Count: 11

Additional: 4

Add: hotspot threshold for Dengue (10-20)

| **TITLE** | **ABSTRACT** | **METHODS** | **RESULTS/ CONCLUSION** | **URL** |
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| Mapping Urban Areas Using a Combination of Remote Sensing and Geolocation Data | * Urban mapping at large scales relies heavily on remote sensing (RS) data, which cannot capture socioeconomic features well. Geolocation datasets contain patterns of human movement, which are closely related to the extent of urbanization. * The objective of this study is to combine multi-source features from RS and geolocation datasets to extract information on urban areas at large scales, including night-time lights, vegetation cover, land surface temperature, population density, LRD, accessibility, and road networks | * The random forest (RF) classifier is introduced to deal with these high-dimension features on a 0.01 degree grid. High spatial resolution land cover (LC) products and the normalized difference built-up index from Landsat are used to label all of the samples. The RF prediction results are evaluated using validation samples and compared with LC products for four typical cities. | * The results showed that night-time light and LRD features had the largest variable importance, which proved the usefulness of geolocation datasets. A total of 176,266 km2 of urban areas in China were identified using the RF classifier, with an overall accuracy of 90.79% and a kappa coefficient of 0.790. Our results were highly consistent with the boundaries that we obtained by manual interpretation in four selected cities. | <https://www.mdpi.com/2072-4292/11/12/1470/htm> |
| Machine learning methods reveal the temporal pattern of dengue incidence using meteorological factors in metropolitan Manila, Philippines | * Hence, our study aims to compare the predictive accuracy of the temporal pattern of Dengue incidence in Metropolitan Manila as influenced by meteorological factors from four modeling techniques, (a) General Additive Modeling, (b) Seasonal Autoregressive Integrated Moving Average with exogenous variables (c) Random Forest and (d) Gradient Boosting. | * Dengue incidence and meteorological data (flood, precipitation, temperature, southern oscillation index, relative humidity, wind speed and direction) of Metropolitan Manila from January 1, 2009 – December 31, 2013 were obtained from respective government agencies. Two types of datasets were used in the analysis; observed meteorological factors (MF) and its corresponding delayed or lagged effect (LG). | * Among the statistical modeling techniques, Random Forest showed the best predictive accuracy. Moreover, the delayed or lag effects of the meteorological variables was shown to be the best dataset to use for such purpose. * The study exhibited that there are indeed different predictive outcomes generated from each statistical modeling technique and it further revealed that the Random forest model with delayed meteorological effects to be the best in predicting the temporal pattern of Dengue incidence in Metropolitan Manila. | <https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-018-3066-0> |
| Generation of infectious disease alerts through the use of geolocation | * This article describes a tool that aims to generate alerts when there are data about an epidemic, and notify all persons who could be exposed to contagion and prevent new infections occurs. | * The first source of information comes from the mobile phone of users on the system. * The second source of information is from medical experts. * The third source of information is the unofficial information extracted directly from the Internet. * Finally, in order to manage this information, it has been used two types of different databases. To store data coming from the sensors of mobile phones and data entered by doctors about patients who have attended, it has used a relational database of MySQL type | * In order to carry out an analysis of the data that are generated in social networks such as Twitter, on the websites of official organizations such as the CDC and in online newspapers, several programs are used. Observe that these data are unstructured, so they need to be processed to retrieve the information contained in them. * This paper presents a system that allows using an Android app to collect data from sensors of the mobile phones, and also it is collected data of patients who visit medical centers with a web application. Thus when an infection is detected, a set of processes analyze data collected from mobile and patients. | <https://beei.org/index.php/EEI/article/view/1945/2023> |
| Address Geocoding Services in Geospatial-based  Epidemiological Analysis: A Comparative Reliability for  Domestic Disease Mapping | * The paper aims to examine the mapping reliability of some online geocoding services to map the spread of tuberculosis (TB) in Sarawak, Malaysia towards practical implementation in the domestic health department. The features examined the common platforms, namely QGIS, Google Map (API), and ArcGIS Online, were selected and explored in terms of the following variables; positional quality, speed, cost, and coverage. | * This study used a methodology that consists of several phases, including planning, data collection, data processing and analysis * These phases are parallel with the concept and framework as explained in a GIS function, where converting text-based postal address data into digital geographical coordinates. ArcGIS Online, Google Map and QGIS were selected because they offered free and open services and were commonly or familiarly easy to process the spatial dataset. | * Although geocoded the same addresses that had been cleaned, it is likely that the editing of addresses impacted the geocoding findings for example improved the match rate and probably also increased the positional accuracy. * In addition, the study can further apply statistical evaluation methods, covering a big area with the number of the cases/addresses, and getting perspective from software experts on the platform capabilities. * The knowledge of accurate geocoding to public health practitioners is essential in order to consider potential biases and limitations in disease mapping that are important for the future decisions and analysis. | <https://drive.google.com/file/d/15WbCNZXRDElnhRJjwrrJ6CPKJNJDyv2u/view?usp=sharing> |
| Epidemiological study on dengue in southern Brazil under the perspective of climate and poverty | * A systematic approach to analyze the spatial and temporal distribution of cases was developed, considering the temporal cross-correlation between dengue and weather, and the spatial correlation between dengue and income over the city’s census tracts. * Through this methodology, we have found evidence that suggests a relation between dengue and poverty, which enriches the debate in the literature and sheds light on an extremely relevant socioeconomic and public health issue. | * The census tracts were the geographic units used to analyze mean income and population density. The vector data regarding highways, woods and permanent water flows were retrieved from OpenStreetMap, and confirmed using satellite pictures from Google Maps. The georeferencing of the patients was retrieved using BatchGeo software tool, and confirmed through Google Maps. * Clinical and epidemiological data, including patient’s address, ethnicity, gender, age, pressure, and symptoms, were retrieved from the Information System for Notifiable Diseases forms | * It is possible to suggest an association between poverty and dengue in Cambé, from August 2012 to September 2014, by correlating dengue incidence and mean income over the census tracts. Throughout the period, the risk of dengue infection was higher in the poorer areas. * Primary and secondary dengue cases were spatially correlated. This suggests that dengue is endemic only in certain areas of the city. | <https://www.nature.com/articles/s41598-020-58542-1> |
| Editorial: OpenStreetMap research in the COVID-19 era |  | * There is evidence that OpenStreetMap (OSM) has been used in various ways related to the global COVID-19 pandemic during the first few months, however, exactly how still needs to be thoroughly reviewed and analysed. As always, OSM data has been contributed and used by a multitude of actors for a variety of applications | * Results contribute knowledge on spatial proximity to health care facilities in slums through the combination of participatory remote mapping, local mapping and survey data for calculating the relations between proximity measures based on Euclidean distance and those based on network-distance. | <https://digitalcommons.fiu.edu/cgi/viewcontent.cgi?article=1081&context=gis> |
| Generating Up-to-Date and Detailed Land Use and Land Cover Maps Using OpenStreetMap and GlobeLand30 | * The OpenStreetMap (OSM), in contrast, consists of a very detailed, dynamically updated, spatial database of mapped features from around the world, but it suffers from incomplete coverage, and layers of overlapping features that are tagged in a variety of ways. However, it clearly has potential for land use and land cover (LULC) mapping. Thus the aim of this paper is to demonstrate how the OSM can be converted into a LULC map and how this OSM-derived LULC map can then be used to first update the GL30 with more recent information and secondly, enhance the information content of the classes. | * One of the keys available in OSM is “landuse”. Some of the values used for this key may have a direct conversion to LULC classes, such as “forest”, “vineyard” or “residential”. However, a large percentage of other proposed keys may also provide information on LULC, such as the keys “building”, “highway” or “amenity”. Hence, a methodology was developed to convert OSM features into LULC classes | * The creation of hybrid maps, i.e., merging GL30 and OSM, has the advantage of obtaining a more detailed and updated product, especially related to urban development. However, the OSM data are not validated (even though there is a continuous validation made by the crowd), which may lead to some potential errors in the database. * The results are considerably different for the two study areas. The overall agreement between the original GL30 and the OSM-derived LULC map is 56% for Kathmandu and 81% for Dar es Salaam. In the former case, the class having the highest RMPA and CMPA is 20 (Forest); class 10 (Cultivated land) shows a low RMPA but a very high CMPA, while the opposite happens for class 80 (Artificial surfaces). | <https://www.mdpi.com/2220-9964/6/4/125/htm> |
| Role of climatic factors in the incidence of dengue in Port Sudan City, Sudan | * This study aimed at discribing the relationship between climatic factors and dengue fever incidence in Port Sudan during 2008–2013 | * This ecological study entailed secondary data analysis of dengue fever cases and climate information to explore which climatic factors predict the incidence of dengue fever. The Wilcoxon rank sum test and multiple linear regression examined the association between number of dengue fever cases and climatic factors during lag times of 1–6 months. | * Relative humidity and maximum and minimum temperatures were correlated with dengue incidence in Port Sudan at different time intervals during 2008–2010. Precipitation and relative humidity were correlated with dengue fever during 2011–2013. However, 3–5-month lagged relative humidity was the strongest explanatory variable for the incidence of dengue. * Dengue transmission appears sensitive to climatic variability. Elucidating the role of climatic factors in dengue fever helps in risk assessment and prevention of epidemics. * Relative humidity > 56% is significant compared to precipitation. Dengue spread is a factor of human behavior than just climate. | <https://applications.emro.who.int/emhj/v25/12/10203397-2019-2512-852-860.pdf> |
| Indoor Resting Behavior of Aedes aegypti (Diptera: Culicidae) in Acapulco, Mexico | * We investigated the resting behavior of Ae. aegypti indoors in 979 houses of the city of Acapulco, Mexico, by performing exhaustive indoor mosquito collections to describe the rooms and height at which mosquitoes were found resting. | * From the total households in the city, 10% lacks domestic piped water supply, and 60% receives water sporadically within a scheduled plan. The lack of a reliable water supply promotes the need for water storage, leading to the permanent presence of large tanks and drums. * A cross-sectional entomologic study was performed between February-March and August-September 2013 to collect resting Ae. aegypti adult mosquitoes within 26 neighborhoods of Acapulco | * Our findings provide relevant information for the design of insecticide-based interventions selectively targeting the adult resting population, such as indoor residual spraying. * The odds of finding adult Ae. aegypti mosquitoes resting below 1.5 m was 17 times higher than the odds of finding mosquitoes resting above 1.5 m | <https://academic.oup.com/jme/article/54/2/501/2952758?login=false#62813419> |
| An information value based analysis of physical and climatic factors affecting dengue fever and dengue haemorrhagic fever incidence | * The information value or the probabilistic relationship between multiple factors is the highest in built-up areas. This was based on the frequency of outbreaks as well. Built-up areas in this study were compared to agricultural places. | * Preliminary results demonstrated that physical factors derived from remotely sensed data could indicate variation in physical risk factors affecting DF/DHF. A composite analysis of these three factors with dengue incidences was carried out using multivariate regression analysis. | * This paper explores the potential of remotely sensed data and GIS technology to analyze the spatial factors affecting DF/DHF epidemic. Three empirical models were evaluated. It was found that Empirical Relatrion-3 (ER-3) has yielded very high coefficient of determination to forecast the number of DF/DHF incidence. | <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1177981/> |
| Spatial Clustering of Dengue Fever Incidence and Its Association with Surrounding Greenness | * The latest 2013 land use survey GIS database completed by the National Land Surveying and Mapping Center was obtained to access another green metric, green land use in Taiwan. * Parks and metropolitan areas which are more congested (higher population density) have high risk of biting and transmission of mosquito bites. Therefore, green spaces had less of a risk due to it being less crowded than parks. | * We first used Spearman’s rho to find out the relationship between DF and green space, and then three spatial autocorrelation methods, including Global Moran’s I, high/low clustering, and Hot Spot were employed to assess the spatial autocorrelation of DF outbreak. In considering the impact of social and environmental factors in DF, we used generalized linear mixed models (GLMM) to further clarify the relationship between different types of green land use and dengue cases. * Data was analyzed through spatial autocorrelation using NASA MODIS satellite. * Temperature (and a rise of it) has a positive effect on the mosquito’s life cycle- laying of eggs, immature development, and survival. | * Results of spatial autocorrelation analysis showed a high aggregation of dengue epidemic in southern Taiwan, and the metropolitan areas were the main hotspots. Results of correlation analysis and GLMM showed a positive correlation between parks and dengue fever, and the other five green space metrics and land types revealed a negative association with DF. |  |
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Additional:

<https://arxiv.org/ftp/arxiv/papers/2005/2005.03599.pdf>

<https://sci-hub.hkvisa.net/https://doi.org/10.1111/j.1745-6584.2005.00123.x>

<https://www.mdpi.com/2414-6366/3/4/118/htm>

<https://www.sciencedirect.com/science/article/pii/S2666756820300106>