

CLIMATE

The project area has a humid tropical climate.

Rainfall

Rainfall is the major source of ground water recharge and rainfall pattern plays an important role on the water levels in the phreatic aquifer and also indirectly to the deeper leaky and confined aquifers. The rainfall data for Thiruvananthapuram district from Indian Meteorological Department, Thiruvananthapuram, during the year 2011 is analyzed.

Annual rainfall distribution

The annual rainfall received for the year 2011 is 1509.2 which is the second lowest rainfall received among the various districts of the state. The district received 583.7 mm of rainfall during the south west monsoon, and 543.5 mm of rainfall during north east monsoon period. The monthly annual rainfall distribution during 2011 is given in table below.

Table:- The monthly annual rainfall for 2011

Month	Rainfall (mm)	Month	Rainfall (mm)
Jan	43.6	July	97.6
Feb	73.6	Aug	84.4
Mar	15.0	Sep	131.5
Apr	157.1	Oct	141.2
May	92.7	Nov	233.4
June	270.2	Dec	168.9
Total annual rainfall			1509.2

DISTRIBUTION OF RAINFALL AND DEPARTURE FROM LONG PERIOD AVERAGES (NORMAL RF) OF LAST 5 YEARS

Month	January		February		March		April		May		June	
Year	RF	% Dep.	RF	% Dep.	RF	% Dep	RF	% Dep.	RF	% Dep.	RF	% Dep
2007	0.30	-98	1.70	-90	3.70	-92	213.30	68	167.20	-27	348.7	-5
2008	0.00	-100	24.60	47	276.00	463	158.30	25	89.80	-61	116.3	-68
2009	5.00	-72	0.00	-100	60.00	22	44.60	-65	206.90	-10	183.3	-50
2010	108.30	515	0.00	-100	73.10	49	109.40	-14	216.70	-6	237.0	-35
2011	43.60	126	73.60	249	15.00	-58	157.10	35	92.70	-57	270.2	-20

Month	July		August		September		October		November		December		Annual	
Year	RF	% Dep.	RF	% Dep.	RF	% Dep	RF	% Dep.	RF	% Dep.	RF	% Dep	Total	% Dep.
2007	306.60	16	177.20	3	279.10	65	327.80	26	213.80	13	11.70	-82	2051.1	14
2008	286.00	8	180.60	5	202.60	20	363.90	40	195.20	3	38.20	-42	1931.5	7
2009	204.20	-23	87.30	-49	183.40	9	119.40	-54	346.30	82	42.50	-35	1482.9	-18
2010	234.90	-11	118.70	-31	114.10	-32	414.30	59	326.00	72	188.30	187	2140.8	19
2011	97.60	-57	84.40	-41	131.50	-19	141.20	-47	233.40	22	168.90	169	1509.2	-16

(Source: Indian Meteorological Department)

Normal Rainfall Vs Actual Rainfall

The actual rainfall during different seasons has been compared with the normal rainfall of the season to find out the variations of the rainfall. The seasonal and their percentage departure from normal rainfall is given in table.

Table:- The seasonal rainfall and their percentage departure from normal rainfall

Season	Period	Seasonal	Normal	% Dep
Winter	January- March	132.2	81.2	62
Summer	April- May	249.8	320.5	-23
South West Monsoon	June- September	583.7	857.8	-32
North East Monsoon	October-December	543.5	537.1	1

Winter period:- During the month of January to March 2011, the district receives a surplus of rainfall than the normal. The percentage departure from normal rainfall was 62 %.

Hot weather period:- During the month of April-May 2011, the departure of pre-monsoon rainfall recorded is -23% ie deficient type of rainfall during the season.

South West Monsoon period:- During the south west monsoon season from June to September 2011, the departure of rainfall recorded in the district is -32%. The district recorded deficient type of rainfall during the season.

North East Monsoon period:- During the north east monsoon period from October to December 2011, the district receives a samples of rainfall with a slight percentage of departure of 1%.

Seasonal rainfall contribution to the total rainfall in percentage

The seasonal rainfall contribution to the total rainfall in percentage in worked out and given in table.

Table:- Seasonal rainfall distribution and their percentage contribution to annual rainfall

Season	Period	Rainfall	Percentage
Winter	January- March	132.2	8.70
Summer	April- May	249.8	16.5
South West Monsoon	June- September	583.7	38.6
North East Monsoon	October- December	543.5	36.0
Total		1509.2	100.0

The South West monsoon received from June to September records. The major contribution of the rainfall received during 2011. 38.68 % (583.7 mm) of the total rainfall is recorded during the season. The north east monsoon contributes 36.02 % and the summer rains contributes 16.55 %. Only 8.75 % of actual rainfall is received during January to March.

Comparison of 2011 seasonal rainfall with previous year (2010) rainfall

The rainfall in the various seasons of 2011 have been compared with previous year rainfall to understand the pattern of rainfall received and to have better assessment of the charge in the ground water region.

Table:- Comparison of 2011 rainfall with 2010

Season	Period	2011	2010	% Dep
Winter	January- March	132.2	181.4	-28
Summer	April- May	249.8	326.0	-24
South- West monsoon	June- September	583.7	704.7	-18
North- East monsoon	October- December	543.5	928.7	-72
Total		1509.2	2140.8	-30

During all the four seasons of the year the district recorded different rainfall. During the North- East monsoon season, the district recorded a departure of -72% and during South- West monsoon, summer and winter season a departure of -18%, -24% and -18% is noticed respectively. The annual rainfall received during the year shows a 30% deficient with the previous year which is so alarming.

Temperature

Cold weather is experienced in the highlands, whereas lower down, the weather is bracing and is generally hot in the lowland regions. The mean maximum temperature is 35 °C (April – May) and the mean minimum temperature is 20 °C (December – January). Humidity is high and rises to about 90 percent during the south west monsoon. The monthly mean daily temperature is given below.

Table:-Monthly mean maximum and minimum temperature

Month	Mean temperature(⁰ C)	
	Maximum	Minimum
January	30.7	22.4
February	31.2	23.0
March	32.1	24.4
April	32.1	25.3
May	31.3	25.2
June	39.3	23.9
July	28.8	23.4
August	29.0	23.5
September	29.6	23.6
October	29.5	23.6
November	29.6	23.3
December	30.3	23.8

The monthly mean maximum & minimum temperature and total rainfall based upon 1901-2000 data.

Table: Monthly mean maximum & minimum temperature and total rainfall (100 yrs)

Month	Mean temperature(⁰ C)		Mean rain fall in mm
	Maximum	Minimum	
January	30.7	22.4	22.9
February	31.2	23.0	21.9
March	32.1	24.4	36.4
April	32.1	25.3	110.5
May	31.3	25.2	210.0
June	39.3	23.9	343.5
July	28.8	23.4	218.6
August	29.0	23.5	143.2
September	29.6	23.6	152.5
October	29.5	23.6	267.9
November	29.6	23.3	199.0
December	30.3	23.8	70.2
Total			1796.6