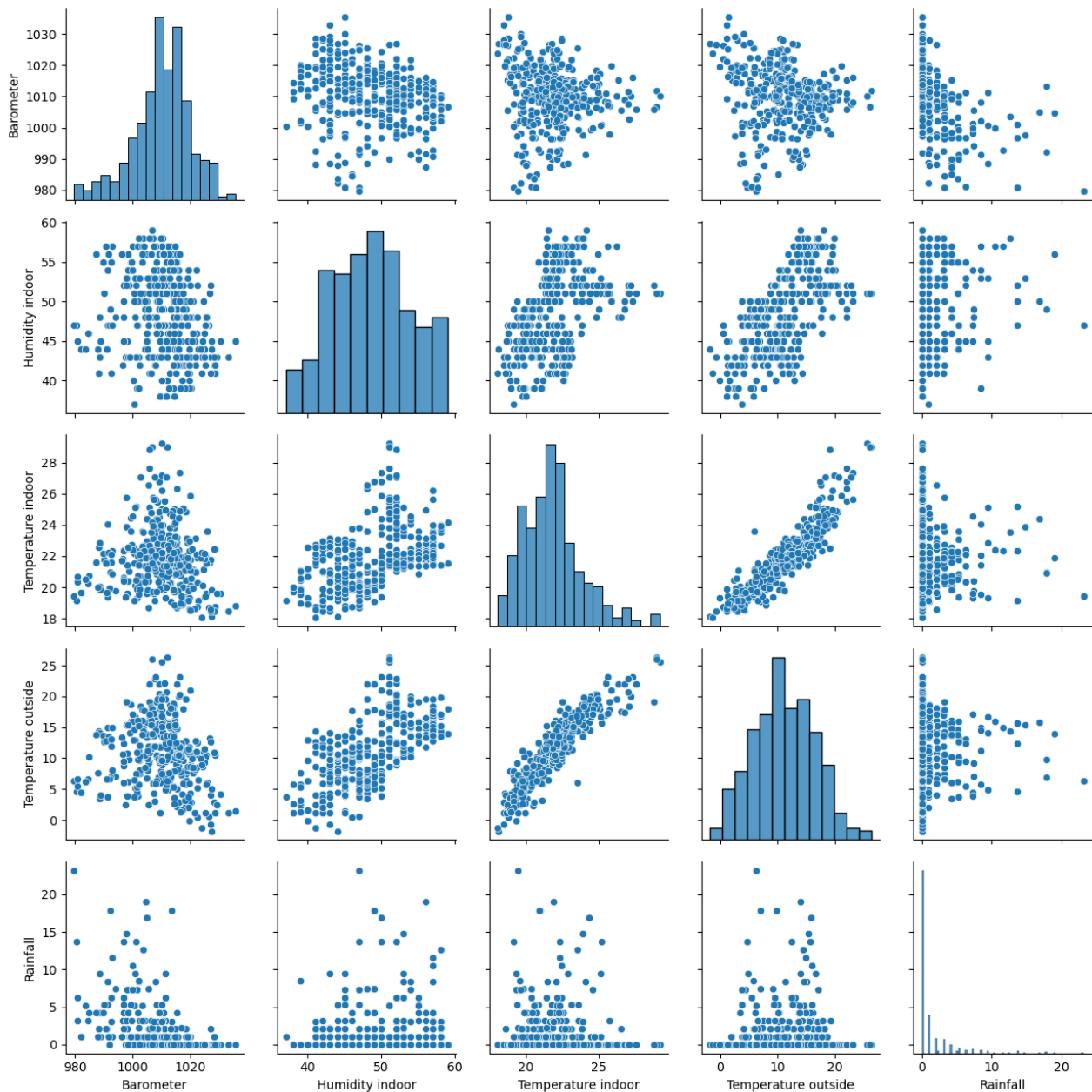
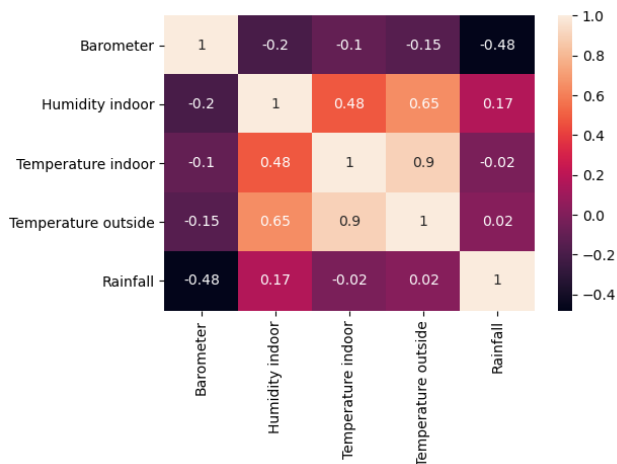


CORRELATIONS BETWEEN VARIABLES

CORRELATION MATRIX OF VARIABLES



CORRELATION HEATMAP

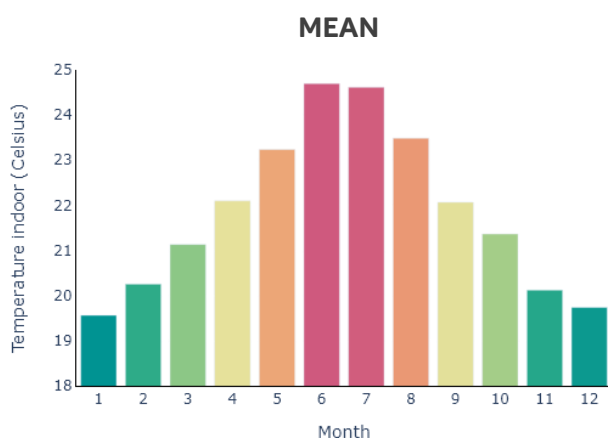


As shown in these two plots, temperature indoor and outside show the strongest correlation with correlation coefficient of 0.90. Also, temperature outside and humidity indoor, and temperature indoor and humidity indoor show strong correlation giving the coefficient of 0.65 and 0.48, respectively. Rainfall and Barometer values show a significant negative correlation of -0.48 . The other comparison of the variables do not show a significant correlation.

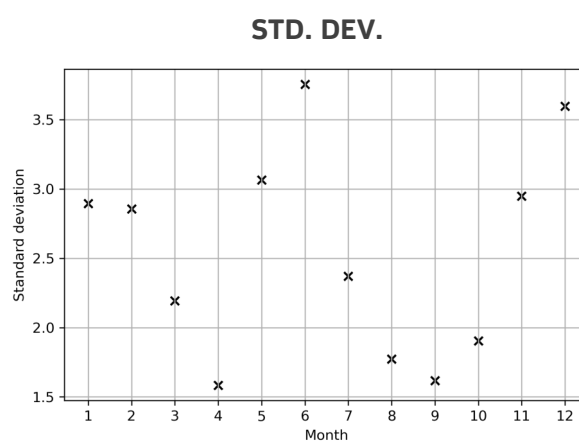
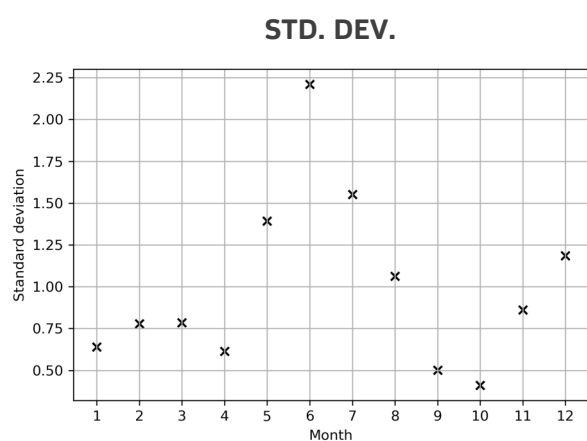
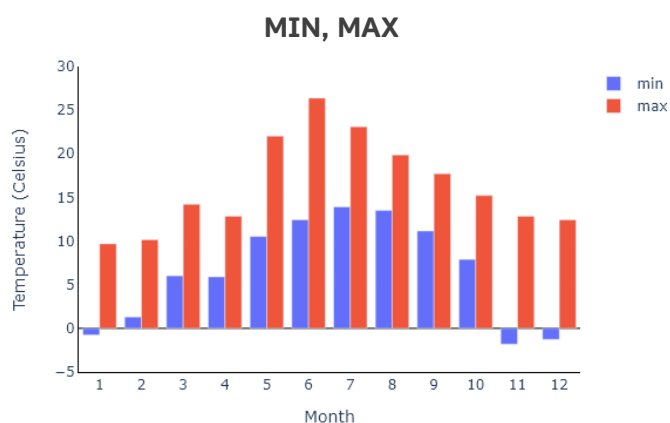
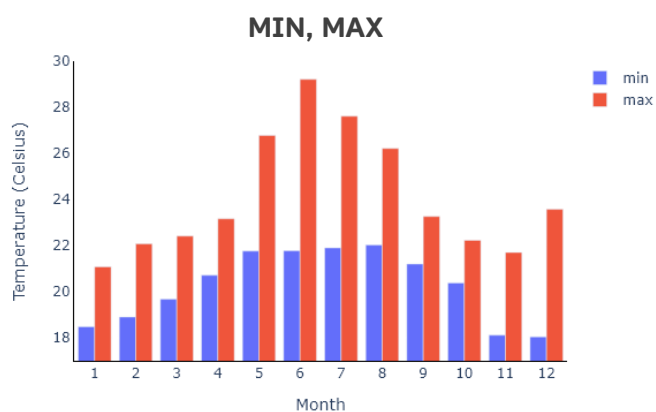
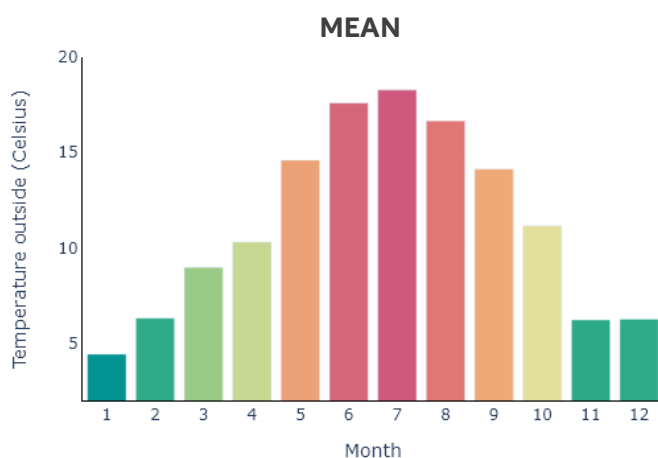
WEATHER VISUALISATION

MONTHLY

TEMPERATURE INDOOR



TEMPERATURE OUTSIDE

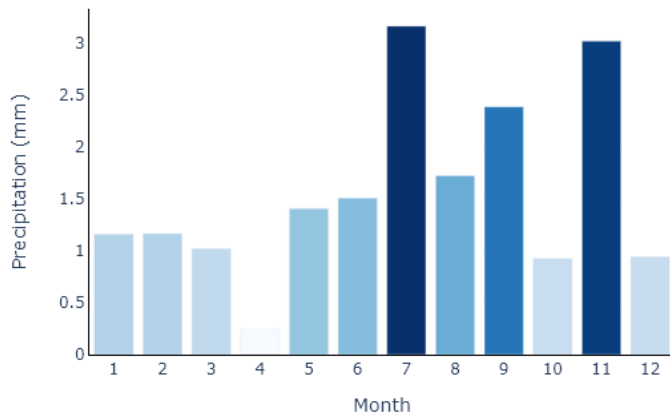


The shapes of the bar plots for temperature indoor and outside are similar - the two temperatures increase and decrease over the same months, which is backed up by their high correlation coefficient as discussed previously. The standard deviation is high in June and the difference between the minimum and maximum temperatures is the highest in this month.

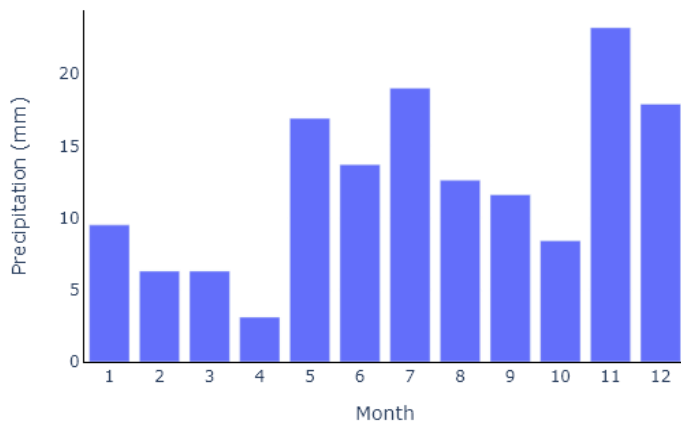
The temperatures are the highest in June and July and lowest in December and January. The change in monthly temperatures is more significant when the temperature was measured outside.

PRECIPITATION

MEAN

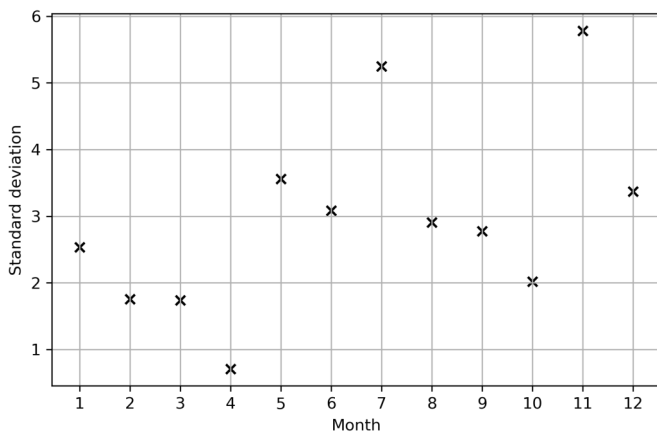


MAX



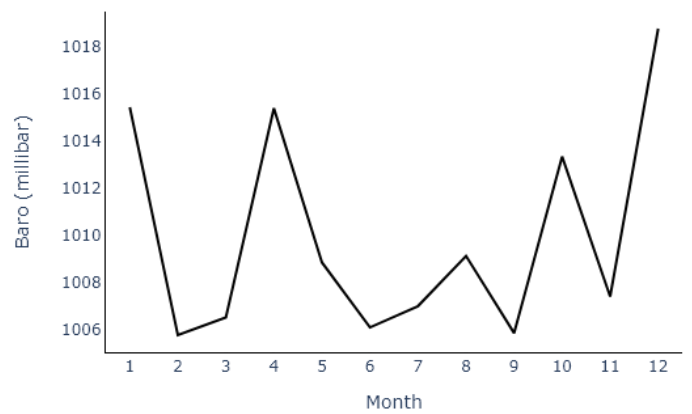
Min. precipitation for all months were zero, therefore, they were excluded from the plot.

STD. DEV.

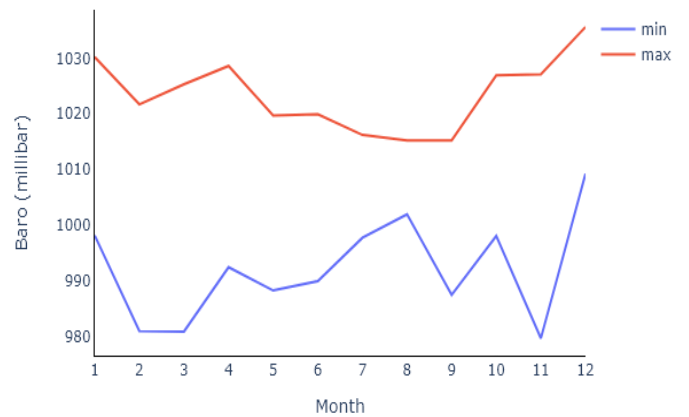


BAROMETER

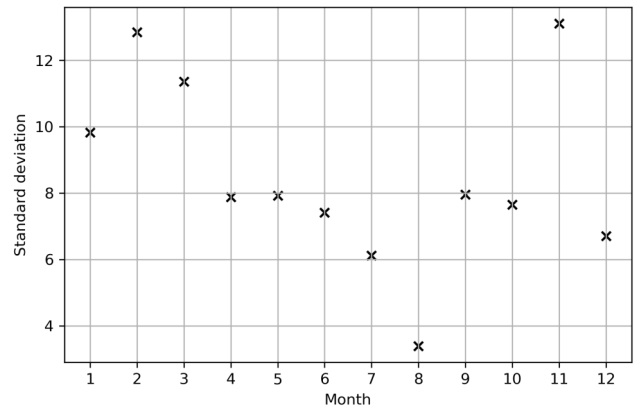
MEAN



MIN, MAX



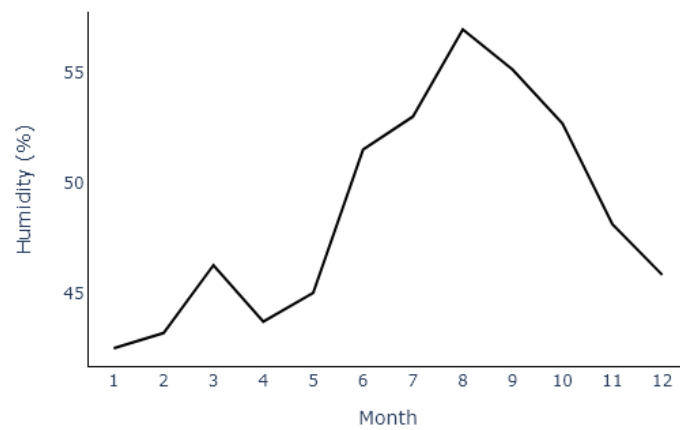
STD. DEV.



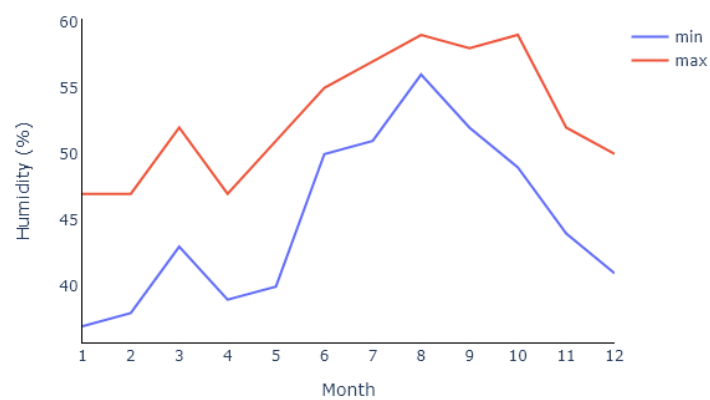
The average precipitation is higher in July and November compared to the other months. The change in barometer values is insignificant given that the y-axis range for barometer plots is narrow. As discussed before, precipitation and barometer values show a negative correlation and is supported by comparing the mean plots - the monthly barometer values are low when precipitation is high.

HUMIDITY INDOOR

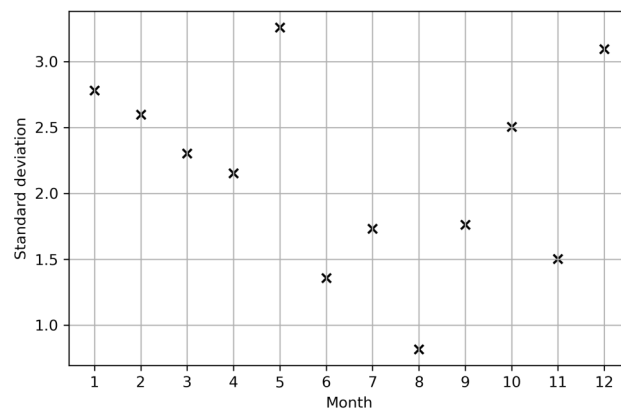
MEAN



MIN, MAX



STD. DEV.

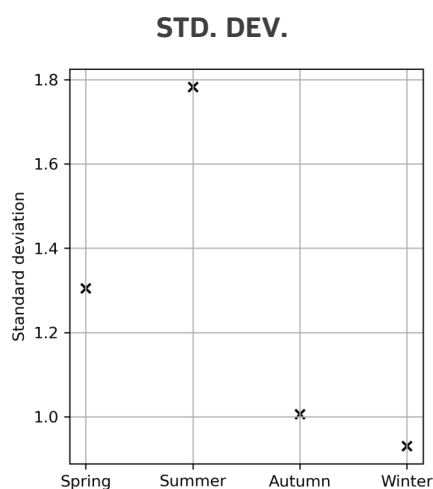
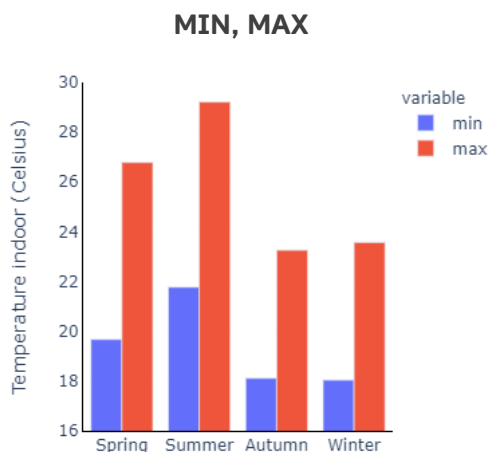
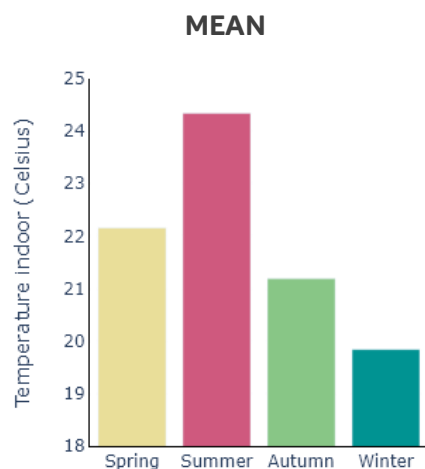


The humidity values show strong correlation with temperature indoor and outside. When the temperature increases, the humidity also increases, and vice versa. The humidity is the highest in August and at its lowest in January.

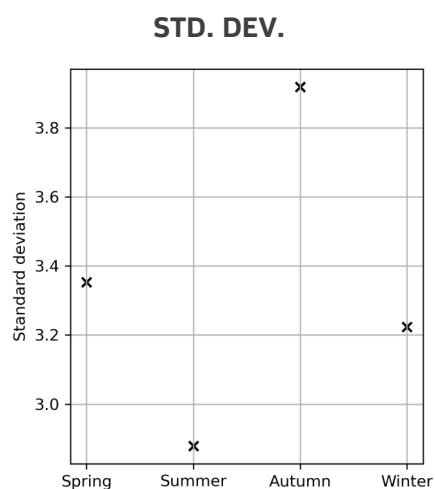
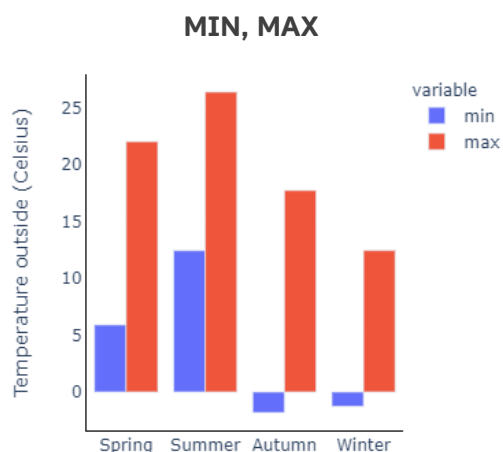
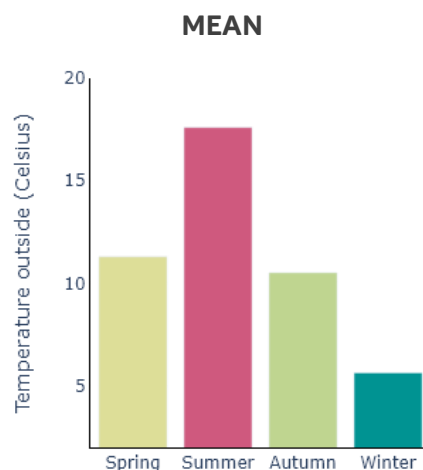
WEATHER VISUALISATION

SEASONAL

TEMPERATURE INDOOR



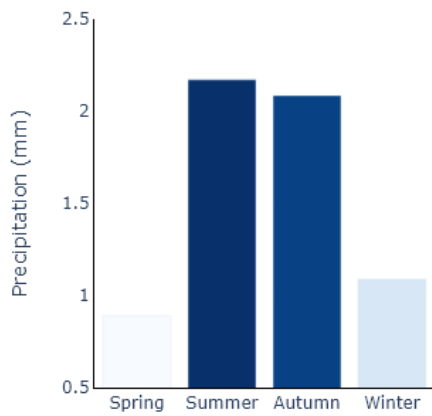
TEMPERATURE OUTSIDE



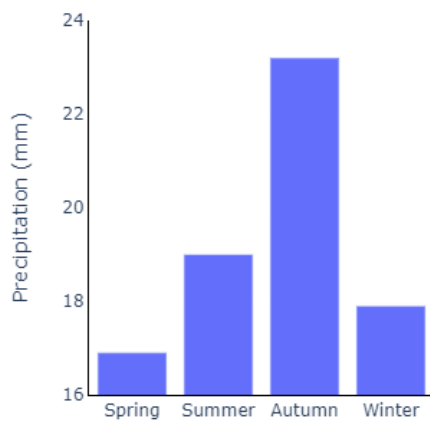
As expected, the seasonal temperature plots show similar results to monthly plots. The temperature is the highest in Summer (June, July and August) and lowest in Winter (December, January and February). The temperature indoor and outside, again, show a strong correlation. However, it is interesting that the standard deviation for temperature indoor is highest in Summer whereas it is the lowest for outside temperature.

PRECIPITATION

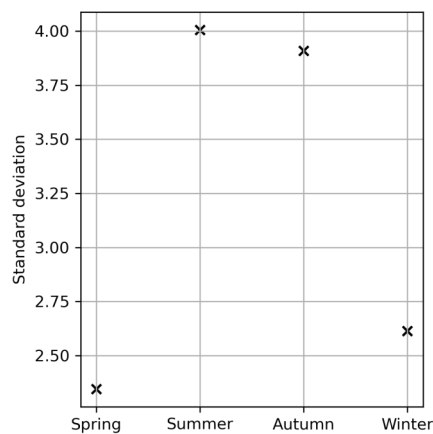
MEAN



MAX

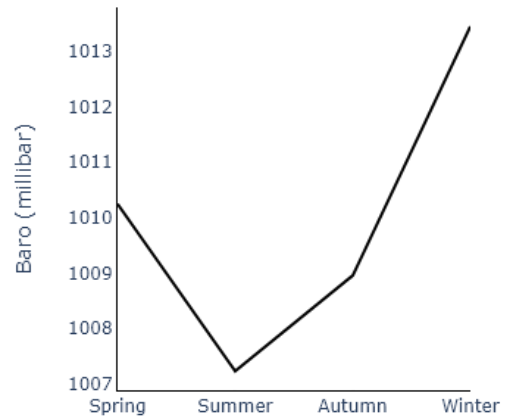


STD. DEV.

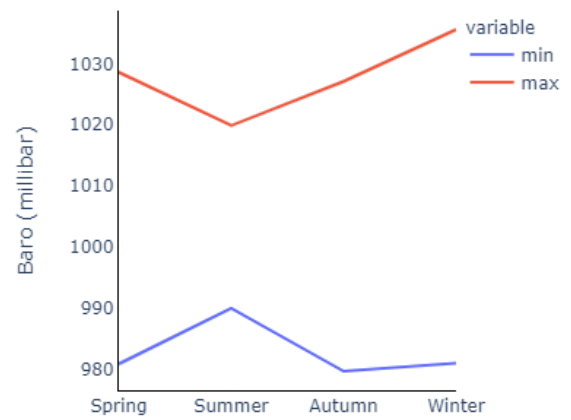


BAROMETER

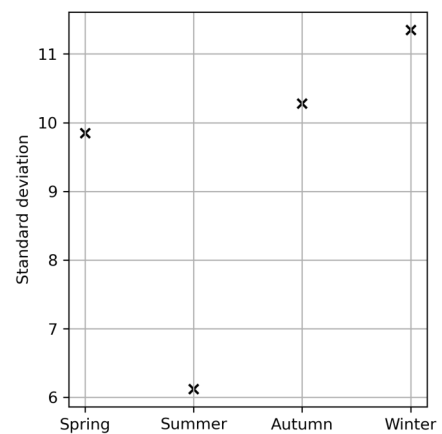
MEAN



MIN, MAX

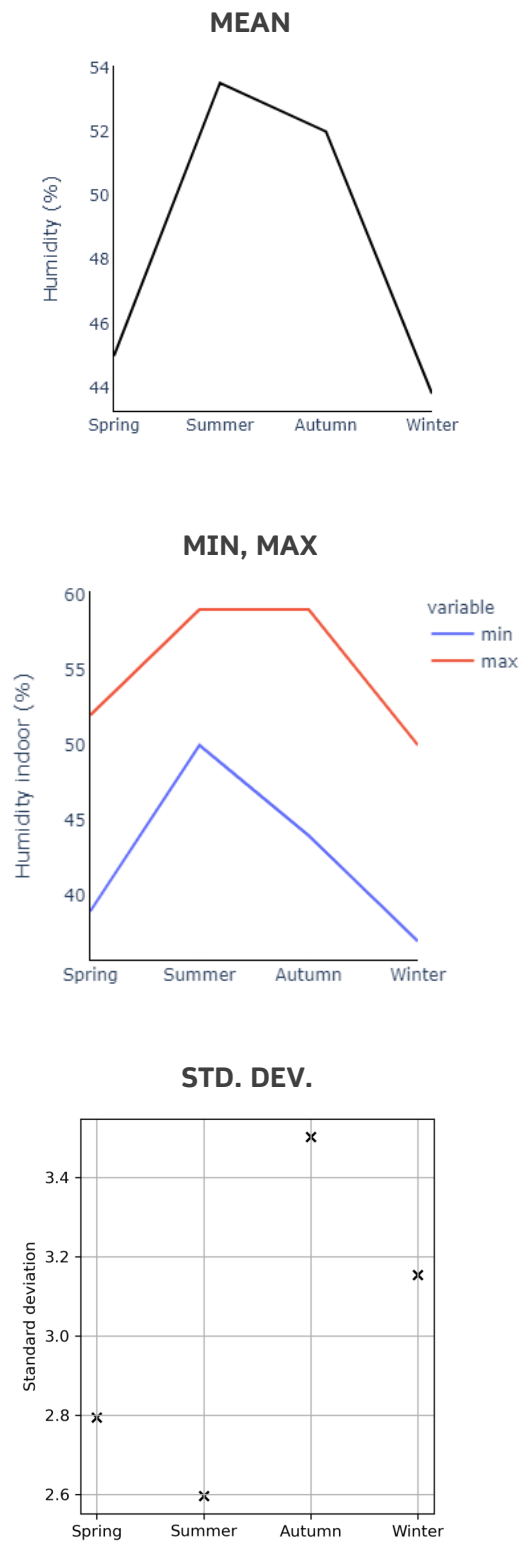


STD. DEV.



The negative correlation between precipitation and barometer values is shown in their mean plots. The precipitation is concentrated in Summer and Autumn where the barometer values are low.

HUMIDITY INDOOR



The seasonal humidity values also show a positive correlation with the temperature plots. The humidity is high in Summer and Autumn when the temperature indoor and outside are also high.

Mackinlay's ranking of visual properties: as the data given can be compared quantitatively, the data are plotted using the Mackinlay's ranking of visual properties in quantitative variables. In these infographics, three best types for representing quantitative variables: length (bar plot), position (scatter plot) and angle/slope (line plot) are used to enhance a visual comparison of the data.

Line plots are used for barometer values instead of a bar plot as the change in barometer values are less significant compared to other variables and angle/slope showed the change more effectively.

Scatter plots are used to represent the standard deviation values as line and bar plots are already used by other variables and it is not recommended to use the same plot type for different types of variables.

Justification of effective colour usage: many different colours are used to draw the attention of a reader. The combinations of visual mappings are used, for example, length and color hue are used for a comparison of monthly and seasonal temperature changes. A combination of different colours, red and blue, is used for min and max plots for a reader to quickly sort out two different categories. Further, a Combination length and color saturation are used for precipitation bar plots.

Justification of removing chart junk: The default graph borders and background colour for the plots plotted using plotly are removed and simple axes are added to prevent creating any unnecessary chart junk and improve data-ink ratio. The grid lines are added where they are needed for a quick comparison in the scatter plots. White spaces are created around the plots and text boxes for viewers to assimilate the contents.