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Global Maps of Aerosol Single Scattering Albedo Using Combined CERES-MODIS Retrievals

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Aerosol absorption is an important parameter for assessing the climatic impact of aerosols. In this study, we present a multi-sensor algorithm to generate global maps of single scattering albedo (SSA) 550 nm using the concept of 'critical optical depth.' Global maps of SSA were generated following this approach using spatially and temporally collocated data from Clouds and the Earth's Radiant Energy System (CERES) and Moderate Resolution Imaging Spectroradiometer (MODIS) sensors on board Terra and Aqua satellites. Limited comparisons against airborne observations over India and surrounding oceans were generally in agreement within ± 0.03 . Global mean SSA estimated over land and ocean is 0.93 and 0.97, respectively. Seasonal and spatial distribution of SSA over various regions are also presented. The global maps of SSA, thus derived with improved accuracy, provide important input to climate models for assessing the climatic impact of aerosols on regional and global scales.