RAF Plant Analytics

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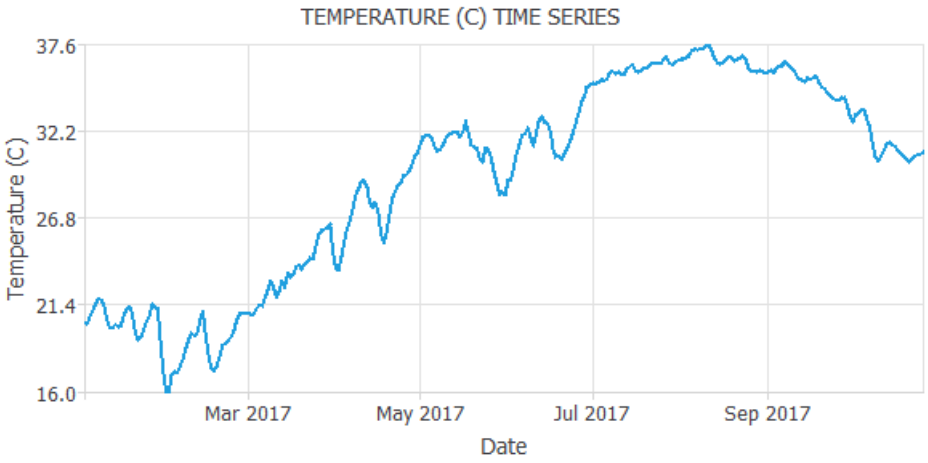
1. Summary

From 02/01/2017 to 26/10/2017	299 days	3 variables

2. Temperature

Temperature time series



The temperature has a stationary trend.

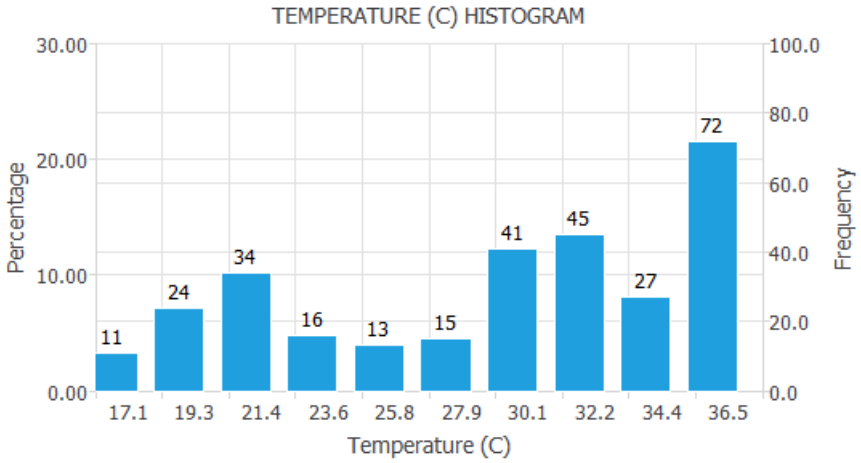
Note that a whole year of data is not available for this plant.

Temperature statistics

Minimum	16.03
Maximum	37.66
Mean	29.38
Standard deviation	6.27

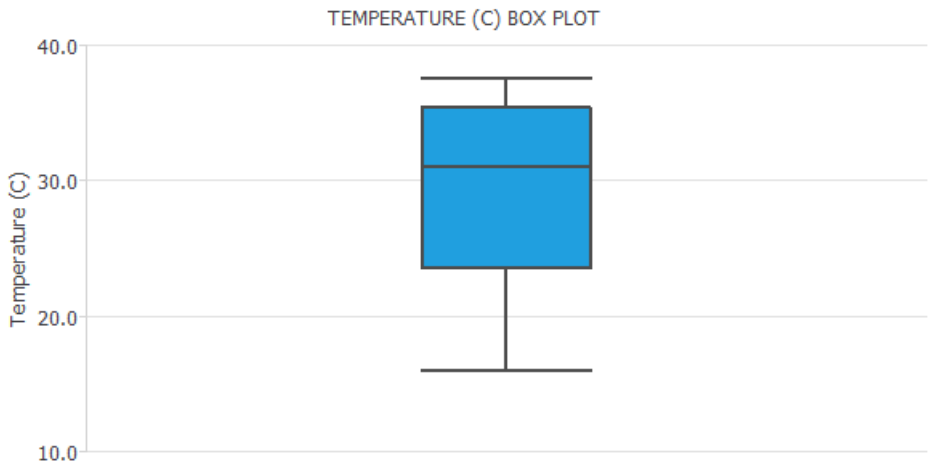
The range of water temperature is about 20 C.

Temperature histogram



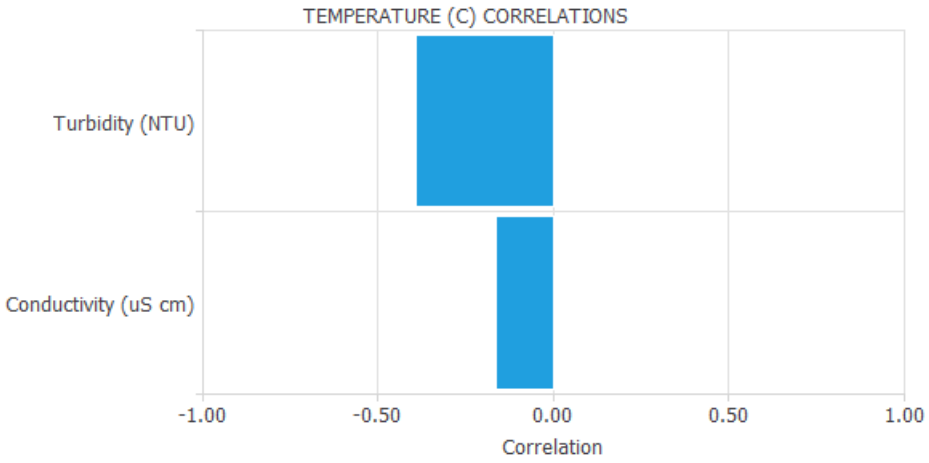
Most temperature values are high (there is more summer than winter data).

Temperature box plot



There are not extreme values of temperature.

Temperature correlations

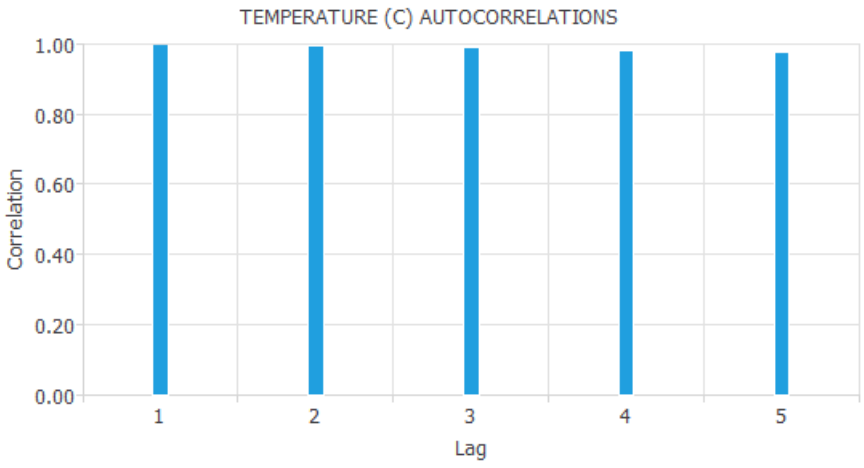


The temperature is more correlated with the turbidity than with the conductivity.

The more temperature the more conductivity, but the correlation here is negative.

This might indicate some problems in the data or some strange effect in the entry point of the plant.

Temperature autocorrelations



The correlation of the temperature with its passed values is very high.

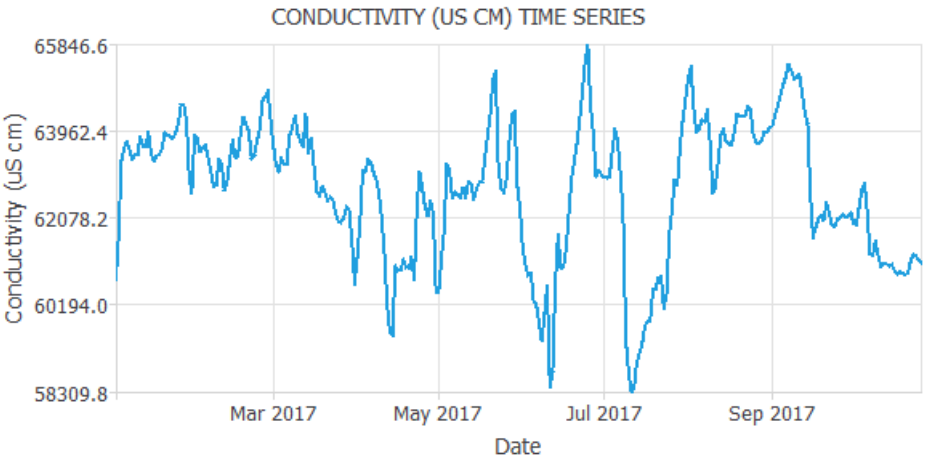
Temperature cross-correlations

Rank	Variable	Correlation
1	Temperature lag 1	0.99
2	Temperature lag 2	0.99
3	Temperature lag 3	0.98
4	Turbidity lag 3	-0.41
5	Turbidity lag 2	-0.40
6	Turbidity lag 1	-0.40
7	Conductivity lag 1	-0.17
8	Conductivity lag 2	-0.16
9	Conductivity lag 3	-0.16

The more important lags for this variable are the temperature, the turbidity and the conductivity, respectively.

3. Conductivity

Conductivity time series



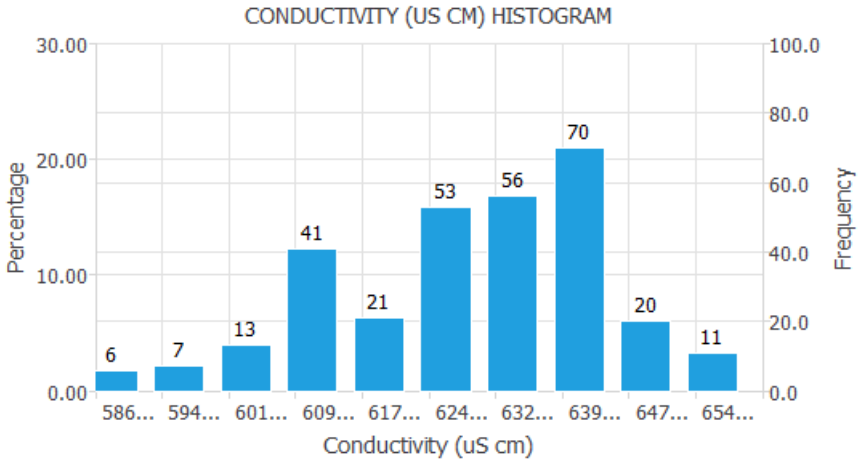
The conductivity has high oscillations, specially in spring and summer.

Conductivity statistics

Minimum	58309
Maximum	65846
Mean	62706
Standard deviation	1507

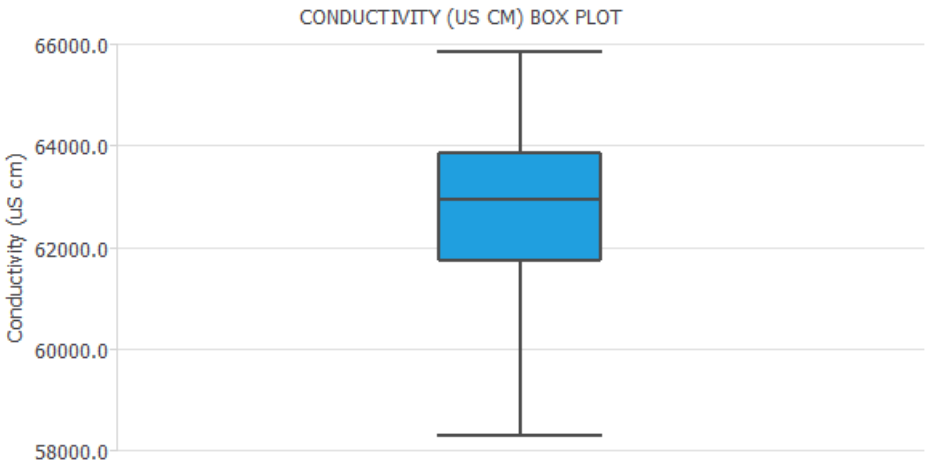
The range of conductivity is 3000 µS/cm.

Conductivity histogram



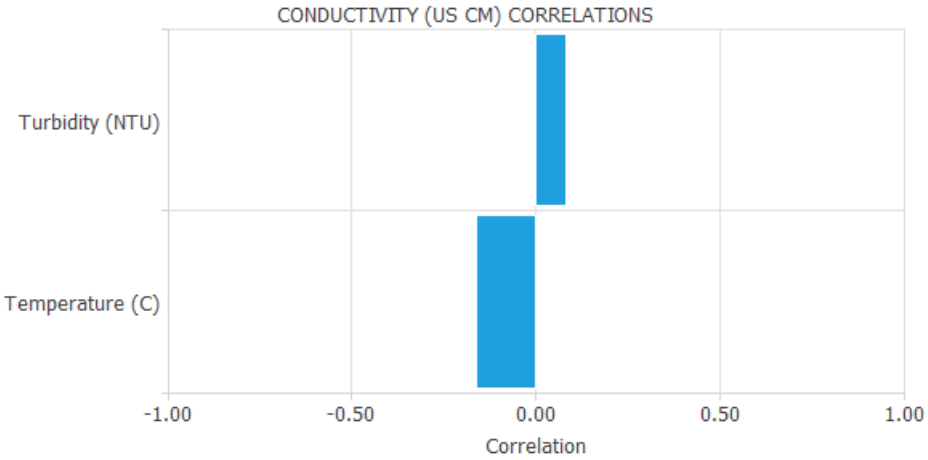
Most conductivity values are around the 63900 µS/cm region.

Conductivity box plot



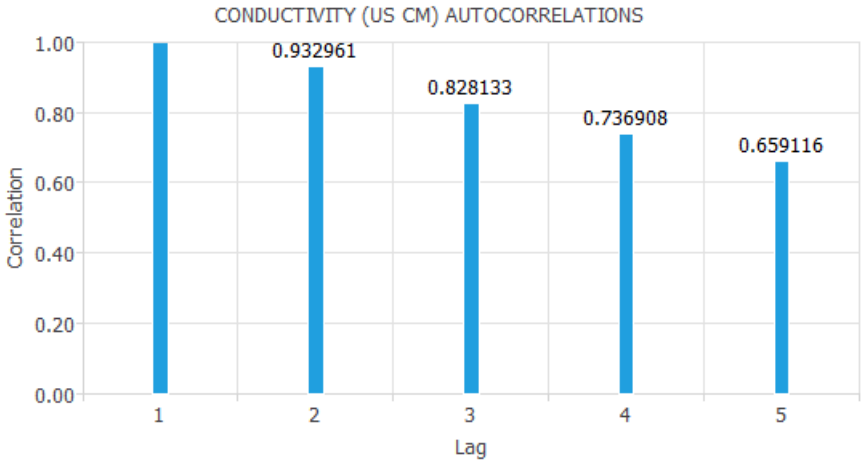
The conductivity box plot does not show extreme values.

Conductivity correlations



The correlations of the conductivity with the temperature and the turbidity are low.

Conductivity autocorrelations



The current conductivity is very highly correlated wit its past values.

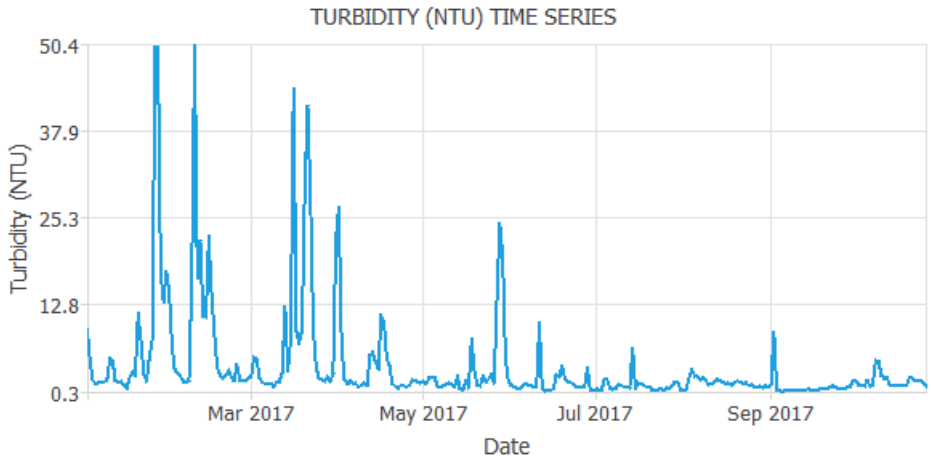
Conductivity cross-correlations

Rank	Variable	Correlation
1	Conductivity lag 1	0.93
2	Conductivity lag 2	0.83
3	Conductivity lag 3	0.73
4	Temperature lag 1	-0.17
5	Temperature lag 2	-0.17
6	Temperature lag 3	-0.17
7	Turbidity lag 1	0.07
8	Turbidity lag 2	0.06
9	Turbidity lag 3	0.04
10		

The best predictors for the conductivity are the last 3 values of the conductivity.

4. Turbidity

Turbidity time series



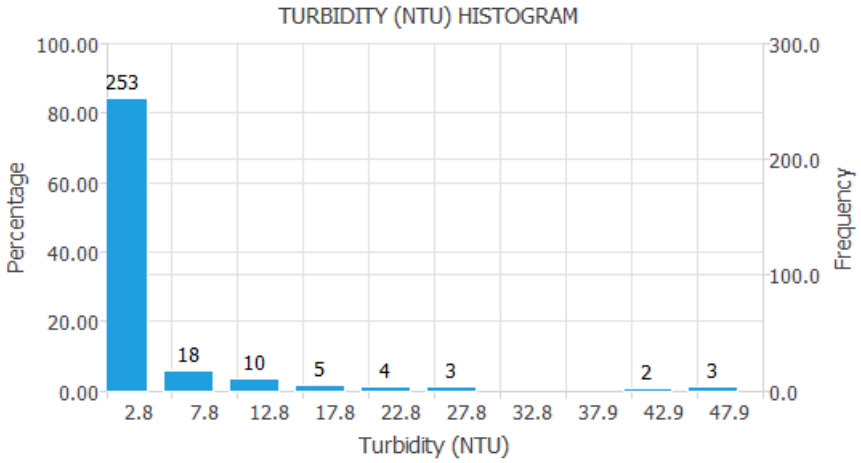
The plant has frequent peaks of turbidity.

Turbidity statistics

Minimum	0.31
Maximum	50.36
Mean	4.00
Standard deviation	7.38

The maximum turbidity value is very high.

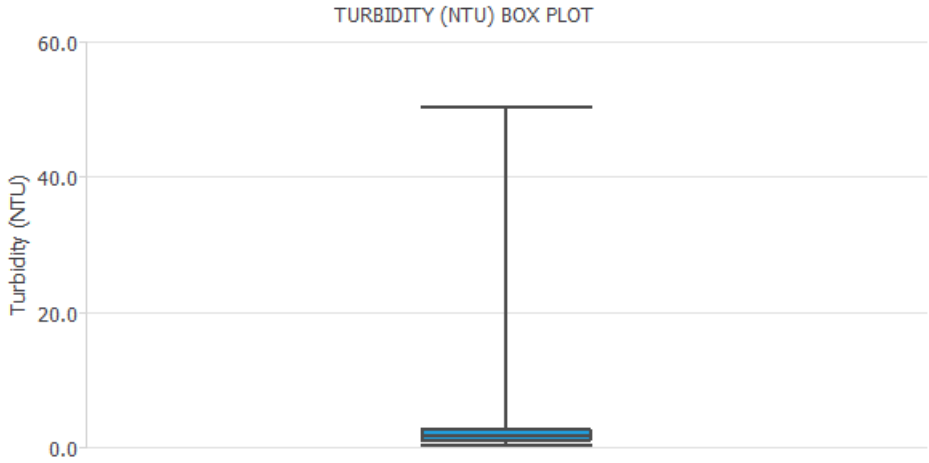
Turbidity histogram



Most turbidity values are low, but there are some ones which are very high.

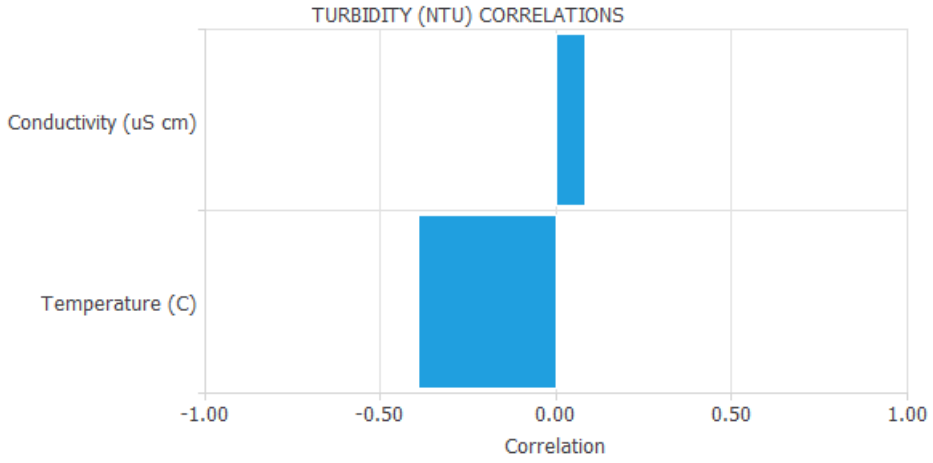
That scenarios might be problematic for the plant.

Turbidity box plot



The box plot shows a very big upper whisker. That region might be dangerous for the plant.

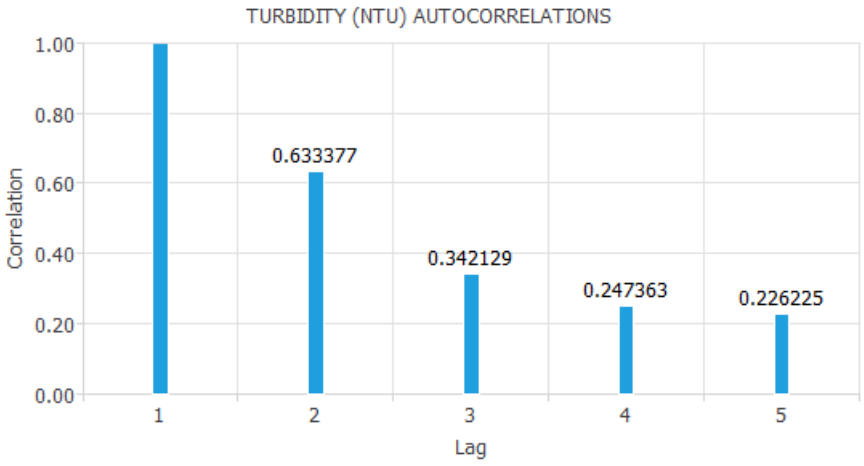
Turbidity correlations



The turbidity is more correlated with the temperature than with the conductivity.

When the temperature decreases the turbidity increases. This might be due to winter and spring storms.

Turbidity autocorrelations



The current turbidity is has a medium correlation with its past values.

Turbidity cross-correlations

Rank	Variable	Correlation
1	Turbidity lag 1	0.63
2	Temperature lag 1	-0.37
3	Temperature lag 2	-0.36
4	Temperature lag 3	-0.36
5	Turbidity lag 2	0.34
6	Turbidity lag 3	0.24
7	Conductivity lag 3	0.08
8	Conductivity lag 1	0.08
9	Conductivity lag 2	0.07
10		

The best predictors for the turbidity are the last values of the turbidity and the temperature.