

1065-37-266

Cecilia Gonzalez-Tokman and **Brian R Hunt*** (bhunt@umd.edu). *Ensemble Methods and Data Assimilation.*

I will speak about ensemble methods that approximate and/or characterize a trajectory (or pseudotrajectory) of a chaotic dynamical system without linearizing the system, including a particular method ("Local Ensemble Transform Kalman Filter") developed at the University of Maryland for data assimilation in spatially extended systems. By "ensemble method" I mean an iterative procedure that alternately: (1) makes a short-term forecast from an ensemble of initial conditions; and then (2) adjusts the ensemble by some prescribed algorithm to determine initial conditions for the next forecast. The methods I consider seek to maintain an ensemble whose spread is reasonably small and that approximately spans the most unstable directions in its vicinity. In data assimilation, the method inputs a time series of (noisy) observations of an otherwise unknown trajectory, and seeks to keep the ensemble close to that trajectory. I will discuss theoretical results for hyperbolic systems, joint with Cecilia Gonzalez-Tokman, and practical results for data assimilation in spatially extended systems, including weather forecast models. (Received September 14, 2010)