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## **E4Warning: ECO-EPIDEMIOLOGICAL INTELLIGENCE FOR EARLY WARNING AND RESPONSE TO MOSQUITO-BORNE DISEASE RISK IN ENDEMIC AND EMERGENCE SETTINGS**

### **Description**

The COVID-19 pandemic has starkly demonstrated the need for better disease intelligence that is capable of anticipating and identifying epidemic risks and outbreaks. This includes emerging and re-emerging mosquito-borne disease (MBD) risks. In the absence of effective vaccine solutions for most MBDs, attention has turned to vector management as an effective, but underutilized opportunity for combating these diseases.

The basis of such management should come from a deep understanding of the factors that drive disease circulation, emergence and spread. This requires a view of the complex interplay between humans, disease-carrying mosquitoes, disease reservoirs (e.g., birds), and the environment, including all the factors that drive spatial behavior and interactions. Among other things, we have insufficient empirical data about water-climate relationships, and the socio-ecological factors driving heterogeneous interactions and modulating disease pathways. This leaves us unable to make good predictions about the risks and spreading patterns of MBDs and it weakens our ability to design effective prevention, control, and treatment strategies.

The E4Warning consortium brings together interdisciplinary, innovative, and open science to contribute to the One Health paradigm shift that is required to tackle the spread of zoonotic pathogens and the emergence of zoonotic disease transmission. It will improve understanding of the interplay between humans, mosquitoes, reservoir species and the environment, and harness this to nowcast and forecast MBD risk in a constantly changing and globally connected environment.

### **Objectives**

We will combine innovative tools and methodologies associated with three types of Earth Observation data: space-based, in-situ (land)-based, and citizen-based, with advanced, multi-sourced statistical and big data modelling to overcome the barriers that are currently limiting our early warning capacity. Our work will put resistance into the disease circuits connecting humans, mosquitoes, and birds through innovative environmental observations and intelligent digital solutions and add to new technological trends that fuel open innovation take-up by public health administrations.

Find out more: <https://cordis.europa.eu/project/id/101086640>

## About the consortium

The consortium is coordinated by the Agencia Estatal Consejo Superior De Investigaciones Cientificas (CSIC), and the Barcelona Supercomputing Center- Centro Nacional de Supercomputacion (BSC) is one of the 12 partner institutions.

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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**Source URL (retrieved on 20 Sep 2024 - 14:06):** <https://www.bsc.es/es/research-and-development/projects/e4warning-eco-epidemiological-intelligence-early-warning-and>