



Is drought helping or killing dengue? Investigation of spatiotemporal relationship between dengue fever and drought

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Dengue Fever is a vector-borne disease that is transmitted between human and mosquitos in tropical and sub-tropical regions. Previous studies have found significant relationship between the epidemic of dengue cases and climate variables, especially temperature and precipitation. Besides, the natural phenomena (e.g., drought) are considered that significantly drop the number of dengue cases by killing vector's breeding environment. However, in Kaohsiung City, Taiwan, there are evidences that the temporal pattern of dengue is correlated to drought events. Kaohsiung City experienced two main dengue outbreaks in 2002 and 2014 that both years were confirmed with serious drought. Especially in 2014, Kaohsiung City was suffered from extremely dengue outbreak in 2014 that reported the highest number of dengue cases in the history. This study constructs the spatiotemporal model of dengue incidences and index of drought events (Standardized Precipitation Index, SPI) based on the distributed lag nonlinear model (DLNM). Other meteorological measures are also included in the analysis.