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# Links between particulate matter (PM10, PM2.5) concentrations and optical remote sensing data: Application to Europe and Canada air pollution monitoring sites

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A study of relationships between two methods of airborne particulate matter (PM) or atmospheric aerosols pollution monitoring is proposed. The first method generally used by air quality monitoring networks is the tapered element oscillating microbalance (TEOM) PM measurement method. The second is the optical remote sensing of atmospheric aerosols. The latter is based on the evaluation of atmospheric visibility (aerosol optical depth) and other optical parameters through natural light extinction and scattering observations.

The data considered were collected in the period 1996-2002 from French and Belgian air quality monitoring sites, Canadian National Air Pollution Survey (NAPS) monitoring site of Egbert, and the world-wide Sun radiometer network AERONET (http://aeronet.gsfc.nasa.gov/). The PM observations include particles smaller than 2.5 $\mu$m (PM10) and those smaller than 10 $\mu$m.

Comparison of considered methods outputs were carried out and analyzed. The influences of aerosol type as well as meteorological parameters are discussed. The potential

of the world-wide long term optical remote sensing data to complement emergent air quality observations in terms of particle matter concentration regarding observational data assimilation in models is outlined.