

# RMC-BestFit and RMC-RFA Top 10 Takeaways

## DLS-114, Module 2.28



**U.S. ARMY**



**US Army Corps  
of Engineers®**

Dam and Levee  
Safety Programs

March 2026 / Version 1

COUGAR DAM, OR (SOURCE: HDR)



# Learning Objective

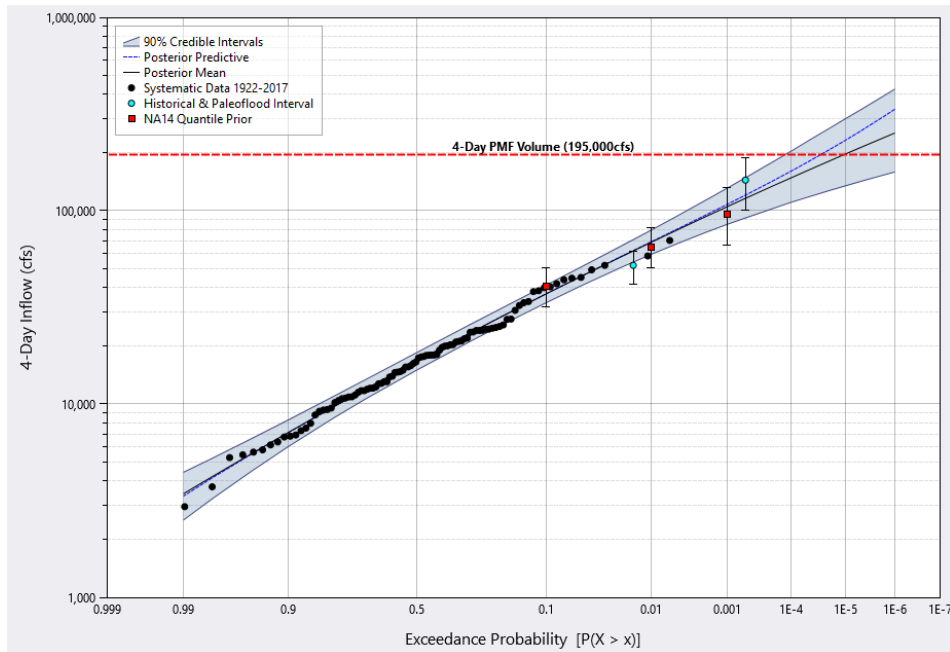
- Define the top 10 key takeaways for the RMC-BestFit and RMC-RFA software



# Top 10 Takeaways (FREEBEE: #0)

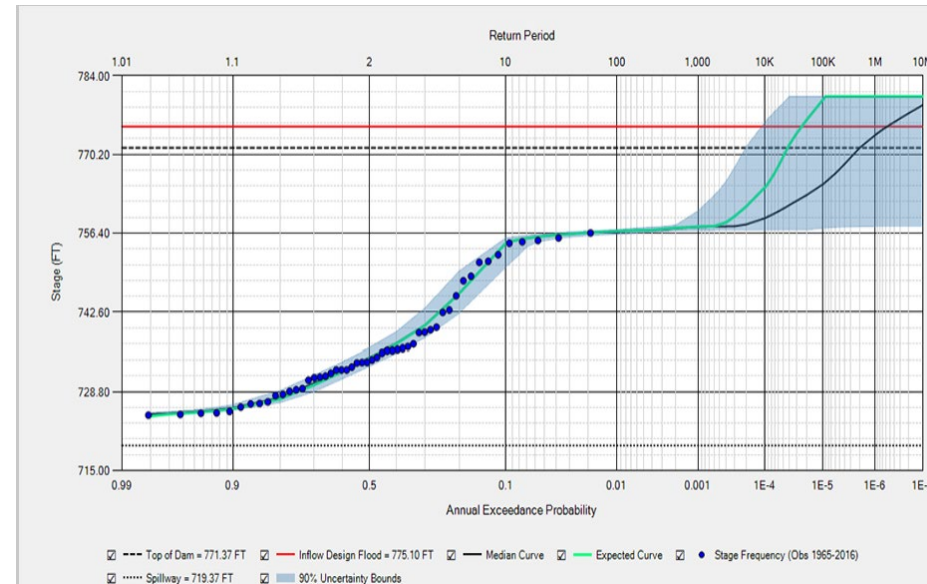
## 1) RMC-BestFit

### Flow-Frequency Curves



## 2) RMC-RFA

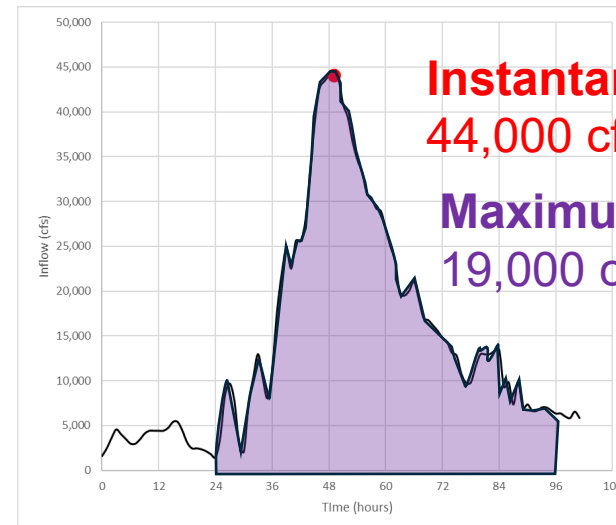
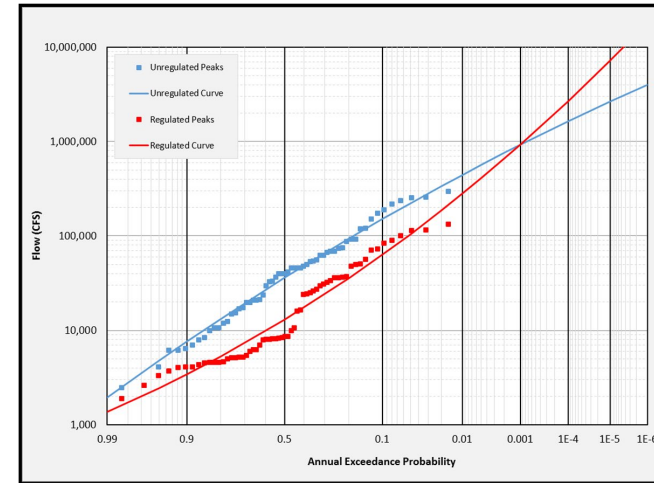
### Stage-Frequency Curves



# Top 10 Takeaways: #1

## 1. Ensure quantity and quality of data

- Unregulated inflow dataset
- Critical duration
- Peak to volume ratio
- As much data as practical



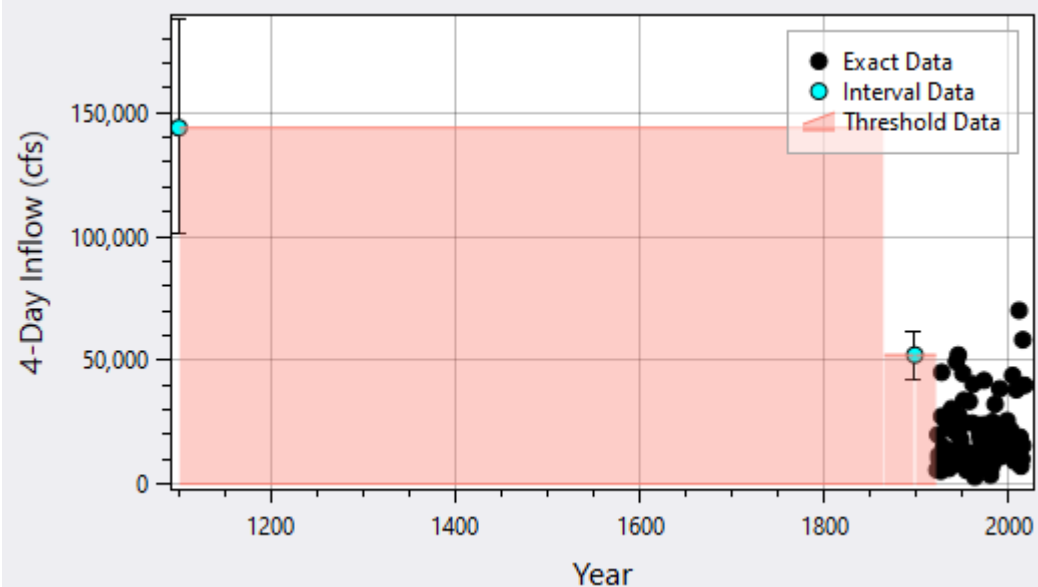
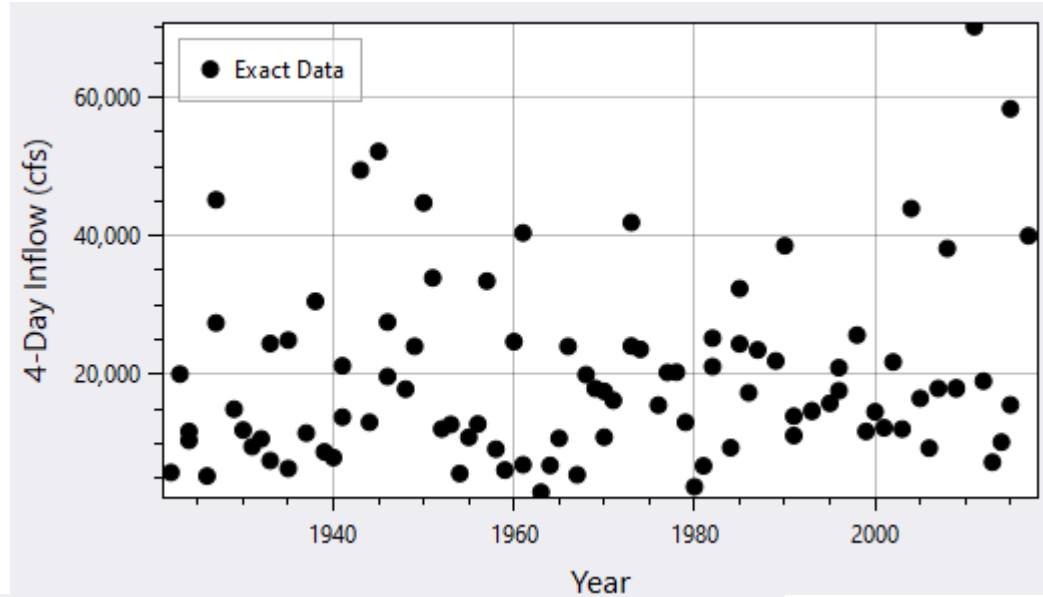
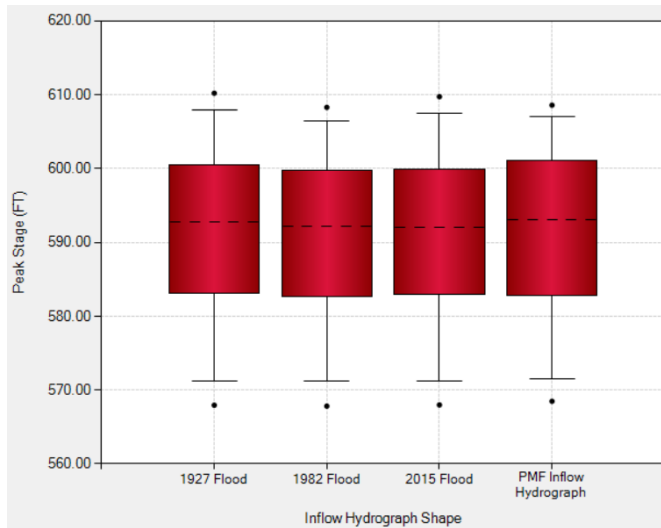
**Instantaneous peak:**  
44,000 cfs

**Maximum 3-day average:**  
19,000 cfs

# Top 10 Takeaways: #2

## 2. The importance of sensitivity analysis

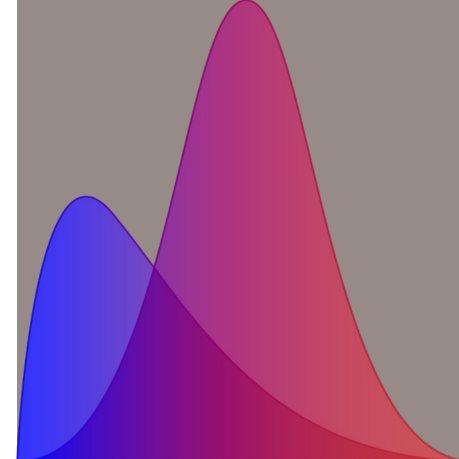
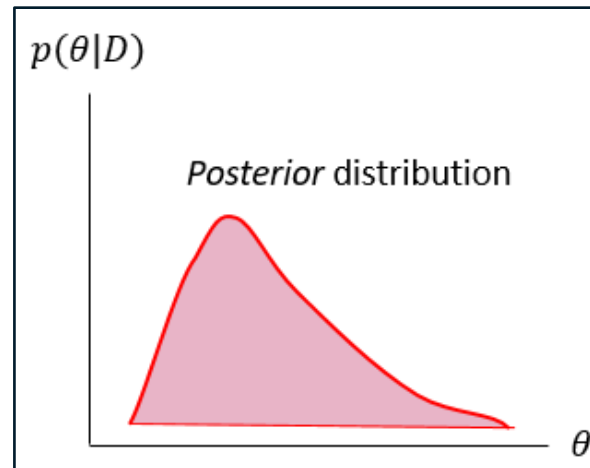
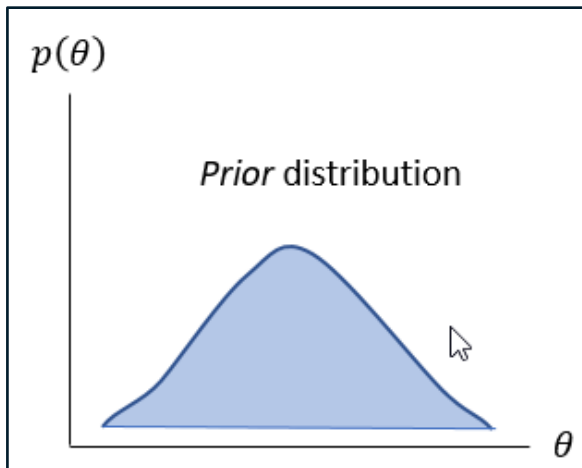
- How input data affects curves
- Volume-frequency and stage-frequency



# Top 10 Takeaways: #3

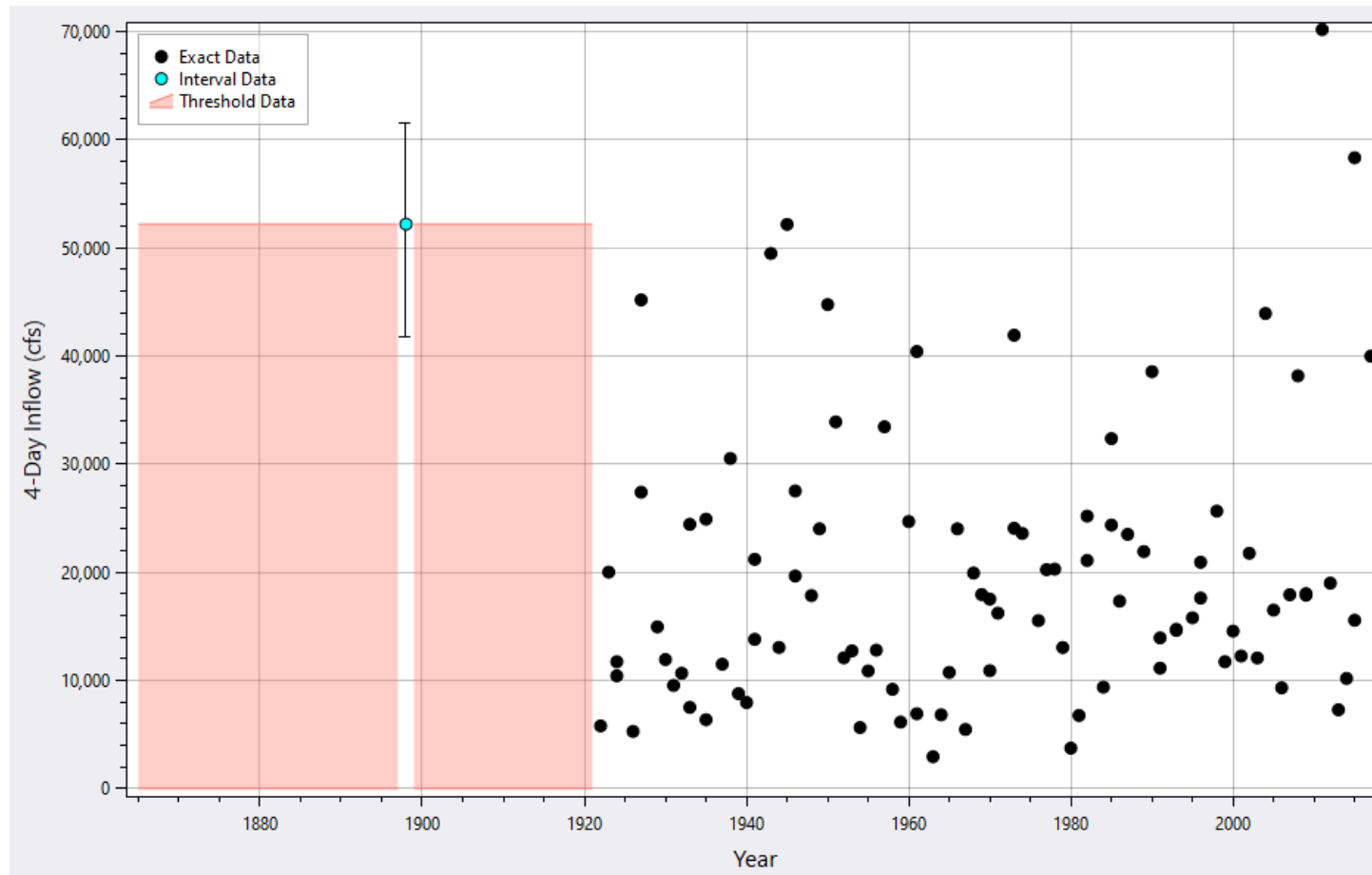
## 3. RMC-BestFit uses Bayes Theorem to find the most likely posterior parameters

- Can incorporate all available hydrologic data
- Quantifies uncertainty for all data



# Top 10 Takeaways: #4

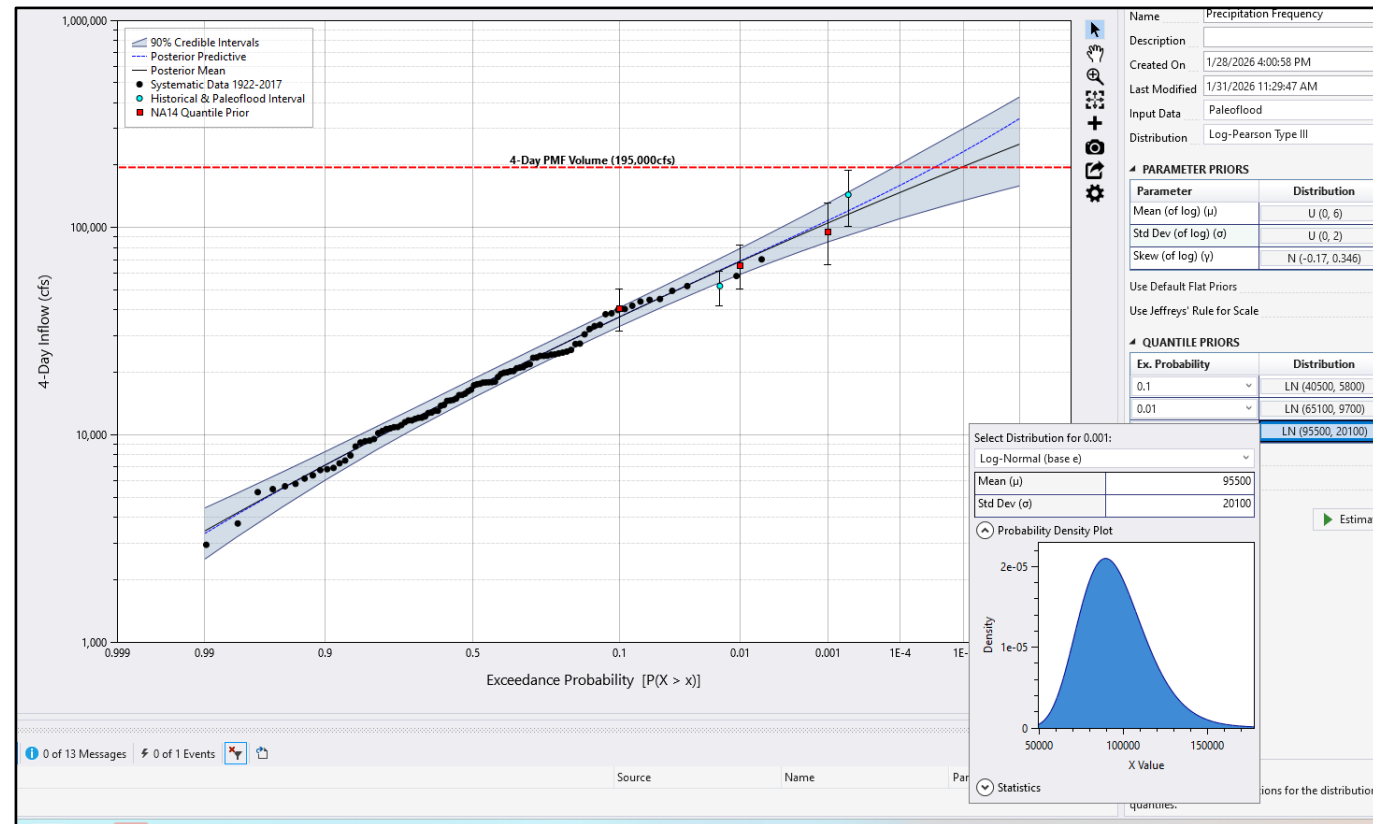
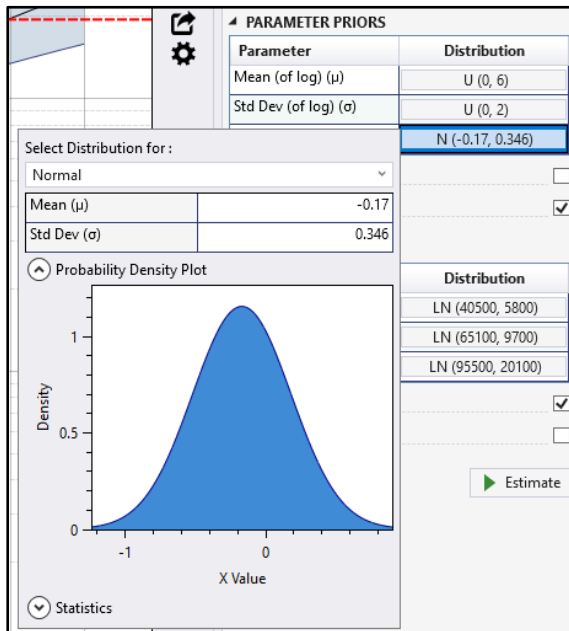
## 4. The importance of representing uncertainty using flow intervals and perception thresholds



# Top 10 Takeaways: #5

## 5. The importance of prior distributions

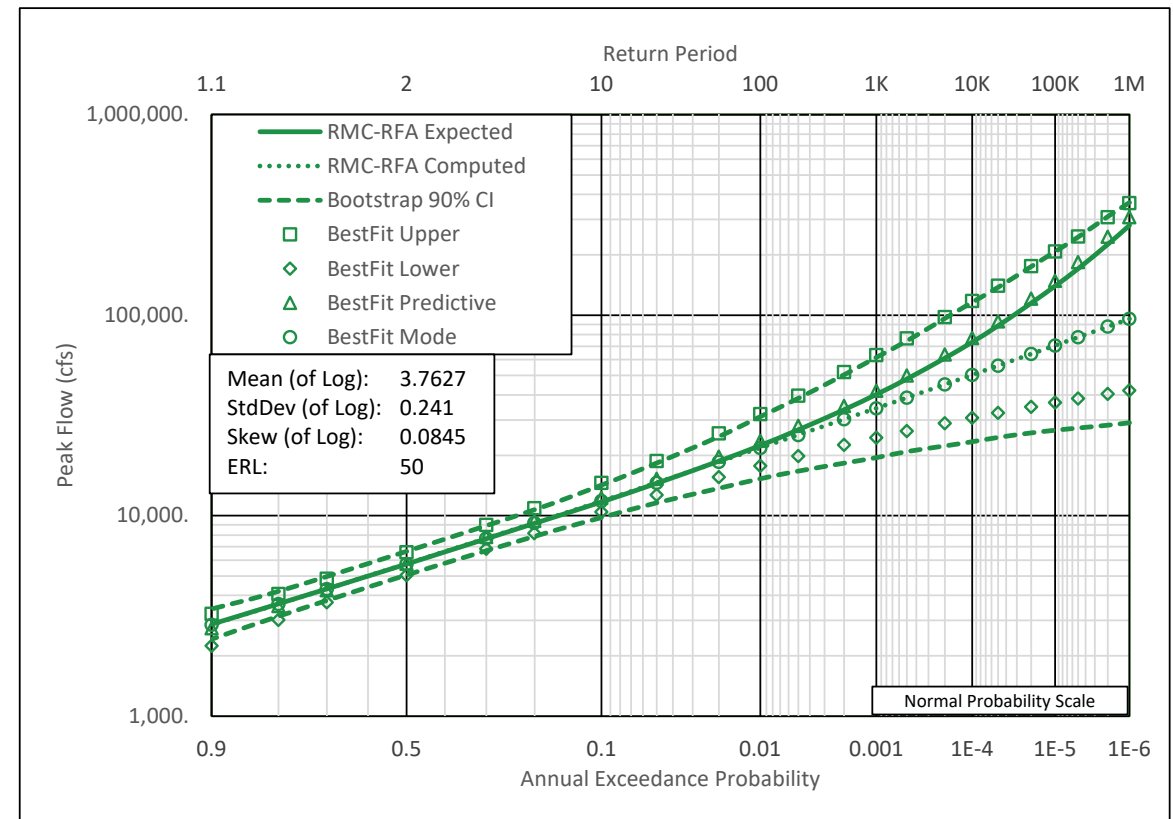
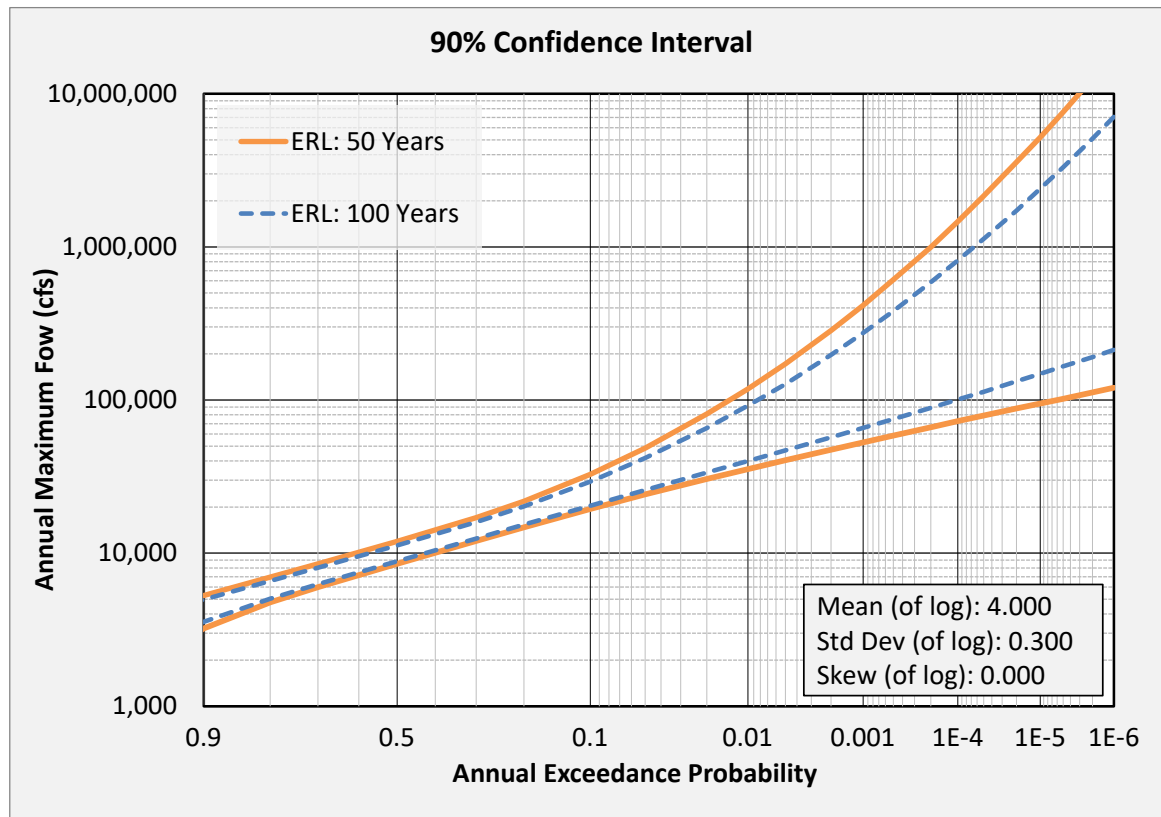
- Prior distributions for parameters
- Prior distributions for quantiles





# Top 10 Takeaways: #6

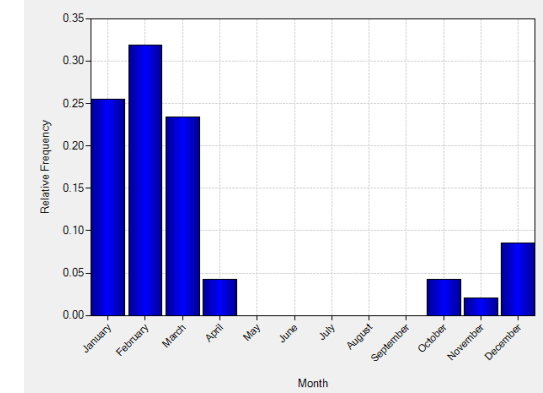
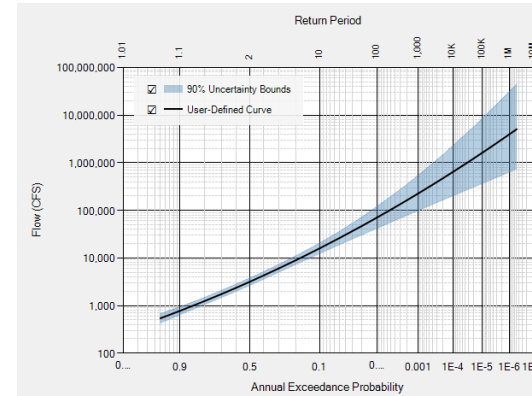
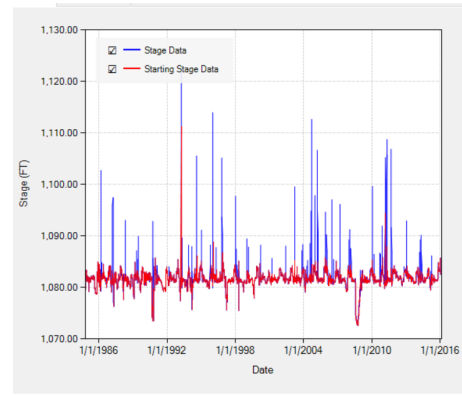
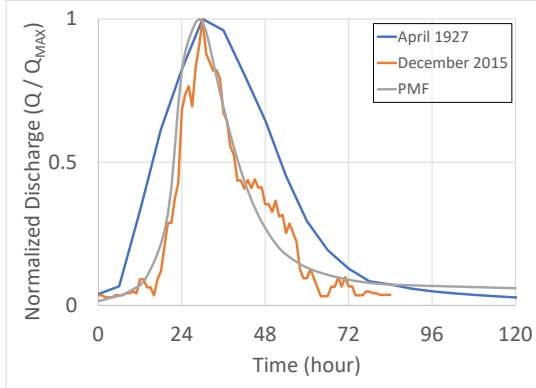
## 6. The importance of effective record length (ERL) estimates and Psuedo-ERL estimates



# Top 10 Takeaways: #7

## 7. RMC-RFA considers uncertainty in all four inputs

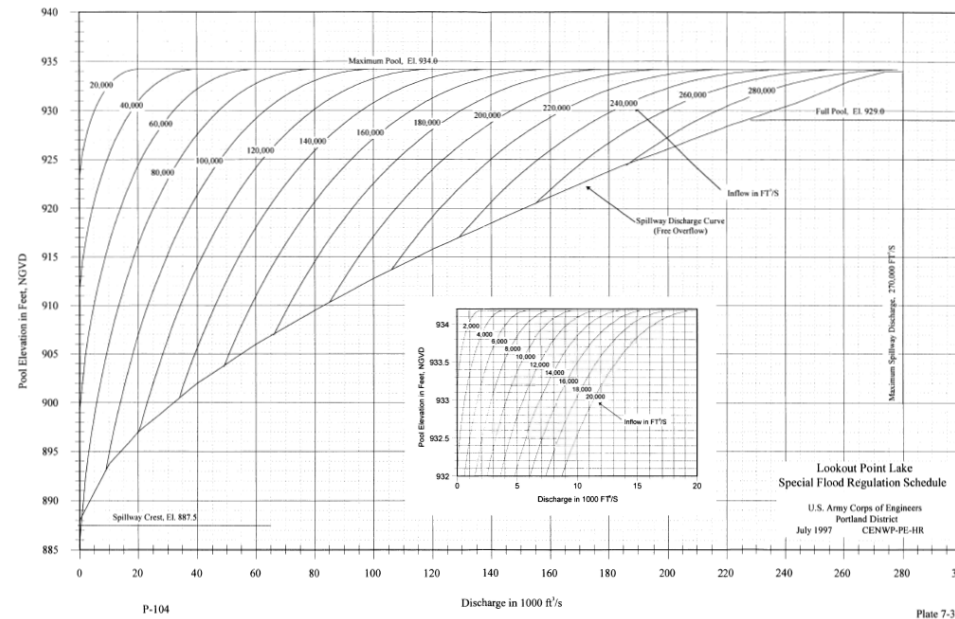
- Inflow Hydrographs
- Reservoir Starting Stage
- Volume-Frequency
- Flood-Seasonality



# Top 10 Takeaways: #8

## 8. The importance of stage-storage-discharge spillway rating curves

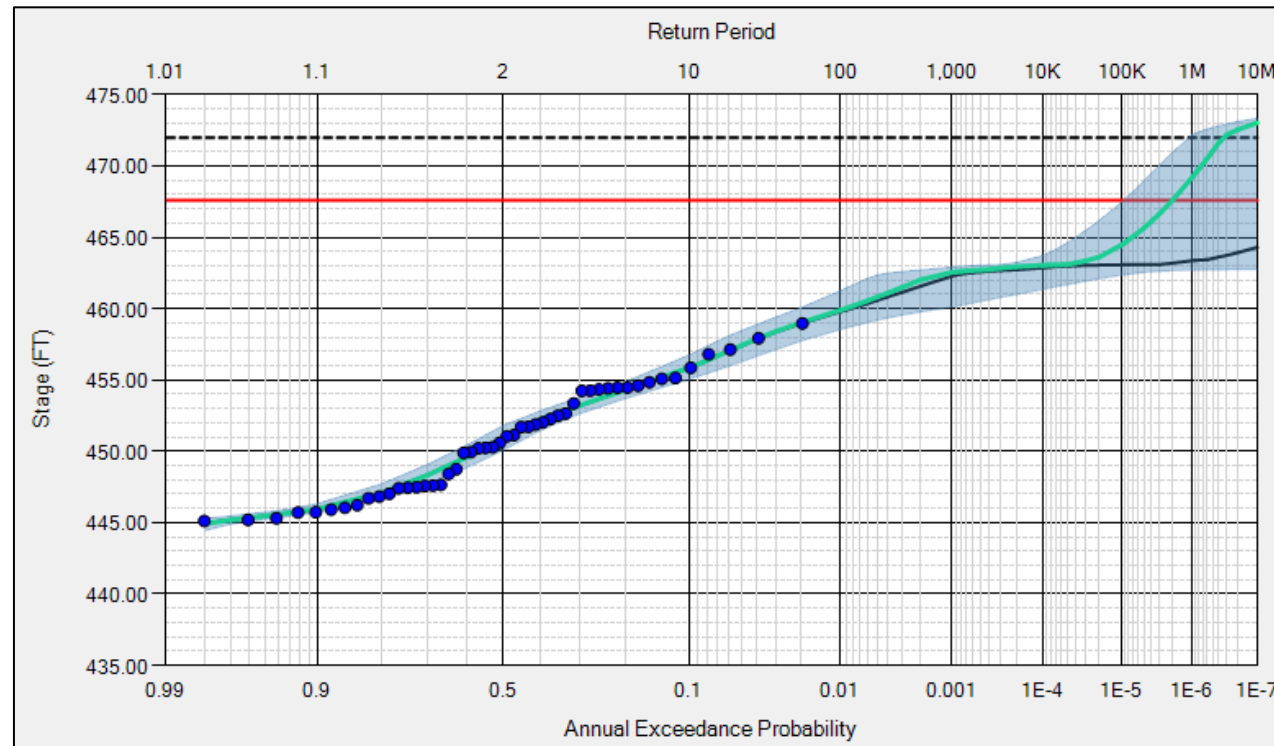
- Extrapolating for extreme events
- Use EM 1110-2-1603 and 1110-2-1605



# Top 10 Takeaways: #9

## 9. Be sure to calibrate hazard curve to empirical data

- Adjust reservoir model rating curve, starting stage duration
- Increased confidence in the curve

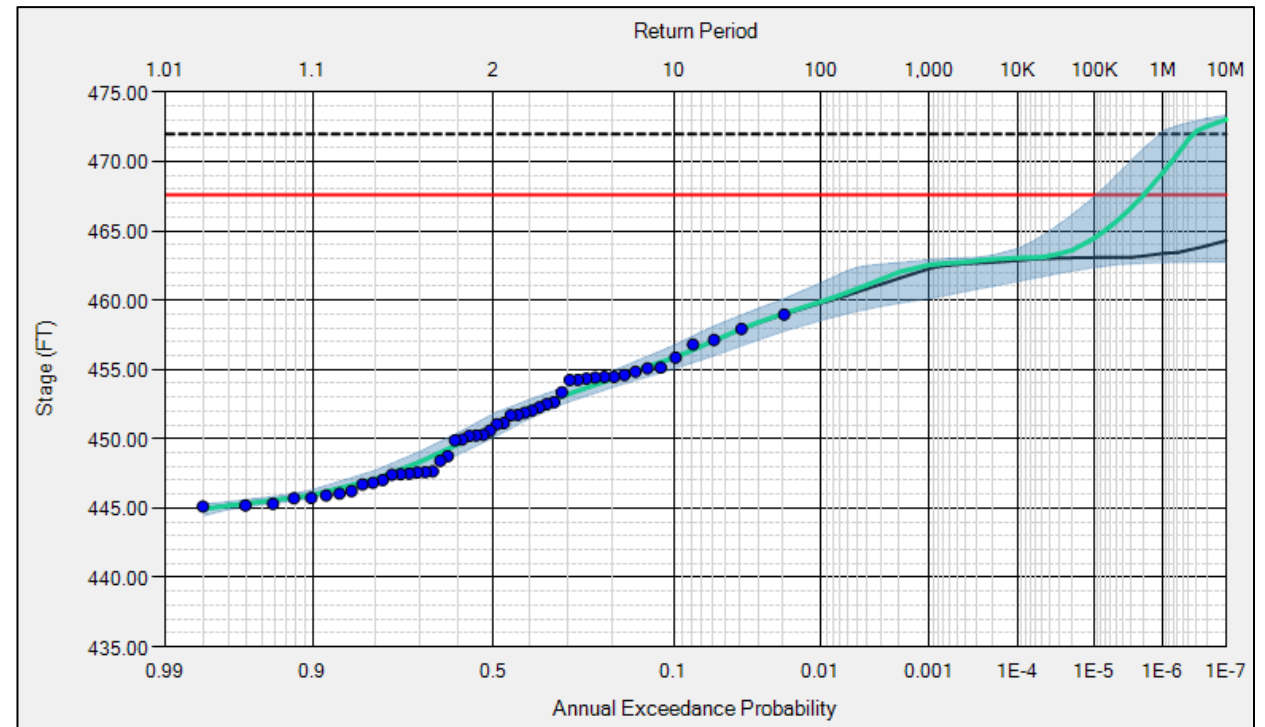




# Top 10 Takeaways: #10

## 10. The importance of defensible flood hazard curves

- Perform diagnostics and sensitivity analysis
- Time step and time window
- Inflection points
- Dam and levee safety risk



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# Questions