Séminaire Vendredi 6 Juin 11h00 / Seminar Friday June 6, 11:00 AM

Conférencier/Lecturer: Seung-Jong Baek (University of Maryland)

Sujet/Subject: Accounting for the surface pressure background bias in an ensemble-based analysis scheme

Présentation/Presentation: Anglais / English

Lieu/Room: Grande salle du premier étage CMC

Résumé/Abstract:

The difference between the dynamics of a numerical weather prediction model and the dynamics of the real atmosphere contributes to the error in the forecasts. When the model is employed to provide the background for an analysis scheme, forecast errors often lead to a slowly evolving systematic error component in the background. This type of error, which is called model bias, violates the common assumption of analysis schemes that the mean of the probability distribution of the background error is zero. This work evaluates a strategy to account for the surface pressure model bias in an analysis scheme. This strategy combines a bias model to parameterize the effect of the bias and the method of state augmentation to estimate both the state vector and the surface pressure model bias with the analysis scheme. A hypothetical "true" trajectory of the atmosphere is generated by a long integration of the National Centers for Environmental Prediction (NCEP) Global Forecast System (GFS) model at a reduced, T62L28, resolution. Then these simulated true states are estimated from the noisy observations using the T30L7 resolution Simplified Parameterization primitivE Equation DYnamics (SPEEDY) model and the Local Ensemble Transform Kalman Filter (LETKF) data assimilation scheme. The results of the numerical experiments suggest that the ensemble based approach can efficiently estimate the surface pressure bias, and that the proper use of the bias information can result in major improvement of the accuracy of the state estimate.