

METEOROLOGICAL STUDY OF DEHRADUN VALLEY

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ABSTRACT

The study of meteorological parameters is very important in the assessment of an area in terms of its physico-cultural personality. The Doon valley boasts for better agricultural land, high production, soil fertility, forest area, tourism activities and infrastructural development. Hitherto, no detailed work has been done regarding meteorological characteristics in the study area so as to associate it with agriculture, horticulture, animal husbandry, silviculture, pisciculture and other economic arena. The present study is an attempt to analyze the meteorological parameters viz. solar radiation intensity, diffuse radiation, ambient temperature, relative humidity, prevailing wind speed, vapour pressure etc. on the basis of their hourly values. The study has been carried out for one representative day of every month. On the basis of the study a framework of the climatic parameters containing the minimum, maximum and average values have been developed. Needless to say that this study will be very helpful in boosting up the agricultural produces, particularly medicinal plants and produces, herbs, flowers and typical cash crops which will not only change the present land use pattern but will also give a firm base for improvement of the economy of the farmers as also the state of Uttarakhand.

INTRODUCTION

Of all the planets the Earth is treated as the home of man because of its favorable atmosphere. The life of all living beings is entirely dependent on the atmospheric conditions of the earth. The atmospheric conditions include solar radiation, humidity, precipitation, temperature, wind pressure etc. In fact the radiation of the sun provides the firm base for the survival of plants and animals, and it happens to be the root of all other phenomena. It is widely known that the climatic conditions are directly governed by the topographical conditions of a region and vice versa. The weather of any place is the sum total of its atmospheric conditions for a short time and is a momentary state of the atmosphere. The weather conditions not only influence the physical characteristics but also have a direct bearing on the cultural activities including economy, society and what not.

The present study seeks to analyze various meteorological data of the Doon valley in order to assess the impact on agriculture, forestry, increasing population and urban pressure and also the increasing demand for power. The study will open up new vistas in the field of energy efficient architecture, pollution free urban environment, water harvesting, energy conservation;

optimize the landuse pattern and future town planning.

METHODOLOGY

An introduction with various climatic zones of India has been made on the basis of meteorological parameters on the basis of their numerical annual average values. The meteorological parameters (*viz. dry bulb temperature, wet bulb temperature, dew point temperature, relative humidity, wind speed, rain fall, cloud cover, moisture, total and diffuse solar radiation intensity on horizontal surface etc.*) have been presented using their hourly values (WEDCO Data Base). The minimum, maximum and hence the average values of above mentioned parameters have been presented for one representative day of each month as shown in the Table given below of each month (Duffie and Beckman, 1991).

Some typical meteorological parameters have been identified viz. ambient temperature (dry bulb, wet bulb and dew point temperature), solar radiation intensity, diffuse radiation intensity, relative humidity, prevailing wind speed, moisture content, cloud cover, rainfall, atmospheric and vapour pressure; which have a direct impact on physio-cultural landscape. On the basis of the hourly values of these meteorological parameters their hourly values for one representative day of each month have been presented from Table 2 to Table 8 and their minimum, maximum and average values have been represented in Diagrams 1 to 8.

THE STUDY AREA

The Dehradun Valley represents the example of its own style and is situated in the southern part of Dehradun district of Uttaranchal which has been formed by the Pleistocene Gravels derived from the Himanchal up to a height of among 350 m above the plains and is a flat floored structural valley. Among all the Doons (Kothari, Harki etc.) the Doon of Dehra is not only the biggest and most important but also the best known and characteristic. Dehradun is nearly 70 kms long and 25 kms wide which rises from 360 m along the Yamuna and the Ganga to 660 m in the middle and to 990 m near the foothills of the Mussoorie range. Though it is apparently a single valley but the reality is that it belongs to two great river systems - Ganga and Yamuna. Owing to greater amount of debris brought down from the drainage area of the lesser Himalaya, the main drainage line of the Aasan and the Suswa is nearer to the Shiwalik. In the east, the lesser Himalaya rises abruptly and there are fewer of the long slopping plateau-type entrenchments forming a marked feature and two isolated hills rise near the Dehra- NagSidh and Kalanga which are separated from the parent ranges by the rivers.

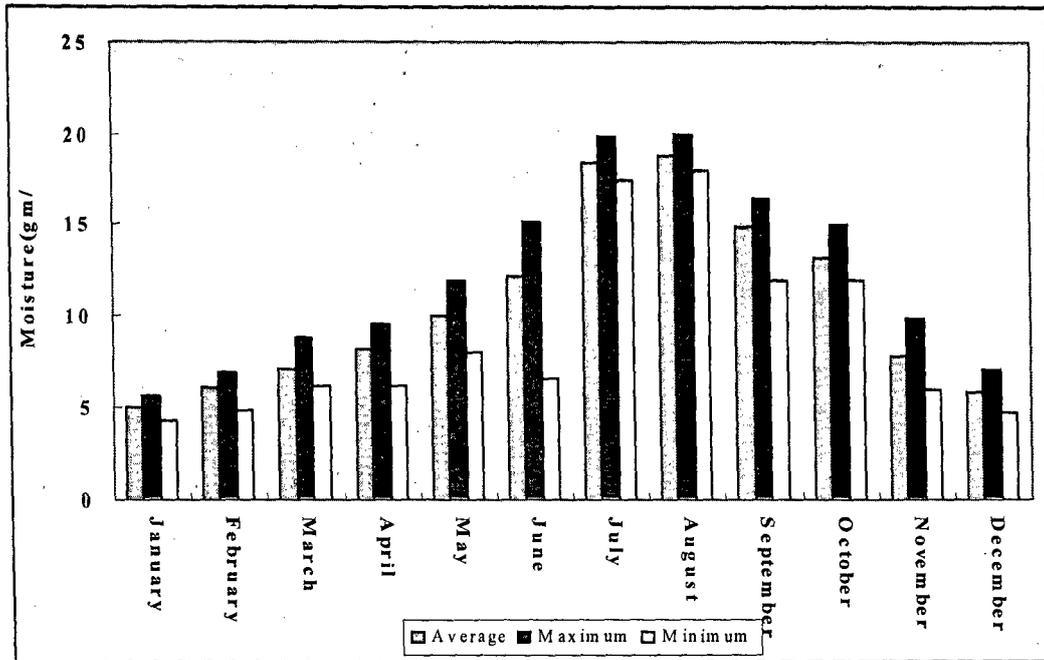


Figure 7. Minimum, Maximum and Daily Average Values of Moisture at Dehradun for One Representative Day of Each Month

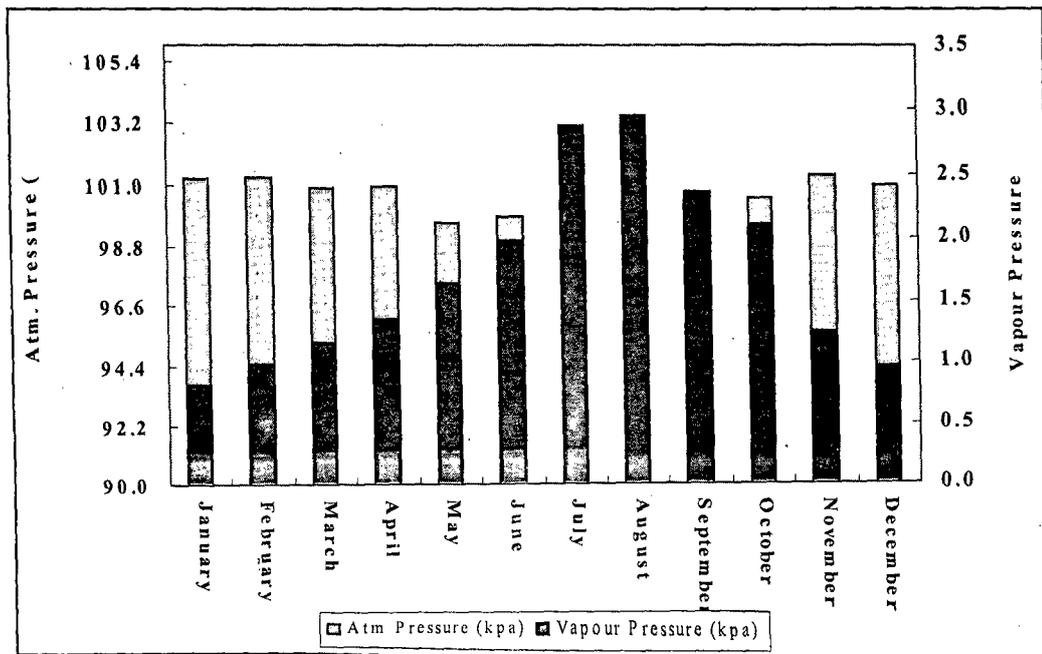


Figure 8. Daily Average Values of Atmospheric Pressure and vapour Pressure at Dehradun for One Representative Day of Each Month

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