Assignment-5

Group 22

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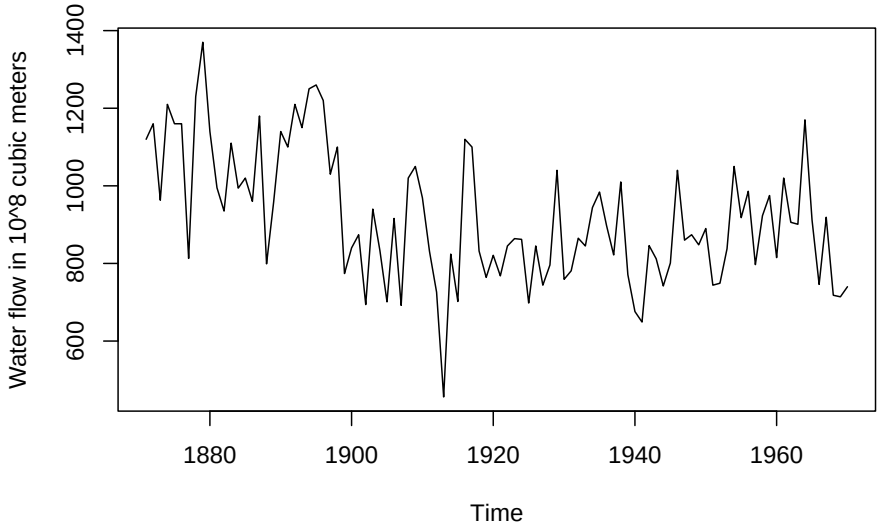
2023-03-31

Graph 1: River Nile annual flow in 10^8 cubic meters (1871−1970)



Let us consider the following random walk plus noise model to be applied to the Nile data:

$$\begin{aligned} Y_t &= \theta_t + v_t \qquad v_t \overset{i.i.d.}{\sim} N(0, V) \\ \theta_t &= \theta_{t-1} + w_t \qquad v_t \overset{i.i.d.}{\sim} N(0, W) \end{aligned}$$

We will set V = 15100 and W = 1470 and the initial distribution $\theta_0 \sim N(1000, 1000)$ for our model Plotting the filtered estimates we get