[] Dendrochronology Program Library Run STER6 Program COF 13:19 Tue 14 May 2013 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 28625

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

Title of run: STER6\_5

File of DATED series: STER6\_5COMP

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 30 years lagged successively by 15 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 .4226

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 1899 to 2012 114 years

Continuous time span is 1899 to 2012 114 years

Portion with two or more series is 1905 to 2012 108 years

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

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

\*O\* Master series 1899 2012 114 yrs \*O\*

\*F\* Total rings in all series 1510 \*F\*

\*E\* Total dated rings checked 1504 \*E\*

\*C\* Series intercorrelation .583 \*C\*

\*H\* Average mean sensitivity .257 \*H\*

\*A\* Segments, possible problems 15 \*A\*

\*\*\* Mean length of series 79.5 \*\*\*

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

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

40A 1 absent rings: 1977

40B 1 absent rings: 2004

2 absent rings .132%

PART 2: TIME PLOT OF TREE-RING SERIES: STER6\_5 13:19 Tue 14 May 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

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

. . . . . . . . . . . . . . . . . . <========> . 29A 1 1922 2012 91

. . . . . . . . . . . . . . . . . . <=====> . 29B 2 1952 2012 61

. . . . . . . . . . . . . . . . . . <======> . 30A 3 1943 2012 70

. . . . . . . . . . . . . . . . . <===========> . 31A 4 1899 2012 114

. . . . . . . . . . . . . . . . . . <========> . 31B 5 1920 2012 93

. . . . . . . . . . . . . . . . . <==========> . 32B 6 1905 2012 108

. . . . . . . . . . . . . . . . . . <======> . 34A 7 1946 2012 67

. . . . . . . . . . . . . . . . . . <=====> . 34B 8 1950 2012 63

. . . . . . . . . . . . . . . . . . <=====> . 35A 9 1959 2012 54

. . . . . . . . . . . . . . . . . . <========> . 36A 10 1920 2012 93

. . . . . . . . . . . . . . . . . . <========> . 36B 11 1921 2012 92

. . . . . . . . . . . . . . . . . . <=====> . 37A 12 1959 2012 54

. . . . . . . . . . . . . . . . . . <=====> . 37B 13 1951 2012 62

. . . . . . . . . . . . . . . . . . <========> . 38B 14 1922 2012 91

. . . . . . . . . . . . . . . . . . <======> . 39A 15 1942 2012 71

. . . . . . . . . . . . . . . . . . <=======> . 39B 16 1936 2012 77

. . . . . . . . . . . . . . . . . . <========> . 40A 17 1923 2012 90

. . . . . . . . . . . . . . . . . .<=========> . 40B 18 1917 2012 96

. . . . . . . . . . . . . . . . . . <=====> . 30B 19 1950 2012 63

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

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: STER6\_5 13:19 Tue 14 May 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

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

1900 1.058 1 1950 .181 15 2000 -.516 19

1901 .415 1 1951 .327 16 2001 .872 19

1902 .560 1 1952 .727 17 2002 .647 19

1903 -2.276 1 1953 .580 17 2003 -2.097 19

1904 1.520 1 1954 .273 17 2004 -2.900 19 1

1905 .783 2 1955 1.315 17 2005 -1.795 19

1906 -1.996 2 1956 -1.324 17 2006 -.959 19

1907 -1.639 2 1957 .757 17 2007 -.113 19

1908 .330 2 1958 .700 17 2008 -.405 19

1909 -.099 2 1959 .014 19 2009 -.006 19

1910 .498 2 1960 -.439 19 2010 1.305 19

1911 -.240 2 1961 .778 19 2011 .505 19

1912 -.879 2 1962 -.490 19 2012 1.288 19

1913 .743 2 1963 .197 19

1914 .934 2 1964 .691 19

1915 .794 2 1965 .786 19

1916 1.146 2 1966 -.393 19

1917 -.497 3 1967 .330 19

1918 -2.879 3 1968 -.528 19

1919 .120 3 1969 -.833 19

1920 .834 5 1970 -.313 19

1921 .807 6 1971 .483 19

1922 .436 8 1972 -.371 19

1923 -.189 9 1973 .252 19

1924 1.557 9 1974 -.053 19

1925 .085 9 1975 1.502 19

1926 .254 9 1976 -.453 19

1927 -.571 9 1977 -.615 19 1

1928 -1.199 9 1978 -1.039 19

1929 -1.291 9 1979 -.722 19

1930 -.268 9 1980 .573 19

1931 .038 9 1981 -.951 19

1932 .301 9 1982 -1.131 19

1933 .285 9 1983 -.297 19

1934 1.541 9 1984 -.748 19

1935 -2.622 9 1985 -.217 19

1936 -.507 10 1986 -1.151 19

1937 -.255 10 1987 1.072 19

1938 .613 10 1988 1.038 19

1939 .844 10 1989 -.127 19

1940 -.219 10 1990 .492 19

1941 1.886 10 1991 .735 19

1942 .448 11 1992 .956 19

1943 -.324 12 1993 1.428 19

1944 -1.428 12 1994 .564 19

1945 -.908 12 1995 1.387 19

1946 .055 13 1996 -.337 19

1947 .061 13 1997 .344 19

1948 -2.562 13 1998 -.277 19

1899 1.794 1 1949 .082 13 1999 .527 19

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PART 4: Master Bar Plot: STER6\_5 13:19 Tue 14 May 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

1900---------D 1950-----A 2000--b

1901------B 1951------A 2001---------C

1902-------B 1952--------C 2002-------C

1903i 1953-------B 2003h

1904----------F 1954------A 2004l

1905--------C 1955----------E 2005g

1906h 1956-e 2006-d

1907g 1957--------C 2007----@

1908------A 1958--------C 2008---b

1909----@ 1959-----@ 2009----@

1910-------B 1960--b 2010----------E

1911---a 1961--------C 2011-------B

1912-d 1962--b 2012----------E

1913--------C 1963-----A

1914---------D 1964--------C

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

1916---------E 1966---b

1917--b 1967------A

1918l 1968--b

1919-----@ 1969-c

1920--------C 1970---a

1921--------C 1971-------B

1922------B 1972---a

1923----a 1973------A

1924----------F 1974----@

1925-----@ 1975----------F

1926------A 1976--b

1927--b 1977--b

1928-e 1978-d

1929-e 1979--c

1930---a 1980-------B

1931-----@ 1981-d

1932------A 1982-e

1933------A 1983---a

1934----------F 1984-c

1935j 1985----a

1936--b 1986-e

1937---a 1987---------D

1938-------B 1988---------D

1939--------C 1989----a

1940---a 1990-------B

1941----------H 1991--------C

1942-------B 1992---------D

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

1944-f 1994-------B

1945-d 1995----------F

1946-----@ 1996---a

1947-----@ 1997------A

1948j 1998---a

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

PART 5: CORRELATION OF SERIES BY SEGMENTS: STER6\_5 13:19 Tue 14 May 2013 Page 5

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Correlations of 30-year dated segments, lagged 15 years

Flags: A = correlation under .4226 but highest as dated; B = correlation higher at other than dated position

Seq Series Time\_span 1905 1920 1935 1950 1965 1980 1995

1934 1949 1964 1979 1994 2009 2024

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

1 29A 1922 2012 .68 .64 .42A .62 .81 .78

2 29B 1952 2012 .50 .51 .73 .74

3 30A 1943 2012 .37A .53 .58 .71 .64

4 31A 1899 2012 .24A .79 .79 .54 .71 .91 .90

5 31B 1920 2012 .75 .82 .68 .70 .81 .78

6 32B 1905 2012 .31B .80 .74 .53 .49 .48B .50

7 34A 1946 2012 .34B .37B .34B .70 .79

8 34B 1950 2012 .40A .46 .58 .64

9 35A 1959 2012 .48 .52 .70 .70

10 36A 1920 2012 .55 .56 .36A .38A .41A .43

11 36B 1921 2012 .65 .68 .59 .58 .53 .63

12 37A 1959 2012 .46 .46 .65 .68

13 37B 1951 2012 .63 .39A .50 .54

14 38B 1922 2012 .67 .74 .51 .50 .64 .71

15 39A 1942 2012 .36B .39A .51 .78 .80

16 39B 1936 2012 .51 .64 .59 .79 .81

17 40A 1923 2012 .61 .68 .65 .44 .81 .87

18 40B 1917 2012 .50 .68 .77 .49 .43 .60 .69

19 30B 1950 2012 .45 .54 .65 .68

Av segment correlation .35 .69 .62 .51 .51 .67 .70

PART 6: POTENTIAL PROBLEMS: STER6\_5 13:19 Tue 14 May 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 30-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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29A 1922 to 2012 91 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

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

1950 1979 0 .13 -.22 .26 -.18 .10 -.06 -.08 -.28 .24 -.20 .42\*-.05 -.03 -.12 .25 -.10 .04 -.32 .28 -.17 .18

[B] Entire series, effect on correlation ( .624) is:

Lower 1968< -.068 1940> -.033 1948> -.025 1960> -.009 1962> -.008 1959> -.008 Higher 1935 .087 2003 .021

1950 to 1979 segment:

Lower 1968< -.124 1962> -.031 1960> -.029 1959> -.025 1961< -.015 1964< -.015 Higher 1975 .071 1956 .034

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29B 1952 to 2012 61 years Series 2

[B] Entire series, effect on correlation ( .589) is:

Lower 1953< -.068 1986> -.016 1962> -.015 1959> -.015 1961< -.014 1973< -.011 Higher 2003 .081 1956 .062

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30A 1943 to 2012 70 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

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

1943 1972 0 -.11 -.07 .09 -.13 .02 -.13 .22 .13 .02 -.30 .37\* .19 -.31 -.12 .25 -.26 .04 -.01 -.03 .08 -.13

[B] Entire series, effect on correlation ( .504) is:

Lower 1947< -.088 2011< -.028 1960> -.016 1944> -.011 1989> -.010 1952< -.010 Higher 1948 .047 2003 .047

1943 to 1972 segment:

Lower 1947< -.158 1960> -.026 1952< -.020 1944> -.020 1943> -.014 1955< -.014 Higher 1948 .132 1956 .082

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31A 1899 to 2012 114 years Series 4

[\*] Early part of series cannot be checked from 1899 to 1904 -- 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

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

1905 1934 0 - - - - .03 .16 .01 -.14 -.39 .03 .24\* .04 -.08 .11 -.17 -.12 .14 -.07 -.20 -.25 .24

[B] Entire series, effect on correlation ( .609) is:

Lower 1918> -.054 1907< -.045 1963< -.015 1977> -.012 1911< -.011 1943> -.007 Higher 1935 .072 1948 .028

1905 to 1934 segment:

Lower 1907< -.142 1918> -.063 1911< -.032 1915< -.011 1905< -.010 1910> -.008 Higher 1906 .125 1924 .036

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

1906 1907 -4.3 SD

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

1907 -4.8 SD; 1918 +3.9 SD

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31B 1920 to 2012 93 years Series 5

[B] Entire series, effect on correlation ( .739) is:

Lower 1963< -.014 1928> -.013 1943> -.010 1927> -.009 1977> -.008 1940< -.008 Higher 1935 .066 1948 .025

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32B 1905 to 2012 108 years Series 6

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

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

1905 1934 8 - - - - -.13 .05 -.20 .23 -.24 -.02 .31| .27 -.35 -.13 -.28 .15 .21 -.14 .32\*-.09 .06

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

1980 2009 -1 -.10 -.22 .10 -.11 -.10 -.06 -.03 -.22 .19 .52\* .48|-.03 .06 .12 - - - - - - -

[B] Entire series, effect on correlation ( .525) is:

Lower 1907> -.051 1917< -.034 2003> -.028 1953< -.017 1911> -.012 1963< -.009 Higher 1935 .079 1956 .025

1905 to 1934 segment:

Lower 1907> -.148 1917< -.110 1911> -.034 1919< -.015 1921< -.012 1915> -.010 Higher 1918 .095 1906 .095

1980 to 2009 segment:

Lower 2003> -.168 1999< -.025 1989> -.022 1981> -.014 2006> -.013 1983< -.009 Higher 2004 .109 1993 .028

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

1906 1907 4.1 SD

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

1907 +4.8 SD

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34A 1946 to 2012 67 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

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

1946 1975 -10 .49\*-.25 .13 -.16 -.01 -.33 -.02 -.10 .33 -.27 .34|-.22 .16 -.14 .13 -.24 .10 -.13 .24 -.09 .23

1950 1979 -10 .50\*-.22 .06 -.14 .02 -.27 -.07 -.14 .35 -.18 .37|-.36 .09 -.03 .11 -.26 .10 -.02 .21 -.20 .20

1965 1994 -10 .38\*-.13 -.06 .15 -.27 .12 .02 -.11 .22 .11 .34|-.47 -.18 .21 -.20 -.14 -.04 .17 .17 -.05 .09

[B] Entire series, effect on correlation ( .515) is:

Lower 1958< -.072 1948> -.038 1981> -.025 1976> -.018 1970< -.017 1946< -.014 Higher 2003 .084 1956 .037

1946 to 1975 segment:

Lower 1958< -.138 1948> -.067 1970< -.025 1946< -.024 1966> -.018 1968> -.016 Higher 1956 .125 1975 .037

1950 to 1979 segment:

Lower 1958< -.160 1976> -.046 1970< -.030 1966> -.021 1977> -.021 1968> -.019 Higher 1956 .140 1975 .041

1965 to 1994 segment:

Lower 1981> -.075 1976> -.053 1970< -.035 1983< -.029 1984> -.027 1977> -.025 Higher 1986 .073 1975 .053

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34B 1950 to 2012 63 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

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

1950 1979 0 .09 -.28 .02 -.26 .04 -.22 -.03 .23 .06 -.36 .40\*-.19 -.10 .16 .04 -.38 .07 .06 -.01 -.05 .31

[B] Entire series, effect on correlation ( .467) is:

Lower 1959< -.135 1968> -.019 1981> -.016 1977> -.015 1976> -.013 1983< -.013 Higher 1956 .039 1995 .016

1950 to 1979 segment:

Lower 1959< -.211 1968> -.037 1976> -.029 1977> -.028 1958< -.023 1974> -.005 Higher 1956 .082 1957 .044

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

1959 -5.8 SD; 1960 -4.6 SD

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35A 1959 to 2012 54 years Series 9

[B] Entire series, effect on correlation ( .669) is:

Lower 1986> -.038 1988< -.037 1970< -.020 1998> -.015 1963> -.010 1977> -.010 Higher 2003 .101 2004 .021

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36A 1920 to 2012 93 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

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

1950 1979 0 -.03 .01 .14 .04 .10 -.29 .03 .06 -.21 -.01 .36\*-.05 .03 -.13 .29 .08 .09 -.15 -.02 .17 -.03

1965 1994 0 -.01 -.05 .27 .11 -.19 .15 .13 -.01 -.27 .21 .38\* .04 -.07 -.04 .19 .19 -.17 -.07 -.04 -.07 -.05

1980 2009 0 .03 .04 .23 .16 -.05 .22 .25 .04 .16 .30 .41\*-.42 -.25 -.04 - - - - - - -

[B] Entire series, effect on correlation ( .450) is:

Lower 1977< -.058 1935> -.043 2003> -.036 1924< -.015 1947> -.011 1993< -.008 Higher 1948 .059 1934 .012

1950 to 1979 segment:

Lower 1977< -.193 1966> -.021 1956> -.012 1973< -.011 1970> -.008 1972> -.008 Higher 1976 .046 1961 .030

1965 to 1994 segment:

Lower 1977< -.130 1981> -.048 1993< -.031 1966> -.026 1978> -.012 1985< -.011 Higher 1986 .070 1976 .042

1980 to 2009 segment:

Lower 2003> -.150 1993< -.031 1981> -.029 1985< -.021 2009< -.016 2000> -.003 Higher 2004 .031 1995 .029

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

1977 1978 4.3 SD

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

1977 -6.4 SD

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36B 1921 to 2012 92 years Series 11

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

Lower 1981< -.030 1977< -.016 1996> -.012 1943> -.011 1956> -.010 1992< -.008 Higher 1948 .026 2004 .011

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37A 1959 to 2012 54 years Series 12

[B] Entire series, effect on correlation ( .584) is:

Lower 1962> -.031 1990< -.025 1976> -.021 2005> -.020 1977> -.018 2009< -.017 Higher 2003 .112 1975 .023

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37B 1951 to 2012 62 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

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

1965 1994 0 .23 -.18 .31 -.06 -.11 .05 .02 .14 .06 -.12 .39\*-.25 .07 -.32 -.18 .09 -.13 .09 .21 .12 -.05

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

Lower 1982> -.048 1957< -.030 1987< -.027 2012< -.018 1970< -.015 2005> -.013 Higher 1956 .076 2003 .063

1965 to 1994 segment:

Lower 1982> -.128 1987< -.079 1970< -.039 1990< -.022 1986> -.016 1971< -.012 Higher 1975 .063 1993 .053

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

1982 +3.6 SD

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38B 1922 to 2012 91 years Series 14

[B] Entire series, effect on correlation ( .633) is:

Lower 1998< -.031 1940> -.026 1980< -.022 1925< -.021 1939< -.015 1966> -.014 Higher 1935 .089 2003 .040

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39A 1942 to 2012 71 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

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

1942 1971 -8 -.07 -.23 .37\*-.31 -.15 -.11 .07 -.06 -.26 -.15 .36| .13 .13 -.06 .03 .09 -.04 -.14 .12 .02 .07

1950 1979 0 .06 -.29 .04 -.37 -.11 -.02 .08 -.10 -.02 -.15 .39\*-.20 .30 -.21 -.07 -.12 -.07 .03 -.05 .01 .25

[B] Entire series, effect on correlation ( .598) is:

Lower 1948> -.035 1961< -.034 1986< -.018 1960< -.015 1978> -.013 1967< -.011 Higher 2003 .058 2004 .018

1942 to 1971 segment:

Lower 1961< -.081 1948> -.039 1960< -.027 1967< -.026 1969> -.018 1962> -.009 Higher 1957 .034 1955 .027

1950 to 1979 segment:

Lower 1961< -.101 1978> -.034 1967< -.032 1976> -.021 1960< -.020 1969> -.020 Higher 1975 .087 1956 .031

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39B 1936 to 2012 77 years Series 16

[B] Entire series, effect on correlation ( .667) is:

Lower 1948> -.052 1977> -.020 1964< -.020 1940> -.016 1992< -.013 1965< -.013 Higher 2003 .062 1941 .012

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40A 1923 to 2012 90 years Series 17

[B] Entire series, effect on correlation ( .670) is:

Lower 1943< -.057 1975< -.016 1925> -.014 1935> -.013 1981> -.010 1971< -.009 Higher 1948 .032 2003 .026

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

1977 -.615 19 1

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

40B 1917 to 2012 96 years Series 18

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

Lower 1917> -.039 1918< -.038 1925> -.016 1981> -.015 1971< -.012 1949< -.009 Higher 1935 .045 1948 .033

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

1917 1918 -4.2 SD

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

2004 -2.900 19 1

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30B 1950 to 2012 63 years Series 19

[B] Entire series, effect on correlation ( .514) is:

Lower 1951< -.040 1962< -.018 1989> -.011 2001< -.009 1972> -.009 1986> -.008 Higher 2004 .024 2010 .017

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PART 7: DESCRIPTIVE STATISTICS: STER6\_5 13:19 Tue 14 May 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 29A 1922 2012 91 6 1 .624 1.81 3.59 .628 .714 .207 2.81 .420 -.048 1

2 29B 1952 2012 61 4 0 .589 1.47 2.94 .666 .836 .209 2.72 .542 -.084 1

3 30A 1943 2012 70 5 1 .504 1.18 2.33 .463 .732 .205 2.70 .497 .003 1

4 31A 1899 2012 114 7 1 .609 1.56 3.88 .722 .797 .251 2.58 .404 .009 2

5 31B 1920 2012 93 6 0 .739 1.77 3.67 .747 .750 .236 2.60 .432 -.027 1

6 32B 1905 2012 108 7 2 .525 1.52 3.03 .690 .830 .252 2.56 .467 -.035 1

7 34A 1946 2012 67 5 3 .515 1.13 2.27 .355 .391 .273 2.87 .583 .040 1

8 34B 1950 2012 63 4 1 .467 1.23 2.21 .517 .790 .221 2.65 .387 .148 1

9 35A 1959 2012 54 4 0 .669 1.25 2.17 .352 .586 .205 2.68 .500 .098 1

10 36A 1920 2012 93 6 3 .450 .85 2.30 .437 .532 .310 2.72 .426 .047 1

11 36B 1921 2012 92 6 0 .588 1.57 2.82 .561 .649 .280 2.45 .421 .052 1

12 37A 1959 2012 54 4 0 .584 1.66 3.16 .608 .612 .243 2.76 .536 .080 1

13 37B 1951 2012 62 4 1 .531 1.64 2.86 .573 .580 .262 2.62 .460 .001 1

14 38B 1922 2012 91 6 0 .633 1.91 3.36 .777 .862 .174 2.56 .448 -.045 1

15 39A 1942 2012 71 5 2 .598 1.52 3.22 .646 .759 .225 2.91 .508 .042 1

16 39B 1936 2012 77 5 0 .667 1.40 3.32 .563 .745 .217 2.65 .425 -.008 1

17 40A 1923 2012 90 6 0 .670 .83 2.52 .587 .815 .394 2.57 .458 .030 3

18 40B 1917 2012 96 7 0 .556 1.24 3.82 .995 .841 .423 2.52 .375 -.074 1

19 30B 1950 2012 63 4 0 .514 1.30 3.03 .685 .874 .212 2.64 .456 -.002 2

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Total or mean: 1510 101 15 .583 1.42 3.88 .625 .730 .257 2.91 .453 .007

- = [ COFECHA STER6COF ] = -