[] Dendrochronology Program Library Run 161 Program COF 11:15 Mon 14 Mar 2011 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 27833

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

File of DATED series: 161\_MOO

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 1760 to 2010 251 years

Continuous time span is 1760 to 2010 251 years

Portion with two or more series is 1805 to 2010 206 years

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

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

\*O\* Master series 1760 2010 251 yrs \*O\*

\*F\* Total rings in all series 2053 \*F\*

\*E\* Total dated rings checked 2008 \*E\*

\*C\* Series intercorrelation .599 \*C\*

\*H\* Average mean sensitivity .258 \*H\*

\*A\* Segments, possible problems 0 \*A\*

\*\*\* Mean length of series 102.7 \*\*\*

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

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

342B 2 absent rings: 1935 1940

345B 2 absent rings: 1982 1984

4 absent rings .195%

PART 2: TIME PLOT OF TREE-RING SERIES: 11:15 Mon 14 Mar 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

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

. . . . . . . . . . . . . . . . . .<=========> . 342A 1 1918 2010 93

. . . . . . . . . . . . . . . . . . <========> . 342B 2 1923 2010 88

. . . . . . . . . . . . . . . . . <==========> . 343A 3 1908 2010 103

. . . . . . . . . . . . . . . . . . <========> . 343B 4 1925 2010 86

. . . . . . . . . . . . . . . . . .<=========> . 344A 5 1912 2010 99

. . . . . . . . . . . . . . . . . <==========> . 344B 6 1900 2010 111

. . . . . . . . . . . . . . . . . . <========> . 345A 7 1926 2010 85

. . . . . . . . . . . . . . . . . . <========> . 345B 8 1927 2010 84

. . . . . . . . . . . . . . . . . . <======> . 346A 9 1940 2010 71

. . . . . . . . . . . . . . . . . . <========> . 346B 10 1929 2010 82

. . . . . . . . . . . . . . .<========================> . 347A 11 1760 2010 251

. . . . . . . . . . . . . . . . . .<=========> . 348A 12 1916 2010 95

. . . . . . . . . . . . . . . <====================> . 347B 13 1805 2010 206

. . . . . . . . . . . . . . . . . . <========> . 348B 14 1923 2010 88

. . . . . . . . . . . . . . . . . <==========> . 349A 15 1906 2010 105

. . . . . . . . . . . . . . . . . .<=========> . 349B 16 1912 2010 99

. . . . . . . . . . . . . . . . . <==========> . 350A 17 1901 2010 110

. . . . . . . . . . . . . . . . . <==========> . 350B 18 1905 2010 106

. . . . . . . . . . . . . . . . . . .<====> . 351A 19 1962 2010 49

. . . . . . . . . . . . . . . . . . .<====> . 351B 20 1969 2010 42

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

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: 11:15 Mon 14 Mar 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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1800 -1.017 1 1850 -1.009 2 1900 -.181 3 1950 .514 18 2000 -.303 20

1801 -.576 1 1851 -.721 2 1901 -.545 4 1951 .465 18 2001 .961 20

1802 -1.097 1 1852 -.473 2 1902 -.907 4 1952 .682 18 2002 1.205 20

1803 1.383 1 1853 -2.162 2 1903 .831 4 1953 -.035 18 2003 -1.045 20

1804 .774 1 1854 -.382 2 1904 1.630 4 1954 .851 18 2004 -1.856 20

1805 -.639 2 1855 -.590 2 1905 .206 5 1955 1.333 18 2005 -1.014 20

1806 -.169 2 1856 .553 2 1906 .943 6 1956 -.214 18 2006 -.984 20

1807 1.053 2 1857 .643 2 1907 .252 6 1957 .671 18 2007 .392 20

1808 -.082 2 1858 .333 2 1908 .237 7 1958 1.274 18 2008 .464 20

1809 .066 2 1859 .880 2 1909 -1.099 7 1959 -.874 18 2009 .443 20

1760 .003 1 1810 1.314 2 1860 1.629 2 1910 .017 7 1960 -1.529 18 2010 1.433 20

1761 -.272 1 1811 1.570 2 1861 2.007 2 1911 -.308 7 1961 .144 18

1762 .723 1 1812 1.123 2 1862 -.029 2 1912 .159 9 1962 -.036 19

1763 1.728 1 1813 1.554 2 1863 .545 2 1913 1.074 9 1963 .009 19

1764 .697 1 1814 .545 2 1864 1.544 2 1914 .298 9 1964 -.722 19

1765 1.421 1 1815 1.378 2 1865 1.126 2 1915 .395 9 1965 -.241 19

1766 1.012 1 1816 .180 2 1866 .856 2 1916 .041 10 1966 -.627 19

1767 -.778 1 1817 -.763 2 1867 -.541 2 1917 -.633 10 1967 -.412 19

1768 -2.009 1 1818 -3.097 2 1868 -.513 2 1918 .158 11 1968 -.559 19

1769 -1.918 1 1819 -.399 2 1869 -2.725 2 1919 .009 11 1969 -.672 20

1770 -1.715 1 1820 -.368 2 1870 .359 2 1920 -.271 11 1970 -.423 20

1771 -.109 1 1821 -.236 2 1871 -.826 2 1921 -.014 11 1971 .953 20

1772 1.727 1 1822 .170 2 1872 -.289 2 1922 -.899 11 1972 -.486 20

1773 .394 1 1823 -1.503 2 1873 -1.017 2 1923 -.281 13 1973 .214 20

1774 -1.013 1 1824 -1.120 2 1874 .129 2 1924 1.265 13 1974 .626 20

1775 -.872 1 1825 .931 2 1875 1.180 2 1925 .172 14 1975 1.335 20

1776 -1.492 1 1826 .759 2 1876 .098 2 1926 .725 15 1976 .290 20

1777 -.088 1 1827 1.479 2 1877 -.730 2 1927 .809 16 1977 .059 20

1778 .472 1 1828 -.282 2 1878 .644 2 1928 .253 16 1978 -.047 20

1779 .337 1 1829 -2.209 2 1879 1.539 2 1929 -.130 17 1979 -.614 20

1780 1.556 1 1830 .498 2 1880 2.437 2 1930 .140 17 1980 1.043 20

1781 1.208 1 1831 .112 2 1881 -.250 2 1931 1.131 17 1981 -1.230 20

1782 .465 1 1832 -.448 2 1882 .610 2 1932 1.140 17 1982 -.751 20 1

1783 -.115 1 1833 .271 2 1883 1.142 2 1933 .008 17 1983 .417 20

1784 -.192 1 1834 1.612 2 1884 .905 2 1934 -.660 17 1984 -.694 20 1

1785 2.403 1 1835 .210 2 1885 .505 2 1935 -1.138 17 1 1985 .102 20

1786 2.057 1 1836 2.242 2 1886 -.471 2 1936 -.541 17 1986 -.158 20

1787 1.041 1 1837 .843 2 1887 -2.382 2 1937 -.375 17 1987 .896 20

1788 .096 1 1838 .643 2 1888 -2.757 2 1938 -.644 17 1988 1.351 20

1789 -.024 1 1839 -.312 2 1889 -1.720 2 1939 -.803 17 1989 -.185 20

1790 -1.118 1 1840 1.104 2 1890 -1.012 2 1940 -1.883 18 1 1990 .274 20

1791 -.949 1 1841 -.312 2 1891 -.900 2 1941 -.124 18 1991 .340 20

1792 -2.082 1 1842 -1.668 2 1892 .804 2 1942 -.281 18 1992 -.131 20

1793 -1.473 1 1843 -.588 2 1893 .014 2 1943 -.378 18 1993 .792 20

1794 -1.917 1 1844 -1.872 2 1894 -.053 2 1944 -.388 18 1994 -.010 20

1795 -.469 1 1845 1.567 2 1895 -2.322 2 1945 -.388 18 1995 1.177 20

1796 -.728 1 1846 1.340 2 1896 .160 2 1946 -.177 18 1996 -1.432 20

1797 -.313 1 1847 -.052 2 1897 .148 2 1947 .678 18 1997 -.675 20

1798 .430 1 1848 -.626 2 1898 .070 2 1948 -1.033 18 1998 -.496 20

1799 -1.368 1 1849 -1.583 2 1899 .433 2 1949 .992 18 1999 .381 20

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PART 4: Master Bar Plot: 11:15 Mon 14 Mar 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

1800-d 1850-d 1900----a 1950-------B 2000---a

1801--b 1851--c 1901--b 1951-------B 2001--------D

1802-d 1852---b 1902-d 1952--------C 2002---------E

1803----------F 1853i 1903--------C 1953-----@ 2003-d

1804--------C 1854---b 1904----------G 1954--------C 2004g

1805--c 1855--b 1905------A 1955---------E 2005-d

1806----a 1856-------B 1906--------D 1956----a 2006-d

1807---------D 1857--------C 1907------A 1957--------C 2007-------B

1808-----@ 1858------A 1908------A 1958---------E 2008-------B

1809-----@ 1859--------D 1909-d 1959-c 2009-------B

1760-----@ 1810---------E 1860----------G 1910-----@ 1960f 2010----------F

1761----a 1811----------F 1861----------H 1911---a 1961------A

1762--------C 1812---------D 1862-----@ 1912------A 1962-----@

1763----------G 1813----------F 1863-------B 1913---------D 1963-----@

1764--------C 1814-------B 1864----------F 1914------A 1964--c

1765----------F 1815----------F 1865---------E 1915-------B 1965----a

1766---------D 1816------A 1866--------C 1916-----@ 1966--c

1767--c 1817--c 1867--b 1917--c 1967---b

1768h 1818l 1868---b 1918------A 1968--b

1769h 1819---b 1869k 1919-----@ 1969--c

1770g 1820---a 1870-------A 1920----a 1970---b

1771----@ 1821----a 1871--c 1921-----@ 1971--------D

1772----------G 1822------A 1872----a 1922-d 1972---b

1773-------B 1823f 1873-d 1923----a 1973------A

1774-d 1824-d 1874------A 1924---------E 1974-------C

1775-c 1825--------D 1875---------E 1925------A 1975---------E

1776f 1826--------C 1876-----@ 1926--------C 1976------A

1777-----@ 1827----------F 1877--c 1927--------C 1977-----@

1778-------B 1828----a 1878--------C 1928------A 1978-----@

1779-------A 1829i 1879----------F 1929----a 1979--b

1780----------F 1830-------B 1880----------J 1930------A 1980---------D

1781---------E 1831------@ 1881----a 1931---------E 1981-e

1782-------B 1832---b 1882-------B 1932---------E 1982--c

1783----@ 1833------A 1883---------E 1933-----@ 1983-------B

1784----a 1834----------F 1884--------D 1934--c 1984--c

1785----------J 1835------A 1885-------B 1935-e 1985-----@

1786----------H 1836----------I 1886---b 1936--b 1986----a

1787---------D 1837--------C 1887j 1937---a 1987--------D

1788-----@ 1838--------C 1888k 1938--c 1988---------E

1789-----@ 1839---a 1889g 1939--c 1989----a

1790-d 1840---------D 1890-d 1940h 1990------A

1791-d 1841---a 1891-d 1941----@ 1991-------A

1792h 1842g 1892--------C 1942----a 1992----a

1793f 1843--b 1893-----@ 1943---b 1993--------C

1794h 1844g 1894-----@ 1944---b 1994-----@

1795---b 1845----------F 1895i 1945---b 1995---------E

1796--c 1846---------E 1896------A 1946----a 1996-f

1797---a 1847-----@ 1897------A 1947--------C 1997--c

1798-------B 1848--c 1898-----@ 1948-d 1998---b

1799-e 1849f 1899-------B 1949---------D 1999-------B

PART 5: CORRELATION OF SERIES BY SEGMENTS: 11:15 Mon 14 Mar 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 1800 1825 1850 1875 1900 1925 1950 1975

1849 1874 1899 1924 1949 1974 1999 2024

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

1 342A 1918 2010 .65 .63 .71 .69

2 342B 1923 2010 .65 .69 .76 .80

3 343A 1908 2010 .59 .57 .69 .79

4 343B 1925 2010 .39 .62 .71

5 344A 1912 2010 .65 .71 .58 .46

6 344B 1900 2010 .41 .53 .69 .72

7 345A 1926 2010 .45 .54 .54

8 345B 1927 2010 .39 .44 .47

9 346A 1940 2010 .66 .67 .59

10 346B 1929 2010 .53 .55 .53

11 347A 1760 2010 .66 .71 .67 .58 .47 .59 .63 .66

12 348A 1916 2010 .55 .50 .74 .74

13 347B 1805 2010 .66 .71 .67 .65 .56 .60 .64 .68

14 348B 1923 2010 .43 .40 .66 .67

15 349A 1906 2010 .48 .65 .78 .78

16 349B 1912 2010 .54 .41 .50 .51

17 350A 1901 2010 .58 .43 .51 .75

18 350B 1905 2010 .49 .52 .65 .72

19 351A 1962 2010 .40

20 351B 1969 2010 .65

Av segment correlation .66 .71 .67 .62 .54 .54 .62 .66

PART 6: POTENTIAL PROBLEMS: 11:15 Mon 14 Mar 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

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342A 1918 to 2010 93 years Series 1

[B] Entire series, effect on correlation ( .691) is:

Lower 1931< -.014 1990< -.011 1971< -.011 1953> -.008 1976> -.008 1964> -.007 Higher 1996 .036 1959 .021

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

342B 1923 to 2010 88 years Series 2

[B] Entire series, effect on correlation ( .755) is:

Lower 1947< -.013 1970> -.012 1924< -.012 1959< -.012 1988< -.010 1964> -.006 Higher 1996 .025 1981 .019

[D] 2 Absent rings: Year Master N series Absent

1935 -1.138 17 1

1940 -1.883 18 1

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

1970 +3.2 SD

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

343A 1908 to 2010 103 years Series 3

[B] Entire series, effect on correlation ( .704) is:

Lower 1948> -.015 1960> -.012 1984> -.012 1916> -.009 1956> -.008 1923> -.008 Higher 1996 .032 2003 .025

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

1942 -4.5 SD; 1984 +3.3 SD; 1986 +3.0 SD

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

343B 1925 to 2010 86 years Series 4

[B] Entire series, effect on correlation ( .571) is:

Lower 1959> -.028 1925> -.023 1940> -.017 1948> -.015 1963> -.010 2006> -.009 Higher 2003 .028 1981 .023

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

1941 +3.1 SD; 1942 +3.3 SD; 1959 +3.7 SD; 1960 +3.5 SD; 1963 +3.6 SD

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344A 1912 to 2010 99 years Series 5

[B] Entire series, effect on correlation ( .540) is:

Lower 2006< -.029 1975< -.018 1989> -.013 2004> -.013 1981> -.013 1915< -.011 Higher 1940 .022 1959 .016

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

1921 +4.2 SD; 1923 +3.0 SD; 1976 -5.4 SD

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

344B 1900 to 2010 111 years Series 6

[B] Entire series, effect on correlation ( .585) is:

Lower 1900< -.038 1959> -.022 1901> -.014 1933> -.014 1948> -.011 1909> -.010 Higher 1996 .049 1981 .023

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

1900 -5.0 SD; 1978 +3.5 SD; 1980 +3.2 SD

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

345A 1926 to 2010 85 years Series 7

[B] Entire series, effect on correlation ( .480) is:

Lower 2000< -.042 1940> -.021 1984> -.013 1946< -.013 1960> -.013 1981> -.013 Higher 1996 .034 2004 .023

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

1940 +3.4 SD; 1942 +3.2 SD; 1943 +3.1 SD; 1944 +3.9 SD; 2000 -4.9 SD

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

345B 1927 to 2010 84 years Series 8

[B] Entire series, effect on correlation ( .437) is:

Lower 1989> -.028 1940> -.026 1981> -.020 1964< -.017 1939> -.013 1992> -.012 Higher 2003 .019 1960 .017

[D] 2 Absent rings: Year Master N series Absent

1982 -.751 20 1

1984 -.694 20 1

[E] Outliers 6 3.0 SD above or -4.5 SD below mean for year

1940 +4.6 SD; 1942 +3.0 SD; 1953 -4.6 SD; 1964 -5.7 SD; 1989 +3.3 SD; 1992 +3.1 SD

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

346A 1940 to 2010 71 years Series 9

[B] Entire series, effect on correlation ( .644) is:

Lower 1972> -.019 2003> -.017 1981> -.014 1975< -.012 1957< -.009 1964> -.009 Higher 1959 .025 1980 .011

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

1980 +3.1 SD

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

346B 1929 to 2010 82 years Series 10

[B] Entire series, effect on correlation ( .535) is:

Lower 1996> -.026 2004> -.012 1974< -.011 1991< -.010 1937< -.008 1993< -.008 Higher 1981 .019 2010 .011

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

1946 +3.1 SD; 1963 +3.5 SD; 1981 -5.7 SD; 2004 +3.0 SD

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347A 1760 to 2010 251 years Series 11

[\*] Early part of series cannot be checked from 1760 to 1804 -- not matched by another series

[B] Entire series, effect on correlation ( .618) is:

Lower 1805> -.015 1826< -.009 1881> -.009 1939> -.007 1900> -.006 1918< -.006 Higher 1818 .008 2003 .008

[E] Outliers 9 3.0 SD above or -4.5 SD below mean for year

1805 +4.7 SD; 1918 -4.7 SD; 1921 +3.5 SD; 1935 +3.1 SD; 1937 +4.2 SD; 1939 +3.7 SD; 1977 +3.1 SD;

1981 +3.5 SD; 1990 -4.7 SD

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

348A 1916 to 2010 95 years Series 12

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

Lower 1972> -.029 1948> -.022 1921< -.011 1916> -.010 2006> -.008 1958< -.006 Higher 1996 .047 2003 .029

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

1972 +3.8 SD

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347B 1805 to 2010 206 years Series 13

[B] Entire series, effect on correlation ( .644) is:

Lower 1805< -.012 1826> -.009 1853> -.008 1948< -.008 1895> -.006 1871> -.006 Higher 1996 .008 1818 .008

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

1805 -4.7 SD; 1826 +3.2 SD; 1872 +3.2 SD; 1948 -5.3 SD; 1977 +3.3 SD

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348B 1923 to 2010 88 years Series 14

[B] Entire series, effect on correlation ( .554) is:

Lower 1933< -.036 1960> -.020 1939> -.019 1940> -.019 1923< -.018 1963< -.015 Higher 1996 .039 1981 .037

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

1939 +3.5 SD; 1940 +4.6 SD; 1960 +3.1 SD

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349A 1906 to 2010 105 years Series 15

[B] Entire series, effect on correlation ( .678) is:

Lower 1972> -.017 1943> -.016 1906< -.015 1911> -.014 1923< -.011 1917> -.011 Higher 1996 .042 1981 .021

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

1911 +3.0 SD; 1918 +4.2 SD; 1943 +3.6 SD; 1952 +3.0 SD

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349B 1912 to 2010 99 years Series 16

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

Lower 1970< -.109 1917> -.028 1913< -.013 1972> -.010 1934> -.008 1985< -.007 Higher 1940 .018 1959 .016

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

1969 1970 -4.3 SD

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

1917 +4.5 SD; 1918 +3.4 SD; 1970 -7.0 SD

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

350A 1901 to 2010 110 years Series 17

[B] Entire series, effect on correlation ( .560) is:

Lower 1960< -.075 1959> -.013 1964> -.012 1918< -.010 1935> -.009 1955< -.006 Higher 1981 .016 1949 .012

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

1959 1960 -5.0 SD

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

1935 +3.2 SD; 1960-10.3 SD; 1971 +3.0 SD

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350B 1905 to 2010 106 years Series 18

[B] Entire series, effect on correlation ( .577) is:

Lower 1939< -.081 1958< -.014 1938> -.013 1956> -.011 1978< -.010 1993< -.009 Higher 1959 .027 1996 .017

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

1938 +3.3 SD; 1940 -4.7 SD; 1956 +3.0 SD

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

351A 1962 to 2010 49 years Series 19

[B] Entire series, effect on correlation ( .404) is:

Lower 1996> -.075 1989< -.034 1966> -.009 1962< -.009 2000> -.009 1993< -.009 Higher 1981 .029 1972 .026

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

1989 -7.2 SD; 1996 +3.7 SD

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

351B 1969 to 2010 42 years Series 20

[B] Entire series, effect on correlation ( .654) is:

Lower 1981> -.039 1972< -.031 1982> -.028 1988< -.020 2000> -.017 1990> -.013 Higher 2003 .052 1996 .033

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

1982 +5.0 SD; 1990 +3.6 SD

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[\*] All segments correlate highest as dated with correlation with master series over .3281

PART 7: DESCRIPTIVE STATISTICS: 11:15 Mon 14 Mar 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 342A 1918 2010 93 4 0 .691 1.22 3.99 .890 .887 .287 2.44 .359 -.079 1

2 342B 1923 2010 88 4 0 .755 1.61 4.42 1.068 .885 .333 2.55 .398 -.012 1

3 343A 1908 2010 103 4 0 .704 .93 2.69 .614 .891 .269 2.79 .521 .064 1

4 343B 1925 2010 86 3 0 .571 1.38 4.40 1.001 .862 .292 2.70 .515 .017 1

5 344A 1912 2010 99 4 0 .540 1.15 2.33 .497 .871 .168 2.73 .465 -.003 1

6 344B 1900 2010 111 4 0 .585 1.05 2.05 .497 .862 .205 2.81 .482 -.009 1

7 345A 1926 2010 85 3 0 .480 .95 3.21 .747 .928 .261 2.62 .465 -.040 1

8 345B 1927 2010 84 3 0 .437 1.32 3.72 1.087 .948 .378 2.60 .466 -.036 1

9 346A 1940 2010 71 3 0 .644 1.75 3.18 .766 .863 .185 2.71 .491 .056 1

10 346B 1929 2010 82 3 0 .535 2.15 4.34 .899 .849 .196 2.36 .343 -.027 1

11 347A 1760 2010 251 8 0 .618 .49 1.29 .238 .705 .297 2.72 .426 -.033 1

12 348A 1916 2010 95 4 0 .668 1.53 3.27 .660 .813 .201 2.54 .408 -.022 1

13 347B 1805 2010 206 8 0 .644 .76 2.24 .427 .773 .297 2.65 .410 -.031 1

14 348B 1923 2010 88 4 0 .554 1.16 2.65 .502 .735 .217 2.68 .461 -.021 1

15 349A 1906 2010 105 4 0 .678 .73 2.00 .394 .825 .249 2.66 .456 -.079 1

16 349B 1912 2010 99 4 0 .526 .84 1.96 .340 .728 .243 2.50 .361 -.047 1

17 350A 1901 2010 110 4 0 .560 .83 2.12 .502 .813 .293 2.58 .302 .006 1

18 350B 1905 2010 106 4 0 .577 1.04 2.91 .674 .844 .264 2.51 .350 .048 1

19 351A 1962 2010 49 1 0 .404 2.33 3.87 .645 .677 .190 2.49 .421 -.067 1

20 351B 1969 2010 42 1 0 .654 2.37 3.19 .513 .723 .127 2.62 .541 .003 1

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Total or mean: 2053 77 0 .599 1.12 4.42 .596 .817 .258 2.81 .427 -.017

- = [ COFECHA 161 COF ] = -