



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Study of Rainfall Variation in Parbhani District of Maharashtra (2000-2016)

Kachare Namdev V.

Department of Geography,

Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad.

Dr.Suryawanshi Madan V.

Head, Dept. of Geography,

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(India)

Abstract

The present study is being conducted to evaluate the expected rainfall trend and its relevance in Godavari basin up to Godavari watershed in Parbhani district of Maharashtra. Precipitation is an important feature of any watershed, as it affects flood frequency, flood control studies and water strategic planning. In this case study, mean monthly precipitation was examined from 2000 to 2016 to identify the amount of variability. Excel is used to evaluate monthly rainfall data trends.

Keywords: Rainfall region, Rainiest month, Thundershowers, Analysis, Intensity

Introduction

For much of the world, rainfall is the principal source of water for agricultural production. Rainfall has three basic characteristics: volume, frequency, and intensity, all of which differ from location to place, day to day, month to month, and year to year. It is critical to have a thorough understanding of these three primary qualities in order to plan its optimal use. The volume, intensity, and distribution of monthly or annual rainfall for the world's most important locations are widely available. Years of daily rainfall records have been accumulated; norms and standard deviations have been calculated; floods and droughts have been identified; and climatic zones of potential evapotranspiration less precipitation have been delineated from Rainfall trends and agricultural research were used to create the map. Investigations involving electronic computers are ongoing, and efforts are being made to forecast future patterns in order to improve preparation.

Climate change takes a long time to manifest. It has risen to the top of the world's most pressing concerns. As a result, quantification of climate change has become essential. Trend analysis is a tool to determine regional variation and temporal changes in many climate parameters. This is an important issue for a country like India, which has an agro-based economy that is heavily dependent on monsoon rains. As a result, any change in that period of the year has the potential to devastate the country's agricultural conditions and, consequently, the economy. Along with this, the food security of the country will also be threatened. The climate variability of India is very high as compared to the global climate variability. This has also

made it necessary to determine whether the trend is rising or falling. The most important climatic parameters, such as droughts and floods, can be attributed to changes in rainfall.

Study Area

The Deccan plateau in the eastern part of the state of Maharashtra is home to Parbhani district, located between 180 45' North and 200 01' North latitude and 760 13' East to 770 29' East longitude. The Ajanta and Balaghat mountain ranges pass through Jintur taluka and Gangakhed taluka of Parbhani district respectively. Godavari and Dudhana rivers pass through this region. Parbhani district is about 457 meters above sea level. The climate of the Parthians is described as tropical. The Köppen–Geiger classification for this region is Aw. There is much more rainfall in summer than in winter. The study area is 6511 sq km or 2.11 percent of the total land area of the state.

Climate

The climate of Parbhani is described as tropical. The Köppen–Geiger classification for this region is Aw. There is much more rainfall in summer than in winter.

The district has a dry climate, except during the south-west monsoon season. Four seasons can be identified throughout the year. From December to February, there is the cold season, followed by the hot season from March to May, the southwest monsoon season from June to September, and the post-monsoon season from October to November. The average annual rainfall in the district is 888.5 mm. The rainfall in the neighboring districts progresses from west to east according to the specific pattern of rainfall.

Temperatur

When the temperature starts to drop in late November, the cold season begins. With an average daily minimum temperature of 12.6 °C and an average daily maximum temperature of 29.3 °C, December is the coldest month of the year.

Rainfall

The average annual rainfall in the district is 888.5 mm. The rainfall in neighboring districts increases from west to east according to the specific pattern of rainfall. Parbhani is the only meteorological observatory in the district.

Materials and Methods

The map of the study area was prepared after obtaining toposheets from the Survey of India. The Bureau of Economics and Statistics in Hyderabad provided daily rainfall data, which was then analyzed using Excel. For one month, the following daily analysis shows a rain gauge station. This is a straightforward process that is done in Excel. The daily rainfall data from eight different rain-gauge stations in Parbhani district were used in the present study to calculate rainfall over a whole year. This information is used to create a graph, which includes a line and an equation that shows the rainfall patterns in the area. There was a lot of rain in the rain gauge station of Booth.

Monthly Rainfall variation in Parbhani District (2000-2016)

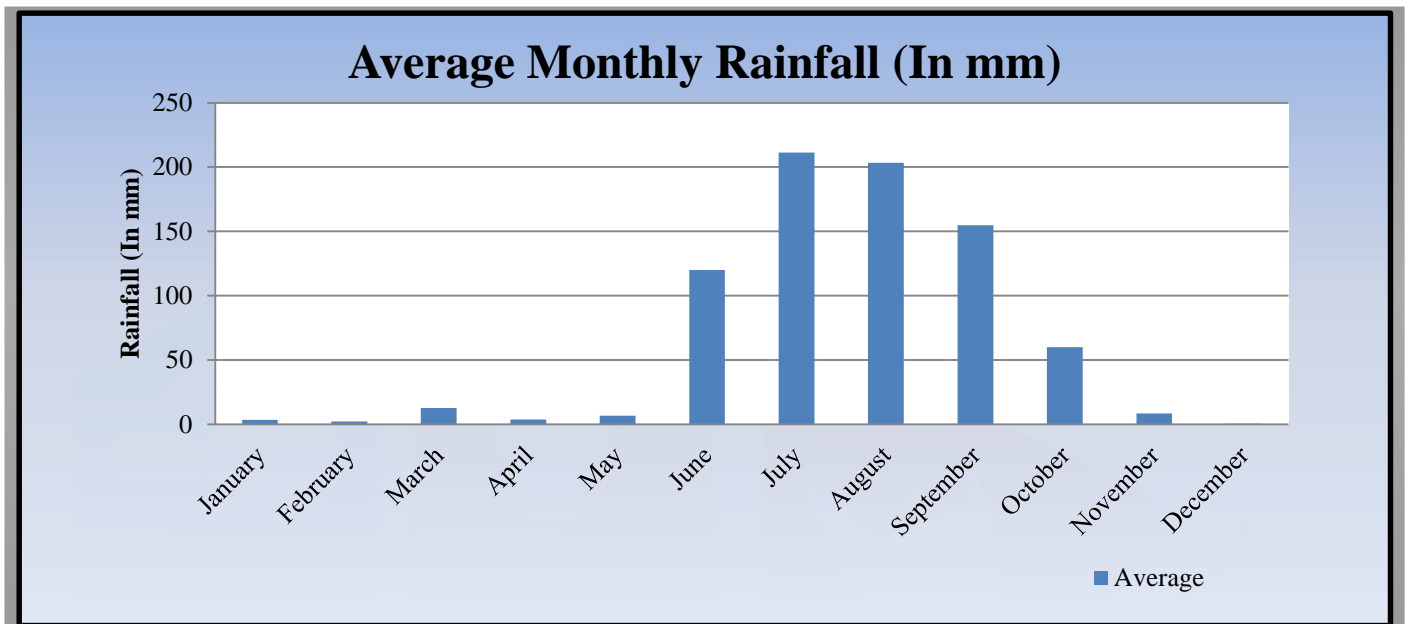
Month Year	January	February	March	April	May	June	July	August	September	October	November	December	Total Rain for Year
2000	3.4	6.7	0	0	10.7	218.8	202	428.9	56.2	26.8	0	0	953.5
2001	1.2	0	0.7	5.9	0	224.6	64.3	378.9	36.5	319.6	0	0	1031.7
2002	0.9	4.8	0	3.5	5.9	324.1	48.3	245.1	145.8	10.7	0.5	0	789.6
2003	27.2	2	1.4	0.9	42.9	114.1	403.2	184.3	86.9	13.2	0	0	876.1
2004	0	0	0	0	0	72.3	189.7	58.6	153.6	38.3	54	0	566.5
2005	13.3	0	33.7	0	0	48.4	592.7	112	218.8	150	0	0	1168.9
2006	0	0	39.1	0	0	126.6	110.7	409.3	172	38.9	0	0	896.6
2007	0	0	0	0	0	173.5	187.2	178.3	252.1	0.7	0	0	791.8
2008	0	0	16.6	0	0	103.9	119.9	111.8	220.2	36.2	0	0	608.6
2009	0	0	0	0	33.7	41.4	137.4	226.4	155.4	55.3	36	7.6	693.2
2010	0	0	0	0	0.6	71.3	359.2	307.3	183.4	52.8	38.7	0	1013.3
2011	0	6.6	0	11	9.7	58.1	289.1	187.5	89.8	15.7	0	0	667.5
2012	0	0	0	0	0	99.5	192.5	107.4	159.3	78.5	0	0	637.2
2013	0	0	13.5	0	0	128.5	351.4	206.4	177.2	85.3	5.7	0	968
2014	0	14.5	76.9	0	0	35.2	75.8	147.2	88.1	5.5	5.1	0	448.3
2015	10.6	0.1	23.8	39	6.2	79.9	23.5	85.3	138.2	9.8	1.4	0	417.8
2016	0	0.8	9.5	1.1	0.9	119.5	244.3	82.8	297.3	80.2	0	0	836.4
Average	3.3294	2.0882	12.659	3.6118	6.5059	119.98	211.25	203.38	154.75	59.853	8.3176	0.4471	786.18

Source: 1. Compiled by Author, 2. Agriculture Department of

Maharashtra

Discussions

The rainfall data was analyzed using data from Maharashtra rain gauge stations maintained by the Agriculture Department. The variability of the mean annual rainfall data for the entire research period is depicted in the graph below. Annual average rainfall has decreased since 2015, but it is not clear whether this trend will continue.



Average Monthly Rainfall (In mm)

Conclusions

The minimum rainfall occurred in the year 2015 around 417.8 mm and 2005 has recorded the maximum of about 1168.9 mm of precipitation. The rainfall data analysis of the Parbhani region for 16 years (2000-2016) reveals variation in the rainfall amount and points out the negative trend of rainfall in the future. It is suggested that water resource development projects that depend on surface water, as well as groundwater sources, will provide a remedial solution to the prevailing problem of depleting groundwater level of the Parbhani region.

Reference

- ¹Mohammad Sahil Choudhari, ²Suresh Savaram Choudhary, Rainwater harvesting system for Latur district(Maharashtra), International Journal of Recent Advances in Engineering & Technology (IJRAET), ISSN (Online): 2347 - 2812, Volume-5, Issue -9-10, 2017.
- Adeloye A.J.& Montaseri M. (2002), "Preliminary Stream-flow data Analyses Prior to Water Resources Planning study", Journal of Hydrological sciences. Vol. 47.
- Anantkrishnan (1970), "some features of the space and Time variation of rainfall over India and Neighbourhood". Pre. Publication Science Report No 118.
- Basisth A Arya D. S, Coel N.K, (2008), "Analysis of Historical changes in Rainfall in the Indian Himalaya". International Journal of Climatology.
- Dahamsheh A and H. Aksoy (2007), "Structural characteristics of annual precipitation data in Jordan". Journal of Theoretical and Applied Climatology. Vol.88.
- Donald H. Burn, Juraj M Cunderlik and Alain Pietroniro (2004), "Hydrological Trends and Variability in the Liard River Basin" Journal of Hydrological Sciences Vol. 49, February 2004.
- Gazette of Parbhani District.
- Ihsan Cicek (2003), "The Statistical Analysis of Precipitation in Ankara, Turkey", Journal of Social Science, Firat University.
- Indian Agricultural Research Institute (2015), "Various Articles on Climate Change". Delhi.
- Indian Meteorology Department (2005), "Climate summary of Maharashtra". Pune.
- Jain S.K, Kumar v. (2012), "Tread Analysis of Rainfall and temperature data or India". Current science.
- Lal D. S. (2011), "Climatology". Sharada Pustak Bhavan, Allahabad
- Luis M De, J. Reventos, J.C.Gonzalez-Hidalgo, J.R. Sanchez, J. Cortina (2000), "Spatial Analysis of Rainfall trends in the region of Valencia". International Journal of Climatology, Vol.20.
- Michael Kizza & Allan Rodhe & Chong-Yu Xu (2008), "Temporal rainfall Variability in the Lake Victoria Basin in East Africa during the twentieth century". Journal of Theoretical and Applied Climatology.

- Mohsen Sheriff, Salem Akram and Amapr Shetty (2009), “Rainfall Analysis for the Northern Wadis of United Arab Emirates: A Case Study”. Journal of Hydrologic Engineering, ASCE.
- R.V. Shinde, S.B Jadhav, & S.N. Pawar, “Analysis of Metrological Drought for Latur and Osmanabad district of Maharashtra”, ISSN–0976–7223I (1) Apr. 2016:36-37
- Statistical Report of Parbhani District.

