

EFFECTS OF CHANGING SPECTRAL RADIATION DISTRIBUTION ON THE PERFORMANCE OF PHOTODIODE PYRANOMETERS

ABSTRACT

The direct normal spectral responsivity of the LI-COR photodiode pyranometer is examined, using DNI spectral data from a PMOD Spectroradiometer and the generic spectral response of a LI-COR pyranometer. The spectral responsivity is found to vary over the day as more blue light is scattered as the air mass increases. The SMARTS2 model is used to examine the effect on the full spectral response range of the photodiode based pyranometer and to refine the estimated response changes. The use of this information is discussed relative to improving corrections to Rotating Shadowband Irradiometers. Similar methodology can be used to estimate the spectral effect on the performance of solar modules.