AERONET – the Ground-based Aerosol Satellite

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AERONET is a global ground-based sun photometer network for characterizing aerosol optical, microphysical and radiative properties at approximately 600 sites supporting satellite aerosol retrieval assessments and global aerosol model validation research. Aerosol optical depth based on direct spectral solar observations in the UV to near-infrared are obtained nominally at 5 minute intervals during daylight hours and from waxing to waning gibbous of the lunar cycle. Sky radiance measurements allows inversion of the radiative transfer equation to retrieve the column integrated absorption and particle size distribution. Twenty-six years of measurement has provided a remarkably consistent, highly accurate and comparable record of aerosol trends over the planet. Likewise with improved processing and automatic quality assurance algorithms near real-time assessment of aerosol properties is possible. This talk will trace the development of the AERONET project from the era of atmospheric correction to remotes sensing of aerosols influence on the climate system, air quality and the role of the solar spectrum in creating this database.