

Spatial Reconstruction of Land Surface Wetness with a TOPMODEL-based Dynamic Hydrology Model

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Abstract

In previous work we have focused on establishing the relationship between the lowland saturated pooling of water and mosquito populations [*Shaman et al.*, 2001a; *Shaman et al.*, 2001c]. In this study we attempt to explore the mosquito habitats themselves. We have begun an effort to sample mosquito larvae at Black Rock Forest on a continual basis; however, at this point we still do not understand the relationship between 1) model generated soil wetness and *in situ* wetness; and 2) the larvae habitats and the *in situ* surface pools in which they develop. Exploration of these links requires both accurate collection of mosquito larvae and a determination of the fidelity of modeled surface wetness.

In this study using ground truth measurements of both surface pooling and soil moisture levels, we will determine the accuracy to which the distribution of wetness across the land surface can be represented with a dynamic hydrology model. By better understanding the distribution of modeled surface wetness, our ability to forecast mosquitoes and mosquito-borne diseases will improve.