



Study of the Spatio-Temporal Changing in Rainfall of Dharashiv District

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Abstract :

Rainfall is a vital component of the hydrological cycle, and its variability has significant impacts on agriculture, water resources, and ecosystems. This study investigates the spatio-temporal changes in rainfall in Dharashiv District, Maharashtra, India. Daily rainfall data from 2011 to 2021 were analyzed using statistical and geospatial techniques. The results show significant spatial and temporal variability in rainfall, with a decreasing trend in annual rainfall. The study identifies areas with high and low rainfall concentrations and highlights the importance of understanding rainfall variability for sustainable water management and agricultural planning.

Keywords: 1. Rainfall, 2. Dharashiv District, 3. Spatio-Temporal Changing

Introduction:

Climate change is one of the biggest problems mankind faces. Due to changes in natural cycles due to climate change, there is a large variation in rainfall today. In some areas, heavy rains and drought-like conditions can be seen. India receives 4.8 percent of the total rainfall in the world. When comparing the rainfall in different countries. Although rainfall is satisfactory in India, water scarcity is widely felt. The average in India is 118 cm. It rains so much. But there is a difference. Khasi and Jaitiya areas have an average of 1200 cm. It rains so much. On the other hand, in desert regions like Rajasthan, 25 to 50 cm. It rains so little. As a result, 64 crore people out of India's 140 crore population face water scarcity every year. Looking at the rainfall in Maharashtra state, the amount of rain falling in the state is not the same. Compared to India's rainfall, Maharashtra's rainfall is low. The frequency of rainfall in the state is 22 percent. Therefore, the state can be called a precipitation prone area. (Castor VL) Marathwada has the lowest average rainfall in Maharashtra with 650 mm. That's it. Average annual rainfall in Marathwada is low and 80-85 percent of rainfall falls between June and September. Of the remaining 15 to 20 percent of rainfall, 5 to 10 percent is pre-monsoon and 10 to 15 percent is post-monsoon. (Marathwada Agricultural University, Agriculture Diary 2022).

Objective: To study the spatio-temporal distribution of rainfall in the study area.

Study Area:

Dharashiv is one of the eight districts of Marathwada and its latitude ranges between 17° 35' N to 18° 40' N and longitude ranges between 75°

16° E to 76° 40' E. Dharashiv district has a total area of 7512.4 sq. km. 96.79% of the total geographical area (7273 sq. km) is covered by rural areas and 3.21% area (241.4 sq. km) is occupied by the urban area. In terms of area, Dharashiv district ranks 24th. East and West extension of Dharashiv district is 280 Km. North of Dharashiv district is Bidar and Gulbarga districts in the south west.

Data Collection and Research Methods:

Secondary source material is used for the present research. Different tools have been used in compiling this Aadhaar material. Information published by the Government from books Marathwada Gazette, local information on tourist spots, books, various office bulletins, documents, Social Forestry Office, Minor Irrigation Office (local level) District Forest Protection Office, District Ground Water Survey Mechanism district Social commentary, irrigation report directorate of statistics Mumbai and research Papers.

Meaning of Precipitation:

Precipitation is the amount of rain water falling on the ground measured in millimetres, cm, inches. The amount of rain water that falls on a certain area of the earth's surface in a certain period of time is considered as the rainfall of that entire area and period. The water measured in this way till a certain date in the whole year is the accumulated rainfall till that date and the total rainfall of the rain falling in the whole year is considered as the annual rainfall of that area. Thus in the last few years eg. (10, 15, 30) The average annual rainfall of the area is determined by taking the average of the rainfall.

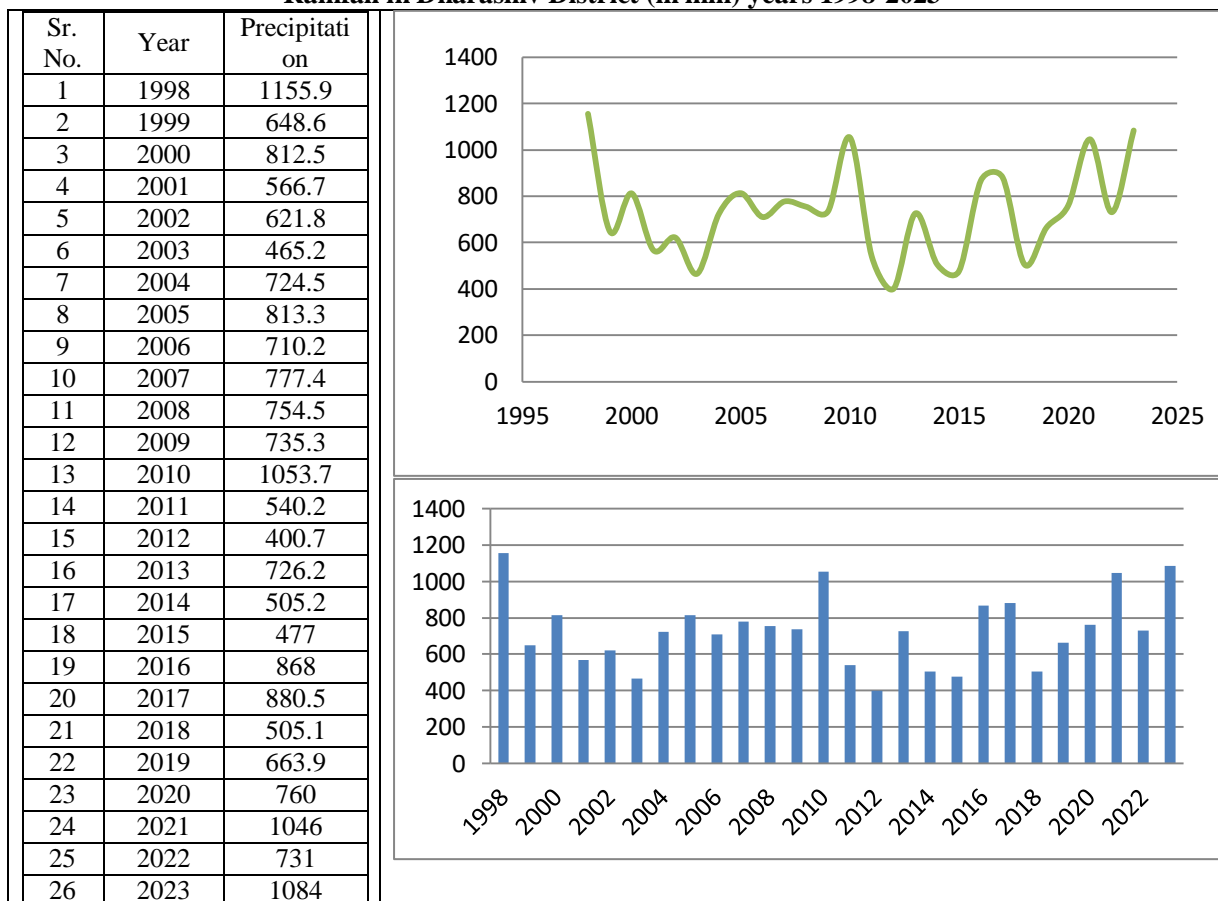
Definition of Precipitation:

"When vaporous air rises and cools enough, the vapor in it condenses to form water droplets. These water particles grow to form water droplets. Water droplets coalesce to form clouds. When water droplets are larger than 0.5 millimeters in diameter, they cannot float in the atmosphere. Then those large water droplets become raindrops.

Forms fall to the surface." This is called precipitation.

Rainfall in the study area:

Rainfall plays a very important role in human economic activities. For the development of human life, rainfall has a direct effect on the primary occupation of man i.e. agriculture. Mainly the climate of Dharashiv district is dry.

Rainfall in Dharashiv District (in mm) years 1998-2023

Source: District Socio Economic Review Report 1998 to 2023

In the above table, after studying the rainfall in the last 26 years in Dharashiv district, it was pointed out that the average rainfall in Dharashiv district during the period 1998 to 2023 is 731.82 mm. If there is so much rainfall, the highest rainfall is found to have occurred in the year 2023 while the lowest rainfall is 477 mm. It was found that it happened in 2015.

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