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SPATIAL-TEMPORAL EPIDEMIOLOGY STUDY OF THE CHIKUNGUNYA DISEASE IN BOLIVIA

Abstract

Satellite technology gives us the opportunity to monitor the environment without needing to conduct any exhaustive fieldwork, for this reason the use of satellite imagery in the epidemiologic field has become a great tool for understanding the favorable conditions that lead to the survival of the vector, the environment in which the transmission occurs, the distribution of the disease and its evolution over time.

Chikungunya disease has its origin in Africa, but due to the climate change and the phenomenon of "El Niño" and "La Niña", new species of mosquitoes have appeared in America, which may carry vector-borne diseases, and it is for this reason that since 2015 Chikungunya fever affects several countries of South America.

During the last three years Chikungunya fever has become an emerging disease in Bolivia because of the favorable conditions for its persistence and transmission in the warm departments of the country. This situation has caused much concern in the Ministry of Health of the Andean country, because this disease can cause serious cardiac, neurological and ocular long term problems.

Because of the recent outbreak of Chikungunya disease in Bolivia, it is difficult to characterize the environmental macro-factors that cause the reproduction, development and maintenance of the mosquito vector in the country. It is for this reason that one of the priority diseases related to public health in Bolivia is Chikungunya, which in 2016 presented incidence rates of (237 x 10,000 inhabitants) in some regions of Bolivia.

Due to the above reasons, this study aims to analyze some area of Bolivia with higher incidence of Chikungunya, using satellite images for extracting some environmental parameters, that will be complemented with meteorological data extracted from weather stations and with epidemiological data provided by the Ministry of Health. This study will allow us to have a more integrated understanding of this disease, to better understand the environment in which the transmission of the disease happens, also we can identify during which months occur higher outbreaks of Chikungunya. This will give us new possibilities to prevent and control this emerging disease in Bolivia