Hybrid ENKF Reanalysis of 1981-1982 Period for Comparison with CFSR Results

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The 3DVAR GSI CFSR reanalysis encountered a number of problems in the assimilation of the relatively sparse datasets in the early 1980's. In particular deficits were noted in the CFSR results having to do with QBO winds and tropical analyses in general, due in large part to limitations on the creation of forecast error structure functions for the GSI which would be effective for the data distribution found during that time period.

Following the implementation of the hybrid-ENKF GSI analysis system in NCEP operations, some interest was developed for revisiting early 1980's reanalysis using a low resolution version of the new operational system. A non-hybrid 3DVAR control was run at T254L64 resolution and a companion hybrid experiment run at the same resolution with 80 T126L64 members in the hybrid ensemble. These two experiments were started from CFSR initial conditions on 01July1981 and run for 10 months through 30April1982.

Results from the two experiments are contrasted with those from CFSR by means of forecast and analysis fits to observations and anomaly correlations, and other features available in the NCEP VSDB diagnostic package, which will highlight the strengths and weaknesses of the three systems in the context of reanalysis in the early satellite period.