[] Dendrochronology Program Library Run FRNI Program COF 10:42 Fri 04 Sep 2020 Page 1

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 QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

 File of DATED series: SCBI\_frni.rwl

 CONTENTS:

 Part 1: Title page, options selected, summary, absent rings by series

 Part 2: Histogram of time spans

 Part 3: Master series with sample depth and absent rings by year

 Part 4: Bar plot of Master Dating Series

 Part 5: Correlation by segment of each series with Master

 Part 6: Potential problems: low correlation, divergent year-to-year changes, absent rings, outliers

 Part 7: Descriptive statistics

 RUN CONTROL OPTIONS SELECTED VALUE

 1 Cubic smoothing spline 50% wavelength cutoff for filtering

 32 years

 2 Segments examined are 50 years lagged successively by 25 years

 3 Autoregressive model applied A Residuals are used in master dating series and testing

 4 Series transformed to logarithms Y Each series log-transformed for master dating series and testing

 5 CORRELATION is Pearson (parametric, quantitative)

 Critical correlation, 99% confidence level .3281

 6 Master dating series saved N

 7 Ring measurements listed N

 8 Parts printed 1234567

 9 Absent rings are omitted from master series and segment correlations (Y)

 Time span of Master dating series is 1871 to 2016 146 years

 Continuous time span is 1871 to 2016 146 years

 Portion with two or more series is 1904 to 2016 113 years

 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 \*C\* Number of dated series 16 \*C\*

 \*O\* Master series 1871 2016 146 yrs \*O\*

 \*F\* Total rings in all series 1201 \*F\*

 \*E\* Total dated rings checked 1168 \*E\*

 \*C\* Series intercorrelation .422 \*C\*

 \*H\* Average mean sensitivity .254 \*H\*

 \*A\* Segments, possible problems 13 \*A\*

 \*\*\* Mean length of series 75.1 \*\*\*

 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 ABSENT RINGS listed by SERIES: (See Master Dating Series for absent rings listed by year)

 No ring measurements of zero value

PART 2: TIME PLOT OF TREE-RING SERIES: 10:42 Fri 04 Sep 2020 Page 2

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 1050 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600 1650 1700 1750 1800 1850 1900 1950 2000 2050 Ident Seq Time-span Yrs

 : : : : : : : : : : : : : : : : : : : : : -------- --- ---- ---- ----

 . . . . . . . . . . . . . . . . . <============> . 12221A 1 1871 2004 134

 . . . . . . . . . . . . . . . . . <=========> . 20155A 2 1904 2005 102

 . . . . . . . . . . . . . . . . . <==========> . 90716A 3 1905 2015 111

 . . . . . . . . . . . . . . . . . .<=========> . 41039A 4 1916 2014 99

 . . . . . . . . . . . . . . . . . .<=========> . 102001 5 1916 2014 99

 . . . . . . . . . . . . . . . . . .<=========> . 41040A 6 1917 2016 100

 . . . . . . . . . . . . . . . . . . <======> . 190549 7 1940 2016 77

 . . . . . . . . . . . . . . . . . . <======> . 22208A 8 1942 2016 75

 . . . . . . . . . . . . . . . . . . <======> . 12171A 9 1943 2015 73

 . . . . . . . . . . . . . . . . . . <=====> . 180968 10 1955 2015 61

 . . . . . . . . . . . . . . . . . . .<====> . 30142A 11 1961 2011 51

 . . . . . . . . . . . . . . . . . . .<====> . 190774 12 1963 2014 52

 . . . . . . . . . . . . . . . . . . .<===> . 90718A 13 1964 2009 46

 . . . . . . . . . . . . . . . . . . .<===> . 40113A 14 1968 2005 38

 . . . . . . . . . . . . . . . . . . . <===> . 090759 15 1973 2016 44

 . . . . . . . . . . . . . . . . . . . <===> . 30141A 16 1977 2015 39

 : : : : : : : : : : : : : : : : : : : : :

 1050 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600 1650 1700 1750 1800 1850 1900 1950 2000 2050

PART 3: Master Dating Series: 10:42 Fri 04 Sep 2020 Page 3

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 Year Value No Ab Year Value No Ab Year Value No Ab Year Value No Ab Year Value No Ab Year Value No Ab

 ------------------ ------------------ ------------------ ------------------ ------------------ ------------------

 1900 .830 1 1950 -.870 9 2000 -.761 16

 1901 2.283 1 1951 -.757 9 2001 -.300 16

 1902 1.612 1 1952 .747 9 2002 -.315 16

 1903 .950 1 1953 .823 9 2003 -.154 16

 1904 1.252 2 1954 -.126 9 2004 .521 16

 1905 -.215 3 1955 .110 10 2005 .346 15

 1906 -1.358 3 1956 .498 10 2006 .371 13

 1907 -.690 3 1957 .906 10 2007 .671 13

 1908 -1.179 3 1958 .983 10 2008 -.033 13

 1909 -.857 3 1959 .817 10 2009 .478 13

 1910 1.175 3 1960 -.324 10 2010 .243 12

 1911 -.399 3 1961 1.201 11 2011 .299 12

 1912 .366 3 1962 -.142 11 2012 -.590 11

 1913 .127 3 1963 .519 12 2013 .068 11

 1914 .906 3 1964 .181 13 2014 .724 11

 1915 1.615 3 1965 -.242 13 2015 .212 8

 1916 1.319 5 1966 -.666 13 2016 -4.213 4

 1917 .772 6 1967 -.365 13

 1918 .205 6 1968 -.492 14

 1919 .598 6 1969 .061 14

 1920 -1.135 6 1970 -.517 14

 1871 .451 1 1921 -.277 6 1971 -.867 14

 1872 1.261 1 1922 -.387 6 1972 -.398 14

 1873 1.749 1 1923 -.080 6 1973 .395 15

 1874 -.534 1 1924 -3.040 6 1974 .257 15

 1875 -.260 1 1925 -1.995 6 1975 -.155 15

 1876 -.642 1 1926 -1.424 6 1976 -.075 15

 1877 -2.125 1 1927 .878 6 1977 -1.994 16

 1878 -.050 1 1928 .183 6 1978 -.291 16

 1879 -2.242 1 1929 -.229 6 1979 .132 16

 1880 2.646 1 1930 -.500 6 1980 .587 16

 1881 -.994 1 1931 .011 6 1981 .524 16

 1882 .236 1 1932 .008 6 1982 .589 16

 1883 -.505 1 1933 .864 6 1983 .655 16

 1884 .319 1 1934 -.029 6 1984 .704 16

 1885 -.532 1 1935 -.020 6 1985 .628 16

 1886 -.533 1 1936 1.215 6 1986 -.090 16

 1887 1.651 1 1937 1.162 6 1987 .457 16

 1888 .833 1 1938 1.064 6 1988 .497 16

 1889 -.409 1 1939 .013 6 1989 .013 16

 1890 .195 1 1940 1.101 7 1990 -.216 16

 1891 -.710 1 1941 .523 7 1991 -1.859 16

 1892 -1.645 1 1942 1.613 8 1992 -.984 16

 1893 -2.036 1 1943 1.049 9 1993 -.092 16

 1894 -.305 1 1944 .076 9 1994 -.106 16

 1895 -.493 1 1945 -.354 9 1995 .061 16

 1896 -.788 1 1946 -.289 9 1996 .026 16

 1897 -.503 1 1947 -2.804 9 1997 .172 16

 1898 .836 1 1948 -1.228 9 1998 .376 16

 1899 2.037 1 1949 -1.479 9 1999 .425 16

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PART 4: Master Bar Plot: 10:42 Fri 04 Sep 2020 Page 4

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 Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value

 1900---------C 1950-c 2000-c

 1901----------I 1951-c 2001---a

 1902----------F 1952--------C 2002---a

 1903---------D 1953--------C 2003----a

 1904---------E 1954----a 2004-------B

 1905---a 1955-----@ 2005-------A

 1906-e 1956-------B 2006-------A

 1907-c 1957---------D 2007--------C

 1908-e 1958---------D 2008-----@

 1909-c 1959--------C 2009-------B

 1910---------E 1960---a 2010------A

 1911---b 1961---------E 2011------A

 1912-------A 1962----a 2012--b

 1913------A 1963-------B 2013-----@

 1914---------D 1964------A 2014--------C

 1915----------F 1965---a 2015------A

 1916----------E 1966--c 2016q

 1917--------C 1967---a

 1918------A 1968--b

 1919--------B 1969-----@

 1920-e 1970--b

 1871-------B 1921---a 1971-c

 1872---------E 1922---b 1972---b

 1873----------G 1923----@ 1973-------B

 1874--b 1924l 1974------A

 1875---a 1925h 1975----a

 1876--c 1926-f 1976----@

 1877h 1927---------D 1977h

 1878----@ 1928------A 1978---a

 1879i 1929---a 1979------A

 1880----------K 1930--b 1980-------B

 1881-d 1931-----@ 1981-------B

 1882------A 1932-----@ 1982-------B

 1883--b 1933---------C 1983--------C

 1884------A 1934-----@ 1984--------C

 1885--b 1935-----@ 1985--------C

 1886--b 1936---------E 1986----@

 1887----------G 1937---------E 1987-------B

 1888---------C 1938---------D 1988-------B

 1889--b 1939-----@ 1989-----@

 1890------A 1940---------D 1990---a

 1891-c 1941-------B 1991g

 1892g 1942----------F 1992-d

 1893h 1943---------D 1993----@

 1894---a 1944-----@ 1994----@

 1895--b 1945---a 1995-----@

 1896-c 1946---a 1996-----@

 1897--b 1947k 1997------A

 1898---------C 1948-e 1998-------B

 1899----------H 1949f 1999-------B

PART 5: CORRELATION OF SERIES BY SEGMENTS: 10:42 Fri 04 Sep 2020 Page 5

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 Correlations of 50-year dated segments, lagged 25 years

 Flags: A = correlation under .3281 but highest as dated; B = correlation higher at other than dated position

 Seq Series Time\_span 1900 1925 1950 1975

 1949 1974 1999 2024

 --- -------- --------- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ----

 1 12221A 1871 2004 .37 .46 .46 .45

 2 20155A 1904 2005 .52 .35 .43 .39

 3 90716A 1905 2015 .50 .53 .49 .39

 4 41039A 1916 2014 .59 .50 .21B .27A

 5 102001 1916 2014 .50 .51 .32A .21A

 6 41040A 1917 2016 .54 .61 .40 .65

 7 190549 1940 2016 .37 .38 .65

 8 22208A 1942 2016 .32A .28A .61

 9 12171A 1943 2015 .42 .31A .29B

 10 180968 1955 2015 .23B .13B

 11 30142A 1961 2011 .34 .35

 12 190774 1963 2014 .29A .32A

 13 90718A 1964 2009 .43

 14 40113A 1968 2005 .44

 15 090759 1973 2016 .20A

 16 30141A 1977 2015 .33

 Av segment correlation .50 .45 .35 .39

PART 6: POTENTIAL PROBLEMS: 10:42 Fri 04 Sep 2020 Page 5

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 For each series with potential problems the following diagnostics may appear:

 [A] Correlations with master dating series of flagged 50-year segments of series filtered with 32-year spline,

 at every point from ten years earlier (-10) to ten years later (+10) than dated

 [B] Effect of those data values which most lower or raise correlation with master series

 Symbol following year indicates value in series is greater (>) or lesser (<) than master series value

 [C] Year-to-year changes very different from the mean change in other series

 [D] Absent rings (zero values)

 [E] Values which are statistical outliers from mean for the year

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 12221A 1871 to 2004 134 years Series 1

 [\*] Early part of series cannot be checked from 1871 to 1903 -- not matched by another series

 [B] Entire series, effect on correlation ( .384) is:

 Lower 1911> -.030 1920> -.024 1916< -.018 1962> -.016 1939> -.014 1937< -.012 Higher 1924 .070 1947 .031

 [C] Year-to-year changes diverging by over 4.0 std deviations:

 1923 1924 -4.1 SD

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1924 -6.2 SD

====================================================================================================================================

 20155A 1904 to 2005 102 years Series 2

 [B] Entire series, effect on correlation ( .456) is:

 Lower 1981< -.022 1970> -.020 1989< -.012 1966< -.009 1911< -.009 1965< -.008 Higher 1920 .026 1977 .022

 [E] Outliers 2 3.0 SD above or -4.5 SD below mean for year

 1970 +3.2 SD; 1998 +3.2 SD

====================================================================================================================================

 90716A 1905 to 2015 111 years Series 3

 [B] Entire series, effect on correlation ( .423) is:

 Lower 1909> -.019 1906> -.017 2005< -.015 2010> -.013 1996< -.012 1970> -.010 Higher 1991 .043 1977 .025

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1909 +3.6 SD; 1990 +3.1 SD; 2010 +3.5 SD

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 41039A 1916 to 2014 99 years Series 4

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1950 1999 -10 .25\*-.04 -.02 -.04 -.28 -.19 -.07 .06 -.27 -.14 .21|-.02 .09 -.29 -.23 .07 .18 .10 .11 .23 .04

 1965 2014 0 .11 -.03 .12 -.14 -.16 -.01 -.07 .18 -.15 -.09 .27\*-.05 .00 - - - - - - - -

 [B] Entire series, effect on correlation ( .481) is:

 Lower 1980< -.037 1977> -.022 1963< -.020 1971> -.017 1942< -.016 1926> -.013 Higher 1947 .101 1924 .067

 1950 to 1999 segment:

 Lower 1980< -.082 1963< -.044 1971> -.038 1984< -.029 1957< -.022 1977> -.017 Higher 1991 .111 1952 .039

 1965 to 2014 segment:

 Lower 1980< -.100 1971> -.042 1984< -.036 1977> -.035 2014< -.021 1981< -.016 Higher 1991 .112 2012 .025

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1926 +3.1 SD; 1952 +3.0 SD; 1971 +3.1 SD

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 102001 1916 to 2014 99 years Series 5

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1950 1999 0 -.13 .14 -.21 -.22 -.06 -.06 -.06 -.21 -.13 .06 .32\* .04 .24 .01 -.16 .13 .08 -.10 .03 -.08 .07

 1965 2014 0 -.13 .21 -.08 -.11 -.11 -.06 .13 -.21 -.08 -.03 .21\* .18 -.03 - - - - - - - -

 [B] Entire series, effect on correlation ( .396) is:

 Lower 2004< -.025 1960< -.017 1962> -.017 1988< -.015 2008> -.011 1961< -.011 Higher 1947 .106 1977 .035

 1950 to 1999 segment:

 Lower 1962> -.041 1988< -.029 1961< -.027 1963< -.021 1991> -.014 1951> -.010 Higher 1977 .099 1957 .015

 1965 to 2014 segment:

 Lower 2004< -.064 1988< -.036 2008> -.026 2007< -.026 2012> -.021 2000> -.020 Higher 1977 .152 2014 .022

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 41040A 1917 to 2016 100 years Series 6

 [B] Entire series, effect on correlation ( .585) is:

 Lower 1924> -.050 1962> -.018 1987< -.011 1990< -.011 1931< -.008 1998< -.008 Higher 2016 .061 1947 .060

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1927 +3.3 SD

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 190549 1940 to 2016 77 years Series 7

 [B] Entire series, effect on correlation ( .574) is:

 Lower 1947> -.020 2005> -.018 1954> -.017 1971> -.015 1976< -.013 1953< -.013 Higher 2016 .141 1991 .036

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 22208A 1942 to 2016 75 years Series 8

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1942 1991 0 .00 .04 -.10 -.16 .05 -.01 .03 .13 .13 .27 .32\*-.05 -.05 .04 -.14 -.04 -.11 -.05 .03 .09 -.30

 1950 1999 0 -.01 .02 -.07 -.14 .05 .02 .05 .16 .03 .26 .28\*-.14 -.09 .00 -.08 .14 -.08 -.01 .11 .09 -.36

 [B] Entire series, effect on correlation ( .466) is:

 Lower 1947> -.048 1963< -.046 1990> -.034 1962> -.027 1969< -.021 1978< -.010 Higher 2016 .167 1991 .052

 1942 to 1991 segment:

 Lower 1963< -.067 1947> -.045 1990> -.043 1962> -.035 1969< -.031 1978< -.016 Higher 1991 .121 1977 .044

 1950 to 1999 segment:

 Lower 1963< -.071 1990> -.057 1962> -.054 1969< -.030 1960> -.021 1965> -.017 Higher 1991 .200 1977 .055

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1990 +4.2 SD

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 12171A 1943 to 2015 73 years Series 9

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1950 1999 0 -.23 -.16 .15 -.20 -.01 -.13 -.10 -.07 .23 -.07 .31\* .15 .14 -.01 .21 -.21 .09 .22 -.28 .29 -.31

 1966 2015 -8 -.07 -.09 .30\*-.14 -.04 -.03 -.29 -.02 .08 -.04 .29|-.04 - - - - - - - - -

 [B] Entire series, effect on correlation ( .424) is:

 Lower 1968< -.039 1991> -.025 2007< -.022 1973< -.014 1966> -.013 1954> -.010 Higher 1947 .074 1977 .033

 1950 to 1999 segment:

 Lower 1968< -.034 1991> -.031 1973< -.020 1966> -.019 1954> -.015 1960> -.014 Higher 1977 .074 1962 .036

 1966 to 2015 segment:

 Lower 1991> -.042 2007< -.030 1968< -.028 1966> -.022 1973< -.019 1992> -.014 Higher 1977 .072 2000 .022

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 180968 1955 to 2015 61 years Series 10

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1955 2004 -6 -.21 .13 .15 -.17 .29\*-.01 .05 .13 .04 -.06 .23|-.17 .03 -.08 -.12 .10 .09 -.19 -.13 -.36 -.18

 1966 2015 -9 .02 .14\* .07 -.20 .12 .11 .07 .06 .08 -.14 .13|-.14 - - - - - - - - -

 [B] Entire series, effect on correlation ( .215) is:

 Lower 1991> -.076 2005< -.045 1955< -.028 2004< -.018 2010< -.015 1968> -.013 Higher 2000 .051 1961 .041

 1955 to 2004 segment:

 Lower 1991> -.093 1955< -.040 2004< -.026 1968> -.016 1986> -.013 1989> -.013 Higher 2000 .064 1961 .054

 1966 to 2015 segment:

 Lower 1991> -.082 2005< -.054 2004< -.024 2010< -.020 1968> -.014 1986> -.012 Higher 2000 .071 2014 .025

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1982 +3.1 SD; 1991 +3.3 SD; 2005 -5.7 SD

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 30142A 1961 to 2011 51 years Series 11

 [B] Entire series, effect on correlation ( .335) is:

 Lower 1973< -.035 1966> -.030 1968> -.020 1976> -.018 1990< -.017 1961< -.011 Higher 1977 .091 1962 .036

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1969 +3.4 SD

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 190774 1963 to 2014 52 years Series 12

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1963 2012 0 .12 .20 .01 .17 -.01 .18 -.19 -.34 .27 .01 .29\*-.12 -.06 -.09 .01 - - - - - -

 1965 2014 0 .13 .24 -.01 .16 -.08 .14 -.16 -.34 .21 .04 .32\*-.07 -.16 - - - - - - - -

 [B] Entire series, effect on correlation ( .319) is:

 Lower 1982< -.037 1979< -.035 1973< -.027 1968> -.026 1994> -.022 1966> -.018 Higher 1977 .120 2000 .064

 1963 to 2012 segment:

 Lower 1982< -.038 1979< -.036 1968> -.027 1973< -.027 1994> -.022 1966> -.019 Higher 1977 .129 2000 .070

 1965 to 2014 segment:

 Lower 1982< -.038 1979< -.036 1968> -.029 1973< -.027 1994> -.025 1966> -.020 Higher 1977 .122 2000 .065

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1981 +3.0 SD

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 90718A 1964 to 2009 46 years Series 13

 [B] Entire series, effect on correlation ( .425) is:

 Lower 1977> -.039 1965> -.030 1987< -.027 1973< -.020 2005< -.015 2003> -.012 Higher 1991 .176 2000 .040

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 40113A 1968 to 2005 38 years Series 14

 [B] Entire series, effect on correlation ( .442) is:

 Lower 1978< -.066 1988< -.044 1975> -.042 2000> -.040 1993< -.034 1998< -.012 Higher 1977 .316 1991 .017

 [C] Year-to-year changes diverging by over 4.0 std deviations:

 1977 1978 -4.9 SD

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1976 +3.1 SD

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 090759 1973 to 2016 44 years Series 15

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1973 2016 0 -.04 .10 -.25 .10 .10 -.11 -.03 -.11 -.09 -.14 .20\* - - - - - - - - - -

 [B] Entire series, effect on correlation ( .203) is:

 Lower 2008> -.058 1974< -.029 1997< -.020 1988< -.020 2016> -.017 2015< -.013 Higher 1977 .128 1991 .024

 1973 to 2016 segment:

 Lower 2008> -.058 1974< -.029 1997< -.020 1988< -.020 2016> -.017 2015< -.013 Higher 1977 .128 1991 .024

 [C] Year-to-year changes diverging by over 4.0 std deviations:

 2015 2016 5.3 SD

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1993 +3.1 SD; 2008 +4.6 SD; 2016 +4.1 SD

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 30141A 1977 to 2015 39 years Series 16

 [B] Entire series, effect on correlation ( .333) is:

 Lower 1991> -.101 1992< -.027 2015> -.023 2012> -.022 1990> -.020 1980< -.020 Higher 1977 .384 2000 .008

 [C] Year-to-year changes diverging by over 4.0 std deviations:

 1991 1992 -4.4 SD

 [E] Outliers 2 3.0 SD above or -4.5 SD below mean for year

 1977 -4.6 SD; 1991 +3.8 SD

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PART 7: DESCRIPTIVE STATISTICS: 10:42 Fri 04 Sep 2020 Page 6

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 Corr //-------- Unfiltered --------\\ //---- Filtered -----\\

 No. No. No. with Mean Max Std Auto Mean Max Std Auto AR

 Seq Series Interval Years Segmt Flags Master msmt msmt dev corr sens value dev corr ()

 --- -------- --------- ----- ----- ----- ------ ----- ----- ----- ----- ----- ----- ----- ----- --

 1 12221A 1871 2004 134 4 0 .384 .87 3.91 .601 .773 .230 2.58 .276 -.025 1

 2 20155A 1904 2005 102 4 0 .456 .68 1.96 .426 .769 .295 2.84 .623 -.004 1

 3 90716A 1905 2015 111 4 0 .423 1.48 2.92 .527 .701 .212 2.70 .404 -.014 1

 4 41039A 1916 2014 99 4 2 .481 1.60 3.35 .657 .747 .197 2.75 .406 -.065 3

 5 102001 1916 2014 99 4 2 .396 .99 2.16 .483 .826 .215 2.65 .445 -.045 1

 6 41040A 1917 2016 100 4 0 .585 1.62 3.83 .703 .751 .188 2.71 .437 .010 1

 7 190549 1940 2016 77 3 0 .574 1.04 3.03 .752 .776 .324 2.70 .419 .001 1

 8 22208A 1942 2016 75 3 2 .466 .98 3.00 .654 .854 .262 2.92 .454 -.009 2

 9 12171A 1943 2015 73 3 2 .424 .48 1.41 .251 .628 .297 3.01 .505 .027 1

 10 180968 1955 2015 61 2 2 .215 .78 3.15 .717 .846 .290 2.85 .543 -.005 1

 11 30142A 1961 2011 51 2 0 .335 1.16 3.63 .812 .846 .198 2.83 .536 .004 1

 12 190774 1963 2014 52 2 2 .319 .81 3.05 .555 .749 .220 2.77 .501 -.022 2

 13 90718A 1964 2009 46 1 0 .425 .83 3.18 .619 .605 .360 3.05 .536 -.068 1

 14 40113A 1968 2005 38 1 0 .442 .59 2.15 .547 .694 .396 2.68 .467 .080 1

 15 090759 1973 2016 44 1 1 .203 .75 2.62 .731 .853 .318 3.19 .628 -.016 1

 16 30141A 1977 2015 39 1 0 .333 .99 2.48 .621 .820 .250 2.54 .448 -.060 1

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 Total or mean: 1201 43 13 .422 1.03 3.91 .592 .764 .254 3.19 .458 -.015

 - = [ COFECHA FRNI COF ] = -