



AOD trends over megacities based on space monitoring using MODIS and MISR

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Space monitoring of aerosol optical depth (AOD) trends over megacities can serve as a potential space indicator of global anthropogenic air-pollution. Three space aerosol sensors, MODIS Terra, MODIS Aqua and MISR, were used in order to study recent decadal trends of AOD over megacities around the world. Space monitoring of AOD trends has the advantage of global coverage and applies the same approach to detecting AOD trends over different sites. In spite of instrumental and time differences among the three sensors investigated, their global pictures of AOD trends over the 189 largest cities in the world are quite similar. The increasing AOD trends over the largest cities in the Indian subcontinent, the Middle East, and North China can be clearly seen. By contrast, megacities in Europe, the north-east of US, and South-East Asia show mainly declining AOD trends. In the cases where all three sensors show similar AOD trends, the results can be considered as reliable. This is supported by the observed trends in surface solar radiation, obtained by using network pyranometer measurements in North and South China, India, and Europe. In the cases where the three sensors show differing AOD trends (e.g. South America), the results can not be considered as reliable.

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