



Quick Response Code:



Website: <https://wgges.us>



Creative Commons (CC BY-NC-SA 4.0):

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Public License, which allows others to remix, tweak, and build upon the work noncommercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Manuscript ID:
IJWGAFES-2025-020404

DOI: 10.5281/zenodo.16562355

DOI Link:
<https://doi.org/10.5281/zenodo.16562355>

Volume: 2

Issue: 4

April

Year: 2025

E-ISSN: 3066-1552

Submitted: 05 Mar 2025

Revised: 20 Mar 2025

Accepted: 10 Apr 2025

Published: 30 Apr 2025

PSGVPMS ASC College
Shahada, Dist. Nandurbar
Email: patilrah30@gmail.com

Address for correspondence:

Dr. Rahul V. Patil
PSGVPMS ASC College Shahada, Dist.
Nandurbar
Email: patilrah30@gmail.com

How to cite this article:

Patil, R. V. (2025). A study of Rainfall Pattern & Vegetation in Taloda Tehsil of Nandurbar district. International Journal of World Geology, Geography, Agriculture, Forestry and Environment Sciences, 2(4), 37–40.
<https://doi.org/10.5281/zenodo.16562355>

A study of Rainfall Pattern & Vegetation in Taloda Tehsil of Nandurbar district

Dr. Rahul V. Patil

Abstract

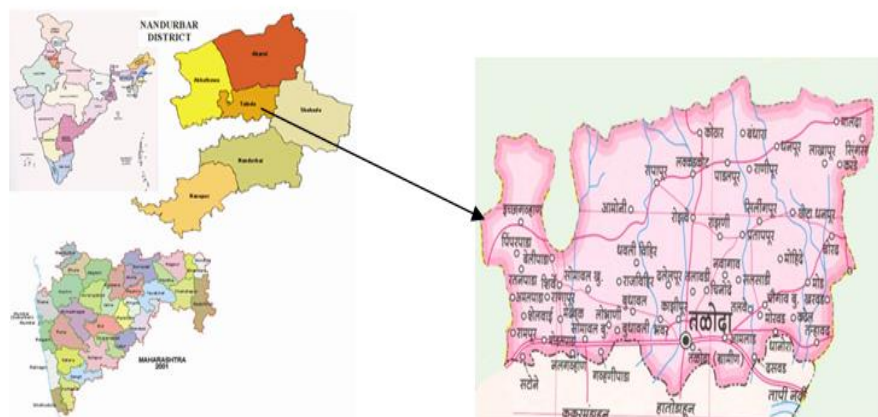
Rainfall and vegetation undeniably stand as two of the most fundamentally important factors for truly understanding the intricate and often delicate balance of nature. The overarching health of any ecosystem, the richness of its biodiversity, and the vital measure of agricultural productivity within a given region are all inextricably linked to not just the total amount of rainfall, but also its critical timing and its even distribution across the year. Ample and well-timed rainfall directly supports the proliferation and growth of diverse vegetation, which in turn performs an indispensable role in maintaining essential soil fertility, actively preventing erosion, delicately regulating the local climate, and crucially, offering both habitat and sustenance for a wide array of animal species. Beyond these direct benefits, vegetation further helps to sustain the natural cycles of both water and nutrients, thereby making a profound contribution to the long-term stability and resilience of the environment. It is against this backdrop that this research paper presents a comprehensive study, meticulously carried out by the researcher. This focused investigation zeroes in on the specific patterns of rainfall and the precise extent and various types of vegetation found within Taloda tehsil of Nandurbar district. The core objective of this in-depth study is to gain a significantly better understanding of the nuanced interrelationship between rainfall variability and vegetation dynamics, and, importantly, to determine how these two intertwined factors collectively influence both the ecological balance and the crucial agricultural sustainability of the region.

Keywords: Rainfall, vegetation, biodiversity, soil fertility, environment, climate

Introduction

In this particular research paper, the researcher has undertaken a thorough comparative analysis of rainfall and vegetation within Taloda tehsil, located in the Nandurbar district. To effectively execute this detailed study, the investigation leveraged advanced technological methodologies, specifically employing Remote Sensing (RS) and Geographic Information System (GIS) techniques. These sophisticated tools were instrumental, enabling the researcher to not only accurately identify but also precisely map the vegetation cover across the area over a significant span of time. By skillfully combining comprehensive rainfall data with the intricate vegetation patterns derived from the powerful capabilities of RS and GIS, the study furnishes genuinely valuable insights into the nuanced ways in which rainfall variability directly influences vegetation growth and its spatial distribution throughout the region. This integrated and robust approach ultimately facilitates a meticulous and truly scientific assessment of prevailing environmental changes, offering crucial data that can directly inform the development of more effective strategies for sustainable land and resource management within Taloda tehsil.

Location of Study Area:



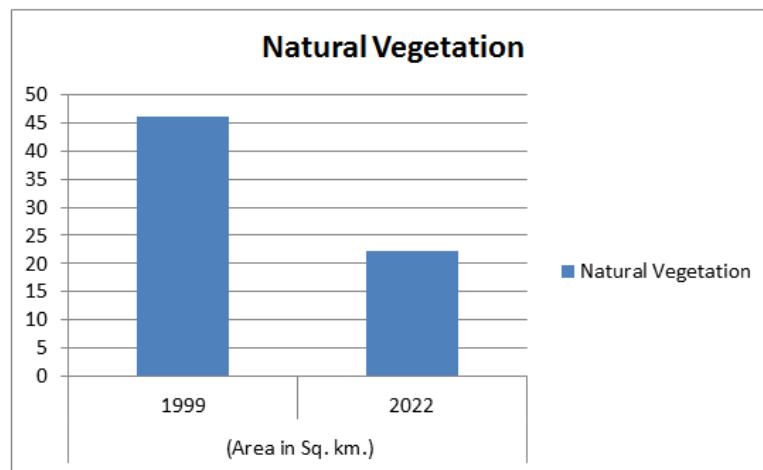
Database & Methodology:

In this study, Landsat satellite images of Taloda tehsil for the years 1999 and 2022 have been utilized to analyze changes in vegetation cover and rainfall patterns over time. The satellite images were processed using various remote sensing techniques, including image correction to eliminate distortions, histogram equalization to enhance image contrast, and supervised classification to categorize different land cover types. These processes were carried out using advanced GIS (Geographic Information System) software tools, which enabled accurate identification and quantification of vegetation areas. After classification, the area covered under vegetation was calculated for both years to assess the changes over the two-decade period. Additionally, rainfall data corresponding to the same years were collected from the Maharashtra Agriculture Department, which provided essential information to correlate changes in vegetation with rainfall variability. This integrated approach of using geospatial technology along with climatic data has helped to draw meaningful conclusions regarding the environmental changes in the Taloda tehsil.

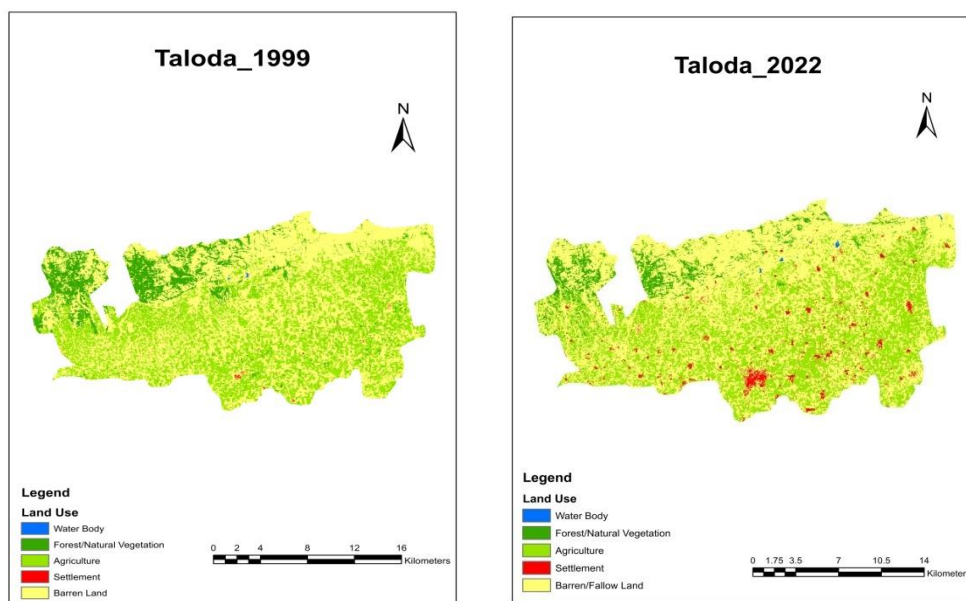
Results:

Taloda Tehsil Vegetation Cover (1999 & 2022):

Land use Type	(Area in Sq. km.)	
	1999	2022
Natural Vegetation	46.05	22.30



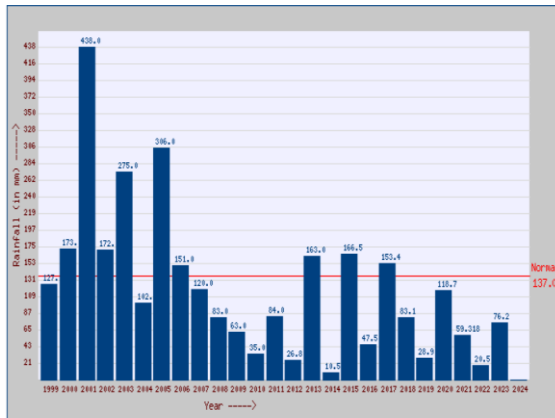
The above table & chart presents data on land use changes in Taloda tehsil between the years 1999 and 2022, specifically focusing on the area under natural vegetation. In 1999, the area covered by natural vegetation was 46.05 square kilometers. However, by 2022, this area had significantly decreased to just 22.30 square kilometers. This substantial reduction in natural vegetation—amounting to a loss of over 50%—indicates notable environmental degradation over the two-decade period. The decline may be attributed to various factors such as deforestation, urban expansion, agricultural encroachment, or changes in land use practices. Such a sharp decrease in green cover can have serious ecological implications, including reduced biodiversity, increased soil erosion, and potential changes in the local climate and rainfall patterns.



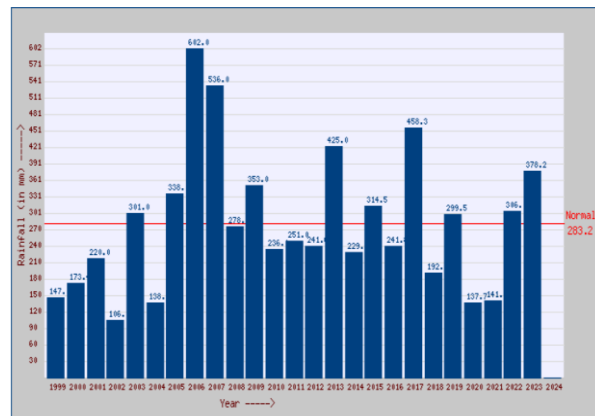
Rainfall:

The following rainfall data highlights a noticeable variation in rainfall patterns between the years 1999 and 2022 in Taloda tehsil of Nandurbar district. In 1999, the onset of the monsoon season typically began in June, providing timely and adequate rainfall essential for agriculture and maintaining ecological balance. However, as we progress toward the year 2022, there is a clear shift observed in the timing and distribution of rainfall. The monsoon has become increasingly delayed, irregular, and unpredictable in recent years. This change can be closely linked to the significant reduction in natural vegetation cover within the region. Natural vegetation, such as forests and dense green cover, plays a critical role in maintaining local climatic stability by influencing moisture retention, temperature regulation, and cloud formation. The loss of vegetation disrupts these natural processes, resulting in altered rainfall patterns. Therefore, the data suggest that environmental degradation, particularly deforestation and declining green cover, has directly contributed to the disturbance in the rainfall cycle in Taloda tehsil.

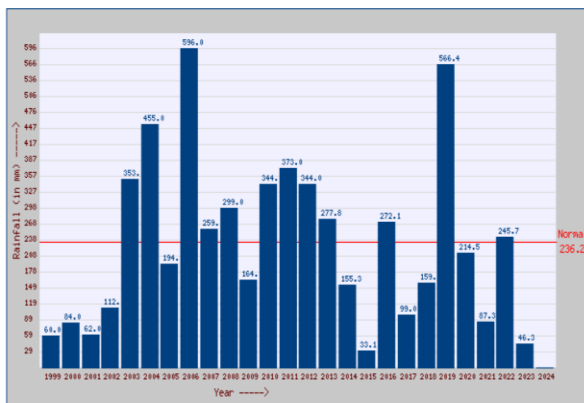
Yearwise (1999 to 2024) Rainfall (in mm) of Taloda Tehsil for the Month of June



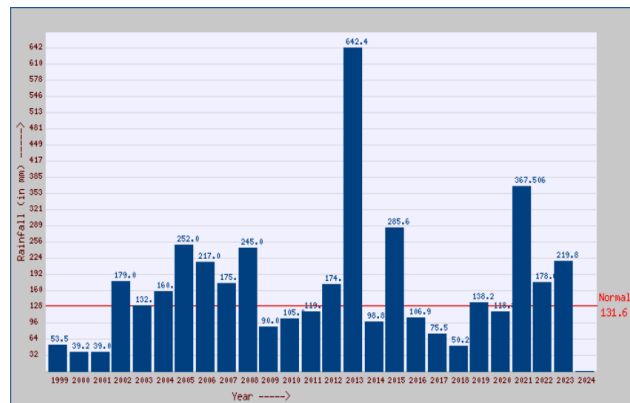
Yearwise (1999 to 2024) Rainfall (in mm) of Taloda Tehsil for the Month of July



Yearwise (1999 to 2024) Rainfall (in mm) of Taloda Tehsil for the Month of August



Yearwise (1999 to 2024) Rainfall (in mm) of Taloda Tehsil for the Month of September



(Source: Agriculture Department, Maharashtra)

Conclusion:

Vegetation cover has decreased significantly in Taloda tehsil over the years. Along with this, noticeable changes and disturbances in the rainfall pattern have also been observed in the region. These changes suggest a close relationship between vegetation and rainfall. The reduction in natural vegetation appears to have affected the local climate, leading to irregular and delayed rainfall in the tehsil.

Acknowledgment

I would like to extend my sincere gratitude to the Principal of my institute, whose unwavering support and leadership provided the essential environment for undertaking this research. Furthermore, I am immensely thankful to my college friends, whose continuous encouragement, collaborative spirit, and stimulating discussions not only helped me navigate challenges but also profoundly inspired me to pursue and complete this type of research work.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

References:

1. An, S., Zeng, F., Zhang, F., Pelt, S.V., Hamer, U. and Makeschin, F. 2008. Soil quality degradation processes along a deforestation chronosequence in the Ziwojing area, China. *Catena*, 75: 248-256.

2. Angel, S., Parent, J. and Civco, D., 2007. Urban sprawl metrics: An analysis of global urban expansion using GIS. ASPRS 2007 Annual Conference, Tampa, Florida.
3. Agaton, M., Setiawan, Y., & Effendi, H. (2016). Land Use/Land Cover Change Detection in an Urban Watershed: A Case Study of Upper Citarum Watershed, West Java Province, Indonesia. *Procedia Environmental Sciences*, 33, 654–660.
4. Basu, Priya and Srivastava, Pradeep (2005). Scaling-up Microfinance for India's Rural Poor. World Bank Policy Research Working Paper Number 3646, 30p
5. Chandel Ajitesh sing (2013) A Geographical study of Rural settlement types and factors affecting the rural settlement in Bilaspur District (H.P) *The international journal of Research Analysis and Evaluation* March-2013, Vol-iv, ISSN. No.0975-3486, Impact Factor-4.279 (SJIF)
6. Ester J and Simonett D. (1975). *Fundamentals of image interpretation - manual of remote sensing* Am., Soc. Of Photogrametry, pp of 69 -1076.
7. Gautam N.C ami Narayanan L.R.A (1982). Suggested National Land Use/ Land Cover Classification System for India using Remote Sensing Techniques.
8. Goodchild M, Haining R, Wise S et al. (1992). Integrating GIS and Spatial Data Analysis: Problems and possibilities, *International Jour, of GIS*, Voi.6.
9. Hugh D. Clout (1972) "Rural Geography – An introduction survey" Pergamon Oxford Geographies Jordan T.G. (1966) "On the nature of Settlement Geography", *The Professional Geographer*, Vol. XVIII, No.1
10. R. Navalgund, V. Jayaraman, and P.S. Roy, Remote sensing Applications -An Overview, *Current Science*, vol.93, no. 12, 2017.[doi:jstor.org/stable/24102069](https://doi.org/10.1002/stable/24102069)