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W. E. Fitzgibbon*, Department of Mathematics, Houston, TX 77204, and **J. J. Morgan, G. F. Webb** and **Y. Wu**. *The Role of Advection and Diffusion for Modeling the Spatial Spread of Disease*.

There is a growing literature regarding the use of reaction diffusion equations for modeling the spatio-temporal spread of diseases. Recently we have been working on models that incorporate both diffusion and advection as mechanisms of dispersal for either hosts, vectors, or pathogens. Dispersion can result from the movement of hosts and/or vectors, it can be wind driven, or result from the flow of surface or subsurface water. The modelling may couple systems of partial differential equations across fragmented domains, different domains or across domains of different dimension. The domains may be bounded or unbounded or both. In this talk, we will discuss our modeling and analysis of a variety of scenarios for the advective-diffusive spread of infectious disease. (Received December 06, 2019)