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Obtaining Accurate Aerosol Extinction and Backscatter Coefficients Using Ceilometers SARAH BOWERS, University of Maryland, Baltimore County, RUBEN DELGADO, University of Maryland - Baltimore County — How different types of aerosols in our atmosphere explicitly affect quality and visibility on any given day is not quite clear. The aerosol extinction coefficient - α - and backscatter coefficient - β - can indicate these characteristics. Ceilometers can measure the backscatter power due to aerosols, but when diffuse sunlight reaches the ceilometer's sensors, it can alter the retrieval signal. Using this data leads to less accurate calculations. To obtain accurate calculations, a smoothing function was created to alleviate background noise. The results of the function were compared to Savitzky-Golay filtering of the backscatter power; the respective method's gradients showed the generated function produced more distinct atmospheric layers. With this new smoothing method, it is hypothesized that more accurate values for β and α can be evaluated with the LIDAR Equation. The proposed process uses ceilometer data to calculate β and the LIDAR ratio, which together can yield α . The accuracy of the calculated α , and thus the effectiveness of the smoothing function, can be tested by comparing the Aerosol Optical Depth (AOD), derived from α , to sun photometer data AOD measurements.

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