Variational Data Assimilation
Gourdon/France, 11th-22nd June 2001

June 9, 2001

References

[1] F. Bouttier, *A dynamical estimation of forecast error covariances in an assimilation system*, Mon. Wea. Rev. **122** (1994), 2376–2390.

[2] P. Courtier, J.-N. Thépaut, and A. Hollingsworth, *A strategy for operational implementation of 4D-VAR using an incremental approach*, Quart. J. Roy. Meteor. Soc. **120** (1994), 1367–1387.

[3] G. Cressman, *An operational objective analysis system*, Mon. Wea. Rev. **119** (1959), 1851–1864.

[4] G. Desroziers, *A coordinate change for data assimilation in spherical geometry of frontal structures*, Mon. Wea. Rev. **125** (1997), 3030–3039.

[5] Ronald M. Errico, Tomislava Vukicevic, and Kevin Raeder, *Comparison of initial and lateral boundary condition sensitivity for a limited-area model*, Tellus **45A** (1993), 539–557.

[6] C. Fischer, A. Joly, and F. Lalaurette, *Error growth and Kalman filtering within an idealized baroclinic flow*, Tellus **50A** (1998), 596–615.

[7] L.S. Gandin, *Objective analysis of meteorological fields*, translated from russian 1965 ed., Israel program for scientific translations, 1963.

[8] P. Gauthier, P. Courtier, and P. Moll, *Assimilation of simulated wind lidar data with a Kalman filter*, Mon. Wea. Rev. **121** (1993), 1803–1820.

[9] P. Gauthier and J.-N. Thépaut, *Impact of a weak constraint formulation based on a digital filter initialisation on a 4d-variational analysis*, Mon. Wea. Rev. (2000), submitted.

[10] M. Ghil, *Meteorological data assimilation for oceanographers. Part I: description and theoretical framework*, Dyn. Atmos. Oc. **13** (1989), 171–218.

[11] Nils Gustafsson, Erland Källén, and Sigurdur Thorsteinsson, *Sensitivity of forecast errors to initial and lateral boundary conditions*, Tellus **50A** (1998), 167–185.

[12] A. Hollingsworth and P. Lönnberg, *The statistical structure of short-range forecast errors as determined from radiosonde data. Part I: the wind field*, Tellus **38A** (1986), 111–136.

[13] M. Janisková, J.N. Thépaut, and J.F. Geleyn, *Simplified and regular physical parametrizations for incremental four-dimensional variational assimilation*, Mon. Wea. Rev. **127** (1999), 26–45.

[14] R.E. Kalman, *A new approach to linear filtering and prediction problems*, Trans. ASME **82D** (1960), 35–45.

[15] R.E. Kalman and R.S. Bucy, *New results in linear filtering and prediction theory*, Trans. ASME **83D** (1961), 95–108.

[16] F.X. Le Dimet and O. Talagrand, *Variational algorithms for analysis and assimilation of meteorological observations*, Tellus **38A** (1986), 97–110.

[17] J.M. Lewis and J.C. Derber, *The use of adjoint equations to solve a variational adjustment problem with advective constraints*, Tellus **37A** (1985), 309–322.

[18] A.C. Lorenc, *A global three-dimensional multivariate statistical interpolation scheme*, Mon. Wea. Rev. **109** (1950), 701–721.

[19] _____, *Optimal nonlinear objective analysis*, Quart. J. Roy. Meteor. Soc. **114** (1988), 205–240.

[20] C. Lu and G.L. Browning, *Four-dimensional variational data assimilation for limited area models: lateral boundary conditions, solution uniqueness and numerical convergence*, J. Atmos. Sci. **57** (2000), 1341–1353.

[21] D. Parrish and J. Derber, *The National Meteorological Center's spectral statistical interpolation analysis system*, Mon. Wea. Rev. **120** (1992), 1747–1763.

[22] Ian Rutherford, *Data assimilation by statistical interpolation of forecast error fields*, J. Atmos. Sci. **29** (1972), 809–815.

[23] C. Soci and C. Fischer, *Etude de sensibilité dans un modèle à aire limitée et à haute résolution*, Ateliers de modélisation de l'atmosphère, Météo-France/CNRM, 2000, pp. 179–182.

[24] X. Zou and Y.-H. Kuo, *Rainfall assimilation through an optimal control of initial and boundary conditions in a limited-area mesoscale model*, Mon. Wea. Rev. **124** (1996), 2859–2882.

[25] M. Zupanski, *Regional four-dimensional variational data assimilation in a quasi-operational forecasting environment*, Mon. Wea. Rev. **121** (1993), 2396–2408.