

Interactive comment on “Toward the assimilation of images” by F.-X. Le Dimet et al.

F.-X. Le Dimet et al.

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Received and published: 17 November 2014

1 Comment

1.1 Comment from O. Talagrand

I pop up into the discussion on the question of operational use of Kalman Filter (KF) and Variational Assimilation (4D-Var). Yes, Kalman Filter is used in operational Numerical Weather Prediction. It is used at the Canadian Meteorological Center (CMC) in the form of Ensemble Kalman Filter (EnKF). And, unless it has changed recently, the US National Centers for Environmental Prediction uses a sequential assimilation algorithm which is essentially a Kalman Filter where the updating of the background with new observations is achieved through minimization of an appropriate objective function

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(3D-Var). However, I do not remember how the prediction error covariance matrix is evolved in time (if at all). That should be easy to check. As to the compared numerical cost of KF and 4D-Var, it can depend very much on the numerical implementation of the algorithms (for instance, number of elements in EnKF, or degree of parallelization). Buehner et al. (2010a, b) have made a rather clean comparison at CMC, which possesses both algorithms in operational order (but uses at present EnKF). They found that, for the same overall computational cost, the two algorithms produce results that can be different, but are of globally similar quality.

1.2 Author's response

We Thank O. Talagrand for pointing to various sources to answer the question of the referees. We used those informations to answer the comments from Referee #3

Interactive comment on Nonlin. Processes Geophys. Discuss., 1, 1381, 2014.