[] Dendrochronology Program Library Run SNCHI Program COF 16:24 Fri 06 Sep 2013 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 28740

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

Title of run: Run2

File of DATED series: SNCHigh\_ABBA\_2

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 1910 to 2012 103 years

Continuous time span is 1910 to 2012 103 years

Portion with two or more series is 1911 to 2012 102 years

>> 593B 1967 absent in 1 of 17 series, but is not usually narrow: master index is 1.011

>> 593B 1968 absent in 1 of 18 series, but is not usually narrow: master index is -.024

>> 593B 1969 absent in 1 of 18 series, but is not usually narrow: master index is .219

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

\*C\* Number of dated series 20 \*C\*

\*O\* Master series 1910 2012 103 yrs \*O\*

\*F\* Total rings in all series 1548 \*F\*

\*E\* Total dated rings checked 1547 \*E\*

\*C\* Series intercorrelation .569 \*C\*

\*H\* Average mean sensitivity .210 \*H\*

\*A\* Segments, possible problems 20 \*A\*

\*\*\* Mean length of series 77.4 \*\*\*

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

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

593B 3 absent rings: 1967 1968 1969

3 absent rings .194%

PART 2: TIME PLOT OF TREE-RING SERIES: Run2 16:24 Fri 06 Sep 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

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

. . . . . . . . . . . . . . . . . .<=========> . 585A 1 1910 2012 103

. . . . . . . . . . . . . . . . . .<=========> . 585B 2 1915 2012 98

. . . . . . . . . . . . . . . . . .<=========> . 586A 3 1914 2012 99

. . . . . . . . . . . . . . . . . .<=========> . 586B 4 1919 2012 94

. . . . . . . . . . . . . . . . . . <========> . 587A 5 1923 2012 90

. . . . . . . . . . . . . . . . . . <========> . 587B 6 1921 2012 92

. . . . . . . . . . . . . . . . . . . <===> . 588B 7 1977 2012 36

. . . . . . . . . . . . . . . . . .<=========> . 589A 8 1911 2012 102

. . . . . . . . . . . . . . . . . .<=========> . 589B 9 1917 2012 96

. . . . . . . . . . . . . . . . . . <=====> . 590A 10 1956 2012 57

. . . . . . . . . . . . . . . . . . <=====> . 590B 11 1955 2012 58

. . . . . . . . . . . . . . . . . .<=========> . 591A 12 1918 2012 95

. . . . . . . . . . . . . . . . . . <=====> . 592A 13 1951 2012 62

. . . . . . . . . . . . . . . . . .<=========> . 592B 14 1919 2012 94

. . . . . . . . . . . . . . . . . .<=========> . 593B 15 1915 2012 98

. . . . . . . . . . . . . . . . . . . <===> . 594A 16 1972 2012 41

. . . . . . . . . . . . . . . . . . .<====> . 594B 17 1968 2012 45

. . . . . . . . . . . . . . . . . . .<====> . 595A 18 1965 2012 48

. . . . . . . . . . . . . . . . . . .<====> . 595B 19 1967 2012 46

. . . . . . . . . . . . . . . . . .<=========> . 596B 20 1919 2012 94

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

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: Run2 16:24 Fri 06 Sep 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

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

1950 -.238 12 2000 .008 20

1951 1.021 13 2001 1.298 20

1952 .315 13 2002 -.177 20

1953 .380 13 2003 -1.399 20

1954 .964 13 2004 .536 20

1955 .476 14 2005 1.127 20

1956 -2.457 15 2006 -2.534 20

1957 1.211 15 2007 .464 20

1958 -.154 15 2008 -.082 20

1959 -1.081 15 2009 .650 20

1910 -4.058 1 1960 -2.786 15 2010 .924 20

1911 .590 2 1961 .529 15 2011 -.455 20

1912 .517 2 1962 -.760 15 2012 .203 20

1913 1.102 2 1963 -.616 15

1914 .769 3 1964 .916 15

1915 .002 5 1965 .833 16

1916 .432 5 1966 1.205 16

1917 -.301 6 1967 1.011 17 1<<

1918 .444 7 1968 -.024 18 1<<

1919 .098 10 1969 .219 18 1<<

1920 -.120 10 1970 -.063 18

1921 1.182 11 1971 -.151 18

1922 -1.069 11 1972 -.810 19

1923 .298 12 1973 -.478 19

1924 .943 12 1974 -.387 19

1925 -.013 12 1975 -.077 19

1926 -.735 12 1976 .398 19

1927 -.516 12 1977 -1.759 20

1928 -.467 12 1978 -.494 20

1929 -.356 12 1979 .649 20

1930 -1.129 12 1980 2.345 20

1931 -.509 12 1981 -.756 20

1932 .233 12 1982 -1.406 20

1933 .167 12 1983 .875 20

1934 .034 12 1984 -.101 20

1935 -1.408 12 1985 .685 20

1936 -.135 12 1986 .501 20

1937 -.203 12 1987 1.492 20

1938 1.109 12 1988 .469 20

1939 .697 12 1989 -1.403 20

1940 -2.241 12 1990 .277 20

1941 1.030 12 1991 .480 20

1942 .548 12 1992 -.021 20

1943 .473 12 1993 -.131 20

1944 .264 12 1994 -1.540 20

1945 .485 12 1995 .671 20

1946 1.635 12 1996 -.348 20

1947 -.271 12 1997 -.371 20

1948 -.078 12 1998 -1.413 20

1949 1.191 12 1999 .704 20

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PART 4: Master Bar Plot: Run2 16:24 Fri 06 Sep 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

1950---a 2000----@

1951---------D 2001----------E

1952------A 2002---a

1953------B 2003-f

1954---------D 2004-------B

1955-------B 2005----------E

1956j 2006j

1957----------E 2007-------B

1958---a 2008----@

1959-d 2009--------C

1910p 1960k 2010---------D

1911-------B 1961-------B 2011--b

1912-------B 1962--c 2012-----A

1913---------D 1963--b

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

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

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

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

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

1919-----@ 1969-----A

1920----@ 1970----@

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

1922-d 1972-c

1923------A 1973--b

1924---------D 1974--b

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

1926--c 1976------B

1927--b 1977g

1928--b 1978--b

1929--a 1979--------C

1930-e 1980----------I

1931--b 1981--c

1932-----A 1982-f

1933-----A 1983---------D

1934-----@ 1984----@

1935-f 1985--------C

1936----a 1986-------B

1937---a 1987----------F

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

1939--------C 1989-f

1940i 1990------A

1941---------D 1991-------B

1942-------B 1992----@

1943-------B 1993----a

1944------A 1994f

1945-------B 1995--------C

1946----------G 1996--a

1947---a 1997--a

1948----@ 1998-f

1949----------E 1999--------C

PART 5: CORRELATION OF SERIES BY SEGMENTS: Run2 16:24 Fri 06 Sep 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 585A 1910 2012 .57 .64 .82 .77 .66 .78 .72

2 585B 1915 2012 .67 .71 .75 .73 .55 .68 .62

3 586A 1914 2012 .36A .41A .60 .50 .21B .66 .61

4 586B 1919 2012 .58 .62 .71 .63 .28B .41A .33B

5 587A 1923 2012 .57 .86 .69 .45 .54 .47

6 587B 1921 2012 .32B .68 .77 .73 .58 .51

7 588B 1977 2012 .72 .71 .75

8 589A 1911 2012 .34A .55 .70 .64 .69 .86 .86

9 589B 1917 2012 .55 .55 .67 .68 .54 .75 .76

10 590A 1956 2012 .70 .73 .73 .73

11 590B 1955 2012 .68 .65 .72 .66

12 591A 1918 2012 .03B .14B .61 .77 .69 .55 .45

13 592A 1951 2012 .50 .65 .40A .34B

14 592B 1919 2012 .40A .46 .65 .65 .66 .37A .23B

15 593B 1915 2012 .37A .45 .65 .54 .41A .69 .67

16 594A 1972 2012 .62 .77 .72

17 594B 1968 2012 .65 .61 .53

18 595A 1965 2012 .31B .68 .76

19 595B 1967 2012 .50 .64 .69

20 596B 1919 2012 .18B .23B .48 .48 .63 .76 .71

Av segment correlation .41 .47 .68 .65 .57 .64 .61

PART 6: POTENTIAL PROBLEMS: Run2 16:24 Fri 06 Sep 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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585A 1910 to 2012 103 years Series 1

[\*] Early part of series cannot be checked from 1910 to 1910 -- not matched by another series

[B] Entire series, effect on correlation ( .694) is:

Lower 1926> -.020 1989> -.015 1950< -.013 1962> -.010 1968> -.008 1931> -.008 Higher 1956 .032 1960 .024

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

585B 1915 to 2012 98 years Series 2

[B] Entire series, effect on correlation ( .665) is:

Lower 1986< -.021 1981> -.015 1989> -.014 2011< -.013 1918> -.010 2003> -.010 Higher 2006 .039 1960 .025

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586A 1914 to 2012 99 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

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

1914 1943 0 - - - - - - -.22 .20 .03 -.32 .36\*-.27 -.27 -.02 .15 .24 -.10 .04 .03 .02 .34

1920 1949 0 -.04 -.24 .08 .03 -.36 .14 -.05 .11 -.04 -.38 .41\*-.31 -.36 .05 .08 .24 -.12 .01 .10 .00 .10

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

1965 1994 -9 .25 .27\* .07 -.25 -.27 -.06 -.13 -.18 -.13 .11 .21|-.21 -.01 .07 .18 .04 .12 .10 .00 -.19 -.05

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

Lower 1989> -.022 1935> -.019 1926> -.016 1994> -.013 1966< -.012 1916< -.011 Higher 2006 .066 1940 .022

1914 to 1943 segment:

Lower 1935> -.068 1926> -.053 1916< -.039 1927> -.028 1943< -.023 1918< -.013 Higher 1940 .103 1922 .063

1920 to 1949 segment:

Lower 1935> -.073 1926> -.058 1927> -.033 1944< -.021 1943< -.019 1934> -.011 Higher 1940 .083 1922 .037

1965 to 1994 segment:

Lower 1989> -.084 1994> -.048 1966< -.044 1990< -.035 1981> -.024 1991< -.021 Higher 1980 .124 1987 .049

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

586B 1919 to 2012 94 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

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

1965 1994 7 -.06 -.03 .01 -.31 .02 .29 .05 -.02 -.16 .21 .28|-.45 .09 .18 .14 -.38 .02 .36\* .00 -.22 -.15

1980 2009 0 -.14 .37 .08 -.24 -.08 .24 .10 .09 -.18 -.02 .41\*-.37 -.10 .15 - - - - - - -

1983 2012 -9 -.11 .39\* .07 -.20 .01 .04 .01 .21 -.14 -.07 .33| - - - - - - - - - -

[B] Entire series, effect on correlation ( .512) is:

Lower 2006> -.028 1989> -.020 2009< -.019 1975< -.016 2011> -.016 1966< -.014 Higher 1956 .062 1960 .027

1965 to 1994 segment:

Lower 1975< -.065 1989> -.064 1966< -.059 1965< -.040 1981> -.032 1990< -.027 Higher 1980 .125 1983 .047

1980 to 2009 segment:

Lower 2009< -.060 1989> -.044 2006> -.033 1999< -.027 1981> -.024 1990< -.020 Higher 1980 .063 2003 .026

1983 to 2012 segment:

Lower 2009< -.061 1989> -.046 2011> -.042 1999< -.029 2006> -.021 1990< -.021 Higher 1998 .048 2003 .039

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587A 1923 to 2012 90 years Series 5

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

Lower 1989> -.036 2000< -.020 1995< -.019 1927> -.016 1924< -.014 1970> -.009 Higher 2006 .049 1956 .042

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587B 1921 to 2012 92 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

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

1921 1950 9 .20 -.17 .03 .13 -.21 .11 .05 -.03 -.28 -.07 .32|-.12 -.01 .11 .10 -.01 .01 -.17 .01 .47\*-.05

[B] Entire series, effect on correlation ( .557) is:

Lower 1997< -.028 1926< -.028 1935> -.020 2006> -.020 1989> -.012 1938< -.012 Higher 1956 .053 1940 .019

1921 to 1950 segment:

Lower 1935> -.064 1938< -.032 1922> -.031 1929> -.026 1939< -.017 1930> -.013 Higher 1940 .109 1946 .035

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588B 1977 to 2012 36 years Series 7

[B] Entire series, effect on correlation ( .693) is:

Lower 1979< -.035 2003> -.026 1989> -.021 1980< -.017 2007< -.017 1996> -.011 Higher 2006 .143 1977 .024

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589A 1911 to 2012 102 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

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

1911 1940 0 - - - - - - - - - -.05 .34\* .02 .05 .02 .09 .21 -.08 -.04 .25 .23 -.07

[B] Entire series, effect on correlation ( .668) is:

Lower 1940> -.027 1914< -.020 1969< -.013 1952< -.011 2011> -.010 1931< -.009 Higher 2006 .058 1980 .012

1911 to 1940 segment:

Lower 1914< -.080 1940> -.078 1915> -.035 1931< -.031 1918< -.018 1937> -.013 Higher 1938 .050 1921 .047

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589B 1917 to 2012 96 years Series 9

[B] Entire series, effect on correlation ( .650) is:

Lower 1948< -.021 1981> -.014 1969< -.013 1956> -.011 1917> -.010 2012< -.010 Higher 2006 .064 1960 .016

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590A 1956 to 2012 57 years Series 10

[B] Entire series, effect on correlation ( .707) is:

Lower 1960> -.026 1981< -.024 1996> -.019 2012< -.013 1988< -.013 1973> -.012 Higher 2006 .050 1956 .021

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590B 1955 to 2012 58 years Series 11

[B] Entire series, effect on correlation ( .666) is:

Lower 1972< -.030 1996> -.024 2007< -.024 1998> -.017 1970< -.014 1960> -.013 Higher 2006 .075 1956 .056

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591A 1918 to 2012 95 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

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

1918 1947 -8 - - .37\* .16 .03 -.07 .05 -.07 -.02 -.06 .03|-.17 -.30 -.24 .02 .16 -.38 .03 .05 -.19 -.07

1920 1949 -7 .10 .20 .12 .30\* .12 .04 .12 .00 .01 -.09 .14|-.17 -.28 -.16 -.11 .25 -.31 -.13 -.08 -.22 -.15

[B] Entire series, effect on correlation ( .456) is:

Lower 2006> -.031 1918< -.029 1922> -.018 1926> -.018 2012< -.017 1994> -.016 Higher 1977 .023 1960 .020

1918 to 1947 segment:

Lower 1918< -.068 1926> -.052 1922> -.046 1921< -.038 1930> -.026 1925> -.021 Higher 1935 .178 1940 .124

1920 to 1949 segment:

Lower 1926> -.052 1921< -.052 1922> -.045 1930> -.024 1925> -.022 1936< -.022 Higher 1935 .162 1940 .124

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592A 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

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

1980 2009 0 .13 -.33 .15 .09 -.05 .26 .08 -.14 .07 -.35 .40\*-.12 .06 .16 - - - - - - -

1983 2012 -5 .06 -.37 .22 .09 -.19 .35\*-.07 -.05 .14 -.37 .34| - - - - - - - - - -

[B] Entire series, effect on correlation ( .442) is:

Lower 2006> -.121 1968< -.029 1956> -.024 2004< -.020 1957< -.011 1999< -.010 Higher 1977 .035 1960 .035

1980 to 2009 segment:

Lower 2006> -.269 2004< -.048 1999< -.022 1984> -.013 1996< -.008 2002< -.004 Higher 1981 .034 1994 .034

1983 to 2012 segment:

Lower 2006> -.303 2004< -.051 1999< -.024 1984> -.013 1993> .000 2012> .000 Higher 1994 .044 1983 .037

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

2006 +3.2 SD

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592B 1919 to 2012 94 years Series 14

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

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

1919 1948 0 - .32 -.14 .03 -.06 .11 .01 .20 .05 -.20 .40\*-.13 -.06 .07 -.15 .20 -.22 .29 .13 -.36 .24

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

1980 2009 0 .04 -.29 .08 .15 -.09 .22 .05 -.17 .19 -.48 .37\* .08 -.14 .02 - - - - - - -

1983 2012 -2 -.02 -.39 .15 .20 -.17 .22 .03 -.08 .30\*-.59 .23| - - - - - - - - - -

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

Lower 2006> -.074 1926> -.023 1922> -.022 1919< -.018 1947> -.014 1929< -.012 Higher 1940 .052 1956 .027

1919 to 1948 segment:

Lower 1922> -.080 1926> -.072 1919< -.049 1947> -.041 1929< -.029 1932< -.022 Higher 1940 .268 1935 .044

1980 to 2009 segment:

Lower 2006> -.215 2008< -.015 1994> -.013 1988< -.009 2000> -.006 1993< -.005 Higher 1980 .060 1981 .039

1983 to 2012 segment:

Lower 2006> -.224 2010< -.029 1994> -.011 1988< -.008 2000> -.007 2008< -.006 Higher 2007 .033 2003 .027

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

2006 +3.0 SD

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593B 1915 to 2012 98 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

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

1915 1944 0 - - - - - .31 -.28 .27 -.06 -.45 .37\*-.13 .09 -.05 -.23 .15 .05 .17 .03 -.32 .22

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

1965 1994 0 -.09 .10 .33 .41 -.18 -.11 .20 .07 -.15 -.39 .41\*-.01 -.28 -.07 -.16 .11 -.26 -.01 .27 .02 -.09

[B] Entire series, effect on correlation ( .471) is:

Lower 1967< -.042 1960> -.023 1925< -.023 1930> -.014 1977> -.012 1994> -.012 Higher 2006 .099 1940 .034

1915 to 1944 segment:

Lower 1925< -.084 1930> -.056 1926> -.042 1917> -.035 1915< -.029 1942< -.027 Higher 1940 .208 1922 .038

1965 to 1994 segment:

Lower 1967< -.124 1994> -.033 1977> -.030 1973> -.023 1969< -.022 1985< -.017 Higher 1981 .142 1987 .037

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

1967 1.011 17 1 >> WARNING: Ring is not usually narrow

1968 -.024 18 1 >> WARNING: Ring is not usually narrow

1969 .219 18 1 >> WARNING: Ring is not usually narrow

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

594A 1972 to 2012 41 years Series 16

[B] Entire series, effect on correlation ( .706) is:

Lower 1989< -.042 1973> -.017 1997> -.013 2012> -.012 1998> -.012 1978< -.010 Higher 2006 .106 1981 .015

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594B 1968 to 2012 45 years Series 17

[B] Entire series, effect on correlation ( .537) is:

Lower 2006> -.038 1974< -.035 1972> -.034 2001< -.029 2011> -.013 1996> -.008 Higher 1977 .046 1989 .035

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595A 1965 to 2012 48 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

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

1965 1994 5 -.24 .03 .02 .13 -.22 .33 .12 .04 -.31 -.30 .31|-.21 -.34 .03 .32 .37\*-.35 -.17 .25 .28 .06

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

Lower 1982> -.037 1965< -.033 1987< -.025 1967< -.025 1970> -.016 1985< -.015 Higher 2006 .190 1989 .032

1965 to 1994 segment:

Lower 1982> -.069 1965< -.057 1967< -.043 1987< -.040 1970> -.026 1985< -.025 Higher 1989 .128 1994 .068

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595B 1967 to 2012 46 years Series 19

[B] Entire series, effect on correlation ( .559) is:

Lower 1982< -.050 1977> -.038 1983< -.016 2000< -.014 1967< -.014 1974> -.008 Higher 2006 .043 1989 .035

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596B 1919 to 2012 94 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

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

1919 1948 -5 - .30 -.17 .08 -.25 .53\*-.15 -.21 .23 .09 .18|-.05 -.09 .33 .01 .01 -.04 .02 .08 -.01 -.03

1920 1949 -5 .08 .00 -.09 .13 -.19 .62\*-.16 -.17 .22 .11 .23|-.08 .00 .24 .03 .08 -.07 -.08 .11 -.03 -.06

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

Lower 1927< -.065 1977> -.021 1919< -.018 1956> -.013 1991< -.012 1948> -.009 Higher 2006 .035 1981 .013

1919 to 1948 segment:

Lower 1927< -.129 1919< -.039 1948> -.015 1945< -.014 1947> -.012 1936< -.012 Higher 1935 .039 1946 .039

1920 to 1949 segment:

Lower 1927< -.187 1948> -.018 1945< -.016 1936< -.014 1947> -.012 1938< -.011 Higher 1935 .043 1946 .034

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

1927 -5.0 SD

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PART 7: DESCRIPTIVE STATISTICS: Run2 16:24 Fri 06 Sep 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 585A 1910 2012 103 7 0 .694 1.21 2.97 .597 .849 .199 2.64 .507 -.085 1

2 585B 1915 2012 98 7 0 .665 1.30 3.82 .568 .741 .194 2.79 .464 -.083 1

3 586A 1914 2012 99 7 3 .484 1.05 2.83 .713 .920 .252 2.71 .419 -.001 1

4 586B 1919 2012 94 7 3 .512 1.25 3.10 .637 .868 .210 2.66 .447 .022 1

5 587A 1923 2012 90 6 0 .598 1.61 3.12 .517 .651 .190 2.61 .504 .025 1

6 587B 1921 2012 92 6 1 .557 1.56 2.85 .715 .861 .172 2.52 .487 .040 1

7 588B 1977 2012 36 3 0 .693 2.41 3.43 .588 .817 .119 2.58 .528 -.032 1

8 589A 1911 2012 102 7 1 .668 1.13 2.30 .598 .888 .216 2.50 .335 -.037 1

9 589B 1917 2012 96 7 0 .650 1.14 2.77 .712 .936 .206 2.55 .427 -.028 1

10 590A 1956 2012 57 4 0 .707 2.05 3.31 .603 .771 .157 2.51 .504 .018 1

11 590B 1955 2012 58 4 0 .666 1.96 3.28 .553 .687 .157 2.78 .540 -.051 1

12 591A 1918 2012 95 7 2 .456 1.15 2.40 .474 .794 .221 2.79 .547 .022 1

13 592A 1951 2012 62 4 2 .442 1.61 3.77 .836 .797 .249 3.00 .494 .069 1

14 592B 1919 2012 94 7 3 .434 1.37 3.66 1.023 .934 .226 2.68 .453 -.036 2

15 593B 1915 2012 98 7 2 .471 1.02 3.32 .707 .940 .238 2.44 .421 .013 1

16 594A 1972 2012 41 3 0 .706 1.98 4.08 1.127 .941 .187 2.59 .481 -.051 3

17 594B 1968 2012 45 3 0 .537 2.61 4.10 1.418 .965 .169 2.61 .612 .074 1

18 595A 1965 2012 48 3 1 .574 2.19 4.75 1.127 .834 .229 2.58 .454 -.074 1

19 595B 1967 2012 46 3 0 .559 1.98 7.46 1.465 .752 .249 2.52 .478 .070 1

20 596B 1919 2012 94 7 2 .482 .80 2.30 .561 .904 .261 2.54 .442 -.075 1

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Total or mean: 1548 109 20 .569 1.43 7.46 .726 .847 .210 3.00 .468 -.013

- = [ COFECHA SNCHICOF ] = -