

# Analyzing the Polarization of Skylight in Relation to Air Quality

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## Abstract

Common methods for measuring aerosol properties are difficult due to the necessity of obtaining air samples. Aerosol properties have been shown to be closely related to the degree of polarization of skylight, and air quality can be partially attributed to aerosols. Therefore, we hypothesize that skylight polarization is related to the air quality index. Using stepper motors and photoresistors, we built a skylight polarimeter which collects the degree of polarization one point in the sky at a time. We collected skylight polarization data across various scattering angles on multiple days with different air qualities. We compared the curve of the degree of polarization versus the scattering angle on each day to the air quality index using a fit with a scale factor. Our results show the potential of skylight polarization as a measure of air quality.