

CLIMATE OF TRIPURA

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Tripura is located in the north-eastern part of India. It is the third-smallest state in the country. The state is located between 22°56′ & 24°32′ north latitudes and 91°09′ & 92°20′ east longitudes. Its area is 10,491 km² and is bordered by Bangladesh to the north, south, and west, and the Indian states of Assam and Mizoram to the east. The length of its international border with Bangladesh is 856 km (84 per cent of its total border). It consists of eight districts, namely West Tripura, Khowai, Sipahijala, Dhalai, North Tripura, Unakoti, Gomati and South Tripura. Forests cover more than half of the state, in which bamboo and cane tracts are common. About 60% of its land is hilly, while the remaining 40% is plain land. Five hill ranges - Boromura, Atharamura, Longtharai, Shakhan and Jampui Hills, run almost parallel from north to south. The state lies in the seismic zone 5, as per seismic zoning map of India, which is considered as the most vulnerable zone for high intensity earthquakes. The capital Agartala is located on a plain to the west with a height of 15 meters above mean sea level.

1. Climate of Tripura:

IMD has two full time meteorological observatories in Tripura. One Meteorological Centre (MC) located at the state capital Agartala (23° 53′ N, 91° 15′ E) in West Tripura district and one Meteorological Observatory (MO) located at Kailashahar (24° 19′ N, 92° 00′ E) in Unakoti District. Besides, it also has part-time observatories across the state from which daily rainfall data are obtained. The state observes moderately warm temperatures during summer and moderately cold temperatures during winter. Due to the presence of Bay of Bengal to its south, the humidity in the state is fairly high during summer.



Fig.1: Map of Tripura with location of Agartala and Kailashahar observatories

As per IMD's classification of meteorological seasons in India, the period of the year has been classified into four seasons, namely,

- i. Winter Season (January to February)
- ii. Pre-monsoon Season (March to May)
- iii. Monsoon Season (June to September)
- iv. Post-monsoon Season (October to December)

- i. **Winter:** The winters in Tripura are generally moderately cold, but on one or two occasions, temperatures as low as 2-3 degree Celsius have also been observed in the two observatories of IMD. Winter conditions commence in the state from December itself. During this period, moderate to dense fog and sometimes very dense fog is observed during morning hours. January is the coldest month of the year. Average minimum temperatures are around 10 degrees Celsius in this month. The days are generally dry, cloud free and light northerly surface winds are observed.
- ii. **Pre-monsoon:** Temperatures start rising from March which also brings thunderstorms accompanied with rain to the state. These thunderstorm events in the pre-monsoon season are known as 'Norwesters' or 'Kalbaisakhi' in local language. They generally move from northwest to southeast direction. Their duration may be from a few minutes

to a few hours. Sometimes thundershowers are accompanied with squall, with wind speed of more than 150 km per hour or hail. The activity begins in March and progressively increases with the advance of the season reaching to its peak in May. It is the secondary rainy season of the state, with nearly 30% of the annual rainfall. On an average, thunderstorms occur more than 30 days in Tripura during this season. The average maximum temperatures are around 32-33 degrees Celsius during this season, with April being the warmest month of the year. During this season, skies are partly cloudy over the state, while towards the end of the season cloudiness increases.

- iii. Monsoon:** Normally south-west monsoon enters in the season in the first week of June. With this the wind direction changes from northerly/northwesterly to southerly which brings humid air from the Bay of Bengal to the state. Cloudiness increases over the state in this season. On an average 75% of the sky is covered by clouds during June to September. Severe thunderstorm activity decreases but rainfall increases during this season. Although some thunderstorms are observed in this season, but they are of lower intensity as compared to pre-monsoon season. It is the main rainy season for the state with an average of more than 1300mm. It is about 60% of the annual rainfall. June is the rainiest month of the year with more than 400mm of average rainfall. The average maximum temperatures are around 31-32 degrees and minimum temperatures are around 24-25 degrees Celsius. The humidity is quite high in this season. The south-west monsoon is normally withdrawn from the state during mid-October.
- iv. Post-monsoon:** Rainfall decreases in the state from October. The temperatures also start decreasing. The average maximum and minimum temperatures fall from 31 and 22 degrees in October to 26 and 11 degrees Celsius respectively in December. From November itself the weather becomes dry, but sometimes one or two cyclonic circulations in the Bay of Bengal bring some rainfall for 2-3 days during this season. Mornings start becoming foggy from December and winter conditions are setup. The surface winds change direction once again to northerly/northwesterly from November.

2. Month wise normal temperature and rainfall

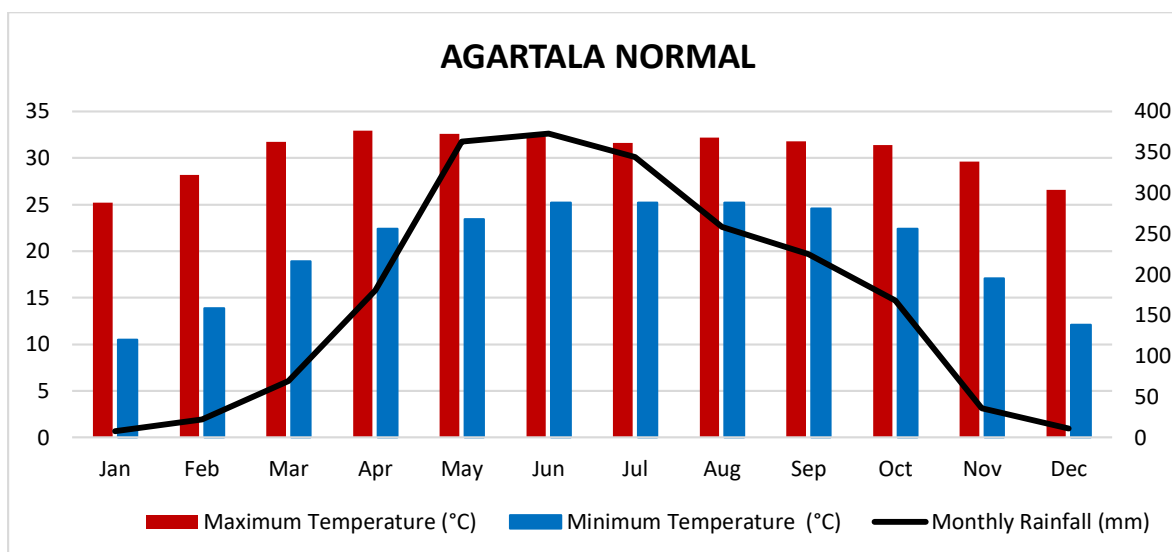


Fig.2: Climatological Normal Temperature and Rainfall at Agartala (Based on 1981-2010)

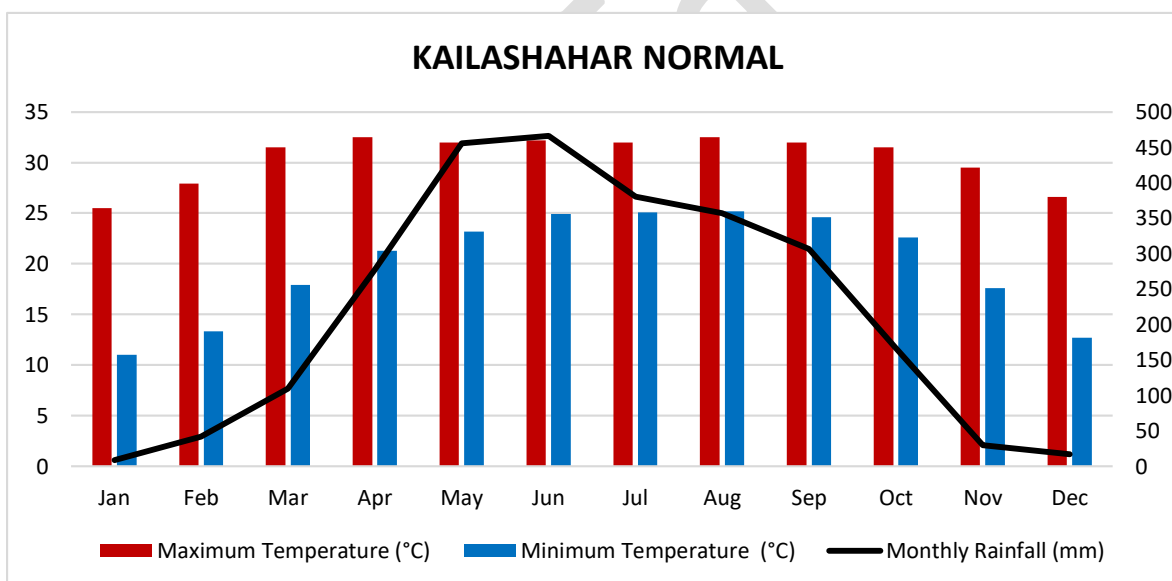


Fig.3: Climatological Normal Temperature and Rainfall at Kailashahar (Based on 1981-2010)

The month wise climatological normal values (based on 1981-2010 climatology) of maximum and minimum temperatures and rainfall for Agartala and Kailashahar are shown in the above figures. It is seen from the above figures that, the maximum temperatures keep on increasing from January to April, but due to significant increase in rainfall from May, it decreases slightly during that period. Again due to decrease in monsoon rainfall from August,

temperatures increase slightly. From November onwards, both temperatures and rainfall decreases significantly.

3. Month wise extreme temperature and rainfall

The highest ever temperature recorded at Agartala is 42.2 °C on 01st May 1960, whereas the lowest ever temperature is 02.0 °C on 30th December 1972. The highest one-day rainfall recorded was 257.2 mm on 22nd May 1993.

At Kailashahar, the highest and the lowest recorded temperatures were 42.2 °C (09th April 1960) and 02.4 °C (15th January 1976) respectively. The highest rainfall recorded in one day was 284.0 mm on 03rd June 1965.

IMD Agartala

4. Tables:

4.1 Climatological normal values based on the period 1981-2010

STATE: TRIPURA			
	MONTHLY RAINFALL (in mm)	SEASON	SEASONAL RAINFALL (in mm)
JANUARY	7.8	WINTER (JAN-FEB)	35.4
FEBRUARY	27.6		
MARCH	78.7	PRE-MONSOON (MAR-MAY)	677.7
APRIL	211.1		
MAY	387.9		
JUNE	460.1	MONSOON (JUNE-SEP)	1457.8
JULY	402.8		
AUGUST	340.9		
SEPTEMBER	254.0		
OCTOBER	170.8	POST-MONSOON (OCT-DEC)	221.8
NOVEMBER	39.4		
DECEMBER	11.6		
ANNUAL	2392.7		

Table 1: Month wise climatological normal values for Tripura

CITY: AGARTALA								
MONTH	MEAN TEMPERATURE(°C)		MEAN TOTAL RAINFALL (mm)	MEAN NUMBER OF RAINY DAYS	MEAN NUMBER OF DAYS WITH			
	DAILY MAXIMUM	DAILY MINIMUM			HAIL	THUNDER	FOG	SQUALL
JANUARY	25.2	10.5	7.6	0.8	0.1	0.4	12.9	0.1
FEBRUARY	28.2	13.9	22.1	2.1	0.0	2.1	3.8	0.1
MARCH	31.7	18.9	69.4	3.3	0.1	5.0	1.5	1.2
APRIL	32.9	22.4	180.4	7.9	0.1	11.8	0.4	2.3
MAY	32.6	23.4	362.9	13.3	0.0	15.5	0.1	3.4
JUNE	32.3	25.2	373.0	14.9	0.0	10.7	0.1	0.6
JULY	31.6	25.2	344.0	15.8	0.0	8.5	0.0	0.1
AUGUST	32.2	25.2	258.2	14.9	0.0	9.9	0.1	0.0
SEPTEMBER	31.8	24.6	225.1	12.2	0.0	11.2	0.6	0.0
OCTOBER	31.4	22.4	167.7	7.1	0.2	5.3	1.8	0.1
NOVEMBER	29.6	17.1	36.2	1.2	0.0	0.4	4.4	0.0
DECEMBER	26.6	12.1	11.0	0.7	0.0	0.1	10.1	0.0
ANNUAL	30.5	20.1	2057.5	94.3	0.6	81.1	35.9	8.1

Table 2: Month wise climatological normal values for Agartala

CITY: KAILASHAHAR								
MONTH	MEAN TEMPERATURE(°C)		MEAN TOTAL RAINFALL (mm)	MEAN NUMBER OF RAINY DAYS	MEAN NUMBER OF DAYS WITH			
	DAILY MAXIMUM	DAILY MINIMUM			HAIL	THUNDER	FOG	SQUALL
JANUARY	25.5	11.0	8.3	1.0	0.0	0.7	10.5	0.0
FEBRUARY	27.9	13.3	41.9	2.3	0.1	2.4	4.0	0.0
MARCH	31.5	17.9	109.3	5.0	0.2	6.2	1.1	0.2
APRIL	32.5	21.3	277.5	10.8	0.3	12.8	0.2	0.6
MAY	32.0	23.2	455.9	15.0	0.0	14.9	0.2	0.3
JUNE	32.2	24.9	465.9	17.1	0.0	11.8	0.0	0.0
JULY	32.0	25.1	380.2	18.7	0.0	8.1	0.0	0.0
AUGUST	32.5	25.2	357.1	18.4	0.0	10.8	0.2	0.0
SEPTEMBER	32.0	24.6	306.9	15.0	0.1	12.0	1.2	0.0
OCTOBER	31.5	22.6	166.7	7.2	0.0	4.6	6.0	0.0
NOVEMBER	29.5	17.6	29.7	1.4	0.0	0.4	10.5	0.0
DECEMBER	26.6	12.7	16.8	0.8	0.0	0.2	11.8	0.0
ANNUAL	30.5	20.0	2616.2	112.8	0.6	85.2	45.6	1.2

Table 3: Month wise climatological normal values for Kailashahar

4.2 Month wise extreme temperature and rainfall

CITY: AGARTALA				
MONTH	TEMPERATURE (°C)		RAINFALL (mm)	
	HIGHEST MAXIMUM (DATE)	LOWEST MINIMUM (DATE)	24 HOURS HIGHEST (DATE)	MONTHLY TOTAL (YEAR)
JANUARY	32.2 (26, 2017)	03.3 (10, 2013)	50.0 (11, 1957)	66.0 (1957)
FEBRUARY	35.1 (28, 1969)	04.7 (07, 1983)	66.4 (27, 2001)	86.1 (1973)
MARCH	38.9 (31, 1962)	09.4 (04, 1972)	98.6 (01, 1960)	220.3 (1990)
APRIL	41.5 (30, 1960)	14.2 (03, 2002)	198.0 (11, 2007)	537.3 (1977)
MAY	42.2 (01, 1960)	16.1 (02, 1955)	242.6 (18, 2018)	730.3 (2018)
JUNE	40.2 (01, 1979)	19.5 (16, 1961)	236.2 (08, 1976)	799.9 (1976)
JULY	37.7 (14, 1972)	21.3 (07, 1972)	257.2 (22, 1993)	786.9 (2007)
AUGUST	37.2 (22, 2019)	20.8 (26, 1966)	238.8 (15, 1955)	658.8 (1965)
SEPTEMBER	37.6 (18, 2015)	21.1 (19, 1965)	220.9 (13, 2004)	496.2 (1960)
OCTOBER	36.5 (04, 2010)	14.6 (31, 1967)	183.6 (11, 1989)	418.0 (1963)
NOVEMBER	34.8 (02, 2016)	09.2 (26, 1982)	120.8 (06, 2016)	205.9 (1955)
DECEMBER	33.1 (21, 1990)	02.0 (30, 1972)	69.3 (25, 1991)	117.5 (1991)
ALL TIME RECORD	42.2 (01 May 1960)	02.0 (30 December 1972)	257.2 (22 May 1993)	799.9 (June 1976)

Table 4: Month wise extreme temperature and rainfall data for Agartala

(Updated on 01st January 2020)

CITY: KAILASHAHAR				
MONTH	TEMPERATURE (°C)		RAINFALL (mm)	
	HIGHEST MAXIMUM (DATE)	LOWEST MINIMUM (DATE)	24 HOURS HIGHEST (DATE)	MONTHLY TOTAL (YEAR)
JANUARY	31.6 (26, 2016)	02.4 (15, 1976)	67.2 (30, 1969)	102.8 (1969)
FEBRUARY	34.5 (28, 2006)	03.9 (05, 1968)	66.3 (08, 1965)	152.8 (2016)
MARCH	38.6 (30, 1986)	07.2 (02, 1972)	108.4 (30, 2010)	353.5 (1983)
APRIL	42.2 (09, 1960)	12.1 (01, 1968)	257.1 (19, 2004)	1012.8 (1977)
MAY	42.0 (01, 1960)	17.4 (04, 2013)	226.0 (26, 1985)	867.8 (1988)
JUNE	38.3 (06, 1979)	19.3 (20, 1982)	284.0 (03, 1965)	854.7 (2017)
JULY	37.8 (29, 1963)	19.7 (17, 1961)	153.5 (20, 2004)	877.2 (2004)
AUGUST	37.5 (19, 1987)	20.8 (27, 1968)	206.6 (08, 1964)	589.4 (2017)
SEPTEMBER	37.2 (15,1996;18,2015)	20.0 (07, 1976)	126.8 (12, 1979)	538.7 (1985)
OCTOBER	36.0 (02,2009;04,2010)	15.4 (31, 1976)	182.0 (09, 1986)	408.0 (1986)
NOVEMBER	36.8 (23, 1981)	08.8 (28, 1969)	104.2 (10, 1986)	191.3 (2016)
DECEMBER	31.7 (02, 2011)	05.6 (18, 2013)	76.2 (19, 2003)	122.2 (2003)
ALL TIME RECORD	42.2 (09 April 1960)	02.4 (15 January 1976)	284.0 (03 June 1965)	1012.8 (April 1977)

Table 5: Month wise extreme temperature and rainfall data for Kailashahar

(Updated on 01st January 2020)
