

WPC 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 6- and 24-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 a 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 – 6- through 72-hour forecasts are presented on the WPC webpage at the following URL:

https://www.wpc.ncep.noaa.gov/pqpf/conus_hpc_pqpf.php

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

David Novak
NOAA/NWS/Weather Prediction Center
College Park, MD 20740
(301) 683-1484
David.Novak@noaa.gov

Part II – Technical Description

a. Format and Science Basis – The WPC produces 6- and 24-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 WPC 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 WPC QPF and variance is that of the ensemble. The conditional distribution is the exponential distribution whose mean is taken to be the WPC 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 WPC web site at:

https://www.wpc.ncep.noaa.gov/pqpf/about_pqpf_products.shtml

b. Product Availability - The product suite is updated synchronously with the WPC 6-hour QPF. PQPF products with 6-hour increments are release four times per day: preliminary products issued at 06 and 18 UTC and final products with 00 and 12 UTC issued at approximately 20:30 UTC the day before and 08:30 UTC respectively. PQPF products with 24-hour increments are release twice per day with 00 and 12 UTC and are issued at approximately 22 UTC the day before and 10 UTC respectively.

c. Additional Information – None.