

## ***Interactive comment on “Combining low-cost, surface-based aerosol monitors with size-resolved satellite data for air quality applications” by Priyanka deSouza et al.***

### **Anonymous Referee #3**

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#### General comments

It is not clear the general scope of the manuscript. It seems that an older draft has been readapted for new purposes. From the title I would expect that the performances of new low-cost sensors in monitoring aerosols are assessed and supported by satellite measurements. Rather, the satellite observations are needed to improve low-cost sensor performances and extend its measurement range. This is pretty unusual. Usually it is the other way round. Satellite observations are at much coarser resolution.

The authors are however aware that considering the monthly effective fraction doesn't make so much sense. In-situ measurements can catch a variability that is order of

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magnitude higher. Moreover, OPC can't detect aerosols with a diameter smaller than 0.38 micrometers. Exhaust and combustion aerosol size is much lower than that value.

In the paper some statements are not state-of-the-art and should be corrected. Technology made progress in the last years and cheaper reliable instruments are available nowadays. This reminds the observations stated in the first comment.

The presented methodology might be interesting, but the same experiment should be repeated where lidar and sun-photometer measurements are available. Why developing a technique in a place where it cannot be properly validated? There is an agreement between MISR-MAIAC and in-situ sensor, but this tells us nothing if the retrievals are accurate I would perform the same analysis at NASA Goddard to prove true those claims.

Specific comments can be found in the attached file.

Please also note the supplement to this comment:

<https://amt.copernicus.org/preprints/amt-2020-136/amt-2020-136-RC3-supplement.pdf>

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