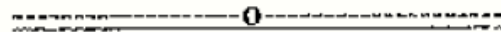


TITLE: Solar Radiation Prediction & Solar Applications
AUTHORS: Paula Marcelle
SUPERVISORS: Mr. R. Clarke



Solar radiation over a long period of time is necessary as a significant input into the design and performance evaluation of solar systems. Solar systems are proving to be good alternate energy systems, particularly for regions like the Caribbean which receive high amounts of solar radiation. There are noticeable gaps in the diurnal global irradiation for Trinidad and Tobago. Previous researchers have generated empirical formulas to estimate solar radiation using various parameters for other tropical areas. Carmichael (2004) used specific humidity and sunshine hours to develop relations to predict solar radiation for Trinidad and Tobago. Carmichael study resulted in two relations for the two seasons in Trinidad and Tobago. These formulas gave good agreement with the measured solar radiation. However, since the diurnal global irradiation for Trinidad and Tobago varies from month to month, monthly empirical models have been developed and are presented here. The climatological data used include daily mean temperature, atmospheric pressure, relative humidity, and the number of sunshine hours which were obtained from the Trinidad and Tobago Meteorological Services. The correlation between the derived and measured insolation was good (>0.85) for all months, and overall proved to be better than the seasonal predictions.