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**Leah M Mitchell\*** (lmmitchell@wpi.edu) and **Andrea Arnold**. *Effects of observation function selection in nonlinear filtering for epidemic models*. Preliminary report.

Nonlinear filtering is an approach to solving the inverse problem of estimating unknown states and/or parameters of a system. The ensemble Kalman filter (EnKF) is one such algorithm that can be used for nonlinear, non-Gaussian systems within a Bayesian inference framework. One component of the EnKF is the observation model, which relates the discrete, noisy data back to the system model. The observation model can take different forms based on assumptions relating to the available data and relevant system parameters. The goal of this research is to explore the effects of selecting different observation models in the EnKF framework. In particular, four different observation models, of different forms and various levels of complexity, are examined through an application to epidemiology. Results discuss the effects of the observation model selection on the filter output. (Received September 16, 2018)