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Modeling the transmission of West Nile virus with weather conditions

Weather (temperature and precipitation) can affect the abundance and the behavior of vector mosquitoes for West Nile virus. In this study, we incorporate the daily weather conditions to model the transmission of West Nile virus in birds and mosquitoes. Using the mosquito abundance from a statistical model, surveillance data and daily weather from the Peel Region, Ontario, we explore how the weather conditions effect the mosquito behaviors through the biting rate and death rate. Some simulation results under different weather patterns will be presented to illustrate the complex dynamics of the transmission.