

Atmos. Chem. Phys. Discuss., community comment CC2  
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## Comment on acp-2020-1266

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Community comment on "Opinion: Papers that shaped tropospheric chemistry" by Paul S. Monks et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-1266-CC2>, 2021

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Page 35, Section 2.17 - "A step-change in this area was made with the paper "Estimating 929 ground-level PM<sub>2.5</sub> using aerosol optical depth determined from satellite remote sensing" by van Donkelaar et al. (2006) which was the first description of the derivation of surface PM<sub>2.5</sub> from satellite AOD, and which has been extensively used to estimate the global impact of particulate matter (both PM<sub>2.5</sub> and PM<sub>10</sub>) on health"

It appears that the above assessment is not correct.

The first paper showing quantitative PM<sub>2.5</sub> estimation using satellite AOD was published in 2003 as 'Wang, J., and S. A. Christopher, Intercomparison between satellite-derived aerosol optical thickness and PM<sub>2.5</sub> mass: Implications for air quality studies, *Geophys. Res. Lett.*, 30(21), 2095, doi:10.1029/2003GL018174, 2003'

introduced a simple statistical method to estimate PM<sub>2.5</sub> using satellite data, later on, the following paper by Liu et al., (2004)

"Liu, Y., Park, R. J., Jacob, D. J., Li, Q., Kilaru, V., and Sarnat, J. A. (2004), Mapping annual mean ground-level PM<sub>2.5</sub> concentrations using Multiangle Imaging Spectroradiometer aerosol optical thickness over the contiguous United States, *J. Geophys. Res.*, 109, D22206, doi:."

first introduced the model scaling approach, which was later adopted by van Donkelaar et al. (2006) and resulted in global estimates of PM<sub>2.5</sub> at annual mean levels.

Over the last two decades, there have been several hundreds of papers published in assessing the satellite-derived AODs to estimate surface particulate matter air quality.