



An Observational Study of the Relationship between Cloud, Aerosol and Meteorology in Broken Low-Level Cloud Conditions

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By Norman G. Loeb

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 32 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. Global satellite analyses showing strong correlations between aerosol optical depth and 3 cloud cover have stirred much debate recently. While it is tempting to interpret the results as evidence of aerosol enhancement of cloud cover, other factors such as the influence of meteorology on both the aerosol and cloud distributions can also play a role, as both aerosols and clouds depend upon local meteorology. This study uses satellite observations to examine aerosol-cloud relationships for broken low-level cloud regions off the coast of Africa. The analysis approach minimizes the influence of large-scale meteorology by restricting the spatial and temporal domains in which the aerosol and cloud properties are compared. While distributions of several meteorological variables within 5deg 5deg latitude-longitude regions are nearly identical under low and high aerosol optical depth, the corresponding distributions of single-layer low cloud properties and top-of-atmosphere radiative fluxes differ markedly, consistent with earlier studies showing increased cloud cover with aerosol optical depth. Furthermore, fine-mode fraction and Angstrom Exponent are also larger in conditions of higher aerosol optical depth, even though no evidence of systematic latitudinal or longitudinal gradients...

### Reviews

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