



Long-term trends in the surface radiation budget from satellite and ground measurements

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Changes in the amount of radiative energy received at the Earth's surface are important drivers of climate change. Several recent studies (e.g., Liepert, 2002; Wild et al., 2005) have focused on trends in the downwelling solar flux as measured at ground-based stations. Although well maintained surface sites provide important detailed surface flux data, the limited number and distribution of such sites makes it difficult to detect global trends using this data. Fortunately there is now over 20 years of global flux data retrievals from satellites available to augment the surface measurement data for climate studies.

This presentation describes trends in surface radiative fluxes during the past two decades as determined from satellite data sets such as the NASA/GEWEX-SRB, IS-CCP, and CERES SRBAVG products. In addition to global trends, regional and zonal variations are examined. The results are related to the relevant surface observations. Particular attention is given to estimating the significance of any detected variations, based on the duration and noise characteristics of the data.