

Satellite imagery system in malaria transmission resulting from the land use/land cover change

ABSTRACT

BACKGROUND AND OBJECTIVES: This study analyzed the changes in land use and land cover trends and their implication on malaria transmission using satellite imagery applications. Deforestation or human land use activity related to water and development has expanded the ideal habitats for malaria-carrying mosquitoes, resulting in an upsurge of malaria transmission. The presence of these habitats and breeding increased the contact between humans and mosquitoes, thus increasing the number of malaria cases. The decrease of canopy and forest cover has increased the temperature, resulting in the shortening of aquatic stages and sporogony development of the mosquitoes. This study aims to provide an understanding of the relationship between the topography effect over the land-use factor and land cover change on malaria for more than ten years from 2005 to 2019 of transmission. **METHODS:** Malaria case data obtained were analyzed for the trends, incidence rate, and spatial distribution. Remote Sensing and geographic information system were used to determine the land use and land cover change in selected districts of North Borneo in Sabah, as the study areas. **FINDINGS:** The malaria incidence rate shows an increase from 2005 to 2019, with 149.64%. The transmission of the malaria vector dynamics and abundance with topography changes has changed with time, including with forest declination at 8.38%, and cropland change decreased at 16.61%. However, an expansion of 33.6% was observed for oil palm plantations. Overall, the results have shown that the range of incidence rate was found` highly viable from 0.29/1000 persons to 4.09/1000 people. **CONCLUSION:** In conclusion, using geographic information system remote sensing with malaria integrated topography transmission information will be targeted by zoning most affected areas or the most productive larval habitat for remedial measures. This study can help to reduce the malaria vector population through environmental management related to the mosquito larval cycle in different land-use settings and change by minimizing the transmission by the targeted malaria control program.