Geophysical Research Abstracts, Vol. 9, 04681, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-04681
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Single-sample estimation of error covariance parameters in optimal interpolation scheme

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Forecast error comes from two distinct sources: initial data and model deficiences. Studies of the effect of model error sources on forecast error shows that quatitive information in a form that is useful for data assimilation is difficult to produce. The model error characteristics changes with time: on synoptic scale the discrepancy between the actual atmosphere and the forecast model simulations depends on the prevailing local weather conditions. It is generally not possible to obtain a complete statistical description of model error, usually we are able to estimate characteristic correlation length scale and regionally averaged variances. In this paper, following the approach developed by Dee (1995) we presents results of modifications introduced to our operation data analysis. Main purpose of these modifications is to produce on-line estimation of some error covariance parameters that are currently unknown. Incorporation these estimations into our optimal interpolation data assimilation method will force the scheme to be consistent with the actual observations. Our operational OI actually contains parameterized representation of model error, and uses a fixed correlation structure by prescribing the height error increments. To improve the situation we propose to parameterize of the innovation covariance based on the covariance matching technique. Our presetation will describe details of the method used and results received for data analysis on few nested model grids.