

Six Hour Interval Quantitative Precipitation Forecast for Days 4 and 5

Part 1 – Mission Connection

a. Product Description – The Hydrometeorological Prediction Center is responsible for issuing Quantitative Precipitation Forecasts (QPF) for use as guidance for River Forecast Centers (RFCs) and Weather Forecast Offices (WFOs). HPC forecasters prepare forecasts for six hour periods out three days. In addition HPC forecasters prepare a 48 hour forecast for days 4 and 5. Several RFCs have requested that HPC provide the days 4 and 5 QPF in six hour increments, rather than the one 48 hr increment.

b. Purpose – These QPFs are provided as guidance forecasts for use by the RFCs and WFOs. The RFCs can use these forecasts subjectively, or as input into hydrological models. WFOs can use the QPFs in the preparation of local forecasts.

c. Audience - The target audience is forecasters at RFCs and WFOs. This information will also prove useful to the emergency management community, the Army Corps of Engineers, the academic community, and anyone interested in rainfall forecasts.

d. Presentation Format – The eight six-hour forecasts are presented as a loop on the HPC webpage at the following URL:

<http://www.hpc.ncep.noaa.gov/training/D4-5/day4-5.html>

e. Feedback Method – Comments regarding the observed precipitation graphics should be sent to one of our feedback email addresses at <http://www.hpc.ncep.noaa.gov/>. Links for these addresses are located on the left-hand menu under “Contact Us”.

Comments may also be provided to:

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Part II – Technical Description

a. Format and Science Basis – HPC forecasters prepare a 48 hour QPF for days 4 and 5. This forecast, like the 6 hourly QPFs prepared for days 1 through 3, are based on output from the numerical models, but are manually prepared by forecasters using their knowledge of the models. Verification statistics show that HPC manual forecasts of QPF are consistently better than the output from the numerical models.

Limited forecaster resources prevent HPC from preparing 6 hourly QPFs for this time range. However, output from the GFS Ensemble Forecast System (GEFS) can be used to disaggregate the 48 hour forecast into eight six hour periods. This process is completely automated, with no forecaster input.

The HPC 6-hourly QPFs are derived by distributing the 48-hour HPC QPF among the eight 6-hours periods in the same proportion as forecast by the 6-hour GEFS Mean QPFs. Specifically, GEFS Mean QPF values are checked at each grid point for forecast hours 78-120-hours to determine if the value is equal to zero or greater than zero. For grid points where the 48-hour GEFS mean QPF is greater than zero, the GEFS 6-hour QPF at each time period is divided by the GEFS 48-hour QPF to determine the percent of QPF that is forecast for that 6-hour period. This percent is then used to assign a value to the HPC QPF. In summary, the temporal distribution of the HPC 48-hour QPF is based on the distribution of the QPF in the GEFS Mean, while the amount forecast for each 6-hour period is based on the amounts in HPC 48 hour QPF forecast.

For those cases in which the GEFS 48-hour forecast is equal to zero at a gridpoint, there is no information available to disaggregate the HPC forecast. In these cases, the HPC 48-hour QPF is multiplied by 1/8 (0.125) for each time period, distributing the QPF equally among the periods.

b. Product Availability – A suite of six hour QPFs are prepared twice daily. They are available by 0000 UTC and 1200 UTC seven days a week.

c. Additional Information – None.