Assignment 11 (ABE651)
Presentation Graphics

Alka Tiwari

(username:tiwari13)
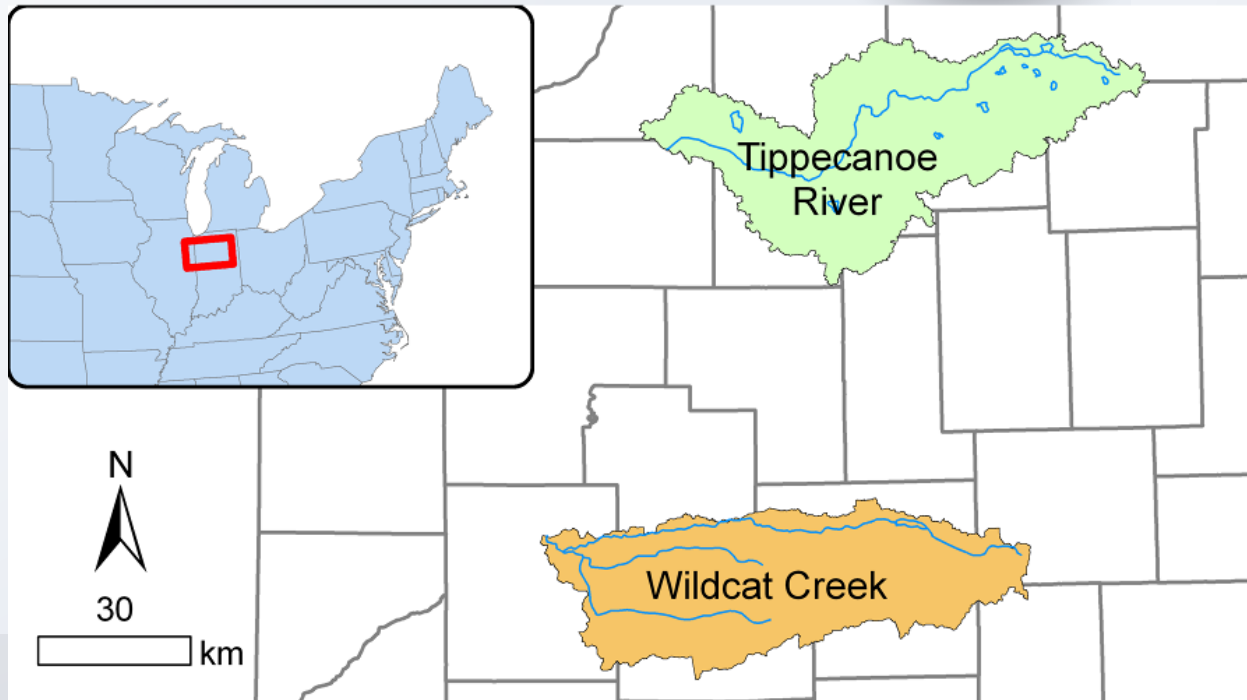
Github: https://github.com/Environmental-Informatics/11-presentation-graphics-roccabye

Environmental Metrics and Descriptive Statistics

for two USGS stream gauges.

(USGS 03331500 TIPPECANOE RIVER NEAR ORA, IN and USGS 03335000
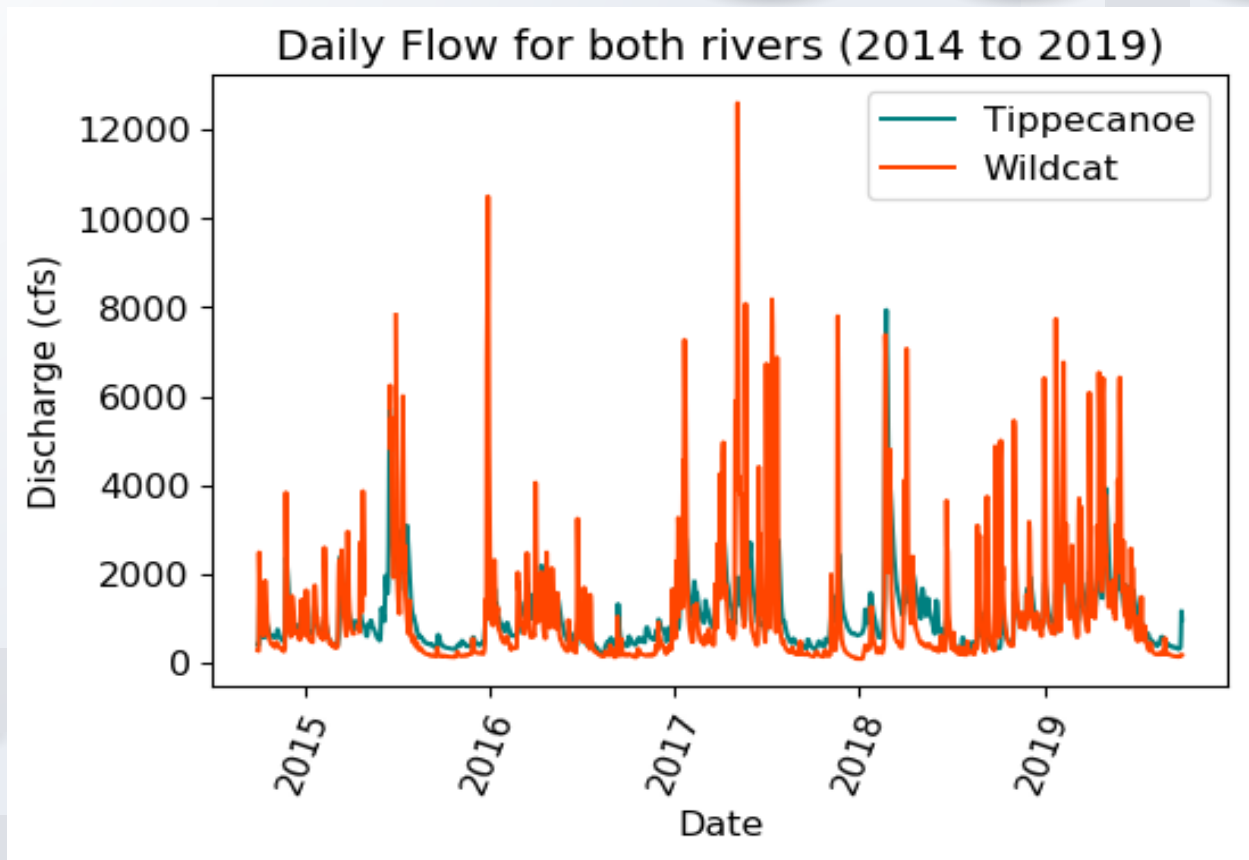WILDCAT CREEK NEAR LAFAYETTE, IN in Central Indiana.)

Location map of USGS stream gauge in Central Indiana

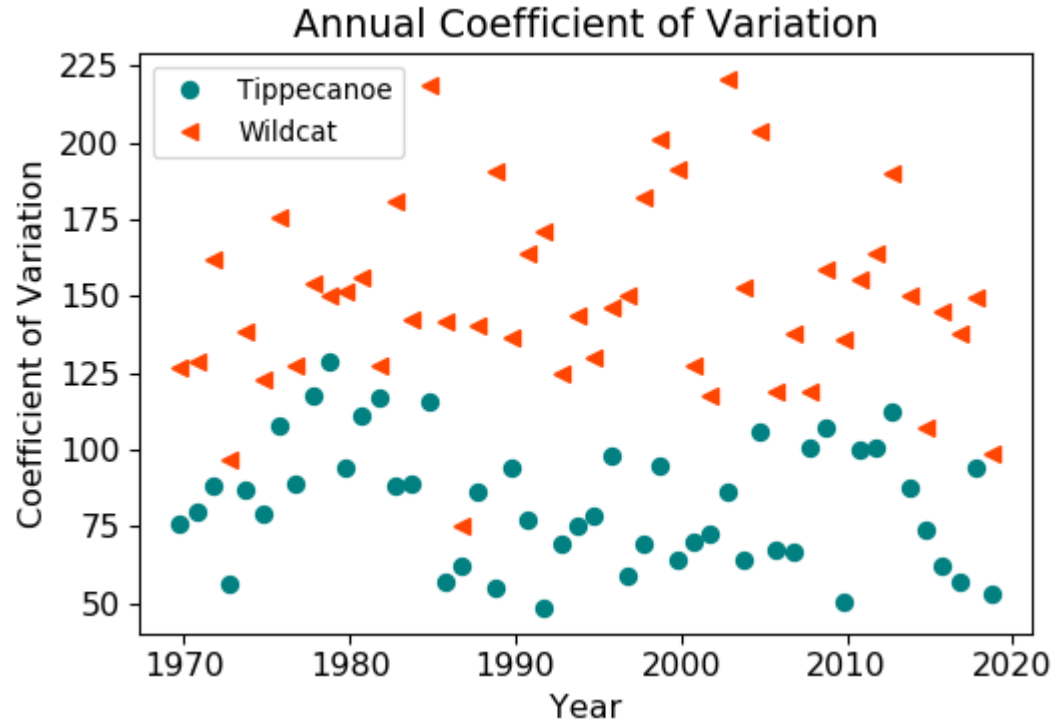source: Assignment 11, Environmental Informatics github repository

Time series of daily discharge (cfs) at both the gauge; Tippecanoe River and Wildcat Creek for past five years.

Daily Flow for both rivers (2014 to 2019)

Note: For Wildcat Creek there is a gap period in 2015 when no data is recorded.
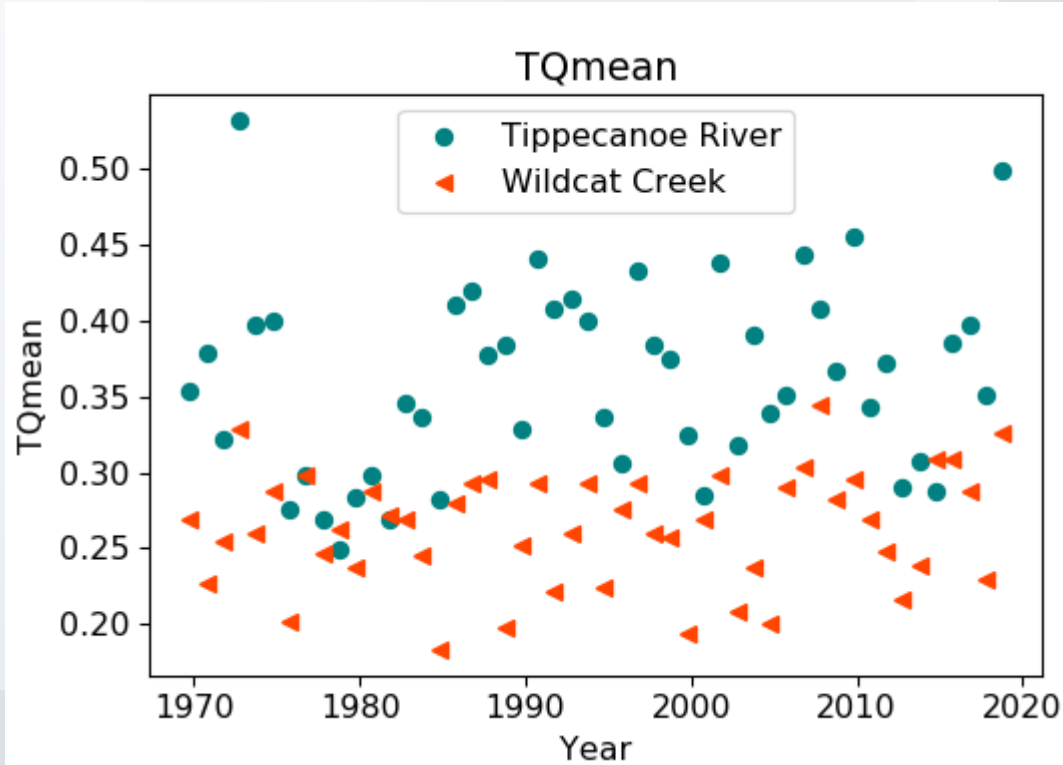The variation in the peak discharge value is huge between two gauges.

Annual mean Coefficient of Variation for the two stream gauge.

Comparisons are done for the period 1969 - 2019

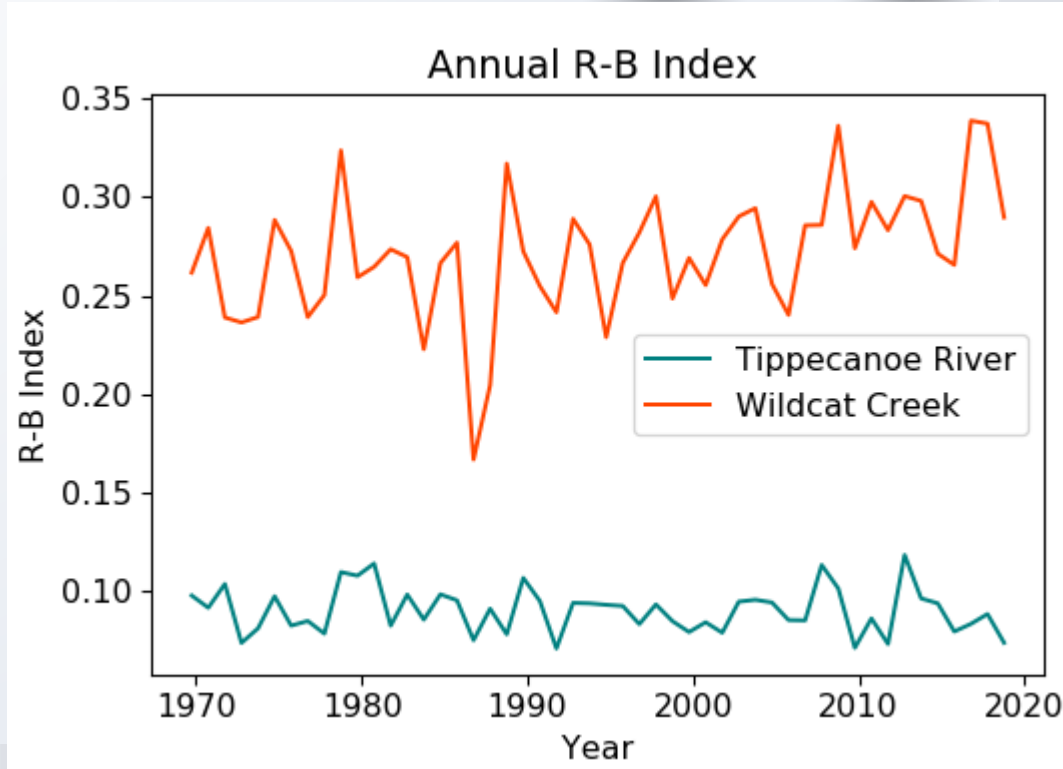Annual mean T-Qmean for the two stream gauge.

TQmean is the fraction of time that daily streamflow exceeds mean streamflow for each year.

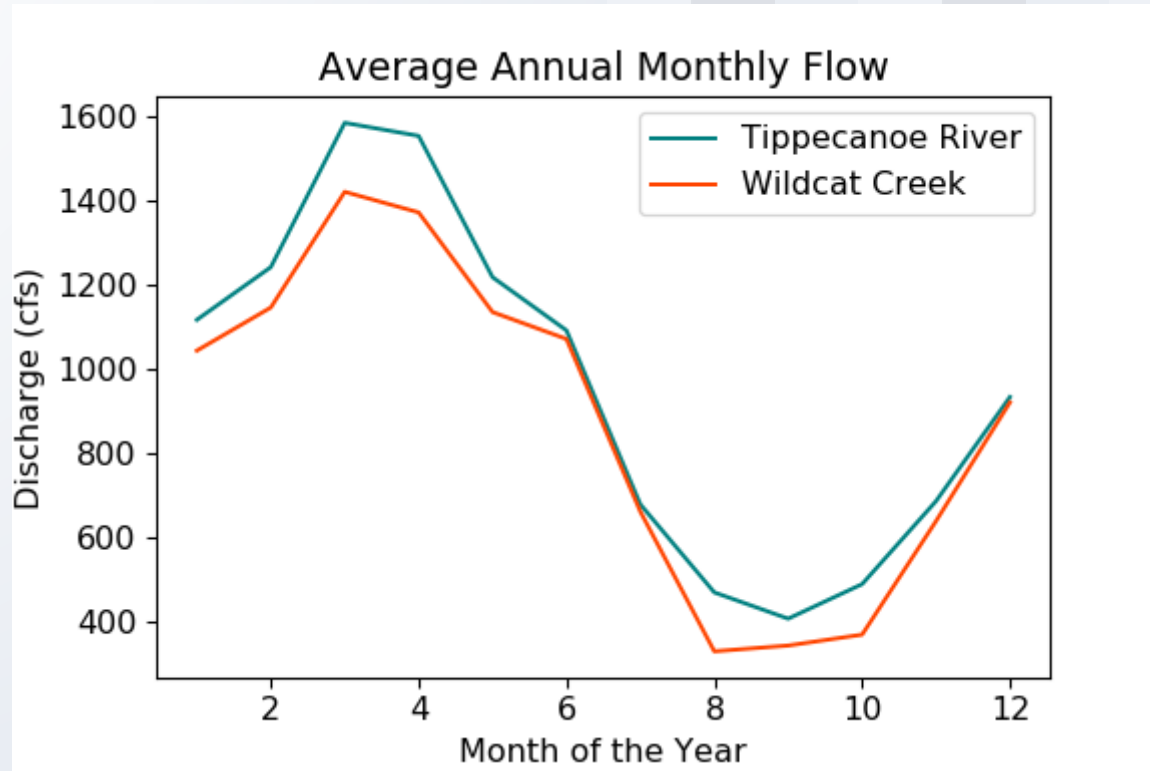Comparisons are done for the period 1969 - 2019

Annual mean Richards-Baker Flashiness (R-B) Index
for the two stream gauge.

R-B index is sum of the absolute values of day-to-day changes in daily discharge volumes/total discharge volumes for each year.
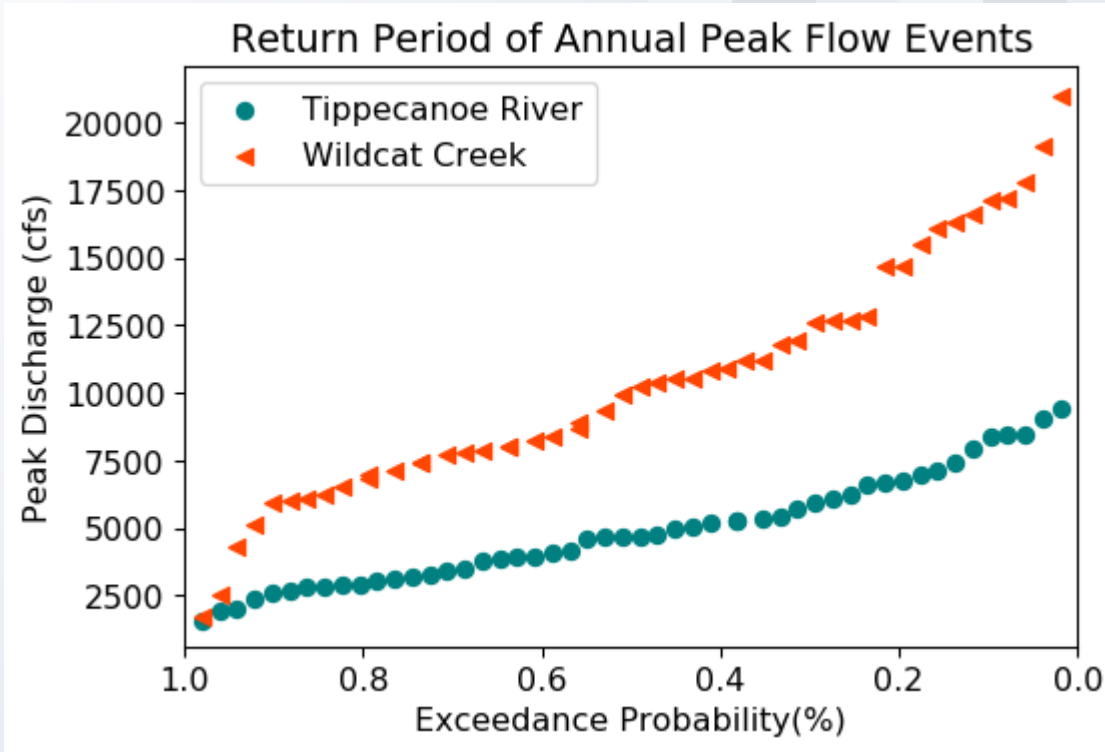

Comparisons are done for the period 1969 - 2019

Monthly averaged mean discharge (cfs) for the two stream gauge.

Average Annual Monthly Flow

Comparisons are done for the period 1969 - 2019

Return period of Annual Peak Flow Event for the two stream gauge

plotting position (or exceedance probability) for each event is calculated using the Weibull plotting position equation:

$$P(x) = \frac{m(x)}{N+1}$$

where m = rank of precipitation event x, and N = number of observations.

In conclusion

❑ **The two watersheds drain very similar areas that are very close together**

❑ **There is no significant difference in climate, and both watersheds have similar land use (dominated by agricultural use).**

❑ **Still their hydrologic response, measured as streamflow, is not similar which is highlighted in the metrics presented here.**