

ANNUAL RAINFALL IN HILL STATIONS OF WESTERN GHATS- TREND ANALYSIS

Anie S S¹, Dr.S.Abrham Thambi Raja²

¹Research Center, S T Hindu College, Nagercoil, revbijukumar@rediffmail.com.

²Lekshmpuram College of Arts and Science, Neyyoor, atrunit@yahoo.in.

Abstract: *Knowing the variations in the rainfall patterns of hills stations is a vital to understand the water budget and climate change in the area. The present study examined the general rainfall pattern in hill stations such as Idukki and Wayanad using annual rainfall data for 12 years collected from Indian Meteorological department, Pune. From the study annual rainfall of hills stations ahows a significant decreasing trend. The decreasing trend in annual rainfall shows the area also affect the climate change.*

KeyWords: *Hills stations, Kerala, annual rainfall, Trend analysis, Climate change*

I. INTRODUCTION:

Kerala is a small strip of land lying at the south-west corner of India. It lies to the north of the equator between 8° 18' and 12°48' north latitude and 74°52' and 77°24' east longitude. Kerala is divided into three geographical regions highlands, midlands and low lands. High lands slope downs from Western ghats which rise to an average height of 900m with a number of peaks well over 1800m height. Idukky and Wayanad are the two hill stations selected in the present study. Forests and mountain cover about 97% of the total area of the Idukki district. Wayanad district is the tip of Deccan Plateau. Annual trend in rainfall pattern has been examined extensively by different researchers from various part of the world [1]. Rainfall is one such important feature, understanding the trends and changes of which will help to solve uncertainties and provide knowledge for decision making on broad series of local issues related with agriculture, industry, irrigation and other human activities [2]. Kerala is the entry point of Southwest monsoon. The main seasons in kerala are Southwest monsoon, Northeast monsoon, pre-monsoon and winter monsoons [3]. Soman et al. reported that annual rainfall over Kerala showed significant decreasing trend [4]. The present study focuses on the annual trend analysis of rainfall of two hill stations with reference to climate change.

II. DATA AND METHODOLOGY

The available meteorological data for the study period 2000–2012 with respect to annual rainfall data have been collected from Indian Meteorological department, Pune. The location selected for the study periods are Idukki and Wayanad. The method of linear trend model has been used for performing the trend analysis of annual rainfall. The correlation between the variables can also be studied using the trend line. Trend line is a line of best fit which can draw to study the relation between variable.

III. RESULT AND DISCUSSION

A. Annual Rainfall trend analysis of Idukki

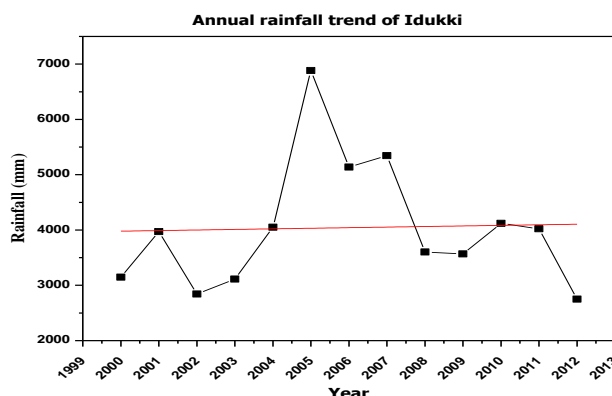


Fig.1 Annual trend analysis of Idukki

The figure 1 corresponds to the rainfall of South West monsoon during the study period. The twelve year study shows a marginal decreasing trend in annual rainfall. The maximum rainfall obtained during the year 2005 of 6,882mm and minimum rainfall obtained 2,749mm of during the year 2012. The decreasing trend in annual rainfall in the study region reveals the impacts of climate change. Higher the area under rain fed agriculture, higher will be the sensitivity to climatic variability. The state of Kerala exhibits spatial-temporal variations in rainfall budget, and the analysis of rainfall data of the last century indicates a significantly decreasing trend in annual as well as South West monsoon rainfall. Climate change may aggravate the risk of soil erosion and other degradation processes.

B. Annual Rainfall trend analysis of Wayanad

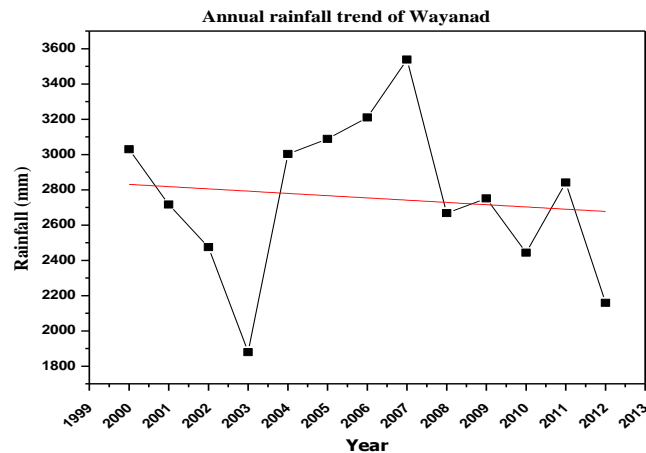


Fig. 2 Annual rainfall trend of wayanad

The figure 2 shows a decreasing trend is seen in annual rainfall in the region of Wayanad district. It reveals that the high range area was seriously hit by extreme climates. The region obtained a maximum rainfall of 3,538mm and a minimum rainfall of 1,805mm during the year 2007 and 2012. The rainfall received in this area is an important factor for agriculture production, food security and availability of water, etc. The decreasing trend in rainfall reveals the presence of climate change. Guthakurta and Rajeevan analysed a rainfall series created using a network of 1476 rain gauge stations for the period 1901 to 2013. It showed a significant decreasing trend in monsoon season for the subdivision Kerala.

IV. CONCLUSIONS

The twelve year study shows a decreasing trend in annual rainfall of the district Idukki and Wayanad. The Idukki district shows maximum rainfall obtained during the year 2005 of 882mm and minimum rainfall of 2749mm of during the year 2012. Similarly, Wayanad district obtained maximum rainfall of 3538mm and minimum rainfall of 1805mm during the years 2007 and 2012. The decreasing trend in annual rainfall in the study region reveals the impact of climate change.

REFERENCE

1. K. Bidin and N.A Chapel, *Characteristic of rain events at an inland locality in north eastern Borneo, Malaysia*, Hydrological Processes, vol. 20, pp. 3835- 3850, 2006.
2. C.V. Singh, *Relationships between Rainy days, Mean Daily intensity and Seasonal rainfall in Normal, Flood and Drought years over India*, Advances in Atmospheric Sciences, vol. 15 (3), pp. 424-432, 1998.
3. R. AnanthaKrishanan, B. Parthasarathy and J.M. Pathan, *Meteorology of Kerala, Contributions to Marine Sciences*, 60, 123-125.1979.
4. M.R. Soman, K. Krishnakumar, N.Singh, *Decreasing trend in the rainfall of Kerala*. Current Science 57, 7-12, 1988.