

Climate Change: An Observation of Weather Elements in Abhayapuri, Bongaigaon, Assam India



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Abstract

This paper aims at examining the weather elements (temperature, relative humidity and rainfall) of Abhayapuri and analyses the trend of distribution of the weather elements. For necessary investigations secondary information required are gathered from "Coconut Firm, Abhayapuri, a unit of Central Coconut Board, India" time to time and the same is arranged for the purpose with the help of standard cartographic diagrams. While examining the trend of distribution of weather elements, the study reflects how the weather elements changing from 1994 onwards and find out the amount of annual rainfall is significantly decreasing in the study period which is more decreasing in recent years along with irregularity of distribution reflecting the lengthening of rainy season, fluctuation of relative humidity in the previous years than the last five years, the range of minimum and maximum temperature is also increasing.

Keywords: Weather Elements, Trends Fluctuation, Range

Introduction

Climate of a region is the long term average weather condition of that region at least for 30 years or more. On the other hand weather is a short term atmospheric condition which reflects on its temperature, humidity, rainfall, sunshine, wind etc. for a while, may be for an hour, a day; a week or a month etc.

Climate change is a long-term shift in the statistics of the weather condition. For example, it could show up as a change in climatic elements from normal condition (expected average values for temperature and precipitation) for a given place and time of year, from one decade to the next.

We know that the global climate is currently changing. The last decade of the 20th Century and then beginning of the 21st have been the warmest period in the entire global instrumental temperature record, starting in the mid-19th century.

Climate change is one of the major challenges at present time and adds considerable stress to our societies and to the environment. From shifting weather patterns that threaten food production, to rising sea levels that increase the risk of catastrophic flooding, the impacts of climate change are global in scope and unprecedented in scale. Without drastic action today, adapting to these impacts in the future will be more difficult and expensive.

Objectives of the Study

In view of global and regional context, no systematic study has been performed in Abhayapuri locality to analyze properly the weather and climatic condition in recent years. Therefore this simple study is an attempt only to analyze and understand the trend of temperature, rainfall, and humidity condition, the main elements of weather of the locality.

As the Global Warming is a Worldwide & the most attention-able phenomenon, the scientific community, and civil society are highly concerned with it, the main objectives of this study is to observe the weather elements of Abhayapuri and are they in a trend of changes.

Methodology

The simple method applied in this study is the statistical analysis showing trend of Temperature, Humidity, and Rainfall of Abhayapuri. The data are collected from the Coconut Farm Abhayapuri, a unit of Central Coconut Board, India and analyzed with the help of some statistical methods for last twenty four years.

In this context temperature & humidity are calculated for monthly and yearly averages. The rainfall condition is calculated in a yearly aggregate manner along with seasonal aggregate. The seasonal rainfall value is calculated considering only the rainy season (i.e. from the month of June to September) every year from 1994 to August 2018.

After calculating, the values are represented with the help of suitable graphs and analyzed the same later.

Analysis

It is seen that, the monthly average temperature of Abhayapuri from May, 1994 to December, 1998 is almost uniform. The Mean monthly maximum average temperature lies around 30 ° C and the minimum monthly average temperature is around 20 ° C in the summer season.

Fig-1A: Shows The Peak Temperatures In The Summer Seasons Along With The Other Months

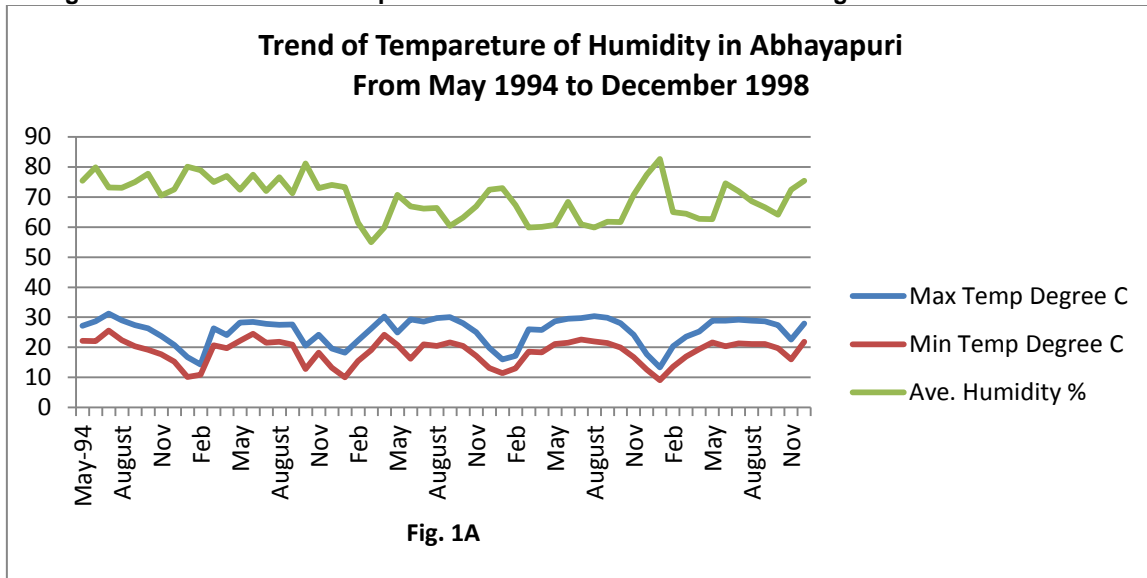


Fig. 1A

On the other hand the yearly cycle of winter mean monthly maximum temperature is also around maximum 20°C and the minimum monthly temperature is around 10° C. Except the seasonal Cycle of temperature change, no spectacular change has been occurred during these five years. In respect of humidity, it is almost stable during May, 1994 to

December 1995. But slight variation is seen after 1995. The Rainfall, during May, 1994 to December 1995, it is seen that whatever the total amount of rainfall more or less equal, the occurrence of rainfall is extending towards retreating monsoon period. That is, rainfall is increasing to the month of September, October of the year (Fig-1B).

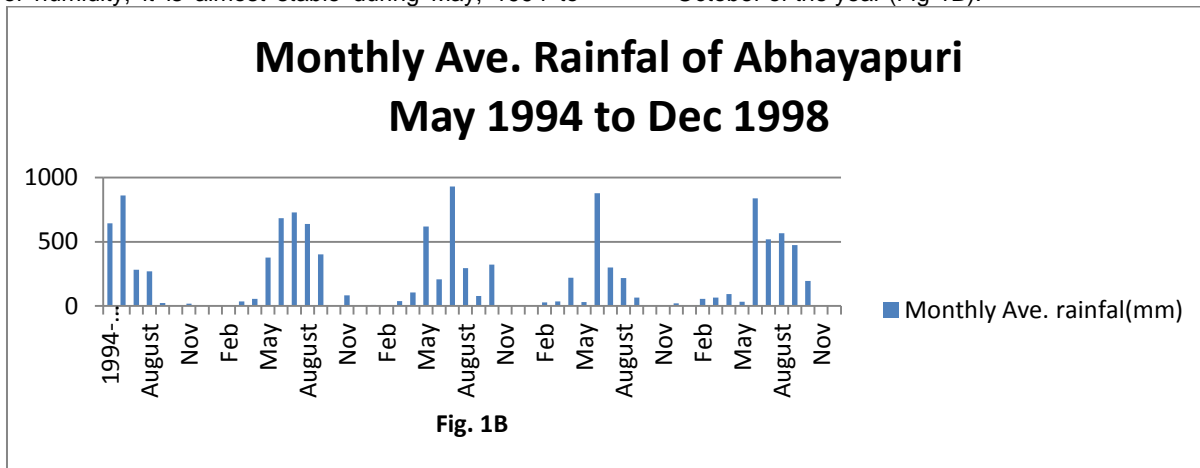
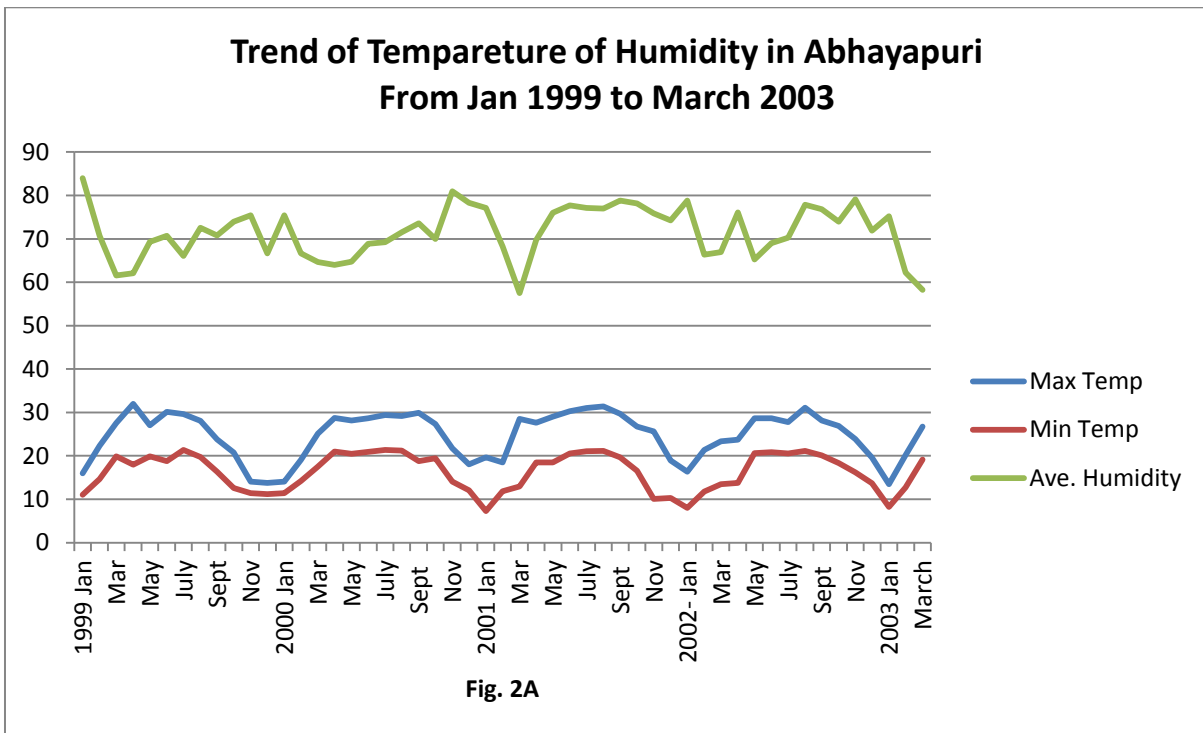


Fig. 1B

The temperature & humidity distribution during January, 1999 to March 2003 is exhibited a regular increase and decrease, following the seasonal variation of temperature, humidity, and rainfall

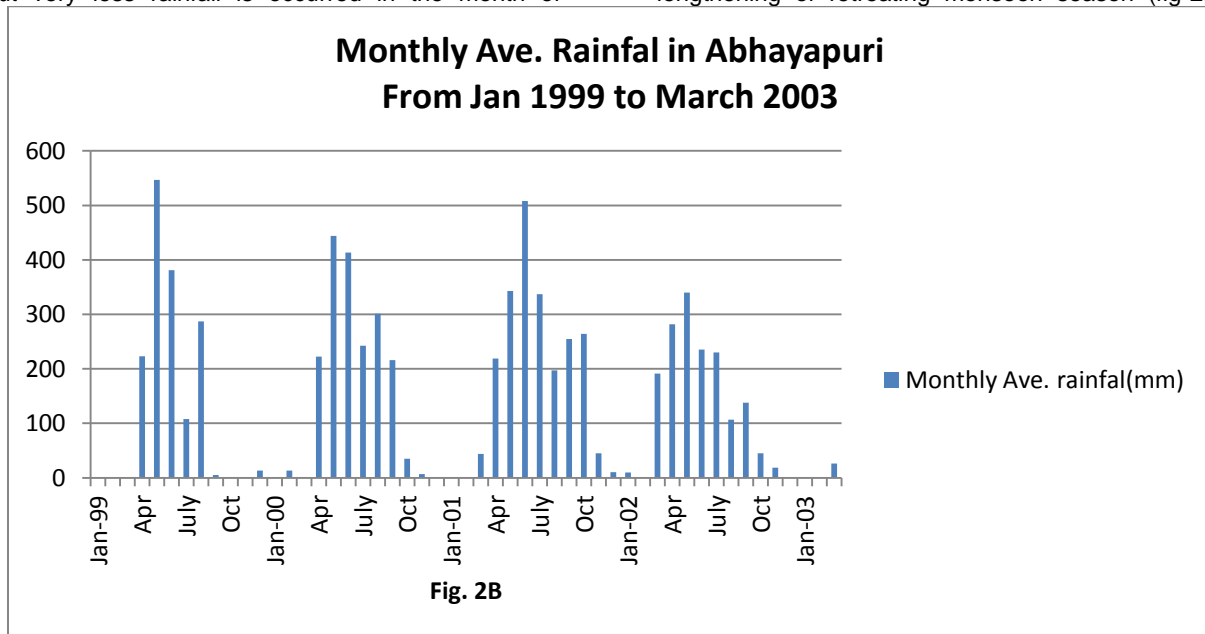
condition. The seasonal maximum average temperature during summer was around 31° C and minimum average temperature in the winter season was around 10° C. (Fig-2A).



The humidity is also seen regular except a spectacular fall in the month of March 2001.

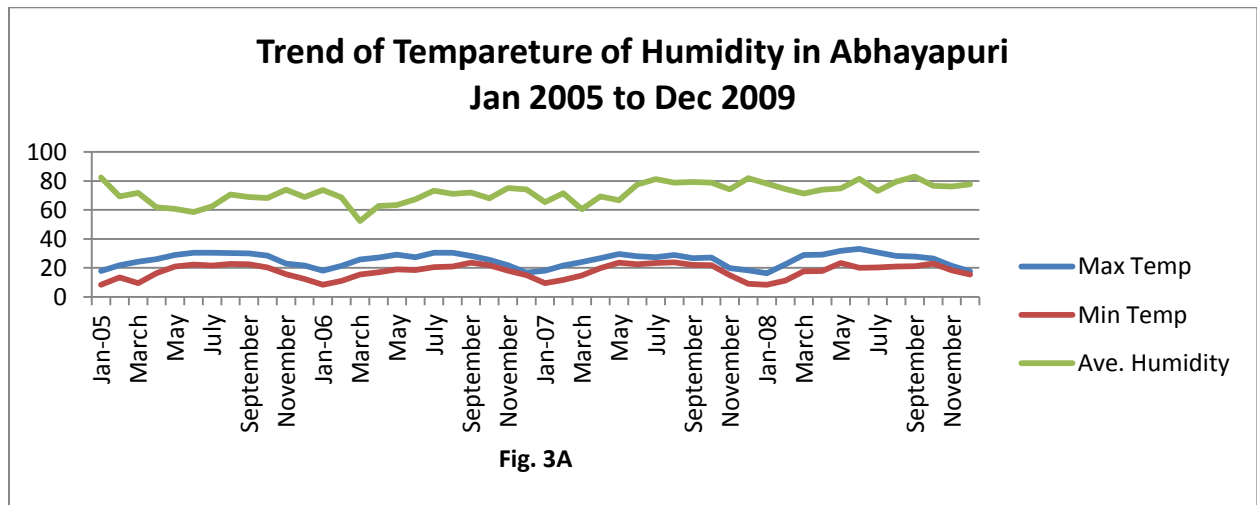
The rainfall condition is found that in the year 1999 more rainfall was occurred in the month of May but very less rainfall is occurred in the month of

September and October i.e. during the retreating monsoon season. From the year 2000, it is seen that the rainfall occurrence is also maintaining the annual normal value but there it is found a extension of lengthening of retreating monsoon season (fig-2B).



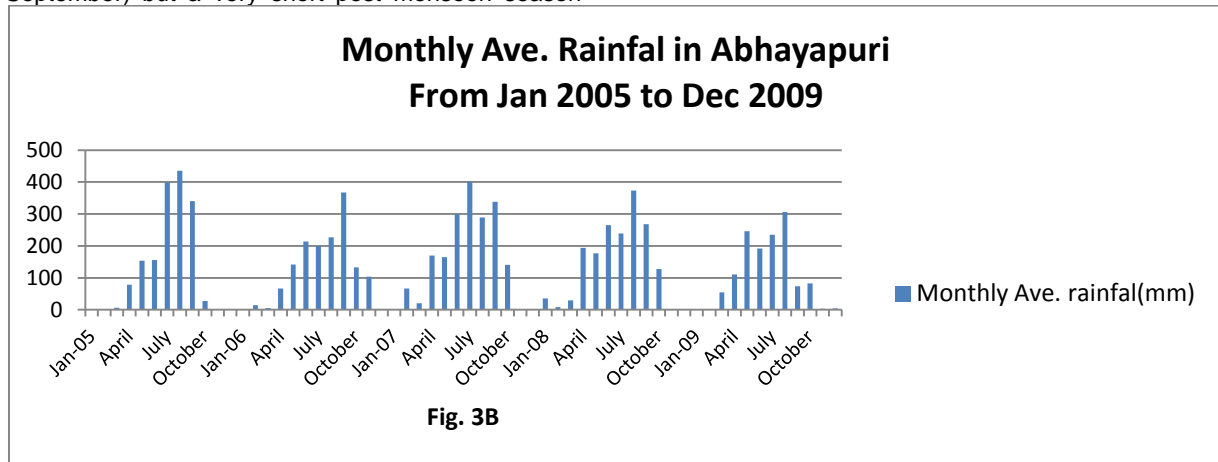
The temperature distribution during January, 2005 to December 2009 is also trending a normal average seasonal fluctuation ranging from around 30° C max during summer season to minimum 10° C in

the winter seasons. But there is a change observed in humidity condition from the pre-monsoon season of 2006 that the humidity level is rising gradually from the normal average level. (Fig 3A)



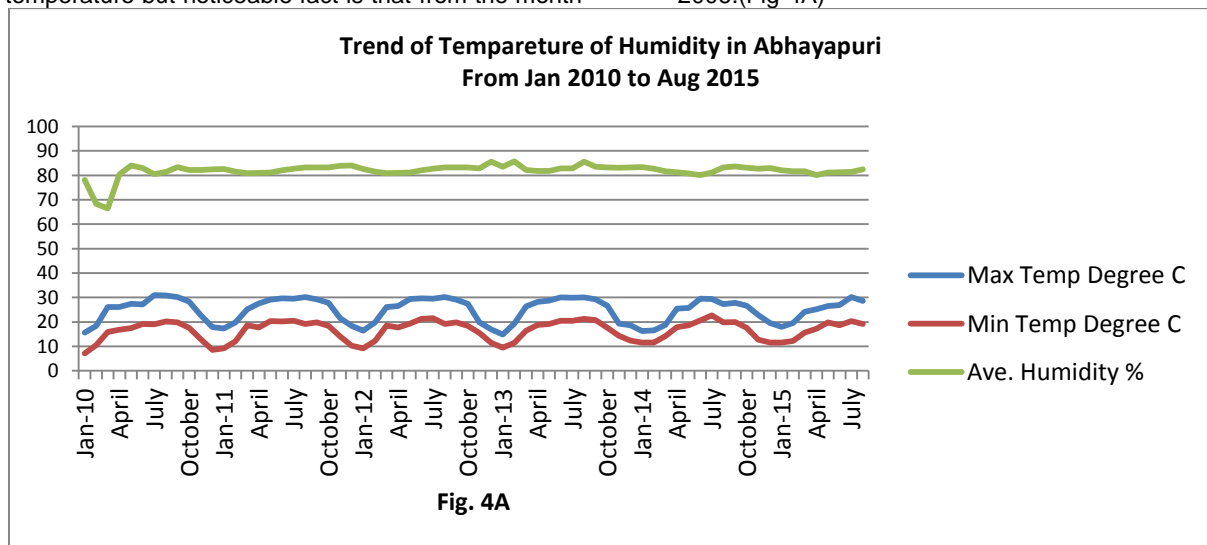
On the other hand the rainfall condition is that the year 2005 reflected a short monsoon with higher amount of rainfall during the monsoon (in July, August & September) but a very short post monsoon season

with less rainfall. After 2005 the rainfall in the next years i.e. from 2006 to 2009 shows a declining trend with lengthening rainy days in the post-monsoon period. (Fig. 3B).



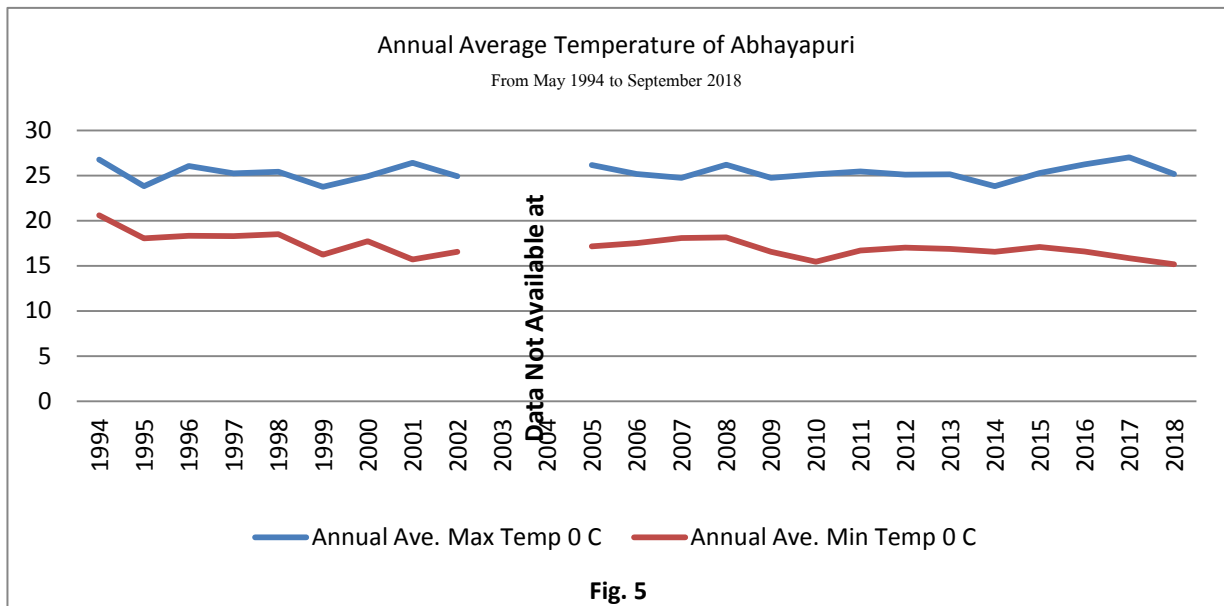
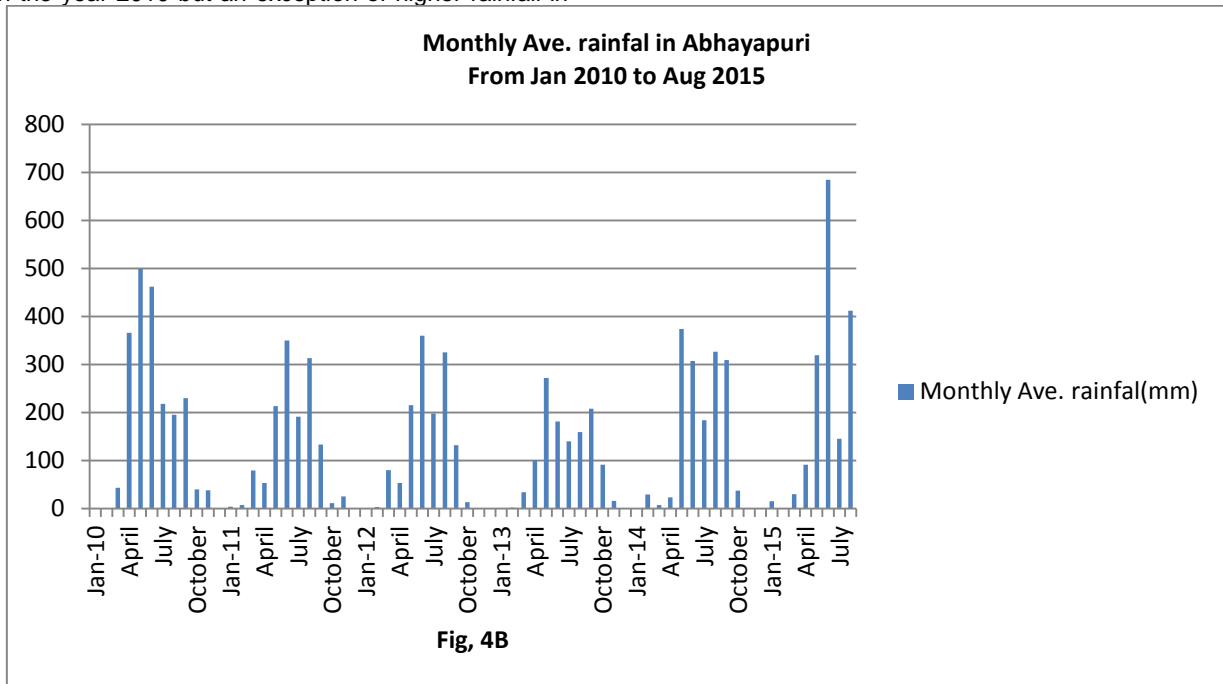
The period of 2010 to 2015, the temperature condition maintaining a steady trend on average seasonal range both in maximum and minimum temperature but noticeable fact is that from the month

of March 2010 the humidity condition is maintaining a higher steady trend (around 80%) with no seasonal variation. this situation is tending from previous year 2006.(Fig-4A)



The rainfall occurrence in this period (2010 - 2015) is also exhibit a declining trend with minimum rainfall in the year 2013. The maximum rain is found in the year 2010 but an exception of higher rainfall in

the pre-monsoon season. Again lengthening of post monsoon season is also a spectacular observation in this period at Abhayapuri. (Fig -4B)



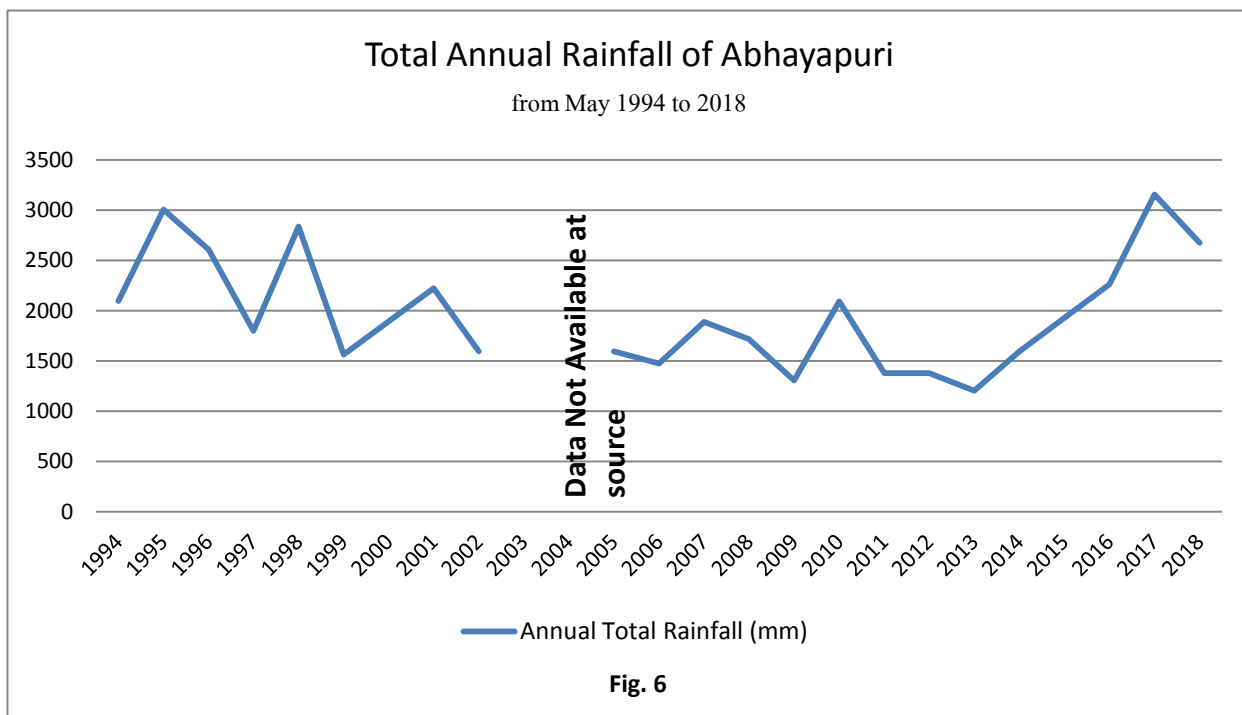


Fig. 6

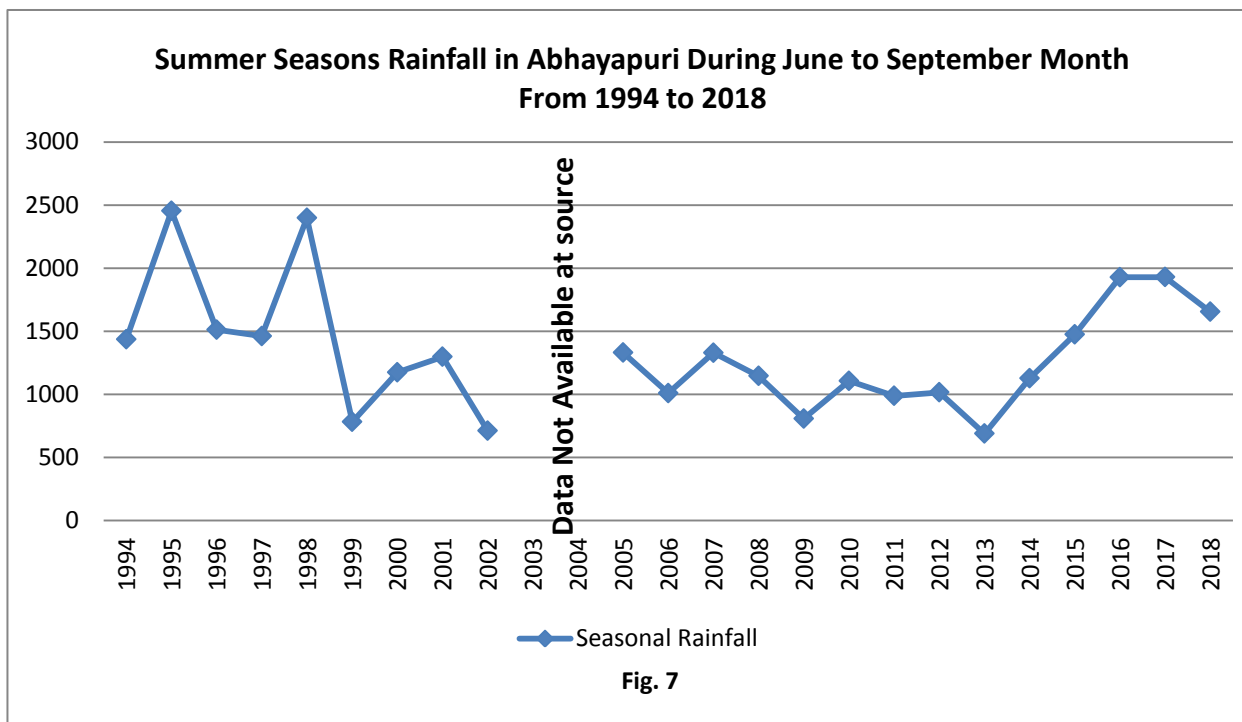


Fig. 7

Findings

1. The Trend of annual maximum temperature distribution of Abhayapuri more or less has not been changed, observed in last 25 years but minimum temperature trend is slightly decreasing creating a situation of extreme climatic condition in recent years. The range of minimum and maximum temperature is increasing.
2. The trend of amount of annual rainfall is significantly decreasing in the study period, which is more decreasing in recent years. Both the annual total rainfall and rainy seasons' total

rainfall are following the same declining trend. Therefore, it is evident that the no spectacular seasonal variation is found in last 25 years but the total amount of rainfall is decreasing as per the present study reflects (Fig-6 & 7).

3. The fluctuation of relative humidity was found more in the previous years than the last five years. So it shows stable trend of humidity level also. (Fig-5)
4. The study reflects that, the decreasing trend of annual rainfall in Abhayapuri is an evidence of

climate change leading to probable impact on different aspects of local environment.

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