1125-92-1063 **D. I. Wallace*** (dwallace@math.dartmouth.edu), Department of Mathematics, Dartmouth College, Hanover, NH 03755. *Malaria and vector dynamics in the Kenyan highlands.*

A dynamic model of malaria transmission in response to mosquito habitat changes is constructed based on the classic Ross model using a system of ordinary differential equations. Such a model takes the parameters controlling the spread of disease as input and gives predicted incidence of malaria cases as output. A dynamic model has an advantage over models based on statistical correlations or data fitting because causality is clearer in dynamic models than in data-driven correlations.

Our model includes not only the dynamics of infected mosquitos and infected humans, but also the abundance of mosquitos and larvae at each stage of development. Therefore, the first stage of the development of this model involves modeling Anopheles gambiae larval and adult populations that matches temperature dependent maturation times and mortality measured experimentally as well as larval instar and adult mosquito emergence data, which is provided from field studies in the Kenyan Highlands. This allows us to investigate the impact of habitat changes on total mosquito population, which then affects the population of infected mosquitos and the population of infected human beings. The objective of this project is to predict the degree of malaria endemicity in response to mosquito habitat changes. (Received September 14, 2016)