

# ***Interactive comment on “Effects of the prewhitening method, the time granularity and the time segmentation on the Mann-Kendall trend detection and the associated Sen’s slope” by Martine Collaud Coen et al.***

## **Anonymous Referee #1**

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This manuscript is well written and is an important contribution for more comprehensive trend analysis of atmospheric composition data. The work is robust with very good analysis and discussions of the different effects on the trend results using various prewhitening methods in addition to MK without prewhitening. It is very well appreciated the clear guidelines for choosing methods and approaches for assessing long term trends.

I will recommend the paper to be published as it is. I have only some small comments/questions which you may consider:

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Line 125. why is negative autocorrelation rare in atmospheric processes? Maybe explain a bit more the reasons and differences between negative and positive autocorrelation and/or give a reference.

Line 272. Why is aerosol number concentration behaving different than the other components regarding the effect of granularity, i.e. the ss remain until the one-year aggregation?

Fig8 and paragraph 429-436. Here you compare the difference in granularity of monthly and seasonal data. Why use different data (scattering contra absorption)? To illustrate the difference in granularity it would have been more logic to use same dataset?

Fig10 and paragraph 493-509. Not sure if I understand how the data selection has been done. Do all the periods contain the whole time serie? I.e 10years contain 3x10years data set if the time serie is totally 30 years. I assume you somehow taken into account that the actual trend for the whole period will effect the results. Not homogeneous trend over a 30 year period. But why is it then so few data points for the 4 year trend, I,e N=360 and 120 for monthly and seasonal trends?

The new algorithm applied. Is that made available? The scheme sketched in Figure 1 is not very easy to use for others to apply the method. It is recommended that the authors upload the scripts for others to use and adopt if possible.

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