

**Dataset Source :** <https://power.larc.nasa.gov/data-access-viewer/>

**Region Selected :** Belagavi

latitude : 15.852792,

longitude : 74.498703.

**The Parameters in The dataset :**

(Temperature , Min\_Temperature , Max\_Temperature , Humidity , Precipitation , Surface\_Pressure , Wind\_speed).

**The Timeline Used is :** (JAN 2022 – MARCH 2023 )

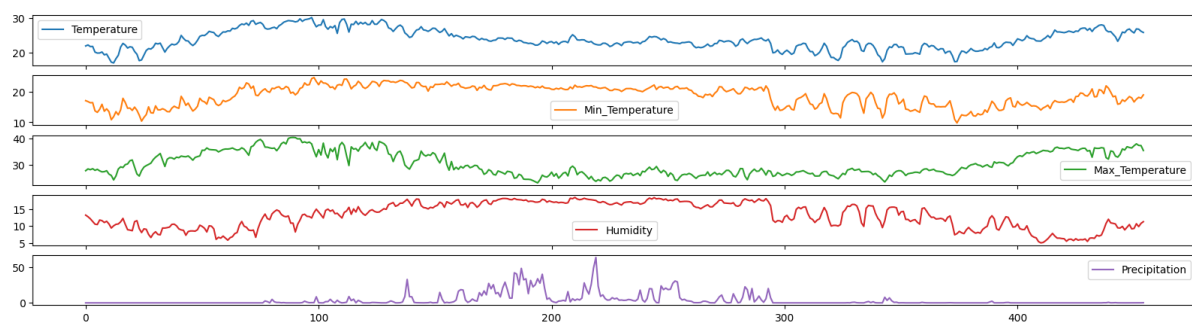
( DATA JAN 2022 - MARCH 2023 )

	Month	Days	YEAR	Date	Temperature	Min_Temperature	Max_Temperature	Humidity	Precipitation	Surface_Pressure	Wind_speed
0	Jan	1	2022	01-01-2022	21.95	17.12	27.66	13.24	0.0	94.21	2.05
1	jan	2	2022	02-01-2022	22.23	16.81	28.35	12.76	0.0	94.07	2.03
2	Jan	3	2022	03-01-2022	21.78	16.42	28.05	12.15	0.0	94.03	1.85
3	Jan	4	2022	04-01-2022	21.82	16.48	28.43	11.35	0.0	94.02	1.97
4	Jan	5	2022	05-01-2022	20.19	13.77	27.81	10.56	0.0	94.02	1.30

**Plotting for Temperature , Min\_Temperature , Max\_Temperature , Humidity , Precipitation :**

X-Axis : Values (C / mm)

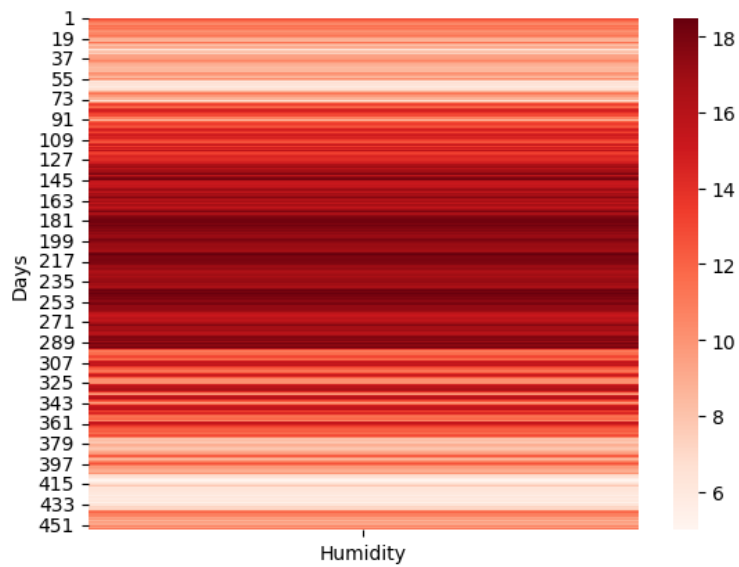
Y-Axis : Number of days (Jan 2022 – March 2023 ) – 451 Days



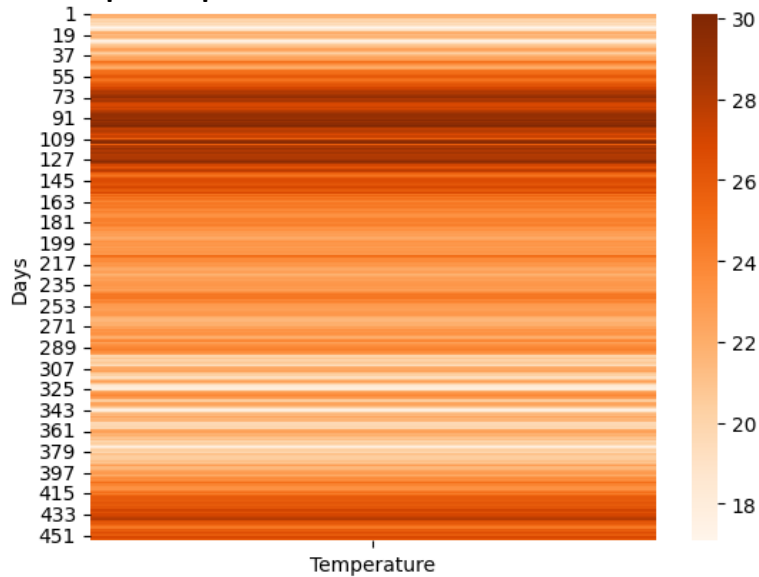
( c ) is considered for the Temperature , Humidity .

(Mm/day ) is considered for the Precipitation .

**Heat Map : Humidity**



**Heat Map : Temperature**



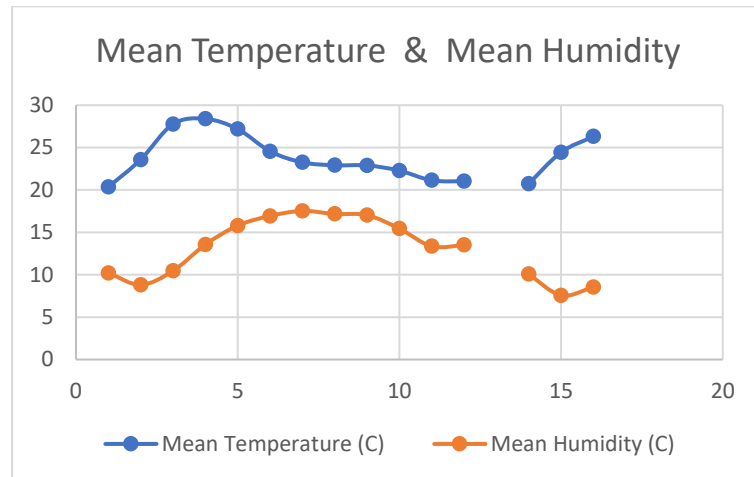
**Calculated Values for Each Month By performing Operations on Dataset .**

Linear Regression Model	Year	Month	Mean Temperature (C)	Mean Humidity (C)	Mean Precipitaion (mm/day)
	2022	January	20.35	10.20354839	0.007419355
		February	23.58321429	8.817142857	0.0137
		March	27.77225806	10.45483871	0.399677419
		April	28.39366667	13.55633333	1.731333333
		May	27.1883871	15.79516129	2.238064516
		June	24.56533333	16.935	10.23466667
		July	23.26	17.52870968	16.91548387
		August	22.91548387	17.17290323	11.84516129
		September	22.89533333	17.03133333	8.506333333
		October	22.28741935	15.44516129	4.814516129
		November	21.132	13.35466667	0.074333333
		December	21.03032258	13.52064516	0.937419355
	2023	January	20.72419355	10.10032258	0.148709677
		February	24.44678571	7.566071429	0.0225
		March	26.31032258	8.542903226	0.067096774

## Using Linear Regression Model :

X-Axis : Temperature (C )

Y-Axis : Number of Months (Jan 2022 – March 2023 )



Linear Regression Model	Year	Month	Mean Squared Error (TEMPERATURE )	Mean Absolute Error (TEMPERATURE )
	2022	January	0.15102622	0.339153455
		February	0.235994753	0.438339125
		March	0.041131023	0.126604334
		April	0.033534627	0.146451693
		May	0.018977617	0.101742368
		June	0.101742368	0.21178566
		July	0.008515081	0.074054145
		August	0.005983684	0.068257452
		September	0.025021878	0.127179514
		October	0.037925131	0.138476115
		November	0.09333103	0.188668069
		December	0.152938172	0.250201329
	2023	January	0.17065237	0.30113958
		February	0.070231513	0.241828594
		March	0.084423675	0.262445563

**Note :** The Mean Absolute Error is used to quantify the average magnitude of errors or deviations between predicted and actual values.

- Mean Squared Error and Mean Absolute Error both measure the accuracy of regression models
- Mean Squared Error is more sensitive to larger errors due to squaring the differences, while Mean Absolute Error treats all errors equally.

**Actual Values :** Dataset Provided By Nasa

**Predicted Values :** Done by Training and testing and using Formula .

$$y = b_0 + b_1 * x$$

where:

- y is the predicted value
- b<sub>0</sub> is the y-intercept (constant term).
- b<sub>1</sub> is the coefficient (slope)
- X is Actual Value