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ASSESSMENT OF CLAMETIC CONDITION IN CHANDRAPUR, VIDARBHA REGION, CENTRAL INDIA

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Abstract:

Climatic condition of the earth is changing day-by-day due to lifestyle of human beings and for the balancing of lifestyle the industrialization can be growing simultaneously. Chandrapur also facing the impact of industrialization factor and due to that the climatic condition of Chandrapur is not so good. The present investigation was evaluated climatic condition of Chandrapur in Vidarbha region.The online radar and meteorological applications ware used for collection of data. The data were collected for calculation of temperature, precipitation, humidity, rain, wind form (direction) and wind speed. The temperature ware fluctuating (9-34^{0}C) as per winter season, in the month of February precipitation was occurring in study area due to suddenly change in climatic condition. Humidity was suddenly increase due to precipitation; wind speed was increased up to 14.8. Wind direction was flowing mostly on north east direction. The climatic condition in Chandrapur was shown slightly suitable for the area because as per winter season the temperature and humidity factor was normal but the precipitation, rain, wind speed and wind direction was changing the winter pattern climatic condition due to indirect impact of Asani cyclone in study area.

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Keywords: Assessment, Climatic Condition, Precipitation, Wind Speed, Wind Direction.

Introduction:

India having extensive diversity in climatic conditions diagonally a hugegeographicalgage and diversetopography, creation generalizations problematic. Climatedisparity has degraded land by growing temperatures, aired soil and forest fire risk was growing [1]. Recent heating has powerfully affected natural biotic systems [2]. Species universal are traveling poleward to coolerzones. On land, species move to higher elevations, whereas marine species find colder water at greater depths [3]. Between 10% to 50% of species on land were measured to be at significantlyadvanced risk of destruction due to weather change [4]. The report shows that, the change in global temperature around 0.3 °C to 0.7 °Cin between 2016–2035 as compared with 1986–2005 [5]. [6] reported that the global warming from the beginning of industrial era is caused by the anthropogenic greenhouse gas emissions. Studies of [7] have shown, based on the temperature records till 2010, that the global warming is set to continue in 21st century. It is also reported that annual surface temperatures over India have significantly increased during 1901–2013[8].

Maharashtra has hot, rainy, typical monsoon climate and cold weather periods. Stifling situations triumph all over the state. Occasionally according to the periodic climate hail, frost and dew can also be occurred.The Chandrapur district weather is general dryness after and before rainy season, well distributed rainfall of southwest monsoon and very hot summer with 49^0C temperature.

The study area is surrounded with large and small industries with coal based super thermal power station, coal mining and other industries due to that the disturbances in weather condition is occurred here.

Materials and Methods:

Study Area: Chandrapur is a partof Nagpur division in the state of Maharashtra, India.Chandrapur district is well known for Chandrapur Super Thermal Power Station and for coal mines due to that Chandrapur is black diamond city.

The assessment of climatic condition was carried out in Chandrapur.In this study, an attempt has been made to assess the climatic condition prevailing concentration and trends of the temperature, precipitation, humidity, rain, windspeed and wind direction. The meteorological parameters data was collected from months of winter i.e. December 2021 to February 2022. The weather android mobile application was used for the collection of daily day and night time meteorological parameters data.

Results and Discussions:

*Temperature:*In the month of December minimum temperature was found to be 9 ^{0}C andmaximum was found to be 30 ^{0}C; in January minimum and maximum was found to be 13^{0}C and 29 ^{0}C and in February minimum and maximum was found to be 10^{0}C and 34 ^{0}C(Table 1). The reduction in temperature can be accredited to the lessening radiation customary from the Sun, later most of it has previouslystoodengrossed by the thermosphere [9].

Precipitation: Change in weather is responsible for global warming and it cumulativerain in some topographies, and dipping it in others, ensuing in extra risky weather [10]. In December month, the maximum precipitation was found to be 45 %; in month of January maximum precipitation was 89 % and in February, maximum temperature was found to be 25 % (Table 1).

Humidity: Aerosolized influenza virus infection are reducing due to high humidity in air[11].In December month, the maximum precipitation was found to be 45 %; in month of January maximum precipitation was 89 % and in February, maximum temperature was found to be 25 % (Table 1).

*Rain:*The raining in month of December was found to be 50 mm and in month of January was found to be 5.1 mmand no rain was found in month of February (Table 1).

Wind speed and Direction: Climatic condition was influence by air motion, because moisture, heat and cold temperature was moved one place to another place by wind [12].Surface climate was affected due to wind speed and direction [13].In the month od December wind speed ranges in between 2-13 mph. in January 2 – 14.8mph and in February 2- 8 mph (Table 1). The wind direction was mostly blowing in study area in month of December it was northeast, east-northeast and north-northeast, in January it was northeast and northwest and in February it was north-northeast, northeast, north and south respectively (Table 2)

Table 1: Parameters shows climatic condition of study area

Month	Parameters	Temperature (^{0}C)	Precipitation (%)	Humidity (%)	Rain (mm)	Wind Speed (mph)
December-2021	Min.	9	0	29	0	2
	Max.	30	45	97	50	13
	Average	21.5	4.8	58.8	1.7	5.1
January -2022	Min.	13	0	27	0	2
	Max.	29	89	97	5.1	14.8
	Average	20.8	6.7	58.7	0.1	6.1
February-2022	Min.	10	0.0	29.0	0.0	2.0
	Max.	34.0	25.0	66.0	0.0	8.0
	Average	23.0	0.9	50.1	0.0	5.4

Table 2: Wind direction in study area

Month	WIND DIRECTION (%)															
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
Dec-21	4	14	22	16	10	2	2	0	7	2	4	0	2	2	4	0
Jan-22	11	3	34	5	5	5	5	5	2	3	3	0	7	0	13	0
Feb-22	13	14	13	4	5	7	0	9	13	5	4	2	0	2	5	4

Conclusion: In this study, climatic condition of study area ware assesses with the help of parameters like temperature, precipitation, humidity, rain, wind form (direction) and wind speed. The temperature ware fluctuating and found average was 21.8 ^{0} C as per winter season, humidity was increased, wind speed was also increase and mostly wind was flowing on north east direction because,in the month of February precipitation was occurring in study area due to suddenly change in climatic condition. The climatic condition in Chandrapur was shown slightly suitable for the area because as per winter season the temperature and humidity factor were normal but the precipitation, rain, wind speed and wind direction were changing the winter pattern climatic condition due to indirect impact of Asani cyclone in study area.

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