[] Dendrochronology Program Library Run 153 Program COF 12:29 Thu 07 Apr 2011 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 27857

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

File of DATED series: 153\_EQU

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 1909 to 2010 102 years

Continuous time span is 1909 to 2010 102 years

Portion with two or more series is 1909 to 2010 102 years

>> 422A 2004 absent in 2 of 22 series, but is not usually narrow: master index is -.248

>> 422A 2005 absent in 2 of 22 series, but is not usually narrow: master index is -.321

>> 422A 2007 absent in 2 of 22 series, but is not usually narrow: master index is 1.561

>> 422A 2008 absent in 2 of 22 series, but is not usually narrow: master index is .554

>> 422A 2009 absent in 2 of 22 series, but is not usually narrow: master index is .275

>> 422A 2010 absent in 2 of 22 series, but is not usually narrow: master index is .879

>> 422B 1986 absent in 1 of 22 series, but is not usually narrow: master index is -.070

>> 422B 1994 absent in 1 of 22 series, but is not usually narrow: master index is -.202

>> 422B 1995 absent in 1 of 22 series, but is not usually narrow: master index is -.301

>> 422B 2000 absent in 1 of 22 series, but is not usually narrow: master index is -.349

>> 422B 2001 absent in 1 of 22 series, but is not usually narrow: master index is .606

>> 422B 2002 absent in 1 of 22 series, but is not usually narrow: master index is 1.768

>> 422B 2004 absent in 2 of 22 series, but is not usually narrow: master index is -.248

>> 422B 2005 absent in 2 of 22 series, but is not usually narrow: master index is -.321

>> 422B 2007 absent in 2 of 22 series, but is not usually narrow: master index is 1.561

>> 422B 2008 absent in 2 of 22 series, but is not usually narrow: master index is .554

>> 422B 2009 absent in 2 of 22 series, but is not usually narrow: master index is .275

>> 422B 2010 absent in 2 of 22 series, but is not usually narrow: master index is .879

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

\*C\* Number of dated series 22 \*C\*

\*O\* Master series 1909 2010 102 yrs \*O\*

\*F\* Total rings in all series 1646 \*F\*

\*E\* Total dated rings checked 1646 \*E\*

\*C\* Series intercorrelation .480 \*C\*

\*H\* Average mean sensitivity .243 \*H\*

\*A\* Segments, possible problems 10 \*A\*

\*\*\* Mean length of series 74.8 \*\*\*

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

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

422A 8 absent rings: 2003 2004 2005 2006 2007 2008 2009 2010

422B 18 absent rings: 1986 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008

2009 2010

26 absent rings 1.580%

PART 2: TIME PLOT OF TREE-RING SERIES: 12:29 Thu 07 Apr 2011 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

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

. . . . . . . . . . . . . . . . . . <======> . 292A 1 1944 2010 67

. . . . . . . . . . . . . . . . . . <======> . 292B 2 1947 2010 64

. . . . . . . . . . . . . . . . . .<=========> . 293A 3 1913 2010 98

. . . . . . . . . . . . . . . . . .<=========> . 293B 4 1910 2010 101

. . . . . . . . . . . . . . . . . . <=======> . 294A 5 1938 2010 73

. . . . . . . . . . . . . . . . . . <=======> . 294B 6 1938 2010 73

. . . . . . . . . . . . . . . . . . <======> . 295A 7 1942 2010 69

. . . . . . . . . . . . . . . . . . <=======> . 295B 8 1939 2010 72

. . . . . . . . . . . . . . . . . . <=======> . 296A 9 1933 2010 78

. . . . . . . . . . . . . . . . . . <=======> . 296B 10 1934 2010 77

. . . . . . . . . . . . . . . . . . <=======> . 297A 11 1939 2010 72

. . . . . . . . . . . . . . . . . . <========> . 297B 12 1925 2010 86

. . . . . . . . . . . . . . . . . . <=======> . 298A 13 1933 2010 78

. . . . . . . . . . . . . . . . . . <=======> . 298B 14 1936 2010 75

. . . . . . . . . . . . . . . . . . <======> . 299A 15 1943 2010 68

. . . . . . . . . . . . . . . . . . <=======> . 299B 16 1937 2010 74

. . . . . . . . . . . . . . . . . . .<====> . 300A 17 1963 2010 48

. . . . . . . . . . . . . . . . . . <=====> . 300B 18 1957 2010 54

. . . . . . . . . . . . . . . . . <==========> . 301A 19 1909 2010 102

. . . . . . . . . . . . . . . . . <==========> . 301B 20 1909 2010 102

. . . . . . . . . . . . . . . . . . <=====> . 422A 21 1953 2010 58

. . . . . . . . . . . . . . . . . . <=====> . 422B 22 1954 2010 57

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

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: 12:29 Thu 07 Apr 2011 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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1950 -.918 18 2000 -.349 22 1<<

1951 .436 18 2001 .606 22 1<<

1952 -.726 18 2002 1.768 22 1<<

1953 -1.509 19 2003 -.431 22 2

1954 .634 20 2004 -.248 22 2<<

1955 .776 20 2005 -.321 22 2<<

1956 -1.448 20 2006 -.702 22 2

1957 1.069 21 2007 1.561 22 2<<

1958 .939 21 2008 .554 22 2<<

1909 -.851 2 1959 .293 21 2009 .275 22 2<<

1910 -1.779 3 1960 -.562 21 2010 .879 22 2<<

1911 -1.443 3 1961 .403 21

1912 .009 3 1962 .347 21

1913 -.178 4 1963 .106 22

1914 1.629 4 1964 -.841 22

1915 2.034 4 1965 .215 22

1916 .763 4 1966 -.369 22

1917 .510 4 1967 -.263 22

1918 1.479 4 1968 -.545 22

1919 -.398 4 1969 .882 22

1920 -2.070 4 1970 .692 22

1921 -.701 4 1971 1.662 22

1922 1.321 4 1972 .111 22

1923 -1.357 4 1973 -.555 22

1924 -.234 4 1974 -.362 22

1925 -1.130 5 1975 .321 22

1926 -.059 5 1976 .720 22

1927 1.522 5 1977 -.118 22

1928 .704 5 1978 -1.100 22

1929 .330 5 1979 -1.080 22

1930 -.160 5 1980 .087 22

1931 -.514 5 1981 -.791 22

1932 1.491 5 1982 .378 22

1933 .644 7 1983 -.876 22

1934 -1.341 8 1984 -1.213 22

1935 .065 8 1985 -1.258 22

1936 .483 9 1986 -.070 22 1<<

1937 -.432 10 1987 .505 22

1938 .850 12 1988 1.100 22

1939 .732 14 1989 .849 22

1940 .055 14 1990 1.259 22

1941 1.506 14 1991 1.760 22

1942 .554 15 1992 1.778 22

1943 -1.168 16 1993 1.247 22

1944 -.774 17 1994 -.202 22 1<<

1945 .431 17 1995 -.301 22 1<<

1946 -.167 17 1996 -2.077 22 1

1947 .589 18 1997 -2.520 22 1

1948 -1.941 18 1998 -1.746 22 1

1949 -.570 18 1999 -1.150 22 1

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PART 4: Master Bar Plot: 12:29 Thu 07 Apr 2011 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--d 2000---a

1951------B 2001-------B

1952--c 2002----------G

1953f 2003---b

1954-------C 2004----a

1955--------C 2005----a

1956-f 2006--c

1957---------D 2007----------F

1958--------D 2008-------B

1909--c 1959------A 2009------A

1910g 1960---b 2010--------D

1911-f 1961------B

1912-----@ 1962------A

1913----a 1963-----@

1914----------G 1964--c

1915----------H 1965------A

1916--------C 1966---a

1917-------B 1967----a

1918----------F 1968---b

1919---b 1969--------D

1920h 1970--------C

1921--c 1971----------G

1922---------E 1972-----@

1923-e 1973---b

1924----a 1974---a

1925-e 1975------A

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

1927----------F 1977----@

1928--------C 1978-d

1929------A 1979-d

1930----a 1980-----@

1931---b 1981--c

1932----------F 1982------B

1933-------C 1983--d

1934-e 1984-e

1935-----@ 1985-e

1936-------B 1986-----@

1937---b 1987-------B

1938--------C 1988---------D

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

1940-----@ 1990---------E

1941----------F 1991----------G

1942-------B 1992----------G

1943-e 1993---------E

1944--c 1994----a

1945------B 1995----a

1946----a 1996h

1947-------B 1997j

1948h 1998g

1949---b 1999-e

PART 5: CORRELATION OF SERIES BY SEGMENTS: 12:29 Thu 07 Apr 2011 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 1900 1925 1950 1975

1949 1974 1999 2024

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

1 292A 1944 2010 .37 .42 .68

2 292B 1947 2010 .39 .44 .57

3 293A 1913 2010 .45 .55 .65 .60

4 293B 1910 2010 .33 .39 .53 .59

5 294A 1938 2010 .42 .71 .71

6 294B 1938 2010 .49 .64 .64

7 295A 1942 2010 .49 .53 .54

8 295B 1939 2010 .53 .60 .47

9 296A 1933 2010 .70 .71 .71

10 296B 1934 2010 .32A .30A .39

11 297A 1939 2010 .61 .63 .65

12 297B 1925 2010 .66 .76 .72

13 298A 1933 2010 .39 .48 .43

14 298B 1936 2010 .45 .57 .55

15 299A 1943 2010 .18B .21B .20B

16 299B 1937 2010 .08B .15B .29A

17 300A 1963 2010 .59

18 300B 1957 2010 .50 .60

19 301A 1909 2010 .37 .36 .44 .45

20 301B 1909 2010 .38 .26B .39 .43

21 422A 1953 2010 .50 .58

22 422B 1954 2010 .33A .43

Av segment correlation .38 .42 .50 .53

PART 6: POTENTIAL PROBLEMS: 12:29 Thu 07 Apr 2011 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

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

292A 1944 to 2010 67 years Series 1

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

Lower 1951< -.073 1956> -.027 1948> -.026 1953> -.021 1977> -.021 1949< -.012 Higher 2007 .029 1957 .016

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

1952 1953 4.5 SD

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

292B 1947 to 2010 64 years Series 2

[B] Entire series, effect on correlation ( .399) is:

Lower 1956> -.059 1951< -.050 1948> -.037 1978> -.024 2006< -.021 1970< -.015 Higher 1996 .044 1983 .026

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

293A 1913 to 2010 98 years Series 3

[B] Entire series, effect on correlation ( .499) is:

Lower 1923> -.063 1934> -.048 2003> -.013 1930> -.012 1913< -.008 1917> -.007 Higher 1948 .038 1996 .019

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

1934 +3.4 SD

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

293B 1910 to 2010 101 years Series 4

[B] Entire series, effect on correlation ( .427) is:

Lower 1923> -.049 1934> -.033 1920< -.016 1938< -.015 1985< -.015 1954< -.013 Higher 1996 .033 1943 .014

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

294A 1938 to 2010 73 years Series 5

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

Lower 1944< -.080 1941< -.034 1939< -.018 1950> -.017 1943> -.017 2008> -.010 Higher 1956 .025 1996 .022

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

294B 1938 to 2010 73 years Series 6

[B] Entire series, effect on correlation ( .547) is:

Lower 1948> -.032 1964< -.031 1941< -.029 1950> -.029 2007< -.017 1972> -.013 Higher 1996 .018 2003 .016

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

295A 1942 to 2010 69 years Series 7

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

Lower 1984> -.022 1952> -.016 1977> -.013 1968< -.011 1990< -.011 1942> -.011 Higher 1948 .023 2007 .022

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

295B 1939 to 2010 72 years Series 8

[B] Entire series, effect on correlation ( .536) is:

Lower 1939< -.041 1972> -.018 1982< -.016 1978> -.016 2010< -.015 1969< -.014 Higher 1956 .023 1943 .018

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

296A 1933 to 2010 78 years Series 9

[B] Entire series, effect on correlation ( .715) is:

Lower 1944> -.017 1983> -.016 1974< -.012 1946> -.012 1978> -.010 1953< -.009 Higher 1948 .034 1956 .021

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296B 1934 to 2010 77 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

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

1934 1983 0 .09 .15 -.13 -.30 .25 -.01 .06 .01 -.29 -.06 .32\*-.13 -.15 .28 -.06 -.02 -.07 -.13 .27 -.07 .03

1950 1999 0 .17 -.10 -.20 -.29 .03 -.11 .10 -.11 -.06 .15 .30\* .11 .07 .19 .13 -.16 -.08 -.11 .02 -.11 -.04

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

Lower 1969< -.053 1983> -.029 1956> -.019 1946> -.016 1981> -.014 1968> -.013 Higher 2003 .025 2007 .025

1934 to 1983 segment:

Lower 1969< -.071 1983> -.040 1956> -.025 1946> -.020 1981> -.019 1982< -.016 Higher 1934 .053 1943 .040

1950 to 1999 segment:

Lower 1969< -.093 1983> -.049 1956> -.025 1981> -.024 1968> -.021 1982< -.020 Higher 1957 .045 1953 .029

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297A 1939 to 2010 72 years Series 11

[B] Entire series, effect on correlation ( .662) is:

Lower 1967< -.020 1969< -.018 1944> -.014 1982< -.010 2006> -.010 1973> -.010 Higher 1956 .027 1948 .021

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297B 1925 to 2010 86 years Series 12

[B] Entire series, effect on correlation ( .663) is:

Lower 1938< -.024 1926< -.021 1950> -.011 1944> -.008 1961< -.007 2001< -.006 Higher 1956 .020 1932 .011

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

1948 -5.5 SD

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298A 1933 to 2010 78 years Series 13

[B] Entire series, effect on correlation ( .397) is:

Lower 1948> -.066 1934< -.020 1998> -.015 2010< -.013 1961< -.013 1958< -.011 Higher 2003 .027 1943 .026

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

1934 -5.0 SD

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

298B 1936 to 2010 75 years Series 14

[B] Entire series, effect on correlation ( .510) is:

Lower 1948> -.049 1964> -.030 1936< -.013 1950< -.012 1981> -.011 1955< -.011 Higher 1956 .041 1996 .021

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299A 1943 to 2010 68 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

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

1943 1992 6 .05 -.23 .10 .15 -.07 .11 .01 -.10 -.12 -.25 .18| .12 .04 .05 -.01 -.07 .31\* .04 .01 -.22 -.04

1950 1999 6 .11 -.15 .12 .16 -.10 -.02 -.08 -.14 -.21 -.28 .21| .11 .06 .14 -.04 -.07 .33\* .06 -.05 -.16 .02

1961 2010 -7 .10 .12 .12 .32\*-.10 -.08 -.24 -.18 -.27 -.17 .20| - - - - - - - - - -

[B] Entire series, effect on correlation ( .282) is:

Lower 1971< -.169 1943> -.045 1991< -.017 1964> -.015 1947< -.013 1958< -.010 Higher 1956 .046 2003 .042

1943 to 1992 segment:

Lower 1971< -.222 1943> -.058 1991< -.022 1964> -.019 1947< -.017 1958< -.013 Higher 1956 .077 1948 .060

1950 to 1999 segment:

Lower 1971< -.248 1991< -.024 1964> -.020 1958< -.014 1993< -.013 1981> -.013 Higher 1956 .079 1954 .035

1961 to 2010 segment:

Lower 1971< -.226 1991< -.022 1964> -.022 1981> -.014 1978> -.012 2010< -.012 Higher 2003 .073 2002 .036

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

1972 -4.5 SD

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299B 1937 to 2010 74 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

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

1937 1986 10 -.04 -.03 .04 .04 -.06 .07 -.16 .04 -.15 -.15 .08| .19 -.08 -.02 -.07 -.03 .17 .10 .13 -.12 .19\*

1950 1999 10 .05 -.10 -.02 .04 -.07 -.07 -.22 -.04 -.17 -.11 .15| .21 .07 .16 -.14 -.05 -.11 .12 .06 -.03 .23\*

1961 2010 0 .04 .10 .02 .20 .00 .00 -.28 -.06 -.17 -.23 .29\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .310) is:

Lower 1971< -.129 1964> -.024 1986< -.021 1947< -.015 1985> -.014 1976< -.013 Higher 2003 .056 1996 .031

1937 to 1986 segment:

Lower 1971< -.189 1964> -.031 1986< -.030 1947< -.022 1976< -.019 1985> -.017 Higher 1948 .046 1941 .040

1950 to 1999 segment:

Lower 1971< -.202 1964> -.032 1986< -.032 1976< -.021 1985> -.018 1968> -.014 Higher 1996 .068 1990 .031

1961 to 2010 segment:

Lower 1971< -.173 1964> -.038 1986< -.026 1985> -.022 1968> -.017 1976< -.016 Higher 2003 .096 1996 .045

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

1973 -4.8 SD

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300A 1963 to 2010 48 years Series 17

[B] Entire series, effect on correlation ( .591) is:

Lower 1964> -.030 1963< -.027 2003> -.017 1977< -.017 1985> -.014 1984> -.014 Higher 1996 .068 1983 .020

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300B 1957 to 2010 54 years Series 18

[B] Entire series, effect on correlation ( .526) is:

Lower 1957< -.041 1964> -.027 1958< -.026 1975< -.024 1977> -.019 1988< -.016 Higher 1996 .067 2003 .029

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301A 1909 to 2010 102 years Series 19

[B] Entire series, effect on correlation ( .390) is:

Lower 1920> -.053 1919> -.020 1911< -.017 1945< -.015 1928< -.012 2006> -.012 Higher 1923 .062 1948 .021

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

1920 +4.4 SD

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

301B 1909 to 2010 102 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

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

1925 1974 4 .22 -.12 -.15 .06 .02 -.06 .16 -.02 .15 .01 .26|-.15 -.15 .02 .30\* .09 -.05 -.20 .04 -.04 -.02

[B] Entire series, effect on correlation ( .399) is:

Lower 1920> -.031 1928> -.019 1934> -.018 1945< -.017 1930< -.015 1919> -.015 Higher 1923 .063 1948 .022

1925 to 1974 segment:

Lower 1928> -.043 1945< -.039 1934> -.035 1930< -.033 1954< -.028 1955< -.020 Higher 1948 .078 1941 .036

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

1920 +3.0 SD

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422A 1953 to 2010 58 years Series 21

[B] Entire series, effect on correlation ( .491) is:

Lower 1953> -.040 1992< -.021 1972> -.021 1985> -.010 1983> -.010 1960> -.009 Higher 1971 .017 1996 .015

[D] 8 Absent rings: Year Master N series Absent

2003 -.431 22 2

2004 -.248 22 2 >> WARNING: Ring is not usually narrow

2005 -.321 22 2 >> WARNING: Ring is not usually narrow

2006 -.702 22 2

2007 1.561 22 2 >> WARNING: Ring is not usually narrow

2008 .554 22 2 >> WARNING: Ring is not usually narrow

2009 .275 22 2 >> WARNING: Ring is not usually narrow

2010 .879 22 2 >> WARNING: Ring is not usually narrow

>> WARNING: Last ring in series is ABSENT

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

1956 -5.6 SD

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

422B 1954 to 2010 57 years Series 22

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

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

1954 2003 0 -.22 .16 -.21 -.11 -.06 .22 -.02 .06 .04 .26 .33\* .26 -.02 -.01 -.26 -.34 -.32 -.17 - - -

[B] Entire series, effect on correlation ( .279) is:

Lower 1965< -.055 1986< -.032 1957< -.031 1956> -.019 2002< -.012 2003> -.009 Higher 1964 .028 1983 .022

1954 to 2003 segment:

Lower 1965< -.084 1986< -.050 1957< -.035 1956> -.033 2003> -.018 1972> -.013 Higher 1964 .034 1954 .033

[D] 18 Absent rings: Year Master N series Absent

1986 -.070 22 1 >> WARNING: Ring is not usually narrow

1994 -.202 22 1 >> WARNING: Ring is not usually narrow

1995 -.301 22 1 >> WARNING: Ring is not usually narrow

1996 -2.077 22 1

1997 -2.520 22 1

1998 -1.746 22 1

1999 -1.150 22 1

2000 -.349 22 1 >> WARNING: Ring is not usually narrow

2001 .606 22 1 >> WARNING: Ring is not usually narrow

2002 1.768 22 1 >> WARNING: Ring is not usually narrow

2003 -.431 22 2

2004 -.248 22 2 >> WARNING: Ring is not usually narrow

2005 -.321 22 2 >> WARNING: Ring is not usually narrow

2006 -.702 22 2

2007 1.561 22 2 >> WARNING: Ring is not usually narrow

2008 .554 22 2 >> WARNING: Ring is not usually narrow

2009 .275 22 2 >> WARNING: Ring is not usually narrow

2010 .879 22 2 >> WARNING: Ring is not usually narrow

>> WARNING: Last ring in series is ABSENT

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

2010 +5.1 SD

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PART 7: DESCRIPTIVE STATISTICS: 12:29 Thu 07 Apr 2011 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 292A 1944 2010 67 3 0 .462 2.04 4.09 .806 .708 .243 2.80 .508 .112 1

2 292B 1947 2010 64 3 0 .399 2.65 5.36 1.292 .827 .236 2.64 .555 -.062 2

3 293A 1913 2010 98 4 0 .499 1.62 3.84 .778 .840 .248 2.54 .411 .060 1

4 293B 1910 2010 101 4 0 .427 1.49 3.45 .812 .851 .228 2.67 .476 .064 1

5 294A 1938 2010 73 3 0 .495 1.53 3.55 .741 .769 .259 2.65 .445 -.004 1

6 294B 1938 2010 73 3 0 .547 2.25 5.10 1.059 .787 .255 2.62 .435 .067 1

7 295A 1942 2010 69 3 0 .559 1.58 4.42 .935 .825 .237 2.76 .546 -.020 1

8 295B 1939 2010 72 3 0 .536 1.56 4.83 1.289 .937 .243 3.01 .547 -.027 1

9 296A 1933 2010 78 3 0 .715 1.32 4.77 1.204 .937 .279 2.61 .558 -.077 2

10 296B 1934 2010 77 3 2 .455 1.64 6.07 1.603 .952 .292 2.74 .499 .011 1

11 297A 1939 2010 72 3 0 .662 1.85 3.68 .836 .764 .268 2.42 .371 -.029 1

12 297B 1925 2010 86 3 0 .663 1.82 4.00 1.068 .861 .240 2.55 .334 -.035 1

13 298A 1933 2010 78 3 0 .397 1.91 3.51 .605 .593 .217 2.53 .361 -.019 1

14 298B 1936 2010 75 3 0 .510 1.75 2.90 .588 .614 .249 2.74 .606 .008 1

15 299A 1943 2010 68 3 3 .282 1.72 3.28 .806 .774 .270 2.68 .463 .117 1

16 299B 1937 2010 74 3 3 .310 1.81 3.71 .929 .788 .288 2.85 .513 .024 1

17 300A 1963 2010 48 1 0 .591 2.08 3.76 .951 .929 .169 2.60 .636 -.011 1

18 300B 1957 2010 54 2 0 .526 2.93 5.66 .740 .515 .183 2.80 .533 -.038 1

19 301A 1909 2010 102 4 0 .390 1.37 3.70 .865 .903 .193 2.93 .416 .024 1

20 301B 1909 2010 102 4 1 .399 1.31 3.63 .696 .832 .243 2.65 .421 -.009 1

21 422A 1953 2010 58 2 0 .491 .97 2.05 .620 .933 .214 2.40 .327 .015 1

22 422B 1954 2010 57 2 1 .279 1.03 3.09 .920 .867 .274 4.62 .665 .501 1

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Total or mean: 1646 65 10 .480 1.71 6.07 .912 .813 .243 4.62 .475 .027

- = [ COFECHA 153 COF ] = -