

OC 4.1: ARBOCARTO: an operational spatial modeling tool to predict *Aedes albopictus* dynamics and the impact of vector control interventions

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Aedes albopictus and *Aedes aegypti* mosquitoes have a worldwide distribution and, as main vectors of dengue, chikungunya and Zika viruses, constitute a threat for public health both in tropical and temperate regions. To better target surveillance and control of *Aedes*-borne diseases, there is a need for tools with the capacity to predict the spatially distributed dynamics of mosquito vectors at a local scale. In addition, to be used by public health authorities and vector control services, such tools need easy-to-use interfaces

allowing a customization by the user according to the geographical and entomological contexts.

'ARBOCARTO' is a spatial modeling tool based on a generic mosquito life cycle-based model, driven by meteorological variables (temperature and rainfall). Its implementation considers the landscape context described from very high spatial imagery and/or ancillary data provided by the user, and the different functionalities allow the user to test different scenarios, such as the impact on mosquito dynamics of prevention measures (e.g., reduction of the number of breeding sites) or control actions (e.g., pulverization of insecticides). We present its application in various geographical contexts.

In highly diverse environments and latitudes, the comparison between the model outputs and observed entomological data demonstrated the ability of 'ARBOCARTO' tool to provide valuable complementary information to existing entomological surveillance programs. Thanks to its user-friendly interface, 'ARBOCARTO' could be adopted by a broad community of managers involved in vector control.

OC 4.2: Citizen-based surveillance of invasive mosquitoes within multi-sourced modelling

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