



Some experiments with artificial neural networks in data assimilation

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Abstract:

Data assimilation is an essential step for operational forecasting systems by means of a weighted combination between observational data from a mathematical model. Artificial neural networks (ANN) have been proposed as a new technique for data assimilation. The new method is presented with applications on Lorenz system under chaotic regime, atmospheric models, and space weather (the latter, a three-wave model of auroral radio emissions).

The performance of the ANN is evaluated with different data assimilation methods: Kalman filter (KF), variational method, and particle filter. In addition, we explore two ANN implementations: multilayer perceptrons, and radial base function.