[] Dendrochronology Program Library Run 2 Program COF 15:28 Thu 06 Mar 2014 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 28921

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 QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

 Title of run: Final

 File of DATED series: BLTMid\_ACSH\_Final

 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 1894 to 2012 119 years

 Continuous time span is 1894 to 2012 119 years

 Portion with two or more series is 1899 to 2012 114 years

 >> 430B 1945 absent in 1 of 14 series, but is not usually narrow: master index is -.308

 >> 430B 2012 absent in 2 of 17 series, but is not usually narrow: master index is 1.353

 >> 433A 2007 absent in 1 of 17 series, but is not usually narrow: master index is -.032

 >> 433A 2008 absent in 1 of 17 series, but is not usually narrow: master index is .384

 >> 433A 2012 absent in 2 of 17 series, but is not usually narrow: master index is 1.353

 >> 439A 1998 absent in 1 of 17 series, but is not usually narrow: master index is .202

 >> 443A 1990 absent in 1 of 17 series, but is not usually narrow: master index is -.030

 >> 443A 1991 absent in 1 of 17 series, but is not usually narrow: master index is .406

 >> 443A 1992 absent in 1 of 17 series, but is not usually narrow: master index is .223

 >> 443A 1993 absent in 1 of 17 series, but is not usually narrow: master index is .744

 >> 443A 1994 absent in 1 of 17 series, but is not usually narrow: master index is 1.289

 >> 443A 1995 absent in 1 of 17 series, but is not usually narrow: master index is .286

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

 \*C\* Number of dated series 17 \*C\*

 \*O\* Master series 1894 2012 119 yrs \*O\*

 \*F\* Total rings in all series 1511 \*F\*

 \*E\* Total dated rings checked 1506 \*E\*

 \*C\* Series intercorrelation .450 \*C\*

 \*H\* Average mean sensitivity .335 \*H\*

 \*A\* Segments, possible problems 10 \*A\*

 \*\*\* Mean length of series 88.9 \*\*\*

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

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

 426A 2 absent rings: 2000 2001

 426B 2 absent rings: 1980 2001

 430B 3 absent rings: 1945 2000 2012

 432A 1 absent rings: 2001

 433A 6 absent rings: 2007 2008 2009 2010 2011 2012

 439A 2 absent rings: 1998 1999

 443A 6 absent rings: 1990 1991 1992 1993 1994 1995

 22 absent rings 1.456%

PART 2: TIME PLOT OF TREE-RING SERIES: Final 15:28 Thu 06 Mar 2014 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

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

 . . . . . . . . . . . . . . . . . <==========> . 422A 1 1900 2012 113

 . . . . . . . . . . . . . . . . . <==========> . 422B 2 1903 2012 110

 . . . . . . . . . . . . . . . . . . <=======> . 424A 3 1930 2012 83

 . . . . . . . . . . . . . . . . . . <=======> . 424B 4 1931 2012 82

 . . . . . . . . . . . . . . . . . <==========> . 426A 5 1900 2012 113

 . . . . . . . . . . . . . . . . . <==========> . 426B 6 1900 2012 113

 . . . . . . . . . . . . . . . . . . <=======> . 427A 7 1939 2012 74

 . . . . . . . . . . . . . . . . . . <=======> . 427B 8 1931 2012 82

 . . . . . . . . . . . . . . . . . <===========> . 430A 9 1899 2012 114

 . . . . . . . . . . . . . . . . . <===========> . 430B 10 1894 2012 119

 . . . . . . . . . . . . . . . . . . <=======> . 432A 11 1930 2012 83

 . . . . . . . . . . . . . . . . . . <=======> . 433A 12 1933 2012 80

 . . . . . . . . . . . . . . . . . . <=======> . 439A 13 1930 2012 83

 . . . . . . . . . . . . . . . . . . <======> . 442A 14 1947 2012 66

 . . . . . . . . . . . . . . . . . . . <===> . 442B 15 1973 2012 40

 . . . . . . . . . . . . . . . . . . <=====> . 442C 16 1950 2012 63

 . . . . . . . . . . . . . . . . . . <========> . 443A 17 1920 2012 93

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

 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: Final 15:28 Thu 06 Mar 2014 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

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 1900 1.313 5 1950 -.156 16 2000 -1.261 17 2

 1901 .678 5 1951 .229 16 2001 -.705 17 3

 1902 -3.603 5 1952 .285 16 2002 -.267 17

 1903 -.020 6 1953 .099 16 2003 .289 17

 1904 -.385 6 1954 -.854 16 2004 .962 17

 1905 -1.285 6 1955 1.157 16 2005 1.688 17

 1906 1.032 6 1956 -.646 16 2006 1.030 17

 1907 .587 6 1957 .112 16 2007 -.032 17 1<<

 1908 .288 6 1958 -.346 16 2008 .384 17 1<<

 1909 .338 6 1959 -.592 16 2009 -.574 17 1

 1910 .899 6 1960 -.245 16 2010 -.416 17 1

 1911 .393 6 1961 .409 16 2011 -.708 17 1

 1912 -.973 6 1962 -.682 16 2012 1.353 17 2<<

 1913 -.869 6 1963 .627 16

 1914 .070 6 1964 -.631 16

 1915 -.213 6 1965 -2.073 16

 1916 .058 6 1966 1.247 16

 1917 1.169 6 1967 1.493 16

 1918 -.355 6 1968 -.698 16

 1919 1.279 6 1969 .233 16

 1920 .140 7 1970 .342 16

 1921 .893 7 1971 -.341 16

 1922 -.015 7 1972 -.479 16

 1923 -1.364 7 1973 .116 17

 1924 .306 7 1974 -.369 17

 1925 .026 7 1975 .388 17

 1926 .303 7 1976 .802 17

 1927 .380 7 1977 .381 17

 1928 .898 7 1978 .884 17

 1929 .432 7 1979 .099 17

 1930 -.274 10 1980 -3.599 17 1

 1931 .351 12 1981 -2.332 17

 1932 -1.324 12 1982 .858 17

 1933 -1.866 13 1983 1.226 17

 1934 -.700 13 1984 1.015 17

 1935 .269 13 1985 .329 17

 1936 -1.144 13 1986 -.245 17

 1937 1.158 13 1987 .393 17

 1938 .034 13 1988 -.611 17

 1939 .493 14 1989 -1.040 17

 1940 -.067 14 1990 -.030 17 1<<

 1941 .341 14 1991 .406 17 1<<

 1942 .540 14 1992 .223 17 1<<

 1943 .976 14 1993 .744 17 1<<

 1894 1.356 1 1944 -.364 14 1994 1.289 17 1<<

 1895 .351 1 1945 -.308 14 1<< 1995 .286 17 1<<

 1896 2.589 1 1946 -.286 14 1996 -.428 17

 1897 .145 1 1947 1.031 15 1997 -.697 17

 1898 -3.875 1 1948 -1.295 15 1998 .202 17 1<<

 1899 .101 2 1949 -.033 15 1999 -1.124 17 1

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PART 4: Master Bar Plot: Final 15:28 Thu 06 Mar 2014 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----------E 1950---a 2000-e

 1901--------C 1951------A 2001--c

 1902n 1952------A 2002---a

 1903----@ 1953-----@ 2003------A

 1904---b 1954-c 2004---------D

 1905-e 1955---------E 2005----------G

 1906---------D 1956--c 2006---------D

 1907--------B 1957-----@ 2007----@

 1908------A 1958---a 2008-------B

 1909-------A 1959--b 2009--b

 1910---------D 1960---a 2010---b

 1911-------B 1961-------B 2011--c

 1912-d 1962--c 2012----------E

 1913-c 1963--------C

 1914-----@ 1964--c

 1915---a 1965h

 1916-----@ 1966----------E

 1917---------E 1967----------F

 1918---a 1968--c

 1919----------E 1969------A

 1920-----A 1970-------A

 1921---------D 1971---a

 1922----@ 1972--b

 1923e 1973-----@

 1924------A 1974---a

 1925----@ 1975-------B

 1926------A 1976--------C

 1927-------B 1977-------B

 1928---------D 1978---------D

 1929-------B 1979-----@

 1930---a 1980n

 1931-------A 1981i

 1932-e 1982---------C

 1933g 1983----------E

 1934--c 1984---------D

 1935------A 1985------A

 1936-e 1986---a

 1937---------E 1987-------B

 1938----@ 1988--b

 1939-------B 1989-d

 1940----@ 1990----@

 1941-------A 1991-------B

 1942--------B 1992------A

 1943---------D 1993--------C

 1894----------E 1944---a 1994----------E

 1895-------A 1945---a 1995------A

 1896----------J 1946---a 1996---b

 1897-----A 1947---------D 1997--c

 1898p 1948-e 1998------A

 1899-----@ 1949----@ 1999-d

PART 5: CORRELATION OF SERIES BY SEGMENTS: Final 15:28 Thu 06 Mar 2014 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 1875 1900 1925 1950 1975

 1924 1949 1974 1999 2024

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

 1 422A 1900 2012 .25A .44 .57 .55

 2 422B 1903 2012 .28A .58 .68 .62

 3 424A 1930 2012 .31A .48 .53

 4 424B 1931 2012 .37 .54 .56

 5 426A 1900 2012 .66 .56 .42 .39

 6 426B 1900 2012 .56 .42 .37 .41

 7 427A 1939 2012 .67 .60 .61

 8 427B 1931 2012 .36 .58 .59

 9 430A 1899 2012 .58 .58 .63 .63 .63

 10 430B 1894 2012 .46 .46 .38 .56 .50

 11 432A 1930 2012 .33B .43 .51B

 12 433A 1933 2012 .32A .25B .32B

 13 439A 1930 2012 .46 .40 .32A

 14 442A 1947 2012 .45 .50 .74

 15 442B 1973 2012 .37B

 16 442C 1950 2012 .39 .57

 17 443A 1920 2012 .48 .45 .34 .39

 Av segment correlation .52 .47 .45 .48 .52

PART 6: POTENTIAL PROBLEMS: Final 15:28 Thu 06 Mar 2014 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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 422A 1900 to 2012 113 years Series 1

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

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

 1900 1949 0 - - - - .06 -.08 .11 .13 -.11 .03 .25\* .00 .03 -.15 .04 -.05 .06 -.22 .04 -.21 .19

 [B] Entire series, effect on correlation ( .392) is:

 Lower 1999> -.026 1902> -.024 1962> -.016 1920> -.016 1988> -.012 1935< -.012 Higher 1980 .108 1948 .015

 1900 to 1949 segment:

 Lower 1920> -.033 1935< -.027 1945> -.020 1910< -.020 1923> -.019 1903< -.019 Higher 1948 .049 1933 .033

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

 422B 1903 to 2012 110 years Series 2

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

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

 1903 1952 0 - .16 -.11 -.02 .04 -.03 .02 .06 .21 -.24 .28\*-.20 -.07 .07 -.02 -.24 .00 -.10 -.13 -.02 .23

 [B] Entire series, effect on correlation ( .493) is:

 Lower 1921< -.030 1920< -.023 1912> -.018 1907< -.014 1968> -.014 2000> -.012 Higher 1980 .119 1948 .015

 1903 to 1952 segment:

 Lower 1921< -.068 1920< -.047 1912> -.039 1907< -.030 1918> -.015 1919< -.015 Higher 1948 .068 1933 .044

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 424A 1930 to 2012 83 years Series 3

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

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

 1930 1979 0 -.11 -.13 .07 -.14 .13 -.02 .04 .18 -.12 -.22 .31\*-.20 -.08 .10 -.03 -.13 .18 -.10 -.05 -.04 .03

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

 Lower 1947< -.032 1948> -.016 1997> -.015 1944> -.015 1990< -.013 1938< -.012 Higher 1965 .032 2005 .018

 1930 to 1979 segment:

 Lower 1947< -.051 1948> -.028 1944> -.025 1932> -.020 1954> -.020 1933> -.019 Higher 1965 .069 1968 .040

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 424B 1931 to 2012 82 years Series 4

 [B] Entire series, effect on correlation ( .447) is:

 Lower 1970< -.044 1936> -.025 1947< -.020 1949< -.019 1964< -.018 1942< -.016 Higher 1980 .066 1933 .016

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 426A 1900 to 2012 113 years Series 5

 [B] Entire series, effect on correlation ( .531) is:

 Lower 1989> -.013 1993< -.013 1968> -.012 1920> -.011 2004< -.011 1918> -.011 Higher 1902 .075 1948 .026

 [D] 2 Absent rings: Year Master N series Absent

 2000 -1.261 17 2

 2001 -.705 17 3

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 426B 1900 to 2012 113 years Series 6

 [B] Entire series, effect on correlation ( .520) is:

 Lower 1979< -.025 1948> -.017 1918> -.011 1914< -.010 1934> -.010 1959> -.009 Higher 1902 .072 1980 .057

 [D] 2 Absent rings: Year Master N series Absent

 1980 -3.599 17 1

 2001 -.705 17 3

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 427A 1939 to 2012 74 years Series 7

 [B] Entire series, effect on correlation ( .622) is:

 Lower 1965> -.041 1999> -.018 2000> -.015 1959> -.015 1978< -.011 1972> -.010 Higher 1980 .078 1948 .031

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 427B 1931 to 2012 82 years Series 8

 [B] Entire series, effect on correlation ( .429) is:

 Lower 1947< -.061 1943< -.035 1948> -.024 1965> -.024 1989> -.017 1949< -.012 Higher 1980 .069 1982 .013

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 430A 1899 to 2012 114 years Series 9

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

 Lower 2011< -.024 1990< -.012 1957< -.012 1913> -.010 1912> -.008 1962> -.008 Higher 1980 .017 1902 .013

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 430B 1894 to 2012 119 years Series 10

 [\*] Early part of series cannot be checked from 1894 to 1898 -- not matched by another series

 [B] Entire series, effect on correlation ( .433) is:

 Lower 1987< -.030 2012< -.030 1943< -.023 1931< -.021 1936> -.017 1948> -.015 Higher 1980 .037 1902 .029

 [D] 3 Absent rings: Year Master N series Absent

 1945 -.308 14 1 >> WARNING: Ring is not usually narrow

 2000 -1.261 17 2

 2012 1.353 17 2 >> WARNING: Ring is not usually narrow

 >> WARNING: Last ring in series is ABSENT

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

 2000 -5.6 SD

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 432A 1930 to 2012 83 years Series 11

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

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

 1930 1979 6 .17 .26 -.12 -.31 .05 -.17 -.05 -.02 .12 .06 .33|-.15 -.17 .13 -.04 -.16 .33\* .20 -.12 -.17 -.08

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

 1963 2012 -9 -.20 .52\*-.04 -.25 -.02 -.09 -.08 .19 -.20 .18 .51| - - - - - - - - - -

 [B] Entire series, effect on correlation ( .399) is:

 Lower 1958< -.046 1956> -.033 1998< -.022 1936> -.020 1968> -.014 1938> -.014 Higher 1980 .069 1965 .031

 1930 to 1979 segment:

 Lower 1958< -.075 1956> -.058 1936> -.036 1968> -.025 1938> -.023 1944> -.020 Higher 1965 .072 1948 .051

 1963 to 2012 segment:

 Lower 1998< -.038 1968> -.026 1988> -.025 2011> -.017 2001< -.012 2005< -.011 Higher 1980 .091 1965 .040

 [D] 1 Absent rings: Year Master N series Absent

 2001 -.705 17 3

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 433A 1933 to 2012 80 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

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

 1933 1982 0 .04 -.06 .14 -.03 -.12 -.07 .12 .07 .00 -.06 .32\*-.19 -.15 -.16 -.03 .03 .13 -.20 .32 -.04 -.08

 1950 1999 -1 .25 .18 .11 -.04 -.22 -.12 -.10 -.06 .00 .34\* .25|-.09 -.15 -.13 -.14 -.07 .00 -.06 .21 .00 -.07

 1963 2012 -1 .38 .18 .06 -.04 -.29 -.21 -.05 -.13 .09 .42\* .32| - - - - - - - - - -

 [B] Entire series, effect on correlation ( .340) is:

 Lower 1933> -.031 2011> -.024 1958> -.019 1967< -.018 1988> -.017 1971> -.016 Higher 1948 .064 2012 .041

 1933 to 1982 segment:

 Lower 1933> -.047 1958> -.029 1971> -.024 1967< -.024 1979> -.016 1962> -.013 Higher 1948 .091 1937 .029

 1950 to 1999 segment:

 Lower 1958> -.034 1967< -.030 1988> -.030 1971> -.028 1979> -.019 1978< -.016 Higher 1980 .046 1966 .031

 1963 to 2012 segment:

 Lower 2011> -.039 1967< -.028 1988> -.026 1971> -.025 1979> -.018 1982< -.015 Higher 2012 .063 1989 .027

 [D] 6 Absent rings: Year Master N series Absent

 2007 -.032 17 1 >> WARNING: Ring is not usually narrow

 2008 .384 17 1 >> WARNING: Ring is not usually narrow

 2009 -.574 17 1

 2010 -.416 17 1

 2011 -.708 17 1

 2012 1.353 17 2 >> WARNING: Ring is not usually narrow

 >> WARNING: Last ring in series is ABSENT

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

 2011 +3.2 SD; 2012 +4.4 SD

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 439A 1930 to 2012 83 years Series 13

 [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 -.08 -.02 -.02 .02 .08 -.02 -.04 .03 -.24 .06 .32\* - - - - - - - - - -

 [B] Entire series, effect on correlation ( .358) is:

 Lower 2012< -.048 1998< -.034 1961< -.022 2000> -.017 1989> -.017 1994< -.015 Higher 1980 .065 1948 .049

 1963 to 2012 segment:

 Lower 2012< -.068 1998< -.048 2000> -.027 1989> -.027 2001> -.022 1994< -.021 Higher 1980 .124 1965 .041

 [D] 2 Absent rings: Year Master N series Absent

 1998 .202 17 1 >> WARNING: Ring is not usually narrow

 1999 -1.124 17 1

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 442A 1947 to 2012 66 years Series 14

 [B] Entire series, effect on correlation ( .495) is:

 Lower 1952< -.072 1948> -.043 1962< -.034 1955< -.018 1968> -.016 1983< -.010 Higher 1980 .102 1965 .023

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 442B 1973 to 2012 40 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 2012 -8 -.15 .03 .47\* .06 -.28 -.21 -.22 -.09 -.02 .13 .37| - - - - - - - - - -

 [B] Entire series, effect on correlation ( .371) is:

 Lower 1980> -.112 1974> -.040 2008< -.032 1975< -.014 1988< -.013 1983< -.006 Higher 1999 .035 2005 .029

 1973 to 2012 segment:

 Lower 1980> -.112 1974> -.040 2008< -.032 1975< -.014 1988< -.013 1983< -.006 Higher 1999 .035 2005 .029

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 442C 1950 to 2012 63 years Series 16

 [B] Entire series, effect on correlation ( .422) is:

 Lower 1956> -.083 1971< -.031 1961< -.027 1968> -.026 1964> -.016 2008< -.016 Higher 1980 .175 2005 .023

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

 1956 +3.4 SD

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 443A 1920 to 2012 93 years Series 17

 [B] Entire series, effect on correlation ( .325) is:

 Lower 1990< -.063 1964> -.028 1989> -.025 1994< -.018 1999> -.013 1945< -.012 Higher 1980 .042 1948 .031

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

 1989 1990 -4.1 SD

 [D] 6 Absent rings: Year Master N series Absent

 1990 -.030 17 1 >> WARNING: Ring is not usually narrow

 1991 .406 17 1 >> WARNING: Ring is not usually narrow

 1992 .223 17 1 >> WARNING: Ring is not usually narrow

 1993 .744 17 1 >> WARNING: Ring is not usually narrow

 1994 1.289 17 1 >> WARNING: Ring is not usually narrow

 1995 .286 17 1 >> WARNING: Ring is not usually narrow

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PART 7: DESCRIPTIVE STATISTICS: Final 15:28 Thu 06 Mar 2014 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 422A 1900 2012 113 4 1 .392 .87 2.36 .585 .810 .333 2.63 .413 -.047 2

 2 422B 1903 2012 110 4 1 .493 1.24 2.59 .606 .783 .269 2.77 .384 .002 1

 3 424A 1930 2012 83 3 1 .396 1.32 3.17 .613 .567 .348 2.58 .464 -.062 1

 4 424B 1931 2012 82 3 0 .447 1.16 2.53 .546 .695 .297 2.52 .468 .002 1

 5 426A 1900 2012 113 4 0 .531 1.05 3.37 .769 .777 .354 2.60 .445 -.051 1

 6 426B 1900 2012 113 4 0 .520 1.09 4.30 .921 .836 .387 2.78 .484 .035 1

 7 427A 1939 2012 74 3 0 .622 1.46 3.01 .508 .542 .253 2.78 .583 -.095 1

 8 427B 1931 2012 82 3 0 .429 1.29 2.54 .477 .258 .327 2.72 .537 -.030 1

 9 430A 1899 2012 114 5 0 .574 1.34 4.60 .815 .760 .311 2.73 .525 -.018 1

 10 430B 1894 2012 119 5 0 .433 .90 3.33 .634 .780 .406 2.51 .376 .003 1

 11 432A 1930 2012 83 3 2 .399 .98 2.33 .546 .803 .331 2.59 .452 -.003 1

 12 433A 1933 2012 80 3 3 .340 1.45 4.59 1.009 .681 .371 3.50 .456 -.001 1

 13 439A 1930 2012 83 3 1 .358 1.12 3.18 .751 .733 .369 2.69 .581 .124 1

 14 442A 1947 2012 66 3 0 .495 1.82 3.47 .855 .701 .350 2.46 .472 -.039 1

 15 442B 1973 2012 40 1 1 .371 1.84 3.57 .571 .334 .295 2.68 .602 .125 1

 16 442C 1950 2012 63 2 0 .422 1.60 3.87 .628 .368 .320 2.87 .533 -.064 1

 17 443A 1920 2012 93 4 0 .325 1.18 2.76 .697 .787 .318 2.54 .437 .021 1

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

 Total or mean: 1511 57 10 .450 1.22 4.60 .686 .690 .335 3.50 .473 -.008

 - = [ COFECHA 2 COF ] = -