20236 Time Series Analysis: Final Project

Federico Bonfio (3187867)
Jonathan Martelli (3074606)
Stefano Pacifico (3185497)
Matteo Ticli (3077833)

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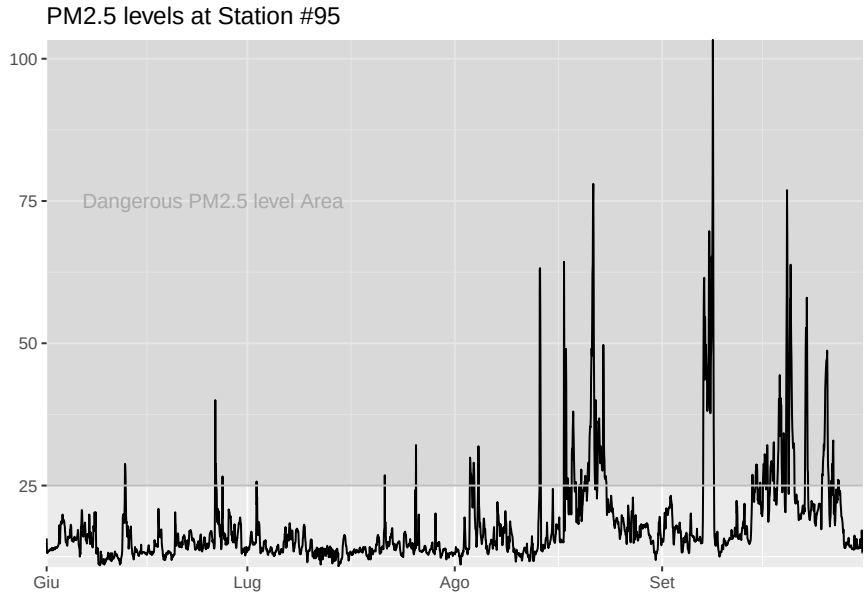
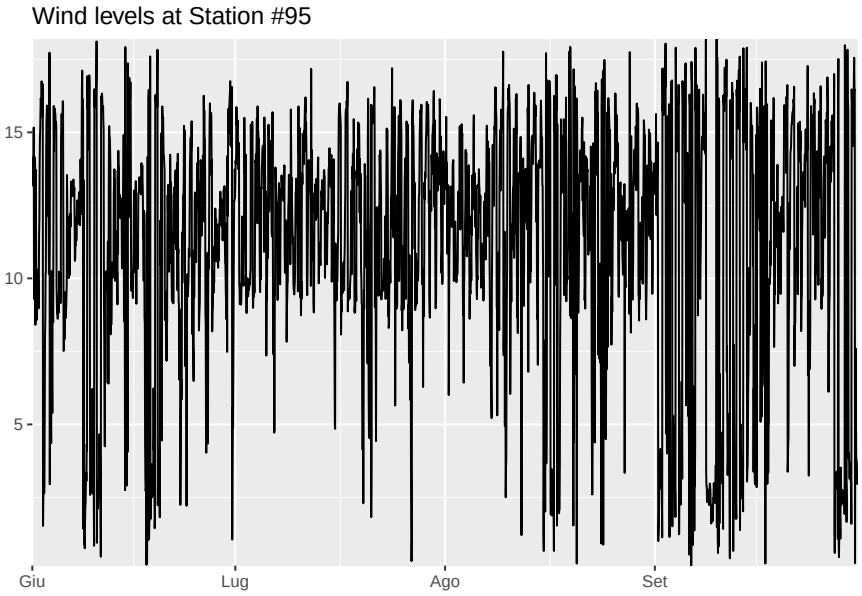
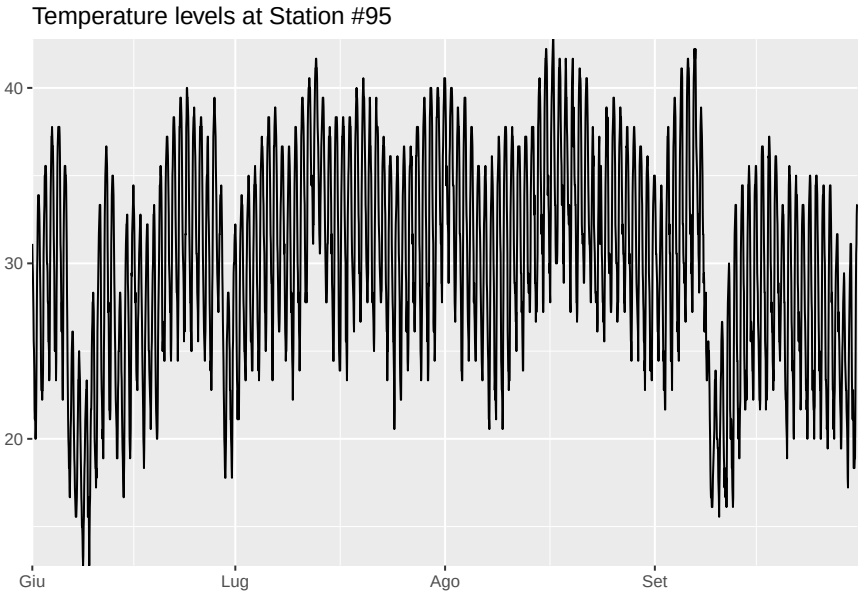
Analysis on station 95

We are going to plot the observations for the $PM_{2.5}$ in order to grasp a sense of what the data look like, being this variable the main one for our analysis.



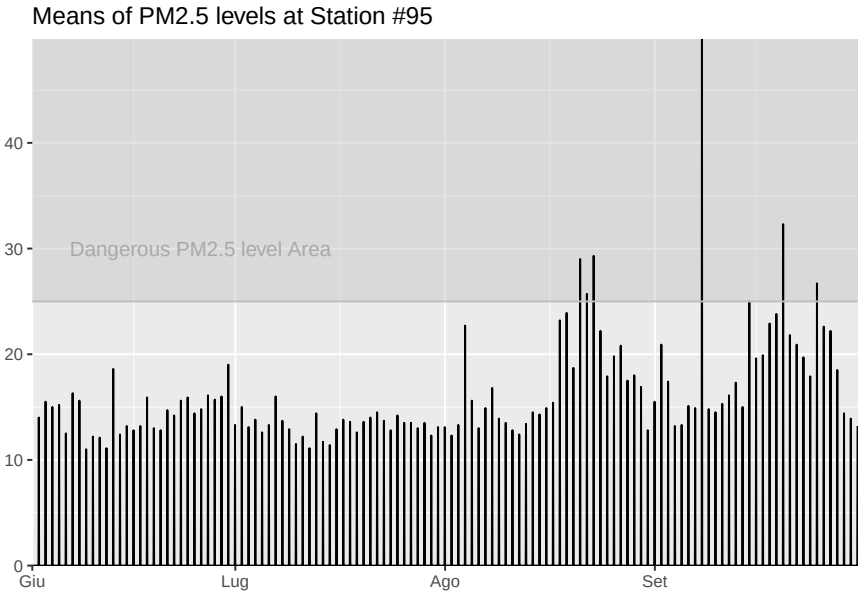
The plot shows the $PM_{2.5}$ levels in the time-frame considered. According to national authorities, the maximum level of $PM_{2.5}$ is suggested to be below 25 micrograms per cubic meter on a daily average rolling basis. We can clearly notice that the level of particle matter increases in the second part of August and in September as well: this could be associated to the wildfire season that devastated the forests of California in late summer 2020.





In the plot above we can observe the data relative to the wind observations at the station 95,as well as the data relative to the temperature. We can notice that both graphs resemble a white noise, meaning that there is no correlation between subsequent observations.

Moreover, since the suggested limit of $PM_{2.5}$ is set to be, on daily average at 25 micrograms per cubic meter, we should take into account the daily average of the $PM_{2.5}$ levels.



The plot above describes the daily means for $PM_{2.5}$ observations, as we can see, there are much less observations that are above the critical level suggested by the national authorities. We actually see that there are only 7 days out of four months that are above the threshold.