**Chronology & Flow**

Created by Fisher Ankney, [fisherankney@gmail.com](mailto:fisherankney@gmail.com), February 13, 2017

Updated February 23rd, 2017

***Description –***

Plot the Arstan tree ring chronologies against Missouri River flow in order to better understand the relationships between them. Include markers for Garrison and Oahe dam construction; evaluate how they affect the chronologies.

***Sources* –**

Sources for the tree ring chronologies are taken from the arstan\_chron\_-67\_spline.xls source spreadsheet found in the study folder. The sources for the Arstan output can be found in Greater Missouri River / analysis / Tree rings / (width\_cross, width\_kimball, width\_smith). The Arstan program itself can be found in Greater Missouri River / analysis / Tree Rings / Tree Ring Analysis Programs / ARS41d\_xp. Upon processing in the Arstan program, a 67% smoothing spline was applied to the chronologies to create the standard chronology. No other notable options were changed from default. The raw chronology output was used in each of the scripts/plots, for each of the three sites.

Flow data is retrieved from Greater Missouri River / analysis / R / Climate Correlations / Bismarck Flow. This data has been retrieved from U.S. Geological Survey National Water Information System (NWIS) for station 06342500, Missouri River at Bismarck, ND.

chron\_clim\_source.xls

***Scripts –***

*flow\_chronology\_script.R*

*site\_chronology\_comparison\_script.R*

***Results –***

*Chronology Flow.png*

*Site Chronology Comparison.png*



