**Assimilation of GOES hourly AMVs in NCEP global data assimilation and forecast system**

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ABSTRACT

NESDIS has been producing GOES hourly atmospheric moisture vectors (AMVs) since 2010. The algorithms to produce the hourly AMVs are similar to those used to produce the three hourly AMVs with a few updates such as improving height assignment when a low level temperature inversion is detected, the image scan line time defines the time for each satellite wind observation, and a reduced latency. The characteristics of the “observation minus background” from GOES hourly AMVs were studied and compared with current operational GOES AMV products. The quality markers from data were also examined. Based on these studies, the strategies to assimilate GOES hourly AMVs were defined and tested in the NCEP data assimilation (GSI) and forecast system (GFS). The experiments show that there are slight positive impacts on Southern hemisphere forecasts and precipitation forecasts over the CONUS. The assimilation of GOES hourly AMVs also improve observation fits for some AMV products.