ID-Extremes: Digital Technology Development Award in Climate Sensitive Infectious Disease Modelling

Description

Interacting and successive extreme climatic events, such as droughts and floods, can trigger outbreaks of multiple infectious diseases. These compound hazards can devastate communities if risk reduction plans are not implemented to protect vulnerable populations. Recent methodological advances in climate-sensitive disease modelling have allowed the quantification of the combined impact of hydrometeorological extremes on disease risk. However, this research has not been developed into user-friendly and sustainable tools to serve anticipatory action planning of a diverse set of users.

Our goal is to develop an infectious disease modelling tool called ID-Extremes within an existing open-source framework for climate science, to predict the probability of outbreaks using observed and forecast hydrometeorological indicators. The flexible design will allow users in different settings to input observed (long-lag) and forecast (short-lag) hydrometeorological indicators, such as drought and flood indicators, and output the probability of an outbreak of a given climate-sensitive disease (e.g., dengue, malaria, or cholera) several months in advance. ID-Extremes will be integrated into existing communities of practice, as a new health service for the Barbados Meteorological Service, a new climate service for the Brazilian Ministry of Health and an early action trigger tool for humanitarian agencies operating in Asia and Africa.

ID-Extremes will allow users to address the following questions in their local context:

- What is the association between interannual variation in overlapping and interacting climatic drivers and disease risk in space and time?
- Which combination of lagged climatic drivers best predict changes in the timing and intensity of CSID outbreaks?
- What is the probability of an outbreak in a given place and time?
- How well would the model have performed in the past (e.g. in terms of true and false positive rates)?

Find out more: https://www.bsc.es/news/bsc-news/three-bsc-projects-dive-the-digital-domain-fight-against-infectious-diseases-due-climate-change

About the consortium

Coordinated by the Barcelona Supercomputing Center- Centro Nacional de Supercomputacion (BSC), our team comprises model developers, data scientists, software engineers and decision-makers from humanitarian agencies, ministries of health, meteorological services and research institutions operating in

Latin America and the Caribbean, Europe, South Asia and Africa.

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