

## ***Interactive comment on “Collocation Mismatch Uncertainties in Satellite Aerosol Retrieval Validation” by Timo H. Virtanen et al.***

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This is an interesting study that should have consequences for future satellite validation work. The authors conclude that there is an optimal sampling distance of 0.3-0.4 degrees for such validations. That should give some confidence in 1 by 1 degree L3 products. I wonder though why correlations drop off much faster for MODIS data (Fig 9) than for AATSR data (Fig 4)? According to the authors, this drop-off is due to the natural variability in an AOD field (i.e. not related to retrieval errors). Wouldn't you expect MODIS and AATSR data to show similar results?

We recently studied the representativity of observations using high resolution models: <https://www.atmos-chem-phys.net/17/9761/2017/> . One interesting aspect is that

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modelled fields show high correlation among neighbouring points while your satellite-AERONET comparison shows very low correlation amongst neighbouring points (i.e. short sampling distance). As the authors themselves conclude this points to large random errors in the satellite product that average out when using larger sampling distances.

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