[] Dendrochronology Program Library Run PMA Program COF 16:08 Fri 20 Jul 2018 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 30518

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

File of DATED series: pma.txt

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 1884 to 2013 130 years

Continuous time span is 1884 to 2013 130 years

Portion with two or more series is 1889 to 2012 124 years

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

\*C\* Number of dated series 19 \*C\*

\*O\* Master series 1884 2013 130 yrs \*O\*

\*F\* Total rings in all series 1859 \*F\*

\*E\* Total dated rings checked 1853 \*E\*

\*C\* Series intercorrelation .507 \*C\*

\*H\* Average mean sensitivity .333 \*H\*

\*A\* Segments, possible problems 14 \*A\*

\*\*\* Mean length of series 97.8 \*\*\*

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

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

206s 1 absent rings: 1925

208w 1 absent rings: 1954

2 absent rings .108%

PART 2: TIME PLOT OF TREE-RING SERIES: 16:08 Fri 20 Jul 2018 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

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

. . . . . . . . . . . . . . . . . .<=========> . 104N 1 1914 2010 97

. . . . . . . . . . . . . . . . . .<=========> . 104S 2 1918 2013 96

. . . . . . . . . . . . . . . . . . <=======> . 105E 3 1923 2006 84

. . . . . . . . . . . . . . . . . <========> . . 203w 4 1884 1975 92

. . . . . . . . . . . . . . . . . <======> . . 203e 5 1901 1975 75

. . . . . . . . . . . . . . . . . <============> . 205s 6 1889 2012 124

. . . . . . . . . . . . . . . . . <===========> . 205w 7 1892 2012 121

. . . . . . . . . . . . . . . . . <====>. . . 206s 8 1890 1949 60

. . . . . . . . . . . . . . . . . <====>. . . 206n 9 1891 1949 59

. . . . . . . . . . . . . . . . . .<=========> . 208s 10 1917 2012 96

. . . . . . . . . . . . . . . . . . <=======> . 208w 11 1921 2007 87

. . . . . . . . . . . . . . . . . <============> . 210e 12 1889 2012 124

. . . . . . . . . . . . . . . . . <==========> . 210w 13 1909 2011 103

. . . . . . . . . . . . . . . . . .<=========> . 211e 14 1918 2012 95

. . . . . . . . . . . . . . . . . . <========> . 211w 15 1923 2012 90

. . . . . . . . . . . . . . . . . <==========> . 220e 16 1900 2012 113

. . . . . . . . . . . . . . . . . <==========> . 220s 17 1904 2012 109

. . . . . . . . . . . . . . . . . <===========> . 224n 18 1895 2012 118

. . . . . . . . . . . . . . . . . <===========> . 224w 19 1897 2012 116

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

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: 16:08 Fri 20 Jul 2018 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 .362 9 1950 .150 17 2000 -.201 15

1901 -1.030 10 1951 -.103 17 2001 -.451 15

1902 1.570 10 1952 -1.239 17 2002 .071 15

1903 .523 10 1953 -1.991 17 2003 -.013 15

1904 .432 11 1954 -1.902 17 1 2004 -1.744 15

1905 .876 11 1955 .337 17 2005 .378 15

1906 -.318 11 1956 -.435 17 2006 .651 15

1907 .409 11 1957 .650 17 2007 -1.288 14

1908 -.911 11 1958 1.431 17 2008 -.145 13

1909 1.353 12 1959 .450 17 2009 -.651 13

1910 -.090 12 1960 .777 17 2010 .718 13

1911 -1.870 12 1961 -.995 17 2011 .401 12

1912 -.119 12 1962 -.109 17 2012 -.210 11

1913 -2.280 12 1963 -.375 17 2013 2.296 1

1914 -1.063 13 1964 -.831 17

1915 1.114 13 1965 .635 17

1916 1.037 13 1966 -.392 17

1917 1.092 14 1967 -.279 17

1918 -.107 16 1968 .109 17

1919 -.608 16 1969 .731 17

1920 .517 16 1970 .251 17

1921 -1.241 17 1971 .257 17

1922 .967 17 1972 -.664 17

1923 -.142 19 1973 1.252 17

1924 -.126 19 1974 .619 17

1925 -1.808 19 1 1975 .650 17

1926 .776 19 1976 1.204 15

1927 .845 19 1977 -.826 15

1928 .819 19 1978 -.329 15

1929 .117 19 1979 -.002 15

1930 -.191 19 1980 -.702 15

1931 .279 19 1981 -.468 15

1932 -.036 19 1982 .401 15

1933 -1.927 19 1983 -.650 15

1884 .460 1 1934 -.140 19 1984 -2.282 15

1885 .574 1 1935 -.035 19 1985 -1.135 15

1886 -1.927 1 1936 -2.441 19 1986 -.086 15

1887 2.106 1 1937 .842 19 1987 .662 15

1888 -2.057 1 1938 1.899 19 1988 -.886 15

1889 1.192 3 1939 .771 19 1989 .621 15

1890 -.959 4 1940 -.173 19 1990 -.096 15

1891 .785 5 1941 .390 19 1991 -.880 15

1892 -1.714 6 1942 1.612 19 1992 1.481 15

1893 -2.371 6 1943 .160 19 1993 .932 15

1894 -.118 6 1944 -1.684 19 1994 .442 15

1895 .974 7 1945 .969 19 1995 1.312 15

1896 1.409 7 1946 -.233 19 1996 -.392 15

1897 .022 8 1947 1.035 19 1997 -.029 15

1898 .421 8 1948 .847 19 1998 -.217 15

1899 -.034 8 1949 .123 19 1999 1.199 15

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PART 4: Master Bar Plot: 16:08 Fri 20 Jul 2018 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------A 1950-----A 2000---a

1901-d 1951----@ 2001--b

1902----------F 1952-e 2002-----@

1903-------B 1953h 2003-----@

1904------B 1954h 2004g

1905--------D 1955------A 2005------B

1906---a 1956---b 2006-------C

1907------B 1957-------C 2007-e

1908-d 1958----------F 2008----a

1909----------E 1959------B 2009--c

1910----@ 1960--------C 2010--------C

1911g 1961-d 2011------B

1912----@ 1962----@ 2012---a

1913i 1963---b 2013----------I

1914-d 1964--c

1915---------D 1965-------C

1916---------D 1966---b

1917---------D 1967---a

1918----@ 1968-----@

1919--b 1969--------C

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

1921-e 1971------A

1922---------D 1972--c

1923----a 1973---------E

1924----a 1974-------B

1925g 1975-------C

1926--------C 1976---------E

1927--------C 1977--c

1928--------C 1978---a

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

1930---a 1980--c

1931------A 1981--b

1932-----@ 1982------B

1933h 1983--c

1884------B 1934----a 1984i

1885-------B 1935-----@ 1985-e

1886h 1936j 1986----@

1887----------H 1937--------C 1987-------C

1888h 1938----------H 1988-d

1889---------E 1939--------C 1989-------B

1890-d 1940---a 1990----@

1891--------C 1941------B 1991-d

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

1893i 1943-----A 1993---------D

1894----@ 1944g 1994------B

1895---------D 1945---------D 1995----------E

1896----------F 1946---a 1996---b

1897-----@ 1947---------D 1997-----@

1898------B 1948--------C 1998---a

1899-----@ 1949-----@ 1999---------E

PART 5: CORRELATION OF SERIES BY SEGMENTS: 16:08 Fri 20 Jul 2018 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 104N 1914 2010 .44 .57 .55 .43

2 104S 1918 2013 .36 .39 .28A .25B

3 105E 1923 2006 .30A .32A .17B .32A

4 203w 1884 1975 .76 .86 .79 .76

5 203e 1901 1975 .61 .75 .74

6 205s 1889 2012 .63 .60 .54 .48 .49

7 205w 1892 2012 .80 .79 .53 .28B .36

8 206s 1890 1949 .60 .52

9 206n 1891 1949 .29A .34

10 208s 1917 2012 .16B .08B .40 .35

11 208w 1921 2007 .66 .65 .45 .49

12 210e 1889 2012 .69 .73 .61 .32A .20A

13 210w 1909 2011 .73 .54 .43 .53

14 211e 1918 2012 .53 .61 .50 .44

15 211w 1923 2012 .61 .63 .51 .47

16 220e 1900 2012 .73 .72 .57 .46

17 220s 1904 2012 .53 .60 .26B .19B

18 224n 1895 2012 .65 .69 .57 .37 .34

19 224w 1897 2012 .74 .75 .67 .62 .52

Av segment correlation .64 .58 .56 .45 .39

PART 6: POTENTIAL PROBLEMS: 16:08 Fri 20 Jul 2018 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

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

104N 1914 to 2010 97 years Series 1

[B] Entire series, effect on correlation ( .431) is:

Lower 1926< -.073 1921> -.037 1917< -.030 1985> -.013 1996> -.013 2004> -.012 Higher 1936 .054 1953 .023

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

1925 1926 -4.2 SD

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

1921 +3.1 SD

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

104S 1918 to 2013 96 years Series 2

[\*] Later part of series cannot be checked from 2013 to 2013 -- not matched by another series

[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 -.29 .09 .11 .00 .02 -.22 .19 .02 -.02 -.10 .28\* .18 .15 .19 -.22 -.05 -.16 -.06 -.05 -.12 .02

1963 2012 -4 -.26 .00 .08 -.02 .09 -.12 .30\* .15 .08 -.04 .25|-.02 - - - - - - - - -

[B] Entire series, effect on correlation ( .342) is:

Lower 1926< -.047 1965< -.022 1921> -.021 1954> -.020 1977> -.015 1970< -.014 Higher 1936 .039 1933 .027

1950 to 1999 segment:

Lower 1954> -.040 1965< -.039 1977> -.029 1970< -.022 1956> -.020 1996> -.015 Higher 1995 .036 1952 .035

1963 to 2012 segment:

Lower 1965< -.041 1977> -.030 1970< -.023 2001> -.017 1996> -.015 1964> -.015 Higher 1995 .041 2004 .035

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

1925 1926 -4.0 SD

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

1988 -4.5 SD

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105E 1923 to 2006 84 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

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

1923 1972 0 .09 -.16 -.01 .15 -.16 -.09 -.22 .15 -.28 -.16 .30\* .15 -.25 .19 .14 -.04 -.32 -.10 .10 -.17 .05

1925 1974 0 .19 -.14 -.03 .14 -.21 -.10 -.19 .10 -.21 -.23 .32\* .12 -.19 .19 .14 -.07 -.32 -.09 .08 -.21 .15

1950 1999 4 -.09 -.09 -.18 -.01 .03 -.15 -.18 .09 -.05 -.05 .17| .06 -.09 .06 .19\*-.16 -.27 .18 -.20 -.14 .12

1957 2006 0 -.09 -.25 -.21 -.08 -.02 -.22 -.08 .17 -.03 .06 .32\*-.10 -.15 .18 .10 -.12 -.20 .22 - - -

[B] Entire series, effect on correlation ( .327) is:

Lower 1987< -.037 1988> -.023 1928< -.022 1954> -.018 1961> -.017 1985> -.015 Higher 2004 .052 1938 .024

1923 to 1972 segment:

Lower 1928< -.041 1967< -.031 1954> -.030 1961> -.030 1923> -.024 1956> -.020 Higher 1938 .047 1933 .043

1925 to 1974 segment:

Lower 1928< -.040 1961> -.033 1954> -.032 1967< -.031 1956> -.022 1925> -.019 Higher 1938 .045 1933 .043

1950 to 1999 segment:

Lower 1987< -.065 1988> -.035 1961> -.025 1954> -.025 1985> -.023 1968< -.017 Higher 1977 .050 1976 .033

1957 to 2006 segment:

Lower 1987< -.059 1988> -.047 1961> -.036 1985> -.031 1991> -.018 1967< -.017 Higher 2004 .106 1977 .038

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203w 1884 to 1975 92 years Series 4

[\*] Early part of series cannot be checked from 1884 to 1888 -- not matched by another series

[B] Entire series, effect on correlation ( .725) is:

Lower 1892> -.032 1893> -.014 1953> -.010 1908> -.010 1962< -.010 1905< -.008 Higher 1936 .026 1913 .024

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203e 1901 to 1975 75 years Series 5

[B] Entire series, effect on correlation ( .572) is:

Lower 1913> -.045 1902< -.041 1910> -.023 1973< -.023 1901> -.023 1970< -.022 Higher 1936 .058 1938 .017

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205s 1889 to 2012 124 years Series 6

[B] Entire series, effect on correlation ( .556) is:

Lower 1938< -.029 1913> -.015 2007< -.014 1992< -.013 1975< -.012 1972> -.009 Higher 1936 .018 1984 .015

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205w 1892 to 2012 121 years Series 7

[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 -7 -.04 .02 .26 .29\* .21 .17 -.14 .00 .04 .01 .28|-.05 -.10 -.02 .07 .02 -.06 -.09 -.08 -.28 -.04

[B] Entire series, effect on correlation ( .546) is:

Lower 1960< -.068 2000< -.019 2007> -.013 1986< -.011 1984> -.011 1957< -.011 Higher 1936 .026 1911 .017

1950 to 1999 segment:

Lower 1960< -.152 1957< -.024 1986< -.020 1983> -.019 1984> -.018 1959< -.013 Higher 1953 .052 1961 .028

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

1960 -4.9 SD

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206s 1890 to 1949 60 years Series 8

[B] Entire series, effect on correlation ( .554) is:

Lower 1948< -.061 1890> -.022 1915< -.021 1918< -.014 1946> -.014 1916< -.013 Higher 1913 .027 1936 .025

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

1925 -1.808 19 1

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

206n 1891 to 1949 59 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

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

1891 1940 0 - - - -.17 .11 .08 .04 -.06 .14 -.16 .29\* .10 .01 -.10 -.23 .06 -.19 .12 .15 .20 -.02

[B] Entire series, effect on correlation ( .337) is:

Lower 1916< -.048 1893> -.045 1911> -.021 1901> -.020 1908> -.019 1902< -.018 Higher 1913 .073 1944 .043

1891 to 1940 segment:

Lower 1916< -.060 1893> -.046 1901> -.022 1902< -.021 1926< -.021 1908> -.021 Higher 1913 .095 1892 .046

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208s 1917 to 2012 96 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

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

1917 1966 -2 .21 -.30 .19 .03 -.21 -.01 -.15 .03 .22\*-.07 .16|-.04 .17 .06 -.03 .15 -.11 -.27 -.04 -.01 .03

1925 1974 -10 .23\*-.37 .07 .06 -.27 -.01 -.07 .10 .18 -.11 .08| .11 .08 .16 -.10 .17 -.10 -.20 .04 .05 -.03

[B] Entire series, effect on correlation ( .249) is:

Lower 1936> -.072 2001< -.033 2004> -.023 1925> -.018 1955< -.016 1953> -.013 Higher 1954 .021 1984 .021

1917 to 1966 segment:

Lower 1936> -.133 1925> -.031 1955< -.030 1941< -.022 1928< -.021 1953> -.021 Higher 1954 .047 1921 .039

1925 to 1974 segment:

Lower 1936> -.127 1955< -.029 1925> -.027 1941< -.022 1928< -.022 1953> -.017 Higher 1954 .061 1945 .040

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

1936 +4.2 SD; 2001 -5.7 SD

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208w 1921 to 2007 87 years Series 11

[B] Entire series, effect on correlation ( .558) is:

Lower 1987< -.031 1998< -.030 1941< -.017 1952> -.015 2001> -.010 1975< -.009 Higher 1992 .014 1938 .011

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

1954 -1.902 17 1

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210e 1889 to 2012 124 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

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

1950 1999 0 .31 -.14 -.03 .04 -.33 -.21 -.18 -.15 -.15 .14 .32\* .17 .12 .27 .09 -.13 .26 -.02 -.08 .11 .03

1963 2012 0 .16 -.39 -.06 .01 -.18 -.03 -.13 -.04 -.13 .07 .20\*-.03 - - - - - - - - -

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

Lower 1995< -.033 1982< -.031 2007> -.015 1972> -.015 1988> -.010 1960< -.007 Higher 1984 .019 1938 .011

1950 to 1999 segment:

Lower 1995< -.089 1982< -.079 1972> -.039 1988> -.026 1960< -.019 1975< -.016 Higher 1984 .089 1953 .049

1963 to 2012 segment:

Lower 1995< -.088 1982< -.077 1972> -.035 2007> -.027 1988> -.022 1975< -.016 Higher 1984 .112 1992 .039

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210w 1909 to 2011 103 years Series 13

[B] Entire series, effect on correlation ( .615) is:

Lower 1939< -.027 1993< -.015 1960< -.013 1986< -.013 1970> -.010 2009> -.010 Higher 1913 .030 2004 .016

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211e 1918 to 2012 95 years Series 14

[B] Entire series, effect on correlation ( .484) is:

Lower 1921> -.036 2004> -.033 1996< -.022 1961> -.022 1922< -.014 1956< -.009 Higher 1936 .031 1984 .031

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

1921 +3.2 SD

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211w 1923 to 2012 90 years Series 15

[B] Entire series, effect on correlation ( .521) is:

Lower 2004> -.035 1988< -.019 1998> -.013 1967> -.010 1980> -.010 1933> -.009 Higher 1984 .022 1925 .019

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

1988 -5.1 SD

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220e 1900 to 2012 113 years Series 16

[B] Entire series, effect on correlation ( .625) is:

Lower 2011< -.040 1927< -.016 1998> -.010 1992< -.008 1906> -.008 1989< -.008 Higher 1984 .019 1911 .017

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220s 1904 to 2012 109 years Series 17

[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 -6 -.06 -.15 -.05 -.28 .35\*-.16 .06 .17 -.22 .11 .26|-.13 .00 -.12 -.20 .05 -.04 .16 .11 -.20 .28

1963 2012 -6 -.05 -.15 .16 -.11 .38\*-.01 .01 .10 -.31 -.01 .19|-.29 - - - - - - - - -

[B] Entire series, effect on correlation ( .366) is:

Lower 1994< -.035 1911> -.034 1961> -.016 1978< -.014 1967< -.013 1912< -.013 Higher 1936 .052 1925 .023

1950 to 1999 segment:

Lower 1994< -.074 1961> -.040 1978< -.026 1984> -.023 1977> -.021 1967< -.019 Higher 1992 .041 1952 .034

1963 to 2012 segment:

Lower 1994< -.068 1978< -.023 2000> -.019 1977> -.019 1984> -.017 1967< -.014 Higher 1992 .046 2004 .027

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224n 1895 to 2012 118 years Series 18

[B] Entire series, effect on correlation ( .533) is:

Lower 1984> -.026 1976< -.017 1964< -.015 1938< -.012 1983> -.011 1968< -.008 Higher 1913 .026 2004 .018

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224w 1897 to 2012 116 years Series 19

[B] Entire series, effect on correlation ( .646) is:

Lower 1985< -.028 2006< -.012 1945< -.011 2007> -.010 1976< -.008 1980> -.007 Higher 1913 .025 2004 .016

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PART 7: DESCRIPTIVE STATISTICS: 16:08 Fri 20 Jul 2018 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 104N 1914 2010 97 4 0 .431 1.61 3.27 .679 .446 .389 2.82 .579 -.059 2

2 104S 1918 2013 96 4 2 .342 2.04 5.46 .946 .599 .376 2.67 .428 -.083 2

3 105E 1923 2006 84 4 4 .327 1.39 5.60 1.330 .781 .398 2.73 .575 -.017 1

4 203w 1884 1975 92 4 0 .725 2.47 6.53 1.330 .728 .373 2.70 .595 -.042 1

5 203e 1901 1975 75 3 0 .572 1.90 5.96 1.094 .541 .378 2.69 .493 -.075 1

6 205s 1889 2012 124 5 0 .556 1.35 3.42 .569 .550 .324 2.48 .359 -.004 4

7 205w 1892 2012 121 5 1 .546 1.37 2.88 .487 .378 .330 2.77 .513 .069 1

8 206s 1890 1949 60 2 0 .554 1.53 3.80 .895 .845 .350 2.49 .511 .048 2

9 206n 1891 1949 59 2 1 .337 1.53 3.77 .997 .821 .306 2.58 .508 -.059 1

10 208s 1917 2012 96 4 2 .249 1.56 3.68 .935 .758 .395 2.73 .429 .011 1

11 208w 1921 2007 87 4 0 .558 1.21 2.98 .744 .722 .478 2.50 .417 .003 2

12 210e 1889 2012 124 5 2 .531 1.44 4.11 .796 .733 .240 2.64 .444 -.033 1

13 210w 1909 2011 103 4 0 .615 1.57 4.62 1.081 .783 .287 2.96 .505 .001 2

14 211e 1918 2012 95 4 0 .484 2.37 6.11 1.429 .887 .251 2.60 .490 .012 2

15 211w 1923 2012 90 4 0 .521 1.99 4.29 1.026 .821 .261 2.50 .376 -.031 1

16 220e 1900 2012 113 4 0 .625 1.60 3.67 .737 .536 .334 2.77 .585 -.037 1

17 220s 1904 2012 109 4 2 .366 1.65 3.64 .740 .446 .359 2.68 .578 -.063 1

18 224n 1895 2012 118 5 0 .533 1.06 2.49 .495 .613 .321 2.71 .436 -.004 1

19 224w 1897 2012 116 5 0 .646 1.46 3.86 .563 .551 .247 2.90 .494 -.019 1

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

Total or mean: 1859 76 14 .507 1.62 6.53 .858 .644 .333 2.96 .488 -.019

- = [ COFECHA PMA COF ] = -