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Development of Smart City : Impact and Transformation due to Urbanization

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Govt. College of Arts & Science
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Spatio Temporal variation of rainfall in Beed District, A Geographical Study.

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Abstract:

Rainfall is very important for every crops. Rain is liquid water in the form of droplets that have condensed from atmospheric water vapor and then becomes heavy enough to fall under gravity. Rainfall is water particles, either in the form of drops more than 0.5 mm diameter. Soil is provide the water and humidity to crops .Rainfall is cheap and important source to provide water to crops. Different crops needs different quantity of water. Rainfall is increasing west to east in Beed district. Ashti, near the western border rainfall 665.3mm and eastern border 850.6mm rainfall at Mominabad.The annual rainfall is received from south-west monsoon period that is about 80 percent of total rainfall. The characteristics of monsoon rainfall is variability, intensity, unreliability variations in rainfall effect on agriculture. The average rainfall in study region is 674.77 mm but spatial variation in average rainfall.

Keywords: - Water cycle, Precipitation, hydroelectric power, monsoon rainfall.

Introduction:

Rain is a major component of the water cycle and is responsible for depositing most of the fresh water on the Earth. It provides suitable conditions for many types of ecosystems, as well as water for hydroelectric power plants and crop irrigation. The major cause of rain production is moisture moving along three-dimensional zones of temperature and moisture contrasts known as weather fronts. If enough moisture and upward motion is present, precipitation falls from convective clouds (those with strong upward vertical motion) such as cumulonimbus (thunder clouds) which can organize into narrow rainbands. In mountainous areas, heavy precipitation is possible where upslope flow is maximized within windward sides of the terrain at elevation which forces moist air to condense and fall out as rainfall along the sides of mountains. On the leeward side of mountains, desert climates can exist due to the dry air caused by downslope flow which causes heating and drying of the air mass. The movement of the monsoon trough, or intertropical convergence zone, brings rainy seasons to savannah climes.

Study Area:

Beed district is located in the central part of Maharashtra in Aurangabad division and forms a part of Marathwada region. The district lies between 18°28' and 19°28' North Latitudes and 74°54' and 76°57' East Longitudes. The district is bounded by Aurangabad and Jalna in the North, Parbhani and Latur in the East, Ahemednagar and Osmanabad in the South and Ahemednagar in the West. Godavari is the most significant river that flows on the borderline of Georai and Majalgaon Tehsils. The total area of Beed district is 10693. Sq.Kms and it is 3.47% of Maharashtra State. Further division of area is 40.25 Sq.Kms in urban parts and 10652.75 Sq.Kms in rural area. According to the 2011 census the total population of Beed district is 2,585,962 with 1352468 male and 1233494 female. In 2001 census, Beed had a population of 2,161,250 of which males were 1,116,356 and remaining 1,044,894 were female. Beed District population constituted 2.30 percent of total Maharashtra population. In 2001 census,

this figure for Beed District was at 2.23 percent of Maharashtra population.

The objectives of the paper:

1. To study the importance the rainfall in agriculture.
2. To study the main causes of the changes in precipitation falls.
3. To study temporal Changes in rainfall in study region.

Data base and Methodology:

The present study is based on secondary data. Secondary data will be collected from social economic review district census handbook, gazettes, decennial census Reports of Government of India. The data has been obtained from the related articles, research papers, reports, policies and plan documents of Government of India and Maharashtra .Some data has been obtained from websites of Govt. of India and Govt. of Maharashtra, beed.nic.in, been undertaken to know the environmental status.

Distribution of rainfall in Beed District:

Beed district is under rain shadow region .Orogenic rainfall always maximum occurs on the windward slope and other side decrease rainfall this side always dry area known as the rain shadow region .Beed district is under rain shadow region and spatial variation of average rainfall in Beed district. The basis of rainfall variability created different rainfall zone in Beed district as following.

i. Heavy rainfall zone :(Above 650 mm):

In this zone included Georai (689.40mm), Majalgaon (800.90mm), Parli V. (727.60mm) ,Wadwani (800.90mm)and Ambejogai (727.60mm).

ii. Moderate rainfall zone :(600mm to 650mm):

In this zone included Kaij (627.90 mm), Dharur (629.80mm) and Beed tehsil (629.90 mm).

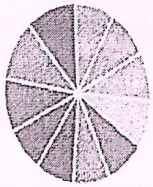
iii.Low rainfall zone :(Below 600mm):

In this zone included Ashti (579.70 mm), Patoda (599.40 mm) and Shirur Ka. (599.40 mm).

Table 2.1. Spatial variation of average rainfall in Beed district.

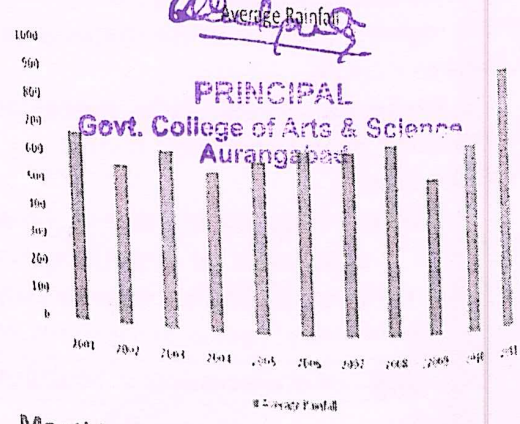
Sr.No.	Name of Tahsil	Rainfall in mm	Sr.No.	Name of Tahsil	Rainfall in mm
1	Beed	629.90	7	Patoda	599.40
2	Kaij	627.90	8	Shirur (Ka).	589.20
3	Dharur	629.80	9	Georai	689.40
4	Parli (V).	627.60	10	Majalgaon	800.90
5	Ambejogai	627.60	11	Wadwani	800.90
6	Ashti	589.40	District average		674.77

Rainfal in mm



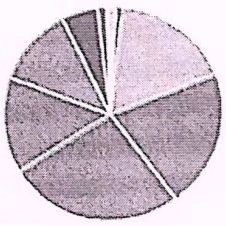
Beed district is under rain shadow zone and rainfall is variable year to year .the highest rainfall in 2011 and that is 925.36 mm and the lowest rainfall in 2008 that is only 550.40 mm from 2001 to 2011.Average rainfall in study region 550mm to 700 mm so, the region in under drought prone area.

Sr.No	Year	Average rainfall mm	Sr.No	Year	Average rainfall mm
1	2001	672.36	7	2007	647.50
2	2002	572.10	8	2008	674.67
3	2003	630.40	9	2009	550.40
4	2004	569.67	10	2010	665.20
5	2005	610.80	11	2011	925.36
6	2006	647.50			



Monthly Average rainfall in Beed district.

Sr. No	Name of month	Average rainfall cm	Percentage of total	Sr No	Name of month	Average rainfall cm	Percentage of total
1	January	-	-	7	July	155	20.72
2	February	02	027	8	August	195	26.06
3	March	06	080	9	September	110	14.71
4	April	02	027	10	October	90	12.05
5	May	08	1.07	11	November	40	5.35
6	June	130	17.38	12	December	10	1.34
		District Average rainfall				748	100



(727.60mm) ,Wadwani (800.90mm)and Ambejogai (727.60mm).ii. Moderate rainfall zone :(600mm to 650mm): In this zone included Kaij (627.90 mm), Dharur (629.80mm) and Beed tehsil (629.90 mm).iii.Low rainfall zone :(Below 600mm): In this zone included Ashti (579.70 mm), Patoda (599.40 mm) and Shirur Ka. (599.40 mm).

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Conclusion:

The study of rainfall is important for identify rainy period and dry periods. This knowledge is useful for farming as well as irrigation management. The basis of rainfall variability created different rainfall zone in Beed district as following.i. Heavy rainfall zone :(Above 650 mm): In this zone included Georai (689.40mm), Majalgaon (800.90mm), Parli V.

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