Retrieval of Aerosol Optical Depth over Mainland China from 1980 to 2000

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The Advanced Very High Resolution Radiometer (AVHRR) onboard NOAA series satellites has been used to retrieve aerosol properties over land over past two decades. One effort is to calculate reflectance at 630nm by building relationship between reflectance at 630nm and the reflective part at 375nm assuming that aerosol particles are with non-scattering effect at 375nm. Using this approach, Xue et al., (2017) retrieved aerosol optical depth (AOD) by AVHRR observations from 1982 to 2015 over the North China and the Central Europe. The corresponding validation works have proved that this AVHRR AOD dataset correlates MODIS, AATSR, AERONET and solar radiance derived AOD well in time series i.e. it could be used to build long-term aerosol data records. However, the spatial coverage limits its application on other fields. It is expected to expand to larger area including whole China region and global scale. In this study, we focus on aerosol retrieval over mainland China from 1980 to 2000, which is expected to build continuous long-term aerosol records covering whole time series from 1980 with MODIS SRAP AOD datasets which begins at 2000 and works operationally to the present. The comparison with AVHRR Deep-Blue aerosol dataset and solar-derived AOD indicates that AVHRR AOD distributes around 1-1 identified line for AOD lower than 0.4, collocated points are more scattered with AOD increase.