[] Dendrochronology Program Library Run BFLOW 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: BFlow3.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 1906 to 2011 106 years

Continuous time span is 1906 to 2011 106 years

Portion with two or more series is 1906 to 2011 106 years

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

\*C\* Number of dated series 40 \*C\*

\*O\* Master series 1906 2011 106 yrs \*O\*

\*F\* Total rings in all series 2543 \*F\*

\*E\* Total dated rings checked 2543 \*E\*

\*C\* Series intercorrelation 0.440 \*C\*

\*H\* Average mean sensitivity 0.216 \*H\*

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

\*\*\* Mean length of series 63.6 \*\*\*

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

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

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

. . . . . . . . . . . . . . . . . . <=====> . 01a0t19A 1 1954 2011 58

. . . . . . . . . . . . . . . . . . <======> . 01a0t19B 2 1949 2011 63

. . . . . . . . . . . . . . . . . . <====> . . 01a0t26A 3 1922 1974 53

. . . . . . . . . . . . . . . . . . . <==> . 01a0t26A 4 1980 2011 32

. . . . . . . . . . . . . . . . . . <========> . 01a0t26B 5 1922 2011 90

. . . . . . . . . . . . . . . . . . <======> . 01a0t63B 6 1947 2011 65

. . . . . . . . . . . . . . . . . . <=>. . . 04a0235A 7 1928 1945 18

. . . . . . . . . . . . . . . . . . <=====> . 04a0235A 8 1950 2011 62

. . . . . . . . . . . . . . . . . <==========> . 04a0395A 9 1906 2011 106

. . . . . . . . . . . . . . . . . <=====> . . 04a0395B 10 1906 1966 61

. . . . . . . . . . . . . . . . . . . <==> . 04a0395B 11 1970 2002 33

. . . . . . . . . . . . . . . . . . <=======> . 04at120A 12 1932 2010 79

. . . . . . . . . . . . . . . . . . <=======> . 04at120B 13 1938 2011 74

. . . . . . . . . . . . . . . . . . <=====> . 06a0T70A 14 1957 2011 55

. . . . . . . . . . . . . . . . . . <========> . 07a0t58A 15 1928 2011 84

. . . . . . . . . . . . . . . . . . <========> . 07a0t58B 16 1929 2011 83

. . . . . . . . . . . . . . . . . . <========> . 07at124A 17 1928 2011 84

. . . . . . . . . . . . . . . . . . <=====> . 07at192A 18 1955 2011 57

. . . . . . . . . . . . . . . . . . <========> . 07at192B 19 1928 2011 84

. . . . . . . . . . . . . . . . . . <=======> . 16a0198A 20 1938 2011 74

. . . . . . . . . . . . . . . . . . <=======> . 16a0198B 21 1938 2011 74

. . . . . . . . . . . . . . . . . . .<====> . 18a0203A 22 1966 2011 46

. . . . . . . . . . . . . . . . . . .<====> . 18a0203B 23 1966 2011 46

. . . . . . . . . . . . . . . . . . <=====> . 28a0292A 24 1958 2011 54

. . . . . . . . . . . . . . . . . . .<====> . 28a0292B 25 1960 2011 52

. . . . . . . . . . . . . . . . . . <======> . 28a0t11A 26 1948 2011 64

. . . . . . . . . . . . . . . . . . <======> . 28a0t11B 27 1948 2011 64

. . . . . . . . . . . . . . . . . . <======> . 28a0t19A 28 1947 2011 65

. . . . . . . . . . . . . . . . . . <======> . 28a0t19B 29 1946 2011 66

. . . . . . . . . . . . . . . . . . <=======> . 32a0193A 30 1931 2011 81

. . . . . . . . . . . . . . . . . . <=====> . 32a0193B 31 1951 2011 61

. . . . . . . . . . . . . . . . . . <=======> . 32a0t45A 32 1934 2011 78

. . . . . . . . . . . . . . . . . . <=======> . 32a0t45B 33 1934 2011 78

. . . . . . . . . . . . . . . . . . <=======> . 33a0t83A 34 1937 2011 75

. . . . . . . . . . . . . . . . . . .<====> . 33a0t83B 35 1968 2011 44

. . . . . . . . . . . . . . . . . . <=======> . 33at121A 36 1939 2011 73

. . . . . . . . . . . . . . . . . . <=======> . 33at121B 37 1939 2011 73

. . . . . . . . . . . . . . . . . . <======> . 33at129A 38 1940 2011 72

. . . . . . . . . . . . . . . . . . <===> . . 33at129B 39 1940 1989 50

. . . . . . . . . . . . . . . . . . . <> . 33at129B 40 2000 2011 12

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

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 -1.059 27 2000 -0.527 36

1951 0.088 28 2001 -0.603 36

1952 0.677 28 2002 -1.379 36

1953 0.340 28 2003 -0.520 35

1954 1.394 29 2004 -0.381 35

1955 1.274 30 2005 0.322 35

1906 -1.429 2 1956 -1.449 30 2006 0.311 35

1907 0.992 2 1957 1.590 31 2007 1.527 35

1908 -1.838 2 1958 1.241 32 2008 -0.308 35

1909 -1.334 2 1959 0.002 32 2009 0.387 35

1910 0.740 2 1960 -1.240 33 2010 0.715 35

1911 -2.755 2 1961 -0.220 33 2011 -0.758 34

1912 1.364 2 1962 -1.708 33

1913 1.169 2 1963 0.047 33

1914 1.247 2 1964 0.965 33

1915 2.262 2 1965 0.552 33

1916 1.118 2 1966 -0.390 35

1917 -0.570 2 1967 -0.377 34

1918 -0.610 2 1968 1.297 35

1919 -2.720 2 1969 0.593 35

1920 0.590 2 1970 0.421 36

1921 2.319 2 1971 0.097 36

1922 0.111 4 1972 -0.137 36

1923 0.052 4 1973 0.658 36

1924 1.427 4 1974 -0.244 36

1925 -0.412 4 1975 -1.525 35

1926 0.766 4 1976 -1.052 35

1927 0.593 4 1977 -0.147 35

1928 1.171 8 1978 -1.625 35

1929 0.542 9 1979 -1.170 35

1930 -1.098 9 1980 0.708 36

1931 -0.699 10 1981 -0.491 36

1932 0.831 11 1982 -0.152 36

1933 1.393 11 1983 0.303 36

1934 0.327 13 1984 -0.946 36

1935 -0.915 13 1985 0.464 36

1936 -0.341 13 1986 0.311 36

1937 -1.331 14 1987 0.952 36

1938 0.338 17 1988 1.309 36

1939 0.587 19 1989 0.861 36

1940 -0.028 21 1990 1.208 35

1941 0.624 21 1991 -1.507 35

1942 -0.690 21 1992 -0.408 35

1943 -0.446 21 1993 0.428 35

1944 -0.842 21 1994 0.165 35

1945 0.700 21 1995 0.640 35

1946 -1.064 21 1996 -0.456 35

1947 -1.484 23 1997 0.344 35

1948 -0.632 25 1998 -1.066 35

1949 0.208 26 1999 -0.576 35

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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-d 2000---b

1951-----@ 2001--b

1952--------C 2002f

1953------A 2003---b

1954----------F 2004---b

1955---------E 2005------A

1906f 1956f 2006------A

1907---------D 1957----------F 2007----------F

1908g 1958---------E 2008----a

1909-e 1959-----@ 2009------B

1910--------C 1960-e 2010--------C

1911k 1961----a 2011--c

1912----------E 1962g

1913---------E 1963-----@

1914---------E 1964--------D

1915----------I 1965-------B

1916---------D 1966---b

1917---b 1967---b

1918--b 1968---------E

1919k 1969-------B

1920-------B 1970------B

1921----------I 1971-----@

1922-----@ 1972----a

1923-----@ 1973-------C

1924----------F 1974----a

1925---b 1975f

1926--------C 1976-d

1927-------B 1977----a

1928---------E 1978g

1929-------B 1979-e

1930-d 1980--------C

1931--c 1981---b

1932--------C 1982----a

1933----------F 1983------A

1934------A 1984-d

1935--d 1985------B

1936----a 1986------A

1937-e 1987--------D

1938------A 1988---------E

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

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

1941-------B 1991f

1942--c 1992---b

1943---b 1993------B

1944--c 1994-----A

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

1946-d 1996---b

1947f 1997------A

1948--c 1998-d

1949-----A 1999---b

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 01a0t19A 1954 2011 .65 .49

2 01a0t19B 1949 2011 .68 .71 .71

3 01a0t26A 1922 1974 .30A .35

4 01a0t26A 1980 2011 .58

5 01a0t26B 1922 2011 .58 .62 .59 .54

6 01a0t63B 1947 2011 .50 .48 .40

7 04a0235A 1928 1945 .30A

8 04a0235A 1950 2011 .47 .36

9 04a0395A 1906 2011 .29B .45 .65 .66

10 04a0395B 1906 1966 .29A .47

11 04a0395B 1970 2002 .78

12 04at120A 1932 2010 .36 .55 .53

13 04at120B 1938 2011 .35 .37 .40

14 06a0T70A 1957 2011 .27A .23B

15 07a0t58A 1928 2011 .21B .47 .50

16 07a0t58B 1929 2011 .50 .46 .44

17 07at124A 1928 2011 .47 .51 .48

18 07at192A 1955 2011 .58 .49

19 07at192B 1928 2011 .56 .62 .51

20 16a0198A 1938 2011 .35 .38B .32A

21 16a0198B 1938 2011 .40 .41 .31A

22 18a0203A 1966 2011 .39

23 18a0203B 1966 2011 .30A

24 28a0292A 1958 2011 .33 .39

25 28a0292B 1960 2011 .49 .56

26 28a0t11A 1948 2011 .49 .53 .58

27 28a0t11B 1948 2011 .56 .53 .52

28 28a0t19A 1947 2011 .55 .53 .39

29 28a0t19B 1946 2011 .37 .38 .54

30 32a0193A 1931 2011 .47 .60 .34

31 32a0193B 1951 2011 .32A .28A

32 32a0t45A 1934 2011 .37 .46 .37

33 32a0t45B 1934 2011 .45 .41 .13B

34 33a0t83A 1937 2011 .58 .47 .31A

35 33a0t83B 1968 2011 .34

36 33at121A 1939 2011 .34 .35 .35

37 33at121B 1939 2011 .42 .48 .49

38 33at129A 1940 2011 .62 .65 .60

39 33at129B 1940 1989 .57

40 33at129B 2000 2011 .70

Av segment correlation 0.36 0.46 0.49 0.44 0.70

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

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01a0t19A 1954 to 2011 58 years Series 1

[B] Entire series, effect on correlation ( 0.596) is:

Lower 1984>-0.033 2008>-0.027 1988<-0.025 2004>-0.020 2009<-0.016 1994<-0.015 Higher 1956 0.046 1991 0.028

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

01a0t19B 1949 to 2011 63 years Series 2

[B] Entire series, effect on correlation ( 0.679) is:

Lower 1984>-0.027 1949<-0.026 1982<-0.021 1956>-0.015 2008>-0.013 1976>-0.010 Higher 1991 0.031 1962 0.022

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

01a0t26A 1922 to 1974 53 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

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

1922 1971 0 -.02 .10 -.28 -.22 .12 .09 .16 -.02 .03 -.20 .30\* .14 .04 -.07 .04 -.04 -.10 -.06 .01 -.16 .27

[B] Entire series, effect on correlation ( 0.313) is:

Lower 1965<-0.073 1922>-0.027 1925>-0.024 1923<-0.023 1945<-0.022 1934<-0.022 Higher 1942 0.027 1935 0.023

1922 to 1971 segment:

Lower 1965<-0.077 1922>-0.028 1923<-0.024 1925>-0.024 1945<-0.023 1934<-0.023 Higher 1942 0.029 1962 0.025

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

01a0t26A 1980 to 2011 32 years Series 4

[B] Entire series, effect on correlation ( 0.577) is:

Lower 1981>-0.034 1980<-0.034 1989<-0.027 1987<-0.024 1996>-0.018 1990<-0.017 Higher 1991 0.185 1984 0.029

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01a0t26B 1922 to 2011 90 years Series 5

[B] Entire series, effect on correlation ( 0.537) is:

Lower 1997<-0.039 1922>-0.033 2002>-0.018 1996>-0.012 1934<-0.009 1972<-0.007 Higher 1975 0.018 2007 0.011

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01a0t63B 1947 to 2011 65 years Series 6

[B] Entire series, effect on correlation ( 0.400) is:

Lower 2004<-0.046 2002>-0.035 2011>-0.034 1989<-0.024 1956>-0.022 1984>-0.021 Higher 1991 0.027 2007 0.023

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04a0235A 1928 to 1945 18 years Series 7

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

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

1928 1945 0 -.58 .04 .20 .19 -.17 -.07 .06 -.18 -.27 .07 .30\*-.17 -.26 .07 .26 -.01 .27 -.40 -.01 -.11 -.15

[B] Entire series, effect on correlation ( 0.297) is:

Lower 1934<-0.085 1935>-0.081 1937>-0.072 1931<-0.028 1940>-0.014 1938<-0.013 Higher 1930 0.073 1928 0.048

1928 to 1945 segment:

Lower 1934<-0.085 1935>-0.081 1937>-0.072 1931<-0.028 1940>-0.014 1938<-0.013 Higher 1930 0.073 1928 0.048

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

04a0235A 1950 to 2011 62 years Series 8

[B] Entire series, effect on correlation ( 0.342) is:

Lower 2004<-0.112 1955<-0.022 1960>-0.022 1956>-0.017 1998>-0.017 1979>-0.011 Higher 1978 0.053 1950 0.029

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

2004 -4.6 SD

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04a0395A 1906 to 2011 106 years Series 9

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

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

1906 1955 8 - - - - - - - - - - .29|-.20 -.04 -.08 -.22 .05 -.03 -.16 .35\* .05 -.16

[B] Entire series, effect on correlation ( 0.434) is:

Lower 1911<-0.090 1936>-0.017 1906>-0.017 1951<-0.013 1928<-0.013 1935>-0.008 Higher 1962 0.021 1991 0.019

1906 to 1955 segment:

Lower 1911<-0.137 1936>-0.029 1906>-0.024 1928<-0.018 1951<-0.018 1935>-0.015 Higher 1921 0.029 1908 0.021

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

1936 +3.8 SD

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04a0395B 1906 to 1966 61 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

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

1906 1955 0 - - - - - - - - - - .29\*-.07 -.15 .09 -.10 .17 -.06 -.17 -.05 .07 .19

[B] Entire series, effect on correlation ( 0.310) is:

Lower 1911>-0.180 1922<-0.041 1966>-0.014 1917>-0.008 1906<-0.007 1951<-0.006 Higher 1921 0.018 1919 0.018

1906 to 1955 segment:

Lower 1911>-0.214 1922<-0.044 1917>-0.010 1906<-0.007 1934>-0.007 1951<-0.006 Higher 1919 0.022 1921 0.021

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

1910 1911 4.1 SD

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

1911 +4.3 SD

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04a0395B 1970 to 2002 33 years Series 11

[B] Entire series, effect on correlation ( 0.784) is:

Lower 1981>-0.035 2002>-0.030 1992<-0.018 1982<-0.016 1977<-0.010 1999>-0.009 Higher 1991 0.044 1978 0.018

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04at120A 1932 to 2010 79 years Series 12

[B] Entire series, effect on correlation ( 0.426) is:

Lower 1937>-0.045 1960>-0.020 2002<-0.020 1956>-0.017 1938<-0.012 1999>-0.012 Higher 1991 0.037 1957 0.016

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

04at120B 1938 to 2011 74 years Series 13

[B] Entire series, effect on correlation ( 0.324) is:

Lower 1945<-0.044 1956>-0.022 1950>-0.021 1975>-0.021 1959>-0.018 1992<-0.017 Higher 1962 0.056 1978 0.024

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06a0T70A 1957 to 2011 55 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

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

1957 2006 0 -.03 -.09 -.02 -.21 .17 -.18 .17 .12 -.37 -.14 .27\*-.13 -.03 -.07 -.05 -.32 - - - - -

1962 2011 -6 .14 -.02 .02 -.06 .24\*-.12 .08 .02 -.34 -.19 .23| - - - - - - - - - -

[B] Entire series, effect on correlation ( 0.287) is:

Lower 1998>-0.040 2009<-0.034 1984>-0.025 1976>-0.020 1997<-0.020 1987<-0.018 Higher 2002 0.039 1957 0.029

1957 to 2006 segment:

Lower 1998>-0.050 1997<-0.033 1984>-0.030 1987<-0.029 1976>-0.026 1985<-0.025 Higher 2002 0.058 1991 0.050

1962 to 2011 segment:

Lower 1998>-0.042 2009<-0.037 1984>-0.026 1997<-0.022 1976>-0.020 1987<-0.020 Higher 2002 0.047 2008 0.045

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

2009 2010 4.3 SD

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

2009 -5.2 SD

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

07a0t58A 1928 to 2011 84 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

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

1928 1977 3 .11 -.05 -.13 -.13 -.04 .02 .03 .10 -.28 .11 .21| .19 -.09 .28\*-.20 -.06 .16 .12 -.32 .13 -.14

[B] Entire series, effect on correlation ( 0.327) is:

Lower 1941<-0.080 1942>-0.041 1946>-0.018 1962>-0.015 1961<-0.012 1940<-0.008 Higher 1975 0.031 1957 0.018

1928 to 1977 segment:

Lower 1941<-0.109 1942>-0.059 1946>-0.026 1962>-0.021 1961<-0.016 1948>-0.010 Higher 1975 0.061 1957 0.035

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

1941 1942 6.1 SD

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

1941 -5.2 SD

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

07a0t58B 1929 to 2011 83 years Series 16

[B] Entire series, effect on correlation ( 0.521) is:

Lower 1991>-0.033 1974<-0.033 1956>-0.020 1977<-0.017 1961<-0.012 1996>-0.009 Higher 1946 0.015 1957 0.015

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

07at124A 1928 to 2011 84 years Series 17

[B] Entire series, effect on correlation ( 0.482) is:

Lower 1950>-0.025 1933<-0.024 1995<-0.014 1975>-0.013 1930>-0.012 1984<-0.011 Higher 1991 0.022 1962 0.016

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

07at192A 1955 to 2011 57 years Series 18

[B] Entire series, effect on correlation ( 0.563) is:

Lower 1996>-0.050 2010<-0.026 1978>-0.022 2004>-0.015 1972<-0.012 1976<-0.011 Higher 1956 0.036 1975 0.026

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

07at192B 1928 to 2011 84 years Series 19

[B] Entire series, effect on correlation ( 0.562) is:

Lower 2008>-0.036 1950>-0.016 1999<-0.016 1976<-0.015 2009<-0.014 1975>-0.013 Higher 1991 0.028 1978 0.025

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

16a0198A 1938 to 2011 74 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

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

1950 1999 -10 .39\*-.06 -.16 .01 .12 -.09 .06 -.03 -.11 -.25 .38|-.31 .10 .14 .10 .01 .30 -.14 -.30 -.06 -.09

1962 2011 0 .31 -.07 -.24 .04 -.03 -.08 -.03 .16 .08 -.20 .32\* - - - - - - - - - -

[B] Entire series, effect on correlation ( 0.346) is:

Lower 1938<-0.050 1991>-0.047 1975>-0.036 1984>-0.019 1942>-0.019 1954<-0.011 Higher 1956 0.092 1960 0.023

1950 to 1999 segment:

Lower 1991>-0.071 1975>-0.055 1984>-0.029 1954<-0.016 1958<-0.015 1988<-0.014 Higher 1956 0.127 1960 0.032

1962 to 2011 segment:

Lower 1991>-0.080 1975>-0.065 1984>-0.033 1988<-0.023 1997<-0.016 1972<-0.013 Higher 2007 0.041 1968 0.033

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

1956 -5.2 SD

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

16a0198B 1938 to 2011 74 years Series 21

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

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

1962 2011 0 .13 -.01 -.24 -.10 .06 -.24 -.10 .02 -.20 -.13 .31\* - - - - - - - - - -

[B] Entire series, effect on correlation ( 0.372) is:

Lower 1938<-0.044 1942>-0.021 1987<-0.020 1986>-0.012 1995<-0.012 1991>-0.011 Higher 1956 0.085 2011 0.017

1962 to 2011 segment:

Lower 1987<-0.041 1986>-0.027 1995<-0.024 1984>-0.015 1993<-0.014 2010<-0.014 Higher 2011 0.037 2007 0.034

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

18a0203A 1966 to 2011 46 years Series 22

[B] Entire series, effect on correlation ( 0.389) is:

Lower 1998>-0.056 1996>-0.038 1966>-0.030 1999<-0.029 1988<-0.015 1993<-0.013 Higher 1991 0.048 2008 0.022

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

18a0203B 1966 to 2011 46 years Series 23

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

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

1966 2011 0 .05 .23 .04 -.02 .04 -.11 -.29 .18 .13 -.26 .30\* - - - - - - - - - -

[B] Entire series, effect on correlation ( 0.302) is:

Lower 1966>-0.099 1968<-0.075 1988<-0.045 1996>-0.023 1967>-0.020 2004>-0.008 Higher 1991 0.171 1984 0.035

1966 to 2011 segment:

Lower 1966>-0.099 1968<-0.075 1988<-0.045 1996>-0.023 1967>-0.020 2004>-0.008 Higher 1991 0.171 1984 0.035

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

1966 +3.2 SD

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

28a0292A 1958 to 2011 54 years Series 24

[B] Entire series, effect on correlation ( 0.370) is:

Lower 1962>-0.067 1966<-0.057 2006<-0.021 1978>-0.021 1983<-0.020 1973<-0.019 Higher 1998 0.032 2002 0.029

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

28a0292B 1960 to 2011 52 years Series 25

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

Lower 1960>-0.049 2006<-0.045 1991>-0.031 2000>-0.016 1986<-0.013 1964<-0.009 Higher 1978 0.031 1998 0.030

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28a0t11A 1948 to 2011 64 years Series 26

[B] Entire series, effect on correlation ( 0.511) is:

Lower 1956>-0.028 1960>-0.027 1978>-0.025 2005<-0.023 1972>-0.019 1968<-0.014 Higher 1962 0.039 1991 0.039

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28a0t11B 1948 to 2011 64 years Series 27

[B] Entire series, effect on correlation ( 0.494) is:

Lower 1956>-0.059 1999>-0.019 2011>-0.017 2010<-0.016 1996>-0.014 2003>-0.013 Higher 1991 0.072 1957 0.021

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28a0t19A 1947 to 2011 65 years Series 28

[B] Entire series, effect on correlation ( 0.525) is:

Lower 1976>-0.025 1962>-0.021 1987<-0.021 1978>-0.017 1960>-0.014 2005<-0.012 Higher 1956 0.060 1957 0.021

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28a0t19B 1946 to 2011 66 years Series 29

[B] Entire series, effect on correlation ( 0.386) is:

Lower 1952<-0.141 1960>-0.030 2002>-0.028 1987<-0.016 1947>-0.010 1953<-0.010 Higher 1991 0.035 1957 0.024

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32a0193A 1931 to 2011 81 years Series 30

[B] Entire series, effect on correlation ( 0.374) is:

Lower 2000<-0.040 1940<-0.020 2004<-0.017 1947>-0.017 1989<-0.015 2011>-0.015 Higher 1956 0.048 1991 0.029

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32a0193B 1951 to 2011 61 years Series 31

[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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1951 2000 0 -.07 -.02 -.05 .01 -.20 .04 -.08 -.13 .04 -.03 .32\*-.04 .02 .20 -.25 -.12 .14 -.03 .18 .02 .07

1962 2011 0 -.09 -.09 .01 .03 -.28 .06 -.02 -.16 .14 -.02 .28\* - - - - - - - - - -

[B] Entire series, effect on correlation ( 0.346) is:

Lower 1983<-0.049 1984>-0.039 2008>-0.026 1989<-0.018 2000<-0.018 1956>-0.015 Higher 1991 0.074 2002 0.029

1951 to 2000 segment:

Lower 1983<-0.058 1984>-0.046 1989<-0.021 2000<-0.020 1956>-0.016 1968<-0.014 Higher 1991 0.094 1954 0.028

1962 to 2011 segment:

Lower 1983<-0.058 1984>-0.048 2008>-0.032 1989<-0.022 2000<-0.016 1998>-0.014 Higher 1991 0.101 2002 0.039

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32a0t45A 1934 to 2011 78 years Series 32

[B] Entire series, effect on correlation ( 0.450) is:

Lower 1971<-0.061 1935>-0.040 1978>-0.021 1974>-0.013 1981>-0.011 1995<-0.011 Higher 1991 0.037 1956 0.033

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32a0t45B 1934 to 2011 78 years Series 33

[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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1962 2011 -10 .26\*-.06 -.07 .25 -.06 -.15 -.07 -.16 -.07 -.10 .13| - - - - - - - - - -

[B] Entire series, effect on correlation ( 0.320) is:

Lower 2006<-0.041 1987<-0.024 1978>-0.022 2011>-0.021 1981>-0.019 2009<-0.016 Higher 1956 0.044 1998 0.030

1962 to 2011 segment:

Lower 2006<-0.044 1987<-0.031 2011>-0.030 1978>-0.028 1981>-0.027 2008>-0.022 Higher 1998 0.090 1991 0.052

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33a0t83A 1937 to 2011 75 years Series 34

[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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1962 2011 0 .08 -.05 -.29 .03 .06 .24 .00 .16 -.18 -.04 .31\* - - - - - - - - - -

[B] Entire series, effect on correlation ( 0.435) is:

Lower 1998>-0.031 1996<-0.025 2007<-0.023 1991>-0.021 1984>-0.018 1939<-0.014 Higher 1957 0.024 1946 0.021

1962 to 2011 segment:

Lower 1998>-0.046 2007<-0.034 1984>-0.026 1991>-0.025 1985<-0.018 1997<-0.016 Higher 1975 0.032 1978 0.028

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33a0t83B 1968 to 2011 44 years Series 35

[B] Entire series, effect on correlation ( 0.335) is:

Lower 1991>-0.067 2008>-0.040 1984>-0.039 1974>-0.018 1997<-0.014 1990<-0.012 Higher 1975 0.082 1978 0.066

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33at121A 1939 to 2011 73 years Series 36

[B] Entire series, effect on correlation ( 0.328) is:

Lower 1982<-0.040 1947>-0.028 1946>-0.026 1984>-0.021 1991>-0.020 2008>-0.020 Higher 1957 0.026 1968 0.025

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33at121B 1939 to 2011 73 years Series 37

[B] Entire series, effect on correlation ( 0.447) is:

Lower 1965<-0.035 1982<-0.024 1946>-0.023 1962>-0.022 1947>-0.019 1984>-0.015 Higher 1956 0.019 1960 0.017

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33at129A 1940 to 2011 72 years Series 38

[B] Entire series, effect on correlation ( 0.621) is:

Lower 1984>-0.031 1942<-0.016 1951<-0.015 1954<-0.013 1981>-0.012 1970<-0.008 Higher 1962 0.023 1957 0.020

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33at129B 1940 to 1989 50 years Series 39

[B] Entire series, effect on correlation ( 0.572) is:

Lower 1984>-0.037 1972<-0.023 1974>-0.022 1975>-0.021 1959>-0.016 1948<-0.010 Higher 1978 0.031 1942 0.019

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33at129B 2000 to 2011 12 years Series 40

[B] Entire series, effect on correlation ( 0.699) is:

Lower 2000>-0.079 2010<-0.040 2006>-0.027 2011>-0.026 2003<-0.019 2005<-0.010 Higher 2002 0.110 2008 0.065

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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 01a0t19A 1954 2011 58 2 0 0.596 1.29 3.37 0.737 0.895 0.207 2.52 0.432 -0.152 1

2 01a0t19B 1949 2011 63 3 0 0.679 1.52 3.29 0.726 0.863 0.214 2.64 0.487 -0.002 2

3 01a0t26A 1922 1974 53 2 1 0.313 1.43 3.12 0.775 0.910 0.187 2.57 0.526 0.079 1

4 01a0t26A 1980 2011 32 1 0 0.577 0.59 1.00 0.155 -0.051 0.282 2.68 0.469 -0.022 1

5 01a0t26B 1922 2011 90 4 0 0.537 0.97 3.01 0.765 0.938 0.236 2.55 0.488 0.070 1

6 01a0t63B 1947 2011 65 3 0 0.400 1.43 3.51 1.054 0.951 0.199 2.71 0.520 -0.091 1

7 04a0235A 1928 1945 18 1 1 0.297 1.05 1.37 0.134 0.150 0.136 2.88 0.792 0.021 1

8 04a0235A 1950 2011 62 2 0 0.342 1.12 2.01 0.461 0.813 0.220 2.44 0.380 -0.051 2

9 04a0395A 1906 2011 106 4 1 0.434 1.28 2.89 0.631 0.825 0.229 2.80 0.384 -0.027 1

10 04a0395B 1906 1966 61 2 1 0.310 0.89 2.35 0.316 0.687 0.185 2.59 0.507 -0.038 1

11 04a0395B 1970 2002 33 1 0 0.784 1.09 1.65 0.302 0.287 0.276 2.58 0.607 -0.002 1

12 04at120A 1932 2010 79 3 0 0.426 1.21 2.44 0.455 0.814 0.201 2.41 0.346 -0.027 1

13 04at120B 1938 2011 74 3 0 0.324 1.80 4.54 0.841 0.886 0.189 2.66 0.491 -0.026 1

14 06a0T70A 1957 2011 55 2 2 0.287 1.30 4.85 1.528 0.966 0.255 2.44 0.424 0.000 1

15 07a0t58A 1928 2011 84 3 1 0.327 1.01 2.05 0.397 0.570 0.277 2.69 0.555 0.104 1

16 07a0t58B 1929 2011 83 3 0 0.521 0.91 1.84 0.341 0.693 0.197 2.76 0.502 -0.034 1

17 07at124A 1928 2011 84 3 0 0.482 1.01 1.88 0.372 0.821 0.172 2.48 0.430 -0.044 2

18 07at192A 1955 2011 57 2 0 0.563 1.24 2.96 0.578 0.749 0.247 2.92 0.707 0.064 1

19 07at192B 1928 2011 84 3 0 0.562 0.93 1.75 0.366 0.749 0.220 2.71 0.631 -0.075 1

20 16a0198A 1938 2011 74 3 2 0.346 1.09 3.34 1.097 0.975 0.262 2.47 0.384 -0.049 1

21 16a0198B 1938 2011 74 3 1 0.372 1.25 3.94 1.134 0.960 0.242 2.79 0.350 -0.076 1

22 18a0203A 1966 2011 46 1 0 0.389 2.01 4.93 1.531 0.968 0.206 2.53 0.504 -0.143 1

23 18a0203B 1966 2011 46 1 1 0.302 1.94 4.56 1.380 0.944 0.221 3.34 0.525 -0.170 2

24 28a0292A 1958 2011 54 2 0 0.370 2.44 3.55 0.524 0.758 0.112 2.57 0.429 0.015 1

25 28a0292B 1960 2011 52 2 0 0.503 2.43 3.28 0.395 0.557 0.121 2.60 0.486 -0.047 1

26 28a0t11A 1948 2011 64 3 0 0.511 1.36 2.39 0.311 0.451 0.199 2.75 0.554 -0.037 2

27 28a0t11B 1948 2011 64 3 0 0.494 1.33 2.67 0.522 0.855 0.176 2.56 0.350 -0.023 1

28 28a0t19A 1947 2011 65 3 0 0.525 1.50 3.36 0.842 0.912 0.227 2.59 0.501 -0.077 1

29 28a0t19B 1946 2011 66 3 0 0.386 1.57 2.95 0.641 0.763 0.226 2.47 0.454 0.004 2

30 32a0193A 1931 2011 81 3 0 0.374 1.02 2.93 0.740 0.928 0.251 2.62 0.460 -0.011 1

31 32a0193B 1951 2011 61 2 2 0.346 1.28 3.08 0.839 0.938 0.198 2.87 0.597 -0.084 1

32 32a0t45A 1934 2011 78 3 0 0.450 1.67 4.26 0.704 0.684 0.253 2.68 0.511 -0.005 1

33 32a0t45B 1934 2011 78 3 1 0.320 1.19 2.41 0.429 0.672 0.255 2.65 0.501 -0.064 1

34 33a0t83A 1937 2011 75 3 1 0.435 1.14 2.37 0.417 0.737 0.197 2.66 0.444 0.001 1

35 33a0t83B 1968 2011 44 1 0 0.335 0.82 1.67 0.312 0.792 0.210 2.55 0.485 -0.056 1

36 33at121A 1939 2011 73 3 0 0.328 1.52 6.95 1.286 0.947 0.226 2.67 0.409 0.011 1

37 33at121B 1939 2011 73 3 0 0.447 1.06 6.61 1.056 0.829 0.230 2.82 0.504 -0.050 1

38 33at129A 1940 2011 72 3 0 0.621 1.10 3.01 0.592 0.835 0.213 2.70 0.490 -0.043 1

39 33at129B 1940 1989 50 1 0 0.572 1.46 2.27 0.387 0.696 0.162 2.58 0.467 0.013 1

40 33at129B 2000 2011 12 1 0 0.699 3.01 4.77 1.431 0.854 0.195 2.74 0.833 -0.066 1

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Total or mean: 2543 97 15 0.440 1.31 6.95 0.680 0.791 0.216 3.34 0.481 -0.028

- = [ COFECHA BFLOWCOF ] = -