IMPROVING THE USE OF QUALITY CONTROLLED AMVS IN THE NCEP GLOBAL FORECAST SYSTEM

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ABSTRACT

Satellite winds (AMVs) are used operationally by global NWP centers including the Environmental Modeling Center of NOAA/NCEP in the United States. However, in terms of overall impact on forecast skill, most operational centers rate AMVs significantly lower than temperature sounding data from microwave and infrared sensors. The lack of vertical resolution is one possible reason for this discrepancy, but even this does not explain the occasional negative impacts of satellite winds seen in the NCEP GFS. A more likely cause of these are cases where clusters of AMVs with anomalous errors pass through the quality control of the data assimilation system and generate a negative overall impact. It has long been known that contrary to the assumption built into many data assimilation systems, actual observation errors are rarely Gaussian. The errors of AMVs in particular are known to have a frequency of large errors that cannot meaningfully be described by normal distributions. The goal of the quality control is to keep the AMVs with gross (non-Gaussian) errors out of the system, and a number of strategies to achieve this goal have been discussed in the community. We will report on examples of negative forecast impact on the Global Forecast System operated by NCEP and show attempts to mitigate this phenomenon via more sophisticated screening strategies.