Plenary Presentation

A WHO-listic Response to Zika Virus

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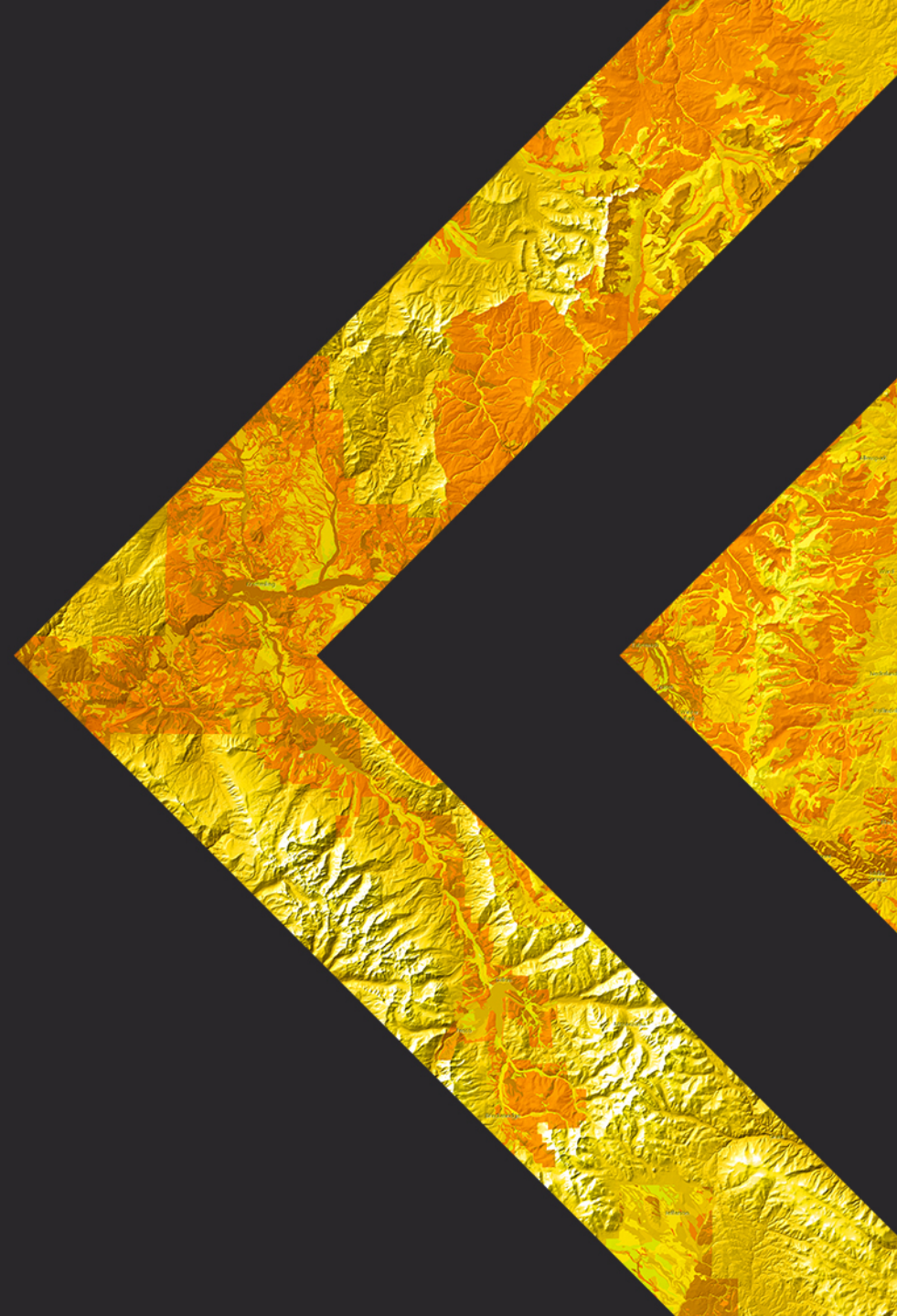


Agenda:

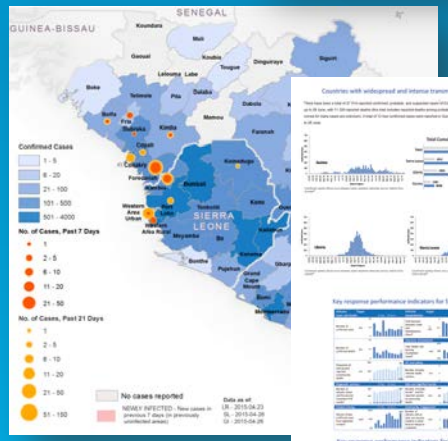
1. How WHO leverages GIS in emergency response?
   - Situational Awareness
   - Strategic Planning
   - Response monitoring
   - Research & modelling
   - Media & Communication
2. Zika: Lessons learned and applied from Ebola
3. Desktop / Web Based ArcGIS Predictive Analysis Tools
   - Demo / Functionality
4. Closing
5. Questions and Answers

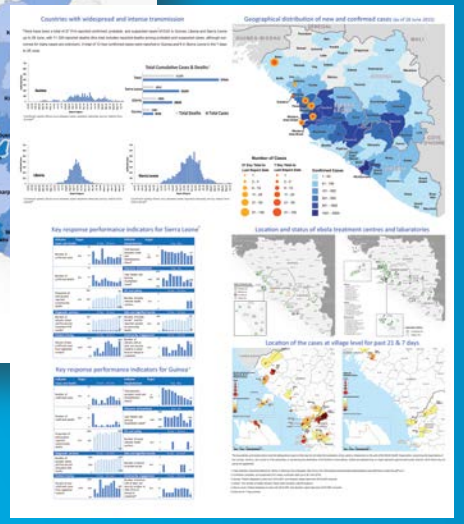
GIS in emergency response…

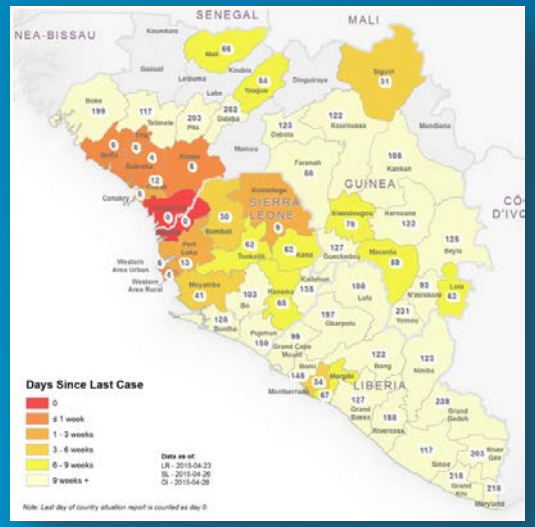
Situational Awareness

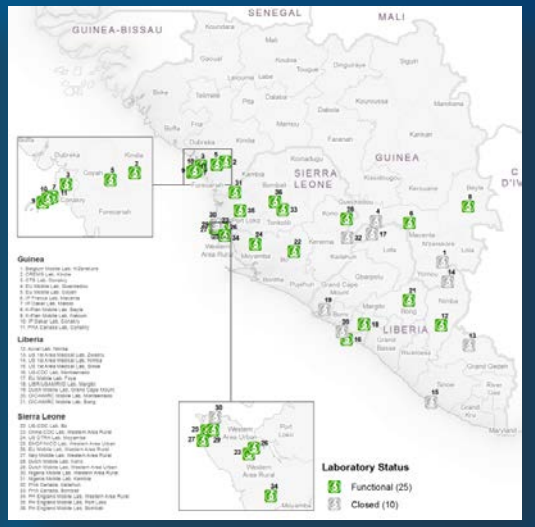
Situation Awareness

	Frequency	Content	Distribution
Daily Briefing	Daily	• Situation awareness update	Internal
Daily DG briefs	Daily	•Summary of epidemiological situation and response activities •Operational information, new information or changes in situation, pressing challenges	Internal
Datapack	Weekly	•Multi-disease •Epi/surveillance (tables, figures and MAPS) •Response monitoring (indicators) •Alerts/signals •Core services	Internal
Situation reports	Weekly	•Summary •Epi/surveillance (tables, figures and MAPS) •Response monitoring (indicators)	External (listserve and WHO website)

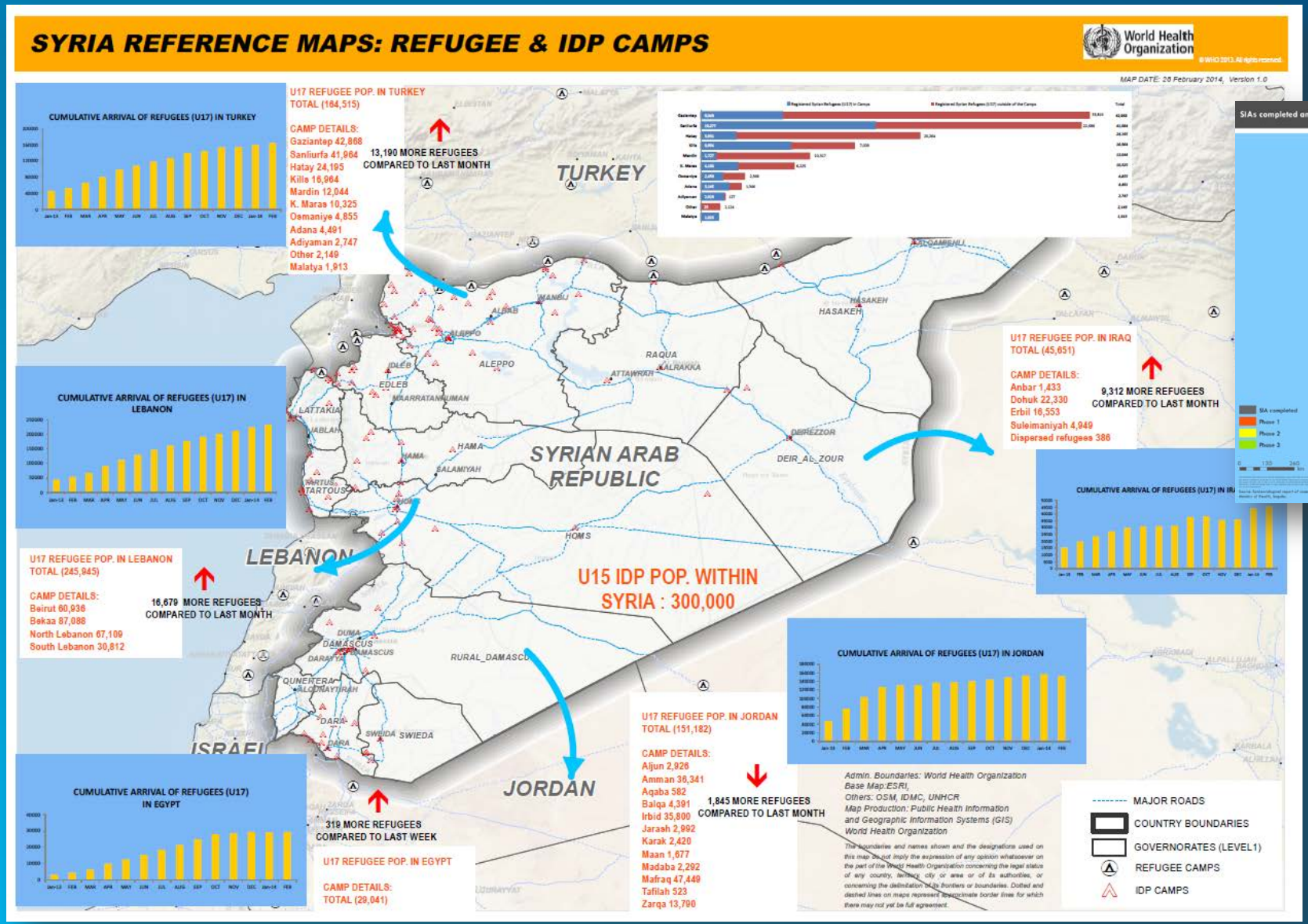


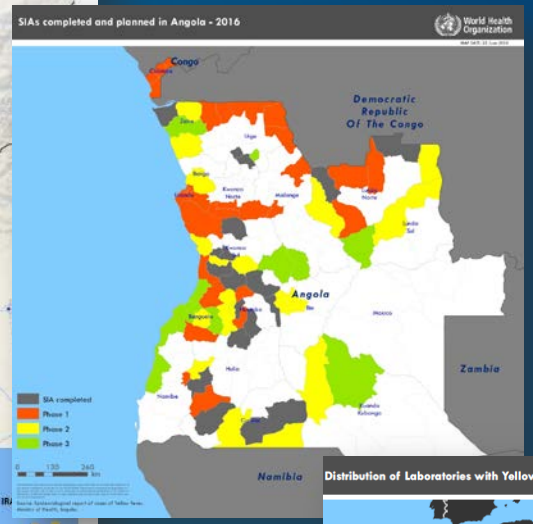


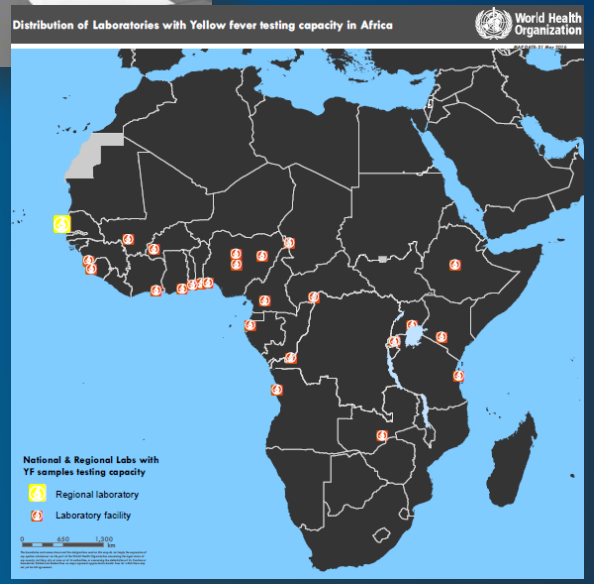




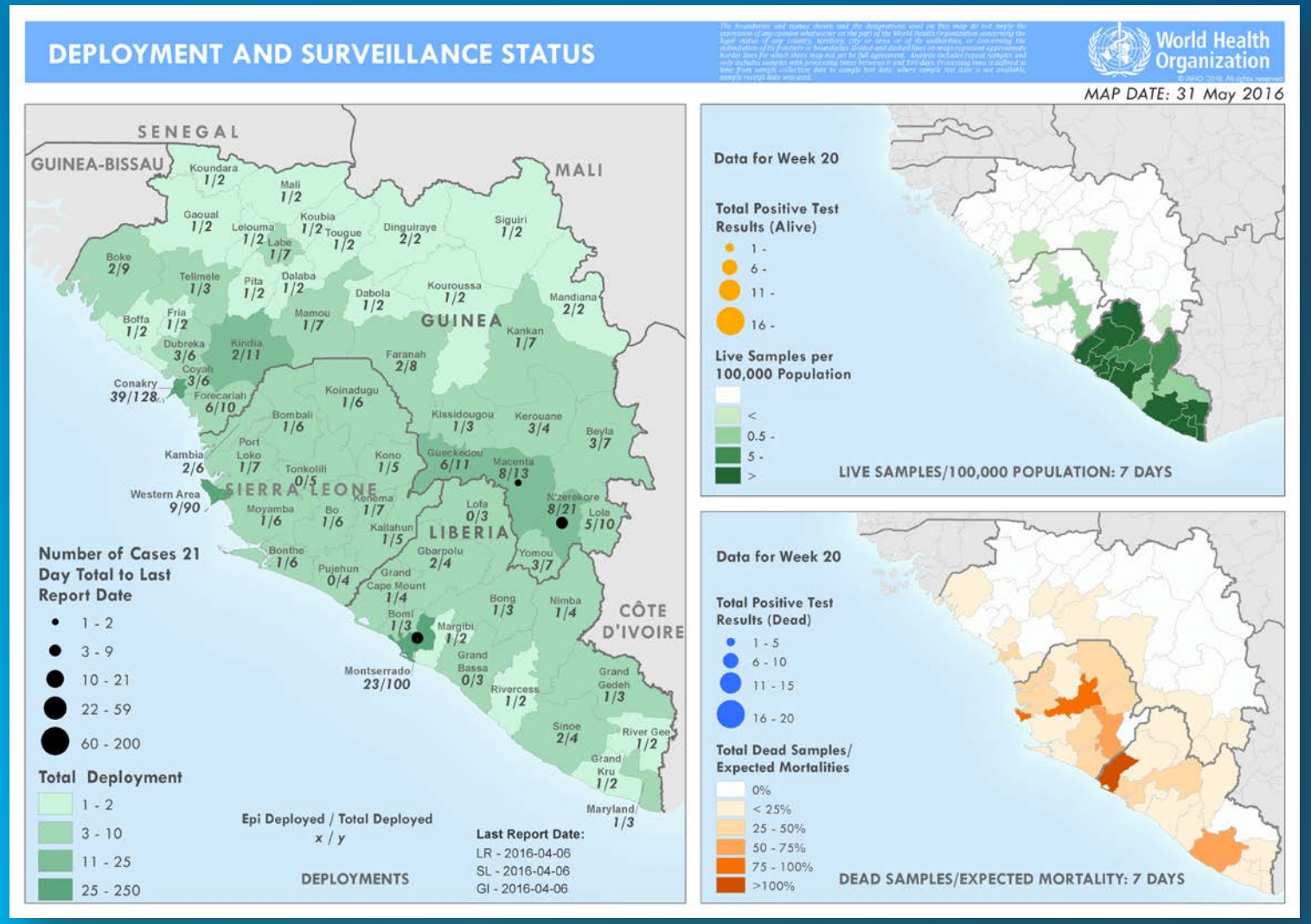
Strategic Planning

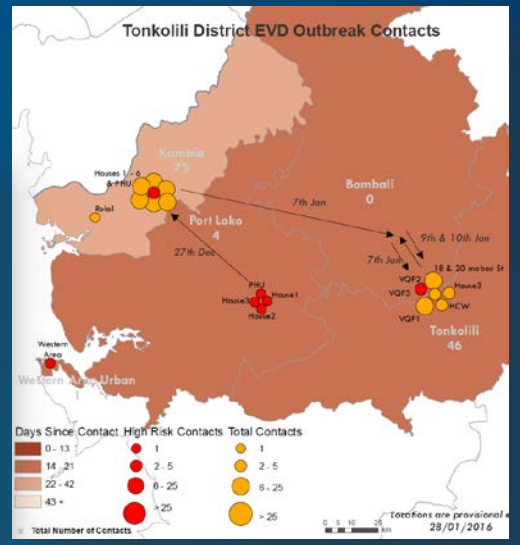


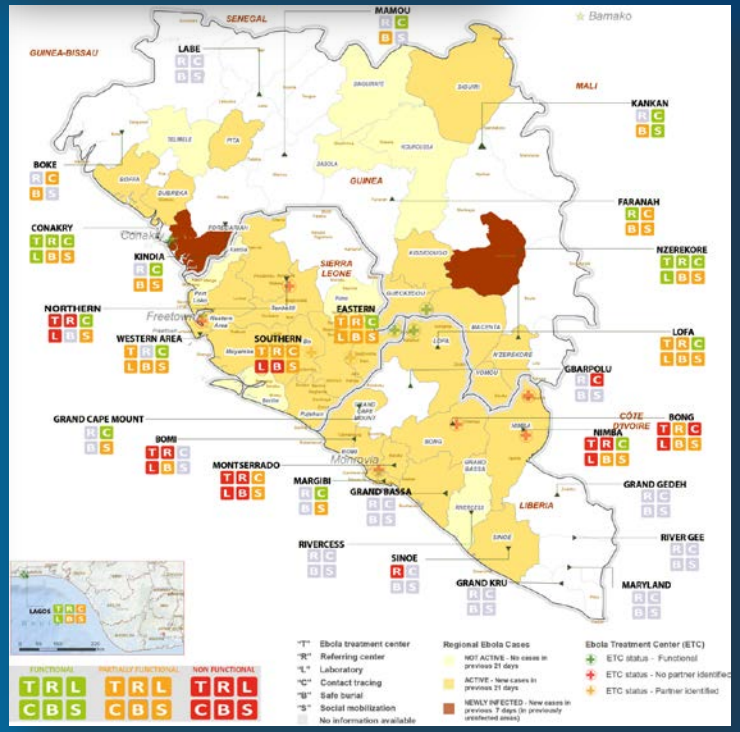




Response Monitoring



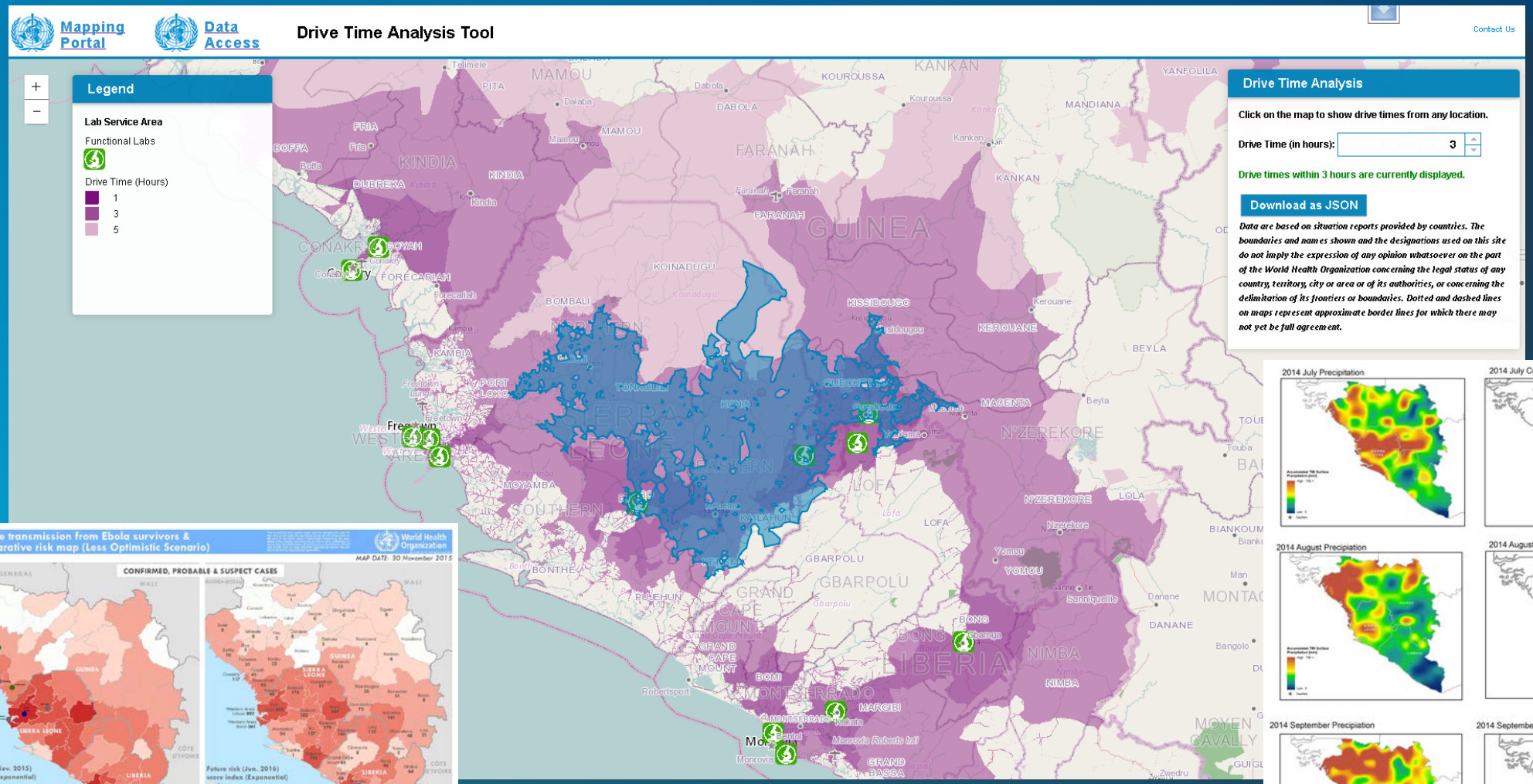


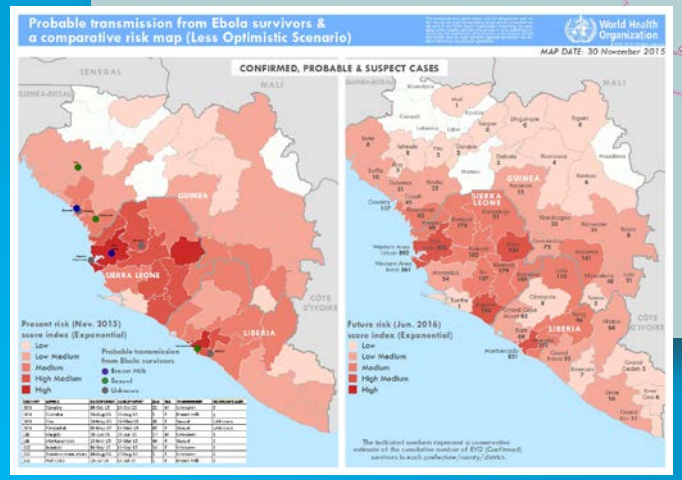


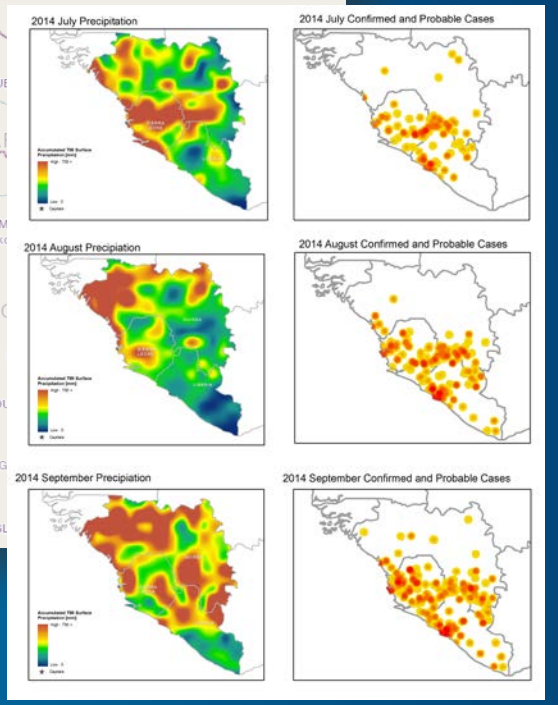
Response Monitoring

Research & Modelling

Research & Modelling







Media & Communication

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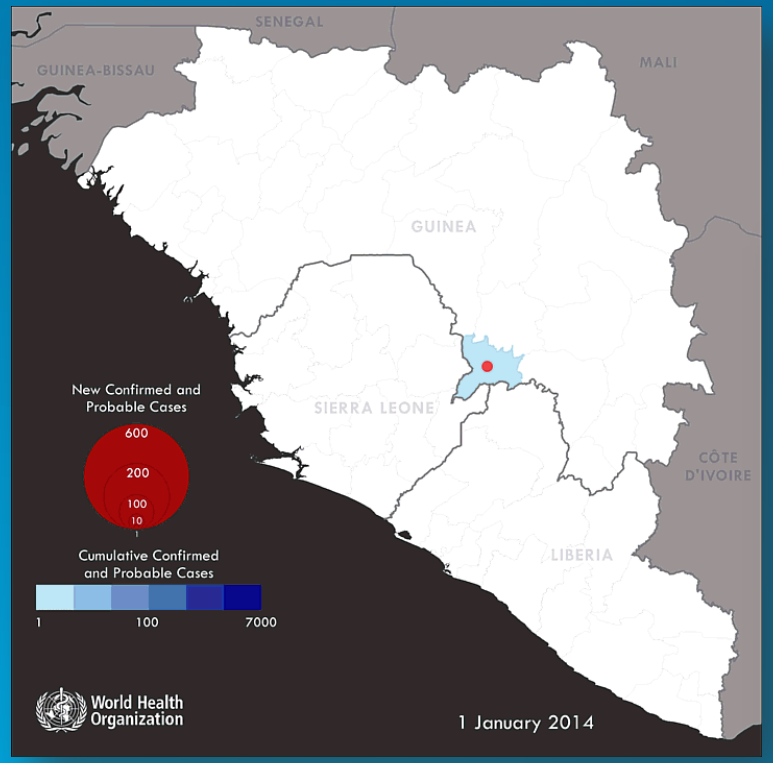
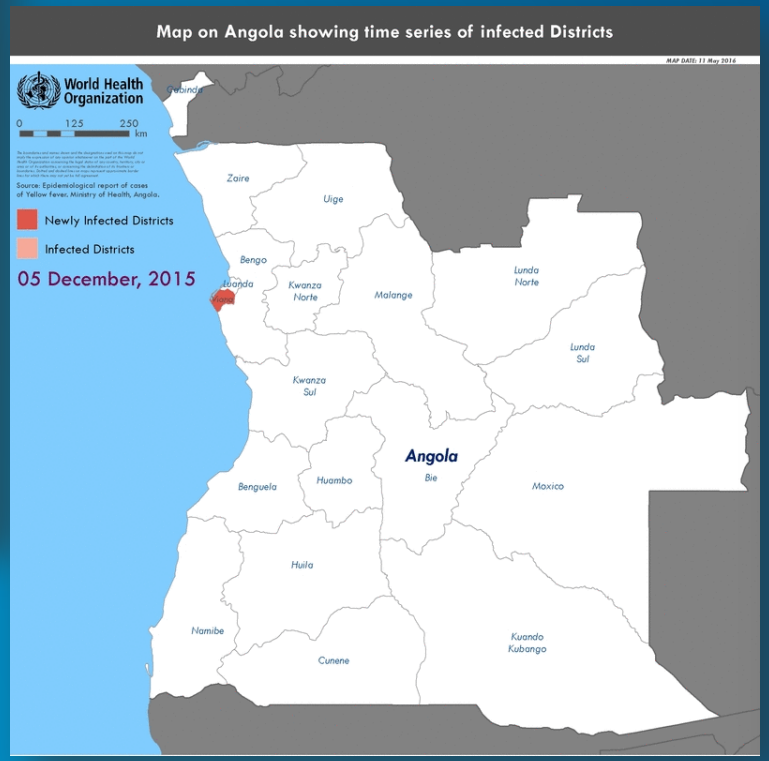
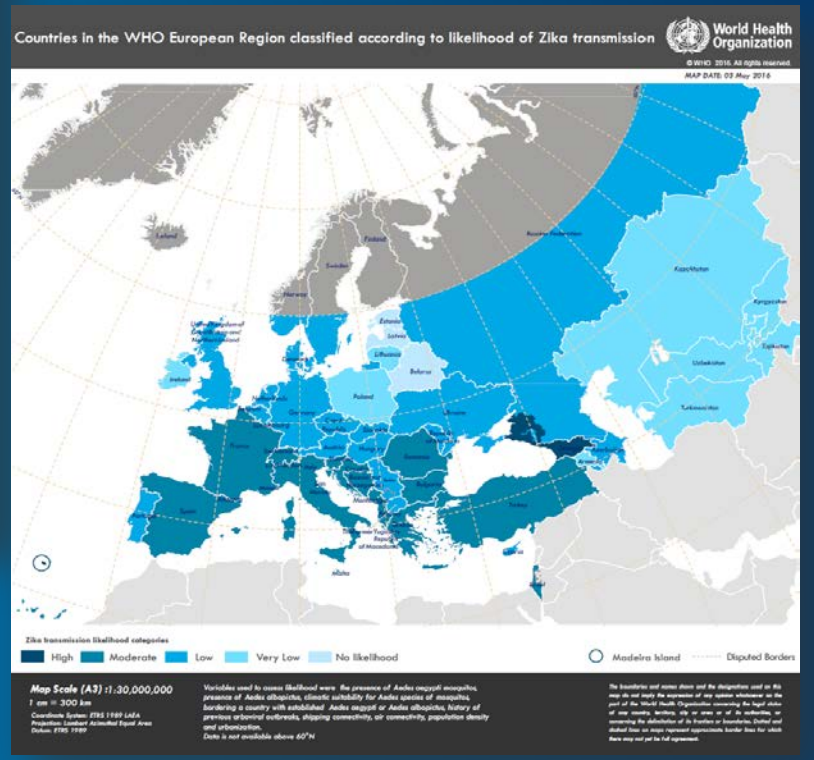
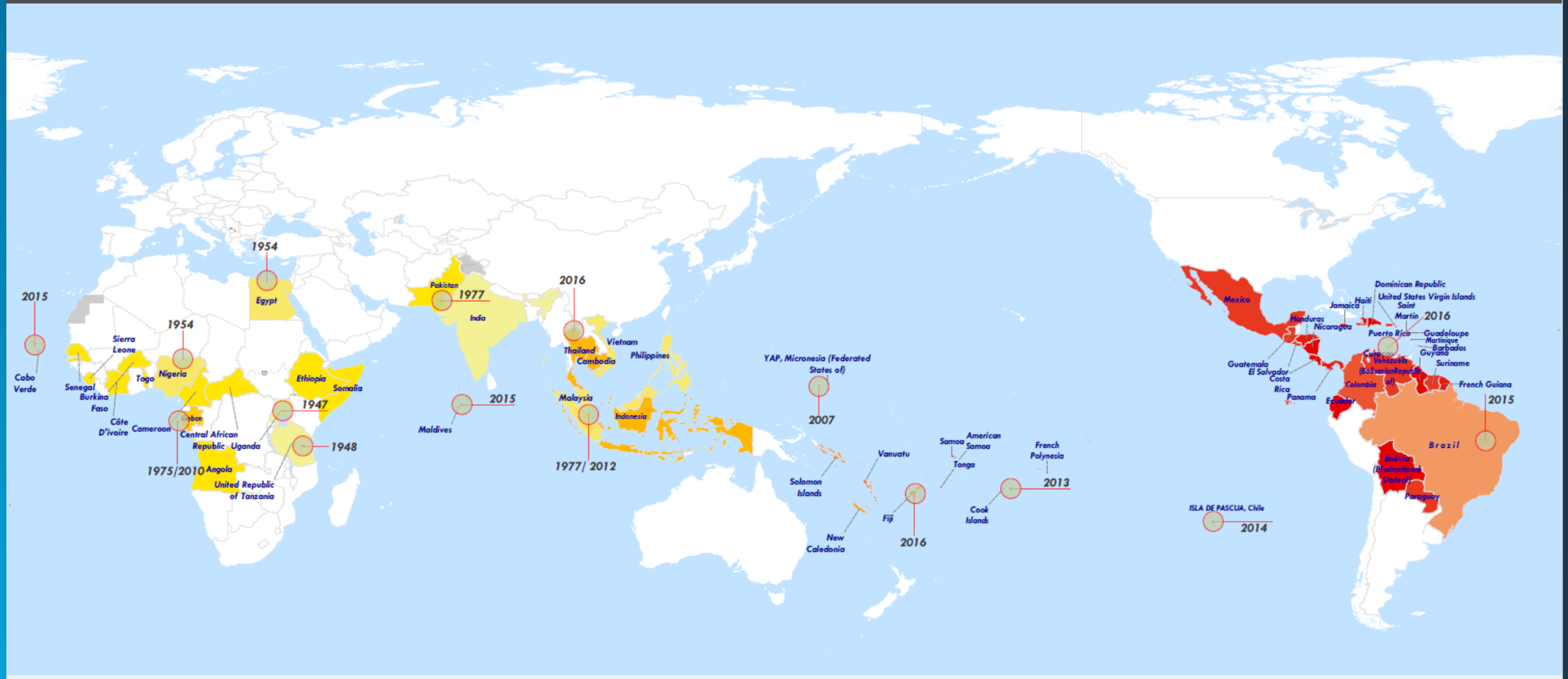






Countries and territories showing historical distribution of Zika virus, 1947 - 2016*

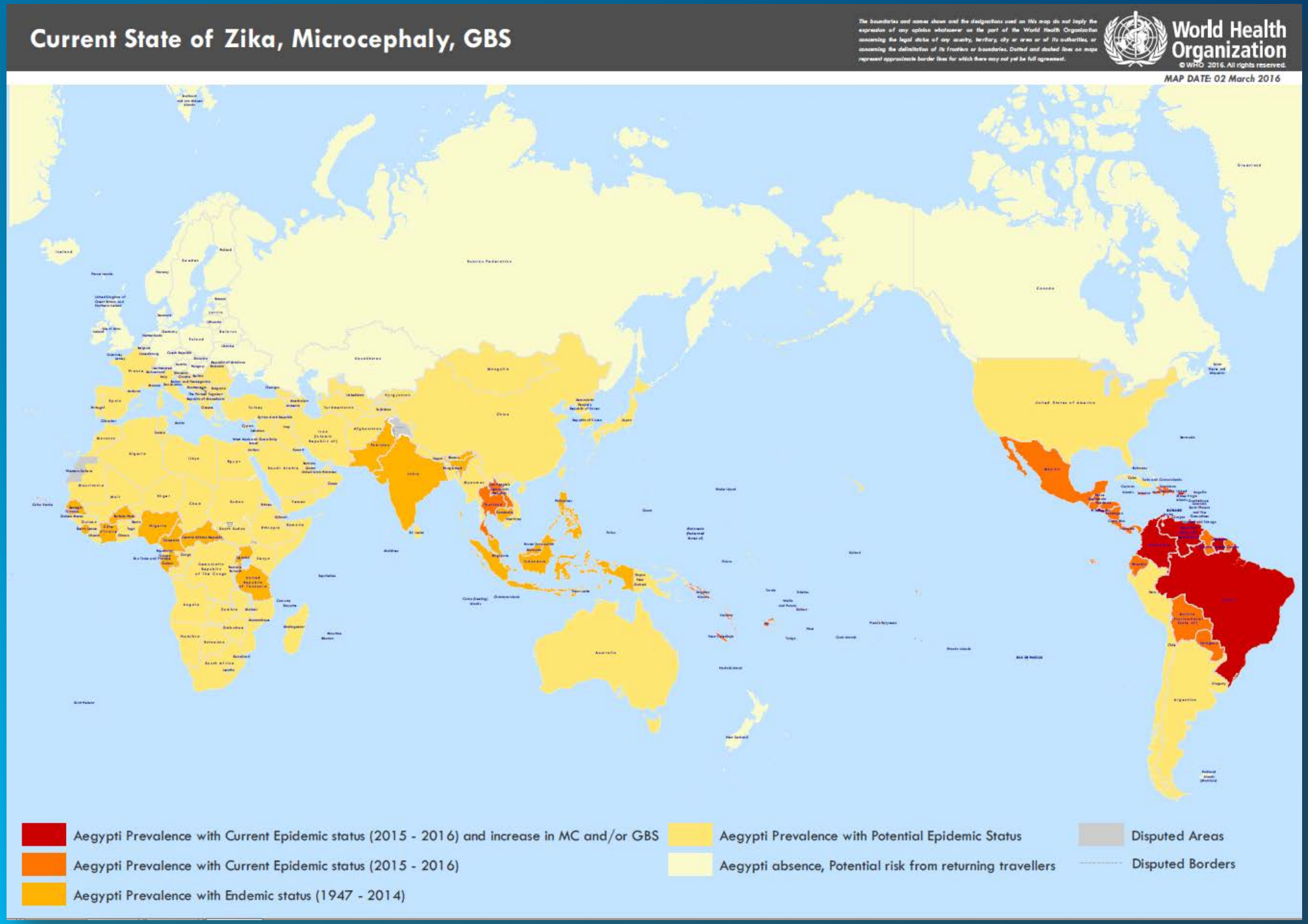


Available information does not allow measurement of the risk of infection; variable transmission among countries is not represented on this map.
Borneo, presently part of Malaysia got infected in 1953 is not represented in the map.
* Data in the map represents till 01 February 2016 as of 11 April 2016

Disputed Areas
Disputed Borders

World Health Organization

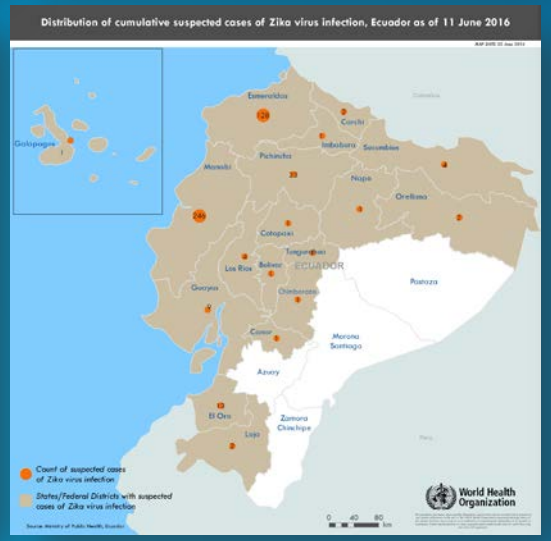
1947 - 1952	1953 - 1954	1960 - 1983	2007 - 2009	2012 - 2014	Jan 2015	Feb 2015	Apr 2015	Jun - Jul 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016
Uganda United Republic of Tanzania India	Philippines Malaysia Vietnam Egypt Nigeria	Angola Central African Republic Ethopia Senegal Pakistan Burkina Faso Togo Niger Cote D'Ivoire	Cameroon Sierra Leone Gabon Indonesia Benin Liberia Mali Costa Rica Cambodia Somalia	YAP, Micronesia (Federated states of) Gabon	French Polynesia ISLA DE PASCUA, Chile Cook Islands New Caledonia Malaysia Philippines Cambodia Indonesia Thailand	New Caledonia	Brazil Solomon Islands	Vanuatu	Maldives Samoa Fiji	Colombia Cabo Verde	El Salvador Guatemala Mexico Paraguay Suriname Venezuela (Bolivarian Republic of)	French Guiana Honduras Martinique Panama Puerto Rico	Bolivia (Plurinational State of) United States Virgin Islands Dominican Republic Costa Rica Guadeloupe Saint Martin Nicaragua Barbados Ecuador Guyana Jamaica Curaçao American Samoa Haiti Tonga



World Health Organization

Current Status of Zika, Microcephaly & GBS

Situational Awareness



more or less wherever it occurs.

- Population density in itself is a good measure of risk.

On the right, the map characterizes between the World Population Estimate Data and the "Spyglass" displaying the Oak Ridge National Laboratory - Landscan data for areas that are suitable for the *Aedes* mosquito to survive.

Analysis Results

The methodology demonstrated here provides a baseline model that can be updated as new data become available...

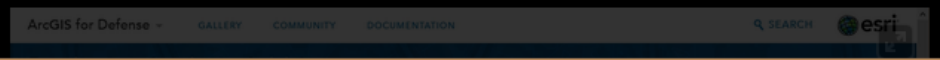
Adaptable methodologies for mapping emerging disease risks will be vital as global climate changes occur.

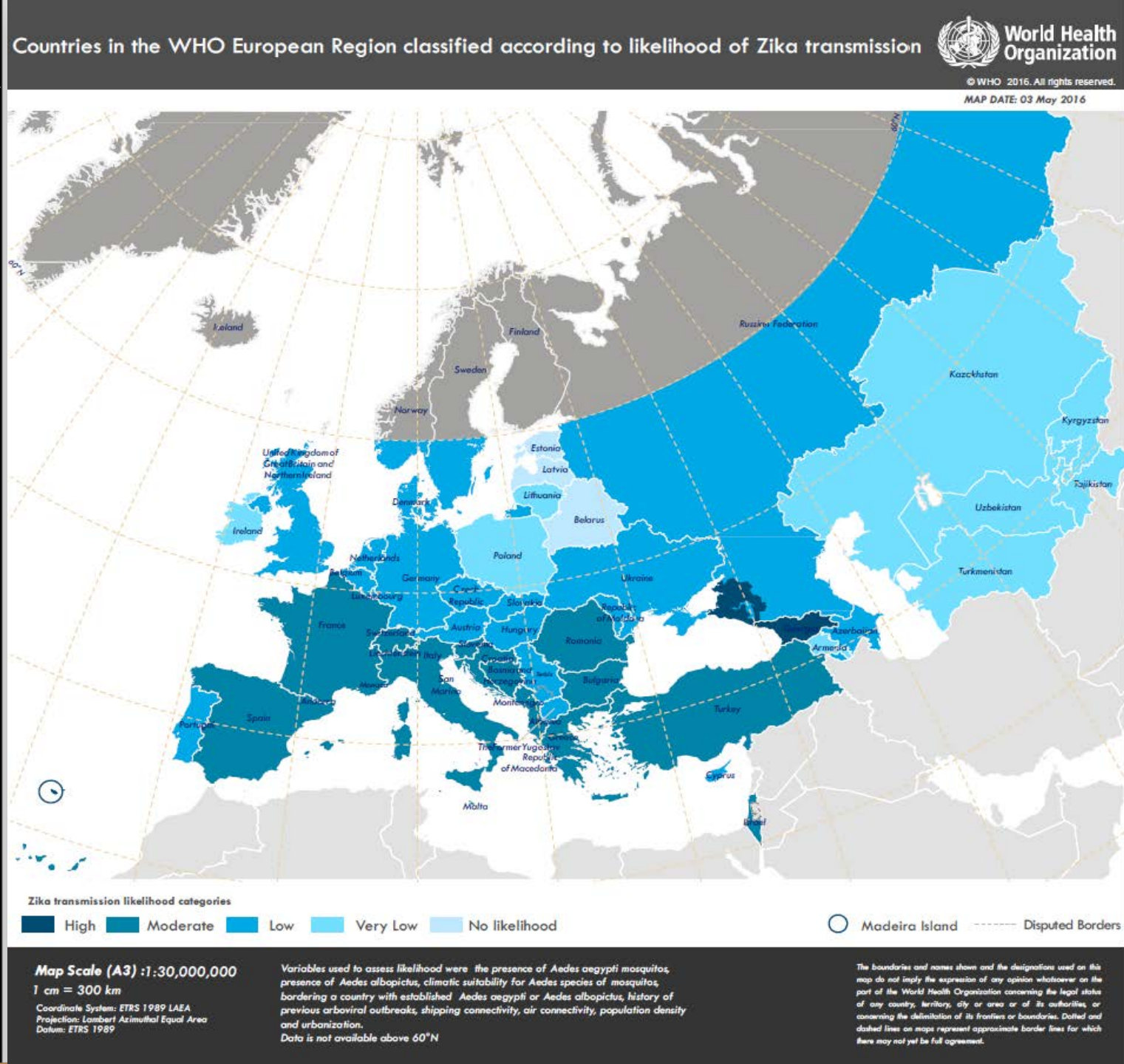
On the right, combining the analysis for the specified parameters of temperature, precipitation, elevation, land cover, and population density identified the seasonal locations suitable for vector borne disease habitat risk on the right.

Where do I get the tools?

Links to the tools are below (click on the images)...

Predictive Analysis Add-In





Why we care?

A story map

Zika Virus: Past, Present, and Future

Zika is exploding across the Americas and slowly creeping across the globe with documented cases in 24 countries (end of January) and more expected to come...

Countries and territories with active Zika virus transmission (Courtesy: CDC - 3 February 2016)

Officials estimate that as many as four million people may become infected with Zika before the outbreak is resolved, and it is definitely at pandemic status....

Image on the right (Accessed 4 February 2016):

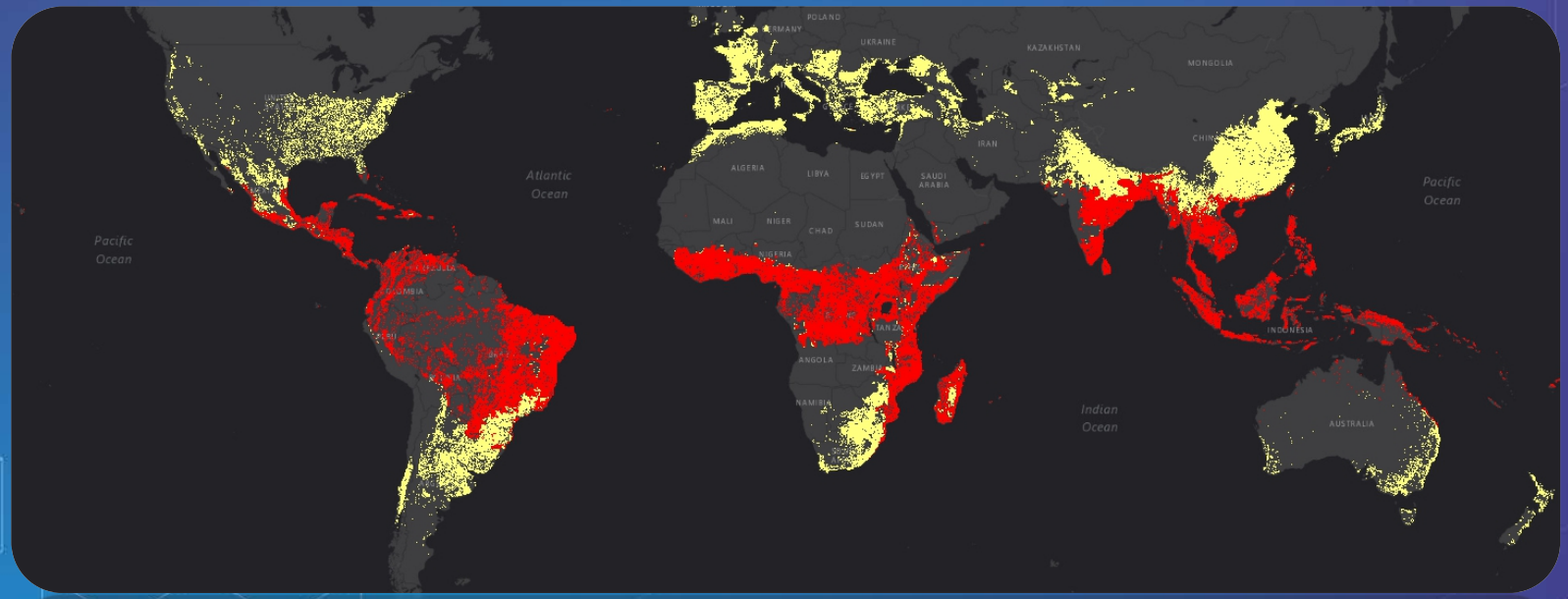
Aedes aegypti mosquitoes are seen in containers at a lab of the Institute of Biomedical Sciences of the Sao Paulo University, on January 8, 2016 in Sao Paulo, Brazil.

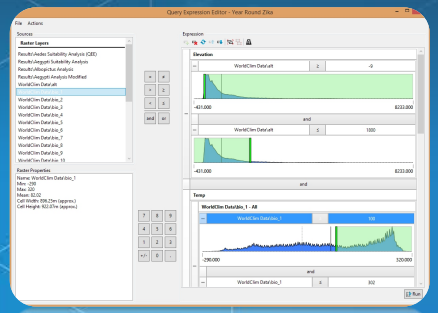
Image on Right: Courtesy BBC News/Reuters

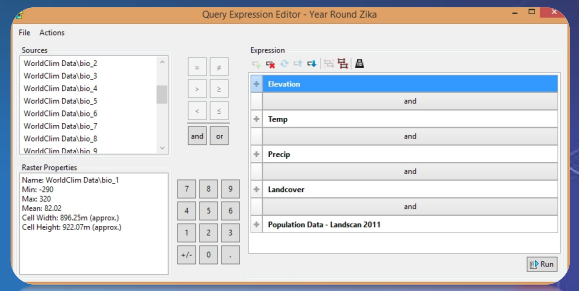
Why do we care about the Zika virus?

http://arcg.is/23MP6P2

Predicting *Aedes* habitat and suitable locations for vector borne disease







A story map

Edit

esri

Analyze vector-borne disease with the ArcGIS Predictive Analysis Tools

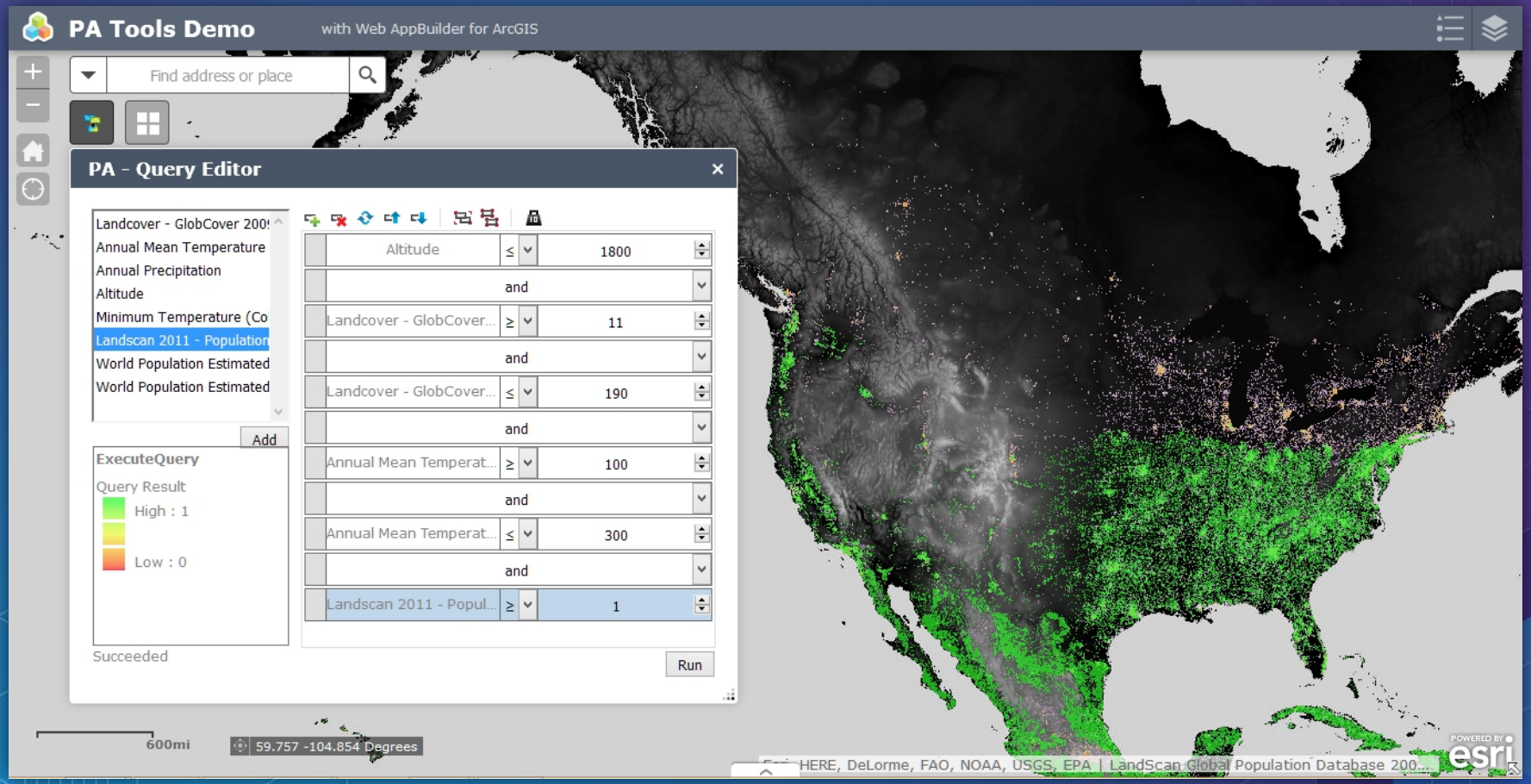
We've all woken up to find ourselves covered in those itchy red marks left behind by mosquitoes (some more than otners).... Providing us with the itchiest insect bites known to man, but also potentially leaving us with contracting some nasty diseases such as malaria, yellow fever, dengue, and Zika!

Why do we care?

Methodologies for mapping emerging disease risks will be vital as threats to human and animal health will need to be modeled with the likely impact of climate change.

http://arcg.is/1sbfofp

Predictive Analysis Web Application

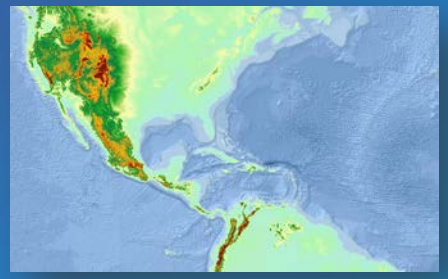


[Predictive Analysis Web 1.0.1 for Web AppBuilder 1.2] -
http://solutions.arcgis.com/defense/templates/predictive-analysis-web/

Predicting *Aedes* Habitat and suitable locations for vector borne disease

Summary

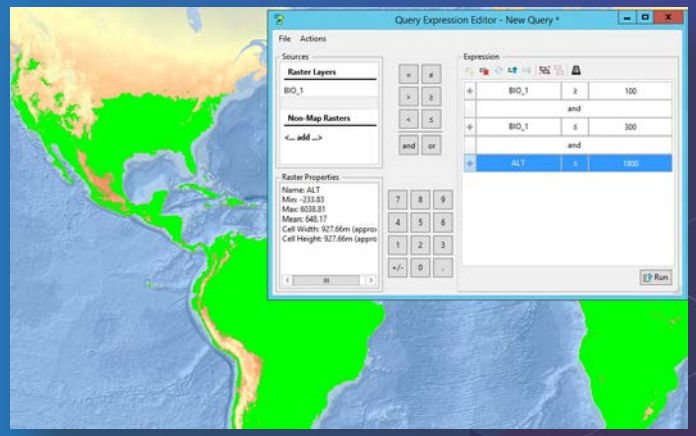
Annual Precipitation

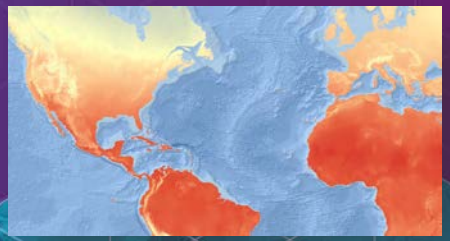


Altitude

Minimum Temperature

1. Where are we likely to have mosquito borne disease?
2. What are the most important parameters to minimize risk?
3. Which environments are most suitable to mosquito borne disease?





Maximum Temperature

Population

Landcover

Questions?