

# MMM SEMINAR SERIES



## *An Ensemble Kalman Filter for Numerical Weather Prediction based on Variational Data Assimilation: VarEnKF*

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Several NWP centers currently employ a variational data assimilation approach for their deterministic forecasts and a separate EnKF system that is used for both initializing ensemble forecasts and for providing ensemble covariances for the deterministic system (e.g. ECCO, NCEP, Met Office). This presentation describes a new approach, VarEnKF, that uses a variational data assimilation approach to implement a perturbed-observation EnKF. Several practical benefits can be realized by using the same data assimilation approach for both deterministic and ensemble prediction in terms of code development and the testing of system changes. In addition, the use of a variational approach may allow the assimilation of a larger volume of observations for updating the ensemble mean than with current EnKF algorithms. Preliminary results with the Canadian global 256-member system show that a particular configuration of VarEnKF can provide significantly improved ensemble forecasts than with the current EnKF assimilation algorithm with only a modest increase in computational cost. Moreover, since the analysis update for each ensemble perturbation is computed independently, this part of the VarEnKF approach would scale perfectly up to a very large number of processors. A brief comparison is also given between VarEnKF and the EVIL approach.

*This seminar will be webcast live at:  
<http://www.fin.ucar.edu/it/mms/fl-live.htm>*

*Recorded seminar link can be viewed here:  
<https://www.mmm.ucar.edu/events/seminars>*

**Friday, 11 March 2016, 11:00 AM**  
Refreshments 10:45 AM  
NCAR-Foothills Laboratory  
3450 Mitchell Lane  
Bldg 2 Main Auditorium, Room 1022