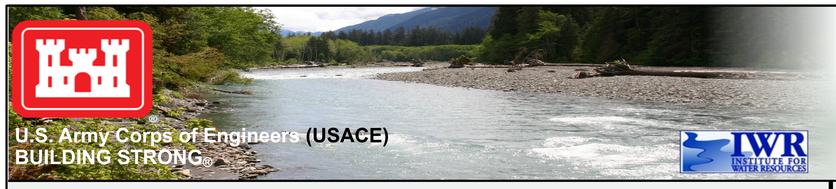

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Hydrologic Engineering Center (CEIWR-HEC)

Paleoflood Analysis within the Statistical Software Package (HEC-SSP)

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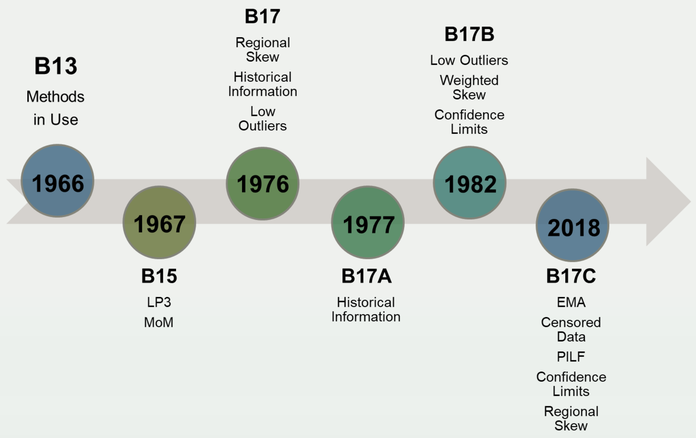
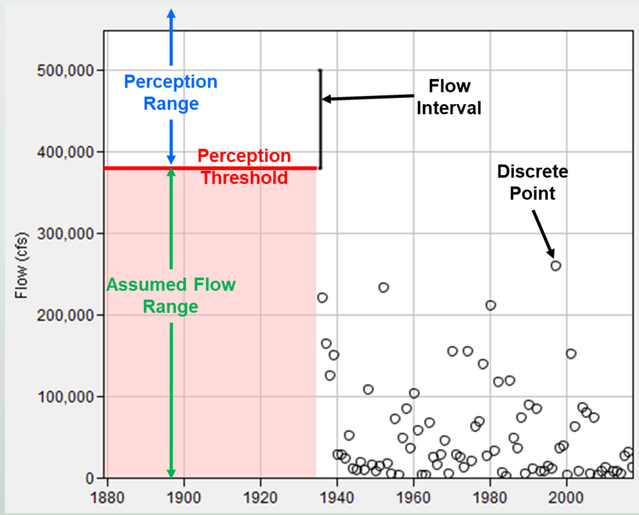
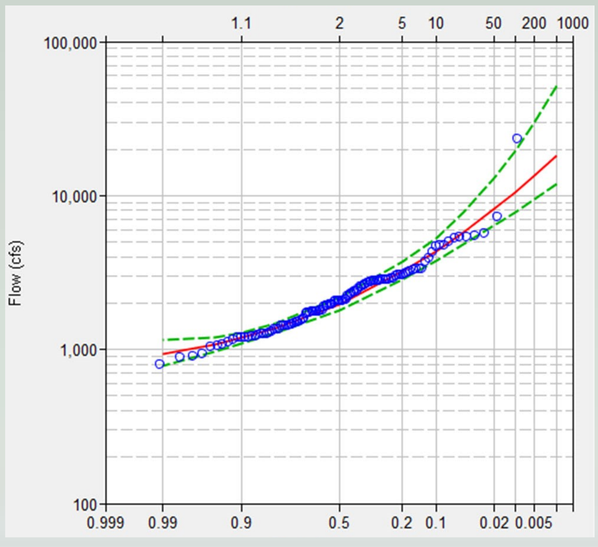
Federal Flood-Frequency Guidelines

Within the United States, Federal flood-frequency guidelines have been used since the mid 1960s to promote accurate and consistent assessments of flood risk.



The most recent revision to these guidelines, Bulletin 17C (**B17C**, England, et al., 2018), was released in 2018 and integrated several changes to the estimation of flood-frequency. Specifically, the use of the Expected Moments Algorithm (**EMA**) allows for the direct incorporation of diverse information when parameterizing a Log Pearson Type III (**LP3**) analytical distribution.

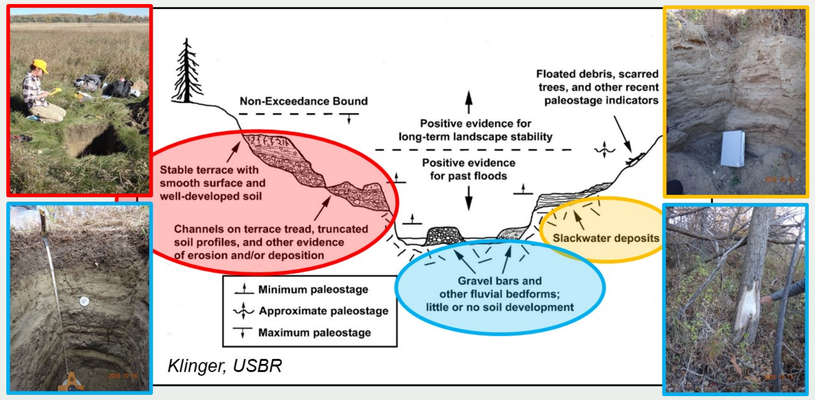




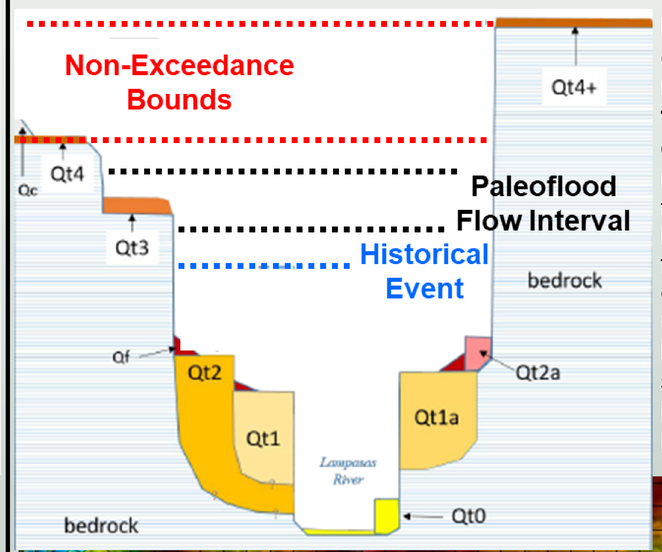
The results of an analysis that uses B17C techniques include **plotting positions** for the observed data, a fully-parameterized LP3 distribution (i.e. **frequency curve**), and **confidence limits**, amongst others.

Paleoflood Data Collection

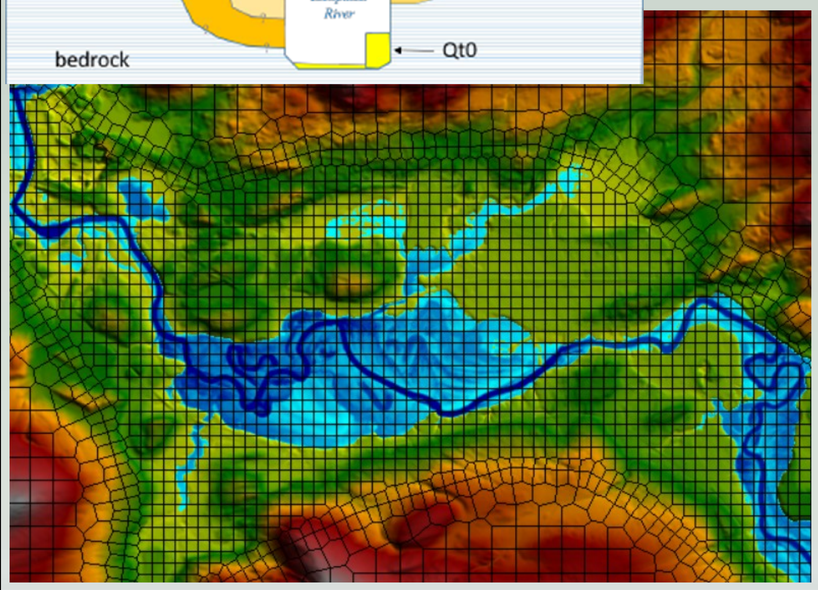
Paleoflood data often consists of geologic, geomorphic, and/or botanical evidence indicating one or more large floods (**paleostage indicators**) and/or the lack thereof (**non-exceedance bounds**). Paleoflood data can improve flood risk estimates, especially at rare exceedance probabilities.



First, detailed **field investigations** are used to identify locations with paleoflood data. Then, **elevations** of the relevant data are surveyed while **ages** are estimated using age-dating techniques.

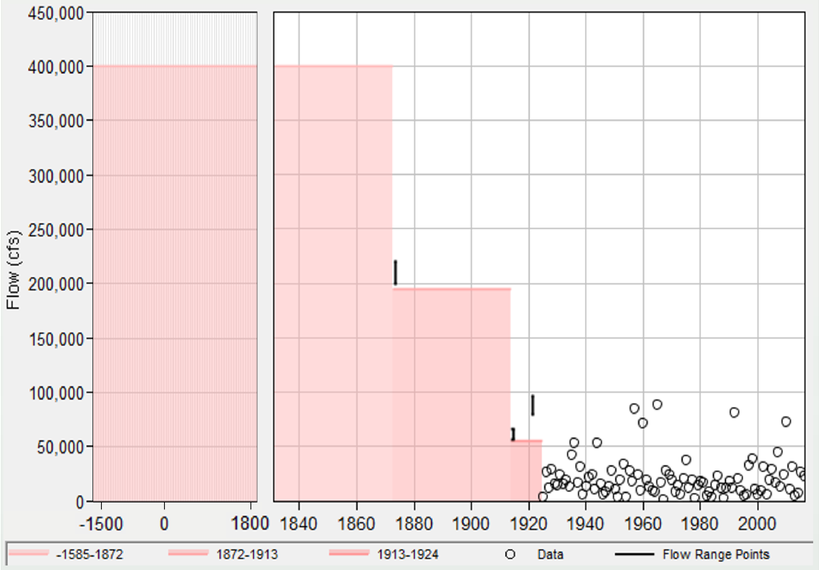


Finally, **discharges** needed to **form**, **equal**, **exceed**, or **not exceed** the various hydrographic features are estimated using **hydraulic simulations**, like **HEC-RAS**.



Paleoflood Analysis within HEC-SSP

HEC-SSP allows the user to investigate, add, remove, and/or manipulate a wide range of pertinent data including **systematic**, **historical**, and **paleoflood** information within a user-interface.



EMA and **B17C** techniques can then be used to quantify flood-frequency given this diverse range of information. The results of these analyses can then be used to inform **hydrologic hazard curves** in an accurate and consistent manner.