PDGM. 114 (N)
250--1985 (DSK-I)

CLIMATE OF KARNATAKA STATE

GOVERNMENT OF INDIA

INDIA METEOROLOGICAL DEPARTMENT

1984

PRICE : Inland : Rs. 63-70

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OROGRAPHICAL FEATURES

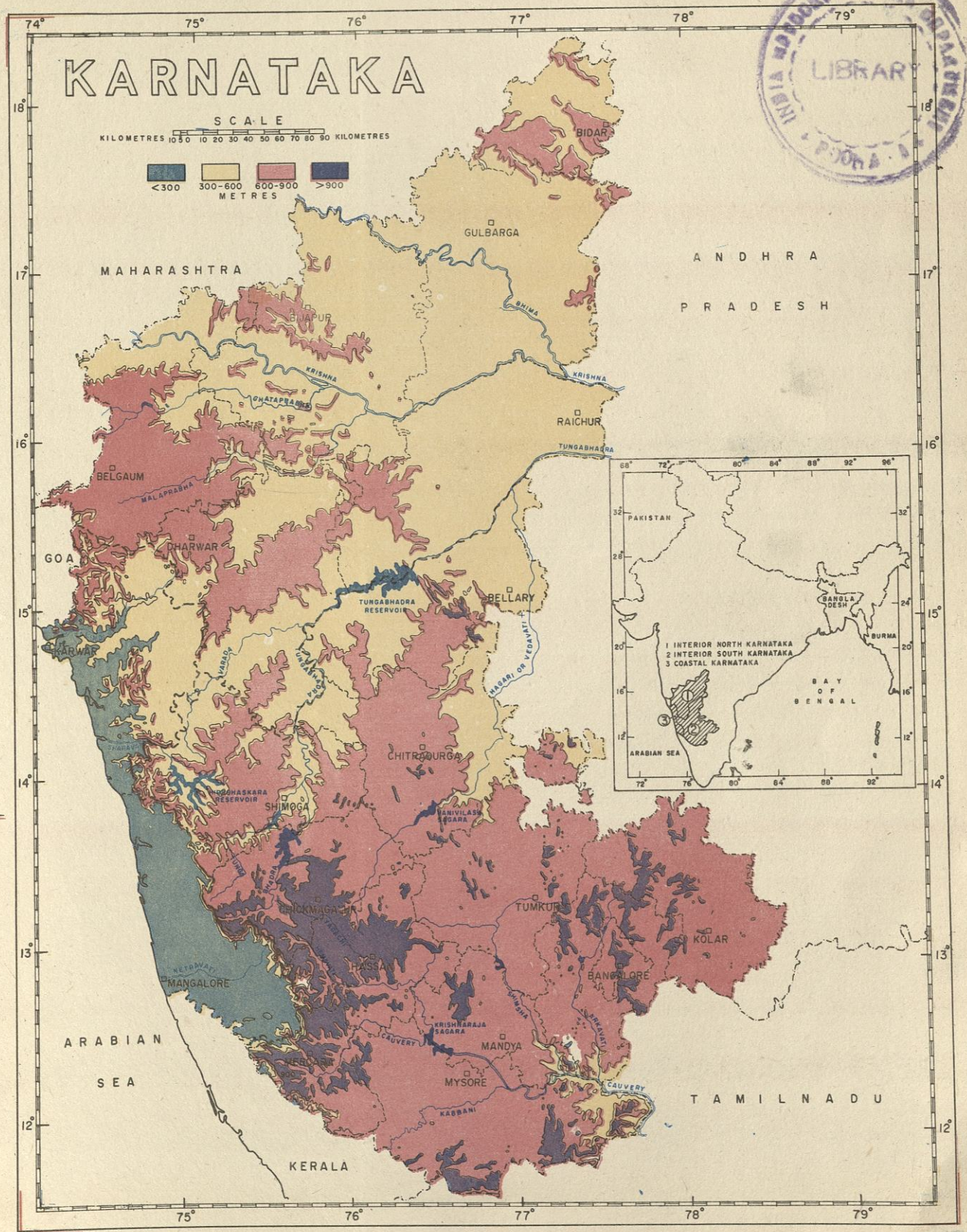

FIG. 1

FOREWORD

The importance of meteorology for the economic and social benefits of man is being increasingly realised all over the World. In recent years the various multi-purpose projects undertaken by the Central and State Governments as well as Agriculture, Aviation, Shipping, Industrial and other interest have been making heavy demands on this department for climatological information pertaining to different parts of the country for planning and executing various projects with a view to having the maximum advantage of favourable meteorological conditions. Keeping these demands in view, it has been decided to publish Climatological Summaries for each State in the country incorporating the District Climatological Summaries. The fourth in the series 'State Climatological Summaries' is the 'Climate of Karnataka State'. It is also hoped that these Climatological Summaries will also serve as educational material in the Schools and Colleges in the State.

The Climatological Summary in the Publication has been prepared under the direction of Dr. R. P. Sarker, Deputy Director General of Meteorology (Climatology and Geophysics).

The preparation of the summary and maps were accomplished by the Revision of Climatological Publication Section under the charge of Sri. M. R. Das, meteorologist, Gr. I with valuable assistance of Sri. A. K. Banerjee, Meteorologist Gr. I in-Charge of Surface Climatology and Planning.

The Cartographic work was attended to by the Drawing Branch and the actual printing of the plates was done by the Rotaprint Unit.

S. K. DAS

Director General of Meteorology

New Delhi

October, 1983.

I N T R O D U C T I O N

The meteorological conditions of Karnataka State as a whole are described in the first chapter followed by detailed description of the climate of each district in the succeeding chapters. The district summaries which were in existence as on 1st January, 1980 are grouped under the respective meteorological sub-divisions and arranged alphabetically.

The normals of meteorological elements used for describing the climate are generally based on data for the period 1931 to 1960 except in the case of rainfall and for all the elements in case of some stations where data of recent years were only available. For rainfall, normals using all available data from 1901 to 1950 have been used. The extreme values of temperature and rainfall presented in the summary are based on data up-dated upto 1978 and 1970 respectively.

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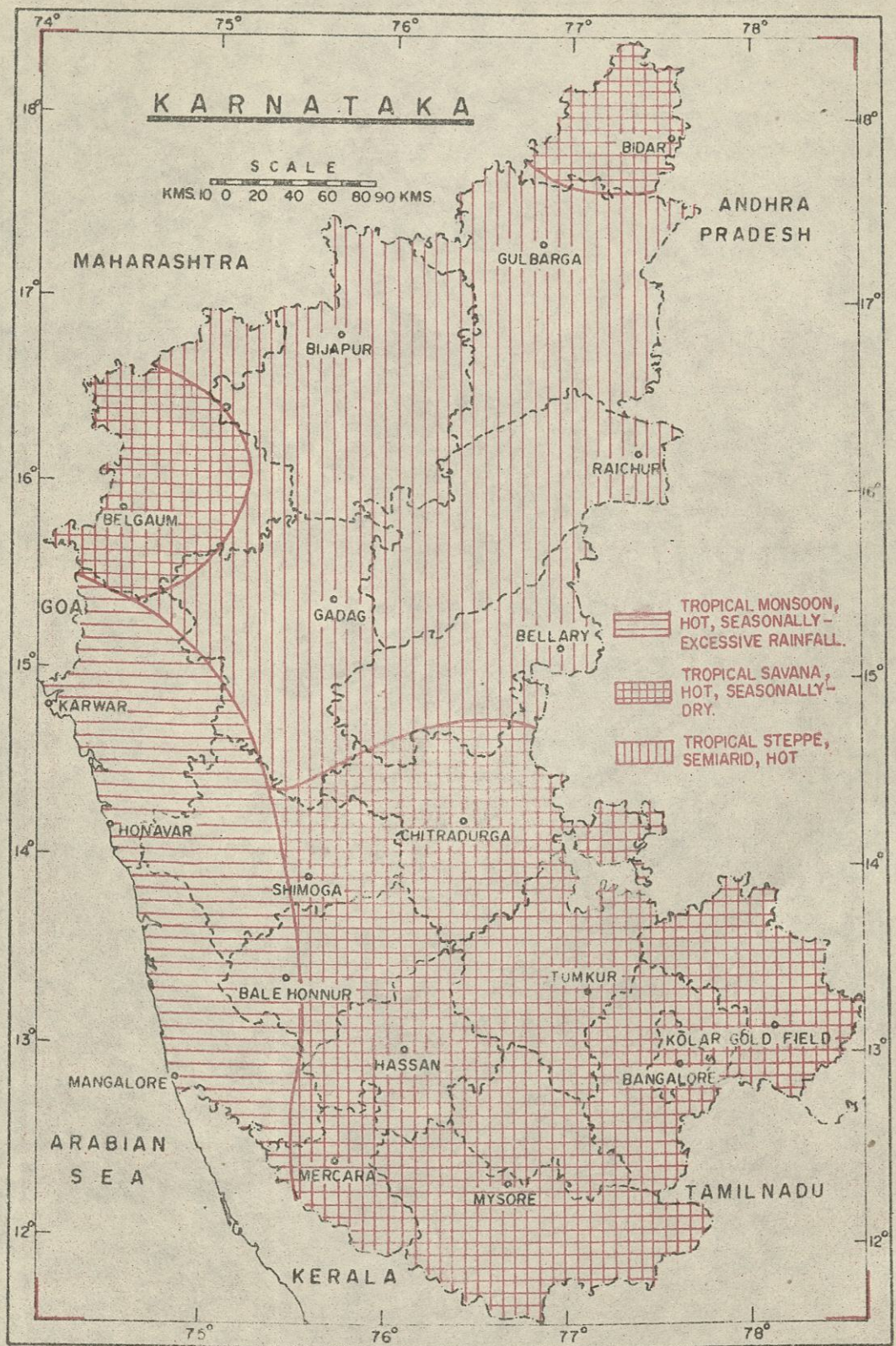

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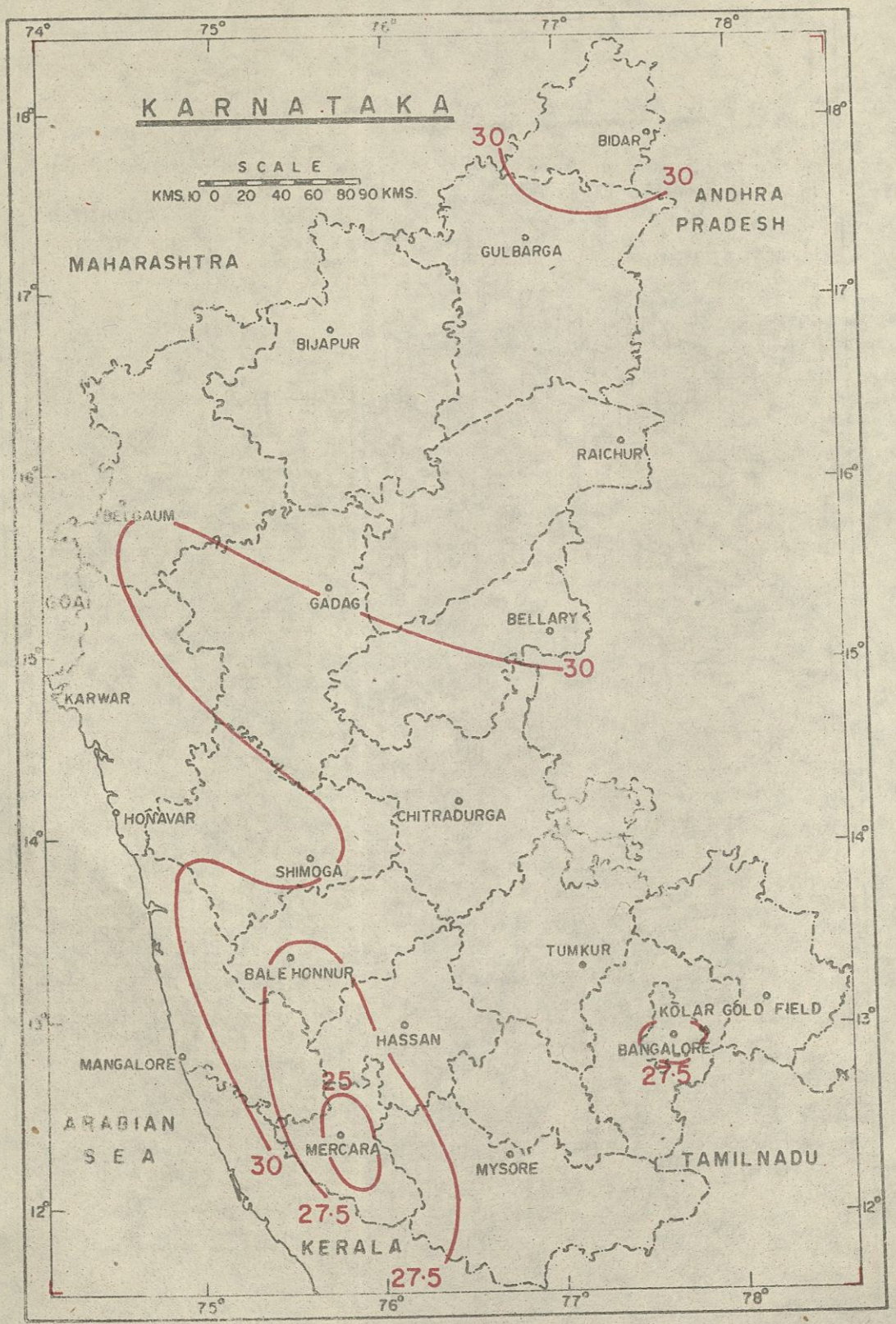

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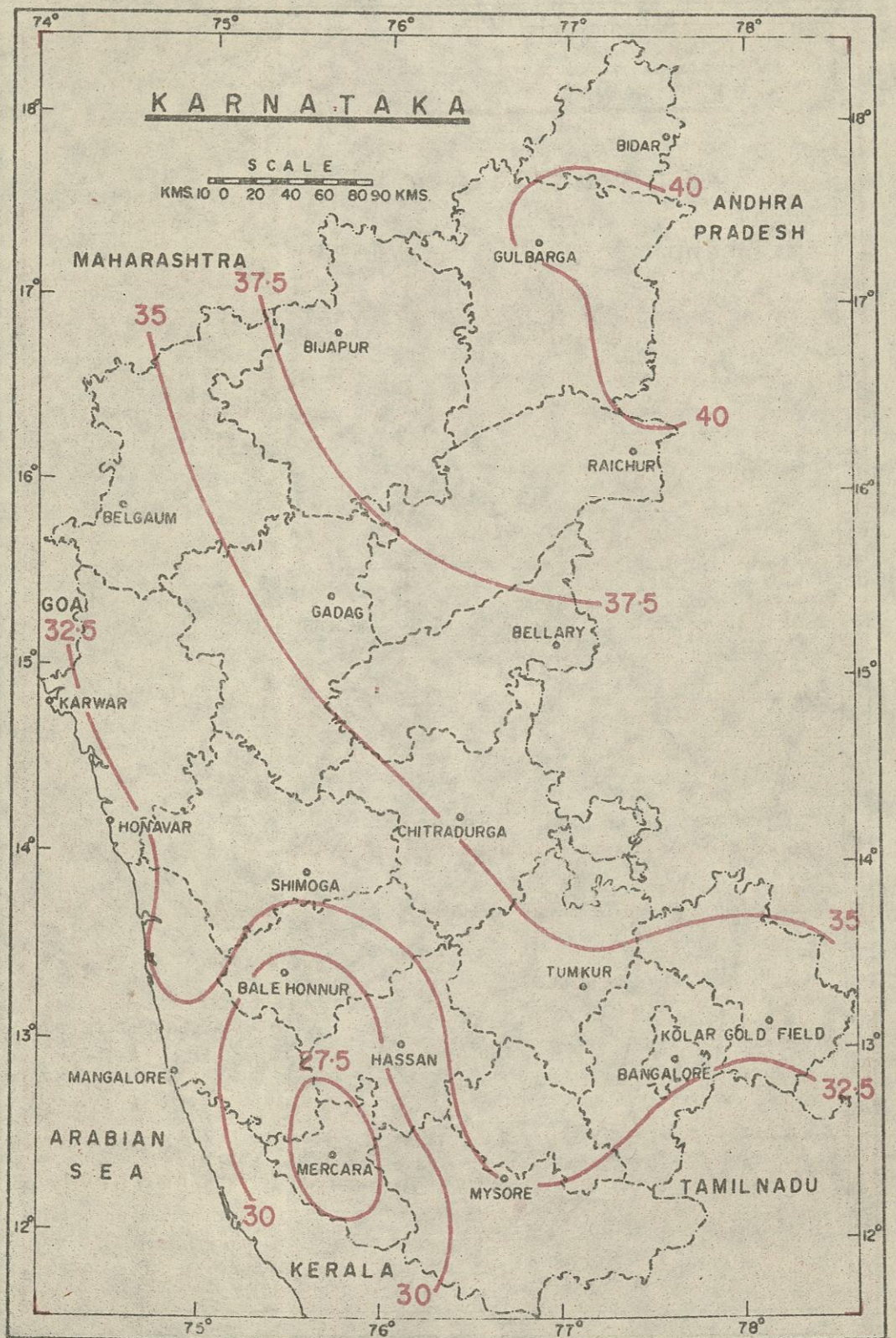

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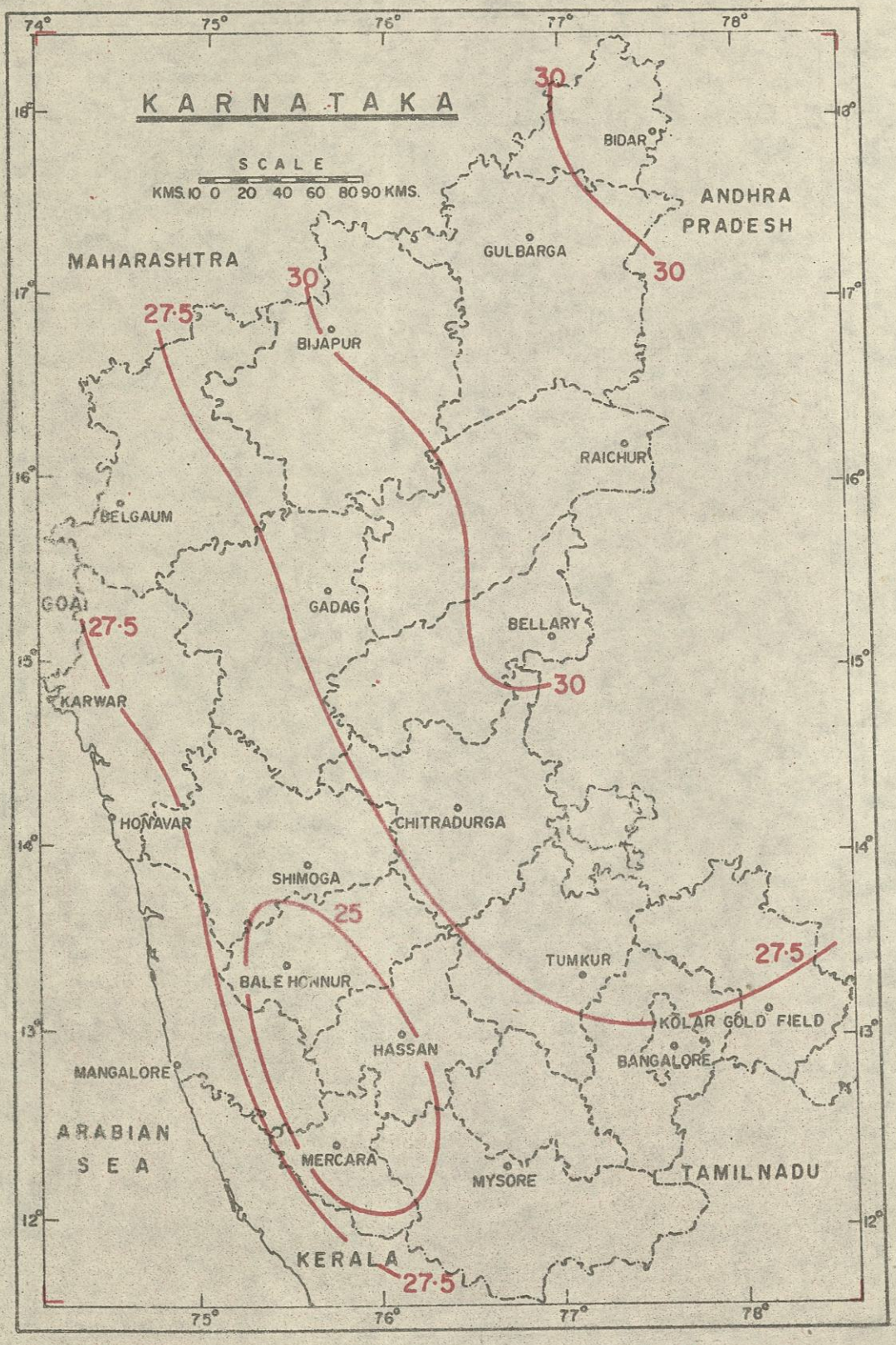

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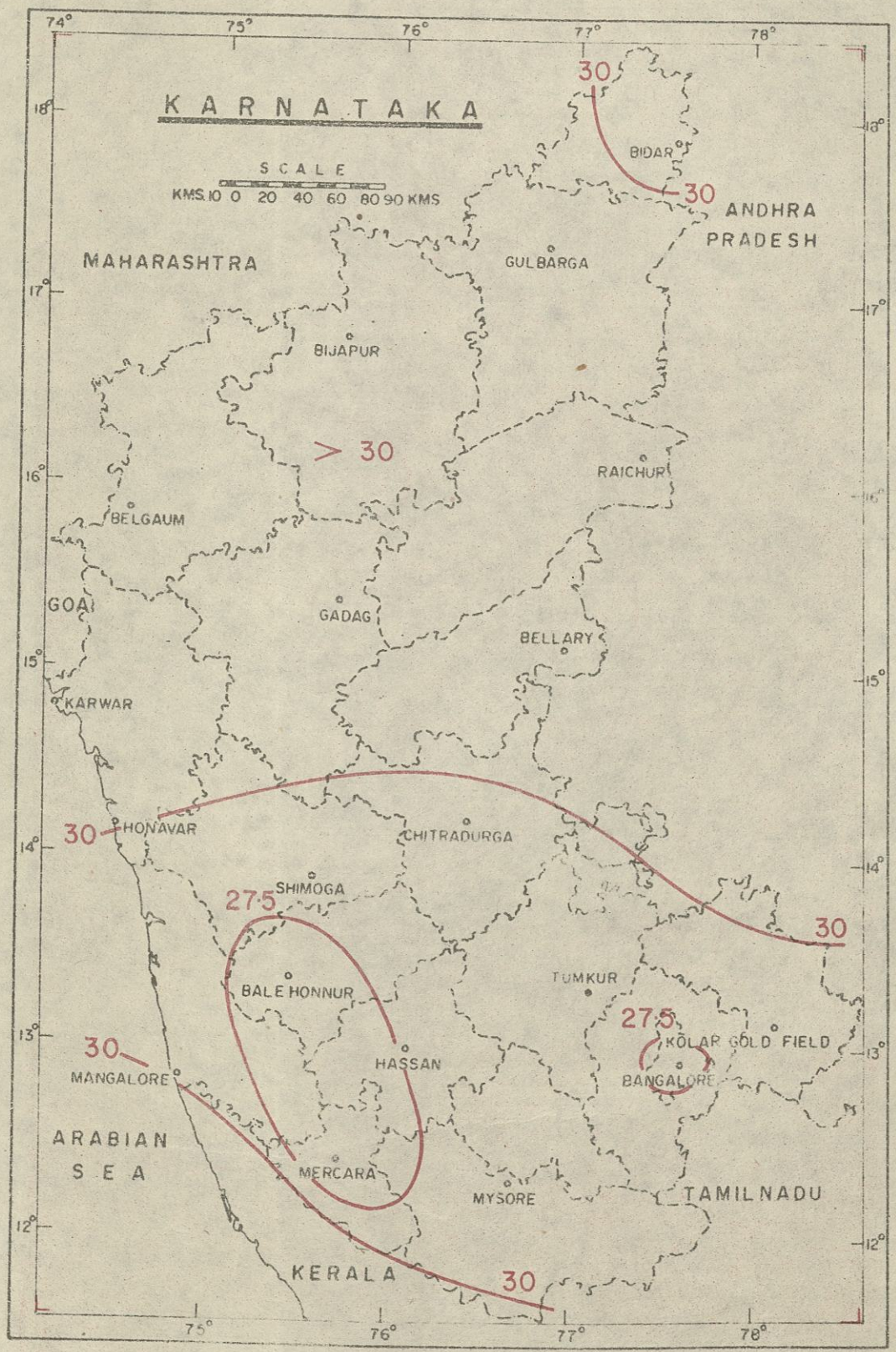

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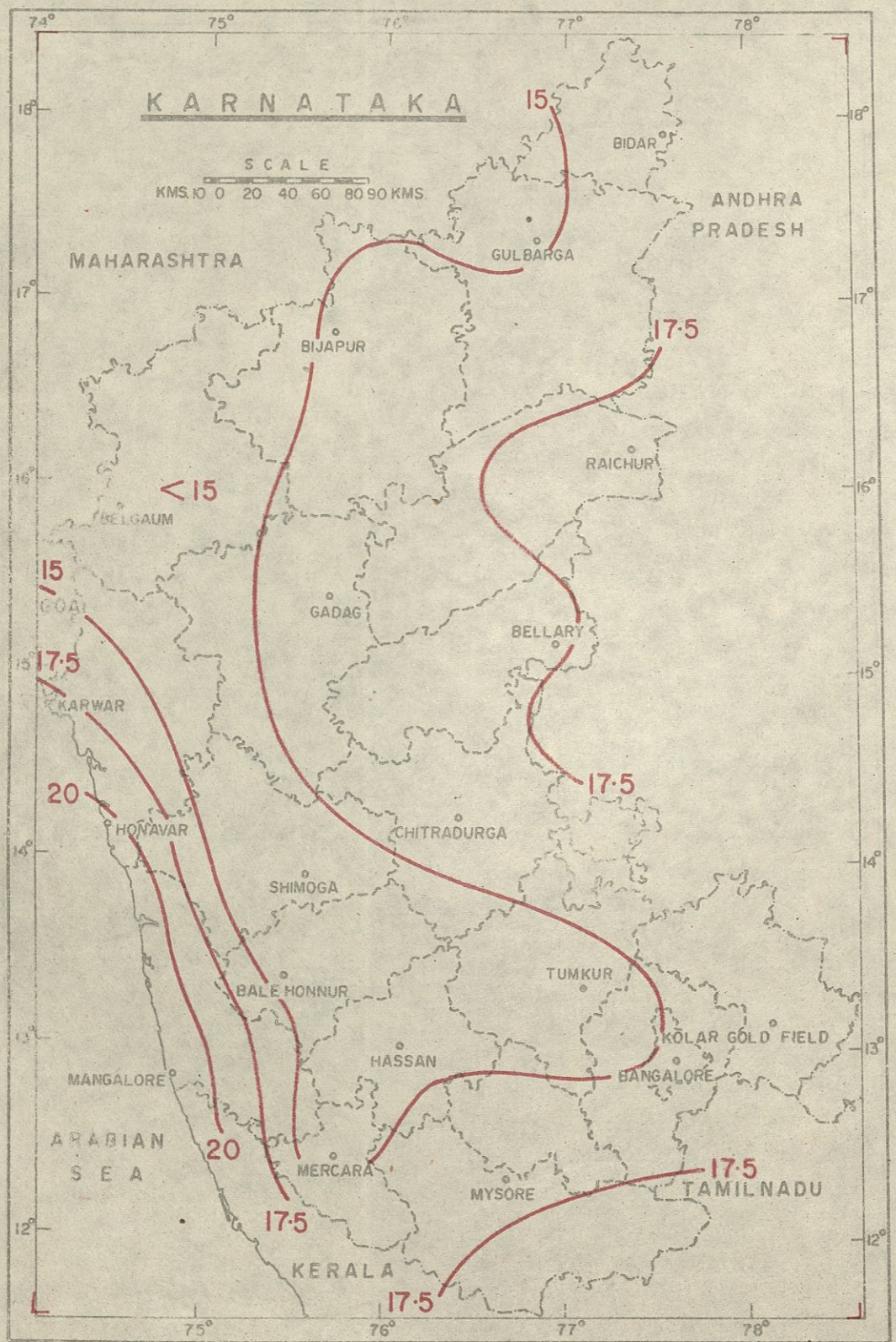

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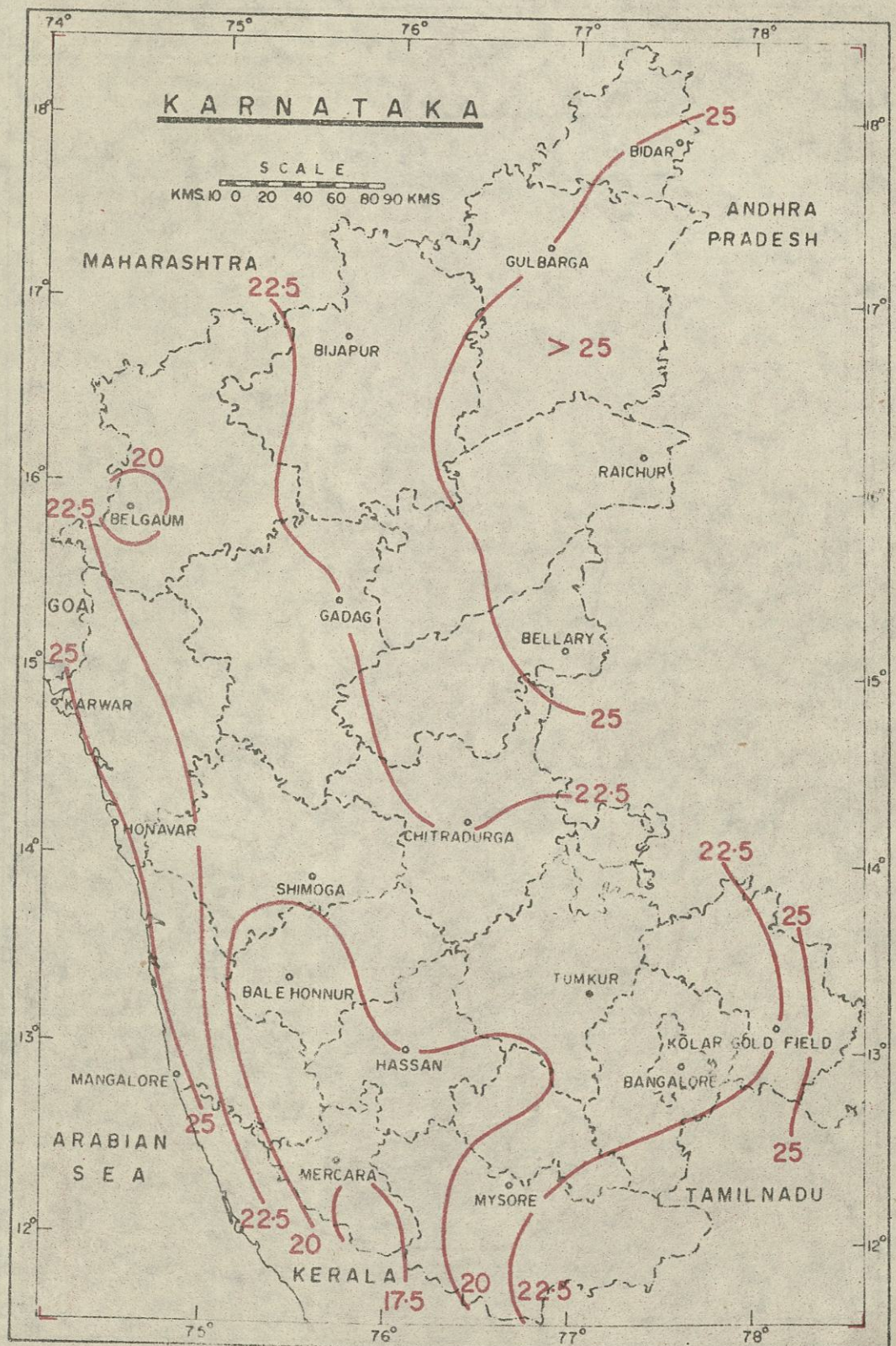

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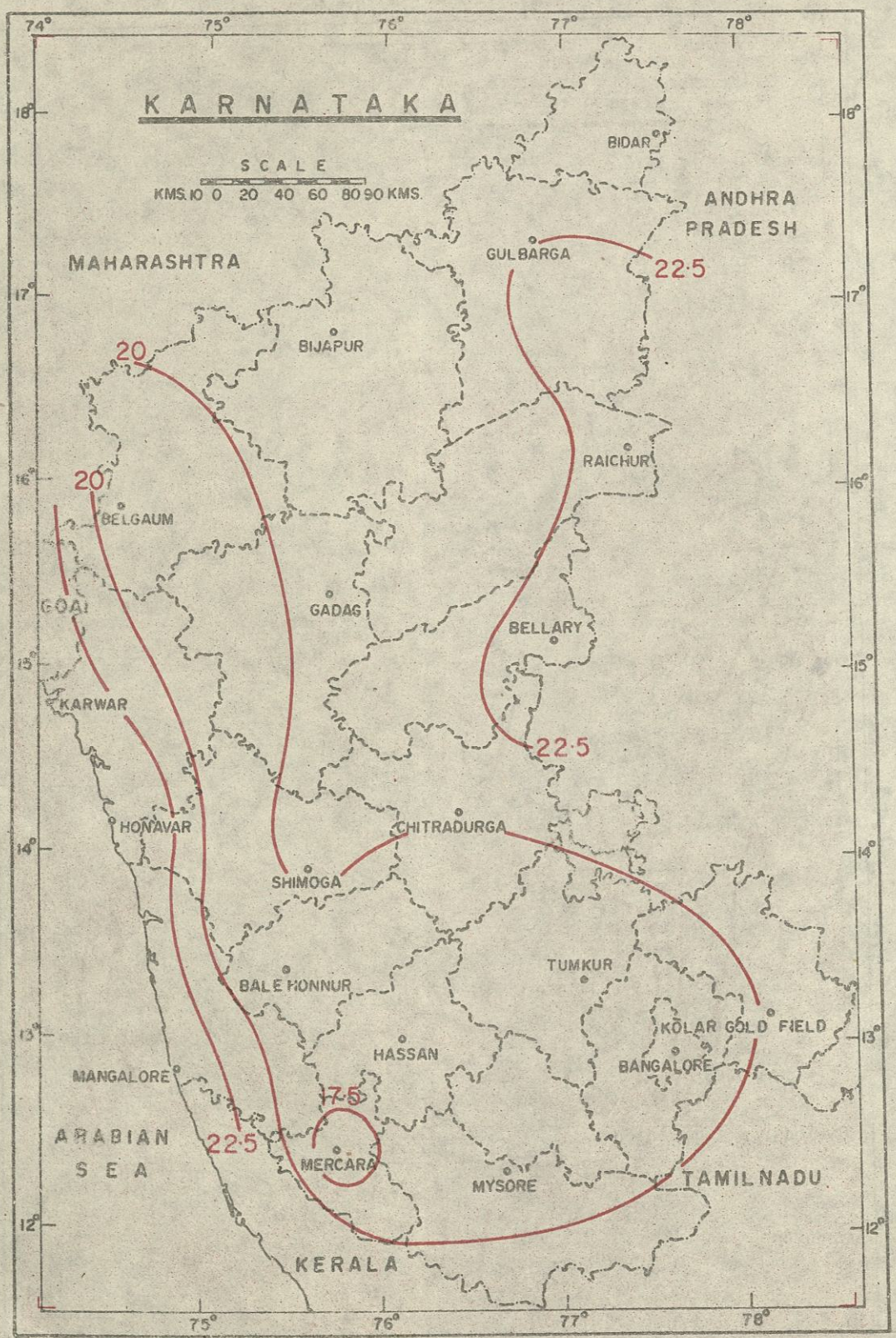

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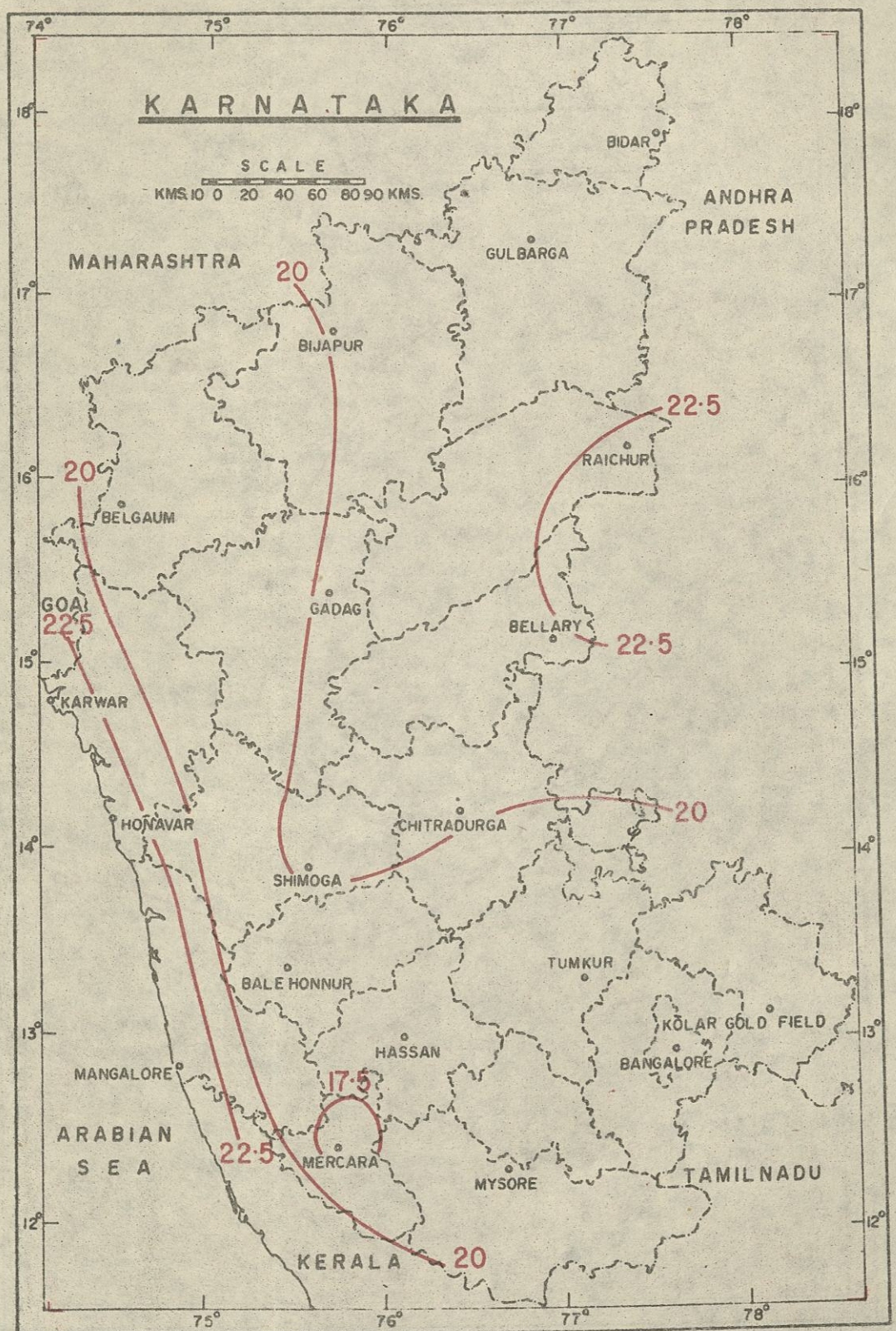

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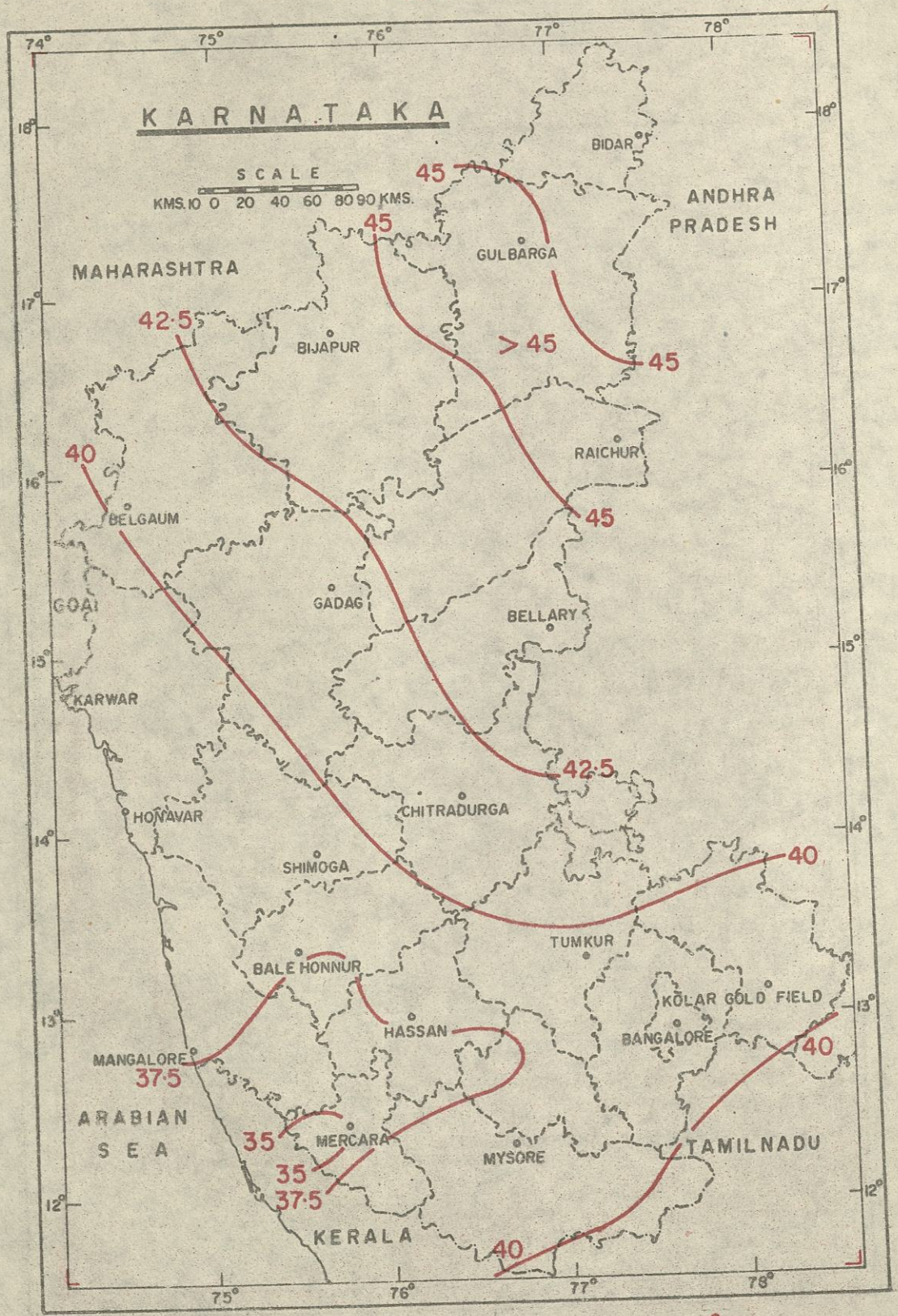

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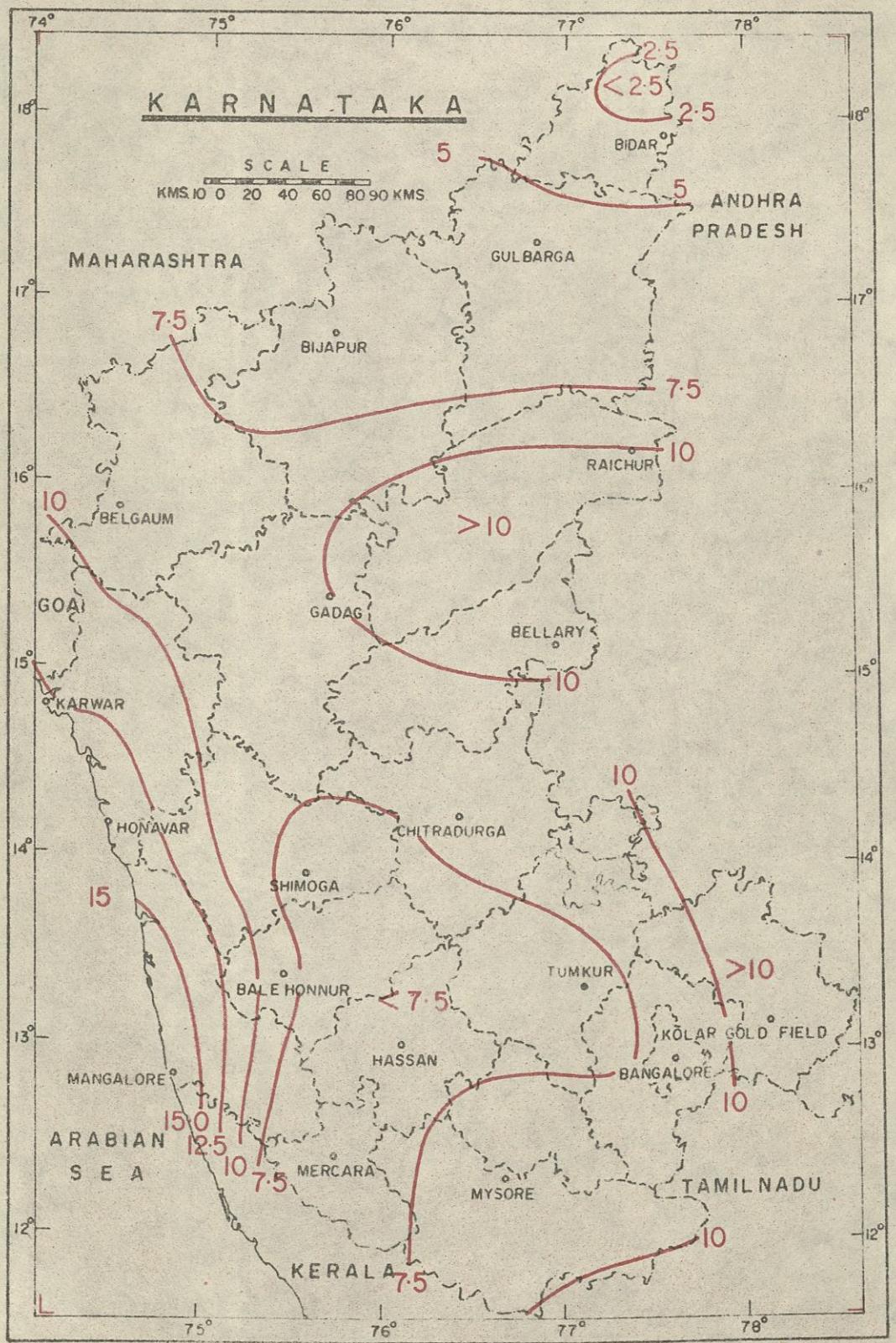

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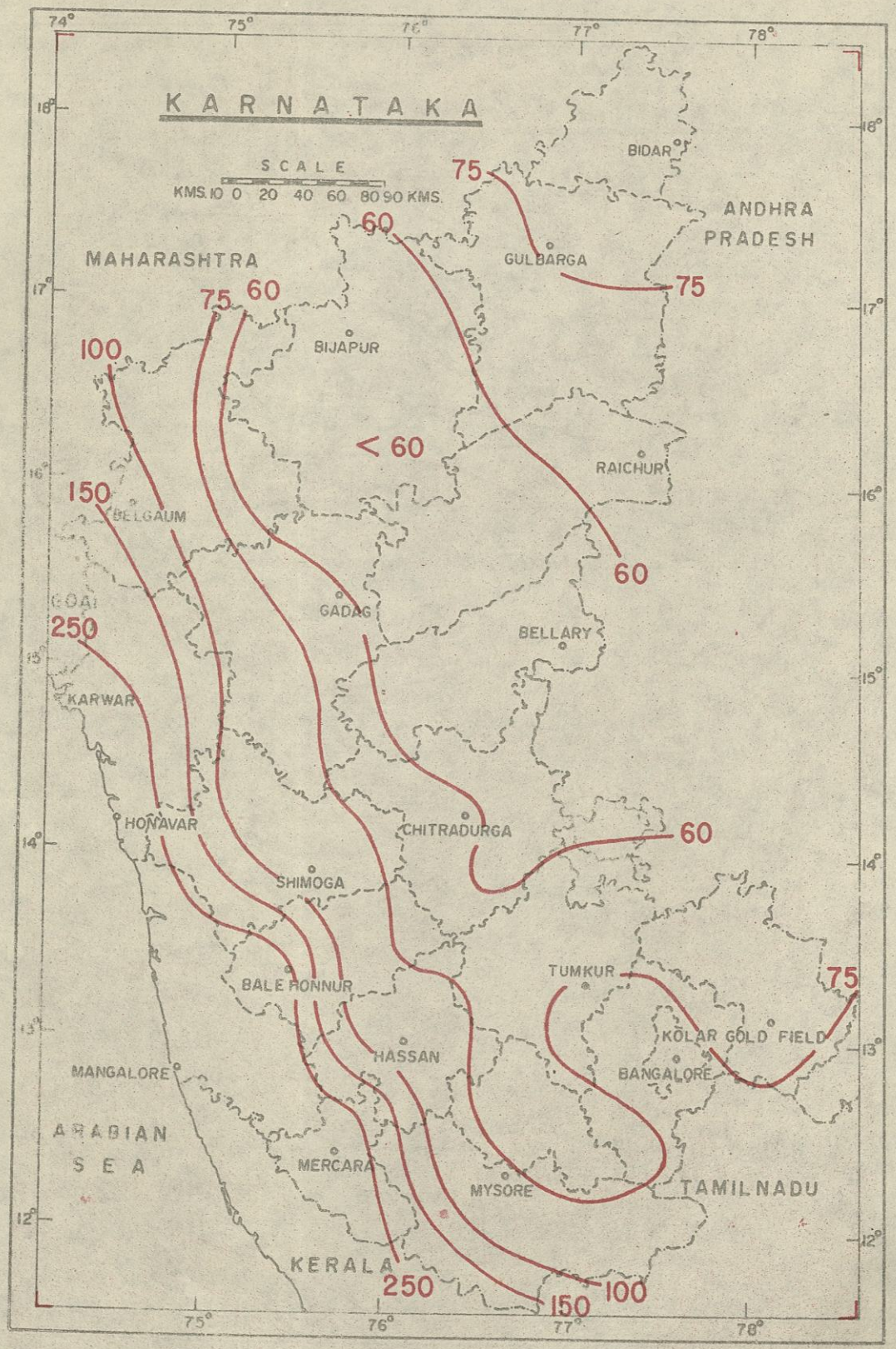

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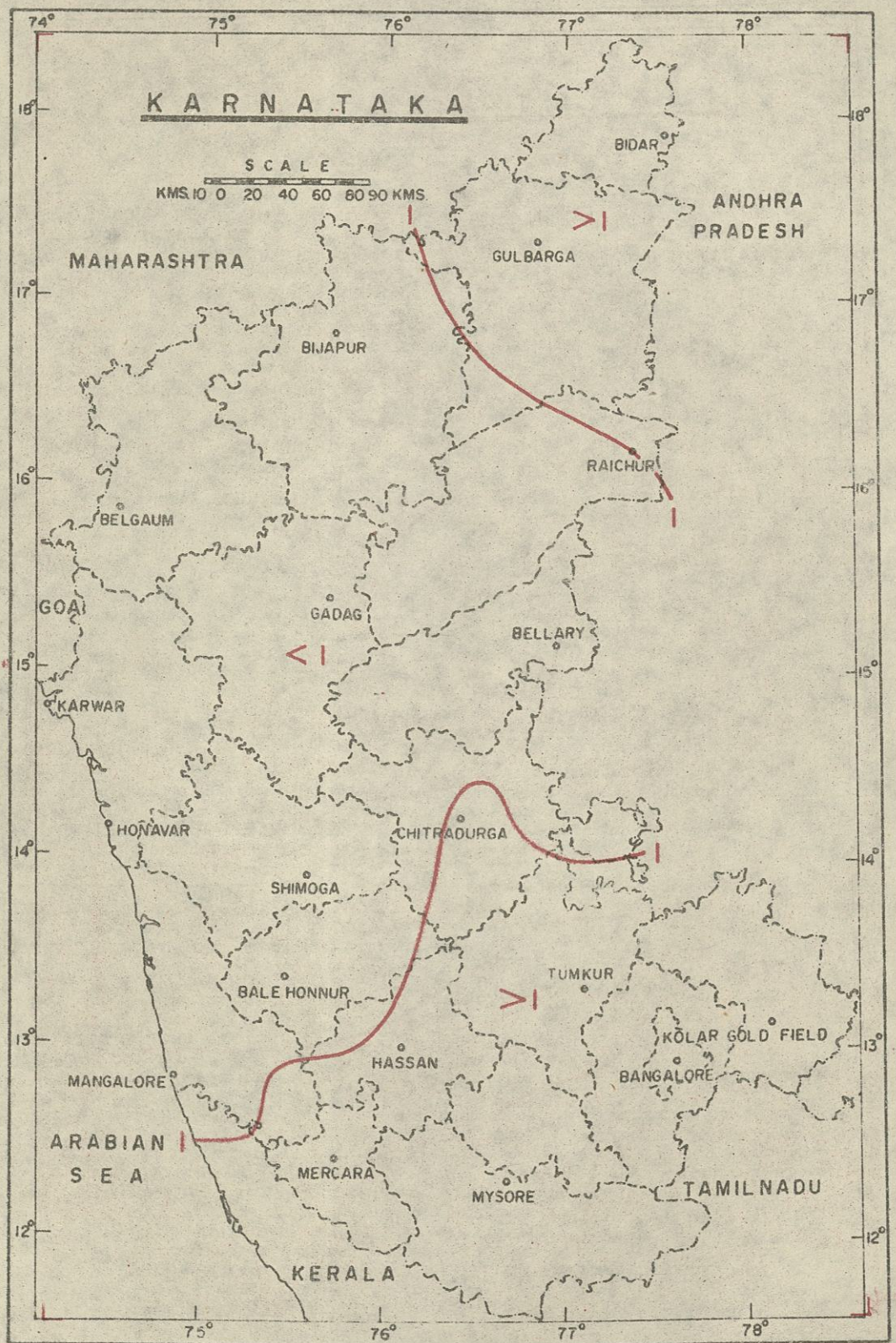

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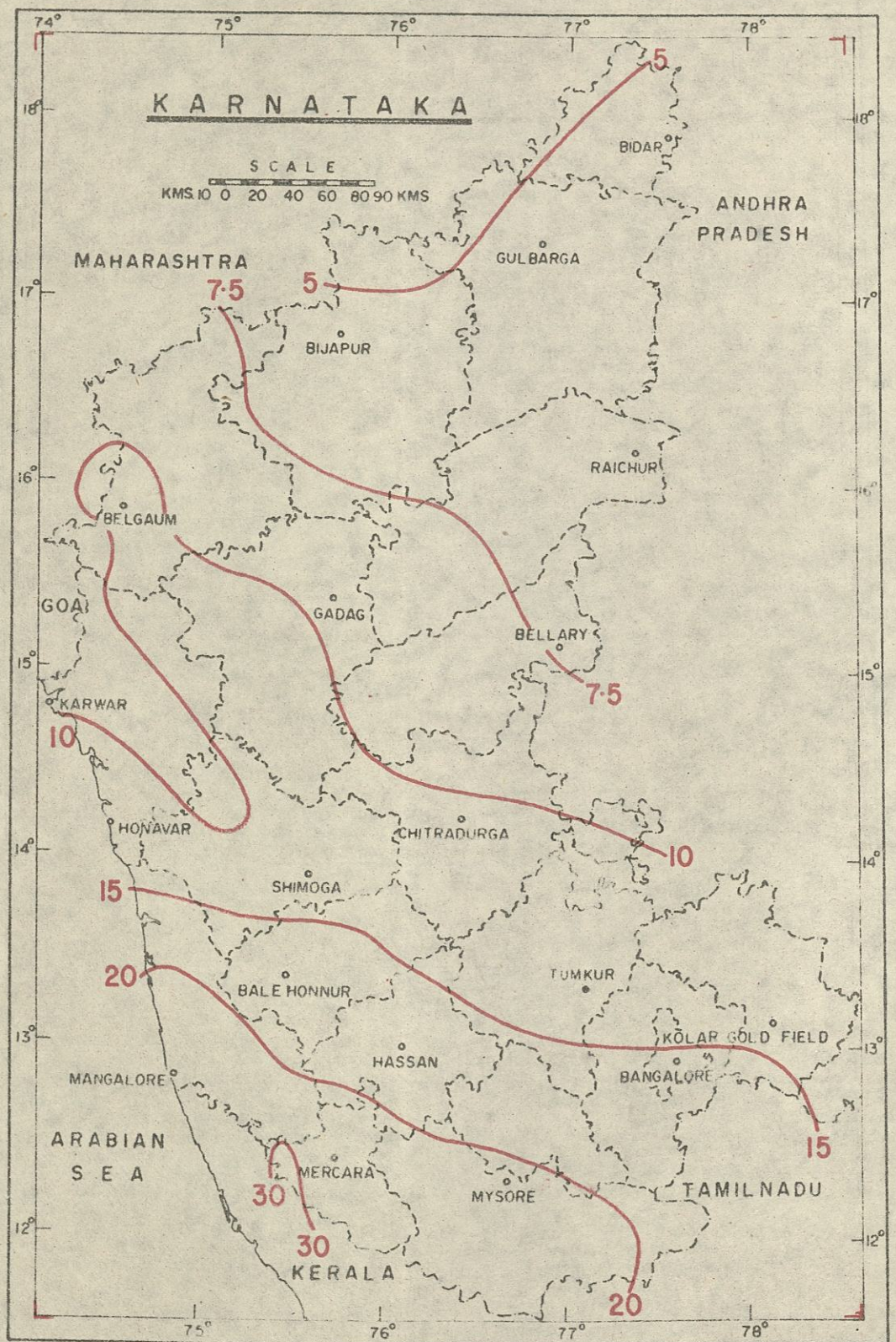

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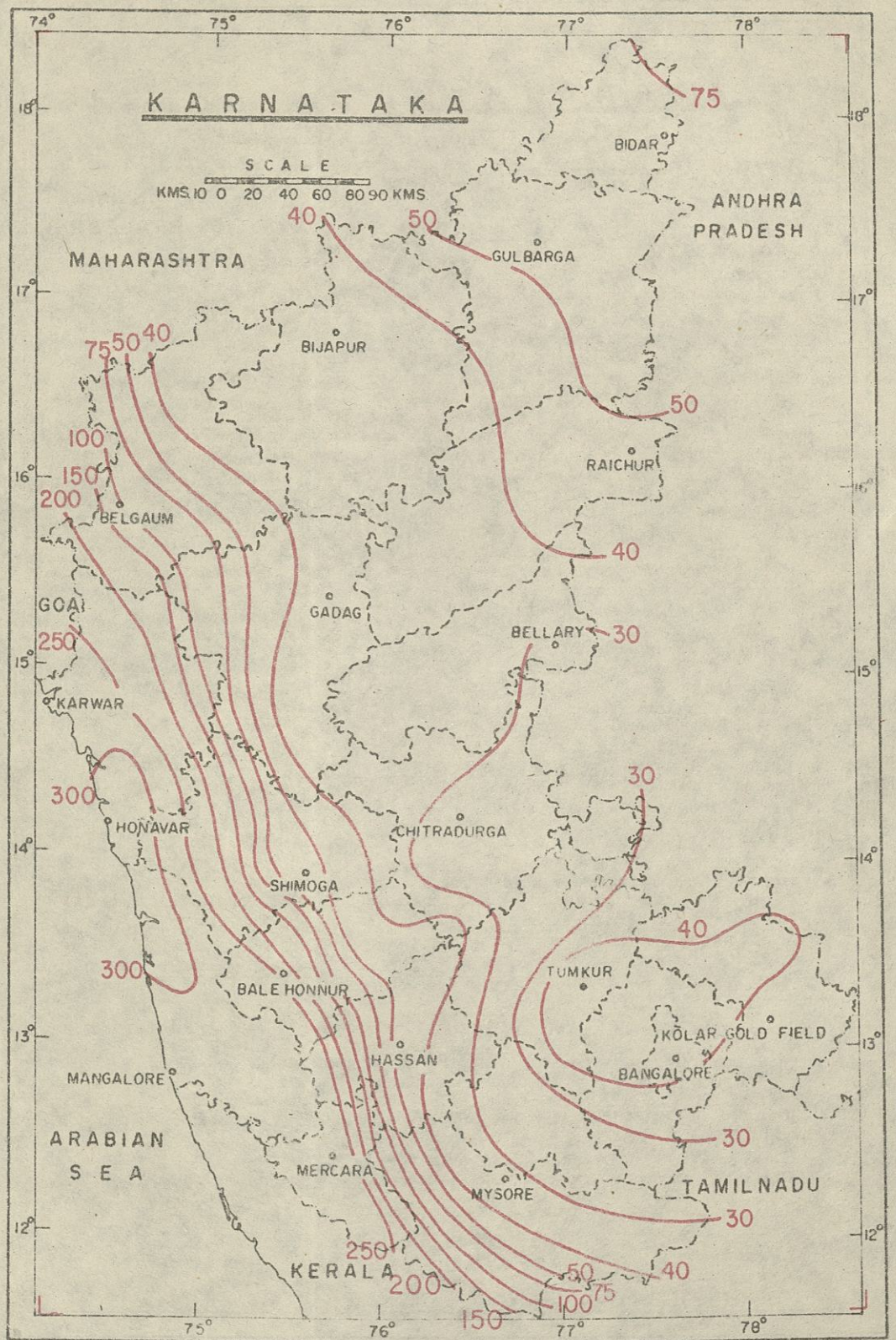

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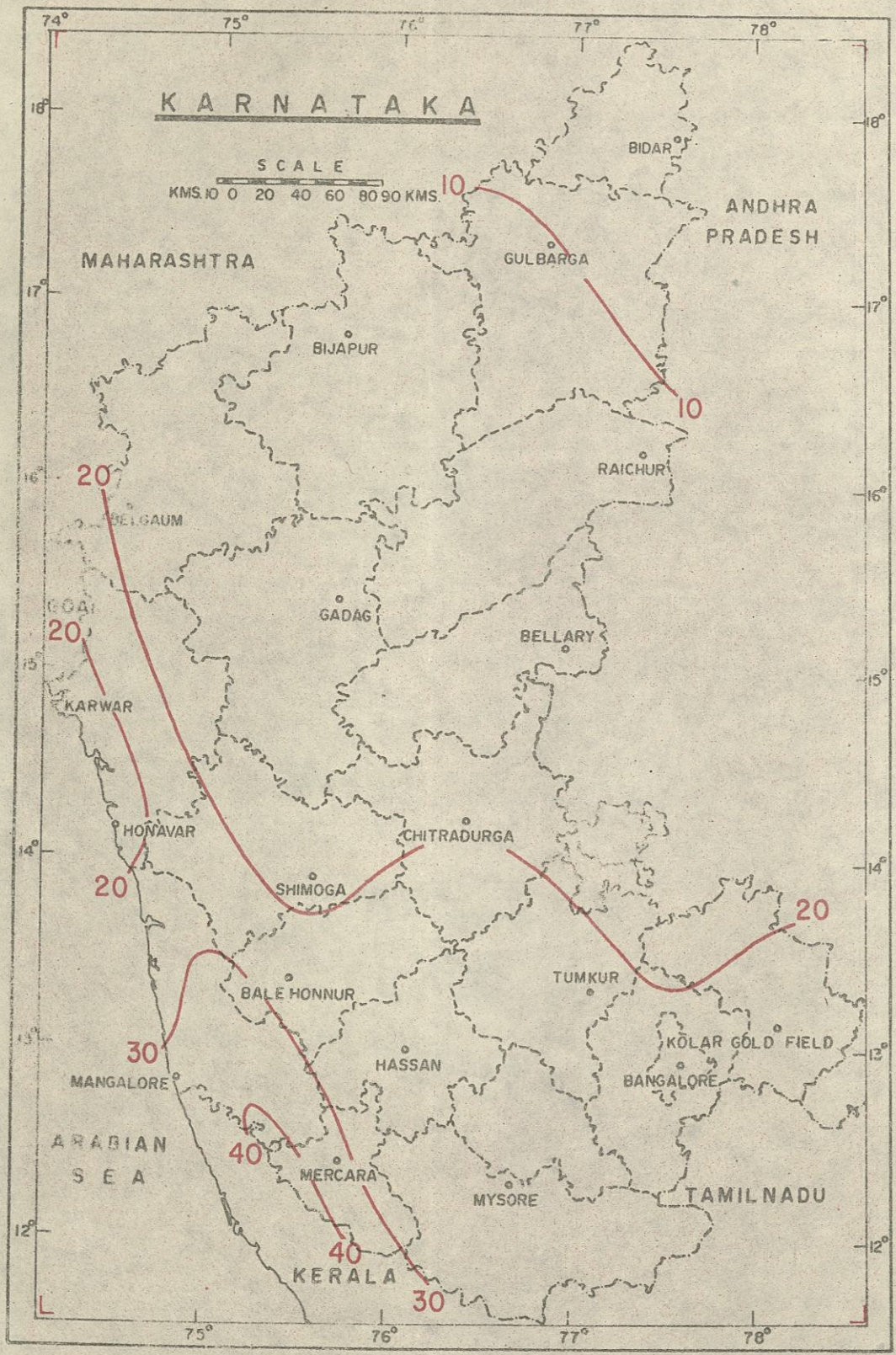

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THE CLIMATE OF KARNATAKA STATE

INTRODUCTION

The State of Karnataka, confined roughly within 11.5°N and 18.5°N latitudes and 74°E and 78.5°E longitude, is situated on a table land in the angle where the Western and Eastern Ghat ranges converge into the Nilgiri hill complex. It is, therefore, enclosed by chains of mountains to its west, east and south. The country consists mainly of plateau which has a higher elevation of 600 to 900 m. a. s. l. in the southern half and 300 to 600 m. a. s. l. in the north. Almost the entire landscape is undulating, broken up by mountains and deep ravines. Plain land of elevation less than 300 m. a. s. l. is to be found only in the narrow coastal belt of the State facing the Arabian Sea. This coastal belt with an average width of 50 to 80 km. covers a distance of about 225 km. from north to south. There are quite a few high peaks both in Western and Eastern Ghat systems with altitude more than 1500 m. Mulaingiri situated in Bababudan range of the Western Ghats is the highest point with an altitude of 1914 m. (6317 ft.). The relief map of the State is presented in Fig. 1. The climate of the State is considerably influenced by its orographic features. Three important river systems traverse across the State, namely, that of Krishna in the north, Cauvery in the south and Tungabhadra in the central part.

Meteorological Sub-Divisions

For meteorological purposes, the State has been divided into three sub-divisions, namely, (a) Coastal Karnataka consisting of the districts of North Kanara and South Kanara, (b) North Interior Karnataka, consisting of Belgaum, Bidar, Bijapur, Dharwar, Gulbarga and Raichur districts, and (c) South Interior Karnataka consisting of districts of Bangalore Rural, Bangalore Urban, Bellary, Chickmagalur, Chitradurga, Coorg, Hassan, Kolar, Mysore, Mandya, Shimoga and Tumkur.

The demarcation of these sub-divisions has been indiciated in the Relief Map (Fig.1)

CLIMATE

As per Koppen's classification, the State is covered by three main climatic types as shown in Fig. 2.

The tropical monsoon climate covers the entire coastal belt and adjoining areas. The climate in this region is hot with excessive rainfall during the monsoon season (June to September). Outside, the coastal belt, the southern half of the State experiences hot, seasonally dry tropical savana climate while most of the northern half experiences hot, semi-arid, tropical steppe type of climate.

The climate of the State varies with the seasons. The winter season from January to February is followed by the summer season from March to May. The period from June to September constitutes the southwest monsoon season and the period from October to December forms the post-monsoon season.

...

The period from October to March, covering the post-monsoon and winter seasons, is generally pleasant over the entire State, except during a few spells of rain associated with northeast monsoon which affect the southeastern parts of the State during October to December. The months April and May are hot, very dry and generally uncomfortable. Weather tends to be oppressive during June due to high humidity and temperature. In comparison, the next three months (July, August and September) are somewhat comfortable due to reduced day temperatures although the humidities continue to be very high.

II. ATMOSPHERIC SEA LEVEL PRESSURE AND WINDS

The seasonal variation of atmospheric pressure over the State takes place in a systematic manner with a maximum in the winter (January) and a minimum in the southwest monsoon season (July). The pressure gradient remains weak except during late summer and monsoon season. During winter, the higher pressure is to the northeast and during April, the pressure decreases from southwest to northeast over the State. Accordingly the winds which are light and mainly from northeast to east in January turn gradually anticlock-wise and are replaced by light northwesterly to westerly winds by April. With the advance of the summer, the pressure gradient increases and correspondingly the winds also strengthen reaching their maximum strength in June/July. During June the pressure decreases from southwest to northeast over the State and correspondingly the winds are mostly from southwest or west. With the progress of the monsoon, winds become more westerly. October is the month of transition with weak pressure gradient. From October onwards, the change over of the pressure and wind to the winter pattern commences. Table 1 gives the mean wind speed in km. p. h. for each month for the three meteorological sub-divisions, together with monthly mean wind speed and predominant wind direction, both in the morning and the evening, for individual stations.

III. TEMPERATURE

Table 2 gives the mean daily maximum and minimum temperatures of the observatory stations of the three sub-divisions of the State together with sub-divisional means. Figures 2 (a, b, c, d) and 3 (a, b, c, d) show the distribution of mean maximum and mean minimum temperatures respectively for the selected months. Extremes of temperature ever recorded, mainly based on data upto 1978, are presented in Figs. 4 and 5.

Both day and night temperatures are more or less uniform over the State, except at the coastal region and high elevated plateau. They generally decrease southwestwards over the State due to higher elevation and attain lower values at high level stations.

April and May are the hottest months. In May, the mean maximum temperature shoots upto 40°C over the northeastern corner of the State, decreasing southwestwards towards the Western Ghat region and the coastal belt. Over the coastal region the temperature is of the order of 32°C. Over Mercara, a hill station, the mean maximum temperature varies from 26°C to 29°C in the summer months (March - May). The highest temperature recorded at an individual station in the State is 45.6°C at Raichur on 1928 May, 23, which is 6°C higher than the normal for the warmest months. Mercara recorded a highest temperature of 35°C on 1902 May, 11, which was also 6.5°C higher than the normal for the warmest month.

...

December and January are the coldest months when the minimum temperature for the State as a whole is 17.5°C, varying from 21°C in the coastal region to 16°C in the interior. The lowest temperature on record, at an individual station, was 2.8°C on 1918 December, 16 at Bidar while the hill station at Mercara had recorded the lowest of 5.4°C on 1968 February, 4 and these were 13.4°C and 8.8°C below respective normals for the coldest month.

Both the maximum and minimum temperatures rise rapidly from January onwards till May. The increase in maximum temperature in the period January to May ranges from 5°C to 10°C in the Interior Karnataka North and South, where as, over the coastal area the increase is even less than 1°C. From June onwards both the maximum and minimum temperatures start falling, the former very rapidly while the latter very slowly. From the beginning of June to end of July the maximum temperature falls by about 5°C to 10°C in the Interior Karnataka while the fall is about 4°C over the coastal area. The fall in the minimum temperature during the period June to September is 1°C to 2°C over the State except over the coastal area where it is less than 1°C. From August onwards the maximum temperature starts rising and a secondary maximum is reached during October due to increased insolation in Interior Karnataka. The night temperature starts falling rapidly after November while the day temperature follows this trend after October and both attain the lowest values by December/January. The fall in minimum temperature and maximum temperature is about 5°C and 2°C respectively. In both the cases the fall is less in the southern parts than in the northern parts of the State.

July has the smallest diurnal range of temperature, (about 6°C) in the State. The diurnal range increases rapidly after withdrawal of monsoon. During the period December to May the diurnal range in the Interior Karnataka is of the order of 12°C to 14°C, being greatest in March.

IV. HUMIDITY

Table 3 gives the mean relative humidity at 0830 and 1730 hrs. IST for the individual stations and the three sub-divisions. The relative humidity is generally high during the period May to October. During May, the relative humidity (average of morning and evening values) over North Interior Karnataka is 50%, increasing to above 60% over South Interior Karnataka and to 75% over Coastal Karnataka. The humidity increases as the southwest monsoon advances into the State and reaches the highest value during July. During this month the humidity is about 75% in Interior Karnataka and 90% over coastal area. The diurnal variation in relative humidity is the least during this season. The humidity is lowest during summer afternoons when the percentage of moisture in the atmosphere comes down to about 25%. making the summer very dry and hot. The diurnal variation is highest during the winter period December - February. As usual, coastal areas are more humid than the interior parts of the State.

V. CLOUDINESS

During the period December to March the skies are lightly clouded (2 to 3 Oktas). Afternoons are, however, comparatively more clouded than forenoons. From April onwards the cloudiness increases and reaches its maximum during the peak period of southwest monsoon in July, when the sky remains covered with 7 oktas of clouds. On an average, during this month, the sky remains overcast on 15 days and clear not even on a single

...

day. During October the clouding decreases to a great extent over the entire State more so in North Interior Karnataka and the sky is about half clouded over the entire State.

Tables 4 and 4(a) give the mean monthly total cloud amount and mean number of days with clear and overcast skies at 0830 and 1730 hrs. IST. For general information, the mean hour of bright sunshine for different months for some observatory stations in the State are indicated in table 4(b).

VI. RAINFALL

Table 5 gives district-wise and sub-divisional mean monthly and annual rainfall and number of rainy days. Figures 6 and 6(a) to 6(d) show the annual and seasonal distribution of rainfall.

The annual rainfall in the State varies roughly from 50 to 350 Cm. In the districts of Bijapur, Raichur, Bellary and southern half of Gulbarga, the rainfall is lowest, varying from 50 to 60 Cm. The rainfall increases significantly in the western part of the State and reaches its maximum over the coastal belt. The southwest monsoon is the principal rainy season when the State receives 80% of its annual rainfall. Rainfall in the winter season (January to February) is less than 1% of the annual total, in the hot weather season (March to May) about 7% and in post-monsoon season about 12%.

Coastal Karnataka, which lies on the windward side of the Western Ghats, gets heavy orographic rainfall amounting to about 335 Cm. annually, the northern coastal parts getting slightly less rainfall than the southern parts. There is a rapid decrease of rainfall on the lee-side of the ghats where the average annual rainfall is of the order of 60 to 70 Cm. Mercara, a hill station over the Western Ghats, receives an annual rainfall of 334 Cm. The average annual rainfall over North and South Interior Karnataka sub-divisions are 71 and 110 Cm. respectively.

Southwest monsoon normally sets in, over the extreme southern parts of the State, by about 1st of June and covers the entire State by about 10th of June. The rainy months July and August account individually to about 30% and 18% of annual rainfall. There are about 26 rainy days (with daily rainfall of atleast 2.5 mm.) in Coastal Karnataka and 8 to 11 days in Interior Karnataka in each of these months.

The withdrawal of the southwest monsoon begins from the northern parts of the State around 2nd week of October and by the 15th October monsoon withdraws from the entire State.

The retreating monsoon current from the northeast which is referred to as 'NE monsoon' is directed towards the peninsula during post-monsoon period (October to December). This current affects the eastern parts of South Interior Karnataka and accounts for about 30% of annual rainfall in this region during the above period.

Table 6 gives the monthly and annual rainfall for various river catchments in the State.

...

VII. RAINFALL VARIABILITY

Co-efficient of variation of annual rainfall is 15% over Coastal Karnataka and between 20% to 30% over Interior Karnataka. As about 80% of the annual rainfall occurs during the monsoon season, the variability in this season is also generally of the same order and similar to that for the annual rainfall. Co-efficient of variation of rainfall is 100% in winter and it varies from 40% to 100% during hot weather period. During post-monsoon season, the co-efficient of variation of rainfall is of the order of 40% to 60%.

VIII. DROUGHTS AND EXCESSIVE RAINFALL

Meteorologically drought over an area or place may be defined as a situation when annual rainfall over the area or place is less than 75% of the normal. It is further classified as 'Moderate drought' if the rainfall defecit is between 25% and 50% and 'Severe drought' when it is more than 50% of the normal.

Areas where frequency of drought as defined above is 20% of the years examined are classified as 'Drought areas' and areas having drought conditions for more than 40% of the years under consideration represent 'Chronically drought affected areas'. During the 50 year period from 1901 to 1950 drought conditions as prevailed over Karnataka are described below. Probabilities of occurrence of low rainfall, based on co-efficient of variation of rainfall described in the previous section are also mentioned.

(a) COASTAL KARNATAKA

The two districts, North and South Kanara in this sub-division, experienced moderate drought conditions at one time or other during the above period. North Kanara experienced drought in three years and none occurred in successive years. South Kanara experienced drought only in one year during the period 1901 - 1950. The drought condition did not occur in the same year at these two districts. The probability of occurrence of annual rainfall of less than 75% of the normal is about 8% for this sub-division. There has been no occasion of occurrence of severe drought in the sub-division.

(b) NORTH INTERIOR KARNATAKA

The western parts (Belgaum and Dharwar districts) experienced less number of drought years than the other parts in the sub-division. Belgaum and Dharwar districts had 2 and 4 while districts Bijapur and Raichur had 9 and 8 drought years respectively. Bidar and Gulbarga districts in the northeastern parts recorded 7 and 6 years of drought conditions respectively. Since the percentage of drought year is less than 20, this sub-division may be classified as 'Non drought area'. Out of the 7 drought years in Bidar district, 'Severe drought' occurred only once in 1929. During the years 1905, 1920 and 1924, three districts out of six in the sub-division had drought conditions.

...

Bijapur district had two spells of drought in successive years during 1904 - 1905 and 1922 - 1923 while Raichur district had one during 1923 - 1924.

The probability of occurrence of annual rainfall of less than 75% of the normal is about 30% for the sub-division while probability of occurrence of severe drought is 2% i. e. once in 50 years.

(c) SOUTH INTERIOR KARNATAKA

The eastern parts of this sub-division experienced more number of drought years than the western parts. For example, the districts Chitradurga, Tumkur and Kolar Gold Field had 7, 8 and 6 drought years respectively during the period 1901 - 1950 while the districts Shimoga, Chickmagalur, Hassan, Mandya and Mysore had 2 to 3 years of drought. Coorg district over the Western Ghat had least number of drought years, only onee in 1905. Bellary district in the northern portion of the sub-division had 5 drought years. Bangalore district in the southeast had 2 years of drought. None of the districts in this sub-division had consecutive years of drought nor did any experience severe drought conditions.

In the year 1923 the maximum number of districts (5 out of 11 districts) experienced drought conditions. During the period 1901 to 1950 this sub-division had 14 years of drought condition in one or more of the districts. The probability of occurrence of annual rainfall of less than 75% of the normal is about 30% i. e. thrice in every 10 years, in the long run, while probability of occurrence of severe drought is nil.

Considering the State as a whole a maximum of 7 out of 19 districts experienced drought conditions during three years viz. 1905, 1918 and 1923. The probability of occurrence of annual rainfall of less than 75% of the normal for the State as a whole is about 40% i. e. twice in every 5 years, in the long run, while probability of occurrence of severe drought is 2% i. e. once in 50 years.

As stated earlier, there was no occasion of occurrence of drought in successive years over Coastal Karnataka and South Interior Karnataka. However, over North Interior Karnataka there were three such occasions. Severity of drought not only depends upon the order of rainfall deficiency in one single year but also upon continued occurrence of deficient rains in successive years, even though the deficiency in each such successive year may not be as high as in a single year. The following table gives the years of successive drought (where the district rainfall was less than 75% of annual normal in each year) during the 50 year period, 1901 to 1950 and the district in which it occurred.

...

TABLE

(Years of successive drought and the affected district)

S. No.	Year	Name of District
1	1904 - 05	Bijapur
2	1922 - 23	Bijapur
3	1923 - 24	Raichur

The above table clearly brings out the area which was simultaneously affected by drought conditions.

The lowest district rainfall expressed, as percentage of annual normal, was 48% recorded in Bidar district in the year 1929.

EXCESSIVE RAINFALL

It may generally be said that rainfall sufficiently in excess of the normal is a predominant factor which causes flood, particularly in high rainfall region. Regions with co-efficient of variation of rainfall of 20% or less are generally prone to floods. For the purpose of the present description, annual rainfall of 125% or more of the normal is considered as a excessive rain.

COASTAL KARNATAKA

In this sub-division the two districts, North and South Kanara had each one year of excessive rainfall. The highest annual rainfall recorded in this sub-division was 133% of the normal in 1933 over North Kanara district. Also the heaviest one day rainfall on record at any station in the sub-division was 579.6 mm. at Kumta on 1966 July, 30.

NORTH INTERIOR KARNATAKA

Dharwar district in the sub-division had the lowest number of years of excessive rainfall viz. 5 years while Raichur had 11 years. Gulbarga, Bidar, Bijapur and Belgaum districts had 10, 9, 8 and 7 years of excessive rainfall respectively. Also the heaviest one day rainfall on record at any station in the sub-division was 307.3 mm. at Khanapur on 1914 August, 5.

The year 1903, 1916, and 1933 are note-worthy for occurrence of excessive rainfall over the most of the districts for this sub-division. So far as excessive rainfall during the period under consideration is concerned, the year 1933 stands unique as this is the only year in which all the districts of the sub-division experienced excessive rainfall. The probability of occurrence of heavy rain, 125% or more of the normal, over the sub-division is about 14%.

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SOUTH INTERIOR KARNATAKA

During the period 1901 - 1950 excessive rain occurred in the districts of Coorg (2), Chickmagalur (3), Mysore, Hassan and Mandya (4 each), Shimoga (5), Kolar and Chitradurga (6 each), Bangalore (7), Tumkur (8) and Bellary (9) in two to nine years as indicated in the bracket against each. More than 150% of the normal rainfall was recorded in 6 districts out of 11. The highest district rainfall expressed as percentage of the normal during the above period, was 173 in Kolar District in 1903. The heaviest one day rainfall on record, at any station in this sub-division, was 842.0 mm. on 1924 July, 25, at Bhagamandala.

For the sub-division as a whole the year 1933 stands out as the rainiest when as many as 6 out of the 11 districts recorded more than 125% of the normal rain. The probability of occurrence of excessive rainfall in any year is about 4% i. e. once in about twenty-five years in the long run; the year 1903, 1933 are note-worthy for occurrence of fairly excessive rainfall over most of the districts of this sub-division.

IX. CYCLONIC STORMS AND DEPRESSIONS

In April and May most of the Bay storms generally originate in the region between 8°N and 13°N and east of 85°E. The direction of movement of the storms is initially towards the northwest or north, later they recurve towards northeast and strike the Arakan coast of Burma. After crossing coast very few of them have affected the State south of 15°N. In October and November storms in Bay of Bengal generally originate in the region between 8°N and 14°N and east of 82°E. They move initially in a northwesterly direction and most of them later recurve and move towards northeast. The north Coromondel and Circars coast and the coastal belt of Bangla Desh are particularly vulnerable to the incident of storm in these months. Most of the Bay storms that strike the coast south of 15°N enter the Arabian Sea and intensify. During their journey from Bay of Bengal to Arabian Sea, these storms affect the weather of the State considerably. In the month November generally the portion of the State south of 15°N is affected by these eastward moving storms and depressions. The following table gives the total number of depressions/storms which affected each of the three sub-divisions during the 80 year period ending 1970.

TABLE

Depressions/Storms affecting Karnataka State during 1891 to 1970

Month	Karnataka State			State as a whole
	Coastal	North	South	
January	..	..	1	1
February	..	..	..	..
March	..	..	1	1
April	1	1	1	1
May	1	2	3	3

...

June	..	..	..	..
July	..	..	..	..
August	..	..	..	..
September	..	..	..	..
October	4	5	8	8
November	5	2	10	11
December	2	..	4	5
Total	13	10	28	30

X. OTHER WEATHER PHENOMENA

Convective - activity is essential for the occurrence of thunderstorm and dust-storm. With the advance of summer, thunder activity becomes pronounced due to ground heating. When the moisture is sufficient in the atmosphere, dry thunderstorm or dust-storm occurs. The maximum number of thunderstorms occur just before the approach of the monsoon. Number of days of thunderstorm in each of pre-monsoon months of April and May in the sub-divisions of Coastal Karnataka, North Interior Karnataka and South Interior Karnataka are generally 2 to 3, 4 and 5 respectively. Number of days of thunderstorm, in the post-monsoon month of October in the three sub-divisions, in the order mentioned above, are 5, 2 and 3 respectively. Thunderstorm activity is minimum in the State during November to February. Dust-storm, squall and fog occur very rarely in the State.

***

T A B L E - 1

MEAN WIND SPEED (Km.p.h.) AND PREDOMINENT WIND DIRECTION

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
						INTERIOR KARNATAKA SOUTH								
Bangalore	a	10.4	9.7	9.4	9.0	11.8	17.1	17.5	15.2	12.1	8.2	8.5	9.6	11.5
	M	E	E	SE	SW/W	W	W	W	W	W	W	E	E	
	E	E	E	E	E	W/NW	W	W	W	W	NE	E/NE	E	
Bellary	a	4.9	5.2	5.9	6.9	10.2	13.8	14.8	13.6	11.1	5.5	4.4	4.4	8.4
	M	C/SE	C/SE	C/SE	NW	NW	W/NW	W/NW	W/NW	NW/N	C/NW	C/SE	C/SE	
	E	SE	SE	SE	SE	NW	W/NW	W/NW	W/NW	NW	NW	SE	SE	
Balehonnur	a				Not available									
	M	SE	SE	C/SE	C/SE	C/NW	C/W	W	C/W	C/NW	C/SE	SE	SE	
	E				Not available									
Chitradurga	a	7.8	6.9	7.1	7.7	10.6	14.2	14.9	13.1	10.8	6.3	6.2	7.6	9.4
	M	E	C/SE	W	W	W	W	W	W	W	W	E	E	
	E	E	E	E	E	W	W	W	W	W	E	E	E	
Mercara*	a	9.6	8.4	8.0	8.2	10.0	13.5	16.7	15.5	12.3	8.4	10.0	11.4	11.0
	M	E/NE	C/E	C/NE	C/NW	W/NW	W/NW	W/NW	W/NW	W/NW	C/E	NE/E	E/NE	
	E	E/NE	E	W	W/NW	W/NW	W/NW	W/NW	W/NW	W/NW	W	E/NE	E/NE	
Hassan	a	5.8	5.7	6.7	8.2	11.5	14.9	15.3	13.6	11.6	6.9	5.5	5.8	9.3
	M	E	C/E	C/W	W	W	W	W	W	W	W	E	E	
	E	E	E	E	W	W	W	W	W	W	W	E	E	
Mysore	a	11.3	9.1	8.8	8.4	10.2	13.9	14.1	12.5	10.7	7.9	9.3	11.3	10.6
	M	NE/E	C/NE	C/W	W	W	W	W	W	W	W	E/NE	NE/E	
	E	E	E	E	E	W	W	W	W	W	W	E/NE	E	
Shimoga	a	4.1	4.3	4.9	5.3	6.3	7.4	6.7	6.3	5.2	4.0	4.2	4.5	5.3
	M	C/Var	C/Var	C/Var	C/Var	SW	SW	SW	SW	C/SW	C/Var	C/NE	C/E	
	E	E	E	E	SW/W	W	SW	W	W	W/SW	SW	NE	E	
Sub.Div. Means	a	7.4	6.8	7.1	7.6	10.1	13.5	13.9	12.4	10.3	6.5	6.3	7.2	

* Hill Station = Not considered for sub-divisional mean.

Contd...

T A B L E - 1 (contd.)

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
						COASTAL KARNATAKA.								
Honavar	a	5.0	5.2	5.1	5.4	6.3	6.8	7.2	6.0	4.4	4.2	4.4	5.2	5.4
	M	E	E	E	E	E	W	W	W	E	E	E	E	
	E	W	W	W	W	W	W	W	W	W	W	W	W	
Mangalore	a	8.5	8.8	8.5	8.9	9.6	9.3	9.4	7.9	6.8	7.3	7.2	8.1	8.4
	M	E	E	E	E	E	E	W	W	E	E	E	E	
	E	NW	NW	NW	NW	NW	SW	W	NW	NW	NW	NW	NW	
Sub.Div. Means	a	6.7	7.0	6.8	7.1	7.9	8.1	8.3	6.9	5.6	5.7	5.8	6.7	
						INTERIOR KARNATAKA NORTH								
Belgaum	a	6.4	6.6	7.2	8.5	10.6	13.0	14.4	13.5	9.9	8.1	6.8	6.5	9.3
	M	E	C/E	C/N	W	W	W	W	W	W	E/NE	E	E	
	E	E	W	W	W	W	W	W	W	W	W	E	E	
Bidar	a	10.6	10.6	10.8	11.2	13.7	20.7	22.5	18.5	13.2	8.8	9.3	9.4	13.3
	M	SE	SW	SW	SW/NW	NW	W	W	W	W	NE	E	E	
	E	NE	NE	NE	NE/E	NW	W	W	W	W	NE	NE	NE	
Bijapur	a	5.0	5.4	6.1	7.4	10.5	13.5	15.0	13.5	10.0	5.5	4.0	4.1	8.3
	M	S	N	N	N/NW	W	W	W	W	W	N	E	SE	
	E	SE	NE	NE	N/NE	NW	W	W	W	W	NE	NE	NE	

contd.....

T A B L E - 1 (contd.)

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Gadag	a	7.5	7.1	8.1	10.1	13.8	18.2	19.6	17.5	13.6	7.8	7.0	7.6	11.4
	M	SE	SE	NW	NW	NW	NW	NW	NW	NW	SE/NW	SE	SE	
	E	SE	SE	SE	SE	NW	NW	NW	NW	NW	SE	E	E	
Gulbarga	a	9.1	9.9	10.4	11.7	14.8	19.2	20.3	17.5	13.0	11.2	11.3	9.8	13.2
	M	E/NE	NE	NE	N	W	W	W	W	W	NE	NE	E	
	E	E	E	E	SE	NW	W	W	W	W	NE	NE	E	
Raichur	a	9.6	9.4	10.0	10.3	14.6	20.7	21.7	18.2	13.6	9.4	9.6	9.4	13.0
	M	SE	SE	SE	SW	NW	SW	SW	SW	NW	NE	NE	SE	
	E	SE	SE	SE	SE	NW	SW	W	W	NW	NE	NE	NE	
Sub.Div. Means	a	8.0	8.2	8.8	9.9	13.0	17.5	18.9	16.5	12.2	8.5	8.0	7.8	

a : Mean wind speed in Kms. per hour.

M : Predominent direction in the morning.

E : Predominent direction in the evening.

Var : Variable.

C : Calm. The next predominent direction is also indicated when calm is mentioned.

TABLE - 2

MEAN MAXIMUM AND MEAN MINIMUM TEMPERATURE (°C)

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
INTERIOR KARNATAKA SOUTH														
Bangalore	Max.	26.9	29.7	32.3	33.4	32.7	28.9	27.2	27.3	27.6	27.5	26.3	25.7	28.8
	Min.	15.0	16.5	19.0	21.2	21.1	19.7	19.2	19.2	18.9	18.9	17.2	15.3	18.4
Bellary	Max.	30.3	33.3	36.4	38.1	37.9	33.7	31.5	31.4	31.5	31.3	29.9	29.3	32.9
	Min.	17.6	19.9	22.9	25.5	25.8	24.7	24.0	23.5	23.0	22.3	19.6	17.4	22.2
Balehonnur	Max.	27.3	29.3	31.3	30.9	29.4	25.1	22.7	23.2	24.5	26.1	26.2	26.2	26.9
	Min.	14.8	15.8	17.5	19.0	19.5	18.8	18.5	18.6	18.1	17.9	16.4	14.9	17.5
Chitradurga	Max.	28.9	32.0	34.9	36.3	35.1	30.6	28.1	28.1	29.1	29.6	28.4	28.0	30.8
	Min.	17.1	19.2	21.5	22.7	22.3	21.4	20.8	20.5	20.3	20.3	18.4	16.7	20.1
Mercara*	Max.	24.6	26.8	28.5	27.9	26.3	21.9	20.2	20.7	22.0	23.7	23.6	23.5	24.1
	Min.	14.2	15.1	16.6	17.9	18.3	17.4	17.1	17.1	16.9	17.0	16.1	14.6	16.5
Hassan	Max.	28.1	30.5	32.9	33.2	31.5	26.8	24.8	25.5	26.7	27.6	27.0	26.8	28.5
	Min.	14.7	16.1	18.2	20.1	20.3	19.4	18.9	18.8	18.4	18.6	16.9	15.0	17.9
Mysore	Max.	28.3	31.2	33.5	34.0	32.6	28.9	27.3	27.9	28.7	28.4	27.4	27.0	29.6
	Min.	16.4	18.2	20.2	21.4	21.2	20.2	19.7	19.6	19.3	19.6	18.3	16.5	19.2
Shimoga	Max.	30.5	32.9	35.3	35.7	33.8	29.0	26.8	27.1	28.6	29.2	29.1	28.9	30.6
	Min.	14.6	16.1	19.1	22.2	22.5	21.7	21.1	21.0	20.5	20.3	17.3	14.4	19.2
Sub.Div. Means	Max.	28.6	31.3	33.8	34.5	33.3	29.0	26.9	27.2	28.1	28.5	27.8	27.4	29.7
	Min.	15.7	17.4	19.8	21.7	21.8	20.8	20.3	20.2	19.8	19.7	17.7	15.7	19.2

Contd.....

T A B L E - 2 (contd.)

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
							COASTAL KARNATAKA							
Honavar	Max.	31.9	31.3	31.9	32.4	32.3	29.3	28.2	28.3	28.8	30.6	32.5	32.7	30.9
	Min.	20.0	20.5	22.7	25.2	25.8	24.1	23.5	23.5	23.2	23.2	21.9	20.9	22.9
Mangalore	Max.	31.4	31.1	31.7	32.4	32.1	29.4	28.5	28.5	28.7	29.8	31.1	31.7	30.5
	Min.	21.7	22.8	24.5	26.1	26.0	23.9	23.5	23.6	23.5	23.8	23.2	21.9	23.7
Sub.Div. Means	Max.	31.7	31.2	31.8	32.4	32.2	29.3	28.3	28.4	28.7	30.2	31.8	32.2	30.7
	Min.	20.9	21.7	23.6	25.7	25.9	24.0	23.5	23.5	23.3	23.5	22.5	21.4	23.3
							INTERIOR KARNATAKA NORTH							
Belgaum	Max.	30.1	32.2	35.0	35.7	34.0	27.5	25.2	25.6	27.0	30.1	29.3	29.3	30.1
	Min.	14.0	15.1	18.0	19.5	20.6	20.6	19.8	19.4	19.0	18.6	17.1	13.9	18.0
Bidar	Max.	28.3	31.1	34.6	36.9	38.6	33.3	29.0	28.7	28.8	29.5	27.9	27.1	31.1
	Min.	16.5	18.7	21.9	24.5	26.0	22.9	21.3	21.0	21.0	20.6	18.0	16.2	20.7
Bijapur	Max.	30.2	32.9	36.0	38.0	38.5	33.3	30.1	30.1	30.6	31.0	29.7	29.0	32.5
	Min.	16.2	18.1	21.3	23.8	23.9	22.4	21.7	21.3	21.1	20.6	17.4	15.2	20.3
Gadag	Max.	30.3	33.0	36.0	37.3	36.5	31.1	28.5	28.9	29.7	30.8	29.8	29.1	31.7
	Min.	16.7	18.6	21.0	22.5	22.6	21.9	21.2	20.9	20.5	20.2	18.4	16.5	20.1
Gulbarga	Max.	30.4	33.4	36.8	39.1	40.2	35.0	31.4	31.2	31.1	31.9	30.4	29.5	33.4
	Min.	16.0	18.5	21.7	25.0	26.3	23.8	22.5	22.2	21.9	21.0	17.5	15.1	21.0
Raichur	Max.	30.2	33.2	36.6	38.7	39.6	35.1	32.0	31.9	31.6	31.7	30.1	29.1	33.3
	Min.	18.5	20.5	23.7	26.2	26.5	24.1	22.9	22.8	22.7	22.5	20.0	18.0	22.4
Sub.Div. Means	Max.	29.9	32.6	35.8	37.6	37.9	32.5	29.4	29.4	29.8	30.8	29.5	28.9	32.0
	Min.	16.3	18.3	21.3	23.6	24.3	22.6	21.6	21.3	21.0	20.6	18.1	15.8	20.4

* Hill Station - Not considered for sub-divisional mean.

TABLE - 3

MEAN RELATIVE HUMIDITY (%)

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
INTERIOR KARNATAKA SOUTH														
Bangalore	M	77	67	63	70	75	82	86	86	85	83	78	78	77
	E	40	29	24	34	46	62	68	66	62	64	59	51	50
Bellary	M	65	51	45	53	58	67	71	72	73	73	69	69	64
	E	31	25	22	28	33	50	59	57	55	53	45	38	41
Balehonnur	M	78	79	81	87	88	92	95	94	93	89	85	79	87
	E	Not available												
Chitradurga	M	65	56	55	67	75	79	83	84	83	79	73	71	73
	E	33	24	24	30	39	63	69	69	63	55	50	40	47
Mercara*	M	79	73	72	82	88	95	97	96	94	89	83	82	86
	E	55	53	54	71	80	94	98	95	91	85	73	58	76
Hassan	M	74	69	71	76	80	85	88	85	86	83	78	76	79
	E	37	31	31	47	64	77	81	79	75	70	58	46	58
Mysore	M	75	69	71	75	79	81	84	84	83	85	80	78	79
	E	30	25	21	34	51	66	70	67	61	61	54	43	49
Shimoga	M	76	76	77	75	78	83	88	87	85	86	82	76	81
	E	33	27	27	44	57	73	81	78	74	70	57	43	55
Sub.Div. Means	M	73	67	66	72	76	81	85	85	84	83	78	75	77
	E	34	27	25	36	48	65	71	69	65	62	54	43	50

contd.....

T A B L E - 3 (contd.)

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
						COASTAL KARNATAKA								
Honavar	M	68	75	79	78	79	89	92	92	91	85	70	63	80
	E	59	64	67	70	72	86	90	88	84	79	66	59	74
Mangalore	M	71	75	75	73	77	89	91	91	89	85	77	69	80
	E	61	66	67	69	72	85	88	87	83	79	66	62	74
Sub.Div. Means	M	69	75	77	75	78	89	91	91	90	85	73	66	80
	E	60	65	67	69	72	85	89	87	83	79	67	60	74
						INTERIOR KARNATAKA NORTH								
Belgaum	M	66	61	62	72	78	85	90	92	89	81	70	67	76
	E	30	30	32	46	58	76	92	87	81	64	47	35	57
Bidar	M	62	50	44	49	51	76	86	86	84	70	61	61	65
	E	35	29	26	31	30	54	67	68	68	54	43	39	45
Bijapur	M	56	47	45	50	58	75	80	80	80	70	60	58	63
	E	31	26	24	25	28	52	62	60	59	49	40	34	41
Gadag	M	61	54	58	71	78	88	84	84	83	75	64	63	72
	E	35	31	31	41	49	68	73	70	66	57	46	41	51
Gulbarga	M	54	43	36	41	47	71	81	81	80	68	57	56	60
	E	27	24	20	22	26	47	62	59	61	48	35	31	39
Raichur	M	64	54	50	54	60	73	78	77	78	71	64	63	65
	E	32	29	28	30	33	50	59	55	56	49	41	34	41
Sub.Div. Means	M	61	51	49	56	62	78	83	83	82	73	63	61	67
	E	32	28	27	33	37	58	69	67	65	53	42	37	46

M : Morning E : Evening

* : Hill Stations - Not considered for sub-divisional means.

T A B L E - 4

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

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
						INTERIROR KARNATAKA SOUTH								
Bangalore	a	6	10	14	5	1	0	0	0	0	1	3	4	3.7
	b	4	1	1	2	6	14	23	21	17	11	8	6	9.5
	c	3.7	2.6	2.0	3.6	5.0	6.9	7.6	7.5	6.9	6.1	4.9	4.2	5.1
Bellary	a	11	12	15	8	3	0	0	0	0	2	4	8	5.3
	b	0	0	0	1	2	4	7	5	4	3	2	1	2.4
	c	2.2	2.0	1.7	2.8	4.2	5.6	6.4	6.0	5.7	4.9	4.5	3.0	4.1
Balehonnur	a	12	12	13	5	1	0	0	0	1	1	5	11	5.1
	b	2	4	6	5	7	18	24	21	14	11	3	2	9.7
	c				- Not available -									
Chitradurga	a	12	13	16	7	2	0	0	0	0	2	5	9	5.5
	b	3	2	2	3	7	11	18	17	11	8	6	5	7.7
	c	2.4	2.0	1.8	3.2	4.9	6.5	7.3	7.1	6.4	5.4	4.4	3.2	4.5
Mercara*	a	9	10	12	4	1	0	0	0	0	1	2	5	3.7
	b	1	0	0	0	2	11	22	18	10	4	3	1	6.0
	c	2.7	2.1	1.8	3.3	4.7	6.4	7.3	6.9	5.9	4.7	4.2	3.5	4.5
Hassan	a	12	13	17	7	4	0	0	0	1	2	4	8	5.7
	b	2	2	2	3	6	15	20	17	11	9	5	3	7.9
	c	2.4	2.2	1.7	3.2	4.6	6.8	7.3	7.0	6.1	5.3	4.2	3.3	4.5

contd.....

TABLE - 4 (contd.)

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mysore	a	4	6	7	2	1	0	0	0	0	1	2	3	2.2
	b	2	1	1	1	2	5	8	6	4	4	3	2	3.3
	c	3.0	2.8	2.3	3.7	4.9	5.9	6.4	6.2	5.7	5.6	4.7	3.6	4.6
Shimoga	a	11	10	10	6	0	0	0	0	0	0	3	6	3.8
	b	3	3	3	1	6	11	20	17	10	9	5	2	7.5
	c	2.4	2.6	2.6	3.1	5.1	6.4	7.3	7.2	6.5	5.9	4.0	2.8	4.7
Sub.Div. Means	a	10	11	13	6	2	0	0	0	0	1	4	7	4.5
	b	2	2	2	2	5	11	17	15	10	8	5	3	6.9
	c	2.3	2.0	1.7	2.8	4.1	5.4	6.0	5.9	5.3	4.7	3.8	2.9	3.9
						COASTAL	KARNATAKA							
Honavar	a	9	6	5	2	1	0	0	0	0	2	3	6	2.8
	b	0	0	0	1	4	10	11	9	5	3	2	0	3.7
	c	2.6	2.7	3.1	4.4	5.8	6.9	7.2	6.9	6.3	5.4	4.1	3.2	4.9
Mangalore	a	8	7	8	2	0	0	0	0	0	1	3	7	3.0
	b	1	1	1	3	10	21	23	19	12	8	4	2	8.7
	c	2.3	2.3	2.3	4.0	5.8	7.1	7.5	7.1	6.3	5.4	4.0	2.8	4.7
Sub.Div. Means	a	9	7	7	2	1	0	0	0	0	1	3	7	2.9
	b	1	1	1	2	7	15	17	14	9	5	3	1	6.2
	c	2.5	2.5	2.7	4.2	5.8	7.0	7.3	7.0	6.3	5.4	4.1	3.0	4.8

contd.....

T A B L E - 4 (contd.)

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
						INTERIOR KARNATAKA NORTH								
Belgaum	a	17	17	18	11	4	0	0	0	0	4	9	13	7.7
	b	0	0	0	1	3	7	12	10	6	3	2	1	3.7
	c	0.9	0.8	0.8	1.8	3.2	5.9	7.0	6.7	5.6	3.9	2.4	1.3	3.4
Bidar	a	14	14	17	10	6	1	0	0	1	4	7	12	7.2
	b	1	1	1	1	3	9	17	14	10	5	3	1	5.5
	c	1.9	1.7	1.6	2.6	3.5	5.7	7.0	6.6	5.9	4.1	3.2	2.3	3.8
Bijapur	a	15	15	18	11	5	1	0	0	1	4	7	11	7.3
	b	1	1	1	1	3	6	11	9	6	4	2	2	3.9
	c	1.6	1.4	1.3	2.1	3.4	5.3	6.3	6.1	5.4	3.9	3.2	2.1	3.5
Gadag	a	9	9	11	6	3	0	0	0	0	1	3	6	4.0
	b	0	0	0	1	3	8	15	14	8	4	3	1	4.7
	c	2.3	2.3	2.0	2.8	4.2	6.1	6.9	6.7	6.1	4.7	3.7	2.7	4.2
Gulbarga	a	15	16	18	10	5	1	0	0	1	5	7	13	7.6
	b	1	0	1	1	3	9	16	13	10	4	2	1	5.1
	c	1.4	1.1	1.2	2.0	3.2	5.5	6.7	6.2	5.6	3.6	2.6	1.9	3.4
Raichur	a	15	15	17	10	5	0	0	0	1	4	5	12	7.0
	b	0	0	0	0	1	4	8	6	4	2	2	1	2.3
	c	1.6	1.5	1.4	2.2	3.3	5.1	5.8	5.5	5.1	3.8	3.3	2.1	3.4
Sub-Div. Means	a	14	14	17	10	5	1	0	0	1	4	6	11	6.8
	b	1	0	1	1	3	7	13	11	7	4	2	1	4.2
	c	1.6	1.5	1.4	2.3	3.5	5.6	6.6	6.3	5.6	4.0	3.1	2.1	3.6

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

* = Hill station - Not considered for sub-divisional means.

a - Days with clear sky. b - Days with sky overcast. c - Mean cloud amount.

TABLE - 4 (a)

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

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
						INTERIOR KARNATAKA SOUTH								
Bangalore	a	7	7	9	2	1	0	0	0	0	0	2	5	2.7
	b	2	1	1	4	8	13	19	15	12	11	8	4	8.2
	c	2.9	2.8	2.9	5.0	5.7	6.9	7.4	7.1	6.8	6.3	5.2	3.9	5.2
Bellary	a	10	9	9	2	1	0	0	0	0	1	1	7	3.3
	b	0	0	0	1	3	5	9	4	4	4	2	1	2.9
	c	2.7	2.5	2.5	4.1	4.6	5.8	6.5	6.2	6.1	5.3	4.2	3.2	4.5
Balehonnur	a			-	Not available	-								
	b			-	do	-								
	c			-	do	-								
Chitradurga	a	11	10	10	2	2	0	0	0	0	1	4	8	4.0
	b	1	1	1	3	6	9	17	12	7	6	4	3	5.8
	c	2.4	2.4	2.5	4.3	4.8	6.4	7.1	6.6	6.2	5.5	4.3	3.1	4.6
Mercara*	a	7	6	6	1	0	0	0	0	0	0	1	5	2.2
	b	0	0	0	1	2	11	18	16	8	4	2	0	5.2
	c	2.7	2.7	2.8	4.4	5.0	6.4	7.1	6.8	5.9	5.2	4.3	3.2	4.7
Hassan	a	9	8	8	0	0	0	0	0	0	0	2	7	2.8
	b	1	1	1	3	6	12	19	16	10	8	4	2	6.9
	c	2.5	2.9	2.8	5.5	5.8	6.7	7.2	7.0	6.3	6.2	4.7	3.5	5.1

contd.....

TABLE - 4 (a) (contd.)

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mysore	a	3	4	3	0	0	0	0	0	0	0	1	3	1.2
	b	1	1	1	2	4	8	12	9	5	6	3	2	4.5
	c	2.9	2.9	3.2	5.1	5.5	6.4	6.8	6.9	6.1	5.9	4.9	3.9	5.0
Shimoga	a	10	8	7	1	1	0	0	0	0	1	2	7	3.1
	b	0	0	1	5	5	10	16	12	7	6	3	1	5.5
	c	2.3	2.5	3.0	5.0	5.0	6.3	7.1	6.9	6.1	5.7	4.2	2.9	4.7
Sub.Div. Means	a	9	8	8	1	1	0	0	0	0	1	2	7	2.9
	b	1	1	1	3	5	9	15	12	7	7	4	2	5.6
	c	2.6	2.7	2.8	4.8	5.2	6.4	7.0	6.7	6.3	5.8	4.6	3.4	4.8
						COASTAL KARNATAKA								
Honavar	a	7	7	6	0	0	0	0	0	0	1	2	5	2.3
	b	0	0	0	1	3	11	12	8	5	4	2	0	3.8
	d	2.4	2.4	3.0	4.3	5.3	6.8	7.1	6.9	6.2	5.7	4.3	3.2	4.8
Mangalore	a	10	8	6	1	1	0	0	0	0	1	2	7	3.0
	b	0	1	1	3	7	21	23	18	11	10	5	2	8.5
	c	2.1	2.1	2.6	4.3	5.2	7.2	7.5	7.1	6.3	6.0	4.6	3.0	4.8
Sub.Div. Means.	a	9	7	6	1	1	0	0	0	0	1	2	6	2.7
	b	0	1	1	2	5	16	17	13	8	7	3	1	6.1
	c	2.3	2.3	2.8	4.3	5.3	7.0	7.3	7.0	6.3	5.9	4.5	3.1	4.8

contd.....

T A B L E - 4 (a) (contd.)

Station		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
							INTERIOR KARNATAKA NORTH							
Belgaum	a	11	11	7	3	3	1	0	0	0	1	5	9	4.3
	b	0	0	0	1	3	7	13	9	8	5	3	1	4.2
	c	1.5	1.4	1.8	3.0	3.4	6.0	7.1	6.8	6.1	5.1	3.4	1.9	4.0
Bidar	a	9	9	8	2	0	0	0	0	0	1	6	9	3.7
	b	1	1	1	2	3	9	16	14	10	5	2	1	5.4
	c	2.9	2.4	3.0	4.7	5.0	6.5	7.2	6.9	6.6	4.8	3.7	2.9	4.7
Bijapur	a	9	11	10	2	1	0	0	0	1	2	5	9	4.2
	b	0	1	1	2	2	7	12	11	8	5	2	1	4.3
	c	2.4	2.1	2.6	4.0	4.7	5.8	6.6	6.4	6.2	4.9	3.7	2.7	4.3
Gadag	a	5	4	5	0	1	0	0	0	0	0	1	3	1.6
	b	1	0	0	2	3	8	14	12	8	4	3	1	4.7
	c	2.8	2.8	3.0	4.5	4.8	6.2	6.9	6.6	6.3	5.4	4.3	3.1	4.7
Gulbarga	a	9	11	9	2	1	0	0	0	0	2	6	9	4.1
	b	1	1	2	3	6	11	18	16	14	7	4	2	7.1
	c	2.1	1.9	2.5	3.9	4.8	6.3	7.1	6.7	6.3	4.7	3.4	2.6	4.4
Raichur	a	11	12	12	3	1	0	0	0	0	2	5	9	4.6
	b	0	0	0	0	1	4	10	7	5	2	2	1	2.7
	c	2.2	2.1	2.2	3.5	4.2	5.8	6.3	6.0	5.9	4.8	3.8	2.7	4.1
Sub.Div. Means	a	9	10	9	2	1	0	0	0	0	1	5	8	3.7
	b	1	1	1	2	3	8	14	11	9	5	3	1	4.7
	c	2.3	2.1	2.5	3.9	4.5	6.1	6.9	6.6	6.2	4.9	3.7	2.7	4.4

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

* = Hill Stations - Not considered for sub-divisional means.

a = Days with clear sky. b = Days with sky overcast. c = Mean cloud amount.

T A B L E – 4(b)

MEAN NO. OF HOURS OF BRIGHT SUNSHINE PER DAY

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
INTERIOR KARNATAKA SOUTH													
Babbur	10.1	10.5	10.2	9.7	8.9	6.0	4.3	5.4	6.3	7.7	8.5	9.3	8.1
Hebbal (Bangalore)	9.3	10.1	9.9	9.3	8.6	5.7	4.0	5.0	5.8	6.6	7.7	7.8	7.5
Mandya	9.2	10.1	9.9	9.6	8.3	6.1	4.5	5.4	6.6	7.3	7.9	8.3	7.7
Bellary	10.0	10.5	10.0	9.9	9.3	6.6	4.8	5.5	6.5	7.8	8.4	9.3	8.2
Hagari	9.6	10.1	9.8	9.4	8.4	5.7	3.8	4.9	5.9	6.9	8.3	8.9	7.6
INTERIOR KARNATAKA NORTH													
Dharwar	9.7	10.1	9.4	8.6	7.5	4.1	2.3	3.5	5.1	6.8	8.5	9.1	7.0
Raichur	9.8	10.2	9.9	9.8	8.9	5.7	4.2	5.3	5.8	7.8	9.0	9.0	8.2

T A B L E - 5

MEAN RAINFALL (MM) AND NUMBER OF RAINY DAYS

District		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
							INTERIOR KARNATAKA SOUTH							
Bangalore	a	4.7	7.1	10.0	42.7	106.4	63.1	82.1	114.1	148.2	143.9	59.7	11.6	793.6
	b	0.5	0.5	0.6	2.9	6.5	4.9	7.0	8.1	8.3	8.1	4.3	1.0	52.7
Bellary	a	2.2	4.3	3.9	21.7	54.7	58.8	63.9	89.6	131.8	99.4	38.0	6.6	574.9
	b	0.2	0.3	0.3	1.8	3.6	4.3	6.2	6.3	7.3	5.4	2.4	0.5	38.6
Chickmagalur	a	3.8	3.7	10.8	53.7	96.5	311.7	693.0	400.7	170.3	165.1	64.1	16.4	1989.8
	b	0.3	0.3	0.8	3.9	6.1	15.0	21.4	18.5	11.6	9.1	4.1	1.0	92.1
Chitradurga	a	3.9	5.0	3.7	23.9	72.8	52.2	65.0	74.8	102.4	114.0	50.6	11.0	579.3
	b	0.3	0.3	0.3	1.8	4.3	4.2	6.9	6.1	6.2	6.0	2.9	0.6	39.9
Coorg	a	6.4	5.6	21.9	90.1	145.8	502.6	878.2	515.8	233.9	212.6	93.7	18.9	2725.5
	b	0.5	0.4	1.4	5.9	8.9	19.6	25.6	21.5	14.4	12.4	6.0	1.4	118.0
Hassan	a	5.0	5.4	9.1	52.7	111.3	124.9	245.5	140.7	101.6	153.9	73.7	16.9	1040.7
	b	0.4	0.4	0.7	3.6	7.1	8.9	13.8	10.5	7.7	8.9	4.6	1.1	67.8
Kolar	a	8.0	6.3	9.5	33.9	79.9	59.4	78.1	102.5	143.7	121.5	73.3	14.4	730.5
	b	0.7	0.5	0.6	3.1	4.9	4.3	6.4	7.2	7.6	7.2	4.7	1.3	47.5
Mysore	a	4.4	6.0	12.7	63.9	132.9	58.9	79.3	78.4	91.9	149.3	69.8	14.4	761.9
	b	0.4	0.4	0.9	4.4	7.8	5.2	7.3	6.5	6.2	8.7	4.3	1.0	53.1

contd.....

T A B L E - 5 (Contd.)

District		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mandya	a	3.5	6.2	7.4	47.9	118.5	43.1	40.8	74.4	103.3	165.1	67.5	13.5	691.2
	b	0.3	0.4	0.6	3.6	7.2	3.6	3.9	5.1	6.2	8.5	4.2	1.0	44.6
Shimoga	a	2.8	2.5	7.0	37.3	75.3	259.5	540.7	283.5	125.6	133.2	47.8	11.3	1526.5
	b	0.2	0.2	0.6	2.7	4.5	13.2	20.5	16.9	9.8	7.6	3.0	0.7	79.9
Tumkur	a	3.6	4.9	6.5	31.0	91.7	59.9	67.5	93.2	126.0	134.0	61.1	8.5	687.9
	b	0.3	0.4	0.5	2.3	5.5	4.3	6.0	6.6	7.2	7.3	3.8	0.8	45.0
Sub.Div. Means	a	4.4	5.2	9.3	45.3	98.7	144.9	257.6	178.9	134.4	144.7	63.6	13.0	1100.0
	b	0.4	0.4	0.7	3.3	6.0	8.0	11.4	10.3	8.4	8.1	4.0	0.9	61.9
							COASTAL KARNATAKA							
North Kanara	a	1.7	1.5	4.6	27.0	78.1	690.1	971.4	532.4	239.1	136.1	50.6	9.1	2741.7
	b	0.1	0.1	0.4	1.9	4.1	20.6	27.1	23.8	14.3	7.7	2.9	0.5	103.5
South Kanara	a	4.5	2.1	6.9	35.9	149.5	1014.0	1270.2	775.1	339.9	227.8	87.3	16.9	3930.1
	b	0.3	0.1	0.4	2.2	6.4	24.8	28.6	26.3	17.2	11.0	4.8	1.1	123.2
Sub.Div. Means	a	3.1	1.8	5.7	31.5	113.8	852.1	1120.8	653.7	289.5	181.9	68.9	13.0	3335.8
	b	0.2	0.1	0.4	2.1	5.3	22.7	27.9	25.1	15.7	9.3	3.9	0.8	113.5

contd.....

T A B L E - 5 (Contd.)

District		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
INTERIOR KARNATAKA NORTH														
Belgaum	a	2.7	1.7	7.9	32.6	56.3	106.5	193.5	118.6	111.5	102.5	41.6	9.3	784.7
	b	0.2	0.1	0.6	2.4	3.8	7.4	11.8	9.0	7.5	6.4	2.4	0.6	52.2
Bidar	a	5.6	9.4	11.9	25.4	25.1	126.5	206.3	166.6	238.8	59.4	26.7	5.8	907.5
	b	0.5	0.8	1.1	2.1	2.4	7.4	11.6	10.1	10.7	3.6	1.6	0.4	52.3
Bijapur	a	3.4	3.4	5.9	20.5	37.5	69.9	66.9	69.6	148.7	81.8	34.7	7.8	550.1
	b	0.2	0.3	0.5	1.8	3.1	5.0	5.7	5.1	8.0	5.0	2.0	0.5	37.2
Dharwar	a	2.1	2.5	6.1	33.1	67.1	86.9	130.0	96.8	103.4	109.8	41.9	11.4	691.1
	b	0.2	0.2	0.5	2.6	4.4	7.5	12.0	9.2	7.3	6.6	2.5	0.6	53.6
Gulbarga	a	3.1	6.3	7.2	20.3	23.3	104.5	148.1	134.8	181.8	60.2	23.3	2.6	715.5
	b	0.2	0.5	0.7	1.7	2.2	7.3	10.5	8.7	9.7	3.8	1.4	0.2	46.9
Raichur	a	2.7	4.2	4.7	16.9	32.7	80.4	91.9	108.9	143.3	78.3	33.5	4.1	601.6
	b	0.2	0.3	0.5	1.5	2.9	5.9	7.4	7.2	8.1	4.9	1.9	0.3	41.1
Sub.Div. Means	a	3.3	4.6	7.3	24.8	40.3	95.8	139.5	115.9	154.6	82.0	33.6	6.8	708.5
	b	0.3	0.4	0.7	2.1	3.1	6.7	9.8	8.2	8.5	5.1	2.0	0.4	47.3

a) Normal rainfall.

b) Average number of rainy days (days with rain of 2.5 mm. or more).

TABLE - 6

RAINFALL (IN MM.) OVER PARTS OF DIFFERENT RIVER BASINS FALLING WITHIN KARNATAKA STATE

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
(1) River Cauvery : Districts/Parts of districts within this Catchment - Interior Karnataka South : Bangalore, Tumkur, Mysore, Mandya, Hassan, Chickmagalur, Coorg -												
4.8	6.0	13.7	63.0	123.8	198.3	347.1	222.6	141.5	166.5	73.3	14.9	1375.5
(2) River Palar and other rivers between River Cauvery and River Pennar both excluding : Districts/Parts of districts within this Catchment - Interior Karnataka South : Bangalore, Kolar -												
8.0	6.8	11.2	37.5	88.2	58.5	78.2	103.1	139.9	128.6	71.6	14.1	745.7
(3) River Pennar : Districts/Parts of districts within this Catchment - Interior Karnataka South : Bangalore, Kolar, Tumkur -												
4.8	4.9	5.7	28.3	72.1	61.3	79.7	97.6	145.8	117.5	59.5	9.4	686.6
(4) River Krishna upto its confluence with River Bhima, excluding River Bhima : Districts/Parts of districts within this Catchment - Interior Karnataka North : Belgaum, Bijapur, Dharwar, Gulbarga, Raichur -												
2.6	2.5	6.6	27.4	51.5	84.7	122.7	94.3	129.2	95.2	38.9	9.0	664.6
(5) River Bhima : Districts/Parts of districts within this Catchment - Interior Karnataka North : Bijapur, Gulbarga -												
4.9	5.1	7.4	18.1	25.9	87.4	95.0	91.1	163.1	71.9	32.0	6.3	608.2
(6) River Tungabhadra upto Dam Site : Districts/Parts of districts within this Catchment - Interior Karnataka South : Chickmagalur, Bellary, Chitradurga, Shimoga - Coastal Karnataka : North Kanara - Interior Karnataka North : Dharwar, Raichur -												
2.9	3.1	6.7	36.8	74.3	200.9	420.4	249.4	129.9	129.6	48.7	12.1	1314.8
(7) River Tungabhadra from the Dam site to its confluence with River Krishna : Districts/Parts of districts within this Catchment - Interior Karnataka South : Chickmagalur, Chitradurga, Hassan, Tumkur, Bellary - Interior Karnataka North : Raichur -												
3.3	5.0	4.7	23.1	69.9	52.3	58.8	77.1	116.2	115.3	50.8	9.1	585.6
(8) River Krishna from its confluence with River Bhima to its mouth (excluding the Tungabhadra) : Districts/Parts of districts within this Catchment - Interior Karnataka North : Raichur -												
3.1	7.1	4.1	15.0	26.4	96.8	117.9	117.9	154.9	84.1	30.7	3.3	661.3
(9) River Manjira : Districts/Parts of districts within this Catchment - Interior Karnataka North : Bidar -												
5.6	9.4	11.9	25.4	25.1	126.5	206.3	166.6	238.8	59.4	26.7	5.8	907.5

INTERIOR KARNATAKA
SOUTH

BANGALORE DISTRICT

The district enjoys a very agreeable climate. The year may be divided into four seasons. The dry season with clear bright weather is from December to February. The summer season from March to May is followed by the southwest monsoon season from June to September. October and November constitute the post-monsoon or retreating monsoon season.

RAINFALL

Records of rainfall in the district are available for 10 stations for periods ranging from 98 to 110 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 793.6 mm. The rainfall in the district varies from 725.5 mm. at Hoskote to 888.9 mm. at Bangalore. About 51% of the annual rainfall in the district is received during the monsoon months June to September, September being the rainiest month. The district gets also as much as 26% of the annual rainfall during the post-monsoon or retreating monsoon period, the rainfall during October being about as much as during September. There is also some good amount of rainfall during the summer months April and May and it is mostly in the form of thundershowers. Except for occasional drizzle due to the incursion of the northeast monsoon current, the period from December to February is generally dry. The variation in the annual rainfall from year to year is not large. In the 50 year period, 1901 to 1950, the highest annual rainfall in the district amounting to 165% of the normal occurred in 1903. The lowest annual rainfall which was 69% of the normal was recorded in 1923. In this 50 year period the annual rainfall in the district was less than 80% of the normal in 7 years, none of them being consecutive. However, considering the rainfall at the individual stations, two consecutive years of such low rainfall is quite common, occurring 4 times at Kanakapura and 1 to 3 times at 5 out of the remaining 9 stations. Even 3 and 4 consecutive years of such low rainfall occurred once each at Anekal. It will be seen from table 2 that the annual rainfall in the district was between 600 and 900 mm. in 33 years out of 50.

On an average there are 53 rainy days (i. e. days with rainfall of 2.5 mm. or more) in a year in the district. This number varies from 48 at Hoskote to 58 at Bangalore.

The heaviest rainfall in 24 hours recorded at any station in the district was 231.1 mm. at Devanhalli on 1874 May, 7.

TEMPERATURE

There are two meteorological observatories in the district at Bangalore, one in the city and the other at the airport. The records of the city observatory may be taken as representative of the meteorological conditions in the district in general as they pertain to long period. After February the temperatures steadily increase. April is usually the hottest month with the mean daily maximum temperature at 33.4°C and the mean daily minimum at 21.2°C. On individual days, in the hot season, the day temperatures often go above 36.0°C. With the onset of the monsoon early in June

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there is appreciable drop in the day temperatures but that in night temperature is only slight. In October the temperatures are as in the southwest monsoon season. Thereafter temperatures decrease. December is generally the coolest month with the mean daily maximum temperature at 25.7°C and the mean daily minimum at 15.3°C. Nights during January are however slightly colder than during December. On individual days during the period December to February the minimum temperature drops down to about 8.0°C.

The highest maximum temperature recorded at Bangalore is 38.9°C on 1931 May, 22. The lowest minimum was 7.8°C on 1884 January, 13.

HUMIDITY

Relative humidity is high during the period June to October, being between 80% and 85% on the average. Humidity decreases thereafter and in the period February to April the air is comparatively drier, the afternoon relative humidities being some 25% to 35%. From May the relative humidity increases.

CLOUDINESS

Skies are heavily clouded to overcast in the southwest monsoon season and to a lesser extent in the post-monsoon season. In the rest of the year skies are mostly clear or lightly clouded. There is some increase in cloudiness during the summer afternoons.

WINDS

Winds are generally light with some strengthening in force during the southwest monsoon season. During October winds are either southwesterly to westerly or from the northeast to east. In November and December winds mainly blow from the northeast and east. In the next two months winds are mainly from directions between northeast and southeast. By March southwesterlies and westerlies begin to appear and in May and the southwest monsoon season, winds are mostly from directions between southwest and northwest.

SPECIAL WEATHER PHENOMENA

In November and December some of the storms and depressions which originate in the Bay of Bengal move westwards causing widespread heavy rain, gusty winds in the district. Thunderstorms occur during the period February to November, the highest incidence being in April and May. Fog occurs on quite a few occasions during the cold season.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and special weather phenomena respectively for Bangalore.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *	
																		Amount (mm)	Date
Bangalore	50	a	7.1	8.9	10.7	44.5	107.4	70.9	111.3	136.7	163.6	153.4	61.2	13.2	888.9	152 (1916)	61 (1913)	195.1	1912 Sep 29
		b	0.7	0.5	0.8	2.7	6.7	5.7	8.5	9.5	8.7	8.3	4.4	1.2	57.7				
Hoskote	50	a	4.6	6.6	13.7	40.1	92.5	56.6	74.2	96.5	131.3	137.7	62.0	9.7	725.5	189 (1903)	50 (1923)	228.6	1874 May 5
		b	0.5	0.5	0.7	2.8	5.8	4.3	6.1	7.4	7.6	7.3	4.2	1.0	48.2				
Dodballapur	49	a	5.1	10.4	9.4	34.0	77.7	64.8	88.7	108.7	147.8	133.1	53.1	8.4	741.2	180 (1903)	58 (1923)	190.5	1887 Oct 9
		b	0.4	0.5	0.4	2.3	4.9	4.4	7.6	7.9	8.6	7.5	4.0	0.7	49.2				
Nelamangala	50	a	3.3	5.3	6.9	42.7	93.2	60.2	83.8	115.6	141.5	139.5	59.2	8.9	760.1	177 (1903)	56 (1907)	139.7	1874 May 19
		b	0.3	0.4	0.6	2.6	6.2	4.8	7.2	8.1	8.4	7.6	4.1	0.8	51.1				
Kanakapura (Kankanhalli)	50	a	3.1	5.6	10.9	49.8	128.0	57.1	69.6	104.9	148.1	155.5	59.4	13.2	805.2	154 (1903)	52 (1923)	224.5	1897 Sep 22
		b	0.3	0.4	0.7	3.6	7.8	4.6	6.9	7.5	8.3	8.9	4.4	1.1	54.5				
Magadi	50	a	4.8	4.8	5.1	36.1	98.3	65.5	72.4	127.5	154.4	143.0	55.4	9.9	777.2	162 (1903)	60 (1945)	127.5	1904 Oct 26
		b	0.5	0.4	0.5	2.8	6.3	5.1	6.6	8.5	8.3	8.2	4.1	0.9	52.2				
Ramanagaram (Closepet)	50	a	2.8	8.4	9.9	46.7	132.6	72.4	78.0	117.3	154.4	150.4	60.5	11.4	844.8	168 (1903)	68 (1934)	163.8	1897 Sep 22
		b	0.3	0.5	0.8	3.6	8.0	5.3	7.0	8.1	8.8	8.5	4.4	1.1	56.4				
Anekal	50	a	6.3	7.4	11.2	46.5	119.1	57.7	83.1	115.6	137.7	141.2	64.8	14.0	804.6	172 (1903)	51 (1950)	185.4	1887 Oct 9
		b	0.7	0.4	0.5	2.8	6.6	5.0	6.7	8.2	7.9	8.2	4.5	1.3	52.8				
Devanalu (Devanhalli)	50	a	7.4	6.9	12.2	40.4	88.9	56.9	84.3	101.1	153.7	125.2	59.4	14.0	750.4	170 (1903)	52 (1950)	231.1	1874 May 7
		b	0.5	0.6	0.7	2.6	5.5	4.7	7.5	7.9	8.1	7.9	4.2	1.2	51.4				
Channapatna	50	a	2.5	7.1	10.4	46.7	126.7	68.6	75.2	117.3	149.6	160.0	62.5	12.9	839.5	146 (1917)	62 (1904)	221.5	1887 Oct 9
		b	0.3	0.5	0.7	3.3	7.7	4.8	6.3	7.4	7.9	8.6	4.2	0.9	52.6				
Bangalore (District)		a	4.7	7.1	10.0	42.7	106.4	63.1	82.1	114.1	148.2	143.9	59.7	11.6	793.6	165 (1903)	69 (1923)		
		b	0.5	0.5	0.6	2.9	6.5	4.9	7.0	8.1	8.3	8.1	4.3	1.0	52.7				

(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 1970 ** Years of occurrence given in brackets

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No. of years	Range in mm.	No.of years
501 - 600	4	901 - 1000	6
601 - 700	11	1001 - 1100	6
701 - 800	15	1101 - 1200	0
801 - 900	7	1201 - 1300	0
		1301 - 1400	1

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(BANGALORE)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	26.9	15.0	32.2	1925 Jan 30	7.8	1884 Jan 13	77	40
February	29.7	16.5	34.5	1969 Feb 23	9.4	1884 Feb 6	67	29
March	32.3	19.0	37.2	1925 Mar 30	11.1	1884 Mar 5	63	24
April	33.4	21.2	38.3	1931 Apr 30	14.4	1894 Apr 26	70	34
May	32.7	21.1	38.9	1931 May 22	16.7	1945 May 6	75	46
June	28.9	19.7	37.8	1926 Jun 2	16.7	1890 Jun 17	82	62
July	27.2	19.2	33.3	1914 Jul 1	16.1	1882 Jul 31	86	68
August	27.3	19.2	33.3	1899 Aug 6	14.4	1882 Aug 4	86	66
September	27.6	18.9	33.3	1951 Sep 16	15.0	1883 Sep 25	85	62
October	27.5	18.9	32.2	1976 Oct 4	13.2	1974 Oct 31	83	64
November	26.3	17.2	31.5	1959 Nov 3	9.6	1967 Nov 15	78	59
December	25.7	15.3	31.1	1926 Dec 18	8.9	1883 Dec 29	78	51
Annual	28.8	18.4					77	50

* Hours I.S.T.

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(BANGALORE AERODROME)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	28.0	15.3	31.2	1959 Jan 22	9.2	1975 Jan 1	78	45
February	30.6	16.4	34.4	1959 Feb 27	10.1	1976 Feb 12	64	30
March	33.2	18.7	36.6	1959 Mar 29	11.7	1950 Mar 1	61	25
April	34.0	21.3	38.3	1960 Apr 14	16.5	1976 Apr 25	69	36
May	32.9	21.2	37.1	1960 May 1	16.7	1949 May 8	75	49
June	29.7	19.9	35.6	1953 Jun 3	16.7	1950 Jun 8	80	61
July	27.8	19.3	33.0	1976 Jul 1	16.1	1953 Jul 9	84	66
August	27.9	19.4	31.5	1965 Aug 30	15.0	1948 Aug 8	85	66
September	28.6	19.3	32.8	1951 Sep 23	15.6	1954 Sep 30	83	62
October	28.3	19.3	32.5	1965 Oct 9, 10	14.0	1968 Oct 28	80	67
November	27.5	17.4	31.7	1953 Nov 14	10.5	1967 Nov 16	77	60
December	26.9	15.4	30.1	1957 Dec 8	9.2	1974 Dec 31	80	53
Annual	29.6	18.6					76	52

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(BANGALORE)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
10.4	9.7	9.4	9.0	11.8	17.1	17.5	15.2	12.1	8.2	8.5	9.6	11.5

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(BANGALORE)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.0	0.5	1.2	7.0	12.0	4.0	2.0	4.0	4.0	7.0	1.3	0.1	43.0
Hail	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Dust-Storm	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.1	1.3
Squall	0.0	0.0	0.1	0.4	0.9	1.1	0.6	0.6	0.3	0.2	0.0	0.0	4.0
Fog	3.0	0.4	0.2	0.1	0.2	0.1	0.3	0.7	0.6	1.5	1.6	3.0	12.0

* No.of days 2 and above are given in whole numbers.

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(BANGALORE AERODROME)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0	0.4	0.7	6	12	4	3	3	4	7	0.8	0.4	41
Hail	0	0	0	0	0	0	0	0	0	0	0	0	0
Dust-Storm	0	0	0.2	0.1	0.2	0.1	0	0	0	0	0	0	0.6
Squall	0	0.1	0.3	1.7	3	1.7	0.7	1.2	0.4	0.2	0.2	0.1	10
Fog	3	0.9	0.3	0.1	0	0.1	0	0	0.3	0.6	1.2	3	9

* No.of days 2 and above are given in whole numbers.

BELLARY DISTRICT

The climate of this district is characterised by dryness in the major part of the year and a hot summer. The year may be divided into four seasons. The period from December to February is the dry, comparatively cool season. The summer season from March to May is followed by the southwest monsoon season from June to September. October and November form the retreating monsoon or post-monsoon season.

RAINFALL

The district has a network of nine raingauge stations with records ranging from 60 to 110 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 574.9 mm. The rainfall is mostly confined to the period May to November. 60% of the annual rainfall is received during the period June to September and about 24% of the annual normal during October and November. September is the month with the highest rainfall. The variation in the annual rainfall in the district from year to year is large. At individual stations the range of variation is much higher than for the district as a whole. In the fifty year period 1901 to 1950 the highest annual rainfall amounting to 159% of the normal was received in 1933, while the very next year was one with the lowest rainfall which was only 58% of the normal. Rainfall less than 80% of the normal occurred in 12 years in this fifty year period, two consecutive years of such low rainfall occurring twice during this period. At some stations two or even three consecutive years of such low rainfall have occurred on even four or five occasions. From table 2 it will be seen that the rainfall was between 400 and 700 mm. in 37 years out of fifty.

On an average the district has 39 rainy days (i. e. days with rainfall of 2.5 mm. or more) in a year. This number varies from 27 at Kottum to 49 at Harapanahalli.

The heaviest rainfall in 24 hours recorded at any station in the district was 196.1 mm. at Siruguppa on 1905 August, 17.

TEMPERATURE

The district has a meteorological observatory at Bellary. The records of temperature and other meteorological conditions of this station may be taken to represent the climatic conditions over the district except in the region of the Sandur hills and the hilly region in the western parts of the district, where temperatures are generally lower by a few degree than those at Bellary. The period from about the later half of November to the end of February is the coolest part of the year. In December, when the mean temperature is the lowest, the mean daily maximum temperature is 29.3°C and the mean daily minimum temperature is 17.4°C. By about the end of February temperatures begin to rise rapidly and by April, which is the hottest month, the mean daily maximum temperature is 38.1°C and the mean daily minimum temperature is 25.5°C. In May also the weather is nearly as hot as in April and in these two months the heat is oppressive. With the onset of the southwest monsoon early in June the weather becomes slightly cooler and continues to be so throughout the southwest monsoon. Both day and night temperatures decrease progressively from about the beginning of October.

The highest maximum temperature recorded at Bellary was 43.9°C on 1909 April, 30 and 1897 May, 15. The lowest minimum temperature was 10.6°C on 1926 December, 28 and 1891 January, 4.

HUMIDITY

The district has, on the whole, a dry climate, the summer and the cold seasons being the driest part of the year when relative humidities are 45 to 65% in the mornings and 20 to 35% in the afternoons. Relative humidities are higher in the southwest monsoon retreating monsoon seasons, when they are generally 50 to 70%.

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CLOUDINESS

During the period May to November skies are moderately to heavily clouded. In the rest of the year skies are clear or lightly clouded generally.

WINDS

Winds are generally light to moderate with some strengthening in the southwest monsoon season. During the period October to April the winds blow from directions between northeast and southeast and are calm on many days in the mornings. Winds blow from directions between southwest and northwest in the period May to September.

SPECIAL WEATHER PHENOMENA

In October and November storms originating in the Bay of Bengal sometimes cross the east coast of India and moving in the westerly to northwesterly direction across the peninsula affect the district and its neighbourhood causing widespread rain and high winds. Thunderstorms occur during the periods April to May and September to October. Dust raising winds occur in April and May.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and frequency of special weather phenomena respectively for Bellary.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *		
																		Amount (mm)	Date	
Bellary (Obsy.)	50	a	2.8	6.1	4.8	20.8	48.3	44.5	40.6	69.3	122.4	105.2	50.0	5.1	519.9	182 (1933)	49 (1923)	162.3	1940	May 21
		b	0.3	0.4	0.5	1.8	3.5	3.1	3.3	4.0	7.1	5.4	3.1	0.4	32.9					
Kurugodu	22	a	0.3	3.1	1.8	17.8	49.0	37.6	45.0	81.3	130.6	119.4	33.3	5.1	524.3	166 (1933)	40 (1942)	167.6	1944	Oct 9
		b	0.0	0.3	0.1	1.3	2.4	2.5	3.8	4.7	5.6	5.5	2.3	0.5	29.0					
Siruguppa	50	a	2.3	7.9	5.6	19.6	45.2	72.4	77.5	100.1	164.9	101.3	31.0	4.6	632.4	190 (1916)	51 (1920)	196.1	1905	Aug 17
		b	0.2	0.4	0.4	1.6	3.5	4.6	6.0	6.5	8.6	5.0	2.3	0.4	39.5					
Hospet	50	a	2.0	4.1	4.6	20.6	55.9	66.5	75.9	106.4	155.2	91.4	41.9	8.9	633.4	184 (1917)	57 (1934)	153.7	1874	Sep 23
		b	0.3	0.3	0.3	2.0	4.0	5.0	7.0	7.4	9.0	5.3	2.6	0.7	43.9					
Kampli	50	a	1.3	4.6	2.8	15.2	50.5	55.6	48.3	70.9	138.7	80.8	40.4	4.6	513.7	193 (1917)	46 (1926)	153.4	1931	Jun 20
		b	0.1	0.3	0.4	1.2	3.1	3.3	4.5	5.0	7.0	4.8	2.3	0.5	32.5					
Hadagalli (Huvvmahada-galli)	50	a	3.6	3.6	4.1	25.9	63.0	67.3	77.7	85.6	127.0	100.1	41.4	10.9	610.2	158 (1932)	60 (1949)	148.8	1943	May 21
		b	0.2	0.4	0.3	2.1	4.5	5.3	8.6	7.1	8.1	6.1	2.5	0.7	45.9					
Harpanahalli		a	1.3	3.6	5.3	25.9	70.4	73.9	91.9	87.6	109.5	101.9	40.1	9.1	620.5	165 (1932)	47 (1930)	154.9	1880	Sep 9
		b	0.2	0.2	0.4	2.2	4.2	6.7	10.7	8.3	7.3	5.8	2.5	0.5	49.0					
Kudligi	50	a	2.3	4.3	4.8	23.4	63.3	60.7	75.4	113.8	135.4	90.9	37.1	6.3	617.7	186 (1933)	49 (1934)	141.0	1880	Sep 9
		b	0.2	0.3	0.4	2.1	4.6	5.2	8.4	8.5	8.3	5.7	2.8	0.5	47.0					
Kottur	23	a	3.8	1.3	1.5	26.2	46.5	50.3	43.2	91.4	102.9	103.6	26.4	4.6	501.7	153 (1947)	43 (1934)	152.4	1950	Sep 27
		b	0.2	0.1	0.1	1.7	2.4	2.7	3.8	5.1	4.6	4.7	1.3	0.3	27.0					
Bellary (District)		a	2.2	4.3	3.9	21.7	54.7	58.8	63.9	89.6	131.8	99.4	38.0	6.6	574.9	159 (1933)	58 (1934)			
		b	0.2	0.3	0.3	1.8	3.6	4.3	6.2	6.3	7.3	5.4	2.4	0.5	38.6					

(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 1970 ** Years of occurrence given in brackets

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T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
301 - 400	2	701 - 800	7
401 - 500	11	801 - 900	3
501 - 600	18	901 - 1000	1
601 - 700	8		

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(BELLARY)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	30.3	17.6	37.2	1967 Jan 31	10.6	1891 Jan 4	65	31
February	33.3	19.9	39.4	1897 Feb 22	12.2	1891 Feb 4	51	25
March	36.4	22.9	42.8	1892 Mar 27	14.4	1885 Mar 2	45	22
April	38.1	25.5	43.9	1909 Apr 30	16.1	1905 Apr 1	53	28
May	37.9	25.8	43.9	1897 May 15	18.3	1890 May 6	58	33
June	33.7	24.7	42.2	1915 Jun 4	18.9	1956 Jun 14	67	50
July	31.5	24.0	38.3	1915 Jul 14	19.4	1930 Jul 2	71	59
August	31.4	23.5	37.8	1883 Aug 9	19.4	1933 Aug 27	72	57
September	31.5	23.0	37.8	1913 Sep 19	18.4	1978 Sep 27	73	55
October	31.3	22.3	38.9	1896 Oct 7	15.0	1889 Oct 28	73	53
November	29.9	19.6	38.4	1968 Nov 1	11.4	1964 Nov 28	69	45
December	29.3	17.4	35.6	1913 Dec 26	10.6	1926 Dec 28	69	38
Annual	32.9	22.2					64	41

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(BELLARY)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
4.9	5.2	5.9	6.9	10.2	13.8	14.8	13.6	11.1	5.5	4.4	4.4	8.4

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(BELLARY)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.1	0.1	0.7	4.0	7.0	1.5	0.4	1.4	3.0	3.0	0.5	0.1	22.0
Hail	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0.2
Dust-Storm	0	0	0	0.1	0	0.2	0.1	0	0	0	0	0	0.4
Squall	0	0	0	0	0	0	0	0	0	0	0	0	0
Fog	0.7	0	0	0	0	0	0	0	0	0.1	0.1	0.3	1.2

* No.of days 2 and above are given in whole numbers.

CHICKMAGALUR DISTRICT

The climate of this district, a greater part of which has a hilly terrain, is on the whole, very agreeable and cool. The cold season from December to February which is one of clear bright weather is followed by the hot season from March to May. The period from June to September constitutes the southwest monsoon season. October and November may be termed the post-monsoon or retreating monsoon season.

RAINFALL

Records of rainfall in the district are available for 8 stations for periods ranging from 50 to more than 100 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 1989.8 mm. The rainfall in the district is heavy in the southwestern portions of the district near the western ghats. The rainfall decreases very rapidly towards the northeast. The large spatial variation in the rainfall in the district will be evident from the fact that Sringeri near the western border gets as much as 3695.1 mm. in a year while Kadur in the eastern part of the district receives only 603.6 mm. in a year. About 79% of the annual rainfall in the district is received during the monsoon months June to September, July being the rainiest month generally. Some rain is received in the pre-monsoon months of April and May and in the post-monsoon season. In the region to the north of Mudgere and to the east of Bhadra river, the rainfall in the post-monsoon season is more than in the latter half of the southwest monsoon season. The variation in the rainfall from year to year in the district is small. In the 50 year period, 1901 to 1950, the highest annual rainfall in the district which was 135% of the normal occurred in 1946. The lowest annual rainfall amounting to 66% of the normal was received in 1918. In the same 50 year period the annual rainfall in the district was less than 80% of the normal in 4 years only, none of them being consecutive. However, considering the annual rainfall at the individual stations in the district, two consecutive years of such low rainfall occurred thrice at Kadur and once each at 3 out of the 7 remaining stations. Even 3 consecutive years of such low rainfall occurred once at Koppa in these 50 years. It will be seen from table 2 that the annual rainfall in the district was between 1700 and 2200 mm. in 29 years out of 50.

On an average there are 92 rainy days (i. e. days with rainfall of 2.5 mm. or more) in a year in the district. This number varies from 122 days at Balehonnur to 42 at Kadur.

The heaviest rainfall in 24 hours, recorded at any station in the district, was 311.4 mm. at Koppa on 1923 August, 7.

TEMPERATURE

There are two meteorological observatories in the district, one at Balehonnur and the other at Chickmagalur. The observatory at Chickmagalur started recently. The records of the Balehonnur observatory may be taken as representative of the meteorological conditions in the district in general. After February there is rapid increase in temperature. April is generally the hottest month with the mean daily maximum temperature at 30.9°C and the mean daily minimum at 19.0°C. Nights in May are however slightly hotter than during April. On individual days during the summer the day temperature reaches 37.0°C occasionally and the days are at times sultry due to high humidity. With the onset of the monsoon in the district, early in June, there is an appreciable drop in the day temperature but the drop in the night temperatures is only slight. The day temperatures begin to increase after September. However, the nights become progressively cooler after September. While the day temperatures are the lowest during the southwest monsoon season, night temperatures are the lowest in the cold season.

The highest maximum temperature recorded at Balehonnur was 37.6°C on 1978 April, 3. The lowest minimum was 7.7°C on 1970 December, 14.

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HUMIDITY

The humidity is very high during the monsoon season, generally exceeding 90%. It is comparatively less during the rest of the year, the driest part of the year being the period January to March, particularly in the afternoons, when the humidity is about 30%.

CLOUDINESS

During the monsoon season the skies are mostly heavily clouded or overcast. Clouding decreases during the post-monsoon period. Skies are mainly clear or lightly clouded during the period January to March. From April onwards cloudiness increases, the afternoons being more cloudy usually.

WINDS

Winds are generally very light. During the period May to September winds blow predominantly from directions between southwest and northwest. In the rest of the year the winds blow mostly from the southeast.

SPECIAL WEATHER PHENOMENA

Thunderstorms occur in the summer season and the post-monsoon season. Fog occurs on many days in the cold season in the western parts of the district. Even in the monsoon and post-monsoon seasons the hilly regions are often enveloped in cloud or mist.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and special weather phenomena respectively for Balehonnur.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No.of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours * Amount (mm)	Date
Chickmagalur	50	a	5.3	5.3	13.2	55.4	122.4	106.2	187.5	92.5	86.1	153.9	72.4	21.6	921.8	159 (1946)	55 (1920)	120.7	1953 Oct 15
		b	0.4	0.3	0.9	3.8	7.4	8.9	13.2	9.0	6.3	8.7	4.6	1.2	64.7				
Kadur	50	a	3.8	3.8	7.4	29.7	83.3	54.9	82.3	49.8	65.3	140.5	65.8	17.0	603.6	192 (1932)	48 (1908)	127.0	1876 Jun 2
		b	0.4	0.3	0.7	2.4	4.9	4.5	7.5	4.0	4.4	7.6	4.1	1.2	42.0				
Tarikere	50	a	3.6	4.6	4.6	38.3	76.2	86.6	240.5	142.0	87.9	135.4	64.5	16.0	900.2	154 (1932)	58 (1945)	228.6	1960 Oct 28
		b	0.3	0.2	0.4	2.8	5.0	8.5	15.9	13.4	7.5	7.7	3.5	0.9	66.1				
Koppa	50	a	4.6	4.8	7.9	51.6	85.6	479.5	1189.5	684.0	247.4	172.5	62.2	13.5	3003.1	151 (1923)	58 (1918)	311.4	1923 Aug 7
		b	0.2	0.3	0.8	4.2	5.5	20.6	27.7	25.4	15.1	9.0	3.5	0.9	113.2				
Mudgere	50	a	4.1	3.3	12.5	65.8	110.7	417.3	820.7	425.2	204.7	189.0	66.8	19.1	2339.2	145 (1947)	67 (1938)	292.1	1924 Jul 14
		b	0.5	0.4	1.0	4.6	7.5	19.2	25.6	22.9	15.4	11.3	4.9	1.1	114.4				
Narasimharajpura	50	a	2.5	3.8	10.2	51.1	91.2	254.8	675.9	369.3	147.1	150.6	51.8	13.7	1822.0	161 (1923)	66 (1905)	225.0	1923 Jul 11
		b	0.3	0.3	0.7	3.8	5.6	16.2	25.2	22.4	11.7	8.2	3.4	0.9	98.7				
Balehonnur	22	a	2.0	2.8	21.8	90.4	119.1	401.8	895.9	593.1	231.7	194.6	67.6	11.7	2632.5	139 (1946)	75 (1945)	219.2	1953 Jul 2
		b	0.3	0.2	1.3	6.3	7.7	20.8	28.1	24.3	16.9	10.6	4.5	0.8	121.8				
Sringeri	50	a	4.6	1.5	8.6	47.0	83.6	692.4	1451.6	849.4	292.3	183.9	61.7	18.5	3695.1	147 (1923)	68 (1918)	296.2	1953 Jul 6
		b	0.3	0.1	0.7	3.6	5.1	21.4	28.2	26.4	15.6	9.5	4.0	1.2	116.1				
Chickmagalur (District)		a	3.8	3.7	10.8	53.7	96.5	311.7	693.0	400.7	170.3	165.1	64.1	16.4	1989.8	135 (1946)	66 (1918)		
		b	0.3	0.3	0.8	3.9	6.1	15.0	21.4	18.5	11.6	9.1	4.1	1.0	92.1				

(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 1970. ** Years given in brackets

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
1301 - 1400	2	2001 - 2100	1
1401 - 1500	0	2101 - 2200	3
1501 - 1600	3	2201 - 2300	3
1601 - 1700	5	2301 - 2400	3
1701 - 1800	8	2401 - 2500	2
1801 - 1900	8	2501 - 2600	1
1901 - 2000	9	2601 - 2700	2

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(BALEHONNUR)

Month	Mean Daily Max. °C	Min. °C	Highest Max. ever recorded °C	Date	Lowest Min. ever recorded °C	Date	Relative Humidity 0830 %	1730* %
January	27.3	14.8	33.2	1975 Jan 21	9.6	1975 Jan 9	78	
February	29.3	15.8	35.4	1974 Feb 25, 27	11.1	1976 Feb 13	79	
March	31.3	17.5	37.2	1969 Mar 10	10.9	1971 Mar 6	81	
April	30.9	19.0	37.6	1978 Apr 3	13.9	1952 Apr 30	87	
May	29.4	19.5	35.7	1967 May 1	12.5	1965 May 18	88	Data not available
June	25.1	18.8	33.5	1966 Jun 2	14.5	1971 Jun 22	92	
July	22.7	18.5	29.6	1966 Jul 9	13.9	1955 Jul 9	95	
August	23.2	18.6	29.4	1947 Aug 15	15.5	1971 Aug 2	94	
September	24.5	18.1	30.6	1965 Sep 29	13.3	1935 Sep 24	93	
October	26.1	17.9	31.7	1965 Oct 10	12.1	1974 Oct 31	89	
November	26.2	16.4	31.5	1977 Nov 6	9.8	1964 Nov 28	85	
December	26.2	14.9	31.3	1978 Dec 19	7.7	1970 Dec 14	79	
Annual	26.9	17.5					87	

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(BALEHONNUR)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
5.1	4.2	4.2	3.7	3.5	3.9	5.6	4.2	3.5	3.1	3.7	4.3	4.1

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(BALEHONNUR)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.1	1.5	1.5	5.0	5.0	0.9	0.2	0.5	1.4	3.0	0.9	0.3	20.0
Hail	0.0	0.0	0.7	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Dust-Storm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.2
Fog	3.0	2.0	4.0	3.0	1.9	1.6	2.0	1.7	4.0	4.0	3.0	3.0	33.0

* No.of days 2 and above are given in whole numbers.

CHITRADURGA DISTRICT

The climate of this district which is in the southwestern part of the Deccan pleatau, is marked by hot summer months, low rainfall and a pleasant monsoon season. December to February is the cold season with clear bright weather generally. The hot season starts in March and lasts till about the beginning of June when the district comes under the influence of the southwest monsoon. The southwest monsoon season extends upto September. October and November form the retreating monsoon or post-monsoon season.

RAINFALL

The district has a network of nine raingauge stations with records for periods ranging from 87 to 110 years. The statement of the rainfall at these stations and for the district as a whole are given in tables 1 and 2. The average annual rainfall over the district is 579.3 mm. Rainfall decreases in general from the southwest to the north-east. The district receives rainfall both during the southwest monsoon season (June to September) and the retreating monsoon (October and November). 50% of the annual rainfall is received during the southwest monsoon season. Rainfall in October and November account for about 30% of the annual rainfall. October is the month with the maximum amount of rainfall. The variation in the annual rainfall of the district is large. In the fifty year period 1901 to 1950, the highest annual rainfall, amounting to 159% of the normal, occurred in 1933. 1908 was the year with the lowest rainfall which amounted to 61% of the normal. In the same fifty year period rainfall less than 80% of the normal occurred in 12 years, two of them being consecutive. But at individual stations there have been even four or five occasions when two consecutive years had less than 80% of the normal rainfall. It will be seen from table 2 that the rainfall in the district was between 400 and 700 mm. in 40 years out of 50.

On an average there are 40 rainy days (i. e. days with rainfall of 2.5 mm. or more). This number varies from 29 at Challakere to 49 at Molalkere.

The highest rainfall in 24 hours, recorded at any station in the district, was 215.9 mm. at Challakere on 1888 May, 12.

TEMPERATURE

The only meteorological observatory in this district is at Chitradurga which has been in existence for over 68 years. The meteorological data of this station may be taken as representative of the conditions in the district. The period from about the latter half of November to February is one of comparatively cool weather, December being the coldest month with the mean daily maximum temperature at 28.0°C and the mean daily minimum at 16.7°C. The period from March to May is one of increasing temperature. April is the hottest month with the mean daily maximum temperature at 36.3°C. During this season the maximum temperature may sometimes reach 41.0°C. With the advance of the monsoon air over the district, early in June, temperatures drop and the weather becomes more pleasant. There is a slight increase of temperature in October and thereafter both day and night temperatures begin to drop. The highest maximum temperature ever recorded at Chitradurga was 41.7°C on 1931 May, 31 and the lowest minimum 8.3°C on 1945 November, 28 and 1945 December, 11.

HUMIDITY

Relative humidity is high about 70% during the period June to November. In the rest of the year, particularly in the summer months, the relative humidities are low and come down to less than 30% in the afternoons.

CLOUDINESS

During the period from June to about the end of October skies are generally heavily clouded to overcast. In the rest of the year they are clear or lightly clouded.

WINDS

Winds are generally moderate with some strengthening in the southwest monsoon months. In the southwest monsoon months they blow mainly from a southwesterly or westerly direction. In the rest of the year they are predominantly from directions between northeast and southeast.

SPECIAL WEATHER PHENOMENA

Thunderstorms are frequent in the summer months of April and May and, to a lesser extent, in the southwest monsoon months. In September and October they are more frequent than in the other monsoon months. Some of the cyclonic storms which originate in the Bay of Bengal during the post-monsoon months cross the eastern coast, often weaken into depressions and move across the peninsula. When these pass through the district or its neighbourhood, the district gets widespread rain.

Tables 3, 4 and 5 give the data of temperature and humidity, mean wind speed and special weather phenomena respectively for Chitradurga.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *	
																		Amount (mm)	Date
Chitradurga	50	a	6.1	5.1	4.3	21.1	79.3	61.7	74.4	89.4	101.6	120.7	59.2	15.2	638.1	166 (1933)	46 (1945)	181.6	1955 May 21
		b	0.3	0.3	0.4	1.9	4.5	4.9	8.6	7.5	6.9	6.5	3.5	0.8	46.1				
Challakere	50	a	3.3	5.8	4.1	19.1	58.7	29.7	33.3	62.2	92.2	100.1	38.1	8.9	455.5	176 (1933)	37 (1920)	215.9	1888 May 12
		b	0.3	0.4	0.3	1.3	3.7	2.4	3.5	3.8	5.3	5.0	2.6	0.6	29.2				
Hiriyur	50	a	3.3	5.1	2.0	23.4	76.7	40.4	46.5	65.3	97.5	111.0	53.3	9.1	533.6	200 (1917)	55 (1945)	138.4	1897 Sep 30
		b	0.3	0.3	0.3	1.7	4.6	2.9	4.1	4.5	5.5	5.9	2.9	0.6	33.6				
Holalkere	50	a	6.3	5.6	5.8	29.5	80.5	56.9	87.9	91.9	99.3	122.2	53.1	14.0	653.0	188 (1933)	59 (1945)	146.1	1931 Nov 7
		b	0.4	0.3	0.5	2.3	4.9	5.0	9.7	8.7	7.1	6.7	3.1	0.7	49.4				
Davangere	50	a	2.5	4.1	3.1	28.7	71.9	69.6	91.4	75.2	109.5	126.0	47.2	10.7	639.9	139 (1932)	46 (1908)	190.5	1891 Jun 18
		b	0.2	0.3	0.3	2.2	3.9	5.9	9.6	7.4	6.7	6.4	2.5	0.6	46.0				
Molakalmuru	50	a	2.5	5.1	3.1	19.1	63.3	52.6	47.7	81.8	139.7	118.6	48.0	7.4	588.9	171 (1917)	52 (1911)	182.1	1948 Aug 3
		b	0.4	0.3	0.3	1.4	4.0	3.9	4.3	5.3	6.4	5.7	3.0	0.4	35.4				
Jagalur	50	a	4.1	6.6	3.1	22.9	65.5	48.3	63.7	75.9	103.9	97.3	45.5	8.1	544.9	211 (1932)	45 (1942)	177.3	1932 Nov 7
		b	0.3	0.3	0.3	1.7	4.1	4.1	7.0	5.9	6.2	5.5	2.7	0.9	38.6				
Hosadruga	50	a	3.1	4.8	4.6	23.1	90.9	55.6	70.6	65.8	82.8	125.0	66.5	13.5	806.3	164 (1933)	56 (1908)	203.2	1955 Oct 21
		b	0.3	0.3	0.4	1.8	5.3	4.0	7.2	5.6	5.6	6.7	3.5	0.8	41.5				
Harihar	50	a	3.8	3.1	2.8	28.5	68.3	55.1	69.6	65.3	95.5	105.4	44.5	11.7	953.6	171 (1917)	50 (1908)	198.1	1943 May 21
		b	0.2	0.2	0.3	2.3	4.1	4.9	8.1	6.3	5.7	5.8	2.6	0.5	41.0				
Chitradurga (District)		a	3.9	5.0	3.7	23.9	72.8	52.2	65.0	74.8	102.4	114.0	50.6	11.0	579.3	159 (1933)	61 (1908)		
		b	0.3	0.3	0.3	1.8	4.3	4.2	6.9	6.1	6.2	6.0	2.9	0.6	39.9				

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
301 - 400	2	701 - 800	5
401 - 500	15	801 - 900	1
501 - 600	12	901 - 1000	2
601 - 700	13		

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(CHITRADURGA)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	28.9	17.1	33.9	1900 Jan 29	9.9	1975 Jan 8	65	33
February	32.0	19.2	36.1	1931 Feb 28	13.3	1947 Feb 6	56	24
March	34.9	21.5	38.9	1925 Mar 31	14.7	1976 Mar 2	55	24
April	36.3	22.7	39.4	1941 Apr 19	16.4	1978 Apr 24	67	30
May	35.1	22.3	41.7	1931 May 21	16.7	1951 May 25	75	39
June	30.6	21.4	37.8	1935 Jun 6	17.2	1906 Jun 6	79	63
July	28.1	20.8	34.4	1932 Jul 3	17.8	1943 Jul 10	83	69
August	28.1	20.5	32.8	1932 Aug 17	17.8	1955 Aug 16	84	69
September	29.1	20.3	35.0	1905 Sep 30	15.0	1910 Sep 19	83	63
October	29.6	20.3	35.0	1965 Oct 10	14.9	1974 Oct 29	79	55
November	28.4	18.4	32.8	1931 Nov 2	8.3	1945 Nov 28	73	50
December	28.0	16.7	32.8	1930 Dec 24	8.3	1945 Dec 11	71	40
Anhual	30.8	20.1					73	47

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(CHITRADURGA)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
7.8	6.9	7.1	7.7	10.6	14.2	14.9	13.1	10.8	6.3	6.2	7.6	9.4

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(CHITRADURGA)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.1	0.2	1.1	5.0	6.0	1.1	0.1	0.9	3.0	3.0	0.5	0.1	21.0
Hail	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2
Dust-Storm	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fog	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1

* No.of days 2 and above are given in whole numbers.

COORG DISTRICT

The climate of this district, a good portion of which lies on the western ghats and the rest in the pleatau region to the east of the western ghats, is characterised by high humidities, heavy rainfall, particularly on the ghats and neighbourhood, and a cool, equable and pleasant climate. The year may be divided into four seasons. The summer season from March to May is followed by the southwest monsoon season from June to September. October and November constitute the post-monsoon season. The period from December to February is the season of generally clear bright weather.

RAINFALL

The district has a good network of 22 raingauge stations with records ranging from 46 to 100 years. A statement 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 2725.5 mm. (excluding the rainfall at Mercara and Ammathi which are hill stations). The rainfall in the district decreases from the west towards the east. On account of the nature of the terrain which consists of hills and valleys the variation in the rainfall within the district is considerable. The annual rainfall at Bhagamandala in the western ghats region is 6032.3 mm. while at Frazerpet on the eastern border of the district it is only 1120.0 mm. June, July and August are the months with heavy rainfall and rainfall in July is the heaviest. The rainfall during the southwest monsoon period is about 80% of the annual rainfall. Some rainfall mostly in the form of thundershowers occurs during April, May and October. The variations in the annual rainfall from year to year is not large. During the 50 year period 1901 to 1950 the highest rainfall amounting to 142% of the normal occurred in 1924 while the lowest rainfall which was only 62% of the normal occurred in 1905. Rainfall less than 80% of the normal occurred in five years out of which three years were consecutive. Considering the rainfall at the individual stations, at 12 out of the 22 stations, annual rainfall less than 80% of the normal, in two consecutive years occurred once or twice. It will be seen from table 2 that in 40 years out of 50 the annual rainfall in the district was between 2200 and 3200 mm.

On an average there are 118 rainy days (i. e. days with rain of 2.5 mm. or more) in a year in the district. This number varies from 85 at Frazerpet to 153 at Pulingoth.

The heaviest rainfall in 24 hours recorded at any station in the district was 842.0 mm. at Bhagamandala on 1924 July, 25.

TEMPERATURE

The only meteorological observatory in the district is at Mercara. The records of this observatory can be taken as representative of the meteorological conditions in the district in general. But at lower elevations in the eastern part of the district, temperatures may be a little higher than those at Mercara. Temperatures begin to increase from February till March which is the hottest month with the mean daily maximum temperature at 28.5°C and a mean daily minimum at 16.6°C. On individual days the day temperatures may go upto 34.0°C or 35.0°C during April and May. With the commencement of the southwest monsoon in June there, is an appreciable drop in day temperatures, but the drop in night temperatures is only slight. With the close of the monsoon season, towards the end of September, there is a slight increase in day temperatures. While the day temperatures in the next four months are nearly the same, as in October, the nights become progressively cooler. The mean daily minimum temperature is the least in January when it is 14.2°C. But during the period December to February the minimum temperature may go down to about 6.0°C on some days.

The highest maximum temperature recorded at Mercara was 35.0°C on 1902 May, 11, and the lowest minimum temperature was 5.4°C on 1968 February, 4.

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HUMIDITY

In general, the air is highly humid all through the year, and particularly so during the monsoon months when it is about 80%. The period from January to March is the driest part of the year when the afternoon relative humidities are on the average, about 55%.

CLOUDINESS

Skies are heavily clouded or overcast in the monsoon season. During the rest of the year skies are lightly to moderately clouded.

WINDS

The winds are light to moderate with some strengthening during the southwest monsoon months. Winds blow mainly from directions between the southwest and northwest during the southwest monsoon season. In the post-monsoon season, winds are mainly north-easterly or easterly but on some days northwesterly winds blow in the afternoons. In the rest of the year winds blow from directions between north and east and on some days between southwest and northwest, especially during the afternoons.

SPECIAL WEATHER PHENOMENA

During the post-monsoon months of October and November some of the storms and depressions which originate in the Bay of Bengal cross the east coast of the peninsula and move westwards emerging later into the Arabian Sea. These affect the district and its neighbourhood causing widespread heavy rain and high winds. Thunderstorms occur on about five days during April and May, and on about one to two days in March and October.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and frequency of special weather phenomena respectively for Mercara.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours * Amount (mm)	Date
Virajpet	50	a	4.6	7.1	17.5	67.8	154.4	572.8	892.6	435.6	203.2	212.3	84.8	19.1	2671.8	161 (1923)	73 (1928)	366.5	1926 July 7
		b	0.5	0.5	1.5	4.9	8.6	21.5	26.4	22.3	15.4	12.8	5.8	1.4	121.6				
Fraserpet	50	a	5.8	5.6	14.7	67.3	139.9	143.5	248.7	142.2	89.4	165.9	78.2	18.8	1120.0	140 (1946)	63 (1938)	160.5	1948 July 9
		b	0.4	0.5	1.1	5.1	8.6	12.5	19.1	13.2	8.3	9.9	5.1	1.1	84.9				
Somawarpet	50	a	5.6	5.6	12.9	62.0	110.7	323.9	774.9	436.1	170.9	168.4	83.1	21.1	2175.2	145 (1923)	69 (1918)	237.4	1924 July 18
		b	0.6	0.4	1.0	4.9	7.6	18.3	24.9	21.7	12.6	11.0	5.5	1.4	109.9				
Napoklu	50	a	10.7	10.9	47.7	135.4	168.7	561.6	1058.4	545.1	210.3	237.2	98.0	21.3	3105.3	156 (1923)	72 (1918)	323.3	1924 July 17
		b	0.8	0.8	3.2	8.4	10.0	21.7	26.6	22.6	15.4	14.0	6.3	1.4	131.2				
Sanivarasante	50	a	4.3	4.6	15.7	55.4	107.4	271.8	629.4	386.1	147.8	166.4	76.5	18.3	1883.7	142 (1923)	76 (1918)	264.4	1924 July 15
		b	0.4	0.4	1.0	4.1	6.9	16.8	25.3	21.8	12.1	10.2	5.2	1.0	105.2				
Pannampet	44	a	4.1	3.1	15.0	72.1	138.7	497.8	822.7	412.7	195.1	170.9	74.9	14.7	2421.8	151 (1924)	72 (1918)	303.5	1924 July 25
		b	0.4	0.3	1.2	5.3	8.3	20.3	25.4	21.7	15.3	11.1	5.5	1.1	115.9				
Bhagamandala	44	a	6.3	6.1	26.7	94.7	241.5	1287.0	2140.5	1237.2	497.3	339.3	135.4	20.3	6032.3	163 (1924)	72 (1944)	842.0	1924 July 25
		b	0.7	0.3	1.7	6.7	10.8	26.1	29.3	28.3	21.4	17.0	7.7	1.6	151.6				
Suntikoppa	44	a	5.6	6.1	18.5	64.8	118.4	293.1	542.8	321.6	144.8	160.3	74.9	12.9	1763.8	132 (1946)	70 (1944)	222.5	1924 July 16
		b	0.6	0.5	1.1	5.1	8.4	18.6	24.8	21.9	12.9	11.0	5.6	1.1	111.6				
Srimangala	16	a	3.8	4.8	12.9	82.3	100.6	498.9	1091.9	633.5	217.7	134.4	82.5	15.5	2878.8	130 (1936)	74 (1945)	272.0	1941 June 9
		b	0.3	0.3	0.9	5.7	8.1	20.7	27.3	22.2	14.6	9.3	6.1	1.3	117.1				
Kariko	18	a	7.4	3.8	21.6	97.0	180.9	1015.2	1586.2	991.9	481.3	322.3	124.7	23.6	4855.9	126 (1943)	79 (1939)	299.7	1953 July 6
		b	0.6	0.3	1.5	5.4	9.3	26.0	30.0	27.6	20.9	16.1	8.1	1.7	147.5				
Pulingoth	18	a	13.5	3.6	32.8	172.5	248.4	1277.9	1905.0	1125.0	502.9	453.1	178.6	27.4	5940.7	119 (1938)	74 (1944)	330.2	1943 July 13
		b	0.6	0.2	1.6	8.2	10.5	26.7	29.9	27.9	19.3	17.9	8.7	1.6	153.1				

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TABLE - 1 contd.

NORMAL AND EXTREME RAINFALL

Station	No.of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours * Amount (mm)	Date
Makut	18	a	5.3	2.8	20.6	93.2	192.5	1094.7	1699.8	1028.5	476.5	279.4	129.0	32.0	5054.3	120 (1946)	80 (1934)	415.5	1958 Jul 14
		b	0.4	0.3	1.1	5.9	10.1	26.0	29.7	26.6	20.4	14.3	6.8	1.6	143.2				
Belekove	18	a	5.8	4.1	21.3	94.5	123.9	284.0	585.5	347.0	155.2	153.9	79.5	13.7	1868.4	135 (1946)	75 (1934)	265.2	1953 Jul 6
		b	0.4	0.4	1.1	6.4	8.6	17.7	25.6	20.2	12.5	11.3	5.7	1.4	111.3				
Nagerhole	18	a	6.9	3.8	20.3	95.3	123.4	242.1	471.4	274.8	122.9	155.5	79.3	14.7	1610.4	128 (1940)	72 (1934)	307.3	1953 Jul 6
		b	0.5	0.2	1.3	6.4	9.2	17.3	24.6	19.4	11.0	10.9	6.0	1.4	108.3				
Karmad	18	a	6.3	4.3	24.1	75.7	104.4	256.0	526.3	282.2	153.2	148.3	70.4	16.3	1667.5	143 (1946)	77 (1934)	291.1	1953 Jul 6
		b	0.5	0.4	1.4	5.6	8.3	17.2	24.1	19.7	13.4	10.9	4.8	1.6	107.9				
Murkhal	18	a	6.3	9.1	20.6	97.8	138.7	190.7	348.2	220.2	126.0	174.2	77.0	18.5	1427.3	153 (1940)	68 (1934)	192.3	1958 Jul 10
		b	0.5	0.8	1.2	6.2	9.2	14.8	21.9	17.5	10.6	9.9	5.0	1.4	99.0				
Thittimatti	18	a	6.9	5.3	23.9	80.3	117.6	229.4	320.8	177.3	121.4	161.3	63.0	13.7	1320.9	126 (1943)	78 (1945)	190.5	1943 Jul 11
		b	0.5	0.6	1.5	6.0	8.4	16.3	22.2	15.4	11.2	11.4	4.6	1.3	99.4				
Dubari	18	a	4.3	8.1	23.4	98.3	117.6	182.4	325.1	184.1	102.1	155.2	70.1	16.5	1287.2	128 (1940)	74 (1938)	147.3	1948 Jul 9
		b	0.6	0.5	1.5	6.2	8.4	15.3	22.2	16.0	9.6	10.6	4.4	1.3	96.6				
Hudugur	18	a	6.9	7.4	18.3	74.9	92.2	135.9	302.0	198.4	92.5	151.6	57.7	16.3	1154.1	145 (1946)	65 (1938)	102.4	1953 Jul 6
		b	0.5	0.5	1.1	5.5	7.9	13.2	23.2	17.9	9.5	11.0	4.3	1.1	95.7				
Sampajti	18	a	7.1	6.3	28.7	120.4	196.3	692.7	1291.3	936.0	467.9	341.4	156.5	23.6	4268.2	129 (1946)	80 (1939)	247.9	1948 Jul 10
		b	0.4	0.5	2.0	6.8	10.2	25.4	29.3	27.1	21.7	18.3	8.5	1.8	152.0				
Coorg (District)		a	6.4	5.6	21.9	90.1	145.8	502.6	878.2	515.8	233.9	212.6	93.7	18.9	2725.5	142 (1924)	62 (1905)		
		b	0.5	0.4	1.4	5.9	8.9	19.6	25.6	21.5	14.4	12.4	6.0	1.4	118.0				

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T A B L E - 1 (contd)

NORMAL AND EXTREME RAINFALL

Station	No.of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *	
																		Amount (mm)	Date
HILL STATIONS																			
Mercara	50	a	6.1	7.6	18.8	67.8	135.9	606.3	1129.3	682.7	307.6	199.9	81.3	22.1	3265.4	127 (1923)	66 (1918)	364.5	1924 Jul 17
		b	0.6	0.6	1.4	5.0	8.3	23.0	28.4	26.6	18.9	12.7	5.5	1.4	132.4				
Ammathi	44	a	5.3	6.3	22.3	76.5	141.5	402.1	722.1	389.1	178.1	194.8	86.4	15.7	2240.2	237 (1924)	68 (1918)	410.7	1924 Jul 25
		b	0.4	0.5	1.7	6.2	8.9	19.7	25.1	21.0	13.9	12.0	5.7	1.0	116.1				

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
1601 - 1800	1	2801 - 3000	5
1801 - 2000	0	3001 - 3200	7
2001 - 2200	5	3201 - 3400	2
2201 - 2400	9	3401 - 3600	1
2401 - 2600	8	3601 - 3800	0
2601 - 2800	11	3801 - 4000	1

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(MERCARA)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	24.6	14.2	31.7	1954 Jan 4	9.0	1965 Jan 13	79	55
February	26.8	15.1	31.7	1911 Feb 22	5.4	1968 Feb 4	73	53
March	28.5	16.6	33.3	1921 Mar 30	10.6	1955 Mar 21	72	54
April	27.9	17.9	34.0	1972 Apr 15	10.6	1955 Apr 16	82	71
May	26.3	18.3	35.0	1902 May 11	9.4	1955 May 21	88	80
June	21.9	17.4	30.0	1939 Jun 2	10.0	1955 Jun 29	94	94
July	20.2	17.1	28.9	1955 Jul 6	10.0	1967 Jul 18	97	98
August	20.7	17.1	27.0	1976 Aug 23	9.5	1968 Aug 13	96	95
September	22.0	16.9	27.2	1976 Sep 14, 27	10.0	1969 Sep 4	94	91
October	23.7	17.0	28.8	1965 Oct 9	10.6	1948 Oct 30	89	85
November	23.6	16.1	27.8	1918 Nov 14	9.4	1964 Nov 28	83	73
December	23.5	14.6	28.9	1903 Dec 23	8.0	1964 Dec 14	82	58
Annual	24.1	16.5					86	76

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(MERCARA)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
9.6	8.4	8.0	8.2	10.0	13.5	16.7	15.5	12.3	8.4	10.0	11.4	11.0

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(MERCARA)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.2	0.2	1.5	5.0	5.0	1.6	0.8	0.1	0.9	1.9	0.3	0.2	18.0
Hail	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Dust-Storm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fog	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.5

* No.of days 2 and above are given in whole numbers.

HASSAN DISTRICT

The district has an agreeable climate. The year may be divided into four seasons. The summer season from March to the end of May is followed by the southwest monsoon season, lasting upto about the end of September. October and November may be termed the post-monsoon or retreating monsoon season. The period from December to February is the dry season with generally clear bright weather.

RAINFALL

Records of rainfall in the district are available for 8 stations for periods ranging from 93 to 110 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 1040.7 mm. The western part of the district, in the vicinity of the western ghats, gets heavy rainfall. The rainfall decreases rapidly from the west to the east. The rainfall in the district varies from 2348.7 mm. at Saklespur in the west to 673.1 mm. at Arsikere, in the east. Most of the rainfall in the district is confined to the period May to October, July being the rainiest month. The rainfall during the southwest monsoon months June to September constitutes only about 59% of the annual normal rainfall. The rest of the rainfall is received mainly during the pre-monsoon months of April and May and the post-monsoon season. The rainfall during the premonsoo n months is mainly in the form of thundershowers. The variations in the annual rainfall from year to year is not large. In the 50 year period 1901 to 1950, the highest annual rainfall amounting to 140% of the normal occurred in 1933. The lowest annual rainfall which was 68% of the normal was received in 1908. In this 50 year period the annual rainfall in the district was less than 80% of the normal in 5 years, none of them being consecutive. However considering the annual rainfall at the individual stations, two consecutive years of such low rainfall have occurred thrice at Channarayapatna, twice at Saklespur and once each at 4 out of the 6 remaining stations. It will be seen from table 2 that the annual rainfall in the district was between 900 and 1200 mm. in 31 years out of 50.

On an average there are 68 rainy days (i. e. days with rainfall of 2.5 mm. or more) in a year in the district. This number varies, as in the case of rainfall, from 109 at Saklespur to 48 at Arsikere.

The heaviest rainfall in 24 hours recorded at any station in the district was 228.6 mm. at Saklespur on 1941 July, 11.

TEMPERATURE

There is a meteorological observatory in the district at Hassan. The records of this observatory may be taken as representative of the climatic conditions prevailing in the district in general. From about the beginning of March temperatures increase steadily. April is generally the hottest month with the mean daily maximum temperature at 33.2°C and the mean daily minimum at 20.1°C. During the summer season, on individual days, the day temperature sometimes go over 35.0°C. With the advance of the monsoon, early in June, there is appreciable drop in temperatures. Towards the close of the monsoon season, by about the end of September, there is a slight increase in day temperatures and a secondary maximum in day temperatures is reached in October. Later, the weather becomes progressively cooler. December is generally the coldest month with the mean daily maximum temperature at 26.8°C and the mean daily minimum at 15.0°C.

The highest maximum temperature recorded at Hassan was 39.6°C on 1969 April, 4. The lowest minimum was 5.6°C on 1978 January, 19.

HUMIDITY

Relative humidities are generally high about 80% in the southwest monsoon and the post-monsoon seasons. February and March are the driest months of the year when the relative humidities in the afternoon are less than 35%.

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CLOUDINESS

The skies are heavily clouded or overcast during the monsoon season. During the post-monsoon season the skies are moderately clouded. In the rest of the year skies are mainly clear or lightly clouded. In the summer season there is some increase in the cloudiness in the afternoons.

WINDS

The winds are, in general, light with some increase in force during the later summer and early monsoon seasons. During the period April to September, winds blow mostly from directions between southwest and northwest. Winds are variable in directions during October. During the post-monsoon and winter seasons the winds blow mostly from directions between northeast and southeast. In March the winds are variable in direction.

SPECIAL WEATHER PHENOMENA

During October and November, some of the depressions and cyclonic storms, which originate in the Bay of Bengal, cross the east coast and move across the peninsula. Such depressions and storm pass through or in the neighbourhood of the district causing widespread heavy rain and high winds. Thunderstorms occur during the period March to October, April and May having the highest incidence. Occasional fogs occur during the cold season.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and special weather phenomena respectively for Hassan.

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T A B L E - 1

NORMAL AND EXTREME RAINFALL.

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *		
																		Amount (mm)	Date	
Hassan	50	a	4.3	7.6	10.7	52.8	115.3	84.1	150.4	99.3	100.1	160.3	76.7	17.3	878.9	147 (1903)	58 (1908)	163.2	1958	Oct 8
		b	0.3	0.5	0.8	4.0	7.4	8.7	13.5	9.6	7.3	9.4	4.8	1.2	67.5					
Saklespur (Manjarabad)	50	a	5.6	5.1	9.9	51.8	113.5	397.3	859.0	452.1	170.2	182.4	81.5	20.3	2348.7	153 (1932)	66 (1949)	228.6	1941	Jul 11
		b	0.4	0.5	0.8	3.9	7.0	18.4	25.9	21.9	13.6	10.6	4.8	1.1	108.9					
Arkalgud	50	a	4.1	7.1	8.1	57.9	109.2	98.5	221.0	127.0	77.5	143.3	75.4	18.8	947.9	162 (1924)	57 (1938)	183.4	1911	Jul 19
		b	0.3	0.4	0.8	4.2	7.1	9.5	17.2	13.1	6.8	8.6	4.7	1.1	73.8					
Belur	50	a	6.6	4.8	8.9	55.6	122.7	125.0	248.4	102.6	84.8	146.1	74.2	21.3	1001.0	148 (1902)	54 (1938)	145.5	1899	Apr 18
		b	0.6	0.4	0.8	3.8	7.5	9.5	14.6	9.6	7.0	8.4	4.7	1.2	68.1					
Channara-yapatna	50	a	4.3	2.3	10.2	49.8	118.1	56.6	66.3	68.6	102.9	147.6	72.9	13.5	713.1	156 (1946)	50 (1908)	147.1	1944	Sep 20
		b	0.4	0.3	0.6	3.3	7.2	4.4	6.8	5.9	6.0	8.4	4.3	0.9	48.5					
Arsikere	50	a	5.8	5.8	6.9	34.8	96.8	54.4	67.8	77.2	106.9	136.9	67.3	12.5	673.1	163 (1933)	43 (1908)	143.5	1935	Oct 19
		b	0.4	0.3	0.7	2.6	6.3	4.5	6.3	6.3	7.3	8.2	4.2	0.9	48.0					
Holenarsipur	50	a	5.1	5.3	10.4	53.9	104.9	56.9	98.5	70.4	77.5	147.6	65.3	12.9	708.7	153 (1933)	64 (1936)	142.2	1887	Oct 9
		b	0.3	0.3	0.8	3.6	7.0	5.3	8.6	6.3	5.6	8.7	4.7	1.0	52.2					
Alur	50	a	4.3	5.1	7.6	65.3	109.7	126.0	252.5	128.3	93.2	166.9	76.7	18.3	1053.9	142 (1912)	56 (1938)	170.9	1887	Oct 9
		b	0.3	0.4	0.7	3.7	7.0	10.6	17.3	12.4	7.7	9.1	4.5	1.2	74.9					
Hassan (District)		a	5.0	5.4	9.1	52.7	111.3	124.9	245.5	140.7	101.6	153.9	73.7	16.9	1040.7	140 (1933)	68 (1908)			
		b	0.4	0.4	0.7	3.6	7.1	8.9	13.8	10.6	7.7	8.9	4.6	1.1	67.8					

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
701 - 800	4	1101 - 1200	7
801 - 900	6	1201 - 1300	5
901 - 1000	9	1301 - 1400	2
1001 - 1100	15	1401 - 1500	2

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(HASSAN)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	28.1	14.7	32.2	1955 Jan 17	5.6	1978 Jan 19	74	37
February	30.5	16.1	35.0	1906 Feb 23	8.3	1898 Feb 2	69	31
March	32.9	18.2	36.7	1934 Mar 31	9.4	1898 Mar 12	71	31
April	33.2	20.1	39.6	1969 Apr 4	13.1	1978 Apr 15	76	47
May	31.5	20.3	37.8	1906 May 5	12.1	1978 May 14	80	64
June	26.8	19.4	34.6	1964 Jun 2	13.1	1978 Jun 3	85	77
July	24.8	18.9	32.5	1966 Jul 11	13.1	1977 Jul 18	88	81
August	25.5	18.8	31.1	1932 Aug 24	13.1	1977 Aug 31	85	79
September	26.7	18.4	32.2	1905 Sep 30	12.1	1977 Sep 16, 17	86	75
October	27.6	18.6	34.0	1978 Oct 23	11.1	1977 Oct 29	83	70
November	27.0	16.9	31.9	1967 Nov 12	8.3	1904 Nov 22	78	58
December	26.8	15.0	31.1	1926 Dec 8	6.7	1907 Dec 5	76	46
Annual	28.5	17.9					79	58

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(HASSAN)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
5.8	5.7	6.7	8.2	11.5	14.9	15.3	13.6	11.6	6.9	5.5	5.8	9.3

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(HASSAN)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.1	0.6	2.0	8.0	10.0	2.0	0.6	1.6	3.0	5.0	0.1	0.5	33.0
Hail	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Dust-Storm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Squall	0.1	0.0	0.1	0.4	0.6	1.1	0.4	0.3	0.0	0.1	0.0	0.0	3.0
Fog	3.0	4.0	7.0	1.1	1.2	0.0	0.0	0.1	0.5	1.6	1.7	2.0	22.0

* No. of days 2 and above are given in whole numbers.

KOLAR DISTRICT

The district enjoys an agreeable climate. The year may be divided into four seasons. The dry season, with clear bright weather, is from December to February. March to May constitutes the hot season and the southwest monsoon season is from June to about the end of October. November is the retreating monsoon season.

RAINFALL

Records of rainfall are available for 12 stations in the district and extent to about 110 years for most of the stations. The details of the rainfall at these stations and for district as a whole are given in tables 1 and 2. The range of hills, in the northwestern portion of the district, comprising the Nandi Hills and their continuation towards the north, constitute the chief watershed and most of the rivers in the district have their origin there. The average annual rainfall at Nandi Hills, at an elevation of 1479 metres, is 1195.8 mm. In the district as a whole, the average annual rainfall is 730.5 mm. The rainfall, during the southwest monsoon season from June to October, constitutes 69% of the annual rainfall. September is usually the month with the highest rainfall. But at Nandi Hills the rainfall in October is higher than in September. During April and May and in the retreating monsoon month of November the district gets some rainfall in association with thunderstorms. The variations in the rainfall from year to year are fairly large. In the 50 year period 1901 to 1950 the annual rainfall averaged over the district was the highest in 1903 when it amounted to 173% of the normal, while the lowest was 52% of the normal in 1923. In 11 out of 50 years the rainfall was less than 80% of the normal. Although, considering the district as a whole, there were no two consecutive years with rainfall less than 80% of the normal, such occasions are known at individual stations. At Gudibanda, five consecutive years 1922 to 1926, had rainfall less than 80% of the normal. There have been four occasions when two consecutive years with rainfall less than 80% of the normal occurred at Chikballapur. It may be seen from table 2 that, in 43 years out of 50, the rainfall in the district was between 500 and 1000 mm.

On an average there are 47 rainy days (i. e. days with rainfall of 2.5 mm. or more) in a year. This number varies from 43 at Bagepalli to 54 at Chikballapur. At Nandi Hills 64 days in a year are rainy days.

The highest rainfall recorded in 24 hours at any station in the district was 253.7 mm. at Malur on 1872 May, 1.

TEMPERATURE

Records of temperature and other meteorological elements are available for the Kolar Gold Field observatory, over a long period and for the Nandi Hills observatory, for a few years. The meteorological conditions, as seen from the data of the Kolar Gold Field observatory, may be taken to be representative of those over the district in general. Nandi Hills which is at a higher elevation than the Kolar Gold Fields enjoys a cooler climate all the year round. The period from March to May is one of continuous rise in temperature. May is generally the hottest part of the year with the mean daily maximum temperature at 34.2°C at Kolar Gold Field. At Nandi Hills April, with a mean daily maximum temperature of 28.7°C, is warmer than May. In the summer months the maximum temperatures may sometimes go upto 39.0°C or 40.0°C. With the advance of the southwest monsoon into the district, in early June, the temperature decreases and throughout the monsoon season the weather is pleasant. After the withdrawal of the southwest monsoon by about the beginning of November, both day and night temperatures begin to drop. December is the coolest part of the year with the mean daily maximum temperatures

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at 25.3°C and 20.6°C and the mean daily minimum temperatures at 15.6°C and 12.6°C at Kolar Gold Field and Nandi Hills respectively. The highest maximum temperature recorded at Kolar Gold Field is 39.9°C on 1931 May, 21, and at Nandi Hills 32.8°C on 1950 May, 12. The lowest minimum temperature was 10.5°C on 1976 February, 12 at Kolar Gold Field and 8.3°C on 1954 December, 5 at Nandi Hills.

HUMIDITY

Relative humidities are high about 70% in the southwest monsoon and post-monsoon season and moderate in the rest of the year.

CLOUDINESS

Skies are heavily clouded to overcast in the period June to September generally with similar conditions prevailing less frequently in October and November. In the rest of the year, skies are clear or lightly clouded. There is some increase in cloudiness in the summer afternoons.

WINDS

Winds are generally moderate with some increase in force in the monsoon months. From May to September winds are generally southwesterly to westerly and, on some afternoons, northwesterly. In October winds from the northeast or east also blow and these predominate in the period November to January. Thereafter there is a gradual clockwise shift of the wind direction particularly in the mornings till April, when winds are mainly southwesterly to westerly in the mornings and between northeast and southeast in the afternoons.

SPECIAL WEATHER PHENOMENA

Thunderstorms are common during the hot season and the post-monsoon months. Occasional fog occurs in the cold season.

Tables 3 and 4 give the temperature and humidity and mean wind speed respectively for Kolar Gold Field.

Tables 3 and 5 give the temperature and humidity, and special weather phenomena respectively for Nandi Hills.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	May	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *		
																		Amount (mm)		Date
Kolar	50	a	9.7	5.8	10.7	37.1	91.4	45.7	64.3	98.8	129.3	119.1	32.0	17.5	711.4	167 (1903)	57 (1908)	167.6	1872	May 2
		b	1.0	0.5	0.7	2.3	5.4	3.4	5.2	6.5	7.3	7.6	5.3	1.6	46.8					
Bangarpet	50	a	8.4	5.6	8.6	37.6	94.2	47.5	63.3	97.3	123.9	126.7	69.9	15.5	698.5	199 (1903)	47 (1950)	179.1	1888	Nov 1
		b	0.7	0.4	0.6	2.2	5.7	3.6	5.0	6.4	7.0	8.1	5.0	1.4	46.1					
Chintamani	50	a	8.1	3.3	10.4	35.6	74.9	57.9	61.5	85.9	128.5	126.2	81.5	16.3	690.1	168 (1930)	45 (1908)	166.4	1894	Jul 6
		b	0.8	0.4	0.8	2.0	4.7	4.2	5.3	6.2	7.0	7.2	5.2	1.5	45.3					
Mulbagal	50	a	13.5	7.9	11.4	31.7	83.6	58.4	70.1	105.2	136.1	132.8	89.1	23.1	762.9	200 (1903)	41 (1950)	196.9	1910	Aug 26
		b	1.2	0.5	0.7	2.0	5.1	4.0	4.9	6.5	7.0	8.1	5.8	2.0	47.8					
Sidlaghatta	50	a	7.9	5.3	11.4	34.8	32.0	64.0	31.0	102.9	151.4	124.2	74.9	13.2	753.0	171 (1903)	52 (1923)	142.7	1932	Sep 29
		b	0.6	0.4	0.7	2.2	5.0	4.3	6.9	7.9	7.4	7.4	4.6	1.3	48.7					
Chikballapur	50	a	9.1	8.1	12.5	31.5	70.4	76.5	100.3	120.7	147.1	116.8	67.8	10.4	771.2	192 (1903)	47 (1908)	154.9	1879	May 21
		b	0.7	0.5	0.7	2.5	4.7	5.4	8.9	9.5	8.4	6.7	4.7	1.2	53.9					
Malur	50	a	7.9	8.6	11.2	41.9	97.5	50.8	69.6	98.3	133.9	123.9	74.7	14.7	733.0	160 (1903)	43 (1920)	253.7	1872	May 1
		b	0.9	0.3	0.7	2.5	6.3	4.4	6.3	7.2	7.6	7.6	4.5	1.4	49.9					
Srinivaspur	50	a	9.4	9.1	10.2	31.2	82.8	57.7	71.9	93.0	136.7	133.1	82.3	16.0	733.4	167 (1903)	48 (1923)	172.7	1875	Sep 21
		b	0.9	0.6	0.6	2.2	5.0	4.2	5.9	7.1	7.0	7.4	5.3	1.4	47.6					
Bagepalli	50	a	3.8	4.1	6.6	31.5	63.7	57.4	87.4	97.8	152.4	105.4	58.2	10.9	679.2	156 (1903)	48 (1904)	144.8	1949	Oct 19
		b	0.3	0.3	0.5	1.9	4.1	4.1	6.2	6.5	8.0	6.1	3.8	0.8	42.6					
Gauribidanur	50	a	5.1	5.1	4.3	28.7	69.6	61.5	85.6	100.6	158.5	110.7	58.7	6.9	695.3	158 (1903)	44 (1923)	196.9	1962	Jun 25
		b	0.5	0.5	0.4	1.9	4.5	4.5	6.8	7.0	8.1	6.6	3.6	0.7	45.1					

contd.....

TABLE - 1 (contd)

NORMAL AND EXTREME RAINFALL

Station	No.of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *		
																		Amount (mm)	Date	
Gudibanda	50	a	5.6	6.6	7.4	31.2	69.3	76.5	103.6	127.0	182.9	117.6	67.1	13.5	808.3	181 (1903)	44 (1908)	238.8	1879	May 21
		b	0.4	0.5	0.4	1.9	4.0	5.2	8.7	8.0	8.6	6.9	3.8	1.0	49.4					
Kolar (District)		a	8.0	6.3	9.5	33.9	79.9	59.4	78.1	102.5	143.7	121.5	73.3	14.4	730.5	173 (1903)	52 (1923)			
		b	0.7	0.5	0.6	2.1	4.9	4.3	6.4	7.2	7.6	7.2	4.7	1.3	47.6					
Nandi Hills	16	a	5.3	0.5	14.7	33.3	123.7	115.3	182.1	177.3	195.6	231.7	82.8	33.5	1195.8	.234 (1946)	52 (1942)	176.8	1951	Jul 6
		b	0.4	0.1	0.9	2.2	6.0	6.6	12.0	10.8	9.7	9.6	3.8	1.9	64.0					

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
301 - 400	1	801 - 900	9
401 - 500	3	901 - 1000	5
501 - 600	9	1001 - 1100	2
601 - 700	8	1101 - 1200	0
701 - 800	12	1201 - 1300	1

** T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(KOLAR GOLD FIELD)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830* %
January	26.3	15.3	30.5	1977 Jan 28	10.8	1977 Jan 5	66
February	29.4	16.5	32.8	1975 Feb 14	10.5	1976 Feb 12	55
March	32.5	18.7	35.4	1978 Mar 31	13.9	1978 Mar 1	47
April	34.1	21.2	38.8	1973 Apr 29	15.7	1975 Apr 2	52
May	34.2	21.8	38.0	1973 May 1	17.6	1975 May 4	57
June	31.2	20.6	34.5	1976 Jun 13	18.3	1975 Jun 23	66
July	29.5	19.9	33.5	1976 July 1	17.3	1975 Jul 26	71
August	29.4	19.8	31.8	1975 Aug 15	18.3	1978 Aug 17, 24	71
September	29.3	19.7	32.0	1976 Sep 23	16.7	1978 Sep 23	71
October	28.1	19.3	32.5	1976 Oct 4	16.3	1976 Oct 30	74
November	26.2	17.6	29.2	1976 Nov 5	12.0	1975 Nov 30	72
December	25.3	15.6	28.0	1977 Dec 30	10.7	1975 Dec 26	70
Annual	29.6	18.8					64

* Hours I.S.T.

** Data taken from the Kolar Gold Field Observatory Report (1903 to 1951) published by the K. G. F. Committee.

TABLE - 3 (contd.)

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(NANDI HILLS)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Date	Lowest Min. ever recorded °C	Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	21.9	12.4	25.6	1954 Jan 21	8.9	1946 Jan 11	66	
February	24.6	14.7	28.3	1954 Feb 27	10.0	1947 Feb 7	57	
March	27.7	16.8	30.6	1953 Mar 5	12.8	1944 Mar 4	55	
April	28.7	17.8	32.2	1956 Apr 23	13.3	1949 Apr 17	64	
May	27.8	17.5	32.8	1950 May 12	13.3	1955 May 24	70	
June	24.1	16.2	30.0	1953 Jun 6	12.2	1948 Jun 7	90	
July	21.7	15.7	26.1	1941 Jul 22	12.8	1952 Jul 11	98	
August	21.9	15.7	25.6	1947 Aug 4	13.3	1947 Aug 27	97	
September	22.1	15.5	26.1	1951 Sep 4	12.2	1949 Sep 21	95	
October	22.5	15.7	25.0	1951 Oct 26	12.2	1948 Oct 3	87	
November	21.4	14.2	24.4	1953 Nov 4	8.9	1945 Nov 27	80	
December	20.6	12.6	25.0	1945 Dec 26	8.3	1954 Dec 5	69	
Annual	23.7	15.4					77	

Data not available

* Hours I. S. T.

* T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(KOLAR GOLD FIELD)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
7.8	8.1	8.4	8.5	11.7	17.4	17.2	14.9	11.9	7.4	7.0	6.9	10.6

*** Data taken from the Kolar Gold Field Observatory Report (1909 to 1959) published by the K.G.F. Committee.**

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(NANDI HILLS)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.0	0.0	0.0	0.6	1.3	0.0	0.0	0.0	0.0	0.4	0.0	0.0	2.3
Hail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dust-Storm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fog	1.6	0.0	0.1	0.1	1.7	2.0	5.9	4.3	5.4	2.5	1.5	1.9	27.0

* No.of days 2 and above are given in whole numbers.

MANDYA DISTRICT

The climate of this district is similar to that of the neighbouring districts of Mysore and Bangalore and is on the whole agreeable. The year may be divided into four seasons. The period from December to February is the dry season with clear bright weather. The period from March to May constitutes the hot season, and the southwest monsoon season is from June to September, October and November may be termed the post-monsoon or retreating monsoon season.

RAINFALL

Records of rainfall in the district are available for 7 stations for periods ranging from 40 to more than 100 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 691.2 mm. The rainfall is generally uniform in the district except in the region of the western border where the rainfall is a little higher. The rainfall varies from 742.0 mm. at Krishnarajpet to 670.6 mm. at Srirangapatnam. The rainfall is mostly confined to the period April to November. The district receives rainfall both in the southwest monsoon and the retreating monsoon seasons. The heaviest rainfall is in the post-monsoon month of October. Rainfall, mostly as thundershowers, is also received in the latter half of the hot season. The rainfall in the hot, southwest monsoon and the retreating monsoon seasons constitutes 25%, 40% and 33% respectively of the annual rainfall. There are variations in the annual rainfall from year to year. During the 50 year period, 1901 to 1950, the highest annual rainfall amounting to 166% of the normal occurred in 1903. The lowest annual rainfall was in 1927 when it was only 63% of the normal. During this 50 year period, the rainfall was less than 80% of the normal in 6 years, none of them being consecutive. However, at the individual stations, 2 and 3 consecutive years of such low rainfall have occurred once or twice at four out of the seven stations during this 50 year period. Nagamangala had two consecutive years of such low rainfall on four occasions. It will be seen from table 2 that the rainfall in the district was between 500 and 1000 mm. in 46 years out of 50.

On an average there are 45 rainy days (i. e. days with rainfall of 2.5 mm. or more) in a year. This number varies from 41 at Nagamangala to 49 at Krishnarajpet.

The heaviest rainfall in 24 hours recorded at any station in the district was 200.7 mm. at Nagamangala on 1925 November, 12.

TEMPERATURE

There is a meteorological observatory at Mandya in the district, which has started very recently. But as conditions in the district are very similar to those in the neighbouring district of Mysore which has a meteorological observatory, the account of the climate which follows is based on the long period climatological records available for Mysore. The period from March to May is one of continuous rise in temperatures. April is usually the hottest month with the mean daily maximum temperature at about 35.0°C and the mean daily minimum temperature at about 21.0°C. On some days the day temperatures in the hot season may go above 39.0°C. The heat is relieved by frequent thunderstorms in April and May. With the advance of the monsoon into the district by about the beginning of June, the temperatures drop appreciably and throughout the south-west monsoon period the weather is pleasant. In the post-monsoon season the temperatures decrease progressively, the drop in night temperatures being more pronounced. December is usually the coldest month with the mean daily maximum temperature at about 27.0°C and the mean daily minimum at about 16.0°C. On some days the minimum temperature may drop down to about 10.0°C.

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The highest maximum temperature recorded at Mysore, a few miles outside the south-western border of the district, was 39.4°C on 1917 April 4. The lowest minimum temperature was 10.6°C on 1945 December, 13.

HUMIDITY

Relative humidities are high during the southwest monsoon season, about 75% and moderate in the post-monsoon season. The period from December to May is the driest part of the year with humidities in the afternoon specially being less than 40%.

CLOUDINESS

Skies are heavily clouded or overcast during the southwest monsoon period and to a lesser extent in the post-monsoon period. In the rest of the year skies are mainly clear or lightly clouded. During the summer afternoons there is some increase in cloudiness.

WINDS

Winds are generally moderate with a little strengthening during the southwest monsoon period. Winds are southwesterly or westerly in the period May to September. Northeasterlies and easterlies appear in October and these predominate in the next four months. In March and April the winds are mainly southwesterly or westerly in the mornings and blow from directions between north and east during afternoons.

SPECIAL WEATHER PHENOMENA

During October and November, some of the depressions and cyclonic storms originating in the Bay of Bengal cross the east coast and move westwards across the peninsula occasionally. Such depressions and storms pass through or in the neighbourhood of the district causing widespread heavy rain and gusty winds. Thunderstorms are common in the hot season and the post-monsoon season. Rainfall during the monsoon period is often associated with thunder.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours * Amount (mm)	Heaviest rainfall in 24 hours * Date
Mandya	50	a	4.8	7.4	10.7	40.4	121.2	47.2	36.6	75.7	110.0	154.7	67.6	12.2	688.5	179 (1909)	60 (1923)	177.8	1956 Oct 2
		b	0.4	0.4	0.7	3.0	7.1	3.4	3.5	4.7	6.8	7.9	4.0	1.1	43.0				
Srirangapatna	50	a	4.1	5.6	10.7	49.0	133.1	43.4	38.3	64.3	90.2	152.4	67.6	11.9	670.6	201 (1903)	65 (1912)	167.6	1957 May 22
		b	0.3	0.3	0.8	3.7	7.5	4.0	3.8	4.7	6.1	8.5	4.0	1.0	44.7				
Malavalli	50	a	2.3	7.9	7.6	49.3	120.1	43.9	42.7	79.5	110.7	146.8	67.1	14.0	691.9	176 (1903)	54 (1927)	160.5	1957 May 23
		b	0.3	0.4	0.7	3.4	7.4	3.8	3.9	5.1	6.2	8.0	4.1	1.0	44.3				
Krishnarajpet	50	a	3.6	5.8	8.1	47.0	140.5	61.0	64.3	64.8	100.3	160.8	74.4	11.4	742.0	164 (1933)	53 (1914)	155.5	1940 Oct 8
		b	0.3	0.5	0.7	3.7	8.0	4.5	6.0	5.2	6.0	8.8	4.3	0.7	48.7				
Nagamangala	50	a	4.3	5.1	7.4	43.7	112.3	39.1	31.5	61.2	122.2	158.2	79.0	11.9	675.9	170 (1903)	54 (1913)	200.7	1925 Nov 11
		b	0.3	0.4	0.5	3.2	7.1	3.1	2.7	4.1	6.4	8.0	4.7	0.9	41.5				
Maddur	18	a	1.8	4.8	2.5	49.5	91.9	35.3	44.2	98.5	107.9	177.5	52.3	14.2	680.9	152 (1946)	61 (1940)	117.3	1958 Sep 21
		b	0.3	0.4	0.3	3.7	6.6	3.4	4.7	6.1	5.8	9.1	3.6	1.1	45.3				
Pandavapura	13	a	3.3	6.6	4.8	56.4	110.2	31.2	28.2	77.0	82.0	205.5	64.3	19.1	688.6	139 (1949)	66 (1938)	112.5	1951 Sep 28
		b	0.3	0.4	0.7	4.7	6.5	2.8	3.0	5.5	6.2	9.3	4.3	1.1	44.8				
Mandya (District)		a	3.5	6.2	7.4	47.9	118.5	43.1	40.8	74.4	103.3	165.1	67.5	13.5	691.2	166 (1903)	63 (1927)		
		b	0.3	0.4	0.6	3.6	7.2	3.6	3.9	5.1	6.2	8.5	4.2	1.0	44.6				

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
401 - 500	2	801 - 900	7
501 - 600	13	901 - 1000	2
601 - 700	14	1001 - 1100	1
701 - 800	10	1101 - 1200	1

MYSORE DISTRICT

The climate of this district is on the whole agreeable. The year may be divided into four seasons. The summer season from March to about the end of May is followed by the southwest monsoon season lasting upto about the end of September. October and November may be termed the post-monsoon or retreating monsoon season. The period from December to February is the dry season with generally clear bright weather.

RAINFALL

Records of rainfall in the district are available for 10 raingauge stations for periods ranging from 44 to more than 100 years. A statement 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 761.9 mm. The western taluks of Periyapatna and Heggaddevankote and the eastern taluk of Kollegal got more rainfall as compared to the central portions of the district. Most of the rainfall in the district is confined to the period April to November. October is the rainiest month. The rainfall during the southwest monsoon months June to September constitutes only about 40% of the annual rainfall. The rainfall during the pre-monsoon months of April and May and during the post-monsoon months of October and November are as much as about 26 and 29% respectively of the annual rainfall. The rainfall during April, May and October is mostly in the form of thundershowers. The variation in the annual rainfall from year to year is not large. During the 50 year period 1901 to 1950, the highest annual rainfall amounting to 156% of the normal occurred in 1903 and the lowest annual rainfall which was 72% of the normal, in 1918. In the same 50 year period, the annual rainfall in the district was less than 80% of the normal in 7 years, none of them being consecutive. Considering the rainfall at the individual stations however, two or three consecutive years of rainfall less than 80% of the normal, occurred once or twice at eight out of the ten stations. It will be seen from table 2 that the rainfall in the district was between 600 and 900 mm. in 36 years out of 50.

On an average there are 53 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 Chamarajnagar to 62 at Heggaddevankote.

The heaviest rainfall in 24 hours recorded at any station in the district was 205.5 mm. at Chamarajnagar on 1916 October, 17.

TEMPERATURE

There is a meteorological observatory in the district at Mysore and the records of this observatory may be taken as representative of the conditions in the district in general. The period from March to May is one of continuous rise in temperature. April is usually the hottest month with the mean daily maximum temperature at 34.0°C and the mean daily minimum at 21.4°C. On individual days the day temperatures during summer may exceed 39.0°C. There is welcome relief from the heat when thundershowers occur during April and May. With the advance of the southwest monsoon into the district, by about the beginning of June, the day temperatures drop appreciably and throughout the southwest monsoon period the weather is pleasant. After mid-November both day and night temperatures decrease progressively. December is the coldest month with the mean daily maximum temperature at 27.0°C and the mean daily minimum at 16.5°C. On some days during the period November to January the minimum temperature may go below 11.0°C.

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The highest maximum temperature recorded at Mysore was 39.4°C on 1917 April, 4. The lowest minimum temperature was 10.6°C on 1945 December, 13.

HUMIDITY

Relative humidities are generally high during the southwest monsoon season. Relative humidities are generally about 70% and over in the mornings throughout the year while in the afternoons humidities are comparatively lower except during the southwest monsoon season. The period January to April is the driest part of the year with relative humidities of about 30% and lower in the afternoons.

CLOUDINESS

The skies during the southwest monsoon period are heavily clouded or overcast and are moderately clouded during the post-monsoon season. In the rest of the year the skies are mainly clear or lightly clouded. During the summer and post-monsoon season there is some increase in the cloudiness in the afternoons.

WINDS

The winds are generally moderate with some strengthening during the southwest monsoon season. During the period May to September winds are mostly westerly or southwesterly. Northeasterlies and easterlies appear in October and these become more predominant in the next four months. In March and April winds are mainly southwesterly or westerly in the mornings, while in the afternoons they blow from directions between north and east.

SPECIAL WEATHER PHENOMENA

During October and November some of the depressions and cyclonic storms, which originate in the Bay of Bengal, cross the east coast and move westwards across the peninsula. Such depressions and storms pass through or in the neighbourhood of the district causing widespread heavy rain and high winds. Thunderstorms are common during the hot season and the post-monsoon months. Rainfall during the monsoon season is also sometimes associated with thunder.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and special weather phenomena for Mysore.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No.of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *		
																		Amount (mm)	Date	
Mysore	50	a	4.3	6.6	13.2	63.5	151.1	60.5	69.1	87.1	117.1	153.7	71.6	11.9	809.7	160 (1903)	61 (1938)	184.4	1957	May 23
		b	0.4	0.4	0.9	4.6	8.1	5.5	7.5	7.3	7.8	9.0	4.6	0.9	57.0					
Chamarajnagar	50	a	5.6	3.6	10.2	52.8	125.7	37.3	35.3	71.6	88.9	150.4	75.7	18.8	675.9	194 (1903)	57 (1923)	205.5	1916	Oct 17
		b	0.6	0.3	0.8	3.8	7.9	3.1	3.7	4.7	5.8	8.5	5.1	1.2	45.5					
Hunsur	50	a	2.8	4.6	9.7	59.4	135.4	73.7	100.8	75.2	77.2	149.6	61.5	12.9	762.8	171 (1903)	59 (1927)	119.1	1903	May 21
		b	0.3	0.3	0.8	4.0	7.9	7.1	9.5	6.9	6.0	8.9	3.8	0.8	56.3					
Krishnarajnagar	50	a	3.6	4.8	10.9	50.8	130.6	45.7	63.0	57.1	80.3	155.7	65.8	12.2	680.5	193 (1916)	51 (1938)	126.0	1930	May 10
		b	0.3	0.3	0.9	3.8	7.7	4.2	6.2	5.2	5.4	8.8	4.3	0.8	47.9					
Heggaddevankote	50	a	4.3	9.7	14.7	70.1	139.5	89.4	181.6	106.2	84.1	131.3	74.7	14.5	920.1	157 (1933)	64 (1927)	149.9	1924	Jul 25
		b	0.3	0.5	1.2	4.6	8.1	7.6	12.3	8.6	6.2	7.6	4.1	0.8	61.9					
Gundlupet	50	a	5.6	4.8	15.7	70.4	125.7	41.9	48.0	49.8	64.8	155.2	79.3	18.5	679.7	155 (1946)	38 (1950)	185.2	1957	May 22
		b	0.4	0.4	1.1	5.3	8.1	3.8	5.4	4.4	4.9	9.0	4.8	1.3	48.9					
Nanjangud	50	a	5.6	7.6	12.9	73.4	132.6	46.2	65.0	65.3	82.5	135.6	67.3	13.5	707.5	178 (1933)	60 (1918)	158.7	1957	May 24
		b	0.5	0.4	0.9	4.6	8.1	4.6	6.9	6.2	5.7	8.0	3.7	1.0	50.6					
T. Narsipur	50	a	3.8	6.3	9.9	59.7	136.5	51.6	45.2	81.5	113.0	142.0	65.8	14.0	719.3	177 (1903)	55 (1923)	168.1	1957	May 24
		b	0.4	0.5	0.5	3.8	7.2	3.6	4.2	6.1	6.9	8.1	3.8	0.9	46.0					
Periyapatna	21	a	4.1	7.1	18.5	70.1	136.1	79.8	124.2	96.8	84.6	157.0	56.6	10.9	845.8	162 (1933)	65 (1938)	97.8	1957	May 24
		b	0.3	0.5	1.0	4.5	7.5	7.9	11.1	8.1	6.2	9.5	4.0	0.9	61.5					
Kollegal	50	a	4.3	5.3	11.7	68.3	125.5	62.7	61.2	93.2	126.0	162.6	79.8	16.8	817.4	169 (1903)	61 (1923)	162.1	1921	Apr 8
		b	0.5	0.5	1.0	4.8	7.6	4.7	5.9	7.2	7.4	9.6	5.1	1.4	55.7					
Mysore (District)		a	4.4	6.0	12.7	63.9	132.9	58.9	79.3	78.4	91.9	149.3	69.8	14.4	761.9	156 (1903)	72 (1918)			
		b	0.4	0.4	0.9	4.4	7.8	5.2	7.3	6.5	6.2	8.7	4.3	1.0	53.1					

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
501 - 600	7	901 - 1000	4
601 - 700	14	1001 - 1100	1
701 - 800	11	1101 - 1200	2
801 - 900	11		

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(MYSORE)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	28.3	16.4	32.8	1936 Jan 27	11.1	1953 Jan 28	75	30
February	31.2	18.2	36.1	1931 Feb 28	12.1	1967 Feb 17, 18	69	25
March	33.5	20.2	37.8	1931 Mar 30	13.3	1933 Mar 11	71	21
April	34.0	21.4	39.4	1917 Apr 4	15.5	1971 Apr 27	75	34
May	32.6	21.2	37.8	1936 May 3	15.6	1904 May 4	79	51
June	28.9	20.2	37.2	1926 Jun 1	12.6	1974 Jun 10	81	66
July	27.3	19.7	33.3	1899 Jul 30	15.8	1961 Jul 1	84	70
August	27.9	19.6	33.9	1899 Aug 5	16.7	1928 Aug 12	84	67
September	28.7	19.3	33.3	1936 Sep 14	13.4	1959 Sep 20	83	61
October	28.4	19.6	32.8	1905 Oct 1	12.9	1974 Oct 31	85	61
November	27.4	18.3	32.2	1918 Nov 1	10.9	1974 Nov 18	80	54
December	27.0	16.5	32.0	1972 Dec 1	10.6	1945 Dec 13	78	43
Annual	29.6	19.2					79	49

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(MYSORE)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
11.3	9.1	8.8	8.4	10.2	13.9	14.1	12.5	10.7	7.9	9.3	11.3	10.6

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(MYSORE)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.2	0.5	2.0	8.0	12.0	2.0	0.8	2.0	3.0	5.0	1.2	0.3	37.0
Hail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dust-Storm	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.1
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fog	1.0	1.1	0.8	0.2	0.1	0.0	0.0	0.0	0.0	0.9	1.7	0.7	7.0

* No.of days 2 and above are given in whole numbers.

SHIMOGA DISTRICT

The climate of this district, a greater part of which has a hilly terrain, is on the whole, very agreeable and cool. The cold season from December to February which is one of generally clear light weather is followed by the hot season from March to May. The southwest monsoon season is from June to September. October and November constitute the post-monsoon or retreating monsoon season.

RAINFALL

Records of rainfall in the district are available for 10 stations for periods ranging from 87 to more than 110 years. The details of the rainfall at these stations and for the district as a whole are given in tables 1 and 2. The rainfall is very heavy in the region of the western ghats. Agumbe in the southwestern corner of the district on the western ghats gets an annual rainfall of 8275.7 mm. The annual rainfall decreases very rapidly as one proceeds towards the east from the ghats region. The eastern parts of the district gets very low rainfall compared to the western parts. Honnali near the northeastern border of the district gets only 611.7 mm. in a year. The average annual rainfall in the district excluding Agumbe is 1526.3 mm. About 79% of the annual rainfall in the district is received during the southwest monsoon months, June to September, July being the rainiest month. There is some rainfall in the post-monsoon season, particularly in October and it is mostly in the form of thundershowers. Some rainfall in the form of thundershowers also occurs during the summer months, April and May. The variation in the rainfall from year to year in the district is not much. In the 50 year period, 1901 to 1950, the highest annual rainfall, which was 135% of the normal, occurred in 1933. The lowest annual rainfall amounting to 69% of the normal was recorded in 1905 and 1918. In this 50 year period the annual rainfall in the district was less than 80% of the normal in 4 years. Considering the annual rainfall at individual stations, such low rainfall in two consecutive years occurred 1 to 3 times at 6 out of 10 stations. Even 3 consecutive years of such low rainfall was recorded at 3 of the stations. Three consecutive years of rainfall less than 80% of the normal occurred twice at Sorab. It will be seen from table 2 that the annual rainfall in the district was between 1300 and 1800 mm. in 36 years out of 50.

On an average there are 80 rainy days (i. e. days with rainfall of 2.5 mm. or more) in a year in the district. This number varies from 108 at Tirthahalli to 44 at Honnali. It is likely to be more at Agumbe.

The heaviest rainfall in 24 hours recorded at any station in the district was 562.9 mm. at Agumbe on 1922 July, 23.

TEMPERATURE

There is a meteorological observatory in the district at Shimoga and the records of this observatory may be taken as representative of the meteorological conditions in the district in general. After January there is rapid increase of temperatures. April is usually the hottest month with the mean daily maximum temperature at 35.7°C and the mean daily minimum at 22.2°C. Nights during May are however slightly warmer than during April. On individual days during the summer the day temperature rises upto about 39.0°C. With the onset of the southwest monsoon in the district, early in June, there is appreciable drop in the day temperatures but the nights still continue to be nearly as warm as during the summer season. Day temperature increase slightly from September and a secondary maximum in day temperature is reached in October, but the nights become cooler with the progress of the season. After October both the day and night temperatures

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decrease steadily till about January and later begin to increase. While day temperatures are the least during the monsoon season, nights are very cool, in the cold season. In December the mean daily maximum temperature is 28.9°C and the mean daily minimum is 14.4°C. On individual days during the cold season the minimum temperature occasionally goes down to about 9.0°C.

The highest maximum temperature recorded at Shimoga was 39.5°C on 1966 April,7. The lowest minimum was 6.5°C on 1975 January,8.

HUMIDITY

The relative humidity during the morning throughout the year generally exceeds 75%. During the afternoons, while in the monsoon months the relative humidity is high, generally exceeding 70%, it is comparatively less in the other months. The driest part of the year is the period January to March when the relative humidities in the afternoons are less than 35%.

CLOUDINESS

Skies are mostly heavily clouded or overcast during the southwest monsoon season. Cloudiness decreases in the post-monsoon season. In the period from December to March the skies are generally clear or lightly clouded. Cloudiness increases from April and the afternoons are more cloudy than the mornings.

WINDS

Winds are generally light in the district with some increase in force during the monsoon season. Winds are mostly from directions between northwest and southwest during the period May to September. In the rest of the year they are predominantly from the directions northeast and southeast.

SPECIAL WEATHER PHENOMENA

Thunderstorms occur during the hot season and the post-monsoon month , the highest incidence being in April and May. Fog occurs occasionally during the cold season in the western parts of the district.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and special weather phenomena respectively for Shimoga.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No.of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *		
																		Amount (mm)		Date
Shimoga	50	a	4.3	1.8	9.1	31.5	75.4	104.4	222.8	115.3	84.1	117.6	45.2	10.9	822.4	157 (1933)	49 (1949)	161.8	1939	Sep 1
		b	0.3	0.1	0.7	2.5	4.7	9.3	15.9	11.9	7.1	7.2	2.7	0.7	63.1					
Channagiri	50	a	4.8	3.8	3.1	29.2	81.3	73.7	154.2	119.4	106.9	121.2	59.7	10.4	767.7	184 (1933)	66 (1918)	152.4	1955	May 21
		b	0.3	0.3	0.3	2.4	5.0	7.1	14.4	12.7	8.5	7.0	3.0	0.7	61.7					
Honnali	50	a	2.8	6.1	4.3	38.1	85.1	54.9	87.9	65.3	81.0	130.1	45.2	10.9	611.7	213 (1933)	58 (1908)	148.6	1939	Oct 15
		b	0.2	0.2	0.4	2.4	4.7	5.1	9.4	6.1	5.3	6.8	2.4	0.6	43.6					
Shikarpur	50	a	1.3	2.3	8.6	41.4	74.9	132.6	280.4	148.8	82.5	145.3	45.0	16.5	979.6	170 (1948)	53 (1922)	172.7	1923	Jul 10
		b	0.1	0.1	0.6	3.1	4.3	10.8	19.0	13.9	7.7	7.0	3.0	0.8	70.4					
Sorab	50	a	1.8	1.3	8.1	31.7	58.9	276.3	587.5	287.3	120.9	131.3	46.2	11.4	1562.7	144 (1948)	57 (1905)	250.2	1923	Jul 10
		b	0.1	0.1	0.6	2.3	3.7	15.7	24.7	19.9	10.4	7.6	2.8	0.6	88.5					
Sagar	50	a	2.3	3.1	9.7	42.2	61.7	396.2	805.2	417.8	150.6	147.3	49.3	10.9	2096.3	164 (1923)	58 (1905)	287.8	1923	Jul 20
		b	0.2	0.2	0.7	3.2	3.9	18.2	26.6	23.2	12.4	7.8	3.2	0.8	100.4					
Nagar (Hosanagar)	50	a	2.8	1.0	7.1	41.4	86.6	613.7	1177.0	554.7	196.6	141.5	45.0	8.1	2875.5	164 (1948)	58 (1918)	406.4	1926	Jul 8
		b	0.3	0.1	0.6	2.9	4.6	19.7	26.2	22.8	13.3	8.7	3.1	0.7	103.0					
Tirthahalli	50	a	2.5	1.8	5.3	32.8	78.7	524.3	1243.6	673.1	211.6	145.0	49.3	10.9	2978.9	151 (1923)	72 (1905)	342.9	1904	Jun 21
		b	0.3	0.1	0.5	2.6	4.5	20.4	27.6	25.2	14.2	8.5	3.4	0.7	108.0					
Kumsi	47	a	2.5	1.3	7.6	46.7	76.5	158.2	308.1	169.4	94.0	119.1	45.7	11.7	1040.8	134 (1932)	63 (1905)	176.5	1909	May 7
		b	0.3	0.0	0.7	3.3	5.0	12.7	20.8	16.7	9.3	7.4	3.1	0.8	80.1					
Shimoga (District)		a	2.8	2.5	7.0	37.3	75.3	259.5	540.7	283.5	125.6	133.2	47.8	11.5	1526.5	135 (1933)	69 (1916)			
		b	0.2	0.2	0.6	2.7	4.5	13.2	20.5	16.9	9.8	7.6	3.0	0.7	79.9					
Agumbe	50	a	4.1	3.3	4.6	33.3	148.6	1713.7	3137.1	2092.9	785.5	261.6	77.5	13.5	8275.7	156 (1946)	76 (1915)	562.9	1922	Jul 23
		b																		

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
1001 - 1100	2	1501 - 1600	4
1101 - 1200	0	1601 - 1700	3
1201 - 1300	5	1701 - 1800	9
1301 - 1400	9	1801 - 1900	4
1401 - 1500	11	1901 - 2000	0
		2001 - 2100	3

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(SHIMOGA)

Month	Mean Daily Max. °C	Min. °C	Highest Max. ever recorded °C	Date	Lowest Min. ever recorded °C	Date	Relative Humidity 0830 %	1730* %
January	30.5	14.6	33.9	1964 Jan 29	6.5	1975 Jan 8	76	33
February	32.9	16.1	37.8	1959 Feb 25	9.0	1967 Feb 7	76	27
March	35.3	19.1	38.9	1953 Mar 20	11.7	1951 Mar 7	77	27
April	35.7	22.2	39.5	1966 Apr 7	11.5	1971 Apr 18	75	44
May	33.8	22.5	39.2	1959 May 1	17.0	1977 May 7, 11	78	57
June	29.0	21.7	36.1	1953 Jun 3	18.3	1956 Jun 15	83	73
July	26.8	21.1	33.6	1966 Jul 7	16.6	1963 Jul 27	88	81
August	27.1	21.0	31.1	1965 Aug 8	16.1	1954 Aug 25	87	78
September	28.6	20.5	33.3	1951 Sep 21	16.1	1952 Sep 14	85	74
October	29.2	20.3	34.1	1976 Oct 13	11.7	1952 Oct 31	86	70
November	29.1	17.3	33.6	1965 Nov 5	8.0	1974 Nov 18	82	57
December	28.9	14.4	32.2	1976 Dec 22	7.4	1966 Dec 15	76	43
Annual	30.6	19.2					81	55

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(SHIMOGA)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
4.1	4.3	4.9	5.3	6.3	7.4	6.7	6.3	5.2	4.0	4.2	4.5	5.3

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(SHIMOGA)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.0	0.1	1.8	7.8	6.8	1.3	0.4	0.0	1.9	2.6	0.4	0.1	23.2
Hail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dust-Storm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fog	13.0	9.0	8.0	0.2	0.0	0.0	0.0	0.0	0.2	3.0	8.0	8.0	49.0

* No.of days 2 and above are given in whole numbers.

TUMKUR DISTRICT

The climate of this district excluding the northernmost part is similar to that of Bangalore district. But the climate of Pavagadda region and the part of the district north of Sira resembles that of Chitradurga district with a somewhat hotter summer. The year may be divided into four seasons. The dry season with clear bright weather is from December to February. The period March to May constitutes the hot season and the southwest monsoon season is from June to September. October and November may be termed as the post-monsoon season.

RAINFALL

Records of rainfall are available for ten stations for periods ranging from 98 to 110 years. Although rainfall data for some more stations are available for varying periods, only data of the ten stations and for the district as a whole are included in tables 1 and 2 and these are quite representative of the conditions in the district. The average annual rainfall in the district is 687.9 mm. The rainfall increases from the north to the south generally and in the western part of the district from the west to the east. The rainfall is mostly confined to the period May to November. The rainfall during the southwest monsoon season is only 50% of the annual rainfall. The post-monsoon month of October is the month with the heaviest rainfall. Rainfall in this month and in November constitutes 28% of the annual total. Rain mostly in the form of thundershowers occurs in the latter half of April and in May. There are variations in the annual rainfall from year to year. During the 50 year period, 1901 to 1950, the highest rainfall in a year amounting to 148% of the normal occurred in 1948, while the lowest rainfall was 50% of the normal and occurred in 1923. In the same 50 year period rainfall less than 80% of the normal was received in 13 years. Considering the district as a whole rainfall less than 80% of the normal occurred twice on two consecutive years. At most of the individual stations there were two or three such occasions. But at Gubbi the rainfall was less than 80% on six consecutive years from 1920 to 1925. It will be seen from table 2 that the rainfall in the district was between 400 and 900 mm. in 41 years out of 50.

On an average there are 45 rainy days (i. e. days with rainfall of 2.5 mm. or more) in a year. This number varies from 35 at Pavagadda to 54 at Tumkur.

The heaviest rain in 24 hours which fell at any station in the district was 209.5 mm at Kunigal on 1925 September, 30.

TEMPERATURE

There is a meteorological observatory at Tumkur in the district, but it has started very recently. So, from the records of the observatories in the adjoining districts a broad picture of the climatic conditions in the district can be formed. The period from March to May is one of continuous rise in temperatures. April is usually the hottest month. Maximum temperatures may sometimes reach 39.0°C. With the advance of the southwest monsoon over the district in June, the temperature drops appreciably and throughout the monsoon season weather is pleasant. After October temperatures decrease steadily and the weather remains cool till February. December is generally the coolest month of the year. The daily minimum temperatures in the cold season sometimes go down to 9.0°C to 10.0°C.

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HUMIDITY

Relative humidities are high, about 75%, during the southwest monsoon period and are generally moderate in the rest of the year. The humidities in the summer afternoons are comparatively lower and is about 30%.

CLOUDINESS

Skies are heavily clouded to overcast in the southwest monsoon season and to a slightly lesser extent in the post monsoon months. In the rest of the year, skies are clear or lightly clouded. There is some increase in cloudiness in the summer afternoons.

WINDS

Winds are generally moderate with some increase in strength in the monsoon months. From May to September winds are mainly southwesterly or westerly and on some afternoons northwesterly. Northeasterly and easterly winds appear in October and these predominate till the end of January. There is a gradual shift of wind in a clock-wise direction from February and by April winds are mainly southwesterly to westerly in the mornings and between northeast and southeast in the afternoons.

SPECIAL WEATHER PHENOMENA

Occasional thunderstorms occur in February and March and these become more frequent in April, May and the early part of June. Even in the monsoon season rain is sometimes associated with thunder. Thunderstorms increase in frequency again in September and October.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *		
																		Amount (mm)		Date
Tumkur	50	a	3.8	9.9	8.1	32.8	91.9	77.0	97.3	123.7	152.1	142.7	60.5	7.1	806.9	168 (1903)	56 (1942)	152.4	1966	May 2
		b	0.3	0.6	0.4	2.6	5.8	5.9	8.2	9.2	8.7	7.8	3.9	0.7	54.1					
Mandhugiri	50	a	5.3	4.6	6.3	31.0	74.9	64.8	75.4	96.0	145.5	142.0	62.5	9.4	717.7	146 (1948)	51 (1923)	195.6	1901	Sep 15
		b	0.5	0.4	0.4	2.1	4.5	4.7	6.5	6.7	7.6	7.4	4.1	0.9	45.8					
Chiknayakan Halli	50	a	2.8	5.1	9.7	37.1	103.1	60.2	67.3	83.8	115.8	146.1	69.3	9.4	708.7	153 (1917)	52 (1908)	183.6	1928	Oct 13
		b	0.3	0.3	0.7	2.7	6.0	4.5	6.5	6.7	7.0	7.8	4.0	0.6	47.1					
Sira	50	a	6.1	3.3	4.8	21.3	77.0	45.7	46.5	75.4	113.5	117.3	47.5	7.4	565.8	215 (1916)	44 (1942)	136.7	1946	Nov 22
		b	0.4	0.3	0.4	1.8	4.6	3.2	4.6	4.6	6.0	6.4	2.8	0.6	35.7					
Gubbi	50	a	2.5	5.8	6.1	33.8	99.8	72.1	86.6	111.0	140.5	142.5	63.0	7.9	771.6	185 (1948)	26 (1923)	165.6	1940	Nov 13
		b	0.3	0.4	0.6	2.2	5.8	5.0	7.6	8.2	8.0	7.3	3.7	0.8	49.9					
Tiptur	50	a	1.8	4.1	6.3	37.3	103.1	47.5	49.3	72.9	92.5	125.2	64.8	10.4	615.2	168 (1906)	45 (1908)	141.2	1935	Oct 19
		b	0.3	0.3	0.5	2.8	6.3	3.7	4.6	5.3	6.2	7.1	4.0	0.9	42.0					
Pavagada	50	a	4.1	3.8	5.3	20.3	72.4	48.0	51.6	79.5	112.0	103.9	51.8	7.6	560.3	179 (1916)	34 (1920)	132.1	1899	Sep 8
		b	0.3	0.3	0.4	1.4	3.9	3.1	4.7	4.9	6.5	5.4	3.4	0.7	35.0					
Kunigal	50	a	2.5	3.3	7.6	35.8	104.4	68.3	69.6	115.1	144.0	147.6	57.9	8.4	764.5	152 (1948)	42 (1908)	209.5	1925	Sep 30
		b	0.3	0.4	0.5	3.0	6.5	4.7	6.0	7.7	8.0	8.2	3.6	0.7	49.6					
Koratagere	50	a	4.8	5.1	4.3	27.2	82.8	59.4	74.4	84.8	123.7	125.2	58.7	7.9	658.3	160 (1933)	45 (1923)	134.6	1937	Sep 26
		b	0.4	0.4	0.4	2.0	4.7	4.4	6.6	6.2	7.1	7.1	4.1	0.9	44.3					
Turuvekere	50	a	2.5	4.1	6.6	33.0	107.7	55.6	56.6	89.9	120.7	147.3	74.7	10.2	708.9	159 (1915)	43 (1908)	174.0	1934	Nov 5
		b	0.3	0.3	0.5	2.9	6.6	4.0	5.1	6.6	7.0	8.3	4.3	0.9	46.8					
Tumkur (District)		a	3.6	4.9	6.5	31.0	91.7	59.9	67.5	93.2	126.0	134.0	61.1	8.5	687.9	148 (1948)	50 (1923)			
		b	0.3	0.4	0.5	2.3	5.5	4.3	6.0	6.6	7.2	7.3	3.8	0.8	45.0					

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
301 - 400	2	701 - 800	12
401 - 500	2	801 - 900	4
501 - 600	11	901 - 1000	4
601 - 700	12	1001 - 1100	3

COSTAL KARNATAKA

NORTH KANARA DISTRICT

The district consists of the coastal strip, the region of the western ghats and the pleteau region to the east of the ghats. The elevations vary from sea level to about 1800 m. and as such the climatic features vary much. The climate is characterised by high humidities, nearly all the year round in the coastal strip and in the western ghats region while in the area east of the ghats the climate is drier except in the southwest monsoon season. The rainfall is plentiful particularly in the coastal and western ghats region. The year may be divided into four seasons. The summer from March to May is followed by the southwest monsoon season from June to September. October and November constitute the retreating monsoon or post-monsoon season. The period from December to February is generally dry with clear bright skies.

RAINFALL

Records of rainfall in the district are available for 11 stations for periods ranging from 40 to more than 100 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 2741.7 mm. The rainfall in the district in general decreases gradually from the coast towards the western ghats region and there after rapidly further eastwards. The southern most portion of the coastal strip in this district is the region with the highest rainfall along the whole of the west coast of India.The rainfall in the district varies from 3854.3 mm. at Bhatkal near the southwestern border of the district to 1155.2 mm. at Mundgod near the northeastern border. Heavy rainfall occurs during the three months June to August and later decreases rapidly. July is the rainiest month. The rainfall during the monsoon months June to September constitutes about 89% of the annual rainfall. The rainfall during the pre-monsoon month of May and the post-monsoon months of October and November is mostly in the form of thundershowers. The variation in the rainfall from year to year is small. During the 50 year period, 1901 to 1950 the highest annual rainfall amounting to 133% of the normal occurred in 1933 while 1905 and 1918 were the years with the lowest annual rainfall which was 70% of the normal. Rainfall less than 80% of the normal occurred in five years out of these fifty years in the district and none of them were consecutive. However, considering the rainfall at the individual stations two consecutive years with rainfall less than 80% of the normal occurred once or twice at 8 out of the 11 stations and 3 consecutive years of such low rainfall once each at Bhatkal and Haliyal. It will be seen from table 2 that the annual rainfall in the district was between 2500 and 3100 mm. in 27 years out of 50.

On an average there are 103 rainy days (i. e. days with rainfall of 2.5 mm. or more) in a year in the district. This number decreases from 114 at Bhatkal and Honavar on the coast to 87 at Mundgod near the northeastern border of the district.

The heaviest rainfall in 24 hours recorded at any station in the district was 579.6 mm. at Kumta on 1966 July, 30.

TEMPERATURE

There are three meteorological observatories in the district, one each at Honavar, Karwar and Shirali. Of these the observatory at Shirali was started recently. The records of the other two observatories may be taken as broadly representative of the conditions in the district in general except that the temperature at higher elevations over the ghats is likely to be a couple of degree lower and in the region east of the ghats a few degrees higher than in the coastal region. Temperatures begin to increase

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steadily from about the end of February. April and May are the hottest months with the mean daily maximum temperature at about 32.0°C to 33.0°C and the mean daily minimum at 25.0°C to 26.0°C in the coastal parts. On individual days the day temperature may go upto about 35.0°C in the coastal region and to about 38.0°C in the portion east of the ghats. Weather during the period March to May is very oppressive due to the moist heat. Thundershowers which occur on the afternoons of some of the days bring welcome relief. In the coastal areas the oppressive heat is often relieved by the comparatively cool sea breeze which blows in the afternoons. With the onset of the southwest monsoon by about the beginning of June, temperatures decrease and weather becomes pleasant. By about the first week of October, when the southwest monsoon withdraws, day temperatures increase slightly but night temperatures begin to decrease. During the post-monsoon period, day temperatures upto the end of December, are as high as during the period March to May. But night temperatures decrease steadily. After December both day and night temperatures decrease till February and thereafter they increase.

The highest maximum temperature recorded at Honavar was 37.8°C on 1948 March, 17, while it was 38.9°C at Karwar on 1956 April, 16. The lowest minimum temperature at Honavar was 14.2°C on 1960 February, 18, and 11.9°C at Karwar on 1911 February, 3.

HUMIDITY

The relative humidity is generally high throughout the year and particularly so in the southwest monsoon months, when they are of the order of 85% to 90%.

CLOUDINESS

In the period from December to February the sky is mainly clear or lightly clouded. Cloudiness gradually increases from March and during the period March to May the afternoons are more cloudy than the mornings. During the southwest monsoon season skies are mostly overcast or heavily clouded. From October cloudiness decreases.

WINDS

Winds are light to moderate with some strengthening in the southwest monsoon season. In the southwest monsoon season winds blow from directions between southwest and northwest. In the period October to February winds are mostly northeasterly to easterly in the mornings and from directions between southwest and northwest in the afternoons. In the summer season easterly to southeasterly winds are more common in the mornings while in the afternoons they continue to be from directions southwest and northwest.

SPECIAL WEATHER PHENOMENA

During the latter half of the summer season and in the post monsoon season, the district, particularly the coastal region, experiences very strong winds, sometimes reaching gale force, and heavy rain in association with cyclonic storms which develop in the Arabian Sea and move in close proximity to the coast. Thunderstorms occur in the latter part of the hot season and in the post monsoon months.

Tables 3, 4 and 5 give the temperature and relative humidity, mean wind speed and special weather phenomena respectively for Honavar and tables 3(a), 4(a) and 5(a) give similar data for Karwar.

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T A B L E - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours * Amount (mm)	Date
Ankola	50	a	0.3	1.5	0.3	15.2	80.0	1009.1	1140.7	566.4	282.5	138.7	56.6	5.3	3296.6	143 (1933)	58 (1941)	348.7	1897 Jun 16
		b	0.1	0.1	0.1	0.9	3.4	23.5	28.3	24.4	14.8	6.9	2.7	0.3	105.5				
Kumta	50	a	1.5	2.5	2.3	15.0	93.7	1097.5	1236.7	694.7	360.2	156.7	55.4	10.4	3726.6	159 (1933)	64 (1911)	579.6	1966 Jul 30
		b	0.1	0.1	0.1	1.0	3.9	23.8	28.5	26.2	16.5	7.3	2.6	0.4	110.5				
Honavar	12	a	3.6	0.3	0.3	15.7	114.8	1042.9	1095.0	702.6	341.6	124.2	56.1	4.3	3501.4	115 (1943)	74 (1941)	485.7	1923 Aug 8
		b	0.5	0.0	0.0	1.2	4.9	25.6	29.5	25.7	16.7	6.6	3.1	0.3	114.1				
Bhatkal	50	a	4.6	0.8	1.3	17.3	110.5	1084.8	1281.2	756.7	369.3	163.6	56.6	7.6	3854.3	132 (1950)	69 (1941)	360.7	1923 Jul 9
		b	0.1	0.1	0.1	0.9	4.6	24.5	28.6	26.6	16.9	8.4	2.8	0.5	114.1				
Haliyal	50	a	1.8	3.8	12.7	45.7	76.7	192.5	397.0	232.4	113.0	135.4	44.2	12.5	1267.7	153 (1933)	53 (1905)	220.5	1914 Aug 6
		b	0.1	0.1	0.9	3.3	4.8	14.6	23.7	18.7	10.2	8.0	2.8	0.6	87.8				
Supa	50	a	0.5	0.8	7.4	40.6	53.9	402.8	976.9	500.6	171.5	118.6	47.0	11.2	2331.8	141 (1923)	58 (1918)	224.8	1923 Jul 20
		b	0.1	0.1	0.5	2.7	3.5	17.9	27.1	23.8	13.2	8.0	3.0	0.6	100.5				
Yellapur	50	a	1.0	1.0	7.6	31.7	57.9	485.9	1008.1	553.7	187.7	125.2	41.9	9.4	2511.1	141 (1933)	64 (1905)	248.9	1928 Jul 28
		b	0.1	0.1	0.6	2.5	4.2	19.7	26.9	24.0	14.3	8.5	3.1	0.6	104.6				
Mundgod	50	a	1.8	1.3	7.6	42.7	72.9	182.6	338.1	206.8	119.6	125.2	43.9	12.7	1155.2	135 (1943)	62 (1905)	190.5	1961 Jul 2
		b	0.1	0.1	0.6	3.1	5.0	13.9	22.4	19.0	11.4	7.4	3.0	0.8	86.8				
Sirsi	50	a	1.3	1.5	5.8	31.7	55.4	527.1	992.4	507.0	187.7	134.9	49.5	8.9	2503.2	139 (1923)	65 (1905)	340.9	1923 Jul 10
		b	0.1	0.1	0.5	2.1	3.8	19.9	27.5	23.9	14.0	8.7	3.0	0.6	104.2				
Siddapur	50	a	2.3	1.8	5.8	25.7	61.2	578.9	1208.3	627.9	215.4	146.3	52.6	10.4	2936.6	150 (1942)	67 (1905)	323.3	1901 Jul 9
		b	0.2	0.2	0.5	2.1	3.7	20.1	27.8	25.2	14.3	8.1	3.1	0.7	106.0				
Karwar	50	a	0.5	1.3	0.0	15.2	82.0	987.3	1010.7	507.2	281.7	128.5	53.1	7.1	3074.6	151 (1933)	67 (1941)	334.5	1897 Jun 16
		b	0.1	0.1	0.0	0.9	3.4	23.2	27.7	24.2	15.1	6.6	2.8	0.5	104.6				
North Kanara (District)		a	1.7	1.5	4.6	27.0	78.1	690.1	971.4	532.4	239.1	136.1	50.6	9.1	2741.7	133 (1933)	70 (1905) and (1918)		
		b	0.1	0.1	0.4	1.9	4.1	20.6	27.1	23.8	14.3	7.7	2.9	0.5	103.5				

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
1901 - 2100	3	2701 - 2900	5
2101 - 2300	6	2901 - 3100	9
2301 - 2500	7	3101 - 3300	4
2501 - 2700	13	3301 - 3500	2
		3501 - 3700	1

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(HONAVAR)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	31.9	20.0	36.5	1961 Jan 17	15.2	1964 Jan 13	68	59
February	31.3	20.5	37.5	1977 Feb 19	14.2	1960 Feb 18	75	64
March	31.9	22.7	37.8	1948 Mar 17	17.6	1971 Mar 6	79	67
April	32.4	25.2	36.1	1977 Apr 7	20.6	1951 Apr 1	78	70
May	32.3	25.8	36.6	1978 May 3	20.6	1943 May 29	79	72
June	29.3	24.1	34.7	1963 Jun 1	20.3	1966 Jun 27	89	86
July	28.2	23.5	33.7	1964 Jul 2	20.6	1963 Jul 28	92	90
August	28.4	23.5	31.8	1957 Aug 23	19.4	1955 Aug 16	92	88
September	28.8	23.2	33.2	1976 Sep 30	20.4	1963 Sep 19	91	84
October	30.6	23.2	36.1	1977 Oct 14	18.3	1950 Oct 26	85	79
November	32.5	21.9	36.7	1941 Nov 3	15.6	1950 Nov 27	70	66
December	32.7	20.9	37.2	1976 Dec 5	15.6	1966 Dec 16	63	59
Annual	30.9	22.9					80	74

* Hours I.S.T.

T A B L E - 3(a)

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(KARWAR)

Month	Mean Daily Max. °C	Min. °C	Highest Max. ever recorded °C	Date	Lowest Min. ever recorded °C	Date	Relative Humidity 0830 %	1730* %
January	30.5	18.9	36.1	1927 Jan 26	12.7	1975 Jan 8	76	60
February	30.8	19.7	38.1	1962 Feb 14	11.9	1911 Feb 3	80	66
March	30.9	22.5	37.6	1963 Mar 3	15.6	1978 Mar 13	81	71
April	31.6	25.3	38.9	1956 Apr 16	16.9	1905 Apr 1	76	71
May	31.5	26.3	36.4	1964 May 23	20.3	1974 May -	80	75
June	29.4	24.8	34.9	1921 Jun 1	20.6	1958 Jun 28	88	82
July	28.0	24.0	32.0	1977 Jul 6	18.3	1882 Jul 6	88	86
August	27.9	24.1	31.1	1932 Aug 22	20.9	1970 Aug 10	89	86
September	28.4	23.8	32.3	1896 Sep 30	20.7	1975 Sep 3	90	83
October	29.9	23.6	35.9	1960 Oct 24	16.8	1882 Oct 28	87	79
November	31.6	20.9	36.4	1976 Nov 17	13.7	1884 Nov 17	76	69
December	32.1	19.4	36.0	1960 Dec 9	12.5	1970 Dec 13	70	62
Annual	30.2	22.8					82	74

* Hours I.S.T.

T A B L E - 4 (a)

MEAN WIND SPEED IN KM/HR.

(KARWAR)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
3.5	4.3	5.0	5.5	6.0	6.4	6.6	4.8	3.2	2.9	2.7	3.1	4.5

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(HONAVAR)

Jan	Feb	Mar	Apr	Máy	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
5.0	5.2	5.1	5.4	6.3	6.8	7.2	6.0	4.4	4.2	4.4	5.2	5.4

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(HONAVAR)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.0	0.0	0.5	1.6	4.0	6.0	0.5	0.0	0.7	2.0	2.0	0.4	18.0
Hail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dust-Storm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fog	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

* No.of days 2 and above are given in whole numbers.

T A B L E - 5 (a)

SPECIAL WEATHER PHENOMENA

(KARWAR)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.0	0.0	0.1	1.2	1.4	1.1	0.1	0.1	0.6	2.7	0.5	0.0	7.8
Hail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dust-Storm	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.3
Squall	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.8
Fog	5.6	3.9	2.7	0.0	0.0	0.0	0.0	0.3	2.1	1.9	5.5	3.5	25.5

* No.of days 2 and above are given in whole numbers.

SOUTH KANARA DISTRICT

The climate of this district is marked by heavy rainfall, high humidities and oppressive weather in the hot season. The year may be divided into four seasons. The hot season from March to May is followed by the southwest monsoon season from June to September. October and November constitute the retreating monsoon or post-monsoon season. December to February may be called the northeast monscon season although the rains associated with the northeast monsoon cease after December and the rest of the season is generally dry.

RAINFALL

The district has good network of nine raingauge stations, records of which extend to periods ranging from 80 to 110 years. A statement of the rainfall at these stations and for the district as a whole are given in tables 1 and 2. The main rainy season is from June to September. The average annual rainfall in the district is 3930 mm. The rainfall increases from the coast towards the western ghats on the eastern border of the district. In the coastal strip in the northern most part of the district in the Bhatkal-Baindur region the rainfall is heavier than in the southern coastal strip. About 87% of the annual rainfall is received during the southwest monsoon season; July being the month with the heaviest rainfall. Some rainfall is received in May and the post-monsoon months. The variation in the rainfall from year to year is not large. Considering the district as a whole during the 50 year period, 1901 to 1950, the highest annual rainfall amounting to 127% of the normal occurred in 1946. In the same 50 year period 1941 was the year in which the lowest annual rainfall amounting to 73% of the normal was received. This was also the only year when the rainfall was less than 80% of the normal. It will be seen from table 2 that in 34 years out of 50 the annual rainfall in the district was between 3400 and 4400 mm.

On an average on 123 days in a year the district gets rainfall of 2.5 mm. or more. As in the case of the amount of rainfall the humber of rainy days in a year increase from the coast towards the western ghats.

The heaviest rainfall in 24 hours which occurred at any station in the district was 373.9 mm. at Coondapur on 30th July, 1902.

TEMPERATURE

There are three meteorolcgical observatories in the district all located at Mangalore but at different places one is in the city, the other at the airport of Bajpe and the third one at the New Mangalore Port at Panambur. The records for the city station are available for about seventy years and hence the temperature and other meteorological conditions in the district can be taken to be represented by the data for that station. Being a coastal district the seasonal variations in the temperature are small. The southwest monsoon season is the coolest part of the year with the mean daily maximum temperature below 29.0°C. Although April and May may be considered to be the hottest months of the year as both day and night temperatures are higher than in the rest of the year, day temperatures remain high even in the period December to February. The oppressive heat is often relieved by the comparatively cool sea breezes which blow in the afternoon. The highest maximum temperature ever recorded at Mangalore was 37.8°C on 1920 February, 28 and the lowest minimum was 16.7°C recorded on 1911 January, 13, 1911 February, 8 and 1950 December, 10.

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HUMIDITY

The air is highly humid all through the year and particularly so in the southwest monsoon months, when it is about 85%.

CLOUDINESS

Skies are heavily clouded or overcast on most days in the southwest monsoon season. The number of such heavily clouded days are fewer in the post-monsoon months of October and November. In the rest of the year skies are generally lightly clouded or clear.

WINDS

Winds are strong and blow mainly from direction between southwest and northwest in the southwest monsoon months. In the rest of the year winds are mainly from directions between north and east in the forenoons and westerly or northwesterly in the afternoons.

SPECIAL WEATHER PHENOMENA

Thunderstorms occur on five to eight days in a month during the period April to June and on three to seven days in a month in the post-monsoon months of October and November. Squalls are possible in the latter part of the hot season and the early part of the southwest monsoon season. In association with storms in the Arabian Sea in months of April, May and June and to a greater extent in the post monsoon months of October and November the district gets heavy rainfall and high squally winds all along the coastal regions.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and frequency of special weather phenomena respectively for Mangalore.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *		
																		Amount (mm)	Date	
Mangalore	50	a	4.8	2.5	8.9	35.3	177.5	966.7	1019.6	607.1	272.0	208.0	79.8	15.7	3397.9	138 (1946)	72 (1941)	360.9	1909	May 8
		b	0.3	0.2	0.5	2.1	7.2	24.7	27.6	25.1	16.0	10.2	4.8	0.9	119.6					
Bettangady	50	a	5.6	2.3	8.6	51.1	151.9	976.4	1572.0	975.6	392.2	304.3	122.4	20.3	4582.7	130 (1923)	72 (1915)	359.9	1941	Jun 11
		b	0.4	0.1	0.7	3.3	7.4	24.7	29.1	27.1	18.1	13.5	5.9	1.2	131.5					
Puttur	50	a	5.3	2.5	13.5	38.9	160.3	928.4	1237.7	772.4	297.9	277.1	111.5	16.8	3862.3	127 (1946)	75 (1944)	336.0	1887	Oct 9
		b	0.5	0.2	0.7	2.7	6.9	24.3	28.7	26.4	16.8	12.9	5.9	1.1	127.1					
Udipi	50	a	3.6	3.3	3.3	29.7	141.5	995.9	1197.6	721.6	351.5	187.2	68.8	14.7	3718.7	128 (1902)	59 (1941)	276.1	1902	Jul 30
		b	0.3	0.1	0.2	2.0	5.8	25.1	28.2	26.0	17.4	9.0	3.8	1.0	118.9					
Bantwal	50	a	6.1	1.3	6.3	33.8	143.5	1003.8	1225.3	732.8	290.3	223.0	85.3	21.0	3772.8	130 (1946)	77 (1913)	290.8	1946	Aug 7
		b	0.3	0.1	0.4	2.3	6.4	24.7	28.9	26.4	16.3	11.8	5.2	1.2	124.0					
Baindur	50	a	1.3	0.8	2.3	23.9	121.4	1123.9	1361.7	823.2	395.2	201.2	73.4	9.1	4137.4	146 (1948)	68 (1911)	346.5	1955	May 21
		b	0.1	0.1	0.2	1.2	4.8	24.8	29.2	27.1	18.0	9.6	3.9	0.8	119.8					
Mulki	50	a	5.1	1.8	3.3	35.8	162.3	984.5	1074.2	668.8	297.7	194.3	66.3	16.8	3510.9	135 (1929)	65 (1941)	303.5	1909	May 8
		b	0.3	0.1	0.3	1.7	6.7	24.7	28.2	25.6	16.4	9.9	4.0	1.0	118.9					
Karkal	50	a	7.6	1.8	12.2	48.5	160.5	1108.5	1532.1	976.4	412.2	298.7	111.8	24.1	4694.4	127 (1946)	65 (1941)	302.0	1923	Jun 24
		b	0.4	0.1	0.8	3.5	6.9	25.5	29.5	27.6	18.8	13.8	6.2	1.5	134.6					
Coondapur	50	a	1.5	2.5	3.8	25.7	126.5	1037.8	1211.3	698.3	349.8	156.2	66.0	13.5	3692.9	135 (1946)	66 (1941)	373.9	1902	Jul 30
		b	0.1	0.1	0.1	1.3	5.1	24.5	28.2	25.8	16.8	7.9	3.3	0.8	114.0					
South Kanara (District)		a	4.5	2.1	6.9	35.9	149.5	1014.0	1270.2	775.1	339.9	227.8	87.3	16.9	3930.1	127 (1946)	73 (1941)			
		b	0.3	0.1	0.4	2.2	6.4	24.8	28.6	26.3	17.2	11.0	4.8	1.1	123.2					

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
2801 - 3000	1	4001 - 4200	10
3001 - 3200	3	4201 - 4400	6
3201 - 3400	3	4401 - 4600	7
3401 - 3600	7	4601 - 4800	1
3601 - 3800	6	4801 - 5000	0
3801 - 4000	5	5001 - 5200	1

TABLE - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(MANGALORE)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	31.4	21.7	36.3	1961 Jan 17	16.7	1911 Jan 13	71	61
February	31.1	22.8	37.8	1920 Feb 28	16.7	1911 Feb 8	75	66
March	31.7	24.5	37.3	1958 Mar 7	18.3	1911 Mar 4	75	67
April	32.4	26.1	36.6	1972 Apr 20	20.0	1954 Apr 23	73	69
May	32.1	26.0	36.7	1921 May 2	18.9	1911 May 6	77	72
June	29.4	23.9	34.4	1923 Jun 5	19.6	1970 Jun 6	89	85
July	28.5	23.5	35.6	1959 July 9	19.2	1968 Jul 8	91	88
August	28.5	23.6	32.2	1932 Aug 26	19.4	1963 Aug 17	91	87
September	28.7	23.5	32.5	1978 Sep 11	19.0	1970 Sep 18, 20	89	83
October	29.8	23.8	35.0	1963 Oct 18	18.8	1970 Oct 29	85	79
November	31.1	23.2	35.6	1941 Nov 3	18.0	1970 Nov 26	77	69
December	31.7	21.9	35.0	1953 Dec 1	16.7	1950 Dec 10	69	62
Annual	30.5	23.7					80	74

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(MANGALORE)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
8.5	8.8	8.5	8.9	9.6	9.3	9.4	7.9	6.8	7.3	7.2	8.1	8.4

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(MANGALORE)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.3	0.1	1.2	5	8	5	1.9	0.8	1.3	7	3	0.9	35
Hail	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Dust-Storm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Squall	0.1	0.0	0.0	0.1	0.7	1.5	1.6	0.4	0.1	0.2	0.1	0.1	5
Fog	0.2	0.0	0.3	0.1	0.0	0.0	0.2	0.1	0.9	0.6	0.4	0.0	3

* No.of days 2 and above are given in whole numbers.

INTERIOR KARNATAKA

NORTH

BELGAUM DISTRICT

The climate of this district is characterised by general dryness except during the monsoon season. The year may be divided into four seasons. The summer season from March to May is followed by the southwest monsoon season which lasts upto the end of September. October and November constitute the post-monsoon or retreating monsoon season. The cold season is from December to February.

RAINFALL

Records of rainfall in the district are available for ten stations for periods ranging from 44 to 100 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 784.7 mm. The rainfall is high in the southwestern parts of the district in the close proximity of the western ghats and decreases very rapidly towards the east. The rainfall in the district thus decreases from 1683.6 mm. at Khanapur near the western ghats to 509.5 mm. at Raibag. About 68% of the annual rainfall in the district is received during the monsoon months June to September, July being generally the rainiest month. Some rainfall in the form of thundershowers is received in the latter half of summer and the post-monsoon seasons. The variation in the annual rainfall in the district as a whole from year to year is not large. During the 50 year period 1901 to 1950, 1914 was the year with the highest annual rainfall in the district which was 155% of the normal. The lowest annual rainfall amounting to 68% of the normal occurred in 1918. But in the eastern parts of the district where the rainfall is comparatively less than in the rest of the district, the variation from year to year is large. In this 50 year period the annual rainfall in the district was less than 80% of the normal in only 4 years and none of them were consecutive. However, considering the annual rainfall at individual stations such low rainfall in two consecutive years is quite common in the district, occurring at least once at all the stations and even 4 times at 2 out of the 10 stations (Saundatti and Gokak). Even 3 consecutive years of such low rainfall occurred once each at Hukeri and Ramdurg and 4 and 5 consecutive years at Bailhongal and Athni respectively. It will be seen from table 2 that the annual rainfall in the district was between 600 and 900 mm. in 37 years out of 50.

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 37 at Athni to 88 at Khanapur.

The heaviest rainfall in 24 hours recorded at any of the stations in the district was 307.3 mm. at Khanapur on 1914 August, 5.

TEMPERATURE

There are two meteorological observatories in the district, one at Central Telegraph Office and the other at Sambre (Aerodrome). The former is functioning since 1856 having been shifted in 1955 from the earlier site at military hospital. The airport observatory is functioning from 1952. As the observatory at C. T. O. has a long period of data these have been taken as representative of the climatic conditions in the district in general. After February there is a steady increase in the temperatures. April is generally the hottest month with the mean daily maximum 35.7°C and the mean daily minimum at 19.5°C. Nights during May and June are comparatively warmer than in April. The summer season on the whole is milder than in the neighbouring districts of the Deccan, especially in the narrow tract parallel to the Sahyadris. But in the eastern parts of the district temperatures in summer would be higher. On individual days

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during the summer season, the day temperature occasionally rises upto 41.0°C at Belgaum. Afternoon thundershowers which occur on some days bring welcome relief, though only temporarily. With the onset of the southwest monsoon into the district early in June there is appreciable drop in the day temperature but nights are quite warm as in the latter part of the hot season. From September there is a slight increase in the day temperatures and a secondary maximum in day temperature is reached in October. But the nights become progressively cooler from September onwards. December is generally the coldest month with the mean daily maximum temperature at 29.3°C and the mean daily minimum at 13.9°C. On individual days during the period December to February, the minimum temperature may go down to about 7.0°C.

The highest maximum temperature recorded at Belgaum was 40.8°C, on 1974 May 3. The lowest minimum was 6.7°C on 1901 February 14.

HUMIDITY

During the monsoon season the humidity is very high, generally being over 85%. The humidity decreases in the post-monsoon period. The driest part of the year is the period January to March when the relative humidity in the afternoons is about 30%.

CLOUDINESS

During the southwest monsoon season the skies are mostly heavily clouded or overcast. Cloudiness decreases in the post-monsoon period. In the period from December to February the skies are generally clear or lightly clouded. Cloudiness increases from April onwards, the afternoons being more cloudy generally.

WINDS

The winds are generally light with some increase in force during the late summer and monsoon seasons. During the period April to September winds blow mainly from the southwest and west. In October winds from directions between north and east are common but on some days they are from the southwest or west. During November and December the winds are mostly northeasterly or easterly. Southwesterlies and westerlies appear in January and from February onwards the easterlies decrease in frequency and the afternoon winds begin to blow more and more from the southwest and west and by April the winds blow predominantly from the west and southwest.

SPECIAL WEATHER PHENOMENA

During the post-monsoon season storms and depressions from the Bay of Bengal which weaken after crossing the east coast and occasionally move into the Arabian Sea affect the weather over the district causing widespread and locally heavy rain and strong winds. Thunderstorms occur in the summer and post-monsoon seasons. Fog occurs during the cold season.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and special weather phenomena respectively for Belgaum.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours * Amount (mm)	Date
Belgaum	50	a	3.6	1.3	9.9	43.2	66.5	190.7	459.0	247.1	118.9	111.0	40.6	11.4	1303.2	169 (1914)	56 (1905)	273.1	1914 Aug 5
		b	0.3	0.1	0.8	3.1	4.7	12.3	22.2	18.1	9.6	7.1	2.8	0.7	81.8				
Khanapur	50	a	1.3	0.8	5.1	28.7	53.3	285.0	693.9	345.9	119.9	102.9	37.1	9.7	1683.6	162 (1914)	45 (1918)	307.3	1914 Aug 3
		b	0.1	0.1	0.6	2.4	3.5	14.9	24.9	20.5	10.6	7.5	2.7	0.6	88.4				
Bailhongal	50	a	1.3	1.8	8.4	36.8	62.7	100.3	136.4	87.1	110.7	114.3	40.6	8.4	708.8	181 (1950)	58 (1934)	149.9	1950 Aug 26
		b	0.1	0.1	0.7	2.5	4.1	7.5	11.3	7.4	7.3	6.7	2.6	0.6	50.9				
Saundatti	50	a	2.8	3.3	7.4	36.1	62.7	62.5	86.9	71.4	112.0	106.7	51.1	7.4	610.3	225 (1916)	58 (1913)	149.9	1956 Oct 16
		b	0.2	0.2	0.6	2.4	4.1	6.2	8.4	5.8	6.6	6.3	2.3	0.6	43.7				
Gokak	50	a	3.6	1.3	5.6	30.0	57.1	68.8	75.9	63.0	95.3	109.5	44.2	9.7	564.0	170 (1916)	56 (1945)	180.9	1925 Oct 9
		b	0.2	0.1	0.6	2.2	3.8	5.1	6.9	4.9	5.9	6.0	2.3	0.8	38.8				
Chikodi	50	a	2.5	1.0	6.9	34.0	51.8	80.8	127.3	86.4	94.5	98.8	38.9	9.9	632.8	164 (1914)	63 (1905)	186.9	1898 Oct 6
		b	0.2	0.2	0.6	2.6	3.5	6.6	11.8	9.3	6.8	6.2	2.3	0.7	50.8				
Hukeri	50	a	1.8	2.5	8.4	32.8	66.5	82.5	129.8	82.8	103.9	109.2	43.7	11.7	675.6	170 (1950)	65 (1925)	150.1	1966 May 2
		b	0.1	0.1	0.8	2.8	4.4	6.7	11.1	8.1	6.7	6.6	2.4	0.5	50.3				
Athni	50	a	4.6	1.3	5.6	26.7	53.1	72.9	75.4	75.2	137.9	93.0	33.3	8.9	587.9	196 (1916)	45 (1905)	148.6	1952 Oct 10
		b	0.3	0.1	0.4	2.0	3.4	4.9	6.6	4.7	7.4	5.3	1.8	0.5	37.4				
Raibag	17	a	3.1	1.5	10.9	28.5	38.6	50.8	76.2	56.6	101.6	96.5	38.6	6.6	509.5	135 (1938)	51 (1945)	130.0	1966 May 4
		b	0.1	0.2	0.6	2.2	2.8	4.3	8.2	5.5	6.4	6.3	2.3	0.4	39.3				
Ramdurg	50	a	2.3	2.5	10.9	29.0	51.1	70.9	73.7	70.6	120.4	83.1	48.3	9.7	572.5	187 (1916)	56 (1904)	151.1	1916 Nov 3
		b	0.3	0.2	0.6	2.1	3.9	5.5	6.6	5.5	7.3	5.6	2.4	0.5	40.5				
Belgaum (District)		a	2.7	1.7	7.9	32.6	56.3	106.5	193.5	118.6	111.5	102.5	41.6	9.3	784.7	155 (1914)	68 (1918)		
		b	0.2	0.1	0.6	2.4	3.8	7.4	11.8	9.0	7.5	6.4	2.4	0.6	52.2				

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
501 - 600	3	901 - 1000	4
601 - 700	7	1001 - 1100	4
701 - 800	19	1101 - 1200	1
801 - 900	11	1201 - 1300	1

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(BELGAUM) **(Central Telegraph Office)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	30.1	14.0	35.7	1974 Jan 18	7.2	1946 Jan 8	66	30
February	32.2	15.1	37.2	1892 Feb 29	6.7	1901 Feb 14	61	30
March	35.0	18.0	39.4	1892 Mar 27	10.0	1957 Mar 8	62	32
April	35.7	19.5	40.5	1977 Apr 18	12.8	1955 Apr 3	72	46
May	34.0	20.6	40.8	1974 May 3	15.6	1917 May 3	78	58
June	27.5	20.6	37.9	1967 Jun 1	16.1	1912 Jun 29	85	76
July	25.2	19.8	33.6	1966 Jul 9	17.2	1912 Jul 18	90	92
August	25.6	19.4	31.7	1969 Aug 19	15.7	1957 Aug 8	92	87
September	27.0	19.0	34.3	1977 Sep 27	15.0	1902 Sep 30	89	81
October	30.1	18.6	35.0	1965 Oct 28	12.2	1906 Oct 30	81	64
November	29.3	17.1	34.6	1965 Nov 7	9.3	1964 Nov 28	70	47
December	29.3	13.9	34.6	1960 Dec 7	8.4	1970 Dec 4	67	35
Annual	30.1	18.0					76	57

* Hours I.S.T.

** Shifted in 1955 from the Military Hospital site.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(BELGAUM)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
6.4	6.6	7.2	8.5	10.6	13.0	14.4	13.5	9.9	8.1	6.8	6.5	9.3

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(BELGAUM)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.2	0.2	2	7	6	1.7	0.1	1.2	2	5	1.7	0.4	27.4
Hail	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Dust-Storm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fog	4	4	1.6	0.9	0.2	0.0	0.0	0.0	0.2	1.5	1.5	1.9	15.8

* No. of days 2 and above are given in whole numbers.

BIDAR DISTRICT

The climate of this district is characterised by general dryness throughout the year except during the southwest monsoon season. The summer season is from about the middle of February to about the first week of June. This is followed by the southwest monsoon season which continues till end of September. October and November constitute the post-monsoon or retreating monsoon season. The cold season is from December to the middle of February.

RAINFALL

Records of rainfall in the district are available for only Bidar for 98 years and the details of the rainfall are given in tables 1 and 2. The average annual rainfall at Bidar is 907.5 mm. About 81% of the annual rainfall is received during the period from June to September, September being the rainiest month. Considering the general rainfall pattern in the region around district, it is seen that rainfall in the district generally increases from the southwest towards the northeast. The variation in the rainfall from year to year is large, and the district is liable to droughts. During the period from 1901 to 1950 the highest annual rainfall which was 177% of the normal occurred in 1949 while the lowest which was only 48% occurred in 1929. Annual rainfall less than 80% of the normal occurred in 12 years out of 45 years for which data are available during the period. During the same period 2 and 3 consecutive years of such low rainfall occurred once each at Bidar. It will be seen from table 2 that the annual rainfall at Bidar was between 700 and 1200 mm. in 28 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 at Bidar.

The heaviest rainfall in 24 hours ever recorded at Bidar was 245.9 mm. on 31st July 1955.

TEMPERATURE

There is a meteorological observatory in the district at Bidar. The records of this observatory may be taken as representative of the meteorological conditions prevailing in the district. Temperatures begin to decrease from about the end of November. December is the coldest month with the mean daily maximum temperature at 27.1°C and the mean daily minimum at 16.2°C. During the cold season temperatures may sometimes go down to about 3.0°C. From about the middle of February both day and night temperatures begin to increase rapidly. May is the hottest month with the mean daily maximum temperature at 38.6°C and the mean daily minimum at 26.0°C. During the summer, on some days the day temperatures rise above 40.0°C. The heat is sometimes very trying. However, there is welcome relief when thundershowers occur in the afternoon on some days. With the advance of the southwest monsoon into the district by about the first or second week of June the day temperatures go down appreciably. With the withdrawal of the southwest monsoon by about the first week of October there is a slight rise in the day temperature but night temperatures steadily decrease. After October both day and night temperatures decrease progressively.

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The highest maximum temperature recorded at Bidar was 43.3°C on 1931 May, 8 and the lowest minimum was 2.8°C on 1918 December, 16.

HUMIDITY

Relative humidities are high during the southwest monsoon season being between 65 and 75%. The summer is the driest part of the year, when the relative humidities in the afternoons are between 30% and 40%.

CLOUDINESS

During the southwest monsoon season skies are generally moderately to heavily clouded and overcast on some days. Cloudiness decreases during the post-monsoon season. During the rest of the year the skies are mostly clear or lightly clouded.

WINDS

Winds are generally moderate in strength with some increase in force during the latter half of the summer season, and the monsoon season. Winds blow mostly from directions between southwest and northwest in the southwest monsoon season. In the post-monsoon season winds blow predominantly from directions between north and east. During the cold season winds are variable in directions; winds from directions between north and west being rare. During the summer they are from the southwest to northwest in the mornings while they are from directions mostly between north and east in the afternoons.

SPECIAL WEATHER PHENOMENA

While cyclonic storms seldom pass through the district, some of the post-monsoon storms from the Bay of Bengal become diffuse after crossing coast and in their passage westwards affect the district and its neighbourhood causing heavy rain. Thunderstorms occur frequently during the summer season and some of them are accompanied with hail. Rain at the period of the onset and withdrawl of southwest monsoon is often accompanied with thunder.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and special weather phenomena respectively for Bidar.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *		
																		Amount (mm)	Date	
Bidar	46	a	5.6	9.4	11.9	25.4	25.1	126.5	206.3	166.6	238.8	59.4	26.7	5.8	907.5	177 (1949)	48 (1929)	245.9	1955	Jul 31
		b	0.5	0.8	1.1	2.1	2.4	7.4	11.6	10.1	10.7	3.6	1.6	0.4	52.3					

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
401 - 500	1	1001 - 1100	3
501 - 600	3	1101 - 1200	3
601 - 700	6	1201 - 1300	5
701 - 800	6	1301 - 1400	1
801 - 900	7	1401 - 1500	0
901 - 1000.	9	1501 - 1600	0
		1601 - 1700	1

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(BIDAR)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Date	Lowest Min. ever recorded °C	Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	28.3	16.5	33.9	1925 Jan 30	3.9	1901 Jan 5	62	35
February	31.1	18.7	37.2	1926 Feb 27	9.4	1950 Feb 11	50	29
March	34.6	21.9	41.7	1910 Mar 19	12.8	1925 Mar 2	44	26
April	36.9	24.5	42.2	1946 Apr 30	12.2	1918 Apr 30	49	31
May	38.6	26.0	43.3	1931 May 8	6.7	1918 May 12	51	30
June	33.3	22.9	42.8	1953 Jun 7	10.0	1918 Jun 2	76	54
July	29.0	21.3	36.7	1966 Jul 6	11.1	1900 Jul 31	86	67
August	28.7	21.0	36.1	1924 Aug 16	9.4	1900 Aug 15	86	68
September	28.8	21.0	36.7	1924 Sep 23	8.9	1918 Sep 24	84	68
October	29.5	20.6	36.7	1901 Oct 26	8.3	1900 Oct 24	70	54
November	27.9	18.0	36.1	1918 Nov 6	6.1	1900 Nov 9	61	43
December	27.1	16.2	32.8	1923 Dec 2	2.8	1918 Dec 16	61	39
Annual	31.1	20.7					65	45

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(BIDAR)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
10.6	10.6	10.8	11.2	13.7	20.7	22.5	18.5	13.2	8.8	9.3	9.4	13.3

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(BIDAR)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.1	0.5	1.3	0.2	1.8	1.9	0.8	0.7	1.5	0.6	0.2	0.1	10.0
Hail	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Dust-Storm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fog	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.4

* No.of days 2 and above are given in whole numbers.

BIJAPUR DISTRICT

The climate of this district in common with the adjoining districts in the Deccan is generally dry and healthy. The large variations in the rainfall from year to year both in the amount and in its distribution through the seasons renders the district liable to drought and famine. The main seasons follow the pattern for the Deccan. The hot season begins by the middle of February and extends to the end of May or the beginning of June followed by the southwest monsoon season extending to the end of September when the weather is cool and damp The northeast or the retreating monsoon season is the period October and November while the cold season is from December to the middle of February.

RAINFALL

The district has a well-distributed network of dozen raingauge stations with records extending over seventy years. The details of the rainfall at the 12 stations and for the district as a whole are given in tables 1 and 2. The spatial variations in the annual rainfall over the district are small, being less than 10% of the normal for the district which is 55.01 cm. Though the total rainfall is not high, the district benefits both from the southwest and the northeast monsoons. The southwest monsoon reaches the district by about the first week of June. The rainfall amounts are practically same for the months June, July and August. There is a steep increase in a September; during this month the district gets more than double the average rainfall of each of the preceding three months. The September rainfall constitutes 27% of the annual rainfall. October and November bring the northeast monsoon rains which fail in some years. 68% of the annual rainfall occurs during June to September (southwest monsoon) while 21% occurs in October and November (northeast monsoon).

The variation of rainfall from year to year is large. During the period of 50 years (1901 - 1950), the district experienced the highest rainfall of about twice the normal in 1916; the lowest rainfall amounting to about two thirds of the normal occurred in 1905, 1920, 1923, and 1942. Considering the individual stations, there have been years when the rainfall at a station was as high as two and a half times the normal or as low as two fifths of the normal. For the district as a whole, during the 50 year period, there were 13 occasions when the rainfall was less than 80% of the normal. Two consecutive years of deficient rainfall occurred on three occasions during this period. In the case of individual stations, records show that rainfall less than 80% of the normal have occurred consecutively in 3, 4 or even 5 years. For instance, Bagewadi experienced low rainfall for all the five years 1922 to 1926. From table 2 it will be seen that the rainfall in the district was between 400 and 700 mm. in 37 years out of 50.

On an average there are 37 rainy days (i. e. days of at least 2.5 mm. or more of rain) in the district. As in the case of rainfall amount, there is very little spatial variation in the average number of rainy days. The two monsoon seasons together account for about 80% of the rainy days.

The highest rainfall in 24 hours recorded over the district was 215.9 mm. at Indi on 1895, September 7.

TEMPERATURE

The only meteorological observatory in the district is in Bijapur town. As temperature and other meteorological conditions are fairly uniform throughout the district, the data for Bijapur town can be taken as representative of the district. Table 3 gives

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the temperature and humidity data based on the observatory records. December is the coldest month of the year when the average minimum temperature is 15.2°C. Temperatures begin to rise rapidly from the latter half of February. The mean maximum temperature attains the highest value of 38.5°C in the month of May. With the onset of the monsoon, weather becomes cooler. The mean minimum temperature in the monsoon months does not differ appreciably from that for the summer months. The diurnal range of temperature is least (about 9.0°C) during the monsoon months and highest (about 15.0°C) during the summer and winter months. The highest maximum temperature ever attained in the shade at Bijapur was 44.9°C recorded on 1972 May 10; the lowest minimum was 6.7°C recorded on 1897, December 18. The Bagalkot-Badami region of the district is reported to be hotter than other parts. The intensity of the summer heat is occasionally relieved by thunderstorms in the afternoon.

HUMIDITY

The district on the whole enjoys a dry climate. The months from December to May are the driest, the average relative humidity in the afternoons being about 30% and even as low as 10% in individual days. Even during the monsoon months the average humidity is appreciably below the saturation level.

CLOUDINESS

Skies are generally clear or lightly clouded during the months December to March. Cloudiness begins to increase progressively from April and during the monsoon months, the skies are heavily clouded on most of the days.

WINDS

Most parts of the district, the Don valley in particular, are exposed to strong winds almost throughout the year. By the end of October a fairly constant wind which gets cooler with the progress of the season sets in from the northeast. From November to January dry and blighting winds blow from directions between northeast and southeast. In February northerlies and northwesterlies are also common in the forenoon and these become more and more predominant in March, and April.

The afternoon winds are variable in all these three months. With the advance of summer, dust-raising winds add to the discomfort of the hot weather. During the second half of May winds increase in force and blow from directions between southwest and northwest. Although they do not bring rain, these winds are cool and refreshing. With the onset of the monsoon, winds strengthen further and blow from directions west and southwest. By the latter half of September winds begin to weaken and blow from directions between north and east.

SPECIAL WEATHER PHENOMENA

Occasionally during the post-monsoon months of October and November storms and depressions from the Bay of Bengal which weaken after crossing the coast and move westwards into the Arabian Sea affect the weather over the district, causing widespread and locally heavy rain and strong winds. Being well inland this district does not experience any full-fledged cyclonic storm. Dust-devils are common in the hot season. Dust-storms occur occasionally in May and at times in April and also in the beginning of June. Thunderstorms occur in the pre-monsoon months of April, May and June and also in September and October. The maximum thunderstorm activity is in May.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and frequency of special weather phenomena respectively for Bijapur.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No.of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours * Amount (mm)	Date
Bijapur	50	a	5.8	2.3	7.1	19.6	29.5	76.3	58.7	65.8	141.5	76.7	30.7	6.6	520.5	190 (1916)	47 (1918)	176.0	1964 Jul 30
		b	0.3	0.2	0.7	1.7	2.5	5.1	4.5	4.2	8.0	4.7	1.9	0.6	34.4				
Indi	50	a	3.3	4.1	6.9	15.5	21.8	74.7	74.9	72.1	173.2	73.7	36.6	7.6	564.4	229 (1916)	42 (1942)	215.9	1895 Sep 7
		b	0.3	0.4	0.7	1.5	2.2	5.2	5.6	5.2	8.8	4.6	2.0	0.6	37.1				
Sindgi	50	a	5.1	4.1	6.3	14.7	27.9	82.8	72.4	75.2	150.1	74.2	29.0	9.7	551.5	168 (1916)	55 (1936)	148.6	1924 Sep 26
		b	0.2	0.4	0.7	1.4	2.5	5.4	5.5	5.0	8.1	4.4	1.9	0.5	36.0				
Bagewadi	50	a	3.1	5.3	7.4	16.3	36.3	75.9	63.3	69.9	151.6	89.7	32.5	9.7	561.0	184 (1933)	45 (1920)	184.1	1964 Sep 30
		b	0.2	0.4	0.5	1.8	2.9	5.5	5.3	4.9	8.8	5.1	2.0	0.7	38.1				
Muddebihal	50	a	2.8	4.1	4.8	20.3	34.3	71.1	68.1	73.9	165.1	75.7	28.7	4.6	553.5	172 (1916)	62 (1923)	145.8	1949 Sep 22
		b	0.2	0.3	0.4	1.8	3.2	5.2	5.8	5.7	8.4	4.8	1.8	0.5	38.1				
Bagalkot	50	a	1.3	4.6	5.6	19.8	41.7	67.8	71.1	62.5	153.8	84.1	33.8	8.4	544.5	225 (1916)	42 (1945)	172.7	1969 Oct 25
		b	0.2	0.3	0.5	1.8	3.5	4.9	6.2	5.2	7.9	5.0	2.1	0.4	38.0				
Bilgi	50	a	2.5	2.8	5.1	19.3	39.1	63.7	59.9	60.5	137.9	74.2	34.0	7.9	506.9	231 (1916)	38 (1905)	172.2	1969 Oct 25
		b	0.2	0.3	0.4	1.7	2.7	4.1	5.2	4.4	7.5	5.0	2.0	0.5	34.0				
Badami	50	a	1.3	2.8	4.3	22.1	49.5	60.5	64.5	71.1	145.5	91.7	45.0	7.9	566.2	241 (1916)	42 (1908)	160.0	1916 Jul 17
		b	0.2	0.3	0.3	1.8	3.6	5.0	5.9	5.5	7.5	4.8	2.1	0.6	37.6				
Hungund	50	a	4.1	4.3	5.3	24.6	41.9	64.0	68.6	80.5	148.1	86.6	38.3	7.1	573.4	181 (1916)	56 (1923)	182.9	1937 Apr 18
		b	0.3	0.3	0.4	1.9	3.5	4.8	6.1	5.8	8.2	5.1	2.0	0.5	38.9				
Ilkal	50	a	2.8	3.3	4.3	27.2	46.0	60.5	69.3	81.3	150.6	87.1	40.6	7.6	580.6	196 (1916)	42 (1923)	190.0	1965 Sep 17
		b	0.2	0.3	0.4	2.0	3.5	4.5	5.8	6.2	8.1	5.4	2.3	0.[illegible]	39.2				
Jamkhandi	50	a	6.1	1.3	6.1	24.6	40.6	69.9	67.3	59.9	142.5	90.4	32.0	8.1	548.8	192 (1916)	50 (1942)	160.0	1960 Sep 7
		b	0.2	0.1	0.5	2.1	3.2	5.2	6.3	4.7	7.7	5.6	2.1	0.[illegible]	38.3				

contd.....

T A B L E - 1 (contd)

NORMAL AND EXTREME RAINFALL

Station	No.of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *	
																		Amount (mm)	Date
Mudhol	49	a	2.8	2.0	7.1	22.6	41.9	71.4	65.0	62.0	134.1	78.0	35.3	8.1	530.3	231 (1916)	52 (1922)	152.4	1933 Sep 6
		b	0.2	0.2	0.6	2.0	3.2	4.9	5.7	4.7	7.4	5.4	1.8	0.5	36.6				
Bijapur (District)		a	3.4	3.4	5.9	20.5	37.5	69.9	66.9	69.6	148.7	81.8	34.7	7.8	550.1	201 (1916)	64 (1905)		
		b	0.2	0.3	0.5	1.8	3.1	5.0	5.7	5.1	8.0	5.0	2.0	0.5	37.2				

(a) Normal rainfall in mm. (b) Average number of rainy days (days with rain of 2.5 mm or more).

* Based on data upto 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
301 - 400	8	801 - 900	1
401 - 500	12	901 - 1000	0
501 - 600	13	1001 - 1100	0
601 - 700	12	1101 - 1200	1
701 - 800	3	1201 - 1300	0

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(BIJAPUR)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	30.2	16.2	39.4	1948 Jan 16	7.2	1945 Jan 7	56	31
February	32.9	18.1	41.1	1943 Feb 28	8.9	1930 Feb 15	47	26
March	36.0	21.3	41.1	1910 Mar 31	13.3	1910 Mar 6	45	24
April	38.0	23.8	42.6	1964 Apr 14	16.1	1905 Apr 3	50	25
May	38.5	23.9	44.9	1972 May 10	17.8	1940 May 8	58	28
June	33.3	22.4	42.2	1923 Jun 1	17.2	1903 Jun 5	75	52
July	30.1	21.7	36.8	1966 Jul 7	16.1	1902 Jul 15	80	62
August	30.1	21.3	36.5	1969 Aug 19	16.7	1906 Aug 21	80	60
September	30.6	21.1	36.7	1896 Sep 22	16.1	1901 Sep 26	80	59
October	31.0	20.6	37.3	1965 Oct 10	12.2	1897 Oct 31	70	49
November	29.7	17.4	35.0	1896 Nov 4	8.3	1904 Nov 23	60	40
December	29.0	15.2	34.6	1976 Dec 26	6.7	1897 Dec 18	58	34
Annual	32.5	20.3					63	41

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(BIJAPUR)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
5.0	5.4	6.1	7.4	10.5	13.5	15.0	13.5	10.0	5.5	4.0	4.1	8.3

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(BIJAPUR)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.1	0.2	0.8	3	3	1.7	0.4	0.9	0.2	1.7	0.2	0.2	12
Hail	0	0	0	0	0	0	0	0	0	0	0	0	0
Dust-Storm	0	0.2	0.4	0.4	0.9	0.2	0.1	0	0.1	0.1	0	0	2.4
Squall	0	0	0	0.1	0	0	0	0	0	0	0	0	0.1
Fog	0.1	0.1	0	0	0	0	0	0	0	0.1	0.2	0.2	0.7

* No.of days 2 and above are given in whole numbers.

DHARWAR DISTRICT

The climate of this district is characterised by general dryness except during the monsoon season. The year may be divided into four seasons. The summer season is from March to May and is followed by the southwest monsoon season which lasts upto the end of September. October and November constitute the post-monsoon or retreating monsoon season. The cold season is from December to February.

RAINFALL

Records of rainfall in the district are available for the 14 stations for periods ranging from 50 to 80 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 691.1 mm. The rainfall is high in the western parts of the district in the close proximity of the Sahyadris and decreases rapidly towards the east. The rainfall in the district thus decreases from 914 mm. at Kalghatgi near the western ghats to 465 mm. at Mundargi. About 67% of the annual rainfall in the district is received during the monsoon months June to September; July being generally the rainiest month. Some rainfall in the form of thundershowers is received in the later half of summer and the post-monsoon seasons. During the post-monsoon or retreating monsoon the district gets about 22% of the annual rainfall. The variation in the annual rainfall in the district as a whole, from year to year, is not large. During the 50 year period, 1901 to 1950, the highest annual rainfall in the district was 144% of the normal recorded in the year 1933. The lowest annual rainfall amounting to 66% of the normal occurred in 1945. But in the eastern parts of the district where the rainfall is comparatively less than in the rest of the district, the variation from year to year is large. In the 50 year period the annual rainfall in the district was less than 80% of the normal in only six years and none of them were consecutive. However, considering the annual rainfall at individual stations two consecutive years of such low rainfall occurred once at nine out of 14 stations. Dharwar recorded seven consecutive years of an unusual spell of such low rainfall for 1936 to 1942. It will be seen from table 2 that the annual rainfall in the district was between 500 to 800 mm. in 39 years out of 50.

On an average there are 54 rainy days (i. e. days with rainfall of 2.5 mm. or more) in a year in the district. This number varies from 33 at Mundargi to 72 at Kalghatgi.

The heaviest rainfall recorded in 24 hours at any of the stations in the district was 290.1 mm. at Nargund on 1959 July, 2.

TEMPERATURE

There is a meteorological observatory in the district at Gadag and the records of this observatory may be taken as representative of the climatic conditions in the district in general. After February there is a steady increase in the temperatures. April is generally the hottest month with the mean daily maximum temperature at 37.3°C and the mean daily minimum at 22.5°C. Nights during May and June are as warm as in April. During summer the day temperature may occasionally rise upto 41.0°C on individual days.

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Afternoon thundershowers which occur on some days during summer season bring welcome relief from the heat though temporarily. With the onset of the southwest monsoon into the district during early June, there is appreciable drop in the day temperature but nights are still warm as in the latter part of the hot season. From September day temperature again increase slowly and a secondary maximum in day temperature is reached in October. But the nights become progressively cooler from September onwards. December is generally the coldest month with the mean daily minimum temperature at 16.5°C. The mean daily maximum temperature during this month is 29.1°C. On individual days during the period December to February the minimum temperatures may go down to about 11.0°C.

The highest maximum temperature recorded at Gadag was 41.7°C on 1939 May, 15. The lowest minimum was 10.0°C recorded on 1975 December, 26.

HUMIDITY

During the monsoon season the humidity is high generally being over 80%. The humidity decreases in the post-monsoon period. The driest part of the year is the period January to March when the relative humidity in the afternoon is about 30%.

CLOUDINESS

During the southwest monsoon season the skies are mostly heavily clouded. Cloudiness decreases in the post-monsoon period. In the period from December to February the skies are generally clear or lightly clouded. Cloudiness increases from April onwards, the afternoons being more cloudy generally.

WINDS

Winds are generally light with some increase in force during late summer and monsoon seasons. During November and December the winds both in mornings and evenings are predominantly from the sector east to southeast. During January and February the winds are predominantly from the sector southeast to south in the mornings, but during February winds from the direction north and northwest also are not so uncommon. In the evenings the winds are mostly from southeast or east. March and April are the months of transition. During these months the southeasterly winds are gradually (first in the mornings and later also in evenings) replaced by northwest to westerly winds. From April to September the winds are predominantly from northwest or west directions. October is again the transitional month during which the reversal of direction of the winds is completed.

SPECIAL WEATHER PHENOMENA

During the post-monsoon season storms and depressions from the Bay of Bengal which weaken after crossing the east coast and occasionally move into the Arabian Sea affect the weather over the district causing widespread and locally heavy rain and strong winds. Thunderstorms occur in the summer and post monsoon seasons. Fog occurs during the cold season.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and special weather phenomena respectively for Gadag.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours * Amount (mm)	Date
Dharwar	50	a	2.0	1.5	8.9	48.3	74.4	95.3	174.0	121.4	102.4	125.2	48.0	11.9	813.3	165 (1946)	63 (1905)	147.3	1914 Aug 6
		b	0.1	0.1	0.7	3.3	5.0	8.3	15.9	11.8	7.0	7.8	2.9	0.7	63.6				
Hubli	50	a	1.5	1.5	9.4	36.6	70.1	81.8	113.3	87.6	100.8	111.5	42.9	11.9	668.9	162 (1933)	62 (1911)	133.6	1927 Sep 14
		b	0.1	0.2	0.7	3.1	4.9	7.6	12.4	8.7	7.3	7.0	2.8	0.7	55.5				
Kalghatgi	50	a	0.8	1.5	7.9	40.1	72.6	135.4	232.7	153.9	99.8	114.8	43.4	10.9	913.8	147 (1933)	57 (1918)	133.3	1924 Sep 26
		b	0.1	0.1	0.6	2.9	4.6	11.4	18.8	14.8	8.8	7.2	2.5	0.5	72.3				
Shiggaon (Bankapur)	50	a	2.3	1.5	5.1	32.3	62.5	90.9	155.7	101.3	78.5	111.3	37.6	10.2	689.2	149 (1943)	53 (1905)	118.6	1948 Nov 19
		b	0.2	0.1	0.4	2.5	4.1	9.2	15.6	11.5	7.2	6.6	2.4	0.7	60.5				
Hangal	50	a	2.5	1.3	6.6	38.1	64.0	138.9	268.7	148.3	72.9	112.5	39.4	11.2	904.4	149 (1933)	48 (1911)	161.5	1959 Jun 30
		b	0.2	0.1	0.5	2.7	4.0	11.2	19.1	13.7	7.6	6.7	2.5	0.6	68.9				
Hirekerur (Kod)	50	a	2.5	4.3	3.8	34.8	71.6	101.9	199.6	111.5	85.6	119.6	49.8	13.2	798.2	152 (1932)	55 (1918)	144.8	1888 Jul 8
		b	0.2	0.3	0.3	2.7	4.2	9.5	17.9	11.9	7.5	7.1	3.0	0.7	65.3				
Ranebennur	50	a	2.8	2.5	6.9	32.8	70.4	68.8	96.8	76.5	90.4	109.5	46.5	15.5	619.4	142 (1932)	52 (1905)	169.4	1906 Dec 22
		b	0.2	0.2	0.6	2.7	4.6	6.6	10.5	7.8	6.2	6.6	2.5	0.7	49.2				
Haveri	50	a	4.3	3.3	7.9	43.2	79.8	95.0	158.7	101.9	89.4	121.4	49.3	15.0	769.2	166 (1933)	52 (1905)	192.8	1943 May 21
		b	0.2	0.2	0.5	2.5	4.6	9.0	15.2	10.5	7.1	7.0	2.7	0.7	60.2				
Gadag (Obsy)	20	a	2.8	2.5	7.1	30.7	69.1	71.1	67.6	92.2	129.0	112.0	44.2	9.4	637.7	163 (1943)	54 (1934)	171.5	1947 Oct 7
		b	0.5	0.3	0.6	2.7	4.5	5.3	6.5	7.3	7.3	6.8	2.9	0.6	45.3				
Mundargi	50	a	2.0	2.3	3.1	19.6	51.1	53.6	38.1	59.9	101.3	89.1	36.8	7.6	464.5	163 (1946)	36 (1934)	127.5	1906 Oct 3
		b	0.1	0.2	0.3	1.7	3.8	3.8	4.4	4.1	7.0	5.2	2.2	0.4	33.2				
Navalgund	50	a	1.3	3.8	5.3	28.5	62.7	65.0	67.6	71.1	130.8	111.8	36.3	10.7	594.9	176 (1916)	46 (1904)	154.9	1892 Oct 18
		b	0.1	0.3	0.5	2.5	4.7	4.8	6.2	5.4	7.5	6.4	2.1	0.6	41.1				

contd....

TABLE - 1 (contd.)

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours * Amount (mm)	Heaviest rainfall in 24 hours * Date
Nargund	50	a	2.5	3.3	5.1	24.4	61.5	49.5	57.9	60.2	123.9	85.6	34.5	8.9	517.3	196 (1933)	47 (1945)	290.2	1959 Jul 2
		b	0.3	0.2	0.4	2.0	4.3	4.3	5.7	4.9	6.6	5.5	2.1	0.6	36.9				
Ron	50	a	1.3	3.1	4.1	19.6	52.1	80.5	65.0	79.8	153.4	99.1	37.9	10.7	606.6	199 (1916)	53 (1945)	170.2	1902 Dec 6
		b	0.1	0.3	0.5	2.0	3.9	5.6	6.3	6.4	8.0	5.6	2.0	0.5	41.2				
Savnur	50	a	1.5	2.8	4.1	34.3	77.0	89.1	123.7	89.4	88.7	113.5	39.9	12.2	676.2	144 (1932)	49 (1905)	101.6	1912 Oct 24
		b	0.1	0.2	0.3	2.5	4.8	8.0	13.3	9.6	6.8	6.5	2.4	0.7	55.2				
Dharwar (District)		a	2.1	2.5	6.1	33.1	67.1	86.9	130.0	96.8	103.4	109.8	41.9	11.4	691.1	144 (1933)	66 (1945)		
		b	0.2	0.2	0.5	2.6	4.4	7.5	12.0	9.2	7.3	6.6	2.5	0.6	53.6				

(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 1970. ** Years given in brackets.

T A B L E - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
401 - 500	3	701 - 800	15
501 - 600	8	801 - 900	4
601 - 700	16	901 - 1000	4

T A B L E - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(GADAG)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	30.3	16.7	34.5	1960 Jan 29	11.1	1951 Jan 7	61	35
February	33.0	18.6	37.7	1961 Feb 28	11.1	1950 Feb 11	54	31
March	36.0	21.0	40.0	1953 Mar 20	14.5	1971 Mar 5	58	31
April	37.3	22.5	41.1	1941 Apr 23	17.2	1935 Apr 15	71	41
May	36.5	22.6	41.7	1939 May 15	17.6	1976 May 5	78	49
June	31.1	21.9	40.6	1953 Jun 4	18.3	1975 Jun 5	88	68
July	28.5	21.2	34.9	1960 Jul 18	18.9	1934 Jul 4	84	73
August	28.9	20.9	35.4	1969 Aug 19	18.3	1965 Aug 15	84	70
September	29.7	20.5	37.8	1951 Sep 20	17.2	1952 Sep 19	83	66
October	30.8	20.2	35.6	1965 Oct 3 days	15.0	1974 Oct 31	75	57
November	29.8	18.4	37.2	1947 Nov 24	12.2	1939 Nov 25	64	46
December	29.1	16.5	34.1	1959 Dec 31	10.0	1975 Dec 26	63	41
Annual	31.7	20.1					72	51

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(GADAG)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
7.5	7.1	8.1	10.1	13.8	18.2	19.6	17.5	13.6	7.8	7.0	7.6	11.4

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(GADAG)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.1	0.1	0.9	.5	6	2	0.6	5	3	3	0.8	0.1	27
Hail	0	0	0	0.1	0.3	0	0	0	0	0	0	0	0.4
Dust-Storm	0	0.1	0	0.1	0	0	0	0	0	0	0	0	0.2
Squall	0	0	0	0	0.1	0.1	0	0	0	0	0	0	0.2
Fog	0.1	0.1	0	0	0	0	0	0	0	0.1	0	0	0.3

* No.of days 2 and above are given in whole numbers.

GULBARGA DISTRICT

The climate of this district is generally dry and healthy, and the seasons are on the pattern of those generally in the Deccan. The summer season starts by about the middle of February and continues to about the first week of June. The southwest monsoon season follows thereafter and extends upto the end of September. October and November constitute the post-monsoon or retreating monsoon season. The period from December to the middle of February is the cold season.

RAINFALL

Records of rainfall in the district are available for four raingauge stations for periods ranging from 41 to 96 years. The statement 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 712.6 mm. The rainfall in the district increases from the southwest towards the northeast. The rainfall in the southwest monsoon season constitutes about 80% of the annual rainfall. September is the rainiest month. The district gets some rain during the latter part of the summer and post monsoon months mostly as thundershowers. The variation in the rainfall from year to year is large as in the neighbouring districts. In the 50 year period, 1901 to 1950, the highest annual rainfall amounting to 200% of the normal was received in 1903. 1920 was the year with the lowest rainfall which was only 51% of the normal. In 11 years out of the 50, the district received rainfall less than 80% of the normal, two consecutive years of such low rainfall occurring twice. Rainfall less than 80% of the normal in two consecutive years has occurred once or twice at all the stations. Even three consecutive years of such low rainfall occurred once at Gulbarga. The large variations in the rainfall from year to year both in its amount and in its distribution through the seasons, renders the district liable to drought. It will be seen from table 2 that the rainfall in the district was between 500 and 1000 mm. in 41 years out of 50.

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 40 at Navandgi to 53 at Tandur.

The heaviest rainfall in 24 hours recorded at any station in the district was 181.6 mm. at Gulbarga on 1969 September.6.

TEMPERATURE

The only meteorological observatory in the district is at Gulbarga. The data of this station may be taken as representative of the conditions in the district as a whole. December is the coldest month with the mean daily maximum temperature at 29.5°C and mean daily minimum at 15.1°C. From the middle of February temperatures rise rather rapidly till May which is the hottest month. The mean daily maximum temperature during this month is 40.2°C and the mean daily minimum temperature is 26.3°C. The day temperatures sometimes go upto 45.0°C in the hot season. The dry heat is sometimes very trying. When the southwest monsoon advances into the district by about the first week of June, temperatures decrease appreciably and the weather becomes milder. The day

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temperatures increase a little with the withdrawal of the monsoon by about the end of September but night temperatures decrease. After October both day and night temperatures decrease gradually, the drop in the night temperatures being more rapid.

The highest maximum temperature recorded at Gulbarga was 45.0°C on 1912 May 18 and on 1923 June 1. The lowest minimum temperature was 5.6°C on 1945 December 18.

HUMIDITY

The period from December to May is the driest part of the year when the relative humidities in the mornings are between 40% and 60%, and in the afternoons about 20% to 30%. Humidity increases by about 20% to 30% during the southwest monsoon and post-monsoon months.

CLOUDINESS

Skies are moderately to heavily clouded in the southwest monsoon period. Cloudiness decreases during the post-monsoon season. In the rest of the year the skies are generally clear or lightly clouded.

WINDS

Winds are generally light to moderate with some increase in force and in the latter half of summer and the monsoon season. Winds are from directions between southwest and northwest in the monsoon season. In the post-monsoon season they are northeasterly or easterly. In the cold season winds blow mainly from directions between northeast and southeast. In the summer season winds are variable in direction but by May, winds from directions between west and north predominate.

SPECIAL WEATHER PHENOMENA

The district is seldom affected by full fledged cyclonic storms. But in the post-monsoon months some of the depressions from the Bay of Bengal become diffuse on crossing the east coast of India. In their passage westwards across the peninsula these diffuse depressions affect the district and its neighbourhood causing widespread heavy rain. Thunderstorms occur in April, May and early June and at the close of the monsoon season.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and frequency of special weather phenomena respectively for Gulbarga.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours * Amount (mm)	Date
Gulbarga	46	a	6.1	7.1	9.1	19.1	27.9	105.4	136.1	131.6	185.4	64.3	32.5	4.1	729.7	196 (1903)	49 (1920)	181.6	1969 Sep 6
		b	0.3	0.5	0.8	1.8	2.5	6.8	9.0	7.7	9.5	4.2	1.8	0.3	45.2				
Yadgir	28	a	4.1	7.9	7.6	21.8	22.6	96.8	132.8	110.7	165.3	70.6	31.0	3.6	674.8	146 (1932)	53 (1937)	151.9	1932 Jul 3
		b	0.3	0.5	0.6	1.9	2.2	8.0	11.5	8.2	9.6	4.4	1.9	0.2	49.3				
Tandur	23	a	1.5	6.3	6.6	22.6	27.9	111.8	172.0	145.8	195.6	48.3	14.7	1.0	755.1	179 (1933)	52 (1941)	155.5	1954 Sep 28
		b	0.1	0.8	0.8	2.0	2.8	8.4	11.9	10.2	11.0	3.9	1.1	0.1	53.1				
Navandgi	20	a	0.8	4.1	5.6	17.5	14.7	102.9	151.4	150.1	180.9	57.7	15.0	1.8	702.5	164 (1938)	47 (1931)	114.3	1942 Aug 26
		b	0.1	0.3	0.5	1.1	1.3	5.9	9.5	8.6	8.5	2.7	0.9	0.2	39.6				
Gulbarga (District)		a	3.1	6.3	7.2	20.3	23.3	104.5	148.1	134.8	181.8	60.2	23.3	2.6	715.5	200 (1903)	51 (1920)		
		b	0.2	0.5	0.7	1.7	2.2	7.3	10.5	8.7	9.7	3.8	1.4	0.2	46.9				

(a) Normal rainfall in mm. (b) Average number of rainy days (days with rain of 2.5 mm or more).

* Based on available data upto 1970. ** Years given in brackets.

T A B L E – 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 – 1950)

Range in mm.	No.of years	Range in mm.	No.of years
301 – 400	1	901 – 1000	3
401 – 500	1	1001 – 1100	4
501 – 600	13	1101 – 1200	2
601 – 700	10	1201 – 1300	0
701 – 800	9	1301 – 1400	0
801 – 900	6	1401 – 1500	1

T A B L E – 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(GULBARGA)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	30.4	16.0	36.1	1897 Jan 31	6.7	1937 Jan 1	54	27
February	33.4	18.5	38.4	1969 Feb 23, 24	10.6	1949 Feb 8	43	24
March	36.8	21.7	42.8	1892 Mar 28	12.8	1910 Mar 5	36	20
April	39.1	25.0	43.9	1923 Apr 30	13.3	1902 Apr 1	41	22
May	40.2	26.3	45.0	1912 May 18	18.3	1892 May 2	47	26
June	35.0	23.8	45.0	1923 Jun 1	12.7	1910 Jun 28	71	47
July	31.4	22.5	38.3	1918 Jul 14	17.2	1920 Jul 11	81	62
August	31.2	22.2	37.8	1899 Aug 5	18.3	1920 Aug 1	81	59
September	31.1	21.9	37.2	1926 Sep 5	17.8	1954 Sep 30	80	61
October	31.9	21.0	38.2	1965 Oct 2	10.0	1905 Oct 27	68	48
November	30.4	17.5	35.6	1940 Nov 3	7.8	1945 Nov 26	57	35
December	29.5	15.1	34.4	1920 Dec 5	5.6	1945 Dec 18	56	31
Annual	33.4	21.0					60	39

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(GULBARGA)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
9.1	9.9	10.4	11.7	14.8	19.2	20.3	17.5	13.0	11.2	11.3	9.8	13.2

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(GULBARGA)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.0	0.2	0.8	.3	3	3	0.3	0.9	3	1.2	0.2	0.2	16
Hail	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Dust-Storm	0.0	0.0	0.1	0.2	0.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	1.5
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Fog	0.0	1.6	1.2	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	3

* No.of days 2 and above are given in whole numbers.

RAICHUR DISTRICT

The climate is characterised by dryness for the major part of the year and a very hot summer. The low and highly variable rainfall renders the district liable to drought. The year may be divided broadly into four seasons. The hot season begins by about the middle of February and extends to the end of May. The southwest monsoon season is from June to the end of September. October and November are the post-monsoon or retreating monsoon months and the period December to the middle of February is the cold season.

RAINFALL

The district has only two raingauge stations with data extending to about 100 years. Rainfall data for a few years only are available for 11 more stations in the district. The statement of the rainfall of the two stations mentioned above and for the district as a whole are given in tables 1 and 2. The average annual rainfall in the district is 601.6 mm. The region around Lingsugur gets the least amount of rainfall in the district while towards the south as well as the east, rainfall increases. During the southwest monsoon months June to September the district receives about 71% of the annual rainfall, September being the month with the highest rainfall. In the post-monsoon months of October and November also, the district receives some rain. The variations in the annual rainfall from year to year is large as is the case in the neighbouring districts. During the 50 year period, 1901 to 1950, the district experienced the highest rainfall amounting to 207% of the normal in 1916. 1941 was the year with the lowest annual rainfall in the same 50 year period which was only 52% of the normal. In 12 of the 50 years the rainfall in the district was less than 80% of the normal. Considering the district as a whole, there were three occasions when two consecutive years had rainfall less than 80% of the normal. Even three such consecutive years have occurred at Raichur and Lingsugur. It will be seen from table 2 that in 43 out of 50 years the rainfall in the district was between 400 and 900 mm.

On an average there are 41 rainy days (i. e. days with 2.5 mm. or more of rain) in a year in the district. As in the case of the amount of rainfall this number is least at Lingsugur and higher at Raichur.

The highest rainfall in 24 hours recorded in the district was 158.7 mm. at Raichur on 1916 October, 31.

TEMPERATURE

The only meteorological observatory in the district is at Raichur. The data of this observatory may be taken as representative of the conditions in the district. December is the coldest month with the mean daily maximum temperature at 29.1°C and the mean daily minimum at 18.0°C. The nights are generally cool in the season but day temperatures sometimes reach 35.0°C to 38.0°C. The period from about the middle of February to May is one of continuous rise in temperatures. May is the hottest month, the mean daily maximum temperature being 39.6°C. The heat is oppressive till the onset of the southwest monsoon by about the first week of June. Thereafter the weather

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becomes slightly cooler and continues to be so till the end of the southwest monsoon season. Day temperatures show a slight increase in October. From November both day and night temperatures gradually decrease till December.

The highest maximum temperature ever recorded at Raichur was 45.6°C on 1928 May, 23 and the lowest minimum was 10.0°C on 1899 January, 14 and 1945 December, 13.

HUMIDITY

The district on the whole has a dry climate, the period from November to May being the driest part of the year. Even during the southwest monsoon period the humidities are not very high, about 75% during mornings and 55% during afternoons.

CLOUDINESS

Skies are moderately to heavily clouded in the southwest monsoon months. In the post-monsoon months clouding is somewhat less. Clear or lightly clouded skies are common in the rest of the year.

WINDS

During the southwest monsoon season, winds are stronger than in the rest of the year when southwesterly to northwesterly winds prevail. In the post-monsoon and the cold seasons, winds are light and wind directions variable in the mornings, especially during post-monsoon season but in the afternoons the winds strengthen and blow from directions between northeast and southeast. In March and April, winds are as in the cold season. In May, the winds are stronger than in March and April and blow from directions between southwest and northwest in the mornings while in the afternoons the directions of the winds are variable.

SPECIAL WEATHER PHENOMENA

Being well inland, the district is seldom affected by full fledged cyclonic storms. In the post-monsoon months, some of the depressions from the Bay of Bengal, after becoming diffuse on crossing the eastern coast of India, pass westwards across the district or its neighbourhood. In association with such diffuse depressions strong winds and widespread rain occur in the district. Thunderstorms are frequent in the period March to June and in September and October.

Tables 3, 4 and 5 give the temperature and humidity, mean wind speed and frequency of special weather phenomena respectively for Raichur.

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TABLE - 1

NORMAL AND EXTREME RAINFALL

Station	No. of years of data		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *		
																		Amount (mm)	Date	
Raichur	50	a	3.1	7.1	4.1	15.0	26.4	96.8	117.9	117.9	154.9	84.1	30.7	3.3	661.3	188 (1916)	41 (1941)	158.7	1916	Oct 31
		b	0.2	0.5	0.5	1.3	2.4	6.6	8.8	8.0	8.9	4.7	1.9	0.3	44.1					
Lingsugur	31	a	2.3	1.3	5.3	18.8	39.1	64.0	66.0	99.8	131.8	72.6	36.3	4.8	542.1	156 (1903)	43 (1905)	152.4	1882	Nov 26
		b	0.2	0.2	0.5	1.6	3.3	5.3	6.0	6.4	7.4	5.0	2.0	0.4	38.3					
Raichur (District)		a	2.7	4.2	4.7	16.9	32.7	80.4	91.9	108.9	143.3	78.3	33.5	4.1	601.6	207 (1916)	52 (1941)			
		b	0.2	0.3	0.5	1.5	2.9	5.9	7.4	7.2	8.1	4.9	1.9	0.3	41.1					

(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 1970. ** Years given in brackets.

TABLE - 2

FREQUENCY OF ANNUAL RAINFALL IN THE DISTRICT

(Data 1901 - 1950)

Range in mm.	No.of years	Range in mm.	No.of years
301 - 400	4	801 - 900	5
401 - 500	12	901 - 1000	2
501 - 600	9	1001 - 1100	0
601 - 700	11	1101 - 1200	0
701 - 800	6	1201 - 1300	1

TABLE - 3

NORMAL TEMPERATURE AND RELATIVE HUMIDITY

(RAICHUR)

Month	Mean Daily Max. °C	Mean Daily Min. °C	Highest Max. ever recorded °C	Highest Max. ever recorded Date	Lowest Min. ever recorded °C	Lowest Min. ever recorded Date	Relative Humidity 0830 %	Relative Humidity 1730* %
January	30.2	18.5	35.6	1897 Jan 30	10.0	1899 Jan 14	64	32
February	33.2	20.5	38.4	1967 Feb 20, 27	12.8	1929 Feb 1	54	29
March	36.6	23.7	42.8	1892 Mar 26	16.7	1936 Mar 6	50	26
April	38.7	26.2	43.3	1927 Apr 29	16.1	1936 Apr 1	54	30
May	39.6	26.5	45.6	1928 May 23	18.0	1974 May 26	60	33
June	35.1	24.1	43.3	1898 Jun 3	16.1	1896 Jun 18	73	50
July	32.0	22.9	38.4	1966 Jul 12	17.4	1975 Jul 5	78	59
August	31.9	22.8	39.3	1969 Aug 1	17.2	1908 Aug 4	77	55
September	31.6	22.7	38.3	1897 Sep 25	17.1	1975 Sep 19	78	56
October	31.7	22.5	37.6	1965 Oct 10	14.9	1974 Oct 30	71	49
November	30.1	20.0	35.0	1920 Nov 10	11.7	1924 Nov 15	64	41
December	29.1	18.0	36.1	1899 Dec 17	10.0	1945 Dec 13	63	34
Annual	33.3	22.4					65	41

* Hours I.S.T.

T A B L E - 4

MEAN WIND SPEED IN KM/HR.

(RAICHUR)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
9.6	9.4	10.0	10.3	14.6	20.7	21.7	18.2	13.6	9.4	9.6	9.4	13.0

T A B L E - 5

SPECIAL WEATHER PHENOMENA

(RAICHUR)

Mean No.of days with*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.1	0.3	0.7	3.0	3.0	1.8	0.8	1.0	2.0	2.0	0.3	0.0	15.0
Hail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dust-Storm	0.0	0.0	0.0	0.4	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.9
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fog	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

* No.of days 2 and above are given in whole numbers.