

Reports of V. Shutyaev

Grenoble
May, 2008

1. Our SIAM paper on analysis error covariances was galley-proven and published online in May (the print version of the journal will be published at a later date). The reference is as follows:

I.Yu.Gejadze, F.-X.Le Dimet, V.Shutyaev. On analysis error covariances in variational data assimilation. SIAM J. Sci. Comput., 2008, v.30, no.4, pp. 1847-1874.

(The version sent to SIAM attached).

2. A second paper was prepared to be submitted to SIAM in the early June:

I.Yu.Gejadze, F.-X.Le Dimet, V.Shutyaev. On optimal solution error covariances in variational data assimilation problems.

The paper presents a generalization of the theoretical results reported in the first SIAM paper to the cases of various control parameters, such as boundary conditions and distributed coefficients. The algorithm based on the quasi-Newton BFGS method is adopted for constructing the optimal solution error (a posteriori) covariance matrix for various controls. The convergence rate of this algorithm is accelerated by using the preconditioning of the Hessian of the auxiliary control problem.

3. The presentation for the AOGS conference is prepared on the same subject (see attached). 5th Asia Oceania Geosciences Society Conference, AOGS 2008, Busan, Korea, June 16-20, 2008.
4. For some case, I also attach my presentation at the EGU General Assembly 2008, Vienna, April 13-18, 2008.