[] Dendrochronology Program Library Run BLT Program COF 13:49 Thu 07 Nov 2013 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 28802

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

Title of run: Run4

File of DATED series: BLTMid\_BEAL\_4

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 1865 to 2012 148 years

Continuous time span is 1865 to 2012 148 years

Portion with two or more series is 1903 to 2012 110 years

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

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

\*O\* Master series 1865 2012 148 yrs \*O\*

\*F\* Total rings in all series 1533 \*F\*

\*E\* Total dated rings checked 1495 \*E\*

\*C\* Series intercorrelation .466 \*C\*

\*H\* Average mean sensitivity .287 \*H\*

\*A\* Segments, possible problems 6 \*A\*

\*\*\* Mean length of series 80.7 \*\*\*

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

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

434B 1 absent rings: 1964

1 absent rings .065%

PART 2: TIME PLOT OF TREE-RING SERIES: Run4 13:49 Thu 07 Nov 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

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

. . . . . . . . . . . . . . . . . . <======> . 420A 1 1941 2012 72

. . . . . . . . . . . . . . . . . . <========> . 420B 2 1920 2012 93

. . . . . . . . . . . . . . . . . <==========> . 421A 3 1903 2012 110

. . . . . . . . . . . . . . . . . . <========> . 421B 4 1920 2012 93

. . . . . . . . . . . . . . . . . . <========> . 425A 5 1929 2012 84

. . . . . . . . . . . . . . . . . . <======> . 428A 6 1944 2012 69

. . . . . . . . . . . . . . . . . . <=====> . 428B 7 1958 2012 55

. . . . . . . . . . . . . . . . . . <========> . 431A 8 1926 2012 87

. . . . . . . . . . . . . . . . . . <========> . 431B 9 1923 2012 90

. . . . . . . . . . . . . . . . . .<=========> . 434A 10 1910 2012 103

. . . . . . . . . . . . . . . . .<==============> . 434B 11 1865 2012 148

. . . . . . . . . . . . . . . . . . . <===> . 435A 12 1979 2012 34

. . . . . . . . . . . . . . . . . . .<====> . 435B 13 1969 2012 44

. . . . . . . . . . . . . . . . . . .<====> . 437A 14 1968 2012 45

. . . . . . . . . . . . . . . . . . <========> . 438A 15 1926 2012 87

. . . . . . . . . . . . . . . . . .<=========> . 440A 16 1916 2012 97

. . . . . . . . . . . . . . . . . <==========> . 440B 17 1903 2012 110

. . . . . . . . . . . . . . . . . . <=====> . 441A 18 1953 2012 60

. . . . . . . . . . . . . . . . . . .<====> . 441B 19 1961 2012 52

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

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: Run4 13:49 Thu 07 Nov 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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1900 -3.688 1 1950 -.609 13 2000 -1.230 19

1901 -1.170 1 1951 .218 13 2001 -1.916 19

1902 1.165 1 1952 .728 13 2002 -.032 19

1903 .084 3 1953 -.184 14 2003 .484 19

1904 1.057 3 1954 .052 14 2004 .706 19

1905 .159 3 1955 .966 14 2005 .338 19

1906 1.854 3 1956 .920 14 2006 .047 19

1907 -.151 3 1957 -.038 14 2007 .657 19

1908 -.954 3 1958 -.838 15 2008 .865 19

1909 -.882 3 1959 -.943 15 2009 -.679 19

1910 .116 4 1960 .689 15 2010 -.126 19

1911 .879 4 1961 .642 16 2011 -.111 19

1912 -.273 4 1962 .035 16 2012 .937 19

1913 -1.179 4 1963 -.135 16

1914 .206 4 1964 -1.238 16 1

1865 -.507 1 1915 1.531 4 1965 -1.335 16

1866 -.987 1 1916 .409 5 1966 .021 16

1867 1.522 1 1917 .345 5 1967 -.084 16

1868 -2.284 1 1918 .741 5 1968 -.157 17

1869 1.004 1 1919 -.333 5 1969 .592 18

1870 1.206 1 1920 .622 7 1970 .820 18

1871 1.634 1 1921 .526 7 1971 .074 18

1872 -.155 1 1922 .214 7 1972 .180 18

1873 1.617 1 1923 -1.547 8 1973 1.510 18

1874 -.079 1 1924 .459 8 1974 .164 18

1875 .590 1 1925 .339 8 1975 .465 18

1876 -.811 1 1926 -.114 10 1976 .052 18

1877 1.961 1 1927 .126 10 1977 .049 18

1878 -.522 1 1928 -.273 10 1978 .772 18

1879 1.120 1 1929 -.428 11 1979 .195 19

1880 -2.088 1 1930 -.542 11 1980 -1.682 19

1881 -.450 1 1931 .427 11 1981 -1.715 19

1882 -1.365 1 1932 -.549 11 1982 .207 19

1883 -.517 1 1933 -1.006 11 1983 .423 19

1884 -1.822 1 1934 -.107 11 1984 -.502 19

1885 1.804 1 1935 .550 11 1985 -.857 19

1886 -.087 1 1936 -2.516 11 1986 -.846 19

1887 1.067 1 1937 -.132 11 1987 .180 19

1888 1.549 1 1938 .942 11 1988 1.207 19

1889 -.485 1 1939 1.371 11 1989 .319 19

1890 -2.031 1 1940 .936 11 1990 .837 19

1891 -3.360 1 1941 .080 12 1991 .462 19

1892 1.165 1 1942 .498 12 1992 -.208 19

1893 1.666 1 1943 1.207 12 1993 -.451 19

1894 .164 1 1944 .374 13 1994 -.337 19

1895 -.371 1 1945 -.466 13 1995 1.080 19

1896 .516 1 1946 -1.583 13 1996 .290 19

1897 .964 1 1947 .042 13 1997 -.225 19

1898 .777 1 1948 -1.692 13 1998 -1.281 19

1899 -.201 1 1949 -.312 13 1999 .006 19

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PART 4: Master Bar Plot: Run4 13:49 Thu 07 Nov 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

1900o 1950--b 2000-e

1901-e 1951------A 2001h

1902---------E 1952--------C 2002----@

1903-----@ 1953---a 2003-------B

1904---------D 1954-----@ 2004--------C

1905------A 1955---------D 2005------A

1906----------G 1956---------D 2006-----@

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

1908-d 1958-c 2008--------C

1909-d 1959-d 2009--c

1910-----@ 1960--------C 2010----a

1911--------D 1961--------C 2011----@

1912---a 1962-----@ 2012---------D

1913-e 1963----a

1914------A 1964-e

1865--b 1915----------F 1965-e

1866-d 1916-------B 1966-----@

1867----------F 1917------A 1967----@

1868i 1918--------C 1968----a

1869---------D 1919---a 1969-------B

1870---------E 1920--------B 1970--------C

1871----------G 1921-------B 1971-----@

1872----a 1922------A 1972------A

1873----------F 1923f 1973----------F

1874----@ 1924-------B 1974------A

1875-------B 1925------A 1975-------B

1876-c 1926----@ 1976-----@

1877----------H 1927-----A 1977-----@

1878--b 1928---a 1978--------C

1879---------D 1929--b 1979------A

1880h 1930--b 1980g

1881--b 1931-------B 1981g

1882-e 1932--b 1982------A

1883--b 1933-d 1983-------B

1884g 1934----@ 1984--b

1885----------G 1935-------B 1985-c

1886----@ 1936j 1986-c

1887---------D 1937----a 1987------A

1888----------F 1938---------D 1988---------E

1889--b 1939----------E 1989------A

1890h 1940---------D 1990--------C

1891m 1941-----@ 1991-------B

1892---------E 1942-------B 1992---a

1893----------G 1943---------E 1993--b

1894------A 1944-------A 1994---a

1895---a 1945--b 1995---------D

1896-------B 1946f 1996------A

1897---------D 1947-----@ 1997---a

1898--------C 1948g 1998-e

1899---a 1949---a 1999-----@

PART 5: CORRELATION OF SERIES BY SEGMENTS: Run4 13:49 Thu 07 Nov 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 1900 1925 1950 1975

1949 1974 1999 2024

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

1 420A 1941 2012 .49 .52 .49

2 420B 1920 2012 .20B .24A .45 .54

3 421A 1903 2012 .68 .75 .30A .17B

4 421B 1920 2012 .56 .60 .36 .40

5 425A 1929 2012 .58 .42 .52

6 428A 1944 2012 .55 .51 .53

7 428B 1958 2012 .48 .56

8 431A 1926 2012 .40 .49 .53

9 431B 1923 2012 .62 .68 .39 .40

10 434A 1910 2012 .27A .34 .39 .46

11 434B 1865 2012 .41 .31A .39 .48

12 435A 1979 2012 .35

13 435B 1969 2012 .35

14 437A 1968 2012 .38

15 438A 1926 2012 .56 .62 .45

16 440A 1916 2012 .51 .54 .42 .39

17 440B 1903 2012 .50 .55 .58 .61

18 441A 1953 2012 .37 .46

19 441B 1961 2012 .43 .42

Av segment correlation .47 .51 .44 .46

PART 6: POTENTIAL PROBLEMS: Run4 13:49 Thu 07 Nov 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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420A 1941 to 2012 72 years Series 1

[B] Entire series, effect on correlation ( .507) is:

Lower 2001> -.044 1947< -.021 1972< -.014 1980> -.014 1984> -.013 1965> -.013 Higher 1946 .031 1998 .026

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

2000 2001 4.6 SD

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

2000 -5.3 SD

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

420B 1920 to 2012 93 years Series 2

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

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

1920 1969 2 .16 .16 -.01 -.15 -.07 .13 -.12 -.23 .00 -.12 .20| .06 .32\*-.12 .17 .05 -.08 -.02 .07 -.19 -.16

1925 1974 0 .24 .11 -.10 -.06 .00 .03 -.16 -.18 -.11 -.17 .24\* .01 .20 -.08 .11 .04 .06 -.05 .00 -.12 .02

[B] Entire series, effect on correlation ( .368) is:

Lower 1936> -.067 1923> -.024 1921< -.016 1957< -.013 1947< -.012 1965> -.012 Higher 1980 .036 1946 .028

1920 to 1969 segment:

Lower 1936> -.071 1921< -.031 1923> -.029 1947< -.024 1957< -.019 1965> -.017 Higher 1946 .081 1948 .026

1925 to 1974 segment:

Lower 1936> -.102 1965> -.021 1947< -.020 1926> -.017 1950> -.015 1957< -.015 Higher 1946 .073 1973 .025

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

1923 +3.4 SD; 1936 +3.1 SD; 1965 +3.6 SD

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421A 1903 to 2012 110 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

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1950 1999 0 .14 .25 -.02 -.08 -.24 .06 .12 .03 -.18 .05 .30\*-.17 -.18 -.05 -.02 .06 .14 .00 .04 .06 -.16

1963 2012 -4 .11 .33 .08 -.11 -.14 .03 .33\* .11 -.15 .08 .17| - - - - - - - - - -

[B] Entire series, effect on correlation ( .507) is:

Lower 1998> -.029 1964> -.022 2000> -.017 1986> -.015 1916< -.015 2002< -.015 Higher 1936 .104 1948 .028

1950 to 1999 segment:

Lower 1998> -.077 1964> -.055 1986> -.039 1996> -.031 1990< -.030 1988< -.024 Higher 1980 .107 1973 .033

1963 to 2012 segment:

Lower 1998> -.063 1964> -.045 2002< -.036 1986> -.032 2000> -.031 1996> -.025 Higher 1980 .112 1973 .041

[E] Outliers 5 3.0 SD above or -4.5 SD below mean for year

1936 -6.0 SD; 1964 +3.1 SD; 1965 +3.1 SD; 1986 +3.4 SD; 1998 +3.5 SD

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421B 1920 to 2012 93 years Series 4

[B] Entire series, effect on correlation ( .502) is:

Lower 1926< -.063 1975< -.023 1980> -.017 1968< -.012 1994< -.011 1996< -.010 Higher 1936 .077 1948 .029

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425A 1929 to 2012 84 years Series 5

[B] Entire series, effect on correlation ( .533) is:

Lower 1959> -.019 1951< -.016 2008< -.016 1997> -.014 2000< -.011 1958> -.010 Higher 1936 .033 1973 .018

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

1959 +3.5 SD

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428A 1944 to 2012 69 years Series 6

[B] Entire series, effect on correlation ( .593) is:

Lower 1967< -.065 1953> -.015 1980> -.013 1977< -.013 1964> -.009 1978< -.008 Higher 1948 .036 1998 .022

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

1967 -4.6 SD

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428B 1958 to 2012 55 years Series 7

[B] Entire series, effect on correlation ( .507) is:

Lower 2000> -.033 1958> -.032 1962< -.027 1976< -.015 1977< -.013 1974> -.012 Higher 1998 .040 1973 .020

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431A 1926 to 2012 87 years Series 8

[B] Entire series, effect on correlation ( .483) is:

Lower 1973< -.024 1936> -.024 1974> -.016 1935< -.016 1998> -.015 1979> -.012 Higher 1980 .040 2001 .019

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

1979 +3.1 SD; 2001 -6.0 SD

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431B 1923 to 2012 90 years Series 9

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

Lower 1923> -.037 1981> -.022 2009> -.020 1980> -.012 1975< -.011 2005< -.011 Higher 1936 .072 1948 .026

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

1923 +3.4 SD; 1981 +4.0 SD

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434A 1910 to 2012 103 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

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

1910 1959 0 .12 -.15 -.05 -.21 .04 -.21 .14 -.17 -.01 .17 .27\*-.07 .01 .17 .09 -.08 -.08 -.10 -.23 .11 .07

[B] Entire series, effect on correlation ( .364) is:

Lower 1912> -.036 1936> -.035 1916< -.020 1980> -.018 1970< -.015 1920< -.008 Higher 1946 .016 1915 .014

1910 to 1959 segment:

Lower 1912> -.063 1936> -.045 1916< -.035 1927< -.014 1920< -.014 1947< -.013 Higher 1923 .036 1946 .035

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

1912 +3.5 SD; 1923 -5.2 SD

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434B 1865 to 2012 148 years Series 11

[\*] Early part of series cannot be checked from 1865 to 1902 -- 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

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

1925 1974 0 -.05 -.03 .04 -.19 -.19 .03 .24 .06 -.23 .12 .31\* .16 .13 .03 .12 .00 -.11 -.30 -.10 -.12 -.08

[B] Entire series, effect on correlation ( .418) is:

Lower 1936> -.047 1984< -.020 1903> -.015 1916> -.011 1981> -.011 1949< -.011 Higher 1906 .021 1998 .019

1925 to 1974 segment:

Lower 1936> -.101 1949< -.028 1935< -.025 1958> -.024 1961< -.021 1959> -.020 Higher 1946 .040 1939 .036

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

1935 1936 4.2 SD

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

1964 -1.238 16 1

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

1903 +3.0 SD

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435A 1979 to 2012 34 years Series 12

[B] Entire series, effect on correlation ( .354) is:

Lower 1984> -.063 1998> -.029 1991< -.022 2000> -.017 2003< -.015 2001> -.012 Higher 1988 .037 1980 .027

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

2009 -6.2 SD

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435B 1969 to 2012 44 years Series 13

[B] Entire series, effect on correlation ( .348) is:

Lower 1998> -.059 1984> -.043 2000> -.036 1969< -.033 1980> -.027 2004< -.017 Higher 2001 .089 2009 .036

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437A 1968 to 2012 45 years Series 14

[B] Entire series, effect on correlation ( .384) is:

Lower 2008< -.084 1998> -.042 2000> -.029 1986> -.019 1996> -.018 1989> -.016 Higher 1980 .152 1973 .032

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

1980 -5.9 SD

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438A 1926 to 2012 87 years Series 15

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

Lower 2001> -.030 2009> -.029 1939< -.014 1995< -.013 1932> -.012 1974> -.012 Higher 1936 .062 1980 .038

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

2001 +3.3 SD

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440A 1916 to 2012 97 years Series 16

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

Lower 1948> -.035 1952< -.023 1925< -.020 1980> -.019 1916> -.017 2009> -.017 Higher 1936 .130 1923 .018

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

1948 +3.4 SD; 1949 +3.5 SD; 1966 +3.6 SD

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440B 1903 to 2012 110 years Series 17

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

Lower 1918< -.023 1938< -.021 1946> -.021 1939< -.019 1903< -.014 1917< -.012 Higher 1936 .097 1998 .014

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

1994 +3.0 SD

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441A 1953 to 2012 60 years Series 18

[B] Entire series, effect on correlation ( .401) is:

Lower 1969< -.055 1998> -.047 2000> -.043 1986> -.029 1959> -.026 1984> -.013 Higher 1980 .076 2001 .065

[E] Outliers 4 3.0 SD above or -4.5 SD below mean for year

1959 +3.2 SD; 1969 -4.8 SD; 1986 +3.5 SD; 2000 +3.0 SD

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441B 1961 to 2012 52 years Series 19

[B] Entire series, effect on correlation ( .419) is:

Lower 1989< -.106 1998> -.055 2009> -.018 1984> -.016 1966< -.013 1985> -.013 Higher 1980 .089 2000 .038

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

1981 -5.3 SD

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PART 7: DESCRIPTIVE STATISTICS: Run4 13:49 Thu 07 Nov 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 420A 1941 2012 72 3 0 .507 1.91 5.86 1.104 .786 .310 2.74 .434 .019 1

2 420B 1920 2012 93 4 2 .368 1.72 3.79 .971 .806 .296 2.51 .530 -.047 1

3 421A 1903 2012 110 4 2 .507 2.16 4.63 1.074 .754 .284 2.44 .345 -.007 1

4 421B 1920 2012 93 4 0 .502 2.21 4.52 .940 .721 .255 2.54 .475 -.028 1

5 425A 1929 2012 84 3 0 .533 2.14 6.45 1.735 .885 .300 2.58 .395 .022 1

6 428A 1944 2012 69 3 0 .593 1.97 3.75 .782 .592 .323 2.64 .443 -.027 1

7 428B 1958 2012 55 2 0 .507 2.31 5.86 1.514 .913 .280 2.72 .568 .012 1

8 431A 1926 2012 87 3 0 .483 1.94 5.09 .888 .780 .220 2.63 .444 -.017 2

9 431B 1923 2012 90 4 0 .515 2.00 3.98 .629 .560 .237 2.65 .469 -.024 1

10 434A 1910 2012 103 4 1 .364 .94 4.22 .767 .833 .357 2.72 .454 -.066 1

11 434B 1865 2012 148 4 1 .418 1.26 5.02 .825 .823 .326 2.62 .419 -.018 1

12 435A 1979 2012 34 1 0 .354 2.31 5.18 1.098 .491 .385 2.41 .472 -.016 1

13 435B 1969 2012 44 1 0 .348 4.45 7.27 1.145 .450 .220 2.68 .631 -.057 1

14 437A 1968 2012 45 1 0 .384 3.52 5.84 1.683 .833 .253 2.49 .430 .027 2

15 438A 1926 2012 87 3 0 .495 2.28 5.59 1.011 .615 .292 2.69 .536 -.026 2

16 440A 1916 2012 97 4 0 .464 2.03 5.56 1.038 .744 .269 2.72 .393 -.045 1

17 440B 1903 2012 110 4 0 .536 1.81 5.05 1.055 .742 .333 2.52 .340 -.037 1

18 441A 1953 2012 60 2 0 .401 2.56 3.84 .679 .515 .213 2.54 .551 -.017 2

19 441B 1961 2012 52 2 0 .419 2.61 4.18 .919 .700 .237 2.58 .431 .000 2

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

Total or mean: 1533 56 6 .466 2.04 7.27 1.011 .731 .287 2.74 .449 -.021

- = [ COFECHA BLT COF ] = -