



RAINFALL CHANGES IN VIDARBHA REGION OF MAHARASHTRA STATE (1901 TO 2017)

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ABSTRACT:

The average rainfall decreased in many parts of India last few years. Degradation of unnecessary forest, increasing pollution, etc is the main reasons of rainfall decreases. Vidarbha region is the part east Maharashtra state included with two administrative divisions, Amravati and Nagpur. This region is the hot zone of Maharashtra state and rainfall distribution in this region is uneven.

Present paper has revealed the average annual rainfall distribution and change in average rainfall in the Vidarbha region from the year 1901 to 2017.

Key words: - *Rainfall, average, annual, change, degradation*

INTRODUCTION:

Indian agriculture is mainly depended on the rainfall distribution and it is irregular and uneven distributed. Present paper is an overview of average annual rainfall distribution and change in Vidarbha region from the year 1901 to 2017.

OBJECTIVES:

The main objective of the present paper is to discuss average annual rainfall and change during 1901 to 2017 in the study region.

Data Source and Methodology

Present paper is based on the secondary source of data and rainfall data collected from Regional Metrological Department, Nagpur. The analysis is based on the decadal rainfall data i.e. 1901, 1911, 1921, 1931, 1941, 1951, 1961, 1971, 1981, 1991, 2001, 2011 and 2017. Average annual

rainfall and change is calculated by using following formula,

$$\text{Average Annual Rainfall} = \frac{\text{Total Yearly Rainfall}}{\text{Total Months}}$$

$$\text{Change} = \text{Current Decade Rainfall} - \text{Last Decade Rainfall}$$

STUDY REGION

Vidarbha region is located in the east of Maharashtra state included with total 11 districts. There are two administrative divisions are included in this region, Amravati and Nagpur. Amravati, Akola, Washim, Yavatmal and Buldhana districts are included in Amravati division. Nagpur, Wardha, Bhandara, Gondia, Chandrapur and Gadchiroli districts are included in Nagpur Division.

Vidarbha region lies in between 18° 43' north to 21° 43' north latitudes and 75° 54' east to 80° 52' east longitudes below the

tropics of cancer. It covers area of 97409 sqkm with 23012551 total populations according to the census year 2011.

The maximum average annual rainfall is occurred in the year 1961 and it is 120.07 cm. This is the middle decade from 1901 to 2017 and rainfall ratio is unbalanced and near about decreased from 1961 to 2017.

In the year 1931, 1961 and 1981 the average annual rainfall in above 100 cm and in the year 1901, 1921, 1951 and 2001 the average rainfall is 90 to 94 cm. According to the recent data of the year 2017 the average annual rainfall is only 66.92 cm and it is lowest in the table.

It is found that the ratio of rainfall is decreased in the region. More than 30% forest in Maharashtra state is occurred only in Chandrapur and Gadchiroli district of Vidarbha region. Also Melghat region in Amravati district has the forest cover but from last few decades forest cover degraded in the study region and its impact are clearly shows on the rainfall of the study region.

Positive Change

The positive changes in average rainfall occurred during 1911 to 1931, 1941 to 1961, 1971 to 1981 and 1991 to 2001. The maximum rainfall is increased during 1951 to 1961 (+29.88 cm) and year 1961 was also gets maximum amount of rainfall in the study region. The minimum positive change is occurred during 191 to 1921 and the positive changes in other decades is observed 20 to 30 cm. It means the average annual rainfall is not increased more than 30 cm.

Negative Change

Maximum decades observed the negative changes in annual rainfall because of reduced the proportion of rainfall. Maximum amount of rainfall is decreased during 1931 to 1941 and then 1961 to 1971. The average annual rainfall is decreased from 100 cm to 66 cm in 2017. Negative changes show the less amount of rainfall and change in climate of the study region.

CONCLUSIONS AND SUGGESTIONS:

The rainfall in the study region is found to have decreased over the last hundred years. In Vidarbha, rainfall is seen increasing from west to east. The Melghat region of Vidarbha, Gondia district and Gadchiroli district are rich in natural vegetation. The region receives more rainfall than other part of the study region. But in the last few years, deforestation in these areas has been occurring continuously. The opposite effect is observed when it rains.

The region has a high percentage of tribal population in Melghat and Gadchiroli district and it is still not advanced. Due to the rotational farming practices, they break down forests in many places. Also, there is illegal deforestation of the teak wood, in many places the deforestation of the forest due to the illegal cuttings of trees and their sell. Therefore natural vegetations are being destroyed in this region.

Chandrapur has a lot of coal mines as well as industries based on it, but its effect is seen when it rains. Development is possible only by maintaining the balance of nature. Therefore, it is necessary to stop the

deforestation and plant more and more trees through social forestry.

Agriculture is the backbone of an Indian economy, and agriculture is dependent on the rain water and rain water is also the major source of drinking water. Therefore, it is necessary to make progress and take such measures without harming nature

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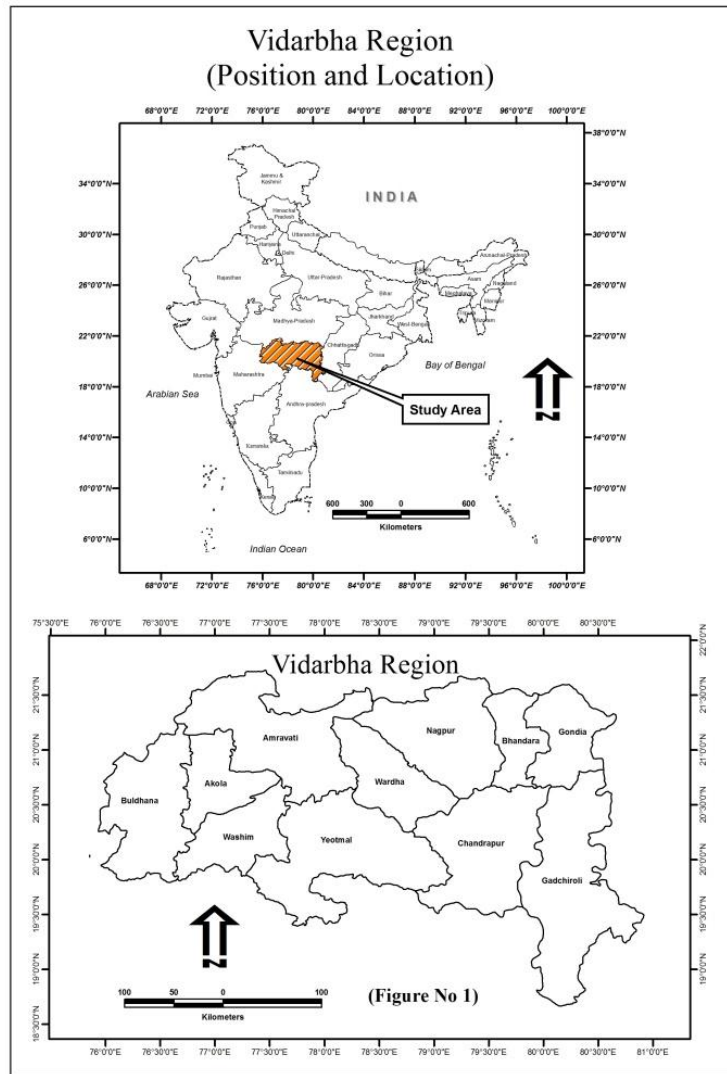
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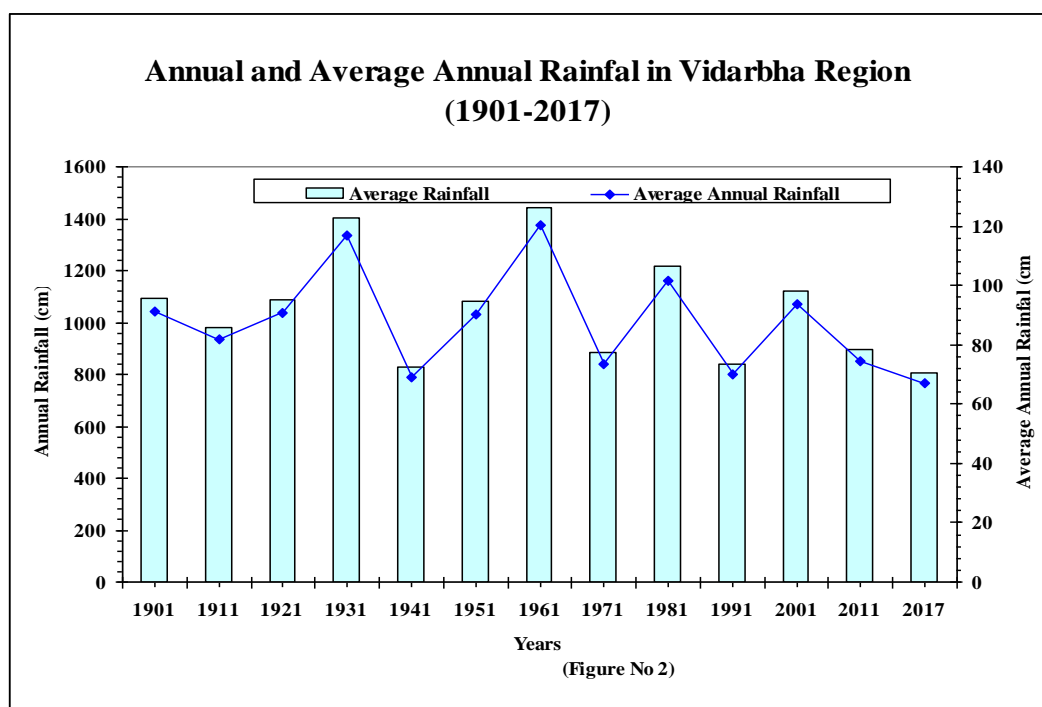
Average Annual Rainfall (1901 to 2017)

The annual rainfall and average rainfall in the Vidarbha region are presented in table no 1.

Table No 1 - Vidarbha Region: Average Annual Rainfall (1901 to 2017)

Years	Rainfall in cm	Average Annual Rainfall in cm
1901	1093.3	91.11
1911	982.8	81.90
1921	1085.6	90.47
1931	1404.2	117.02
1941	828.9	69.08
1951	1082.3	90.19
1961	1440.8	120.07
1971	882.4	73.53
1981	1218.6	101.55
1991	838.7	69.89
2001	1122.1	93.51
2011	893.2	74.43
2017	803	66.92

Source: - Regional Metrological Department, Nagpur



Change in Rainfall

Maximum negative changes occurred in the annual rainfall of the study region from the year 1901 to 2017. The change in average annual rainfall is shown in the table no 2.

Table No 2 - Vidarbha Region: Change in Average Annual Rainfall (1901 to 2017)

Year	Change
1901 to 1911	-9.21
1911 to 1921	8.57
1921 to 1931	26.55
1931 to 1941	-47.94
1941 to 1951	21.12
1951 to 1961	29.88
1961 to 1971	-46.53
1971 to 1981	28.02
1981 to 1991	-31.66
1991 to 2001	23.62
2001 to 2011	-19.08
2011 to 2017	-7.52

Source: - Calculated by Author

