World Health Organization
Regional Office for the Eastern Mediterranean

Weekly Epidemiological Monitor

ISSN 2224-4220

Volume 10 Issue 03; 15 January 2017

Current major event

Aedes distribution model maps

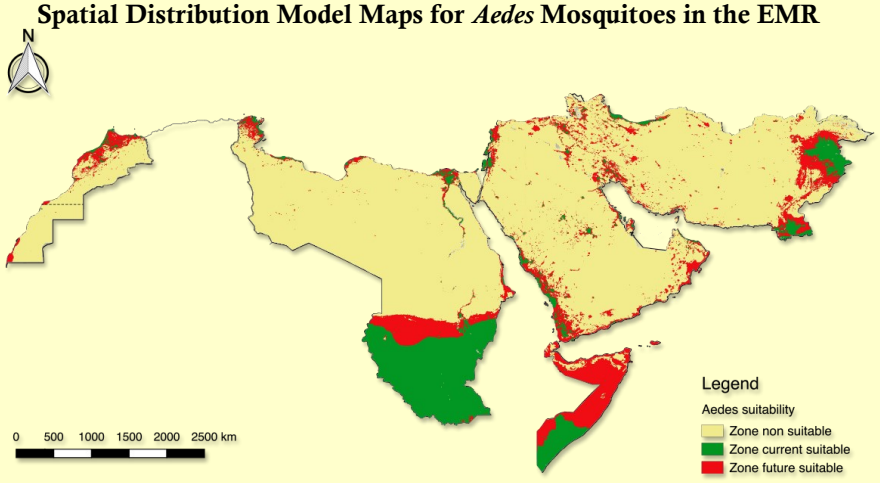
In response to the threat of introduction of Zika Virus (ZIKAV), the WHO Eastern Mediterranean Regional Office has produced risk map for the Region as well as for each of the twenty-two countries that integrates the information about two zika vectors- *Aedes aegypti* and *Ae. Albopictus* taking into account the current and future habitat suitability of these vectors in these countries .

Editorial note

The two rounds of meetings held in 2016 by the Regional Office to enhance preparedness and readiness measures to prevent the introduction of ZIKAV in the Region concluded that there was an urgent need to develop updated distribution maps for both *Aedes aegypti* and *Ae. albopictus*, the two key-vectors of Zika virus, in order to fill the existing data gap. An initiative was launched, soon after, by the Regional Office to generate risk maps for *Ae. aegypti* and *Ae. albopictus* to depict areas of potential establishment and spread in the EMR region.

As a part of this initiative risk maps for the whole region including for each of the twenty-two countries have been developed using a spatial distribution model that have been built using available published information and additional available data collated from national experts. Such data sets are per definition incomplete, and further works have been kicked off to fill the gaps for the missing information. As a result, the risk maps produced based on this model *(Please see the risk maps above)* may not always reflect actual threat and overestimate or underestimate the risk depending on the quality of the available data in given areas. The individual country maps produced using this model may provide additional information on probable or actual distribution of *Aedes* mosquitoes at the points of entry (airport, seaport) major road networks and main urban areas. Maps generated by such spatial distribution model (SDMs) can be used to target surveillance areas and to inform transmission modelling as input in time series data analysis. Using various techniques

Spatial Distribution Model Maps for *Aedes* Mosquitoes in the EMR



Spatial Distribution Model for *Aedes* mosquitoes in the EMR

- Occurrence data
  - Observed occurrences of *Ae. albopictus* and *Ae. Aegypti* using same environmental conditions or predictors
- Absence and pseudo-absence data
- Environmental and eco-climatic predictor variables
- Habitat suitability and future spread

(Please see in the box), the model was established to generate risk maps on probable occurrence of *Aedes aegypti* and *Ae. Albopictus* in the Region as well as future possibility of spread owing to habitat suitability.

This SDM will soon be rolled out to the countries in the Region to use the information presented in the map for targeted and focused vector surveillance to early detect any high density of competent vectors for ZIKAV as well as other epidemic arboviruses. For example, if the area is already infected with established *Aedes* colonies, then an adapted surveillance strategy is required. Active surveillance would be recommended around areas colonized by *Aedes* to monitor the extend of its spread. If there is also viral circulation it is advised to field capture mosquitoes to perform a pathogen detection analysis. We expect that this work will guide the countries to target areas for enhanced surveillance and early detect any autochthonous transmission of arbovirus.

Update on outbreaks

in the Eastern Mediterranean Region

MERS-CoV in Saudi Arabia; Cholera in Somalia; Cholera in Yemen; Chikungunya in Pakistan;

Current public health events of international concern

[cumulative N° of cases (deaths), **CFR %**]

Avian Influenza : 2006-2017	
Egypt (A/H5N1)	[356 (121), 33.9%]
Egypt (A/H9N2)	[3 (0)]
Chikungunya	
Pakistan	[230 (0)]
MERS-CoV: 2012-2017	
Saudi Arabia	[1414 (601), 42.5%]
Cholera : 2016-2017	
Somalia	[14 710 (497), 3.3%]
Yemen	[12773 (97), 0.76%]
Rift Valley Fever : 2016-2017	
Niger	[266(32), 12%)
Avian Influenza A (H7N9) : 2013-2017	
China	[808(307),36%]
Avian Influenza A (H5N6) : 2016-2017	
China	[4 (0)]
Wild poliovirus: 2014-2017	
Pakistan	[379(0)]
Afghanistan	[60(0)]
Zika Virus Infection: 2015-2017	
69 countries and territories have reported transmission so far	