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Global Aerosol Maps

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Aerosol particles introduce one of the largest uncertainties in climate modelling. These uncertainties already start with deficiencies in the (spatial and temporal) representation of aerosol which is demonstrated by significant model diversity for aerosol amount, size and composition. While advanced aerosol dedicated space sensors during the last decade offer new detail on regional, seasonal and vertical distributions of aerosol, many of these satellite retrieval products suffer from accuracy issues. Based on quality data statistics from ground based remote sensing (AERONET), strengths of individual satellite data-sets are identified and combined into (trusted) global monthly aerosol maps. These maps can serve as general aerosol climatology. Applications include the identification of major deficiencies (for the representation of aerosol) in modelling or the use as input either to (global) modelling, where the computational expensive of complex aerosol processes is prohibitive or to radiative transfer simulation to determine the (direct) aerosol impact on the energy balance.