

## A New Climate Model Can Predict Dengue Outbreaks in the Caribbean Region

*The risk of outbreaks is highest after a period of drought followed by intense rainfall several months later*

Barcelona, 30 July, 2018.- Changes in climate, such as rain and drought, can affect the risk of mosquito-borne diseases such as dengue, chikungunya and Zika. An international team comprising the Barcelona Institute for Global Health ([ISGlobal](#)) -an institution supported by “la Caixa” Foundation- has developed a **new tool to predict the impact of droughts and extreme rainfall on the risk of dengue outbreaks**.

Over the last years, **the Caribbean region has faced a large number of disease outbreaks** transmitted by the *Aedes* mosquito (dengue, chikungunya and Zika). It is also a region with large drought periods, particularly in years with El Niño events. During these dry seasons, many households store water in recipients, which represents ideal breeding sites for mosquitoes. However, few studies have examined the effects of prolonged drought on dengue transmission.

Now, an international team has developed a statistical model for **the Caribbean Institute for Meteorology & Hydrology** in order to predict dengue outbreaks in Barbados. The methodology is based on previous studies performed for Brazil and [Ecuador](#). Based on temperature and rainfall data, they built a model that predicted monthly dengue cases between 1999 and 2016.

The results, published in [Plos Medicine](#), show that **the tool successfully predicted the months with dengue outbreaks**. In particular, the optimal conditions for outbreaks were **drought periods followed by a combination of hot conditions and intense rainfall 4 to 5 months after**.

**Rachel Lowe**, lead author and researcher at ISGlobal and the London School of Hygiene & Tropical Medicine, explains: “this is the first statistical model that considers the **combined impact of drought and rainfall in disease risk**. This is important because climate change is leading to more intense and frequent droughts and hurricanes in the region,” she adds.

The researcher of the ISGlobal Climate & Health programme concludes: “this tool is of great value for public health policies since it helps **to plan interventions aimed at reducing the risk of dengue and other mosquito-borne diseases**.” In fact, this model is expected to contribute to an **early warning system in the entire Caribbean region** to predict possible outbreaks of mosquito-borne diseases, three months in advance.

## Reference

Nonlinear and delayed impacts of climate on dengue risk in Barbados: A modelling study Rachel Lowe, Antonio Gasparrini, Cédric J. Van Meerbeeck, Catherine A. Lippi, Roche Mahon, Adrian R. Trotman, Leslie Rollock, Avery Q. J. Hinds, Sadie J., Ryan, Anna M. Stewart Ibarra. *Plos Medicine*. 17 July 2018. <https://doi.org/10.1371/journal.pmed.1002613>

## About ISGlobal

The Barcelona Institute for Global Health, ISGlobal, is the fruit of an innovative alliance between the "la Caixa" Foundation and academic and government institutions to contribute to the efforts undertaken by the international community to address the challenges in global health. ISGlobal is a consolidated hub of excellence in research that has grown out of work first started in the world of health care by the Hospital Clínic and the Parc de Salut MAR and in the academic sphere by the University of Barcelona and Pompeu Fabra University. The pivotal mechanism of its work model is the transfer of knowledge generated by scientific research to practice, a task undertaken by the institute's Education and Policy and Global Development departments. ISGlobal a member of the CERCA programme of the Generalitat de Catalunya.

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