

## Rainfall Characteristics in Ahmednagar District of Maharashtra State

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### ABSTRACT

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Rainfall is one of the vital form of precipitation which affects not only agricultural activity but also entire ecology in any region. Hence rainfall distribution and its trends in district is important to understand water availability and to take decisions for the agricultural activities in area. This research paper is an effort to assess the spatial and temporal rainfall variability of Ahmednagar district of Maharashtra State. Ahmednagar is popularly known as the largest district of Maharashtra with fourteen Talukas. The average annual rainfall of this district is 621 mm with an average of 46 rainy days. In this study the spatial and temporal rainfall distribution of this district is taken in to account. Short-term annual rainfall data are considered from 1998 to 2014. The daily rainfalls of monsoon months of all the fourteen Taluka are analyzed for the year 2015. It was found that spatial and temporal variability is high in the District.

**Keywords :** Rainfall variability, Rainy days, Cloudburst, Average rainfall, Severe Drought.

### I. INTRODUCTION

Rainfall is considered a significant element for development of agricultural and other economic activities, rather it is treated as most fundamental factor for human development. India receives 4000 BMC of water through precipitation every year. It includes both rain and snow fall water. The rainfall is most crucial agro-climatological factor in seasonally arid part of world and its analysis is prerequisite for agricultural planning of India [1, 27, 21, 22, 25, 26, 30]. Hence rainfall and its nature and trend at district has a great significance in water storage for future use. Maharashtra 35% of area is drought prone and it

receives very scanty and very irregular rainfall. According to Sukhtankar Committee, 87 Tehsil from 12 districts having drought prone area of the state, where drought conditions are observed once in a year. Ahmednagar district is one of them [2, 31, 23, 24, 29, 28]. Rainfall in this region is uneven both in time and space. Therefore rainfall distribution in Ahmednagar district is taken in to consideration in this study. As study area comes under semi arid zone of Maharashtra. It receives erratic nature of rainfall where Rainfall variability is hampers cropping pattern in agriculture and related activities [11, 12, 19, 20]. Many researchers explain stated that rainfall variability due to climate change and insufficient

capacity to manage it, lead to poverty and food insecurity in Africa and some parts of Asia [3, 4, 13, 14, 18, 17].

## II. STUDY AREA

So many scholars had worked on it. Alaka Gadgil and Nanbhu Kudnar and Anil Landage had work on rainfall variability. Ahmednagar district is located at central position in Maharashtra between upper Godavari and Bhima river basin [5, 6, 7, 15, 16]. Ahmednagar lies between 18° 2' to 19° 9' North latitude and 73° 9' to 75° 5' East longitude. Ahmednagar District is largest district of Maharashtra, District has occupy 17053sq. k.m. area which is 5.66 % of states land. According to 2011 census population of district is 3372935. Ahmednagar district is characterized by Undulating hill topography and plain. Western region occupied by hill ranges and eastern area is surrounded by plains.

## III. METHODOLOGY

Thus to fulfill above objective data has been collected from secondary sources. This data is collected from Agricultural department of Maharashtra state, Indian Meteorological Department, Pune covering the period from 1998-2014 and district Socio-economic abstract. The collected data has been processed and tabulated. Final result of statistical methods has been presented through maps and tables [8, 9, 10].

## IV. RESULTS AND DISCUSSION

### A) TEMPORAL ASPECT OF RAINFALL

Geographically Ahmednagar district of Maharashtra state has occupies Western-central location. Maharashtra 35% of area is drought prone and it receives very scanty and very irregular rainfall [10, 11, 12]. The Sukhtankar committee, which was set up by Government of Maharashtra, has observed that 87 Tehsil from 12 districts having drought prone area of

the state, where drought condition are observed once in a year. Ahmednagar district is one of them [32]. This district faces very acute problem of water scarcity. Due to its typical location it comes under rain shadow zone which reduces rainfall drastically. In temporal aspect occurrence rainfall in regards of time has been considered for study.

The average rainfall of Ahmednagar district for the last 18 years was 565 mm. uneven distribution and uncertainty are major characteristic of rainfall in India and Ahmednagar District is no exception for it. The highest rainfall of district was recorded in the year 1998. It was 825 mm and year 2003 represent as lowest rainfall year where only 325 mm rainfall was occurred in district. Due to rain shadow zone proximity of rainfall is very low and variability in rainfall was observed in maximum scale. The temporal aspect and characteristic can be more reveal with help of following table. It shows tehsilwise rainfall distribution in Ahmednagar district.

### B) SPATIAL ASPECT OF RAINFALL IN DISTRICT(2015)

The spatial distribution of rainfall in Ahmednagar district follows orographic or relief rainfall. Spatial location of Ahmednagar district determines rainfall in district. In last 18 years spatial distribution of rainfall was observed as follows. Akole tehsil starts from Sahyadri ghatmatha therefore it receives highest rainfall (772 mm). Jamkhed (687mm) Medium rainfall observed in Shirampur (559mm), Nagar (576mm), Shevgaon (577mm), Karjat (582mm) tehsils. Whereas Kopargaon (454mm), Parner (483mm), Sangamner (489mm) receives lowest rainfall in district. In the year 2015 rainfall of monsoon in Ahmednagar district was follows.

## V. CONCLUSION AND FUTURE SCOPE

The main conclusion of study is shown in conclusion that this paper will become much useful for the farmers climatologist and the personals who study

climatic elements and their deep study. This paper Ahmednagar district. also become much vital for agriculturist in

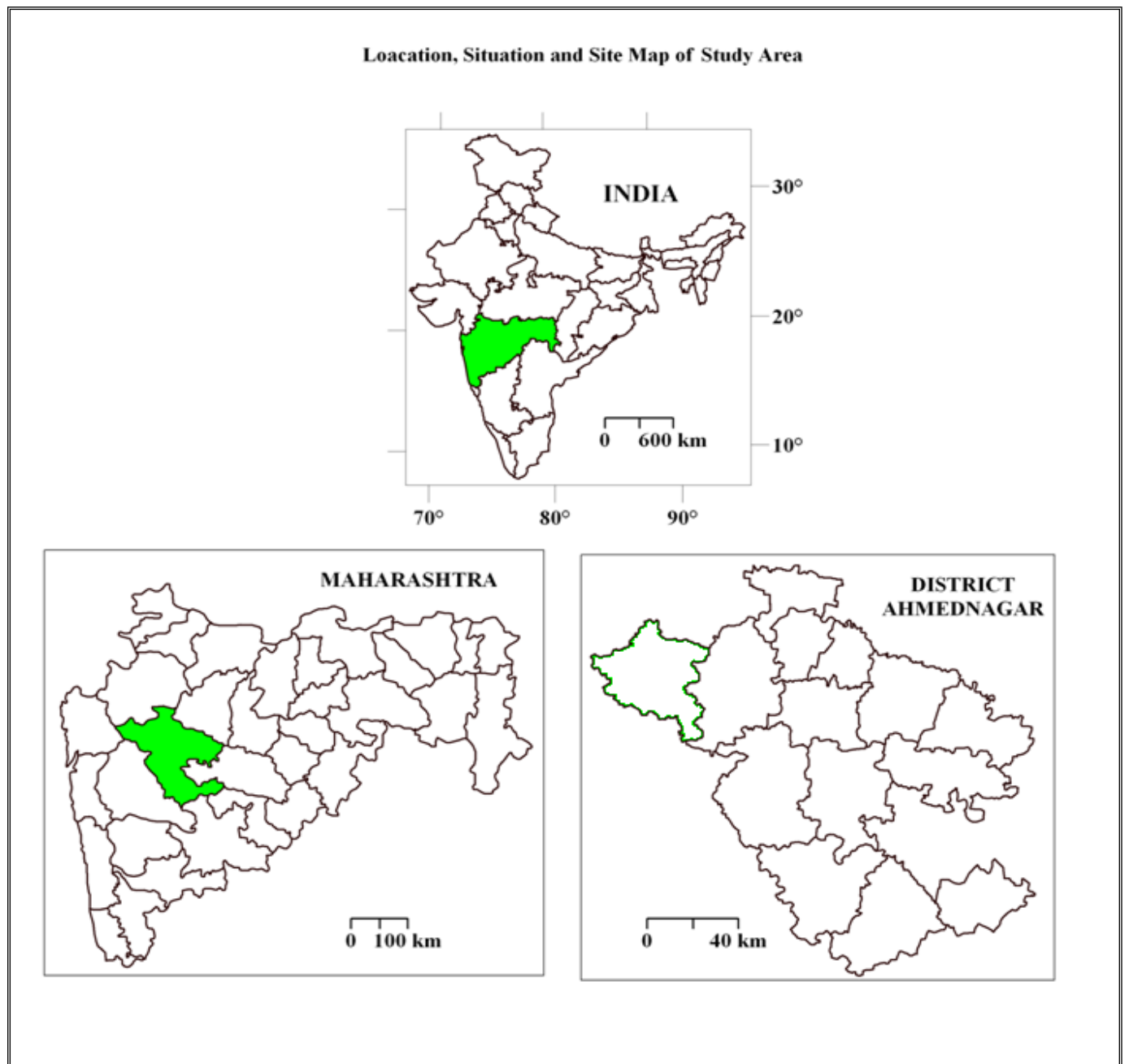
Table 1 : Temporal Aspect of Rainfall in Ahmednagar District

Taluka	19 98	19 99	20 00	20 01	20 02	20 03	20 04	20 05
Akola	880	510	689	563	476	502	1354	1084
Sangamner	575	472	658	438	492	489	650	529
Kopargaon	667	551	451	368	337	341	479	406
Shrirampur	828	332	575	542	308	259	553	550
Rahuri	637	842	615	579	325	313	575	465
Newasa	676	647	569	436	344	265	568	479
Rahata	655	525	396	497	475	263	557	601
Nagar	735	860	670	480	400	214	556	500
Shevgaon	811	633	569	507	476	362	785	465
Pathardi	1135	472	498	726	559	544	681	451
Parner	753	341	539	485	517	190	759	531
Karjat	964	629	468	686	525	328	635	606
Shrigonda	951	768	402	620	421	110	574	484
Jamkhed	1296	1003	670	440	502	516	686	634

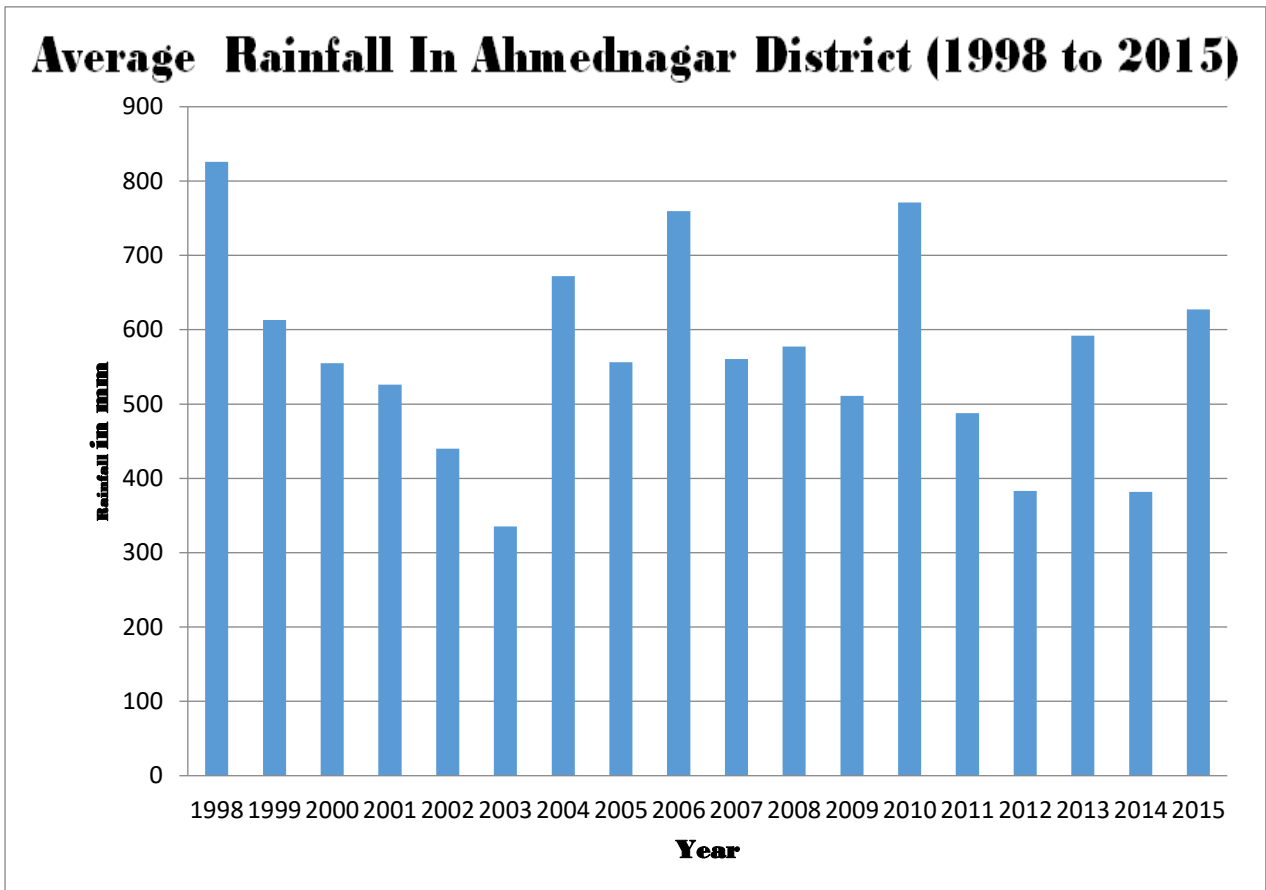
Taluka	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Akola	1130	871	1006	549	829	500	648	766	733	806
Sangamner	589	485	487	329	572	240	496	375	391	537
Kopargaon	571	596	401	333	644	455	402	416	273	476
Shrirampur	788	611	503	485	853	636	408	509	491	833
Rahuri	796	745	651	551	866	589	513	506	321	589
Newasa	629	368	591	456	860	474	503	494	337	497
Rahata	690	462	385	337	814	395	548	699	327	510
Nagar	809	648	648	565	791	374	225	569	429	887

Shevgaon	759	450	473	636	824	741	276	665	379	581
Pathardi	804	443	625	617	932	616	250	608	414	631
Parner	852	389	388	464	604	368	249	546	176	535
Karjat	785	416	715	711	729	413	245	675	343	604
Shrigonda	523	752	448	498	710	316	258	777	268	560
Jamkhed	906	614	763	623	770	712	345	682	464.	738

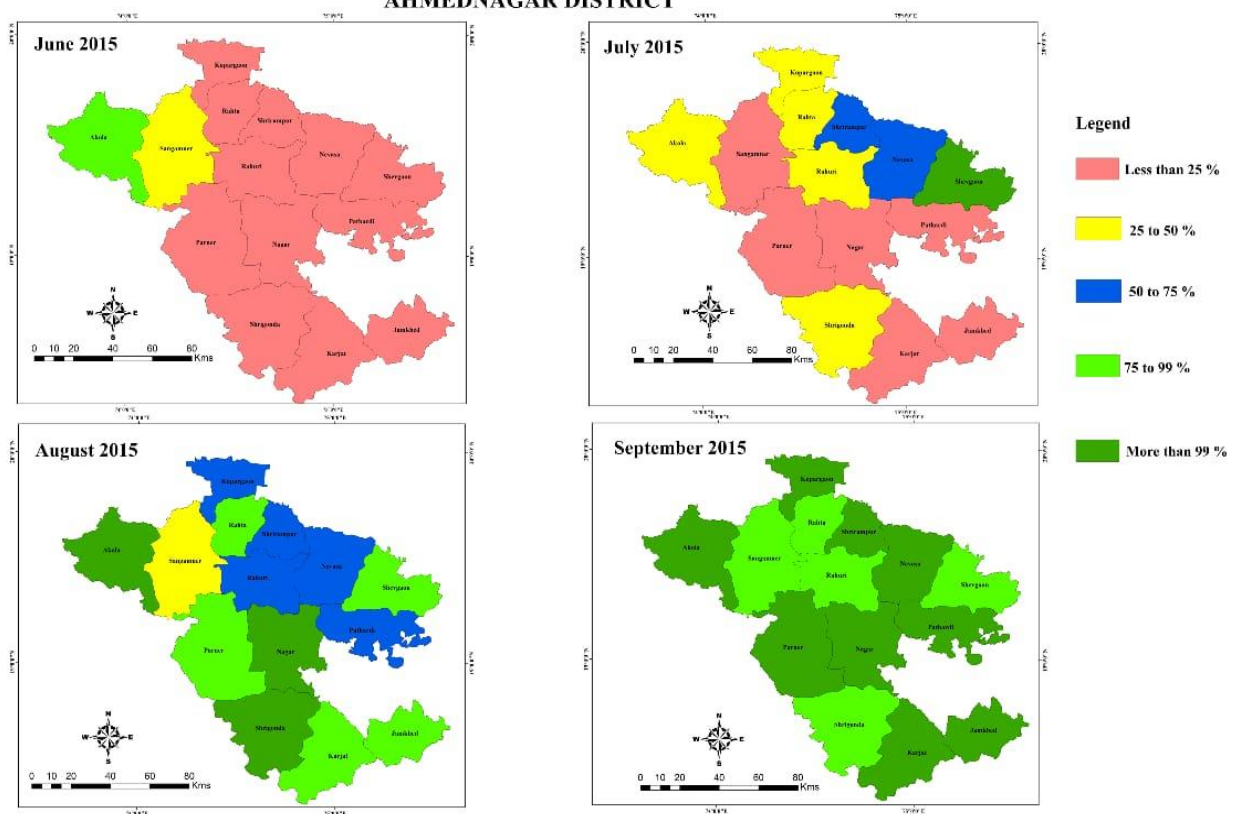
Source: [www.agri.mah.nic.in](http://www.agri.mah.nic.in)



**Fig.1 : Location Map of Study Area**



**Fig. 2.** Average rainfall In Ahmednagar District



**Fig. 3.** Rainfall Distribution in Ahmednagar District

## VI. CONCLUSION

The present research paper is an efforts to appraise the spatial and temporal rainfall variability of Ahmednagar district the largest district of Maharashtra State. The district has fourteen Talukas with district headquarter at Ahmednagar. Akole Taluka of this district has natural border with Sahyadri mountain. In this study the annual rainfall from 1998-2015 is considered, high rainfall of above 565 mm was observed in 8 years and below 500 mm rainfall in 5 years. Taluka wise rainfall analysis shows that Western and southern part of the district (Three Talukas) received high rainfall and the remaining five Talukas of the district received moderate rainfall. Six Talukas get low rainfall than normal. The mean rainfall of the district in the last 18 years is 565 mm with a maximum of 772 mm rainfall in Akole Taluka and minimum of 454 mm in Kopergaon Taluka.

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