[] Dendrochronology Program Library Run USPMI Program COF 12:11 Mon 03 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 28918

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

Title of run: Final

File of DATED series: USPMid\_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 1886 to 2012 127 years

Continuous time span is 1886 to 2012 127 years

Portion with two or more series is 1894 to 2012 119 years

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

\*C\* Number of dated series 21 \*C\*

\*O\* Master series 1886 2012 127 yrs \*O\*

\*F\* Total rings in all series 1489 \*F\*

\*E\* Total dated rings checked 1481 \*E\*

\*C\* Series intercorrelation .456 \*C\*

\*H\* Average mean sensitivity .323 \*H\*

\*A\* Segments, possible problems 11 \*A\*

\*\*\* Mean length of series 70.9 \*\*\*

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

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

643A 1 absent rings: 1989

643B 2 absent rings: 1988 1989

656A 1 absent rings: 1989

669A 1 absent rings: 1981

662A 4 absent rings: 1933 1934 1935 1936

9 absent rings .604%

PART 2: TIME PLOT OF TREE-RING SERIES: Final 12:11 Mon 03 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

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

. . . . . . . . . . . . . . . . . . <=====> . 640A 1 1951 2012 62

. . . . . . . . . . . . . . . . . . <======> . 640B 2 1942 2012 71

. . . . . . . . . . . . . . . . . . <=====> . 641A 3 1955 2012 58

. . . . . . . . . . . . . . . . . . <=====> . 641B 4 1957 2012 56

. . . . . . . . . . . . . . . . . . <=======> . 643A 5 1939 2012 74

. . . . . . . . . . . . . . . . . . <======> . 643B 6 1944 2012 69

. . . . . . . . . . . . . . . . . . <======> . 646B 7 1942 2012 71

. . . . . . . . . . . . . . . . . . <=======> . 646C 8 1939 2012 74

. . . . . . . . . . . . . . . . . . <=======> . 653A 9 1939 2012 74

. . . . . . . . . . . . . . . . . . <=======> . 653B 10 1939 2012 74

. . . . . . . . . . . . . . . . . . <=====> . 654A 11 1955 2012 58

. . . . . . . . . . . . . . . . . . <======> . 656A 12 1943 2012 70

. . . . . . . . . . . . . . . . . . <======> . 656B 13 1946 2012 67

. . . . . . . . . . . . . . . . . . <=====> . 655A 14 1955 2012 58

. . . . . . . . . . . . . . . . . . <=====> . 655B 15 1954 2012 59

. . . . . . . . . . . . . . . . . <===========> . 662B 16 1894 2012 119

. . . . . . . . . . . . . . . . . . <=====> . 669A 17 1952 2012 61

. . . . . . . . . . . . . . . . . . <======> . 669B 18 1941 2012 72

. . . . . . . . . . . . . . . . . . <======> . 670A 19 1948 2012 65

. . . . . . . . . . . . . . . . . . .<====> . 673B 20 1963 2012 50

. . . . . . . . . . . . . . . . . <============> . 662A 21 1886 2012 127

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

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 12:11 Mon 03 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

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

1900 -1.724 2 1950 -1.607 13 2000 -.660 21

1901 -.147 2 1951 .355 14 2001 -1.603 21

1902 -.185 2 1952 .830 15 2002 -.602 21

1903 1.354 2 1953 .588 15 2003 -.652 21

1904 -.849 2 1954 -.582 16 2004 -.269 21

1905 1.007 2 1955 1.207 19 2005 1.160 21

1906 -1.143 2 1956 -.780 19 2006 .882 21

1907 -1.399 2 1957 .598 20 2007 .424 21

1908 -1.123 2 1958 .102 20 2008 .609 21

1909 .429 2 1959 -.156 20 2009 .063 21

1910 .203 2 1960 -.644 20 2010 .500 21

1911 -.022 2 1961 .899 20 2011 -.685 21

1912 .094 2 1962 -.390 20 2012 -.127 21

1913 .375 2 1963 .436 21

1914 .765 2 1964 -.135 21

1915 -1.253 2 1965 -1.034 21

1916 .542 2 1966 .503 21

1917 .236 2 1967 .892 21

1918 1.439 2 1968 .088 21

1919 1.288 2 1969 1.031 21

1920 1.431 2 1970 .161 21

1921 1.343 2 1971 -.127 21

1922 1.109 2 1972 -.733 21

1923 1.527 2 1973 .190 21

1924 .441 2 1974 .158 21

1925 -1.716 2 1975 .996 21

1926 -.108 2 1976 .061 21

1927 1.321 2 1977 -.504 21

1928 .329 2 1978 .869 21

1929 1.122 2 1979 .081 21

1930 -.195 2 1980 -1.693 21

1931 -1.023 2 1981 -2.448 21 1

1932 -1.496 2 1982 .460 21

1933 -1.662 2 1 1983 .869 21

1934 -.936 2 1 1984 .831 21

1935 -1.453 2 1 1985 .166 21

1886 2.748 1 1936 -2.765 2 1 1986 -.962 21

1887 .226 1 1937 -1.564 2 1987 .276 21

1888 .547 1 1938 -.661 2 1988 -1.074 21 1

1889 .412 1 1939 1.309 6 1989 -1.292 21 3

1890 .263 1 1940 -.054 6 1990 -.492 21

1891 .606 1 1941 .240 7 1991 .345 21

1892 -1.177 1 1942 .224 9 1992 .267 21

1893 -.869 1 1943 1.048 10 1993 .747 21

1894 -1.133 2 1944 -.285 11 1994 1.548 21

1895 .691 2 1945 -.526 11 1995 .820 21

1896 .893 2 1946 -1.458 12 1996 -.064 21

1897 1.064 2 1947 .954 12 1997 .248 21

1898 .866 2 1948 -1.512 13 1998 1.059 21

1899 -3.238 2 1949 .290 13 1999 .936 21

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PART 4: Master Bar Plot: Final 12:11 Mon 03 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

1900g 1950f 2000--c

1901----a 1951------A 2001f

1902----a 1952--------C 2002--b

1903----------E 1953-------B 2003--c

1904--c 1954--b 2004---a

1905---------D 1955----------E 2005---------E

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

1907-f 1957-------B 2007------B

1908-d 1958-----@ 2008-------B

1909------B 1959----a 2009----@

1910-----A 1960--c 2010-------B

1911----@ 1961--------D 2011--c

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

1913------B 1963------B

1914--------C 1964----a

1915-e 1965-d

1916-------B 1966-------B

1917-----A 1967--------D

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

1919----------E 1969---------D

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

1921----------E 1971----a

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

1923----------F 1973-----A

1924------B 1974-----A

1925g 1975---------D

1926----@ 1976----@

1927----------E 1977---b

1928------A 1978--------C

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

1930----a 1980g

1931-d 1981j

1932f 1982-------B

1933g 1983--------C

1934--d 1984--------C

1935f 1985-----A

1886----------K 1936k 1986-d

1887-----A 1937f 1987------A

1888-------B 1938--c 1988-d

1889------B 1939----------E 1989-e

1890-----A 1940----@ 1990---b

1891-------B 1941-----A 1991------A

1892-e 1942-----A 1992-----A

1893--c 1943---------D 1993--------C

1894-e 1944---a 1994----------F

1895-------C 1945---b 1995--------C

1896--------D 1946f 1996----@

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

1898--------C 1948f 1998---------D

1899m 1949------A 1999--------D

PART 5: CORRELATION OF SERIES BY SEGMENTS: Final 12:11 Mon 03 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 640A 1951 2012 .38B .32A

2 640B 1942 2012 .48 .46 .34

3 641A 1955 2012 .46 .44B

4 641B 1957 2012 .49 .55

5 643A 1939 2012 .42 .43 .45

6 643B 1944 2012 .71 .73 .64

7 646B 1942 2012 .69 .74 .68

8 646C 1939 2012 .59 .58 .51

9 653A 1939 2012 .43 .43 .39

10 653B 1939 2012 .46 .45 .45

11 654A 1955 2012 .48 .43

12 656A 1943 2012 .34 .42 .37

13 656B 1946 2012 .49 .46 .46

14 655A 1955 2012 .48 .41

15 655B 1954 2012 .45 .31A

16 662B 1894 2012 .46 .25A .28B .59 .66

17 669A 1952 2012 .51 .44

18 669B 1941 2012 .43 .36B .29B

19 670A 1948 2012 .43 .48 .45

20 673B 1963 2012 .33A

21 662A 1886 2012 .43 .28B .16B .42 .57

Av segment correlation .45 .26 .46 .48 .46

PART 6: POTENTIAL PROBLEMS: Final 12:11 Mon 03 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

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

640A 1951 to 2012 62 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

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

1951 2000 8 .04 .00 .24 .00 -.01 -.08 .07 -.18 -.01 .00 .38|-.19 -.19 -.26 .02 .08 -.01 .37 .53\* .06 -.25

1963 2012 0 -.13 .09 .25 .04 -.24 .03 .04 -.15 -.02 .06 .32\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .332) is:

Lower 1973< -.055 1980> -.035 1994< -.032 1995< -.031 1951< -.018 1986> -.018 Higher 1981 .091 1998 .019

1951 to 2000 segment:

Lower 1973< -.066 1980> -.045 1994< -.037 1995< -.035 1986> -.022 1951< -.020 Higher 1981 .097 1998 .020

1963 to 2012 segment:

Lower 1973< -.064 1980> -.041 1994< -.039 1995< -.036 1986> -.020 2004< -.020 Higher 1981 .110 1998 .023

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640B 1942 to 2012 71 years Series 2

[B] Entire series, effect on correlation ( .395) is:

Lower 1972< -.032 2003> -.024 1973< -.021 2001> -.020 1944> -.016 1980> -.016 Higher 1981 .051 1950 .024

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

1972 -5.3 SD

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

641A 1955 to 2012 58 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

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

1963 2012 -1 -.03 -.08 -.22 -.23 -.16 .25 .19 -.26 -.03 .44\* .44| - - - - - - - - - -

[B] Entire series, effect on correlation ( .464) is:

Lower 1988> -.031 1980> -.019 1973> -.016 1982< -.015 1989> -.013 1962< -.013 Higher 1981 .093 1956 .030

1963 to 2012 segment:

Lower 1988> -.037 1973> -.023 1982< -.021 2002< -.016 1980> -.015 1967< -.014 Higher 1981 .136 2001 .031

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

1973 +3.5 SD

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641B 1957 to 2012 56 years Series 4

[B] Entire series, effect on correlation ( .489) is:

Lower 1957< -.071 1986> -.050 1989> -.043 1983< -.017 1977> -.014 1982< -.012 Higher 1981 .061 1980 .033

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643A 1939 to 2012 74 years Series 5

[B] Entire series, effect on correlation ( .462) is:

Lower 1950> -.028 1972> -.023 1986> -.018 1969< -.017 1944> -.016 1942< -.014 Higher 1981 .024 1989 .021

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

1989 -1.292 21 3

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643B 1944 to 2012 69 years Series 6

[B] Entire series, effect on correlation ( .689) is:

Lower 2009< -.022 1944> -.020 1972> -.018 1998< -.014 2001> -.010 1962> -.009 Higher 1981 .032 1950 .022

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

1988 -1.074 21 1

1989 -1.292 21 3

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646B 1942 to 2012 71 years Series 7

[B] Entire series, effect on correlation ( .657) is:

Lower 2002< -.038 2010> -.013 1950> -.012 1946> -.012 1948> -.011 1990< -.010 Higher 1980 .023 1981 .020

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646C 1939 to 2012 74 years Series 8

[B] Entire series, effect on correlation ( .550) is:

Lower 1949< -.022 1983< -.017 1964< -.017 2012> -.016 2002< -.015 1984< -.015 Higher 1948 .033 1981 .027

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

2012 +3.4 SD

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653A 1939 to 2012 74 years Series 9

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

Lower 1956> -.031 1972> -.030 2008< -.021 1988> -.020 1991< -.017 2012> -.016 Higher 1948 .042 1980 .038

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

2012 +3.3 SD

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653B 1939 to 2012 74 years Series 10

[B] Entire series, effect on correlation ( .482) is:

Lower 1977< -.067 1956> -.033 2008< -.016 1976> -.014 1972> -.014 1963< -.010 Higher 1948 .028 1980 .024

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654A 1955 to 2012 58 years Series 11

[B] Entire series, effect on correlation ( .386) is:

Lower 2010< -.062 1955< -.050 1988> -.038 1965> -.029 2007< -.015 1962> -.013 Higher 1980 .062 1956 .032

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656A 1943 to 2012 70 years Series 12

[B] Entire series, effect on correlation ( .385) is:

Lower 1981> -.052 1948> -.034 1946< -.023 2006< -.022 1987< -.017 1956> -.012 Higher 1955 .018 1989 .016

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

1989 -1.292 21 3

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

1946 -5.8 SD; 1981 +3.0 SD

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656B 1946 to 2012 67 years Series 13

[B] Entire series, effect on correlation ( .485) is:

Lower 1981> -.058 1959< -.021 1956> -.016 1985< -.016 2006< -.015 1971< -.011 Higher 1946 .021 2005 .014

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

1981 +3.1 SD

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655A 1955 to 2012 58 years Series 14

[B] Entire series, effect on correlation ( .409) is:

Lower 2010< -.084 1981> -.040 1962> -.031 1965> -.031 1992< -.020 1966< -.018 Higher 2001 .032 1980 .028

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655B 1954 to 2012 59 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

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

1963 2012 0 -.13 .16 .03 .01 -.12 -.25 .06 .24 -.05 .17 .31\* - - - - - - - - - -

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

Lower 2004< -.120 2000> -.034 1969< -.022 1977> -.019 1962> -.017 1959> -.016 Higher 1956 .036 1994 .033

1963 to 2012 segment:

Lower 2004< -.146 2000> -.042 1969< -.025 1977> -.024 2011> -.017 1968< -.014 Higher 1994 .041 1980 .039

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

2004 -6.1 SD

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662B 1894 to 2012 119 years Series 16

[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 -.02 .09 .24 .17 .15 .04 .10 -.06 .10 -.18 .25\*-.09 .09 -.22 .11 -.15 .09 -.23 .05 -.09 .07

1925 1974 -8 .06 .01 .40\*-.22 .09 -.07 .05 .07 .04 -.20 .28|-.01 .22 -.26 .20 -.27 .32 -.29 .04 -.20 .03

[B] Entire series, effect on correlation ( .439) is:

Lower 1944< -.044 1925> -.029 1902> -.018 1904> -.010 1908< -.009 1964< -.008 Higher 1899 .052 1980 .015

1900 to 1949 segment:

Lower 1944< -.077 1925> -.044 1902> -.035 1908< -.016 1928< -.013 1904> -.011 Higher 1936 .032 1918 .019

1925 to 1974 segment:

Lower 1944< -.081 1925> -.074 1928< -.017 1964< -.017 1962> -.015 1946> -.010 Higher 1936 .033 1955 .030

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

1902 +3.9 SD; 1904 +3.7 SD; 1925 +4.1 SD

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669A 1952 to 2012 61 years Series 17

[B] Entire series, effect on correlation ( .518) is:

Lower 1965> -.038 1980> -.023 2008< -.021 2010> -.015 1987< -.015 1970< -.014 Higher 1981 .051 1955 .017

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

1981 -2.448 21 1

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669B 1941 to 2012 72 years Series 18

[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 .38\*-.11 .21 -.12 .03 -.23 .04 -.49 .22 .01 .36|-.20 -.04 -.14 .25 -.01 .02 -.03 .11 .15 -.06

1963 2012 -10 .35\* .15 .13 .08 -.20 -.17 -.14 -.47 -.05 .16 .29| - - - - - - - - - -

[B] Entire series, effect on correlation ( .404) is:

Lower 1947< -.041 1965> -.038 1980> -.033 1998< -.028 1972< -.025 1975< -.021 Higher 1948 .048 1981 .047

1950 to 1999 segment:

Lower 1965> -.054 1980> -.046 1998< -.037 1975< -.027 1972< -.027 1954> -.019 Higher 1981 .074 1950 .041

1963 to 2012 segment:

Lower 1965> -.059 1980> -.048 1998< -.042 1975< -.031 1997< -.015 1972< -.014 Higher 1981 .098 1986 .022

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

1948 -5.5 SD

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670A 1948 to 2012 65 years Series 19

[B] Entire series, effect on correlation ( .444) is:

Lower 1980> -.063 1956> -.043 1948> -.030 1969< -.020 1970< -.014 1953< -.012 Higher 1950 .050 1981 .033

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

1970 -5.2 SD; 1980 +3.1 SD

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673B 1963 to 2012 50 years Series 20

[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 .23 .07 -.06 .06 .11 .18 .09 -.13 -.20 .08 .33\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .326) is:

Lower 1966< -.060 1999< -.024 1988> -.018 1993< -.018 2002> -.017 2000> -.015 Higher 1980 .055 1981 .034

1963 to 2012 segment:

Lower 1966< -.060 1999< -.024 1988> -.018 1993< -.018 2002> -.017 2000> -.015 Higher 1980 .055 1981 .034

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

1986 -4.9 SD; 2002 +3.1 SD

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662A 1886 to 2012 127 years Series 21

[\*] Early part of series cannot be checked from 1886 to 1893 -- 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

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

1900 1949 6 -.18 -.08 .07 -.03 -.34 -.12 -.02 -.04 -.04 -.12 .28|-.14 .19 -.17 .15 .08 .36\*-.10 .16 .03 .14

1925 1974 6 -.26 -.05 -.02 -.14 -.17 -.21 .02 .05 -.10 -.13 .16| .02 .02 -.05 -.15 .10 .20\*-.24 .06 .05 .13

[B] Entire series, effect on correlation ( .441) is:

Lower 1902< -.021 1925< -.020 1946> -.016 1956> -.014 1960> -.013 1963< -.012 Higher 1899 .069 1980 .019

1900 to 1949 segment:

Lower 1925< -.052 1902< -.048 1946> -.036 1908> -.024 1928> -.019 1900< -.013 Higher 1948 .039 1936 .022

1925 to 1974 segment:

Lower 1925< -.063 1963< -.037 1946> -.036 1956> -.033 1960> -.030 1952< -.022 Higher 1948 .053 1936 .031

[D] 4 Absent rings: Year Master N series Absent

1933 -1.662 2 1

Present in series 16 662B time span 1894 to 2012

1934 -.936 2 1

Present in series 16 662B time span 1894 to 2012

1935 -1.453 2 1

Present in series 16 662B time span 1894 to 2012

1936 -2.765 2 1

Present in series 16 662B time span 1894 to 2012

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

1908 +3.0 SD; 1980 -5.1 SD

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PART 7: DESCRIPTIVE STATISTICS: Final 12:11 Mon 03 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 640A 1951 2012 62 2 2 .332 1.08 2.55 .574 .547 .383 2.64 .569 .104 1

2 640B 1942 2012 71 3 0 .395 1.13 2.41 .464 .187 .408 2.54 .423 .083 1

3 641A 1955 2012 58 2 1 .464 1.66 2.99 .450 .566 .196 2.77 .514 .003 1

4 641B 1957 2012 56 2 0 .489 2.05 3.46 .685 .467 .321 2.40 .467 .038 1

5 643A 1939 2012 74 3 0 .462 1.15 3.86 1.009 .839 .392 2.52 .445 .064 2

6 643B 1944 2012 69 3 0 .689 1.27 3.59 1.019 .831 .402 2.65 .591 -.040 1

7 646B 1942 2012 71 3 0 .657 1.60 4.00 .712 .567 .291 2.77 .575 .157 1

8 646C 1939 2012 74 3 0 .550 1.63 4.13 .817 .792 .209 2.85 .522 -.001 1

9 653A 1939 2012 74 3 0 .424 1.06 2.73 .571 .748 .333 2.91 .589 .065 2

10 653B 1939 2012 74 3 0 .482 1.20 3.03 .714 .802 .334 2.51 .411 -.069 1

11 654A 1955 2012 58 2 0 .386 1.66 5.45 .937 .826 .250 2.83 .602 .035 1

12 656A 1943 2012 70 3 0 .385 1.59 3.42 .698 .645 .343 2.44 .362 -.028 2

13 656B 1946 2012 67 3 0 .485 1.91 4.83 1.042 .714 .337 2.62 .537 .044 1

14 655A 1955 2012 58 2 0 .409 2.35 4.90 .989 .561 .333 2.72 .539 -.043 2

15 655B 1954 2012 59 2 1 .327 1.01 2.25 .413 .450 .370 2.53 .428 -.013 2

16 662B 1894 2012 119 5 2 .439 1.24 2.92 .504 .676 .284 2.46 .400 -.008 2

17 669A 1952 2012 61 2 0 .518 1.52 3.75 1.080 .774 .385 2.70 .481 -.077 1

18 669B 1941 2012 72 3 2 .404 1.50 3.49 .884 .862 .260 2.58 .443 -.011 1

19 670A 1948 2012 65 3 0 .444 1.10 4.26 .908 .799 .400 2.50 .442 -.060 2

20 673B 1963 2012 50 1 1 .326 1.32 2.67 .472 .711 .218 2.51 .394 .065 2

21 662A 1886 2012 127 5 2 .441 1.26 3.23 .642 .746 .328 2.68 .441 .032 1

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Total or mean: 1489 58 11 .456 1.42 5.45 .734 .679 .323 2.91 .480 .016

- = [ COFECHA USPMICOF ] = -