Capgemini test: forecasting water levels

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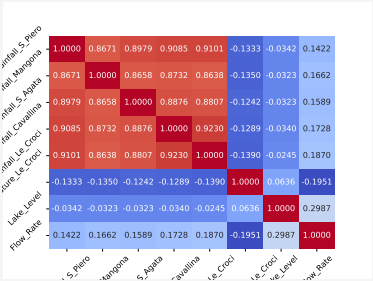
Data set

- Chosen *Lake_Bilancino*
- Two target variables:
  - Lake level
  - Flow rate
- Most variables missing before 01/01/2004
  $\Rightarrow$ removed since $\sim 9\%$ of the total
- Missing data not replaced[a]

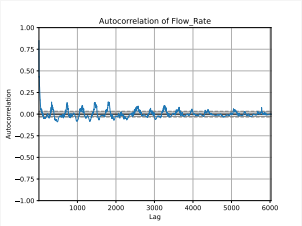


Covariance matrix

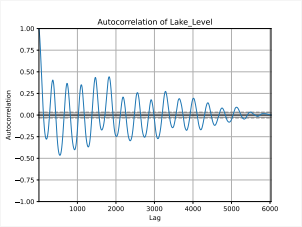
[a] Applied an interpolation only when computing the autocorrelation.

Forecasting strategy

1. Simple AutoRegressive (AR) model
2. More complex AutoRegressive Integrated Moving Average (ARIMA) model
3. Multivariate analysis (not implemented)



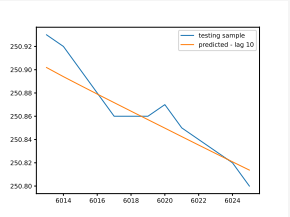
Flow rate - autocorrelation



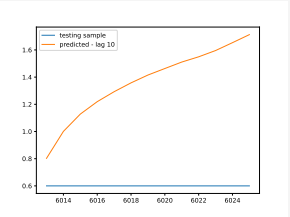
Lake level - autocorrelation

Predictions - 13 samples

AutoRegressive model

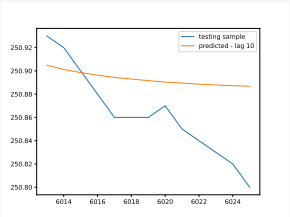


Lake level

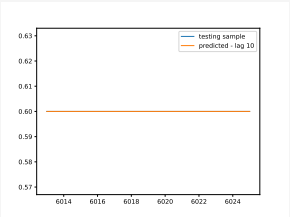


Flow rate

ARIMA model



Lake level



Flow rate

Conclusions