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RAINFALL RESOURCE INFORMATION STUDY AT DINDIGUL DISTRICT, SOUTH INDIA

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ABSTRACT

The study has reconstructed the data to view the relationship of environment to the resource of rainfall. The higher altitude region (kodaikanal block) were received more rainfall. The higher amount rainfall will make help to better vegetation (natham block).This study cleared that the rainfall is depending upon the natural environment such as elevation. The study concluded that the rainfall accumulating rate is totally depends upon the altitudeas a prime factor in a direct tender relationship. GIS techniques were well played to enable an easy understanding to the trend of the rainfall distribution among the block wise in the period of time through spatially.

Key Words: *Keywords: Rain Fall, rainfall distribution, rainfall Variation, Dindigul Rainfall.*

1. INTRODUCTION

The source of ground water is always known as the rainfall precipitation. When the rain fails there will be a big natural lose in the society for living. Being India is a tropical country, it mainly depends upon the rainfall for the water resources. More than 80% of the annual rainfall occurs during the monsoon periods in Tamil Nadu. Intensity of monsoon rainfall is uneven and erratic both in space and time, resulting drought conditions in some parts of Tamil Nadu during non-monsoon periods. Thus, it is essential to analyses the occurrence of rainfall during various seasons for evolving a system to manage the water resources effectively (Vennilaet.al, 2007). lysgaard in his study explained that there is voluminous evidence of significant climatic variations in the past century in large areas over the world (lysgaard, 1949; ahlmann, 1948). However, it has been recognized by thornthwaite and other authors that the annual values of precipitation and temperature for the Southwest do not show significant trends (thornthwaite et.al, 1942).

Luna in his study said that, the frequency of daily rains of various sizes is analyzed for four long-record stations in New Mexico. It is shown that the frequency of rains smaller than 0.50 inch in a day progressively increased from 1850 to about 1930. Opposite trends in different size classes tended to partially compensate one another in such a way that trends do not appear in the annual rainfall totals. Frequency of rains of various sizes comprising wet years and dry are compared. Some effects of changes in rainfall frequency on vegetation and erosion are discussed (Luna Leopold, 1951).

On the basis of the lack of progressive variation, it has been argued by them that climatic change cannot be considered an important contributing factor in the present epicycle of erosion. Identifying the distribution of daily rainfall could have a wide range of applications in hydrology, engineering design, and climate research The annual, monsoon and non-monsoon rainfall data, and presented the spatial and frequency distribution of rainfall intensity over the basin by preparing various diagrams (Jagannadhasarma, 2005). Gurugnanam in his study said that the rainfall accounts only will help the environement

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to be in better condition Gurugnanam, 2009). Analyses which have been made in the past have shown no significant trend in annual values of rainfall during the period of rainfall records in the south-western United States.

Omar in his study said that in many regions of the world, planning agricultural and water management activities is usually done based on probabilities for monthly rainfall, taking on values on specified intervals of values. These intervals of monthly rainfall amounts are commonly grouped into three categories: drought, normal rainfall, and abundant rainfall. Changes in the probabilities for occurrence of monthly rainfall amounts within these climatic rainfall categories will influence the decisions farmers and water managers will take, for example, crops to cultivate, flood preparedness, and operations of water reservoirs (Omar Abel Lucero, 1998). Gurugnanam in his study said that the groundwater quality mapping assessments needs rainfall intensity detail as the main key for the sources of water quality (Gurugnanam et.al, 2009).

The anomalies were computed for 15 model grid boxes corresponding to the combined Sahelo–Sahara, Sahel and Soudan regions of Nicholson 1993. This combination of regions was necessary in order to have a reasonable number of model grid boxes in the sample, given the high spatial variability of rainfall. These grid boxes were located from 10–208N and extended from the West African coast to about 158E Nicholson 1993, Shows that the rainfall trends in these three regions have been very similar over the past 40 years. The rainfall surplus of 220–370 mm was computed in AESR 12.2 and 370–520 mm in AESR 12.3 mm. Since winter rainfall is meager and erratic this amount of rainfall may be harvested and utilized for providing supplemental irrigation to winter crops or during dry spell of rainy season crops. Study also reveals that at 80% probability level (highly assured) in first month of southwest monsoon (June) 98–156 mm rainfall occurs in AESR 12.1, 103–144 mm in AESR 12.2 and 93–132 mm in AESR 12.3. These amounts of rainfall are sufficient to prepare land and sowing of direct seeded crops like maize, groundnut, black gram, green gram, pigeon pea, cowpea, etc(GourangaKar, Verma, 2004).

Lucero has recommended that the climate variability in annual rainfall occurs because the aggregation of daily rainfall changes. A topic open to debate is whether that change takes place because rainfall becomes more intense, or because it rains more often, or a combination of both. The answer to this question is of interest for water resources planning, hydro meteorological design, and agricultural management. Change in the number of rainy days can cause major disruptions in hydrological and ecological systems, with important economic and social effects. Furthermore, the characteristics of daily rainfall aggregation in ongoing climate variability provide a reference to evaluate the capability of GCM to simulate changes in the hydrologic cycle, Omar Lucero , Daniel Rozas, 2001).

2. REGION OF STUDY

The study area lies between 77°15′ and 78°15′ E longitude and 10°0′ to 10°45′ N latitude, which falls under Survey of India (SOI. 1973) Toposheets No: 58J01, 58J02, 58J03, 58J04, 58J05, 58J06, 58J07,58J08, 58F06, 58F07, 58F08, 58F09, 58F10, 58F11, 58F12, 58F13, 58F14, 58F15,58F16 on 1:50000 scale and covering a total area of 6,066 km2. The elevation varies from 158 to 2,529 m above MSL (Fig:1)

Dindigul district is bounded by Palani hill ranges of Western Ghats in the west, Sirumalai hills in the south and east. The northern part of the district covers plain terrain. This study area enjoys sub-tropical climate with the temperature (°C) ranges from 21.8 to 41.80. The study area chiefly consists of hard crystalline rocks of Archean age, which include charnockites, granite gneiss, calc gneiss and quartzite.

3. METHODOLOGY

Random variables analysis is carried for total rainfall amount, in a decade years.The study has been made to detail a revised account on the environment through rainfall for the area of dindigul by using meteorological data for recent years. Base map of the study area which is falls under the toposheets no: 58J01 - 58J08 and 58F06 - 58F16 from Survey of India (SOI. 1973) on 1:50000 scales has been prepared through GIS software. The data utilized in GIS environment through technical tools, especially for the key, geomorphology and rainfall variation maps.

4. RESULTS AND DISCUSSION

Geomorphology

The map shows the geomorphological classification of dindigul district in detail.

Shallow flood plain, shallow weathered pediplain, structural hills are the major geomorphological feature occupied and occurred in dindigul district.

Residual hills, valleyt fills, weathered hill tops are also occiered in the study area but not in predominant scales. Kodaikanal and sirumali hills are main hill regions in the area.

Natham forests are also playing major role with environmental factors which is on s-w side of dindigul. (see fig : 2)

Rainfall Variation

The rainfall of monsoon in four different years is shown different distributions.

Kodaikanal and natham regions are received more rainfall when compared to other regions in all the monsoon years. Palani, nilakkottai, are received a moderate rainfall totally in all the years on the season. (see fig:3)

Dindigul town and its adjacent areas are received low and sometimes moderate rainfall.

The pie chart in map clearly explained the rainfall variation among the places through rainfall stations for the respected four years orderly 2008, 2009, 2010, and 2011.

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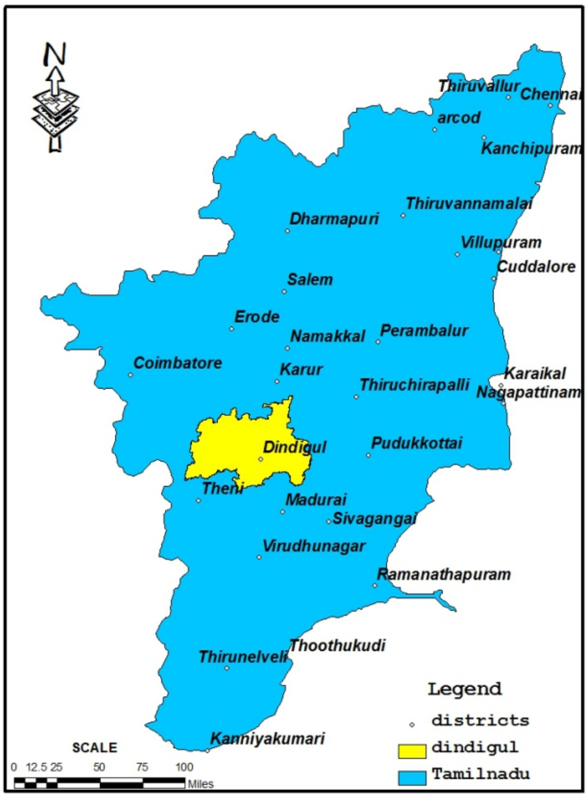

Figure1: Study area map

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Dindigul town and its adjacent areas are received low and sometimes moderate rainfall.

The pie chart in map clearly explained the rainfall variation among the places through rainfall stations for the respected four years orderly 2008, 2009, 2010, and 2011.

The trendline clearly expressed the rainfall variation difference of the different places.(see fig: 4)

The high altitude and forest areas are accumulated with high rainfall in the district. Kodaikanal and natham blocks are had more rainfall. Likewise the flat and settled areas such as dindigul block, batlagundu block and reddiyarchatram block plane regions were received lower rainfall. Palani block and vedasandur block the moderate height regions were accumulated with moderate and fluctuating account of rainfall.

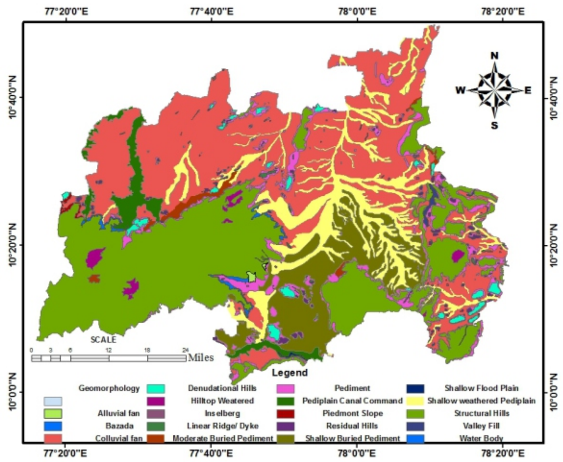


Figure 2: Geomorphology of Dindigul

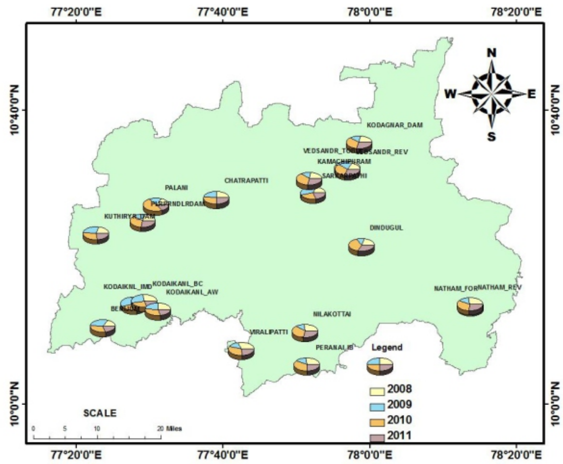
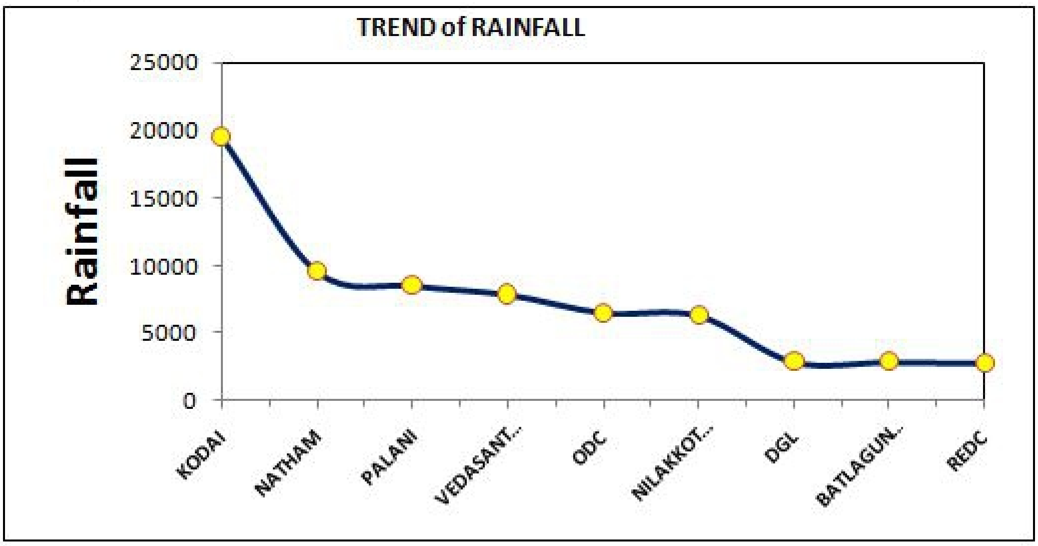


Figure 3: Rainfall Variation



5. CONCLUSION

The study has reconstructed the data to view the relationship of environment to the resource of rainfall. The higher altitude region (kodaikanal block)were received more rainfall. The higher amount rainfall will make help to better vegetation (natham block).This study cleared that the rainfall is depending upon the natural environment such as elevation. The study concluded that the rainfall accumulating rate is totally depends upon the altitudes a prime factor in a direct tender relationship.

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