[] Dendrochronology Program Library Run BFHIG Program COF 00:00 ®¯® 00 0000 Page 1

[]

[] P R O G R A M C O F E C H A Version 6.06P -30

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

File of DATED series: BFhigh2.rwl

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 0.3281

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 1907 to 2011 105 years

Continuous time span is 1907 to 2011 105 years

Portion with two or more series is 1907 to 2011 105 years

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

\*C\* Number of dated series 38 \*C\*

\*O\* Master series 1907 2011 105 yrs \*O\*

\*F\* Total rings in all series 2228 \*F\*

\*E\* Total dated rings checked 2228 \*E\*

\*C\* Series intercorrelation 0.540 \*C\*

\*H\* Average mean sensitivity 0.195 \*H\*

\*A\* Segments, possible problems 8 \*A\*

\*\*\* Mean length of series 58.6 \*\*\*

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

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

No ring measurements of zero value

PART 2: TIME PLOT OF TREE-RING SERIES: 00:00 ®¯® 00 0000 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

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

. . . . . . . . . . . . . . . . . . .<====> . 13a0197A 1 1964 2011 48

. . . . . . . . . . . . . . . . . . .<====> . 13a0197B 2 1964 2011 48

. . . . . . . . . . . . . . . . . <==========> . 13a0201A 3 1907 2011 105

. . . . . . . . . . . . . . . . . <==========> . 13a0201B 4 1907 2011 105

. . . . . . . . . . . . . . . . . . .<====> . 13a0202A 5 1967 2011 45

. . . . . . . . . . . . . . . . . . .<====> . 13a0202B 6 1967 2011 45

. . . . . . . . . . . . . . . . . . . <===> . 21a0200A 7 1971 2011 41

. . . . . . . . . . . . . . . . . . . <===> . 21a0200B 8 1971 2011 41

. . . . . . . . . . . . . . . . . . . <===> . 21a0206A 9 1975 2011 37

. . . . . . . . . . . . . . . . . . . <===> . 21a0206B 10 1975 2011 37

. . . . . . . . . . . . . . . . . . .<====> . 21a0t92A 11 1965 2011 47

. . . . . . . . . . . . . . . . . . .<====> . 21a0t92B 12 1965 2011 47

. . . . . . . . . . . . . . . . . . <======> . 24a0t30A 13 1948 2011 64

. . . . . . . . . . . . . . . . . . <======> . 24a0t30B 14 1948 2011 64

. . . . . . . . . . . . . . . . . . <======> . 24a0t80A 15 1948 2011 64

. . . . . . . . . . . . . . . . . . <==> . . 24a0t80B 16 1948 1972 25

. . . . . . . . . . . . . . . . . . . <==> . 24a0t80B 17 1980 2011 32

. . . . . . . . . . . . . . . . . . <=======> . 24at111A 18 1937 2011 75

. . . . . . . . . . . . . . . . . . <=======> . 24at111B 19 1937 2011 75

. . . . . . . . . . . . . . . . . . <=======> . 25a00t6A 20 1938 2011 74

. . . . . . . . . . . . . . . . . . <=======> . 25a00t6B 21 1938 2011 74

. . . . . . . . . . . . . . . . . . <=======> . 25a0222A 22 1939 2011 73

. . . . . . . . . . . . . . . . . . <=======> . 25a0222B 23 1939 2011 73

. . . . . . . . . . . . . . . . . . <======> . 25a0311A 24 1947 2011 65

. . . . . . . . . . . . . . . . . . <======> . 25a0311B 25 1943 2011 69

. . . . . . . . . . . . . . . . . . <=======> . 26a00t2A 26 1939 2011 73

. . . . . . . . . . . . . . . . . . <=======> . 26a00t2B 27 1939 2011 73

. . . . . . . . . . . . . . . . . . <=====> . 26a0t32A 28 1956 2011 56

. . . . . . . . . . . . . . . . . . <=====> . 26a0t32B 29 1956 2011 56

. . . . . . . . . . . . . . . . . . <=====> . 26a0t46A 30 1951 2011 61

. . . . . . . . . . . . . . . . . . . <> . 26a0t46B 31 2001 2011 11

. . . . . . . . . . . . . . . . . . <====> . 26a0t46C 32 1951 2000 50

. . . . . . . . . . . . . . . . . . <=====> . 31a0t31A 33 1959 2011 53

. . . . . . . . . . . . . . . . . . <=====> . 31a0t31B 34 1952 2011 60

. . . . . . . . . . . . . . . . . . <=====> . 31a0t47A 35 1951 2011 61

. . . . . . . . . . . . . . . . . . <=====> . 31a0t47B 36 1955 2011 57

. . . . . . . . . . . . . . . . . . <======> . 31at112A 37 1941 2011 71

. . . . . . . . . . . . . . . . . . <=======> . 31at112B 38 1939 2011 73

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

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: 00:00 ®¯® 00 0000 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 0.633 18 2000 -0.045 36

1951 -0.246 21 2001 1.367 36

1952 -1.124 22 2002 -0.038 36

1953 -1.320 22 2003 -0.630 36

1954 -0.796 22 2004 1.225 36

1955 -0.298 23 2005 0.693 36

1956 -1.707 25 2006 -0.879 36

1907 0.844 2 1957 -0.027 25 2007 1.114 36

1908 -0.404 2 1958 -0.298 25 2008 -1.296 36

1909 1.513 2 1959 0.229 26 2009 -0.957 36

1910 -1.085 2 1960 -0.295 26 2010 0.089 36

1911 -0.291 2 1961 1.602 26 2011 0.443 36

1912 0.682 2 1962 0.421 26

1913 1.504 2 1963 0.213 26

1914 1.420 2 1964 1.864 28

1915 1.187 2 1965 0.729 30

1916 -2.159 2 1966 -0.647 30

1917 -2.062 2 1967 -0.904 32

1918 -0.018 2 1968 -0.005 32

1919 -1.966 2 1969 -1.072 32

1920 -1.417 2 1970 0.574 32

1921 0.022 2 1971 0.673 34

1922 0.952 2 1972 0.546 34

1923 -2.903 2 1973 0.330 33

1924 0.342 2 1974 -0.796 33

1925 1.709 2 1975 0.132 35

1926 0.678 2 1976 -0.262 35

1927 0.227 2 1977 -0.598 35

1928 1.561 2 1978 -1.053 35

1929 0.932 2 1979 -0.920 35

1930 -1.474 2 1980 1.313 36

1931 -1.025 2 1981 -1.473 36

1932 -1.324 2 1982 -0.688 36

1933 0.086 2 1983 0.767 36

1934 1.661 2 1984 -0.335 36

1935 2.292 2 1985 1.223 36

1936 1.037 2 1986 -0.005 36

1937 -1.027 4 1987 0.548 36

1938 -1.095 6 1988 0.295 36

1939 0.771 11 1989 -0.359 36

1940 -0.310 11 1990 0.133 36

1941 0.728 12 1991 -0.159 36

1942 0.821 12 1992 -0.796 36

1943 0.627 13 1993 0.387 36

1944 -0.042 13 1994 -1.446 36

1945 -0.317 13 1995 0.647 36

1946 0.814 13 1996 -1.092 36

1947 0.865 14 1997 -0.058 36

1948 -0.716 18 1998 -0.600 36

1949 0.516 18 1999 0.880 36

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PART 4: Master Bar Plot: 00:00 ®¯® 00 0000 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-------C 2000-----@

1951----a 2001---------E

1952-d 2002-----@

1953e 2003--c

1954--c 2004---------E

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

1956g 2006--d

1907--------C 1957-----@ 2007---------D

1908---b 1958----a 2008e

1909----------F 1959------A 2009-d

1910-d 1960----a 2010-----@

1911----a 1961----------F 2011------B

1912-------C 1962------B

1913----------F 1963------A

1914----------F 1964----------G

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

1916i 1966--c

1917h 1967--d

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

1919h 1969-d

1920f 1970-------B

1921-----@ 1971-------C

1922--------D 1972-------B

1923l 1973------A

1924------A 1974--c

1925----------G 1975-----A

1926-------C 1976----a

1927------A 1977---b

1928----------F 1978-d

1929--------D 1979--d

1930f 1980---------E

1931-d 1981f

1932e 1982--c

1933-----@ 1983--------C

1934----------G 1984---a

1935----------I 1985---------E

1936---------D 1986-----@

1937-d 1987-------B

1938-d 1988------A

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

1940----a 1990-----A

1941--------C 1991----a

1942--------C 1992--c

1943-------C 1993------B

1944-----@ 1994f

1945----a 1995-------C

1946--------C 1996-d

1947--------C 1997-----@

1948--c 1998--b

1949-------B 1999--------D

PART 5: CORRELATION OF SERIES BY SEGMENTS: 00:00 ®¯® 00 0000 Page 5

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Correlations of 50-year dated segments, lagged 25 years

Flags: A = correlation under 0.3281 but highest as dated; B = correlation higher at other than dated position

Seq Series Time\_span 1900 1925 1950 1975 2000

1949 1974 1999 2024 2049

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

1 13a0197A 1964 2011 .46

2 13a0197B 1964 2011 .45

3 13a0201A 1907 2011 .48 .52 .50 .41

4 13a0201B 1907 2011 .41B .30B .30A .30A

5 13a0202A 1967 2011 .58

6 13a0202B 1967 2011 .57

7 21a0200A 1971 2011 .40

8 21a0200B 1971 2011 .64

9 21a0206A 1975 2011 .64

10 21a0206B 1975 2011 .59

11 21a0t92A 1965 2011 .41

12 21a0t92B 1965 2011 .50

13 24a0t30A 1948 2011 .63 .66 .71

14 24a0t30B 1948 2011 .53 .55 .60

15 24a0t80A 1948 2011 .55 .58 .62

16 24a0t80B 1948 1972 .48B

17 24a0t80B 1980 2011 .70

18 24at111A 1937 2011 .62 .63 .66

19 24at111B 1937 2011 .71 .75 .71

20 25a00t6A 1938 2011 .54 .48 .49

21 25a00t6B 1938 2011 .57 .48 .49

22 25a0222A 1939 2011 .54 .54 .59

23 25a0222B 1939 2011 .55 .54 .56

24 25a0311A 1947 2011 .58 .58 .53

25 25a0311B 1943 2011 .39 .46 .40

26 26a00t2A 1939 2011 .61 .67 .66

27 26a00t2B 1939 2011 .57 .69 .69

28 26a0t32A 1956 2011 .68 .71

29 26a0t32B 1956 2011 .51 .64

30 26a0t46A 1951 2011 .58 .75

31 26a0t46B 2001 2011 .80

32 26a0t46C 1951 2000 .49

33 31a0t31A 1959 2011 .48 .47

34 31a0t31B 1952 2011 .53 .50

35 31a0t47A 1951 2011 .69 .72

36 31a0t47B 1955 2011 .57 .51

37 31at112A 1941 2011 .56 .46 .42

38 31at112B 1939 2011 .24A .25A .26A

Av segment correlation 0.45 0.53 0.53 0.57 0.80

PART 6: POTENTIAL PROBLEMS: 00:00 ®¯® 00 0000 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

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

13a0197A 1964 to 2011 48 years Series 1

[B] Entire series, effect on correlation ( 0.461) is:

Lower 1964<-0.135 1996>-0.036 1969>-0.029 1979>-0.016 1966>-0.015 1998>-0.015 Higher 1981 0.090 1994 0.044

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

13a0197B 1964 to 2011 48 years Series 2

[B] Entire series, effect on correlation ( 0.455) is:

Lower 1964<-0.108 1987<-0.035 1969>-0.027 1996>-0.026 2005<-0.016 1966>-0.010 Higher 1981 0.134 2007 0.027

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

13a0201A 1907 to 2011 105 years Series 3

[B] Entire series, effect on correlation ( 0.433) is:

Lower 1923>-0.031 2008>-0.012 1993<-0.011 1951>-0.011 1949<-0.010 1994>-0.010 Higher 1916 0.017 1919 0.013

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

1923 +3.7 SD

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

13a0201B 1907 to 2011 105 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

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

1907 1956 7 - - - - - - - - - - .41|-.05 -.14 -.07 -.17 -.34 -.14 .44\* .03 .04 .09

1925 1974 7 -.08 -.06 -.01 .08 -.01 -.11 .04 -.01 -.12 .16 .30|-.04 -.16 -.11 -.24 -.31 -.08 .33\* .12 .13 .13

1950 1999 0 .09 .04 .01 .05 .01 .00 .07 .04 .13 -.32 .30\*-.19 -.21 -.06 -.15 -.03 -.20 .18 .17 .13 .19

1962 2011 0 .03 .27 -.04 .02 -.03 .01 -.15 .03 -.03 -.47 .30\* - - - - - - - - - -

[B] Entire series, effect on correlation ( 0.365) is:

Lower 1994>-0.020 1949<-0.017 1941<-0.016 2005<-0.016 1982>-0.014 2001<-0.013 Higher 1916 0.030 1923 0.016

1907 to 1956 segment:

Lower 1949<-0.030 1941<-0.030 1933>-0.015 1910>-0.015 1937>-0.014 1956>-0.013 Higher 1916 0.044 1919 0.023

1925 to 1974 segment:

Lower 1949<-0.044 1941<-0.043 1974>-0.033 1933>-0.024 1958<-0.021 1937>-0.020 Higher 1930 0.038 1935 0.034

1950 to 1999 segment:

Lower 1994>-0.053 1958<-0.032 1982>-0.032 1974>-0.031 1987<-0.030 1959<-0.029 Higher 1981 0.048 1980 0.047

1962 to 2011 segment:

Lower 1994>-0.059 2005<-0.048 2001<-0.041 1982>-0.037 1974>-0.036 1987<-0.025 Higher 1980 0.045 1981 0.044

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

1982 +3.4 SD

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

13a0202A 1967 to 2011 45 years Series 5

[B] Entire series, effect on correlation ( 0.579) is:

Lower 1981>-0.053 1976<-0.031 2006>-0.026 1982>-0.020 1995<-0.012 1971<-0.011 Higher 1994 0.051 1980 0.018

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

13a0202B 1967 to 2011 45 years Series 6

[B] Entire series, effect on correlation ( 0.570) is:

Lower 1981>-0.035 1969<-0.023 1971<-0.022 1988<-0.019 1967>-0.017 1982>-0.016 Higher 1994 0.047 2008 0.033

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

21a0200A 1971 to 2011 41 years Series 7

[B] Entire series, effect on correlation ( 0.399) is:

Lower 1994>-0.075 2005<-0.029 1979>-0.027 1996>-0.026 1986<-0.022 1990<-0.022 Higher 1981 0.155 2001 0.028

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

21a0200B 1971 to 2011 41 years Series 8

[B] Entire series, effect on correlation ( 0.643) is:

Lower 1993<-0.040 2005<-0.034 1994>-0.030 2006>-0.024 1996>-0.018 1989>-0.010 Higher 1981 0.087 2008 0.046

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

21a0206A 1975 to 2011 37 years Series 9

[B] Entire series, effect on correlation ( 0.640) is:

Lower 2006<-0.050 1994>-0.020 1993<-0.017 1980<-0.017 1996>-0.015 2008>-0.013 Higher 1981 0.092 2004 0.018

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

21a0206B 1975 to 2011 37 years Series 10

[B] Entire series, effect on correlation ( 0.585) is:

Lower 1994>-0.070 1996>-0.023 2008>-0.013 1980<-0.011 2007<-0.010 1998>-0.008 Higher 1981 0.098 2006 0.015

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

21a0t92A 1965 to 2011 47 years Series 11

[B] Entire series, effect on correlation ( 0.410) is:

Lower 1981>-0.074 1965<-0.069 1977>-0.019 1966>-0.016 1967>-0.015 2011<-0.012 Higher 1994 0.059 1985 0.018

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

21a0t92B 1965 to 2011 47 years Series 12

[B] Entire series, effect on correlation ( 0.503) is:

Lower 1971<-0.071 1970<-0.045 1974>-0.044 1966>-0.026 1990<-0.023 1967>-0.018 Higher 1981 0.080 1994 0.075

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

1974 +3.1 SD

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

24a0t30A 1948 to 2011 64 years Series 13

[B] Entire series, effect on correlation ( 0.638) is:

Lower 2006<-0.030 1954<-0.026 1952>-0.023 1948>-0.019 1951>-0.016 1975<-0.010 Higher 1956 0.017 1994 0.017

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

24a0t30B 1948 to 2011 64 years Series 14

[B] Entire series, effect on correlation ( 0.595) is:

Lower 1974<-0.110 1948>-0.014 1997<-0.013 1966>-0.012 1994>-0.010 1952>-0.010 Higher 1981 0.020 2008 0.016

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24a0t80A 1948 to 2011 64 years Series 15

[B] Entire series, effect on correlation ( 0.602) is:

Lower 1985<-0.023 1979>-0.017 2006>-0.016 1989>-0.015 1973<-0.012 1954>-0.012 Higher 1981 0.042 2008 0.026

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

24a0t80B 1948 to 1972 25 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

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

1948 1972 -3 -.01 -.51 -.16 .02 .05 -.12 .18 .51\* .23 -.20 .48| .10 -.19 -.37 -.03 -.20 -.11 .01 .03 .23 .16

[B] Entire series, effect on correlation ( 0.483) is:

Lower 1972<-0.069 1953>-0.068 1968<-0.043 1967>-0.038 1958<-0.029 1954>-0.028 Higher 1956 0.149 1964 0.067

1948 to 1972 segment:

Lower 1972<-0.069 1953>-0.068 1968<-0.043 1967>-0.038 1958<-0.029 1954>-0.028 Higher 1956 0.149 1964 0.067

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

24a0t80B 1980 to 2011 32 years Series 17

[B] Entire series, effect on correlation ( 0.701) is:

Lower 2006>-0.055 1989>-0.053 1980<-0.030 1996>-0.021 1995<-0.011 2005<-0.010 Higher 1981 0.072 1994 0.047

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

1989 +3.4 SD

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

24at111A 1937 to 2011 75 years Series 18

[B] Entire series, effect on correlation ( 0.635) is:

Lower 1975<-0.021 2011<-0.019 1952>-0.017 1951>-0.016 1995<-0.015 2009>-0.013 Higher 1994 0.028 1980 0.015

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

24at111B 1937 to 2011 75 years Series 19

[B] Entire series, effect on correlation ( 0.714) is:

Lower 1975<-0.025 1969>-0.015 1952>-0.011 1950<-0.009 1938>-0.008 2005<-0.008 Higher 1981 0.026 1994 0.023

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

25a00t6A 1938 to 2011 74 years Series 20

[B] Entire series, effect on correlation ( 0.509) is:

Lower 1989<-0.039 1981>-0.037 1994>-0.023 1940<-0.018 1952>-0.017 1957<-0.013 Higher 1956 0.048 1964 0.012

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

25a00t6B 1938 to 2011 74 years Series 21

[B] Entire series, effect on correlation ( 0.534) is:

Lower 1989<-0.083 1981>-0.033 1994>-0.020 1974>-0.016 1947<-0.011 1944>-0.010 Higher 1956 0.044 2008 0.020

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

25a0222A 1939 to 2011 73 years Series 22

[B] Entire series, effect on correlation ( 0.573) is:

Lower 1977<-0.056 1986<-0.020 1999<-0.018 1948>-0.013 1978>-0.012 1960<-0.011 Higher 1964 0.019 1981 0.016

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25a0222B 1939 to 2011 73 years Series 23

[B] Entire series, effect on correlation ( 0.547) is:

Lower 1982<-0.087 1940<-0.029 1994>-0.027 2006>-0.025 1978>-0.013 1999<-0.012 Higher 1981 0.022 2008 0.019

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

1982 -4.7 SD

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

25a0311A 1947 to 2011 65 years Series 24

[B] Entire series, effect on correlation ( 0.555) is:

Lower 1979<-0.046 2011<-0.030 1966>-0.018 1989>-0.017 1980<-0.017 1953>-0.015 Higher 1956 0.033 1964 0.025

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

25a0311B 1943 to 2011 69 years Series 25

[B] Entire series, effect on correlation ( 0.465) is:

Lower 1987<-0.125 1981>-0.065 2011<-0.015 1945>-0.014 2008>-0.010 2010<-0.008 Higher 1964 0.032 1994 0.032

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

26a00t2A 1939 to 2011 73 years Series 26

[B] Entire series, effect on correlation ( 0.625) is:

Lower 1942<-0.025 2008>-0.019 1941<-0.013 1957<-0.008 1982<-0.006 1992>-0.006 Higher 1956 0.033 1994 0.030

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

26a00t2B 1939 to 2011 73 years Series 27

[B] Entire series, effect on correlation ( 0.633) is:

Lower 1944<-0.085 1981>-0.015 1969>-0.014 1996>-0.013 2003>-0.011 1977>-0.008 Higher 1994 0.030 2008 0.015

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

26a0t32A 1956 to 2011 56 years Series 28

[B] Entire series, effect on correlation ( 0.691) is:

Lower 1966<-0.034 1978>-0.016 1979>-0.013 1960>-0.011 1986<-0.010 2002>-0.009 Higher 1994 0.028 1981 0.024

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

26a0t32B 1956 to 2011 56 years Series 29

[B] Entire series, effect on correlation ( 0.546) is:

Lower 1957<-0.073 1956>-0.030 1965<-0.021 1981>-0.017 1977>-0.011 1999<-0.010 Higher 1994 0.052 1961 0.024

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

26a0t46A 1951 to 2011 61 years Series 30

[B] Entire series, effect on correlation ( 0.653) is:

Lower 1956>-0.060 1953>-0.028 1992>-0.016 1973<-0.011 1970<-0.011 1977>-0.010 Higher 1981 0.051 1994 0.033

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

26a0t46B 2001 to 2011 11 years Series 31

[B] Entire series, effect on correlation ( 0.803) is:

Lower 2003>-0.062 2006>-0.031 2002<-0.025 2001<-0.010 2011> 0.001 2009> 0.001 Higher 2008 0.124 2004 0.025

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

26a0t46C 1951 to 2000 50 years Series 32

[B] Entire series, effect on correlation ( 0.486) is:

Lower 1956>-0.098 1991<-0.047 1965<-0.015 1992>-0.013 1953>-0.010 1966<-0.008 Higher 1981 0.065 1994 0.030

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

1956 +3.7 SD

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

31a0t31A 1959 to 2011 53 years Series 33

[B] Entire series, effect on correlation ( 0.487) is:

Lower 1988<-0.124 1981>-0.033 1999<-0.013 1992<-0.011 2006>-0.011 2003>-0.011 Higher 2008 0.038 1980 0.022

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

1988 -5.1 SD

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

31a0t31B 1952 to 2011 60 years Series 34

[B] Entire series, effect on correlation ( 0.489) is:

Lower 1956>-0.029 1994>-0.023 1973<-0.022 1996>-0.021 2006>-0.016 1979>-0.015 Higher 1980 0.021 1964 0.020

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

31a0t47A 1951 to 2011 61 years Series 35

[B] Entire series, effect on correlation ( 0.664) is:

Lower 1956>-0.039 1952<-0.017 2002<-0.013 2004<-0.012 1973<-0.010 1960>-0.010 Higher 1994 0.024 1981 0.018

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

31a0t47B 1955 to 2011 57 years Series 36

[B] Entire series, effect on correlation ( 0.555) is:

Lower 2008>-0.039 1981>-0.037 1975<-0.030 1992>-0.027 1966>-0.020 2009<-0.010 Higher 1956 0.034 1996 0.024

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

31at112A 1941 to 2011 71 years Series 37

[B] Entire series, effect on correlation ( 0.448) is:

Lower 1997<-0.035 1985<-0.023 1998<-0.022 1996>-0.019 1950<-0.013 1994>-0.013 Higher 1956 0.023 1961 0.017

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

1998 -5.3 SD

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

31at112B 1939 to 2011 73 years Series 38

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

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

1939 1988 0 .13 -.01 -.01 .02 .03 .13 .07 -.14 -.17 -.05 .24\*-.16 .17 .16 .18 .05 .06 -.11 -.17 -.24 -.23

1950 1999 0 .17 .05 .05 -.02 -.03 -.06 -.04 -.19 -.10 -.10 .25\*-.27 .19 .00 .21 .06 .13 -.23 -.12 -.23 -.22

1962 2011 0 .19 -.05 .07 .15 .14 -.10 -.06 -.01 -.19 -.21 .26\* - - - - - - - - - -

[B] Entire series, effect on correlation ( 0.272) is:

Lower 1963<-0.061 1961<-0.049 1940>-0.019 2006>-0.017 1981>-0.016 1994>-0.015 Higher 1956 0.028 1952 0.024

1939 to 1988 segment:

Lower 1963<-0.066 1961<-0.063 1940>-0.026 1981>-0.026 1962<-0.014 1948>-0.009 Higher 1956 0.038 1952 0.035

1950 to 1999 segment:

Lower 1963<-0.080 1961<-0.062 1981>-0.030 1994>-0.027 1962<-0.018 1977>-0.006 Higher 1956 0.032 1952 0.029

1962 to 2011 segment:

Lower 1963<-0.171 2006>-0.029 1962<-0.029 1994>-0.023 1981>-0.022 2001<-0.009 Higher 2007 0.026 1964 0.023

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

1958 1959 4.2 SD

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

1954 -4.8 SD; 1959 +3.9 SD

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PART 7: DESCRIPTIVE STATISTICS: 00:00 ®¯® 00 0000 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 ()

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1 13a0197A 1964 2011 48 1 0 0.461 1.87 4.35 0.912 0.906 0.175 2.68 0.662 -0.042 1

2 13a0197B 1964 2011 48 1 0 0.455 1.70 3.47 0.609 0.789 0.166 2.63 0.432 -0.063 1

3 13a0201A 1907 2011 105 4 0 0.433 0.78 2.41 0.513 0.915 0.207 2.65 0.479 0.020 1

4 13a0201B 1907 2011 105 4 4 0.365 0.64 2.86 0.551 0.948 0.240 2.59 0.396 -0.013 1

5 13a0202A 1967 2011 45 1 0 0.579 1.65 3.29 0.921 0.911 0.208 2.47 0.537 -0.024 1

6 13a0202B 1967 2011 45 1 0 0.570 1.78 2.97 0.653 0.859 0.170 2.60 0.505 -0.043 2

7 21a0200A 1971 2011 41 1 0 0.399 1.46 1.95 0.314 0.534 0.167 2.52 0.538 0.060 1

8 21a0200B 1971 2011 41 1 0 0.643 2.21 3.71 0.626 0.754 0.159 2.67 0.489 -0.027 2

9 21a0206A 1975 2011 37 1 0 0.640 2.26 3.22 0.470 0.411 0.190 2.46 0.519 -0.028 1

10 21a0206B 1975 2011 37 1 0 0.585 2.52 3.92 0.637 0.646 0.184 2.45 0.414 -0.037 1

11 21a0t92A 1965 2011 47 1 0 0.410 1.89 2.61 0.540 0.791 0.165 2.47 0.581 0.081 1

12 21a0t92B 1965 2011 47 1 0 0.503 1.74 2.65 0.501 0.538 0.237 2.49 0.524 -0.037 1

13 24a0t30A 1948 2011 64 3 0 0.638 1.36 3.13 0.747 0.883 0.246 2.56 0.477 -0.055 1

14 24a0t30B 1948 2011 64 3 0 0.595 1.85 3.56 0.753 0.779 0.235 2.38 0.373 -0.003 2

15 24a0t80A 1948 2011 64 3 0 0.602 1.40 3.10 0.757 0.891 0.205 2.59 0.473 -0.083 1

16 24a0t80B 1948 1972 25 1 1 0.483 2.27 3.18 0.510 0.626 0.157 2.77 0.731 0.005 1

17 24a0t80B 1980 2011 32 1 0 0.701 1.56 2.48 0.372 0.557 0.199 2.66 0.585 -0.017 1

18 24at111A 1937 2011 75 3 0 0.635 1.71 3.25 0.665 0.875 0.153 2.80 0.519 0.041 2

19 24at111B 1937 2011 75 3 0 0.714 1.50 3.06 0.660 0.895 0.156 2.70 0.585 -0.052 1

20 25a00t6A 1938 2011 74 3 0 0.509 1.00 2.56 0.687 0.926 0.246 2.71 0.502 0.028 2

21 25a00t6B 1938 2011 74 3 0 0.534 1.22 2.69 0.701 0.913 0.210 2.46 0.409 -0.080 1

22 25a0222A 1939 2011 73 3 0 0.573 1.35 3.13 0.663 0.869 0.211 2.61 0.452 -0.030 1

23 25a0222B 1939 2011 73 3 0 0.547 1.32 2.84 0.686 0.897 0.189 2.53 0.408 0.036 1

24 25a0311A 1947 2011 65 3 0 0.555 1.54 3.47 0.648 0.876 0.175 2.70 0.477 0.009 1

25 25a0311B 1943 2011 69 3 0 0.465 2.15 3.71 0.497 0.570 0.171 2.81 0.469 -0.012 1

26 26a00t2A 1939 2011 73 3 0 0.625 1.33 2.62 0.650 0.857 0.233 2.65 0.511 0.039 1

27 26a00t2B 1939 2011 73 3 0 0.633 1.49 3.33 0.763 0.854 0.232 2.70 0.501 0.068 1

28 26a0t32A 1956 2011 56 2 0 0.691 1.85 4.32 0.758 0.776 0.184 2.86 0.526 -0.022 2

29 26a0t32B 1956 2011 56 2 0 0.546 1.39 3.32 0.622 0.732 0.251 2.71 0.489 -0.047 1

30 26a0t46A 1951 2011 61 2 0 0.653 1.66 2.62 0.375 0.235 0.207 2.64 0.511 0.013 1

31 26a0t46B 2001 2011 11 1 0 0.803 1.16 1.81 0.362 0.496 0.223 2.47 0.725 -0.102 2

32 26a0t46C 1951 2000 50 1 0 0.486 1.75 2.62 0.448 0.673 0.162 2.76 0.538 0.035 1

33 31a0t31A 1959 2011 53 2 0 0.487 2.12 2.90 0.388 0.238 0.172 2.58 0.489 0.036 3

34 31a0t31B 1952 2011 60 2 0 0.489 1.94 4.15 0.694 0.850 0.140 2.42 0.358 -0.054 1

35 31a0t47A 1951 2011 61 2 0 0.664 1.87 3.39 0.605 0.855 0.146 2.63 0.539 0.048 1

36 31a0t47B 1955 2011 57 2 0 0.555 1.69 4.17 0.924 0.907 0.177 2.71 0.642 -0.028 1

37 31at112A 1941 2011 71 3 0 0.448 1.80 4.03 1.030 0.943 0.184 2.90 0.571 0.065 3

38 31at112B 1939 2011 73 3 3 0.272 1.81 4.62 0.933 0.856 0.187 3.45 0.465 0.261 2

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Total or mean: 2228 81 8 0.540 1.58 4.62 0.652 0.791 0.195 3.45 0.496 0.004

- = [ COFECHA BFHIGCOF ] = -