	860.8 981.6	49.4	5.72 1.97	354.39	95.51	128.61	1.35
1989 1990	33.3 4.3	11.6 52.6	20.1 29.9	4.2 15.6	38.4 66.7	132.2 159.3	288.0 389.7	277.8 273.6	180.7 224.6	15.8 29.7	6.4 2.5	10.9 13.4	1019.4 1261.8	44.9 56.9	62.7 112.2	878.7 1047.2	33.1 45.5	4.24	287.97 389.71	84.95 105.15	107.52 127.67	1.27
1991 1992	16.2 19.4	21.4 12.7	21.4 6.6	19.5 6.3	24.9 31.6	124.3 66.2	235.4 241.0	361.3 313.5	139.3 161.5	6.7 53.7	4.2 6.2	20.0 1.5	994.8 920.2	37.6 32.1	65.8 44.5	860.4 782.2	31.0 61.4	4.24	361.32 313.52	82.90 76,69	113.22 104.80	1.37
1993	15.4	17.8	37.8	19.6	38.9	142.2	240.7	261.8 344.9	297.3	18.9	4.6	0.7	1095.6	33.2	96.3 57.1	942.0 1001.8	24.2	0.66	297.31	91.30	112.53	1.23
1995	31.5	27.6	23.2	8.1	19.9	130.2	274.9	356.5	199.4	14.7	25.9	11.4	1123.4	59.1	51.1	961.0	52.1	8.05	356.54	93.61	119.85	1.28
1990	17.1	79	15.0	36.6	31.9	100.4	316.3	299.0	174.0	7 	32.8	71.1	1204.4	25.0	42.1 79.0	915.0	94.8 156.5	7.86	316.26	9796	120.39	1.28
1998 1999	142 132	18.2 13.0	37.2	24.9 4.3	33.2 54.9	110.8 152.7	349.6 326.6	354.0 267.6	169.9 250.9	74.9 81.9	13.7	0.6	1201.2	32.4 26.2	95.3 61.5	984.3 997.7	89.1 85.7	0.56	354.04 326.56	100.10 97.60	127.17	1.27
2000	98 94	21.4	12.8	21.1	66.9 80.2	210.3	314.2 316.0	247.4 221.9	160.0 102.6	6.8 64.6	1.9	0.8	1073.6	31.2	100.8	932.0 857.2	95 691	0.80	314.23	89.46 88.56	112.59	1.26
2002	259	39.9	16.6	23.5	553	94.8	178.0	275.5	167.1	25.6	3.7	5.6	911.3	65.7	95.3	715.4	349	3.70	275.52	75.94	86.41	1.14
2004	332	39	4.9	33.2	45.7	162.8	271.6	291.8	118.7	52.1	3.0	2.0	1022.9	37.1	83.9	844.9	41.2 57.1	2.02	291.82	85.24	104.17	1.22
2005	28.4 5.0	23.4	25.3 35.5	12.5 24.1	20.6 62.1	84.3 137.2	388.2 297.7	214.0 227.7	170.9 135.8	40.9 19.5	1.0 3.3	2.0 5.0	1011.4 957.1	51.8 9.3	58.4 121.6	857.3 798.4	439 27.8	1.01 3.29	388.16 297.70	84.29 79.76	117.46 98.88	1.39
2007 2008	4.0 11.6	66.6 11.2	32.6 12.1	15.8 22.3	46.2 48.0	113.3 288.5	363.1 306.0	281.5 257.9	198.9 160.8	18.5 18.2	2.1 3.5	2.4 3.1	1145.1 1143.2	70.6 22.8	94.6 82.4	956.8 1013.2	23.0 24.8	2.11 3.13	363.13 305.97	95.42 95.27	121.54 122.06	1.27
2009	73	10.0 19.8	14.2	11.2	45.7	55.6 69.4	252.9 324.7	204.4 289.7	160.8 234.4	77.5 262	21.9	4.4	865.8 1090.2	173	71.2 49 5	673.7 918.1	103.7 57.1	4.36	252.91 324.66	72.15	85.96 120.99	1.19
MIN	1.47	3.08	2.30	424	14.58	36.80	145.32	181.70	\$8.46 324.02	2.88	0.70	0.36	8.59.89	6.36	37.52	639.04	9.07	0.36	252.91	71.66	85.66	1.06
MEAN	20.65	22.34	19.75	18.34	36.60	136.11	315.65	307.18	181.85	42.03	8.87	9.33	1118.70	42.99	74.69	940.80	60.22	3.42	342.89	9323	119.43	1.28
SD CV	1.5.76	15.79	12.47	0.59	0.43	34.ZZ 0.40	36.14	48.35	0.30	35.34 0.84	11.11	9.93	0.12	19.84	24.42 0.33	0.12	_\$5.85 0.65	2.59	51.03	0.12		

Table 9. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901 – 2010 in the Ganga river catchment areas

Name Name Name Name Na						<u> </u>						M	lahi				20 20				41 - 24		
	YEAR	JAN	FEB	MAR	AFR	MAY	JUN	JUL	AUG	SEP	001	NOV	DEC	ANN	JAN- FEB	MAR- MAY	JUN- SEP	OC I- DEC	MIN	MAX	MEAN	SD	CV
	1901	2.7	0.0	1.1	0.7	4.6	37.7	178.8 214.9	212.0	12.9	4.3	0.1	0.0	454.9 703.4	2.7	6.4	441.4	4.4	0.01	211 99 280 46	37.91	74.66	1.97
	1902	0.4	0.2	2.0	0.0	9.1	20.1	341.4	183.3	253.9	1.7	0.1	0.0	813.2	0.6	11.1	799.7	1.8	0.03	341.37	67.77	120.61	1.78
	1904 1905	0.7	10.9	17.0	0.0	39.0 1.1	71.0 26.0	178.7 421.7	59.3 40.7	100.6	1.3	0.2	3.8	482.7 613.3	0.4	56.1 3.7	409.7	5.3 0.6	0.04	178.73	40.22 51.11	54.91 121.83	1.37
	1906	0.0	16.1	0.1	0.0	0.1	105.1	297.4	255.4	205.9	1.6	0.1	0.2	882.0 605.5	16.1	0.2	863.8 501.0	1.9	0.00	297.41	73.50	113.84	1.55
	1908	6.2	0.3	1.6	0.0	0.2	69.8	351.0	266.4	30.5	0.9	0.1	0.0	727.0	6.5	1.9	717.7	1.0	0.04	350.99	60.59	119.07	1.97
	1909	0.0	0.3	0.2	16.3	2.8	122.4 259.9	296.1	269.8 326.8	114.1 67.0	1.6 29.5	0.1	4.8	828.4 972.6	0.3	19.3 0.5	802.4 930.8	6.5	0.00	296.07 326.82	69.03 81.05	109.36	1.58
100 100 <td>1911 1912</td> <td>1.6</td> <td>0.2</td> <td>11.6</td> <td>0.0</td> <td>0.1</td> <td>142.0 73.5</td> <td>48.9 384.1</td> <td>60.4 275.7</td> <td>88.7 27.3</td> <td>1.7</td> <td>8.3 24.9</td> <td>0.1</td> <td>363.6 789.2</td> <td>1.7</td> <td>11.7</td> <td>340.0 760.5</td> <td>10.1 26.4</td> <td>0.03</td> <td>142.05 384.08</td> <td>30.30 65.77</td> <td>45.99</td> <td>1.52</td>	1911 1912	1.6	0.2	11.6	0.0	0.1	142.0 73.5	48.9 384.1	60.4 275.7	88.7 27.3	1.7	8.3 24.9	0.1	363.6 789.2	1.7	11.7	340.0 760.5	10.1 26.4	0.03	142.05 384.08	30.30 65.77	45.99	1.52
Info Info <th< td=""><td>1913</td><td>0.0</td><td>0.0</td><td>0.1</td><td>0.0</td><td>43.9</td><td>264.7</td><td>505.4</td><td>204.0</td><td>130.0</td><td>0.5</td><td>0.5</td><td>0.8</td><td>1150.1</td><td>0.0</td><td>44.1</td><td>1104.1</td><td>1.9</td><td>0.00</td><td>505.41 210.10</td><td>95.84</td><td>158.32</td><td>1.65</td></th<>	1913	0.0	0.0	0.1	0.0	43.9	264.7	505.4	204.0	130.0	0.5	0.5	0.8	1150.1	0.0	44.1	1104.1	1.9	0.00	505.41 210.10	95.84	158.32	1.65
	1914	20.1	11.7	14.8	0.0	3.8	79.3	82.0	94.0	215.4 39.6	162.3	0.8	0.0	802.2 509.8	31.8	19.5	294.9	163.7	0.00	162.29	42.49	51.23	1.57
100 00	1916	0.0	0.1	0.1	0.1	8.4 105.1	176.3	156.8	434.6 269.6	141.9	22.1	10.8	0.0	951.4 1296.1	0.1	8.6	909.7 990.8	33.0 170.5	0.00	434.65	79.28	131.42	1.66
	1918	0.0	0.0	0.3	0.0	9.8	45.1	48.6	220.5	15.1	0.5	1.0	0.0	341.1	0.1	10.2	329.3	1.6	0.01	220.48	28.42	62.98	2.22
	1920	16.5	0.3	0.2	0.0	71.6	186.2	276.7	83.3	35.0	0.5	0.1	0.0	670.5	16.8	71.9	581.2	0.6	0.03	276.69	55.87	89.10	1.59
	1921	7.5	0.0	0.1	0.0	0.1	22.8 96.9	294.6	180.2	409.7	0.5	0.1 6.8	0.0	910.9	7.5	0.3	907.4 758.5	9.4	0.00	409.73	75.91 64.81	140.94	1.86
Inter Inter< Inter< Inter Inter< Inter< Inter<	1923 1924	0.0	1.1	6.1 0.2	4.5	4.7	1.1 76.7	286.2 274.6	177.5	113.7	0.9 72.5	0.1	0.1	596.0 871.2	1.1 2.5	15.3 3.3	578.5 787.7	1.0	0.00	286.24 274.57	49.67 72.60	93.82 105.53	1.89
180 0.0 1.0 0.0 <td>1925</td> <td>0.0</td> <td>0.0</td> <td>0.1</td> <td>0.0</td> <td>17.6</td> <td>193.7</td> <td>181.3</td> <td>56.8</td> <td>17.7</td> <td>1.9</td> <td>26.0</td> <td>0.1</td> <td>495.2</td> <td>0.0</td> <td>17.8</td> <td>449.6 846.0</td> <td>27.9</td> <td>0.00</td> <td>193.74</td> <td>41.27</td> <td>70.38</td> <td>1.71</td>	1925	0.0	0.0	0.1	0.0	17.6	193.7	181.3	56.8	17.7	1.9	26.0	0.1	495.2	0.0	17.8	449.6 846.0	27.9	0.00	193.74	41.27	70.38	1.71
Integ Integ <th< td=""><td>1920</td><td>0.0</td><td>3.2</td><td>0.1</td><td>0.2</td><td>4.4</td><td>68.6</td><td>678.1</td><td>206.5</td><td>104.9</td><td>24.5</td><td>23.0</td><td>12.2</td><td>1125.8</td><td>3.2</td><td>4.8</td><td>1058.1</td><td>59.7</td><td>0.00</td><td>678.13</td><td>93.82</td><td>193.98</td><td>2.07</td></th<>	1920	0.0	3.2	0.1	0.2	4.4	68.6	678.1	206.5	104.9	24.5	23.0	12.2	1125.8	3.2	4.8	1058.1	59.7	0.00	678.13	93.82	193.98	2.07
100 130 13 1	1928	2.5	0.2	0.1	2.3	0.4 2.6	56.0 148.8	336.2 300.2	335.4	25.9	30.7	0.2	6.1 2.6	658.2	1.2	5.2	830.5 646.3	42.3	0.00	336.20	72.88	126.69 98.28	1.74
100 00	1930 1931	1.5	0.1	0.5	0.1	9.6	99.0 17.2	462.0 231.7	178.4	155.3	71.9	0.2	0.1	978.8 1061.7	1.6	10.2	894.8 9360	72.2	80.0	462.02	81.56 88.48	136.40	1.67
1000 0.000 0.001	1932	0.0	0.0	4.4	0.1	0.6	46.5	363.2	101.9	158.7	10.0	0.2	0.0	685.7	0.1	5.1	670.3	10.2	0.03	363.16	57.14	108.95	1.91
box box <td>1935</td> <td>0.0</td> <td>2.0</td> <td>0.6</td> <td>0.8</td> <td>0.3</td> <td>107.7</td> <td>166.0</td> <td>393.4</td> <td>177.8</td> <td>3.8 0.6</td> <td>23.4</td> <td>4.0</td> <td>870.4</td> <td>0.3</td> <td>1.1</td> <td>845.0</td> <td>24.0</td> <td>0.03</td> <td>393.42</td> <td>99.24 72.54</td> <td>131.23</td> <td>1.52</td>	1935	0.0	2.0	0.6	0.8	0.3	107.7	166.0	393.4	177.8	3.8 0.6	23.4	4.0	870.4	0.3	1.1	845.0	24.0	0.03	393.42	99.24 72.54	131.23	1.52
101 01 03 04 0.6	1935 1936	3.3	0.1	0.2	1.0	0.6	61.7 147.1	261.6 78.6	103.1 26.7	219.8 170.7	18.0	0.8 39.0	1.5	671.6 472.6	3.4 2.4	1.8 6.9	646.1 423.1	20.2 40.1	0.08	261.56 170.66	55.97 39.38	92.40 60.76	1.65
198 0.1 10.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 <td>1937 1938</td> <td>0.1</td> <td>3.7</td> <td>0.4</td> <td>0.4</td> <td>1.5 30.0</td> <td>202.3 250.6</td> <td>524.1 287.8</td> <td>25.1 121.2</td> <td>253.1 24.1</td> <td>5.9 22.2</td> <td>0.2</td> <td>0.5</td> <td>1017.1 747.1</td> <td>3.7</td> <td>2.3 30.4</td> <td>1004.4 693.8</td> <td>6.6 22.8</td> <td>0.06</td> <td>524.06 287.78</td> <td>84.76 62.26</td> <td>163.50 104.83</td> <td>1.93 1.68</td>	1937 1938	0.1	3.7	0.4	0.4	1.5 30.0	202.3 250.6	524.1 287.8	25.1 121.2	253.1 24.1	5.9 22.2	0.2	0.5	1017.1 747.1	3.7	2.3 30.4	1004.4 693.8	6.6 22.8	0.06	524.06 287.78	84.76 62.26	163.50 104.83	1.93 1.68
198 116 136 <td>1939</td> <td>0.1</td> <td>1.0</td> <td>3.7</td> <td>0.1</td> <td>0.3</td> <td>19.4</td> <td>127.8</td> <td>268.6</td> <td>147.7</td> <td>2.2</td> <td>0.2</td> <td>0.1</td> <td>571.0 750.5</td> <td>1.1</td> <td>4.1</td> <td>563.4</td> <td>2.5</td> <td>0.05</td> <td>258.58</td> <td>47.58</td> <td>87.12</td> <td>1.83</td>	1939	0.1	1.0	3.7	0.1	0.3	19.4	127.8	268.6	147.7	2.2	0.2	0.1	571.0 750.5	1.1	4.1	563.4	2.5	0.05	258.58	47.58	87.12	1.83
m. m.<	1941	1.6	15.6	1.2	0.4	1.8	12.6	353.0	546.4	63.9	1.0	0.2	0.3	998.0	17.1	3.4	976.0	1.5	0.19	546.41	83.17	177.01	2.13
194 134 133 134 133 134 133 134 133 <td>1942</td> <td>1.1</td> <td>0.0</td> <td>0.3</td> <td>0.0</td> <td>7.7</td> <td>116.6</td> <td>431.7</td> <td>88.6</td> <td>139.1</td> <td>11.8</td> <td>0.2</td> <td>0.0</td> <td>300.5</td> <td>1.1</td> <td>8.7</td> <td>980.8 778.7</td> <td>12.0</td> <td>0.04</td> <td>431.68</td> <td>66.71</td> <td>142.27</td> <td>1.89</td>	1942	1.1	0.0	0.3	0.0	7.7	116.6	431.7	88.6	139.1	11.8	0.2	0.0	300.5	1.1	8.7	980.8 778.7	12.0	0.04	431.68	66.71	142.27	1.89
ise 00 15 0.0 1.3 1.2 2.6 1.3 1.2.6 2.4 4.1 1.107 1.007 <t< td=""><td>1944 1945</td><td>15.4</td><td>0.1</td><td>9.0 0.3</td><td>1.8</td><td>1.7</td><td>114.2</td><td>518.9 424.0</td><td>594.2 183.4</td><td>75.6 278.1</td><td>16.8</td><td>0.2</td><td>0.0</td><td>1348.0</td><td>15.5</td><td>12.4 5.0</td><td>1302.9 1066.3</td><td>17.1</td><td>0.05</td><td>594.21 424.00</td><td>112.33 89.55</td><td>211.11 143.73</td><td>1.88</td></t<>	1944 1945	15.4	0.1	9.0 0.3	1.8	1.7	114.2	518.9 424.0	594.2 183.4	75.6 278.1	16.8	0.2	0.0	1348.0	15.5	12.4 5.0	1302.9 1066.3	17.1	0.05	594.21 424.00	112.33 89.55	211.11 143.73	1.88
184 24 25 0.6 0.6 0.0 0.00 0.0	1946 1947	0.0	2.5	0.3	1.3	2.8	244.3 6.3	289.9 192.7	448.2	117.7	2.4	29.4 1.0	13.7	1152.6	2.6	4.4 8.6	1100.1 726.4	45.5	0.03	448.21 271.26	96.05 62.68	150.40	1.57
1000 0.00 <th< td=""><td>1948</td><td>21.4</td><td>2.6</td><td>0.5</td><td>0.4</td><td>0.2</td><td>103.6</td><td>195.7</td><td>184.1</td><td>91.3</td><td>10.6</td><td>18.6</td><td>0.0</td><td>629.0</td><td>24.0</td><td>1.1</td><td>574.7</td><td>29.2</td><td>0.03</td><td>195.67</td><td>52.42</td><td>73.35</td><td>1.40</td></th<>	1948	21.4	2.6	0.5	0.4	0.2	103.6	195.7	184.1	91.3	10.6	18.6	0.0	629.0	24.0	1.1	574.7	29.2	0.03	195.67	52.42	73.35	1.40
1810 0.0 <td>1949</td> <td>0.0</td> <td>0.0</td> <td>0.3</td> <td>0.0</td> <td>0.9</td> <td>13.9</td> <td>620.3</td> <td>114.2</td> <td>414.1</td> <td>0.9</td> <td>0.2</td> <td>0.0</td> <td>1164.9</td> <td>0.2</td> <td>1.2</td> <td>1162.5</td> <td>18.0</td> <td>0.02</td> <td>620.28</td> <td>97.08</td> <td>203.69</td> <td>2.10</td>	1949	0.0	0.0	0.3	0.0	0.9	13.9	620.3	114.2	414.1	0.9	0.2	0.0	1164.9	0.2	1.2	1162.5	18.0	0.02	620.28	97.08	203.69	2.10
150 241 0.0 0.0 100 200 771 241 0.7 786 34 0.0 200 401 100 200 101 100 200 101 100 200 101 100 200 200 101 100 200 200 200 101 100 200	1951	0.1	0.1	0.6	0.0	0.2	66.2 81.6	647.3	130.9	18.0	3.4	3.8	0.0	457.6 923.1	0.2	6.1 0.6	444.1 921.4	7.1	0.02	647.28	38.13 76.93	71.93	2.43
1355 23 0.7 0.5 0.0 1.16 4.16	1953 1954	24.1	0.0	0.4 6.4	0.1	0.3	130.7	150.0 244.9	390.6 137.2	77.4 584.8	3.2 54.5	0.2	0.0	777.1 1112.2	24.1 6.0	0.7	748.8 1044.6	3.4 55.0	0.02	390.64 584.84	64.76 92.69	116.17 172.37	1.79
1979 34 0.1 1.0 0.2 1.4 1.2 1.1 2.2 2.3 5 1.0 0.03 3.2 3.6 9.7 7.0 0.0 2.4.64 4.9.8 141.7 1.00 1390 1.2 0.1 0.3 0.3 0.6 2.9.2 2.3 3.7.7 4.5 0.5 1.2 0.0 0.077 4.9.0 0.00 4.77 4.9.0 0.00 4.77 4.9.0 0.00 4.77 4.9.0 0.00 4.77 4.9.0 0.00 4.77 4.9.0 0.00 4.77 4.9.0 0.00 4.77 4.9.0 0.00 4.77 4.9.0 0.00 4.77 4.9.0 0.00 4.77 4.9.0 0.00 4.77 4.9.0 0.00 0.07 1.0 0.05 1.0 0.00 0.00 0.01 0.00 0.01 1.0 0.00 0.01 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01	1955	2.3	0.7	0.5	0.0	1.3	118.4 95.3	44.2 381.4	357.9	318.9 105.2	71.2	0.4	0.0	915.7 944 9	3.0	1.8	839.3 772.6	71.6	0.03	357.89	76.31	128.25	1.68
12 13 0.1 0.0 2.2 0.1 2.2 0.1 1.3 0.1 1.3 0.1	1957	3.4	0.1	1.0	0.2	3.4	122.2	181.5	242.5	23.5	10.8	6.2	0.1	594.8	3.5	4.5	569.7	17.0	0.09	242.46	49.56	84.17	1.70
100 1.1 0.1 1.4 0.3 2.2 12 13.6 0.1 2.90 1.4 0.3 2.2.1 0.40 2.2.2 1.4 0.3 2.2.1 0.4 2.2.2 0.3 0.3 0.4 0.3 <	1958	1.2	0.1	0.0	2.9	1.8	79.8	407.9	304.9	334.4	75.7	4.5	0.1	1013 8	1.3	4.7	957.7	80.3	0.09	407.94	101.11	153.92	1.55
180: 0.0 0.1 2.7 2.0 2.3 20.6 30.0 20.6 30.7 70 88.5 1.8 0.0 30.7 71.6 112.8 112.1 180: 0.3 0.0 <	1980 1961	5.1	0.1	1.4	0.3	2.2	122.1 66.9	174.9 310.7	223.1 158.4	463.7	6.7 28.2	0.6	0.1	579.1 1031.9	5.1 0.4	4.0	562.6 999.7	29.3	0.08	223.10 463.72	48.26 85.99	79.32	1.64
1964 0.0 0.1 10.0 0.1 10.0 0.10 0.10 0.5 0.00 20.88 31.63 82.89 10.0 1965 5.0 0.0 0.5 2.1 31.5 10.0 <td>1962 1963</td> <td>0.0</td> <td>0.1</td> <td>2.7</td> <td>2.0</td> <td>2.3</td> <td>20.6</td> <td>310.8</td> <td>208.3 338.3</td> <td>296.8 163.1</td> <td>0.1</td> <td>10.0</td> <td>5.7</td> <td>859.5 856.2</td> <td>0.1</td> <td>7.0</td> <td>836.5 798.6</td> <td>15.8 52.9</td> <td>0.05</td> <td>310.77 338.27</td> <td>71.63</td> <td>123.25</td> <td>1.72</td>	1962 1963	0.0	0.1	2.7	2.0	2.3	20.6	310.8	208.3 338.3	296.8 163.1	0.1	10.0	5.7	859.5 856.2	0.1	7.0	836.5 798.6	15.8 52.9	0.05	310.77 338.27	71.63	123.25	1.72
1967 0.0 0.1 0.2 0.0 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.1 0.2 0.2 0.3 0.2 0.3 0.2 0.3 0.2 0.3 0.2 0.3 0.2 0.3 0.2 0.3 0.2 0.3 0.4 0.0 0.2 0.3 0.3 0.0 <td>1964</td> <td>0.0</td> <td>0.1</td> <td>0.0</td> <td>0.1</td> <td>16.4</td> <td>72.4</td> <td>230.9</td> <td>194.8</td> <td>104.4</td> <td>0.2</td> <td>0.1</td> <td>0.0</td> <td>619.5</td> <td>0.1</td> <td>16.5</td> <td>602.5</td> <td>0.3</td> <td>0.03</td> <td>230.88</td> <td>51.63</td> <td>82.96</td> <td>1.61</td>	1964	0.0	0.1	0.0	0.1	16.4	72.4	230.9	194.8	104.4	0.2	0.1	0.0	619.5	0.1	16.5	602.5	0.3	0.03	230.88	51.63	82.96	1.61
1966 0.0 1.0 2.9.3 1.0 2.9.3 1.0 2.9.3 1.0 2.9.3 1.0 2.9.3 1.0 2.9.3 1.0 2.9.3 2.0.3 1.0 2.9.3 2.0.3 0.0.0 0.0 2.0.4 1.0.4 2.0.3 2.0.3 2.0.3 0.0.0 0.0 2.0.4 1.0.6 0.0.5 2.0.4 1.0.3 0.0.0 0.0.0 0.0.4 1.0.4 1.0.0 0.0.0 2.0.4 1.0.0 0.0.0 2.0.4 1.0.0 0.0.0 2.0.4 0.0.0 0.0.0 0.0.0 0.0.0 0.0.0 0.0.0 0.0.0 0.0.0 <th< td=""><td>1966</td><td>0.2</td><td>0.1</td><td>0.2</td><td>0.9</td><td>2.4</td><td>64.4</td><td>184.4</td><td>103.0</td><td>123.6</td><td>0.5</td><td>4.0</td><td>0.0</td><td>483.0</td><td>0.3</td><td>2.7</td><td>475.5</td><td>4.4</td><td>0.01</td><td>184.43</td><td>40.25</td><td>63.71</td><td>1.58</td></th<>	1966	0.2	0.1	0.2	0.9	2.4	64.4	184.4	103.0	123.6	0.5	4.0	0.0	483.0	0.3	2.7	475.5	4.4	0.01	184.43	40.25	63.71	1.58
1900 0.0 0.1 0.1 790 255 197 0.6 1.3 0.1 0.2 0.255 1700 0.6 1.3 0.1 0.2 0.255 1710 0.5 0.4 0.00 281 0.0 255 0.01 2.3 0.00 281 1.5 1.2 1.4 0.00 2.55 0.1 2.3 0.00 2.55 0.1 2.3 0.00 0.01 2.5 0.01 2.55 0.01 2.55 0.01 2.55 0.01 0.00 0.01 2.55 0.01 0.00 0.01	1967	0.0	0.1	54.9	0.1	0.4	9.3	330.0	255.5	184.6	4.0	0.0	_90.8 0.0	647.0	0.1	5.5	636.9	<u> </u>	0.03	329.99	69.19 53.92	89.06 113.29	2.10
1971 0.5 0.4 0.3 0.2 8.0 1942 28.6 2715 178.3 25.4 0.00 0.01 8.6.5 38.67 5.4 0.00 28.45 97.0 1.3 1972 0.3 0.0 0.6 65.7 38.12 48.6 10.3 0.0 0.4 40.8 1.6 60.9 144.17 10.6 0.0 346.4 1.7 10.6 0.0 346.4 1.7 10.6 0.0 346.4 1.7 10.6 0.0 346.4 1.7 10.6 0.0 346.4 1.7 10.6 0.0 346.4 0.0 346.4 0.0 14.6 10.7 10.6 10.6 14.6 11.1 10.2 11.4 11.2 11.4 10.2 11.4 10.2 11.4 10.2 11.4 10.2 11.1 10.2 11.4 10.2 11.1 10.2 11.4 10.2 13.4 10.1 11.4 10.1 12.4 11.4 10.1 12.2 13.4 10.1 13.4 10.1 13.4 10.1 13.4 10.1 <td>1969 1970</td> <td>0.2</td> <td>0.1</td> <td>0.0</td> <td>0.1</td> <td>0.1 2.3</td> <td>79.0 232.5</td> <td>2762</td> <td>268.5</td> <td>198.6 221.9</td> <td>0.7</td> <td>10.8</td> <td>1.9</td> <td>836.3 907.8</td> <td>0.3</td> <td>0.2</td> <td>822.3 901.1</td> <td>13.5</td> <td>0.00</td> <td>276.15</td> <td>69.69 75.65</td> <td>111.15 112.29</td> <td>1.59</td>	1969 1970	0.2	0.1	0.0	0.1	0.1 2.3	79.0 232.5	2762	268.5	198.6 221.9	0.7	10.8	1.9	836.3 907.8	0.3	0.2	822.3 901.1	13.5	0.00	276.15	69.69 75.65	111.15 112.29	1.59
1974 0.2 0.4 0.3 0.0 6.6 187.7 10.6 10.0 16.6 6.9 145.7 10.6 0.00 263.2 123.32 204.72 1.6 1974 0.2 0.4 0.2 0.2 94.3 205.3 155.4 71.8 100.3 0.0 0.4 605.5 0.6 64.4 47.9 10.6 0.00 264.3 10.3 10.7 11.6 12.3 10.6 0.00 264.3 10.3 10.7 11.8 12.4 14.4 17.2 14.4 17.2 14.4 17.2 14.4 17.2 14.7 17.2 14.8 17.3 12.3 14.6 13.3 10.00 13.3 14.8 17.9 13.2 14.6 14.8 17.9 13.5 14.8 17.9 13.2 16.6 13.3 10.07 13.1.5 14.8 17.9 10.2 10.0 10.2 10.1 10.2 10.1 10.2 10.1 10.2 10.1 10.2 10.1 10.2 10.1 10.2 10.2 10.1 10.2 10.1	1971	0.5	0.4	0.3	0.2	8.0 11	154.2	298.6 197.6	207.5	176.3	5.4	0.0	0.0	851.4 997.4	0.8	8.5	836.7 989.2	5.4	0.00	298.64 235.45	70.95	107.36	1.51
1976 0.5 0.6 0.6 0.8 0.6 <td>1973</td> <td>1.1</td> <td>0.5</td> <td>0.3</td> <td>0.0</td> <td>6.6</td> <td>85.7</td> <td>381.2</td> <td>438.6</td> <td>546.3</td> <td>19.3</td> <td>0.0</td> <td>0.4</td> <td>1479.8</td> <td>1.6</td> <td>6.9</td> <td>1451.7</td> <td>19.6</td> <td>0.00</td> <td>546.25</td> <td>123.32</td> <td>204.79</td> <td>1.66</td>	1973	1.1	0.5	0.3	0.0	6.6	85.7	381.2	438.6	546.3	19.3	0.0	0.4	1479.8	1.6	6.9	1451.7	19.6	0.00	546.25	123.32	204.79	1.66
1976 4.6 0.6 0.3 0.1 1.4 1.6 9.77 1.5 1.6 9.87 1.0 1.2 1.1 1.2 1.1 <t< td=""><td>1975</td><td>0.2</td><td>0.4</td><td>0.8</td><td>0.2</td><td>0.6</td><td>143.2</td><td>2063</td><td>305.9</td><td>267.0</td><td>51.3</td><td>0.0</td><td>0.4</td><td>976.0</td><td>0.7</td><td>1.5</td><td>922.4</td><td>51.3</td><td>0.00</td><td>305.89</td><td>81.33</td><td>117.24</td><td>1.40</td></t<>	1975	0.2	0.4	0.8	0.2	0.6	143.2	2063	305.9	267.0	51.3	0.0	0.4	976.0	0.7	1.5	922.4	51.3	0.00	305.89	81.33	117.24	1.40
1978 0.3 3.0 0.4 1.2 0.0 0.08 31.7 41.97 71.3 9.5 2.0.6 11.7 99.0 2.3 1.6 93.5 41.8 0.04 41.968 81.68 145.78 178 1970 3.2 6.0 0.3 0.00 0.2 257.0 13.16 249.5 58.3 2.0 0.4 42.0 90.0 5.77.8 3.2.2 50.01 255.07 66.85 106.00 1.9 99.0 3.0 90.01 50.04 66.85 106.00 1.3 297.4 4.90 0.5 95.06 83.0 1.40 11.0 1.3 20.1 250.3 90.0 11.2 11.7 11.0 0.0 77.1 10.0 0.00 250.3 90.0 10.0 0.0 94.9 10.0 6.5 97.0 10.00 250.3 99.0 11.2 11.2 11.4 10.0 0.0 99.0 10.0 6.5 97.0 10.00 10.3 11.489 11.49 11.48 11.49 14.14 12.0 11.489 11.49 1	1976	4.6 3.6	0.6	0.3	0.1	0.1	211.1	327.2 357.0	247.0	158.8 233.1	1.6	96.7 10.2	0.0	1256.5	5.2 6.3	0.5	1152.5 1048.3	98.2	0.00	517.70 357.01	104.71 90.07	165.22 131.53	1.58
1980 0.3 0.6 0.3 0.0 0.2 270 21.6 249.5 31.4 220 2.8 200 0.5 783.3 22.5 0.01 285.97 66.85 105.20 1.8 1981 30.1 11.0 0.6 1.2 11.0 1.3 2.9 2.8 9996 41.3 2.2 97.4 54.9 53.0 12.5 1.8 1983 0.4 0.4 0.3 1.0 1.7 12.2 92.86 1.0 1.0 1.0 3.2 97.7 0.0 0.0 22.8 8.3 1.1 <td< td=""><td>1978 1979</td><td>0.3</td><td>3.0 6.0</td><td>0.4</td><td>1.2</td><td>0.0</td><td>90.8 80.5</td><td>351.7 151.5</td><td>419.7 284.5</td><td>71.3</td><td>9.5</td><td>20.6</td><td>0.0</td><td>980.2 727.2</td><td>3.2</td><td>1.6</td><td>933.5 576.2</td><td>41.8</td><td>0.04</td><td>419.68</td><td>81.68 60.60</td><td>145.78 87.97</td><td>1.78</td></td<>	1978 1979	0.3	3.0 6.0	0.4	1.2	0.0	90.8 80.5	351.7 151.5	419.7 284.5	71.3	9.5	20.6	0.0	980.2 727.2	3.2	1.6	933.5 576.2	41.8	0.04	419.68	81.68 60.60	145.78 87.97	1.78
Image Image <th< td=""><td>1980</td><td>0.3</td><td>0.6</td><td>0.3</td><td>0.0</td><td>0.2</td><td>257.0</td><td>213.6</td><td>249.5</td><td>58.3</td><td>2.0</td><td>0.4</td><td>20.1</td><td>802.2 000 4</td><td>0.9</td><td>0.5</td><td>778.3</td><td>22.5</td><td>0.01</td><td>256.97</td><td>66.85</td><td>106.20</td><td>1.59</td></th<>	1980	0.3	0.6	0.3	0.0	0.2	257.0	213.6	249.5	58.3	2.0	0.4	20.1	802.2 000 4	0.9	0.5	778.3	22.5	0.01	256.97	66.85	106.20	1.59
1954 0.5 0.4 0.4 0.1 1.6.1 3229 100. 0.0 98.4 0.7 10.0 88.7 80.0 0.00 32.9 0.00 0.0 98.4 0.0 10.0 88.4 80.0 0.00 32.9 0.00 0.0 98.4 0.0 0.0 10.0 88.4 37.1 17.1 12.96 12.2 0.0 0.0 18.4 21.0 0.0 12.4 12.2 0.0 12.4 12.2 0.0 12.2 30.0 14.4 22.3 0.0 0.6 680.1 35.5 3 660.0 11.22 25.0 11.22 25.0 0.00 11.23 20.0 30.0 0.0 680.1 30.0 0.0 11.23 20.0 11.23 20.0 30.0 0.0 11.23 20.0 11.23 20.0 11.23 20.0 11.23 20.0 11.23 20.0 11.23 20.0 11.23 20.0 21.0 20.0 21.0 21.0 </td <td>1982</td> <td>9.7</td> <td>0.5</td> <td>0.4</td> <td>6.5</td> <td>29.4</td> <td>37.9</td> <td>250.3</td> <td>190.8</td> <td>60.2</td> <td>11.2</td> <td>117.4</td> <td>0.0</td> <td>714.5</td> <td>10.1</td> <td>36.3</td> <td>539.4</td> <td>128.7</td> <td>0.03</td> <td>250.33</td> <td>59.54</td> <td>83.41</td> <td>1.40</td>	1982	9.7	0.5	0.4	6.5	29.4	37.9	250.3	190.8	60.2	11.2	117.4	0.0	714.5	10.1	36.3	539.4	128.7	0.03	250.33	59.54	83.41	1.40
1986 0.3 0.3 0.3 0.4 4.3 0.8 5.7 109.8 1.0 0.3 549.4 0.0 0.3 549.4 0.0 0.3 549.4 0.0 0.3 549.4 0.0 0.0 680.1 3.5 5.3 669.0 0.23 0.00 112.3 2.3 0.0 0.01 1.3 5.3 669.0 0.23 0.00 0.01 3.5 5.3 669.0 0.0 0.23 0.00 0.01 1.35 5.3 669.0 0.00 660.6 1.00 0.00 2.3 0.00 0.02 2.3 0.00 0.02 2.3 0.00 0.02 2.3 0.00 0.02 2.3 0.00 0.02 2.3 0.00 0.02 2.3 0.02 2.3 0.02 2.3 0.02 2.3 0.02 2.3 0.02 2.3 0.02 2.3 0.02 2.3 0.02 2.3 0.02 2.3 0.02 2.3 0.02 2.3	1963	0.4	0.4	0.5	0.1	0.1	27.4	265.2	205.9 571.5	80.3	80.0	0.0	0.0	948.9	1.0	0.6	879.7 944.4	80.0	0.00	344.86 571.53	61.51 79.07	172.98	2.19
1968 0.3 0.0 4.1 73.9 0.04 406.1 35.4 24.7 98.6 12.1 655.7 8.7 4.5 995.8 4.66 0.04 406.14 54.44 114.11 20.0 1968 2.0 0.5 0.7 0.0 0.1 101.8 21.38 286.5 96.5 1.7 0.0 0.0 823.1 0.0 22.6 2.86.6 1.02.2 38.3 0.0 0.0 83.3 0.0 0.0 2.85 38.65 98.2 1.88 1.00 0.0 83.2 1.002.6 2.86.6 1.02 99.2 2.3 1.00 0.0 83.3 0.0 0.0 2.4 0.2 0.0 2.3 1.00 0.0 2.4 0.0 0.0 82.5 0.00 2.13 1.55.4 82.18 1.48 1.26 0.00 42.3 5.70.0 1.26 0.00 42.3 1.26 0.00 42.3 1.26 0.0 42.3 1.26 0.0 <td>1985 1986</td> <td>0.3</td> <td>0.5</td> <td>0.3</td> <td>4.3 0.6</td> <td>0.8 4.4</td> <td>9.0 82.5</td> <td>1459 3713</td> <td>161.6 184.2</td> <td>56.7 31.0</td> <td>169.8</td> <td>0.0</td> <td>0.3</td> <td>549.4 680.1</td> <td>0.8 3.5</td> <td>5.4 5.3</td> <td>373.1 669.0</td> <td>170.1</td> <td>0.00</td> <td>169.81 371.29</td> <td>45.78 56.67</td> <td>70.31 113.23</td> <td>1.54</td>	1985 1986	0.3	0.5	0.3	4.3 0.6	0.8 4.4	9.0 82.5	1459 3713	161.6 184.2	56.7 31.0	169.8	0.0	0.3	549.4 680.1	0.8 3.5	5.4 5.3	373.1 669.0	170.1	0.00	169.81 371.29	45.78 56.67	70.31 113.23	1.54
1980 2.0 0.5 0.7 0.0 0.1 1938 24.6 1965 1.7 0.0 0.1 7038 2.4 0.8 688.6 1.9 0.02 286.5 36.5 66.26 1.65 1990 0.2 0.6 0.3 2.8 0.1 2.7.7 454.6 154.2 43.7 0.8 0.1 0.07 66.0 0.02 46.09 69.00 44.57 57.09 132.2 2.33 157.9 188.4 61.6 4.3 0.0 686.5 1.0 2.4 997.2 65.9 0.00 213.71 55.54 82.18 1.48 1993 0.2 2.5 2.0 1.1 2.4 3.9 497.2 0.85.5 142.4 2.08 1.04 1.477 1.28 1.00 432.2 1.85.4 1.04 1.04 1.04.77 1.48 1.06 1.00 432.9 2.88.4 0.4 1.4 1.00 1.32.3 1.65 4.1 3.00 0	1987 1988	8.1 0.3	0.6	0.3	0.0	4.1	73.9 64.5	80.4 279.6	406.1 307.0	35.4 129.0	24.7 38.3	9.8 0.0	12.1	655.7 825.1	8.7 0.7	4.5 6.0	595.8 780.1	46.6	0.04	406.14 306.96	54.64 68.75	114.11 111.99	2.09
Image Image <th< td=""><td>1989 1990</td><td>2.0</td><td>0.5</td><td>0.7</td><td>0.0</td><td>0.1</td><td>101.8</td><td>213.8</td><td>286.5 41.8 1</td><td>96.5 207.5</td><td>1.7</td><td>0.0</td><td>0.1</td><td>703.8</td><td>2.4</td><td>0.8</td><td>698.6 1022.6</td><td>1.9</td><td>0.02</td><td>286.52</td><td>58.65</td><td>98.26 140.41</td><td>1.68</td></th<>	1989 1990	2.0	0.5	0.7	0.0	0.1	101.8	213.8	286.5 41.8 1	96.5 207.5	1.7	0.0	0.1	703.8	2.4	0.8	698.6 1022.6	1.9	0.02	286.52	58.65	98.26 140.41	1.68
1376 0.5 0.5 0.0 2.0 37.2 21.5 1.57 1.58 1.00 1.24 0.00 2.4 0.00 2.12 0.00 2.12 0.00 2.12 0.00 2.25 2.00 0.00 4.21 0.00 4.23 0.00 622.6 2.7 5.5 801.8 1.26 0.00 427.2 68.55 142.4 2.08 1994 16.0 0.5 0.4 3.1 0.7 226.0 335.6 432.9 228.4 0.4 1.4 0.0 822.5 5.5 801.8 1.43 3.00 0.00 423.9 110.4 149.77 1.48 1.66 1.00 423.8 7.72 1.4 3.0 0.00 43.3 0.00 423.8 7.72 1.4 1.43 1.03 1.07 1.25 3.0 1.00 3.0 1.00 44.0 3.0 1.00 44.0 3.0 1.00 3.0 1.00 3.0 1.00 3.0 1.00	1991	0.2	0.6	0.3	2.8	0.1	27.7	454.6	154.2	43.7	0.8	0.1	0.0	685.0	0.8	3.2	680.1	0.9	0.00	454.57	57.09	132.79	2.33
1949 10.0 U.S. 0.4 3.1 0.7 2280 335.6 432.9 2984 0.4 1.4 0.0 12823 16.5 4.2 130.29 1.9 10.00 422.1 110.44 164.77 1.48 1995 2.7 0.5 1.6 0.0 0.9 400.3 366.8 158.4 10.6 5.22 2.25 641.4 43.3 0.00 668.8 87.84 10.64 14.8 10.6 14.3 30.6 0.00 42.28 87.28 14.48 16.8 10.5 5.5 30.0 1047.4 76.6 6.9 1002.3 30.6 10.0 42.88 87.28 14.48 10.5 5.6 3.0 1042.5 30.0 26.3 0.0 30.6 10.0 5.8 10.9 1.1 1.1 1.1 10.5 5.6 3.0 1002.5 30.0 0.0 26.0 30.7 1.2 1.1 1.1 1.1 1.2 1.1 1.1 1.	1992	0.5	2.5	2.0	1.1	2.0	83.9	497.2	90.7	188.4	12.4	4.5	0.0	822.6	2.7	2.4 5.5	391.2	12.6	0.00	497.22	68.55	04.18	2.08
1996 70 0.6 1.2 0.5 5.2 99.5 42.29 29.31 22.268 30.5 0.2 0.0 10474 7.6 6.9 10023 30.6 0.00 422.88 87.28 144.88 16.85 1997 2.7 0.3 0.4 23.3 27 184.1 0.36 31.41 0.36 31.41 0.36 31.41 0.36 81.4 0.3 46.0 33 965.2 44.00 31.41 1.36 81.4 0.3 4.11 810.5 66.6 0.00 317.05 73.45 111.90 1.52 1999 0.0 0.3 1.6 2.5 40.1 1.51.5 249.2 43.45 1.60 0.3 41.4 43.0 65.07 1.48 2000 0.0 0.3 4.2 1.2 170.3 22.4 172.2 30.0 27.7 0.0 0.1 44.37 41.44 43.04 41.20 1.84 1.05 2.77 1.	1994 1995	16.0	0.5	0.4	3.1	0.7	236.0 40.0	335.6 366.8	432.9	298.4 118.7	0.4 25.8	1.4	0.0	1325.3 701.5	16.5 23.2	4.2	1.302.9 641.4	1.9 34.3	0.00	432.91 366.83	110.44 58.46	164.77 106.14	1.49
1998 0.0 0.3 0.1 3.9 0.1 86.3 285.1 14.2.1 317.1 63.5 3.1 0.0 881.4 0.3 -1.1 810.5 666.6 0.00 317.06 73.45 111.00 1.52 1999 0.0 7.9 0.1 0.0 5.8 105.3 202.6 44.6 116.4 45.7 0.0 0.0 282.4 7.9 5.9 466.9 45.7 0.00 202.55 44.03 65.07 1.48 2000 0.0 0.3 1.6 2.5 40.1 5.1.5 249.2 45.45 5.00 1.1 484.0 0.3 44.1 437.0 26.00 20.49.2 40.34 1.82 1.85 2.77 1.00 0.0 500 7.9 0.2 21.54 10.45 1.25 1.2 1.0 0.0 500 7.9 0.6 515.1 1.2 0.0 0.0 92.0 7.9 0.2 910.7 1.2 1.00	1996 1997	7.0	0.6	1.2	0.5	5.2	59.5 186.1	422.9	293.1 374.1	226.8 103.4	30.5 10.5	0.2	0.0	1047.4	7.6	6.9 26.3	1002.3 965.2	30.6	0.00	422.88	87.28 86.88	144.38 130.52	1.65
1.2000 0.00 0.3 0.00 2.00 0.00 <t< td=""><td>1998</td><td>0.0</td><td>0.3</td><td>0.1</td><td>3.9</td><td>0.1</td><td>86.3</td><td>265.1</td><td>142.1</td><td>317.1</td><td>63.5</td><td>3.1</td><td>0.0</td><td>881.4</td><td>0.3</td><td>4.1</td><td>810.5</td><td>66.6</td><td>0.00</td><td>317.06</td><td>73.45</td><td>111.90</td><td>1.52</td></t<>	1998	0.0	0.3	0.1	3.9	0.1	86.3	265.1	142.1	317.1	63.5	3.1	0.0	881.4	0.3	4.1	810.5	66.6	0.00	317.06	73.45	111.90	1.52
zuu u.u u.s 4.2 12.7 170.3 222.4 172.2 30.0 27.7 0.0 0.0 660.2 0.5 17.1 615.0 27.7 0.00 27.7 0.0 0.0 660.2 0.5 17.1 615.0 27.7 0.00 222.44 55.02 82.7 1.2 0.0 0.00 590 7.9 6.6 515.1 1.2 0.0 0.00 990.0 7.9 0.2 910.7 1.2 0.00 383.3 7.67 12.468 1.63 2004 0.1 0.0 0.2 0.0 2.4 63.0 306.1 31.2 1.2 0.0 0.0 900.0 7.9 0.2 82.42 1.20 0.0 306.8 7.07 1.1 1.00 803.4 0.12 1.2 1.4 1.2 1.00 306.8 31.464 1.55 2005 0.0 0.5 0.0 1.5 9.02 1.2 0.00 30.7 1.1	2000	0.0	0.3	1.6	2.5	40.1	51.5	249.2	85.4	50.9	43.7	0.0	1.1	484.0	0.3	44.1	437.0	43.7	0.00	249.22	40.34	71.82	1.48
2000 1.5 6.5 0.0 0.1 0.0 10.6 30.29 328.3 177.9 1.2 0.0 0.0 9200 7.9 0.2 910.7 1.2 0.00 338.33 76.67 124.468 1.68 2004 0.1 0.0 0.2 0.0 2.4 63.0 336.1 31.24 122.0 22.3 1.9 0.0 80.4 0.1 2.6 823.4 24.22 0.0 300.67 124.464 1.55 2005 0.2 0.0 6.0 4.7 1.0 0.0 987.0 0.2 1.54 99.0 32.6 124.44 1.25 2006 0.0 6.7 0.0 1.1 7.7 7.0 1.1 1.0 1.84 1.000 48.1 0.00 364.3 7.50 1.1 0.0 1.84 1.000 364.3 7.50 1.21 0.00 364.3 1.75.0 1.69 1.000 48.43 1.17.0 1.48.7 1.22	2001 2002	0.4	0.0	0.3	4.2	12.7	170.3 147.1	222.4 44.1	172.2 21.5.4	50.0 108.5	27.7	0.0	0.0	660.2 530.9	0.5 7.9	17.1 6.6	615.0 515.1	27.7	0.00	222.44 215.41	55.02 44.24	82.71 72.84	1.50
2005 0.2 0.0 0.3 15.1 0.0 130.5 282.2 203.9 320.7 12 0.0 967.0 12.4 900.6 12.4 900.6 12.4 900.6 12.4 900.6 12.4 900.7 12.6 10.0 907.0 12.6 900.7 12.6 10.0 907.0 12.6 12.6 12.6 12.6 12.6 12.6 12.6 12.6 12.6 12.6	2003 2004	1.5	6.5 0.0	0.0	0.1	0.0	101.6 63.0	302.9 326.1	328.3 312.4	177.9	1.2	0.0	0.0	920.0 850.4	7.9	0.2	910.7 823.4	1.2	0.00	328.33 326.08	76.67	124.68 121.74	1.63
accord ood tit sead tit ood ood tit ood	2005	0.2	0.0	0.3	15.1	0.0	130.5	295.2	203.9	320.7	1.2	0.0	0.0	967.0	0.2	15.4	950.2	1.2	0.00	320.72	80.58	124.64	1.55
Lubs U	2007	0.0	2.6	0.0	1.5	12.5	92.1	364.3	299.0	132.6	1.0	0.0	0.0	906.0	2.7	10.4	887.9	1.2	0.00	364.35	75.50	127.90	1.69
2010 0.6 0.3 0.0 0.0 0.0 62.8 33.7 418.7 192.7 13.6 62.1 0.0 1005.9 75.7 0.00 418.68 90.21 145.47 16.1 MIN 0.00 0.00 0.00 0.00 0.00 141.22 20.00 0.00 341.00 142.05 344.47 16.1 MIN 0.00 0.00 0.00 0.00 10.41 41.22 25.07 12.20 0.00 0.31.00 10.42.05 24.44 45.59 11.65 MMAX 24.11 10.505 544.97 1.23 12.27 36.84 1479.82 31.76 110.69 142.05 24.44 45.59 1.11 24.38 MEAN 2.48 1.76 1.70.267 36.84 1479.82 31.76 110.69 142.05 24.44 45.59 1.11 24.38 MEAN 2.48 1.76 1.78 23.31 14.43 13.38 11.82.7 3.26	2008	0.0	0.0	0.0 2.3	2.0	0.1	62.9 43.8	242.1 381.8	210.7	148.7 87.4	7.2	0.4 37.3	0.0	674.3 774.1	0.1	2.2	684.0	7.6	0.00	242.14 381.76	56.19 64.51	91.09 111.56	1.62
MAX 24.11 16.06 54.95 23.31 105.10 264.68 678.13 394.21 384.84 170.36 122.67 36.84 1479.82 31.76 110.69 1451.75 170.48 0.60 678.13 123.32 21.11 2.43 MEAN 2.68 1.64 1.87 1.61 7.15 96.61 283.93 246.43 153.88 21.18 8.39 2.11 827.48 4.32 10.64 780.85 31.66 0.04 345.97 68.96 116.82 1.70 SD 507 3.25 587 3.54 1.400 64.12 118.24 129.31 114.78 30.13 564 229.40 620 15.99 27.26 39.72 0.08 116.52 1.70 CV 1.00 1.00 1.01 2.01 2.02 0.62 1.57 1.02 2.02 1.02 2.01 1.62 1.70	2010 MIN	0.6	0.3	0.0	0.0	0.0	62.8 1.14	331.7 44.12	418.7 25.07	192.7 12.90	13.6 0.12	62.1 0.00	0.0	1082.5 341.09	0.9	0.0	1005.9 294.89	75.7	0.00	418.68	90.21 28.42	145.47 45.99	1.61
Store 3.25 5.87 3.54 14.60 0.42 12.00 0.411 0.476 7.42 10.07 0.000 91.59 0.630 110.82 11.0 SD 507 3.25 5.87 3.54 14.60 64.12 114.78 36.13 30.85 56.12 15.99 227.56 39.72 0.08 115.22 19.12 CW 1.00 1.00 0.04 0.02 1.71 2.43 2.94 6.20 1.599 227.56 39.72 0.08 115.22 19.12	MAX	24.11	16.06	54.95	23.31	105.10	264.68 96.61	678.13	594.21 246.43	584.84	170.36	122.67	36.84	1479.82	31.76	110.69	1451.75	170.48	0.60	678.13 345.07	123.32	211.11	2.43
	SD	5.07	3.25	587	3.54	14.60	64.12	118.24	129.31	114.78	36.13	20.38	5.64	229.40	620	15.99	227.56	39.72	0.08	11522	19.12		1.00

 Table 10. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901

 - 2010 in the Mahi river catchment areas

				e e'								Nam	nada	<u> </u>	•				
YEAR	JAN	FEB	MAR	APR 20	MAY	JUN	JUL 206.9	AUG	SEP	001	NOV	DEC	ANN 1035 S	JAN-FEB	MAR-MAY	JUN-SEP	OCI-DEC	MIN MAX MEAN	SD CV
1902	12.5	23	0.3	4.4	3.0	36.6	291.5	216.7	223.2	33.0	26.9	17.8	868.2	14.8	7.7	768.1	77.7	0.32 291.54 72.35	105.58 1.46
1903	6.0	18	0.4	1.2	45.1	64.5 105.7	312.9	318.3	286.5	74.0	0.1	0.7	1111.5	7.8	46.7	982.2	74.8	0.09 318.28 92.62	131.45 1.42 96.18 1.28
1905	69	4.7	6.1	6.4	8.7	40.1	427.5	197.6	270.3	3.3	0.1	0.9	972.7	11.6	21.3	935.5	4.3	0.09 427.48 81.06	140.73 1.74
1906	7.1	15.7	22.1	0.3	1.9	249.8	388.5	257.4	210.7	3.9	0.3	6.4	1164.2	22.8	24.2	1106.4	10.7	0.28 388.51 97.01	138.79 1.43
1908	9.6	8.4	15.9	2.2	1.2	143.6	410.6	378.4	87.4	8.7	0.4	58	1072.2	179	19.3	1020.1	14.9	0.41 410.61 89.35	149.18 1.67
1909	9.1	83	3.6	36.0	9.6 21	148.5	290.0 244.1	235.6	138.0	1.2	0.0	40.3	920.2 1165.6	17.4	49.2	812.1	41.6	0.04 239.97 76.68	101.49 1.32
1911	85	0.6	7.4	0.3	1.3	169.5	156.0	227.3	219.5	28.1	50.4	10	869.9	9.1	8.9	772.4	79.5	0.26 227.34 72.49	92.12 1.27
1912	5.6	36.7	02	2.6	2.1	46.4	353.9	345.5	112.8	1.7	80.7	2.4	990.5 1047.7	42.3	4.9	858.5	84.7 17.0	0.23 353.92 82.54	129.91 1.57
1915	02	4.8	36.1	11.0	14.7	147.6	402.3	246.4	205.0	8.0	62	39	1086.1	5.0	61.8	1001.3	18.1	0.21 402.31 90.51	131.37 1.45
1915	79	28.6	52.5	7.8	9.9 237	177.5	328.5	320.9	143.3	1179	6.7 29.6	69	1208.5	36.6	70.3 24.8	970.2 1132.7	131.4	6.67 328.54 100.70 0.14 392.74 113.32	120.24 1.19
1917	39	34.6	12.5	3.1	58.1	223.3	319.4	370.3	318.6	89.4	0.0	2.7	1435.9	38.5	73.7	1231.6	92.1	0.05 370.28 119.66	145.04 1.21
1918	12	45	1.7	0.6	24.6	192.4 242.4	159.6	271.0	61.2	0.6	17.8	7.4	742.6	5.7	26.9	684.2 1228.3	25.8	0.58 270.99 61.88	92.79 1.50
1919	56.7	0.3	10.1	5.0	14.6	118.8	328.8	217.6	100.4	0.3	0.1	10	853.6	56.9	29.7	765.6	1.3	0.06 328.85 71.13	105.53 1.48
1921	14.3	1.7	0.1	0.3	0.1	237.2	241.4	261.2	289.8	0.4	0.1	1.0	1047.5	159 48.2	0.5	1029.6	1.5	0.05 239.79 87.30	126.32 1.45
1923	3.0	29	17.8	2.4	2.9	17.7	518.6	461.0	192.1	17.2	0.1	35	1239.1	5.9	23.1	1189.3	20.8	0.14 518.56 103.26	188.62 1.83
1924	24.3	2.8	33	1.2	1.9 33.1	46.0	390.1 354.3	363.5	221.3	86.4 4.6	10.3	18.2	971.1	27.1	6.4 33.4	1020.9 873.6	1149 63.7	1.16 390.08 97.43 0.12 354.27 80.92	144.59 1.48 115.82 1.43
1926	29.4	2.6	26.4	26.6	15.8	24.3	330.0	491.3	300.7	57.0	09	2.1	1307.1	32.0	68.8	1146.3	60.0	0.87 491.33 108.92	166.44 1.53
1927	29	12.2	25.9	1.4	1.2	109.1	440.0	250.6	76.5	56.9 61.3	81.6	12.0	1070.2	15.1 41.1	28.5	876.2 932.4	150.5 134.9	1.19 440.03 89.19 0.86 494.84 93.27	131.29 1.47 144.26 1.55
1929	14.0	12.4	0.3	8.9	0.6	132.3	369.7	289.7	131.1	10.6	0.1	20.0	989.6	263	9.8	922.8	30.7	0.10 369.66 82.47	125.99 1.53
1930	0.4	154	12	17.8	4.6	146.7	538.6 321.3	214.8	181.7	23.0 173.6	5.1	4.6	1139.8	1.9	23.6	1081.7	32.7	0.36 538.57 94.99	160.50 1.69
1932	02	99	16.3	3.8	3.9	95.4	616.1	144.4	278.1	39.1	1.7	1.0	1209.8	10.1	23.9	1134.0	41.8	0.25 616.08 100.82	182.61 1.81
1933 1934	33	22.5	8.8	11.7	69.9 0.6	151.5	369.3 313.1	409.5	313.2 413.5	41.7	69 27.2	11.4 62	1419.6	25.8 4.6	90.4 7.5	1243.5 1312.8	59.9 49.7	3.30 409.50 118.30 0.14 413.48 114.55	155.14 1.31 168.00 1.47
1935	10.1	6.1	0.5	17.2	0.7	123.4	458.7	219.3	241.9	14.7	0.6	4.7	1098.0	16.2	18.4	1043.4	20.0	0.49 458.72 91.50	145.38 1.59
1936	55	19.6	25.5	6.1	18.9	224.2 208.0	270.4 528.5	300.2 182.1	270.2	25.6	119.5	3.4	1289.1	25.1 31.1	50.4 44.0	1065.1 1154.5	148.4 80.1	5.37 300.25 107.42 0.55 528.45 109.13	122.29 1.14
1938	20.6	65	4.1	1.7	27.3	366.4	412.9	268.2	111.0	107.4	0.3	0.6	1326.9	27.1	33.1	1158.5	108.3	0.25 412.89 110.58	152.27 1.38
1939 1940	14.5	11.5	20.5	2.6	0.2	105.0	399.9 500.5	434.2 397.0	145.8 74.9	8.7 68.4	1.6	0.9	1145.5	26.0 11.8	23.3	1084.9 1149.8	11.3 103.5	0.19 434.25 95.46 3.09 500.46 106.78	157.33 1.65 168.92 1.58
1941	24.5	35.8	11.9	2.1	4.7	90.0	265.8	329.0	86.0	6.8	02	0.7	857.5	60.3	18.7	770.8	7.7	0.16 329.00 71.45	110.87 1.55
1942	19.1	49.2	3.1	3.5	1.0 26.3	168.3	603.5 417.3	326.4	193.1 264.2	1.0 95.0	0.1	12.3 0.6	1380.6	68.3 71.9	7.5	1291.4	13.4 96.4	0.15 603.53 115.05	186.00 1.62
1944	22.9	40.7	51.3	4.5	1.6	109.7	619.4	578.4	186.4	69.5	2.1	33	1689.8	63.6	57.5	1493.8	74.9	1.61 619.37 140.82	220.88 1.57
1945	34.6	95	02	15.7	4.1	216.1 330.9	438.5	281.6 415.1	243.7 100.6	14.1	0.2	15	1250.6	34.9 9.6	20.0	1179.9	15.8	0.16 438.47 104.21 0.08 415.07 115.73	150.45 1.44
1947	35.6	13.9	11.1	4.1	1.9	75.6	451.1	390.1	260.2	20.0	0.6	12.5	1276.8	49.5	17.2	11769	33.2	0.62 451.09 106.40	163.86 1.54
1948	39.3	98 60	2.0	3.0	1.0 26.3	201.3	426.5	361.2	240.0 409.8	17.9 106.6	82.9	0.7	1385.7	49.1 6.1	6.0 28.8	1229.1 1070.3	101.5	0.73 426.53 115.47	153.56 1.33 143.66 1.42
1950	22	17.2	22.7	1.6	4.2	62.6	488.5	220.5	251.9	9.2	0.3	24.2	1105.1	19.4	28.5	1023.5	33.7	0.32 488.53 92.09	152.07 1.65
1951	9.4	7.6	19.4	8.8 2.6	5.3	105.2 150.6	267.0	276.1	123.9 88.3	40.3	0.7	0.3	863.8 891.3	16.9	33.5	772.2 858.6	41.3 6.9	0.33 276.06 71.99 0.12 347.38 74.28	101.79 1.41 120.41 1.62
1953	14.7	35	0.1	5.0	0.6	75.6	380.4	376.4	132.9	23.9	0.1	0.4	1013.5	18.2	5.7	965.2	24.3	0.08 380.38 84.46	143.01 1.69
1954	33.4	2.1	0.8	1.7	0.9	89.7 224.4	345.3	243.2	495.0 316.4	12.7	02	12	1215.9	20.4 35.5	8.1 6.3	1173.2	14.1	0.21 494.98 101.32	167.53 1.65 153.43 1.36
1956	25	3.1	29	0.9	57.6	167.9	473.6	263.0	167.9	56.6	33.7	11.0	1240.6	5.6	61.5	1072.3	101.3	0.93 473.61 103.38	144.40 1.40
1957	16.2	0.8	50.8	12.4	6.9 2.2	105.3 91.4	261.2	396.0 321.1	100.8	9.0 79.1	0.6	03	960.2 1191.8	17.1	70.0	863.3 1073.8	9.9 92.3	0.33 395.99 80.02 0.27 373.04 99.31	125.25 1.57 142.03 1.43
1959	21.0	12	0.4	5.9	20.9	109.1	483.6	363.0	329.0	76.7	5.4	02	1416.5	22.3	27.2	1284.7	82.3	0.20 483.63 118.04	172.00 1.46
1960 1961	44.0	1.0	14.0	4.5	7.8	150.3	286.7	394.3	71.8 536.7	76.5	03	08	1051.9	45.0 19.1	26.3	903.1 1479.5	77.6 130.8	0.30 394.34 87.66	128.38 1.46 197.43 1.44
1962	43	10.9	15.3	13.9	9.9	34.2	342.3	253.9	323.8	1.8	7.7	44.2	1062.2	15.2	39.1	954.2	53.7	1.79 342.31 88.52	133.59 1.51
1963	2.8	10.9	4.4	9.2	7.3	116.3	255.8	376.7	200.5	37.1	17.3	0.3	1038.6	13.7	20.9	949.3 1062.6	54.7 16.2	0.27 376.71 86.55	125.46 1.45
1965	32	1.4	6.6	5.9	0.7	70.0	271.0	170.2	125.5	6.4	19	12.4	675.4	4.6	13.2	636.8	20.7	0.72 271.03 56.28	88.10 1.57
1966	9.1	0.4	3.1 40.3	0.5	5.5	96.7 152.9	316.3	208.5 329.4	128.7	2.0	27.4	6.6 95.6	806.9 1162.2	9.5 1.2	9.2	752.3	36.0 100.4	0.43 316.26 67.24	102.91 1.53 130.58 1.35
1968	16.5	79	14.1	2.9	0.9	68.7	372.2	371.6	161.9	11.1	0.3	0.8	1028.8	24.4	17.9	974.4	12.2	0.26 372.22 85.74	141.42 1.65
1969	27.5	10.9	21.7	1.5	2.9	301.6	481.5	377.8 434.5	333.8	5.1	0.8	0.7	1229.1	5.6 38.4	4.2 36.1	1195.4 1354.6	23.9 6.0	0.81 481.52 102.42	165.74 1.39
1971	16.1	8.7	6.4	5.8	37.9	249.7	432.8	220.6	211.6	78.2	1.6	0.3	1269.6	24.8	50.1	1114.7	80.0	0.25 432.83 105.80	140.37 1.33
1972	35	4.6	0.4	2.9	1.5	102.4	245.8 626.0	519.5	301.7	17.8	15.5	33	1028.5	6.9 34.5	4.8	980.1 1476.9	30.0	0.42 519.50 85.71	155.46 1.81 213.66 1.62
1974	2.4	8.7	16	2.0	15.1	82.4	299.0	432.7	85.8	96.8	4.7	03	1031.3	11.0	18.7	899.8	101.8	0.29 432.69 85.94	138.78 1.61
1975	8.1	10.5 3.4	62 5.7	1.1	3.0 8.3	177.7	331.4 391.9	4.36.0	251.4 217.4	82.7	1.5 39.3	03	1309.9	18.7	10.3	1196.4 1084.6	84.5 46.8	0.25 436.00 109.16	153.37 1.41 141.82 1.46
1977	45	7.0	99	5.1	12.2	256.5	286.4	420.0	214.0	46.7	79.0	1.4	1352.7	11.5	27.1	1187.0	127.1	1.41 419.98 112.73	145.08 1.29
1978	15.8 32.2	 	24.7 5.3	0.1 1.8	1.2 7.5	186.8	441.7 251.6	450.2 314.0	87.1 91.2	25.3 14.9	20.6 81.0	20.2 1.0	1.529.5 976.3	55.5 71.0	52.1	1165.8 793.7	76.1 96.9	1.22 450.16 110.79 1.02 314.02 81.36	104.42 1.48 104.00 1.28
1980	6.7	32	18	1.6	1.6	285.9	282.5	374.4	139.2	8.8	16	33.3	1140.5	9.8	5.0	1082.0	43.7	1.55 374.40 95.04	139.47 1.47
1981	98 64.0	1.8	29 29	2.0	12.0	108.7	276.1	369.1	215.5 143.8	33.1	53.7	0.4	1077.1	763	16.0	897.6	46.7 87.1	0.40 <u>369.10</u> 89.76	158.15 1.39 119.32 1.33
1983	4.0	9.0	1.4	2.4	7.9	109.9	315.3	397.8	362.2	63.6	16	1.7	1276.9	13.0	11.7	1185.2	67.0	1.43 397.78 106.41	156.45 1.47
1964	31.3	53	1.6	7.5	5.8	104.3	347.5	277.4	166.2	101.0	2.4	03	1050.6	36.6	9.2	895.4	103.7	0.31 347.49 87.55	118.91 1.36
1986	4.6	64.4	11.9	2.7	6.6	186.9	485.6	285.9	83.9	14.8	22	16.3	1165.9	69.0	21.3	1042.3	33.3	2.24 485.63 97.16	151.09 1.56
1987	10.1	11.7	49	8.7	6.4	168.2	397.9	315.5	136.6	49.6	20.8	0.3	1171.8	21.8	20.8	845.5	92.6 51.9	0.25 397.90 97.65	139.22 1.43
1989	22	23	22.6	1.5	7.0	191.6	222.1	344.7	125.6	5.9	0.8	10.5	936.8	4.5	31.1	884.0	17.2	0.76 344.69 78.07	116.08 1.49
1990	39	7.8	8.1	5.0	4.4	156.2	406.6	278.0	45.0	9.9	7.8	03	933.1	11.8	17.5	885.8	18.1	0.32 406.60 77.76	133.76 1.72
1992	2.8	2.6	19	2.5	9.4	94.2	222.7	356.5	134.5	40.9	2.3	0.5	870.8	5.4	13.8	807.9	43.7	0.46 356.53 72.57	113.72 1.57
1993	14.2	79	0.9	10.2	0.1 3.9	293.6	412.4 513.8	290.8 475.6	272.0	40.6	38	03	1251.5	22.0	15.0	1166.5	24.6	0.33 513.76 134.71	198.49 1.47
1995	22.1	55	34.7	4.5	3.6	95.1	409.5	240.6	155.4	26.6	18	13.2	1012.6	27.6	42.8	900.6	41.6	1.82 409.45 84.39	126.46 1.50
1996	14.9	14.0	3.7	3.5 7.8	1.9 6.6	04.2	461.0	⊿e0.1 333.6	109.0	30.0 48.9	71.1	100.0	1300.0	_36.1 17.1	8.7	971.5 1044.8	84.7 220.0	2.21 457.56 91.75 2.21 461.01 108.33	145.29 1.34
1998	26.4	49	16.9	7.7	2.4	104.6	334.0	230.8	345.2	47.2	23.9	0.3	1144.3	31.3	27.0	1014.6	71.5	0.34 345.20 95.36	131.31 1.38
2000	2.8	3.4	1.5	1.5	22.3	175.9	339.0	267.5	479.1 75.8	7.3	18	0.3	797.4	40.5 6.2	25.4	1236.3 755.9	9.8	0.55 479.12 119.16 0.67 338.97 66.45	102.05 1.36
2001	2.6	2.1	7.0	7.8	32.2	296.7	296.3	178.5	60.4	66.0	13	03	941.2	4.7	47.0	821.9	67.6	0.34 296.31 78.43	111.68 1.42
2003	13	41.3	7.0	8.5 1.7	0.5	192.7	347.2	454.0	1361.2	14.5	15	3.0	950.6	42.6	9.2	802.8	19.6	1.00 454.01 79.22 0.54 381.20 107.70	152.56 1.42
2004	33.8	1.7	4.7	5.1	14.3	142.1	296.3	357.6	109.0	33.5	8.7	0.6	1007.2	35.5	24.0	904.9	42.8	0.62 357.59 83.94	122.76 1.46
2005	3.8 0.5	3.1	16.0 62.1	4.4	3.1 46.5	94.0	390.4	2.54.0 501.7	2/9.8 203.7	17.6	8.0	0.4	1296.1		21.9	1217.2 1189.9	20.0 28.0	1.20 563.66 108.00 0.38 501.70 111.09	178.33 1.65
2007	05	30.0	85	3.6	17.3	113.5	389.2	286.6	204.3	3.7	19	1.1	1060.2	30.5	29.4	993.6	6.7	0.50 389.17 88.35	133.44 1.51
2009	11.8	1.8	3.4	1.8	22.3	88.7	417.0	215.8	201.3	14.2 69.8	3.1 84.9	17.0	1135.9	4.0	20.9	901.3	18.1	0.23 299.39 78.69 1.05 416.98 94.66	112.12 1.42 126.04 1.33
2010	29	42	1.8	1.5	1.9	101.0	309.8	345.1	267.1	41.2	53.5	4.7	1134.7	7.0	5.3	1023.0	99.3	1.51 345.09 94.56	132.78 1.40
MAX	87.93	64.44	62.09	0.24 36.01	0.11 69.93	366.43	76.04 625.99	144.45 619.88	26.75 536.68	173.63	139.34	100.03	1689.79	0.35 105.20	0.48	1554.96	1.52 220.00	<u>0.04</u> <u>221.54</u> 56.28 <u>6.67</u> <u>625.99</u> 140.82	80.18 1.14 220.88 1.93
MEAN	13.46	12.41	9.93	5.11	10.53	144.56	360.39	328.40	201.45	38.75	15.60	7.88	1148.46	25.86	25.57	1034.80	62.23	0.74 410.43 95.71	141.27 1.48
CV	1.19	1.09	12.28	1.17	1.28	0.48	0.29	96.47	0.51	0.98	1.73	2.04	0.18	0.78	0.76	0.18	47.85	1.25 0.21 0.18	1 1

Table 11. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901 - 2010 in the selected Narmada river catchment areas

DOI: 10.9790/2402-1105035173

VEOD	Tur	0 जा ज	MADIA	T AG	MAVI	TIN	пп	ATT/1	5 570	0.1	NOU	Ta	ANN	IAN PPD	MADMON	IIIN CED	OCLORG	MIN	Mav	MEST	20	60
1901	363	0.5	10.3 4	4.8	7.2	117.4	224.3	227.8	42.0	63.4	0.0	0.3	734.2	36.8	22.3	611.5	63.7	0.03	227.81	61.19	84.40	1.38
1902	12.9	0.1	0.1	3.0	3.0	51.0	238.8	150.7	146.8	43.0	23.1	25.4	698.9 855.0	13.0	6.1	587.4 741 s	92.4 37.0	0.10	238.80	58.24	77.73	1.33
1904	2.9	10.0	7.1 0	0.2	5.3	91.0	111.3	77.0	262.1	36.1	0.0	2.9	606.0	13.0	12.6	541.4	39.0	0.03	262.14	50.50	77.58	1.45
1905	0.8	3.3	0.2 0	0.2	3.9	572	334.4	91.3 255.4	155.0	1.7	0.7	0.3	649.1 873.4	4.1	4.4	637.9 848.3	2.6	0.23	334.36	54.09	101.07	1.87
1907	1.2	37.7	0.2 2	2.3	0.7	120.4	198.9	221.8	14.4	1.5	8.7	0.3	628.1	38.9	23.1	555.6	10.5	0.15	221.81	52.34	81.24	1.55
1908	0.7	0.1	16.5	3.2	0.6	152.1	253.9 222.5	201.1	81.1	0.9	0.3	1.5	712.1	0.8	20.4	688.2	2.7	0.12	253.90	59.34 63.22	91.77	1.55
1910	0.0	0.0	0.1 0	0.1	4.0	231.6	213.0	237.1	165.2	59.2	38.7	0.3	949.2	0.1	4.1	846.8	98.2	0.02	237.10	79.10	101.09	1.28
1911	10.8	0.1	1.5 0	0.1	0.8	140.8	122.7	143.7	67.9	2.1	52.5 78.1	0.6	543.5	10.8	2.4	475.1	55.2 98.7	0.05	143.69	45.29	59.09 85.37	1.30
1912	0.0	1.6	1.0 0	0.1	16.0	214.5	293.1	139.5	127.8	4.2	0.1	15.7	813.5	1.7	17.1	774.9	19.9	0.05	293.11	67.79	101.39	1.50
1914	0.0	5.0	5.2 2	3.3	18.8	250.7	262.4	151.7	284.1	8.1 102.5	18.0	10.0	1017.3	5.0	27.4	948.9 625.1	36.1	0.05	284.12	84.78	116.80	1.38
1915	0.0	2.9	0.2 0	0.5	24.7	185.8	267.3	212.7	230.3	85.1	37.8	0.2	1047.6	3.0	25.4	896.0	123.2	0.05	267.31	87.30	105.34	1.21
1917	0.3	26.6	6.8	1.4	382	162.7	169.6	197.4	235.0	143.6	1.9	0.2	983.8 400.4	27.0	46.4	764.6	145.8 24.5	0.21	234.97	81.98 34.12	91.25	1.11
1919	23.4	4.6	0.7	2.9	159	212.6	208.7	184.8	126.5	64.1	32.6	0.4	877.1	27.9	19.5	732.7	97.0	0.35	212.62	73.09	85.72	1.17
1920	753	0.3	0.5 0	1.7	7.6	95.7	169.0	101.9	67.3	1.2	0.0	0.2	519.6	75.6	8.8	433.8	15	0.02	168.96	43.30	57.08	1.32
1922	46.3	3.8	0.0	1.5	5.6	167.4	210.6	60.8	206.2	10.6	43.2	3.8	759.8	50.1	7.1	645.0	57.6	0.04	210.64	63.32	82.39	1.30
1923	0.7	0.8	24.8 4	4.4	5.1	159	317.8	112.8	177.3	0.7	0.0	1.7	662.1 804.8	1.5	34.4 8.0	623.8	2.4	0.02	317.80	55.18	99.79 85.48	1.81
1925	0.1	0.0	1.0 0	0.1	273	176.7	140.5	143.6	50.5	4.7	58.8	12.1	615.5	0.1	28.5	511.4	75.6	0.02	176.70	51.29	65.33	1.27
1926	439	4.0	1.6 2	2.4	9.2	45.4	238.2	294.0 83.2	85.3	4.6	2.4	1.5	732.5	47.9	13.2	662.9 710.2	8.4 142.6	1.49	294.01 319.82	61.04 71.93	99.95	1.64
1928	0.1	35.8	5.0 0	0.0	1.0	130.5	245.0	155.0	150.1	71.1	3.5	46.4	843.2	35.8	60	680.5	120.9	0.02	244.98	70.27	81.37	1.16
1929	4.1	22.4	0.5 2	3.5	0.7 6.4	202.1	187.3	65.7	102.3 289.2	17.2 31.3	0.0	5.1	627.9 830.8	26.5	21.6	557.4 777.0	22.3 43.6	0.01	202.12 289.23	52.33 69.24	73.31	1.40
1931	1.3	0.3	1.8 0	0.7	2.0	87.4	324.2	300.4	192.4	266.9	24.8	9.6	1211.6	1.6	45	904.3	301.2	0.25	324.19	100.97	131.28	1.30
1932	0.0	8.2	26.0 e	5.6 2.4	2.7	79.1	364.7	137.0 265.0	152.5 316.0	64.7 42.1	2.7	1.3	865.5 1056.9	8.2 5.6	35.3 61.3	753.3 922.0	68.7 68.0	0.0S	364.70 31.5.96	72.13	112.35	1.56
1934	4.7	0.0	0.1	1.4	0.3	126.8	226.2	298.1	176.0	3.9	54.1	0.2	891.9	4.7	18	827.1	58.2	0.01	298.06	74.32	106.07	1.43
1935	5.9 10.5	1.1	0.1 1	2.9	1.1 22.2	154.6	311.4 94.4	133.3	184.1 151.7	43.8 2.4	1.5 214.5	0.8	848.3 867.6	7.0 29.0	11.8 36.2	783.5 585.3	46.1 217.1	0.07	311.42 227.74	70.69	102.10	1.44
1937	0.1	6.1	5.6 3	5.4	0.3	155.5	354.6	48.7	241.5	81.2	0.6	8.0	937.5	6.2	41.4	800.2	89.8	0.07	354.61	78.13	114.94	1.47
1938	4.5	0.3	5.6	4.7	99.1 0.4	521.8 77.3	±10.4 231.9	154.4 288.5	140.5 62.1	19.0 11.3	0.3	0.2	1057.6 706.1	4.8	46.4	927.0 659.8	79.4 26.7	0.18 0.14	.521.80 288.51	88.13 58.84	119.86	1.36
1940	1.7	3.8	0.9	3.7	6.3	181.6	310.9	199.5	110.5	90.1	29.8	7.6	946.5	5.5	10.9	802.6	127.5	0.88	310.94	78.88	102.76	1.30
1941	8.9 1.0	262 359	0.2	4.1 3.0	0.7	47.4 1.51.6	.158.4 328.9	132.3 302.4	95.3 137.9	6.7 0.7	0.0	0.2 28.3	083.5 990.9	35.1 36.8	79 4.1	633.5 920.9	69 29.1	0.05	358.45 328.95	56.96 82.57	104.11 121.33	1.83
1943	16.2	0.0	0.1	0.9	38.2	142.0	246.6	87.6	191.1	145.4	0.2	0.2	868.5	16.2	39.2	667.4	145.8	0.03	246.57	72.38	88.00	1.22
1944	<u>5.8</u> 14.2	0.0	0.1	3.1	1.5	102.6	399.2 267.8	401.8 225.2	100.1 255.2	35.2 12.6	2.1	0.2	1458.5 884.5	21.1 14.3	20.7	1129.7 849.8	01.0 15.4	0.03	401.78 267.78	73.71	101.50	1.30
1946	0.0	4.9	0.1 8	3.2	12.0	198.7	274.9	227.8	127.0	4.1	167.9	16.3	1041.9	4.9	20.2	828.4	188.3	0.04	274.90	86.82	105.02	1.21
1947	29.5	2.1	2.1 2	2.0	2.9	205.5	302.1	183.7	124.2	16.4	1.5	0.2	976.3	24.8 31.6	62	815.5	123.0	0.19	302.07	81.36	102.56	1.39
1949	0.0	0.4	0.2 0	0.2	24.7	137.1	315.5	135.6	422.9	91.3	0.5	0.2	1128.6	0.4	25.1	1011.1	92.0	0.04	422.87	94.0S	140.89	1.50
1950	3.0	0.1	2.7 2	2.6	6.1	135.4	255.4	152.1	203.9 58.9	82.5	6.1	0.1	705.1	3.2	11.4	601.8	88.7	0.15	255.44	36.41 58.76	82.93	1.65
1952	0.0	4.5	0.7	1.5	3.3	106.7	212.5	101.9	51.6	9.7	0.1	1.1	493.6	4.5	55	472.7	11.0	0.01	212.48	41.14	67.02	1.63
1953	4.9	1.3	7.8 (5.1).9	1.3	129.4	290.0	163.8	95.4 369.1	40.1 6.3	0.1	1.7	960.8	6.2	10.0	936.5	40.4	0.05	269.09	80.07	127.27	1.51
1955	14.4	0.1	1.4	3.9	3.2	161.4	149.7	310.1	200.1	126.5	0.4	0.1	971.4	14.6	85	821.3	127.0	0.12	310.07	80.95	105.42	1.30
1950	1.6	0.0	16.8 1	0.5	14.6	172.1	153.0	199.6	107.8	9.4	7.8	0.1	693.5	4.5	41.9	632.5	120.0	0.04	199.61	57.79	76.98	1.13
1958	0.5	0.0	1.8	7.0	6.9	109.9	279.7	316.5	175.2	46.0	42.5	0.2	986.3	0.6	15.7	881.3	88.7	0.02	316.54	82.19	114.48	1.39
1939	23.9	0.0	9.5 (0.8	14.4	163.3	194.8	176.6	91.5	54.7	0.1	1.9	731.4	23.9	24.6	626.2	56.7	0.05	194.82	60.95	7595	1.25
1961	0.6	2.0	2.8 2	2.0	13.5	119.8	292.6	144.8	255.5	174.9	2.3	4.8	1015.8	2.6	18.4	812.8	182.1	0.60	292.62	84.65	109.17	1.29
1963	1.9	7.4	9.4	3.3	8.9	137.8	206.2	265.7	82.3	70.0	30.1	0.1	823.1	9.3	21.7	692.1	100.1	0.05	265.75	68.60	89.68	1.31
1964	0.2	0.2	2.6 0	2.2	3.5	158.4	259.4	228.9	154.9	21.7	2.9	0.0	833.4	0.4	68	801.6	24.6	0.02	259.42	69.45	100.63	1.45
1966	3.0	0.2	4.1 (0.4	17.3	53.8	305.1	119.0	169.8	1.9	45.9	14.4	735.0	3.2	21.8	647.8	62.2	0.21	305.14	61.25	93.73	1.53
1967	0.3	0.5	19.0 2	2.2	0.6	161.7	308.7	139.3 325.3	84.4 129.6	8.0 21.0	1.0	73.9	799.6	0.8	21.7	694.1 726.0	82.9 24.7	0.34	308.66	66.63 65.18	95.62	1.44
1969	1.2	0.1	0.1 (0.1	0.5	109.0	290.9	210.5	287.9	0.9	25.9	0.3	927.4	1.3	0.7	896.3	27.1	0.06	290.87	77.28	117.82	1.52
1970	8.0 0.5	0.6	5.1	1.6 1.1	17.6	305.4	145.6	363.8 151.6	250.3 169.1	11.7 55.3	0.2 5.4	0.1	1110.2 676.5	8.6 3.0	24.4	1065.2 581.6	12.1	0.10	363.84	92.52 56.38	137.30	1.48
1972	0.6	1.0	0.0	1.8	5.4	120.4	158.1	250.9	92.9	9.1	21.2	0.2	661.7	1.6	72	622.4	30.5	0.02	250.94	55.14	82.67	1.50
1973	0.7	9.5 2.8	0.7 1	4.4	1.9 38.0	108.4 45.7	.541.2 231.0	267.1 187.4	245.1 103.7	56.5 93.2	5.5 5.6	0.2	1037.9 713.9	10.2 3.4	3.7 42.9	961.8 567.8	62.1 99.9	0.21	341.23 230.99	96.49 59.49	125.46	1.45
1975	1.1	5.8	0.6	0.9	6.1	158.4	228.4	271.9	234.7	765	5.7	0.1	990.3	6.9	76	893.4	82.3	0.06	271.85	82.52	108.93	1.32
1976	1.0	2.6	3.4 8.6 1	2.0	11.1	235.0	225.5	177.0	10.5.4	36.7	84.9 88.4	1.3 6.8	916.1	3.6	21.7	391.0 758.9	93.8 131.8	0.72	234.99	84.04 76.34	91.27	1.34
1978	6.9	21.8	13.3 0	5.7	2.7	154.4	283.5	249.5	68.7	28.6	42.8	8.0	886.8	28.7	22.7	756.1	79.4	2.66	283.52	73.90	99.60	1.35
1979	4.1	18.5	0.0	1.2	1.3	273.0	174.3	2662	130.4 70.4	46.1 6.9	94.5	1.4	833.7	43.0	2.6	629.8 784.0	41.7	0.87	272.97	09.47	101.33	1.41
1981	7.8	4.2	7.5 1	1.2	7.6	120.1	334.8 244 º	281.9 156.1	224.3	43.5	12.3	14.2	1059.3 741 o	12.0	16.2	961.1 610.2	70.0	1.17	334.77	88.28 61.92	122.55	1.39
1963	0.9	1.2	0.8 0	0.9	1.3	90.4	287.2	283.6	272.2	61.1	5.5	0.1	1006.1	2.1	3.0	933.4	67.5	0.78	287.20	83.84	122.34	1.46
1984	12.5	12.7	0.0 1	1.0	1.1	83.8	234.3	241.8	107.2	88.5 101 1	7.4	0.2	790.8	25.2	22	667.2	96.2	0.03	241.84	65.90 56.04	89.45 76.64	1.36
1986	1.1	27.3	0.7	1.0	3.5	148.4	258.5	202.2	61.8	10.9	9.9	12.6	737.7	28.4	5.1	670.8	33.4	0.65	258.52	61.48	90.11	1.47
1987	11.3 0.6	10.7	1.1 0	0.6	20.0	160.3	141.5 394.4	245.7 183.4	49.3 341.5	58.9 79.5	54.7 12.8	19.8 0.1	774.3	22.0 1.9	22.0 18.1	596.8 1043.0	133.4 92.4	0.90	245.72	64.52 96.29	77.50	1.20
1969	0.6	1.0	24.8	1.0	10.2	163.9	239.5	233.9	134.7	172	5.8	8.0	840.7	1.6	36.1	772.0	31.1	0.56	239.54	70.06	95.01	1.36
1990	2.7	2.8	0.1 0	1.9	1.9	183.4	239.8 297.3	340.8	138.6 38.6	107.5	12.0	8.1 0.1	1111.3 675.7	5.6	75.5	902.6 639.5	127.6 23.6	0.08	340.76	92.61 56.30	95.94	1.22
1992	0.8	1.6	0.1	1.6	7.9	139.5	152.9	223.4	149.9	88.2	7.8	0.1	773.7	2.3	96	665.6	96.1	0.12	223.38	64.48	81.58	1.27
1993 1994	0.6 4.7	5.6	20.5	3.9	7.1	114.6	320.1 326.2	116.7 242.2	231.7 209.1	91.1 32.5	11.5 22.0	17.8	938.5 1073.7	6.2 8.8	28.8 23.6	783.1 986.8	120.4 54.5	0.64	320.09 326.18	78.21 89.47	103.91	1.33
1995	24.7	1.4	35.1	5.0	14.2	84.2	335.1	70.5	191.4	59.5	5.7	0.4	827.3	26.1	54.3	681.2	65.6	0.37	335.05	68.94	99.81	1.45
1996	4.2	2.7	2.3 1	1.0	6.2	133.6	290.6 256.6	269.4	190.2 97.0	130.1 51.9	0.8 97.2	0.1 63.0	885.5 1003.4	6.9 15.3	49	139.8 756.6	212.1	0.10	269.44	74.04 83.62	94.51	1.35
1998	2.9	1.5	5.1	1.5	2.2	119.5	293.1	199.0	354.8	94.0	32.5	0.1	1106.2	4.5	8.7	966.4	126.6	0.11	354.76	92.18	125.63	1.36
2000	0.8	6.0	0.0 0	1.8	46.6	185.6 133.1	217.3 220.5	144.1	227.4 50.8	144.1 8.3	0.8 6.9	0.1 4.6	972.8 623.1	24.5 6.8	48.8	547.7	151.0	0.01	220.47	81.07 51.92	94.00 73.51	1.16
2001	5.5	0.8	14.0 4	4.9	15.1	168.4	115.5	166.5	94.6	103.8	5.3	0.0	694.5	6.3	34.0	545.1	109.1	0.05	168.39	57.87	67.06	1.16
2002	0.5	20.5	2.0 9 1.8 6	5.8	1.4	203.6	09.5 288.3	164.7	141.2	8.9	5.4	1.4	844.5	5.1 21.0	15.1	797.8	_94.8 15.8	0.49	288.30	70.37	102.64	1.50
2004	10.8	0.7	1.3	1.1	179	103.0	257.7	229.1	154.5	54.1	19.6	0.0	849.9	11.5	20.2	744.4	73.8	0.05	257.69	70.82	93.88	1.33
2005	0.5	0.7	67.7	1.0	33.9	149.3	351.2	439.5	219.8	48.9	4.0	0.0	1365.1	0.62 1.2	20.6	1053.0	79.9	0.01	439.52	97.24	150.39	1.34
2007	0.4	1.8	0.1 1	3.4	3.6	162.4	300.5	292.4	209.0	5.1	9.2	0.0	998.0	2.2	17.1	964.3	14.4	0.01	300.48	83.16	121.80	1.46
2008	0.5	0.8	4.1	1.4	27.9	785	357.5	153.6	115.3	542	105.6	7.9	907.2	1.1	33.4	704.9	20.4	0.03	2653.56 357.48	75.60	102.10	1.40
2010	11.7	1.9	3.4 (0.8	1.7	144.3	335.1	303.5	177.2	71.0	76.5	0.0	1127.2	13.6	59	960.2	147.5	0.01	335.15	93.93	121.30	1.29
MAX	75.31	37.65	67.69 3	5.42 8	84.62	321.80	399.17	461.78	422.87	266.91	214.48	73.92	1365.10	75.58	102.59	1181.40	301.23	3.32	461.78	113.76	161.50	1.87
MEAN	6.76	5.30	5.75 3	81	11.49	139.30	253.15	197.85	161.03	45.90	22.19	6.62	859.15	12.06	21.05	751.34	74.71	0.28	280.90	71.60	99.24	1.40
	1.40	3.01	1 221 3		1.00	23.13	10.00	.5.00			20.10	10.07		1.10	10.00		0.77	0.00	-9.40	17.39	4	

 Table 12. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901

 - 2010 in the selected Tapti river catchment areas

VEAD	TONT	THEFT	2500	0.000	15 0 32		ππ	0.1127	C ED	0.071	NOT	Damo	dar	TO M DED	Non May			MDI	3.5 0.37	3.577.0.37		
1901	64.2	55.2	7.2	11.2	38.9	77.0	253.7	354.9	239.9	30.2	13.3	1.0	1146.7	119.4	S7.3	925.5	44.5	0.99	354.85	95.56	118.39	1.24
1902	1.0	6.6 179	18.3	29.2 39.6	52.6	79.5	356.3	184.8 261.5	318.9	26.1	5.1	1.5	1079.8	7.6	100.1	939.5 719.6	32.7	1.03	356.26	89.98 88.41	126.72 93.32	1.41
1904	0.6	11.7	31.0	5.7	108.5	272.2	528.3	283.1	83.1	17.2	0.2	1.2	1343.0	12.3	145.2	1166.8	18.6	0.24	528.33	111.91	166.02	1.48
1905	32.9 37.3	43.6	68.9 31.8	35.5 1.9	67.5 34.9	35.2 152.6	404.8 276.0	293.2	283.6	22.0 95.3	0.2	4.8	1292.1	76.5	171.9 68.6	1016.8 864.7	269 98.0	0.16	404.80 279.85	107.68 98.14	136.99	1.02
1907	1.9	63.1	96.4	18.6	17.9	306.5	230.1	408.1	249.2	2.4	0.2	15.5	1409.8	65.0	132.9	1193.8	18.1	0.16	408.08	117.49	142.71	121
1908	27.2	45.4	4.5	74.2	46.6	271.7	267.9	383.6	268.8	30.1	0.2	1.5	1363.6	33.0	96.6	1191.9	42.0	0.15	383.59	93:50	140.72	124
1910	4.8	5.9	1.1	17.7	62.0	248.0	264.6	269.9	251.4	70.0	11.4	2.2	1209.0	10.7	80.8 87	1033.9	83.6	1.09	269.89	100.75	118.72	1.18
1912	1.6	10.3	13.1	16.9	38.2	125.3	311.3	311.9	78.3	33.6	59.4	1.3	1001.1	11.9	68.2	826.7	94.3	126	311.96	83.42	112.47	135
1913	0.7	104.9 22.1	35.8 17.8	2.6 18.0	98.4 169.6	396.4 119.4	257.2 340.7	379.0	161.3 153.5	65.9 8.1	0.1	15.7 4.5	1535.3 1131.8	105.6	136.8	1193.8 891.4	99.0 12.7	0.71	396.40 340.67	127.94 94.32	142.50	1.11 1.26
1915	3.3	35.5	24.6	10.6	38.0	157.7	296.8	174.2	223.2	48.3	27.7	1.1	1041.0	36.8	73.1	852.0	77.1	1.10	296.80	86.75	99.72	1.15
1910	0.1	32.7	17.2	95	130.6	2990.2	354.2	358.2	239.6	340.7	0.1	1.1	1764.8	33.1	157.4	1232.3	342.0	0.03	358.20	147.07	155.15	1.05
1918	2.5	0.1 6.5	5.5	20.0	60.5 63.3	342.3	96.9 372.5	373.6	138.0 244.8	1.4	0.1	1.3	1042.2	2.6	86.0 102.3	950.7 1262.5	2.9 88.4	0.09	373.59	86.85 130.19	134.41	1.55
1920	0.1	16.5	83.9	10.8	41.3	115.7	578.0	226.7	172.7	4.5	0.1	1.1	1251.3	16.6	136.0	1093.1	5.7	0.10	578.02	104.28	167.16	1.60
1921	32.8 9.0	8.0	0.8	18.3	20.5	362.0	289.8 370.5	388.9	255.4	28.8 68.1	0.1 4.4	3.5	1098.5	41.3	32.6 38.9	994.7 1376.7	76.0	0.10	338.90	91.54	125.42	1.35
1923	1.0	68.0 7.0	7.7	73	19.5	201.9	388.9 502.2	484.1	110.1	39.1	11.8	1.3	1340.7	69.0 17.4	34.4 34.2	1185.0	52.2 182.7	1.03	484.15	111.72	163.90	1.47
1924	5.0	6.1	11.6	39.1	88.4	176.6	415.0	297.4	166.0	61.9	3.2	1.0	1271.2	11.4	139.0	1054.9	66.0	0.98	414.99	105.93	134.20	127
1926	31.9	0.5	72.9	10.0	36.6 49.6	59.3 109.9	514.1	351.8 236.5	310.0	29.4 60.2	1.9	279	1446.3	32.3	119.5	1235.2	<u> </u>	0.47	514.10 371.05	120.52 98.71	171.30	1.42
1928	55.7	6.6	0.7	22.0	50.1	408.3	365.8	164.4	88.2	172.9	0.8	2.8	1338.3	62.3	72.8	1026.8	176.5	0.74	408.33	111.53	142.11	1.27
1929	0.6	3.3	7.9	10.8	21.4	125.1	495.2	295.9	220.5	47.8	120.0	5.7	1386.9	62.5 3.9	41.9 47.4	1081.4 1162.2	331.4	0.05	457.94 495.18	126.44	159.92	1.26
1931	4.9	113.1	15.6	6.1 12.1	27.7	88.9 02.0	344.7	275.1	192.8	82.5	25.9	1.4	1178.9	118.0	49.5	901.6 969.4	109.8	1.42	344.75	98.24 97.76	114.87	1.17
1933	53.9	44.3	2.4	42.8	83.5	238.8	314.6	374.1	172.4	61.7	0.1	3.8	1392.4	98.2	128.7	1099.9	65.6	0.09	374.06	116.04	128.48	1.11
1934 1935	30.0 38.2	21.2 13.5	0.9 7.8	17.8	17.4 9.2	146.4 104.4	296.0 232.6	515.4 486.4	182.5 238.4	51.8 2.2	9.2 0.1	2.1	1090.6 1145.4	51.3 51.8	36.0 28.6	940.2 1061.7	63.1 3.3	0.86	315.41 486.38	90.89 95.45	115.77	1.27
1936	15.1	13.6	13.6	5.1	70.7	217.8	392.6	310.4	324.3	144.6	14.6	17.8	1540.3	28.8	89.4	1245.1	177.0	5.12	392.59	128.36	145.36	1.13
1937	20.0	39.2	0.2	09	80.4	1499	238.8	318.0	169.4	45.0	0.4	0.8	1290.2	59.2	81.5	912.2	46.3	0.18	317.99	91.60	109.20	1.08
1939 1940	9.2 0.0	34.0 30.3	29.5 86.5	13.7 14.6	26.6 43.7	225.1 107.9	329.1 256.5	363.9 418.1	266.5	144.1 48.6	0.1	1.2 24.1	1442.7 11.37.4	43.2 30.3	69.7 144.7	1184.5 889.5	145.3 72.8	0.07	363.90 418.09	120.22 94.78	139.05 124.08	1.16
1941	37.3	0.9	1.2	79	62.5	280.6	284.7	329.7	208.6	195.5	15.2	0.9	1424.9	38.2	71.6	1103.6	211.5	0.88	329.67	118.74	130.25	1.10
1942	50.2	5.8	34.5 1.1	31.4	43.4 19.2	142.8	466.5	440.5	217.9	76.3	0.0	0.8	1525.8	56.0	51.6	1220.2	77.1	0.05	465.53	127.15	165.54	1.41
1944	28.5 35.2	41.7	23.5	22.4	16.7	131.5	342.5	368.6	139.9	83.4	2.1	1.0	1221.8	70.2 67.5	62.6 66.8	1002.5 917.9	86.5 133.3	0.97	388.64	101.82 98.70	131.99	1.30
1946	0.0	17.7	27.2	74.6	75.3	254.3	316.7	309.6	219.8	141.0	20.0	0.6	1456.8	17.7	177.1	1100.5	161.5	0.01	316.69	121.40	122.42	1.01
1947	3.2 23.0	11.9	45.3	22	35.6 39.7	132.1	290.6 361.8	303.4 282.1	270.9	99.6 105.5	0.6	15.8	1211.1 1304.2	41.2	83.1 66.8	997.0 1002.5	115.9	0.56	303.45 361.75	100.93	120.14	1.19
1949	31.8	11.5	19.7	58.4	105.8	196.3 357.5	365.0	342.3	214.3	60.6 19.9	0.1	0.6	1406.3	43.3	183.9	1117.8	61.3 78.8	0.12	364.96	117.19	131.35	1.12
1950	3.1	0.3	20.0	18.9	27.2	182.2	301.9	219.8	214.1	61.5	6.3	0.7	1055.9	3.4	66.1	918.0	68.5	0.19	301.89	87.99	109.08	124
1952	3.4 43.4	6.0 13.3	23.0	32.1 69	71.6 26.5	190.9 221.2	312.5 456.5	263.3 404.0	211.0	77.1	0.4	2.0	1193.3 1485.1	9.4 56.7	126.7 33.8	977.7 1361.0	79.5 33.7	0.43	312.53	99.44 123.76	113.61	1.14
1954	14.8	5.9	3.2	3.0	37.9	168.2	236.8	228.4	258.0	33.5	0.0	6.8	996.5 947.6	20.7	44.1	891.4	40.4	0.01	258.04	83.04	105.84	127
1955	10.4	23.1	43.4	42	73.3	221.4	261.9	263.6	314.9	147.9	8.1	8.0	1380.3	33.5	120.9	1061.7	164.1	4.21	314.88	115.02	119.62	1.04
1957	38.4 9.1	18.1 22.5	18.5 14.6	1.6	4.5	138.8 83.5	385.8	210.0	213.5 300.0	14.0	0.0	0.9	1044.0 1106.6	56.5 31.7	24.6 53.8	948.1 912.2	14.9	0.04	385.84	87.00 92.21	124.07	1.43
1959	39.2	6.1	6.1	10.1	42.8	199.6	295.2	298.7	308.4	272.8	0.1	0.9	1480.1	45.3	59.0	1101.9	273.8	0.12	308.38	123.34	137.10	1.11
1961	8.4	76.1	1.1	13	26.2	249.6	278.3	374.0	283.0	204.4	0.4	4.2	1505.7	2.6 84.6	28.6	1183.0	209.5	0.10	373.99	125.47	140.80	1.12
1962	7.4	18.9	5.2	33.5	30.0 58.6	144.8	236.6	270.9	185.3	78.4	0.6	8.5	1020.3	26.3	68.7 82.7	837.7	87.6	0.65	270.93	85.03	98.47	1.16
1964	2.0	11.7	4.5	21.7	49.7	168.1	345.2	265.3	215.9	86.0	3.5	0.0	1173.6	13.7	75.9	994.5	89.5	0.03	345.22	97.80	120.66	123
1965 1966	0.2	12.0 3.0	31.4 0.1	34.1 3.8	9.3	96.1 197.4	352.7 127.4	191.2 257.4	213.1 74.7	26.8 16.8	0.5	1.7	969.1 743.1	12.2 30.7	74.8	853.1 656.9	29.0 40.2	0.22	352.66 257.40	80.76 61.92	112.99 86.60	1.40
1967	5.2	4.6	44.9	25.0	30.5	69.8 318.5	251.1 399.5	454.7	251.9 84.7	28.8	0.6	6.7	1173.9	99 363	100.4 31.8	1027.5	36.1	0.65	454.67	97.82 110.92	143.90	1.47
1969	3.5	7.2	4.8	40.7	78.6	118.4	283.7	347.6	214.5	16.1	16.7	0.0	1131.8	10.7	124.2	964.2	32.8	0.03	347.62	94.32	121.74	129
1970	18.6 50.2	22.8	1.4	5.1 76.8	92.3	292.4	249.1 454.1	475.1	380.5 212.4	78.1 82.9	3.1 8.3	0.0	1768.5	30.9	60.5 170.5	1024.8 1433.9	91.2	0.00	380.52 475.06	99778 147.38	125.71	1.17
1972	16.7	43.2	0.4	65	0.0	54.0 164.5	237.1	447.4	187.6	81.2	16.6	0.0	1090.7 1470.5	59.9 19.6	7.0	926.0 1078.4	97.8 260.3	0.00	447.38	90.89 122.54	136.30	1.50
1974	8.1	3.3	38.0	1.4	62.3	44.0	318.5	269.5	267.1	69.5	0.3	0.1	1082.2	11.4	101.7	899.2	69.9	0.09	318.52	90.18	120.61	1.34
1975	18.7 4.4	29.4 26.2	30.9	10.0	18.5 45.0	91.0 90.6	601.0 278.4	300.8 273.0	310.6	116.0	0.3	0.0	1527.2	48.0 30.5	59.4 62.6	1.303.4 983.5	116.3 14.6	0.00	600.98 341.48	127.26 90.94	185.40 128.19	1.46
1977	17.8	16.7	4.4	37.9	100.0	296.6 310.7	526.8 226.5	274.6	183.0	57.2	35.2	24.5	1574.7	34.5 40.9	142.3	1281.0	116.9	4,44	526.76	131.23	160.93	123
1979	40.4	46.8	9.4	8.4	3.1	129.2	294.6	173.7	127.2	15.0	21.0	9.0	877.9	87.2	20.8	724.8	45.1	3.06	294.64	73.16	90.65	124
1980	19.5 43.7	13.4 48.6	<u>55.3</u> 16.6	0.5 35.7	30.9 74.9	244.4 96.6	3378.3		2/4.9	4.0	0.6 2.1	13.3	14:24.7 1094.5	52.9 92.3	127.2	1219.1 855.6	102.1	2.12	303.19 378.31	118.73 91.21	142.81	120
1982	8.8	19.5 21.1	70.2	33.7	28.5	122.4	187.9	312.8	80.3 247.1	41.2 80.9	9.8	5.8	921.0 1101 2	28.3	132.5	703.5 903.8	56.8 105.4	5.81	312.84	76.75	91.99	1.20
1984	31.3	38.8	0.2	2.7	29.0	537.6	349.3	416.3	165.1	44.0	0.3	0.0	1614.6	70.1	31.9	1468.3	44.3	0.00	537.58	134.55	190.60	1.42
1985 1986	16.1 10.9	13.7 16.8	0.2	0.5 23.1	42.7 64.4	131.9 247.8	329.6 336.6	284.8 198.4	214.0 206.8	148.7 143.7	0.4 21.7	0.0 50.0	1182.6 1321.5	29.8 27.8	43.4 88.7	960.3 989.7	149.1 215.4	0.00	329.56 336.64	98.55 110.13	120.89 112.83	1.23
1987	9.1	15.9 34 2	20.7	30.0	45.4	60.2 246 1	400.2 200.5	468.0	310.4	4.5	54.3	3.3	1421.9	25.0 46.0	96.1 96.5	1238.8	62.0 80.7	325	467.95	118.49	169.85	1.43
1969	8.3	2.3	2.9	0.0	79.0	160.0	3769	300.5	234.3	48.9	10.2	24.1	1247.3	10.7	81.8	1071.6	83.2	0.00	376.87	103.94	132.31	1.10
1990 1991	2.7 30.1	59.4 17.1	19.9 48.2	21.0	74.0 38.5	184.5 170.7	652.8 307.3	253.3 370.6	253.0 228.1	137.8	4.5 0.3	0.7 54.3	1663.6 1293.5	62.2 47.3	114.9 92.3	1343.6 1076.7	142.9 77.3	0.65	652.78 370.59	138.63	187.47	1.35
1992	9.1	13.6	0.3	4.7	68.6	164.3	249.1	343.6	152.4	27.3	1.8	0.0	1034.8	22.7	73.6	909.4	29.1	0.03	343.59	86.24	115.54	1.34
1993	4.7	37.0	0.2	20.7	33.7	290.7	445.5	374.8	165.0	46.8	6.8	0.0	1585.5	69.5	54.6	1275.9	185.4	0.00	445.48	132.13	125.45	1.29
1995 1996	18.7 20.8	24.1 44.4	17.8	0.0	38.1 16.6	104.5	407.9 223.6	333.9 536.3	619.7 170.8	50.1 22.0	123.2	18.5	1756.6	42.8	55.9 30.2	1466.0 1392.9	191.7 22.3	0.02	619.68 536.27	146.38 125.88	199.18 189.14	1.36
1997	17.1	13.3	2.9	30.8	29.9	261.6	397.0	457.2	278.8	64.2	98.6	34.3	1685.7	30.4	63.6	1394.6	197.0	294	457.24	140.47	163.31	1.16
1998	3.3	5.7	0.4	0.0	64.2 114.2	298.7	475.0	468.7	383.5	162.3	2.1	0.0	1913.8	9.0	204.5	1625.9	254.5	0.00	475.01	159.48	194.42	122
2000	5.8	32.1 10.6	12.2	32.4	112.3 96.6	255.7 314 5	308.4 334.5	159.2 185 5	378.0	5.3 59.4	0.4	0.0	1301.6	37.9 14.4	156.8	1101.3 921.9	5.6 60.3	0.00	377.98	108.47 92.67	135.65	125
2002	27.8	6.3	16.9	89	39.7	179.7	244.0	309.4	250.4	53.0	2.2	3.1	1141.4	34.2	65.4	983.5	58.3	2.20	309.41	95.12	115.71	1.22
2003	1.9	0.9	54.3 1.3	46.9	39.4	203.2	330.4 222.5	203.0 398.9	225.6	98.0	0.3	10.7	1278.4	21.7	92.7 87.6	923.3 972.7	240.7 99.4	0.30	398.86	97.75	124.57	1.12
2005	23.2	34.9 1 1	19.0 150	0.8	18.7	114.8 301 1	290.7 412.4	21.5.8 288.1	151.3	72.0	0.4	16.8	958.2 1443 5	58.1 1 9	38.4 135.0	772.5	89.1 18.7	0.40	290.65 412.40	79.85 120.20	94.64 154.00	1.19
2007	0.9	57.7	15.2	31.0	68.3	102.4	508.6	298.4	307.6	21.7	5.9	0.3	1418.0	58.6	114.5	1217.0	27.9	0.26	508.60	118.17	163.74	1.39
2008	33.6 7.6	8.9	6.5 17.0	11.6 0.0	64.9 94.2	_50.1	572.1 296.4	270.4 272.0	163.9	14.9 62.7	0.0	0.2	1337.0	42.5 9.1	83.0 111.2	1196.4 839.3	15.1 79.7	0.00	389.93 296.37	111.42 86.60	149.96	1.35
2010 MTM	1.0	16.0	2.7	85	61.0	53.7	197.7 96.94	156.6	264.4	69.1 1.4.2	4.2	27.5	862.3 743.07	17.0	72.2	672.3	100.8	1.04	264.36	71.86	87.39 86.60	122
MAX	102.59	113.07	96.42	76.83	169.63	537.58	652.78	536.27	619.68	340.68	123.16	54.33	1913.82	146.43	205.48	1625.89	342.01	696	652.78	159.48	199.18	1.60
MEAN SD	17.19 18.33	24.15 24.78	18.67 21.18	17.72	48.28 31.08	189.19 97.24	329.77 98.96	312.81 82.38	228.13 88.02	80.69 70.51	12.03 23.56	5.71 10.49	1284.36 225.86	41.34 31.19	84.68 42.71	1059.91 191.86	98.44 74.80	0.69	380.99 83.73	107.03	134.10	1.26
CV	1.07	1.03	1.13	0.91	0.64	0.51	0.30	0.26	0.39	0.87	1.96	1.84	0.18	0.75	0.50	0.18	0.76	1.76	0.22	0.18		

 Table 13. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901

 - 2010 in the selected Damodar river catchment areas

YEAR	TAN	FFB	MAR	ADR	MAY	ΠΝ	пп.	ATIC	SED	OCT	NOV	Brahm	ani ANN	IAN-FEB	MARMAY	TIN-SED	OCT-DEC	IMIN	MAY	MEAN	SD	CV
1901	100.8	99.5	20.6	25.4	55.7	81.3	372.4	471.0	238.5	51.6	8.1	0.6	1525.4	200.2	101.8	1163.2	60.3	0.57	471.04	127.12	152.87	120
1902	44.2	31.5	7.8	24.4	68.5	158.9	345.2	341.4	200.0	249.5	1.6	0.8	1473.8	75.7	100.6	1045.5	251.9	0.76	345.15	122.81	131.60	1.07
1904	0.6 53.8	18.4 45.3	40.7	8.3	85.2	415.9 70.9	467.9	413.4 239.2	129.9 288.7	48.0 33.5	0.7	1.1	1630.9 1291.9	19.0 99.2	1.34.2 1.50.6	1427.2 1006.1	50.5 36.1	0.56	467.86	135.91	183.33 130.45	1.35
1906 1907	59.0 0.5	169.2 37.3	53.7 83.9	0.5	30.8 22.6	193.1 320.9	432.5	281.8 637.4	253.9 157.6	63.6 1.4	11.6 0.8	3.9 48.4	1553.7 1627.9	228.2 37.7	85.0 153.9	1161.4 1385.7	79.2 50.6	0.49	432.52 637.43	129.48 135.66	137.25	1.06
1908	15.5	29.2	6.4 1.8	1.3	41.4	251.3 403.0	444.9 506.7	627.6	182.6	20.9 6.5	0.8	0.7	1622.5	44.8 30.9	49.0 134.0	1506.3 1554.4	22.4	0.67	627.60 506.69	135.21	207.18	1.53
1909	26.3	1.8	1.6	31.7	309	250.1	346.7	387.5	224.2	126.5	1.7	0.6	1429.7	28.1	64.3	1208.6	128.8	0.63	387.54	119.14	145.08	122
1911	1.5	52.9	48.4 5.5	0.8 37.1	263	396.5 130.7	457.6	400.3	139.8	90.8 25.1	41.7	0.6	1350.5	54.4	68.8	1309.1	67.3	0.56	460.20	124.32 112.54	164.82	1.44
1913 1914	2.4 0.3	121.0 14.6	31.6 17.1	3.4 19.7	58.0 126.3	328.0 132.2	458.6 460.2	417.9	130.5 239.5	87.7 12.2	21.7	8.9 8.0	1669.7 1441.4	123.4 15.0	93.0 163.1	1334.9 1243.1	118.3 20.3	2.39	458.57 460.21	139.14 120.11	166.37 165.05	1.20
191.5 191.6	8.9 0.2	23.6 9.7	29.9 0.3	16.9	65.8 25.6	126.4 375.0	287.6 221.8	251.7	231.3	93.4 211.2	50.5 21.0	0.5	1186.6 1435.8	32.6	112.6 47.2	897.1 1145.9	144.4 232.7	0.52	287.57	98.89 119.65	102.54 146.80	1.04
1917	1.5	53.5	26.4	5.8	56.4	365.3	434.5	355.6	281.0	252.0	3.4	0.7	1836.3	55.0	88.7 122.5	1436.4	256.1	0.67	434.51	153.02	169.76	1.11
1919	93.7	26.3	32.9	12.9	51.0	452.6	377.5	477.0	174.0	68.0	16.6	0.5	1783.2	120.0	96.9	1481.2	85.1	0.48	477.05	148.60	180.53	121
1920	50.3	6.5	0.3	8.1	45.0	283.3	940.0 385.0	434.7	221.6	4.8	0.0	0.5	1400.1	15.7 56.8	114.4 13.6	1657.3 1296.9	5.3 32.8	0.03	940.01 407.02	149.39	160.57	1.86
1922 1923	14.0 0.4	4.6 83.7	0.3	12.3	27.7	253.5 176.5	471.3 426.5	313.8 590.3	273.2 125.9	51.4 59.9	14.9 22.6	1.0 0.6	1437.9 1519.1	18.5 84.1	40.3 32.6	1311.9 1319.3	67.3 83.0	0.27	471.31 590.30	119.83 126.59	162.71 189.90	1.36
1924	41.4	14.6	16	2.6	51.9 87.6	123.3	365.3	269.9 361.7	275.5	68.3 95.8	89.3 4.7	0.4	1304.2	56.1 2.5	56.2 128.2	1034.0 1440 S	158.0 106.2	0.43	365.26	108.68	125.37	1.15
1926	32.2	7.0	106.3	16.9	41.1	52.1	434.1	513.4	327.3	61.1	0.7	12.4	1604.8	39.1	164.3	1327.0	74.3	0.74	513.44	133.73	182.31	136
1927	18.6	89.6	9.1	45.2	55.4	277.4	439.6	451.6 268.3	139.9	162.9	0.0	4.4	1464.5	29.0	39.2 109.7	1307.1	167.3	0.45	439.57	127.39	192.27	1.17
1929 1930	<u></u> 0.1	16.8 1.5	42 82	9.5 22.4	32.5	123.0 141.5	738.9 485.0	448.2 462.9	167.7 210.8	157.5 36.5	0.0	48.7	1806.5 1536.5	76.4 1.6	46.2 49.7	1477.7 1300.2	206.2 184.9	0.00	738.87 485.03	150.54 128.04	223.66 175.88	1.49
1931 1932	10.8 0.4	107.6 36.2	17.4	2.0	43.7 44.9	122.6 120.2	370.6 464.5	.507.4 344.7	148.8 267.5	130.8 32.9	53.6 64.4	0.6 0.6	1516.1 1403.8	118.5 36.6	63.2 72.5	1149.5 1196.8	185.1 97.9	0.64	507.42	126.34 116.98	157.93 155.29	125
1933	37.8	105.3	73	13.9	104.7	252.8	484.2	387.5	251.4	77.5 80.5	10.1	12.7	1745.2	143.1	125.9	1375.9	100.3	7.28	484.19	145.43	161.78	1.11
1935	17.9	23.0	16.7	49.3	2.9	132.5	532.4	291.4	194.5	0.1	0.0	3.0	1263.8	40.9	69.0	1150.7	3.2	0.02	532.36	105.32	163.54	1.55
1930	0.0	97.9	15.2	43.1	663	258.3	487.1	291.4	296.6	104.7	0.7	0.5	1661.8	97.9	124.6	1333.4	105.9	0.03	487.07	138.49	157.75	1.13
1938	30.6 13.0	31.7 43.1	0.6 54.8	1.8 24.9	105.3	226.6 241.9	299.3 479.8	428.0 461.2	235.9	53.3 168.9	3.8 10.2	0.3	1417.0 1717.3	62.2 56.1	107.7 90.6	1189.7 1389.2	57.4 181.3	0.32	428.01 479.84	118.09 143.10	144.06 173.91	122
1940 1941	0.1 42.1	44.1 5.4	81.6 5.5	21.1	58.9 50.2	172.9 268.9	563.5 463.1	349.6 361.6	153.3	38.2 135.2	0.1 59.6	20.9	1504.3 1578.3	44.2	161.5 66.0	1239.3 1269.4	59.2 195.5	0.11	563.46 463.11	125.36	170.28	1.36
1942	6.8 102.3	57.2	5.1	26.2	22.2	153.3	547.9 502.3	394.5	350.1	29.6 68.9	12.7	2.3	1608.0	64.1 114.0	53.6 97.9	1445.8	44.6 70.1	2.26	547.87	134.00	188.77	1.41
1944	55.8	92.5	62.0	32.1	28.3	106.5	457.4	483.7	142.9	188.6	5.4	0.6	1655.7	148.3	122.4	1190.4	194.6	0.55	483.69	137.97	164.98	120
1945	48.0	12.6	12.7	81.1	79.7	311.7	419.5	479.6	243.6	91.9	40.1	0.5	1753.1	11.8	173.6	1209.4	130.4	0.05	419.27	120.40	168.95	1.16
1947 1948	18.4 22.2	38.2 26.7	45.4 15.5	2.0 8.2	17.0 46.7	170.4 214.9	338.2 409.4	355.5 363.0	209.0	125.6 80.5	2.2 66.2	25.0 0.4	1346.9 1481.0		64.4 70.4	1073.0 1214.4	1 <i>5</i> 2.8 147.2	2.01	355.47 409.41	112.24 123.41	128.92 144.27	1.15
1949 1950	5.9 0.9	11.5 22.2	7.8 43.0	50.4 1.0	94.9 37.7	192.5 275.3	406.2 463.8	469.1 441.5	251.3 180.3	97.7 21.4	0.8	2.7	1590.9 1518.5	17.5 23.1	153.1 81.7	1319.1 1360.9	101.2 52.8	0.80	469.12 463.84	132.57 126.55	163.95 173.55	1.24
1951	3.9 2.8	3.3 14.2	92.2 23.7	34.5 361	29.7 57.9	179.3 220.8	283.0 449.5	373.1	159.2	94.5 104.4	17.2	0.8 0.6	1270.7	7.1	156.5 117.8	994.7 1396.8	112.4	0.77	373.14	105.89	121.39	1.15
1953	23.4	14.3	0.1	7.2	19.5	171.8	456.7	498.8	288.9	39.9	21.5	0.8	1543.0	37.8	26.7	1416.3	62.3	0.05	498.85	128.59	184.70	1.44
1955	21.8	5.5	60	4.2	36.4	192.7	313.6	307.0	279.8	143.9	14.7	0.5	1326.1	27.3	46.6	1093.1	159.1	0.50	313.64	110.51	129,43	117
1956	38.8	41.7 38.9	40.1 32.1	7.0	9.4	303.7	462.7	449.5 306.3	173.7	24.3	9.1	4.2 0.4	1835.1	77.7	48.5	1490.1	26.1	0.37	449.48	102.64	146.20	1.12
1958 1959	9.4 26.6	61.1 6.8	25.5	19.1 14.6	13.0 48.9	138.4 146.6	418.3 326.0	238.5 343.4	234.8 332.3	107.8	4.8 2.0	0.5	1271.2 1369.9	70.5 33.4	57.5 65.6	1030.0 1148.3	113.0 122.6	0.48	418.31 343.36	105.93 114.16	130.78 140.59	123
1960 1961	13.9 8.4	3.8	35.1	1.6 11.4	13.2 33.9	156.0 361.9	453.1 465.4	590.2 343.3	257.7	58.5 159.4	4.1 8.8	3.9 3.8	1591.2 2029.8	17.7	49.9 46.0	1457.0 1679.7	66.5 172.1	1.60	590.16 509.04	132.60	199.64 196.19	1.51
1962	8.8	16.0	89 70	29.1	38.8	209.6	310.3	259.4	180.5	51.4	2.1	12.7	1127.6	24.8	76.9 102.6	959.8 1273 1	66.2 190.9	2.08	310.28	93.97 132.08	112.69	120
1964	2.1	30.2	52	16.2	44.1	221.9	405.6	436.0	206.4	54.3	2.6	0.9	1425.5	32.3	65.5	1269.9	57.8	0.89	435.97	118.79	160.46	135
1965	28.3	6.7	0.0	21.8	24.0	316.0	354.9	295.0	84.1	50.9	25.7	6.6	1214.4	35.0	46.1	1050.1	83.2	0.43	354.93	100.15	135.60	139
1967	31.5 39.8	1.8 33.8	49.2	21.2	48.0	1.54.1 2226.0	3793	437.8	107.8	68.4	3.0	2.7	1401.1 1388.3	33.2 73.6	118.4 45.6	1218.4 1195.0	31.0 74.1	2.69	457.63 481.95	116.76	161.40	1.33
1969 1970	5.7 17.6	7.4 27.8	4.8 47.6	33.6 18.9	113.7 34.3	150.2 285.2	405.7 415.9	390.7 291.7	172.8 310.8	34.0 51.7	15.7 2.6	1.5 0.6	1335.6 1504.8	13.0 45.4	1.52.1 100.8	1119.3 1303.6	51.2 54.9	1.48 0.59	405.68 415.91	111.30 125.40	146.64 152.22	1.32
1971 1972	39.5 3.1	36.1 34.0	2.0 2.6	78.8 17.8	69.9 5.1	316.3 127.6	490.7 401.4	564.1 427.3	181.1 242.3	154.7 83.5	3.4 21.8	0.0	1936.6 1366.5	75.6 37.1	1.50.7 25.5	1552.2 1198.6	158.1 105.3	0.00	564.11 427.33	161.38 113.88	194.76 157.26	1.21
1973	9.4 2.6	33.1 10.5	25.6	0.7	41.8	115.2	483.0	436.7	474.2	268.4 82.0	19.6 2.0	3.4	1911.1 1279 3	42.5	68.0 64.2	1509.1 1118.1	291.4 84.0	0.67	483.02	159.26 105.61	198.58	125
1975	25.6	27.7	31.1	6.8	21.4	133.6	540.3	511.2	195.4	141.7	3.0	0.0	1637.8	53.4	59.3 92.1	1380.4	144.7	0.00	540.32	136.48	192.76	1.41
1977	17.3	18.7	8.7	26.4	106.9	253.1	472.8	395.0	209.3	42.4	43.3	11.9	1605.7	36.0	142.0	1330.2	97.6	8.68	472.76	133.81	162.14	121
1978	10.5	80.8 38.1	65.2	15.1	5.2	290.4	404.6	272.8	296.9	31.2	15.0	9.1	1015.3	55.9	26.8	911.8	59.7	5.25	404.59 323.69	1.54.61 87.86	151.32	1.12
1980	13.5 37.4	15.8 31.6	42.9 28.0	20.6 39.2	37.6	315.2 176.4	443.0 406.3	324.2 317.0	248.7	59.3 21.8	2.6	0.0	1523.6 1396.3	29.4 69.0	101.2 147.5	1331.1 1152.5	619 273	0.01	443.02 406.27	126.97 116.36	158.63 138.09	1.19
1982 1983	18.2 2.4	52.1 70.2	85.7 17.9	23.0 43.3	26.6 63.7	202.3	322.1 350.8	538.6 353.9	128.8 390.0	46.2 83.0	3.1 1.4	0.1	1446.7 1546.9	70.3 72.6	135.3 124.9	1191.7 1252.0	49.3 97.4	0.05	538.59 389.97	120.56 128.91	162.56 148.93	1.35
1984	28.1 40.6	41.1	1.1	11.2 81	35.5	329.1	442.2	451.8	119.2	77.7	1.1	0.0	1538.1	69.3 74.6	47.8	1342.2	78.8] 14 3	0.00	451.78	128.17	174.49	136
1986	23.2	48.0	11.4	22.9	54.5	275.0	468.0	253.5	175.8	135.8	42.9	452	1556.4	71.3	88.9	1172.3	224.0	11.39	468.03	129.70	140.38	1.08
1988	3.6	73.5	34.1	43.6	28.7	314.9	321.8	412.2	189.0	47.9	1.5	0.0	1538.2	77.1	106.4	1237.9	49.4	0.00	412.23	122.56	146.28	120
1969	4.6	7.2 35.1	50.0	28.7	51.7	354.3 285.2	373.3 478.9	396.3 369.5	198.9 257.7	49.3	13.3 56.9	119	1470.6 1863.5	37.3	63.5 218.1	1.320.9	216.9	1.19	396.33 478.88	122.55	161 29	1.32
1991 1992	38.1 5.0	17.4 20.8	47.5 2.8	15.1 14.9	20.3 54.5	179.9 134.4	481.5 420.1	536.0 386.7	232.5 145.4	72.1 41.5	20.0 10.2	39.9 0.0	1700.2 1236.2	55.5 25.8	82.8 72.1	1429.8 1086.6	1.32.0 51.8	15.05	535.95 420.11	141.69 103.02	184.99 148.74	1.31 1.44
1993 1994	2.4 12.6	13.2 29.3	13.1 1.2	61.5 18.3	583 378	257.8 344.0	415.6 596.6	322.5 489.8	348.4 229.5	86.4 102.1	16.2 15.2	0.0	1595.6 1876.4	15.6 41.9	133.0 57.3	1344.3 1659.9	102.6 117.3	0.00	415.58 596.60	132.97 156.37	156.00 210.38	1.17
1995	46.4	26.5 34.7	43.4	11.1	114.2	138.8	384.3 403.2	372.7	279.2	84.4 33.8	98.3 1.7	8.2	1607.6	72.9 60.7	168.7	1175.1	190.9 35.5	8.21	384.30 431.00	133.97	135.93	1.01
1997	20.0	10.6	18.2	53.9	21.6	209.4	394.9	491.7	186.5	56.7	42.3	72.8	1638.6	30.5	93.8	1342.5	171.8	10.55	491.73	136.55	163.99	120
1999	2.4	7.4	2.0	0.5	122.9	222.4	429.8	383.2	277.6	190.1	3.2	0.0	1641.5	99	125.3	1313.0	193.3	0.00	429.78	136.79	160.93	1.18
2000	3.1	55.6 12.8	19 34.0	25.7 35.5	77.1	2290.8	414.9 608.0	2/1.3 301.4	119.4	52.3 53.8	2.9 5.7	0.0	1200.5	و.يو 15.9	90.3 146.6	1089.6	39.5 59.5	0.00	414.89 608.04	105.04	1.90.01	1.29
2002 2003	33.9 2.2	8.5 28.8	23.9 32.2	8.3 18.6	49.6 14.1	176.2 280.2	306.3 434.5	321.0 362.7	264.8 289.5	38.2 245.1	3.7 4.7	0.7	1235.2 1731.4	42.4 31.1	81.7 64.9	1068.4 1366.9	42.7 268.6	0.72	321.05 434.47	102.93 144.28	126.76 163.96	1.23
2004	16.8 30.3	5.9 28.3	13.4	47.2 8.4	64.5 23.4	197.2 207.4	376.9 455.0	564.7 261 3	1.51.8	113.1 90.6	1.2	0.5	1553.2 1354.1	22.7 58.6	125.1 47.3	1290.5 1132.5	114.8 115.7	0.52	564.68 455.03	129.44 112.84	176.19 141.57	136
2006	1.7	6.3 100	39.8	21.3	111.7	214.9	507.8 494.7	437.8	235.9	25.5	5.2	0.0	1607.8	8.0 64.6	172.8	1396.3	30.7	0.00	507.83	133.98	178.67	1.33
2008	29.9	23.3	17.2	15.4	565	422.1	493.4	411.6	235.0	34.3	1.0	0.0	1739.9	53.3	89.1	1562.1	35.4	0.00	493.37	144.99	190.77	1.32
2009	4.6 2.6	6.3 12.0	12.0	0.2	80.3 68.7	87.6 154.4	306.5	216.7	196.8	95.4 69.0	18.1	2.1 33.6	1.546.0	10.9	96.5 74.0	939.7	115.6	0.24	557.80 306.47	95.08	105.43	1.47
MIN MAX	0.03	0.33	0.05 106.32	0.00 98.90	2.60 139.36	52.14 452.59	186.04 940.01	221.10 637.43	84.08 509.04	0.10 258.36	0.00	0.00	1054.28 2029.82	1.18 228.18	12.18 218.07	897.08 1679.72	3.15 291.42	0.00 15.05	279.94 940.01	87.86 169.15	102.54 278.07	0.92
MEAN SD	19.08 22.24	31.16 30.50	21.72 22.61	21.12 18.07	49.45 30.14	217.76 92.40	428.21 101.05	392.76 92.23	230.58 74.12	81.78 59.42	15.59 23.47	6.08 11.92	1515.30 199.16	50.24 39.91	92.29 41.66	1269.32 167.05	103.45 64.67	1.32	463.89 92.42	126.27 16.60	161.76	1.28
CV	117	0.98	1.04	0.86	0.61	0.42	0.24	0.23	0.32	0.73	1.51	1.96	013	0.79	0.45	0.13	0.63	1.93	0.20	013	2	

 Table 14. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901

 - 2010 in the selected Brahmani river catchment areas

			•								Kris	hna							an			
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCI	NOV	DEC	ANN	JAN-	MAR-	JUN-	OCI-	MIN	MAX	MEAN	SD	CV
1901	8.8	31.4	5.0	49.8	52.9	105.4	183.6	131.0	102.2	75.5	19.2	1.4	766.2	40.3	107.7	5EP 522.2	96.0	1.36	183.65	63.85	57.16	0.90
1902	0.9	0.1	1.2	20.0	29.0	111.1	139.7	115.9	175.3	117.2	39.9	63.1	813.4	1.0	50.2	542.0	220.2	0.09	175.28	67.78	61.38	0.91
1903	3.0 0.6	0.1	4.6	9.6	62.5	104.1	200.5	196.5 64.6	182.3	146.3	0.4	0.3	644.2	<u>37</u> 09	63.2	479.0	101.1	0.10	138.80	80.50 53.68	91.93 59.86	1.06
1905	0.2	3.3	6.5	12.1	46.0	101.3	121.3	158.5	56.8	85.3	5.3	0.3	597.0	35	64.6	438.0	90.9	0.18	158.52	49.75	55.00	1.11
1906	16.6	0.1	7.5	72.4	5.8	106.5	206.1	186.5	134.4	9.1	15.5	9.0	774.5	18.9	20.0 85.7	654.3	33.5	0.10	206.13	64.54	78.20	1.09
1908	6.2	1.5	4.7	12.4	21.3	75.9	210.9	134.8	272.8	19.7	1.3	0.3	761.9	7.7	38.5	694.4	21.3	0.28	272.81	63.49	93.18	1.47
1909	0.0	0.2	4.1	19.2	28.2	141.4	209.7	205.7	210.0	35.2 115.0	8.4 35.0	0.3	923.5	0.1	38.5	649.1 734.6	46.5	0.02	209.96	04.90 76.96	86.39	1.18
1911	0.3	0.1	1.4	68	35.6	114.0	182.9	115.3	71.6	58.0	18.1	7.2	611.2	0.4	43.8	483.7	83.2	0.07	182.89	50.93	59.37	1.17
1912	0.1	8.5	0.3	28.0	30.0 61.8	129.9	257.5	74.1	96.4	86.1	1.1	2.6	672.7	8.0	74.0	508.2	139.6	0.12	207.73	67.30 56.06	66.39	1.19
1914	0.0	0.2	0.6	13.0	32.5	114.2	279.1	218.0	169.2	31.1	31.3	13.5	902.7	02	46.1	780.5	75.9	0.02	279.09	75.22	96.54	1.28
1915	0.6	4.5	<u>.54.1</u> 0.4	13.8	53.2 63.3	142.9	201.2	104.1	215.3	207.1	45.4	0.4	955.5	21.8	91.4 77.5	080.U 764.9	341.6	0.38	215.27	98.86	96.57	0.98
1917	0.2	27.7	15.7	95	27.1	158.2	125.9	186.3	229.5	151.7	58.5	0.3	990.5	27.9	52.3	699.9	210.5	0.19	229.52	82.54	82.44	1.00
1918	9.8 7.5	0.4	2.9	14.0	50.3	150.7	145.5	88.6 91.6	225.4	69.9	75.0	5.7	838.8	78	67.2	613.1	150.7	0.43	225.43	48.28	43.55	1.04
1920	9.9	0.2	0.7	17.2	25.6	96.3	146.1	89.8	133.6	49.4	2.0	0.3	571.1	10.1	43.5	465.7	51.8	0.21	146.13	47.60	54.63	1.15
1921	25.9	1.2	0.2	19.5	41.6	105.0	173.2	94.5 84.5	68.9	67.4	110.7	0.7	698.4	27.1	61.4	431.6	181.8	0.07	173.21	58.20	53.80	0.92
1923	0.9	11.3	25.9	13.4	27.3	49.7	275.2	98.5	167.4	20.5	2.7	1.7	694.3	12.2	66.5 50.0	590.7	24.9	0.89	275.15	57.86	84.14	1.45
1924	0.0	0.1	3.1	23.5	76.4	106.5	164.9	142.3	180.5	40.5	26.4	159	755.7	0.1	103.0	521.5	153.0	0.03	164.91	64.79	60.02	0.93
1926	24.1	0.3	5.9	12.7	33.0	84.6	182.1	165.0	163.7	28.0	3.1	0.7	703.2	24.4	51.6	595.3	31.9	0.32	182.06	58.60	71.20	1.22
1925	0.3	25.4	13.0	14.1	18.0	143.0	172.7	134.1	190.8	112.4	2.6	7.7	854.8	25.6	45.1	661.4	128.5	0.33	197.28	71.23	76.64	1.08
1929	1.1	16.6	1.4	46.8	32.5	125.5	122.1	82.4 86.0	182.9	92.3 146.5	20.5	2.7	726.8	17.7	80.7 59.0	512.9 541.0	115.5	1.07	182.87	60.57 66.00	59.81 68.07	0.99
1931	0.1	0.1	1.9	20.2	35.3	138.5	202.1	138.1	196.8	82.6	72.9	15.8	904.2	0.1	57.4	675.4	171.3	0.05	202.08	75.35	76.10	1.01
1932 1933	0.0	7.0	1.0 9.6	18.6	48.8 89.9	76.7	182.7	210.3 190.2	148.5	144.0 156.8	82.3 42.3	0.9	964.8	7.0	68.4 127.9	662.1 698.6	232.5	0.61	226.55	80.40 88.67	83.24 77.26	1.04
1934	1.2	0.1	0.9	19.0	13.8	114.3	221.3	144.6	96.7	64.9	49.7	0.3	726.7	13	33.8	576.8	114.9	0.07	221 27	60.56	71.03	1.17
1935	9.4 0.3	23.9	0.0 6.9	10.1	13.3 54.2	120.0	108.9	202.0	113.0	65.8	5.7 80.9	3.5	750.5	9.6 24.2	39.1 71.1	505.0	152.1	0.24	146 21	62.54	15.20 54.28	0.87
1937	0.0	15.4	9.5 25.4	77.5	16.5	89.6 153.0	203.8	69.6 210.6	146.3	109.0	0.9	5.8	744.0 912.6	15.4 6.4	103.5	509.3 362.0	115.8	0.03	203.77	62.00 36.05	66.20 87.12	1.07
1939	0.1	0.1	5.8	16.6	9.2	95.4	180.0	164.2	120.8	131.2	33.9	0.7	758.0	0.1	31.7	560.4	165.7	0.06	179.98	63.17	70.02	1.11
1940 1941	0.1 18.6	0.3	2.8	29.3 8.3	81.1	132.3 100.5	173.5	175.5	103.8	67.7	30.3	10.0	853.1 643.3	22.5	113.1 33.9	585.0 502.8	154.6 84.1	0.09	175.50	71.09 53.61	67.44 58.11	0.95
1942	0.1	2.2	0.2	23.4	28.7	181.0	201.4	141.7	63.8	39.6	5.5	22.7	710.3	22	52.2	587.9	67.8	0.06	201.42	59.19	73.20	1.24
1943	0.2	0.5 6.3	1.8 34.5	59	40.5	108.5	243.3	76.7 81.0	199.6	165.5	21.2 29.8	0.5	914.0 863.0	65	80.9	579.8	195.6	0.34	243.29	71.92	78.29	1.03
1945	0.7	0.1	0.1	21.1	25.0	95.7 128.8	235.0	139.7	104.3	66.4 58.3	8.6 114.9	0.5	697.2 921.7	0.7	46.2	574.7	75.5	0.06	235.05	58.10 76.81	73.76	1.27
1947	10.9	4.3	5.8	14.8	25.0	94.6	210.5	250.6	178.3	54.5	12.5	14.6	876.6	15.3	45.7	733.9	81.7	4.34	250.56	73.05	89.52	1.23
1948	3.6	0.9	4.3	33.6	40.4 67.5	95.9 101 7	170.3	173.1	161.0 234.3	80.4	8.9	0.5	875.2 840.3	45	78.3	600.3 647.5	192.0	0.47	173.08	72.93	68.67 80.01	0.94
1950	0.0	5.4	5.9	43	38.6	86.0	227.6	126.3	220.8	103.6	20.2	0.5	839.4	55	48.8	660.8	124.3	0.04	227.63	69.95	84.17	1.20
1951	0.1	0.1 5.8	10.7	19.4	54.6 86.9	130.9 84.6	211.3	97.7 105.1	131.7 78.7	91.3 128.3	12.3	0.7	761.0	02 59	84.8 108.1	571.7 425.3	104.3	0.08	211 29	63.41 56.95	69.02 56.26	0.99
1953	0.6	0.1	0.4	35.5	5.7	137.9	223.1	137.7	181.9	216.6	0.6	0.4	940.5	0.7	41.5	630.6	217.6	0.09	223.08	78.37	93.09	1.19
1954	0.1	0.2	12.9	22.9	39.2 82.5	127.3	204.0 140.8	242.1	200.8	142.2	15.6	0.3	965.0	0.4	115.5	711.1	82.4	0.09	203.98	82.09	86.36	1.05
1956	0.2	1.4	0.9	29.7	72.1	129.3	319.1	145.9	146.6	162.3	91.0	2.4	1101.0	1.7	102.7	741.0	255.7	0.25	319.15	91.75	95.85	1.04
1958	1.4	1.6	8.0	35.6	65.1	91.1	255.9	232.9	95.8	83.5	31.4	0.3	902.7	3.1	108.7	675.7	115.2	0.31	255.93	75.23	86.77	1.15
1959	0.1	0.6	0.2	17.6	45.6 65.8	178.9	258.0 172.9	162.7 68.9	163.5 276.3	61.6 52.5	24.8 25.6	1.3	925.1 812.2	0.7	63.5 91.2	773.2 641.7	87.8	0.11	268.02	77.09	91.73 84.94	1.19
1961	0.8	1.6	2.9	23.6	105.2	153.9	324.1	131.1	70.1	155.7	11.9	0.6	981.4	2.4	131.6	679.2	168.2	0.61	324.12	81.78	98.44	1.20
1962	0.2	4.9	15.3	35.1	50.9	127.9	154.3	242.6	68.5	155.3	3.3	0.7	859.0	50	103.4	593.4	159.3	0.18	242.64	71.58	80.04	1.12
1964	0.0	0.4	2.0	10.7	10.8	113.7	206.8	182.8	288.0	85.7	26.5	1.3	928.8	0.4	23.6	791.3	113.5	0.03	288.05	77.40	99.31 36.11	1.28
1966	8.5	0.2	1.7	93	67.3	71.1	212.3	95.0	152.9	59.1	84.7	12.5	774.7	8.7	78.3	531.3	156.4	0.22	212.28	64.56	66.08	1.02
1967	0.9	0.1	11.0	23.2	25.8	97.8 91.3	261.6 182.4	105.4	140.9	64.2 93.6	2.6	21.8	755.3	1.0	60.0 56.1	605.7 536.2	88.6	0.15	261.58	62.94	78.24	1.24
1969	0.3	0.1	1.7	11.9	65.8	102.8	210.3	182.4	137.4	100.0	38.2	9.9	860.8	0.4	79.4	632.8	148.1	0.06	210.30	71.73	74.60	1.04
1970	0.4	4.3	3.6	28.7	71.0 64.6	117.0	154.3 102.6	221.8 140.5	161.0	98.3 101.0	1.1	0.1	858.5	4.7	103.3 94.1	654.1 505.6	99.4 104.0	0.09	221.77	71.54	77.88 58.73	0.99
1972	0.3	3.3	1.1	15.2	47.6	83.6	146.6	47.5	121.6	58.2	33.5	2.3	561.0	3.6	64.0	399.3	94.1	0.28	146.59	46.75	48.93	1.05
1973	0.3	0.2	5.1	22.3	23.1 90.3	78.4	184.1	197.7	220.2	172.8	9.8 4.9	0.1	883.7	05	117.7	579.5	185.9	0.21	220.18	73.65	81.48 80.29	1.17
1975	4.7	7.3	9.5	6.7	44.2	121.5	228.2	165.3	243.4	224.7	27.4	0.3	1083.2	12.0	60.4 50.3	758.4	252.4	0.29	243.41	90.26	99.56 70.02	1.10
1977	0.3	0.6	8.1	26.9	72.5	134.1	198.6	124.3	74.3	139.2	95.0	1.5	875.3	09	107.5	531.2	235.7	0.28	198.56	72.95	66.72	0.91
1978	3.7	10.9	2.4	36.0	74.5	147.6	211.4	205.5 131.2	191.9 260.0	76.8	60.1 87.8	7.8	1028.5 839 1	14.6	112.9 69.0	756.3 631.0	144.7	2.36	211.39	85.71	81.97 78.42	0.96
1980	0.5	0.2	3.3	40.2	20.8	176.5	176.5	197.1	123.1	33.1	31.9	4.1	807.4	0.7	64.3	673.2	69.1	0.17	197.10	67.28	77.57	1.15
1961	0.4	0.2	3.3	23.1	52.1	108.4	185.9	160.1	290.1 133.4	86.7	48.1	0.1	765.2	0.7	78.5	764.4 556.9	105.4	0.18	290.13	63.77	93.82 63.39	0.99
1983	0.3	0.6	0.6	42	27.0	129.4	198.1	232.6	249.9	89.4	8.1	10.2	950.3	10	31.8	810.0 532.1	107.7	0.32	249.89	79.19	98.24 73.22	1.24
1965	3.3	0.0	6.1	16.3	28.9	118.8	150.8	117.0	82.0	92.9	8.9	2.9	628.2	35	51.4	468.6	104.7	0.19	150.81	52.35	55.80	1.07
1986	14.5	9.5	1.7	17.3	25.4 42.0	168.2	108.0	165.1	123.6 99.4	31.4 144.4	47.8 94.0	8.3 26 A	720.9	24.0 5.2	44.4 58.1	564.9 539.3	87.5 265 9	1.70	168.19	60.07	63.08 64.99	1.05 0.90
1968	0.3	4.9	1.8	43.4	28.4	87.8	275.3	224.8	255.6	19.1	2.0	15.5	958.9	52	73.6	843.4	36.7	0.28	275.32	79.91	107.05	1.34
1989 1990	0.3	0.2	30.4 7.0	14.5 6.0	22.5	126.3 140.5	293.7 153.4	115.8 199.3	198.2 90.5	32.4 130.5	9.4 26.8	8.9 0.1	852.6 896.6	0.5 5.0	67.4 150.5	734.1 583.7	50.7 157.5	0.18	293.69 199.26	71.05	94.01 74.42	1.32
1991	2.4	0.2	2.2	33.9	55.6	238.5	222.5	124.8	100.5	57.8	28.2	0.1	966.7 922-7	26	91.7	696.3 602.3	86.1 152.4	0.14	238.55	72.22	84.13	1.16
1992	0.4	0.2	6.1	15.5	32.7	84.3	219.7	152.8	1111.0	210.9	19.5	39.0	891.9	05	54.3	567.8	269.4	0.15	219.75	74.33	81.17	1.04
1994	3.1	6.4	1.2	32.4	26.6	143.6 80.3	229.0	121.4	56.7 142.8	192.9	23.2	0.1	836.8 874.6	9.6 22.5	60.3 81.5	550.7 587.5	216.3	0.12	228.97	69.73 72.98	81.03	1.16
1996	0.4	0.5	0.5	26.9	20.3	158.9	166.6	174.9	168.4	169.2	11.0	5.8	903.5	09	47.7	668.8	186.0	0.39	174.93	75.29	81.95	1.09
1997 1998	11.3 0.3	0.2	8.9 0.8	32.7	17.3 35.0	111.6	185.0 199.3	158.3 189.5	100.5 227.9	73.6 190.9	64.8 23.4	29.5	793.8	11.5 0.8	59.0 47.7	555.5 738.3	167.9 21.5.0	0.18	185.02 227.90	66.15 83.49	61.36 93.93	0.93
1999	0.3	6.1	0.6	78	90.9	130.5	205.7	102.4	120.5	143.3	2.7	0.1	811.1	65	99.3	559.0	146.2	0.14	205.70	67.59	72.88	1.08
2001	1.7	0.2	8.3	38.6	17.4	85.2	100.7	118.4	174.0	95.7 146.9	9.1	0.4	712.2	19	64.3	489.5	102.2	0.62	45.164 173.99	59.35	64.21	1.14
2002	4.1	3.0	3.2	7.0	69.7	123.2	98.2 154.0	162.4	61.1	127.9	3.7	0.1	663.7	7.1	79.9	444.9	131.7	0.14	162.39	55.31 50.22	59.95 55.96	1.08
2004	7.7	1.9	9.4	33.7	116.1	91.6	178.1	111.9	156.4	42.1	5.4 6.6	0.1	755.5	95	159.2	538.0	48.8	0.12	178.14	62.95	64.74	1.03
2005	9.9	0.3	4.4	46.2	50.1	122.6	311.7	164.0	192.0 173.2	160.5	7.5 80.8	0.5	1069.7	10.2	100.7	790.3 651.7	168.5	0.32	311.66	89.14 79.56	100.52	1.13
2007	0.2	0.4	1.5	26.6	43.6	246.7	154.5	210.6	243.1	49.7	9.7	0.9	967.5	0.6	71.7	854.9	60.3	0.21	246.68	82.29	100.95	1.23
2008	0.2	15.6	107.7	11.4	35.8 65.6	72.9 97.0	137.1 189.9	221.9 174.2	180.0 214.9	48.6 76.4	44.2 63.1	2.9	878.4 918.2	15.8 0.4	154.9 90.2	611.9 675.9	95.8 151.8	0.19	Z21 92 214.88	73.20	73.26	1.00
2010	10.3	0.6	3.6	22.6	40.4	128.2	286.6	232.2	160.5	108.3	100.0	4.3	1097.7	10.9	66.6	807.5	212.6	0.64	286.57	91.47	96.23	1.05
MAX	25.91	31.42	107.66	77.46	137.43	49.65	324.12	250.56	288.05	224.71	134.05	63.12	1186.36	40.26	159.15	854.93	341.59	4.45	324.12	98.86	107.05	1.47
MEAN	3.13	3.49	6.82	20.97	45.00	120.17	193.09 49.17	149.78	153.28	96.43 50.61	32.25	6.70	831.12	6.62 7.84	72.80	616.31	135.38	0.38	214.82	69.26 10.47	75.99	1.10
CV	1.74	1.72	1.75	0.61	0.58	0.27	0.25	0.32	0.37	0.52	1.00	1.70	0.15	1.18	0.41	0.17	0.45	1.81	0.19	0.15		

Table 15. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901 - 2010 in the selected Krishna river catchment areas

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YEAR	JAN	FEB	MAR	AFR	MAY	JUN	JUL	AUG	SEP	œı	NOV	DEC	ANN	JAN-	MAR-	JUN-	OCI-	MIN	MAX	MEAN	SD CV
1901	6.1	43.7	0.0	10.1	55.6	48.9	55.7	43.8	109.8	77.0	98.8	28.2	577.5	49.8	65.6	258.1	203.9	0.00	109.76	48.12	34.75 0.72
1902	5.7	0.0	0.5	192	39.5	70.1	42.5	94.3 110.2	151.4	200.1	42.4	24.9	690.5	5.7	59.3	358.3	267.3	0.01	200.07	57.54	62.67 1.09
1903	14.2	0.0	0.8	10.9	64.6	28.7	61.0	17.4	76.2	116.5	0.6	7.5	398.4	14.2	76.3	183.3	124.6	0.00	116.47	33.20	37.59 1.13
1905	2.6	3.4	10.7	14.3	39.8	57.9	34.6	194.9	22.2	146.5	20.7	0.4	548.0 348.0	6.0 51.5	64.8	309.7 452.8	167.5	0.41	194.91	45.67	61.65 1.35 \$615 0.88
1907	0.5	0.0	3.8	77.0	3.6	41.5	122.3	23.8	94.3	34.0	99.4	28.8	528.9	0.5	84.3	281.9	162.2	0.00	122.26	44.08	43.33 0.98
1908	11.8	1.3	4.9	4.3	31.2	34.5	58.6	33.6 244.6	203.9	97.1 24.0	6.5	1.3	488.9	13.1	40.4	330.6	104.8 28.3	1.25	203.94	40.75 60.94	58.81 1.44 78.32 1.29
1910	0.2	0.0	0.2	10.9	33.6	45.6	171.5	164.2	173.7	169.1	104.5	0.2	873.9	0.3	44.8	555.0	273.8	0.04	173.69	72.82	77.32 1.06
1911 1912	0.1	0.1 3.9	0.5	16.0	59.7 19.5	49.9 33.0	59.3 65.8	45.3	93.1 158.8	105.9	50.3	17.6	497.8 691.1	0.1	25.6	247.6 362.8	173.8 298.6	0.05	105.93	41.48 57.59	35.62 0.86 65.21 1.13
1913	0.1	0.7	0.2	5.2	53.6	42.1	92.5	25.1	128.9	142.7	1.7	41.2	534.0	0.8	59.0	288.5	185.7	0.05	142.73	44.50	51.14 1.15
1914	32.6	2.6	63.9	8.7	45.6	54.0	130.9	49.9	141.2	55.8	174.2	2.3	801.3	35.2	118.2	415.6	232.3	2.34	180.71	66.77	62.13 0.93
1916	0.1	0.5	0.0	7.7	53.6 55.0	40.4	219.3	167.0	172.2	212.9	101.6	1.2	976.4 973.0	0.5	61.3	598.9 475.6	315.7	0.03	219.32	81.37	88.63 1.09 68.90 0.04
1918	31.7	0.6	8.2	12.8	65.1	23.9	22.9	59.7	128.0	2.1	180.2	17.8	552.8	32.2	86.1	234.4	200.1	0.57	180.25	46.07	55.46 1.20
1919	14.1 42.3	0.0	22.0	23.8	49.5	66.1 30.8	118.8	20.8	255.4	62.6 105.1	137.2	16.7	787.0 490.5	14.1	95.3 30.1	461.1 258.6	216.5	0.04	255.40	65.59 40.88	73.38 1.12 43.81 1.07
1921	16.0	0.0	0.0	50.4	6.6	56.2	139.8	69.3	72.6	207.9	53.1	1.5	673.4	16.0	57.0	337.8	262.6	0.03	207.90	56.12	63.15 1.13
1922	31.4 6.1	0.1 9.5	0.0	9.3	45.3	36.1 37.6	54.8 55.9	69.6 19.0	22.2 150.5	106.2 68.4	ZZ8.5 8.1	4.1 5.6	607.4 421.8	31.4	54.6 61.2	182.7 263.0	338.7 82.1	5.57	ZZ8.49 150.48	50.61 35.15	64.32 1.27 41.45 1.18
1924	6.3	0.0	0.5	13.0	45.3	41.0	76.1	79.7	188.1	33.6	133.5	0.3	617.3	6.3	58.8	384.9	167.3	0.04	188.06	51.44	59.26 1.15
1925	44.7	0.0	9.0	34.3	29.5	87.0	64.9	53.5	152.1	83.5	93.5	2.4	578.4	44.7	72.8	357.4	103.5	0.04	1152.06	48.20	43.99 0.91
1927	0.7	1.3	0.0	1.8	25.2	61.2	99.1 88.4	73.9	180.2	535	151.0	0.3	648.2 621.8	1.9	27.0	414.5	204.8	0.04	180.19	54.01 51.82	62.38 1.15 \$0.24 0.07
1929	7.8	12.3	1.6	365	46.8	45.6	24.4	31.3	186.3	122.4	93.1	20.8	628.9	20.1	84.9	287.6	236.3	1.61	186.32	52.41	54.95 1.05
1930	7.5	8.5	8.0	5.8	143.4	75.3	45.1	38.7 24.0	136.5	232.6	82.0	41.7	825.1 \$63.2	16.0	157.2	295.7	356.2	5.83	232.56	68.76 46.94	70.35 1.02 4547 0.97
1932	0.0	12.1	0.0	7.2	54.1	41.7	61.1	134.8	78.2	101.5	93.6	3.7	\$87.9	12.1	61.4	315.7	198.8	0.00	134.79	49.00	45.87 0.94
1933	9.0	0.1	0.1	27.4	20.4	16.0	80.5 93.6	39.8	30.1	125.8	57.1	62.5 3.0	474.4	9.0	89.6 47.9	231.9	185.7	0.03	174.88	54.31 39.54	39.63 1.00
1935	4.8	1.1	1.2	32.4	25.3	73.1	82.2 52 4	228.2	83.9	150.8	11.0	5.1	699.0	5.8	58.9	467.5	166.8	1.06	228.24	58.25	70.78 1.22
1930	0.0	19.1	5.3	95.3	27.2	38.7	86.6	34.2	113.9	156.9	65.2	14.0	649.3	19.4	127.8	273.4	236.1	0.08	156.93	54.10	49.61 0.92
1938	0.0	2.6	2.3	2.1	54.3 12.4	65.1 65.6	59.6 44.4	245.6	238.0	19.8	2.1	3.7	695.2 200 3	2.6	58.7	608.2 340.2	25.7	0.01	245.64	57.94	89.36 1.54 54.73 0.04
1940	0.1	0.0	5.9	32.2	130.6	63.1	59.5	90.9	103.7	187.3	142.6	11.5	827.4	0.1	168.7	317.2	341.4	0.03	187.26	68.95	62.64 0.91
1941 1942	3.5	6.1 0.4	0.0	10.7	30.9 28.3	36.8	35.5 35.8	64.2 112.3	162.4 64.0	100.9 40.3	53.8 42.7	83.4 34.4	588.2 463.9	9.5 0.4	41.5 45.6	299.0 300.4	238.2	0.02	162.40 112.35	49.02 38.66	48.09 0.98 35.15 0.91
1943	9.3	0.2	0.3	23.1	183.9	29.2	66.8	58.7	125.9	247.1	73.6	4.8	822.9	9.5	207.3	280.6	325.5	0.18	247.13	68.57	79.27 1.16
1944	0.0	0.0	0.0	22.5	38.5	23.6	122.9	41.1 85.9	96.2	49.3	96.8 53.9	4.7	497.2	0.1	94.8 61.0	331.9	267.0	0.04	165.49	41.43	42.46 1.02
1946	0.2	1.5	7.3	12.1	55.0	34.9	51.7	97.8	150.1	75.1	222.2	102.9	810.8	1.8	74.4	334.5	400.2	0.20	222.20	67.57	67.43 1.00
1945	3.5	0.1	1.2	29.9	48.5	30.0	71.8	106.4	70.4	97.8	99.5	5.1	564.1	3.5	79.6	278.6	202.4	0.09	106.37	47.01	41.07 0.87
1949	0.0	0.0 62	0.3	8.0	77.1	87.7	111.9	141.1 80.8	186.8	103.7	38.8	0.3	755.7	0.0	85.3 51.2	527.5 277.7	142.8	0.01	186.83	62.97 40.96	64.46 1.02 44.31 1.08
1951	0.0	0.1	16.6	29.4	77.3	61.1	86.6	37.8	73.0	71.1	30.3	0.1	483.4	0.2	123.3	258.4	101.4	0.05	86.61	40.28	32.47 0.81
1952	0.0	3.4 0.2	0.3	10.5 44.6	159.4 20.2	45.5 62.9	52.5	60.6 40.8	49.8	104.5 304.3	2.8	86.3 0.2	575.8 742.6	3.5	170.3 64.9	208.4 361.2	193.6 315.9	0.05	159.41 304.29	47.98 61.88	49.78 1.04 89.42 1.45
1954	4.4	0.1	6.7	115	40.4	43.3	163.5	67.0	65.0	194.9	0.2	45.1	642.1	4.5	58.7	338.7	240.2	0.05	194.86	53.51	63.81 1.19
1955	2.2	0.8	0.4	60.9	51.2	38.1 77.6	86.9	53.7	161.1	234.3	45.4 95.0	16.8	895.0	4.5	138.3	406.8	357.9	0.78	234.31	59.01 74.58	54.67 0.93 71.40 0.96
1957	0.0	0.2	6.0	10.6	47.2	120.9	62.2	69.6	75.9	81.2	56.8	0.2	530.9	0.3	63.9	328.5	138.2	0.03	120.87	44.24	40.22 0.91
19.59	0.3	3.9	0.1	23.3	43.1	109.4	78.3	85.1	143.7	62.6	30.2	12.6	592.5	4.2	66.5	416.4	105.4	0.08	143.66	49.38	46.83 0.95
1960	0.1	0.0	3.8	6.7	46.7	42.0	78.4	20.2	238.3	48.7	159.6	5.8	650.2 588.7	0.1	57.1	378.9	214.2	0.01	238.27	54.19	73.84 1.36
1962	0.6	3.7	3.9	39.3	56.7	48.3	35.1	124.4	114.3	225.1	31.5	74.2	757.1	4.3	99.8	322.1	330.8	0.61	225.06	63.09	64.86 1.03
1963	1.6	0.0	4.6 0.0	48.5	25.7 13.2	52.7 61.6	61.1 189.6	138.1 68.3	96.0 251.8	168.8 52.8	13.8 81.6	19.2	630.1 732.2	1.6	78.7	347.9 571.3	201.8	0.01	168.78 251.78	52.51 61.01	55.43 1.06 81.39 1.33
1965	0.1	0.2	3.3	31.3	13.7	48.7	64.1	153.6	100.3	8.4	30.4	47.4	501.6 206.6	0.3	48.3	366.7	86.2 300.2	0.10	153.59	41.80	46.31 1.11
1967	9.0	0.0	23.2	6.7	42.4 56.7	90.5 56.6	133.6	33.2	133.7	108.0	27.2	48.4	640.5	9.0	34.2	361.2	183.7	0.00	130.37	53.37	48.23 0.90
1968	0.1	4.5	13.4	292	23.5	36.8	58.9 82.3	11.6	172.4	95.7 212.6	65.4 60.1	29.4 41.3	540.9 685.5	4.6	66.1	279.7	190.5 314.0	0.06	172.37	45.08	48.80 1.08 63.76 1.12
1970	0.2	4.1	0.9	11.7	101.0	42.7	68.0	142.1	143.3	116.2	17.1	0.2	647.5	4.3	113.7	396.2	133.4	0.17	143.35	53.96	57.52 1.07
1971	2.4	2.6	13.1 0.4	389 192	51.9 97.5	232 803	41.5	99.7 12.5	65.8 143.2	169.8	21.4 62.0	9.7 60.3	539.9 678.0	5.0	103.8	230.2	200.9 310.5	0.36	169.78 188.22	44.99 56.50	48.61 1.08 61.62 1.09
1973	0.0	0.2	0.4	7.0	37.7	60.4	50.3	150.3	131.5	177.4	33.3	11.7	660.0	0.2	45.1	392.5	222.3	0.00	177.35	55.00	63.19 1.15
1974	0.0	0.1	3.7	5.9	42.2	30.9	47.9	44.5	120.7	319.9	29.8 95.8	5.5	882.9	0.1	51.8	409.3	421.2	0.00	319.89	73.58	94.74 1.29
1976	0.2	0.1	0.4	25.5	19.3	40.8	86.1 92.1	1362 945	30.1 48.9	104.7	127.1	3.7	574.2	0.3	45.1	293.2 320.5	235.6	0.12	136.18	47.85	51.54 1.08
1978	0.1	4.8	0.8	31.4	31.4	55.4	155.5	57.0	197.0	775	122.3	44.1	777.4	5.1	63.5	464.9	243.9	0.14	196.99	64.78	63.12 0.97
1979 1980	1.2	17.9 0.1	0.6	9.2 19.7	97.6 39.6	46.4	65.0 45.9	47.5 69.0	176.6 65.5	47.0 40.8	172.5 95.1	8.1 8.5	689.4 439.2	19.0	107.4 60.4	335.4 234.3	227.5	0.60	176.62 95.11	57.45 36.60	61.91 1.08 31.23 0.85
1981	2.1	0.1	21.4	15.5	29.2	19.4	97.1	97.8	246.1	133.6	44.4	14.4	721.2	2.2	66.2	460.4	192.4	0.12	246.09	60.10	72.71 1.21
1982	0.0	0.1	2.6	11.1	42.5	75.0	40.7 97.8	14.5 178.0	256.0	85.6	90.2	1.4 36.0	4.52.5 837.5	0.1	54.1 90.3	206.0 606.9	1/2.1	0.01	90.23 256.04	36.04 69.79	30,05 1.00 78,90 1.13
1984	0.4	29.5	323	13.3	11.0	20.1	125.5	7.7 90 c	110.5	70.1	52.1	24.1	496.6 494 0	29.9	56.7	263.8	146.2	0.44	125.49	41.38	40.77 0.99
1985	40.2	5.6	0.4	10.5	22.9	66.7	31.8	34.0	120.0	65.9	57.6	7.8	463.3	45.8	33.7	252.5	131.2	0.12	120.00	38.61	34.55 0.89
1987	1.5	0.2	4.2 4.6	6.1 569	23.0	47.0	16.4	164.8 236.5	98.3 159.0	154.6 54.8	95.4 20.1	46.8	658.4 802.3	1.7	33.2 136.7	326.5 566.4	2969 98.6	0.17	164.85 236.52	54.86 66.86	59.53 1.09 76.85 1.15
1989	0.0	0.2	26.3	4.3	32.5	27.4	255.5	19.6	161.6	27.2	44.9	17.1	616.7	0.2	63.1	464.2	89.2	0.00	255.55	51.39	77 27 1.50
1990	0.6 5.6	8.5 0.1	4.9 0.5	133	136.6 51.4	46.2	41.3 46.9	71.1 55.6	114.0 70.1	125.1	109.6	2.3 3.3	673.6 755.8	9.2 5.7	154.9	272.6 341.8	2369 3372	0.63	1.36.59 191.48	56.13 62.99	52.81 0.94 68.24 1.08
1992	1.9	0.1	0.4	6.4	46.0	50.6	60.2	92.9	41.7	66.3	117.4	1.1	485.0	2.0	52.8	245.4	184.8	0.12	117.41	40.42	39.65 0.98
1993	1.8	13.0	4.8 0.4	26.4	33.2	31.6	59.7	62.3	18.7	197.7	62.4	13.0	520.0	14.7	60.0	172.2	273.1	0.06	197.66	43.34	53.39 1.23
1995	16.8	0.8	2.2	11.4	133.6	31.8	137.2	249.4	85.3 167.8	2330	12.9	0.2	757.4	17.5	147.2	503.7 625.1	89.0 307.6	0.19	249.38 233.90	63.12 83.42	77.29 1.22 91.12 1.09
1997	10.2	0.1	12.3	33.6	28.5	51.9	20.0	46.1	224.0	46.9	78.5	66.2	618.2	10.3	74.4	342.1	191.5	0.11	224.03	51.52	59.15 1.15
1998	0.0	0.2	0.7	43.4	32.7	20.9 40.9	99.1 45.7	161.3	150.7 79.9	129.6 95.0	100.9 46.4	12.0 4.5	751.8 508.3	0.2	76.9	432.1 268.3	242.5 145.9	0.00	161.33	62.65 42.36	61.79 0.99 38.88 0.92
2000	0.0	31.8	0.3	279	70.7	104.0	76.7	255.2	72.0	141.1	18.1	15.6	814.4	31.8	98.9	508.9	174.8	0.00	256.25	67.87	73.56 1.08
2001	0.1 45.6	0.1	0.6 4.5	809 3.0	15.5 96.6	27.0 47.0	35.0 36.8	55.3 60.7	45.7	207.6	30.3 16.6		576.6	47.1	97.1	333.2 190.3	211.0	0.06	217.92 218.11	58.95 48.05	75.68 1.28 61.00 1.27
2003	0.0	0.1	28.5	13.6	5.7	31.1	96.7	69.0 15.4	38.7	176.5	3.2	13.6	476.8	0.1	47.8	235.5	193.3	0.02	176.54	39.74	5225 1.31
2004	2.4	0.2	1.6	36.0	97.2	61.4	121.0	129.7	104.7	324.5	68.3	23.3	971.2	3.5	134.9	416.7	416.2	0.71	324.54	80.94	89.88 1.11
2006	0.1	0.1	50.1 0.7	22.8	55.9 78.1	79.6	45.7	26.4 241 0	80.3	72.4	110.2	0.3	543.9 1084 1	0.1	128.8	232.0 741.0	182.9	0.06	241.90	45.32	3626 0.80 9532 1.05
2008	1.1	16.0	70.3	5.2	54.2	53.8	123.6	145.3	102.6	110.0	84.9	0.0	767.1	17.1	129.7	425.4	195.0	0.02	145.28	63.93	50.69 0.79
2009	0.3	0.0	5.5	16.8	104.2 90.1	79.8 59.8	23.2	126.1 171.3	185.7	23.8 1.52.4	125.2	32.0 18.3	722.7	0.3	126.5	414.9 454.1	181.0 289.6	0.03	185.73	60.23 74.31	61.96 1.03 62.13 0.84
MIN	0.00	0.00	0.00	0.50	3.55	14.78	13.39	7.73	18.66	2.12	0.21	0.02	398.39	0.01	13.03	172.21	25.66	0.00	86.61	33.20	31.23 0.72
MEAN	6.24	3.93	10.33 6.44	95.30 20.66	185.85	<u>56.27</u>	81.47	430.25 93.90	430.04 125.55	329.54 122.98	71.40	125.71	1084.07 663.07	10.17	229.08 81.54	357.19	421.20	0.35	324.54 179.18	90.34 55.26	95.52 1.54 58.69 1.06
SD	12.35	8.81	12.80	17.41	37.07	33.70	43.78	61.17	57.54	66.75	56.06	25.06	140.96	14.35	39.84	108.18	82.86	0.88	51.02	11.75	

Table 16. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901 - 2010 in the selected Penner river catchment areas

			-	20 V						a	Cau	very		,	a							10
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	oci	NOV	DEC	ANN	JAN-	MAR-	JUN-	001-	MIN	MAX	MEAN	SD	CV
1901	13.9	26.3	8.5	35.2	117.2	102.7	159.4	83.8	215.7	184.9	133.4	24.4	1105.4	40.2	160.9	561.6	342.8	8.48	215.70	92.12	71.48	0.78
1902	24.4	2.8	17.4	44.0	123.2	72.6	192.2	105.7	109.0	236.4	78.2	111.2	1117.0	27.2	184.5	479.5	425.7	2.82	236.37	93.08	69.84	0.75
1903	3.1 14.8	1.8	2.4	45.1	164.4	112.7	234.0	153.5	81.6	162.3	9.5	4.5	843.7	4.9	235.5	444.2	431.7	0.34	233.99	70.31	92.51 68.92	0.83
1905	2.7	11.0	19.9	46.3	122.4	107.9	124.4	113.0	70.8	180.1	54.1	0.6	853.0	13.6	188.6	416.0	234.7	0.62	180.0S	71.08	58.19	0.82
1906	21.8	8.7	7.5	7.6		80.6 114.6	187.5	280.8	82.4	181.9	74.1	62.3 361	1053.3	30.5	73.3	631.3	318.2 235.1	7.53	280.77	87.78 84.87	85.97	0.98
1908	89	16.9	17.4	48.7	126.9	85.6	157.6	85.1	103.2	162.3	8.3	4.0	824.8	25.8	193.0	431.4	174.6	3.99	162.31	68.73	59.49	0.87
1909	82.1	32	5.1	76.1	178.8	100.6	149.6	210.2	100.1	190.4	54.0	10.1	1160.3	85.3	260.1	560.5	254.5	3.20	210.16	96.69	72.80	0.75
1911	13	0.9	9.2	44.0	136.5	190.5	172.1	45.2	77.3	147.5	83.2	39.7	947.4	2.3	189.6	485.1	270.4	0.93	190.54	78.95	67.44	0.85
1912	2.8	2.6	2.2	32.8	95.9	131.8	183.1	114.5	175.4	205.1	125.4	4.7	1076.3	5.3	130.9	604.8	335.2	2.23	205.10	89.69	77.66	0.87
1915	1.7	1.4	4.6	20.5	75.0	68.2	193.6	104.8	120.8	191.5	75.6	42.8	900.7	3.2	100.2	487.4	310.0	1.44	193.60	75.06	67.69	0.90
1915	15.9	38	38.9	44.5	75.5	200.7	164.3	93.1	168.4	137.5	151.7	20.1	1114.4	19.8	158.9	626.4	309.3	3.83	200.65	92.86	69.12	0.74
1910	49	44.6	24.6	22.8	79.0	135.0	74.6	159.6	244.6	149.4	114.6	14.1	1068.0	49.5	126.5	613.9	278.1	4.87	244.60	89.00	73.30	0.82
1918	20.9	09	27.8	31.8	108.0	62.9	58.7	96.7	66.6	81.2	232.3	26.3	814.0	21.8	167.6	284.8	339.8	0.89	232.32	67.84	61.13	0.90
1919	44.9	1.6	3.1	76.0	74.1	123.3	183.2	78.2	144.8	143.6	150.6	0.7	1024.1	46.5	153.3	529.5	294.9	0.73	183.17	85.34	63.98	0.75
1921	59.5 10.4	0.6	1.6	93.6	73.5	110.4	195.7	185.5	79.4	182.1	83.5	13.9	1079.2	60.1	168.6	571.0	279.5	0.60	195.70	89.93	68.87	0.77
1923	25.7	0.7	35.5	44.8	63.1	71.8	232.8	187.6	87.0	104.1	20.4	20.9	894.3	26.4	143.4	579.2	145.3	0.71	232.78	74.52	70.75	0.95
1924	11.1	0.3	14.0	48.9	122.2	130.3	390.3	128.8	144.0	80.0	92.0	10.2	1172.1	11.4	185.1	793.4	182.2	0.34	390.35	97.67	106.51	1.09
1925	40.7	0.9	27.5	49.3	62.1	65.3	194.7	128.4	165.6	124.1	47.7	13.2	919.5	41.6	138.9	554.0	185.1	0.87	194.74	76.63	61.93	0.81
1927	32	55	6.3	27.6	100.4	134.5	179.5	112.1	159.2	44.0	101.1	8.5	882.0	8.7	134.4	S85.3 378.1	153.7	3.25	179.50	73.50	65.06	0.89
1929	89	15.9	5.3	145.8	84.0	134.6	150.2	73.7	156.3	126.9	88.1	29.4	1019.1	24.8	235.1	514.8	244.4	5.33	156.29	84.92	58.29	0.69
1930	10.8	27.5	24	40.8	201.6	114.1	91.5	76.6	117.1	355.1	107.2	26.1	1179.9	38.3	253.9	399.2	488.5	10.84	355.09	98.33 82.10	98.40	1.00
1932	0.6	28.1	2.2	53.3	189.9	62.9	174.7	214.2	78.4	266.9	156.2	20.1	1247.5	28.7	245.4	530.2	443.2	0.58	266.93	103.95	91.73	0.88
1933	1.4	2.1	13.6	59.6 42.6	168.8	95.8	164.7	253.1 90.3	168.6	238.1	47.2	53.2 50	1265.9 825.4	3.5	241.9	682.1 344.0	338.5 319.2	1.39	253.08	105.50	90.03 68.87	0.85
1935	14.7	2.5	4.7	75.2	51.1	94.3	138.3	164.0	96.3	179.4	64.6	27.1	912.1	17.2	130.9	492.9	271.0	2.52	179.37	76.01	60.64	0.80
1936	1.0	25.6	45.7	28.9	115.2	137.9	147.7	89.7	158.3	102.1	92.2	18.0	990.7 981 1	26.6	189.8	533.5	240.9	1.03	158.27	82.56	55.84 58.42	0.68
1938	05	14.9	17.5	58.2	54.7	102.3	159.1	216.4	129.3	46.3	21.0	23.1	843.3	15.4	130.4	607.1	90.4	0.50	216.43	70.28	67.49	0.96
1939	13.9 0.6	1.6 0.3	21.5 6.7	94.9 83.0	73.7	91.5	128.8	147.3 118.6	116.6	280.8	145.5	1.3 33.3	1117.5	0.9	190.2 263.5	484.3	427.6	1.27	290.90 256.23	93.13 99.91	80.53 79.00	0.86
1941	9.1	2.1	0.4	64.8	102.3	120.7	139.5	137.1	150.8	111.9	97.7	71.7	1008.0	11.2	167.4	548.1	281.3	0.36	150.85	84.00	54.65	0.65
1942	65.6	8.4	5.4	75.0	104.4	72.4	139.4	64.4	96.6	291.0	40.7	4.5	943.5	74.0	231.6	439.7	376.1	4.54	290.96	93.45	83.33	0.74
1944	63	31.2	61.1	30.7	91.4	89.7	155.2	100.2	156.4	186.1	151.9	51.7	1111.9	37.5	183.2	501.6	389.6	6.33	186.06	92.66	58.79	0.63
1945	10.3	2.0	27.7	70.4	86.0	113.9	142.3	178.7	46.1	155.5	229.2	114.4	1290.7	4.5	133.8	409.3 595.3	499.1	1.95	229.20	107.56	70.77	0.66
1947	17.8	5.4	33.7	64.4	62.0 144.9	86.5	144.0	191.9 200.5	122.9	204.5	155	17.6	966.1	23.2	160.0	545.4	237.6	5.39	204.50	80.51	70.21	0.87
1949	1.1	12	1.9	68.8	125.6	80.0	175.4	142.5	92.3	213.4	26.2	0.4	929.0	2.4	196.3	490.2	240.1	0.45	213.44	77.42	74.37	0.96
1950	28	42.5	8.8 23.8	6.3	63.3 134.0	73.3	181.7	159.9	111.8	145.8	86.7 90.5	6.4 30	887.1 951.4	43.1	2574	526.8	238.9	0.53	181.73	73.93	64.41 59.51	0.87
1952	2.7	25.0	6.3	46.2	71.9	75.5	146.2	105.8	66.1	159.9	13.6	98.8	818.1	27.6	124.4	393.6	272.4	2.67	159.89	68.17	52.54	0.77
1953	22	11.2	1.9	110.3 56.9	73.2	121.9	245.3	125.6	126.9	304.6	29.6	4.6	1157.3	13.4	185.4	619.7 512.8	338.7	1.92	304.56	96.44 89.73	98.45 79.78	1.02
1955	9.7	03	12.1	79.3	184.9	106.0	71.1	81.2	153.4	180.9	67.3	39.1	985.4	10.0	276.3	411.7	287.3	0.34	184.93	82.11	63.97	0.78
1950	0.0	5.4	17.2	22.7	194.3	118.6	143.3	87.8	50.8	193.3	133.9	18.5	985.9	5.4	234.2	400.5	345.8	0.02	194.34	82.16	72.71	0.88
1958	69	3.4	24.9	72.2	169.7	91.1	179.2	172.3	112.2	123.8	107.0	6.7	1069.3	10.3	266.7	554.8	237.4	3.42	179.25	89.11 04.80	66.68	0.75
1960	12	0.8	23.3	68.9	97.7	64.1	193.5	90.9	111.7	131.9	150.1	3.8	937.9	2.0	189.9	460.2	285.8	0.80	193.50	78.16	63.08	0.81
1961	25.5	10.0 19.2	2.2 14.6		130.0	148.4	269.4 168.3	141.2	88.5 148.2	180.3	50.0 31.6	23.2 53.0	1126.4 1161.8	35.4	190.1	647.5 543.1	253.4 321.8	2.15	269.41 237.28	93.87 96.81	81.55	0.87
1963	21.8	3.8	16.7	62.5	66.1	672	143.0	121.6	115.5	184.1	53.7	65.0	921.1	25.5	145.3	447.3	302.9	3.78	184.14	76.76	54.33	0.71
1964	0.8	12	5.5	25.7 59.2	91.2 59.5	64.3	233.1	133.4	142.6 83.2	199.8	46.6	51.5 68.4	734.0	2.0	122.2	405.6	_304.U 197.4	0.80	133.42	95.51 61.17	42.99	0.89
1966	7.4	15	7.7	41.3	67.6	70.2	162.2	96.3	210.3	214.5	169.3	43.8	1092.0	8.9	116.5	539.0	427.7	1.52	214.50	91.00	78.82	0.87
1967	0.8	7.1	21.3	74.6	100.0	84.3	193.3	93.7 86.2	45.7	111.5	60.1	26.3	920.4	7.9	196.0	517.5	199.0	0.45	195.35	76.70	55.50 58.19	0.76
1969	0.8	0.8	4.5	49.7	110.9	54.1	153.3	168.7	61.0	184.5	99.7 00 2	62.3	950.1	1.6	165.1	437.0	346.5	0.76	184.52	79.18	64.67	0.82
1970	10.1	69	16.9	53.6	130.0	100.6	112.6	177.2	145.6	165.8	33.3	59.1	1011.6	17.0	200.5	536.0	258.1	6.87	177.24	84.30	62.10	0.74
1972	1.1	03	0.3	40.6	210.6	103.9	114.3	69.1 144.7	178.5	222.4	64.8	147.1	1153.1	1.5	251.5	465.9	434.2	0.33	222.41	96.09 82.18	80.34	0.84
1974	18	0.6	1.7	42.4	99.0	38.4	180.2	115.7	217.0	119.5	24.4	3.3	843.8	2.4	143.0	551.2	147.2	0.56	217.00	70.32	74.80	1.06
1975	2.6	1.7	22.2	26.4	126.0	139.2	176.8	192.5	188.2	97.3	66.1	5.4	1104.7	4.2	174.6	696.7	229.1	1.66	192.51	92.06	78.47	0.85
1977	1.0	11.4	10.9	69.6	149.9	102.8	158.9	109.2	159.3	302.5	190.4	1.5	1267.5	12.4	230.4	530.2	494.4	1.03	302.53	105.62	92.74	0.88
1978	2.1	89 46.1	6.0 7.9	46.4	116.6 63.8	119.0	178.0	134.6	210.2	140.7	181.9	64.4 11.2	1105.7	475	168.9	538.9 646.6	367.0	2.05	181.86	92.14 97.30	65.00 80.66	0.71
1980	1.0	0.3	21.3	62.4	123.3	130.1	189.5	69.7	113.7	129.8	107.2	4.8	953.0	1.3	207.0	503.0	241.7	0.30	189.52	79.42	62.40	0.79
1981 1982	29	1.1 0.3	31.0 6.8	35.4 32.2	123.7 94.9	869 89.0	132.6 90.6	164.0 94.6	211.3 67.4	202.0	61.8 104.7	21.9 6.2	1074.7 696.8	4.0	190.2 133.9	394.8 341.5	285.7	1.11 0.31	211.31 109.10	89.56 58.06	75.71 44.86	0.85
1983	13	0.3	1.5	12.9	115.9	129.4	128.7	162.3	151.3	123.3	49.1	109.0	985.0	1.6	130.2	571.8	281.4	0.32	162.31	82.08	63.82	0.78
1964	27.4	91.3	7.4	64.0	56.2	144.3	83.7	114.2	154.4	73.4	72.6	15.3	803.9	28.1	127.7	486.9	161.3	0.71	196.55	66.99	49.46	0.09
1986	26.7	17.3	8.3	29.0	88.4	108.8	93.0	134.5	160.8	139.7	99.2	14.8	920.4	44.0	125.7	497.0	253.7	8.31	160.77	76.70	54.87	0.72
1967	10	3.8	19.4	99.4	101.5	52.5	188.9	90.4 171.6	174.9	0.0 57.8	26.3	10.5	906.0	4.8	218.8	.560.4 587.8	94.6	1.05	188.92	75.50	70.53	0.79
1989	13	0.5	26.2	66.9 32.3	87.4	92.4	257.7	89.2	151.1	163.6	47.7	6.4 14.5	990.5 792.3	1.8	180.5	590.5 342.9	217.7	0.47	257.75	82.54	77.40	0.94
1991	9.8	1.1	2.8	67.8	86.7	194.0	159.1	111.0	1175	217.1	116.4	3.8	1087.0	10.8	157.4	581.6	337.3	1.06	217.07	90.59	75.98	0.84
1992	15	0.8	0.6	27.3	94.2 91.3	190.6	183.1	96.2 120.7	157.8	108.9	175.3	7.5	1043.8	2.3	122.1	627.8	291.7	0.62	190.62 238.82	86.99 84.91	77.16	0.89
1994	18.7	10.0	3.5	74.6	112.5	117.6	214.8	82.7	86.5	268.4	116.3	2.1	1107.9	28.7	190.7	501.6	396.9	2.12	268.40	92.32	83.28	0.90
1995	6.0 3.0	19	10.3 5.2	60.2 115.8	67.4	76.2	183.3	142.7 146.3	999.0 163.7	128.2 146.4	34.8	0.7 86.6	896.1	4.0	186.3	501.3 597.7	200.5	0.73	183.32 163.67	74.67 88.15	63.74	0.82
1997	4.6	0.6	16.2	46.8	63.5	869	158.7	127.7	127.2	219.4	200.5	50.3	1102.1	5.2	126.5	500.4	470.2	0.59	219.39	91.85	74.66	0.81
1998	1.7	92	2.4	74.4	145.4	962 603	190.9	79.3	72.9	345.9	110.8	84.8 18.6	1075.4	11.1	222.2	366.7	475.4	1.50	345.94	99.50 89.62	96.17	1.07
2000	78	40.0	2.3	64.2	72.3	95.7	95.5	246.7	158.8	162.8	70.8	42.9	1059.8	47.8	138.7	596.7	276.6	2.28	246.72	88.32	70.81	0.80
2001	32	19.8	4.2 5.9	213.4	139.5	105.8	51.4	73.1	35.9	266.3	37.1	3.0	762.0	23.0	166.4	266.2	306.4	2.99	256.26	63.50	76.70	1.21
2003	1.7	10.6	43.1	67.7 50.1	34.1	121.8	116.5	90.9	44.1	212.5	75.6 94.6	2.2	820.8 1132.5	12.3	144.9	373.3	290.3 295.8	1.67	212.48	68.40 94.38	61.09	0.89
2005	90	33	40.1	79.4	92.0	77.7	142.0	115.5	133.4	388.1	173.4	31.1	1285.0	12.3	211.5	468.6	592.6	3.28	388.11	107.08	103.51	097
2006	12.8	1.4	72.7	30.7 84.2	196.2	126.1	90.6 197.0	109.6	126.6	2161	142.2	2.9	1061.7	14.2	299.6	452.9 695 3	295.0 352.0	1.37	196.18 216.12	88.48 104 75	64.52 78.98	0.73
2006	33	19.7	121.4	43.8	60.3	83.7	154.9	175.6	85.4	232.3	112.7	7.6	1100.8	23.0	225.6	499.6	352.6	3.34	232.28	91.73	71.07	0.77
2009	2.8	12 16	17.8	41.5 84.0	118.2 90.3	61.5 79.7	228.1 125.6	108.1 128.9	134.1 97.4	68.7 156.1	144.7	24.5 37.6	951.0 1036.3	4.0	177.4	531.7 431.5	237.9 423.5	1.15	228.06 229.75	79.25 86.36	69.00 69.10	0.87
MIN	0.02	0.15	0.11	6.28	34.15	34.37	51.40	45.23	21.63	43.96	8.27	0.45	696.75	0.76	73.34	266.19	90.39 SC	0.02	109.10	58.06	42.94	0.60
MEAN	9.90	7.64	14.93	55.79	107.83	103.10	159.73	129.52	122.67	173.82	98.40	30.76	1014.09	17.53	178.56	515.02	302.97	1.09	214.96	84.51	70.54	0.84
SD	13.99	11.39	18.90	28.98	42.45	33.76	47.88	46.10	47.71	67.68	56.76	31.00	134.44	17.03	49.58	96.70	93.70	2.21	49.86	11.20		

 Table 17. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901

 - 2010 in the selected Cauvery river catchment areas

<u> </u>											Mah	anadi										. 1
YEAR	IAN	FEB	MAR	APR	MAY	ПЛИ	пп.	AUG	SEP	oct	NOV	DEC	ANN	JAN-	MAR-	JUN-	-1 XX	MIN	MAX	MEAN	SD	CV
1901	46.2	108.8	26.1	13.9	18.5	80.1	359.0	452.4	160.4	32.5	53	0.5	1303.6	FEB 155.0	MAY SS 6	SEP 1051.8	DEC 38.2	0.51	452.38	108.63	147.80	1.36
1902	1.7	3.6	2.4	33.3	8.6	46.5	427.2	305.4	189.4	10.3	42	93	1041.9	53	44.3	968.5	23.8	1.67	427.21	86.83	142.95	1.65
1903	9.0	14.6	3.5 28.5	3.6	44.8 58.8	395.2	330.6	404.0	221.4	76.4	05	0.9	1339.8	23.0	90.9	1079.1	77.7	0.46	403.99	119.27	142.90	1.28
1905	39.2	24.0	26.0	24.7	44.0	50.9	403.1	295.3	344.6	112	02	1.1	1264.2	63.2	94.6	1093.9	12.5	0.21	403.09	105.35	148.72	1.41
1908	2.6	27.3	44.2	60.9	5.5	279.0	240.0	496.5	192.6	2.5	9.1	25.2	1385.4	29.9	110.6	1208.1	36.8	2.53	496.50	115.45	155.58	1.35
1908	11.6	37.3	5.2	2.4	15.5	196.0	440.6	556.7	162.9	21.3	03	12	1451.2	48.9	232	1356.3	22.8	0.26	556.72	120.93	189.69	1.57
1909	7.3	1.4	2.9	28.8	10.3	237.5	336.2	453.8	234.1	107.7	10.0	0.8	1432.7	8.6	44.0	1261.5	118.6	0.20	453.75	119.39	157.19	1.33
1911	2.0	0.9	20.3	1.0	11.8	396.2	176.8	540.6	228.9	110.3	16.5	1.1	1506.6	29	33.2	1342.6	127.9	0.85	540.65	125.55	180.11	1.43
1913	1.5	66.8	21.0	32	31.1	241.7	334.1	317.7	120.6	50.2	5.6	12.1	1205.6	68.3	55.2	1014.1	67.9	1.50	334.14	100.46	125.41	1.25
1914	0.2 24.8	7.8	17.0	46.0	79.1	161.2 98.0	485.8	340.5	230.6	3.9	25.3	32	1375.6	8.0 53.7	142.1	1218.2	73	0.23	485.80	114.63	160.17	1.40
1916	0.2	19.8	2.9	10.0	16.8	359.8	280.6	390.0	186.8	130.0	29.5	0.7	1427.1	20.1	29.7	12172	160.2	0.21	390.00	118.93	148.94	1.25
1917	1.2	2.9	5.9	83	39.7	523.7	235.5	413.8	169.2	1.7	3.7	8.0	1430.3	17.3	64.4	1309.3	13.5	1.03	413.80	145.29	179.95	1.51
1919	84.6	51.6	33.3	15.2	39.1	408.0	393.0	552.3 340.0	146.1	89.4	17.3	1.4	1831.4	136.2	87.6	1499.5	108.1	1.36	552.30	152.62	188.01	1.23
1923	39.3	0.6	2.0	4.6	0.9	293.3	283.8	387.2	241.9	11.3	02	0.8	1265.8	40.0	7.4	1206.2	12.2	0.15	387.22	105.48	148.69	1.41
1922	21.3	0.8	2.3	11.7	10.7	184.6	419.2	274.5	334.1	17.5	24.1	1.1	1301.7	22.1	24.6	1212.3	42.7	0.82	419.16	108.47	152.89	1.41
1924	34.3	4.0	6.3	5.6	269	73.8	289.7	314.9	257.4	83.8	95.3	0.8	1192.9	38.3	38.8	935.9	179.9	0.81	314.93	99.41	118.45	1.19
1925	0.2	0.4 9.9	3.5 92.4	19.4 49.6	95.6	<u>531.3</u> 44.3	529.4 311.7	4.40.0 597.8	182.4 324.8	015 703	13.2	30	1672.2 1583.1	U.6 46.6	118.5	1473.2	73.5	0.24	529.40 597.79	131 92	187.99	1.35
1927	3.4	49.8	19.1	3.8	11.6	207.5	407.9	448.8 244 0	175.1	75.8	17.4	09	1421.0	53.3	34.4	1239.3	94.0	0.86	448.76	118.42	160.19	1.35
1928	20.6	15.7	2.4	7.0	5.2	181.5	613.5	447.5	179.8	95.2	0.0	33.0	1601.6	36.4	14.6	1422.4	128.3	0.04	613.47	133.46	199.79	1.50
1930 1931	0.4 8.6	2.3	8.3	36.9	7.2	185.2	449.9 293.2	209.0 510.0	216.1	26.7	93.0 56.2	4.6	1299.7 1348.5	2.7	52.4 33.2	1120.2	124.4	0.38	449.89 519.87	108.30	143.30	1.32
1932	0.3	20.2	4.7	99	19.4	116.8	527.1	290.2	267.7	54.7	42.0	10	1354.0	20.5	34.1	1201.8	97.6	0.32	527.12	112.84	165.22	1.46
1933 1934	20.9	82.0	13.2 3.5	20.1 6.0	107.0	317.7	422.7	432.3	250.9	39.5 55.7	63 83	5.1	1727.8	103.0	140.4	1433.6	50.9 65.9	5.12	432.32	143.99	166.96	1.16
1935	5.0	13.1	6.2	30.6	2.2	129.7	579.4	244.9	230.3	2.8	0.0	5.4	1249.8	18.2	39.0	1184.3	83	0.04	579.44	104.15	174.93	1.68
1936	0.2	30.1 55.6	25.2	80.5	13.4	248.5	405.8	402.5	257.5	69.3	0.6	1.0	1603.4	55.8	119.1	1357.6	94.2 70.9	0.21	463.79	147.84	164.27	1.25
1938	122	22.4	5.1	3.4	60.0	252.0	346.1	360.8	272.9	113.4	8.4	0.8	1457.6	34.6	68.5	1231.8	122.7	0.84	360.83	121.47	144.01	1.19
1939	0.2	21.0	32.5	20.3	38.0	249.4	412.4 544.9	379.1	77.4	539	1.0	20.9	1443.6	26.3	90.8	1250.8	75.7	0.83	544.91	120.30	176.35	1.30
1941 1942	26.5	10.0	18.9	42	28.8	268.2	248.0 494.4	261.3 416.2	135.3	63.7 19.2	16.3	09	1082.1	36.5	51.9 19.5	912.7 1344.6	81.0 23.3	0.92	268.18	90.18 119.81	108.18	1.20
1943	108.8	2.5	4.3	23.2	29.3	195.5	424.6	403.3	383.8	34.6	13	0.7	1612.1	111.4	56.8	1407.2	36.7	0.75	424.63	134.34	172.26	1.28
1944	21.6	2.6	96.4 1.5	21.7 49.3	9.1	94.5	563.4 419.0	460.3	188.8 388.7	127.9 66.5	4.1	0.8	1666.0	999.0 30.8	127.2 60.3	1307.0	132.8	0.83	563.36 419.01	138.84	184.70	1.33
1946	0.1	6.0	3.1	27.1	21.1	298.2	350.2	494.4	205.3	54.0	28.9	1.1	1489.6	6.1	51.2	1348.2	84.1	0.13	494.45	124.14	170.10	1.37
1948	23.4	8.9	9.1	7.8	10.4	214.8	370.0	407.9	231.3	39.6	63.6	0.6	1387.4	32.2	273	1224.1	103.8	0.57	407.94	115.62	150.47	1.30
1949 1950	0.6	3.5	4.3 68.1	78	57.6	225.7	385.6 443.2	420.8	272.8	133.9	0.1 18.0	16	1459.4 1343.7	4.1	69.6 74.5	1250.1	135.6 36.6	0.09	420.75	121.62	157.60	1.30
1951	4.7	2.9	104.1	53.4	30.2	131.6	307.5	414.2	130.0	97.5	58	0.7	1282.5	7.6	187.7	983.3	103.9	0.67	414.18	106.88	130.54	1.22
1952	27.6	7.2	0.6	13.6	7.4	142.1	418.4	474.4	193.2	43.1	4.3	0.8	1365.8	34.8	21.5	1200.8	47.8	0.69	418.42	112.14	173.36	1.41
1954	3.1	2.1	4.9	9.6	5.3	128.6	270.6	318.2	358.9	18.2	12	68	1127.5	52	19.7	1076.3	26.2	1.17	358.91	93.95	139.63	1.49
1955	2.3	20.8	6.6	0.5	74.7	301.5	452.3	389.8	298.0	71.1	7.8	33	1550.6	23.0	82.1	1363.2	82.2	0.27	452.31	129.21	166.92	1.20
1957 1958	20.4	16.6	46.0	10.6	16.6	103.1 97.6	410.8	387.2	98.7 328.0	19.8	12	0.1	1131.1 1519.1	36.9	73.2	9999.8 1293.9	21.2	0.10	410.84	94.26	146.49	1.55
1959	29.0	6.4	0.8	52	10.3	1.58.9	375.8	420.7	362.2	62.0	2.6	0.8	1434.6	35.4	16.2	1317.5	65.4	0.76	420.70	119.55	167.33	1.40
1980	4.3	3.4 60.5	42.2	9.0 13.9	8.6	194.6 369.4	463.5	451.0	444.9	108.7	3.0 8.1	08	1454.2	21.0 64.8	39.8 35.4	1280.9	112.5	0.81	463.52	121.18	169.77 210.03	1.40
1962	3.8	13.4	11.9	16.0	23.9	156.1	364.5	293.2	194.2	265	2.6	24.5	1130.6	17.2	51.8	1008.0	53.6	2.56	364.51	94.22	126.80	1.35
1963	1.0	25.6	1.5	10.2	8.4	241.1	412.6	510.2	191.2	93.3	52	0.5	1501.0	27.3	20.1	1355.0	98.6	0.19	510.18	125.08	177.61	1.32
1965 1966	8.7	5.0	37.2	15.2 16.0	11.9	120.7	296.4 321.7	181.3 244.4	198.5 110.5	8.2 34.3	2.0	0.1	885.0 1115.6	13.6 23.6	64.3 43.9	796.9 970.3	10.3	0.08	296.41 321.74	73.75	100.61	1.36
1967	7.3	1.6	99.5	14.9	16.2	209.0	391.3	522.8	204.2	6.2	13	40.1	1514.4	89	130.5	1327.3	47.6	1.28	522.76	126.20	173.93	1.38
1968	28.0	3.6	14.5	13.8	48.6	152.7	419.4	300.3	192.8	61.2 17.6	6.4	3.5	1191.0	6.4	35.6	1045.0	27.5	0.62	419.37	99.25	129.63	1.51
1970	10.9	9.7	47.0	11.4 41 s	26.6	299.0	490.8	403.4	229.0	22.0	33	0.1	1553.2	20.6	85.0	1422.3	25.4	0.13	490.79	129.44	177.92	1.37
1972	1.1	20.0	9.0 4.4	21.4	3.9	107.9	376.0	404.7	260.5	50.5	38.3	0.7	1290.4	22.1	29.6	1149.2	89.5	0.69	404.73	107.53	151.03	1.40
1973 1974	3.8	19.5	10.6	3.7	8.8	101.2	485.1	425.0	301.2 85.8	187.9 77.8	4.7	0.1	1551.7 970.5	23.3	23.1	1312.5 845.3	192.8 87.8	0.12	485.13	129.31 80.87	178.94	1.38
1975	9.2	21.6	16.8	23	3.0	190.0	456.8	409.6	218.6	125.8	1.7	00	1455.4	30.8	22.0	1275.1	127.5	0.04	456.76	121 29	165.28	1.36
1976	2.5	9.1	4.7 5.4	23.1	39.6	222.4	404.5 376.4	420.8	271.7	11.0	48.4	1.4	1265.1	13.5	44.8 68.1	1185.2	21.6 69.3	0.10	404.47 387.92	105.43	167.77	1.39
1978	9.5	23.0	38.7	14.2	4.8	241.7	401.7	460.3	178.6	21.1	17.2	22.1	1433.0 064 1	32.5	57.7	1282.3 839.4	60.5 49 °	4.75	460.33	119.41	164.05	1.37
1930	9.6	6.7	14.9	14.4	16.9	327.6	488.7	276.4	436.9	38.0	0.4	32	1633.6	16.3	46.1	1529.6	41.6	0.45	488.74	136.14	189.10	1.20
1981 1982	31.8 28.4	8.8 31.6	38.9 54.2	10.8	29.2 34.0	129.4	329.1 251.4	436.3 588.0	281.2 113.6	21.0 61.4	05	33	1320.3 1327.5	40.6 59.9	79.0	1175.9	24.8 65.3	0.49	436.25	110.02	151.71	1.38
1983	1.1	36.5	6.1	30.2	31.8	138.5	333.4	421.1	344.2	64.8	10	62	1414.9	37.5	68.1	1237.3	71.9	0.98	421.08	11791	155.77	1.32
1984 1985	43.3	29.4	<u>3.0</u>	<u> </u>	18.0	303.6 141.8	418.9	404.5	337.3	42.1 82.8	0.4	0.0	1404.3	72.8	30.0	1234.4	42.5 83.2	0.03	418.86	117.03	160.79	1.37
1986	24.4	58.7	15.5	28.3	21.3	437.6	416.8	299.1	112.0	56.7	26.8	24.6	1521.9	83.1	65.1	1265.5	108.2	15.50	437.61	126.82	160.76	1.27
1967	2.1	45.4	19.0	20.5	13.6	210.2	290.6	312.4	192.6	27.1	47.4	0.1	1147.5	47.4	52.9	952.0	27.5	0.07	312.37	95.61	120.60	1.30
1989 1990	1.1	4.8	12.9	1.7	122	294.2	336.4 401.3	338.6	200.0	17.6	15	19.8	1290.8	58 34 5	269	1219.2	38.9 236.8	1.08	396.35 401.20	107.56	151.57	1.41
1991	16.7	7.5	24.1	7.0	9.4	123.8	432.9	450.8	138.9	47.7	18.3	9.7	1296.8	24.3	40.5	1146.4	75.7	6.98	450.82	107.23	162.64	1.52
1992 1993	2.3	8.4 10.4	5.5	17.3	22.5	127.6	<i>31</i> 8.5 414.9	419.9 348.5	192.6 302.5	17.5	8.6	0.0	1200.6	10.7	45.2	1118.6	26.1 55.4	0.01	419.91	100.05	151.99	1.52
1994	5.3	20.0	1.9	16.3	20.3	421.3	626.7	490.9	252.2	66.4	6.4	0.0	1927.7	25.2	38.5	1791.2	72.8	0.01	626.74	160.65	227.80	1.42

 Table 18. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901

 - 2010 in the selected Mahanadi river catchment areas

DOI: 10.9790/2402-1105035173

69.0 1133 36.6 964 94.6 1267

YEAR	JAN	FEB	MAR APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	God: DEC	ANN	JAN-FEB	MAR-MAY	JUN-SEP	OCTIDEC	MIN	MAX	MEAN SD CV
1901 1902	21.1	39.8 0.4	24.3 34.8 2.1 25.5	24.8 9.5	121.2 59.0	292.5 250.6	349 9 226.7	110.4 223.8	52.8 38.3	8.5 32.3	0.4 24.3	1080.7 894.0	60.9 2.0	84.0 37.1	874.1 760.1	61.7 94.9	0.37	349.91 250.62	90.06 114.77 1.27 74.50 97.69 1.31
1903 1904	5.0 0.8	4.5	1.4 8.6 13.2 3.0	46.8	130.9 172.7	423.6 206.8	326.2 174.6	197.9 223.3	135.5 85.2	16.0 0.2	4.0 1.4	1300.3 919.6	9.5 3.6	56.8 51.9	1078.6 777.4	155.5 86.8	1.38	423.62 223.28	108.36 142.13 1.31 76.64 91.05 1.19
1905	3.9	8.7	18.3 28.7	21.1	95.6	225.9	255.4	284.6	15.5	1.0	0.5	959.1	12.6	68.1	861.5	16.9 54 4	0.46	284.60	79.93 109.41 1.37
1900	2.1	24.7	10.8 5.0	3.8	199.5	265.9	363.4	88.9	4.3	13.4	7.1	1046.9	26.7	77.6	917.7	24.8	2.09	363.39	87.24 122.16 1.40
1908	2.5	9.8 5.0	9.0 7.8 4.8 54.5	20.6	169.2	331.6	371.1	290.8	9.8	0.5	41.4	1213.3	20.1	27.9 79.9	896.1	12.3 51.8	0.46	371.10	86.28 117.10 1.36
1910 1911	0.6	0.3	1.1 11.4 5.3 5.6	17.6	266.3	283.6 222.7	274.1 294.3	330.5 180.6	102.3	48.9	0.4	1337.1 1013.4	0.9	30.1 24.3	1154.5 902.7	151.6 79.2	0.27	330.50 294.31	111.42 134.85 1.21 84.45 108.08 1.28
1912	1.4	41.3	1.2 17.8	18.9	56.4	373.2	335.2 225.0	141.8	20.1	23.7	0.7	1031.7	42.7	38.0 44.4	906.6	44.5	0.67	373.20	85.98 131.28 1.53 83.85 114.40 1.36
1913	0.1	7.6	10.4 38.7	28.1	277.8	357.4	268.4	296.6	10.9	8.0	10.2	1314.3	7.8	77.2	1200.2	29.1	0.13	357.40	109.52 142.61 1.30
1915	26.3	9.6	1.5 113	30.4	215.6	236.4 327.8	265.5	236.4	140.0	48.9	0.6	1218.2 1325.6	39.9 9.8	97.3 43.2	935.1 1083.2	14 5.9 189.5	0.18	263.48 327.84	101.52 103.17 1.02 110.46 126.71 1.15
1917 1918	0.4 9.6	60.4 1.9	17.2 21.7 7.4 7.4	49.7 93.5	240.0	323.3 183.2	234.5	352.9 101.3	156.6	14.7 10.0	0.6	1471.9 866.6	60.7 11.6	88.6 108.3	1150.7 712.3	171.8	0.37	352.89 218.43	122.66 132.36 1.08 72.22 86.46 1.20
1919	37.1	33.9	19.7 16.2 5.8 18.2	30.3	265.9	274.2	263.0 144.8	164.7	102.7	32.1	5.3	124 5.0 644 8	71.0	66.2 37.7	967.8 \$71.9	140.1	5.31	274.20	103.75 108.16 1.04 \$3.73 71.37 1.33
1921	15.3	0.3	1.2 13.5	1.8	243.8	279.7	255.7	215.9	35.8	9.9	0.5	1073.3	15.6	16.4	995.1	46.2	0.30	279.67	89.44 118.88 1.33
1922	32.2	1.8	1.1 9.8 27.8 12.3	5.1	30.8	318.7	154.5	269.3	31.5	6.9	0.5	940.9	34.0	32.4 45.2	943.0 841.3	42.9	1.23	318.70	92.89 113.86 1.23 78.41 119.80 1.53
1924	16.6	0.7	4.6 12.4	10.4	52.1 157.5	251.0 319.5	249.6 341.3	260.8 123.3	893 57.1	54.7 44.1	4.4	1006.7 1129.0	17.3 0.3	27.5 82.4	813 5 941 5	148.3 104.7	0.70	260.79 341.26	83.89 105.81 1.26 94.09 121.23 1.29
1926	49.7	4.6	28.3 25.7	38.7	563	283.8	401.1	168.7	37.6	2.0	1.1	1097.6	54.3	92.7 31.0	909.9 900.3	40.7	1.10	401.08	91.47 127.75 1.40
1928	0.5	25.6	10.4 7.2	9.8	163.7	324.6	205.7	241.7	110.8	0.6	8.9	1109.6	26.1	27.4	935.7	120.3	0.52	324.60	92.47 114.25 1.24
1929	0.1	43.0 5.2	8.2 25.9	8.1	208.6	252.5	185.9	235.2	65.9	51.2	2.1	1011.1	47.0 5.3	42.2	872.6	119.2	0.14	252.55	86.61 100.08 1.16
1931 1932	2.5	3.8	9.6 12.4 6.9 13.5	13.5	132.1 126.2	355.3 439.2	334.1 211.6	240.9	207.3	48.8	4.9	1365.3 1125.0	6.3 21.2	35.6 43.7	1062.4 978.3	261.0 81.8	2.47	355.29	113.78 136.13 1.20 93.75 132.50 1.41
1933	6.4	26.0	10.3 22.9	80.6	256.8	316.7	305.8 359.4	294.0	88.1 36.6	12.9	21.6	1442.2	32.5	113.8	1173.3	122.5	6.45	316.69	120.18 131.12 1.09
1935	9.3	3.0	1.6 27.9	4.9	148.6	408.9	199.0	247.7	45.2	1.1	2.1	1099.4	12.3	34.4	1004.3	48.4	1.07	408.94	91.62 132.29 1.44
1936	7.4	36.0	19.1 9.5 34.1 97.0	49.6	295.9	417.5	293.8	192.0	61.1 97.2	63.3 0.4	3.6 8.0	1373.6	66.3 36.1	78.2 137.1	918.9	132.0 105.7	0.16	315.38	99.82 122.10 1.22
1938 1939	2.5	22.1	18 9 13 4 26 2 15 5	38.9	288.2 113.3	377.5 249.4	284.6 311.9	222.0	140.1 80.8	11.7	1.0	1420.8 929.3	24.5 3.9	71.2 44.5	1172.3 787.1	152.7 93.8	0.96	377.51 311.90	118.40 138.15 1.17 77.44 104.72 1.35
1940	0.3	6.6 8.4	12.3 22.2 10.3 5.4	46.6	221.0	436.5	326.6 200.0	87.7	73.9 34.1	19.4	10.9	1263.8	6.9 19.0	81.1	1071.7	104.1	0.28	436.50	105.31 144.42 1.37 67.15 83.23 1.24
1942	2.1	43.5	1.0 24.1	17.1	191.4	434.3	356.4	154.1	19.4	4.8	20.6	1268.9	45.6	42.2	1136.2	44.9	0.97	434.26	105.74 149.37 1.41
1943	33.7 4.0	1.1 38.0	1.9 17.1 74.5 9.5	12.3	190.2	425.0	279.6	287.5	100.7	3.4	0.7	1140.7 1277.4	34.8 42.0	96.3	944.7	104.8	0.68	425.03	95.06 112.15 1.18 106.45 133.92 1.26
1945 1946	12.7	0.4	0.2 36.3	10.6	163.5	381.1 339.2	296.8 295.8	268.1 132.9	56.1 22.2	5.9 77.1	2.5	1234.2 1175.2	13.1 13.9	47.1 60.6	1109.5 993.2	64.5 107.5	0.25	381.11 339.24	102.85 138.09 1.34 97.93 122.27 1.25
1947	26.5	18.1	12.4 11.5 7.8 18.4	12.7	110.0	390.4 317.9	363.6	237.4 240.4	43.4	8.0	17.3	1251.3	44.6	36.6	1101.4 944.5	68.7	8.02	390.39 317.87	104.27 143.43 1.38 97.11 113.19 1.17
1949	1.2	2.4	1.8 13.8	50.5	192.7	336.7	245.2	327.5	141.0	1.3	0.8	1314.8	3.6	66.2	1102.0	143.1	0.79	336.70	109.57 133.63 1.22
1950	2.3	23.4 0.8	44.1 22.1	28.3	104.1	354.0	272.6	187.9	83.5	9.2	4.3 0.8	924.5	20.8 3.1	30.8 94.6	814.1 902.5	47.9 93.6	0.40	363.08	91.15 117.77 1.29
19.52	0.3	14.3	5.6 15.6 0.3 25.5	18.8	100.7 192.8	266.1 269.9	224 9 402.7	184.6 209.7	66.7 101.6	0.4 2.3	5.3 0.4	903.4 1219.8	14.6 9.2	40.1 31.2	776.3	72.4	0.26	266.08 402.67	75.28 96.72 1.28 101.65 135.91 1.34
19.54	0.5	0.4	13.4 11.0 3.9 15.3	14.1	133.3	360.4	256.5	298.1	26.1	0.5	4.3	1118.6	0.8	38.5	1048.3	30.9 172.5	0.36	360.40	93.22 134.59 1.44 115.94 141.94 1.22
1956	1.3	2.8	1.6 8.2	70.8	220.2	439.8	221.6	210.5	84.7	58.9	3.7	1324.0	4.1	80.6	1092.1	147.2	1.32	439.76	110.33 136 50 1.24
19.58	3.1	4.1	9.0 23.7	19.5	95.4	377.0	389.9	186.9	96.6	37.2	0.3	1242.6	7.1	52.2	1049.1	134.1	0.34	389.85	103.55 141.82 1.37
1959	8.7	1.4 0.2	0.2 9.6 26.2 8.1	26.5	204.6	386.4	375.0	330.3	91.5 84.0	7.0	2.1	1424.9 1052.8	10.1	28.3 60.8	881.5	97.4 93.1	0.23	386.37	87.73 105.34 1.20
1961	2.2	10.1	5.8 11.8 8.2 39.7	34.2 33.2	169.4 88.3	383.4 336.4	328.6	248.6	162.8	12.2 30.1	3.0 49.9	1372.1 1185.0	12.3	51.8 81.1	1130.0 972.7	178.0 120.5	2.21	383.44 336.42	114.34 140.36 1.23 98.75 121.34 1.23
1963	0.1	6.3	11.7 32.5 5.2 6.3	20.5	205.5	253.8 256.4	405.4	147.5	110.3	2.0	0.1	1195.5	6.4	64.6 17.0	1012.2	112.4	0.07	405.36	99.63 130.54 1.31 89.35 123.97 1.39
1965	9.6	2.3	7.9 18.6	10.5	125.4	314.1	194.1	156.9	9.1	1.0	4.4	854.1	12.0	37.0	790.6	14.5	0.99	314.14	71.18 102.98 1.45
1966	20.7	1.0	6.4 12.0 57.0 12.6	6.0	191.2	355.1	262.2	144.2	20.9	2.5	20.7	1017.9	21.7	39.3 75.6	955.5	78.4 100.9	1.23	357.89	94.56 119.53 1.26
1968 1969	13.4 1.4	22.0 0.4	32.7 26.1 2.8 7.1	9.0 39.3	106.6	290.3 379.1	151.0 226.3	231.8 288.9	69.0 28.9	14.0 38.8	2.0	967.8 1147.1	35.4 1.8	67.8 49.2	779.7 1015.8	85.0 80.2	1.97	290.33 379.05	80.65 96.09 1.19 95.59 130.59 1.37
1970 1971	11.0 3.2	2.1	18.0 17.2 17.1 34.3	353	256.4	235.2	430.0	203.5 160.0	27.6	0.4	0.1	1236.8 1037.6	13.1 17.9	70.5 103.1	1125.1 785.3	28.1 131.3	80.0 80.0	429.97	103.07 142.27 1.38 86.47 90.43 1.05
1972	0.2	6.6	1.5 153	7.6	138.5	251.5	226.0	129.2	39.9	42.1	1.5	859.9	6.8	24.4	745.2	83.4 204.0	0.23	251.51	71.66 91.59 1.28
1974	0.2	4.9	3.3 12.2	37.2	146.8	223.3	241.1	126.4	186.0	10.0	0.1	991.4	5.1	52.8	737.6	196.0	0.03	241.09	82.62 95.28 1.15
1975	6.3 1.3	18.3	12.3 7.0 6.7 24.6	17.7	237.5	453.9	298.4 295.0	330.1	136.6 9.0	3.0	0.1	1385.0	24.6	37.1 48.1	1183.6	139.6 55.3	0.07	330.09 453.87	93.04 143.85 1.55
1977	0.3	4.9	8.2 29.5 16.3 23.0	36.1	152.0	308.0 393.6	295.8 372.8	154.0 122.8	46.0 38.0	104.9	5.0	1144.8	5.2	73.8 54.9	909 9 11 18.8	155.9 82.8	0.29	308.02 393.56	95.40 110.95 1.16 108.11 143.30 1.33
1979	20.8 3 d	39.8 3.9	3.2 9.6	27.5	185.4	249.1	267.7	223.0	27.9	50.1 3.7	3.6	1107.8	60.6	40.4	925.2	81.7	3.24	267.67	92.32 105.19 1.14
1981	20.2	2.3	287 125	23.7	154.9	302.1	317.6	299.7	40.5	3.1	5.6	1210.9	22.5	64.8	1074.3	49.2	2.31	317.56	
1982	0.5	6./ 11.9	9.5 14.0 4.7 4.9	24 2 21.4	165.5	346.6	399.7	357.3	116.2	2.8	6.3	1437.8	12.4	47.4	1269.1	91.8 125.2	0.08	399.67	119.82 158.65 1.32
1984 1985	14.7	18.1	3.2 21.6 4.7 12.9	13.0	119.5	327.3 290.7	214.1 213.7	130.4 120.4	70. <u>4</u> 124.3	2.9 2.4	0.2	935.4 1012.5	32.8 24.7	37.7 33.5	7913 826.1	73.5 128.2	0.16	327.28 290.73	77.95 103.35 1.33 84.38 102.77 1.22
1986 1987	19.3 14.6	47.1	6.9 19.1 18.3 11.8	13.1 30.0	206.1	327.5	357.2	110.6	31.7 96.4	23.1	29.9 5 0	1191.7 1000 7	66.4 25.6	39.1 60.1	1001.5	84.7 167 9	6.90	357.21	99.31 126.80 1.28 83.39 95.75 1.15
1988	1.3	10.4	5.8 25.2	14.6	173.4	487.2	298.9	305.5	51.1	7.5	2.7	1383.6	11.7	45.6	1265.0	61.3	1.30	487.21	115.30 163.56 1.42 99.04 132.53 1.30
1989	3.6	1.0	+1.4 4.6 23.7 7.1	13.6	251.9	302.6	471.5	167.2	182.1	9.8	3.2	1634.6	22.1	217.2	1094.0	52.9 195.2	3.24	471.51	136.22 152.30 1.12
1991 1992	7.9	3.0	10.6 17.0	14.0	193.0 174.2	358.0 254.3	206 2 337 4	101.2	34.2 41.7	28.0 31.7	0.6	973.8 996.1	10.8	41.6	858.4 892.8	62.9 73.4	0.63	357.98 337.43	81.15 113.53 1.40 83.01 114.94 1.38
1993	0.2	4.0	14.3 14.0 1.1 23.5	15.5	117.3	379.8	211.5	195.8	111.9	3.2 18.4	14.5	1081.9	4.2	43.8 46.0	904.4 10.95.7	129.6 107.1	0.18	379.75	90.16 119.44 1.32
1995	45.0	4.6	43.2 16.2	50.4	158.5	351.4	182.7	202.2	153.3	3.9	0.4	1212.0	49.7	109.8	894 9	157.6	0.41	351.43	101.00 109.02 1.08
1996	17.3	0.2 2.2	10.8 36.2	113	93.1	301.2	200 5	180.4	90.4 73.8	75.1	65.0	1031.9	11.4	59.9 58.3	804.3	213.9	2.25	301.18	91.34 96.16 1.05
1998 1999	9.9 0.3	16.9 15.0	10 9 12 3 2.0 3.4	19.8 47.9	162.9 212.6	304.8 278.1	260.1 308.1	263.6 264.7	120.9 88.9	57.3	0.0	1239.5 1222.8	26.8 15.3	43.0 53.3	991.5 1063.6	178.2 90.7	0.04	304.83 308.14	103.29 115.80 1.12 101.90 125.56 1.23
2000	0.2	24.8	2.5 9.4 22.6 39.2	39.1 24.6	231.1 176.0	328.2 221.9	332.3 275.1	90.0 145.3	26.7 125.7	1.1	0.8	1086.2 1048.2	25.0 3.7	50.9 86.5	981.6 818.3	28.6 139.7	0.19	332.29	90.51 129.44 1.43 87.35 97.30 1.11
2002	19.7	7.0	5.5 16.0	25.8	213.2	163.5	344.2 308.4	114.2	41.1	1.3	0.1	951.6	26.7	47.2	835.1	42.6	0.10	344.22	79.30 109.27 1.38
2004	29.2	10.1	4.8 14.9	23.2	131.3	320.2	213.6	185.8	58.4	6.1	0.0	997.7	39.4	42.8	850.9	64.6	0.05	320.16	83.14 105.37 1.27
2005	45.8 0.1	5.5	11 2 13 3 55 2 35 7	53.1	160.4	421.4 351.0	434.6 354.5	523.0 301.7	142.9 44.0	1.0 38.5	0.0	1373.0	49.1	42.4 144.0	1137.4	146.1 82.5	0.04	441.43	114.39 145.76 1.25 112.83 138.73 1.23
2007 2008	0.1	7.3	4.3 11.7 73.5 8.0	11.4 8.3	219.0	272.0	291.5 291.0	242.6 258.0	29.5 25.6	4.5	0.6	1094.5 1129.8	7.4	27.4 89.8	1025.0 992.9	34.6 32.7	0.09	291.49 290.98	91.21 123.27 1.35 94.15 119.59 1.27
2009	1.1	1.7	7.8 6.5	34.9	104.9	354.0	250.2	150.3	51.4	61.5	1.2	1025.3	2.7	49.1	859.4	114.1	1.05	354.04	85.44 113.48 1.33
MIN	0.09	0.22	0.23 2.73	1.76	30.81	163.51	144.82	82.52	4.28	0.14	0.04	644.79	0.34	16.42	571.94	12 33	0.04	403.54	53.73 71.37 1.02
MAX	49.66	60.37 11.33	/4.48 96.96 13.11 18.11	186.41	312.15 168.92	487.21 321.37	4/1.51 280.13	357.32 201.99	207.31	116.22	8U.64 6.84	1634.61	71.00	217.22 55.68	972.42	261.03 98.07	14.33	487.21 342.34	136.22 163.56 1.55 95.48 122.08 1.28
SD CV	10.86	13.19	14.84 13.14 1.13 0.73	22.81 0.93	58.24 0.34	67.17 0.21	69.60 0.25	68.55 0.34	47.91 0.68	24.51 1.18	12.52 1.83	167.37 0.15	16.85 0.86	29.81 0.54	142.32 0.15	51.08 0.52	2.22	59.78 0.17	13.95 0.15

Table 19. A statement of total monthly precipitation [mm] and selected statistics for the long-term period 1901 - 2010 in the Godavari river area

 Table 20. A statement of periodicity values (inverses of predominating frequencies) for mean monthly precipitation sequences in the analysed long-term period 1901–2010 in the selected catchment areas in India

[<u> </u>		1	1	f											c	
Analysed			-	N	4onths	or the	calenda	r year	-		-			SI	atistics of	I	-
acqueres profile	'T'	'II'	'III'	TV'	'V'	'VI'	'VII'	'VIII'	'IX'	'X'	'XI'	'XII'	MIN	MAX	MEAN	SD	CV
sequence prome									[year	s]							
BRAHMAPUTRA	4.54	4.36	2.48	109.00	2.66	4.19	36.33	54.50	54.50	8.38	2.02	3.11	2.02	109.00	109.00	109.00	4.04
INDUS	3.76	13.63	7.79	5.19	7.79	3.89	2.42	2.32	4.04	13.63	2.10	4.74	2.10	21.80	2.32	2.79	3.63
GANGES	12.11	4.19	2.53	18.17	7.27	2.48	2.14	3.63	7.27	13.63	2.60	6.06	54.50	6.41	2.32	2.73	21.80
MAHI	36.33	12.11	3.89	2.73	4.36	21.80	2.42	3.11	3.63	13.63	3.03	2.10	2.79	3.52	3.52	3.52	2.22
NARMADA	12.11	36.33	6.06	2.27	3.76	27.25	2.42	2.42	5.45	13.63	10.90	2.14	3.52	54.50	2.32	109.00	5.45
TAPTI	21.80	12.11	2.10	2.48	4.74	2.66	2.42	4.74	6.41	13.63	9.91	18.17	3.52	54.50	15.57	54.50	21.80
DAMODAR	2.22	2.02	6.81	3.11	7.27	2.48	54.50	27.25	2.14	13.63	2.02	54.50	4.19	54.50	54.50	3.03	3.03
BRAHMANI	3.41	3.41	6.41	2.27	4.74	2.48	2.53	3.21	2.42	13.63	9.08	2.18	109.00	3.63	3.21	10.90	3.03
KRISHNA	4.95	3.89	2.66	2.02	2.73	2.22	5.45	7.79	2.14	9.91	15.57	3.11	6.41	15.57	15.57	15.57	3.76
PENNER	109.00	2.66	21.80	2.66	3.03	4.95	3.11	2.48	3.63	9.91	2.37	3.89	6.81	2.66	2.87	2.66	4.95
CAUVERY	109.00	2.22	2.66	54.50	3.52	2.06	4.95	2.37	2.14	54.50	15.57	4.95	2.66	2.66	7.27	2.66	3.52
MAHANADI	3.41	3.52	3.41	2.27	4.74	4.74	2.53	2.95	2.32	2.14	54.50	2.73	4.54	2.95	10.90	3.41	2.95
GODAVARI	2.27	2.06	2.66	2.53	7.27	2.66	3.11	2.14	6.41	13.63	2.37	3.76	3.89	2.73	2.14	2.66	3.76
Table 21 Values of	Enaram	ators of	f tha liv	agar tro	nd in	month	lu proc	initatio	nina	colond	arvoar	in the	analyco	d long t	orm por	ind 1001	1 2010

able 21. Values of parameters of the linear trend in monthly precipitation in a calendar year in the analysed long-term period 1901–2010

			in	the se	electe	d riveı	r catch	ment	areas	in Ind	ia							
		1				Mont	hs of the	calenda	r year						S	Statistics of	f	
	Units	Т	ΊΙ	'III'	'IV'	١V	'VI'	'VII'	'VIII'	'IX'	'X'	'XI'	'IIX'	MIN	MAX	MEAN	SD	CV
						BRA	HMAPU	TRA							1			
Slope value, a		-0.057	-0.083	-0.075	-0.221	0.166	-0.229	-0.234	-0.800	-0.120	-0.140	-0.075	-0.021	0.001	-1.242	-0.157	-0.279	-0.001
Lower limit at a 95% confidence level	[mm/year]	-0.120	-0.170	-0.252	-0.464	-0.180	-0.662	-0.758	-1.336	-0.478	-0.383	-0.167	-0.075	-0.020	-1.646	-0.252	-0.390	-0.002
Opper limit at a 95% confidence level	L	0.006	0.004	0.102	0.021	0.512		0.290	-0.264	0.238	0.104	0.017	0.033	0.023	-0.837	-0.063	-0.168	-0.001
Siona valua	1	1		-			TINDO2						-					
a a	8	-0.030	0.058	-0.029	-0.010	0.013	0.086	0.084	-0.036	-0.015	0.031	0.027	-0.018	0.011	-0.019	0.013	-0.015	-0.001
Lower limit at a 95% confidence level	[mm/year]	-0.134	-0.056	-0.158	-0.095	-0.054	-0.004	-0.099	-0.218	-0.172	-0.039	-0.018	-0.100	-0.008	-0.187	-0.024	-0.061	-0.001
Upper limit at a 95% confidence level		0.074	0.171	0.099	0.075	0.080	0.176	0.268	0.146	0.142	0.102	0.072	0.063	0.031	0.150	0.051	0.030	0.000
						. (JANGES	3										
Slope value, a		-0.005	-0.024	-0.033	-0.003	0.027	-0.005	-0.060	-0.314	0.025	0.034	-0.026	-0.018	-0.009	-0.245	-0.033	-0.079	0.000
Lower limit at a 95% confidence level	[mm/year]	-0.087	-0.118	-0.107	-0.067	-0.067	-0.329	-0.407	-0.597	-0.306	-0.177	-0.092	-0.077	-0.024	-0.462	-0.097	-0.155	-0.001
Upper limit at a 95% confidence level		0.078	0.070	0.041	0.062	0.122	0.319	0.287	-0.031	0.356	0.245	0.041	0.042	0.007	-0.029	0.031	-0.003	0.000
ct. 1		0.000	0.012	0.014	0.017	0.075	MAHI	0.005	0.500	0.100	0.000	0.000	0.014	0.000	0.017	0.070	0.000	0.001
Slope Value, a	[mms/mms]	-0.008	-0.013	-0.014	0.017	-0.065	-0.034	0.095	0.502	0.122	0.022	0.080	0.016	0.000	-0.017	0.060	0.033	-0.001
Lower limit at a 95% confidence level	[IIIIIVyear]	-0.038	-0.032	-0.049	-0.004	-0.151	-0.417	-0.612	-0.200	-0.363	-0.194	-0.040	-0.018	-0.001	-0.700	-0.034	-0.104	-0.002
opper filling at a 95% confidence level	<u> </u>	0.022	0.007	0.021	0.036	0.021 N	ARMAD	Δ	1.203	0.000	0.230	0.201	0.049	0.000	0.072	0.174	0.231	0.000
Slope value, a	r	-0.019	-0.022	-0.006	-0.032	-0.003	0.118	0.087	0.249	0.160	0.004	-0.017	0.004	0.003	0.306	0.044	0.071	0.000
Lower limit at a 95% confidence level	[mm/vear]	-0.115	-0.103	-0.080	-0.067	-0.084	-0.296	-0.528	-0.337	-0.450	-0.223	-0.178	-0.092	-0.003	-0.197	-0.056	-0.075	-0.001
Upper limit at a 95% confidence level		0.077	0.059	0.067	0.003	0.078	0.533	0.701	0.836	0.771	0.231	0.144	0.100	0.008	0.810	0.144	0.218	0.001
							TAPTI											
Slope value		-0.045	-0.015	0.036	0.002	0.002	0.085	0.312	0.681	0.310	0.212	0.069	-0.022	0.001	0.44.9	0.136	0.147	-0.001
a	[mm/year]	0.015	0.015	0.000	0.002	0.002	0.005	0.512	0.001	0.510	0.010	0.005	0.022	0.001	9.112	0.150	0.117	0.001
Lower limit at a 95% confidence level		-0.112	-0.065	-0.023	-0.029	-0.092	-0.262	-0.099	0.227	-0.178	-0.059	-0.141	-0.098	-0.002	0.106	0.054	0.037	-0.001
Upper limit at a 95% confidence level		0.022	0.034	0.095	0.033	0.097	0.433	0.724	1.136	0.799	0.483	0.279	0.054	0.004	0.793	0.218	0.256	0.000
Slope relue a	1	0.020	0.120	0.040	0.015			.r. L 0 120	0.141	0.575	0.021	0.002	0.042	0.002	0.260	0.020	0.052	0.000
Tower limit at a 95% confidence level	[mm/yeer]	0.130	0.120	0.175	-0.015	0.000	-0.004	0.120	-0.141	0.070	0.021	0.003	0.045	0.003	0.200	0.030	0.002	0.000
Upper limit at a 95% confidence level	linnakoul	0.079	0.018	0.077	0.082	0.251	0.578	0.711	0.351	1.090	0.443	0.144	0.105	0.010	0.758	0.151	0.199	0.001
		0.015	0.010	0.011	0.000	B	RAHMA	N	0.001	1.000	0.110	0.111	0.100	0.010	0.100	0.101	0.100	0.001
Slope value, a		-0.069	-0.148	-0.005	-0.006	0.091	-0.122	-0.027	-0.366	0.271	0.052	0.008	0.034	0.017	-0.448	-0.024	-0.110	-0.001
Lower limit at a 95% confidence level	[mm/year]	-0.202	-0.329	-0.140	-0.114	-0.088	-0.674	-0.631	-0.913	-0.169	-0.303	-0.132	-0.037	0.003	-0.994	-0.123	-0.256	-0.001
Upper limit at a 95% confidence level	104 - 104 - 104	0.063	0.032	0.130	0.102	0.270	0.430	0.578	0.181	0.712	0.407	0.149	0.105	0.032	0.098	0.075	0.036	0.000
						K	RISHN	4										
Slope value, a		-0.016	-0.022	0.062	0.024	0.121	0.104	0.039	0.308	-0.006	0.241	-0.039	-0.038	-0.001	0.173	0.065	0.069	0.000
Lower limit at a 95% confidence level	[mm/year]	-0.048	-0.057	-0.008	-0.052	-0.035	-0.089	-0.255	0.023	-0.342	-0.058	-0.231	-0.106	-0.005	-0.070	0.003	-0.004	-0.001
Opper limit at a 95% confidence level		0.017	0.014	0.133	0.101	0.211	U.Z97	0.333	0.592	0.331	0.540	0.154	0.029	0.003	0.416	0.126	0.143	0.001
Slope value, a		-0.095	-0.027	0.048	0.069	0.205	0.157	0.055	0.234	-0.209	0.305	-0.200	-0.001	-0.005	0.187	0.045	0.052	0.000
Lower limit at a 95% confidence level	[mm/year]	-0.166	-0.027	-0.029	-0.034	-0.013	-0.043	-0.206	-0.129	-0.551	-0.090	-0.533	-0.151	-0.010	-0.116	-0.025	-0.035	-0.001
Upper limit at a 95% confidence level	[-0.023	0.025	0.124	0.172	0.424	0.356	0.317	0.597	0.133	0.700	0.133	0.149	0.000	0.490	0.115	0.139	0.001
						С	AUVER	Y										
Slope value		0.116	0.016	0.004	0.140	0.000	0.005	0.200	0.007	0.010	0.1.00	0.007	0.012	0.005	0.057	0.014	0.004	0.000
a	[mm/treen]	-0.116	-0.016	0.084	0.149	-0.082	-0.095	-0.290	-0.087	0.018	0.190	0.067	0.013	-0.005	0.056	-0.014	-0.004	0.000
Lower limit at a 95% confidence level	linnador	-0.196	-0.084	-0.027	-0.022	-0.335	-0.296	-0.571	-0.362	-0.267	-0.213	-0.272	-0.173	-0.019	-0.242	-0.081	-0.076	-0.001
Upper limit at a 95% confidence level		-0.035	0.052	0.196	0.320	0.171	0.106	-0.009	0.188	0.303	0.593	0.406	0.198	0.008	0.354	0.053	0.069	0.001
Classesha	-	1	-	_	-	M	AHANA		-			-		_	-	-		_
Stope value		0.006	-0.132	-0.004	-0.078	0.030	-0.206	0.163	-0.331	0.153	-0.006	0.010	0.026	0.006	-0.352	-0.031	-0.069	0.000
Lower limit at a 95% confidence level	[mm/year]	-0.105	-0.259	-0 133	-0 184	-0.103	-0.792	-0.363	-0.829	-0.308	-0.282	-0.097	-0.045	-0.005	-0.782	-0.129	-0.193	-0.001
Upper limit at a 95% confidence level		0.118	-0.005	0.125	0.027	0.164	0.380	0.690	0.167	0.614	0.269	0.118	0.098	0.018	0.078	0.067	0.055	0.000
		1				Ge	DAVA	RI										
Slope value, a		0.017	-0.056	0.046	-0.049	0.028	-0.107	0.225	0.345	-0.116	0.211	0.003	-0.008	0.000	0.270	0.045	0.053	0.000
Lower limit at a 95% confidence level	[mm/year]	-0.048	-0.134	-0.042	-0.127	-0.109	-0.454	-0.175	-0.066	-0.526	-0.072	-0.143	-0.082	-0.014	-0.084	-0.038	-0.052	-0.001
Upper limit at a 95% confidence level		0.081	0.022	0.135	0.029	0.164	0.241	0.624	0.756	0.293	0.495	0.150	0.067	0.013	0.623	0.128	0.158	0.001

VIII. Conclusion

The strategic plans and ambitious objectives included in the water management programme for India are regrettably accompanied by numerous contrasts between extremely dramatic growth projects and poor knowledge of local environmental conditions and by attempts to import Western, supposedly universal models that ignore local and regional features and characteristics of the territory. The Ministries of Water Resources and of Agriculture and the Planning Commission are responsible for water management on a national scale; additionally, the government is authorised by the Constitution to manage river drainage basins. These statutory and organizational instruments provide great opportunities for implementation of the adopted water mission, but

further excessive exploitation of water resources with a continued low efficiency of water intake use may cause a durable and dramatic reduction in available water resources and impair their quality. The study contains an analysis of precipitation, covering multiple profiles and based on the GPCC database that provides monthly mean values for the territory of India, in 13 river catchment areas. Brahmaputra, Indus, Ganga, Mahi, Narmada, Tapti, Damodar, Brahmani, Krishna, Penner, Cauvery, Mahanadi and Godavari. The catchment areas and their closing cross-sections are defined using data made available by the GRDC agency (Table 1). The analysis includes data for the period 1901–2010 with a spatial resolution of $0.5^{\circ}x^{\circ}0.5^{\circ}$ of geographic longitude and latitude. The data is analysed in calendar year profiles. The periodical nature of precipitation is assessed and the trends in climate changes calculated. The characteristics of trend in climate changes are described by linear equations with indicated boundary values of coefficients determined at a 5% significance level.

The long-term mean annual total of precipitation in the territory of India is estimated at 1126 mm and the mean values in the analysed period of 110 years vary from 894 mm to 1387 mm. The standard deviation of mean value of annual total precipitation reaches 10% and the coefficient of variation amounts to 0.08. The sum of mean precipitation volume in the long-term period amounts to 3704 km³, showing a positive trend of 68 [million m^3 /year]. The trend in the mean value of precipitation in the territory of India is positive: 0.021 [mm/year].

The periodicity of precipitation in all analysed river catchment areas is characterised by minimum values of predominating repeatability periods of about 2 years while maximum values vary from 13 to 15 years in the catchment areas of Indus, Ganga, Brahmani and Krishna, amount to 22 years in the Tapti catchment area, 36 years in the Mahi and Narmada catchment areas, 55 years in the Damodar catchment area; with no indications for the Brahmaputra, Penner and Couvery rivers. The maximum value of linear precipitation trend in the analysed catchment areas is observed in the Tapti river: 0.681 [mm/year], and the lowest, negative value – in the Brahmaputra river: -0.803 [mm/year]. The trend in mean values for the analysed long-term period varies from -0.159 [mm/year] for the Brahmaputra to 0.136 [mm/year] for the Tapti river. Positive trends in mean precipitation values are observed in the Indus, Mahi, Narmada, Tapti, Damodar, Krishna, Penner and Godavari river catchment areas, negative trends in precipitation values are identified in the Brahmaputra, Ganga, Brahmani, Cauvery and Mahanadi river catchment areas.

The analyses discussed confirm spatial and temporal variability of precipitation in the key river catchment areas in India, feeding the country's surface and underground water resources. The statistics contained in this study demonstrate the regional nature of water supply, indicate the need to complete regional analyses of temporal and spatial variations in the volumes of water feeding Indian resources, and confirm that regional and local plans must be developed to adapt to climate change, based on the accepted scenarios aimed to compensate climate change effects.

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