An evaluation of the Canadian Ensemble Prediction System against radiosonde observations

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An ensemble Kalman filter (EnKF) has been developed to provide the 16 initial conditions that are needed by the Canadian global medium-range Ensemble Prediction System (EPS). A first set of verifications consisting of rmse, rank histograms -against analysis- and ROC -against observations-, has shown sufficient improvements to enable an operational implementation of the EnKF at the beginning of January 2005. The forecast component of the EPS has remained unchanged. We present here a more complete probabilistic validation of the new EPS against a set of observations (radiosonde network). We define confidence intervals, by bootstrap methods, for the probabilistic measures to objectively compare the performance of the former and the new operational EPS. We present scores of the reduced centred random variable (rcrv), and the Brier skill score and its decomposition. We also present an evaluation using the Continuous Ranked Probability Score (CRPS) and discuss its decomposition.