HPC Probabilistic Quantitative Precipitation Forecasts

Part 1 – Mission Connection

a. Product Description – This product provides a probabilistic forecast of rainfall over the continental U.S. in six hour increments.

b. Purpose – The probabilistic quantitative precipitation forecast (PQPF) guidance is used by forecasters and hydrologists to determine the probability of any rainfall amount at a given location. The PQPF can be used to assist forecasters in the issuance of flash flood and flood watches at an WFO or RFC. It can also be used at the RFC as input into probabilistic river forecasts.

c. Audience - The target audience includes NWS forecasters and hydrologists. The product may also be useful to anyone interested in water management, commercial weather services, the academic community, and the agricultural community.

d. Presentation Format – Six-hour forecasts through 72 hours are presented on the HPC webpage at the following URL:

http://www.hpc.ncep.noaa.gov/pqpf_6hr/conus_hpc_pqpf_6hr.php

e. Feedback Method – Comments may be provided via email or by directly contracting:

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Part II – Technical Description

a. Format and Science Basis – The HPC produces 6-hour quantitative precipitation forecasts (QPFs) for forecast projection days one through three at 6-hour intervals (72-hour duration). High-resolution model runs constitute an ensemble from which uncertainty information is obtained to construct a probability distribution about the HPC QPF to compute the probability of precipitation (PoP). This PoP and a distribution conditional on non-zero precipitation are utilized to generate probabilistic forecasts of precipitation.

The PoP is computed from a binormal distribution whose mode is the HPC QPF and variance is that of the ensemble. The conditional distribution is the exponential distribution whose mean is taken to be the HPC QPF.

The probabilistic QPF forecasts provide information in two different forms: probabilities of exceeding a threshold, and levels of precipitation amount associated with a given percentile in the distribution.

A more detailed description of this product can be found on the HPC web site at:
http://www.hpc.ncep.noaa.gov/pqpf_6hr/about_pqpf_products.shtml

b. Product Availability – The product is generated twice per day at 0600 and 1800 UTC every day.

c. Additional Information – None.