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Comparison of UV-B Broadband Brewer Measurements with Irradiances from Surface-Based and Satellite-Based Models

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Author(s)

Jacqueline Binyamin, John Davies, Bruce McArthur

ABSTRACT

UV-B irradiance can be estimated from surface meteorological data or from satellite measurements. This paper compares irradiance estimates from the Davies surface-based radiation model and the Canada Centre for Remote Sensing (CCRS) satellite model with Brewer spectrophotometer measurements for all sky conditions at six Canadian stations (Edmonton, Regina, Winnipeg, Montreal, Halifax and Toronto). The Davies model is applied with both the discrete ordinate radiative transfer (DISORT) and the delta-Eddington algorithms to solve the radiative transfer equation. Both models' estimates are compared with instantaneous Brewer measurements. Both perform similarly with mean bias errors within 6% of the mean measured irradiance for the measurement period and root mean square errors between 25% and 30%.

KEYWORDS

Keywords

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