Séminaire Vendredi 21 fevrier 2014 11:00h / Seminar Friday February 21st 2014 11:00h

Sujet/Subject: **A Kalman Filter for Post-processing of NWP Wind Speed Forecast**

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Résumé/Abstract
In order to improve Numerical Weather Prediction (NWP) model forecasts, A Kalman filter (KF) with two implementations are proposed to take into account the facts that both NWP model error and KF are sensitivity to the weather patterns, and that KF is sensitivity to the training period. They are respectively a Classification based KF (CKF) integrated with an autoregressive process, and a KF blending with wind direction index (KFWI). CKF is recommended to be used if the training period is longer than 2 years, while a KFWI is more suitable for a training period shorter than 2 years.

A K-Means clustering method is used for classification of weather patterns with 2 years of the regional analysis data. The CKF is applied to each of the 10 weather patterns determined with the clustering analysis. The results show that CKF significantly improves the GEM-LAM 2.5km model forecasts when observations from 9 meteorological stations in Gaspe region are used for training and validation. The proposed method is also compared with UMOS for 147 stations across Canada. The results show KFWI (with 90 days training) improves significantly the regional model forecasts by 25% and 20%, and outperforms UMOS by an average of 10% and 2% in term of MAE and StdAE, respectively.