



DATA INFLUENCE

Statistics for Hydrology

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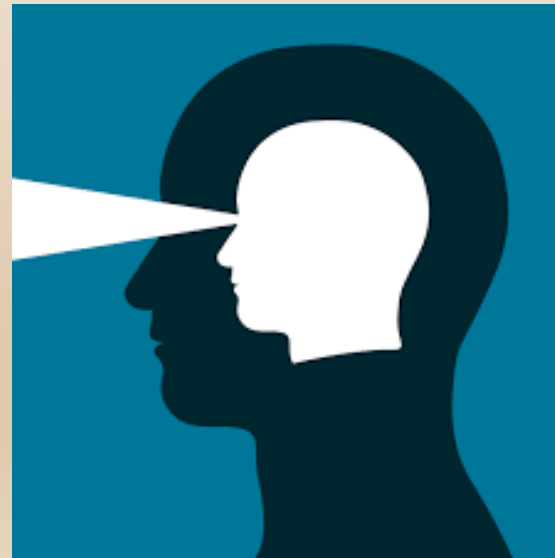
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US Army Corps
of Engineers®

LEARNING OBJECTIVES

- Develop an intuitive sense for how data can influence both the fit and uncertainty of a frequency curve



OUTLINE OF TOPICS

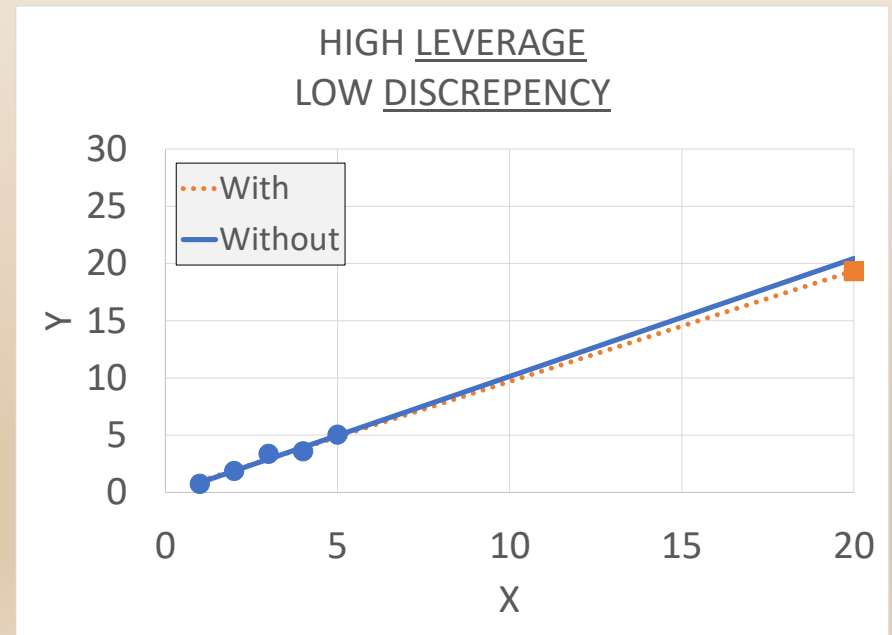
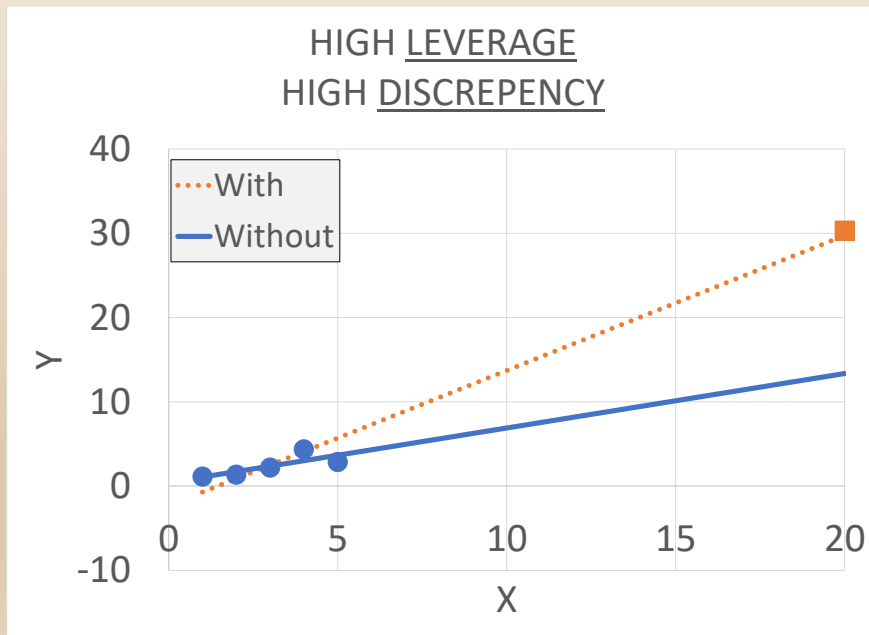
- Terms and concepts
- Systematic data
- Flow intervals
- Perception thresholds
- Regional skew



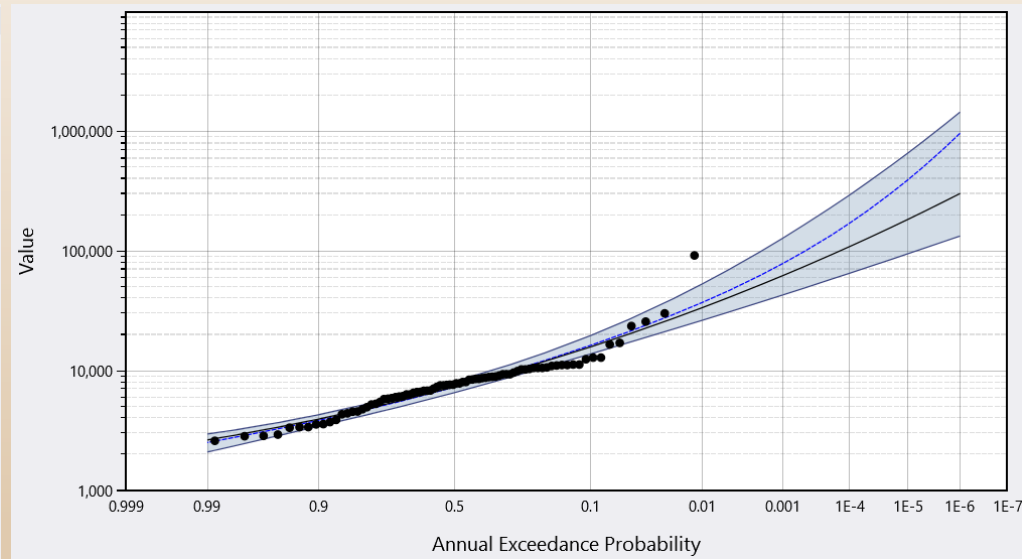
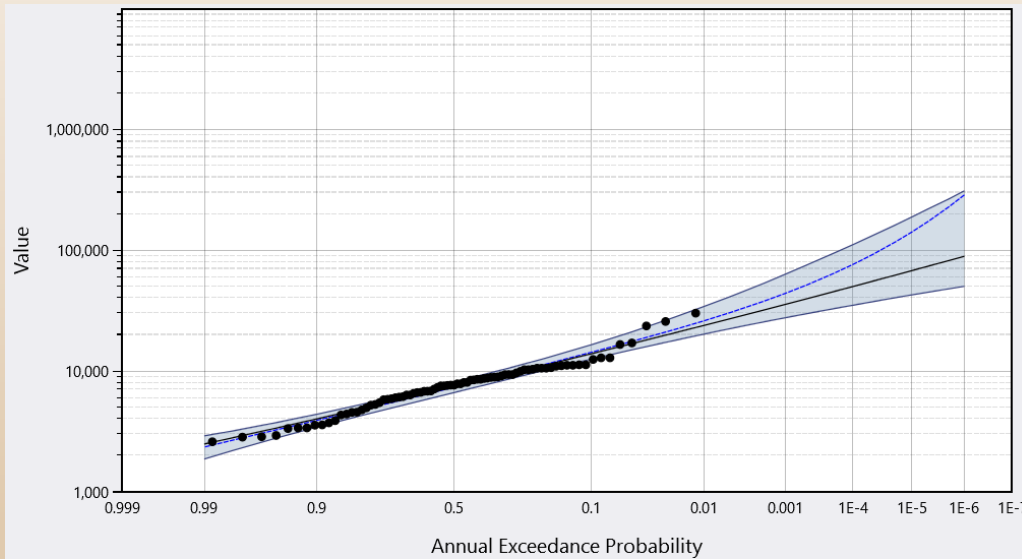
TERMS AND CONCEPTS



- Influence, Leverage, Discrepancy



SYSTEMATIC DATA

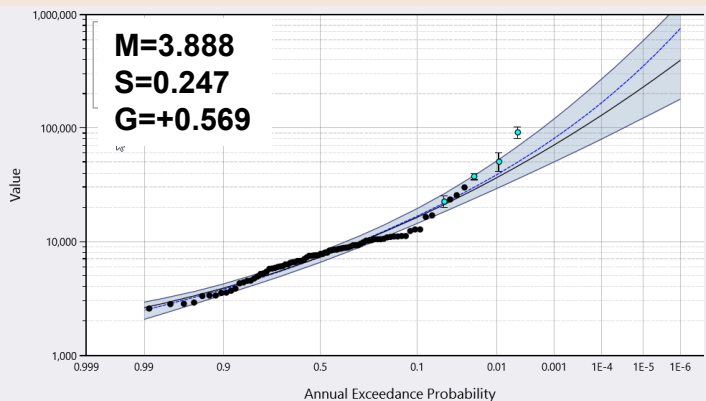
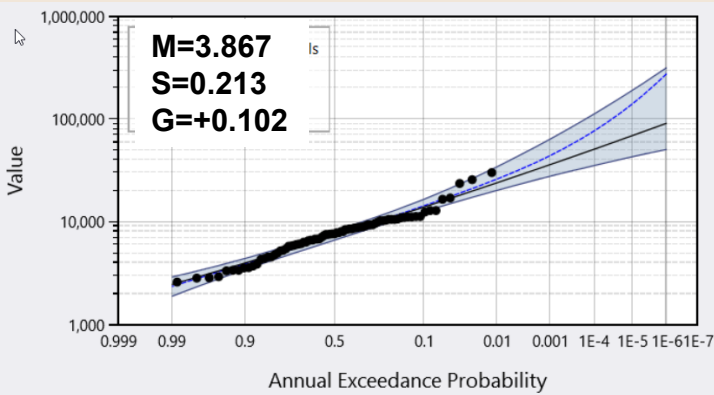


PRO TIP

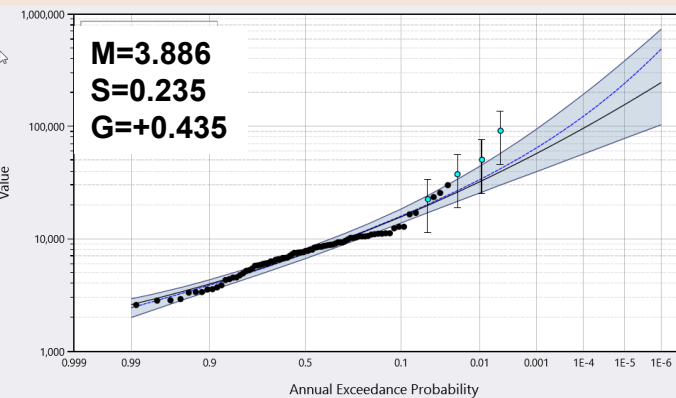
Data that is unusually large or small tends to shift the frequency curve towards the data



FLOW INTERVALS



Smaller Uncertainty in Flow Intervals

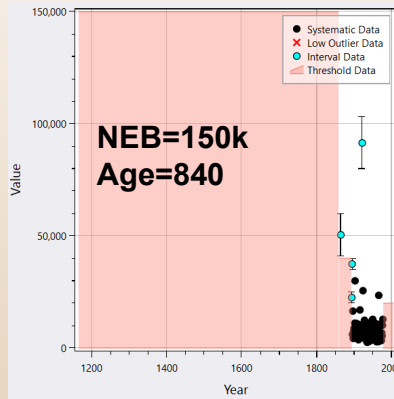
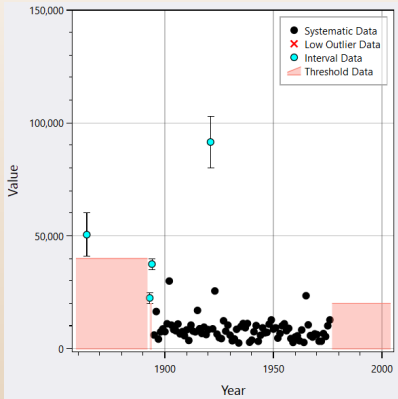


Larger Uncertainty in Flow Intervals

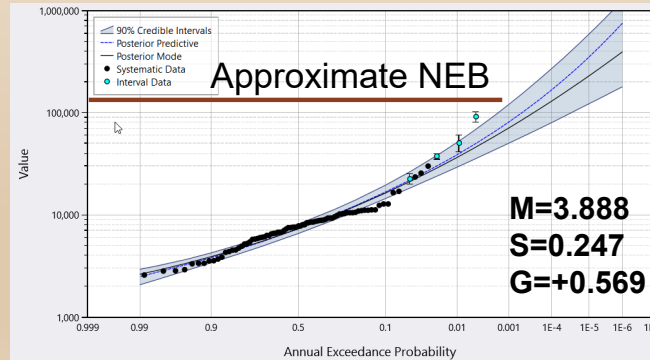
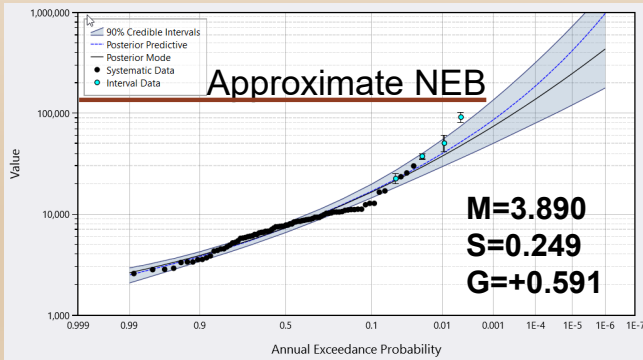
PRO TIP
 Larger flow intervals (more uncertainty) tend to have less effect on the frequency curve and a smaller reduction in the confidence interval



PERCEPTION THRESHOLDS



PRO TIP
 High perception threshold relative to the age tends to have less effect on the frequency curve and a smaller reduction in the confidence interval



Thanks, NEB, but I kinda already knew that a 5,000 year-ish flood probably did not occur in the last 840 years

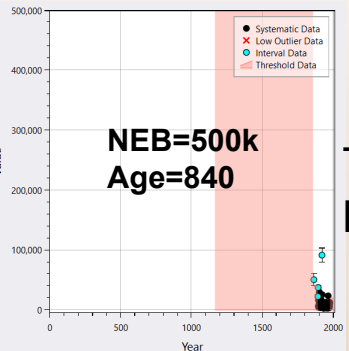


Without NEB

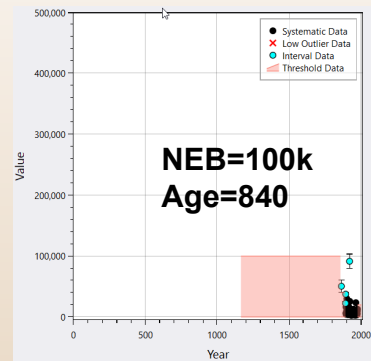
With NEB



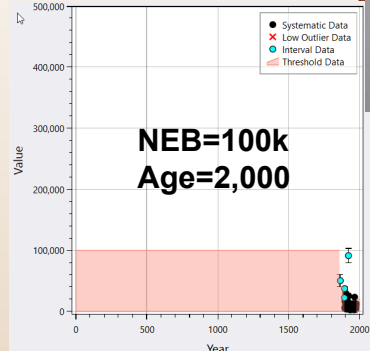
PERCEPTION THRESHOLDS



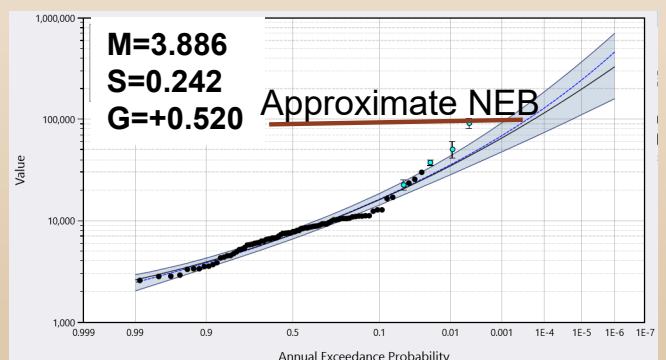
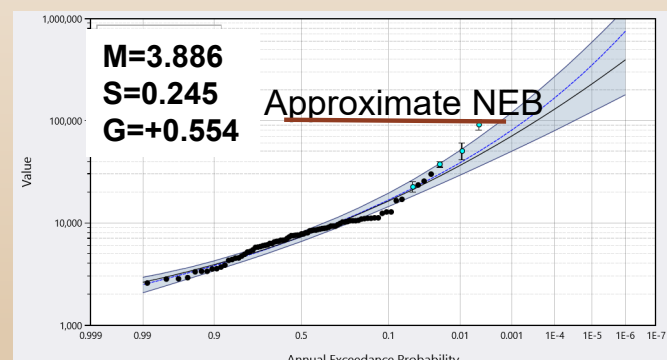
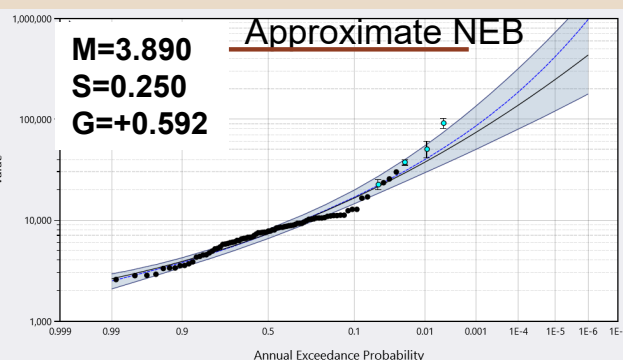
Tall and narrow
Less shift



Shorter
More shift



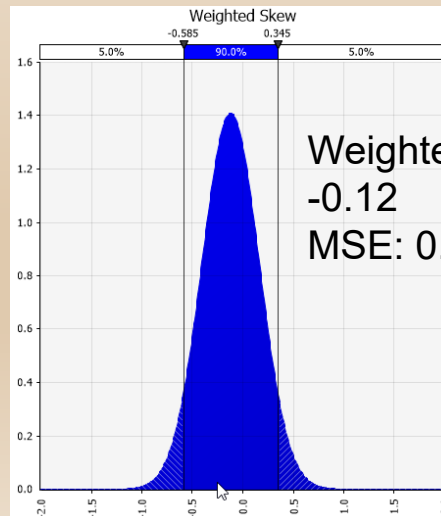
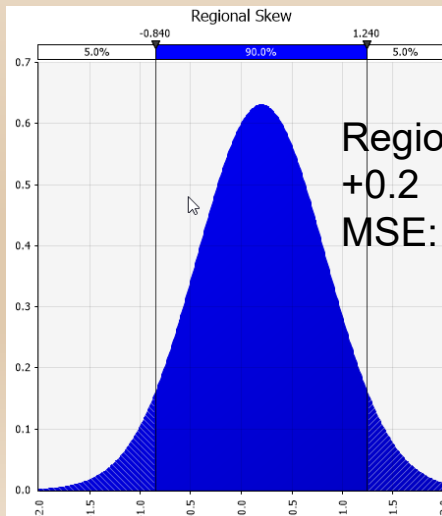
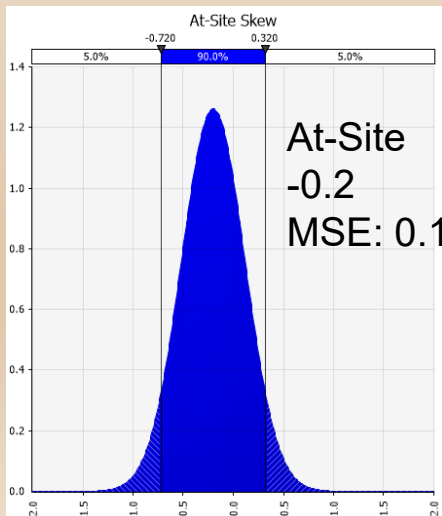
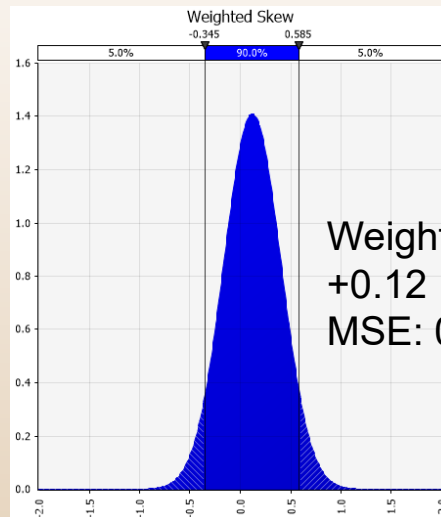
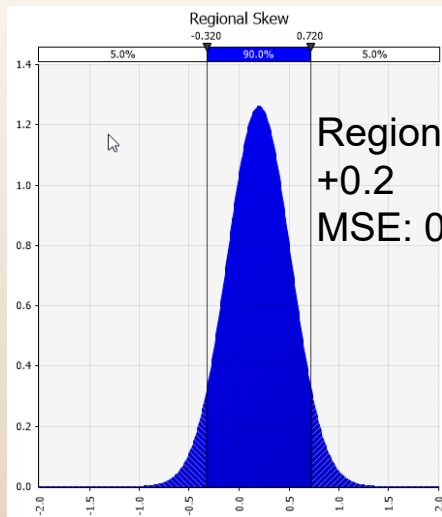
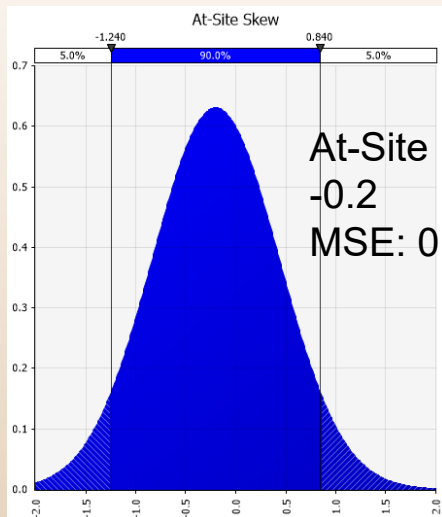
Wider
More shift



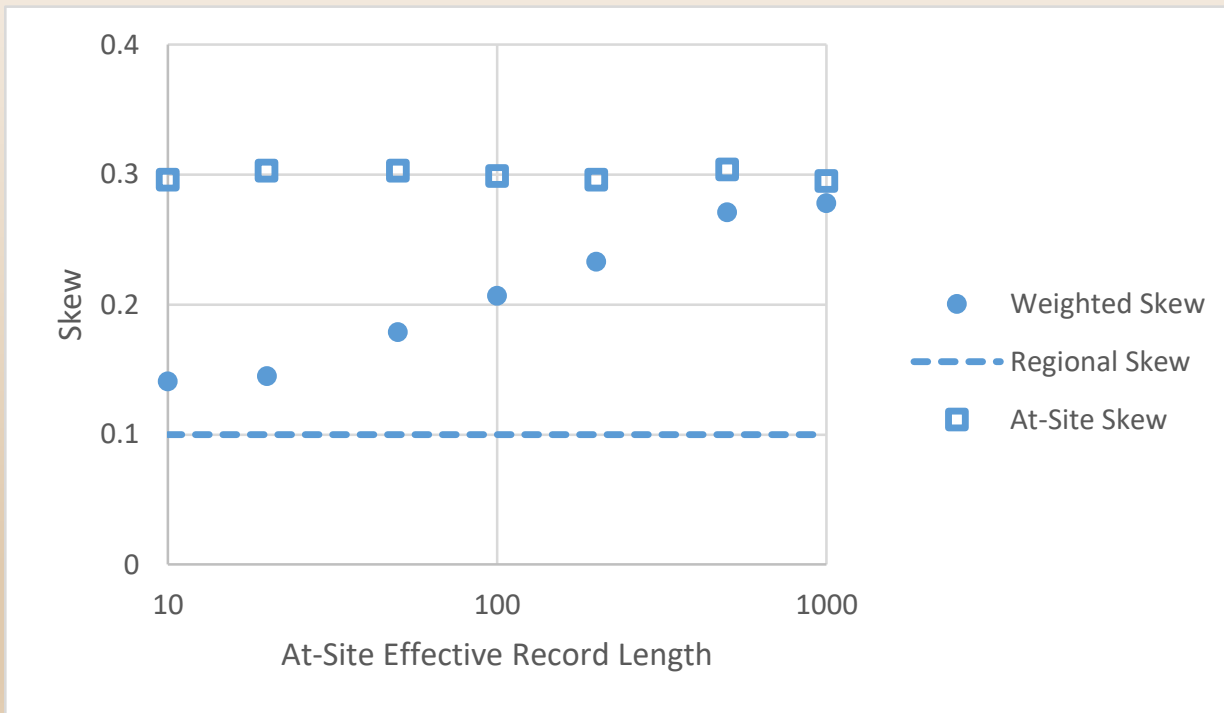
PRO TIP
Perception thresholds can only shift a frequency curve down and to the right (less frequent). The threshold acts like a ceiling pushing down on the frequency curve.



REGIONAL SKEW



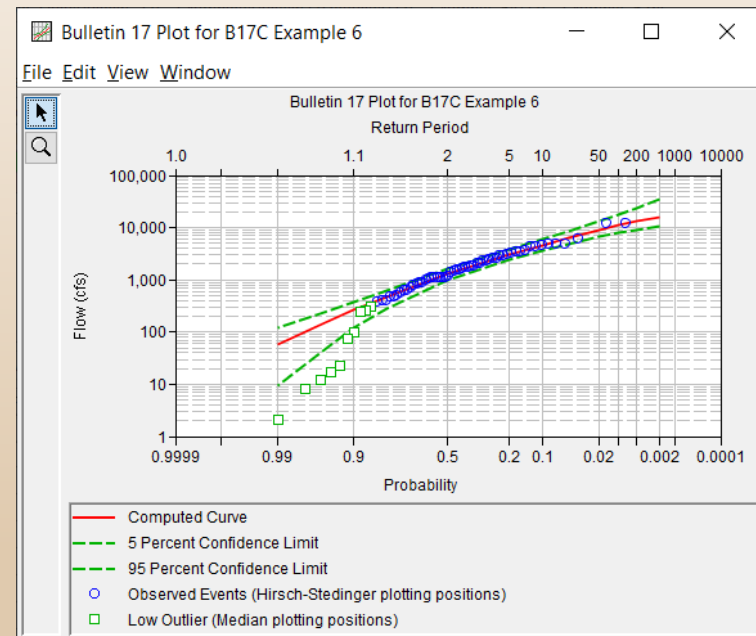
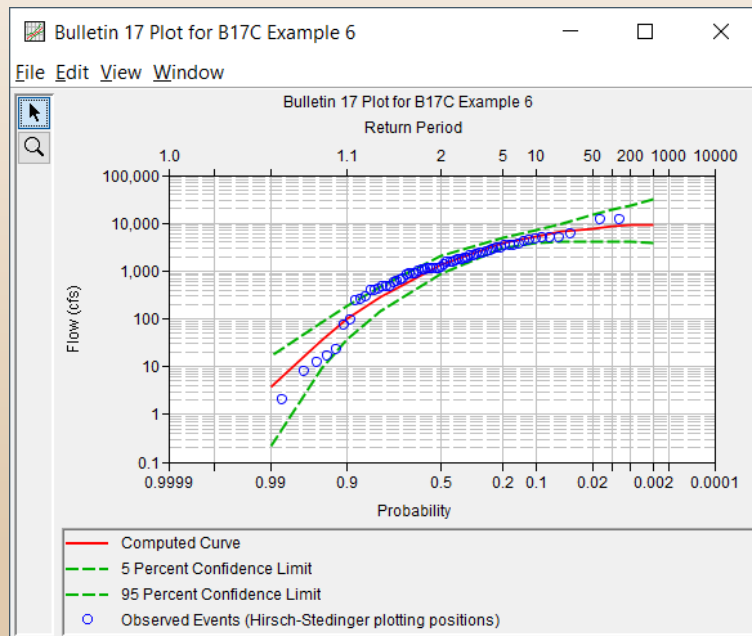
REGIONAL SKEW



PRO TIP
Influence of regional skew decreases as the amount of at-site data increases



POTENTIALLY INFLUENTIAL LOW FLOODS

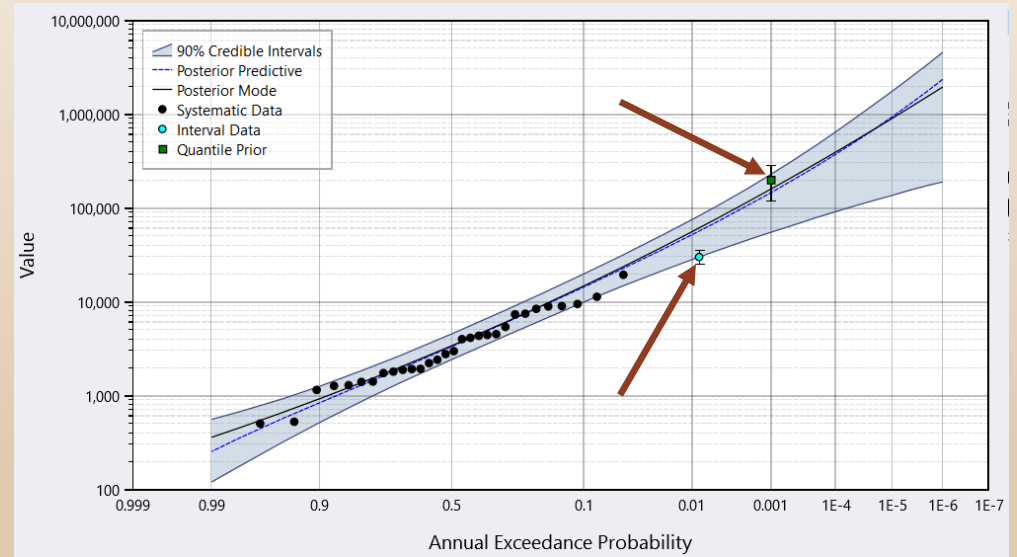


COMPETING INFLUENCE



PRO TIP

The influence of a particular data value wrestles with the influence of the other data values



DATA INFLUENCE

