1086-37-1931 **Nicholas A Allgaier*** (nicholas.allgaier@uvm.edu), **Kameron D Harris** and **Christopher M Danforth**. *Empirical correction of a toy climate model.*

Improving the accuracy of forecast models for physical systems such as the atmosphere is a crucial ongoing effort. The primary focus of recent research has been reducing error in state estimation, but as that error has been successfully diminished, the role of model error in forecast uncertainty has duly increased. In this talk we investigate an empirical model correction procedure involving the comparison of short forecasts with a reference truth system, in order to calculate (1) state-independent model bias and (2) state-dependent error patterns. An estimate of the likelihood of the latter error component is computed from the current state at every timestep of model integration. The effectiveness of this technique is explored in a realistic scenario, in which the model is structurally different (in dynamics, dimension, and parametrization) from the target system. Results suggest that the correction procedure is more effective for reducing error and prolonging forecast usefulness than parameter tuning. However, the cost of this increase in average forecast accuracy is the creation of substantial qualitative differences between the dynamics of the corrected model and the true system. A method to mitigate dynamical ramifications and further increase forecast accuracy is presented. (Received September 24, 2012)