

Abstract

Gridded satellite products provide (computationally less-intense) opportunities to compare and contrast parameters from different versions/sensors. In the present study, Level-3 (L3) Cloud Aerosol Lidar with Orthogonal Polarization (CALIOP) aerosol products from the most recent release (version 4, V4) are compared with its earlier version (version 3, V3) products. The various improvements in V4 are detailed and the resultant changes in aerosol optical depth (AOD) and aerosol vertical extinction profiles for various aerosol species (total aerosol, dust, polluted dust, smoke) over various regions are discussed. Broadly, V4 global AOD is higher than the V3 AOD (except for polluted dust). Significant differences in V4 and V3 AODs are observed over Africa, East Asia, Atlantic Ocean, Arabian Sea, Bay of Bengal and South America. Seasonal-wise global mean percentage difference in V4 and V3 total-AODs (with respect to V4 AODs) ranged between 9% and 15%. The change in the spatial distribution of polluted dust over oceanic regions is one of the significant differences between V4 and V3. V4 total-AODs are closer to Moderate Resolution Imaging Spectroradiometer (MODIS) AODs than V3 total-AODs are. The shape of the aerosol extinction profiles also differed between V4 and V3. The altitudinal differences in the V4 and V3 extinction values varied spatio-temporally.