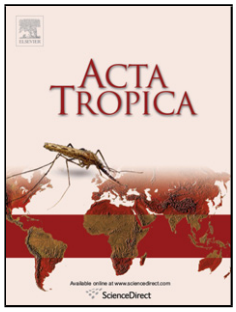

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Improving the prediction of arbovirus outbreaks: a comparison of climate-driven models for West Nile virus in an endemic region of the United States.

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Abstract

Models that forecast the timing and location of human arboviral disease have the potential to make mosquito control and disease prevention more effective. A common approach is to use statistical time series models that predict disease cases as a lagged function of environmental variables. However, the simplifying assumptions required for standard modeling approaches may not capture important aspects of complex, non-linear transmission cycles. Here, we compared a set of alternative models of human West Nile virus (WNV) in 2004-2017 in South Dakota, USA. We used county-level logistic regressions to model historical human case data as functions of distributed lag summaries of air temperature and several moisture indices. We tested two