1096-45-2255 **Emmanuel J. Morales Butler*** (ejmorale@asu.edu), Mathematical, Computational & Modeling, Sciences Center, Arizona State University, Physical Sciences, A-Wing, Tempe, AZ 85287-1904, and **Juan P. Aparicio** (juan.p.aparicio@gmail.com) and **Carlos Castillo-Chavez** (ccchavez@asu.edu). *A Global Uncertainty and Sensitivity Analysis on a Simple Age-of-Infection SIR Model.* Preliminary report.

Simple epidemiological models are frequently used to estimate the effect of different control strategies on epidemics dynamics. In some cases effect of parameter uncertainty is quantified via uncertainty analysis on model output variables like the basic reproduction number or the final epidemic size. However a more general question is how these quantities depend on model assumptions. Here we consider the effect of the assumed distribution for the infectious period on the output variables. In this work we modeled the infectious period using the family gamma distribution which include as limiting cases the exponential and the delta distributions. In this work a global uncertainty and sensitivity analysis is applied to a simple age-of-infection Susceptible-Infectious-Recovered model described by a nonlinear system of Volterra integral equations. Results reflect that the variance of the infectious period distribution is a key input modeling parameter in the prediction precision of three out of five output variables considered. The novel application in this work serves as a research decision tool that determines which type of a nonlinear system is more suitable to utilize: if a model governed by Volterra integral equations or ordinary differential equations. (Received September 17, 2013)