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Evaluating the urban climate at Campina Grande city, Paraíba, Brazil

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Data of air temperature and relative humidity were collected at nine locations of Campina Grande city, including urban and suburban areas by considering eight collecting campaigns of 24 hours in the dry and rainy seasons. The data were collected by a 23X datalogger (Campbel Scientific, Inc.) programmed for collecting data at each second and storage the average of each ten minutes. Also, meteorological information of the last 41 years at Campina Grande was applied to verify time tendencies. For evaluating the degree of human thermal comfort it was applied the Thom discomfort index (TDI). The Mann-Kendall statistical test was used for identifying possible significant tendency at the time series of air temperature and relative humidity. The results showed a 1.5 ºC increase in air temperature and a 7.2% reduction in relative humidity throughout the analyzed time series. The TDI also showed an increasing tendency with an overall increase of 0.83 ºC in the period. No human thermal discomfort was observed in the time periods and locations studied except for the Praça da Bandeira location for specific days of the dry season with the observation of a not pronounced urban heat island. Also, it was observed that before 9:00 and after 16:00 the thermal sensation is similar for all locations studied while between 9:00 and 16:00 hours the thermal sensation changes with the hour of the day for all locations studied.