UNIVERSITY OF BOLOGNA

Climate change adaptation

Exercise – Trend analysis for a time series of the daily river flows

At the river cross section of a river mean daily river flows were observed thus obtaining 20000 consecutive values. Data, expressed in cubic meters per second, are reported in the text file "synthetic-river-flow.txt".

The student is kindly requested to:

1) Estimate the linear trend in the time series by minimizing the sum of the squared interpolation errors.
2) By assuming that the errors are normally distributed and independent, compute the standard deviation of the interpolation error.
3) Plot the trend line along the time series.