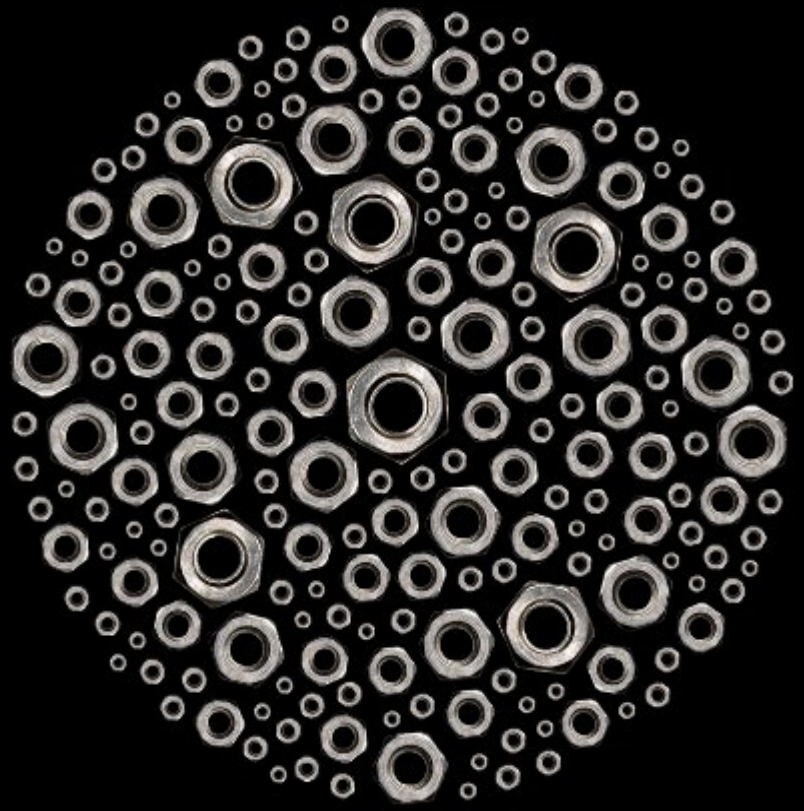
Deloitte.



Temperature Prediction

March 31st, 2023

MAKING AN IMPACT THAT MATTERS since 1845

Deloitte.

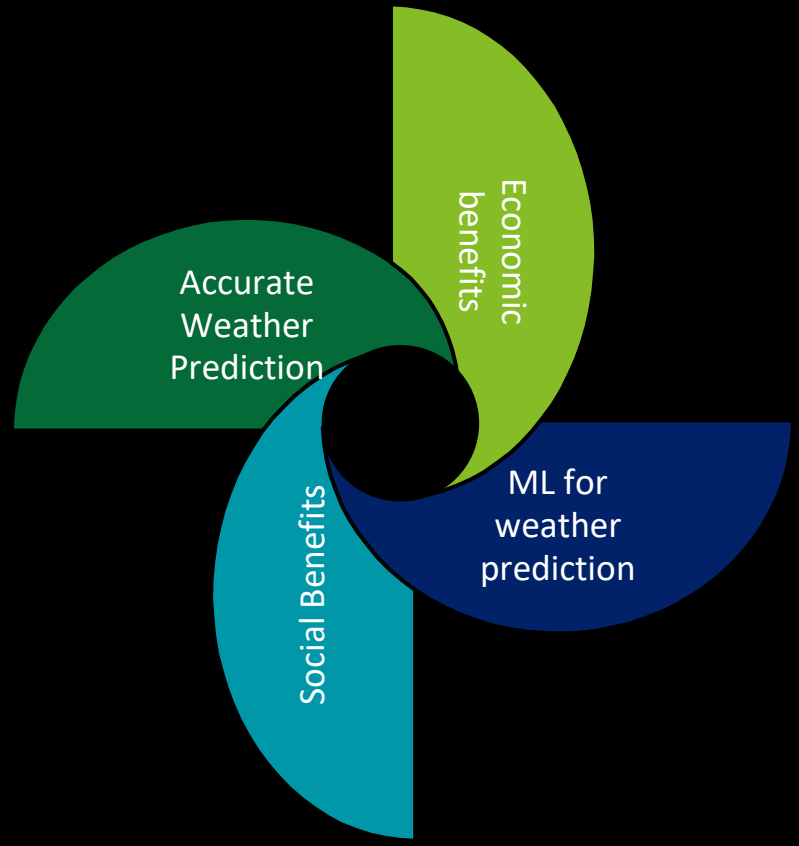
Contents

- Overview
- Understanding the data
- Data Exploration
- Training and Testing
- What is next?
- Q&A

Deloitte.

Overview

- Importance of Accurate Weather Prediction
- Economic Benefits
- Machine Learning Analysis for Weather Forecasting
- Social Benefits of Accurate Weather prediction



Deloitte.

Understanding the data

01 **Temperature**

02 **Solar Radiation**

03 **Humidity**

04 **Pressure**

05 **Wind Direction**

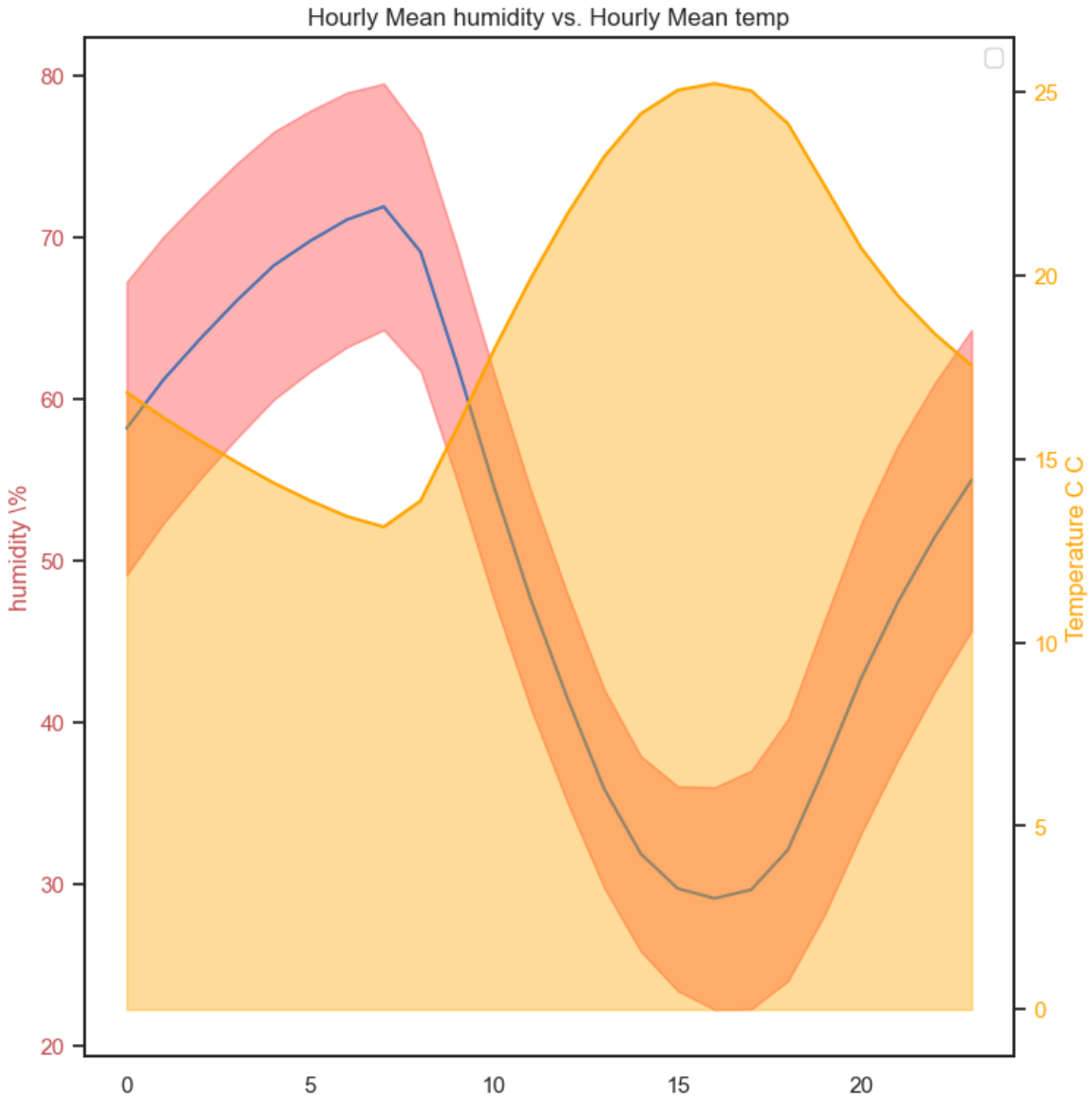
06 **Wind Speed**

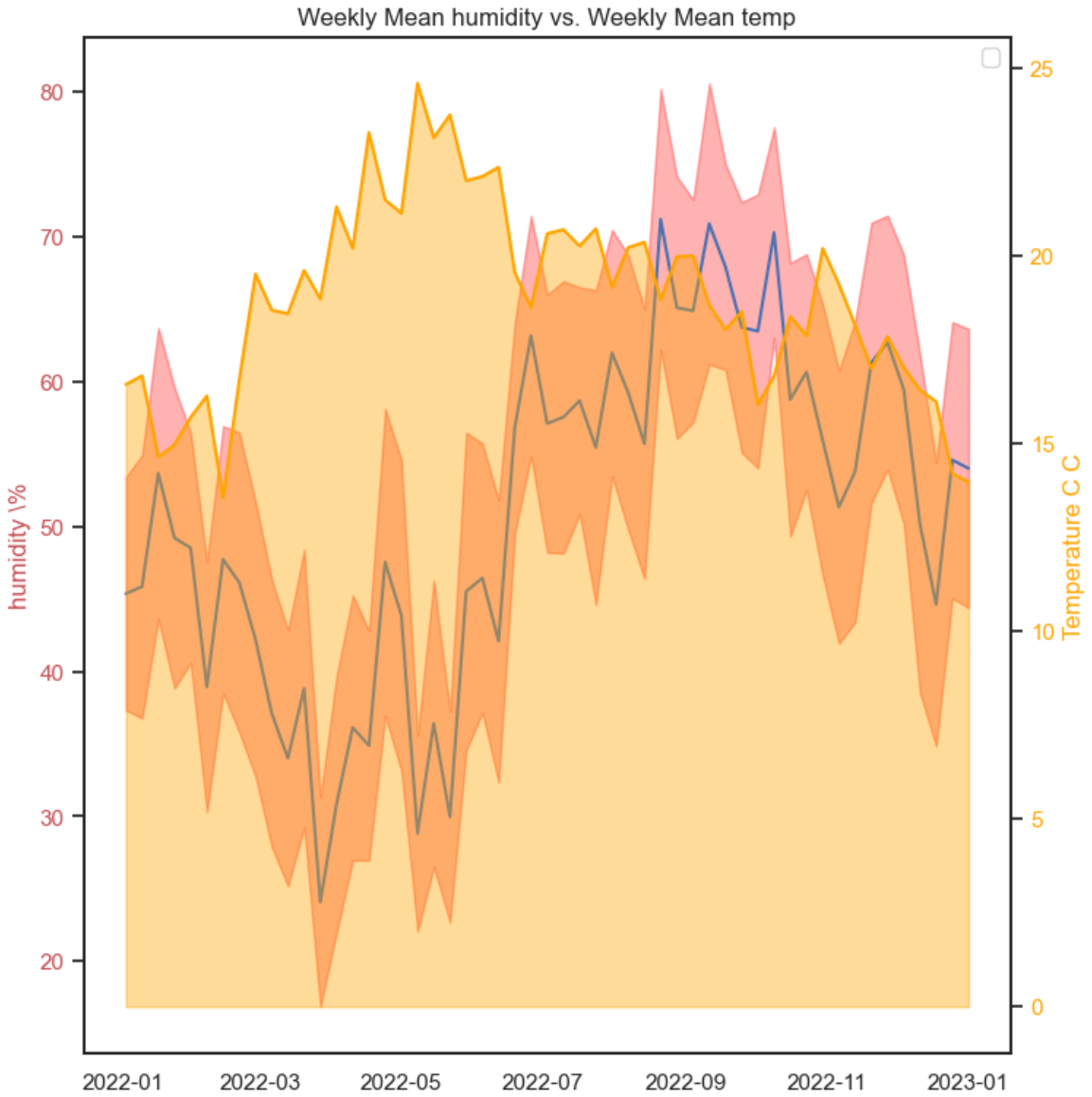
Deloitte.

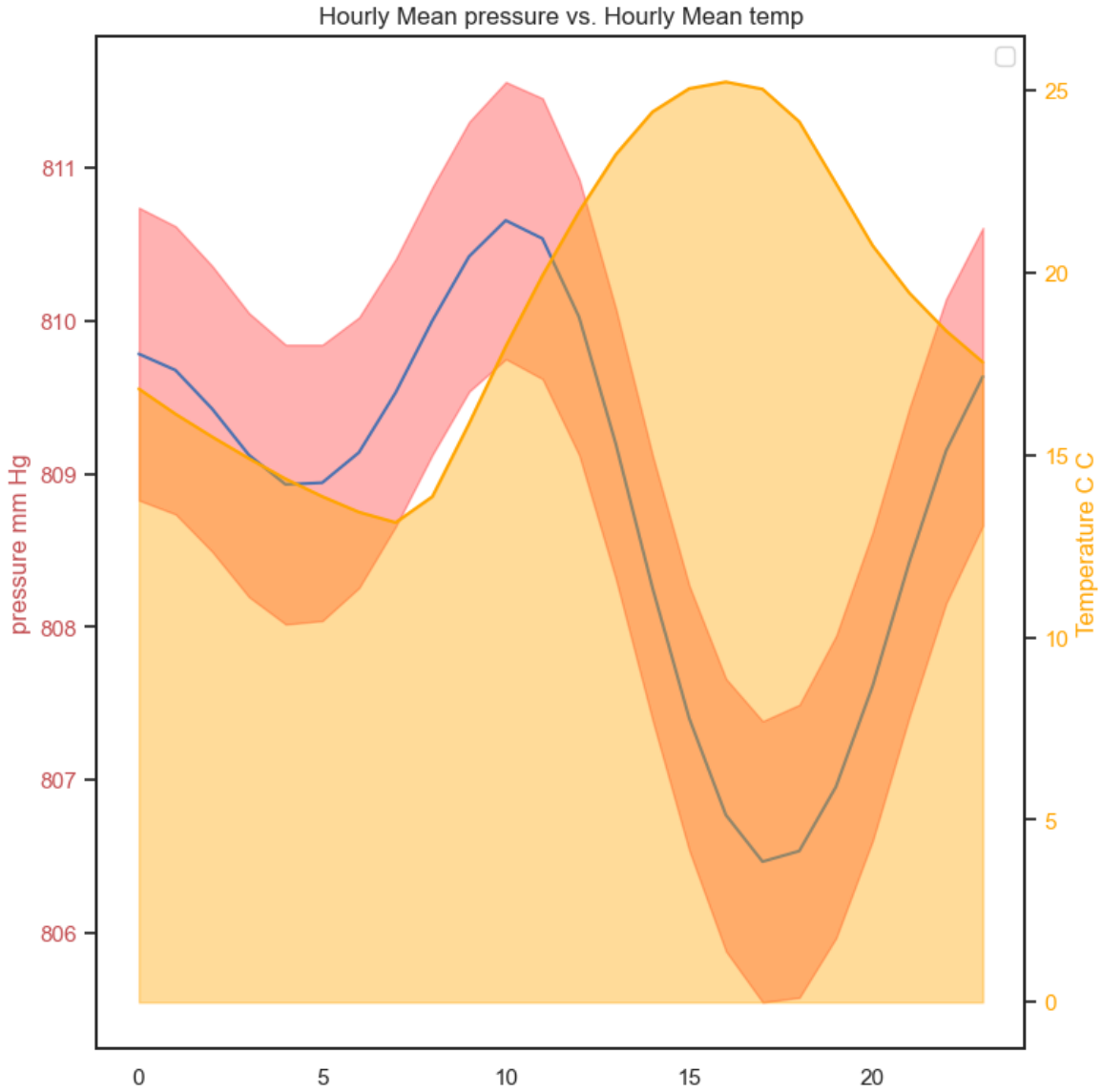
Pearson correlation Values

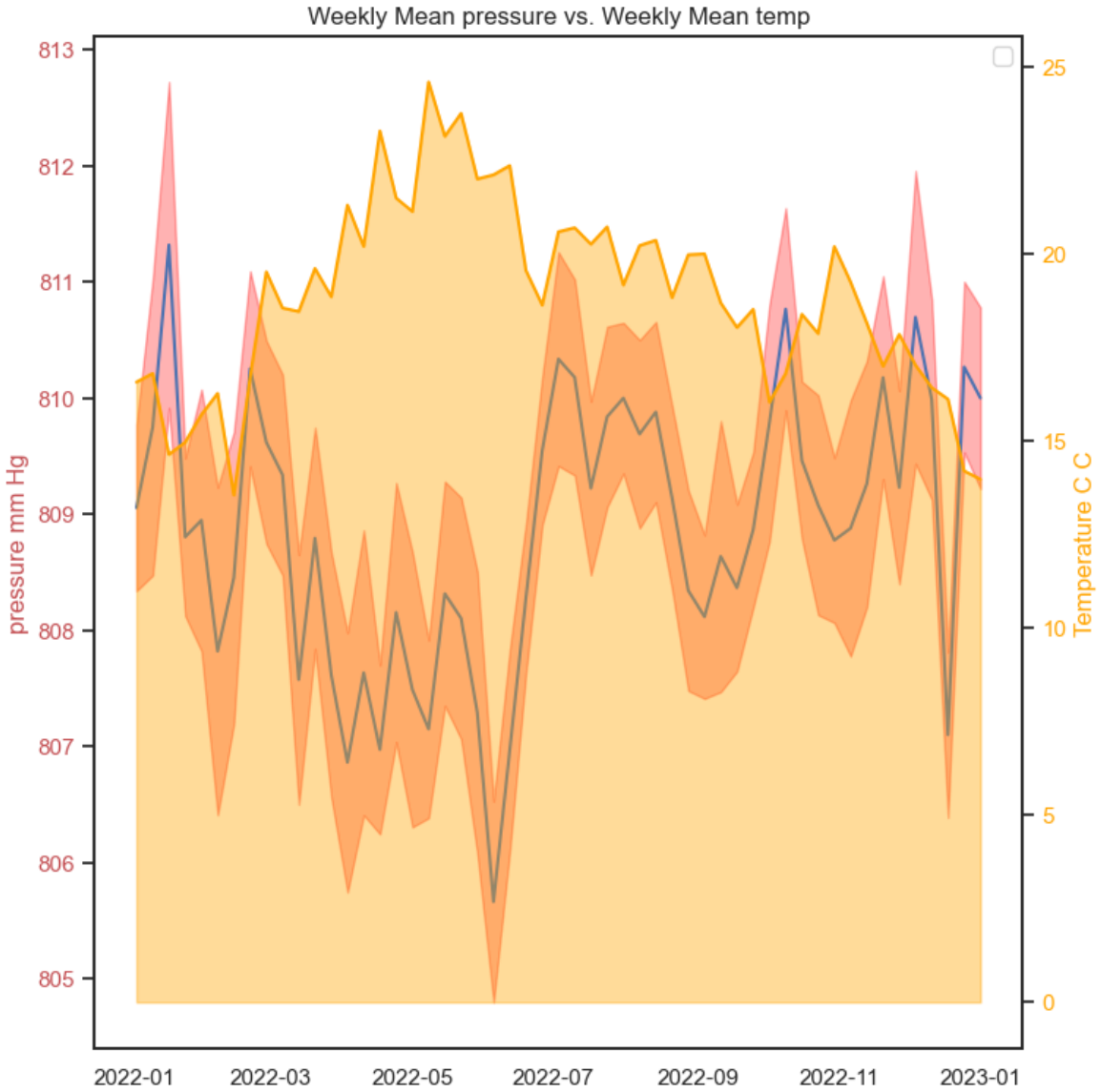
- Temperature Vs. Radiation 0.56
- Temperature Vs. Wind Speed 0.45
- Temperature Vs. Pressure -0.53
- Temperature Vs. Humidity -0.75

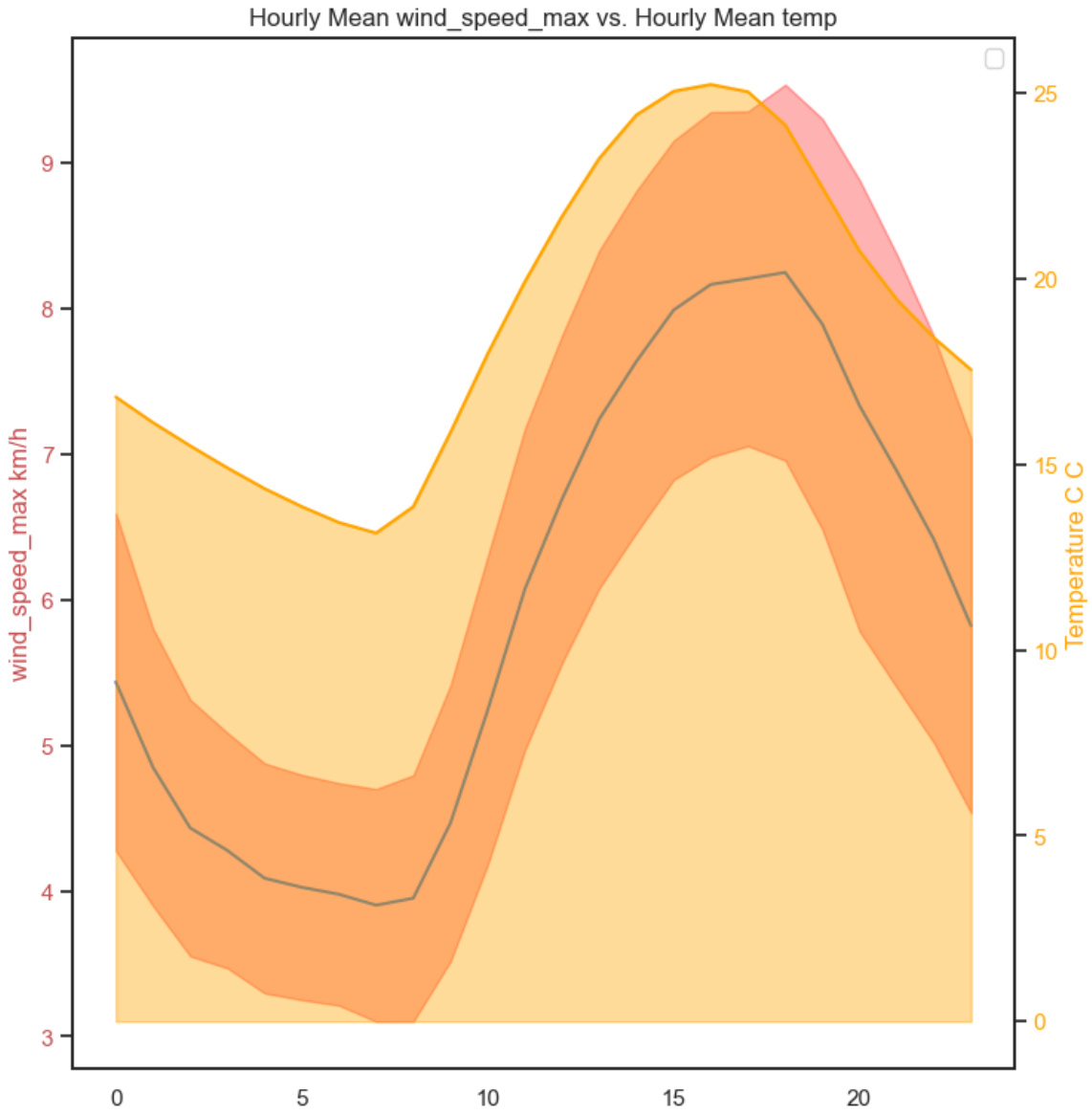
Data Exploration

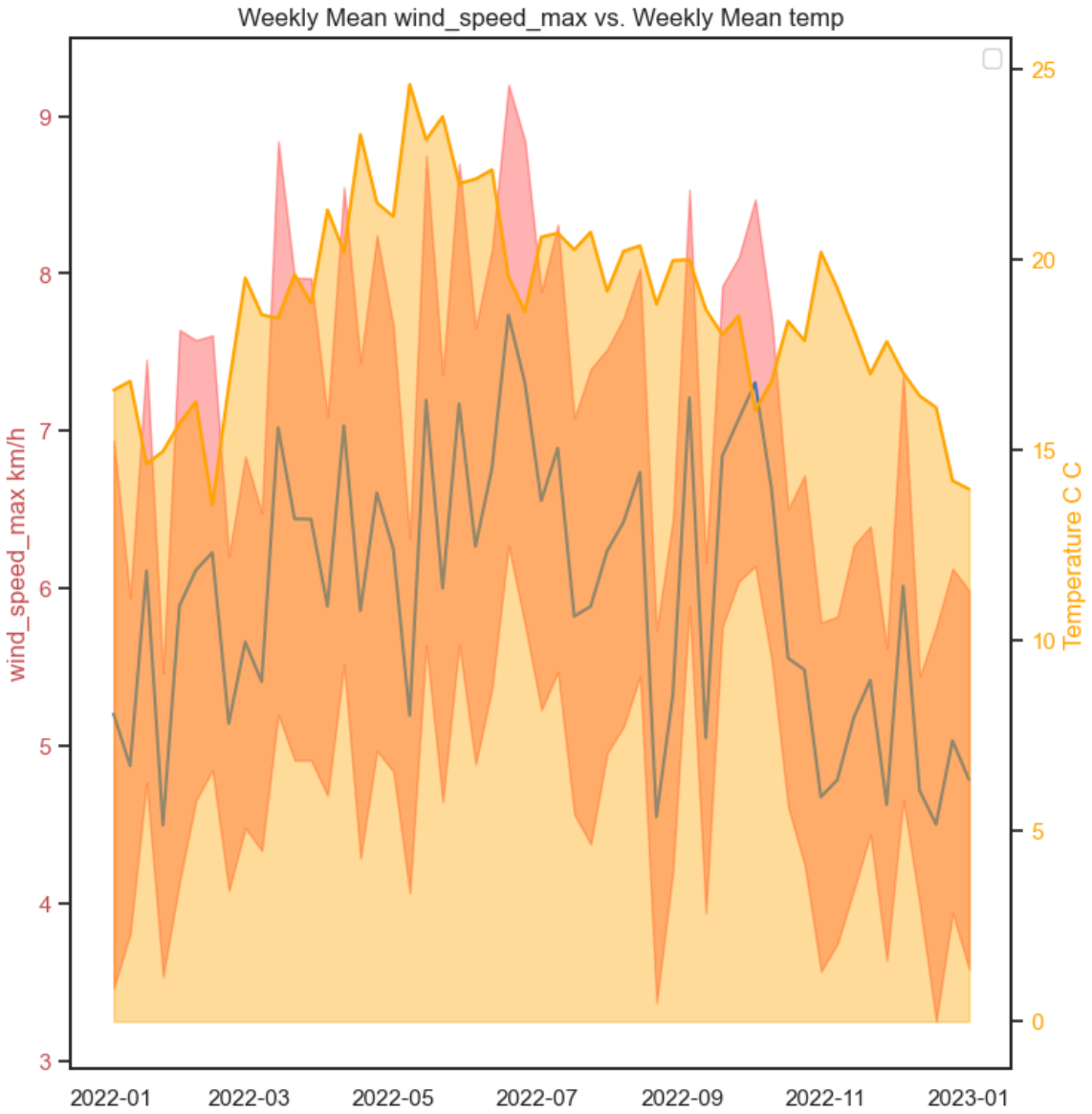

Hourly Mean humidity vs. Hourly Mean temp
humidity \%
Temperature C C
80
70
60
50
40
30
20
25
20
15
10
5
0
0
5
10
15
20

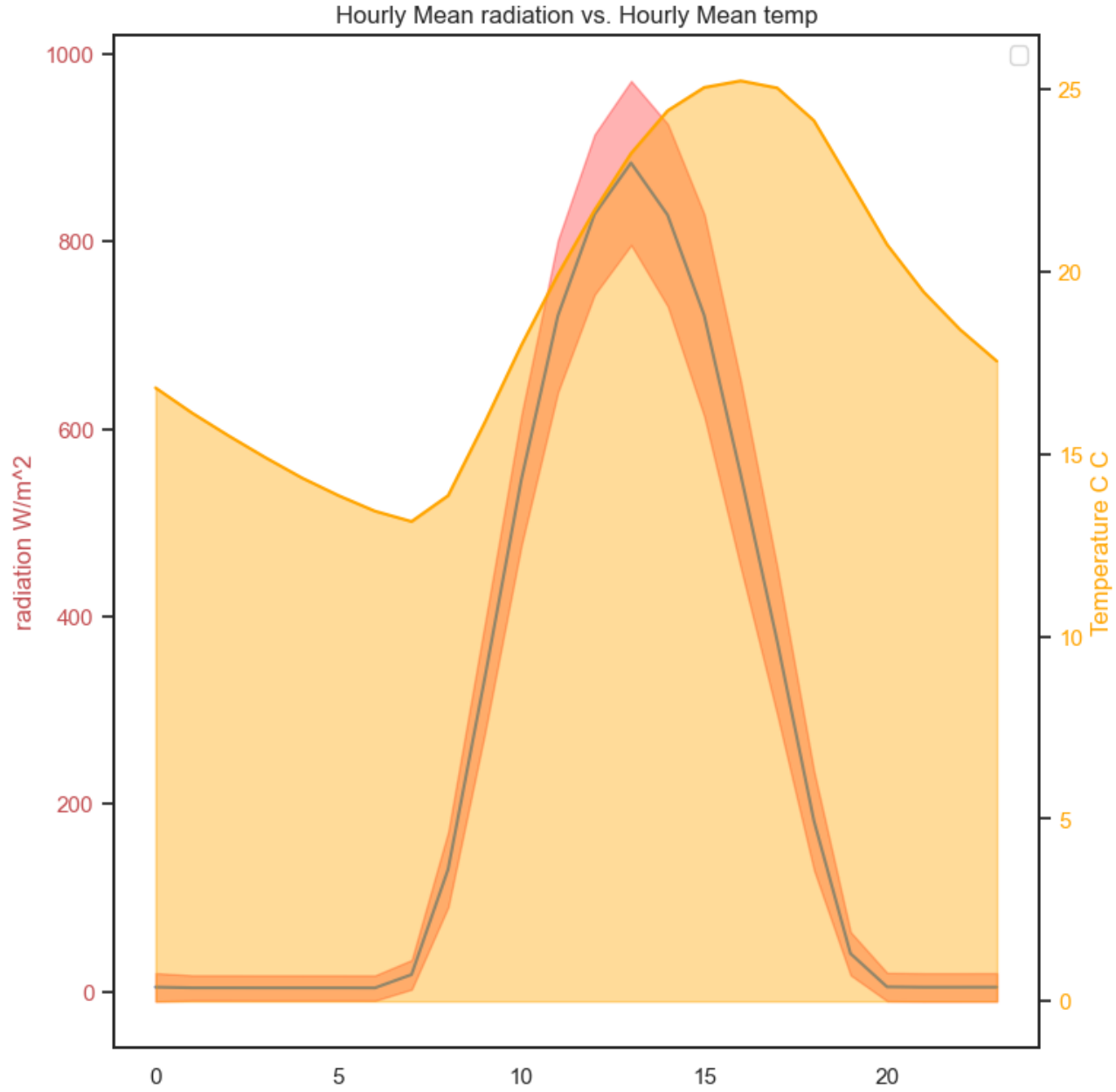

Weekly Mean humidity vs. Weekly Mean temp
humidity \%
Temperature C C
80
70
60
50
40
30
20
25
20
15
10
5
0
2022-01
2022-03
2022-05
2022-07
2022-09
2022-11
2023-01

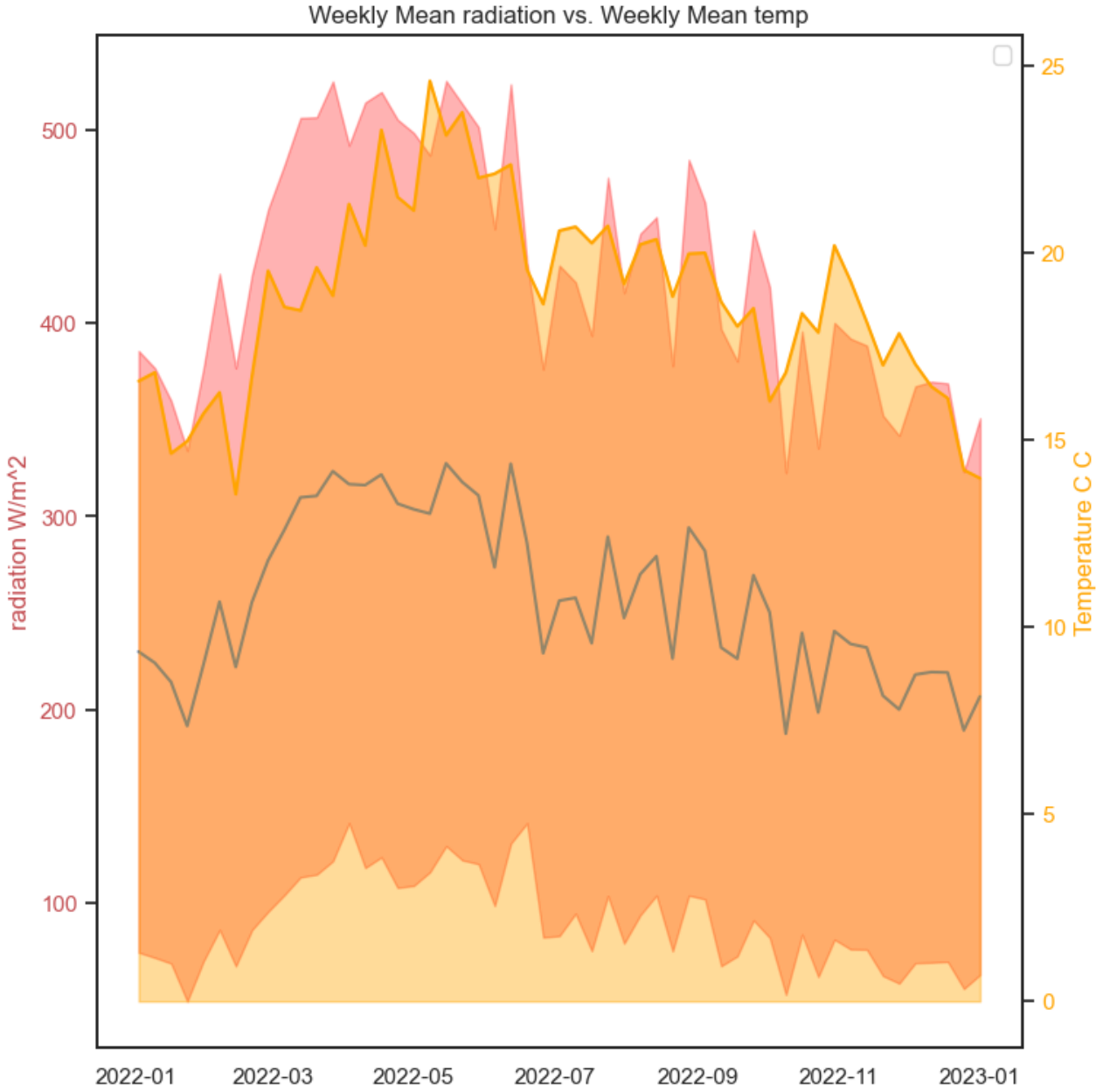

Hourly Mean pressure vs. Hourly Mean temp
pressure mm Hg
Temperature C C
811
810
809
808
807
806
25
20
15
10
5
0
0
5
10
15
20


Weekly Mean pressure vs. Weekly Mean temp
pressure mm Hg
Temperature C C
813
812
811
810
809
808
807
806
805
25
20
15
10
5
0
2022-01
2022-03
2022-05
2022-07
2022-09
2022-11
2023-01


Hourly Mean wind_speed_max vs. Hourly Mean temp
wind_speed_max km/h
Temperature C C
0
5
10
15
20
3
4
5
6
7
8
9
0
5
10
15
20
25

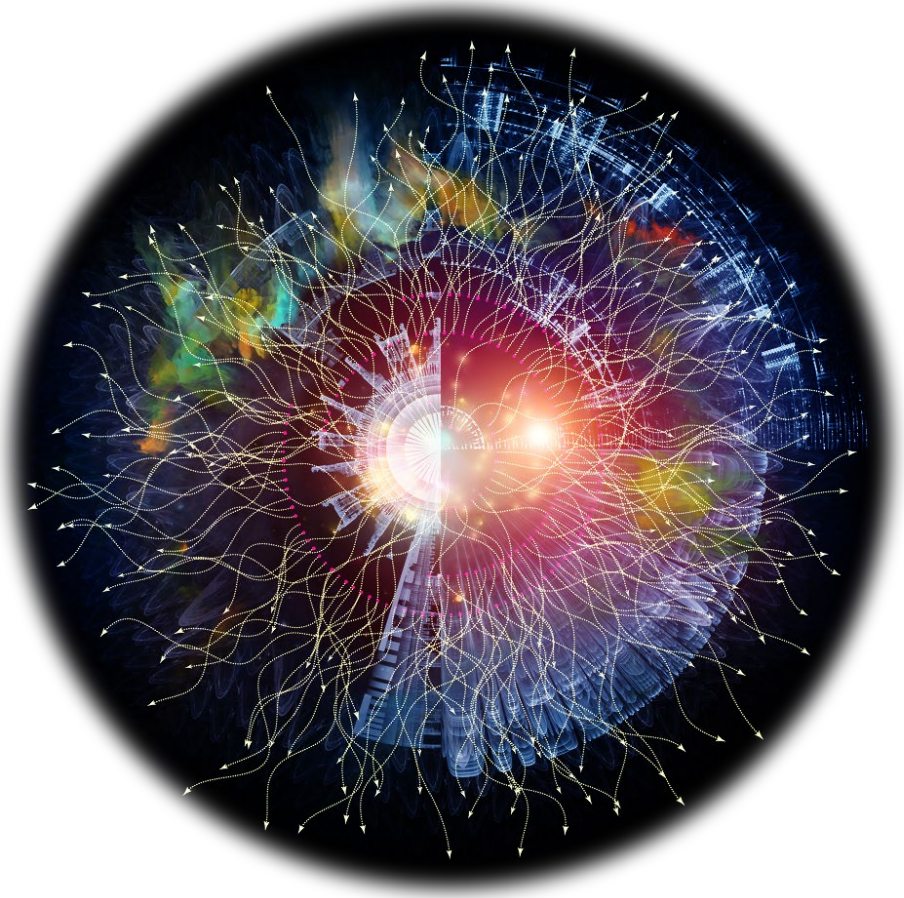

Weekly Mean wind_speed_max vs. Weekly Mean temp
wind_speed_max km/h
Temperature C C
2022-01
2022-03
2022-05
2022-07
2022-09
2022-11
2023-01
3
4
5
6
7
8
9
0
5
10
15
20
25


Hourly Mean radiation vs. Hourly Mean temp
radiation W/m^2
Temperature C C
1000
800
600
400
200
0
25
20
15
10
5
0
0
5
10
15
20


Weekly Mean radiation vs. Weekly Mean temp
radiation W/m^2
Temperature C C
500
400
300
200
100
25
20
15
10
5
0
2022-01
2022-03
2022-05
2022-07
2022-09
2022-11
2023-01

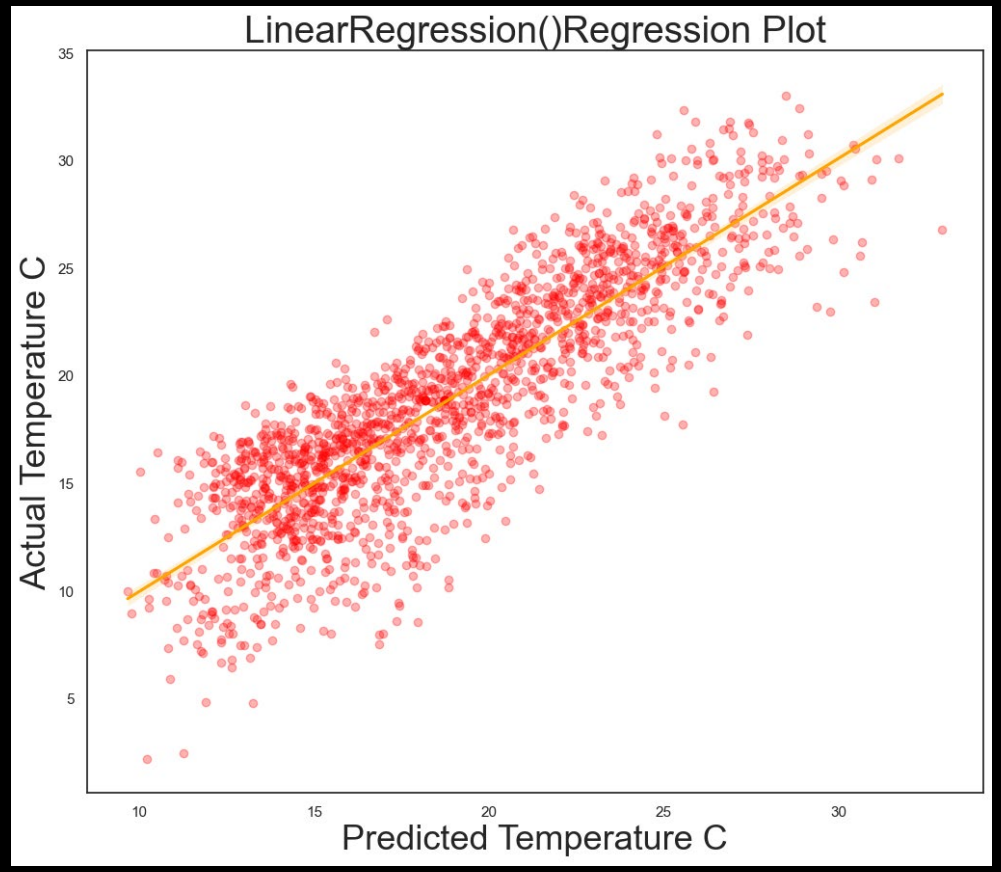
Deloitte.

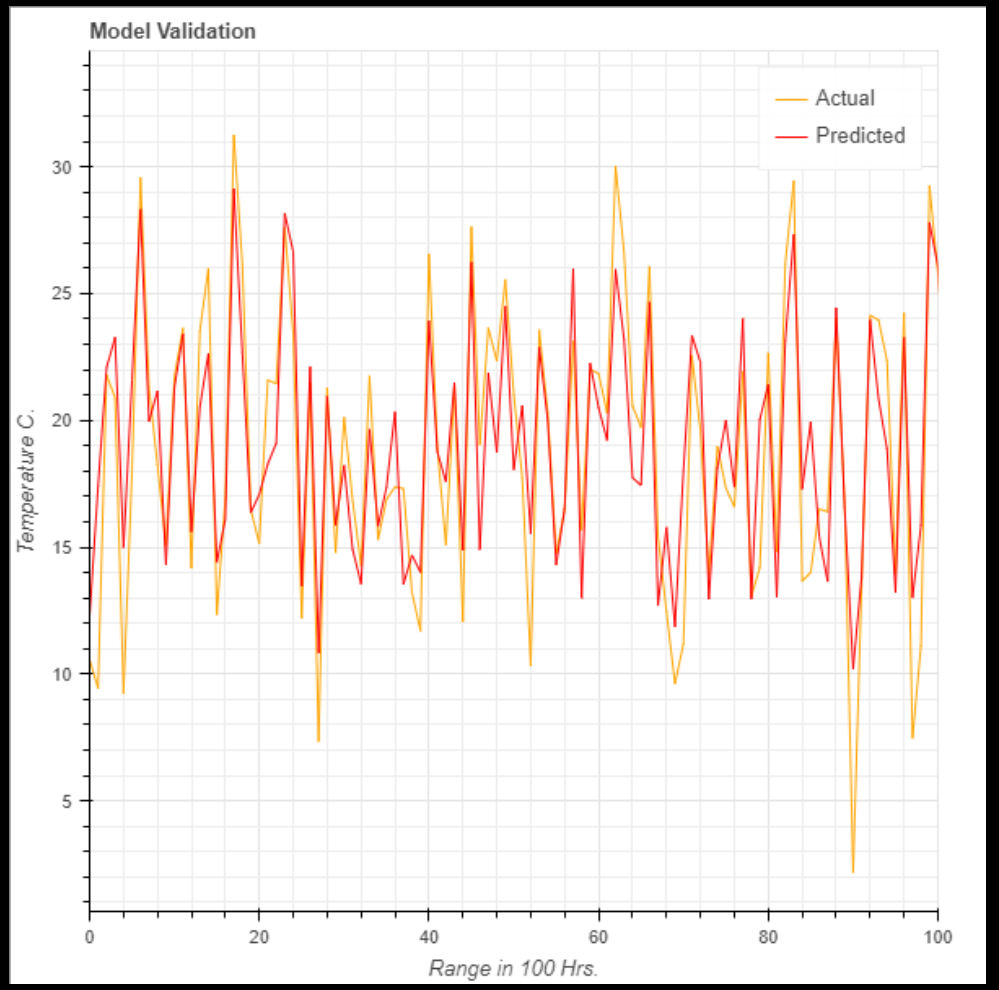
- Linear Regression
- Random Forest Regression
- Supper Vector Regression (SVR)



Training & Testing

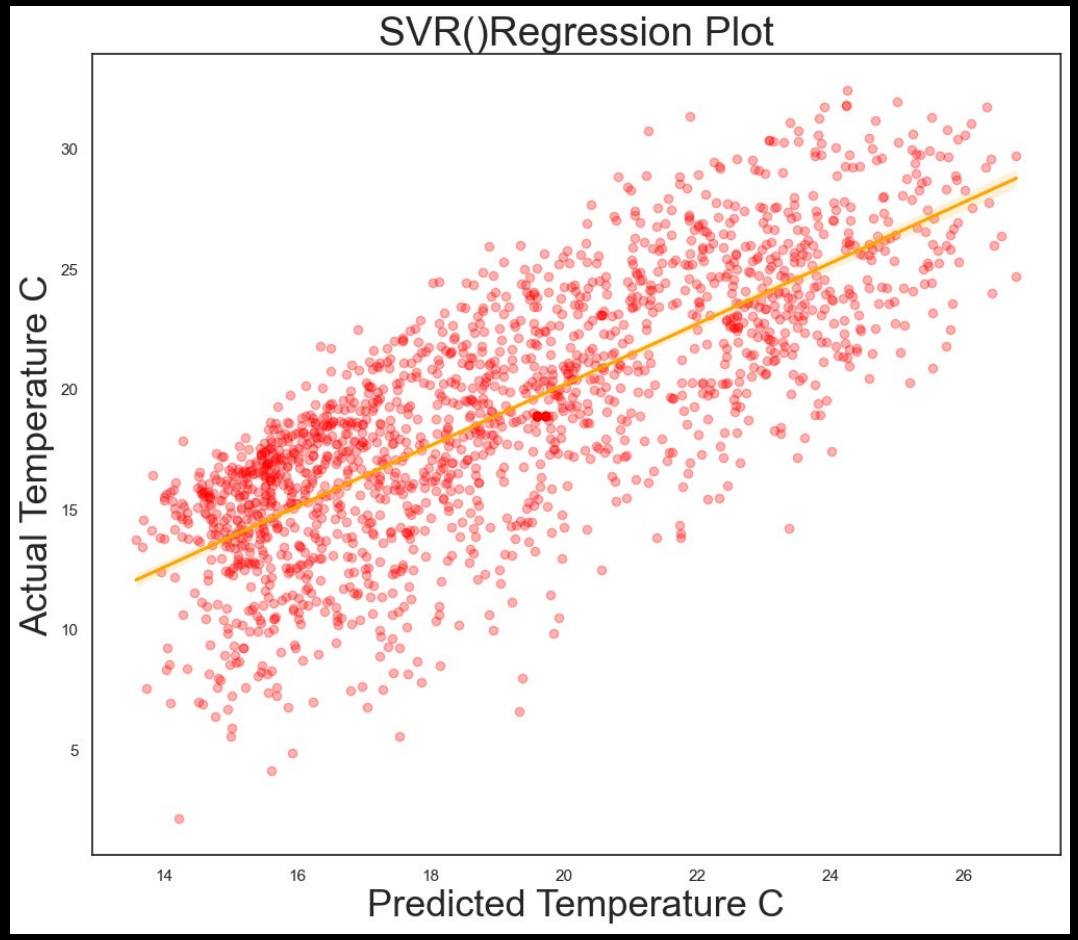
Deloitte.

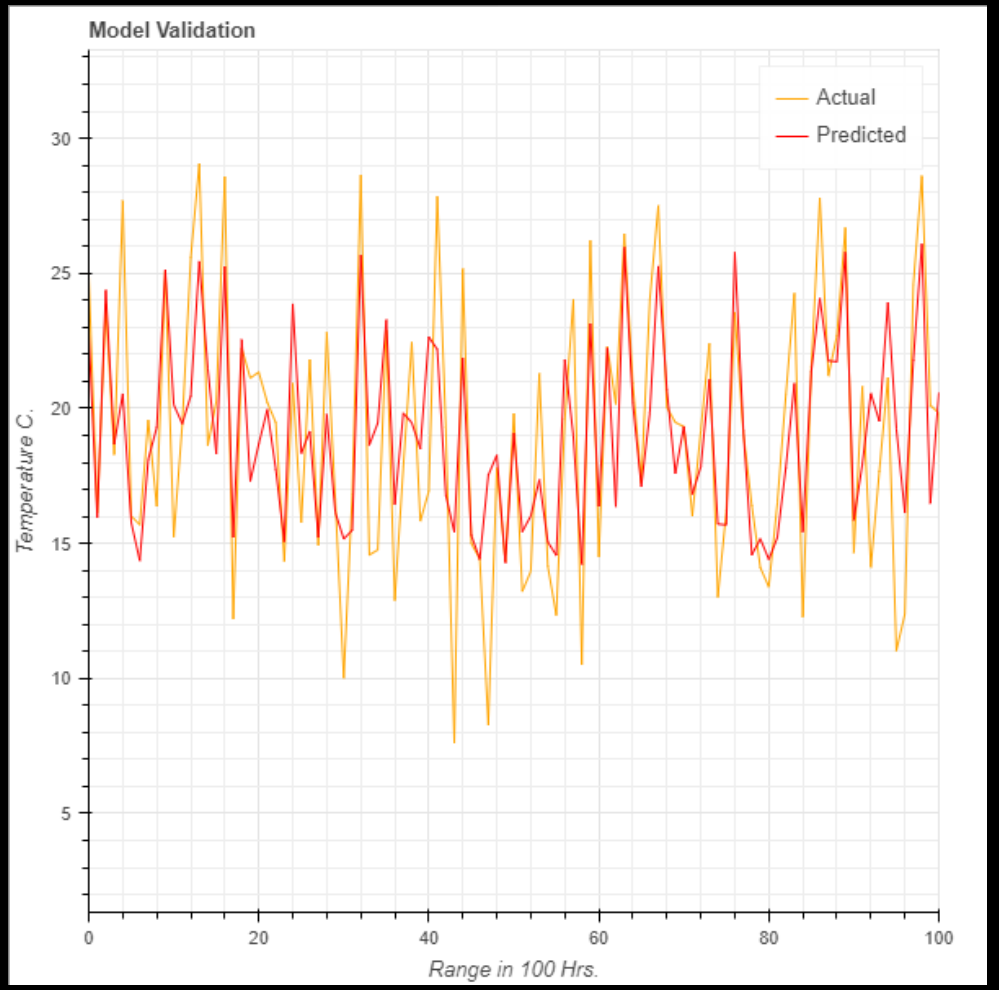




Linear Regression

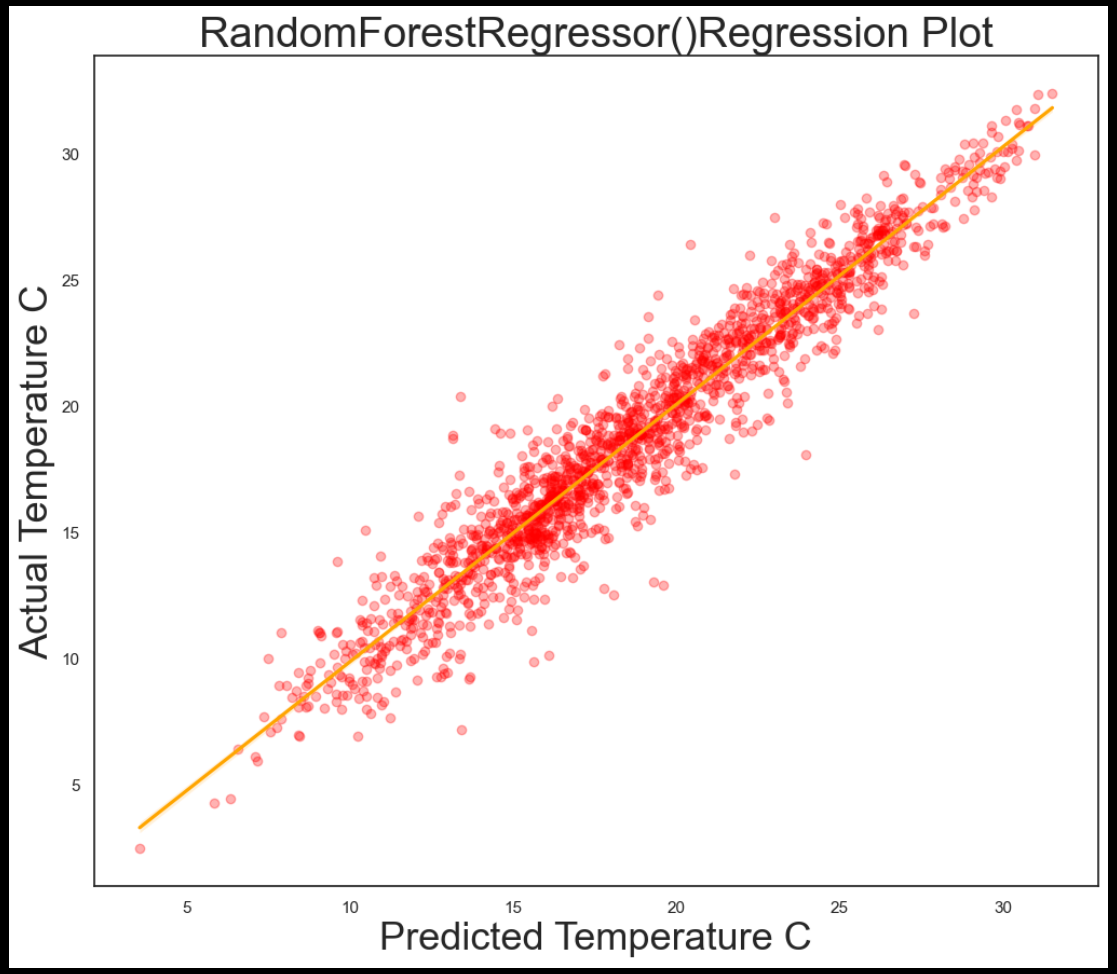
Deloitte.

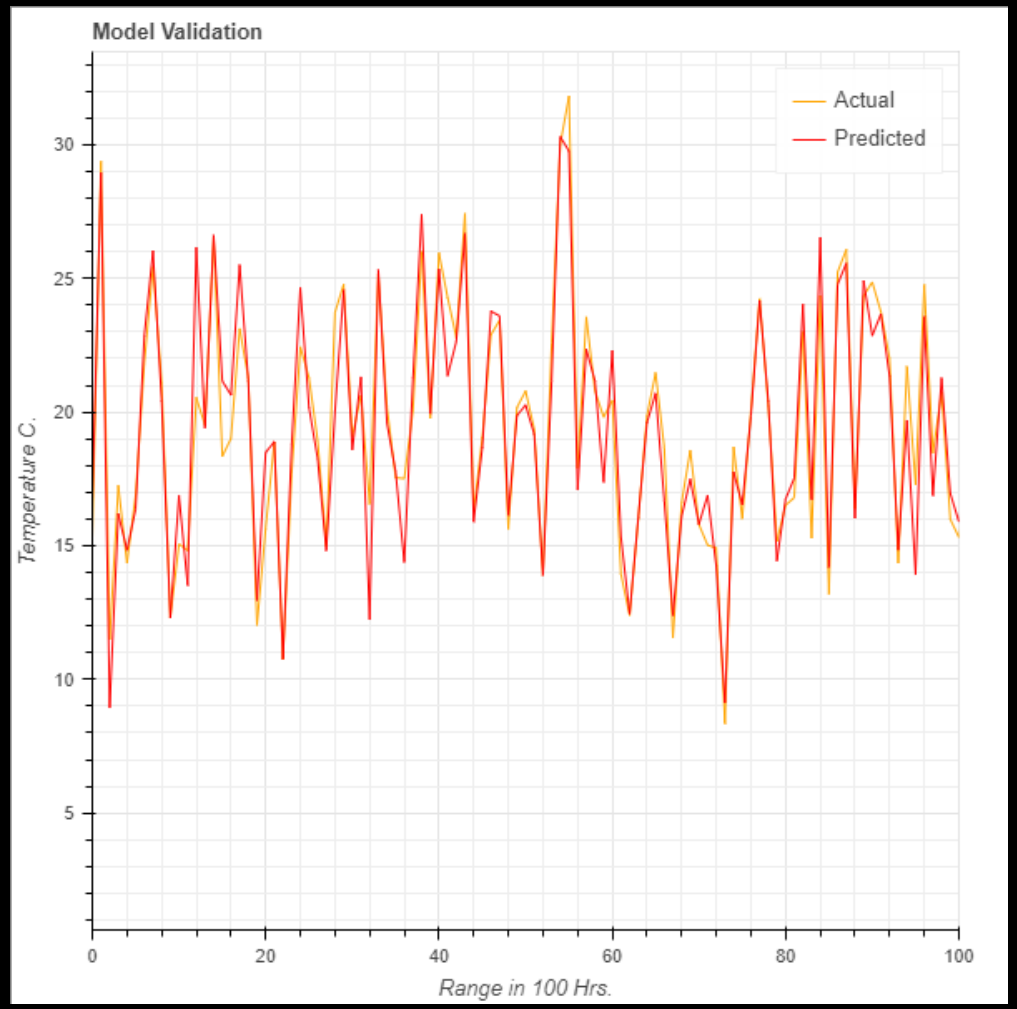




Super Vector Regression

Deloitte.





Random Forest Regression

Deloitte.

What is next?

Deloitte.

Thanks for you attention!