Optimization of the usage of AMV data within the GSI

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ABSTRACT

We present results of data assimilation experiments on atmospheric motion vectors (AMVs) within the GSI analysis system. In particular, we present results of the optimization of the error prescription for AMVs and compare data thinning/filtering methodologies (e.g., thinning versus super-obbing) of the AMV observations. Experiments are performed in an operations-parallel environment with NCEP's GDAS and GFS, and leveraging the expertise of the NESDIS to generate AMVs from satellite imagery and that of NASA's Global Modeling and Assimilation Office (GMAO) and the Naval Research Laboratory (NRL)'s super-obbing techniques and experience to produce more significant NWP impact with AMVs. Increased NWP impact from AMVs is sought to improve the current state of operational numerical weather prediction (NWP), and to provide a hedge against NWP skill loss in the event of a satellite coverage gap. Both short and long-term forecast and analysis verifications are used to evaluate our proposed changes to AMV assimilation within the GSI.