Expected Value Graphic

Product Description Document (PDD)

Part I - Mission Connection

a. **Product:** Description: Currently the National Weather Service River Forecast Centers and Weather Forecast Offices produce a wide variety of river forecasts to indicate current and future river conditions. The Expected Value graphic indicates timing and confidence levels for forecast stages for a selected time-frame, generally 90 days. This would provide an overall range of expected hydrologic conditions based on computed probabilities. The Expected Value Graphic will be issued as a web-based graphic for NCRFC's area of responsibility. It will be issued once a month after the Climate Prediction Center outlooks are released at mid-month to cover the ensuing three month period (i.e. graphic issued around May 26 will cover the period from June-August).

b. **Purpose:** Frequent questions from users about the probabilistic outlook distributions can be answered by examining the underlying historical data. However, the historical data used in the ensemble system is not readily available to the users. The Expected Value graph allows the users to view a broader range of statistical measures, and thus facilitates interpretation of the probabilistic information. This will enable them to make subsequent risk-based decisions. This graphic also provides more specific timing information within the specified time frame.

c. **Audience:** The target audience for this graphic is broad. From partners regional customers, such as, the US Army Corps of Engineers, the US Geological Survey, Federal Emergency Management Agency, state Emergency Managers (EMs), and river authorities with areas of responsibility over several states. Water resources managers and climatologists will find the expected value information useful for drought monitoring and climatological applications. Local EMs and the general public may also find this graphic useful.

d. **Presentation Format:** The Expected Value Graphic is available on the Web. The graphic shows the highest and lowest stages that can be expected, based on historical climate and current basin conditions for a pre-defined period. The Distributed Mean and Standard Deviations are shown to provide users with a degree of certainty.

The graphic has stage/flow on the y-axes and time in dates across the x-axis. The Expected Value Graphic covers a period of 90 days. An explanation of this graphic is provided for the user(s) through a button ("About") on the page.

e. **Feedback Method:** Comments regarding this graphic are sought through the feedback link on the webpage, or they may be sent to:

North Central River Forecast Center
17733 Lake Drive West
Chanhassen, MN 55317

Attn: Dan Luna
daniel.luna@noaa.gov

An online survey is also available on this page.

Part II - Technical Description

a. **Format and Science Basis:** NCRFC runs the Ensemble Streamflow Prediction (ESP) component of the National Weather Service River Forecasting System to generate long term probabilities. From ESP, NCRFC generates an Expected Value graphic. This graphic shows the following: Maximum, Minimum, Distributed Standard Deviation, and the Distributed Mean values over a period of 90 days on one graphic. These values are computed and plotted for each day in the forecast period.

The Maximum Value is the highest stage expected, based on recorded historical climate data as input to the hydrologic model, and on a basin's current conditions (soil moisture, snow cover, etc.)

The Minimum Value is the lowest stage expected based on these same data and conditions.

The Distributional Mean can be interpreted as an average simulated stage for a given day produced by any of the yearly climate scenarios.

The Distributional Standard Deviation provides confidence levels and defines a range within which approximately 68% of the simulated daily stage values are expected to fall.

b. **Product Availability:** The Expected Value graphics will be produced and sent to the web on a monthly basis, shortly after the middle of the month.

c. **Additional Information:** Contact Dan Luna (daniel.luna@noaa.gov) or John Halquist (john.halquist@noaa.gov) at NCRFC (phone 952-361-6650).