

## Maps of Isolines of Ultraviolet (UV)-B Dose at the Republic of Panama

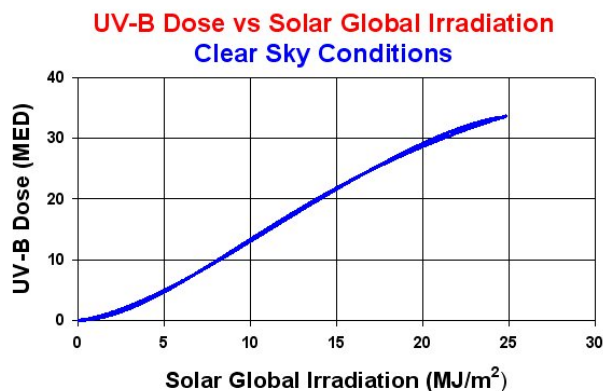
A.P. Graell, S. Guerra, D. Castillo, A. Maturell, H. Samudio and L. Jordan

Laboratory of Atmospheric Physics of the University of Panama, El Cangrejo, Republic of Panama;  
00507523-5328, E-mail: apino@cwpanama.net

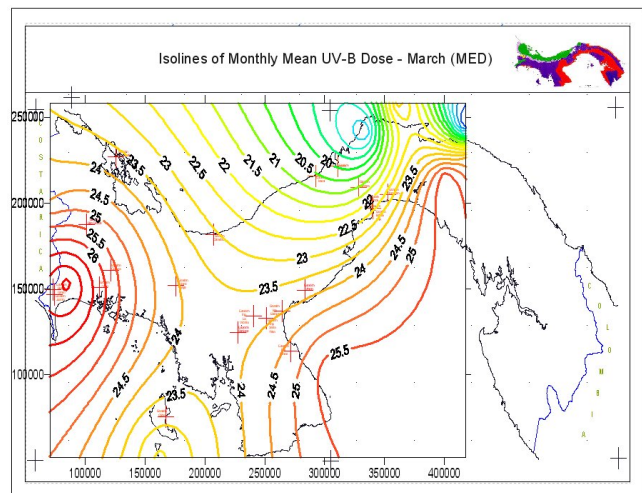
The Laboratory of Atmospheric Physics of the University of Panama has been monitoring UV-B radiation as well as other meteorological variables since 1998. UV-B radiation is measured by means of broadband radiometers, 501 UV-Biometers, installed at the monitoring sites of the radiometric network managed by the University of Panama. Under clear sky conditions, extreme UV Indexes and high UV-B doses have been measured. It has been determined that these conditions are observed during 87% of dry season period. It has been established that, at the Republic of Panama, the incidence of skin cancers (basal, squamous and melanoma) has been increasing during the last decade. Due to this situation, in order to assess the UV-B dose distribution for all the country and for every month, maps of isolines of UV-B dose are extremely important.

As a first step for the construction of the maps of isolines mentioned before, a correlation between UV-B dose and solar global irradiation was established. It was accomplished by means of the data of both parameters measured, simultaneously, at the University of Panama under a day with clear sky conditions. The model used to fit the correlation was a sigmoidal function. Once that correlation was established, it was applied to solar global irradiation data captured by 23 stations managed by the National Hydrometeorological Center as well as 6 stations managed by the Panama Canal Authority. In this way, daily UV-B dose was obtained for all the sites where these stations are located. The data of UV-B dose captured by the radiometers managed by the University of Panama were also included. The maps mentioned before were constructed by means of the Kriging interpolation method.

According to those maps, highest levels of UV-B dose are observed at the Pacific seaboard during the dry season. Lesser levels of UV-B dose are observed at the Caribbean seaboard all over the year. These significant differences between the levels of UV-B dose at both seaboards are extremely linked to cloud cover. A discussion of the results of the UV-B dose isolines maps will be presented.



**Figure 1.** Correlation Between UVB Dose and Isolines of Monthly UV-B Dose - March Global Irradiation.



**Figure 2.** Isolines of Monthly UV-B Dose - March.