

Forecast of UV Index by Means of an Empirical Model in the Republic of Panama

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Forecast of the UV Index can be accomplished by means of radiative transfer models as well as by means of empirical models. In general, radiative transfer models calculations are an important complement to measurements of UV irradiance from broad band meters. However, these models are an adequate forecasting tool, only under clear sky conditions. In the tropics, the main UV irradiance attenuation factor is cloudiness. Due to this fact, empirical models which take into account this factor are a more valuable tool for our latitude. The Laboratory of Atmospheric Physics scientific team at the University of Panama has developed an empirical model which predicts UV Irradiance and Index, at local solar noon. The input parameters for this model are: date, latitude, solar declination, terrestrial orbital eccentricity factor, and total ozone column.

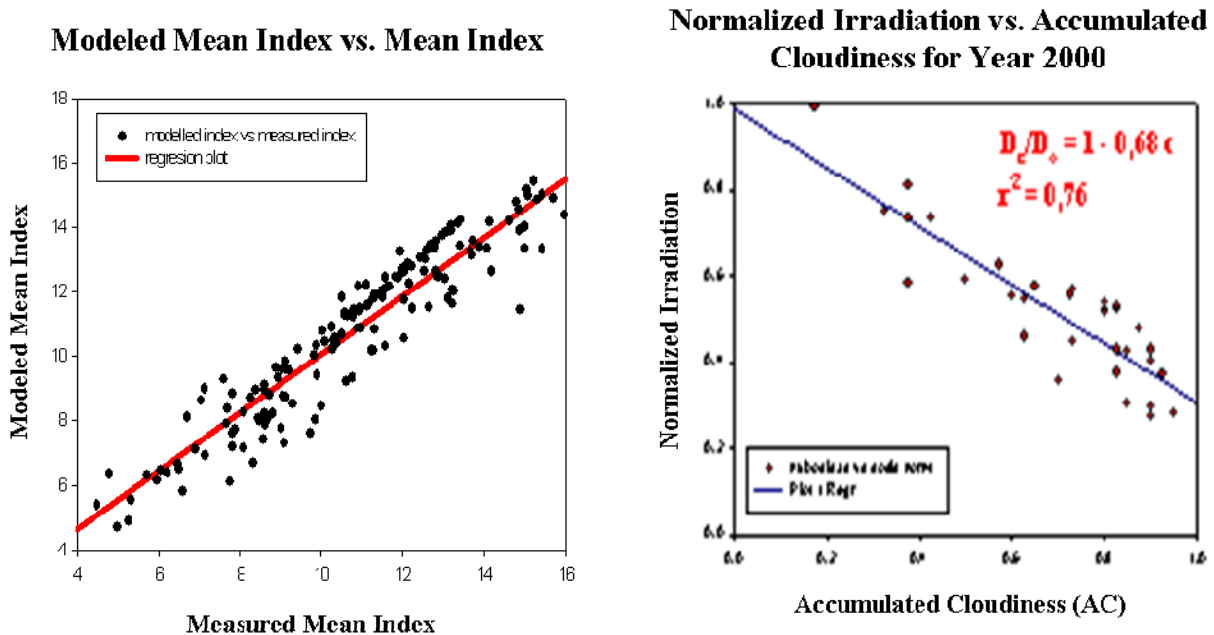


Figure 1. (left) Shows the model Mean UV Index at solar local noon vs the measured Mean UV Index. The correlation coefficient is $r^2 = 0.90$. (right) Shows the behavior of Normalized UV Irradiation or Dose vs Accumulated Cloud Cover Fraction. The correlation coefficient is $r^2 = 0.76$. UV-B radiation is measured in a continuous way, by means of broadband UV-B meters, model 501 UV-Biometers, installed at Panama City, David City and Santiago City.