1135-60-1011   **Divine Wanduku*** (`dwanduku@georgiasouthern.edu`), 65 Georgia Ave., Room 3042, Statesboro, GA 30458. *Exploring the effects of white noise on the dynamics of malaria in a highly random environment.* Preliminary report.

Malaria ranks amongst the world's top killers. According to WHO report released in December 2016, there were 212 million cases of malaria resulting in about 429 thousand deaths. Moreover, more than two thirds of the global malaria related deaths are children under the age of 5. In this study, a class of stochastic dynamic models (Ito-Doob type) for malaria is presented. The class type is determined by the qualitative behavior of the nonlinear incidence rates of the disease. Furthermore, the malaria dynamics is influenced by random perturbations from the disease transmission and natural death rates of humans, which are represented by independent white noise processes. The class of malaria models exhibits three random delays:- two of the delays represent the incubation periods of the malaria plasmodium inside the vector and human hosts, whereas the third delay is the period of effective naturally acquired immunity against the disease. This talk focuses on exploring the impacts of the noises in the system on the eradication of malaria via comparative analyses of the family of stochastic models under different intensities of the noises in the system. Numerical simulation results are presented. (Received September 18, 2017)