Model-Data Fusion for Mosquito-borne Diseases

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Mosquito-borne diseases have been emerging and re-emerging in the Americas, causing millions of human illnesses. Recent examples include Zika virus and chikungunya. In order to quantify the impact of past outbreaks and predict the course of future outbreaks, it is necessary to merge models with heterogeneous data streams. We present both statistical and mechanistic modeling for mosquito-borne disease spread coupled with data including demographics, human case counts, weather, and satellite to predict risk. We highlight the relative usefulness of our data streams and models depending on the question we are answering and its scale.

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