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Comparison of ISWS Bulletin 70 with NOAA Atlas 14 for Illinois

Jim Angel, Sally McConkey, Zoe Zaloudek

Given the enormous safety and financial consequences of civil works design, it is vital to explore the need to update extreme precipitation event values. ISWS staff Jim Angel and Zoe Zaloudek have taken the first step to compare the difference between the frequency distributions published in Bulletin 70 and Atlas 14 for Illinois.

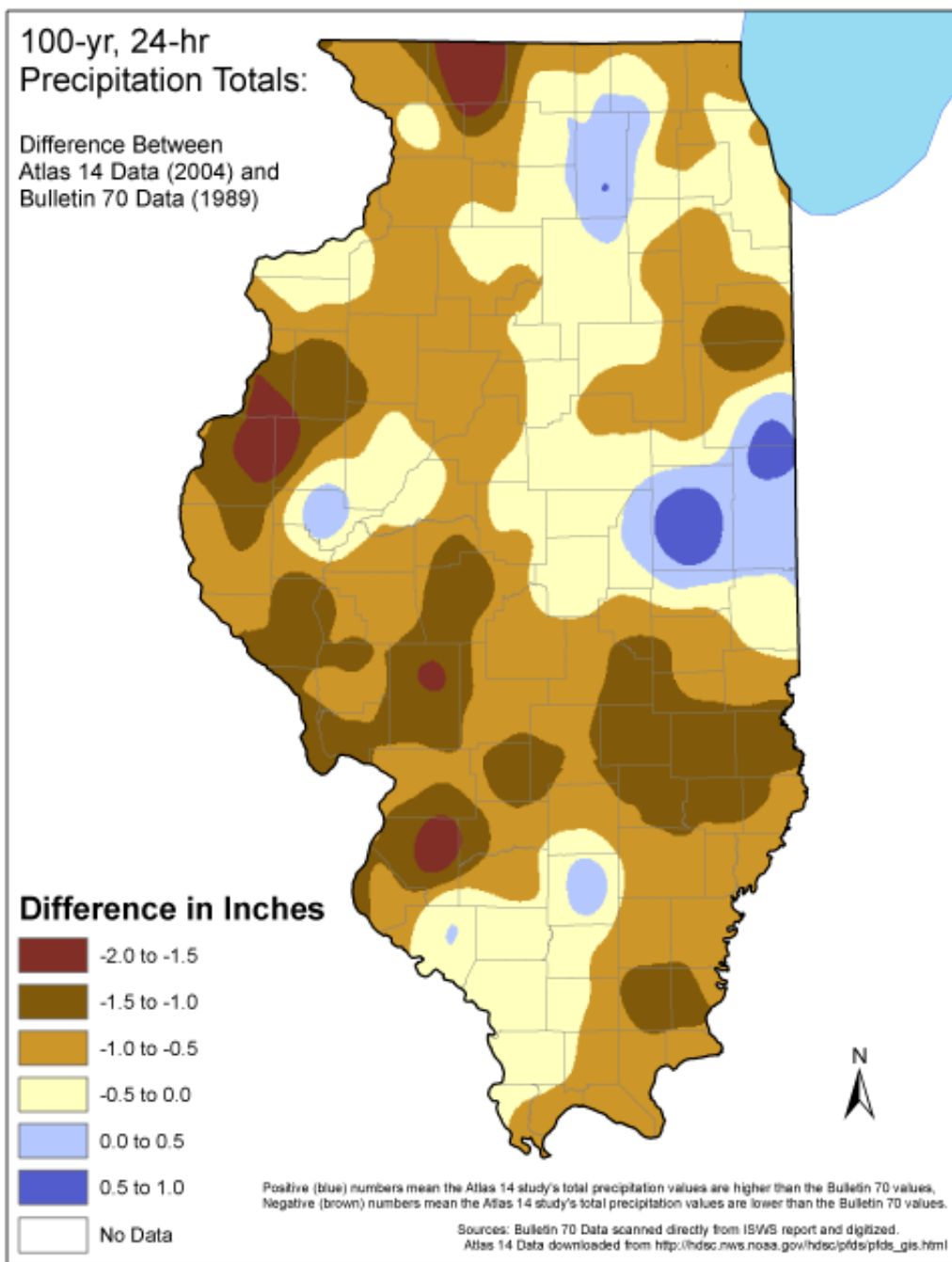
The current state standard for expected extreme rainfall events is the ISWS Bulletin 70. The Illinois Department of Natural Resources, Office of Water Resources requires the use of Bulletin 70 hydrology for flood studies requiring state permits. The Federal Emergency Management Agency likewise requires Bulletin 70 hydrology when mandated by the state. Many Illinois county and community stormwater ordinances require that designs be based upon the Bulletin 70 frequency distributions. The frequency distributions of extreme rainfall events provided in the Bulletin 70 publication is based on analyses of precipitation data from 1901 to 1983.

In 2004 the National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS) published NOAA Atlas 14. This publication provides precipitation frequency estimates for the Ohio River Basin, and includes all of the State of Illinois. The period of record for the data included in the analyses extends to 2002; nearly 20 years of additional data over that available for Bulletin 70.

The map below is a comparison of precipitation totals an event of a 24-hour duration and a 1%-annual-chance probability (100-year storm). Positive (blue) numbers mean the Atlas 14 study's total precipitation

values are higher than the Bulletin 70 values, negative (brown) numbers mean the Atlas 14 study's total precipitation values are lower than the Bulletin 70 values.

Despite the additional 20 years of data, the Atlas 14 study produced smaller values at many locations. Similar differences were found at other storm durations and probabilities. Clearly with the concerns about the age of Bulletin 70 and the performance of Atlas 14 in Illinois, more study is needed on this issue.



Links

[ISWS Bulletin 70](#)

[NOAA Atlas 14](#)

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