Long Term Verification Statistics for the Missouri River Based on 12 Daily Forecast Locations for the Period 1983-2013

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This study examines collectively the long term river forecast verification statistics for twelve daily forecast locations on the Missouri River from Sioux City, Iowa downstream to Saint Charles, Missouri. This study covers the time period from Jan 1, 1983 through Dec 31, 2013 and focuses on forecast lead times of 24, 48, and 72 hours. The metrics used for this statistical analysis are correlation (scatter plots), distribution properties (standard deviations), and accuracy "error statistics" (mean absolute error and error). The paper also includes the topics of long term flows in the Missouri basin with regard to forecasting errors and verification studies for the Missouri River and downstream on the Mississippi.

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The Missouri Basin River Forecast Center (MBRFC) issues daily forecasts on the maximum Missouri River for navigation and water supply year-round and issues flood forecasts as needed. Verification statistics for 12 points on the maximum Missouri River were computed using standard statistical measures to examine forecast accuracy. Included are the annual mean discharge values provided by the USGS for the period 1983 through 2013, which show an improving trend in the annual forecasting bias over the past 30 years. Several changes in hydrologic modeling and forecasting that have taken place the past three decades.

The Missouri Basin River Forecast Center (MBRFC) in Pleasant Hill, Missouri is responsible for providing river forecast services for the Missouri River basin. The Missouri River basin is the longest river in the United States with a length of about 2,340 miles (3,761 km) and is the third longest river in the world. The Missouri River flows through 11 states in the United States and has a drainage area of about 530,000 square miles (1,372,694 km²). The Missouri River is the birthplace of Native American cultures and is a vital water source for agriculture, industry, and recreation.

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For more information about MBRFC: http://weather.gov/mbrfc or Facebook: www.facebook.com/NWSMBRFC

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