Characterization of aerosol pollution over East Asia with PARASOL space-borne observations

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In order to explore aerosol optical characteristics and evaluate satellite aerosol retrievals over East Asia, we compare the fine mode Aerosol Optical Depth (AOD) with a cut-off radius of 0.30 μm from 14 AERONET sites located in this large area with PARASOL and MODIS aerosol observations. These analyses show that PARASOL AOD is quite consistent with the AERONET AOD of fine fraction, so that this sensor is well suited for remote sensing of fine mode particles. Based on the empirical relationship established between daily fine particle mass (PM2.5) concentration measured at surface and column AOD derived from POLDER-2 satellite sensor over France [Kacenelenbogen et al., 2006], we derive PM2.5 concentration from the whole data set of PARASOL AOD (2005-2008) over East Asia and then estimate associated air quality categories, as defined by the U.S. Environmental Protection Agency (EPA). In addition, this approach allows an analysis of the spatial and temporal variability of air pollution events over this large region, with special interest for China. However, it should be noted that the applicability of the relationship derived by Kacenelenbogen et al. [2006] requires further validation over different parts of East Asia with available ground-based PM2.5 measurements.