

Acclimatological estimate of incident solar energy in Tamaulipas, northeastern Mexico

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An estimation of climatological field of incident solar energy in Tamaulipas State, northeastern Mexico, is presented. Monthly mean evolution of solar energy in 7 automatic meteorology call stations distributed along the State shows that the maximum values generally exceed 500200 Wm^2 during fall-winter (Nov-Feb), and 700200 Wm^2 during spring-summer (May e Aug). An empirical model, which estimates the solar energy as function of other climatic variables (minimum temperature, maximum temperature evaporation, and precipitation) recorded in 165 climatological conventional stations, is used to extend the climatological solar energy estimate in the study area. The mean values of both measured and estimated solar energy are objectively mapped to fill the observation gaps and reduce the noise associated with inhomogeneous statistics and estimation errors. The highest values of solar energy (6.7 kWhm^2 during the summer and 4.0 kWhm^2 during the winter) are observed in the high lands, southwestern part of the State, where the lowest values (5.7 kWhm^2 during the summer and 2.8 kWhm^2