

# Day 1 Review

## DLS-114, Module 1.20



**U.S. ARMY**



**US Army Corps  
of Engineers®**

Dam and Levee  
Safety Programs

March 2026 / Version 1

HOOVER DAM, NV (SOURCE: HDR)

# Risk Informed Decisions

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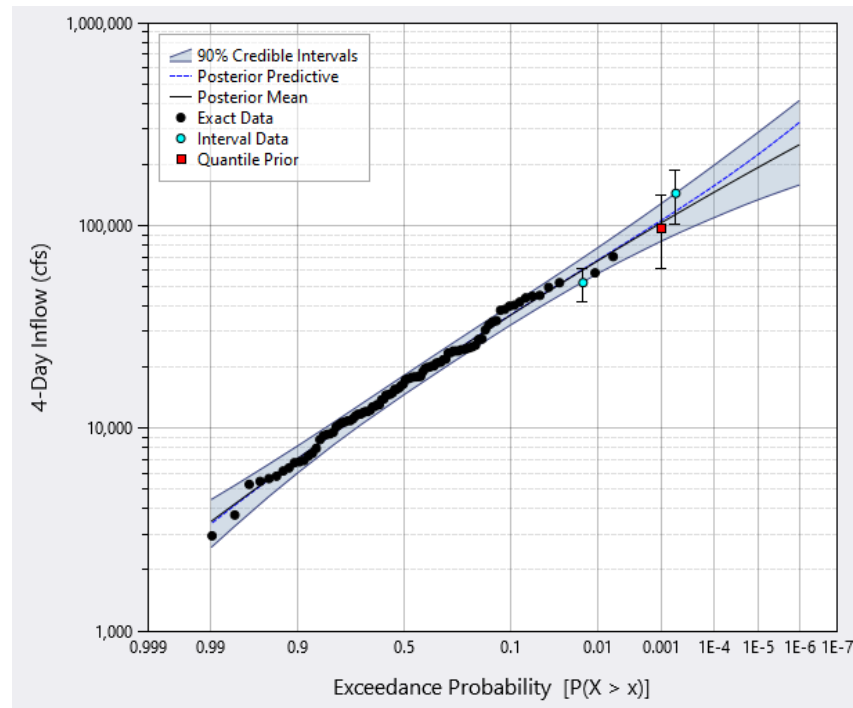
$$\textit{Risk} = P(\textit{Hazard}) \times P(\textit{Failure}|\textit{Hazard}) \times \textit{Consequences}|\textit{Failure}$$



# Software

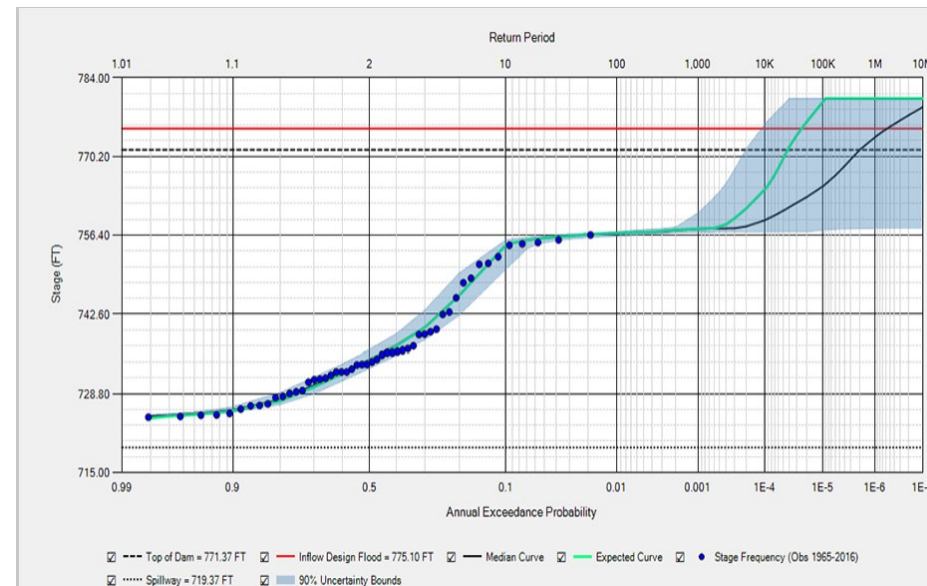
## 1) RMC-BestFit

### Flow-Frequency Curves

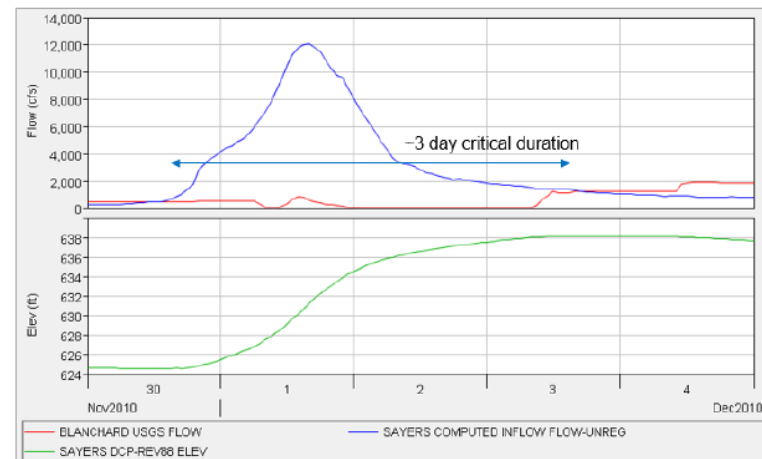
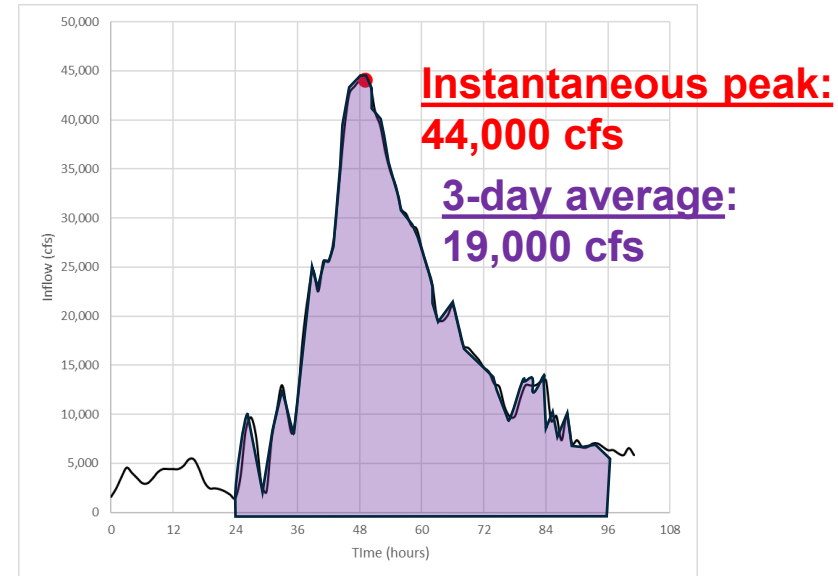
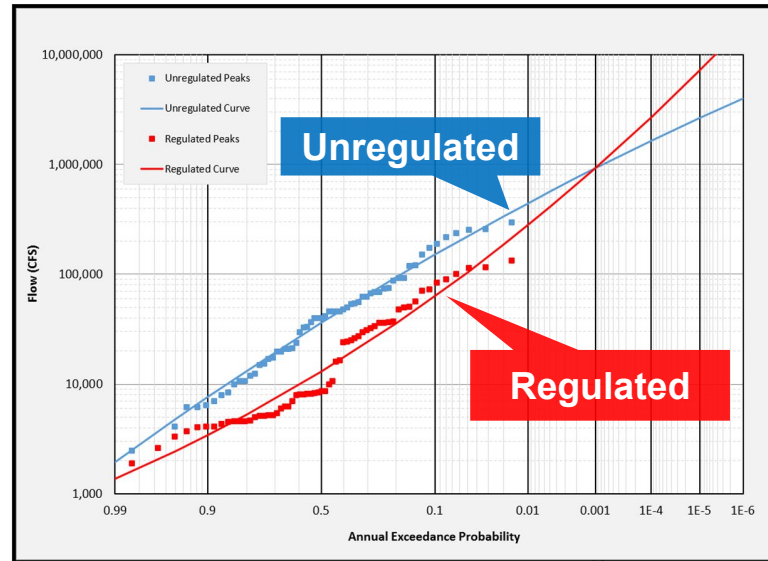


## 2) RMC-RFA

### Stage-Frequency Curves



# Quantity and Quality of Data



# RMC-BestFit Input Data

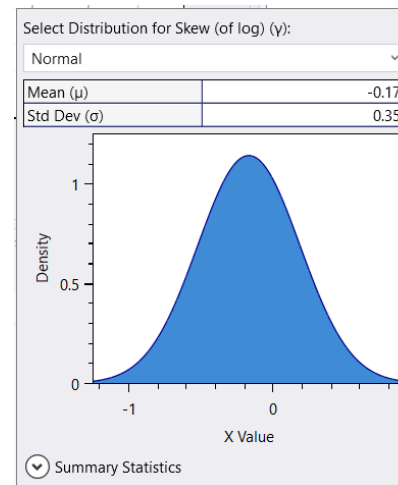
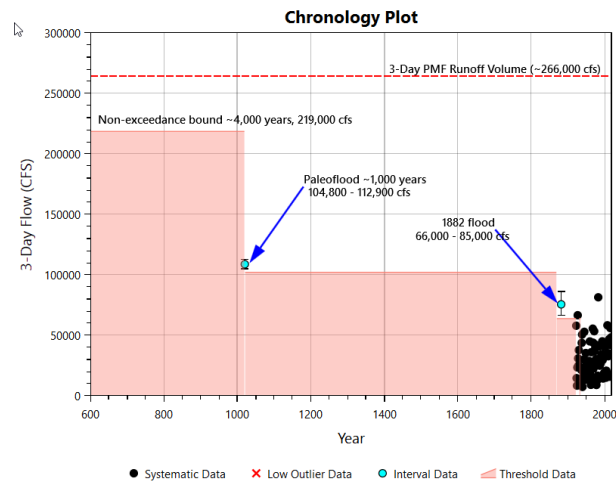
Exact  
data

Interval  
data

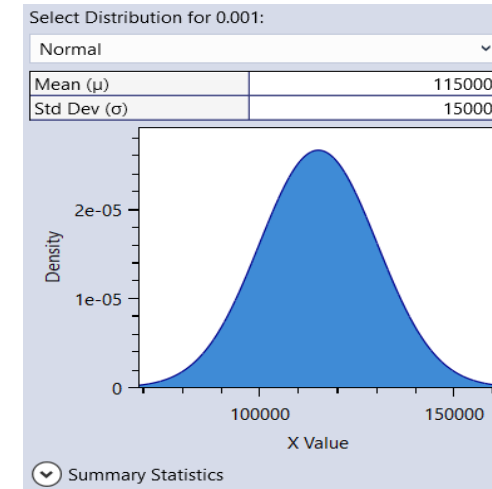
Threshold  
data

Prior  
distribution  
for  
parameter

Quantile  
prior  
distribution



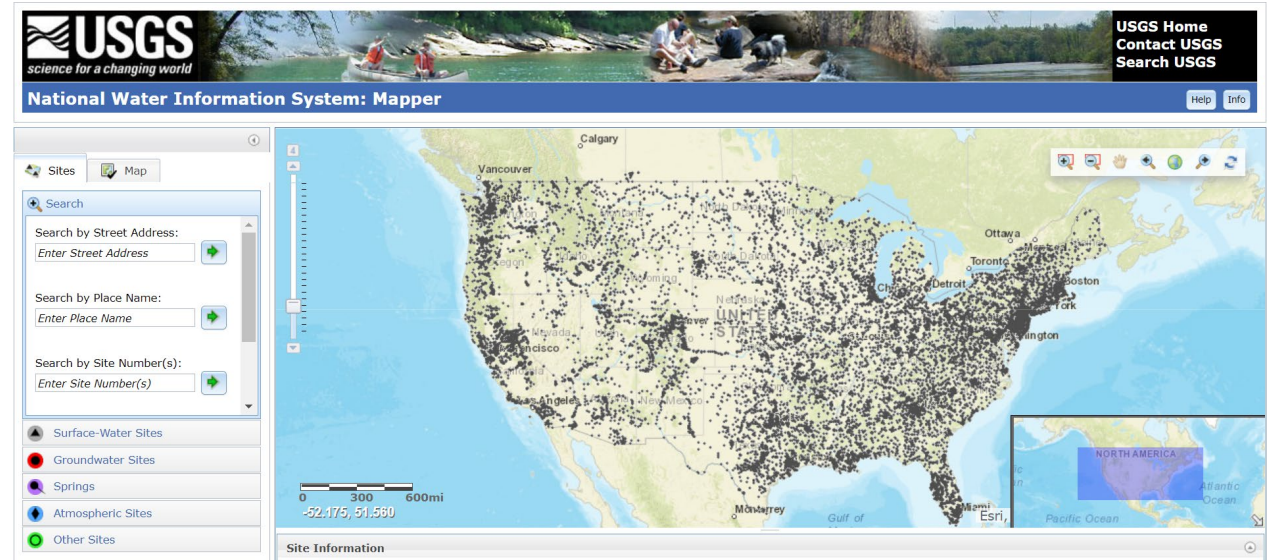
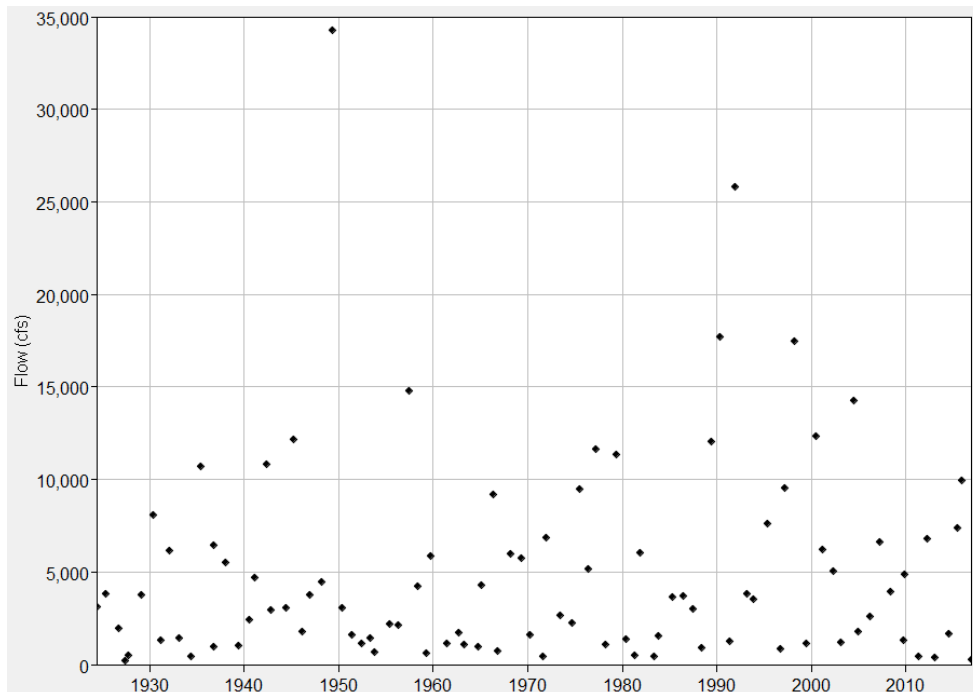
Regional skew



Precipitation frequency

# Systematic Data

- Collected at regular, prescribed time intervals under a defined protocol
- Input as **Exact** values



# Historical and Paleoflood

## Historical Floods in New England

By M. T. THOMSON, W. B. GANNON, M. P. THOMAS, G. S. HAYES, and others

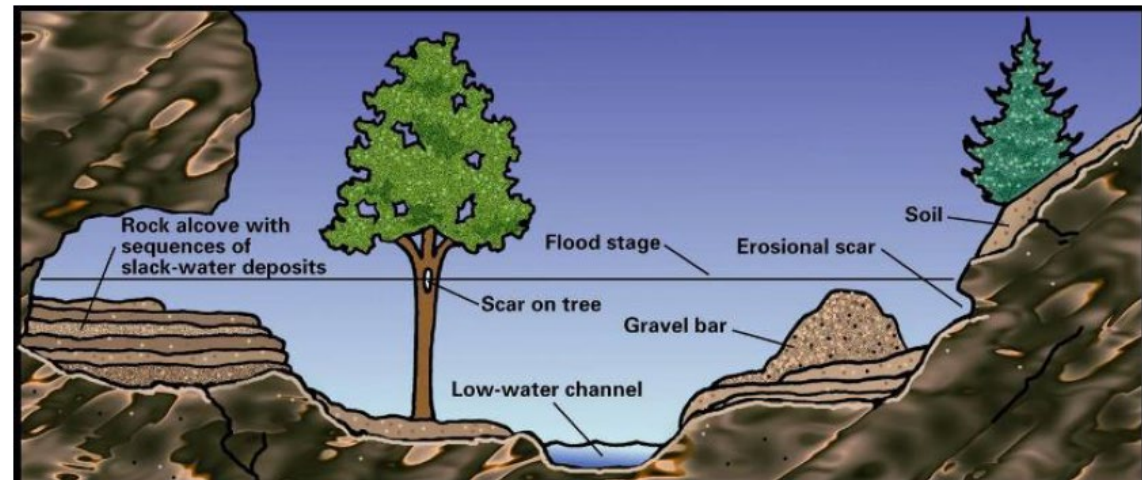
CONTRIBUTIONS TO THE HYDROLOGY OF THE UNITED STATES

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1779-M

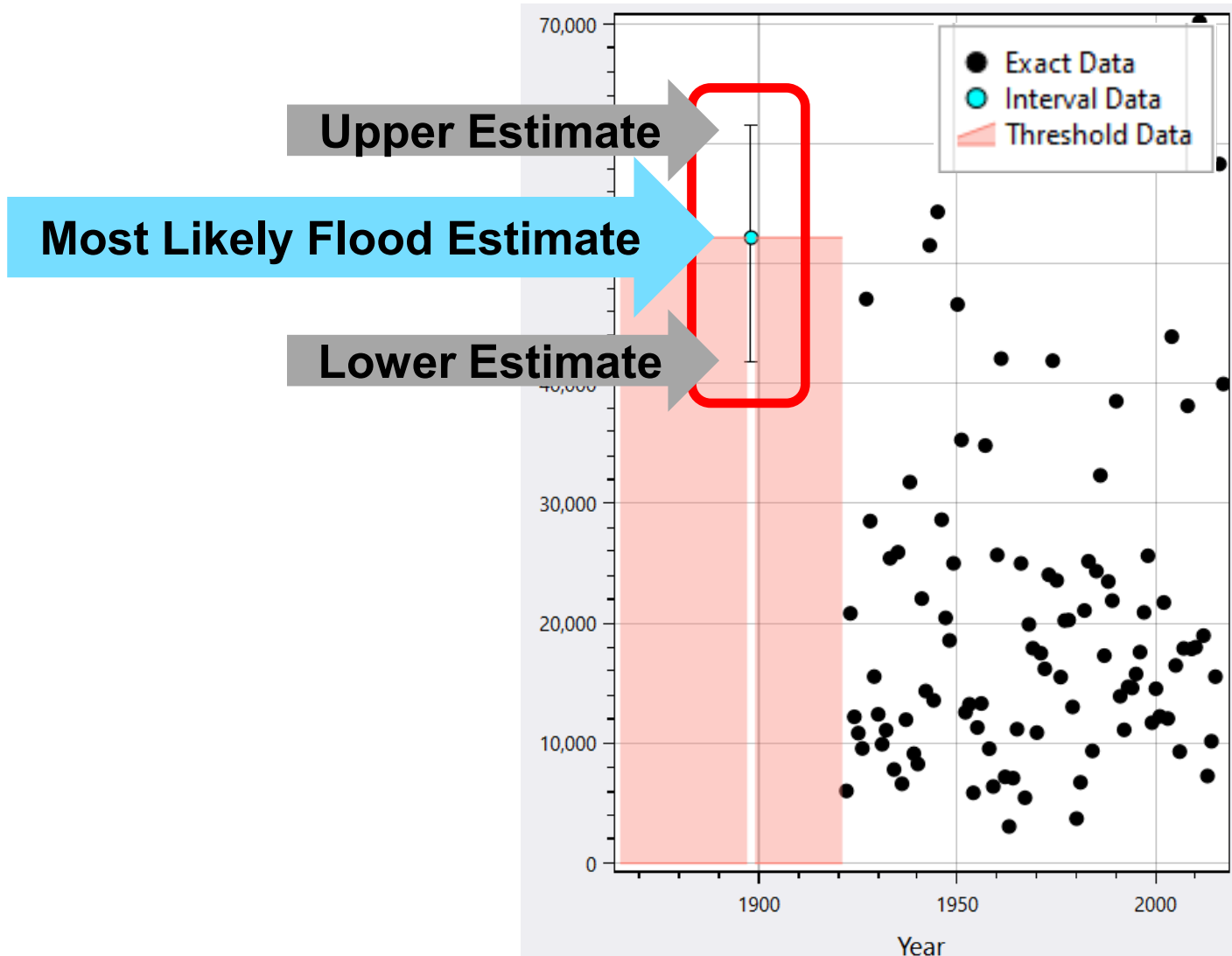


UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1964

- Observed floods
- Large uncertainty
- Geologic high-water mark



# Flow Interval

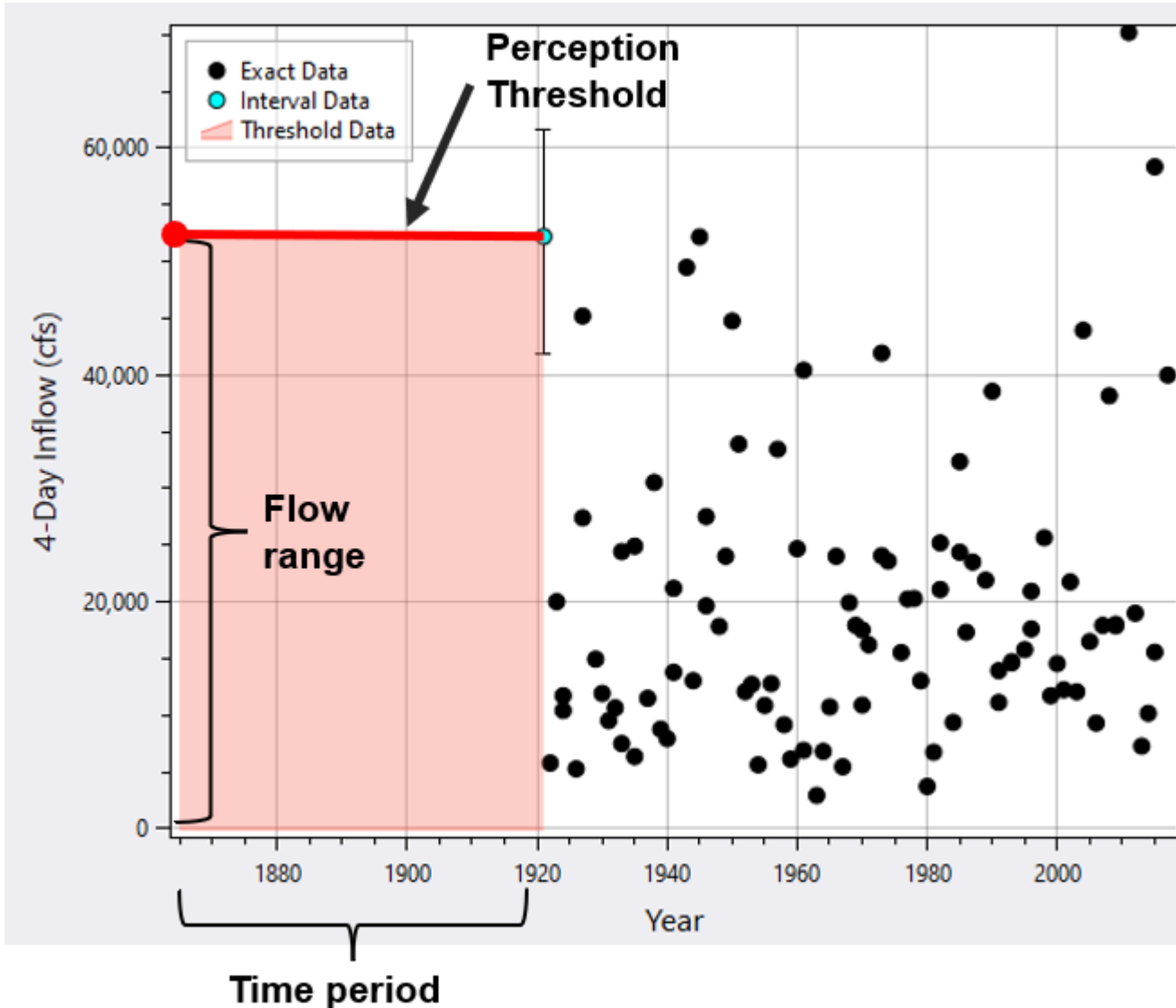


- Large **Historical** Floods
- **Paleoflood** Stage Indicators (**PSI's**)
- Range of Uncertainty
- Rule of Thumb (+/-20%)



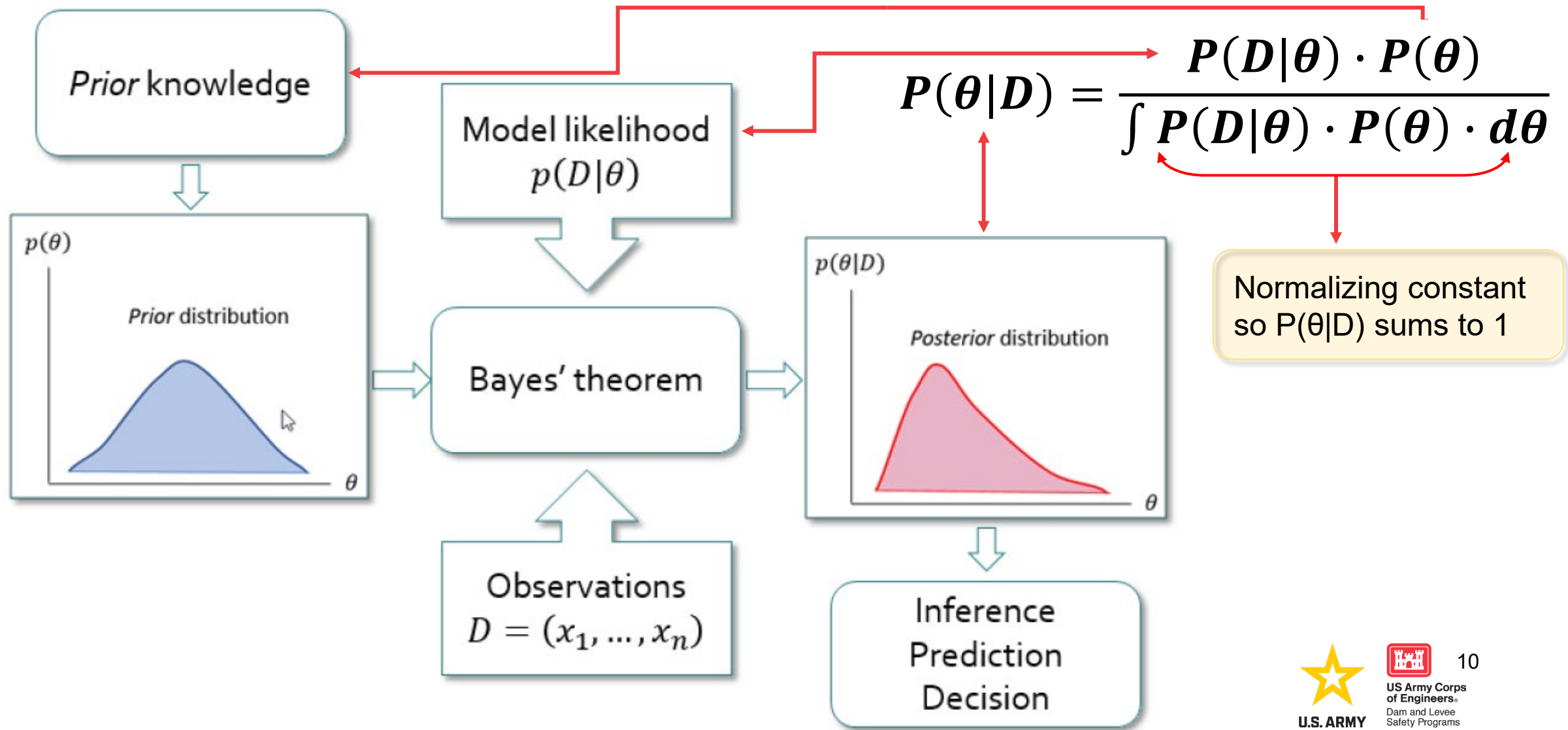


# Perception Thresholds



- Periods of Time with **Unobserved** floods
- Periods with **Missing Data**
- **Paleoflood** Non-Exceedance Bounds (**NEB's**)

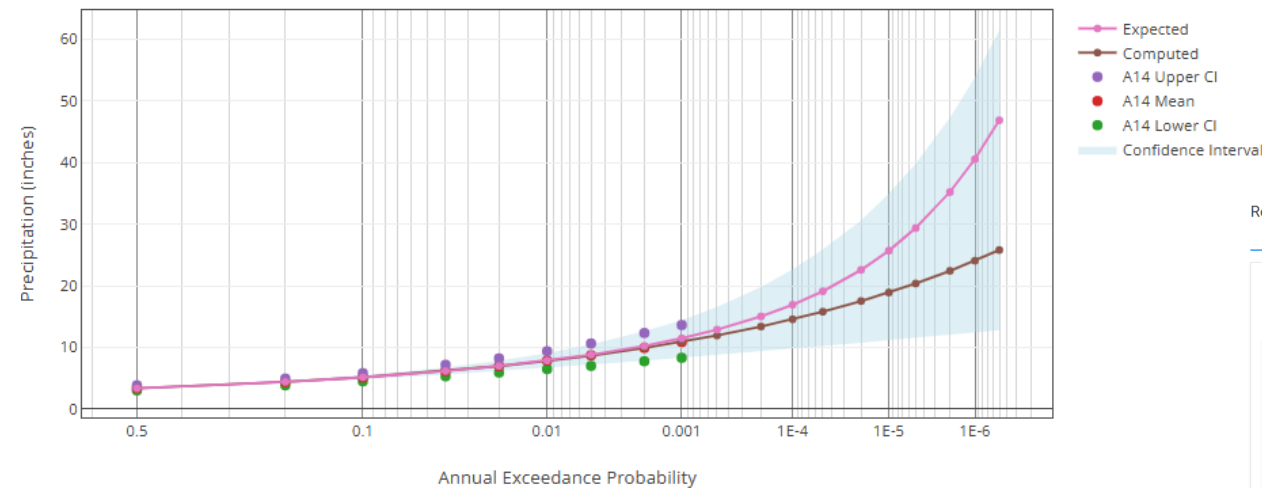
# Bayes' Theorem



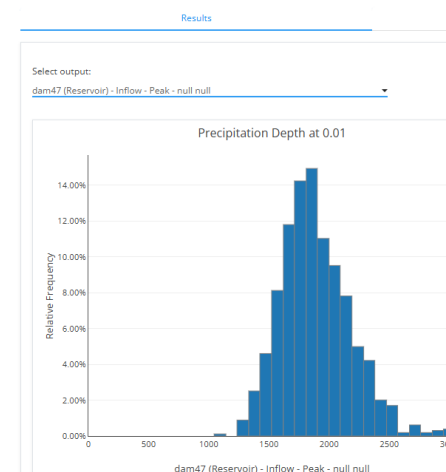
# Rainfall Runoff Frequency Tool (RRFT)

**INPUT:**  
**NOAA Atlas 14**  
**Precipitation-Frequency**

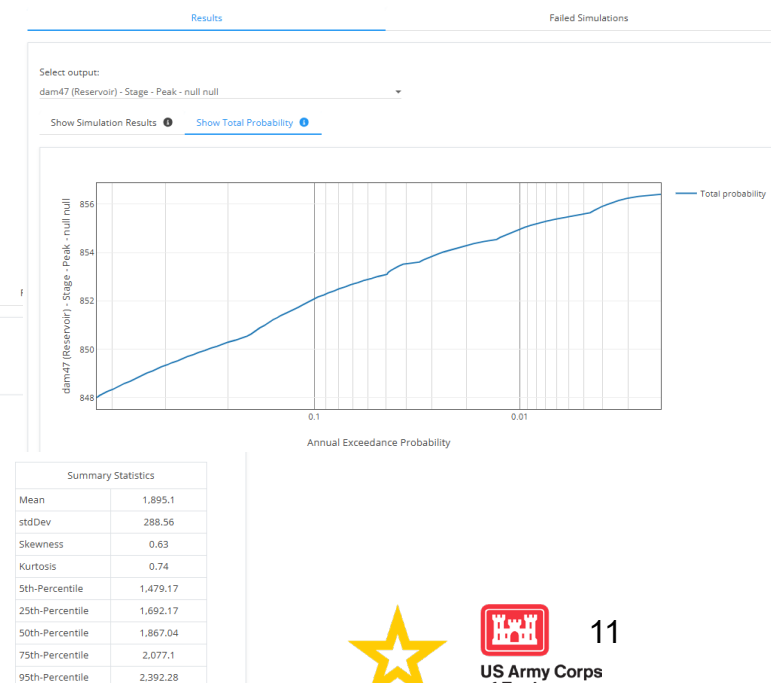
**OUTPUT:**  
**Flow-Frequency Curves**  
**Volume-Frequency Curves**  
**Stage-Frequency Curves**  
**Quantile Distributions**



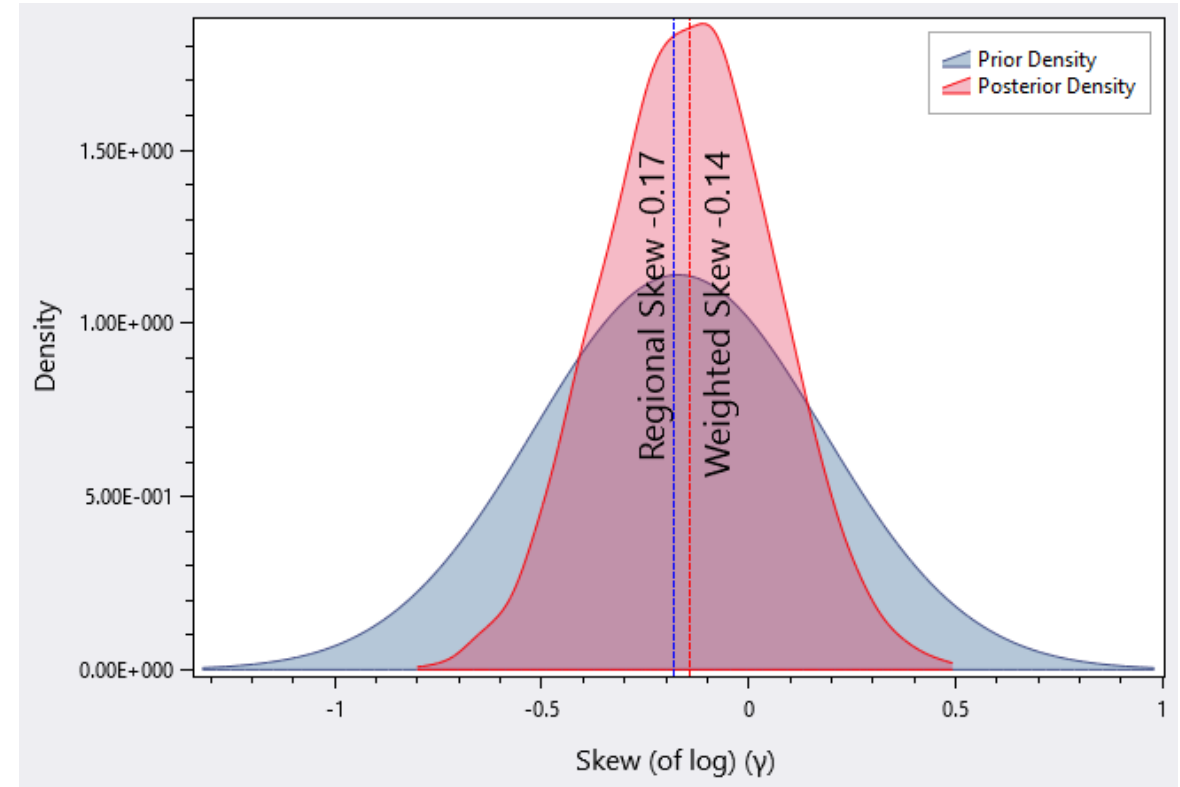
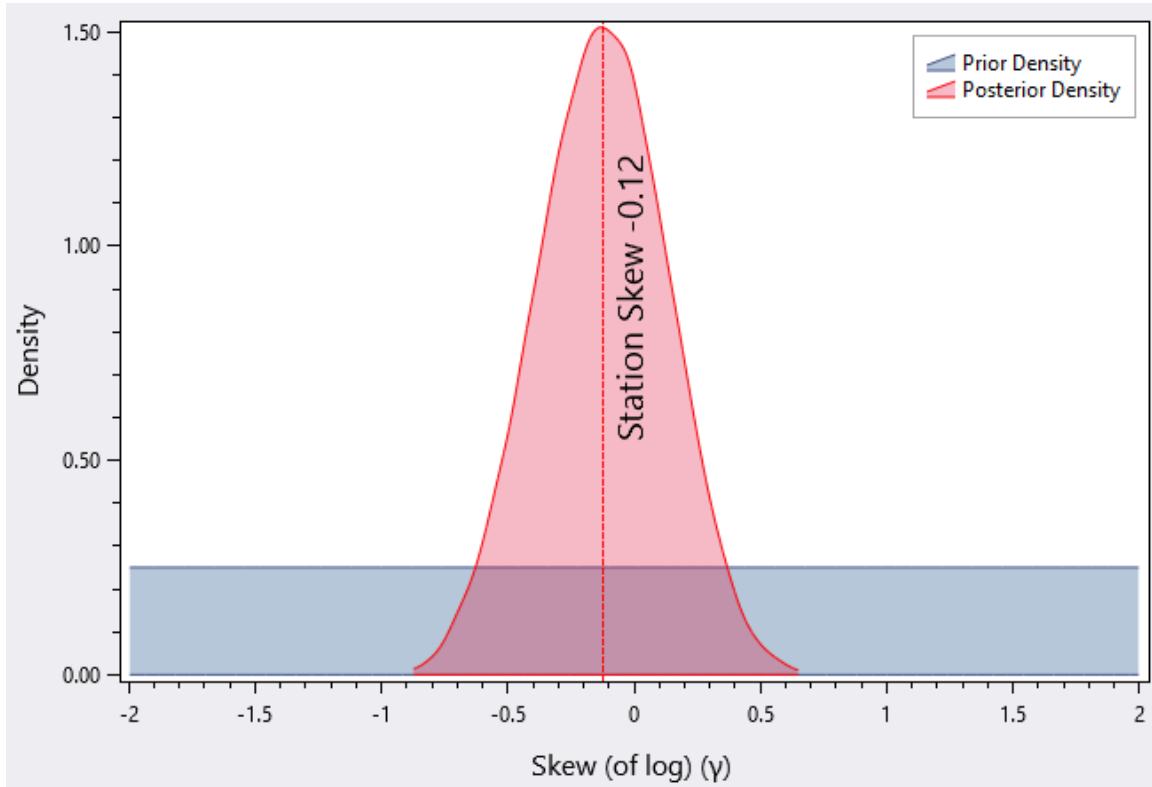
Results for Execution: Quantile Test



Results for Execution: RRFT-Ver1Day-Sep2010-%\_100SS



# Prior Distribution for Parameters (Regional Skew)





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# Questions