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**Matthew J Hoffman\*** (mjhsma@rit.edu), 85 Lomb Memorial Dr., School of Mathematical Sciences, Rochester, NY 14623-5602. *Correcting flow estimates in Chesapeake Bay using data assimilation.*

An ensemble Kalman filter data assimilation system has been applied to a model of the Chesapeake Bay for the purpose of regional ocean prediction. Observation simulation experiments have shown that the LETKF improves the state estimate of the system using a realistic simulated observation system. Errors in forcing in the Bay dominate the chaotic growth of initial condition errors. Model errors, most importantly over-mixing that leads to reduced stratification, are also important. Experiments show that the assimilation improves the state using an ensemble of forcing fields as well as adaptive inflation techniques to counteract forcing and model errors. We evaluate improvements made for a reanalysis of the year 2003 and the changes made to the geophysical flow. (Received September 22, 2011)