[] Dendrochronology Program Library Run FINAL Program COF 14:17 Thu 27 Jun 2013 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 28669

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

Title of run: Final

File of DATED series: USPMid\_PCRU\_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 1850 to 2012 163 years

Continuous time span is 1850 to 2012 163 years

Portion with two or more series is 1853 to 2012 160 years

>> 671A 1925 absent in 1 of 14 series, but is not usually narrow: master index is -.091

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

\*C\* Number of dated series 23 \*C\*

\*O\* Master series 1850 2012 163 yrs \*O\*

\*F\* Total rings in all series 2427 \*F\*

\*E\* Total dated rings checked 2424 \*E\*

\*C\* Series intercorrelation .505 \*C\*

\*H\* Average mean sensitivity .255 \*H\*

\*A\* Segments, possible problems 7 \*A\*

\*\*\* Mean length of series 105.5 \*\*\*

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

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

671A 1 absent rings: 1925

672B 1 absent rings: 1933

672A 1 absent rings: 1933

3 absent rings .124%

PART 2: TIME PLOT OF TREE-RING SERIES: Final 14:17 Thu 27 Jun 2013 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

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

. . . . . . . . . . . . . . . . . . <========> . 638A 1 1923 2012 90

. . . . . . . . . . . . . . . . . . <=======> . 638B 2 1933 2012 80

. . . . . . . . . . . . . . . . . . <========> . 642A 3 1926 2012 87

. . . . . . . . . . . . . . . . . . <======> . 642B 4 1940 2012 73

. . . . . . . . . . . . . . . . . . <=====> . 647B 5 1955 2012 58

. . . . . . . . . . . . . . . . . .<=========> . 649A 6 1912 2012 101

. . . . . . . . . . . . . . . . .<==============> . 649B 7 1860 2012 153

. . . . . . . . . . . . . . . . . <==========> . 650A 8 1900 2012 113

. . . . . . . . . . . . . . . . . .<=========> . 650B 9 1910 2012 103

. . . . . . . . . . . . . . . . . <===========> . 657A 10 1893 2012 120

. . . . . . . . . . . . . . . . . . <======> . 657B 11 1940 2012 73

. . . . . . . . . . . . . . . . . <==========> . 658B 12 1909 2012 104

. . . . . . . . . . . . . . . . . <============> . 658A 13 1887 2012 126

. . . . . . . . . . . . . . . . . . <=====> . 660D 14 1950 2012 63

. . . . . . . . . . . . . . . . . . <=====> . 660C 15 1954 2012 59

. . . . . . . . . . . . . . . . . . .<====> . 660B 16 1960 2011 52

. . . . . . . . . . . . . . . . . . <=====> . 660A 17 1953 2012 60

. . . . . . . . . . . . . . . . .<==============> . 667B 18 1868 2012 145

. . . . . . . . . . . . . . . . .<==============> . 667A 19 1865 2012 148

. . . . . . . . . . . . . . . . <===============> . 671B 20 1850 2012 163

. . . . . . . . . . . . . . . . <===============> . 671A 21 1853 2012 160

. . . . . . . . . . . . . . . . .<==============> . 672B 22 1860 2012 153

. . . . . . . . . . . . . . . . . <=============> . 672A 23 1870 2012 143

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

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 14:17 Thu 27 Jun 2013 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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1850 .004 1 1900 .203 10 1950 .195 19 2000 -.445 23

1851 1.609 1 1901 -.704 10 1951 .569 19 2001 .358 23

1852 -3.412 1 1902 -.422 10 1952 -.089 19 2002 .287 23

1853 -2.875 2 1903 1.823 10 1953 .269 20 2003 -.078 23

1854 -.422 2 1904 .719 10 1954 .505 21 2004 -2.410 23

1855 -.079 2 1905 .564 10 1955 .689 22 2005 -1.711 23

1856 -.256 2 1906 .649 10 1956 -1.185 22 2006 -1.470 23

1857 .767 2 1907 -.105 10 1957 .801 22 2007 -.276 23

1858 1.913 2 1908 -.234 10 1958 1.163 22 2008 -.951 23

1859 1.041 2 1909 -1.225 11 1959 .167 22 2009 .868 23

1860 1.347 4 1910 .319 12 1960 -1.407 23 2010 1.257 23

1861 1.336 4 1911 -.827 12 1961 .505 23 2011 .768 23

1862 1.725 4 1912 -.422 13 1962 -.716 23 2012 1.522 22

1863 -1.248 4 1913 .646 13 1963 -.284 23

1864 -1.171 4 1914 .131 13 1964 .494 23

1865 -.298 5 1915 -.365 13 1965 .032 23

1866 -.303 5 1916 .878 13 1966 -.871 23

1867 .776 5 1917 -.950 13 1967 -.692 23

1868 1.446 6 1918 -.468 13 1968 -1.037 23

1869 .259 6 1919 .924 13 1969 .115 23

1870 .641 7 1920 .579 13 1970 1.021 23

1871 .817 7 1921 1.604 13 1971 1.627 23

1872 1.184 7 1922 .422 13 1972 -.379 23

1873 -.256 7 1923 -.407 14 1973 .248 23

1874 -.903 7 1924 1.357 14 1974 -.541 23

1875 -1.346 7 1925 -.091 14 1<< 1975 .654 23

1876 -.085 7 1926 .255 15 1976 .369 23

1877 -.432 7 1927 .024 15 1977 -.270 23

1878 -.985 7 1928 .507 15 1978 -.530 23

1879 -1.337 7 1929 -.919 15 1979 -.292 23

1880 -.727 7 1930 -.190 15 1980 .596 23

1881 -2.937 7 1931 .194 15 1981 -.473 23

1882 -2.137 7 1932 -.157 15 1982 -1.132 23

1883 -.768 7 1933 -.623 16 2 1983 -.522 23

1884 .124 7 1934 .404 16 1984 -1.034 23

1885 -.434 7 1935 -2.214 16 1985 -1.131 23

1886 1.643 7 1936 -1.455 16 1986 -.811 23

1887 .181 8 1937 -1.325 16 1987 .826 23

1888 -.393 8 1938 -.277 16 1988 1.927 23

1889 -.030 8 1939 .624 16 1989 1.257 23

1890 .387 8 1940 -.283 18 1990 1.449 23

1891 .629 8 1941 1.555 18 1991 1.175 23

1892 .681 8 1942 .972 18 1992 1.722 23

1893 -.241 9 1943 -.254 18 1993 1.535 23

1894 .514 9 1944 .414 18 1994 .088 23

1895 -.222 9 1945 .232 18 1995 .428 23

1896 .627 9 1946 .548 18 1996 -2.146 23

1897 .178 9 1947 .576 18 1997 -1.632 23

1898 .470 9 1948 -1.196 18 1998 -1.037 23

1899 -.087 9 1949 .557 18 1999 .585 23

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PART 4: Master Bar Plot: Final 14:17 Thu 27 Jun 2013 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

1850-----@ 1900------A 1950------A 2000---b

1851----------F 1901--c 1951-------B 2001------A

1852n 1902---b 1952----@ 2002------A

1853k 1903----------G 1953------A 2003----@

1854---b 1904--------C 1954-------B 2004j

1855----@ 1905-------B 1955--------C 2005g

1856----a 1906--------C 1956-e 2006f

1857--------C 1907----@ 1957--------C 2007----a

1858----------H 1908----a 1958---------E 2008-d

1859---------D 1909-e 1959-----A 2009--------C

1860---------E 1910------A 1960f 2010---------E

1861---------E 1911--c 1961-------B 2011--------C

1862----------G 1912---b 1962--c 2012----------F

1863-e 1913--------C 1963----a

1864-e 1914-----A 1964-------B

1865----a 1915---a 1965-----@

1866---a 1916--------D 1966-c

1867--------C 1917-d 1967--c

1868----------F 1918---b 1968-d

1869------A 1919---------D 1969-----@

1870--------C 1920-------B 1970---------D

1871--------C 1921----------F 1971----------G

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

1873----a 1923---b 1973------A

1874-d 1924---------E 1974--b

1875-e 1925----@ 1975--------C

1876----@ 1926------A 1976------A

1877---b 1927-----@ 1977----a

1878-d 1928-------B 1978---b

1879-e 1929-d 1979----a

1880--c 1930----a 1980-------B

1881l 1931------A 1981---b

1882i 1932----a 1982-e

1883--c 1933--b 1983---b

1884-----@ 1934------B 1984-d

1885---b 1935i 1985-e

1886----------G 1936f 1986--c

1887-----A 1937-e 1987--------C

1888---b 1938----a 1988----------H

1889-----@ 1939--------B 1989---------E

1890------B 1940----a 1990----------F

1891--------C 1941----------F 1991---------E

1892--------C 1942---------D 1992----------G

1893----a 1943----a 1993----------F

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

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

1896--------C 1946-------B 1996i

1897-----A 1947-------B 1997g

1898-------B 1948-e 1998-d

1899----@ 1949-------B 1999-------B

PART 5: CORRELATION OF SERIES BY SEGMENTS: Final 14:17 Thu 27 Jun 2013 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 1850 1875 1900 1925 1950 1975

1899 1924 1949 1974 1999 2024

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

1 638A 1923 2012 .49 .48 .52 .51

2 638B 1933 2012 .58 .56 .54

3 642A 1926 2012 .48 .59 .67

4 642B 1940 2012 .27B .59 .71

5 647B 1955 2012 .59 .59

6 649A 1912 2012 .47 .42 .62 .71

7 649B 1860 2012 .29B .19B .36 .42 .56 .62

8 650A 1900 2012 .40 .45 .53 .59

9 650B 1910 2012 .46 .40 .51 .49

10 657A 1893 2012 .29A .43 .53 .55 .49

11 657B 1940 2012 .47 .41 .42

12 658B 1909 2012 .47 .49 .68 .74

13 658A 1887 2012 .35 .43 .37 .62 .70

14 660D 1950 2012 .54 .70

15 660C 1954 2012 .77 .80

16 660B 1960 2011 .69 .70

17 660A 1953 2012 .44 .42

18 667B 1868 2012 .46 .43 .55 .53 .58 .66

19 667A 1865 2012 .33B .41 .52 .59 .61 .59

20 671B 1850 2012 .34 .63 .60 .56 .66 .70

21 671A 1853 2012 .33A .57 .60 .53 .62 .62

22 672B 1860 2012 .42 .35 .49 .62 .58 .52

23 672A 1870 2012 .51 .52 .47 .34 .40 .29A

Av segment correlation .38 .42 .48 .47 .57 .60

PART 6: POTENTIAL PROBLEMS: Final 14:17 Thu 27 Jun 2013 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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638A 1923 to 2012 90 years Series 1

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

Lower 1937< -.049 1925> -.040 2004> -.026 1956> -.011 1984> -.008 1955< -.008 Higher 1935 .074 1996 .024

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638B 1933 to 2012 80 years Series 2

[B] Entire series, effect on correlation ( .553) is:

Lower 2006< -.038 1973< -.021 1984> -.020 1990< -.018 1985> -.012 1953< -.010 Higher 1996 .038 1935 .020

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642A 1926 to 2012 87 years Series 3

[B] Entire series, effect on correlation ( .581) is:

Lower 1984< -.024 1966< -.020 1945< -.013 1962> -.012 1982> -.012 1960> -.011 Higher 2004 .040 1956 .015

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642B 1940 to 2012 73 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

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

1940 1989 -10 .36\* .01 .10 .00 -.07 .06 -.25 .00 .28 -.19 .27| .00 -.26 .21 -.04 -.05 -.15 -.08 -.14 -.22 .05

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

Lower 1945< -.202 1960> -.027 1949< -.015 1972> -.013 1959> -.012 1948> -.012 Higher 2004 .030 1956 .030

1940 to 1989 segment:

Lower 1945< -.214 1960> -.040 1972> -.020 1949< -.019 1959> -.017 1948> -.017 Higher 1956 .053 1941 .043

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

1944 1945 -4.5 SD 1945 1946 4.2 SD

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

1945 -5.9 SD

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

647B 1955 to 2012 58 years Series 5

[B] Entire series, effect on correlation ( .588) is:

Lower 1960> -.042 1982> -.029 1973< -.027 1965< -.022 1966> -.018 2008> -.017 Higher 1996 .054 1956 .028

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649A 1912 to 2012 101 years Series 6

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

Lower 1931< -.029 1960> -.027 1935> -.022 1923< -.012 1943< -.012 1964< -.010 Higher 2004 .037 1996 .012

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649B 1860 to 2012 153 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

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

1860 1909 -10 .29\*-.10 -.09 -.17 .12 -.17 -.01 -.01 .11 -.22 .29| .15 .05 -.07 .05 -.13 .23 .07 -.18 -.22 .12

1875 1924 -6 .20 .10 -.07 -.31 .28\*-.07 -.03 -.01 .21 -.11 .19|-.14 .04 -.03 .28 .03 .20 .09 -.07 -.13 .10

[B] Entire series, effect on correlation ( .414) is:

Lower 1883< -.027 1862< -.020 1917> -.018 1960> -.013 1926< -.008 1895> -.008 Higher 1996 .030 1863 .028

1860 to 1909 segment:

Lower 1883< -.056 1862< -.045 1895> -.021 1879> -.015 1882> -.015 1906< -.014 Higher 1863 .119 1886 .045

1875 to 1924 segment:

Lower 1883< -.069 1917> -.050 1895> -.022 1906< -.018 1882> -.015 1879> -.015 Higher 1886 .062 1903 .051

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

1882 1883 -4.8 SD

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

1917 +3.1 SD

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650A 1900 to 2012 113 years Series 8

[B] Entire series, effect on correlation ( .474) is:

Lower 1948> -.018 1994> -.018 1904> -.016 1913< -.015 1908> -.013 1970< -.012 Higher 1996 .046 1935 .017

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

1934 +3.3 SD

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

650B 1910 to 2012 103 years Series 9

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

Lower 1936< -.022 2012< -.022 1970< -.016 1914> -.016 1962> -.016 1994> -.015 Higher 1996 .054 1948 .018

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657A 1893 to 2012 120 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

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

1893 1942 0 .09 -.36 .07 .01 -.08 -.14 -.13 -.05 .06 -.10 .29\*-.10 .01 .01 -.05 -.06 .03 .12 -.10 .05 .03

[B] Entire series, effect on correlation ( .434) is:

Lower 1895< -.034 2004> -.019 1954< -.017 1953< -.011 1900< -.011 1917> -.011 Higher 1948 .019 1972 .017

1893 to 1942 segment:

Lower 1895< -.088 1900< -.028 1917> -.018 1925> -.013 1904> -.009 1922> -.007 Higher 1921 .034 1919 .023

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

1901 1902 4.2 SD

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

1901 -6.0 SD

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657B 1940 to 2012 73 years Series 11

[B] Entire series, effect on correlation ( .468) is:

Lower 1994> -.030 1968< -.017 1996> -.011 1984> -.010 1970< -.009 1982> -.009 Higher 2004 .040 2012 .014

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658B 1909 to 2012 104 years Series 12

[B] Entire series, effect on correlation ( .595) is:

Lower 1909> -.026 1923> -.012 1968> -.011 1916< -.010 1971< -.008 1949< -.008 Higher 1996 .038 2004 .027

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658A 1887 to 2012 126 years Series 13

[B] Entire series, effect on correlation ( .455) is:

Lower 1888< -.051 1946< -.033 1887> -.020 1972> -.012 1920< -.011 1912> -.010 Higher 2004 .037 1996 .024

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660D 1950 to 2012 63 years Series 14

[B] Entire series, effect on correlation ( .629) is:

Lower 1966< -.030 1993< -.019 1957< -.016 1962> -.013 1952< -.013 1955< -.013 Higher 2004 .058 1996 .015

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660C 1954 to 2012 59 years Series 15

[B] Entire series, effect on correlation ( .799) is:

Lower 1982> -.013 1974> -.012 1966> -.012 1962> -.011 1968> -.008 1992< -.004 Higher 2004 .032 1956 .011

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660B 1960 to 2011 52 years Series 16

[B] Entire series, effect on correlation ( .692) is:

Lower 1970< -.031 1962> -.026 1993< -.015 1961< -.011 2003> -.009 1975< -.009 Higher 2004 .060 1996 .031

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660A 1953 to 2012 60 years Series 17

[B] Entire series, effect on correlation ( .434) is:

Lower 1991< -.118 2008> -.032 1955< -.024 2009< -.015 1956> -.015 1993< -.015 Higher 1996 .046 2004 .036

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

2008 +3.4 SD

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667B 1868 to 2012 145 years Series 18

[B] Entire series, effect on correlation ( .528) is:

Lower 1944< -.034 1928< -.016 1895> -.013 1881> -.010 1899> -.008 1923> -.007 Higher 1935 .043 2004 .020

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667A 1865 to 2012 148 years Series 19

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

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

1865 1914 -10 .37\* .15 .19 .09 .09 -.01 .05 .08 -.18 -.35 .33|-.02 .08 .03 -.02 -.15 .13 .08 .17 -.05 -.06

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

Lower 1948> -.019 1873< -.017 1871< -.015 1875> -.013 1928< -.011 1972> -.011 Higher 1935 .048 1881 .020

1865 to 1914 segment:

Lower 1871< -.048 1873< -.047 1875> -.044 1877> -.034 1895> -.027 1865> -.023 Higher 1881 .107 1903 .063

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

1873 -4.9 SD

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

671B 1850 to 2012 163 years Series 20

[\*] Early part of series cannot be checked from 1850 to 1852 -- not matched by another series

[B] Entire series, effect on correlation ( .530) is:

Lower 1863> -.031 1859< -.023 1853> -.015 1864< -.015 1916< -.015 1956> -.009 Higher 2004 .014 1881 .012

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

1863 +3.3 SD

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671A 1853 to 2012 160 years Series 21

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

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

1853 1902 0 - - - - - - - .08 -.02 .28 .33\* .20 -.15 -.08 -.08 -.35 .16 -.16 .00 -.15 .19

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

Lower 1925< -.028 1859> -.023 1864> -.013 1865< -.011 2012< -.010 1952> -.007 Higher 1863 .026 1956 .015

1853 to 1902 segment:

Lower 1859> -.068 1865< -.038 1864> -.033 1896< -.021 1901> -.016 1870< -.015 Higher 1863 .135 1881 .049

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

1925 -.091 14 1 >> WARNING: Ring is not usually narrow

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

672B 1860 to 2012 153 years Series 22

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

Lower 1861< -.023 1921< -.023 1887> -.014 1940> -.010 1925> -.009 1984> -.009 Higher 1935 .030 1881 .014

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

1933 -.623 16 2

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

672A 1870 to 2012 143 years Series 23

[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 .05 -.08 -.03 -.22 .01 .09 .10 -.20 -.08 .29\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .412) is:

Lower 1971< -.037 2004> -.017 1873> -.010 1974> -.010 2003< -.010 2006> -.009 Higher 1881 .022 1996 .014

1963 to 2012 segment:

Lower 1971< -.073 2004> -.044 1974> -.024 2006> -.023 1968> -.015 1981> -.012 Higher 1996 .038 1987 .025

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

1933 -.623 16 2

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PART 7: DESCRIPTIVE STATISTICS: Final 14:17 Thu 27 Jun 2013 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 638A 1923 2012 90 4 0 .482 1.42 3.10 .667 .839 .200 2.57 .419 -.059 1

2 638B 1933 2012 80 3 0 .553 1.34 3.74 .905 .916 .202 2.67 .480 -.030 1

3 642A 1926 2012 87 3 0 .581 1.53 3.05 .585 .772 .198 2.61 .494 -.019 1

4 642B 1940 2012 73 3 1 .409 1.42 3.61 .632 .810 .204 2.44 .336 -.101 1

5 647B 1955 2012 58 2 0 .588 2.13 4.71 .781 .715 .235 2.48 .474 -.004 2

6 649A 1912 2012 101 4 0 .558 1.39 4.00 .739 .889 .203 2.58 .487 -.006 1

7 649B 1860 2012 153 6 2 .414 1.53 4.57 1.069 .932 .209 2.63 .410 .028 2

8 650A 1900 2012 113 4 0 .474 1.21 4.54 1.124 .894 .277 3.10 .567 -.027 3

9 650B 1910 2012 103 4 0 .464 .90 2.45 .632 .860 .263 2.66 .481 .037 2

10 657A 1893 2012 120 5 1 .434 1.59 4.80 1.160 .908 .259 2.59 .456 -.089 1

11 657B 1940 2012 73 3 0 .468 1.71 4.09 1.091 .916 .195 2.44 .369 .011 1

12 658B 1909 2012 104 4 0 .595 1.46 5.18 .923 .745 .303 2.87 .502 -.031 1

13 658A 1887 2012 126 5 0 .455 1.32 4.13 .671 .764 .224 2.56 .397 -.115 1

14 660D 1950 2012 63 2 0 .629 1.70 3.24 .649 .841 .177 2.65 .505 .006 1

15 660C 1954 2012 59 2 0 .799 1.22 2.91 .715 .878 .273 2.63 .563 -.033 2

16 660B 1960 2011 52 2 0 .692 1.60 2.84 .604 .766 .204 2.81 .551 -.024 1

17 660A 1953 2012 60 2 0 .434 1.16 2.69 .609 .792 .253 2.77 .515 -.111 2

18 667B 1868 2012 145 6 0 .528 1.01 2.91 .664 .874 .260 2.52 .356 -.010 1

19 667A 1865 2012 148 6 1 .495 .88 2.80 .652 .890 .259 2.47 .350 -.060 1

20 671B 1850 2012 163 6 0 .530 .84 4.32 .819 .928 .272 2.64 .362 .002 1

21 671A 1853 2012 160 6 1 .484 .81 3.50 .733 .913 .273 2.43 .276 -.122 1

22 672B 1860 2012 153 6 0 .493 .88 3.26 .813 .906 .352 2.79 .432 -.103 1

23 672A 1870 2012 143 6 1 .412 .50 1.95 .462 .905 .363 2.92 .496 -.087 6

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

Total or mean: 2427 94 7 .505 1.20 5.18 .778 .867 .255 3.10 .432 -.044

- = [ COFECHA FINALCOF ] = -