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MINISTRY OF EARTH SCIENCES
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INDIA METEOROLOGICAL DEPARTMENT

तेलंगाना की जलवायु CLIMATE OF TELANGANA



CLIMATOLOGICAL SUMMARIES OF STATES SERIES - No. 23

ISSUED BY

OFFICE OF THE
ADDITIONAL DIRECTOR GENERAL
OF METEOROLOGY (RESEARCH)
INDIA METEOROLOGICAL DEPARTMENT
PUNE - 411 005



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Additional Director General of Meteorology (Research)
India Meteorological Department
Shivajinagar, Pune 411 005
India
Tel : 020-25572265
email : cps.pune@imd.gov.in

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P R E F A C E

The importance of meteorology and its economic and social benefits are being increasingly realised all over the world. In our country also, various sectors like agriculture, aviation, power and energy, tourism, shipping, transport industry etc. require climatological information pertaining to different regions of the country for planning and execution of different projects. Keeping these requirements in view, it was decided by India Meteorological Department to publish a series of "Climatological Summaries" for each state in the country, incorporating the district climatological summaries. "Climate of Telangana" is the twenty-third issue in the series of 'State Climatological Summaries'. The climate of this state is prepared for the first time.

The present publication contains district wise climate information on rainfall, temperatures, wind, humidity, clouds and other meteorological parameters for "Telangana" state. Information on climatic classification, coefficient of rainfall variation, droughts, excessive rainfall, cyclonic storms and depressions are also included in the publication. Climatic classification over the state is determined by Koppen's technique.

The contributions for preparation of climatological summary and related maps have been made by Shri G. S. Dhekne, Shri S. M. Deshpande, Smt. U. S. Satpute, Shri R. S. Wayal, Smt. P. R. Iyer and Smt. P. P. Bhagwat from "Climatological Publication Section" of the Office of the Additional Director General of Meteorology (Research), India Meteorological Department, Pune.

The publication has been prepared by Dr. T. P. Singh, Director and reviewed by Shri B. Mukhopadhyay, LACD-ADGM(R). I appreciate their sincere efforts.

I am hopeful that this publication will be a useful source of climatic information for societal development.

NEW DELHI
SEPTEMBER 2015

DR. LAXMAN SINGH RATHORE
DIRECTOR GENERAL OF METEOROLOGY

**INDIA METEOROLOGICAL DEPARTMENT
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17.	Abstract	The publication contains extensive information on the climate of Telangana state and its districts based on rainfall, temperature, winds, clouds and other weather parameters. The information on droughts and excessive rainfall, depressions and cyclonic storms are also included in the publication.
18.	Key Words	State Summary, District Summary, Physical Features, Climatic Classification, Heaviest Rainfall, Mean Maximum Temperature, Mean Minimum Temperature, Highest Maximum Temperature, Lowest Minimum Temperature, Rainfall Variability, Seasonal Rainfall, Annual Rainfall.

INTRODUCTION

The climatology of Telangana state of India in terms of various meteorological parameters such as temperature, rainfall, rainfall variability, pressure and winds, relative humidity, clouds, weather hazards, etc. is described in state summary, followed by a detailed description of the climate of each district in the succeeding chapters. In this publication, the districts of Telangana state which were in existence as on 1st January 2015, have been considered and the climatology of these districts, arranged in alphabetical order is presented.

The normals for each month and annual rainfall are generally based on the data for the period 1961 to 2010. The monthly and annual normals of other meteorological parameters used for describing the climate are generally based on data for the period 1981 to 2010 however, when data for the sufficient period is not available, normals for the previous period are utilized. The extreme values of temperature and rainfall presented in the publication are based on the updated data up to the year 2013. These data have been obtained from National Data Centre, Pune. The information on cyclones and depressions affected the state during the period 1891-2014 are included in the state summary.

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FIG.1: PHYSICAL FEATURES OF TELANGANA STATE

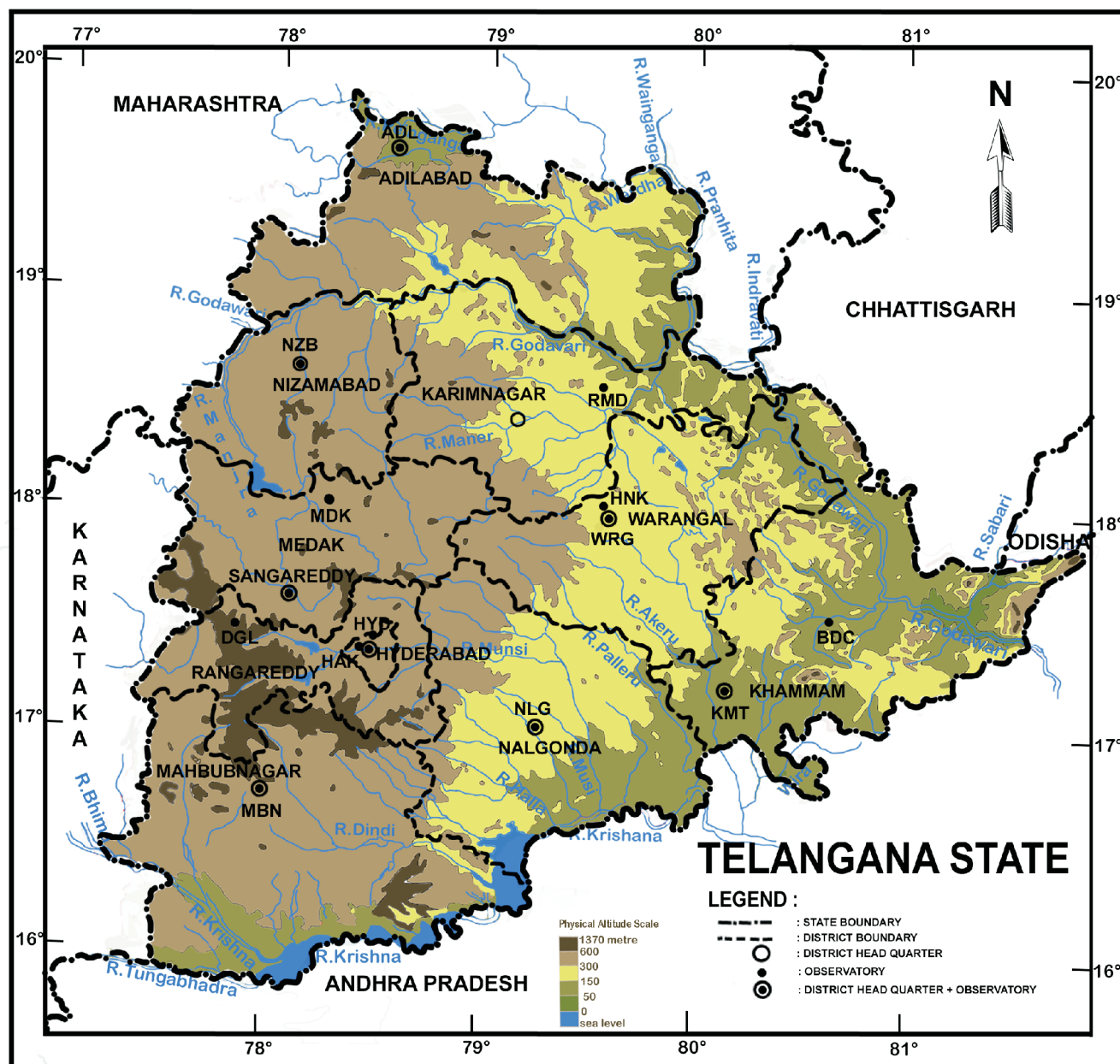


FIG.1(a): INSET

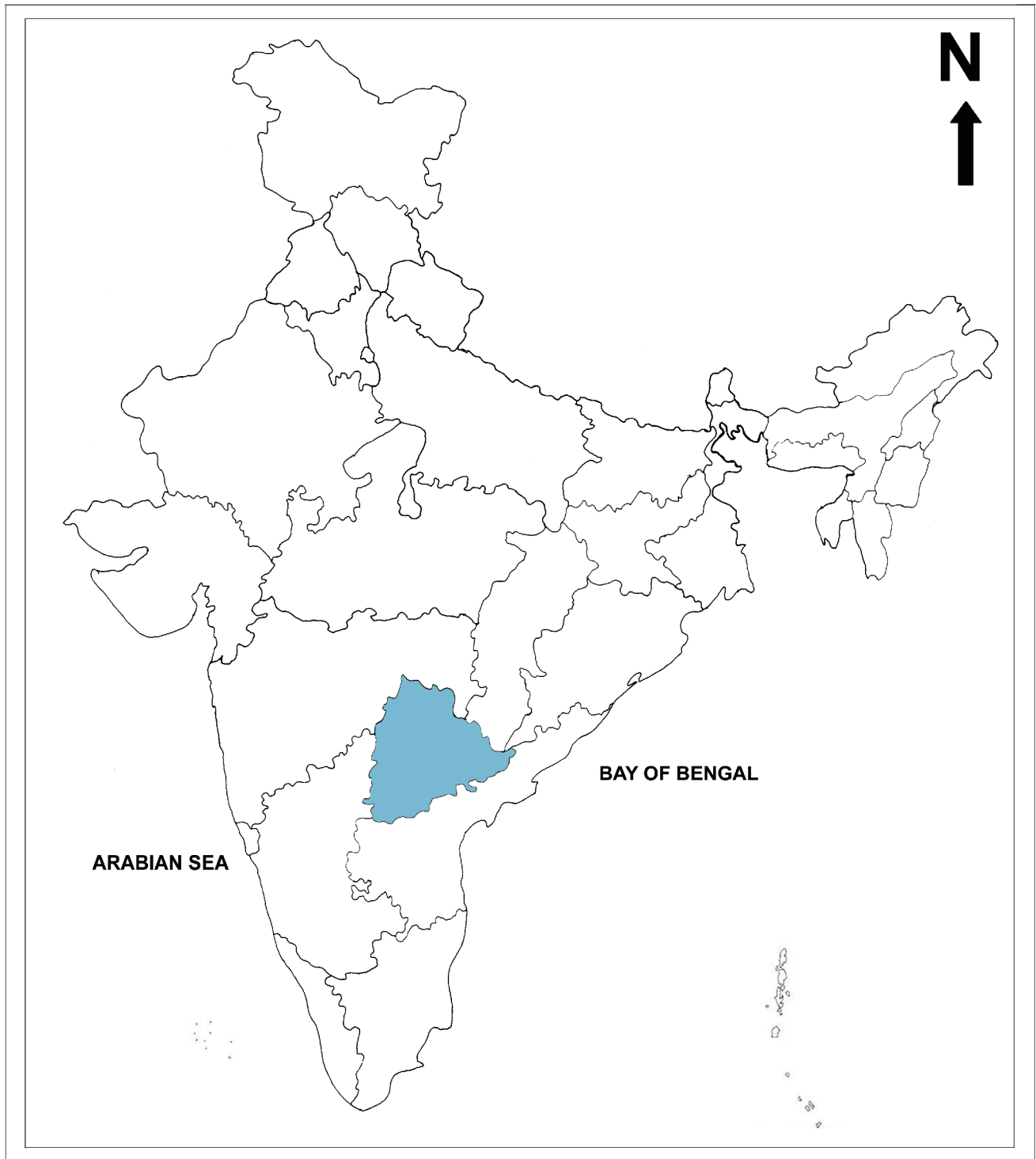


FIG.2: CLIMATIC CLASSIFICATION

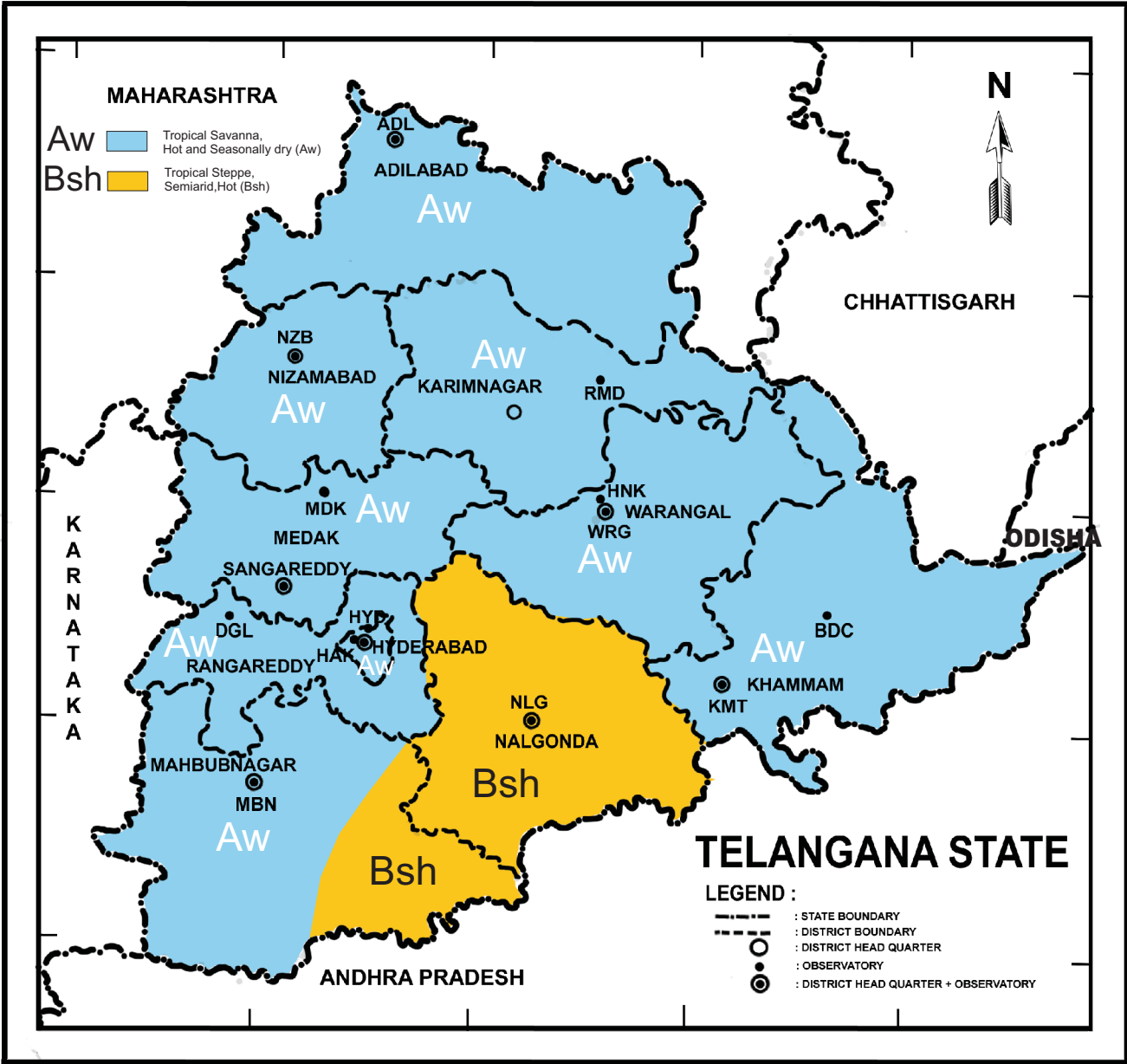


FIG.2(a): MEAN MAXIMUM TEMPERATURE (°C) - MAY

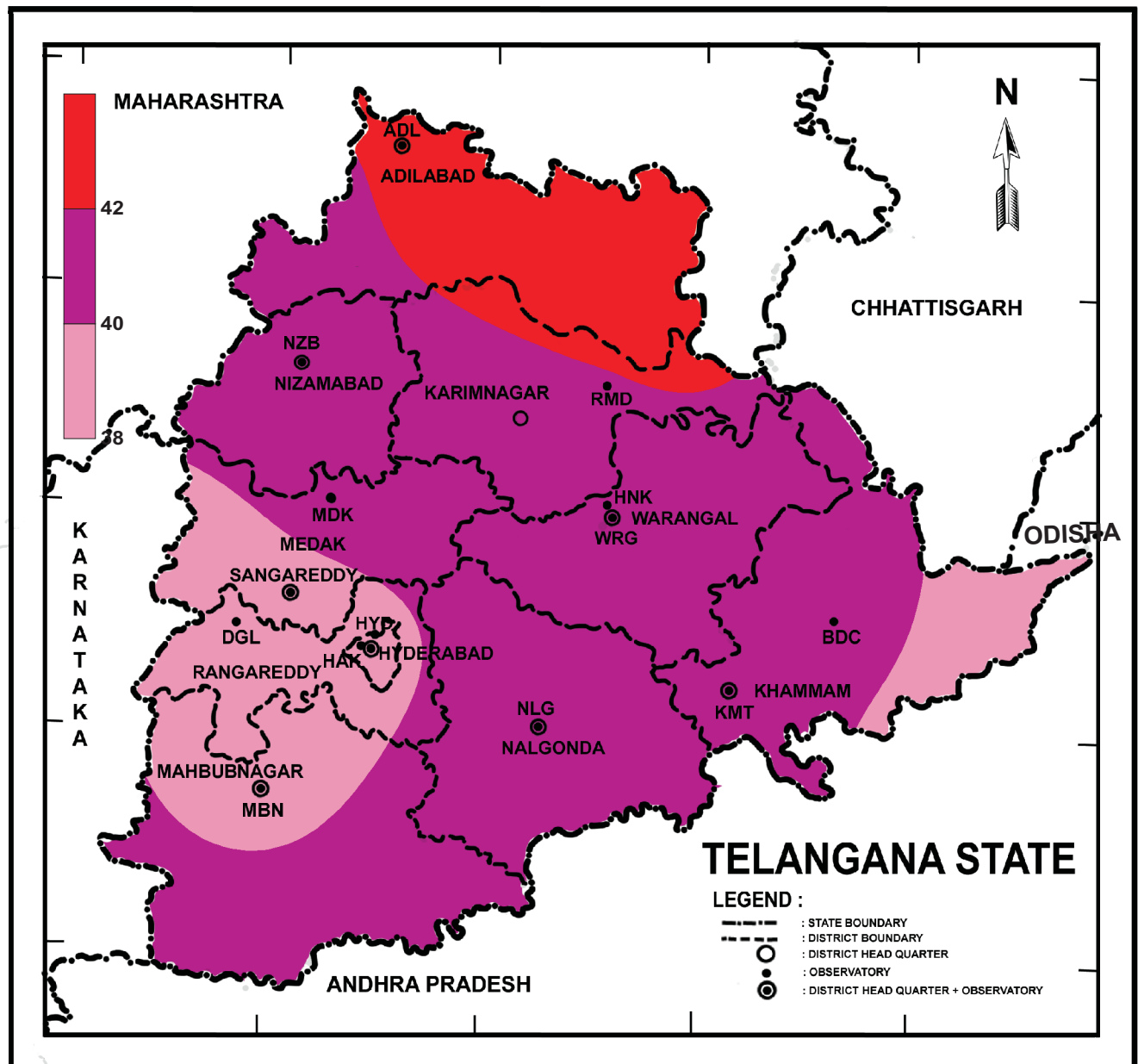


FIG.2(b): MEAN MAXIMUM TEMPERATURE (°C) - JULY

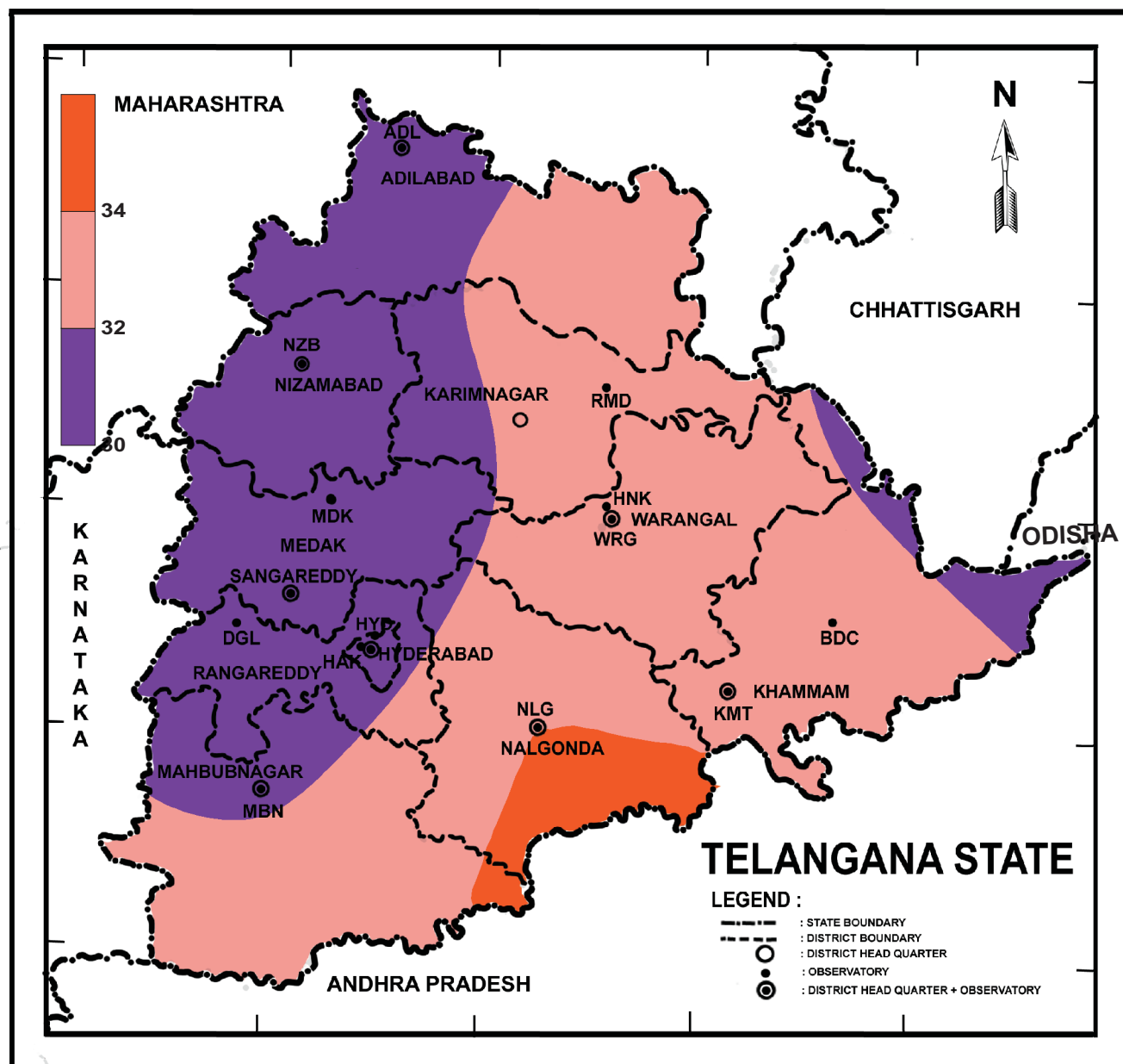


FIG.2(C): MEAN MAXIMUM TEMPERATURE (°C) - OCTOBER

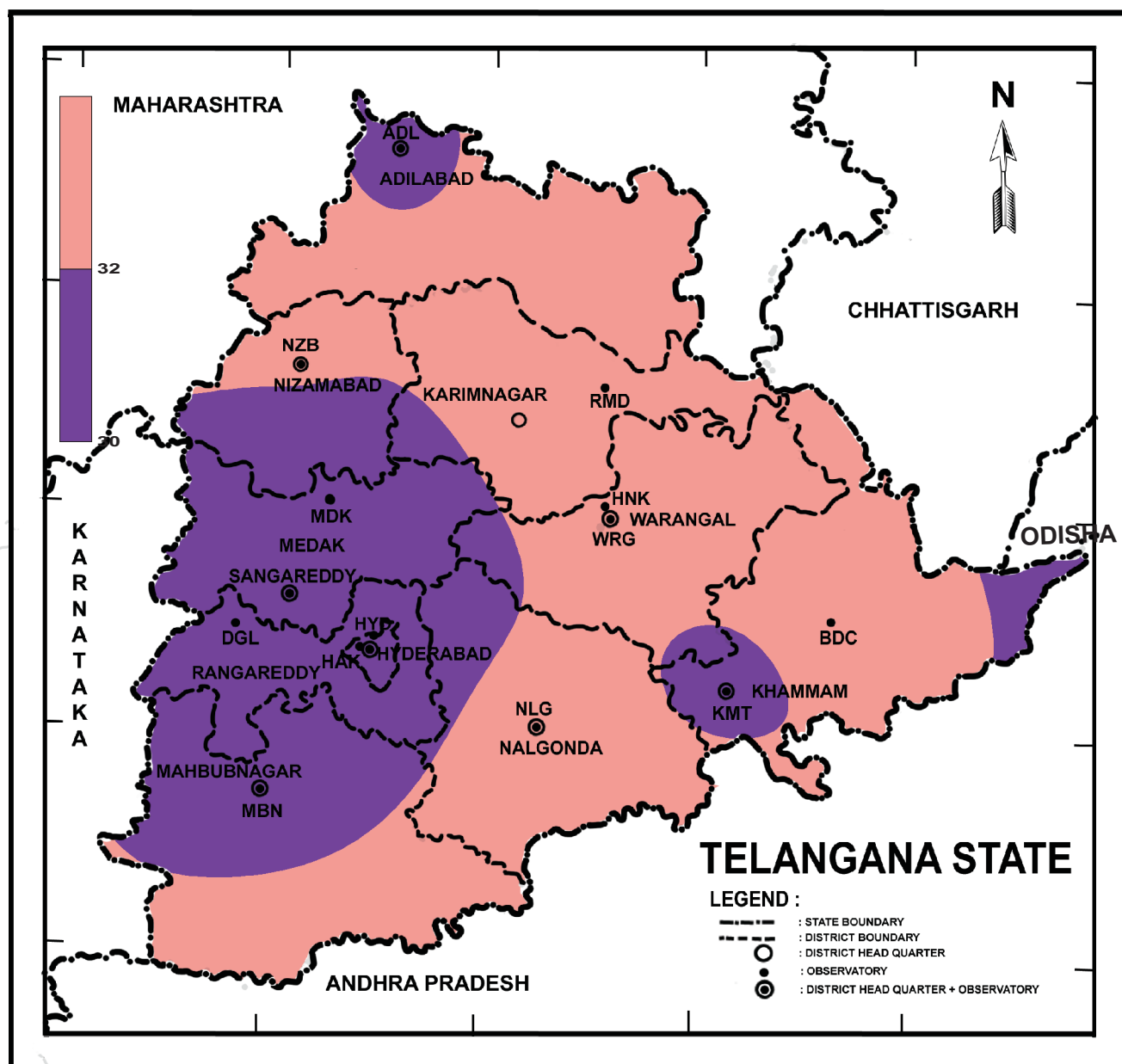


FIG.2(d): MEAN MAXIMUM TEMPERATURE (°C) - JANUARY

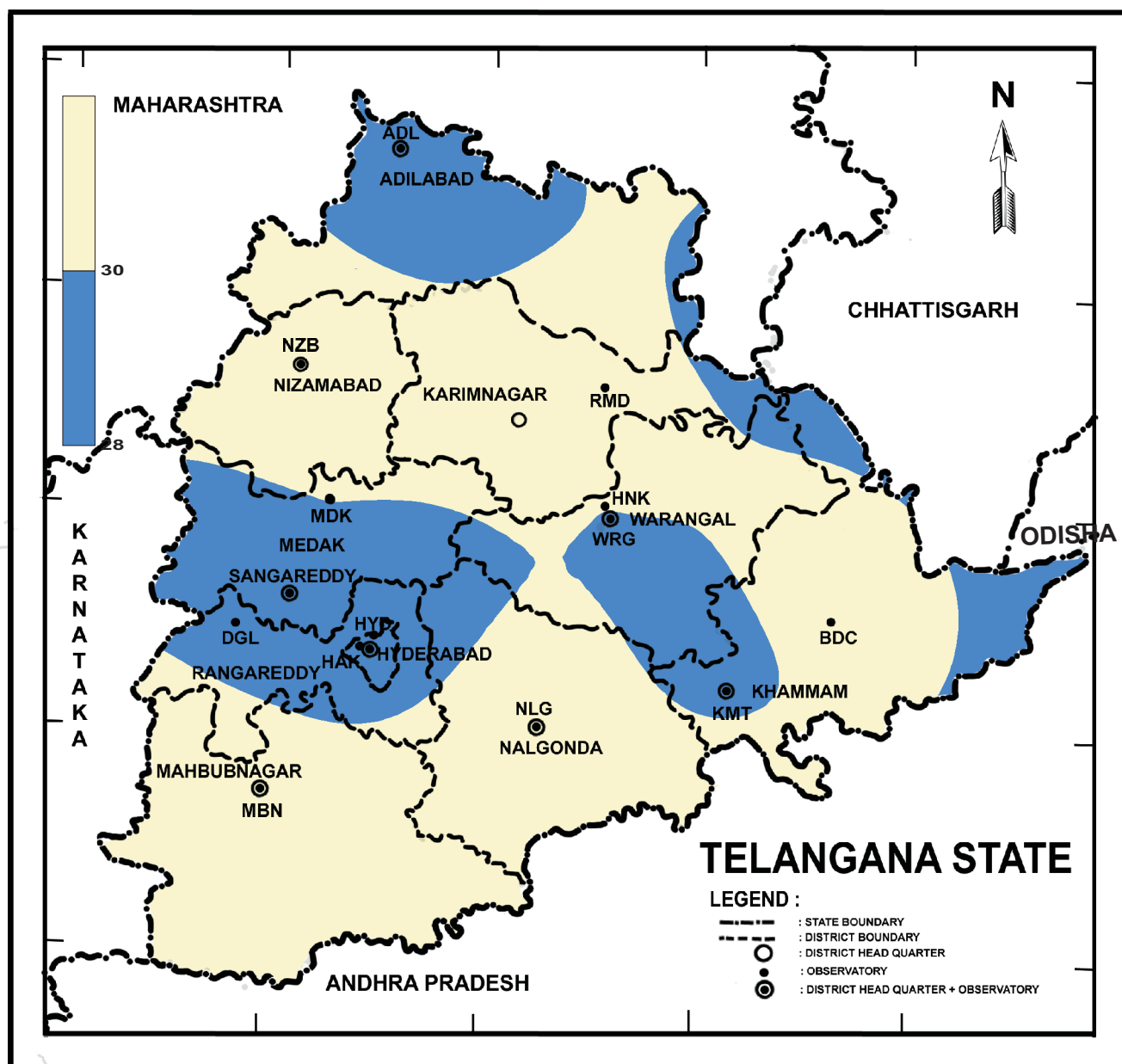


FIG.3(b): MEAN MINIMUM TEMPERATURE (°C) - APRIL

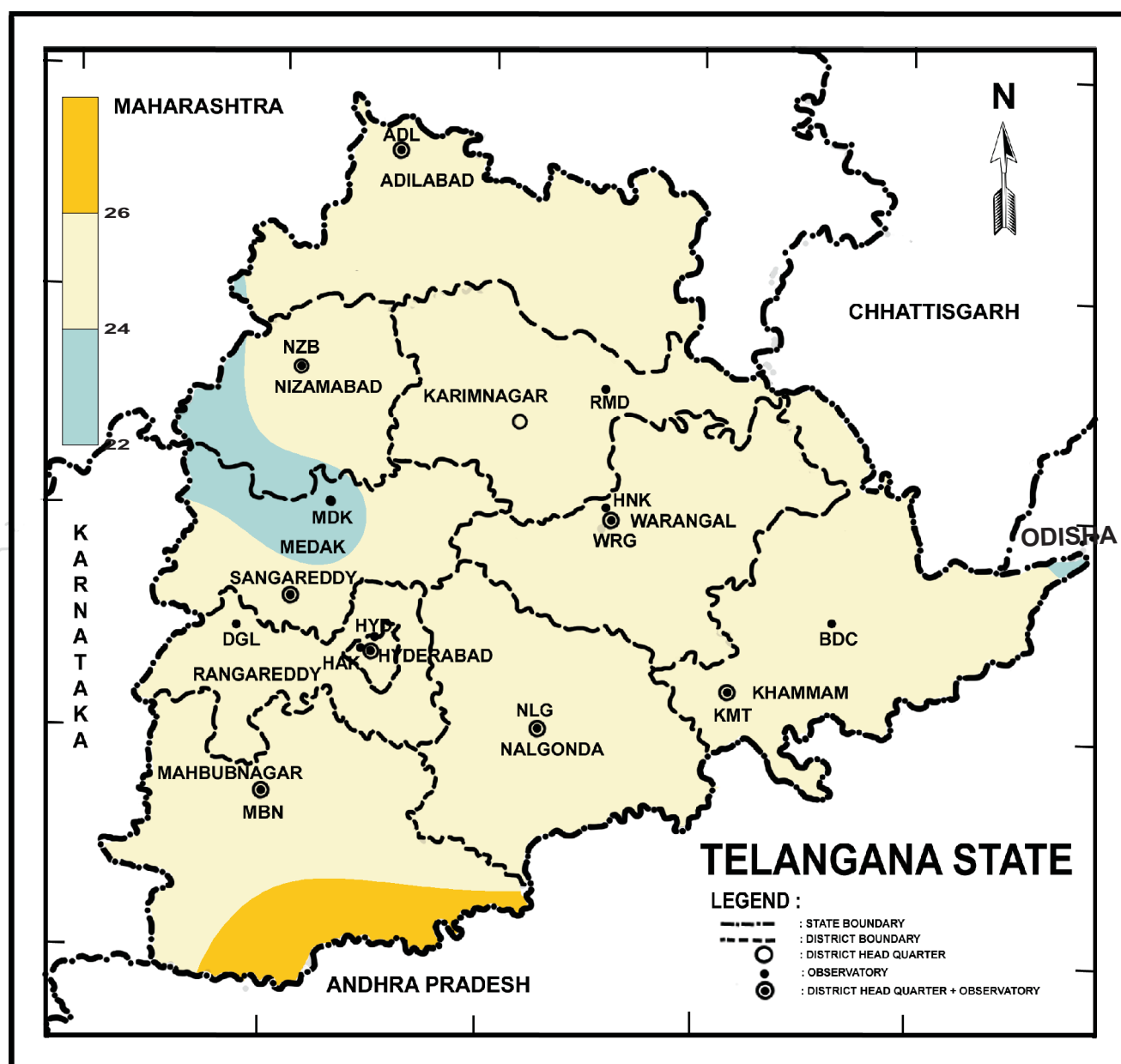


FIG.3(c): MEAN MINIMUM TEMPERATURE (°C) - JULY

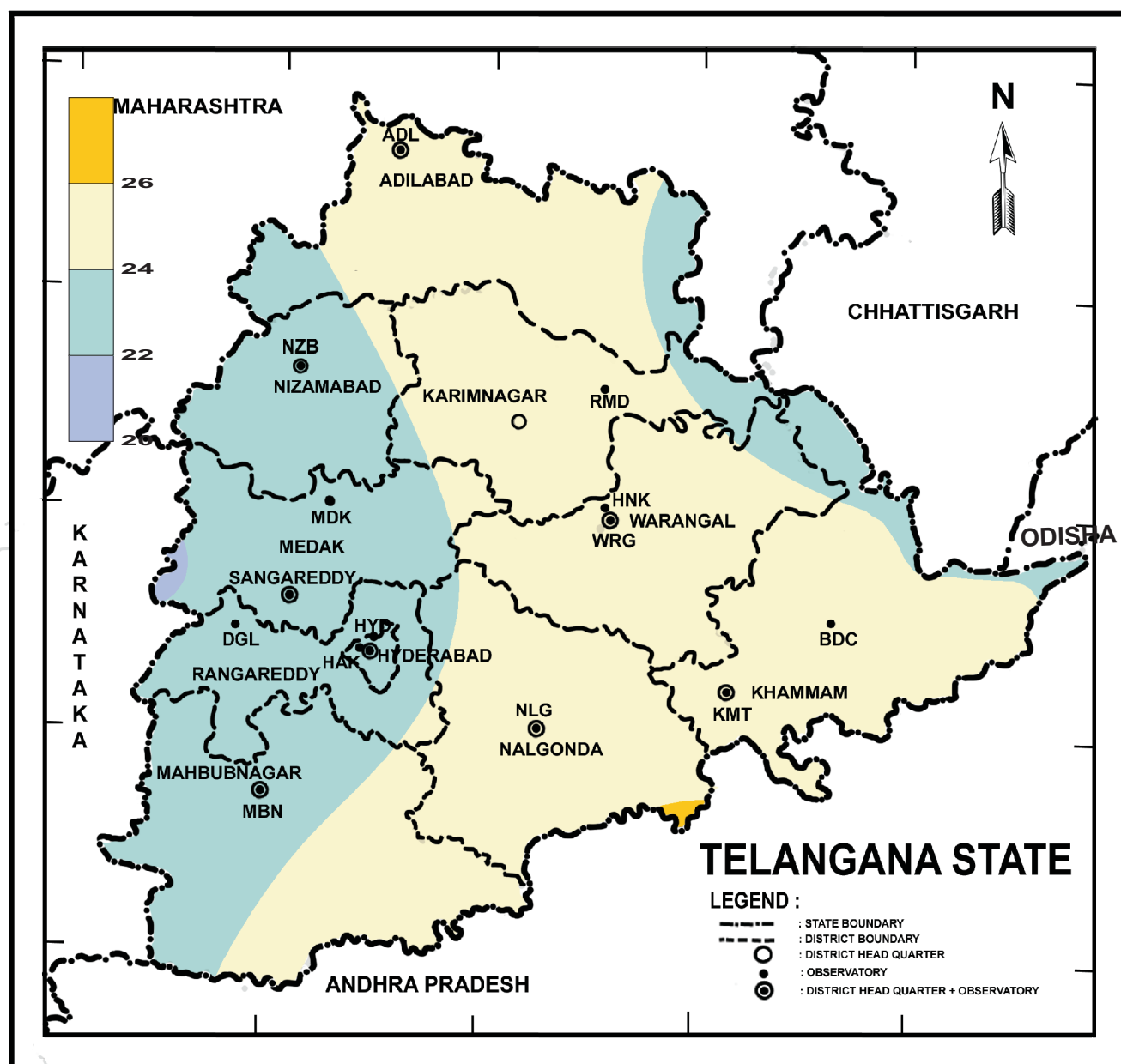


FIG.3(d): MEAN MINIMUM TEMPERATURE (°C) - OCTOBER

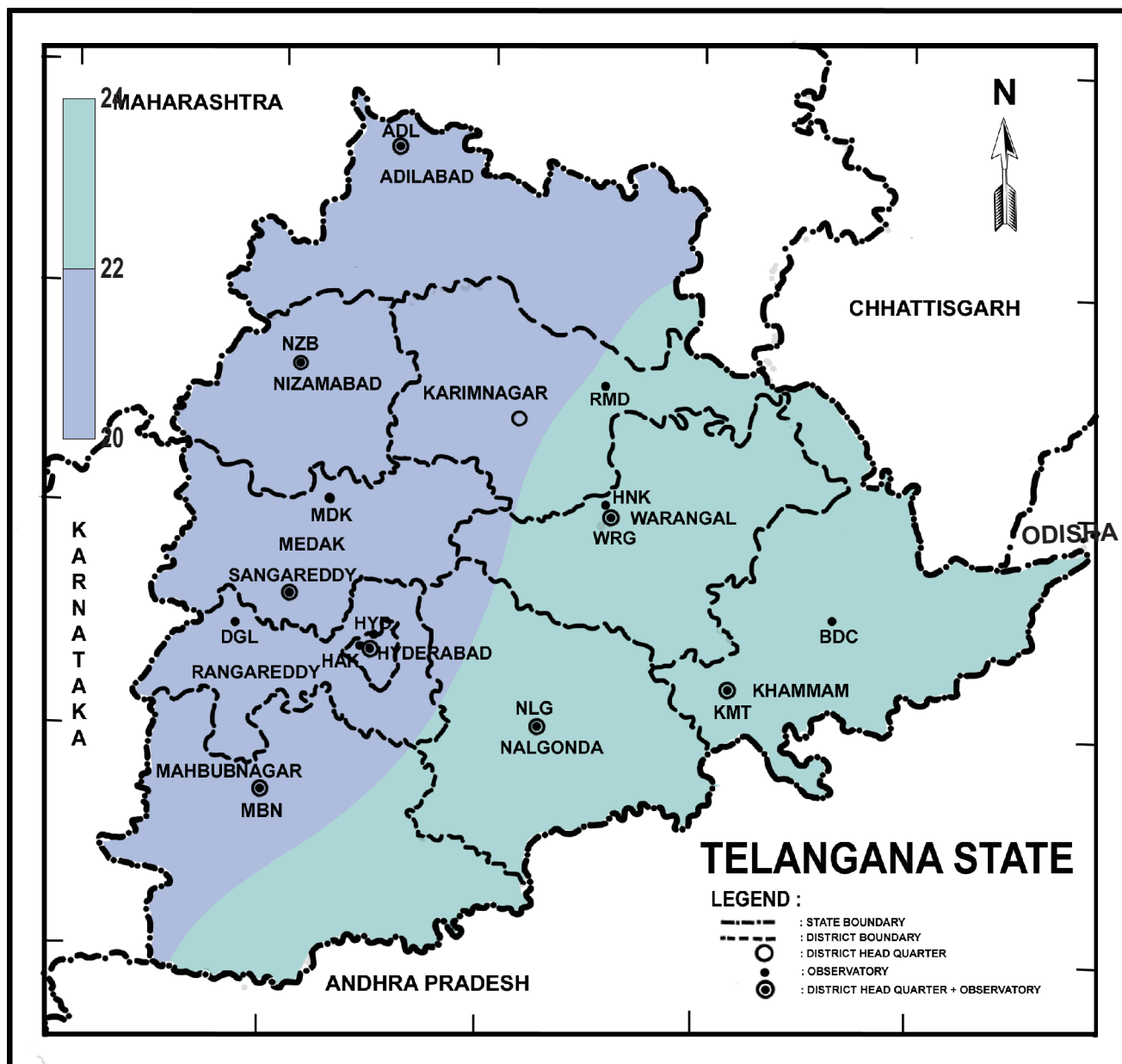
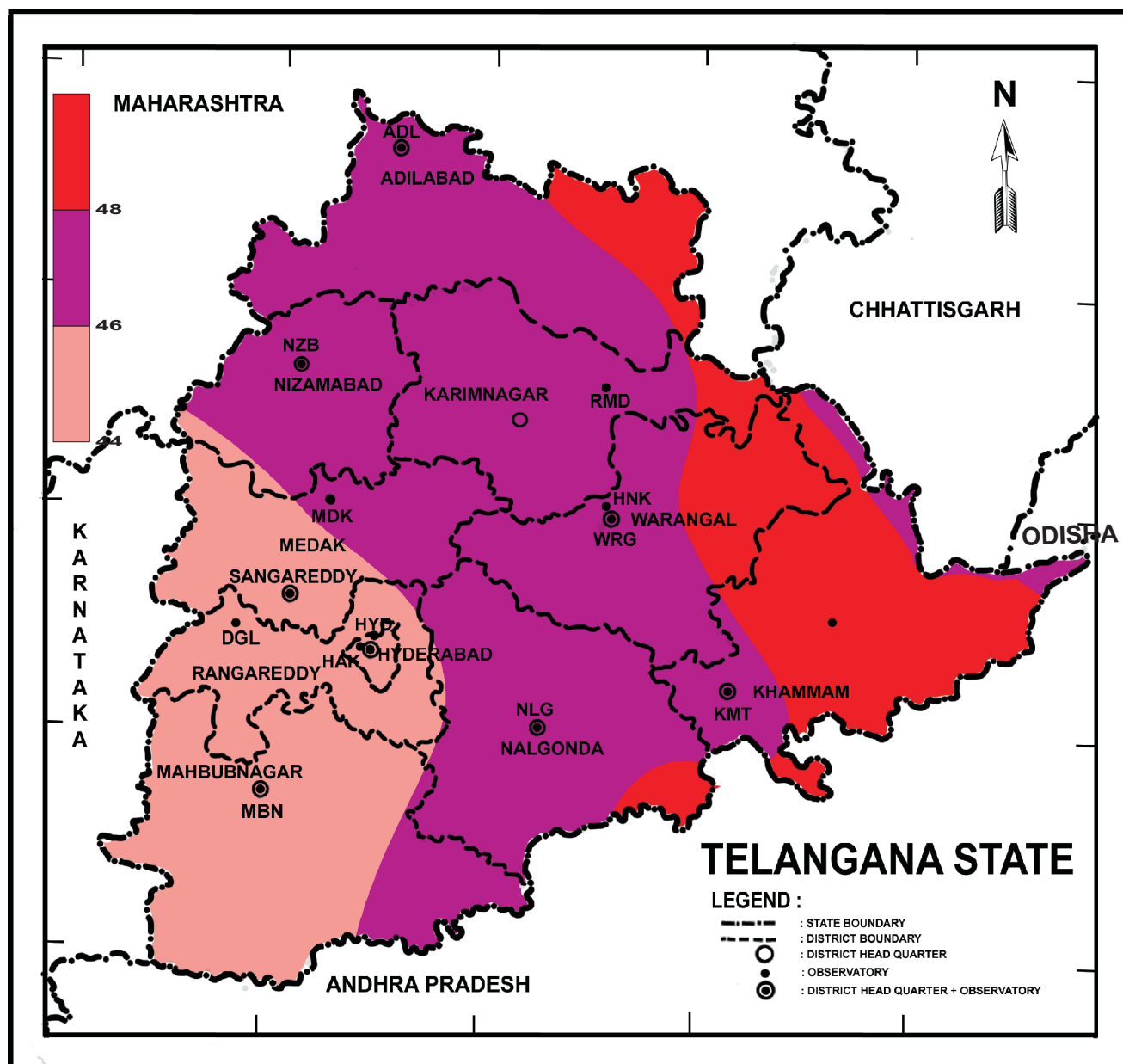


FIG.4: HIGHEST MAXIMUM TEMPERATURE (°C) EVER RECORDED



MAHARASHTRA

CHHATTISGARH

ODISHA

KARNATAKA

ANDHRA PRADESH

TELANGANA STATE

LEGEND :

- : STATE BOUNDARY
- - - : DISTRICT BOUNDARY
- : DISTRICT HEAD QUARTER
- : OBSERVATORY
- ⊙ : DISTRICT HEAD QUARTER + OBSERVATORY

HDI Values (from legend):

- 10
- 8
- 6
- 4
- 2

FIG.6: ANNUAL NORMAL RAINFALL (cm)

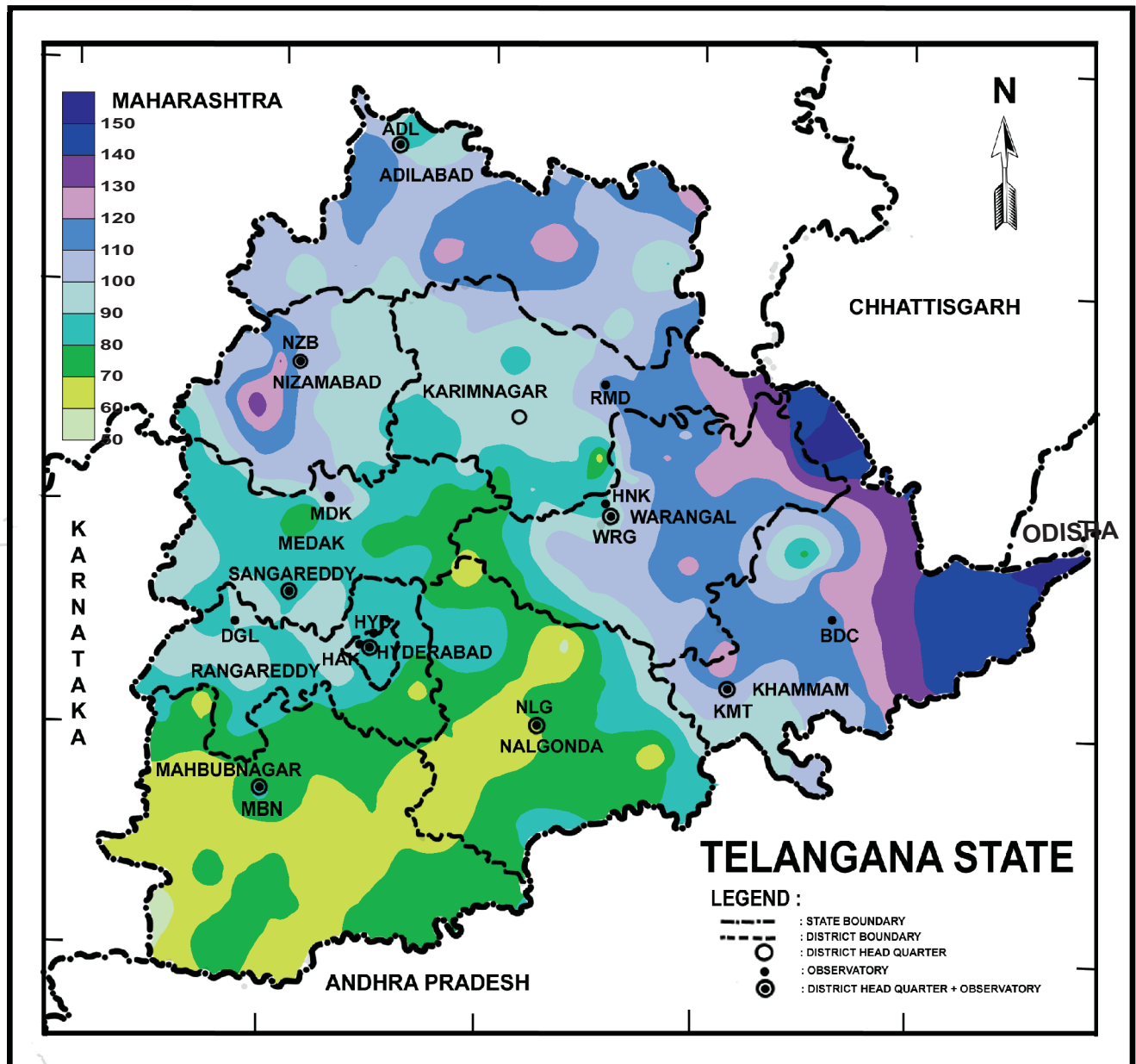


FIG.6(a): SEASONAL RAINFALL (cm) - WINTER (COLD WEATHER) SEASON
(DEC-JAN-FEB)

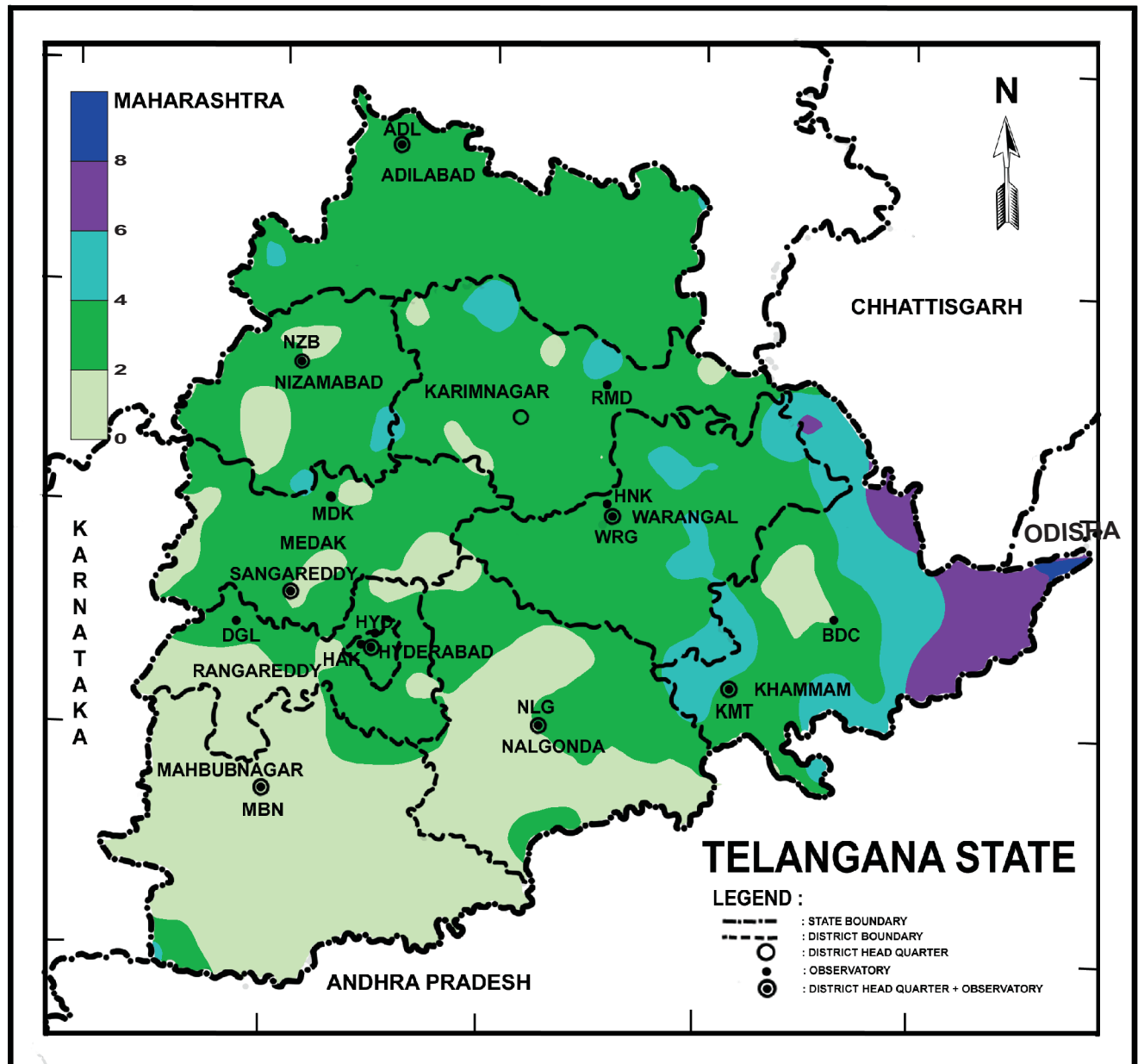


FIG.6(b): SEASONAL RAINFALL (cm)- PRE-MONSOON (HOT WEATHER) SEASON
(MARCH-MAY)

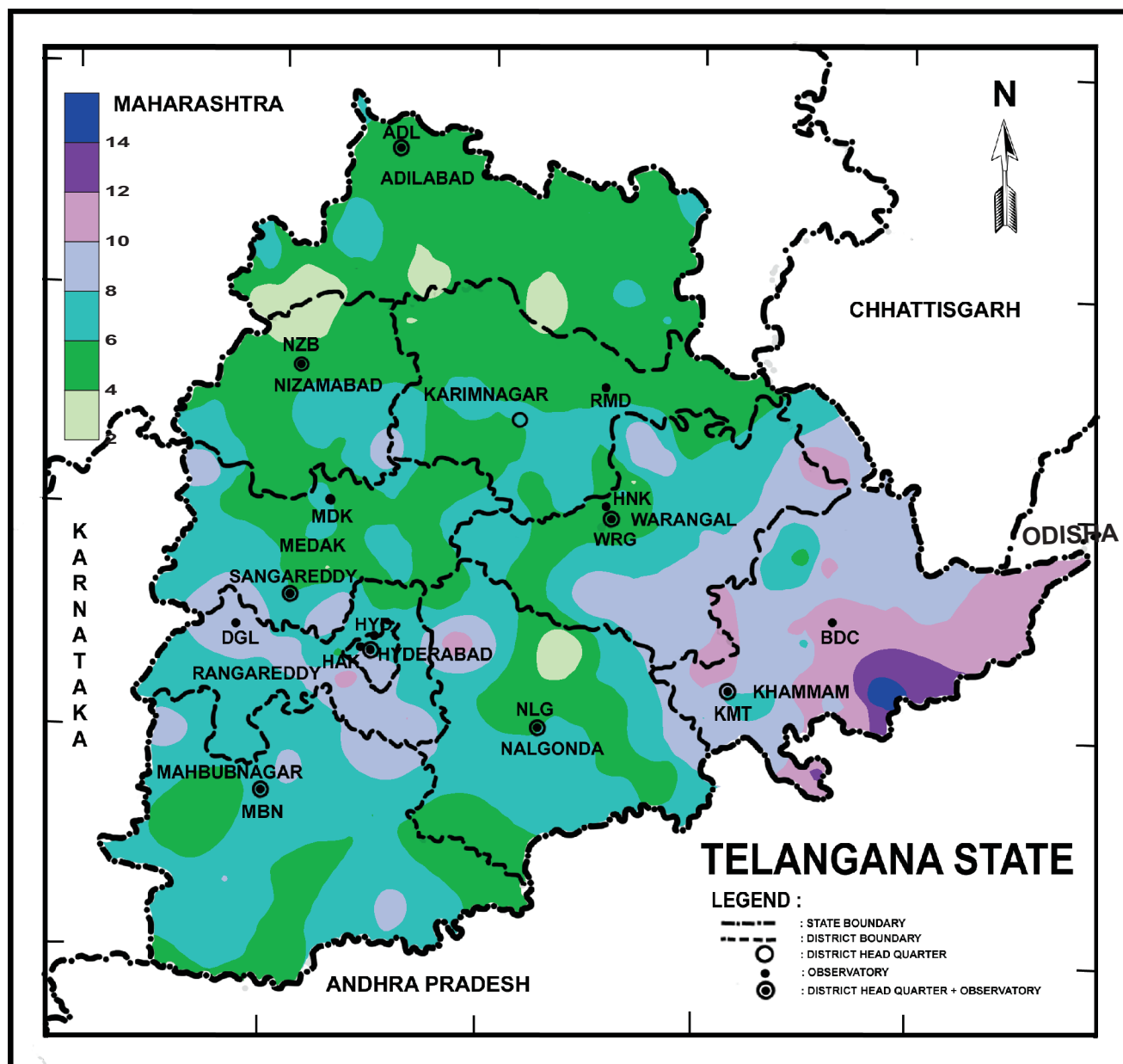


FIG.6(c): SEASONAL RAINFALL (cm) - SOUTHWEST MONSOON SEASON
(JUNE - SEPTEMBER)

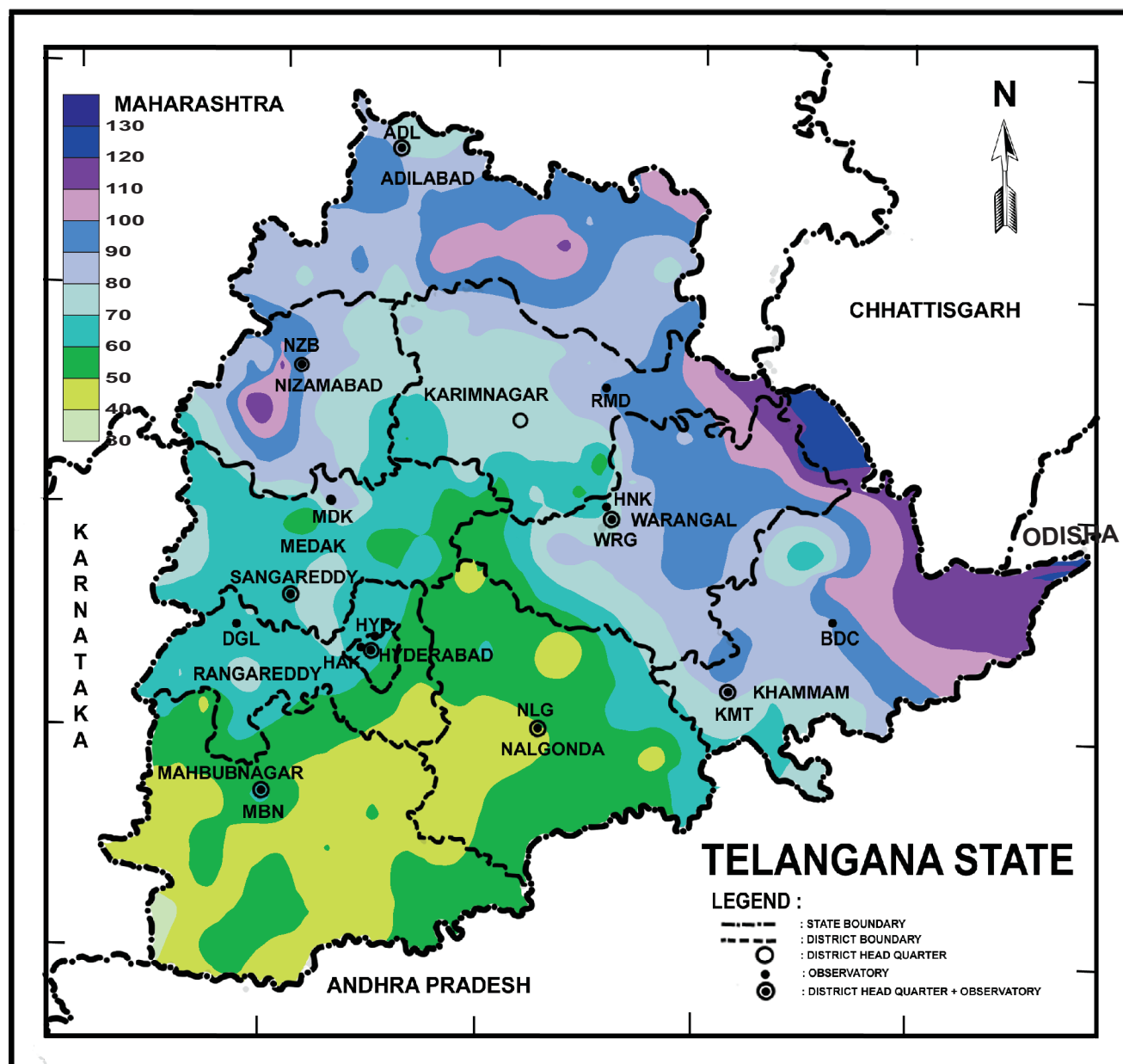


FIG.6(d): SEASONAL RAINFALL (cm) - POST MONSOON SEASON
(OCTOBER-NOVEMBER)

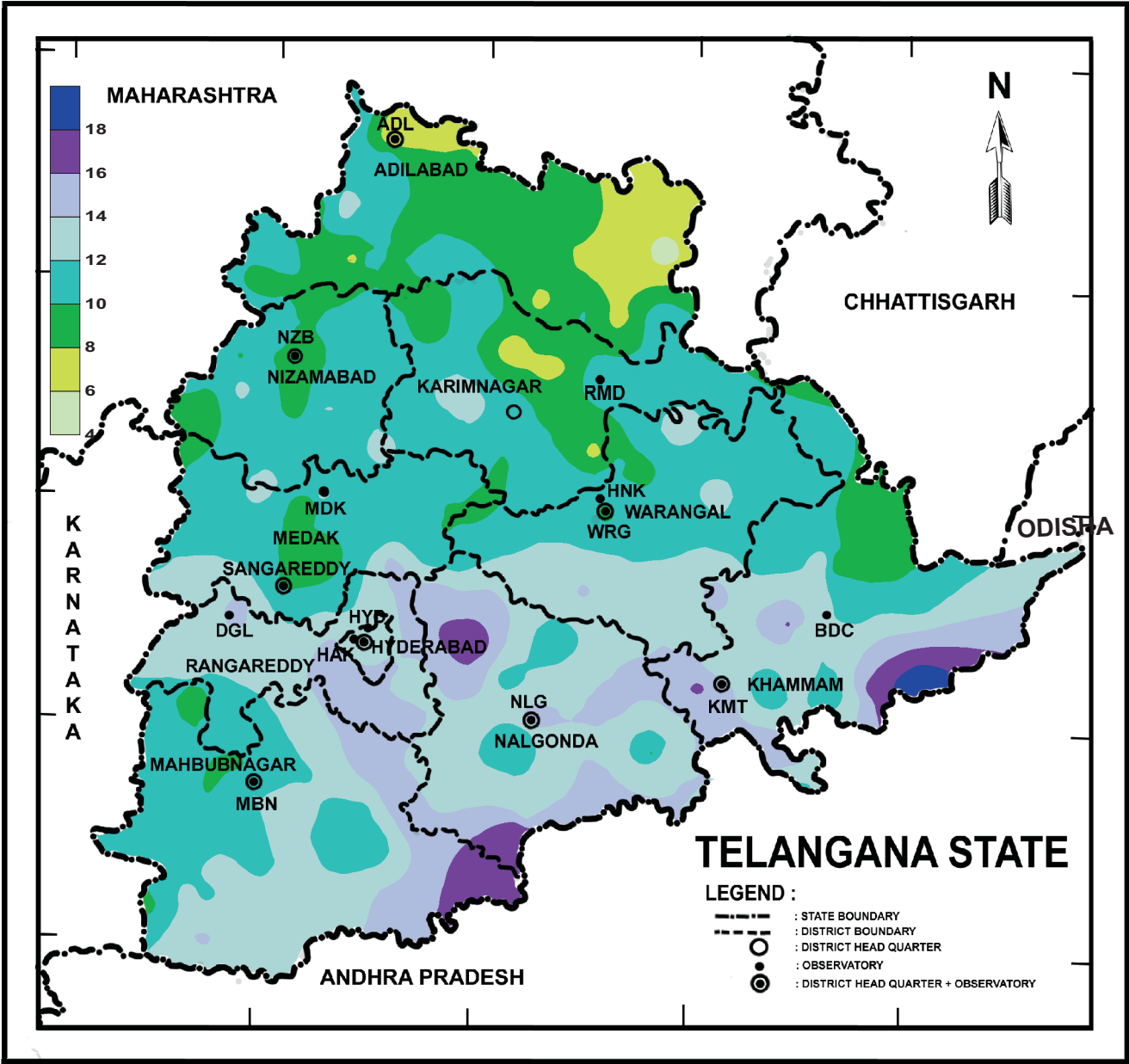


FIG.7: DISTRICT NORMALS OF SEASONAL AND ANNUAL RAINFALL (mm)
TELANGANA

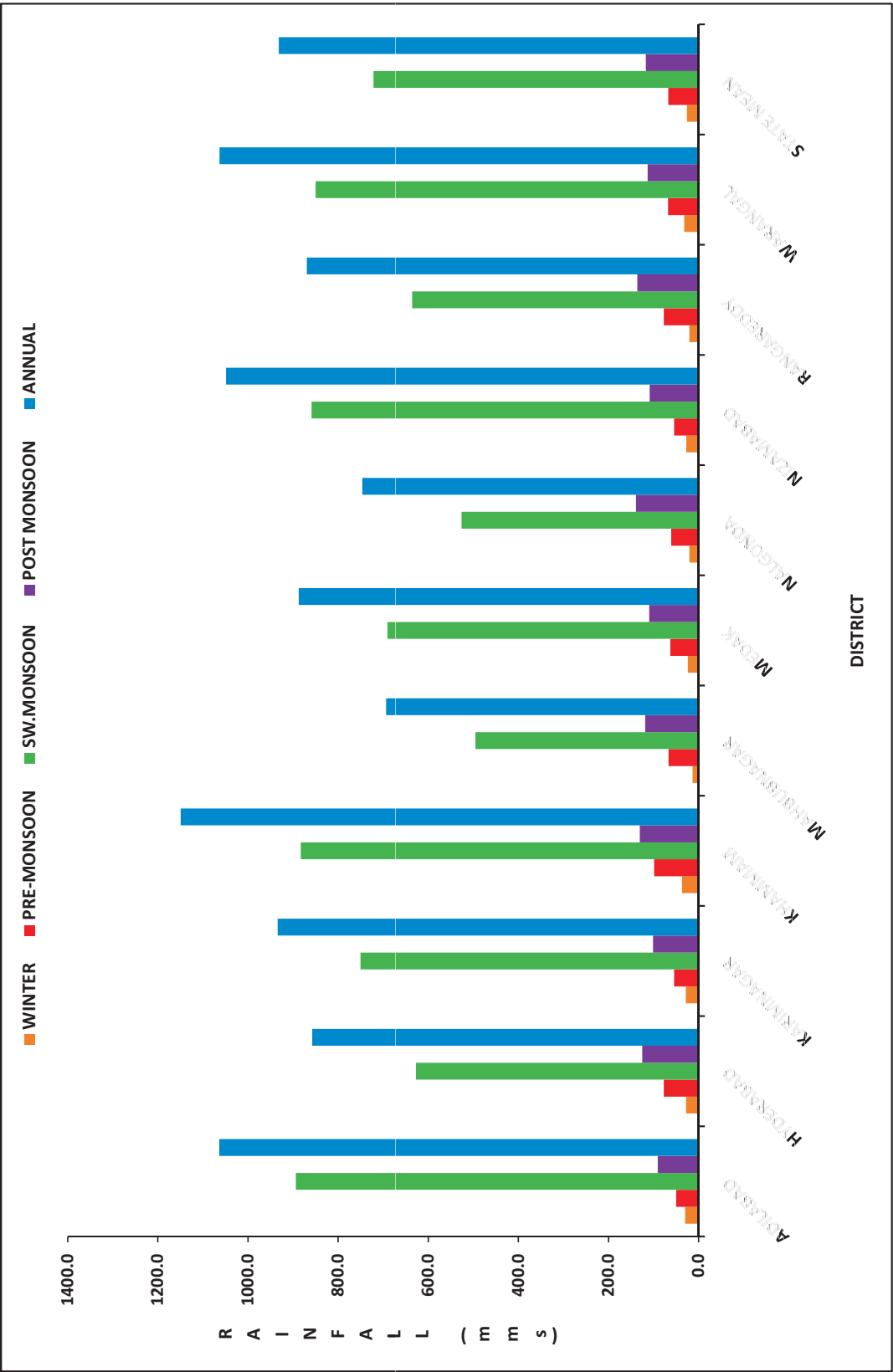


FIG.8: CATCHMENT AREAS WITH ANNUAL RAINFALL (mm)
(307, 309, 310, 312, 313, 314, 317.)

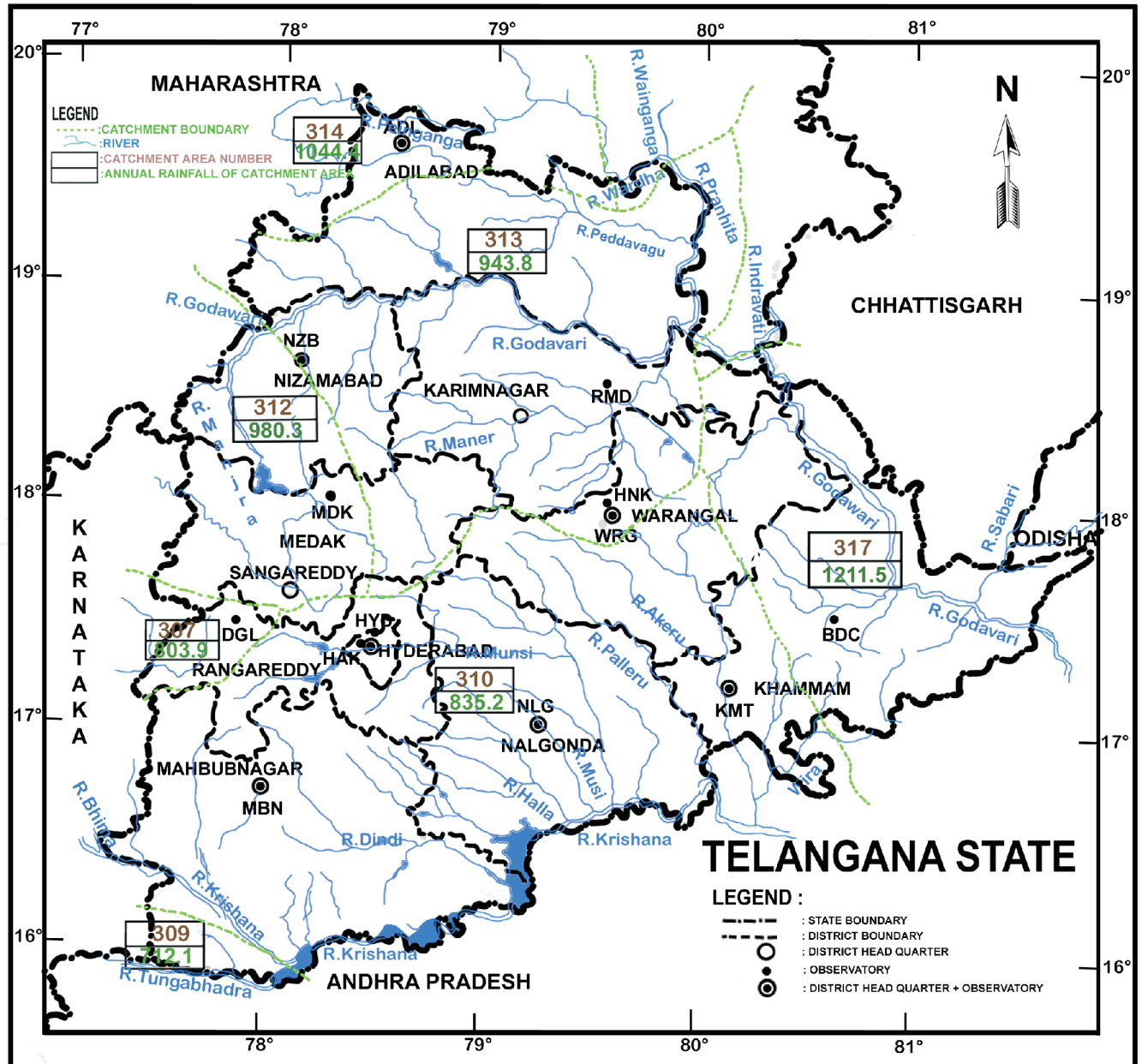


FIG.9: COEFFICIENT OF RAINFALL VARIATION - ANNUAL

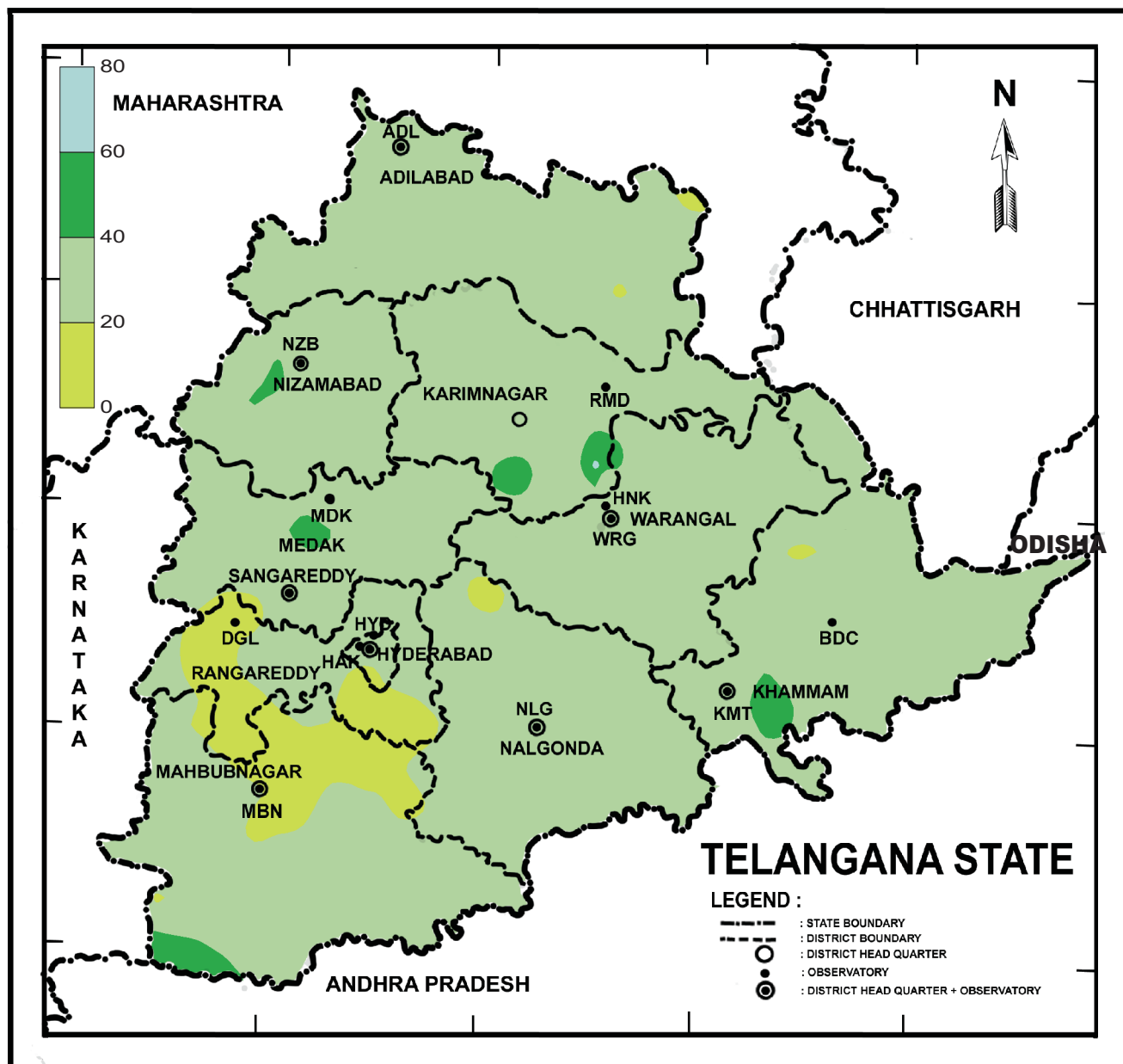


FIG.9(a): COEFFICIENT OF RAINFALL VARIATION PRE-MONSOON SEASON
(MARCH-MAY)

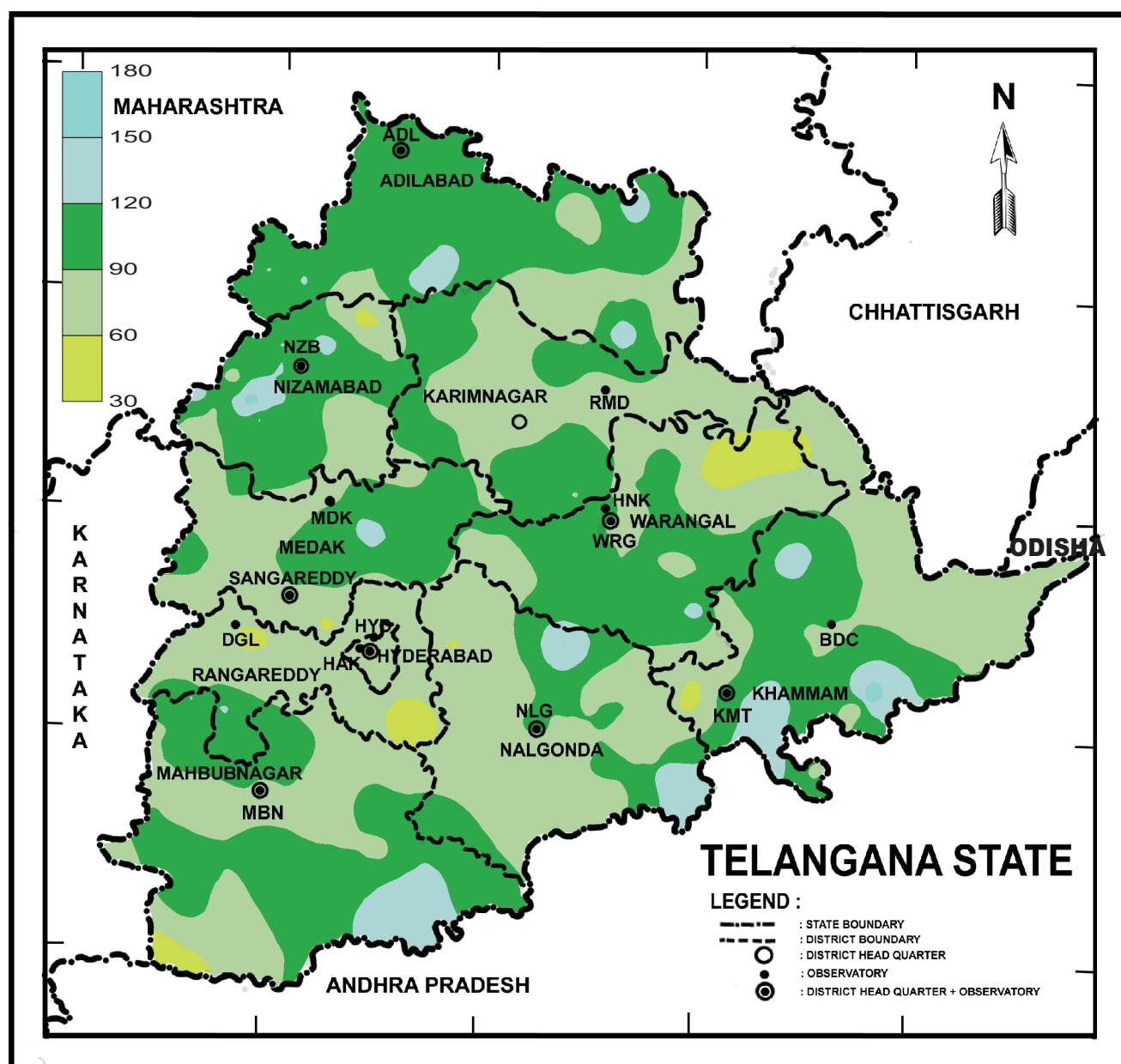


FIG.9(b) : COEFFICIENT OF RAINFALL VARIATION - SOUTH WEST MONSOON SEASON
(JUNE-SEPTEMBER)

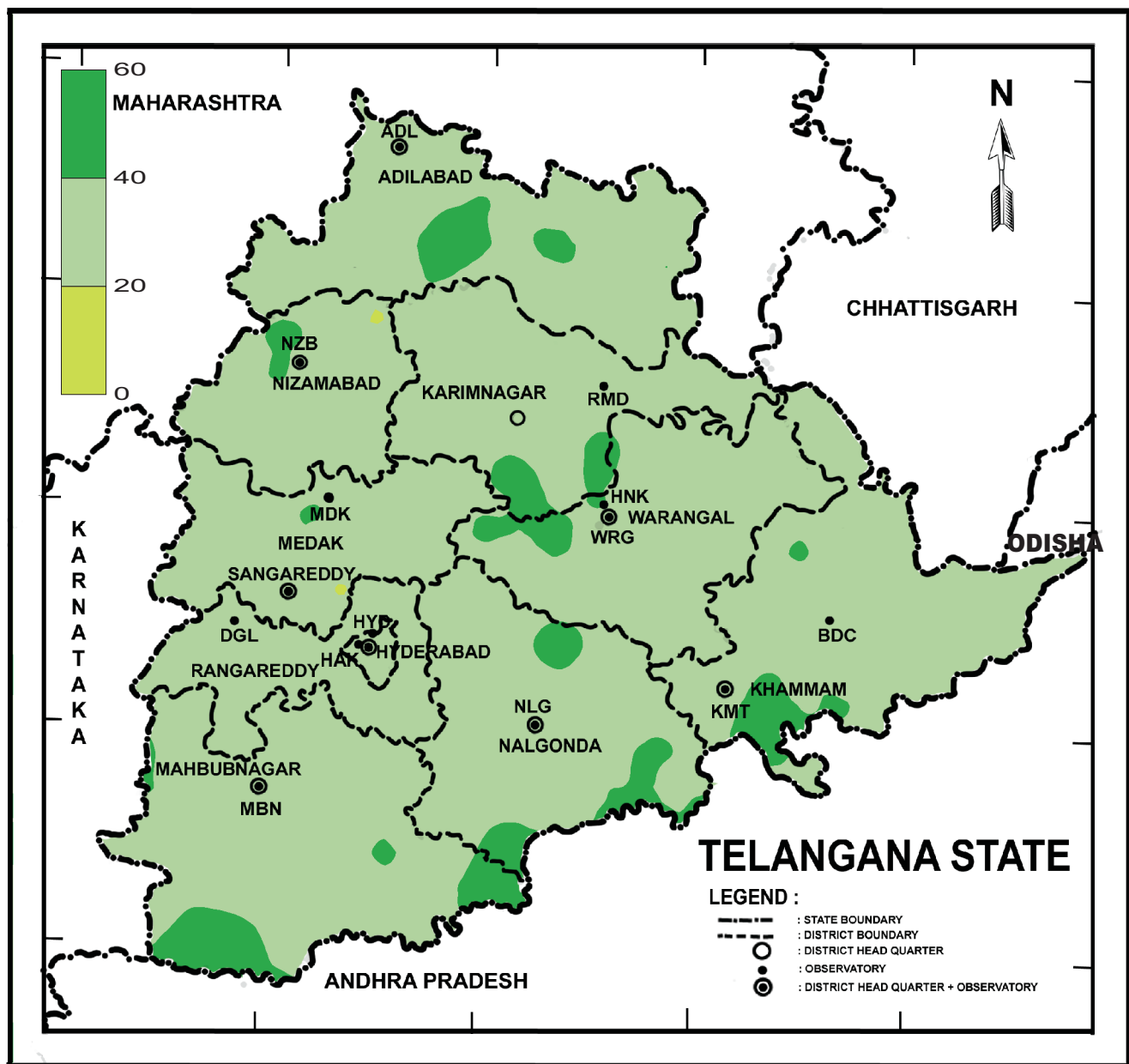


FIG.9(c): COEFFICIENT OF RAINFALL VARIATION - POST MONSOON SEASON
(OCTOBER-NOVEMBER)

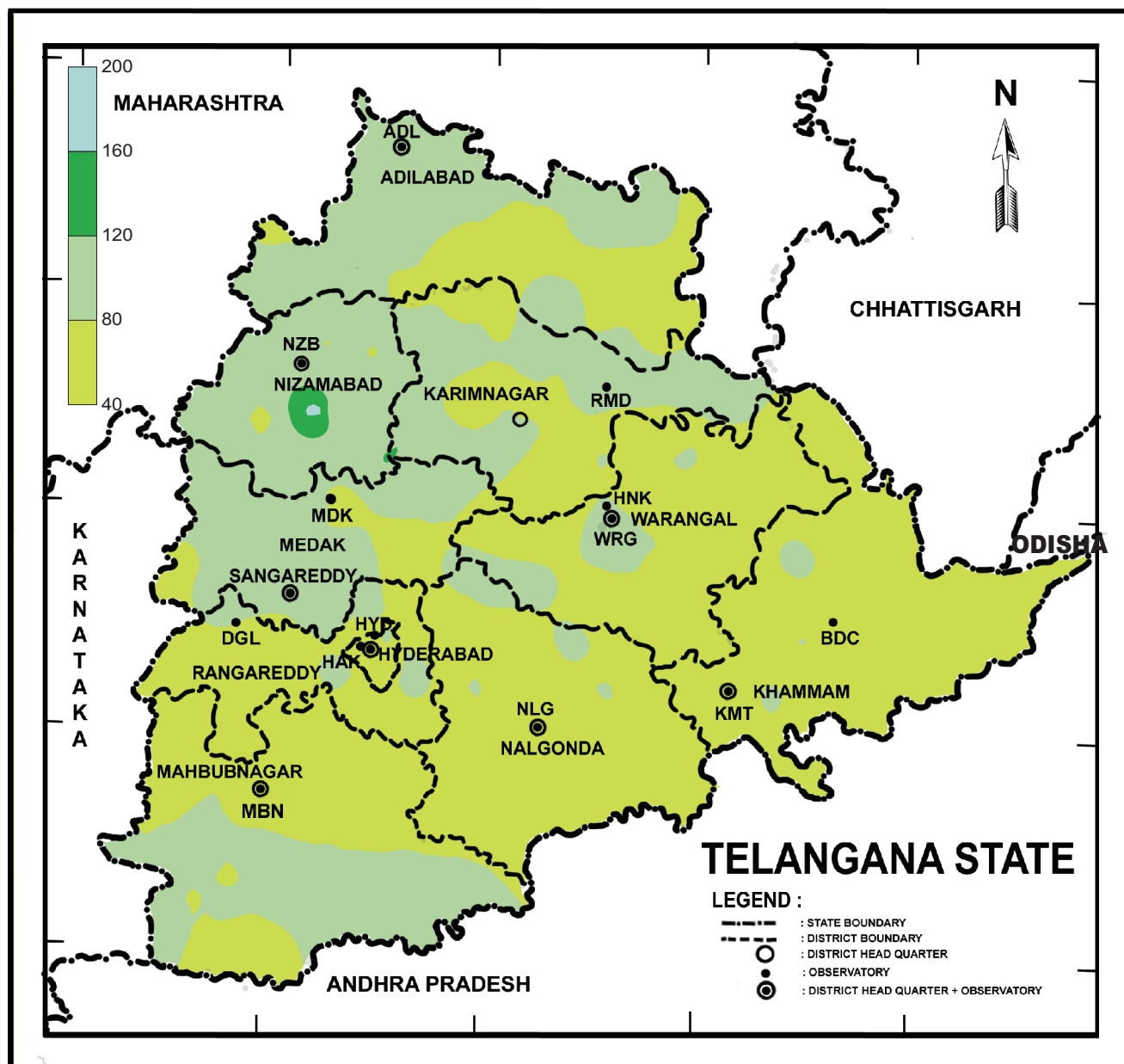


FIG.9(d): COEFFICIENT OF RAINFALL VARIATION - WINTER SEASON
(DECEMBER-JANUARY-FEBRUARY)

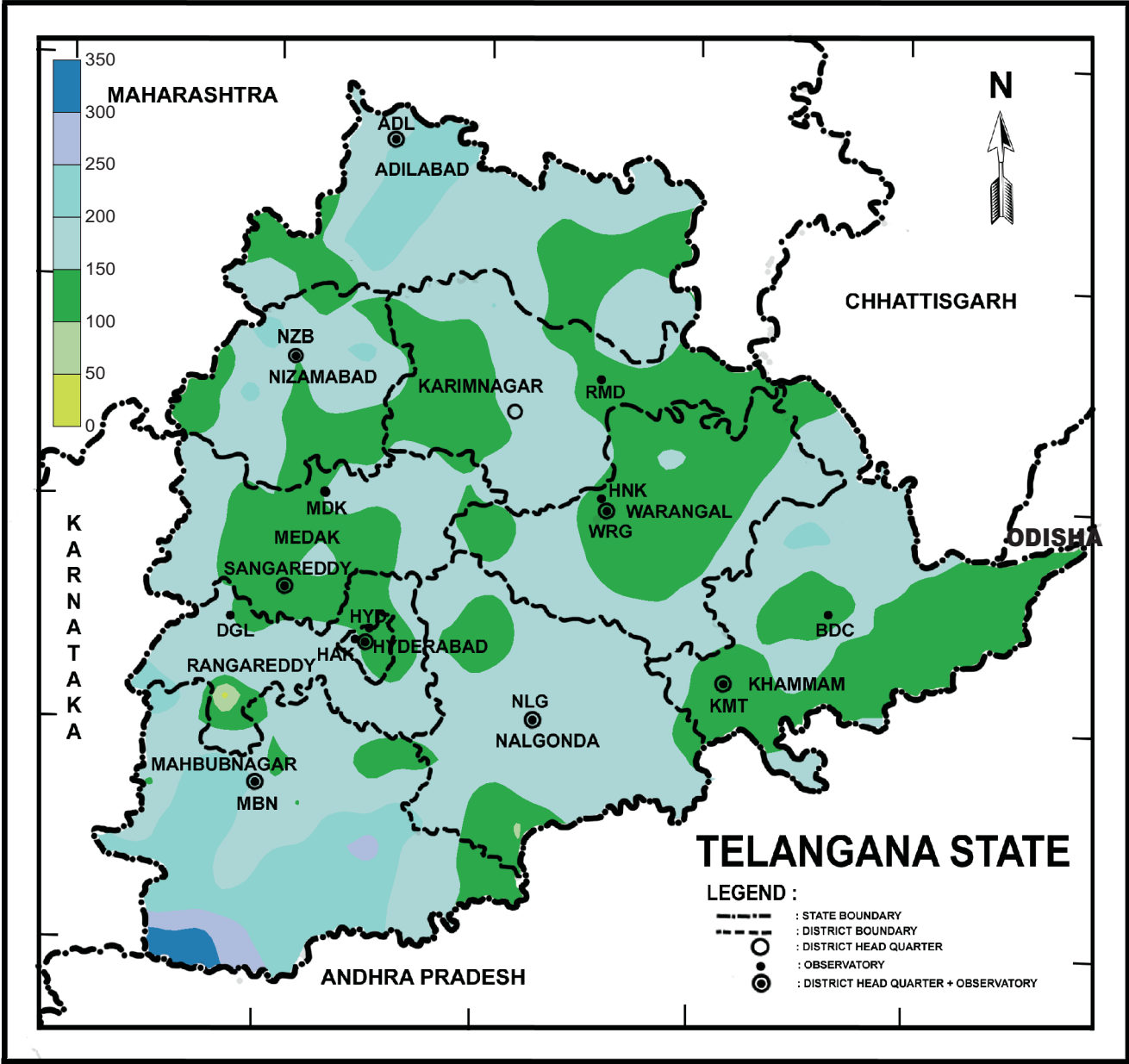


FIG.10: AREA AFFECTED BY DROUGHT (1961-2010)

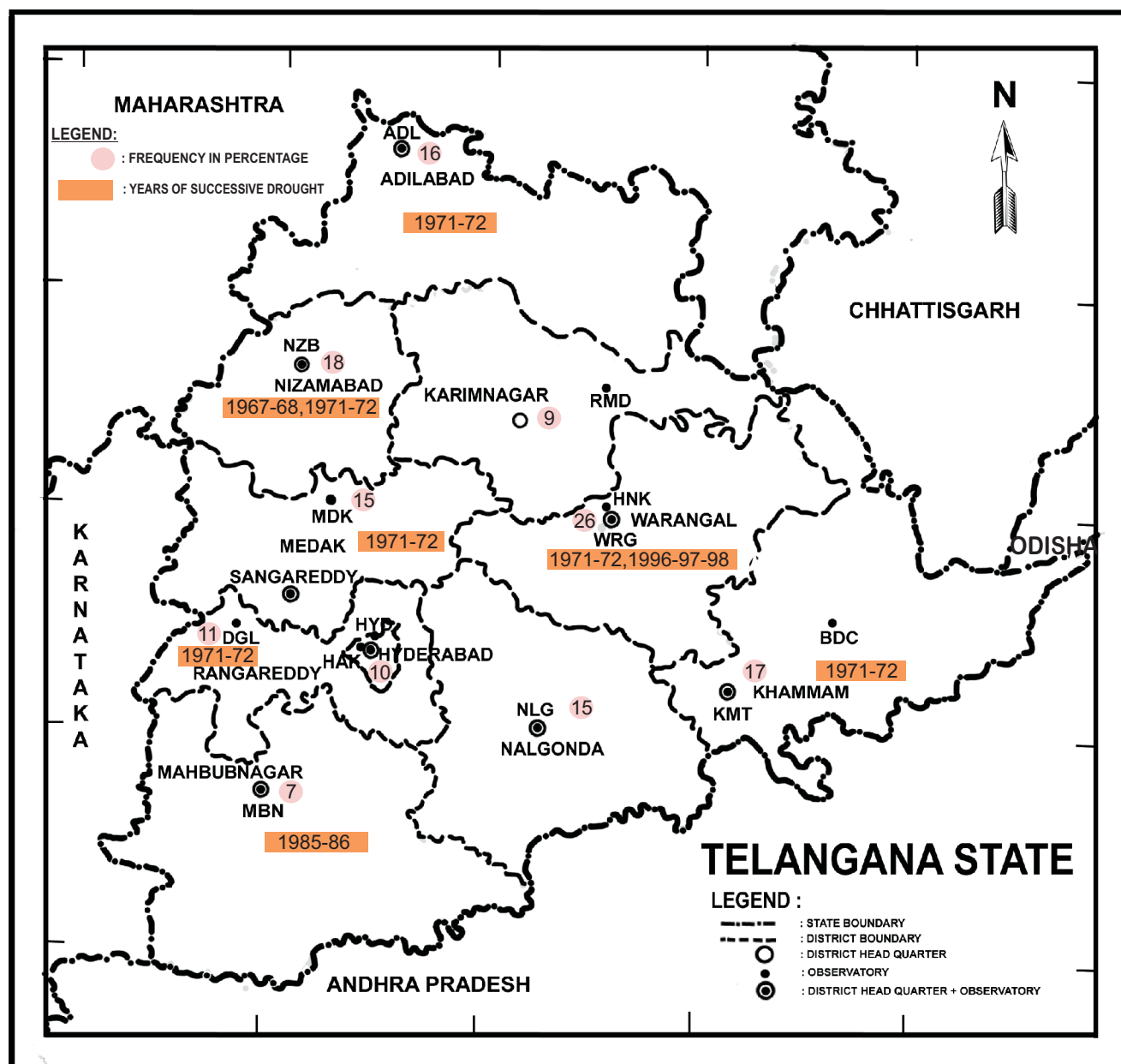
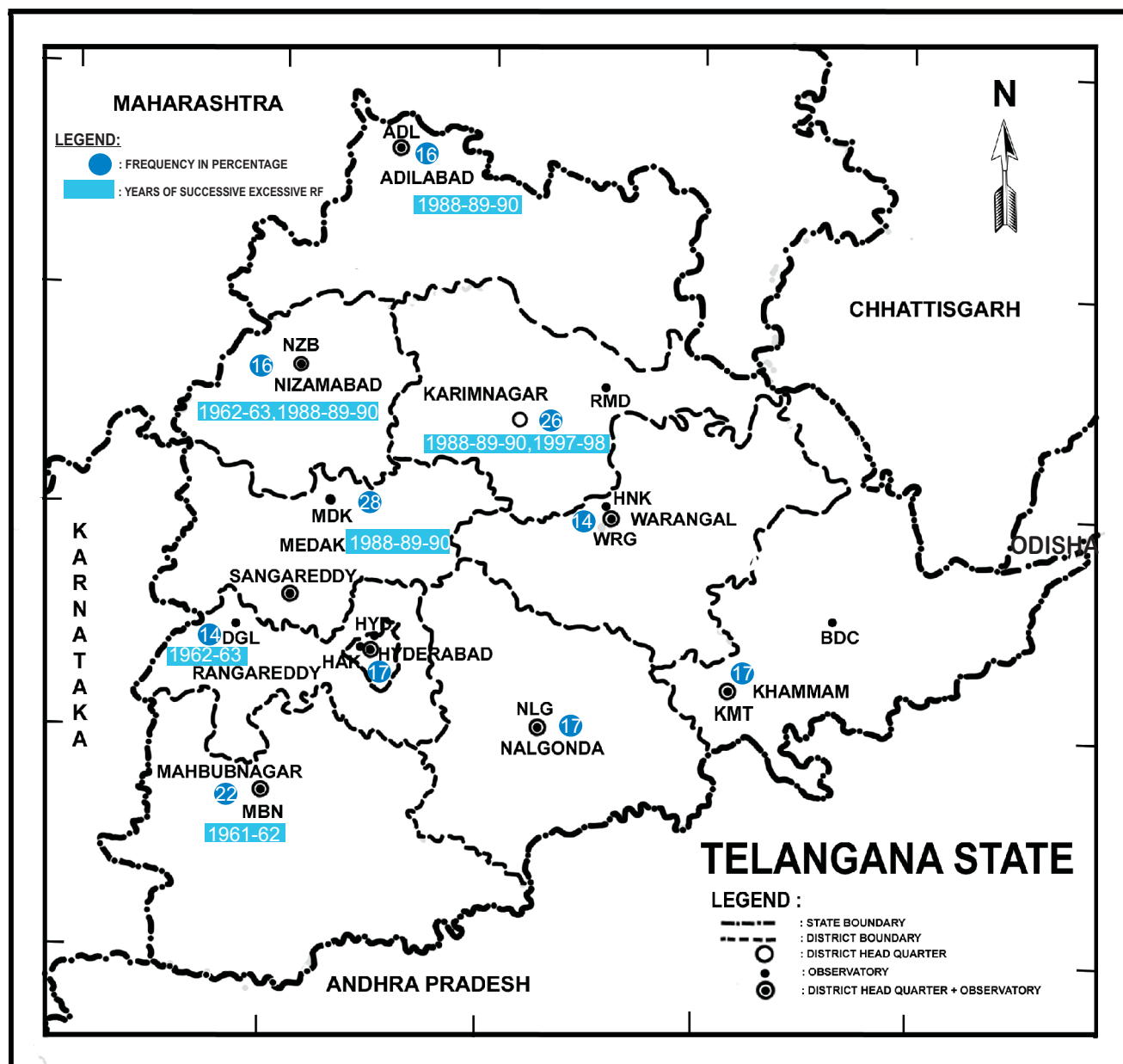


FIG.11: AREA AFFECTED BY EXCESSIVE RAINFALL (1961 - 2010)



STATE CLIMATOLOGICAL SUMMARY

CLIMATE OF TELANGANA

Introduction

Telangana state is located between 15°55'N - 19°55'N latitude and 77°10'E- 81°50'E longitude in the southern region of India. It shares its boundaries with Andhra Pradesh to the south and southeast, Chhattisgarh and Odisha to the northeast, Maharashtra to the north and northwest and Karnataka to the west. The state of Telangana has a geographical area of about 114,840sq.km. Telangana is situated on the Deccan plateau, towards the eastern coast in the southern region of India. The average elevation of the plateau area is about 500 metre above mean sea level, higher in west and southwest and sloping downward towards the east and northeast, where it meets the discontinuous line of the Eastern Ghats ranges. Western part of the state is mostly hilly with an altitude of 300m to 600m and its small area is having an altitude of 600 m to 845 m. Eastern part is mostly plain of low elevation and very small area of hills. Peak height in the state is about 1360 m which is observed in the extreme eastern part of the state.

Telangana has two prominent perennial rivers such as Godavari in the north and Krishna in the south. Other rivers such as Manair, Penganga, Pranhita, Akeru, Dindi, Manjeera, Musi, Bhima, Paleru and Peddavagu flow through the state. There are many big dams on the rivers in the state viz. Sriram Sagar, Nizam Sagar, Nagarjun Sagar, Himayat Sagar, Singur dam and so on and they supply water for irrigation, for drinking and for generating hydro-power.

Godavari River: It is one of the most important rivers of Telangana and is the second longest river of the country. It originates in Nashik district of Maharashtra and runs across the Deccan plateau and through northern part of Telangana and Andhra Pradesh before entering the Bay of Bengal. It flows from west to southwest and irrigates almost northern part of Telangana. Manjeera river is one of its major tributaries.

Krishna River: It flows in extreme southern part of the state and passes through border with Andhra Pradesh. Bhima is one of the prominent tributaries of Krishna river.

Penganga River: It originates in the Ajantha ranges in Aurangabad district in Maharashtra. It enters in Telangana state through Adilabad district. It flows along state border between Maharashtra and Telangana before converging into Wardha river.

Peddavagu River: This river originates about 10 km upstream of Adilabad district in Telangana and after passing through an stretch of about 180 km it converges into Pranhita river.

Musi River: It is a tributary of Krishna river and originates in Ananthgiri hills, near Vikarabad. Then it flows through the Deccan plateau region of Telangana and meets Krishna river near Vazirabad in Nalgonda district.

Dindi River: This river originates in northern hilly area of Mahabubnagar district and flows across Nalgonda district where Nagarjun Sagar dam is built on this river.

Manair River: It is a tributary of Godavari river. The Lower Manair Dam built across this river in Karimnagar district and provides the water to Karimnagar district for irrigation and drinking.

Manjira River: It originates in the Balaghat ranges of hills at an altitude of 823 metre in Maharashtra. It is a tributary of Godavari river. It passes through Telangana state. Nizam Sagar dam across Manjira river is in Nizamabad district. Singur Reservoir on Manjira river in Medak district provides the water to Medak, Nizamabad and Hyderabad districts.

There are also many lakes in the state and most of them are in Hyderabad district viz. Husain Sagar, Osman Sagar, Saroornagar, Shamirpet, Himayat Sagar, Banjara, Fox Sagar, Mir Alarm tank, Alwal etc. Pakhal and Durgam Cheruvu lakes are in Warangal and Rangareddy districts respectively. Nizamsagar and Pochampadu lakes are in Nizamabad district.

The state representing only one meteorological sub-division-Telangana consists of the following 10 districts.

Sr. No.	District Name	Sr. No.	District Name
1.	Adilabad	6.	Medak
2.	Hyderabad	7.	Nalgonda
3.	Karimnagar	8.	Nizamabad
4.	Khammam	9.	Rangareddy
5.	Mahbubnagar	10.	Warangal

Climate

In general Telangana state has a hot and dry climate. The state is situated in the southern region of India. The geographical factors like distance from the sea and altitude of the state have influenced the climate of Telangana. Consequent upon some area of the state is of semi-arid. May is the hottest month while December and January are the coldest ones. The state is mostly dependent on the monsoon for rain. The climatic condition during summer is hot and dry wind blows and occasionally it becomes gusty over the state. The state is sometimes affected by heat waves during summer months mostly in April and May months. During winter the temperature falls to some extent during a few spells when cold waves associated with western disturbances affect northern parts of the state in winter months. April and May months are generally hot, dry and uncomfortable. With the onset of southwest monsoon from about the middle of June weather becomes humid and slightly cool. Sometimes, weather is experienced as fairly comfortable for the next months (July, August and September) due to reduced day temperatures, although the humidity continues to be high. After withdrawal of monsoon weather becomes gradually cool and pleasant.

In general the year may be divided into four seasons. Winter season from December to February is followed by pre-monsoon or summer season from March to May. Thereafter, southwest monsoon season starts and lasts till September. The period of October and November is of post monsoon season.

Areas in the state under each climate pattern based on Koppen's classification are shown in Fig.2. This broad classification is based on annual and monthly means of precipitation in cm and temperature in $^{\circ}\text{C}$.

The climate of state varies from Tropical savanna, hot and seasonally dry (Aw) over almost area of the state (Adilabad, Hyderabad, Karimnagar, Khammam, Nizamabad, Medak, Rangareddy, Warangal districts and some part of Mahabubnagar district) to Tropical Steppe, Semi-arid, hot (Bsh) over Nalgonda district and some part of Mahabubnagar district.

Sea Level Pressure and Winds

The pressure gradient over the state generally remains weak except during late summer and monsoon season. The seasonal variation in atmospheric pressure over the state occurs in a systematic way with a maximum in the winter and minimum in southwest monsoon season. During winter the atmospheric pressure is high over north India and decreases to the south. Over Telangana the pressure gradient is weak. Winds are mostly light and blow from east, north, northeast or southeast. Sometimes winds are calm.

Pressure thereafter decreases and by March it is nearly uniform over the state. Winds are light and easterly to southeasterly and sometimes southerly and southwesterly winds are also observed. Winds are strengthening towards evening. In April, with the establishment of a low pressure over Bihar and adjoining parts of the country, a reversal in the pressure gradient occurs. The gradient over the state, however, continues to be weak. Winds are mostly southeasterly and sometimes southwesterly components are also seen. With the advance of the summer, seasonal low over north India deepens and shifts towards the northwest. The pressure gradient over Telangana state generally increases. Winds strengthen and are mostly westerly to northwesterly and southwesterly till September. October is the month of transition when reversal of pressure gradient takes place. Winds weaken and northerly and northeasterly components are seen. The seasonal low begins to establish itself over the Bay of Bengal and conditions revert to the winter pattern. Pressure thereafter, continue to rise till January.

Table I gives the monthly mean wind speed in kilometer per hour and predominant wind direction in the morning and evening for observatory stations in the state.

Temperature

Table II gives the mean maximum and minimum temperatures at the observatory stations of the state. The spatial distribution of mean maximum and mean minimum temperatures for the representative month of four seasons of year is depicted in Fig. 2(a,b,c,d) and 3(a.b.c.d). Fig. 4 and 5 give the extremes of maximum and minimum temperatures ever recorded on data up to 2013.

Pre-monsoon season is the hottest season while winter is the coldest season. May is the hottest month with mean maximum temperature of 40.9⁰C. In May, mean maximum temperature ranges from 39.4⁰C to 42.1⁰C over the state, the highest values are observed over northern part of the state (Fig 2(a)). During the summer season Telangana state is sometimes affected by heat wave, at that time maximum temperature ranges between 45⁰C and 49⁰C. The highest maximum temperature ever recorded at any individual station was 49.4⁰C at Bhadrachalam observatory in Khammam district on 30th May 1988 which is 8.5⁰C higher than the normal for the warmest month. During July, an appreciable drop in mean maximum temperature is observed with the values ranging between 30.6⁰C and 34.0⁰C (fig 2(b)). The spatial distribution of day temperature in October is quite similar to that of July (fig 2(c)). The values of mean maximum temperature in October range between 30.8⁰C and 33.1⁰C. From Fig.2(d) it is observed that mean maximum temperature of January ranges between 29.0⁰C and 30.8⁰C.

December and January are the coldest months when mean minimum temperature for the state as a whole is 15.9⁰C. In January the temperature varies from 14.1⁰C in the northwest to 18.1⁰C in the southeast area (fig 3(a)). The lowest minimum temperature ever-recorded at any individual station was 2.7⁰C at Medak observatory on 7^h January 1992, which was 13⁰C less than normal of this month. The value of minimum temperature ranges between 23.7⁰C and 25.8⁰C in April (fig

3(b)). The values of minimum temperature range from 22.8⁰C to 25.6⁰C and 20.2⁰C to 23.4⁰C in respective July and October months shown in (Fig.3(c) and 3(d).

Both the maximum and minimum temperatures rise rapidly from February onwards till May. The increase in maximum temperature during the period from February to May ranges from about 6⁰C to 11⁰C at individual stations of the state. From June onwards both day and night temperatures start to drop, the day temperature falls rapidly while night temperature falls slowly. From the first week of June to the end of August the maximum temperature falls about 4⁰C to 7⁰C, whereas minimum temperature falls by about 1⁰C to 2⁰C. In September and October, a slight rise in the maximum temperature is experienced due to increased insolation. The night temperature begins to fall rapidly from October while the day temperature follows this trend after October and both attain the lowest values in December. July, August and September months have the smallest diurnal range of temperature about 7⁰C-8⁰C. The diurnal range of temperature increases rapidly after withdrawal of southwest monsoon. During the period December to May diurnal range is of the order of 14⁰C to 15⁰C, being greatest in February, March and April.

The climate is pleasant from November to February. Summer months of April and May are uncomfortable with oppressive heat. The period of July to September is of warm and humid and sometimes weather becomes uncomfortable.

Humidity

Table III gives the mean relative humidity at 0830 and 1730 hours IST for observatory stations in the state. Summer is the driest part of the year when relative humidity in the afternoon generally ranges between 33 % and 36% and morning relative humidity ranges between 53% and 61%. During southwest monsoon and postmonsoon season relative humidity is generally high when morning humidity generally ranges between 68% and 81% and afternoon relative humidity ranges between 51% and 72%. During winter season relative humidity in the morning is high and it ranges between 67% and 74% and in the afternoon it is low and ranges between 40% and 52%.

Cloudiness

Table IV and IV (a) give the mean monthly and total cloud amount and mean number of days with clear and overcast skies at 0830 and 1730 hours IST respectively for observatory stations in the state.

The skies are generally heavily clouded or overcast during southwest monsoon season from June to September especially during July and August when about 5 okta or more sky covered with clouds and during June and September when about 4 okta or above sky covered with clouds. Skies are generally clear or lightly clouded during the period from November to April. During May and October skies are generally moderately clouded. Afternoons are however, comparatively more clouded than mornings in the year except during January and February months.

Rainfall

Table V gives district-wise and state-wise mean monthly and annual rainfall and number of rainy days (i.e. days with rainfall of 2.5 mm or more). Fig. 6 and 6(a) to 6(d) depict the spatial distribution of the annual and seasonal rainfall over the state.

The total annual precipitation for the state as a whole is about 93.1 cm and total annual number of rainy days are about 49 (Table V). The precipitation in the state occurs in the form of rain. The annual rainfall varies slightly from district to district. Eastern and Northern parts of the state receive more rain. Khammam district in the eastern part of the state received the maximum amount of precipitation i.e. about 115 cm in a year, whereas Mahabubnagar district in the southern part of the state received the minimum amount of precipitation i.e. about 69cm in a year.

Fig. 6(a) and 6(b) show rainfall pattern during winter (December to February) and pre-monsoon season (March to May) respectively. During these seasons state receives little rain about 3% and 7% of annual rainfall. State receives about 77% of annual rainfall during the southwest monsoon season. The pattern of spatial

distribution of the rainfall during southwest monsoon season viz. Fig.6(c)) generally resembles to that of the spatial distribution of the annual rainfall (Fig. 6). From Fig. 6(d) it is observed that during post monsoon season, rainfall is about 13% of the annual rainfall and maximum rainfall is observed in southeastern part of the state during this season.

The percentage of the seasonal number of rainy days with respect to the annual number of rainy days shows that 76% during the southwest monsoon season, 8% during the pre-monsoon season, 3 % during the winter season and 13% in postmonsoon season.

The state receives rainfall mainly due to low pressure areas and monsoon depressions originating in the Bay of Bengal during the southwest monsoon season and post monsoon season. During the monsoon season most of the depressions originating in the Bay of Bengal cross coastal region and move westwards or west-north-westwards over the state, some of them breaking over the hilly area. July and August are the rainiest months and in these two months nearly 47% of the annual rainfall is received. After April, the rainfall gradually increases till mid-June and thereafter increases sharply till July. It decreases from September and sharply decreases from October i.e.withdrawal of southwest monsoon. Precipitation during the pre-monsoon months is mostly associated with thunderstorms and constitutes about 7% of the annual rainfall.

The southwest monsoon sets in over the state by about the first week of June. The monsoon starts to withdraw from the state by about first week of October and completely withdraws by about the middle of October.

The features of rainfall described above are also evident from Fig. 7 which shows the annual and seasonal rainfall for the individual districts as well as for the state and provides a measure for comparison of seasonal rainfall with the annual for both district-wise and state-wise rainfall.

Table VI gives the mean monthly and annual rainfall and rainy days for various river catchments (No. 307,309,310,312,313, 314 and 317) in the state. The

annual rainfall of these river catchments is shown in Fig. 8. However, table VI shows the districts/parts of districts of Telangana state covered by these catchments. Catchment No. 307 formed by river Bhima which covers some area of Mahabubnagar and Rangareddy districts receives an annual rainfall of 803.9 mm with 46 rainy days. Catchment No.309 formed by river Tungabhadra from the dam site to its confluence with river Krishna which covers some part of Mahabubnagar district receives an annual rainfall of 712.1 mm with 39 rainy days. Catchment No.310 formed by river Krishna from its confluence with river Bhima to its mouth (excluding the Tungabhadra) which covers the districts of Hyderabad and Nalgonda and some area of Khammam, Mahabubnagar, Medak, Warangal and Rangareddy districts receive an annual rainfall of 835.2 mm with 45 rainy days. Catchment No. 312 formed by river Manjira which covers some area of Medak and Nizamabad districts receive an annual rainfall of 980.3 mm with 49 rainy days. Catchment No. 313 formed by river Godavari from its confluence with river Manjira upto its confluence with river Wainganga (excluding the Wainganga) which covers the almost area of Karimnagar district and some area of Adilabad, Medak, Nizamabad and Warangal districts receive an annual rainfall of 943.8 mm with 48 rainy days. Catchment No. 314 formed by river Painganga which covers some part of Adilabad district receives an annual rainfall of 1044.4 mm. with 51 rainy days. Catchment No. 317 formed by river Godavari from its confluence with river Wainganga to its mouth which covers some area of Khammam, Karimnagar and Warangal districts receive an annual rainfall of 1211.5 mm. with 58 rainy days.

Rainfall Variability

The spatial distribution of variation of annual rainfall over Telangana is depicted in Fig. 9. Coefficient of Variation (CV) which is expressed as percentage is defined as:

$$C.V. = \frac{\text{Standard deviation } (\sigma)}{\text{Normal } (N)} \times 100$$

It is observed from Fig. 9 that values of CV of annual rainfall range between 6.9% and 78.6% over the entire state of Telangana. Most part of the state is having

CV ranging between 20% and 40%. Some southwestern part of the state is of less variability with values ranging between 7% and 20%. A small area in Karimnagar district is having the highest CV of 78.6%.

The spatial distribution of CV of seasonal rainfall over Telangana is shown in Fig. 9(a), 9(b), 9(c) and 9(d) for the seasons: pre-monsoon season (March to May), southwest monsoon season (June to September), post monsoon season (October and November) and winter season (December to February) respectively.

During the pre-monsoon season it is observed that values of CV range between 32% and 178% (Fig. 9(a)). Highest CV value is observed in smaller portion of Nizamabad district i.e. 177.4%. Major portion of the state is having CV values ranging between 60% and 120%.

During southwest monsoon season it is observed that values of rainfall variability CV ranges between 18% and 60% (Fig. 9(b)). Most part of the state is having CV values between 20% and 40%. Some smaller part of all districts except Hyderabad and Rangareddy is values of CV ranging between 40% and 60%. Smaller part in Medak and Nizamabad districts is having CV value about 20%.

During post monsoon season the values of CV range between 40% and 166% (Fig. 9(c)). Major part of the state is having CV values ranging between 40% and 80%. Northwestern and extreme southern part of the state exhibits CV values ranging between 80% and 120%. Some part of Nizamabad district shows highest CV values ranging between 120% and 165%.

During winter season the values of CV range between 0% and 336% (Fig. 9(d)). Major part of the state exhibits CV values ranging between 100% and 200%. Extreme southern part of the state shows CV values ranging between 200% and 335%.

As 77% of annual rainfall occurs during southwest monsoon season, the variability in this season over Telangana state is relatively low and similar to that of annual rainfall while as the variability of rainfall during pre-monsoon and winter seasons are very high with CV values exceeding 150% and 300% respectively over

some parts of the state. In general the contribution of rainfall during southwest monsoon season to the annual rainfall is the maximum over the state.

Droughts:

Meteorological drought over an area or a place may be defined as a situation when the annual rainfall over the area or place is less than 75% of the normal. It is classified as “Moderate drought” if the rainfall deficit is between 25% and 50% and “Severe drought” when it is more than 50%. Areas where frequency of drought as defined above is more than 20% of the years examined, such areas are classified as “drought areas” and areas having drought condition for more than 40% of the years under consideration represent “chronically drought affected areas”.

Following districts of the state were affected by drought during some year or the other during the period 1961-2010. The details of year wise occurrence of drought over each district during the 50 year period of 1961-2010 are given below. The figures within the brackets against each district indicate the number of occasions during the 50 year period when these districts were affected by drought.

Adilabad (7), Hyderabad (5), Karimnagar (4), Khammam(8), Mahbubnagar(3), Medak (6), Nalgonda (6), Nizamabad (9), Rangareddy (4), Warangal (11).

During the period 1961-2010 under consideration, Warangal district of the state experienced 11 years of drought out of 42 years, satisfying the criteria for “drought areas”.

Though the six districts out of 10 districts experienced drought condition in successive years 1971-1972, the occurrence of drought conditions in successive years is not frequent in the state. However, individual districts have had successive years of drought. Severity of drought not only depends upon the order of the rainfall deficiency in a single year, but also on the continued occurrence of deficient rain in successive years, even though the deficiency in each successive year may not be as high as in a single year.

The following table (i) depicts district wise years of successive drought during the period under consideration 50 year period 1961-2010.

Table (i)

S.No.	Names of district affected	Years of drought	Years of successive drought
1	Adilabad	1965, 1971, 1972, 1984, 1993, 2004, 2009.	1971 - 1972.
2	Hyderabad	1969, 1972, 1980, 1985, 1999.	
3	Karimnagar	1968, 1984, 2004, 2009.	
4	Khammam	1965, 1968, 1971, 1972, 1979, 1984, 1997, 2009.	1971 - 1972.
5	Mahbubnagar	1972, 1985, 1986.	1985 - 1986.
6	Medak	1968, 1971, 1972, 1985, 2007, 2009.	1971 - 1972.
7	Nalgonda	1965, 1972, 1980, 1984, 1986, 2009.	
8	Nizamabad	1967, 1968, 1971, 1972, 1991, 1994, 2002, 2004, 2009.	1967 - 1968, 1971 - 1972.
9	Rangareddy	1968, 1971, 1972, 1977.	1971 - 1972.
10	Warangal	1968, 1971, 1972, 1977, 1979, 1991, 1994, 1996, 1997, 1998, 2009.	1971 - 1972, 1996 - 1997 - 1998.

Fig. 10 shows the percentage frequency of drought and years of successive drought in the districts during the period 1961-2010. The following table (ii) shows the years of severe drought for various districts, with the actual rainfall expressed as percentage of normal rainfall given in brackets, against each district.

Table (ii)

S.No.	Names of district affected	Years of severe drought
1.	Hyderabad	1972 (48%)
2.	Khammam	1997 (49%)
3.	Nizamabad	1971 (48%)
4.	Warangal	1994, 1997 (11%) 1998

It is observed that the lowest annual rainfall was in Warangal district (11% of the normal rainfall) in the year 1997.

It is observed that in year 1972 nine districts, in year 2009 seven districts and in year 1968 and 1971 six districts out of 10 districts experienced drought.

There were no drought conditions in the state in the following 27 years: 1961 to 1964, 1966, 1970, 1973 to 1976, 1978, 1981 to 1983, 1987 to 1990, 1992, 1995, 2000, 2001, 2003, 2005, 2006, 2008 and 2010.

Excessive Rainfall:

Rainfall sufficiently in excess of the normal is a predominant factor for occurrence of floods, particularly in high rainfall regions. An annual rainfall of 125% or more of the normal is considered as excessive rainfall.

Fig. 11 shows the percentage frequency of excessive rainfall years and successive years of excessive rainfall during the period 1961-2010. The following table (iii) gives the district wise excessive rainfall years and the highest annual rainfall (expressed as percentage of normal) with the years of occurrence.

Table (iii)

S.No.	Districts	Years of Excessive Rainfall	Highest amount of Annual Rainfall incm.(expressed as % of normal with year)			Annual Rainfall in cm.
1	Adilabad	1978, 1983, 1988, 1989, 1990, 1994, 2010.	198.9	187	1988	106.4
2	Hyderabad	1962, 1970, 1975, 1978, 1995, 2005, 2008, 2010.	138.0	161	1975	85.7
3	Karimnagar	1962, 1978, 1983, 1986, 1988, 1989, 1990, 1994, 1997, 1998, 2005, 2010.	154.1	165	1983	93.4
4	Khammam	1969, 1978, 1983, 1988, 1994, 2005, 2008, 2010.	191.9	167	1994	114.9
5	Mahbubnagar	1961, 1962, 1964, 1975, 1978, 1983, 1988, 1990, 2005.	111.7	161	2005	69.4
6	Medak	1962, 1973, 1978, 1981, 1983, 1988, 1989, 1990, 1998, 2000, 2005.	141.0	159	1998	88.7
7	Nalgonda	1961, 1975, 1978, 1988, 1990, 1996, 2010.	151.6	203	1996	74.7
8	Nizamabad	1962, 1963, 1975, 1983, 1988, 1989, 1990, 1995.	184.6	176	1983	104.9
9	Rangareddy	1962, 1963, 1975, 1983, 1988.	135.6	156	1983	86.9
10	Warangal	1978, 1983, 1988, 2005, 2008, 2010.	144.6	136	1983	106.3

From the above table, it is seen that during the period under consideration, there were 24 years in which some districts or the other in the

state recorded excessive rainfall. In the year 1996, Nalgonda district received highest excessive rainfall, i.e. 203% of the annual normal rainfall. In the year 1988, maximum number of districts (i.e.9 out of 10) of the state experienced excessive rainfall. Karimnagar and Medak districts experienced maximum number of excessive rainfall years 12 and 11 respectively, while Rangareddy district experienced minimum number of excessive rainfall (5) years. The successive years of excessive rainfall against each district are listed below:

Successive Years of Excessive Rainfall (Districtwise)

S.No.	Districts	Successive years of Excessive rainfall
1	Adilabad	1988 -1989 - 1990,
2	Hyderabad	NIL
3	Karimnagar	1988 - 1989 - 1990, 1997 - 1998.
4	Khammam	NIL
5	Mahbubnagar	1961 - 1962.
6	Medak	1988 - 1989 - 1990.
7	Nalgonda	NIL
8	Nizamabad	1962 - 1963, 1988 - 1989 -1990 .
9	Rangareddy	1962 - 1963.
10	Warangal	NIL

The heaviest one day rainfall on record at any station in the state was 581.2 mm on 19 July 2013 at Perur (H) in Khammam district.

Cyclonic storms and depressions

Table VII depicts the number of storms/depressions which affected the state during the period 1891- 2014. The cyclonic storms and depressions which affect India mostly originate and/or intensify over the Bay of Bengal, mainly during the months of May to December. They usually travel northwestwards or westwards and cross the east coast of India. In general, storms and depressions weaken on entering land. The Telangana state is about 100 km away from the east coast of India. The state therefore does not experience the full fury of severe storms / depressions like the coastal regions. However, in association with these systems,

heavy to very heavy rainfall occurs over the affected districts. During the course of movement, the disturbances sometimes turn or recurve towards north or northeast under the influence of deep westerly system moving across Pakistan and Northwest India. The point of recurvature progressively shifts westward till September. The disturbances in May recurve while still out in Bay of Bengal. As such exceptionally a few of them cross the coast and travel inland, weaken far away from the state and therefore cannot affect it.

In the months of January to April and in July the state has not been affected by the storms and depressions for a single occasion, but during the month of December it was affected once since 1891. The maximum number of storms / depressions that affected the state in October was 21 and, in September and November it was 10 and 8 respectively. The maximum numbers of storms/monsoon depressions originating from the Bay of Bengal affect the state during September, October and November.

During the period 1891- 2014, 49 storms/depressions affected the Telangana state.

Other Weather Phenomena

(a) Thunderstorms

Convective activity is responsible for the occurrence of thunderstorms, hailstorms and dust storms in Telangana state. With the advance of the summer, thunderstorm activity becomes pronounced due to heating of the land. When the moisture in the atmosphere is insufficient, dry thunderstorms or duststorms occur. The maximum number of thunderstorms occurs with approach of the monsoon current, so its frequency reaches maximum in May or June or July in the state. While dust storms are occasionally confined in the summer months of March to June. Pre-monsoon and monsoon thunderstorms are sometimes severe and accompanied by squalls. The average number of days of thunderstorms during the monsoon season

is ranging between 0 and 7 in the state and the maximum being in June. Thunderstorm activity is the least in the state during November and December.

(b) Fog

Favourable conditions for formation of fog such as light to calm wind, sufficient humidity, clear skies, low temperatures etc., do exist after the withdrawal of the monsoon till March. But due to lack of sufficient moisture, fog occurs only occasionally in winter and post monsoon seasons, maximum frequency of fog occurrence being during the months of December and January.

TABLE – I
MEAN WIND SPEED (KMPH) AND PREDOMINANT WIND DIRECTION
TELANGANA

STATION		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
Adilabad	a	4.1	4.8	6.3	7.3	9.5	8.8	6.6	6.9	4.1	3.1	2.8	3.1	5.6
	m	C/SW	C/S/NE	SW/S/NE	SW	SW	SW	SW	SW	NW/NE/SW	NE/C	NE/C	C/N/NE	SW/NE/C
	e	NE	NE/E/N	NE/S	NE/SW	SW/NE	NE	SW/W	W/SW	NW/NE/SW	NE	NE	NE	NE
Bhadrachalam	a	1.6	2.8	3.9	4.9	4.2	4.2	3.9	3.4	2.5	1.8	1.4	1.2	3.0
	m	C/W	C/W/SE	SE/C/W	SE/C/SW	SW/SE/C	SW/W/C	SW/C/W	C/SW/W	C/W/SW	C/W/NE	C/NE/W	C/W	C/W/SW
	e	C/W	C/W/SE	SE/W/C	SE/C/SW	C/W/SE	W/SW/C	C/W/SW	C/W/SW	C/W/SW	C/W/NE	C/W/NE	C/W	C/W/SE
Hanamkonda	a	3.0	4.8	5.3	8.1	8.7	6.9	6.5	4.4	5.1	2.7	3.0	3.0	5.1
	m	S/SE	S/SE	S/SE	SE/S	SE/S	S/NW/SE	NW/W	NW	NW	C/S/N	N/SE/C	S	S/SE
	e	S	S	S	SE/S	SE/S/C	S/NW/SE	NW/W/SE	NW	NW/SE	C/S/N	N/C/S	S/N	S/SE/C
Hyderabad (A)	a	6.0	6.6	6.8	7.3	10.4	14.8	14.9	13.8	9.5	6.9	6.4	5.6	9.1
	m	C/SE/E	C/SE/E	C/SE/E	C/NW/SE	NW	W	W	W	NW/W	C/SE/NE	C/E/SE	C/SE/E	C/W/NW
	e	E	E	E/SE	SE/E	NW	W	W	W/NW	NW/W	NE/E/N	E/NE	E	E/W/NW
Khammam	a	1.8	2.6	3.1	3.5	3.8	4.3	3.4	2.9	1.8	1.4	1.5	1.6	2.6
	m	C/E	E/C/S	E/S	S/E	S/E/W	W	W	W	C/W	C/E/NW	C/E/N	C/E	C/W/E
	e	C/E/S	C/S/E	S/C/E	C/S/E	C/E/W	W	W	W/C	C/W/E	C/E/S	C/E	C/E	C/E/W
Mahbubnagar	a	3.9	3.8	3.5	4.1	5.1	7.5	6.1	5.9	3.8	3.5	4.5	4.8	4.7
	m	C/E	C/E/NE	C/SE/E	C/SW/NW	C/NW/W	W/C	W/SW/NW	C/W/NW	C/NW/W	C/E/NE	C/E/NE	C/E/NE	C/W/NW
	e	C/E	C/E	C/E/SW	C/E/SE	C/NW/W	C/W	C/W/SW	C/W/NW	C/NW/W	C/NE/E	C/E/NE	C/E	C/E/W
Medak	a	1.9	2.4	2.6	3.3	4.0	6.0	5.2	4.0	2.4	1.5	1.2	1.4	3.0
	m	C/SE	C/SE	C/SW/SE	SW/C	NW/SW	SW	SW	SW	SW	C/SW	C/NE/SE	C/SE/NE	C/SW
	e	C/NE/SE	C/SE/NE	C/SE/SW	SW/C/SE	NW/SW	SW	SW	SW	SW	C/NE	C/NE	C/NE	C/SW

TABLE – I(contd...)
MEAN WIND SPEED (KMPH) AND PREDOMINANT WIND DIRECTION
TELANGANA

STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Nalgonda	a	2.9	3.8	4.3	3.7	4.8	8.4	7.3	5.7	4.0	2.2	2.8	2.1	4.3
	m	SE/NE/C	SE	SE	SE	SE/NW	NW/SW	SW/NW	NW	NW/SW	NE/NW	NE/C	NE	NW/SE/NE
	e	SE	SE	SE	SE	SE/NE/NW	SW/NW	NW/SW	NW	C/SW/NW	NE/C	C/NE	NE/SE	SE/NW
Nizamabad	a	2.6	2.9	3.1	3.5	4.7	6.3	6.0	5.4	3.8	2.6	2.4	2.2	3.8
	m	C/SE/E	C/SE/E	C/SE/E	CW/SW	W	W/SW	SW/W	W/SW	W/C/SW	C/E/NE	C/E/NE	C/SE/E	CW/SW
	e	C/NE/E	C/E/NE	C/E/NE	C/E/SE	CW/NW	W/SW	SW/W	W/SW	CW/SW	C/NE/E	C/NE/E	C/NE/E	CW/SW
Ramgundam	a	2.7	3.6	4.0	4.7	4.7	5.1	3.7	3.2	2.2	1.8	1.7	1.8	3.3
	m	C/S/SE	C/S/SE	C/S	S/C	C/S/NW	C/NW/W	CW/NW	C/NW/W	C/NW/W	C/NW/N	C	C	C/S/NW
	e	C/NE/S	C/S	C/S	C/S	C/NW/S	CW/NW	C/NW/W	CW/NW	C/NW/W	C/NE/E	C	C	C/S/NW
State Mean	a	3.1	3.8	4.3	5.0	6.0	7.2	6.4	5.6	3.9	2.7	2.8	2.7	4.5

a: Mean Wind Speed in Km. per hour.

m: Predominant Wind Direction in the Morning.

e: : Predominant Wind Direction in the Evening.

C: Calm.

TABLE II
MEAN MAXIMUM AND MINIMUM TEMPERATURE (°C)

TELANGANA

OBSERVATORY	TEMP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Adilabad	Max	29.0	31.5	37.0	40.4	42.1	38.2	31.7	30.9	32.0	31.7	29.4	28.5	33.5
	Min	14.1	17.3	21.2	25.8	28.4	27.0	24.7	24.3	23.9	20.5	16.7	12.9	21.4
Bhadrachalam	Max	30.8	33.8	37.2	39.3	40.9	36.8	32.7	31.6	32.8	32.6	31.3	30.3	34.2
	Min	17.3	19.9	22.8	25.5	27.4	26.5	24.6	24.4	24.5	22.9	19.3	16.9	22.7
Hanamkonda	Max	30.0	32.7	36.3	39.4	41.2	36.5	32.5	31.0	32.4	32.4	31.0	29.8	33.8
	Min	17.2	19.5	22.5	25.3	27.4	26.4	24.8	24.3	24.4	22.8	19.3	16.2	22.5
Hyderabad (A)	Max	29.3	32.4	35.9	38.1	39.4	34.9	31.3	30.1	31.1	31.0	29.6	28.7	32.7
	Min	15.9	18.3	21.5	24.4	26.3	24.2	22.8	22.2	22.3	20.6	17.4	15.1	20.9
Khammam	Max	29.2	32.1	35.2	37.7	40.1	36.6	32.7	31.5	32.3	31.5	30.0	28.6	33.1
	Min	18.1	20.6	23.2	25.6	27.4	26.7	25.0	24.4	24.6	23.1	20.0	17.3	23.0
Mahbubnagar	Max	30.7	33.6	37.0	39.2	39.7	34.8	31.7	30.5	31.5	31.6	30.9	30.0	33.4
	Min	17.1	19.3	22.7	25.6	27.0	24.7	23.5	22.9	22.9	21.5	19.2	17.0	22.0
Medak	Max	30.0	32.9	36.6	39.6	40.6	35.0	30.6	29.3	30.3	30.8	29.8	29.2	32.9
	Min	14.7	17.1	20.5	23.7	25.8	24.6	23.1	22.5	22.5	20.2	16.3	13.7	20.4
Nalgonda	Max	30.8	33.5	37.0	39.4	41.3	37.4	34.0	32.9	33.5	32.6	30.9	30.1	34.5
	Min	17.9	20.1	22.6	25.3	28.1	27.2	25.6	25.1	24.8	23.4	20.7	18.1	23.2
Nizamabad	Max	30.8	33.6	37.3	40.2	41.6	36.6	31.8	30.6	31.8	32.2	31.0	30.2	34.0
	Min	15.2	17.7	21.2	24.6	27.1	25.1	23.5	23.0	22.9	20.7	17.0	14.2	21.0
Ramgundam	Max	30.5	33.4	37.2	40.1	41.9	37.3	32.5	31.4	33.1	33.1	31.6	30.2	34.4
	Min	15.7	18.3	21.9	25.6	28.2	27.2	25.1	24.6	24.5	22.1	17.7	14.6	22.1
State Mean	Max	30.1	33.0	36.7	39.3	40.9	36.4	32.1	31.0	32.1	32.0	30.6	29.6	33.7
	Min	16.3	18.8	22.0	25.1	27.3	26.0	24.3	23.8	23.7	21.8	18.4	15.6	21.9

TABLE – III
MEAN RELATIVE HUMIDITY (%)
TELANGANA

OBSERVATORY		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Adilabad	M	65	56	45	43	40	58	77	76	79	76	72	69	63
	E	42	29	32	29	26	40	71	74	71	67	58	55	49
Bhadrachalam	M	82	77	75	71	64	71	82	84	83	83	82	82	78
	E	56	47	44	42	39	56	74	77	77	74	68	63	60
Hanamkonda	M	74	70	70	66	61	70	78	80	79	76	73	72	72
	E	59	55	52	48	44	59	71	75	74	69	67	62	61
Hyderabad (A)	M	72	63	55	52	49	70	79	82	79	73	67	69	68
	E	40	32	28	28	30	51	64	69	65	56	48	43	46
Khammam	M	77	74	72	70	61	65	77	80	80	79	73	73	73
	E	49	43	36	35	35	50	66	71	70	67	58	52	53
Mahbubnagar	M	63	56	52	51	56	73	80	83	81	74	65	64	66
	E	41	36	33	32	36	55	66	71	69	63	52	45	50
Medak	M	71	62	52	45	44	67	79	82	81	75	68	70	66
	E	42	34	29	27	27	50	68	74	71	63	54	46	49
Nalgonda	M	82	82	79	73	61	70	76	77	77	78	75	76	76
	E	47	48	42	39	36	50	60	65	67	64	59	53	53
Nizamabad	M	73	63	52	44	42	65	78	80	79	76	74	74	67
	E	42	34	28	25	25	48	66	71	68	60	53	46	47
Ramgundam	M	77	69	61	58	51	66	80	82	81	77	74	77	71
	E	48	39	34	32	32	51	69	73	71	64	56	51	52
State Mean	M	74	67	61	57	53	68	79	81	80	77	72	73	70
	E	47	40	36	34	33	51	68	72	70	65	57	52	52

M: MORNING E: EVENING

TABLE-IV
MEAN CLOUD AMOUNT ** (OKTA OF THE SKY) AND MEAN NUMBER OF DAYS OF CLEAR AND OVERCAST SKIES AT
0830 HRS. IST.
TELANGANA

OBSERVATORY		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Adilabad	a	2	0	1	2	2	2	1	4	1	5	4	2	26
	b	0	0	0	0	0	1	2	2	1	0	0	0	6
	c	1.1	1.5	1.1	2.0	1.7	2.0	2.6	1.3	1.2	1.2	1.0	1.3	1.5
Bhadrachalam	a	20	17	14	13	13	6	5	5	6	9	15	18	141
	b	1	1	1	1	1	6	9	7	5	3	2	1	38
	c	1.1	1.3	1.9	2.1	2.2	4.4	5.3	4.9	4.5	3.0	2.0	1.4	2.8
Hanamkonda	a	14	12	13	14	14	5	3	3	6	12	14	16	126
	b	1	1	0	0	1	3	6	7	3	2	1	0	25
	c	1.8	1.9	1.6	1.4	1.3	3.2	4.4	4.6	3.2	2.3	1.7	1.3	2.4
Hyderabad(A)	a	12	14	15	9	5	0	0	0	0	5	8	11	79
	b	1	0	0	0	1	5	8	7	4	3	1	1	31
	c	2.6	1.9	1.8	2.5	3.5	5.7	6.4	6.4	5.6	4.0	3.0	2.5	3.8
Khammam	a	17	12	15	15	17	8	6	6	9	13	19	19	156
	b	0	0	0	0	1	2	3	3	1	1	0	0	11
	c	1.4	1.8	1.7	1.6	1.6	3.2	3.8	3.8	2.8	2.1	1.3	1.2	2.2
Mahbubnagar	a	21	22	23	19	14	3	1	1	3	11	14	19	151
	b	2	1	1	2	3	10	16	16	13	8	4	3	79
	c	1.5	0.9	1.0	1.5	2.4	5.4	6.6	6.7	5.8	3.8	2.8	1.8	3.4
Medak	a	14	16	17	14	10	2	0	1	2	8	12	15	111
	b	2	1	1	2	3	12	16	16	11	6	3	2	75
	c	1.6	1.0	1.4	1.5	3.1	5.6	6.7	6.6	5.5	3.3	2.2	1.5	3.3
Nalgonda	a	16	14	14	13	10	3	1	1	2	5	9	12	100
	b	2	3	1	2	2	7	10	9	5	5	4	3	53
	c	1.5	1.7	1.3	1.9	2.0	4.0	4.7	4.8	3.5	3.0	2.5	1.7	2.7
Nizamabad	a	14	15	14	9	5	1	0	0	0	5	11	12	86
	b	1	0	1	1	1	7	10	11	6	3	2	1	44
	c	1.9	1.4	1.7	2.1	3.1	5.5	6.2	6.4	5.5	3.7	2.4	2.1	3.5
Ramgundam	a	16	16	16	12	8	1	0	0	1	8	14	16	108
	b	2	1	0	1	1	8	13	14	6	3	1	1	51
	c	1.9	1.6	1.6	2.0	2.8	5.4	6.3	6.4	4.9	3.2	1.9	1.6	3.3
State Mean	a	15	14	14	12	10	3	2	2	3	8	12	14	109
	b	1	1	1	1	1	6	9	9	5	3	2	1	40
	c	1.6	1.5	1.5	1.9	2.4	4.4	5.3	5.2	4.3	3.0	2.1	1.6	2.9

a: Days with clear sky.

b: Days with sky overcast.

c : Mean Cloud amount.

** Okta= Unit, equal to area of one eighth of the sky used in specifying cloud amount.

For example: 1 Okta means 1/8th of the sky covered.

TABLE - IV (A)
MEAN CLOUD AMOUNT ** (OKTA OF THE SKY) AND MEAN NUMBER OF DAYS OF CLEAR AND OVERCAST SKIES AT
1730 HRS. IST
TELANGANA

OBSERVATORY		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Adilabad	a	2	0	1	2	2	1	0	1	0	4	3	1	17
	b	0	0	0	0	0	1	0	1	0	0	0	0	2
	c	0.9	1.5	1.0	1.6	2.0	1.4	2.4	1.3	2.0	1.3	1.0	1.2	1.5
Bhadrachalam	a	16	15	16	12	9	4	3	3	3	7	11	14	113
	b	1	1	1	2	2	7	10	8	7	4	2	1	46
	c	1.5	1.4	1.7	2.6	2.9	5.2	5.8	5.6	5.3	3.8	2.6	2.0	3.4
Hanamkonda	a	16	13	14	13	12	3	2	1	3	10	12	15	114
	b	0	0	0	0	0	3	6	6	4	2	1	0	22
	c	1.2	1.4	1.3	1.4	1.4	3.3	4.4	4.5	3.7	2.4	1.8	1.3	2.3
Hyderabad(A)	a	10	10	8	3	1	0	0	0	0	2	5	9	48
	b	0	0	0	0	1	3	6	5	3	2	1	1	22
	c	2.3	1.9	2.6	3.6	4.2	6.0	6.6	6.5	6.1	4.9	3.4	2.7	4.2
Khammam	a	20	20	23	19	17	5	4	5	5	10	15	19	162
	b	0	0	0	0	1	2	3	3	2	2	1	0	14
	c	0.9	0.7	0.8	1.3	1.6	3.7	4.0	4.0	3.7	2.6	1.8	1.2	2.2
Mahbubnagar	a	18	19	17	10	7	2	1	1	2	6	11	15	109
	b	2	1	2	3	4	10	14	13	12	8	4	3	76
	c	1.7	1.1	1.7	2.9	3.4	5.6	6.3	6.2	6.1	4.7	3.2	2.3	3.8
Medak	a	9	9	8	5	3	1	0	0	1	4	7	9	56
	b	1	0	1	1	3	10	15	16	9	5	2	1	64
	c	1.8	1.7	2.3	3.1	3.8	5.7	6.7	6.6	5.7	4.1	2.9	1.9	3.9
Nalgonda	a	13	12	13	9	7	1	0	0	0	3	7	9	74
	b	1	0	0	1	2	5	7	7	5	3	3	1	35
	c	0.6	0.5	0.9	2.0	2.2	3.5	3.9	2.4	2.1	1.4	1.7	1.4	1.9
Nizamabad	a	10	11	10	4	2	0	0	0	0	3	8	10	58
	b	1	0	1	1	1	6	11	11	6	4	2	1	45
	c	2.3	1.8	2.3	3.2	4.0	6.0	6.7	6.7	6.0	4.5	3.0	2.6	4.1
Ramgundam	a	13	15	14	6	3	1	0	0	0	4	9	12	77
	b	1	0	0	1	1	6	12	12	7	3	1	1	45
	c	1.8	1.3	1.7	2.7	3.2	5.5	6.6	6.5	5.8	3.8	2.6	2.0	3.6
State Mean	a	13	12	12	8	6	2	1	1	1	5	9	11	81
	b	1	0	1	1	1	5	8	8	6	3	2	1	37
	c	1.5	1.3	1.6	2.4	2.9	4.6	5.3	5.0	4.7	3.4	2.4	1.9	3.1

a : Days with clear sky.

b : Days with sky overcast.

c : Mean Cloud amount.

** Okta= Unit, equal to area of one eighth of the sky used in specifying cloud amount.

For example: 1 Okta means 1/8th of the sky covered.

TABLE- V
MEAN RAINFALL (in mm) AND NUMBER OF RAINY DAYS
TELANGANA

DISTRICTS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Adilabad	a	16.7	8.0	16.0	12.7	21.0	166.9	279.0	289.0	158.7	70.4	20.1	5.2	1063.7
	b	0.8	0.6	1.0	0.9	1.5	7.8	13.4	12.7	8.0	3.4	1.2	0.3	51.6
Hyderabad	a	8.4	12.1	22.4	19.6	35.4	103.7	174.7	201.3	147.6	99.8	25.1	7.2	857.3
	b	0.5	0.5	1.1	1.6	2.5	6.7	9.8	10.9	8.0	5.1	1.8	0.5	49.0
Karimnagar	a	14.4	7.1	17.3	15.9	21.1	134.3	235.6	225.2	155.4	75.5	25.4	6.8	934.0
	b	0.8	0.5	1.0	1.0	1.5	7.2	12.3	11.4	7.3	3.8	1.5	0.5	48.8
Khammam	a	12.4	11.6	20.6	24.4	53.7	138.5	283.1	281.6	179.8	101.5	29.1	13.1	1149.4
	b	0.6	0.7	1.0	1.3	2.6	7.5	13.3	12.9	8.8	5.4	2.0	0.7	56.8
Mahbubnagar	a	2.3	4.1	18.2	18.0	30.6	87.3	132.8	137.5	137.5	94.0	24.4	6.9	693.6
	b	0.2	0.3	0.9	1.1	1.9	5.4	8.6	8.7	7.3	4.5	1.5	0.4	40.8
Medak	a	9.3	7.6	20.1	18.7	24.1	116.8	205.4	222.9	145.6	86.3	23.5	7.1	887.4
	b	0.5	0.5	1.0	1.2	1.5	6.9	10.9	11.2	7.5	4.2	1.3	0.4	47.1
Nalgonda	a	7.9	5.9	16.0	16.9	27.9	87.6	141.5	146.0	151.2	104.6	34.3	6.7	746.5
	b	0.5	0.4	0.8	0.9	1.6	5.3	8.1	8.1	7.1	5.0	2.4	0.5	40.7
Nizamabad	a	13.2	6.7	16.6	13.3	24.3	150.3	263.4	286.2	158.9	86.7	21.7	7.7	1049.0
	b	0.7	0.6	1.0	1.0	1.6	7.8	12.8	12.6	7.4	3.9	1.3	0.5	51.2
Rangareddy	a	7.3	6.8	23.3	22.4	31.6	111.1	167.2	184.2	173.1	107.4	28.6	6.3	869.3
	b	0.5	0.4	1.1	1.5	2.0	6.4	9.4	9.8	8.5	4.9	1.7	0.5	46.7
Warangal	a	11.2	10.8	20.1	18.7	29.1	146.0	282.2	253.7	168.2	86.2	26.8	10.1	1063.1
	b	0.6	0.7	0.8	1.1	1.8	7.6	12.7	11.6	7.8	4.6	1.7	0.6	51.6
State Mean	a	10.3	8.1	19.1	18.1	29.9	124.3	216.5	222.8	157.6	91.2	25.9	7.7	931.5
	b	0.6	0.5	1.0	1.2	1.9	6.9	11.1	11.0	7.8	4.5	1.6	0.5	48.6

a :- Normal Rainfall (mm)

b:- Average number of rainy days (i.e. days with rainfall of 2.5 mm or more).

TABLE-VI
MEAN RAINFALL(mm) OVER DIFFERENT RIVER CATCHMENTS OF TELANGANA STATE

Sr.No	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1)	River Bhima (Catchment.No.307)												
	Parts of districts within this catchment:- MAHBUBNAGAR, RANGAREDDY												
a	7.4	5.4	28.1	19.6	30.9	104.4	153.7	169.0	153.8	99.6	26.3	5.8	803.9
b	0.5	0.3	1.2	1.4	2.1	6.4	9.2	9.6	8.3	4.8	1.7	0.5	46.0
2)	River Tungabhadra from the dam site to its confluence with River Krishna. (Catchment.No. 309)												
	Part of district within this catchment:- MAHBUBNAGAR												
a	1.0	2.7	8.2	12.4	41.1	84.6	128.7	159.0	133.7	109.0	25.8	6.0	712.1
b	0.2	0.2	0.4	1.2	2.1	5.0	8.0	8.5	6.3	5.1	1.6	0.4	38.7
3)	River Krishna from its confluence with River Bhima to its mouth (Excluding the River Tungabhadra) (Catchment.No. 310)												
24	Districts/Parts of districts within this catchment:- HYDERABAD, NALGONDA/KHAMMAM, MAHBUBNAGAR, MEDAK, WARANGAL, RANGAREDDY												
a	6.8	7.0	18.6	19.7	34.0	102.9	173.6	178.1	156.4	100.3	29.5	8.3	835.2
b	0.4	0.4	0.9	1.1	1.9	6.0	9.6	9.6	7.7	4.9	1.9	0.5	45.0
4)	River Manjira. (Catchment.No.312)												
	Parts of districts within this catchment:- MEDAK, NIZAMABAD												
a	10.6	7.4	18.5	15.6	24.1	135.9	235.7	262.0	153.3	87.4	22.1	7.7	980.3
b	0.6	0.5	1.0	1.1	1.5	7.4	11.7	12.0	7.5	4.1	1.3	0.5	49.1
5)	River Godavari from its confluence with River Manjira upto its confluence with River Wainganga (Excluding Wainganga). (Catchment.No.313)												
	Districts/Parts of districts within this catchment:- KARIMNAGAR/ ADILABAD, MEDAK, NIZAMABAD, WARANGAL												
a	13.9	7.3	15.7	13.7	21.5	138.9	244.1	240.0	147.8	73.2	21.7	6.0	943.8
b	0.7	0.6	0.9	0.9	1.5	7.1	12.1	11.4	7.1	3.6	1.3	0.4	47.6

TABLE-VI
MEAN RAINFALL(mm) OVER DIFFERENT RIVER CATCHMENTS OF TELANGANA STATE

Sr.No	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
6)	River Painganga.(Catchment No.314)												
	<u>Parts of districts within this catchment:-</u> ADILABAD												
a	14.3	6.6	19.6	9.5	20.6	170.7	272.2	290.6	149.4	67.2	17.7	6.0	1044.4
b	0.7	0.4	1.3	0.9	1.5	8.2	13.2	12.5	8.1	3.0	1.1	0.4	51.2
7)	River Godavari from its confluence with River Wainganga to its mouth. (Catchment.No. 317)												
	<u>Part of district within this catchment:-</u> KHAMMAM, WARANGAL												
a	12.9	11.7	19.9	26.0	47.0	151.4	318.1	306.0	184.4	95.5	26.1	12.4	1211.5
b	0.6	0.7	1.0	1.4	2.5	7.9	14.1	13.6	8.9	5.1	1.7	0.6	58.3

TABLE – VII
STORMS AND DEPRESSIONS AFFECTING TELANGANA STATE
DURING 1891 – 2014

MONTHS	NO. OF STORMS/ DEPRESSIONS
JANUARY	NIL
FEBRUARY	NIL
MARCH	NIL
APRIL	NIL
MAY	5
JUNE	2
JULY	NIL
AUGUST	2
SEPTEMBER	10
OCTOBER	21
NOVEMBER	8
DECEMBER	1
TOTAL	49

DISTRICT CLIMATOLOGICAL SUMMARIES

ADILABAD DISTRICT

The climate of this district is characterized by hot and dry in summer and good rainfall during the southwest monsoon season. The year may be divided into four seasons. Summer season is from March to about the first week of June and is followed by southwest monsoon season till September. The period of October to November constitutes the post monsoon season. December to February is the cold weather season.

RAINFALL

Records of rainfall in the district are available for 28 raingauge stations for the period ranging from 17 to 50 years. The details of rainfall at these stations and for the district as a whole are given in Table 1 and 2. The average annual rainfall in the district is 1063.7 mm. The rainfall in the southwest monsoon season (June to September) constitutes about 84% of the annual normal rainfall, July and August being the months with the highest rainfall with an average value of 284 mm. The annual rainfall in the district varies over a small range. In the fifty year period 1961 to 2010, the highest annual rainfall was in year 1988 when it amounted to 187% of the normal. In the year 2009, the annual rainfall in the district was the lowest during this period and amounted to only 59 % of the normal. In this period the rainfall was less than 80% of the normal in 10 years. Considering the district as a whole, there was one occasion of two consecutive years of such a low rainfall. It is seen from Table 2 that the annual rainfall was between 801 mm and 1300 mm in 31 years out of 45.

On an average there are 52 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number varies from 44 at Adilabad observatory and Lohersa REV to 58 at Boath PWD.

The heaviest rainfall in 24 hours recorded at any station in the district was 450.0 mm at Khanapur REV on 30 July 1988.

TEMPERATURE

There is one meteorological observatory in the district at Adilabad so the description which follows is based on the meteorological data of this observatory. After February, temperature begins to rise rapidly till May which is the hottest month with the mean maximum temperature at 42.1°C and mean minimum temperature at 28.4°C. The days are intensely hot and on some days in April, May and early part of June, maximum temperature may reach at about 45°C. Sometimes thundershowers occur during afternoons and bring welcome relief from the heat. With the onset of the southwest monsoon over the district the weather becomes to slightly cool, the day temperatures go down appreciably but the drop in the night temperatures is slight. After the withdrawal of monsoon by about the first week of October the day temperatures mostly remain unchanged but the night temperatures continue to decrease. After October both day and night temperatures decrease rapidly. December is the coldest month of the year with the mean maximum temperature at 28.5°C and mean minimum temperature at 12.9°C. In this season the minimum temperature may go down to about 6°C on some individual days.

The highest maximum temperature ever recorded at Adilabad was 47.3°C on 25 May 2010 and the lowest minimum temperature was 5.2°C on 26 January 2006 and 22 December 2010.

HUMIDITY

The value of relative humidity is generally lower in the afternoon than in the morning. While there is little difference in the southwest monsoon and post monsoon seasons. During July to November months the air is generally humid with value of relative humidity of the order of 60% to 80%. The humidity decreases from December and air is generally mild humid. Summer season is the driest part of the year with value of relative humidity in the afternoon being about 30% and morning humidity is about 40% to 45%.

CLOUDINESS

During the southwest monsoon season, skies are heavily clouded to overcast. In post monsoon and in the latter part of summer season skies are generally light to moderate clouded. In winter season skies are generally clear or lightly clouded. In May, September and October, cloudiness is more in the afternoons than in the mornings.

WINDS

Winds are generally light to moderate throughout the year with some increase in force in latter part of summer and southwest monsoon season. In pre-monsoon and southwest monsoon season winds mainly blow from southwest direction and sometimes northeasterly and westerly winds are also observed. From October to February winds mostly blow from northeast and north direction, sometimes calm winds are also observed.

SPECIAL WEATHER PHENOMENA

Storms and depressions originating in the Bay of Bengal during the latter part of pre-monsoon season, southwest monsoon and post monsoon seasons and move westwards so that they affect the weather of the district causing widespread heavy rain and strong winds. Thunderstorms occasionally occur during the summer and southwest monsoon seasons. Sometimes thunderstorms occasionally occur in the afternoons accompanied by hails during post monsoon season. Fog occasionally occurs in the morning of winter months.

Tables 3, 4 and 5 give the normals of temperature and relative humidity, cloudiness, wind speed and direction respectively for Adilabad observatory.

TABLE - 1
NORMALS AND EXTREMES OF RAINFALL
ADILABAD

STATION	NO .OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	Date
ADILABAD OBSY	20	a	21.2	1.4	25.5	8.7	16.0	128.1	247.7	198.2	123.6	39.0	14.0	0.6	824.0	157	91	255.0	04 Aug 2008
		b	1.0	0.1	1.7	0.9	1.4	6.4	12.1	9.7	8.0	1.6	0.9	0.1	43.9	(1994)	(2004)		
ADILABAD PWD	32	a	16.3	6.5	14.3	8.9	23.5	184.2	251.5	299.5	154.0	80.7	21.3	2.4	1063.1	154	72	277.1	16 Aug 1963
		b	0.7	0.6	1.0	1.0	1.6	9.0	12.9	12.5	8.7	3.6	1.2	0.3	53.1	(1963)	(2009)		
ADILABAD REV	32	a	6.4	8.4	17.6	7.7	23.9	192.5	311.0	322.1	180.5	68.1	14.2	13.2	1165.6	169	58	277.0	16 Aug 1963
		b	0.7	0.5	1.2	0.7	1.6	9.1	14.2	13.5	7.9	3.3	1.0	0.7	54.4	(1990)	(1984)		
ASIFABAD PWD	34	a	13.0	11.0	18.6	22.0	22.4	157.5	292.3	263.3	176.6	79.8	11.5	2.6	1070.6	168	55	290.2	28 Aug 2000
		b	0.6	0.7	1.0	1.4	2.2	7.9	13.5	12.4	8.3	4.4	0.7	0.3	53.4	(1998)	(2009)		
ASIFABAD REV	32	a	4.9	6.6	11.6	16.2	16.2	162.4	281.8	276.4	159.0	73.8	15.3	9.4	1033.6	155	60	240.0	12 Aug 1986
		b	0.4	0.4	0.7	1.5	1.3	8.7	13.7	12.9	8.8	3.6	1.0	0.5	53.5	(1988)	(1972)		
BEJJUR REV	21	a	28.8	10.2	13.3	18.5	38.3	205.2	316.2	371.7	176.7	60.0	16.0	2.4	1257.3	135	66	343.0	05 Aug 2008
		b	1.3	0.8	1.0	1.0	1.3	7.7	14.1	14.2	8.1	2.9	1.1	0.4	53.9	(1995)	(2009)		
BELLAMPALL REV	21	a	16.5	12.3	25.5	19.3	23.2	158.3	241.6	295.6	146.1	53.5	21.5	4.5	1017.9	150	67	191.6	04 Aug 2008
		b	1.0	0.8	1.2	1.3	1.6	7.7	12.6	13.2	7.9	3.3	1.4	0.4	52.4	(2005)	(2009)		
BHAINSA REV	21	a	26.3	11.2	25.1	13.9	26.8	177.8	235.7	267.6	175.1	94.8	13.9	5.1	1073.3	153	57	271.8	20 Oct 1995
		b	1.4	0.9	1.8	1.2	1.6	7.6	11.5	11.1	8.1	3.5	1.4	0.4	50.5	(1999)	(2009)		

TABLE – 1 (contd...)
NORMALS AND EXTREMES OF RAINFALL
ADILABAD

STATION	NO.OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
BOATH PWD	19	a	33.7	6.2	19.6	15.9	29.8	175.7	254.7	295.1	147.7	103.2	33.6	0.5	1115.7	153	53	208.2	20 Oct 1995
		b	1.2	0.8	1.3	1.0	2.8	8.7	13.6	13.2	8.4	4.3	2.3	0.2	57.8	(1995)	(2009)		
BOATH REV	40	a	6.4	8.8	14.1	15.1	22.8	171.3	288.7	279.3	159.8	79.8	13.4	9.3	1068.8	214	55	267.0	04 Sep 1966
		b	0.4	0.7	1.0	1.2	1.6	9.0	14.5	13.7	8.0	3.6	1.3	0.7	55.7	(1988)	(1965)		
CHENNUR PWD	19	a	28.3	7.4	21.9	18.3	21.9	163.3	283.8	301.6	177.5	76.0	40.7	2.5	1143.2	136	54	235.0	05 Aug 2006
		b	1.5	0.6	0.9	1.2	1.7	6.5	13.8	13.5	8.7	4.8	1.4	0.3	54.9	(2006)	(2009)		
JAIPUR REV	19	a	23.3	6.6	11.1	14.7	15.4	127.4	255.3	287.6	145.3	50.7	20.3	1.1	958.8	147	61	222.8	05 Aug 2006
		b	1.1	0.5	0.8	0.8	1.3	5.6	11.9	12.1	7.8	3.0	1.6	0.3	46.8	(2010)	(2009)		
KADDAM PWD	28	a	12.3	5.9	10.9	10.8	22.9	202.1	364.4	353.8	155.6	78.1	25.7	8.6	1251.1	212	40	280.6	17 Jun 1990
		b	0.4	0.5	0.8	1.0	1.3	9.6	14.7	13.5	8.1	3.6	1.3	0.5	55.3	(1990)	(1974)		
KHANAPUR REV	40	a	10.3	5.0	7.5	4.5	12.7	186.2	330.9	298.5	155.6	87.5	19.3	5.4	1123.4	237	61	450.0	30 Jul 1988
		b	0.5	0.5	0.5	0.4	0.8	8.5	14.1	12.6	7.4	3.3	0.9	0.4	49.9	(1988)	(1984)		
KOTAPALLI REV	21	a	20.4	10.0	20.8	13.4	20.4	132.8	257.7	327.3	151.6	47.6	31.3	1.9	1035.2	136	60	249.8	04 Aug 2008
		b	1.2	0.8	0.8	0.6	1.3	6.7	13.7	13.8	7.7	3.7	1.2	0.1	51.6	(2006)	(2009)		
LAXMANCHANDA PWD	43	a	13.4	5.7	12.3	8.7	17.7	156.7	275.7	293.8	155.5	72.2	18.5	1.1	1031.3	224	62	250.0	12 Oct 1985
		b	0.7	0.6	0.8	0.6	1.2	7.7	13.5	13.2	8.0	3.4	1.3	0.2	51.2	(1988)	(1972)		
LOHESRA REV	21	a	25.7	9.2	9.5	5.0	15.3	145.2	237.0	236.2	153.0	82.6	18.7	1.1	938.5	184	54	298.0	08 Sep 1999
		b	1.3	0.8	1.2	0.6	1.1	6.1	10.9	10.6	7.1	2.9	0.9	0.1	43.6	(1995)	(2007)		

**TABLE – 1 (contd...)
NORMALS AND EXTREMES OF RAINFALL
ADILABAD**

STATION	NO.OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
LUXETTIPET REV	39	a	8.0	6.6	7.1	6.7	16.6	153.6	319.4	266.0	155.5	62.7	12.1	15.3	1029.6	162	57	210.6	13 Aug 1986
		b	0.3	0.4	0.5	0.6	1.1	8.1	13.2	12.8	7.4	3.7	1.0	0.4	49.5	(1983)	(1968)		
MAMDA REV	21	a	22.6	8.1	21.0	7.9	19.2	138.1	256.8	218.6	123.3	70.1	28.3	6.6	920.6	147	79	174.0	15 Jun 1998
		b	1.1	0.8	1.6	0.6	1.4	7.5	13.2	11.7	6.7	3.2	1.5	0.1	49.4	(2010)	(2007)		
MANCHERIAL HYDRO	17	a	23.0	9.5	13.0	16.5	20.3	153.4	250.6	285.8	155.7	83.0	20.4	4.4	1035.6	167	25	152.2	04 Aug 2008
		b	1.1	0.7	0.8	1.1	1.8	7.7	13.7	11.7	7.8	4.5	1.4	0.3	52.6	(2010)	(2007)		
MUDHOLE REV	50	a	12.5	7.9	10.8	7.8	14.2	165.7	263.1	268.1	177.0	73.7	13.1	7.9	1021.8	211	47	340.0	20 Oct 1995
		b	0.7	0.4	0.8	0.7	1.2	8.0	13.3	12.5	8.3	3.3	1.0	0.4	50.6	(1983)	(1984)		
NIRMAL PWD	35	a	14.3	5.2	18.6	12.0	28.8	168.0	271.3	289.0	186.8	84.5	19.9	3.4	1101.8	154	65	197.0	08 Sep 2010
		b	0.8	0.5	1.0	1.0	1.8	7.9	13.7	13.9	9.2	3.7	0.9	0.2	54.6	(1995)	(2009)		
NIRMAL REV	40	a	9.6	9.3	9.6	8.5	18.4	171.2	308.4	281.9	161.3	56.4	16.9	5.9	1057.4	219	52	218.0	04 Sep 1966
		b	0.6	0.6	0.5	0.8	1.7	8.4	15.1	13.8	7.9	3.3	1.0	0.6	54.3	(1988)	(1971)		
SIRPUR REV	39	a	5.9	8.1	18.6	8.9	13.4	175.7	319.0	333.7	162.9	56.6	13.8	5.7	1122.3	161	51	205.6	05 Aug 2008
		b	0.3	0.5	1.1	0.6	1.0	7.9	14.4	14.1	8.6	3.2	0.9	0.4	53.0	(1990)	(2009)		
SWARNA PROJECT PWD	23	a	4.5	11.0	13.4	8.6	21.0	238.8	360.1	302.1	240.2	62.1	18.5	8.8	1289.1	168	63	287.0	04 Sep 1980
		b	0.4	0.6	0.6	0.4	1.5	8.7	14.4	12.9	8.5	2.7	1.2	0.3	52.2	(1988)	(1968)		
TAMSI REV	21	a	21.9	8.6	21.8	13.2	26.3	173.2	231.7	299.5	125.8	91.4	25.4	8.3	1047.1	137	61	292.4	20 Oct 1995
		b	0.9	0.5	1.6	1.2	1.8	8.4	12.2	12.6	7.5	3.2	1.4	0.4	51.7	(1995)	(2009)		

TABLE – 1 (contd...)
NORMALS AND EXTREMES OF RAINFALL
ADILABAD

STATION	NO.OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
VEMANAPALLI REV	19	a	19.9	11.1	15.4	11.3	16.8	129.2	238.5	269.4	114.6	30.3	23.1	2.6	882.2	143	34	212.0	14 Jun2001
		b	1.0	0.6	0.8	0.6	1.0	6.3	12.1	11.9	6.5	2.8	1.7	0.3	45.6	(2000)	(2009)		
WANKDI REV	21	a	19.4	6.4	20.5	32.4	23.9	178.9	268.1	309.6	148.5	71.9	21.5	5.3	1106.4	133	53	217.3	05 Aug 2006
		b	1.0	0.8	1.4	1.5	2.1	8.2	13.4	12.9	7.3	3.5	1.2	0.3	53.6	(2010)	(2009)		
ADILABAD (DISTRICT)		a	16.7	8.0	16.0	12.7	21.0	166.9	279.0	289.0	158.7	70.4	20.1	5.2	1063.7	187	59		
		b	0.8	0.6	1.0	0.9	1.5	7.8	13.4	12.7	8.0	3.4	1.2	0.3	51.6	1988	2009		

(a) NORMAL RAINFALL IN MM

b) AVERAGE NUMBER OF RAINY DAYS (DAYS WITH RAIN OF 2.5 MM OR MORE)

(*) BASED ON ALL AVAILABLE DATA UPTO 2013

(*) YEARS OF OCCURRENCE GIVEN IN BRACKETS

TABLE – 2
FREQUENCY OF ANNUAL R/F IN THE DISTRICT
(DATA 1961 - 2010)
ADILABAD

RANGE IN MM	NO. OF YEARS	RANGE IN MM	NO. OF YEARS
601 - 700	2	1301 - 1400	2
701 - 800	5	1401 - 1500	2
801 - 900	7	1501 - 1600	0
901 - 1000	6	1601 - 1700	0
1001 - 1100	5	1701 - 1800	1
1101 - 1200	9	1801 - 1900	0
1201 - 1300	4	1901 - 2000	2

(DATA AVAILABLE FOR 45 YEARS)

TABLE- 3
NORMALS OF TEMPERATURES AND RELATIVE HUMIDITY
ADILABAD

MONTH	MEAN MAXIMUM TEMP	MEAN MINIMUM TEMP	HIGHEST MAXIMUM EVER RECORDED		LOWEST MINIMUM EVER RECORDED		RELATIVE HUMIDITY (%)	
	°C	°C	°C	DATE	°C	DATE	0830 IST	1730 IST
January	29.0	14.1	37.3	15-01-2006	5.2	26-01-2006	65	42
February	31.5	17.3	38.3	26-02-2006 21-02-2006	6.7	08-02-2004	56	29
March	37.0	21.2	42.8	22-03-2004	12.0	16-03-1984	45	32
April	40.4	25.8	46.3	20-04-2010	18.7	05-04-2005	43	29
May	42.1	28.4	47.3	25-05-2010	20.1	05-05-1981	40	26
June	38.2	27.0	46.8	05-06-1995	19.0	30-06-1987	58	40
July	31.7	24.7	39.7	02-07-1982	20.6	26-07-1985	77	71
August	30.9	24.3	38.7	07-08-2004 07-08-1983	21.2	02-08-1984 10-08-1981	76	74
September	32.0	23.9	39.1	17-09-1984	19.8	30-09-2010	79	71
October	31.7	20.5	38.0	16-10-1991	14.2	21-10-2004	76	67
November	29.4	16.7	35.3	12-11-2010	8.8	26-11-1983	72	58
December	28.5	12.9	36.0	21-12-1984	5.2	22-12-2010	69	55
Annual	33.5	21.4	47.3	25-05-2010	5.2	26-01-2006 22-12-2010	63	49

TABLE - 4
MEAN CLOUD AMOUNT ** (OKTA OF THE SKY) AND MEAN NUMBER
OF DAYS OF CLEAR AND OVERCAST SKIES.

ADILABAD

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0830 HOURS IST													
a	2	0	1	2	2	2	1	4	1	5	4	2	26
b	0	0	0	0	0	1	2	2	1	0	0	0	6
c	1.1	1.5	1.1	2.0	1.7	2.0	2.6	1.3	1.2	1.2	1.0	1.3	1.5
1730 HOURS IST													
a	2	0	1	2	2	1	0	1	0	4	3	1	17
b	0	0	0	0	0	1	0	1	0	0	0	0	2
c	0.9	1.5	1.0	1.6	2.0	1.4	2.4	1.3	2.0	1.3	1.0	1.2	1.5

a : Days with clear sky.

b : Days with sky overcast.

c : Mean Cloud amount.

** = Unit, equal to one eighth of the sky used in specifying cloud amount
For example : 1 Okta means 1/8th of the sky covered.

TABLE - 5
Mean Wind Speed (kmph) and Predominant Wind Direction
ADILABAD

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind speed in km/ hr.	4.1	4.8	6.3	7.3	9.5	8.8	6.6	6.9	4.1	3.1	2.8	3.1	5.6
Direction in the morning.	C/SW	C/S/NE	SW/S/NE	SW	SW	SW	SW	SW	NW/NE/SW	NE/C	NE/C	C/N/NE	
Direction in the evening.	NE	NE/E/N	NE/S	NE/SW	SW/NE	NE	SW/W	W/SW	NW/NE/SW	NE	NE	NE	

HYDERABAD DISTRICT

Hyderabad district lies in the part of Deccan plateau and it has an average elevation of 536 metre above mean sea level. The highest point in the district is Banjara Hills at 672 metre. There are number of large and small lakes in and around its neighbourhood.

The climate of this district is characterized by hot and dry in summer and humid in other seasons. The year may be divided into four seasons. Summer season commences from March and continues till about the first week of June, followed by southwest monsoon season till the first week of October. Post monsoon season starts thereafter and lasts till November. The Period of December to February is of cold weather season.

RAINFALL

Records of rainfall in the district are available for three raingauge stations for the period ranging from 16 to 50 years. The details of rainfall at these stations and for the district as a whole are given in Table 1 and 2. The average annual rainfall in the district is 857.3 mm. The rainfall in the southwest monsoon season (June to September) constitutes about 73% of the annual normal rainfall, August being the month with the highest rainfall with an average value of 201.3 mm. The annual rainfall in the district varies over a small range. In the fifty years period 1961 to 2010, the highest annual rainfall was in year 1975 when it amounted to 161% of the normal. In the year 1972, the annual rainfall in the district was the lowest in this period and amounted to only 48% of the normal. In this period the rainfall was less than 80% of the normal in 10 years and there are two occasions of two consecutive years. It is seen from Table 2 that the annual rainfall was between 601 mm and 1100 mm in 37 years out of 48.

On an average there are 49 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number varies from 47 at Golkonda REV to 51 at Begumpet / Hyd.Aero obsy.

The heaviest rainfall in 24 hours recorded at any station in the district was 241.5 mm at Begumpet / Hyd. Aero obsy and Secunderabad on 24 August 2000.

TEMPERATURE

There is one meteorological observatory in the district at Hyderabad (A). Hence, the climatological description of the district which follows is based on the meteorological data of this observatory. From the middle of February temperatures begin to rise rapidly till May which is usually the hottest month of the year with the mean maximum temperature is at 39.4°C and mean minimum temperature is at 26.3°C. May and early part of June prior to the onset of the southwest monsoon is rather hot and the day temperatures often go above 42°C on some individual days and the days are intensely hot and discomfort. Thundershowers occasionally occur in afternoon and bring relief from the heat. With the onset of the southwest monsoon into the district early in June there is appreciable drop in temperatures and the weather becomes pleasant. After withdrawal of southwest monsoon day temperatures slightly change but the night temperatures continue to decrease. After October both the temperatures begin to drop rapidly. December is usually the coldest month with the mean maximum temperature at 28.7°C and mean minimum at 15.1°C. During winter season the minimum temperatures may go down to 8°C or below on individual days.

The highest maximum temperature ever recorded in the district was 45.5 °C on 02 June 1966 and the lowest minimum temperature was 6.1 °C on 08 January 1946 at Hyderabad Aero observatory.

HUMIDITY

During the southwest monsoon season the air is generally humid with values of relative humidity about 70% to 82% in the morning and about 51% to 69% in the afternoon. After the monsoon season humidity decreases and the air is generally mild humid in the afternoons of post monsoon and winter seasons. The driest part of the year is summer season when the value of relative humidity in the afternoon is at about 28% whereas it is about 52% in the morning.

CLOUDINESS

During the southwest monsoon season skies are generally heavily clouded to overcast. The cloudiness decreases in the post monsoon season. In the latter part of summer and post monsoon seasons, the clouding is moderate and cloudiness is more in the afternoon than the morning. In the rest of the year skies are generally clear or lightly clouded.

WINDS

Winds are generally light to moderate with some increase in force in the latter part of summer and southwest monsoon season. In the post monsoon and winter seasons, winds are mostly variable in direction in the mornings and easterly winds are predominant along with some northeasterly and southeasterly in the afternoons. In the months of March and April, winds are mostly variable in direction, easterly and southeasterly and northwesterly components appear in the district. Winds from a west direction begin to blow from May and in the southwest monsoon season winds mostly blow from west to northwest direction.

SPECIAL WEATHER PHENOMENA

Storms and depressions originating in the Bay of Bengal during latter part of pre-monsoon season and post monsoon season cross the east coast of India and move in a westerly or northwesterly direction across the peninsula. Some of these

depressions affect the weather over the district and its neighbourhood causing widespread heavy rain and gusty winds. Thunderstorms occur throughout the year and its frequency being high during the period from April to October and least during the winter months. Thunderstorms during the period March to October are sometimes accompanied by squall and are accompanied with hail during February to May. Fog occasionally occurs in the morning of winter season and sometimes observed in March and November also.

Tables 3, 4, 5 and 6 give the normals of temperature and relative humidity, cloudiness, wind speed and direction and special weather phenomena respectively for Hyderabad (Aero) observatory.

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
HYDERABAD

STATION	NO.OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
BEGUMPE/HYD AERO OBSY	50	a	7.6	8.8	18.2	21.5	36.3	106.7	177.4	179.9	155.7	100.9	23.5	5.5	842.0	164	49	241.5	24 Aug 2000
		b	0.5	0.5	0.9	1.8	2.5	7.4	10.4	10.8	8.1	5.6	1.6	0.4	50.5	(1975)	(1972)		
GOLKONDA REV	20	a	6.2	9.7	19.6	15.5	32.9	100.5	174.6	196.5	142.9	96.2	27.1	6.2	827.9	150	78	135.0	09 Aug 2008
		b	0.3	0.3	0.9	1.3	2.4	6.6	9.8	10.9	8.2	4.8	1.6	0.4	47.5	(2008)	(2009)		
SECUNDERA- BAD	16	a	11.3	17.8	29.4	21.9	36.9	104.0	172.2	227.4	144.1	102.2	24.6	10.0	901.8	126	79	241.5	24 Aug 2000
		b	0.7	0.7	1.5	1.6	2.7	6.1	9.1	11.1	7.7	5.0	2.3	0.8	49.3	(2008)	(2007)		
HYDERABAD (DISTRICT)		a	8.4	12.1	22.4	19.6	35.4	103.7	174.7	201.3	147.6	99.8	25.1	7.2	857.3	(161)	(48)		
		b	0.5	0.5	1.1	1.6	2.5	6.7	9.8	10.9	8.0	5.1	1.8	0.5	49.0	1975	1972		

(A) NORMAL RAINFALL IN MM

(B) AVERAGE NUMBER OF RAINY DAYS (DAYS WITH RAIN OF 2.5 MM OR MORE)

(*) BASED ON ALL AVAILABLE DATA UPTO 2013

(**) YEARS OF OCCURRENCE GIVEN IN BRACKETS

TABLE – 2
FREQUENCY OF ANNUAL R/F IN THE DISTRICT
(DATA 1961 - 2010)
HYDERABAD

RANGE IN MM	NO. OF YEARS	RANGE IN MM	NO. OF YEARS
401 - 500	1	901 - 1000	7
501 - 600	3	1001 - 1100	3
601 - 700	8	1101 - 1200	5
701 - 800	11	1201 - 1300	1
801 - 900	8	1301 - 1400	1

(DATA AVAILABLE FOR 48 YEARS)

TABLE- 3
NORMALS OF TEMPERATURES AND RELATIVE HUMIDITY
HYDERABAD(A)

MONTH	MEAN MAXIMUM TEMP	MEAN MINIMUM TEMP	HIGHEST MAXIMUM EVER RECORDED		LOWEST MINIMUM EVER RECORDED		RELATIVE HUMIDITY (%)	
	°C	°C	°C	DATE	°C	DATE	0830 IST	1730 IST
January	29.3	15.9	35.9	31-01-2009	6.1	08-01-1946	72	40
February	32.4	18.3	39.1	26-02-2009	8.9	03-02-1911	63	32
March	35.9	21.5	42.2	29-03-1892	13.2	06-03-1957	55	28
April	38.1	24.4	43.3	30-04-1973	16.0	19-04-1997	52	28
May	39.4	26.3	44.5	12-05-2010	16.7	06-05-1997	49	30
June	34.9	24.2	45.5	02-06-1966	17.8	12-06-1922	70	51
July	31.3	22.8	37.4	17-07-2008 01-07-2009	18.6	26-07-1968	79	64
August	30.1	22.2	36.2	08-08-2009	18.7	31-08-2009	82	69
September	31.1	22.3	36.1	15-09-1927	17.8	30-09-1942	79	65
October	31.0	20.6	36.7	06-10-1896	11.7	26-10-1968	73	56
November	29.6	17.4	34.0	12-11-1986	7.4	26-11-1964	67	48
December	28.7	15.1	33.8	26-12-2007	7.1	14-12-1966	69	43
Annual	32.7	20.9	45.5	02-06-1966	6.1	08-01-1946	68	46

TABLE - 4
MEAN CLOUD AMOUNT ** (OKTA OF THE SKY) AND MEAN NUMBER
OF DAYS OF CLEAR AND OVERCAST SKIES.
HYDERABAD(A)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0830 HOURS IST													
a	12	14	15	9	5	0	0	0	0	5	8	11	80
b	1	0	0	0	1	5	8	7	4	3	1	1	31
c	2.6	1.9	1.8	2.5	3.5	5.7	6.4	6.4	5.6	4.0	3.0	2.5	3.8
1730 HOURS IST													
a	10	10	8	3	1	0	0	0	0	2	5	9	47
b	0	0	0	0	1	3	6	5	3	2	1	1	22
c	2.3	1.9	2.6	3.6	4.2	6.0	6.6	6.5	6.1	4.9	3.4	2.7	4.2

a : Days with clear sky.
b : Days with sky overcast.
c : Mean Cloud amount.
** = Unit, equal to one eighth of the sky used in specifying cloud amount
For example: 1 Okta means 1/8th of the sky covered.

TABLE - 5
Mean Wind Speed (kmph) and Predominant Wind Direction
HYDERABAD(A)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind speed in km/ hr.	6.0	6.6	6.8	7.3	10.4	14.8	14.9	13.8	9.5	6.9	6.4	5.6	9.1
Direction in the morning.	C/SE /E	C/SE/ E	C/SE /E	C/NW SE/W	NW	W	W	W	NW/W	C/SE/ NE/E	C/E/ SE/NE	C/SE/ E	
Direction in the evening.	E	E	E/SE	SE/E	NW	W	W	W/NW	NW/W	NE/E/N	E/NE	E	

TABLE - 6
Special Weather Phenomena
HYDERABAD(A)

Mean No. of Days With	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.3	0.4	1.9	4.2	6.4	7	4.6	4.3	7.1	4.6	0.5	0	41.3
Hail	0	0.1	0.1	0.2	0.1	0	0	0	0.1	0	0	0	0.6
Dust storm	0	0	0	0	0	0	0.1	0	0	0	0	0	0.1
Fog	1	0.4	0.1	0	0	0	0	0	0.1	0	0.2	0.4	2.2
Squall	0	0	0.3	0.9	0.8	1	0.8	0.6	0.1	0.1	0	0	4.6

KARIMNAGAR DISTRICT

The climate of this district is characterized by hot and dry in summer and good rainfall during the southwest monsoon season. The year may be divided in to four seasons. Summer season begins from March and continues till the first week of June and is followed by southwest monsoon season till September. Post monsoon season starts thereafter and continues till November. The period of December to February is of cold weather season.

RAINFALL

Records of rainfall in the district are available for 25 raingauge stations for period ranging from 10 to 50 years. The details of the rainfall at these stations and for the district as a whole are given in Tables 1 and 2. The average annual rainfall in the district is 934.0 mm. During the southwest monsoon season (June to September) the district receives about 80% of the annual normal rainfall. July and August are the rainiest months with an average value of 230.4 mm. The variation in the rainfall from year to year is not much large. In the fifty year period 1961 to 2010, the highest annual rainfall amounting to 165% of the annual normal occurred in year 1983, while the lowest annual rainfall which was 57% of the normal occurred in 2004. In this fifty year period there were five years in which the annual rainfall in the district was less than 80% of the annual normal. There was one occasion of two consecutive years of such a low rainfall. It is seen from Table 2 that the rainfall was between 701 mm and 1200 mm in 33 years out of 47 for which continuous data is available.

On an average there are 49 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number varies from 36 at Illanthakuntha to 56 at Ramgundam observatory.

The heaviest rainfall in 24 hours recorded at any station in the district was 364. 2 mm at Manthani REV on 30 July 2010.

TEMPERATURE

There is one meteorological observatory in the district at Ramgundam so the description that follows is based on the records of the meteorological data of this observatory. From February there is rapid increase in temperature. May is the hottest month with the mean maximum temperature at 41.9°C and mean minimum temperature at about 28.2°C. On many days during the summer season and early part of June i.e. prior to monsoon onset, the maximum temperature exceeds 42°C and reaches to 45°C on individual days and the days are intensely hot. Afternoon thundershowers which occasionally occur on some days and bring welcome relief though only temporarily. With the onset of the southwest monsoon in the second week of June, day temperatures come down appreciably and weather becomes cool and pleasant. By about the first week of October the monsoon withdraws and the day temperatures are mostly same as in September, but the night becomes cooler. After October both day and night temperatures decrease rapidly. December is the coldest month with the mean maximum temperature at 30.2°C and mean minimum temperature at 14.6°C. In winter minimum temperature may sometimes go down to about 8 - 9°C on individual days.

The highest maximum temperature ever recorded at Ramgundam was 47.3°C on 24 May 1984 and the lowest minimum temperature was 7.5 °C on 24 December 1994.

HUMIDITY

In the southwest monsoon months, particularly in July, August and September air is generally humid and value of relative humidity about 80% in the mornings and about 70% in the afternoons. From October humidity decreases and air is generally mild humid in post monsoon and winter seasons. The relative humidity in the afternoon is generally lower than the morning throughout the year. Summer is the driest part of the year with the minimum value of relative humidity in the afternoon is about 32%.

CLOUDINESS

During the southwest monsoon season skies are heavily clouded to overcast. In the latter part of summer and post monsoon seasons cloudiness is moderate. During the winter season sky is generally clear or lightly clouded.

WINDS

Winds are generally light to moderate with some increase in force during the southwest monsoon and pre-monsoon seasons. In the southwest monsoon season winds mostly blow from west, southwest and northwest directions. During October winds generally blow from northwest, north, northeast or east directions. Winds are generally calm during November and December. From January southerly and southeasterly winds appear in the district and they become predominant from February to May. From May, northwesterly and southwesterly winds appear in the district along with southerly.

SPECIAL WEATHER PHENOMENA

Storms and depressions originating in the Bay of Bengal during pre-monsoon, southwest monsoon and post monsoon seasons affect the weather of the district and its neighbourhood, during their westward movement after crossing the coast and cause gusty winds and widespread heavy rain. Thunderstorms generally occur throughout the year. Its frequency is more in latter part of summer and southwest monsoon season and in the month of October. Thunderstorms occur in summer season and they are sometimes associated with squall. Dust storms occasionally occur in summer season. Fog sometimes occurs in the morning of winter season.

Tables 3, 4, 5 and 6 give the normals of temperature and relative humidity, cloudiness, wind speed and direction and special weather phenomena respectively for Ramgundam observatory.

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
KARIMNAGAR

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
AMBARIPET PWD	30	a	4.4	4.9	14.5	9.9	21.8	148.5	253.2	237.0	143.5	77.6	21.0	2.1	938.4	135	64	178.8	21 Jul 2012
		b	0.4	0.5	0.8	0.6	1.5	7.6	11.7	12.1	7.0	3.8	1.3	0.2	47.5	(1990)	(2009)		
BHEEMDEVAR- PALLI REV	21	a	17.8	10.0	24.8	25.2	21.4	88.4	178.1	165.8	141.4	85.0	33.7	7.2	798.8	135	63	170.0	19 Sep 2006
		b	1.0	0.6	1.2	1.1	1.9	6.0	10.3	10.1	6.3	4.7	1.7	0.8	45.7	(1989)	(2009)		
DHARMAPURI REV	21	a	33.8	7.5	16.3	20.1	19.1	141.9	261.3	253.7	164.8	76.5	34.1	8.7	1037.8	140	72	208.0	15 Jun 1998
		b	1.2	0.4	1.4	1.4	1.4	7.3	13.1	12.0	7.8	3.5	1.9	0.4	51.8	(1995)	(2008)		
GAMBHIRAOPET REV	21	a	26.4	5.3	32.7	26.6	21.9	100.0	154.8	205.5	115.9	82.5	30.5	10.7	812.8	149	57	206.0	05 Aug 2006
		b	1.1	0.4	1.4	1.6	1.3	6.5	11.1	11.8	6.6	4.4	1.4	0.8	48.4	(1995)	(2009)		
HUZURABAD PWD	45	a	11.7	7.2	11.0	20.1	26.2	118.4	207.2	204.8	155.5	91.4	30.5	5.9	889.9	160	66	250.0	19 Sep 2006
		b	0.7	0.6	0.8	1.2	1.7	7.3	11.6	11.2	7.1	4.7	1.7	0.4	49.0	(2006)	(2009)		
HUZURABAD REV	39	a	12.3	3.7	10.4	16.9	22.1	133.9	239.2	221.6	136.7	88.5	24.2	4.4	913.9	170	61	315.4	10 Aug 1983
		b	0.5	0.4	0.7	1.1	1.6	7.0	12.1	11.6	6.9	4.3	1.2	0.2	47.6	(1983)	(1968)		
IBRAHIMPATANAM PWD	10	a	5.8	10.2	20.0	15.0	12.9	134.0	196.8	227.0	180.2	60.6	18.0	2.4	882.9	147	71	219.6	08 Sep 2010
		b	0.5	0.7	1.4	0.5	1.1	8.1	13.1	11.1	8.7	2.9	1.2	0.3	49.6	(2010)	(2007)		
ILLANTHAKUNTHA REV	18	a	6.2	4.6	20.6	7.7	13.9	86.4	132.3	156.0	126.1	35.8	36.5	7.6	633.7	163	61	179.0	24 Jul 1989
		b	0.5	0.5	1.1	0.6	0.9	4.8	8.4	8.7	5.9	2.5	1.8	0.5	36.2	(2006)	(2009)		
JAGTIAL PWD	46	a	18.9	6.2	16.2	20.7	21.0	153.7	253.8	240.3	170.5	88.6	23.2	7.8	1020.9	175	54	285.0	15 Jun 1998
		b	0.8	0.6	0.8	1.0	1.6	8.1	13.9	12.0	7.9	4.1	1.5	0.4	52.7	(1998)	(1964)		

TABLE – 1(contd....)
NORMALS AND EXTREMES OF RAINFALL
KARIMNAGAR

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
JAMMIKUNTA	16	a	13.4	7.6	30.4	29.5	18.1	120.4	197.0	223.2	167.8	47.2	41.8	15.7	912.1	139	71	240.0	19 Sep 2006
		b	1.0	0.6	0.7	1.3	1.8	7.6	11.3	10.3	7.5	3.3	2.0	0.6	48.0	(2000)	(2009)		
KAMANPUR REV	21	a	23.5	18.1	17.9	15.8	20.0	136.6	269.0	238.1	150.9	77.4	21.4	12.0	1000.7	148	66	220.0	05 Aug 2006
		b	1.5	0.7	1.2	1.0	1.4	7.0	12.6	11.9	7.8	3.7	2.1	0.9	51.8	(2010)	(2007)		
KARIMNAGAR PWD	46	a	15.4	7.5	17.1	19.5	29.5	137.2	217.8	207.4	177.5	83.3	32.7	7.6	952.5	153	66	240.6	19 Sep 2006
		b	0.9	0.4	0.9	1.4	2.1	7.9	13.1	12.1	8.2	4.5	1.7	0.5	53.7	(1983)	(1968)		
KARIMNAGAR REV	32	a	16.1	5.5	9.6	15.2	30.5	143.9	252.5	202.7	184.4	75.8	27.9	5.4	969.5	152	62	194.8	24 Jul 1989
		b	0.8	0.3	0.5	1.2	1.9	7.8	13.2	11.7	8.2	3.9	1.5	0.5	51.5	(1983)	(1968)		
KOHEDA REV	16	a	15.3	4.5	29.3	11.6	25.0	99.7	138.0	211.6	133.5	56.3	32.1	6.1	763.0	145	76	140.0	18 Aug 1989
		b	0.8	0.4	1.2	0.8	1.5	6.0	9.0	9.1	6.1	3.2	1.9	0.4	40.4	(2006)	(2009)		
KORATLA PWD	24	a	12.6	4.3	14.9	9.8	22.5	139.0	234.8	252.6	145.9	66.0	18.1	4.0	924.5	175	73	247.6	08 Sep 2010
		b	0.6	0.6	1.2	0.6	1.4	8.2	12.8	12.1	7.1	3.8	0.9	0.3	49.6	(2010)	(2007)		
MAHADEVPUR PWD	24	a	2.9	10.0	5.7	10.8	25.6	173.7	407.6	321.4	201.8	88.8	10.7	2.5	1261.5	151	70	293.0	21 Jul 1976
		b	0.2	0.7	0.3	0.7	1.5	7.3	15.7	14.4	8.1	4.0	0.6	0.2	53.7	(1990)	(1968)		
MALLAPUR REV	16	a	17.7	8.1	14.6	8.1	21.0	124.5	223.8	250.1	119.1	52.2	15.3	5.6	860.1	151	77	185.4	24 Jul 1989
		b	0.9	0.6	1.1	0.7	1.4	6.8	11.8	10.7	5.6	2.6	1.1	0.6	43.9	(2010)	(2008)		
MANTHANI REV	49	a	16.3	6.4	12.0	13.3	22.6	155.2	306.5	267.2	183.9	81.0	18.3	12.4	1095.1	181	52	364.2	30 Jul 2010
		b	0.8	0.5	0.7	1.0	1.5	7.7	14.0	12.9	8.4	4.0	1.4	0.6	53.5	(2010)	(1984)		
METPALLI REV	44	a	9.1	4.6	12.0	6.9	17.1	149.1	250.2	263.6	169.4	83.4	15.7	3.0	984.1	161	57	212.0	10 Aug 1983
		b	0.5	0.5	00.8	0.6	1.2	7.9	13.3	11.7	8.2	3.5	1.3	0.3	49.8	1983)	(1968)		

TABLE – 1(contd....)
NORMALS AND EXTREMES OF RAINFALL
KARIMNAGAR

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
PEDAPALLI REV	22	a	7.3	4.5	17.5	9.0	15.6	148.4	315.3	223.7	143.5	46.8	21.0	10.2	962.8	145	70	231.6	19 Jul 1934
		b	0.4	0.4	0.8	0.6	1.5	8.3	14.2	10.5	6.6	2.8	1.3	0.3	47.7	(1978)	(1984)		
RAIKAL REV	21	a	25.8	12.2	20.8	19.0	19.2	140.7	263.5	212.3	148.1	81.0	19.2	3.4	965.2	149	77	208.0	15 Jun 1998
		b	1.1	0.7	1.3	1.5	1.4	6.0	12.5	11.1	7.1	3.5	1.5	0.6	48.3	(1995)	(2009)		
RAMGUNDAM OBSY	50	a	14.9	8.2	11.7	15.9	27.8	162.8	313.6	274.0	186.1	91.4	23.9	9.7	1140.0	153	47	216.3	05 Aug 2006
		b	0.8	0.6	0.8	1.2	2.1	8.6	14.3	13.0	8.5	4.3	1.4	0.6	56.2	(1983)	(2004)		
SHAMIGARAM PWD	32	a	10.1	4.8	11.2	15.7	21.4	118.3	192.5	168.0	138.1	83.3	27.9	2.9	794.2	157	59	193.0	18 Aug 1989
		b	0.6	0.4	0.6	1.1	1.3	6.4	10.0	9.9	6.8	4.3	1.5	0.1	43.0	(1989)	(1971)		
SIRICILLA REV	39	a	6.5	5.0	10.6	14.4	14.5	155.3	226.5	185.4	139.1	76.3	23.8	4.4	861.8	171	52	226.6	15 Jun 1978
		b	0.5	0.3	0.6	1.1	1.2	7.0	12.4	11.3	7.6	3.7	1.4	0.4	47.5	(1989)	(1968)		
VEMULAWADA REV	21	a	16.4	7.6	31.8	21.3	16.3	148.4	204.9	217.5	160.3	110.4	33.6	8.3	976.8	140	65	258.0	24 Jul 1989
		b	1.1	0.7	1.6	1.6	1.3	7.8	12.7	11.1	6.9	4.5	2.4	0.6	52.3	(1989)	(2009)		
KARIMNAGAR (DISTRICT)		a	14.4	7.1	17.3	15.9	21.1	134.3	235.6	225.2	155.4	75.5	25.4	6.8	934.0	165	57		
		b	0.8	0.5	1.0	1.0	1.5	7.2	12.3	11.4	7.3	3.8	1.5	0.5	48.8	(1983)	(2004)		

(a) NORMAL RAINFALL IN MM

(b) AVERAGE NUMBER OF RAINY DAYS (DAYS WITH RAIN OF 2.5 MM OR MORE)

(*) BASED ON ALL AVAILABLE DATA UPTO 2013

(**) YEARS OF OCCURRENCE GIVEN IN BRACKETS

TABLE - 2
FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT
KARIMNAGAR
(Data 1961-2010)

RANGE IN MM	NO. OF YEARS	RANGE IN MM	NO. OF YEARS
501 - 600	1	1101 - 1200	6
601 - 700	3	1201 - 1300	5
701 - 800	6	1301 - 1400	2
801 - 900	9	1401 - 1500	1
901 - 1000	3	1501 - 1600	2
1001 - 1100	9		

(DATA AVAILABLE FOR 47 YEARS)

TABLE-3
NORMALS OF TEMPERATURES AND RELATIVE HUMIDITY
RAMGUNDAM

MONTH	MEAN MAXIMUM TEMP	MEAN MINIMUM TEMP	HIGHEST MAXIMUM EVER RECORDED		LOWEST MINIMUM EVER RECORDED		RELATIVE HUMIDITY (%)	
	°C	°C	°C	DATE	°C	DATE	0830 IST	1730 IST
January	30.5	15.7	36.0	29-01-2009	8.0	04-01-1991	77	48
February	33.4	18.3	39.6	28-02-2009	8.4	22-02-1993	69	39
March	37.2	21.9	43.0	29-03-1996	12.2	01-03-2000	61	34
April	40.1	25.6	45.6	30-04-2000	15.4	20-04-1971	58	32
May	41.9	28.2	47.3	24-05-1984	20.4	01-05-1977	51	32
June	37.3	27.2	47.2	08-06-1953	19.4	03-06-1973	66	51
July	32.5	25.1	41.0	06-07-1966	18.8	14-07-1973	80	69
August	31.4	24.6	37.9	04-08-1990	19.8	31-08-1965	82	73
September	33.1	24.5	38.6	28-09-1987	17.8	30-09-1972	81	71
October	33.1	22.1	38.8	07-10-1996	11.2	28-10-1985	77	64
November	31.6	17.7	38.2	05-11-1992	9.0	30-11-1970	74	56
December	30.2	14.6	35.5	14-12-1984	7.5	24-12-1994	77	51
Annual	34.4	22.1	47.3	24-05-1984	7.5	24-12-1994	71	52

TABLE - 4
MEAN CLOUD AMOUNT ** (OKTA OF THE SKY) AND MEAN NUMBER
OF DAYS OF CLEAR AND OVERCAST SKIES.

RAMGUNDAM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0830 HOURS IST													
a	16	16	16	12	8	1	0	0	1	8	14	16	108
b	2	1	0	1	1	8	13	14	6	3	1	1	51
c	1.9	1.6	1.6	2.0	2.8	5.4	6.3	6.4	4.9	3.2	1.9	1.6	3.3
1730 HOURS IST													
a	13	15	14	6	3	1	0	0	0	4	9	12	77
b	1	0	0	1	1	6	12	12	7	3	1	1	45
c	1.8	1.3	1.7	2.7	3.2	5.5	6.6	6.5	5.8	3.8	2.6	2.0	3.6

a : Days with clear sky.

b : Days with sky overcast.

c : Mean Cloud amount.

** = Unit, equal to one eighth of the sky used in specifying cloud amount
For example : 1 Okta means 1/8th of the sky covered.

TABLE - 5
Mean Wind Speed (kmph) and Predominant Wind Direction
RAMGUNDAM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind speed in km/ hr.	2.7	3.6	4	4.7	4.7	5.1	3.7	3.2	2.2	1.8	1.7	1.8	3.3
Direction in the morning.	C/S/ SE	C/S/ SE	C/S	S/C	C/S/N W/SW	C/NW/ W/SW	C/W/N W/SW	C/NW/ W	C/NW /W	C/NW /N	C	C	
Direction in the evening.	C/N E/S	C/S	C/S	C/S	C/NW/ S	C/W/N W/SW	C/NW/ W/SW	C/W/N W	C/NW /W	C/NE/ E	C	C	

TABLE- 6
SPECIAL WEATHER PHENOMENA
RAMGUNDAM

NO OF DAYS WITH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Thunder	0.5	0.8	1.3	3.0	4.7	7.6	7.0	5.6	6.8	4.3	0.5	0.1	42.2
Hail	0	0	0	0	0	0	0	0	0	0	0	0	0
Duststorm	0	0	0	0.1	0	0	0	0	0	0	0	0	0.1
Fog	0.4	0	0	0	0	0	0	0	0	0	0	0.2	0.6
Squall	0	0	0	0	0.1	0	0	0	0	0	0	0	0.1

KHAMMAM DISTRICT

Khammam district has mostly plain area but some small extreme eastern part of the district is having an altitude of 940 metre to 1360 metre.

The climate of this district is characterized by a hot summer and good monsoon rainfall. The year may be divided into four seasons. Summer season is from March to the first week of June followed by southwest monsoon till about the middle of October. Thereafter post monsoon season starts and lasts till November. The period of December to February is of cold weather season.

RAINFALL

Records of rainfall in the district are available for 34 rainguage stations for period ranging from 17 to 50 years. The details of the rainfall at these stations and for the district as a whole are given in Table 1 and 2. The average annual rainfall in the district is 1149.4 mm. During the southwest monsoon season (June to September) the district receives rainfall of about 77% of the annual rainfall. July and August are the rainiest months with average rainfall of about 282.3 mm. The variation in the rainfall is large from year to year as well as place to place. In the fifty year period 1961 to 2010, the highest annual rainfall amounting to 167% of the annual normal occurred in year 1994, while the lowest annual rainfall which was 49% of the normal occurred in year 1997. During this period there were eleven years in which the annual rainfall in the district was less than 80% of the normal and there was one occasion each of two consecutive years and four consecutive years respectively. It is seen from Table 2 that the rainfall was between 901 mm and 1400 mm in 28 years out of 48.

On an average there are 57 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number varies from 43 at Allipalli PWD to 66 at Dummugudem PWD and Venkatapuram REV.

The heaviest rainfall in 24 hours recorded at any station in the district was 581.2 mm at Perur Hydro on 19 July 2013.

TEMPERATURE

There are two meteorological observatories in the district i.e. one at Khammam and other at Bhadrachalam. The temperature and other meteorological data for these observatories may be taken as representative of the climatic conditions in the district as a whole. From the middle of February, temperature begins to rise rapidly till May which is generally the hottest month with an average of maximum temperature about 40.5°C and minimum temperature about 27.4°C. The days are intensely hot and on some days in April, May and early part of June, the maximum temperature reaches at about 44°C or above. The sultry mornings with high humidity and dry afternoons with hot winds make the summer very uncomfortable. Thundershowers which occasionally occur during afternoons and bring welcome relief from the heat though only temporarily. With the onset of southwest monsoon over the district by early in June, the day temperatures go down appreciably and the night temperatures decrease slightly. Both the temperatures become steady from July. After October both day and night temperatures continuously decrease. The fall in night temperatures is most rapid. December is the coldest month of the year with the average of maximum temperature about 29.5°C and mean minimum temperature about 17.1°C. Sometimes minimum temperatures go down to about 10°C on individual days in winter season.

The highest maximum temperature ever recorded in the district was 48.6°C on 09 May 1973 and the lowest minimum temperature ever recorded was 8.4°C on 05 January 1962 and 11 December 1970 at Bhadrachalam observatory.

.HUMIDITY

Air is generally humid throughout the year particularly in the mornings in the district. Mornings are comparatively more humid than the afternoons throughout the year and relative humidity ranges between 60% and 85%. Afternoon humidity ranges between 35% and 75%. Southwest monsoon season is more humid with value of the

humidity from 65% to 84%. The summer season is the driest part of the year with value of relative humidity especially in the afternoon is at about 40%.

CLOUDINESS

In southwest monsoon season skies are heavily clouded to overcast. From October, cloudiness decreases and it is moderate in the post monsoon season. In winter and early part of summer skies are generally clear or lightly clouded. Cloudiness increases in latter part of summer.

WINDS

Winds are generally light with some increase in force in the latter part of summer and early part of southwest monsoon season. In winter and post monsoon seasons winds mainly blow from west direction along with some northeasterly. Sometimes easterly and southeasterly winds are also observed in the district. During summer season winds mostly blow from southeast, south or east direction. Sometimes westerly and southwesterly components are also seen in the district. Winds generally blow from southwest or west direction during the southwest monsoon season.

SPECIAL WEATHER PHENOMENA

Storms and depressions originating in the Bay of Bengal during pre-monsoon, southwest monsoon and post monsoon seasons affect the weather of the district and its neighbourhood during their westward or northwestward movement after crossing the coast and cause gusty winds and widespread heavy rain. Thunderstorms generally occur throughout the year. Its frequency is more in latter part of summer and southwest monsoon season and in the month of October. Dust storms occasionally occur in pre-monsoon season. Fog occurs in the morning of winter and post monsoon season.

Tables 3, 4, 5, 6 and 3(a), 4(a), 5(a), 6(a) give the normals of temperature and relative humidity, cloudiness, mean wind speed and wind direction and special weather phenomena respectively for Khammam and Bhadrachalam observatories.

TABLE-1
NORMALS AND EXTREMES OF RAINFALL
KHAMMAM

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL R/F AS % OF NORMAL**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
ALLIPALLI PWD	27	a	3.7	6.9	13.2	8.6	24.9	92.4	203.7	181.7	116.4	83.0	16.1	2.7	753.3	193	62	151.5	12 Aug 1986
		b	0.3	0.5	0.6	0.7	1.6	5.3	10.7	10.1	7.4	4.1	1.0	0.2	42.5	(1978)	(1979)		
ASWAPURAM REV	18	a	15.6	9.5	21.3	26.7	42.4	177.2	292.3	293.5	183.7	63.7	23.5	18.1	1167.5	144	67	240.0	17 Jun 1996
		b	0.6	0.6	0.7	1.9	2.8	8.3	14.1	14.0	8.9	3.8	1.7	0.8	58.2	(2010)	(2009)		
B'CHALAM /KOTHAGU OBSY	48	a	5.8	7.5	16.4	35.6	59.8	132.7	302.6	273.5	164.7	97.7	25.3	4.9	1126.5	168	55	230.6	20 Sep 2005
		b	0.4	0.5	0.9	2.1	3.0	7.7	14.2	13.9	9.3	5.0	1.7	0.3	59.0	(2010)	(2009)		
BAYYARAM REV	21	a	32.1	11.9	35.3	28.5	52.9	126.8	257.8	291.9	199.5	126.3	29.8	9.8	1202.6	151	58	322.0	20 Sep 2005
		b	1.1	0.8	0.9	1.0	2.3	7.0	12.3	12.2	7.8	6.2	2.2	0.9	54.7	(2008)	(2009)		
BHADRACHALAM REV	49	a	5.3	11.1	18.8	33.1	49.2	171.3	307.2	293.9	167.5	95.6	24.1	7.3	1184.4	161	55	314.0	17 Jun 1996
		b	0.4	0.7	0.9	2.0	2.4	8.7	14.2	14.3	9.3	5.1	1.5	0.4	59.9	(1978)	(2009)		
BONAKAL REV	21	a	10.3	7.5	40.7	22.3	62.7	105.9	217.7	229.6	155.5	108.0	39.2	12.6	1012.0	136	77	260.0	23 Jul 1989
		b	1.0	0.5	1.6	0.6	2.2	6.4	11.5	11.4	8.1	5.8	2.7	0.9	52.7	(1989)	(2007)		
BURGAMP REV	50	a	7.0	13.3	20.4	24.3	52.3	160.2	291.7	288.8	177.0	89.9	33.3	7.1	1165.3	157	25	286.8	20 Sep 2005
		b	0.5	0.6	0.9	1.5	2.6	8.5	13.9	14.1	9.4	5.0	1.9	0.4	59.3	(2010)	(1971)		
CHERLA PWD	17	a	41.5	7.9	15.9	27.4	53.3	168.4	363.1	376.0	203.0	69.8	17.3	21.3	1364.9	152	47	211.8	04 Aug 2004
		b	1.1	0.6	1.1	1.8	3.2	7.8	15.5	14.0	9.0	4.4	1.4	1.0	60.9	(2010)	(2009)		
CHINTUR REV	21	a	6.7	17.6	24.7	29.3	38.9	176.6	383.2	385.7	217.9	89.3	21.0	27.5	1418.4	136	72	340.0	20 Sep 2005
		b	0.3	0.6	1.2	0.9	2.9	7.9	15.1	15.2	9.3	5.4	1.6	0.8	61.2	(1989)	(2009)		
DAMMAPETA	17	a	26.6	24.4	30.4	32.8	69.7	165.1	303.3	310.8	211.4	136.4	63.2	29.2	1403.3	162	70	340.8	20 Sep 2005
		b	1.3	0.8	1.5	1.5	3.4	8.8	13.2	13.4	9.3	6.7	2.4	1.0	63.3	(2000)	(2009)		

TABLE – 1(contd...)
NORMALS AND EXTREMES OF RAINFALL
KHAMMAM

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL R/F AS % OF NORMAL**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
DUMMUGUDEM PWD	36	a	6.7	12.8	13.6	28.4	58.4	199.6	372.9	324.5	173.6	99.3	27.3	8.3	1325.4	152	53	230.0	17 Jun 1996
		b	0.4	0.5	1.0	2.1	2.7	9.6	16.5	16.0	10.1	5.4	1.5	0.6	66.4	(1989)	(1972)		
GUNDALA PWD	42	a	11.9	14.2	21.8	16.2	50.0	133.4	277.9	231.2	172.2	80.1	23.7	3.8	1036.4	172	46	165.0	16 Jun 1996
		b	0.6	0.9	1.3	1.5	3.3	8.5	14.1	13.0	9.0	5.1	1.7	0.4	59.4	(2010)	(2009)		
KALLUR	18	a	9.2	19.9	17.5	19.8	58.2	112.1	208.7	261.9	195.2	78.4	25.4	21.4	1027.7	155	66	285.0	20 Sep 2005
		b	0.6	1.0	0.8	1.1	2.7	6.6	12.2	12.7	8.4	5.4	2.3	0.9	54.7	(2005)	(2009)		
KHAMMAM OBSY	50	a	9.7	7.9	8.7	15.6	48.8	129.0	252.9	232.4	185.9	114.9	30.3	4.6	1040.7	176	64	299.7	10 Jul 1954
		b	0.6	0.4	0.6	1.2	2.6	7.2	12.6	12.0	9.0	6.3	1.7	0.4	54.6	(1969)	(1979)		
DUMMUGUDEM PWD	36	a	6.7	12.8	13.6	28.4	58.4	199.6	372.9	324.5	173.6	99.3	27.3	8.3	1325.4	152	53	230.0	17 Jun 1996
		b	0.4	0.5	1.0	2.1	2.7	9.6	16.5	16.0	10.1	5.4	1.5	0.6	66.4	(1989)	(1972)		
KHAMMAM REV	39	a	5.8	6.8	15.0	16.0	50.7	134.2	254.6	232.9	186.3	120.3	33.2	4.7	1060.5	172	46	227.2	20 May 1969
		b	0.4	0.5	0.8	1.1	2.4	7.9	12.4	11.4	8.6	6.0	2.1	0.4	54.0	(1969)	(2009)		
KOTHAGUDEM REV	43	a	11.0	8.2	20.6	28.4	55.9	138.8	274.2	272.4	167.1	98.0	27.1	11.2	1112.9	147	44	220.6	03 Nov 2012
		b	0.6	0.7	1.0	1.7	2.9	8.0	13.2	13.3	9.1	5.2	1.9	0.5	58.1	(2010)	(2009)		
KUSUMANCHI REV	21	a	14.0	16.9	25.2	21.7	51.8	113.7	230.7	222.9	155.9	127.5	39.1	20.5	1039.9	144	76	214.4	23 Jul 1989
		b	1.0	0.6	1.1	0.7	2.3	6.0	11.6	11.2	8.3	6.1	3.2	1.0	53.1	(1989)	(2009)		

TABLE – 1(contd....)
NORMALS AND EXTREMES OF RAINFALL
KHAMMAM

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL R/F AS % OF NORMAL**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
MADHIRA PWD	47	a	3.5	9.8	10.3	16.8	62.5	104.5	189.2	192.7	148.9	125.9	37.4	9.2	910.7	186	6	330.0	20 Nov 1977
		b	0.2	0.5	0.6	1.0	2.2	6.5	10.3	10.6	7.6	6.3	2.1	0.6	48.5	(1990)	(1997)		
MADHIRA REV	36	a	3.7	6.1	8.9	19.6	70.6	114.0	212.1	200.1	168.0	114.3	26.7	5.7	949.8	178	49	266.7	20 May 1969
		b	0.2	0.4	0.6	1.1	2.1	7.0	11.2	11.0	8.8	5.4	1.7	0.5	50.0	(1990)	(1972)		
MULAKALAPALLI REV	21	a	12.6	21.7	28.4	26.0	56.5	144.9	323.4	317.7	196.0	95.6	32.6	20.8	1276.2	138	46	410.0	20 Sep 2005
		b	0.9	0.7	1.5	1.5	3.0	8.5	14.2	13.9	9.5	5.5	2.1	1.0	62.3	(2005)	(2009)		
NELAKONDAPALLI REV	21	a	12.0	16.6	21.7	12.5	42.8	115.4	233.4	226.6	178.0	113.4	33.6	16.3	1022.3	143	63	220.0	23 Jul 1989
		b	0.7	0.9	1.4	0.8	2.1	6.7	11.8	11.9	8.9	5.8	2.6	1.0	54.6	(1989)	(2009)		
PENUBALLI REV	20	a	11.1	11.3	37.6	29.2	61.1	126.5	253.0	249.8	170.9	109.3	28.0	22.0	1109.8	163	54	315.2	20 Sep 2005
		b	0.7	0.9	1.9	1.4	3.6	7.0	13.7	12.0	8.1	5.8	2.2	0.9	58.2	(2010)	(2009)		
PERUR HYDRO	32	a	12.5	13.7	8.6	24.9	30.9	173.2	457.7	451.9	212.4	78.7	14.0	6.5	1485.0	159	71	581.2	19 Jul 2013
		b	0.7	0.8	0.6	1.4	2.2	9.0	16.4	16.7	9.9	4.6	1.1	0.3	63.7	(1988)	(2001)		
SATHUPALLI REV	30	a	8.5	7.7	20.0	62.8	73.4	139.2	284.2	304.6	163.0	132.7	30.9	13.4	1240.4	186	63	280.4	20 Sep 2005
		b	0.7	0.8	1.1	1.4	3.0	7.5	13.6	12.9	8.2	6.8	1.9	0.8	58.7	(1990)	(2009)		
SINGABUPALAYAM PWD	31	a	3.0	8.8	13.1	28.9	62.0	138.2	292.9	257.3	182.2	132.2	34.4	4.9	1157.9	209	43	286.0	05 Oct 1983
		b	0.1	0.7	0.7	1.4	2.7	6.8	12.5	11.7	9.2	5.3	1.8	0.3	53.2	(1983)	(1975)		
SINGARENI REV	20	a	28.5	18.7	25.4	29.2	47.8	128.3	289.8	294.6	182.5	110.1	24.3	14.4	1193.6	155	55	396.2	04 Aug 2006
		b	0.9	0.9	1.0	1.4	2.6	7.1	13.6	12.6	8.4	5.5	2.1	1.0	57.1	(2005)	(2009)		
TALLADA REV	21	a	11.5	9.4	28.5	24.5	63.4	124.8	251.6	282.2	178.9	103.9	34.2	18.6	1131.5	132	40	290.0	23 JUL 1989
		b	0.7	0.8	1.0	1.3	2.4	6.9	12.0	13.0	8.8	5.7	2.4	0.7	55.7	(1994)	(2009)		

TABLE – 1(contd...)
NORMALS AND EXTREMES OF RAINFALL
KHAMMAM

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL R/F AS % OF NORMAL**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
VEMSOOR REV	21	a	14.8	8.4	27.0	18.4	57.9	109.8	255.3	252.7	151.5	105.3	24.2	20.2	1045.5	178	74	275.0	23 Jul 1989
		b	0.6	0.7	1.4	1.3	2.1	6.5	13.7	12.0	7.4	5.3	1.9	0.7	53.6	(2010)	(2009)		
VENKATAPURAM REV	22	a	16.9	8.9	31.0	23.0	60.0	186.1	440.1	451.8	240.5	97.3	25.3	14.1	1595.0	157	66	354.0	18 Sep 2006
		b	1.0	0.7	1.4	1.4	2.8	8.4	16.6	15.8	9.7	5.4	2.1	0.9	66.2	(2010)	(2009)		
WARA PWD	31	a	4.9	9.3	3.1	21.0	77.0	140.1	242.3	239.9	179.9	120.2	36.9	1.7	1076.3	171	63	350.0	23 Jul 1989
		b	0.3	0.7	0.3	1.5	2.4	7.5	12.3	12.2	9.2	6.1	2.0	0.2	54.7	(1969)	(1972)		
WAZEED REV	21	a	35.2	18.2	19.6	21.3	29.7	169.2	389.7	413.4	220.6	78.2	30.2	16.5	1441.8	132	62	345.0	18 Sep 2006
		b	1.1	0.9	1.1	1.2	2.1	8.8	16.2	16.6	9.7	4.9	1.8	0.8	65.2	(2010)	(2009)		
WYRA	17	a	5.9	5.1	20.6	17.2	38.8	111.0	194.8	210.9	166.3	65.9	31.0	24.3	891.8	167	5	308.4	20 Sep 2005
		b	0.6	0.6	0.8	0.6	1.9	6.4	10.2	10.2	7.4	3.9	2.3	0.7	45.6	(2010)	(1997)		
YELLANDU REV	45	a	6.5	11.4	17.8	15.5	47.3	141.8	299.0	271.3	171.4	99.4	23.7	3.1	1108.2	162	50	241.2	04 Aug 2006
		b	0.2	0.6	0.8	1.2	2.5	8.0	14.0	12.7	8.9	5.2	1.8	0.3	56.2	(2010)	(1979)		
YERRUPALEM REV	21	a	6.7	5.2	19.3	23.4	64.5	105.0	223.4	251.9	169.2	91.4	22.7	19.5	1002.2	172	53	289.0	23 Jul 1989
		b	0.5	0.5	0.9	1.1	2.4	5.9	11.4	11.6	7.9	5.2	2.1	0.8	50.3	2010)	(2009)		
KHAMMAM (District)		a	12.4	11.6	20.6	24.4	53.7	138.5	283.1	281.6	179.8	101.5	29.1	13.1	1149.4	167	49		
		b	0.6	0.7	1.0	1.3	2.6	7.5	13.3	12.9	8.8	5.4	2.0	0.7	56.8	(1994)	(1997)		

(a) NORMAL RAINFALL IN MM

(b) AVERAGE NUMBER OF RAINY DAYS (DAYS WITH RAIN OF 2.5 MM OR MORE)

(*) BASED ON ALL AVAILABLE DATA UPTO 2013

(**) YEARS OF OCCURRENCE GIVEN IN BRACKETS

TABLE - 2
FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT
KHAMMAM
(Data 1961-2010)

RANGE IN MM	NO. OF YEARS	RANGE IN MM	NO. OF YEARS
501 - 600	1	1301 - 1400	4
601 - 700	2	1401 - 1500	5
701 - 800	2	1501 - 1600	2
801 - 900	5	1601 - 1700	1
901 - 1000	6	1701 - 1800	1
1001 - 1100	6	1801 - 1900	0
1101 - 1200	7	1901 - 2000	1
1201 - 1300	5		

(DATA AVAILABLE FOR 48 YEARS)

TABLE – 3
NORMALS OF TEMPERATURE AND RELATIVE HUMIDITY
(KHAMMAM)

MONTH	Mean Maximum Temperature	Mean Minimum Temperature	Highest Maximum ever recorded		Lowest Minimum ever recorded		Relative Humidity (%)	
	°C	°C	°C	Date	°C	Date	0830 IST	1730 IST
January	29.2	18.1	35.0	31-01-1950	9.4	08-01-1946	77	49
February	32.1	20.6	39.4	21-02-1969	11.7	03-02-1943	74	43
March	35.2	23.2	43.3	28-03-1953	14.2	15-03-1987	72	36
April	37.7	25.6	45.5	30-04-1973	18.0	17-04-1972	70	35
May	40.1	27.4	47.2	25-05-1947	18.6	14-05-1987	61	35
June	36.6	26.7	46.7	03-06-1953	21.2	11-06-1987	65	50
July	32.7	25.0	40.6	07-07-1966	18.4	24-07-2004	77	66
August	31.5	24.4	41.2	16-08-1972	19.0	13-08-1986	80	71
September	32.3	24.6	39.6	03-09-1985	18.7	29-09-1986	80	70
October	31.5	23.1	39.6	30-10-1978	15.2	23-10-1985	79	67
November	30.0	20.0	35.4	04-11-1965	11.7	30-12-1941	73	58
December	28.6	17.3	34.6	01-12-1972	9.7	13-12-1966	73	52
Annual	33.1	23.0	47.2	25-05-1947	9.4	08-01-1946	73	53

TABLE - 4
MEAN CLOUD AMOUNT ** (OKTA OF THE SKY) AND MEAN NUMBER OF DAYS
OF CLEAR AND OVERCAST SKIES
(KHAMMAM)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
0830 HOURS IST													
a	17	12	15	15	17	8	6	6	9	13	19	19	156
b	0	0	0	0	1	2	3	3	1	1	0	0	11
c	1.4	1.8	1.7	1.6	1.6	3.2	3.8	3.8	2.8	2.1	1.3	1.2	2.2
1730 HOURS IST													
a	20	20	23	19	17	5	4	5	5	10	15	19	162
b	0	0	0	0	1	2	3	3	2	2	1	0	14
c	0.9	0.7	0.8	1.3	1.6	3.7	4.0	4.0	3.7	2.6	1.8	1.2	2.2

a: Days with clear sky.
b: Days with sky overcast.
c: Mean cloud amount in Okta.
** Okta = Unit equal to area of one eighth of the sky used in specifying cloud amount.
For example: 1 Okta means 1/8th of the sky covered.

TABLE - 5
MEAN WIND SPEED AND PREDOMINANT WIND DIRECTION
(KHAMMAM)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Wind speed in km/hr	1.8	2.6	3.1	3.5	3.8	4.3	3.4	2.9	1.8	1.4	1.5	1.6	2.6
Direction in morning	C/E	E/C/S	E/S	S/E	S/E/W	W	W	W	C/W	C/E/N/W	C/E/N	C/E	
Direction in evening	C/E/S	C/S/E	S/C/E	C/S/E	C/E/W/S	W	W	W/C	C/W/E	C/E/S	C/E	C/E	

TABLE - 6
SPECIAL WEATHER PHENOMENA
(KHAMMAM)

Mean No. of Days With	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Thunder	0.1	0.1	0.3	1.2	1.6	2.1	1.0	0.6	1.8	0.8	0.3	0.1	10.0
Hail	0	0	0	0	0	0	0	0	0	0	0	0	0
Dust storm	0	0	0	0.3	0.7	0.1	0	0	0	0	0	0	1.1
Fog	1.4	0.7	0.1	0	0	0	0	0	0	0	0.1	0.5	2.8
Squall	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE – 3(a)
NORMALS OF TEMPERATURE AND RELATIVE HUMIDITY
(BHADRACHALAM)

MONTH	Mean Maximum Temperature	Mean Minimum Temperature	Highest Maximum ever recorded		Lowest Minimum ever recorded		Relative Humidity (%)	
	°C	°C	°C	Date	°C	Date	0830 IST	1730 IST
January	30.8	17.3	37.2	30-01-2009	8.4	05-01-1962	82	56
February	33.8	19.9	40.6	28-02-2009	9.2	23-02-1993	77	47
March	37.2	22.8	42.8	29-03-1953	13.6	23-03-1997	75	44
April	39.3	25.5	46.4	29-04-1973	17.0	29-04-1987	71	42
May	40.9	27.4	48.6	09-05-1973	18.6	07-05-1981	64	39
June	36.8	26.5	47.5	05-06-2003	19.4	23-06-1981	71	56
July	32.7	24.6	40.8	07-07-1966	20.0	13-07-1986	82	74
August	31.6	24.4	38.2	02-08-1972	19.8	08-08-1992	84	77
September	32.8	24.5	39.2	19-09-1987	19.6	12-09-1977	83	77
October	32.6	22.9	38.2	02-10-1972	14.0	14-10-2003	83	74
November	31.3	19.3	36.0	08-11-1992	10.0	28-11-1970	82	68
December	30.3	16.9	37.6	25-12-1987	8.4	11-12-1970	82	63
Annual	34.2	22.7	48.6	09-05-1973	8.4	05-01-1962 11-12-1970	78	60

TABLE – 4(a)
MEAN CLOUD AMOUNT ** (OKTA OF THE SKY) AND MEAN NUMBER OF DAYS
OF CLEAR AND OVERCAST SKIES
(BHADRACHALAM)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
0830 HOURS IST													
a	20	17	14	13	13	6	5	5	6	9	15	18	141
b	1	1	1	1	1	6	9	7	5	3	2	1	38
c	1.1	1.3	1.9	2.1	2.2	4.4	5.3	4.9	4.5	3.0	2.0	1.4	2.8
1730 HOURS IST													
a	16	15	16	12	9	4	3	3	3	7	11	14	113
b	1	1	1	2	2	7	10	8	7	4	2	1	46
c	1.5	1.4	1.7	2.6	2.9	5.2	5.8	5.6	5.3	3.8	2.6	2.0	3.4

a: Days with clear sky.

b: Days with sky overcast.

c: Mean cloud amount in Okta.

** Okta = Unit equal to area of one eighth of the sky used in specifying cloud amount.
For example: 1 Okta means 1/8th of the sky covered.

TABLE – 5(a)
MEAN WIND SPEED AND PREDOMINANT WIND DIRECTION
(BHADRACHALAM)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind speed in km/hr	1.6	2.8	3.9	4.9	4.2	4.2	3.9	3.4	2.5	1.8	1.4	1.2	3.0
Direction in morning	C/W	C/W/SE	SE/C/W	SE/C/SW	SW/SE/C/W	SW/C	SW/C/W	C/SW/W	C/W/SW	C/W/NE	C/NE/W	C/W	
Direction in evening	C/W	C/W/SE	SE/W/C/SW	SE/C/SW/W	C/W/SE/NW	W/S/W/C	C/W/SW/NE	C/W/SW	C/W/SW	C/W/NE	C/W/NE	C/W	

TABLE – 6(a)
SPECIAL WEATHER PHENOMENA
(BHADRACHALAM)

Mean No. of Days With	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Thunder	0	0.3	0.7	2.4	3.6	3.3	1.4	2.0	3.2	1.9	0.4	0	19.2
Hail	0	0	0	0	0	0	0	0	0	0	0	0	0
Dust storm	0	0	0.1	0.1	0.5	0.2	0	0	0	0	0	0	0.9
Fog	0.2	0	0.1	0	0	0	0	0	0.2	0.2	0.2	0.3	1.2
Squall	0	0	0	0	0	0	0	0	0	0	0	0	0

MAHBUBNAGAR DISTRICT

Mahabubnagar district has mostly plain area and some small hills in extreme northern and southeastern parts having an altitude up to about 845 metre above mean sea level. The climate of this district is characterized by dry hot in summer and humid in monsoon season. Summer season begins from March and continues till the first week of June followed by southwest monsoon season till the first week of October. Post monsoon season starts thereafter and lasts till November. The Period of December to February is of cold weather season.

RAINFALL

Records of rainfall in the district are available for 37 raingauge stations for the period ranging from 20 to 50 years. The details of rainfall at these stations and for the district as a whole are given in Table 1 and 2. The average annual rainfall in the district is 693.6 mm. The rainfall in southwest monsoon season (June to September) constitutes about 71% of the annual normal rainfall. July, August and September months receive the high rainfall with an average of monthly rainfall of 136 mm. The annual rainfall in the district varies over a small range. In the fifty year period 1961 to 2010, the highest annual rainfall was in year 2005 when it amounted to 161% of the normal. In year 1972, the annual rainfall in the district was the lowest in the fifty year period and amounted to only 56% of the normal. In the fifty year period the rainfall was less than 80% of the normal in 6 years. During this period there was one occasion of two consecutive years of such a low rainfall. It will be seen from Table 2 that annual rainfall was between 501 mm and 900 mm in 31 years out of 41.

On an average there are 41 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number varies from 32 at Shidhanoor to 52 at Mahbubnagar obsy.

The heaviest rainfall in 24 hours recorded at any station in the district was 530.6 mm at Hanwada REV on 27 July 1996.

TEMPERATURE

There is one meteorological observatory in the district at Mahabubnagar so the description which follows is based on the meteorological data and climatological conditions prevailing at this observatory. From the middle of February, temperature begins to rise rapidly till May which is the hottest month with the mean maximum temperature at 39.7°C and mean minimum temperature at 27°C. On individual days in latter part of summer season and early part of June, maximum temperature sometimes reaches at about 43°C. The weather is oppressive during this period till the onset of southwest monsoon by about the first week of June. Thunder showers which occasionally occur during afternoons bring welcome relief from the heat. The temperatures drop appreciably after monsoon onset. The day temperatures increase a little in September and after October both day and night temperatures begin to drop. December is the coldest month of the year with the mean maximum temperature at 30°C and mean minimum temperature at 17°C. The minimum temperatures go down to about 11°C on individual days during winter.

The highest maximum temperature ever recorded at Mahabubnagar was 45.3°C on 30 April 1973 and the lowest minimum temperature was 9.1°C on 16 January 2009.

HUMIDITY

The value of relative humidity is generally lower in the afternoon than in the morning. In the southwest monsoon months the air is generally humid with value of relative humidity of the order of 55% to 85%. Humidity decreases from October and air is generally mild humid in post monsoon and winter seasons. Summer season is the driest part of the year with value of relative humidity in the afternoon being about 35% and humidity is about 50% in the morning.

CLOUDINESS

During the southwest monsoon season, skies are heavily clouded to overcast. In post monsoon season skies are generally moderate clouded. During winter and

pre-monsoon seasons skies are generally clear or lightly clouded. In April cloudiness increases particularly in the afternoons.

WINDS

Winds are generally light to moderate throughout the year with some increase in force in latter part of summer season and southwest monsoon months. During southwest monsoon season winds mainly blow from west and southwest direction and sometimes northwesterly winds are also observed. From October to February winds mostly blow from east and northeast direction, sometimes calm winds are also observed. During March and April southeasterly and easterly winds are mostly observed along with some southwesterly and northwesterly. In May winds mostly blow from northwest and west direction.

SPECIAL WEATHER PHENOMENA

The district is seldom affected by severe cyclonic storms. But in post monsoon and pre-monsoon seasons some of storms and depressions from the Bay of Bengal become weak on crossing the east coast of India. In their passage westward across the coastal region the diffuse depressions affect the district and its neighbourhood and give widespread heavy rain accompanied with strong wind. Thunderstorms generally occur in the afternoon throughout the year. Its frequency is more in the latter part of summer and southwest monsoon season. Dust raising winds occasionally occur in pre-monsoon season. Fog occasionally occurs in the mornings of winter season.

Tables 3, 4, 5 and 6 give the normals of temperature and relative humidity, cloudiness, wind speed and direction and special weather phenomena respectively for Mahbubnagar observatory.

TABLE - I
NORMALS AND EXTREMES OF RAINFALL
MAHBUBNAGAR

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL R/F AS % OF NORMAL & YEAR**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
ACHAMPET REV	48	a	0.7	2.7	9.5	25.6	28.4	78.7	141.0	155.6	158.6	100.9	24.9	3.8	730.4	170	45	268.6	01 Oct 2009
		b	0.1	0.2	0.6	1.2	1.9	5.4	9.0	9.1	7.9	4.6	1.7	0.4	42.1	(1989)	(1972)		
ALAMPUR REV	49	a	0.5	1.1	10.6	11.2	33.6	87.0	119.8	146.3	127.2	97.5	29.0	3.4	667.2	176	52	317.0	23 Jun 2007
		b	0.1	0.1	0.5	1.0	1.9	4.9	7.7	8.2	6.6	4.7	1.8	0.3	37.8	(2007)	(1984)		
AMANGAL REV	21	a	0.6	5.4	26.2	18.6	39.1	80.9	112.8	124.2	149.5	110.9	42.0	12.6	722.8	174	74	187.2	29 Oct 2005
		b	0.1	0.4	1.7	1.2	2.6	5.0	7.8	7.5	7.4	5.4	2.5	0.6	42.2	(2005)	(2008)		
ATMAKAUR REV	38	a	1.9	5.9	11.4	14.3	38.7	100.8	149.3	150.6	162.2	94.2	19.2	3.7	752.2	232	43	355.6	28 Sep 1964
		b	0.2	0.3	0.6	0.8	1.8	5.8	9.4	9.1	7.0	4.0	1.5	0.3	40.8	(1964)	(1972)		
BIJINAPALLY REV	21	a	1.4	4.2	23.2	19.1	22.7	73.4	112.1	123.4	140.9	110.5	24.6	7.8	663.3	143	65	140.0	01 Oct 2009
		b	0.2	0.4	1.1	1.3	1.7	4.9	8.6	8.5	7.7	4.6	1.7	0.6	41.3	(2005)	(2008)		
BOMRASHPET REV	20	a	4.4	2.0	27.0	18.7	22.2	78.4	132.6	139.8	106.8	58.7	30.0	1.7	622.3	128	75	113.0	26 Aug 1998
		b	0.5	0.3	1.4	1.4	2.2	6.0	9.7	8.8	6.9	3.4	1.3	0.2	42.1	(2010)	(2007)		
CHANDRASAGAR PWD	27	a	0.5	1.2	4.4	12.9	31.7	77.3	131.4	119.2	148.2	85.7	22.2	6.8	641.5	164	57	209.6	13 May 1979
		b	0.1	0.2	0.2	1.0	1.5	4.6	7.5	7.9	7.3	4.6	1.5	0.5	36.9	(1989)	(1980)		
DHARUR REV	20	a	7.3	6.0	43.9	19.7	16.5	86.2	110.2	125.8	87.1	102.8	24.9	5.7	636.1	134	64	155.0	23 Jun 2007
		b	0.4	0.4	1.4	1.2	1.7	5.0	7.4	8.1	5.6	4.6	1.9	0.7	38.4	(2005)	(2008)		
DOULATHABAD REV	21	a	4.9	1.4	49.5	14.5	28.7	101.7	174.8	167.6	144.6	75.8	31.7	11.4	806.6	167	92	150.0	16 Sep 2010
		b	0.4	0.3	1.7	0.9	2.1	6.0	9.7	9.6	7.1	3.5	1.1	0.8	43.2	(2010)	(2006)		

TABLE – I(contd....)
NORMALS AND EXTREMES OF RAINFALL
MAHBUBNAGAR

STATION	NO. OF YEAR S OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL R/F AS % OF NORMAL & YEAR**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
GADWAL REV	32	a	2.8	7.8	8.4	16.8	35.1	80.1	137.5	138.9	128.0	88.5	23.7	6.5	674.1	168	50	145.2	06 Oct 1994
		b	0.3	0.3	0.4	1.0	1.9	4.9	9.3	9.1	7.3	4.3	1.5	0.5	40.8	(1975)	(1986)		
GHATT REV	21	a	4.9	7.4	24.1	9.4	39.9	77.7	90.7	96.6	101.8	80.1	15.0	1.1	548.7	138	80	166.4	01 Oct 2009
		b	0.3	0.4	1.1	0.9	1.8	4.7	6.5	7.0	6.3	3.3	1.3	0.3	33.9	(2005)	(2006)		
GOPALPET REV	21	a	2.9	2.6	18.1	14.1	23.9	81.3	121.9	120.4	128.7	97.2	37.8	8.1	657.0	137	48	200.0	30 Jun 2000
		b	0.3	0.3	1.1	1.3	1.8	5.2	7.9	8.4	7.5	4.2	1.4	1.0	40.4	(1991)	(2008)		
HANWADA REV	20	a	0.9	4.6	11.1	23.5	29.5	84.2	157.6	143.4	127.7	84.4	12.8	4.2	683.9	151	79	530.6	27 Jul 1996
		b	0.1	0.5	1.0	1.3	1.6	5.3	8.5	9.3	7.9	4.6	0.9	0.2	41.2	(1996)	(2008)		
JADCHERLA REV	21	a	3.1	7.8	32.7	24.6	27.2	89.0	123.3	135.6	146.7	91.7	22.6	9.9	714.2	119	95	170.2	30 Ssp 2009
		b	0.3	0.5	1.6	1.3	2.0	5.7	8.8	9.2	7.8	4.9	1.8	0.6	44.5	(2005)	(2007)		
KALWAKURTHI REV	44	a	2.4	1.6	12.2	19.6	27.9	85.0	133.8	139.2	163.7	88.9	30.6	5.8	710.7	210	49	299.0	01 Jul 1999
		b	0.2	0.1	0.7	1.3	1.7	5.8	9.3	8.9	7.9	4.5	1.8	0.4	42.6	(2007)	(1972)		
KODANGAL REV	50	a	4.6	3.7	14.4	15.2	29.7	104.1	173.3	167.9	154.4	82.9	18.6	4.4	773.2	148	56	202.2	17 SEP 1980
		b	0.3	0.3	0.5	1.2	1.8	6.5	10.4	9.5	8.5	4.3	1.2	0.2	44.7	(1975)	(1971)		
KOLISAGAR PROJECT PWD	29	a	1.1	2.4	4.3	14.0	23.4	89.7	148.5	116.6	125.9	87.0	11.6	1.2	625.7	185	53	164.7	29 JUL 1961
		b	0.2	0.3	0.4	1.1	2.0	6.3	9.2	8.6	8.3	4.3	1.1	0.1	41.9	(1964)	(1980)		

TABLE – I(contd....)
NORMALS AND EXTREMES OF RAINFALL
MAHBUBNAGAR

STATION	No. of years of data		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL R/F AS % OF NORMAL & YEAR**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
KOTHAKOTA REV	21	a	2.1	3.3	27.5	16.3	42.6	91.7	113.9	128.3	129.2	106.9	26.7	10.5	699.0	122	70	166.4	01 Oct 2009
		b	0.3	0.4	1.6	1.2	2.2	5.1	7.3	9.3	7.1	4.5	1.9	0.9	41.8	(2009)	(2007)		
LINGAL REV	21	a	0.0	1.0	33.2	21.0	32.9	105.4	131.2	138.9	122.8	114.4	31.7	3.5	736.0	135	54	237.0	01 Oct 2009
		b	0.0	0.1	1.5	0.6	1.7	5.8	7.9	8.0	6.8	4.4	1.3	0.3	38.4	(1991)	(2008)		
MADGUL REV	21	a	1.1	5.4	32.0	27.7	20.0	83.8	90.7	115.2	144.1	99.8	34.6	11.7	666.1	140	75	154.4	22 Sep 1991
		b	0.1	0.3	1.4	1.2	1.7	5.0	6.7	6.5	7.5	4.6	2.2	0.8	38.0	(2007)	(2006)		
MAHBUBNAGAR OBSY	50	a	3.6	4.5	8.4	19.4	43.7	110.9	179.3	181.5	169.9	93.6	18.5	4.5	837.8	151	55	252.0	15 Aug 1978
		b	0.3	0.4	0.6	1.5	3.0	7.2	12.0	11.0	9.1	5.3	1.5	0.3	52.2	(1964)	(1985)		
MAHBUBNAGAR PWD	45	a	4.1	5.5	12.4	16.8	42.1	106.1	153.1	183.4	164.8	103.7	17.6	4.1	813.7	146	66	302.3	23 Jul 1959
		b	0.3	0.4	0.7	1.3	2.5	6.8	10.6	10.3	9.2	5.7	1.5	0.4	49.7	(1964)	(1986)		
MAHBUBNAGAR REV	33	a	3.2	3.4	8.8	14.1	39.4	110.0	203.2	174.4	165.2	86.3	20.5	6.2	834.7	148	54	186.4	10 Aug 1892
		b	0.2	0.3	0.6	1.0	2.6	7.4	12.4	10.9	8.3	4.8	1.4	0.3	50.2	(1983)	(1972)		
MIDJIL REV	21	a	1.1	3.4	27.2	23.4	24.4	87.9	111.6	131.8	154.7	87.3	30.9	11.9	695.6	139	66	138.0	30 Sep 2009
		b	0.1	0.6	1.1	1.1	1.6	5.3	8.3	8.2	7.3	4.1	1.7	0.5	39.9	(2005)	(2006)		
NAGARKURNOOL PWD	44	a	1.4	2.7	9.3	27.1	26.8	90.4	120.5	123.0	160.2	89.5	20.4	4.4	675.7	148	65	170.2	28 Sep 1964
		b	0.2	0.2	0.9	1.5	1.3	5.4	8.0	8.3	8.0	4.2	1.6	0.3	39.9	(2005)	(2008)		
NAGARKURNOOL REV	40	a	2.0	4.5	5.4	21.9	27.7	89.7	143.2	137.3	151.4	84.1	27.6	3.3	698.1	152	64	266.7	23 May 1952
		b	0.2	0.3	0.4	1.2	1.6	5.6	9.8	9.7	7.7	4.6	1.6	0.3	43.0	(1961)	(1966)		

TABLE – I(contd....)
NORMALS AND EXTREMES OF RAINFALL
MAHBUBNAGAR

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL R/F AS % OF NORMAL & YEAR**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
PEDDAMANDADI REV	21	a	4.3	3.6	30.1	17.9	30.0	87.2	119.9	121.1	102.0	90.8	20.5	1.4	628.8	166	70	180.0	30 Jun 2000
		b	0.3	0.4	1.6	1.2	1.7	4.5	7.2	8.4	6.4	3.9	1.4	0.3	37.3	(1991)	(2008)		
SARLASAGAR PWD	28	a	1.0	4.9	0.8	17.7	28.2	90.7	154.7	151.5	124.2	92.8	10.1	6.0	682.6	177	67	122.0	12 Jun 1980
		b	0.2	0.3	0.1	1.1	1.5	5.9	9.6	9.5	7.3	4.3	0.9	0.4	41.1	(1973)	(1979)		
SHADNAGAR REV	44	a	4.0	7.5	6.0	24.3	41.0	92.1	158.6	143.4	163.5	108.9	23.3	2.5	775.1	176	57	148.2	01 Oct 2001
		b	0.3	0.7	0.6	1.7	2.2	6.7	10.1	9.8	8.0	5.3	1.5	0.1	47.0	(1975)	(1972)		
SHIDHANOOR PWD	25	a	1.2	2.9	3.5	8.9	38.0	60.0	101.2	129.1	93.8	102.1	15.2	40.6	596.5	307	67	368.0	03 Dec 1962
		b	0.1	0.3	0.2	0.7	2.0	3.7	6.3	7.4	5.2	4.9	0.9	0.6	32.3	(1962)	(1976)		
TADOOR REV	21	a	2.1	6.2	19.7	15.4	24.3	62.2	104.2	108.2	139.6	75.7	29.5	9.3	596.4	158	72	205.8	30 Sep 2009
		b	0.1	0.4	1.0	1.0	1.2	4.6	7.5	7.1	6.9	3.9	1.5	0.6	35.8	(2010)	(2006)		
TELKAPALLY PWD	36	a	1.4	2.8	14.3	25.5	30.0	75.7	122.4	118.8	146.4	84.1	23.5	3.6	648.5	186	47	192.0	14 May 1979
		b	0.2	0.2	0.8	1.3	1.9	4.8	7.9	8.5	7.3	4.0	2.1	0.3	39.3	(1988)	(1980)		
UPPAL PWD	26	a	1.5	4.3	5.8	13.6	48.6	82.1	137.6	171.6	140.2	120.5	22.5	8.6	756.9	196	59	201.9	30 Sep 1964
		b	0.2	0.3	0.3	1.3	2.3	5.1	8.2	8.7	5.9	5.4	1.4	0.4	39.5	(1963)	(1976)		
UTKOOOR REV	20	a	0.0	2.2	32.6	10.5	18.2	78.8	125.0	116.8	122.6	97.3	21.4	4.7	630.1	163	54	120.0	10 Oct 1993
		b	0.0	0.3	1.4	0.8	1.5	5.1	8.3	8.2	6.8	4.1	1.2	0.4	38.1	(2010)	(2006)		

TABLE – I(contd....)
NORMALS AND EXTREMES OF RAINFALL
MAHBUBNAGAR

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL R/F AS % OF NORMAL & YEAR**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
VANGOOR REV	21	a	0.4	1.1	30.1	17.5	23.8	77.9	92.7	111.2	124.1	114.5	43.8	11.5	648.6	180	71	160.0	30 Sep 2001
		b	0.0	0.3	0.9	0.9	1.8	4.6	7.0	7.3	6.3	5.3	2.5	0.8	37.7	(2005)	(2006)		
WANAPARTHI REV	44	a	1.8	4.7	8.6	17.0	30.9	101.0	157.9	158.0	148.3	88.9	24.6	3.7	745.4	165	43	218.0	01 Oct 2009
		b	0.2	0.4	0.5	0.9	1.5	6.1	9.5	10.1	7.4	4.2	1.6	0.3	42.7	(1961)	(1972)		
WEPANGANDLA REV	21	a	4.6	8.2	26.5	19.7	20.5	91.4	122.9	133.7	117.7	97.7	20.2	5.8	668.9	175	46	151.0	23 Jun 2007
		b	0.1	0.3	1.3	0.8	1.6	4.8	8.2	8.6	6.3	4.4	1.3	0.4	38.1	(2005)	(2008)		
MAHBUBNAGAR (DISTRICT)		a	2.3	4.1	18.2	18.0	30.6	87.3	132.8	137.5	137.5	94.0	24.4	6.9	693.6	161	56		
		b	0.2	0.3	0.9	1.1	1.9	5.4	8.6	8.7	7.3	4.5	1.5	0.4	40.8	(2005)	1972)		

- (a) NORMAL RAINFALL IN MM
(b) AVERAGE NUMBER OF RAINY DAYS (DAYS WITH RAIN OF 2.5 MM OR MORE)
(*) BASED ON ALL AVAILABLE DATA UPTO 2013
(**) YEARS OF OCCURRENCE GIVEN IN BRACKETS

TABLE - 2
FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT
MAHBUBNAGAR
(Data 1961-2010)

RANGE IN MM	NO. OF YEARS	RANGE IN MM	NO. OF YEARS
301 - 400	1	801 - 900	3
401 - 500	1	901 - 1000	4
501 - 600	10	1001 - 1100	3
601 - 700	7	1101 - 1200	1
701 - 800	11		

(DATA AVAILABLE FOR 41 YEARS)

TABLE- 3
NORMALS OF TEMPERATURE AND RELATIVE HUMIDITY
MAHBUBNAGAR

MONTH	MEAN MAXIMUM TEMP	MEAN MINIMUM TEMP	HIGHEST MAXIMUM EVER RECORDED		LOWEST MINIMUM EVER RECORDED		RELATIVE HUMIDITY (%)	
	°C	°C	°C	DATE	°C	DATE	0830 IST	1730 IST
January	30.7	17.1	36.8	30-01-2009	9.1	16-01-2009	63	41
February	33.6	19.3	40.3	17-02-1993	11.6	16-02-1956	56	36
March	37.0	22.7	41.8	28-03-1996	12.5	06-03-1976	52	33
April	39.2	25.6	45.3	30-04-1973	16.1	06-04-1990	51	32
May	39.7	27.0	44.9	29-05-1973	18.3	07-05-1986	56	36
June	34.8	24.7	44.8	02-06-2003	20.1	21-06-1986	73	55
July	31.7	23.5	37.4	02-07-1988	18.6	07-07-1981	80	66
August	30.5	22.9	37.5	26-08-1981	20.0	01-08-1956	83	71
September	31.5	22.9	39.4	17-09-1966	18.5	25-09-1972	81	69
October	31.6	21.5	39.1	15-10-1981	13.4	30-10-1974	74	63
November	30.9	19.2	35.9	04-11-2008	11.3	26-11-1964	65	52
December	30.0	17.0	36.0	25-12-2007	10.5	04-12-1992	64	45
Annual	33.4	22.0	45.3	30-04-1973	9.1	16-01-2009	66	50

TABLE - 4
MEAN CLOUD AMOUNT ** (OCTA OF THE SKY) AND MEAN NUMBER
OF DAYS OF CLEAR AND OVERCAST SKIES.

MAHBUBNAGAR

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0830 HOURS IST													
a	21	22	23	19	14	3	1	1	3	11	14	19	151
b	2	1	1	2	3	10	16	16	13	8	4	3	79
c	1.5	0.9	1.0	1.5	2.4	5.4	6.6	6.7	5.8	3.8	2.8	1.8	3.4
1730 HOURS IST													
a	18	19	17	10	7	2	1	1	2	6	11	15	109
b	2	1	2	3	4	10	14	13	12	8	4	3	76
c	1.7	1.1	1.7	2.9	3.4	5.6	6.3	6.2	6.1	4.7	3.2	2.3	3.8

a : Days with clear sky.

b : Days with sky overcast.

c : Mean Cloud amount.

** = Unit, equal to one eighth of the sky used in specifying cloud amount
For example: 1 Okta means 1/8th of the sky covered.

TABLE - 5
Mean Wind Speed (kmph) and Predominant Wind Direction
MAHBUBNAGAR

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind speed in km/ hr.	3.9	3.8	3.5	4.1	5.1	7.5	6.1	5.9	3.8	3.5	4.5	4.8	4.7
Direction in the morning.	C/E	C/E/NE	C/SE/E/SW	C/SW/NW/S	C/NW/W	W/C	W/SW/NW	C/W/NW/SW	C/NW/W	C/E/NE/NW	C/E/NE	C/E/NE	
Direction in the evening.	C/E	C/E	C/E/SW/SE	C/E/SE/NE	C/NW/W/SW	C/W	C/W/W	C/W/NW	C/NW/W	C/NE/E/NW	C/E/NE	C/E	

TABLE- 6
SPECIAL WEATHER PHENOMENA
MAHBUBNAGAR

NO OF DAYS WITH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Thunder	0.1	0.1	0.2	2.1	1.8	1.6	1.1	0.7	1.6	0.9	0.1	0	10.3
Hail	0	0	0	0	0	0	0	0	0	0	0	0	0
Duststorm	0	0	0	0.2	0.3	0	0	0	0	0	0	0	0.5
Fog	0.1	0	0	0	0	0	0	0	0	0	0	0.2	0.3
Squall	0	0	0	0	0	0	0	0	0	0	0	0	0

MEDAK DISTRICT

Medak district lies in the table land of the Deccan plateau. Average elevation of Medak district is about 442 metre above mean sea level. The climate of this district is characterized by hot and dry in summer and humid during monsoon season. The year may be divided into four seasons. Summer (Pre-monsoon) season is from March to the first week of June and is followed by southwest monsoon season till September. October and November constitutes post monsoon season. The period of December to February is of cold weather season.

RAINFALL

Records of rainfall in the district are available for 28 raingauge stations for the period ranging from 19 to 49 years. The details of rainfall at these stations and for the district as a whole are given in Table 1 and 2. The average annual rainfall in the district is 887.4 mm. The rainfall in the southwest monsoon season (June to September) constitutes about 78% of the annual normal rainfall, July and August being the months with the highest rainfall with an average value of about 214 mm. The annual rainfall in the district varies over a small range. In the fifty year period 1961 to 2010, the highest annual rainfall was in year 1998 when it amounted to 159% of the normal. In year 1972, the annual rainfall in the district was the lowest in the fifty year period and amounted to only 53% of the normal. In this period the rainfall was less than 80% of the normal in 8 years and there were two occasions of two consecutive years of such a low rainfall. It is seen from Table 2 that annual rainfall was between 701 mm and 1100 mm in 21 years out of 40.

On an average there are 47 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number is from 38 at Kalher REV to 54 at Medak observatory, Medak PWD and Rayanapalli PWD.

The heaviest rainfall in 24 hours recorded at any station in the district was 400.0 mm at Kowdipalli REV on 23 July 1989.

TEMPERATURE

There is one meteorological observatory in the district at Medak so the description that follows is based on the records of Medak observatory. The temperature and other meteorological data for this station may be taken as representative of the climatic conditions in the district as a whole. From the middle of February, temperature begins to rise rapidly till May which is the hottest month with the mean maximum temperature at 40.6°C and mean minimum temperature at 25.8°C. The heat during the summer season is very trying and the day temperatures often exceed 40°C on individual days. Thundershowers which occasionally occur in afternoons and bring welcome relief from the heat. With the onset of the southwest monsoon season over the district by about the first week of June the day temperatures decrease appreciably and the weather becomes cool and pleasant. After the withdrawal of monsoon by about the first of October the night temperatures decrease steadily and after October day temperatures also decrease steadily. During post monsoon season the weather is generally pleasant due to moderate temperature. December is the coldest month of the year with the mean maximum temperature at 29.2°C and mean minimum temperature at 13.7°C. The minimum temperature goes down to about 5°C on individual days during winter season.

The highest maximum temperature ever recorded at Medak was 46.3°C on 18 May 2006 and the lowest minimum temperature was 2.7°C on 07 January 1992.

HUMIDITY

During the southwest monsoon season and post monsoon season relative humidity is generally high and it ranges between 50% and 82%. In the year the humidity is more in mornings than in the evenings. The humidity decreases rapidly from February. Summer season is the driest part of the year with value of relative humidity in the afternoon is about 28% and it is about 47% in the morning.

CLOUDINESS

In southwest monsoon season skies are mostly heavily clouded and overcast on some days. The cloudiness decreases from October and moderate in the post monsoon season. The skies are generally clear or lightly clouded in the rest of the year. Cloudiness increases in latter part of summer, especially in the afternoon.

WINDS

Winds are generally light to moderate with some strengthening in force in May and early part of southwest monsoon season. During southwest monsoon season wind blows from southwest direction. In winter and post monsoon seasons winds are generally southeasterly and northeasterly, and sometimes wind is calm. During pre-monsoon season winds generally blow from southwest, southeast and northwest directions.

SPECIAL WEATHER PHENOMENA

Storms and depressions originating in the Bay of Bengal during pre-monsoon, southwest monsoon and post monsoon seasons affect the weather of the district and its neighbourhood during their westward or northwestward movement after crossing the coast and cause gusty winds and widespread heavy rain. Thunderstorms generally occur throughout the year. Its frequency is more in the period from April to October. Thunderstorms during the summer season are sometimes accompanied by hail and dust storm. Fog generally occurs in winter.

Tables 3, 4, and 5 give the normals of temperature and relative humidity, cloudiness, wind speed and direction respectively for Medak observatory.

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
MEDAK

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	Amount (MM)	DATE
CHEGUNTA REV	21	a	12.5	10.9	23.7	13.8	21.5	98.6	212.2	231.8	132.2	91.2	24.8	9.2	882.4	174	66	375.0	24 Jul 1989
		b	0.7	1.0	1.5	1.0	1.1	6.3	10.9	11.7	6.8	4.9	1.5	0.5	47.9	(1989)	(2009)		
DUBBAK REV	30	a	11.4	4.5	14.0	17.8	26.2	115.1	209.2	211.4	141.0	82.1	27.1	9.8	869.6	151	53	200.9	09 Jul 1987
		b	0.6	0.4	0.8	1.0	1.5	7.0	11.5	11.2	6.6	4.0	1.2	0.6	46.4	(1982)	(2009)		
GAJWEL REV	38	a	2.8	6.0	16.4	14.4	19.1	104.7	183.2	194.1	164.8	79.3	24.2	3.3	812.3	158	64	241.6	18 Aug 1994
		b	0.2	0.4	0.7	0.8	1.2	6.8	10.3	10.3	8.2	4.4	1.2	0.4	44.9	(1988)	(1972)		
GHANAPUR PWD	31	a	0.6	4.9	5.6	18.6	25.3	156.6	255.0	261.7	168.1	84.6	19.1	2.3	1002.4	165	66	218.0	23 Jul 1989
		b	0.1	0.2	0.4	1.1	1.5	8.2	12.6	12.5	7.9	4.4	1.0	0.2	50.1	(1989)	(1968)		
JINNARAM REV	21	a	14.0	13.3	29.3	26.6	32.2	127.1	199.8	235.4	111.5	90.2	16.7	11.2	907.3	128	69	202.6	17 Apr 2006
		b	0.8	0.7	1.5	1.1	1.9	6.5	10.7	11.0	7.2	4.4	1.1	0.5	47.4	(2006)	(2007)		
KALHER REV	21	a	11.8	17.0	18.9	20.6	13.6	111.5	185.1	216.9	111.2	76.7	29.5	11.4	824.2	163	47	153.0	23 Jul 1989
		b	0.7	0.4	0.9	1.2	1.1	6.2	8.6	9.0	5.5	3.3	0.9	0.5	38.3	(1989)	(2009)		
KANGTI REV	21	a	8.8	6.7	43.4	19.8	28.4	118.0	201.7	210.5	128.1	76.5	27.8	14.0	883.7	148	62	170.0	14 Jul 2011
		b	0.7	0.6	1.4	1.0	1.1	6.5	10.1	9.8	6.8	3.3	1.4	0.5	43.2	(1989)	(2007)		

TABLE – 1(contd....)
NORMALS AND EXTREMES OF RAINFALL
MEDAK

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
KOWDIPALLI REV	21	a	9.9	6.1	29.9	15.3	22.2	118.9	199.9	202.4	113.9	81.9	19.8	15.4	835.6	184	63	400.0	23 Jul 1989
		b	0.6	0.7	1.3	0.8	1.4	6.6	10.8	11.2	6.5	4.1	1.5	0.7	46.2	(1989)	(2007)		
KULCHARAM REV	21	a	15.3	5.6	25.7	15.1	13.8	87.2	164.6	176.2	86.3	59.6	19.1	9.0	677.5	195	48	207.0	23 Jul 1989
		b	0.7	0.6	1.2	1.0	1.5	6.6	9.7	10.5	5.7	3.5	1.8	0.7	43.5	(1989)	(2009)		
MEDAK OBSY	28	a	8.3	6.3	17.8	16.9	33.1	144.4	267.3	293.2	157.0	87.1	21.4	8.8	1061.6	153	67	192.2	22 Sep 2005
		b	0.5	0.4	1.0	1.5	2.2	8.2	12.8	13.6	7.9	4.4	1.2	0.6	54.3	(1988)	(1984)		
MEDAK PWD	46	a	9.7	9.3	13.6	18.4	35.7	138.6	250.4	269.9	155.3	101.8	29.9	5.1	1037.7	151	57	185.0	21 Jun 1978
		b	0.4	0.6	0.8	1.4	2.0	7.9	12.9	13.1	8.1	4.5	1.6	0.3	53.6	(1983)	(2009)		
MEDAK REV	33	a	7.9	5.3	7.2	16.4	28.4	152.9	274.1	268.7	179.2	94.2	19.4	6.9	1060.6	152	65	210.6	28 Sep 1947
		b	0.5	0.4	0.5	1.4	1.4	7.9	13.4	13.2	8.1	3.9	1.0	0.4	52.1	(1988)	(1984)		
MULUGU REV	32	a	10.3	3.9	15.6	22.9	30.1	98.8	174.5	206.2	119.0	112.7	36.9	6.5	837.4	160	73	175.0	28 Aug 1996
		b	0.6	0.3	1.1	1.5	1.6	6.8	9.8	10.4	6.6	4.5	2.0	0.4	45.6	(1983)	(2007)		
MUNIPALLY REV	21	a	14.8	8.9	32.1	22.9	24.7	105.2	198.1	192.8	164.2	96.1	24.7	8.9	893.4	146	69	141.0	06 Oct 1994
		b	0.6	0.8	1.4	1.4	2.0	6.3	9.9	10.9	8.3	5.1	1.3	0.8	48.8	(1995)	(2009)		

TABLE – 1(contd....)
NORMALS AND EXTREMES OF RAINFALL
MEDAK

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (mm)	DATE
NAGASANIPALLI PWD	27	a	0.0	1.6	4.0	12.2	24.6	148.5	252.1	251.1	182.0	92.8	20.4	1.4	990.7	167#	55	217.4	23 Jul 1989
		b	0.0	0.0	0.3	0.7	1.2	7.3	12.7	12.0	8.0	4.3	0.9	0.2	47.6	(1983)	(1968)		
NANGNOOR REV	21	a	14.1	6.3	34.6	13.4	27.1	76.4	165.5	168.7	116.5	68.6	26.2	6.1	723.5	155	60	260.4	18 Aug 1994
		b	0.5	0.5	1.5	1.0	1.4	4.9	9.0	8.9	6.0	3.9	1.6	0.6	39.8	(1989)	(2009)		
NARASAPUR REV	31	a	3.2	4.1	7.5	10.6	16.9	114.5	228.7	223.9	193.1	76.3	11.7	3.6	894.1	187	33	302.2	03 Jul 1965
		b	0.2	0.4	0.7	1.0	1.4	7.5	12.0	12.5	8.5	4.1	0.9	0.2	49.4	(1983)	(1972)		
NARAYAN KHED REV	42	a	5.1	4.8	11.3	21.1	25.2	142.4	194.8	203.2	166.6	83.3	16.5	5.8	880.1	155	68	187.5	28 Jun 1960
		b	0.3	0.3	0.6	1.2	1.5	7.9	10.8	10.5	7.9	3.5	0.9	0.3	45.7	(1983)	(1984)		
PAPANNAPET REV	21	a	13.6	14.6	25.4	16.7	15.2	102.5	186.0	233.5	128.1	85.7	28.8	5.9	856.0	156	51	229.0	23 Jul 1989
		b	0.8	0.8	1.5	1.3	1.1	6.4	10.2	10.8	7.1	3.6	1.8	0.4	45.8	(1989)	(2009)		
PATANCHERU PWD	19	a	10.8	8.2	33.0	38.2	26.5	99.0	206.5	258.9	165.6	92.0	28.3	3.8	970.8	132	64	184.0	24 Aug 2000
		b	0.8	0.4	1.4	1.6	1.8	6.2	10.3	11.6	9.4	4.6	1.8	0.4	50.3	(1995)	(2007)		
RAMAYAMPET REV	30	a	10.2	4.3	15.4	13.4	25.0	99.2	190.2	201.5	122.4	76.9	25.4	7.5	791.4	158	57	192.4	05 Aug 2006
		b	0.6	0.5	1.1	1.4	1.7	7.3	11.5	11.3	7.3	4.6	1.2	0.4	48.9	(1988)	(1985)		

TABLE – 1(contd....)
NORMALS AND EXTREMES OF RAINFALL
MEDAK

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
RAMCHANDRAPURAM REV	21	a	14.5	11.4	36.2	23.6	25.5	99.4	190.6	247.0	130.4	90.6	24.5	4.4	898.1	136	73	198.0	24 Aug 2000
		b	1.0	0.4	1.5	1.4	1.6	5.9	9.5	11.3	7.5	4.6	1.8	0.7	47.2	(2010)	(2007)		
RAYANAPALLY PWD	28	a	1.0	2.4	6.3	12.3	28.3	159.0	245.5	296.3	159.9	100.2	20.6	4.0	1035.8	147	52	210.0	24 Jul 1989
		b	0.3	0.2	0.5	1.0	1.7	8.9	13.5	14.2	8.0	4.8	1.1	0.2	54.4	(1989)	(1972)		
SANGAREDDI REV	44	a	6.8	6.2	11.9	21.7	25.2	117.8	186.6	203.7	186.0	75.7	21.3	5.3	868.2	166	44	307.3	27 Sep 1908
		b	0.5	0.6	0.5	1.5	1.9	7.4	10.6	11.3	9.3	4.3	1.3	0.4	49.6	(1970)	(1972)		
SANKARAMPET(A) REV	21	a	14.9	14.1	28.6	13.8	15.5	108.3	204.7	233.8	142.6	99.9	28.8	11.6	916.6	156	57	209.0	23 Aug 2003
		b	0.7	0.6	1.4	1.1	0.9	5.8	10.2	10.5	6.8	4.2	1.3	0.5	44.0	(1995)	(2007)		
SIDDIPET REV	49	a	12.3	9.7	17.6	18.6	18.9	104.8	164.7	165.3	131.9	80.8	23.6	5.9	754.1	167	55	135.0	21 Jul 1976
		b	0.6	0.9	0.9	1.1	1.3	6.6	10.5	10.1	7.6	4.1	1.6	0.4	45.7	(1983)	(2009)		
SIDDIPET REV	49	a	12.3	9.7	17.6	18.6	18.9	104.8	164.7	165.3	131.9	80.8	23.6	5.9	754.1	167	55	135.0	21 Jul 1976
		b	0.6	0.9	0.9	1.1	1.3	6.6	10.5	10.1	7.6	4.1	1.6	0.4	45.7	(1983)	(2009)		

TABLE – 1(contd....)
NORMALS AND EXTREMES OF RAINFALL
MEDAK

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
TOOPRAN REV	21	a	8.5	9.0	27.5	20.7	15.0	89.0	172.5	173.0	123.3	80.0	20.3	10.7	749.5	144	75	151.0	24 Jul 1989
		b	0.6	0.9	1.5	1.0	1.1	5.7	9.5	9.0	6.7	4.3	1.4	0.6	42.3	(1989)	(2009)		
ZAHIRABAD REV	38	a	7.6	7.5	10.8	28.7	30.3	132.9	186.7	210.7	196.2	99.3	20.3	1.5	932.5	200	48	217.2	23 Aug 1959
		b	0.4	0.5	0.6	1.7	2.0	8.1	0.4	10.4	9.2	4.4	0.9	0.1	48.7	(1988)	(1972)		
MEDAK		a	9.3	7.6	20.1	18.7	24.1	116.8	205.4	222.9	145.6	86.3	23.5	7.1	887.4	159	53		
(DISTRICT)		b	0.5	0.5	1.0	1.2	1.5	6.9	10.9	11.2	7.5	4.2	1.3	0.4	47.1	(1998)	(1972)		

(a) NORMAL RAINFALL IN MM

(b) AVERAGE NUMBER OF RAINY DAYS (DAYS WITH RAIN OF 2.5 MM OR MORE)

(*) BASED ON ALL AVAILABLE DATA UPTO 2013

(**) YEARS GIVEN IN BRACKETS

TABLE – 2
FREQUENCY OF ANNUAL R/F IN THE DISTRICT
(DATA 1961 - 2010)
MEDAK

RANGE IN MM	NO. OF YEARS	RANGE IN MM	NO. OF YEARS
401 - 500	1	1001 - 1100	3
501 - 600	1	1101 - 1200	4
601 - 700	6	1201 - 1300	4
701 - 800	6	1301 - 1400	2
801 - 900	8	1401 - 1500	1
901 - 1000	4		

(DATA AVAILABLE FOR 40 YEARS)

TABLE- 3
NORMALS OF TEMPERATURE AND RELATIVE HUMIDITY
MEDAK

MONTH	MEAN MAXIMUM TEMP	MEAN MINIMUM TEMP	HIGHEST MAXIMUM EVER RECORDE D		LOWEST MINIMUM EVER RECORDED		RELATIVE HUMIDITY (%)	
	°C	°C	°C	DATE	°C	DATE	0830 IST	1730 IST
January	30.0	14.7	36.0	31-01-2009	2.7	07-01-1992	71	42
February	32.9	17.1	38.0	28-02-2001	8.0	18-02-1992	62	34
March	36.6	20.5	41.8	31-03-1996	11.2	04-03-1992	52	29
April	39.6	23.7	44.5	30-04-2006	16.5	08-04-1989	45	27
May	40.6	25.8	46.3	18-05-2006	19.4	24-05-1990	44	27
June	35.0	24.6	44.6	03-06-1998	13.9	17-06-1986	67	50
July	30.6	23.1	37.0	13-07-1996	18.1	10-07-1991	79	68
August	29.3	22.5	35.6	15-08-1994	18.2	09-08-1991	82	74
September	30.3	22.5	36.4	24-09-1979	16.5	29-09-1991	81	71
October	30.8	20.2	36.3	08-10-2002	10.8	25-10-1991	75	63
November	29.8	16.3	33.8	04-11-2000	7.5	27-11-1991	68	54
December	29.2	13.7	33.8	29-12-2007	5.0	16-12-1991	70	46
Annual	32.9	20.4	46.3	18-05-2006	2.7	07-01-1992	66	49

TABLE - 4
MEAN CLOUD AMOUNT ** (OCTA OF THE SKY) AND MEAN NUMBER
OF DAYS OF CLEAR AND OVERCAST SKIES.

MEDAK

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0830 HOURS IST													
a	14	16	17	14	10	2	0	1	2	8	12	15	111
b	2	1	1	2	3	12	16	16	11	6	3	2	75
c	1.6	1.0	1.4	1.5	3.1	5.6	6.7	6.6	5.5	3.3	2.2	1.5	3.3
1730 HOURS IST													
a	9	9	8	5	3	1	0	0	1	4	7	9	56
b	1	0	1	1	3	10	15	16	9	5	2	1	64
c	1.8	1.7	2.3	3.1	3.8	5.7	6.7	6.6	5.7	4.1	2.9	1.9	3.9

- a : Days with clear sky.
b : Days with sky overcast.
c : Mean Cloud amount.
** = Unit, equal to one eighth of the sky used in specifying cloud amount
For example : 1 Okta means 1/8th of the sky covered.

TABLE - 5
Mean Wind Speed (kmph) and Predominant Wind Direction
MEDAK

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind speed in km/ hr.	1.9	2.4	2.6	3.3	4.0	6.0	5.2	4.0	2.4	1.5	1.2	1.4	3.0
Direction in the morning.	C/SE	C/SE	C/SW/SE	SW/C	NW/SW	SW	SW	SW	SW	C/SW	C/NE/SE	C/SE/NE	
Direction in the evening	C\NE\SE	C\SE\NE	C\SE\SW	SW\C\SE	NW\SW	SW	SW	SW	SW	C\NE	C\NE	C\NE	

NALGONDA DISTRICT

The climate of this district is characterized by dry hot in summer and humid during the southwest monsoon season. The year may be divided into four seasons. Summer season is from March to first week of June and is followed by southwest monsoon season till about mid-October. Thereafter, post monsoon season continues till November. The period of December to February is of cold weather season.

RAINFALL

Records of rainfall in the district are available for 28 rainguage stations for period ranging from 20 to 50 years. The details of the rainfall at these stations and for the district as a whole are given in Tables 1 and 2. The average annual rainfall in the district is 746.5 mm. During southwest monsoon season (June to September) the district receives about 71% of the annual normal rainfall. July, August and September are the rainiest months with average rainfall of 146 mm. The variation in the rainfall from year to year is not large. In the fifty year period 1961 to 2010, the highest annual rainfall amounting to 203% of the annual normal occurred in year 1996, while the lowest annual rainfall which was 63% of the normal occurred in 1972. In this fifty year period there were six years in which the annual rainfall in the district was less than 80% of the normal and none of them were consecutive. It is seen from Table 2 that the rainfall was between 501 mm and 900 mm in 30 years out of 41 for which continuous data is available.

On an average there are 41 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number varies from 28 at Palliwada Project PWD to 47 at Kodad PWD.

The heaviest rainfall in 24 hours recorded at any station in the district was 506.7 mm at Nagarjunsagar Dam PWD on 13 August 1996.

TEMPERATURE

There is one meteorological observatory in the district at Nalgonda. So the description that follows is based on the records of this observatory. From the middle of February both day and night temperatures begin to rise rapidly till May which is the hottest month with the mean maximum temperature at 41.3°C and mean minimum temperature at 28.1°C. In the latter part of the summer season i.e. April to the first week of June, the maximum temperature sometimes reaches about 44°C on individual days. The heat during summer season is oppressive until the onset of the monsoon by first week of June, days are discomfort with hot dusty winds. However, thundershowers which occasionally occur in the afternoon on some days and bring welcome relief though only temporarily. With the advance of southwest monsoon into the district, the day temperatures drop rapidly while drop in night temperature is comparatively small. With the withdrawal of the monsoon by about mid- October, there is rapid drop in the night temperatures while the day temperatures begin to decrease slightly. December is the coldest month with the mean maximum temperature at 30.1°C and mean minimum temperature at 18.1°C. On individual days during the winter season night temperatures go down to about 12°C.

The highest maximum temperature ever recorded at Nalgonda was 46.5°C on 12 May 1988 and the lowest minimum temperature was 10.6°C on 22 December 2010.

HUMIDITY

Air is generally humid throughout the year in the mornings and relative humidity ranges between 61% and 82%. Mornings are more humid than the afternoons. Afternoon the humidity ranges between 36% and 67%. Summer is the driest part of the year when afternoon humidity is at about 39%.

CLOUDINESS

During southwest monsoon season skies are generally heavily clouded to overcast on some days. In the latter part of summer and post monsoon season there is moderate cloudiness. During the winter season skies are generally clear or lightly clouded. Generally cloudiness is more in the mornings than in the afternoons.

WINDS

Winds are generally light with a little strengthening in the latter part of summer and southwest monsoon season. In the southwest monsoon season winds are predominantly southwesterly or northwesterly. During the period from October to December northeasterly winds are mostly predominant along with some northwesterly and southwesterly. During the period from January to May southeasterly wind is predominant. Sometimes northeasterly and northwesterly are also observed.

SPECIAL WEATHER PHENOMENA

Depressions originating in the Bay of Bengal during the post monsoon season cross the east coast and moving in some northwest direction pass through or in the neighbourhood of the district causing widespread and locally heavy rain and gusty winds. Thunderstorm occurs in the district throughout the year. Its frequency is more in the latter part of summer season and in the southwest monsoon season. Fog occurs occasionally in the mornings of winter season.

Tables 3, 4 and 5 give the normals of temperature and relative humidity, cloudiness, wind speed and direction respectively for Nalgonda observatory.

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
NALGONDA

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
ALAIR REV	21	a	19.6	4.6	17.3	21.0	26.8	95.8	154.4	153.7	143.5	98.1	39.5	5.0	779.3	129	83	126.0	10 Jul 1991
		b	1.2	0.6	1.0	1.1	1.7	5.9	8.7	8.2	6.5	4.9	2.7	0.4	42.9	(1995)	(2007)		
BHONGIR PWD	47	a	9.6	9.3	15.5	27.0	23.4	100.9	152.6	140.8	161.8	109.5	36.3	4.5	791.2	155	44	256.0	23 Sep 1991
		b	0.5	0.5	0.7	1.8	1.9	6.4	9.2	8.5	7.5	5.4	2.5	.5	45.4	(2005)	(1980)		
BHONGIR REV	39	a	7.3	11.1	10.8	17.2	17.2	113.1	155.4	137.3	140.0	123.1	32.8	7.3	772.6	130	45	222.4	23 Sep 1991
		b	0.5	0.5	0.6	1.3	1.2	6.7	9.4	8.3	7.1	5.6	2.2	0.5	43.9	(1991)	(1980)		
CHITYAL REV	21	a	10.5	1.7	18.4	13.1	17.2	104.9	112.0	151.4	152.3	75.5	35.0	2.8	694.8	136	70	132.0	02 Aug 1998
		b	0.6	0.3	1.2	0.5	1.5	6.1	7.1	8.5	7.8	4.0	2.9	0.3	40.8	(1998)	(2009)		
DAMERCHERLA REV	21	a	3.3	2.6	24.3	19.5	32.4	73.1	136.6	143.1	176.5	102.4	43.4	13.7	770.9	148	62	251.3	22 Sep 1991
		b	0.6	0.4	1.2	1.2	2.0	4.6	8.2	8.7	7.0	5.3	2.8	0.8	42.8	(1991)	(2009)		
DEVARKONDA REV	45	a	1.2	2.1	7.7	15.7	29.2	81.5	101.0	118.3	150.2	81.7	46.5	5.3	640.4	174	62	196.0	19 Oct1996
		b	0.2	0.3	0.5	0.9	1.6	4.7	6.7	7.2	7.3	4.5	2.6	0.4	36.9	(1975)	(1972)		
DINDI PROJECT PWD	24	a	2.1	1.4	8.1	6.8	29.8	61.0	114.5	115.9	121.0	106.9	55.3	5.5	628.3	168	67	158.0	13 May 1979
		b	0.2	0.1	0.4	0.5	1.6	4.4	7.8	8.1	6.6	5.7	2.9	0.4	38.7	(1975)	(1980)		

TABLE – 1(contd....)
NORMALS AND EXTREMES OF RAINFALL
NALGONDA

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	amount (mm)	DATE
HUZURNAGAR REV	49	a	4.5	2.5	7.2	7.1	26.7	92.7	186.8	160.5	155.6	103.4	28.8	6.6	782.4	166	51	230.0	22 Sep 1991
		b	0.3	0.4	0.5	0.6	1.4	6.0	10.4	8.7	7.7	5.3	2.3	0.6	44.2	(1978)	(2009)		
KANAGAL REV	21	a	6.0	3.2	18.4	25.2	23.2	67.3	105.9	128.0	174.2	74.6	29.2	3.8	659.0	152	36	210.0	30 Sep 2001
		b	0.4	0.4	0.9	1.0	1.4	4.1	6.3	7.7	7.3	4.2	2.5	0.4	36.6	(2005)	(2009)		
KODAD PWD	20	a	12.5	10.0	45.6	14.3	45.1	83.6	181.9	192.4	168.7	100.5	33.8	9.4	897.8	148	42	197.2	23 Jul 1989
		b	0.9	0.5	1.4	1.1	2.3	5.0	8.9	9.3	8.8	5.3	2.7	0.6	46.8	(1989)	(2009)		
MATTAMPALLY REV	21	a	4.0	9.4	21.7	16.8	24.7	60.7	125.5	114.4	105.8	72.4	22.6	10.6	588.6	182	45	172.2	22 Jul 1989
		b	0.4	0.6	1.4	0.8	1.4	4.0	7.9	7.8	6.2	4.7	2.2	0.7	38.1	(1989)	(2009)		
MIRYALGUDA REV	49	a	4.1	5.5	11.3	13.3	30.9	86.5	151.7	150.8	162.0	102.3	38.4	9.3	766.1	163	60	380.0	22 Sep1991
		b	0.3	0.3	0.6	0.9	1.5	5.2	8.6	8.4	7.2	5.1	2.2	0.6	40.9	(1969)	(1965)		
MUNAGALA REV	21	a	6.8	9.1	27.8	9.9	27.1	92.0	176.2	192.0	158.8	103.4	29.9	6.6	839.6	127	57	155.0	16 Jun 1996
		b	0.6	0.6	1.0	0.5	1.7	5.0	9.4	9.1	7.9	4.4	2.3	0.3	42.8	(2010)	(2009)		
MUSI ROJECT PWD	30	a	4.4	8.4	7.4	13.9	43.2	101.0	168.0	156.0	154.9	101.9	35.5	7.6	802.2	146	61	164.0	06 Oct 1983
		b	0.3	0.3	0.5	0.8	2.1	6.4	9.7	9.1	8.0	5.2	2.1	0.5	45.0	(1978)	(1972)		

TABLE – 1(contd....)
NORMALS AND EXTREMES OF RAINFALL
NALGONDA

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
NADIGUDEM REV	20	a	16.7	9.0	25.8	8.6	24.8	87.3	152.3	171.9	137.5	109.4	24.2	6.5	774.0	128	50	171.0	29 Jul 1998
		b	0.4	0.3	0.8	0.6	1.7	4.5	7.9	8.8	6.3	5.2	2.4	0.6	39.5	(1998)	(2009)		
NAGARAM PWD	30	a	6.2	8.0	7.3	26.3	31.2	110.3	132.1	126.0	159.7	109.5	36.2	6.4	759.2	160	53	160.0	20 Sep 1988
		b	0.3	0.5	0.6	1.5	1.7	6.1	8.3	8.3	7.6	5.4	2.3	0.4	43.0	(1978)	(1980)		
NAGARJUNSAGAR DAMPWD	20	a	7.3	11.1	7.7	9.5	23.2	68.5	138.5	201.1	150.8	146.0	35.4	5.0	804.1	189	107	506.7	13 Aug 1996
		b	0.8	0.7	0.6	0.7	1.7	5.3	8.0	7.6	6.6	5.6	2.4	.4	40.4	(1996)	(1986)		
NALGONDA OBSY	33	a	14.3	2.5	9.6	18.2	27.4	68.6	107.3	105.6	154.0	124.1	28.5	5.2	665.3	171	95	173.2	24 Jul 1989
		b	0.5	0.2	0.6	1.0	1.3	4.5	5.9	7.2	7.2	5.2	2.7	0.3	36.6	(1981)	(1982)		
NALGONDA PWD	47	a	10.3	6.2	14.5	19.7	32.9	93.2	140.6	149.3	169.8	108.6	38.1	9.0	792.2	180	54	195.8	07 Sep 1968
		b	0.5	0.4	0.9	0.9	1.8	5.8	8.3	8.6	7.7	5.4	2.6	.5	43.4	(1998)	(1986)		
NALGONDA REV	31	a	8.6	5.9	9.0	18.8	19.7	102.8	148.9	146.9	155.2	107.8	41.9	8.9	774.4	157	61	195.8	07 Sep 1968
		b	0.4	0.3	0.6	0.9	1.1	6.5	8.8	8.5	7.9	5.3	2.8	0.6	43.7	(1978)	(1972)		
PALLIWADA PROJEC PWD	30	a	1.8	4.8	0.0	3.4	12.6	77.8	126.8	102.7	119.1	88.5	17.0	6.3	560.8	175	28	136.0	18 Jul 1988
		b	0.0	0.3	0.0	0.2	0.5	3.5	6.3	5.6	5.4	4.5	1.3	0.3	27.9	(1988)	(1986)		

TABLE – 1(contd....)
NORMALS AND EXTREMES OF RAINFALL
NALGONDA

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
PENDILIOKALA PWD	30	a	2.0	2.6	3.0	10.3	19.6	59.0	88.1	93.0	135.0	84.5	35.8	7.4	540.3	179	51	116.3	25 Sep 1971
		b	0.2	0.2	0.3	0.5	1.2	3.7	5.4	5.7	6.6	5.2	3.0	0.6	32.6	(1975)	(1984)		
POCHAMPALLY REV	21	a	23.3	5.5	34.9	40.9	39.5	88.1	143.0	158.2	156.1	124.3	40.6	9.0	863.4	130	73	215.0	02 Apr 1993
		b	1.0	0.6	1.6	1.4	1.9	5.0	7.2	8.0	6.8	5.3	2.7	0.7	42.2	(2005)	(2009)		
RAJAPET REV	22	a	3.7	5.1	15.4	17.1	26.7	74.9	116.8	124.5	112.1	96.6	16.5	3.1	612.5	160	90	260.4	22 Jul 1989
		b	0.4	0.3	0.9	0.9	1.4	5.0	7.0	6.8	5.6	4.6	1.5	0.3	34.7	(1990)	(2009)		
RAMANNAPET REV	50	a	5.6	4.2	12.6	22.8	25.6	111.6	127.5	126.7	135.9	118.5	34.3	5.7	731.0	170	51	190.0	04 Nov 1987
		b	0.4	0.3	0.6	1.1	1.5	6.3	7.9	7.6	7.1	5.1	2.2	0.4	40.5	(2010)	(1986)		
SURYAPET REV	50	a	5.0	7.9	9.7	10.8	33.8	116.4	181.2	181.8	163.0	111.3	37.8	8.1	866.8	214	42	196.0	14 Jun 1978
		b	0.4	0.3	0.4	0.7	1.8	6.4	10.1	9.5	7.6	5.2	1.9	0.5	44.8	(1978)	2009)		

TABLE – 1(contd....)
NORMALS AND EXTREMES OF RAINFALL
NALGONDA

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
TUNGATURTHY REV	21	a	12.4	4.3	26.7	14.7	34.5	94.0	179.6	175.3	151.1	106.2	28.5	4.3	831.6	127	53	173.0	21 Sep 2005
		b	0.8	0.3	1.0	1.0	1.9	5.4	9.4	8.4	7.5	4.7	2.3	0.2	42.9	(1998)	(2009)		
VALIGONDA REV	21	a	8.6	8.2	31.3	30.3	32.3	87.2	157.9	171.6	208.3	136.6	38.0	5.7	916.0	166	62	200.4	29 Oct 2005
		b	0.5	0.5	1.2	1.6	1.7	5.3	7.4	7.9	7.2	4.6	3.3	0.3	41.5	(1997)	(2009)		
NALGONDA		a	7.9	5.9	16.0	16.9	27.9	87.6	141.5	146.0	151.2	104.6	34.3	6.7	746.5	203	63		
(DISTRICT)		b	0.5	0.4	0.8	0.9	1.6	5.3	8.1	8.1	7.1	5.0	2.4	0.5	40.7	(1996)	(1972)		

(a) NORMAL RAINFALL IN MM

(b) AVERAGE NUMBER OF RAINY DAYS (DAYS WITH RAIN OF 2.5 MM OR MORE)

(*) BASED ON ALL AVAILABLE DATA UPTO 2013

(**) YEARS GIVEN IN BRACKETS

TABLE - 2
FREQUENCY OF ANNUAL R/F IN THE DISTRICT
NALGONDA
(Data 1961-2010)

RANGE IN MM	NO. OF YEARS	RANGE IN MM	NO. OF YEARS
401 - 500	3	1001 - 1100	3
501 - 600	3	1101 - 1200	0
601 - 700	10	1201 - 1300	0
701 - 800	10	1301 - 1400	0
801 - 900	7	1401 - 1500	0
901 - 1000	4	1501 - 1600	1

(DATA AVAILABLE FOR 41 YEARS)

TABLE- 3
NORMALS OF TEMPERATURE AND RELATIVE HUMIDITY
NALGONDA

MONTH	MEAN MAXIMUM TEMP	MEAN MINIMUM TEMP	HIGHEST MAXIMUM EVER RECORDE D		LOWEST MINIMUM EVER RECORDED		RELATIVE HUMIDITY (%)	
	°C	°C	°C	DATE	°C	DATE	0830 IST	1730 IST
January	30.8	17.9	36.5	22-01-2000	11.6	28-01-2006	82	47
February	33.5	20.1	39.5	16-02-2005	14.0	07-02-2006	82	48
March	37.0	22.6	43.5	29-03-1996	15.3	06-03-1979	79	42
April	39.4	25.3	45.0	30-04-1999	20.1	15-04-1979	73	39
May	41.3	28.1	46.5	12-05-1988	21.0	05-05-1981	61	36
June	37.4	27.2	46.3	02-06-1998	21.8	12-06-1991	70	50
July	34.0	25.6	39.8	01-07-2009	21.6	23-07-2007	76	60
August	32.9	25.1	38.6	07-08-2009	20.8	01-08-2009	77	65
September	33.5	24.8	38.7	24-09-2002	20.4	29-09-2008	77	67
October	32.6	23.4	38.5	06-10-1980	16.2	28-10-2008	78	64
November	30.9	20.7	36.0	05-11-2007	13.4	30-11-2004	75	59
December	30.1	18.1	34.5	19-12-1992	10.6	22-12-2010	76	53
Annual	34.5	23.2	46 . 5	12-05-1988	10.6	22-12-2010	76	53

TABLE - 4
MEAN CLOUD AMOUNT ** (OCTA OF THE SKY) AND MEAN NUMBER
OF DAYS OF CLEAR AND OVERCAST SKIES.

NALGONDA

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0830 HOURS IST													
a	16	14	14	13	10	3	1	1	2	5	9	12	100
b	2	3	1	2	2	7	10	9	5	5	4	3	53
c	1.5	1.7	1.3	1.9	2.0	4.0	4.7	4.8	3.5	3.0	2.5	1.7	2.7
1730 HOURS IST													
a	13	12	13	9	7	1	0	0	0	3	7	9	74
b	1	0	0	1	2	5	7	7	5	3	3	1	35
c	0.6	0.5	0.9	2.0	2.2	3.5	3.9	2.4	2.1	1.4	1.7	1.4	1.9

a : Days with clear sky.

b : Days with sky overcast.

c : Mean Cloud amount.

** = Unit, equal to one eighth of the sky used in specifying cloud amount
For example: 1 Okta means 1/8th of the sky covered.

TABLE - 5
Mean Wind Speed (kmph) and Predominant Wind Direction
NALGONDA

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind speed in km/ hr.	2.9	3.8	4.3	3.7	4.8	8.4	7.3	5.7	4.0	2.2	2.8	2.1	4.3
Direction in the morning.	SE/NE /C	SE	SE	SE	SE/NW	NW/SW	SW/NW	NW	NW/SW	NE/NW	NE/C	NE	
Direction in the evening.	SE	SE	SE	SE	SE/NE/ NW	SW/NW	NW/SW	NW	C/SW/ NW	NE/C	C/NE	NE/SE	

NIZAMABAD DISTRICT

The climate of this district is characterized by hot and dry in summer and good rainfall during southwest monsoon season. The year may be divided into four seasons. Summer season begins from March and continues till first week of June, followed by southwest monsoon season till September. October and November months constitute post monsoon season. The period of December to February is of cold weather season.

RAINFALL

Records of rainfall in the district are available for 32 rain gauge stations for the period ranging from 18 to 49 years. The details of rainfall at these stations and for the district as a whole are given in Tables 1 and 2. The average annual rainfall in the district is 1049.0 mm. The variation in rainfall from year to year is not large. The rainfall in the southwest monsoon season (June to September) constitutes about 82% of the annual rainfall, August being the month with the highest rainfall with an average value of 286.2 mm. In the fifty year period 1961 to 2010, the highest annual rainfall was in year 1983 when it amounted to 176% of the normal. In the year 1971, the annual rainfall in the district was the lowest in this period and amounted to only 48% of the normal. In this fifty year period the rainfall was less than 80% of the normal in 14 years. There were three occasions of two consecutive years and one occasion of three consecutive years of such a low rainfall. It is seen from Table 2 that the annual rainfall was between 801 mm and 1300 mm in 32 years out of 50.

On an average there are 51 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number varies from 45 at Jukkal REV to 56 at Nizamabad REV.

The heaviest rainfall in 24 hours at any station in the district was 416.8 mm at Bodhan REV on 4 July 1958.

TEMPERATURE

There is one meteorological observatory in the district at Nizamabad so the description that follows is based on the records of this observatory. From the middle of February day and night temperatures begin to rise rapidly till May which is the hottest month with the mean maximum temperature at 41.6°C and mean minimum temperature at 27.1°C. The intense heat during the summer season is very trying and the day temperatures sometimes reaches about 43°C or above on individual days. Thundershowers occasionally occur in the afternoon on some days and bring some relief from oppressive weather. With the advance of the southwest monsoon over the district by about early part of June, the day temperatures drop appreciably while drop in night temperature is comparatively small. With the withdrawal of the monsoon by the end of September, there is a slight increase in day temperature. But the night temperatures continue to fall steadily. After October, there is a fall in both day and night temperatures. December is the coldest month with the mean maximum temperature at 30.2°C and mean minimum temperature at 14.2°C. On such occasions the minimum temperatures sometimes drop to about 6°C on individual days.

The highest maximum temperature ever recorded at Nizamabad was 47.3°C on 22 May 2005 and the lowest minimum was 4.4°C on 17 December 1897.

HUMIDITY

During the southwest monsoon season the relative humidity is generally high. The value of relative humidity ranges between 65% and 80% in the mornings and between 48% and 71% in the afternoons. From October humidity start to decrease and summer is the driest part of the year when the humidity ranges between 25% to 28% in the afternoons and 40% and 50% in the mornings. In year humidity is more in the mornings than in the afternoons.

CLOUDINESS

During the monsoon months skies are heavily clouded to overcast. Cloudiness decreases from October. In the latter half of summer and post monsoon season there is moderate cloudiness. During the winter season, skies are generally clear or lightly clouded. In year cloudiness is more in the afternoons than in the mornings.

WINDS

Winds are generally light with a little strengthening in the latter part of summer and early part of southwest monsoon season. In the southwest monsoon season westerly or southwesterly winds are predominant. During the post monsoon season winds generally blow from east or northeast direction. During winter season and in March southeasterly or easterly winds are predominant along with some northeasterly observed in the afternoon. From April westerly and southwesterly winds appear in the district and they become predominant in May and monsoon season.

SPECIAL WEATHER PHENOMENA

Depressions originating in the Bay of Bengal during the southwest monsoon season and post monsoon season cross the east coast and moving in some west direction affect the weather of the district causing widespread heavy rain and gusty winds. Thunderstorm occurs in the district throughout the year. Its frequency is more in the latter part of summer season and in southwest monsoon season. Fog occurs occasionally in the mornings of winter season.

Table 3, 4, 5 and 6 give the normals of temperature and humidity, cloudiness, wind speed and direction, and special weather phenomena respectively for Nizamabad observatory.

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
NIZAMABAD

STATION	NO.OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
ALISAGAR PWD	30	a	7.0	6.1	12.8	13.4	29.0	212.7	342.1	391.6	232.4	83.1	13.7	5.3	1349.2	275	32	380.0	30 Aug 1990
		b	0.3	0.4	0.8	0.8	1.2	8.0	13.1	13.1	8.1	3.6	0.7	0.4	50.5	(1988)	(1972)		
ARMOOR PWD	46	a	10.5	4.3	8.8	16.6	19.1	139.4	245.7	257.5	140.7	88.1	15.4	4.5	950.6	175	57	226.0	18 Aug 1970
		b	0.5	0.4	0.7	1.0	1.2	7.0	13.0	12.0	7.2	3.8	1.0	0.3	48.1	(1995)	(1984)		
BALKONDA REV	21	a	24.6	6.1	18.6	12.1	26.9	145.4	248.4	231.6	131.2	89.1	24.8	8.9	967.7	148	49	166.0	05 Aug 2006
		b	1.3	0.6	1.4	0.9	1.4	7.2	12.8	12.0	6.5	3.9	1.4	0.6	50.0	(1995)	(2009)		
BANSWADA REV	49	a	12.4	3.4	10.9	16.7	22.3	172.4	277.9	309.2	178.8	89.8	19.4	5.7	1118.9	210	53	232.7	14 Jul 1965
		b	0.6	0.4	0.8	1.1	1.6	8.7	13.5	13.3	8.2	4.0	1.4	0.4	54.0	(1990)	(2009)		
BARIDPUR PWD	27	a	5.7	3.3	7.3	14.6	29.7	144.2	294.1	274.5	188.9	70.6	17.3	2.2	1052.4	170	51	277.1	08 Jul 1958
		b	0.4	0.3	0.4	1.1	1.9	7.8	12.8	12.2	8.4	3.2	0.9	0.2	49.6	(1983)	(1972)		
BHEEMGAL REV	26	a	20.7	10.5	14.1	7.9	24.8	167.9	246.8	260.0	130.0	85.9	21.9	8.7	999.2	171	74	172.0	24 Jul 1989
		b	0.7	0.6	1.1	0.7	1.6	7.7	12.3	12.0	6.3	3.7	1.6	0.6	48.9	(1990)	(1991)		
BHOMENDRAPAL PWD	25	a	2.2	0.5	4.4	11.0	25.9	208.7	328.6	434.7	188.5	103.5	23.2	11.1	1342.3	224	53	305.0	24 Jul 1989
		b	0.2	0.1	0.4	0.9	1.1	8.7	12.7	14.0	7.4	4.1	0.8	0.5	50.9	(1990)	(1972)		
BICKKUNDA REV	21	a	19.7	5.0	35.9	14.2	17.8	129.4	269.5	262.2	147.9	67.4	19.3	11.4	999.7	153	74	280.0	21 Sep 2005
		b	1.1	0.7	1.5	0.8	1.1	7.6	12.3	11.2	6.8	3.9	1.4	0.6	49.0	(1989)	(2009)		

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
NIZAMABAD

STATION	NO.OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
BODHAN PWD	46	a	15.1	6.0	11.7	11.2	20.8	167.7	299.8	319.9	172.4	99.6	24.5	7.1	1155.8	200	57	354.1	05 Jul 1958
		b	0.7	0.5	0.8	1.1	1.2	8.6	14.2	13.1	7.9	3.9	1.3	0.5	53.8	(1983)	(1972)		
BODHAN REV	39	a	9.6	5.7	11.8	9.4	19.1	160.7	290.6	286.1	169.4	79.4	17.2	5.0	1064.0	204	42	416.8	04 Jul 1958
		b	0.5	0.4	0.7	0.9	1.0	8.5	13.9	13.1	8.4	3.4	1.1	0.4	52.3	(1983)	(1971)		
BORLAM PWD	26	a	3.9	2.2	6.0	15.6	25.1	205.5	344.2	421.5	191.6	86.6	28.8	2.6	1333.6	167	54	269.7	23 Jul 1989
		b	0.3	0.3	0.5	0.9	1.7	9.1	13.5	15.0	7.6	4.0	1.2	0.1	54.2	(1990)	(1972)		
DOMAKONDA REV	21	a	20.7	12.7	41.6	18.6	27.0	107.5	208.3	224.9	136.9	89.5	30.7	12.0	930.4	147	55	202.0	05 Aug 2006
		b	1.0	1.1	1.7	1.2	1.8	6.5	12.1	11.6	6.2	4.4	1.8	0.7	50.1	(1989)	(2009)		
GANDHARI PWD	22	a	13.4	7.6	30.2	11.4	26.3	122.7	244.6	315.0	149.3	74.1	13.2	7.1	1014.9	166	65	317.2	05 Aug 2006
		b	0.8	0.5	1.4	1.0	1.7	7.2	12.8	12.9	8.1	3.3	1.0	0.5	51.2	(1995)	(2009)		
JUKKAL REV	21	a	13.5	5.0	27.0	15.4	26.9	105.3	208.0	234.1	130.4	66.5	18.6	11.2	861.9	141	52	208.0	24 Aug 2000
		b	1.1	0.8	1.6	1.0	1.5	6.5	9.9	10.7	6.5	3.4	1.4	0.8	45.2	(1995)	(2008)		
KALLADI PWD	25	a	3.5	2.9	1.7	17.0	22.4	150.3	296.2	273.7	172.8	71.3	29.3	9.3	1050.4	182	52	310.0	30 Jul 1988
		b	0.2	0.2	0.1	0.9	1.5	7.5	14.1	13.4	7.5	3.5	1.2	0.6	50.7	(1988)	(1978)		
KAMAREDDY REV	49	a	11.0	5.8	16.2	20.1	20.4	130.0	238.8	266.9	150.1	92.1	20.4	6.5	978.3	182	59	277.0	05 Aug 2006
		b	0.8	0.6	0.7	1.5	1.5	7.9	12.6	12.8	7.7	4.3	1.3	0.3	52.0	(1975)	(1971)		

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
NIZAMABAD

STATION	NO.OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
KOTGIR REV	21	a	24.0	5.3	25.9	13.6	21.8	146.3	259.4	262.6	141.1	88.1	27.5	14.7	1030.3	157	70	243.2	19 Oct 1995
		b	1.1	0.6	1.8	1.1	1.9	7.9	13.0	12.5	7.4	3.9	1.6	0.9	53.7	(1995)	(2009)		
MACHAREDDY REV	21	a	16.6	9.2	53.6	18.6	27.4	110.8	188.4	254.2	135.6	108.2	26.8	10.4	959.8	168	49	401.0	05 Aug 2006
		b	1.2	0.6	2.0	1.2	1.6	7.1	11.8	12.0	6.8	4.8	1.6	0.6	51.3	(1995)	(2009)		
MEDNOOR REV	31	a	4.5	4.3	10.9	4.9	22.1	149.8	241.0	249.1	179.9	89.6	22.0	7.5	985.6	197	34	260.0	19 Oct 1995
		b	0.6	0.3	0.6	0.4	1.2	7.6	11.6	11.9	8.4	3.6	1.4	0.6	48.2	(1983)	(1972)		
MORTHAD REV	21	a	26.8	4.4	22.9	10.5	28.2	145.2	246.1	236.1	138.7	95.1	27.1	8.2	989.3	154	72	176.0	08 Sep 1999
		b	1.2	0.3	1.6	0.7	1.6	7.3	13.3	11.6	7.0	3.8	1.6	0.4	50.4	(1995)	(2009)		
NAGIREDDYPET REV	21	a	18.3	18.4	23.0	12.2	24.1	125.4	235.8	281.8	139.9	89.2	25.9	16.6	1010.6	143	68	207.0	23 Jul 1989
		b	1.1	1.1	1.2	1.0	1.9	7.2	11.8	13.5	6.8	4.2	1.8	0.6	52.2	(1989)	(2009)		
NAVIPET PWD	37	a	9.8	3.1	6.2	9.6	24.0	167.4	318.4	330.8	192.9	94.9	13.9	6.2	1177.2	232	51	320.0	06 Oct 1983
		b	0.6	0.4	0.6	1.2	1.8	8.3	14.4	13.9	8.0	3.9	0.9	0.3	54.3	(1988)	(1972)		
NIZAMABAD OBSY	49	a	11.2	4.9	11.8	14.6	24.8	150.2	276.4	282.9	167.1	66.1	16.7	4.0	1030.7	212	59	355.0	06 Oct 1983
		b	0.7	0.6	1.0	1.3	1.7	8.6	13.6	13.0	8.0	3.3	0.9	0.4	53.1	(1983)	(2004)		
NIZAMABAD REV	49	a	16.3	6.6	14.2	11.8	26.0	153.8	302.4	308.7	186.0	80.9	22.6	8.6	1137.9	181	54	291.4	06 Oct 1983
		b	0.8	0.8	1.2	1.0	1.8	8.7	14.4	13.6	8.7	3.5	1.2	0.5	56.2	(1983)	(1972)		

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
NIZAMABAD

STATION	NO.OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
NIZAMSAGAR (HYDRO)		a	8.8	8.4	12.4	14.4	22.5	141.2	216.9	280.7	137.1	92.0	23.8	2.8	961.0	171	63	200.2	05 Aug 2006
		b	0.6	0.6	0.7	1.2	1.6	7.3	12.2	12.3	7.4	4.0	1.4	0.3	49.6	(1983)	(2007)		
NIZAMSAGAR PWD	21	a	1.0	4.5	3.1	15.3	42.0	159.7	243.9	313.2	159.3	99.5	16.4	5.9	1063.8	155	49	354.6	05 Jul 1958
		b	0.1	0.5	0.3	1.2	2.4	8.6	13.1	14.0	7.0	4.1	0.7	0.3	52.3	(1962)	(1972)		
POCHAMPET PROJ PWD	31	a	11.5	10.4	10.5	14.6	19.1	159.2	250.3	242.3	155.8	70.2	20.6	9.3	973.8	190	67	296.4	19 Aug 1970
		b	0.7	0.7	0.7	1.0	1.4	8.2	12.8	11.6	7.8	3.6	1.2	0.5	50.2	(1988)	(1972)		
POCHARAM PWD	21	a	3.8	6.1	6.2	6.4	23.2	166.6	286.9	302.7	179.0	98.9	19.9	7.4	1107.1	153	54	266.0	21 Jun 1978
		b	0.3	0.3	0.2	0.6	1.3	7.6	12.5	12.8	7.6	4.9	0.9	0.5	49.5	(1989)	(1968)		
SADASIVNAGAR REV	21	a	17.1	12.2	32.1	19.5	23.9	119.1	226.2	253.8	121.4	100.8	23.4	7.7	957.2	174	61	253.0	05 Aug 2006
		b	1.1	0.6	1.7	1.7	1.7	7.2	12.7	12.6	6.7	4.4	2.4	0.5	53.3	(1995)	(2009)		
SHRIRAMSAG. POCHAHYDRO	37	a	17.6	12.1	8.6	11.5	17.8	154.3	265.9	271.6	150.1	78.8	16.7	7.3	1012.3	184	56	178.8	21 Oct 1982
		b	0.8	0.7	0.9	0.8	1.6	8.5	13.3	12.2	7.9	3.6	1.0	0.5	51.8	(1988)	(2009)		

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
NIZAMABAD

STATION	NO.OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST R/F IN 24 HRS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
YELLAREDDY REV	49	a	8.4	8.1	13.8	12.9	26.5	160.7	253.7	294.2	165.2	92.9	21.5	4.6	1062.5	198	46	384.0	31 Jul 2011
		b	0.5	0.6	0.8	1.0	1.6	8.4	12.8	13.2	7.5	3.8	1.2	0.3	51.7	(1989)	(1971)		
NIZAMABAD (DISTRICT)	27	a	13.2	6.7	16.6	13.3	24.3	150.3	263.4	286.2	158.9	86.7	21.7	7.7	1049.0	176	48		
		b	0.7	0.6	1.0	1.0	1.6	7.8	12.8	12.6	7.4	3.9	1.3	0.5	51.2	(1983)	(1971)		

(A) NORMAL RAINFALL IN MM

(B) AVERAGE NUMBER OF RAINY DAYS (DAYS WITH RAIN OF 2.5 MM OR MORE)

(*) BASED ON ALL AVAILABLE DATA UPTO 2013

(**) YEARS GIVEN IN BRACKETS

TABLE - 2
FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT
NIZAMABAD
(Data 1961-2010)

RANGE IN MM	NO. OF YEARS	RANGE IN MM	NO. OF YEARS
501 - 600	1	1201 - 1300	1
601 - 700	3	1301 - 1400	3
701 - 800	6	1401 - 1500	1
801 - 900	7	1501 - 1600	1
901 - 1000	12	1601 - 1700	0
1001 - 1100	3	1701 - 1800	1
1101 - 1200	9	1801 - 1900	2

(DATA AVAILABLE FOR 50 YEARS)

TABLE – 3
NORMALS OF TEMPERATURE AND RELATIVE HUMIDITY
(NIZAMABAD)

MONTH	Mean Maximum Temperature	Mean Minimum Temperature	Highest Maximum ever recorded		Lowest Minimum ever recorded		Relative Humidity (%)	
	°C	°C	°C	Date	°C	Date	0830 IST	1730 IST
January	30.8	15.2	37.0	27-01-2009	4.8	05-01-1983	73	42
February	33.6	17.7	39.8	25-02-2006	6.1	03-02-1911	63	34
March	37.3	21.2	43.3	24-03-1928	11.0	01-03-1984	52	28
April	40.2	24.6	46.8	29-04-1988	12.8	01-04-1905	44	25
May	41.6	27.1	47.3	22-05-2005	16.0	18-05-1983	43	25
June	36.6	25.1	46.3	05-06-1995 02-06-1995	14.0	25-06-1985	65	48
July	31.8	23.5	40.0	09-07-1904	13.6	16-07-1985	78	66
August	30.6	23.0	39.0	03-08-1987	14.0	02-08-1985	80	71
September	31.8	22.9	39.0	04-09-1986	14.8	07-09-1983	79	68
October	32.2	20.7	38.9	16-10-1951	8.4	16-10-1984	76	60
November	31.0	17.0	37.0	18-11-1986	7.0	28-11-1984	74	53
December	30.2	14.2	35.4	16-12-1984	4.4	17-12-1897	74	46
Annual	34.0	21.0	47.3	22-05-2005	4.4	17-12-1897	67	47

TABLE – 4
MEAN CLOUD AMOUNT(OKTA OF THE SKY) AND MEAN NUMBER**
OF DAYS OF CLEAR AND OVERCAST SKIES
(NIZAMABAD)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
0830 HOURS IST													
a	14	15	14	9	5	1	0	0	0	5	11	12	86
b	1	0	1	1	1	7	10	11	6	3	2	1	44
c	1.9	1.4	1.7	2.1	3.1	5.5	6.2	6.4	5.5	3.7	2.4	2.1	3.5
1730 HOURS IST													
a	10	11	10	4	2	0	0	0	0	3	8	10	58
b	1	0	1	1	1	6	11	11	6	4	2	1	45
c	2.3	1.8	2.3	3.2	4	6	6.7	6.7	6	4.5	3	2.6	4.1

a: Days with clear sky.
b: Days with sky overcast.
c: Mean cloud amount in Okta.
** Okta = Unit equal to area of one eighth of the sky used in specifying cloud amount.
For example: 1 Okta means 1/8th of the sky covered.

TABLE - 5
Mean Wind Speed and Predominant Wind Direction
(NIZAMABAD)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind speed in km/hr	2.6	2.9	3.1	3.5	4.7	6.3	6.0	5.4	3.8	2.6	2.4	2.2	3.8
Direction in morning	C/SE/ E	C/SE/ E	C/SE/ E	C/W/ SW	W	W/SW	SW/W	W/SW	W/C/ SW	C/E/ NE	C/E/ NE	C/SE/ E	
Direction in evening	C/NE/ E	C/E/ NE	C/E/N E	C/E/ SE	C/W/N W	W/SW	SW/W	W/SW	C/W/ SW	C/N E/E	C/NE/ E	C/NE/ E	

TABLE - 6
Special Weather Phenomena
(NIZAMABAD)

Mean No. of Days With	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.1	0.1	0.5	1.4	1.6	3.1	2.6	1.7	2.2	1.7	0.2	0	15.2
Hail	0	0	0.1	0	0	0	0	0	0	0	0	0	0.1
Dust storm	0	0	0	0	0	0	0	0	0	0	0	0	0
Fog	0.4	0	0	0	0	0	0	0	0	0	0.5	1.6	2.5
Squall	0	0	0	0	0	0	0	0	0	0	0	0	0

RANGAREDDY DISTRICT

Rangareddy district lies in the table land of the Deccan plateau. It has mostly plain area but some part of the district is having an altitude about 650 metre above mean sea level. The climate of this district is characterized by hot and dry in summer and humid in other seasons. The year may be divided into four seasons. Summer season commences from March and continues till about the first week of June, followed by southwest monsoon season till the first week of October. Post monsoon season starts thereafter and lasts till November. The Period of December to February is of cold weather season.

RAINFALL

Records of rainfall in the district are available for 19 raingauge stations for period ranging from 20 to 48 years. The details of the rainfall at these stations and for the district as a whole are given in Tables 1 and 2. The average annual rainfall in the district is 869.3 mm. During the monsoon season (June to September) the district receives rainfall of about 73% of the annual rainfall. August is the rainiest month with average rainfall of 184.2 mm. The variation in the rainfall from year to year is not large. In the fifty year period 1961 to 2010, the highest annual rainfall amounting to 156% of the annual normal occurred in year 1983, while the lowest annual rainfall which was 62% of the normal occurred in 1972. In the fifty year period there were six years in which the annual rainfall in the district was less than 80% of the normal. There is one occasion when such a low rainfall occurred in two consecutive years. It is seen from Table 2 that the rainfall was between 601 mm and 1100 mm in 28 years out of 35.

On an average there are 47 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number varies from 37 at Balkapur to 56 at Pargi REV.

The heaviest rainfall in 24 hours recorded at any station in the district was 240.0 mm at Medchel / Manchal REV on 22 September 1991.

TEMPERATURE

There is no meteorological observatory in the district so the description which follows is based on the neighbouring observatory located at Hyderabad where similar climatological conditions prevail. The meteorological data and climatological conditions prevailing at this station can be taken as representative of the whole district. From mid-February, temperatures begin to rise rapidly till May which is the hottest month with the mean maximum temperature about 39°C and mean minimum temperature about 26°C. On some days in April, May and early part of June, the day temperature may reach at 43°C or above. Thundershowers which occasionally occur during some afternoons and bring welcome relief from the heat. With the onset of the southwest monsoon season over the district by about the first week of June the weather cools down, the day temperatures go down appreciably but the drop in the night temperatures is slight. After withdrawal of southwest monsoon day temperatures slightly change but the night temperatures continue to decrease. After October both the temperatures begin to drop rapidly. December is generally the coldest month of the year with the mean maximum temperature about 29°C and mean minimum temperature about 15°C. In winter season the minimum temperature may sometimes go down to about 7°C or below on individual days.

HUMIDITY

During the southwest monsoon season the air is generally humid with values of relative humidity about 70% to 85% in the morning and about 50% to 70% in the afternoon. After the monsoon season humidity decreases and the air is generally dry in the afternoons of post monsoon and winter seasons. The driest part of the year is summer season when the value of relative humidity in the afternoon is about 30% whereas it is about 55% in the morning.

CLOUDINESS

During the southwest monsoon season skies are generally heavily clouded to overcast. The cloudiness decreases in the post monsoon season. In the latter part of the summer and the post monsoon seasons, the clouding is moderate and

cloudiness is more in the afternoon than the morning. In the rest of the year skies are generally clear or lightly clouded.

WINDS

Winds are generally light to moderate with some increase in force in the latter part of summer and southwest monsoon season. In the post monsoon and winter seasons, winds are mostly variable in direction in the mornings and easterly winds are predominant along with some northeasterly and southeasterly in the afternoons. In the months of March and April, winds are mostly variable in direction, easterly and southeasterly and northwesterly components appear in the district. Winds from a west direction begin to blow from May and in the southwest monsoon season winds mostly blow from west to northwest direction.

SPECIAL WEATHER PHENOMENA

Storms and depressions originating in the Bay of Bengal during latter part of pre-monsoon season and post monsoon season cross the east coast of India and move in a westerly or northwesterly direction across the peninsula. Some of these depressions affect the weather over the district and its neighbourhood causing widespread heavy rain and gusty winds. Thunderstorms occur throughout the year and its frequency being high during the period from April to October and least during the winter months. Thunderstorms during the period March to October are sometimes accompanied by squall and from February to May are accompanied with hail. Fog occasionally occurs in the morning of winter season and sometimes observed in March and November also.

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
RANGAREDDY

STATION	No. of Years of Data		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
BALKAPUR PWD	25	a	0.9	3.5	2.5	26.7	26.7	167.2	188.1	221.5	259.0	164.4	23.0	7.1	1090.6	201	49	182.9	09 Sep 1975
		b	0.1	0.1	0.1	1.4	1.3	5.7	7.2	7.7	7.5	4.7	0.8	0.4	37.0	(1975)	(1968)		
BASHEERABAD REV	21	a	4.5	0.7	29.3	24.0	18.7	113.3	166.7	176.4	194.5	99.4	19.6	12.0	859.1	166	74	180.0	14 Oct 1998
		b	0.4	0.1	1.3	1.4	1.5	6.8	9.8	10.3	9.1	4.5	1.1	0.6	46.9	(1998)	(2006)		
CHEVELLA REV	29	a	6.5	12.5	23.1	27.2	31.5	115.3	164.9	174.5	184.8	93.1	25.6	6.1	865.1	202	67	167.8	24 Aug 2000
		b	0.5	0.6	1.5	1.6	1.8	7.1	9.6	10.1	9.0	5.0	1.4	0.4	48.6	(1988)	(1982)		
DOMA REV	21	a	6.2	1.0	29.6	12.3	27.6	103.0	156.7	165.1	127.0	76.8	29.2	3.1	737.6	138	92	119.2	31 Jul 2011
		b	0.3	0.1	1.0	0.7	2.0	5.7	9.3	9.4	7.7	3.8	1.2	0.3	41.5	(1995)	(2009)		
HAYATHNAGAR REV	21	a	8.9	5.7	28.6	20.7	31.1	97.8	141.9	177.3	139.3	108.0	37.5	9.5	806.3	138	69	189.2	22 Sep 1991
		b	0.7	0.6	1.8	1.4	2.1	5.9	8.5	9.0	7.4	5.5	2.7	0.7	46.3	(2010)	(2009)		
IBRAHIMPATNAM REV	41	a	2.2	4.6	9.2	15.9	29.7	81.3	110.7	118.2	154.4	87.5	26.6	5.6	645.9	160	56	188.0	22 Sep 1991
		b	0.2	0.3	0.7	1.0	1.8	4.8	7.9	7.4	8.3	4.7	2.2	0.4	39.7	(1975)	(1972)		
JANWADA PWD	25	a	2.0	5.1	2.6	21.6	21.5	123.3	170.7	202.1	215.7	131.7	20.2	7.3	923.8	199	62	231.1	27 Sep 1908
		b	0.3	0.2	0.3	1.5	1.7	6.3	9.0	9.4	8.5	4.8	1.0	0.5	43.5	(1975)	(1971)		
KULKACHERLA REV	21	a	7.4	0.7	33.5	19.6	25.3	104.2	166.3	192.4	174.3	90.8	23.1	4.3	841.9	129	88	138.0	02 Aug 2003
		b	0.3	0.0	1.1	1.3	1.9	5.8	9.6	10.1	8.9	4.3	1.1	0.4	44.8	(2000)	(2008)		

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
RANGAREDDY

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
MAHESHWARAM REV	21	a	12.8	14.9	18.3	28.8	35.6	84.9	151.4	160.1	143.8	110.8	37.7	11.4	810.5	132	82	170.0	01 Oct 2001
		b	0.7	0.6	1.3	2.0	2.0	5.7	8.9	9.3	7.9	5.5	2.5	0.6	47.0	(1998)	(2007)		
MARPALLY REV	21	a	14.0	17.4	37.3	15.1	39.5	114.8	155.9	179.4	141.2	106.9	26.6	3.4	851.5	144	80	152.2	29 Oct 1997
		b	0.5	0.6	1.7	1.5	2.2	7.9	9.3	10.0	8.5	5.0	1.9	0.4	49.5	(1995)	(2006)		
MEDCHEL/MANCHAL REV	38	a	3.8	4.8	9.0	14.5	21.0	110.2	189.6	184.0	177.3	93.2	30.5	6.7	844.6	227	62	240.0	22 Sep 1991
		b	0.2	0.3	0.8	1.2	1.6	6.5	10.1	9.8	8.0	4.3	1.7	0.4	44.9	(1983)	(1979)		
MOMINPET REV	21	a	18.3	5.6	32.4	26.6	37.2	122.6	180.9	232.9	180.5	108.9	35.4	3.5	984.8	127	80	142.0	28 Aug 1996
		b	0.9	0.5	1.2	1.8	2.3	7.0	9.2	11.6	9.1	4.9	2.0	0.6	51.1	(2005)	(2009)		
NAWABPET REV	20	a	12.8	4.4	28.6	24.7	28.3	118.8	165.9	204.1	148.0	103.4	38.7	4.1	881.8	151	91	140.4	06 Oct 1994
		b	1.1	0.4	1.1	1.8	2.1	7.1	10.6	11.2	9.1	5.1	2.0	0.7	52.3	(2010)	(2009)		
PARGI REV	48	a	4.7	4.6	12.1	23.7	41.0	114.6	224.2	218.2	208.2	102.5	21.8	3.8	979.4	149	63	178.0	22 Sep 1991
		b	0.3	0.2	0.6	2.1	2.8	8.2	12.6	12.4	10.3	5.2	1.3	0.3	56.3	(1969)	(1977)		
RAJENDRANAGAR REV	21	a	6.7	11.6	43.6	21.8	33.0	102.7	175.8	198.4	150.1	104.1	33.4	5.3	886.5	157	74	163.4	27 Sep 1908
		b	0.6	0.3	1.4	1.8	2.0	6.5	9.1	10.4	8.0	5.1	1.8	0.7	47.7	(1995)	(2009)		

TABLE – 1
NORMALS AND EXTREMES OF RAINFALL
RANGAREDDY

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
SHAMSHABAD REV	21	a	5.3	11.7	37.1	39.1	34.2	107.2	177.4	201.1	170.0	136.6	29.8	8.6	958.1	139	67	224.0	02 Aug 2003
		b	0.4	0.5	1.8	1.8	1.9	5.9	9.1	9.8	7.8	5.3	1.9	0.6	46.8	(2003)	(2007)		
TANDUR PWD	41	a	4.8	4.9	12.9	21.8	36.9	122.0	195.5	194.8	189.8	112.8	16.6	5.5	918.3	150	76	171.1	16 Aug 1973
		b	0.4	0.4	0.7	1.7	2.5	7.6	11.4	10.6	10.0	5.8	1.0	0.4	52.5	(1998)	(1981)		
YACHARAM REV	21	a	10.6	14.5	25.9	27.4	49.7	94.4	117.7	122.9	152.8	112.1	40.4	7.8	776.2	156	89	200.8	23 Sep 1991
		b	0.6	0.9	1.5	1.2	2.9	5.0	7.3	7.6	7.2	5.0	2.8	0.6	42.6	(2005)	(2010)		
YALAL REV	21	a	6.8	1.0	26.5	14.5	31.5	112.4	177.3	176.9	178.4	97.1	28.3	4.1	854.8	136	90	140.6	30 Sep 2009
		b	0.7	0.1	1.3	1.3	2.3	6.6	10.9	11.0	9.6	5.2	1.8	0.4	51.2	(2010)	(2006)		
RANGAREDDY (DISTRICT)		a	7.3	6.8	23.3	22.4	31.6	111.1	167.2	184.2	173.1	107.4	28.6	6.3	869.3	156	62		
		b	0.5	0.4	1.1	1.5	2.0	6.4	9.4	9.8	8.5	4.9	1.7	0.5	46.7	(1983)	(1972)		

(A) NORMAL RAINFALL IN MM

(B) AVERAGE NUMBER OF RAINY DAYS (DAYS WITH RAIN OF 2.5 MM OR MORE)

(*) BASED ON ALL AVAILABLE DATA UPTO 2013

(**) YEARS GIVEN IN BRACKETS

TABLE - 2
Frequency of Annual Rainfall in the District
RANGAREDDY
(Data 1961-2010)

Range in mm	No. of years	Range in mm	No. of years
501 - 600	2	1001 - 1100	4
601 - 700	5	1101 - 1200	2
701 - 800	7	1201 - 1300	2
801 - 900	7	1301 - 1400	1
901 - 1000	5		

(Data available for 35 years)

WARANGAL DISTRICT

The climate of this district is characterized by hot in summer and good rainfall during southwest monsoon season. The year may be divided in to four seasons. Summer season begins from March and continues till the first week of June and is followed by southwest monsoon season till about mid-October. Post monsoon season starts thereafter and continues till November. The period of December to February is of cold weather season.

RAINFALL

Records of rainfall in the district are available for 23 raingauge stations for period ranging from 21 to 49 years. The details of rainfall at these stations and for the district as a whole are given in Tables 1 and 2. The average rainfall in the district as a whole is 1063.1 mm. During the southwest monsoon season (June to September) the district receives 80% of the annual rainfall, July being the rainiest month with an average value of rainfall of 282.2 mm. The variation in the rainfall from year to year is large. In the fifty year period 1961-2010, the highest annual rainfall amounting to 136% of the normal occurred in year 1983, while the lowest annual rainfall which was only 11% of the normal occurred in 1997. In this fifty year period there were 13 years in which the rainfall in the district was less than 80% of the normal and there were two occasions when such a low rainfall has occurred in two consecutive years and one occasion of three consecutive years. It is seen from Table 2 that the rainfall was between 801 mm and 1300 mm in 24 years out of 42.

On an average there are 52 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number varies from 39 at Narmetta REV to 61 at Gudur REV.

The heaviest rainfall in 24 hours recorded at any station in the district was 325.0 mm at Ghanpur PWD on 13 August 1986.

TEMPERATURE

There is one meteorological observatory in the district at Hanamkonda so the description that follows is based on the records of the meteorological data of this observatory. From about mid-February there is rapid increase in temperature. May is the hottest month with the mean maximum temperature at 41.2°C and the mean minimum temperature at 27.4°C. On individual days during the period of April to first week of June, the maximum temperature may be as high as 43°C or above. The days are discomfort with hot winds until the onset of southwest monsoon. Afternoon thundershowers which occasionally occur on some days and bring welcome relief though only temporarily. With the onset of the southwest monsoon day temperatures come down appreciably. However, night temperatures in June are generally as high as in May. The day temperatures in October are about the same as in the monsoon season, but the night becomes cooler. With the withdrawal of monsoon by about the middle of October, there is an appreciable drop in night temperature. After October both day and night temperatures decrease rapidly. December is the coldest month with the mean maximum temperature at 29.8°C and mean minimum at 16.2°C. In winter season, the district is sometimes affected by short spells of cold weather. On such occasions the minimum temperature may sometimes drop down to 10°C or below on individual days.

The highest maximum temperature ever recorded in the district was 47.8°C on 03 June 2003 and the lowest minimum temperature was 8.3 °C on 29 December 1902 at Hanamkonda observatory.

HUMIDITY

In the south west monsoon season air is generally humid with value of relative humidity ranges between 60% and 80%. The relative humidity in the morning is generally more than the afternoon throughout the year. Air is generally mild humid in post monsoon and winter seasons. Summer is the driest part of the year with the value of relative humidity in the afternoon about 48%.

CLOUDINESS

During the monsoon season skies are heavily clouded to overcast. There is rapid decrease in cloudiness from October and cloudiness is moderate during the post monsoon season. During the rest of the year the skies are generally clear or lightly clouded.

WINDS

Winds are generally light to moderate throughout the year with some strengthening in force during the latter part of summer and early part of the southwest monsoon season. During the southwest monsoon season winds mostly blow from northwest along with some westerly and southeasterly. Southerly winds are also observed. During post monsoon season northerly winds start to appear in the district along with some southerly and southeasterly. During winter and summer season southerly and southeasterly are predominant.

SPECIAL WEATHER PHENOMENA

Storms and depressions which originate in the Bay of Bengal during pre-monsoon, southwest monsoon and post monsoon seasons, and which move in a northeasterly direction after crossing the coast sometimes affect the weather over the district and cause gusty winds and wide spread heavy rain. Thunderstorms generally occur throughout the year. Its frequency is more in latter part of summer and in southwest monsoon season and in the month of October. Hailstorms and dust storms occur occasionally in summer season. Fog occasionally occurs in the morning of post monsoon and winter seasons.

Tables 3, 4, 5 and 6 give the normals of temperature and relative humidity, cloudiness, wind speed and direction and special weather phenomena respectively Hanamkonda observatory.

TABLE – I
NORMALS AND EXTREMES OF RAINFALL
WARANGAL

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
BHOOPALPALLY REV	21	a	12.1	8.5	19.7	28.5	42.1	146.0	322.4	315.3	172.4	72.4	34.4	6.9	1180.7	158	77	247.0	06 Jul 1989
		b	0.7	0.7	0.7	1.3	1.8	7.4	13.6	13.4	7.9	4.4	1.9	0.7	54.5	(1989)	(2009)		
CHERIAL REV	21	a	11.6	11.8	34.0	15.1	34.4	100.5	164.8	168.9	119.1	75.6	24.8	11.1	771.7	174	70	281.4	24 Jul 1989
		b	0.4	0.6	1.7	1.1	1.7	5.6	8.2	8.3	5.3	4.3	2.1	1.0	40.3	(1989)	(2007)		
GHANPUR PWD	34	a	6.5	12.8	15.3	15.2	23.0	150.0	308.3	255.2	165.5	93.9	25.0	3.8	1074.5	234	56	325.0	13 Aug 1986
		b	0.3	0.8	0.5	1.0	1.4	8.4	13.7	11.5	8.1	4.6	1.2	0.3	51.8	(1988)	(2009)		
GOVINDARAOPET REV	21	a	8.3	16.5	23.5	32.0	25.9	167.7	339.7	298.6	193.6	74.6	29.4	17.4	1227.2	121	62	212.6	05 Aug 2006
		b	0.8	0.9	0.9	1.4	1.8	8.0	14.0	13.0	8.2	4.3	1.7	0.9	55.9	(2005)	(2009)		
GUDUR REV	21	a	19.2	17.2	34.4	25.1	34.7	176.9	312.5	314.2	166.7	88.6	32.8	10.7	1233.0	146	41	234.4	31 Aug 1995
		b	0.8	1.0	1.1	1.3	2.9	8.7	14.6	13.3	8.3	5.2	2.6	0.8	60.6	(2008)	(2009)		
HANAMKONDA OBSY	49	a	6.6	10.1	13.3	12.1	25.9	118.9	233.9	175.9	142.2	75.0	28.9	8.0	850.8	159	14	304.8	27 Sep 1908
		B	0.5	0.6	0.9	0.9	1.8	6.9	11.8	9.7	7.2	4.2	1.5	0.5	46.5	(1978)	(1997)		
JANGAON REV	40	a	12.2	6.1	10.1	18.3	24.6	118.0	173.5	155.8	138.2	99.1	28.2	6.9	791.0	163	58	205.6	09 Jul 1987
		b	0.4	0.4	0.8	1.2	1.4	6.9	9.7	9.7	7.5	4.4	1.8	0.4	44.6	(1975)	(1977)		
KHANAPUR REV	21	a	20.8	9.3	38.2	26.7	30.6	169.9	296.6	311.9	179.4	73.1	33.4	20.2	1210.1	143	54	229.0	23 AUG 2003
		b	0.8	0.6	1.0	1.2	2.2	8.1	13.0	12.6	8.3	4.6	2.8	0.8	56.0	(2008)	(2009)		

TABLE - I
NORMALS AND EXTREMES OF RAINFALL
WARANGAL

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
KOTHAGUDEM PWD	30	a	3.3	5.7	17.4	11.5	25.7	141.2	282.4	286.4	173.2	89.9	29.5	10.8	1077.0	141	44	272.6	04 Aug 2006
		b	0.2	0.4	0.6	0.6	1.4	6.8	12.5	11.6	8.4	4.5	1.7	0.6	49.3	(2008)	(2009)		
LAKNAVARAM PWD	28	a	8.8	10.3	4.8	25.2	31.9	169.4	373.2	258.8	180.3	109.7	20.5	9.5	1202.4	168	64	270.0	13 Aug 1986
		b	0.5	0.7	0.6	1.8	2.4	9.7	14.9	12.6	8.9	5.6	1.2	0.4	59.3	(1969)	(1972)		
MAHBUBABAD REV	39	a	4.9	9.1	18.6	19.0	43.1	144.2	275.7	244.2	161.8	96.9	27.7	4.0	1049.2	149	58	195.4	15 Jul 1965
		b	0.3	0.5	0.6	0.9	2.0	7.6	12.5	11.6	8.1	4.7	1.7	0.3	50.8	(1988)	(1972)		
MULUG REV	40	a	15.5	8.4	12.8	11.7	25.4	162.6	353.5	275.9	164.7	94.2	19.9	9.8	1154.4	143	59	299.0	04 Jul 1958
		b	0.4	0.5	0.6	0.9	2.0	8.8	14.6	13.3	8.4	4.8	1.3	0.5	56.1	(1989)	(1968)		
NARMETTA REV	21	a	12.2	5.1	40.2	10.1	22.8	107.5	147.2	185.7	141.3	75.8	23.1	4.9	775.9	158	64	220.0	21 Sep 2005
		b	0.9	0.6	1.2	.9	1.5	5.8	8.0	8.0	6.0	3.8	1.7	0.6	39.0	(1989)	(2009)		
NARSAMPET	24	a	11.0	9.9	24.5	20.3	36.6	163.9	282.5	290.8	203.3	83.2	21.9	23.6	1171.5	143	53	230.1	25 Jul 1945
		b	0.6	0.8	1.0	1.1	2.0	8.3	13.7	12.5	8.3	4.7	1.9	0.9	55.8	(1996)	(2009)		
NARSAMPET REV	33	a	18.0	9.9	14.5	19.3	23.2	159.8	311.2	280.5	170.5	84.6	31.6	7.2	1130.3	150	52	164.0	31 Aug 1995
		b	0.6	0.7	1.0	1.1	1.6	8.4	14.7	12.7	8.5	4.7	2.1	0.6	56.7	(1996)	(1972)		

TABLE - I
NORMALS AND EXTREMES OF RAINFALL
WARANGAL

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
PARKAL REV	40	a	12.6	7.4	8.9	10.9	25.3	153.0	296.3	251.2	160.3	85.9	22.8	9.8	1044.4	151	65	244.0	24 Jul 1989
		b	0.6	0.6	0.6	0.9	1.7	7.7	13.8	12.5	7.9	5.0	1.5	0.5	53.3	(1983)	(1980)		
PALAKURTHY REV	21	a	13.4	17.4	33.4	30.1	38.2	126.2	205.7	206.4	173.3	110.9	33.1	9.9	998.0	130	57	191.0	21 Sep 2005
		b	0.7	0.9	1.2	1.1	2.3	7.2	10.3	9.5	7.3	4.8	1.8	0.9	48.0	(2008)	(2009)		
POLAMPET PWD	27	a	6.1	12.1	7.2	13.3	21.4	143.1	310.3	238.7	166.9	119.7	19.1	5.1	1063.0	150	61	242.4	13 Aug 1986
		b	0.3	0.8	0.5	1.2	1.6	7.7	13.8	12.5	7.9	5.8	1.3	0.3	53.7	(1988)	(1985)		
SALIVAGU PROJECTPWD	25	a	6.3	7.8	8.8	6.6	15.1	147.1	272.7	219.0	116.8	77.5	8.5	3.6	889.8	190	54	268.0	13 Aug 1986
		b	0.5	0.4	0.5	0.4	1.1	6.5	12.3	10.3	5.9	4.0	0.6	0.1	42.6	(1988)	(1979)		
SHAYAMPET REV	21	a	18.7	12.6	20.0	19.8	27.4	167.8	292.2	291.8	175.0	88.6	36.0	9.8	1159.7	130	52	167.0	04 Aug 2006
		b	1.1	0.6	0.8	1.2	1.8	8.3	13.2	12.0	7.3	4.8	2.7	0.7	54.5	(2000)	(2009)		
TADVAI REV	21	a	12.9	11.2	28.1	23.2	32.7	155.4	347.5	323.2	212.4	78.8	28.7	16.4	1270.5	139	54	280.6	17 Jun 1996
		b	0.8	0.8	1.3	1.2	1.8	7.7	14.1	14.1	8.5	4.0	1.5	0.8	56.6	(2006)	(2009)		
VENKATAPUR REV	21	a	9.9	14.9	27.8	25.5	31.8	137.1	326.0	294.1	198.3	73.2	24.1	14.0	1176.7	135	54	245.6	27 Aug 2000
		b	0.7	0.9	0.9	1.1	1.9	7.2	13.0	12.8	8.3	4.8	1.9	0.8	54.3	(1989)	(2009)		

TABLE - I
NORMALS AND EXTREMES OF RAINFALL
WARANGAL

STATION	NO. OF YEARS OF DATA		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
																HIGHEST	LOWEST	AMOUNT (MM)	DATE
WARANGAL PWD	24	a	6.0	13.8	5.9	10.2	27.8	132.9	263.4	193.1	169.6	61.3	32.3	9.6	925.9	147	60	160.0	21 Jul 1976
		b	0.3	0.7	0.5	0.6	1.6	7.4	12.6	10.0	7.8	3.4	1.5	0.6	47.0	(1978)	(1977)		12 Sep 1984
WARANGAL (DISTRICT)		a	11.2	10.8	20.1	18.7	29.1	146.0	282.2	253.7	167.2	86.2	26.8	10.1	1062.1	136	11		
		b	0.6	0.7	0.8	1.1	1.8	7.6	12.7	11.6	7.8	4.6	1.7	0.6	51.6	(1983)	(1997)		

(A) NORMAL RAINFALL IN MM

(B) AVERAGE NUMBER OF RAINY DAYS (DAYS WITH RAIN OF 2.5 MM OR MORE)

(*) BASED ON ALL AVAILABLE DATA UPTO 2013

(**) YEARS GIVEN IN BRACKETS

TABLE - 2
Frequency of Annual Rainfall in the District
WARANGAL
(Data 1961-2010)

RANGE IN MM	NO. OF YEARS	RANGE IN MM	NO. OF YEARS
101 - 200	2	801 - 900	4
201 - 300	1	901 - 1000	8
301 - 400	0	1001 - 1100	3
401 - 500	0	1101 - 1200	6
501 - 600	0	1201 - 1300	3
601 - 700	2	1301 - 1400	4
701 - 800	7	1401 - 1500	2

(DATA AVAILABLE FOR 42 YEARS)

TABLE- 3
NORMALS OF TEMPERATURE AND RELATIVE HUMIDITY
HANAMKONDA

MONTH	MEAN MAXIMUM TEMP	MEAN MINIMUM TEMP	HIGHEST MAXIMUM EVER RECORDE D		LOWEST MINIMUM EVER RECORDED		RELATIVE HUMIDITY (%)	
	°C	°C	°C	DATE	°C	DATE	0830 IST	1730 IST
January	30.0	17.2	35.8	31-01-2009	8.9	07-01-1945	74	59
February	32.7	19.5	39.6	16-02-2005	10.6	03-02-1911	70	55
March	36.3	22.5	42.2	27-03-1953 25-03-2004	14.4	01-03-1971	70	52
April	39.4	25.3	45.1	30-04-1973	17.8	02-04-1957	66	48
May	41.2	27.4	47.2	27-05-2003	17.2	03-05-1917	61	44
June	36.5	26.4	47.8	03-06-2003	16.3	19-06-1985	70	59
July	32.5	24.8	39.6	03-07-1993	17.8	15-07-1911	78	71
August	31.0	24.3	39.6	07-08-1992	16.6	26-08-1994	80	75
September	32.4	24.4	38.4	27-09-2009	17.6	07-09-1994	79	74
October	32.4	22.8	38.6	08-10-2002	15.0	31-10-1952	76	69
November	31.0	19.3	36.6	18-11-1994	9.4	30-11-1904	73	67
December	29.8	16.2	35.1	22-12-1984	8.3	29-12-1902	72	62
Annual	33.8	22.5	47.8	03-06-2003	8.3	29-12-1902	72	61

TABLE - 4
MEAN CLOUD AMOUNT ** (OCTA OF THE SKY) AND MEAN NUMBER
OF DAYS OF CLEAR AND OVERCAST SKIES.

HANAMKONDA

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0830 HOURS IST													
a	14	12	13	14	14	5	3	3	6	12	14	16	126
b	1	1	0	0	1	3	6	7	3	2	1	0	25
c	1.8	1.9	1.6	1.4	1.3	3.2	4.4	4.6	3.2	2.3	1.7	1.3	2.4
1730 HOURS IST													
a	16	13	14	13	12	3	2	1	3	10	12	15	114
b	0	0	0	0	0	3	6	6	4	2	1	0	22
c	1.2	1.4	1.3	1.4	1.4	3.3	4.4	4.5	3.7	2.4	1.8	1.3	2.3

a : Days with clear sky.

b : Days with sky overcast.

c : Mean Cloud amount.

** = Unit, equal to one eighth of the sky used in specifying cloud amount

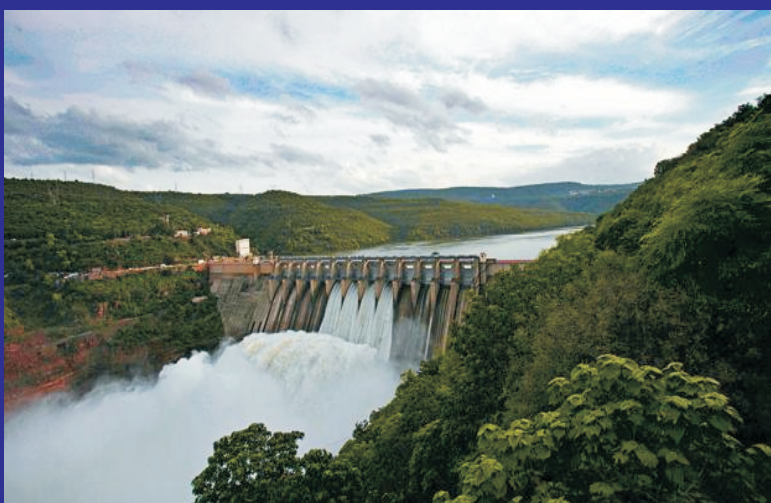
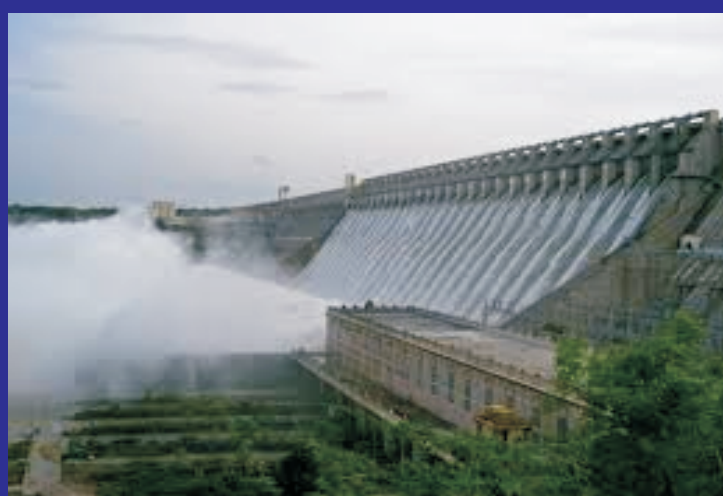
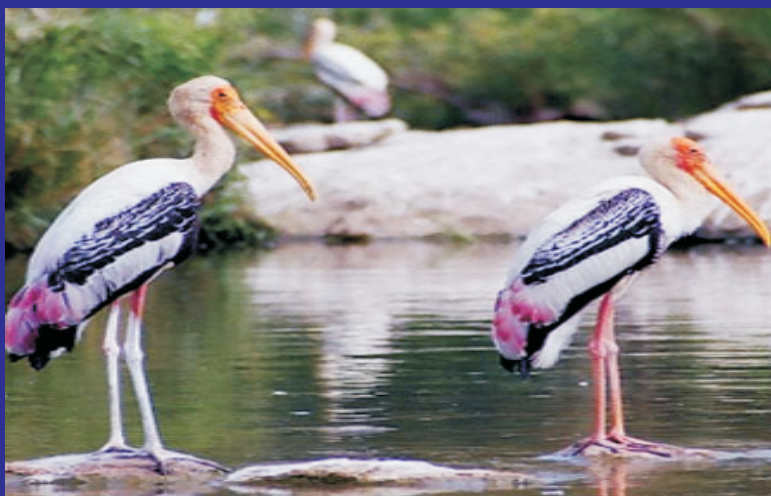
For example : 1 Okta means 1/8th of the sky covered.

TABLE - 5
Mean Wind Speed (kmph) and Predominant Wind Direction
HANAMKONDA

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Wind speed in km/ hr.	3.0	4.8	5.3	8.1	8.7	6.9	6.5	4.4	5.1	2.7	3.0	3.0
Direction in the morning.	S/SE	S/SE	S/SE	SE/S	SE/S	S/NW/ SE	NW/W	NW	NW	C/S/N	N/SE/ C	S
Direction in the evening.	S	S	S	SE/S	SE/S/ C	S/NW/ SE	NW/W/ SE	NW	NW/SE	C/S/N	N/C/ S	S/N

TABLE- 6
SPECIAL WEATHER PHENOMENA
HANAMKONDA

NO OF DAYS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Thunder	0.1	0.2	0.6	1.8	1.5	2.1	0.9	1.0	1.7	1.2	0	0.1	11.2
Hail	0	0	0.1	0	0	0	0	0	0	0	0	0	0.1
Duststorm	0	0	0	0.1	0	0	0	0	0	0	0	0	0.1
Fog	1.4	0	1.3	0	0	0	0	0	0	1.2	1.3	1.0	6.2
Squall	0	0	0	0	0	0	0	0	0	0	0	0	0



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