Column Optical Depths Derived from CALIOP Ocean Surface Returns

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A major strength of Cloud-Aerosol Lidar with Orthogonal Polarization (CALIOP) is its ability to detect optically thin aerosols in the atmosphere. In spite of this strength, there is a signal to noise ratio limit that renders a small fraction of aerosols undetectable by the lidar. The current Lidar Level 2 Version 4.2 algorithm does not retrieve optical properties in regions of the atmosphere where the signal is below this detection threshold. The optical properties associated with these missing aerosols have been shown to be important in atmospheric modeling correction studies and when assessing the direct radiative effect of aerosols. Optical properties for these undetectable regions must be quantified to fully characterize the radiative budget of our atmosphere. We present an overview of work being done to account for these missing aerosols and a method for deriving full column optical depths using lidar returns of the ocean surface. We will also show preliminary results compared to the Moderate Resolution Imaging Spectroradiometer (MODIS) and a similar method, Synergized Optical Depth of Aerosols (SODA).