**Climate Correlation Summary**

Created by Fisher Ankney, [fisherankney@gmail.com](mailto:fisherankney@gmail.com), February 14, 2017

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***Description –***

Correlate the Climate variables PDSI, Flow, Precipitation, and Temperature to the Missouri River Cross Ranch and Smith Grove chronologies. Find the best period of comparison, and present the results in a visually appealing, and easily understood table.

***Sources* –**

Chronologies used in these comparisons are the Smith Grove standard ARSTAN chronology (with the 67% smoothing spline option selected) and the Cross Ranch standard ARSTAN chronology (with the 67% smoothing spline option selected).

Climate data was retrieved from the following sources -

*Flow* – Retrieved January 5th, 2017. USGS Surface-water monthly statistics for the Nation – USGS 06342500 Missouri River at Bismarck, ND. -00060, Discharge, cubic feet / second

*Max Temperature* – Retrieved January 5th, 2017. High Plains Regional Climate Center’s CLIMOD (climod.unl.edu) for Bismarck Muni AP, ND, Burleigh County, Station ID – 320819 (Coop).

*Precipitation* – Retrieved January 5th, 2017. High Plains Regional Climate Center’s CLIMOD (climod.unl.edu) for Bismarck Muni AP, ND, Burleigh County, Station ID – 320819 (Coop).

*PDSI* – Retrieved February 20th, 2017. National Climatic Data Center (NCDC) (https://www7.ncdc.noaa.gov/CDO/CDODivisionalSelect.jsp). For climate division 4 (west central), North Dakota.

*Climate Correlations.xls*

***Scripts –***

*early\_climate\_correlations\_script.R*

*late\_climate\_correlations\_script.R*

*gm\_barplot\_template.R*

***Results –***

*Results – Correlation Table (April – July).xls*

*Results – Correlation Table (April – August).xls*

*Results – Correlations.xls*