
Dengue Prone Areas in Gamping, Yogyakarta, Indonesia Based on Environmental Condition by Using Spatial Analysis

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Abstract

Dengue fever is most rapidly spreading disease throughout the world. There is no vaccine and drugs so that eradication relies on vector control. Prediction-prone areas could support the effectiveness of the vector control. This research aims to predict dengue-prone areas based on the environmental factors. The dependent variable was dengue hemorrhagic fever (DHF) cases, while the independent variables were environmental factors such as climate, land cover and elevation. DHF cases were obtained from District Health Office. Climatic data such as temperature, rainfall and humidity were obtained from local Meteorology and Climatology Agency. Land cover was obtained from high resolution imagery. Research unit was the buffer area with a diameter of 200 m patient residence. Quantitative analysis with scoring and weighting methods were used to determine area prone classification. Scoring was based on the distribution of frequency, while the weighting was determined by coefficient correlation (r^2 value). There were 372 DHF cases in sub-district of Gamping in year 2008-2013. The result shoed that 68.64% of patient lived in vulnerable and very vulnerable area, 31.36% patient lived in less vulnerable areas. The total area of less vulnerable was 734.396.973 ha, vulnerable area was 609.464.989 ha and the very vulnerable area was 997.717.972 ha. It was concluded that environmental factors can be used to predict prone area, the neighborhood where the patient lived as a research unit can provide information on how many percent of patient living in an area prone classification.

Keywords

dengue-prone areas, spatial analysis, environment, neighborhood

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