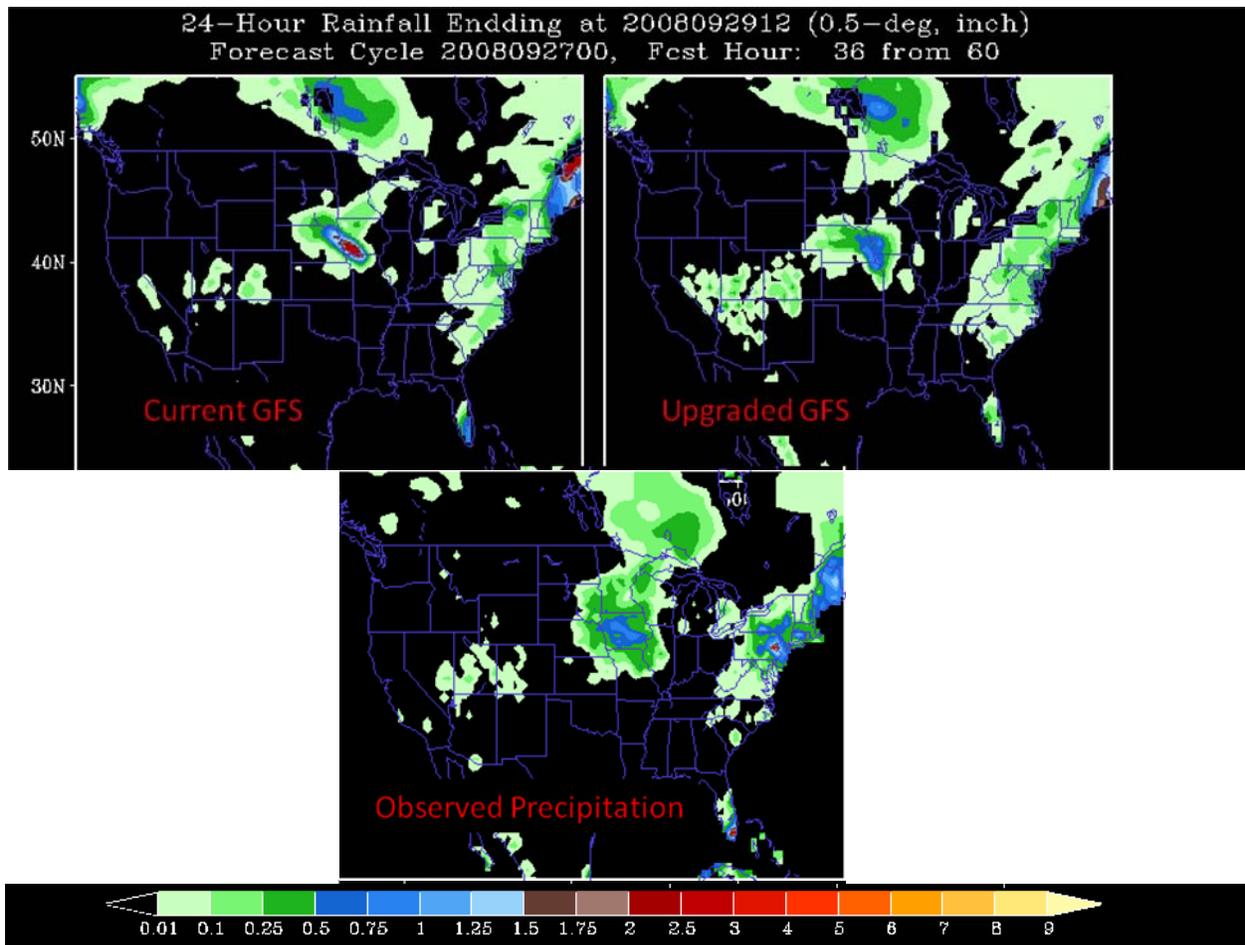


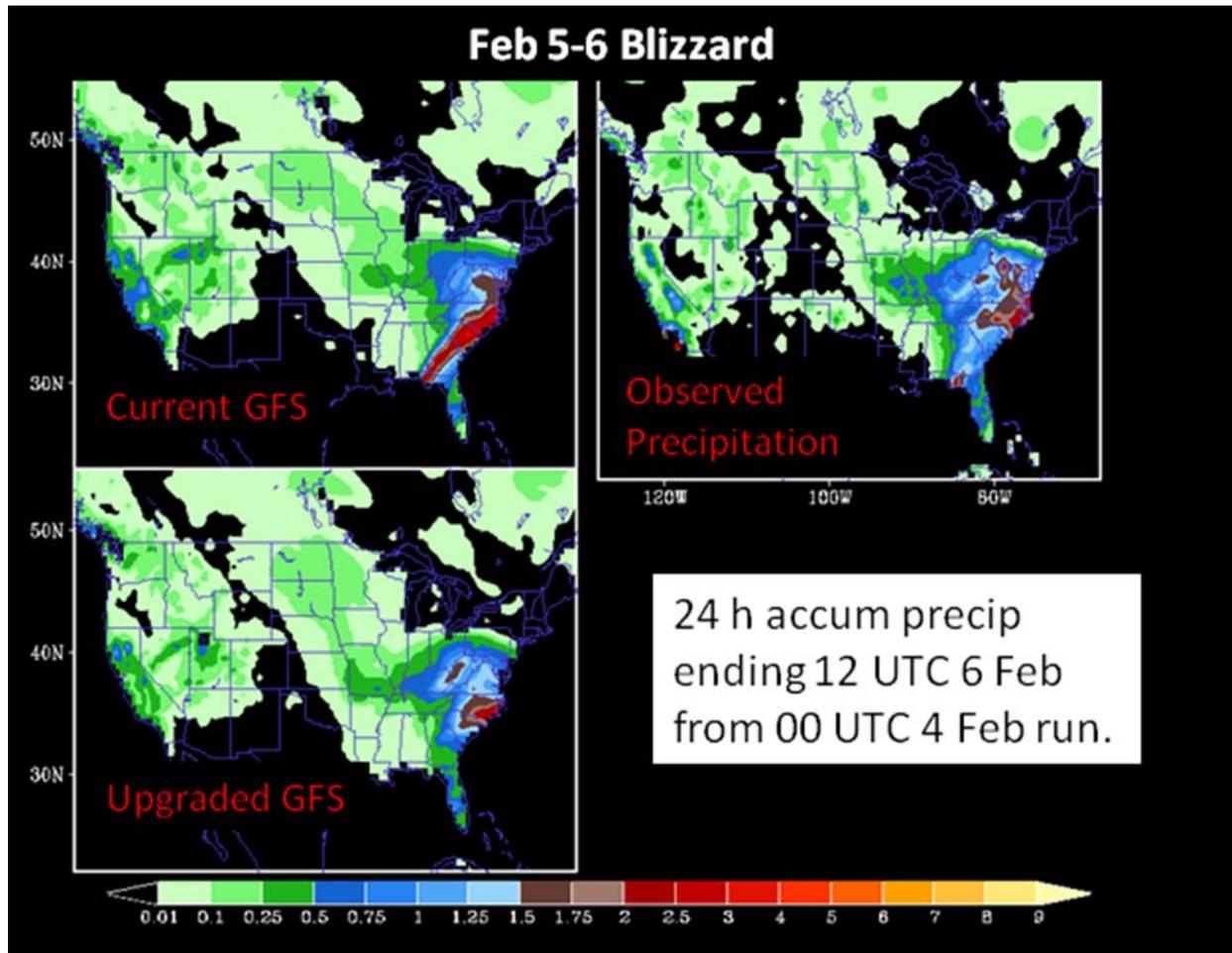
## Global Forecast System (GFS) Upgrade Implemented July 28, 2010

An extensive set of improvements to NCEP's Global Forecast System will be implemented into NCEP operations on Wednesday, July 28, 2010, following three years of development, evaluation and testing. One of the major changes is an increase in the model's horizontal resolution from approximately 35 km to 27 km. Additionally, a number of improvements have been made to the model's ability to represent physical atmospheric processes. These improvements include an upgraded radiation and cloud package, upgraded specification of gravity wave drag, a higher resolution grid for hurricane relocation, an upgraded boundary layer scheme, the use of a higher resolution snow analysis, a new mass flux shallow convection scheme and an updated deep convection scheme. Also, the model will have a horizontal resolution of 27 km through 192 hours in support of the GFS MOS development, which is an additional 12 hours from the previous version. The model's resolution from 192 to 384 hours will remain at 70 km. Finally, the availability of three hourly forecast output will be extended out to 192 hours from 180 hours.

The result of this set of changes is improvement in the overall accuracy of the model's forecasts. In addition, a significant improvement in precipitation verification scores resulted from a reduction in the appearance of spurious excessive amounts of precipitations occurring over small geographic areas. An example of the elimination of these so-called "bulls-eyes" is illustrated in the maps below.



The general improvement in precipitation scores can be seen from the Feb 5-6, 2010 East coast blizzard event:



Another important result of the GFS upgrade is a significant improvement in the GFS forecasts of hurricane track and intensity. In the Eastern Pacific, an improvement of 50% in both track and intensity GFS forecasts at day 5 was observed for both the 2008 and 2009 hurricane seasons. In the Atlantic, a 10% improvement in the 5 day track forecast and a 30% improvement in intensity at day 5 were observed in GFS forecasts over the same time period. The 2010 hurricane season has only seen a couple of storms, but so far, the same level of improvement seen in the previous two seasons has been measured.

Fields from experimental runs of the upgraded version of the GFS have been available to the field for several months. As with all operational implementations, information about the change is available on the National Weather Service Technical Information Notice website: <http://www.nws.noaa.gov/os/notif.htm> as well as via email list servers. As of July 28, the full benefit of the GFS upgrade will be available to the field via AWIPS.