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NEW MATHEMATICAL METHODS FOR VARIATIONAL OBJECTIVE ANALYSIS
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STATUS REPORT

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Reference [1], which has been provided to the Goddard Technical Officer, Dr. James Pfaendtner, gives an overview of the work being performed under this Contract. We have completed the simulation experiments described in Section 1.2 of that report and are preparing the results for publication. The experiment reports results on a new method for estimating the relative accuracy between two different sources of information to be assimilated in a numerical weather prediction model.

Work on multiple smoothing and tuning parameters and accuracy estimates (variances, confidence intervals) in the problem of assimilation of diverse sources of information in NWP is continuing. In particular, a study of the "identifiability" of multiple smoothing and tuning parameters is continuing, as are efficient numerical methods for their dynamic estimation. A study of the "partial spline" method of inclusion of non-smooth and other special types of information (noted in Section 3 of reference [1]),is also continuing, with special emphasis on accuracy estimates.

References

[1] G. Wahba, D. R. Johnson, and F. Reames. Multiple smoothing and weighting parameters in direct variational methods for objective analysis of meteorological information. In F.-X. LeDimet and O. Talagrand, editors, *Assimilation of Observations in Meteorology and Oceanography*, pages 448–453. Proceedings of the International Symposium, World Meteorologican Organization, Clermont-Ferrand, France, 1990.