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Ensemble Kalman filter assimilation in a boundary layer 1D numerical model

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COBEL-ISBA is a 1D boundary layer numerical model dedicated to the forecast of low visibility events, currently in operationnal use in the Paris-Charles De Gaulle airport. An ensemble local forecasting system has recently been developped (Roquelaure and Bergot, 2006). Specific local observations (measurement mast, radiative fluxes, sodar) has been installed on the Paris-CDG airport and are used within a one-dimensional variational data assimilation (1DVar) framework. The goal of the research presented here is to improve the existing assimilation scheme by using an Ensemble Kalman Filter (EnKF). The variance-covariance matrix of background errors is computed with a single iteration of the prediction-correction cycle of the EnKF algorithm. Tests have been performed with several iterations, in order to spread the local observations vertically to constrain the state of the boundary layer. Simulated observations are used in a first step; tests have been carried out with real observations.