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HEAT WAVES OF VIJAYAWADA FROM 1981 TO 2022: A SHORT COMMUNICATION

A Smitha Kranthi[1*], Anil Kumar Matta[2], Dhanvi Matta[3]

[1*]Department of Computer Science and Engineering, Koneru Lakshmaiah education foundation, Green fields, Guntur, A.P-522302, India*,*
[2]Data Scientist, NC, River Breeze, Vijayawada, A.P-520011, India*,*
[3] Dhanvi Matta Sri Chaitanya Jr. College, MG Road, Benz Circle, Vijayawada, A.P-520010, India,

Email Id: [2]anilkumarmatta7@gmail.com, [3]dhanvi.m@nalanda.edu.in
Corresponding Email: [1*]asmithakranthi@kluniversity.in

ABSTRACT:

Climate change will cause temperature variations in the years to come. These temperatures will vary with time and hour. In this report, we assessed the association of (ANN) Average Normal Number for the month of May & temperatures between 1981 to 2022.We looked at ANN for specific humidity, earth skin temperature, and precipitation correction sum. We then used logistic regression and time study design to analyze the data. We determined the odd values for the year by evaluating odd ratios for maximum temperature changes. Temperature variations ranging from 30 to over 40 degrees per day have had a major impact during the past 43 years, as seen by the significant ($p<0.10$) correlation we found between ANN and earth skin temperature, specific humidity, and precipitation correction total at lags of 0.1 and 0.5. We found that the model is statistically significant and that the relevant year's odd ratios and values exist. We infer that ANN (TS) is less affected by hourly temperature increases than ANN(QV2M) & ANN(TOTCORR).

Keywords: Environmental Science, Heat waves, Temperature, Multi variant approach

1. INTRODUCTION

The seasons—summer, rainy, and winter—have a clock around the year, and because of global warming, these will change over time. Throughout the year, there are extreme winds and temperatures in the Vijayawada region. The majority of people travel by car, particularly when they are riding bikes, as it is more convenient for them to travel on long, close-by streets and highways. Population protection and preventing temperature-related migration are crucial (Wandave Tizhe, 2015; Rachel H. White, 2021). In this study, we calculated the warm season by comparing the average of just May month years, and we noted the effects of higher temperatures. We examined temperature exposures using a multivariate statistical approach, and the results were accurate.

2. MATERIALS AND METHODS

Located in the Indian state of Andhra Pradesh, Vijayawada is among the top 10 fastest growing cities in the world. It has an area of 61.88 km³ with maximum temperatures that frequently reach 400 C in May and January, which is the coldest month of the year. The weather forecast for May 11, 2024, with a maximum daytime temperature of 400 C, is shown in **(Figure 1)**.

Figure 1: Weather Report of 11th May 2024 with a max. day temp. 40^0 centigrade

Temperature information for the following location is derived from NASA: Latitude 16.5076; Longitude 80.6667 from 1981 to 2022. Since May is the hottest month of the year, we limited our investigation to that month and concentrated on peak temperatures. During the study period, we checked for defects in the bike visit case. We used a multi regression fit model with two to five x factors and the response variable as Y to evaluate the data using a timebased case cross-over design research. The earth's surface temperature, specific humidity, and precipitation correction total were compared over three control periods.

3. RESULTS

The maximum specific humidity ANN (QV2M) for the years 2020 and 2021 is 16.48 at 2 meters (g/kg); the maximum precipitation corrected total ANN (TOTCORR) for the year 2010 is 1545.12 (mm) for the summer study period of 1981 to 2022. **(Figure 2)** show that ANN (TS) has no effect when looking at the incremental impact of x variables with increased R2 %. ANN (QV2M) & ANN (TOTCORR) are present for just R2 %.
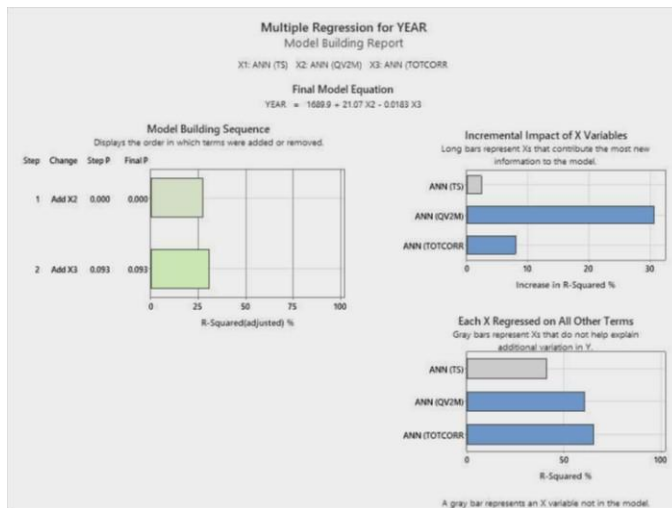
Figure 2: The year's Multiple Regression Model Building Report

4. CONCLUSIONS

It is obvious that the precipitation corrected sum (mm) and specific humidity at two meters (g/kg) for the years 2020, 2021, and 2010 were abnormal. Since these values were much closer

to the current year of 2024, they must be continued to be studied as the years go by for the health of the larger Vijayawada population.

5. REFERENCE

1.   Wandave Tizhe. The effects of increased temperatures (Heat waves) on cardiovascular health among adults in Atlanta, MPH, Environmental Health, 2015.
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