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Space Enterprise

Bulletin of the World Health Organization

Remote Sensing for Malaria

The World Health Organization's Global Technical Strategy for Malaria 2016-2030 has been developed with the aim to help countries to reduce the human suffering caused by the world’s deadliest mosquito-borne disease. Adopted by the World Health Assembly in May 2015 it provides comprehensive technical guidance to countries and development partners for the next 15 years emphasizing the importance of scaling up malaria responses and moving towards elimination. It also highlights the urgent need to increase investments across all interventions - including preventive measures diagnostic testing treatment and disease surveillance - as well as in harnessing innovation and expanding research. By adopting this strategy WHO Member States have endorsed the bold vision of a world free of malaria and set the ambitious new target of reducing the global malaria burden by 90% by 2030. They also agreed to strengthen health systems address emerging multi-drug and insecticide resistance and intensify national cross-border and regional efforts to scale up malaria responses to protect everyone at risk.

Current Topics in Malaria

This book covers the essential concepts and strategies within traditional and cutting-edge feature learning methods through both theoretical analysis and case studies. Good features give good models and it is usually not classifiers but features that determine the effectiveness of a model. In this book, readers can find not only traditional feature learning methods, such as principal component analysis, linear discriminant analysis, and geometrical-structure-based methods, but also advanced feature learning methods, such as sparse learning, low-rank decomposition, tensor-based feature extraction, and deep-learning-based feature learning. Each feature learning method has its own dedicated chapter that explains how it is theoretically derived and shows how it is implemented for real-world applications. Detailed illustrated figures are included for better understanding. This book can be used by students, researchers, and engineers looking for a reference guide for popular methods of feature learning and machine intelligence.

Proceedings for the Twenty-Ninth International Symposium on Remote Sensing of Environment

This book is a printed edition of the Special Issue "Spatial Audio" that was published in Applied Sciences

The Economist

During the last two decades, a series of explosive seasonal malaria outbreaks occurred in the Kenya highland areas. These outbreaks were associated with a high mortality rate and caused thousands of deaths, of which over 70% were children under the age of five. Malaria is transmitted by mosquitoes. Knowledge on the distribution of mosquitoes is important to malaria eradication and prevention. However, several gaps exist in current mosquito studies. First, few predictive models of mosquito larval habitats at a micro scale have been developed. Second, it is largely unknown how the seasonal and inter-annual change in climatic conditions affects the spatial distribution of mosquito larvae. Third, few spatial models have been developed to represent the spatial distribution of adult mosquitoes. Fourth, the quantitative relationship between the spatial distribution of the larval habitats and adult mosquitoes is rarely identified. To fill these gaps, this dissertation first developed mosquito larval habitat models to predict the spatial distribution of mosquito larval habitats utilizing mosquito data collected in a study area over three years. The prediction accuracy of the models was satisfactory. This dissertation then studied how mosquito larvae respond spatially to seasonal and inter-annual climatic variations. The results suggest that the spatial distribution of larvae demonstrates considerable seasonal and inter-annual variation. This dissertation also modeled the spatial distribution of the adult mosquitoes by using both spatial and non-spatial methods. The developed model can explain over 70% of the variation in the distribution of the adult mosquitoes. Finally, this dissertation quantified the relationship between the distribution of adult mosquitoes and mosquito larval presence sites. It was found that larval presence sites that have been repeatedly observed were significantly related to the distribution of the adult mosquitoes. The findings presented in this dissertation provide a more comprehensive understanding of the malaria vector in western Kenya highlands. These findings are important for public health decision-making related to adult mosquito surveillance and malaria control.

Emerging Infectious Diseases

Using data collected for 350 cities from around the world, the authors use a variety of analytical methods to provide a global picture of what was happening to infectious epidemic diseases at a critical period in urban evolution on the international stage. The diseases considered are diphtheria, enteric fever, measles, scarlet fever, tuberculosis, and whooping cough. To place the results in a wider time context, other data are used to look both backwards and forwards for nearly a century on either side of the twenty-five-year time window. The book presents a number of results that may be interpreted in the context of debates on the causes of long-term mortality decline from these infectious diseases. It will be of interest to students of demography, history of medicine, and economic history as well as to researchers already active in these fields.
Since the dawn of medical science, people have recognized connections between a change in the weather and the appearance of epidemic disease. With today's technology, some hope that it will be possible to build models for predicting the emergence and spread of many infectious diseases based on climate and weather forecasts. However, separating the effects of climate from other effects presents a tremendous scientific challenge. Can we use climate and weather forecasts to predict infectious disease outbreaks? Can the field of public health advance from "surveillance and response" to "prediction and prevention"? And perhaps the most important question of all: Can we predict how global warming will affect the emergence and transmission of infectious disease agents around the world? Under the Weather evaluates our current understanding of the linkages among climate, ecosystems, and infectious disease; it then goes a step further and outlines the research needed to improve our understanding of these linkages. The book also examines the potential for using climate forecasts and ecological observations to help predict infectious disease outbreaks, identifies the necessary components for an epidemic early warning system, and reviews lessons learned from the use of climate forecasts in other realms of human activity.

### Epidemics

This book presents research using high-resolution operational satellite data for monitoring and assessing numerically how to reduce the area and intensity of malaria outbreaks. Satellite data and imagerys a powerful and effective tool for malaria monitoring and reduction of the number of affected people as it bypasses the limitations imposed by the dearth of near-the-ground weather data in many malaria-prone areas. With this in mind, this volume provides readers with: In-depth information in monitoring signs of malaria from operational polar-orbiting satellites Examples of country-specific models for predicting malaria area (1 and 4 km2 resolution) and intensity information on the how the effects of climate change on malaria outbreak area and intensity can be monitored A new Vegetation Health (VH) methodology to estimate vegetation moisture, temperature and moisture/temperature conditions as indicators of malaria vector activity Advice to users on the application of VH technology for early assessments of malaria area, intensity and risk level Remote Sensing for Malaria is intended for an audience of public health practitioners, environmentalists, and students and researchers working in spatial epidemiology and disease prevention.

### Bulletin

Research EU.

### Proceedings

The Indian Journal of Medical Research

### Feature Learning and Understanding

This book includes selected contributions related to big data and data networking, presented at the 13th International Conference on Computing and Information Technology (IC2IT), which was held at the Arnoma Grand Hotel Bangkok, Thailand, July 6–7, 2017. The aim of the conference was to present emerging algorithms, methods and technologies with a high degree of originality, novelty and innovation addressing the conference theme ‘Mastering Data and Networking’. Section 1 and 2 discuss various aspects of data mining and corresponding applications. Section 3 focuses on speed and overhead networking optimisation problems, as well as energy problems of autonomous systems, which are becoming increasingly important. The key to addressing these problems is properly determining critical parameters. Section 4 sheds light on natural language processing, including extraction of trends and popularity and recognition of emotions as well as classic topics such as detection and classification.

### Seed

Recent Advances in Information and Communication Technology 2017

This book is a printed edition of the Special Issue “Smart Healthcare” that was published in Applied Sciences

### Deciphering Global Epidemics

Abstract : Indonesia is one of the countries in Southeast Asia where malaria is a prominent public health concern with an estimated 15 million malaria cases annually and 42,000 deaths. The study explores the environmental risk factors of malaria guided by an eco epidemiological model of malaria transmission. A longitudinal and cross sectional approach has been employed for data gathering of the environmental variables, spatial and temporal patterns of malaria transmission, malaria vectors behaviour and human risk factors of malaria transmission in Indonesia. Three different regions in Indonesia were used for the study. The first area is West Timor which has the highest malaria incidence in Indonesia. The second location is Sukabumi District of West Java, which had a malaria outbreak in 2003. The final location is Kebumen District of Central Java, which has one of the highest malaria pocket areas in Java. All areas were divided into three different topographical settings coastal, hilly and highland areas. In each study areas, the environmental data were analysed using t-test, ANOVA, Pearson Correlation, and General Linear Model Repeated Measures. Further, LISA (Local Indicators of Spatial Association) analysis using GIS was employed to explore local spatial distribution and generate malaria maps for the malaria transmission areas based on the local spatial association. Adult mosquito (Anopheles spp) surveys were used to explore malaria vectors behaviour in different areas and different topographical settings. Finally, an interview program was used to collect data in order to understand human risk factors in malaria transmission. Human risk factors data were calculated using (2 and logistic regression. The results show that 100% of West Timor’s villages are in malaria endemic areas. Villages on the district boundary zones had more malaria than non-boundary villages. The number of rainy days had a significant positive correlation to malaria incidence. Humidity also had a significant positive correlation to malaria incidence. Altitude and maximum temperature had a significant negative correlation with malaria cases. In Sukabumi, West Java, altitude was not significantly correlated with malaria incidence. The risk of being infected with malaria was similar for respondents in coastal and highland areas. Rainfall, temperature, and wind speed were also not significantly correlated to malaria incidence in Sukabumi. In Kebumen, Central Java, rainfall patterns did not have a significant correlation with malaria incidence. Altitude, however, showed a significant correlation with malaria
incidence, where more cases occurred at an altitude between 60 m and 200 m above sea level. Malaria incidence was higher in village than urban areas in all West Timor, West Java and Central Java. Number of very high-risk malaria villages was higher in dry than wet seasons in all areas. Eleven (11) Anopheles mosquito species were recorded during this study: An. aconitus, An. annularis, An. barbirostris, An. flavirostris, An. indefinitus, An. kochi, An. maculatus, An. subpictus, An. sundaicus, An. tessellatus, and An. vagus. Each species occupied different topographical settings and areas. The species behaved differently for host-seeking and resting. Anopheles species which were very active in host-finding at night included; An. aconitus, An. barbirostris, An. subpictus, and An. vagus. Anopheles species with high vectorial capacity were An. subpictus and An. barbirostris. This study found that occupation and outdoor activities were correlated with malaria incidence. Farmers and fishermen had a greater risk of being infected by malaria than those in other occupations. Overall, malaria incidence was higher in low socio-economic groups. However, Malaria incidence was not affected by education status: both low and highly educated groups had a similar malaria risk. In all the research areas, respondents who stayed outdoors at night and respondents who slept outside had a higher risk of being infected with malaria. This higher risk may be related to the mosquitoes’ habit of seeking hosts more outdoors. Getting access to health facilities is an important aspect of the treatment of diseases, including malaria. This study concludes that malaria is still a prominent public health problem in Indonesia, in which the level of incidence and transmission vary based on geography and topographical settings. Malaria transmission has local characteristics resulting from the combination of many variables. The eco-epidemiological approach is a useful method for gaining insights into malaria variables in order to improve the understanding of malaria transmission in Indonesia. This study recommends that more attention be paid to malaria incidence at lower altitudes. This study found mosquitoes were more active outdoors, thus indoor residual spraying (IRS) is not recommended for malaria control in some areas. However, in West Timor Anopheles species predominantly feed and rest indoors. Thus, using insecticide treated nets (ITN) is likely to be effective in this area. Improvement of living conditions and implementing of mosquito-proof house programs would reduce malaria risk. This study also recommends that the extension of health facilities and health care delivery using local resources such as village midwives and malaria village cadres would provide an accessible malaria service for the villagers. In addition, to have better and more sustained results, integrated malaria intervention is needed. This includes adequate malaria treatment, good malaria surveillance systems and adequate vector control programs. These programs should be based on local conditions such as local weather, human behaviour, topographical and ecological settings, and vector species and their specific ecologies. Geographic information systems such as LISA (Local Indicators of Spatial Association) can be used to predict malaria risk areas and should be incorporated into the malaria surveillance system.

The Landscape Epidemiology of Malaria Within Two Communities in a Highland Region of Kenya

The Rules of Contagion

Indian Journal of Malarialogy

Environmental Factors and an Eco-epidemiological Model of Malaria in Indonesia

Provides the background for the support of the public sector in space and gives the projects in current planning

Towards Malaria Elimination

Spatial Distribution of Mosquitoes

CORDIS Focus

This book is designed to be a practical study in infectious disease dynamics. The book offers an easy to follow implementation and analysis of mathematical epidemiology. The book focuses on recent case studies in order to explore various conceptual, mathematical, and statistical issues. The dynamics of infectious diseases shows a wide diversity of pattern. Some have locally persistent chains-of-transmission, others persist spatially in ‘consumer-resource metapopulations’. Some infections are prevalent among the young, some among the old and some are age-invariant. Temporally, some diseases have little variation in prevalence, some have predictable seasonal shifts and others exhibit violent epidemics that may be regular or irregular in their timing. Models and ‘models-with-data’ have proved invaluable for understanding and predicting this diversity, and help improve intervention and control. Using mathematical models to understand infectious disease dynamics has a very rich history in epidemiology. The field has seen broad expansions of theories as well as a surge in real-life application of mathematics to dynamics and control of infectious disease. The chapters of Epidemics: Models and Data using R have been organized in a reasonably logical way: Chapters 1-10 is a mix and match of models, data and statistics pertaining to local disease dynamics; Chapters 11-13 pertains to spatial and spatiotemporal dynamics; Chapter 14 highlights similarities between the dynamics of infectious disease and parasitoid-host dynamics; Finally, Chapters 15 and 16 overview additional statistical methodology useful in studies of infectious disease dynamics. This book can be used as a guide for working with data, models and ‘models-and-data’ to understand epidemics and infectious disease dynamics in space and time.

Exchanges

This book presents high-quality, original contributions (both theoretical and experimental) on software engineering, cloud computing, computer networks & internet technologies, artificial intelligence, information security, and database and distributed computing. It gathers papers presented at ICRIC 2019, the 2nd International Conference on Recent Innovations in Computing, which was held in Jammu, India, in March 2019. This conference series represents a targeted response to the growing need for research that reports on and assesses the practical implications of IoT and network technologies, AI and machine learning, cloud-based e-Learning and big data, security and privacy, image processing and computer vision, and next-generation computing technologies.

Artificial Intelligence and IoT

Research Report
Model Using Machine Learning

Global Technical Strategy for Malaria 2016-2030

This Thirty-Seventh Edition of ANNUAL EDITIONS: SOCIOLOGY provides convenient, inexpensive access to current articles selected from the best of the public press. Organizational features include: an annotated listing of selected World Wide Web sites; an annotated table of contents; a topic guide; a general introduction; brief overviews for each section; a topical index; and an instructor’s resource guide with testing materials. USING ANNUAL EDITIONS IN THE CLASSROOM is offered as a practical guide for instructors. ANNUAL EDITIONS titles are supported by our student website, www.mhcls.com/online.

Proceedings of ICRIC 2019

Annual Editions: Sociology 08/09

Recent Developments in Smart Healthcare

Big Data and Analytics for Infectious Disease Research, Operations, and Policy

On December 4â€“5, 2019, the National Academies of Sciences, Engineering, and Medicine held a 1.5-day public workshop titled Exploring the Frontiers of Innovation to Tackle Microbial Threats. The workshop participants examined major advances in scientific, technological, and social innovations against microbial threats. Such innovations include diagnostics, vaccines (both development and production), and antimicrobials, as well as nonpharmaceutical interventions and changes in surveillance. This publication summarizes the presentations and discussions from the workshop.

Journal of the Malaria Institute of India

Draft Report

Spatial Audio

The ability to interpret and act on the massive amounts of information locked in web and enterprise systems is critical to success in the modern business economy. R, a free software environment for statistical computing and graphics, is a comprehensive package that empowers developers and analysts to capture, process, and respond intelligently to statistical information. R in Action is the first book to present both the R language, and then moves on to various examples illustrating R’s features. Coverage includes data mining methodologies, approaches to messy data, R’s extensive graphical environment, useful add-on modules, and how to interface R with other software platforms and data management systems.

Exploring the Frontiers of Innovation to Tackle Microbial Threats

With the amount of data in the world exploding, big data could generate significant value in the field of infectious disease. The increased use of social media provides an opportunity to improve public health surveillance systems and to develop predictive models. Advances in machine learning and crowdsourcing may also offer the possibility to gather information about disease dynamics, such as contact patterns and the impact of the social environment. New, rapid, point-of-care diagnostics may make it possible to capture not only diagnostic information but also other potentially epidemiologically relevant information in real time. With a wide range of data available for analysis, decision-making and policy-making processes could be improved. While there are many opportunities for big data to be used for infectious disease research, operations, and policy, many challenges remain before it is possible to capture the full potential of big data. In order to explore some of the opportunities and issues associated with the scientific, policy, and operational aspects of big data in relation to microbial threats and public health, the National Academies of Sciences, Engineering, and Medicine convened a workshop in May 2016. Participants discussed a range of topics including preventing, detecting, and responding to infectious disease threats using big data and related analytics; varieties of data (including demographic, geospatial, behavioral, syndromic, and laboratory) and their broader applications; means to improve their collection, processing, utility, and validation; and approaches that can be learned from other sectors to inform big data strategies for infectious disease research, operations, and policy. This publication summarizes the presentations and discussions from the workshop.

Tropical Medicine and Hygiene News

Towards Malaria Elimination - A Leap Forward was started to mark the occasion for renewed commitment to end malaria transmission for good (the WHO’s call for “Malaria Free World” by 2030). This book is dedicated for the benefit of researchers, scientists, program and policy managers, students and anyone interested in malaria and other mosquito-borne diseases with the goal of sharing recent information on success stories, innovative control approaches and challenges in different regions of the world. Some main issues that emerged included multidrug-resistant malaria and pandemic risk, vaccines, cross-border malaria, asymptomatic parasite reservoir, the threat of Plasmodium vivax and Plasmodium knowlesi, insecticide resistance in Anopheles vectors and outdoor malaria transmission. This book is one little step forward to bring together in 17 chapters the experiences of malaria-expert researchers from five continents to present updated information on disease epidemiology and control at the national/regional level, highlighting the constraints, challenges, accomplishments and prospects of malaria elimination.

Under the Weather

An Observer Book of the Year A Times Science Book of the Year A New Statesman Book of the Year A Financial Times Science Book of the Year ‘It is hard to imagine a more timely book much of the modern world will make more sense having read it’. The Times A deadly virus suddenly explodes into the population. A political movement gathers pace, and then quickly vanishes. An idea takes off like wildfire, changing our world forever. We live in a world that’s more interconnected than ever before. Our lives are shaped by outbreaks - of disease, of misinformation, even of violence - that appear, spread and fade away with bewildering speed. To understand them, we need to learn the hidden laws that govern them. From ‘superspreaders’ who might spark a pandemic or bring down a financial system to the social dynamics that make loneliness catch on, The Rules of Contagion offers compelling insights into human behaviour and explains how we can get better at predicting what happens
next. Along the way, Adam Kucharski explores how innovations spread through friendship networks, what links computer viruses with folk stories - and why the most useful predictions aren't necessarily the ones that come true.

Mila

Health Information of India

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