[] Dendrochronology Program Library Run LB140 Program COF 11:51 Wed 27 Dec 2017 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 30313

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

Title of run: LB1400B\_corr3-50

File of DATED series: LB1400B\_corr3.txt

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 Y

8 Parts printed 1234567

9 Absent rings are omitted from master series and segment correlations (Y)

Time span of Master dating series is 1850 to 2015 166 years

Continuous time span is 1850 to 2015 166 years

Portion with two or more series is 1850 to 2015 166 years

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

\*C\* Number of dated series 30 \*C\*

\*O\* Master series 1850 2015 166 yrs \*O\*

\*F\* Total rings in all series 3431 \*F\*

\*E\* Total dated rings checked 3431 \*E\*

\*C\* Series intercorrelation .608 \*C\*

\*H\* Average mean sensitivity .248 \*H\*

\*A\* Segments, possible problems 3 \*A\*

\*\*\* Mean length of series 114.4 \*\*\*

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

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: LB1400B\_corr3-50 11:51 Wed 27 Dec 2017 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

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

. . . . . . . . . . . . . . . . . <==========> . 1001A 1 1906 2015 110

. . . . . . . . . . . . . . . . . <==========> . 1001B 2 1904 2015 112

. . . . . . . . . . . . . . . . <===============> . 1002A 3 1857 2015 159

. . . . . . . . . . . . . . . . <===============> . 1002B 4 1857 2015 159

. . . . . . . . . . . . . . . . . <============> . 1003A 5 1881 2015 135

. . . . . . . . . . . . . . . . . . <========> . 1004A 6 1923 2015 93

. . . . . . . . . . . . . . . . . . <========> . 1004B 7 1928 2015 88

. . . . . . . . . . . . . . . . . .<=========> . 1004C 8 1916 2015 100

. . . . . . . . . . . . . . . . . <=============> . 1005A 9 1874 2015 142

. . . . . . . . . . . . . . . . . <=============> . 1005B 10 1875 2015 141

. . . . . . . . . . . . . . . . . .<=========> . 1008A 11 1914 2015 102

. . . . . . . . . . . . . . . . . <=============> . 1008B 12 1878 2015 138

. . . . . . . . . . . . . . . . . .<=========> . 1010A 13 1916 2015 100

. . . . . . . . . . . . . . . . . .<=========> . 1010B 14 1916 2015 100

. . . . . . . . . . . . . . . . . . <=======> . 1011A 15 1935 2015 81

. . . . . . . . . . . . . . . . . . <======> . 1011B 16 1940 2015 76

. . . . . . . . . . . . . . . . . <===========> . 1012A 17 1893 2015 123

. . . . . . . . . . . . . . . . . <===========> . 1012B 18 1898 2015 118

. . . . . . . . . . . . . . . . . <=============> . 1014A 19 1877 2015 139

. . . . . . . . . . . . . . . . . <=============> . 1014B 20 1878 2013 136

. . . . . . . . . . . . . . . . . .<=========> . 1015B 21 1911 2015 105

. . . . . . . . . . . . . . . . <===============> . 1241A 22 1850 2015 166

. . . . . . . . . . . . . . . . <===============> . 1241B 23 1850 2015 166

. . . . . . . . . . . . . . . . . . <=====> . 1265A 24 1953 2015 63

. . . . . . . . . . . . . . . . . . <======> . 1265B 25 1942 2015 74

. . . . . . . . . . . . . . . . . . <========> . 1356A 26 1925 2015 91

. . . . . . . . . . . . . . . . . . <========> . 1356B 27 1928 2015 88

. . . . . . . . . . . . . . . . . .<=========> . 1387A 28 1912 2015 104

. . . . . . . . . . . . . . . . . . <========> . 1387B 29 1924 2015 92

. . . . . . . . . . . . . . . . . <============> . 1003B 30 1886 2015 130

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

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: LB1400B\_corr3-50 11:51 Wed 27 Dec 2017 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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1850 -1.639 2 1900 -1.052 13 1950 -2.087 29 2000 .212 30

1851 -.784 2 1901 -.759 13 1951 -.207 29 2001 .036 30

1852 -1.163 2 1902 1.155 13 1952 .586 29 2002 1.539 30

1853 1.649 2 1903 1.741 13 1953 .279 30 2003 -1.166 30

1854 1.136 2 1904 1.638 14 1954 1.393 30 2004 .482 30

1855 1.485 2 1905 1.448 14 1955 .643 30 2005 1.098 30

1856 1.156 2 1906 .125 15 1956 .234 30 2006 -1.187 30

1857 -1.119 4 1907 -.977 15 1957 1.212 30 2007 .642 30

1858 .706 4 1908 -1.286 15 1958 1.727 30 2008 -1.090 30

1859 -1.087 4 1909 -.450 15 1959 .221 30 2009 -.246 30

1860 .151 4 1910 .591 15 1960 -.283 30 2010 1.135 30

1861 -1.817 4 1911 -1.967 16 1961 .608 30 2011 -.827 30

1862 -.815 4 1912 -.502 17 1962 -.675 30 2012 -.016 30

1863 .138 4 1913 -.259 17 1963 .520 30 2013 .411 30

1864 .381 4 1914 .421 18 1964 -1.811 30 2014 .736 29

1865 .532 4 1915 1.311 18 1965 -1.717 30 2015 -.157 29

1866 1.968 4 1916 1.307 21 1966 -.058 30

1867 2.038 4 1917 .843 21 1967 1.103 30

1868 1.593 4 1918 -1.769 21 1968 .209 30

1869 .102 4 1919 -.255 21 1969 .745 30

1870 -.089 4 1920 .304 21 1970 .400 30

1871 .343 4 1921 .857 21 1971 .621 30

1872 -.309 4 1922 .688 21 1972 -.130 30

1873 -.863 4 1923 -.079 22 1973 .637 30

1874 -.669 5 1924 .801 23 1974 -1.113 30

1875 -.166 6 1925 1.168 24 1975 .027 30

1876 -1.504 6 1926 -1.882 24 1976 -.776 30

1877 -2.423 7 1927 1.009 24 1977 .020 30

1878 -.396 9 1928 1.388 26 1978 -.211 30

1879 -.781 9 1929 1.405 26 1979 -.765 30

1880 .236 9 1930 -.424 26 1980 -.044 30

1881 -.067 10 1931 -.444 26 1981 -.211 30

1882 2.172 10 1932 -.235 26 1982 -.140 30

1883 -.320 10 1933 .471 26 1983 -.612 30

1884 .989 10 1934 -.783 26 1984 -2.355 30

1885 -.921 10 1935 .276 27 1985 -.784 30

1886 1.078 11 1936 -.109 27 1986 .297 30

1887 .061 11 1937 -.148 27 1987 1.223 30

1888 .298 11 1938 .753 27 1988 -.202 30

1889 -.523 11 1939 1.242 27 1989 -.111 30

1890 .056 11 1940 -.524 28 1990 1.074 30

1891 -.639 11 1941 -1.325 28 1991 1.189 30

1892 .531 11 1942 -.526 29 1992 1.615 30

1893 -.059 12 1943 .205 29 1993 1.162 30

1894 .391 12 1944 -1.191 29 1994 -.446 30

1895 -.984 12 1945 -.108 29 1995 -.334 30

1896 -.908 12 1946 .084 29 1996 -1.360 30

1897 .546 12 1947 .020 29 1997 -1.100 30

1898 .843 13 1948 -2.504 29 1998 -.461 30

1899 -2.518 13 1949 -1.525 29 1999 .453 30

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PART 4: Master Bar Plot: LB1400B\_corr3-50 11:51 Wed 27 Dec 2017 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

1850g 1900-d 1950h 2000------A

1851--c 1901--c 1951----a 2001-----@

1852-e 1902---------E 1952-------B 2002----------F

1853----------G 1903----------G 1953------A 2003-e

1854---------E 1904----------G 1954----------F 2004-------B

1855----------F 1905----------F 1955--------C 2005---------D

1856---------E 1906-----A 1956------A 2006-e

1857-d 1907-d 1957---------E 2007--------C

1858--------C 1908-e 1958----------G 2008-d

1859-d 1909---b 1959------A 2009----a

1860------A 1910-------B 1960----a 2010---------E

1861g 1911h 1961-------B 2011--c

1862--c 1912---b 1962--c 2012-----@

1863------A 1913----a 1963-------B 2013-------B

1864-------B 1914-------B 1964g 2014--------C

1865-------B 1915---------E 1965g 2015----a

1866----------H 1916---------E 1966-----@

1867----------H 1917--------C 1967---------D

1868----------F 1918g 1968------A

1869-----@ 1919----a 1969--------C

1870----@ 1920------A 1970-------B

1871------A 1921--------C 1971-------B

1872---a 1922--------C 1972----a

1873--c 1923----@ 1973--------C

1874--c 1924--------C 1974-d

1875----a 1925---------E 1975-----@

1876f 1926h 1976--c

1877j 1927---------D 1977-----@

1878---b 1928---------F 1978----a

1879--c 1929----------F 1979--c

1880------A 1930---b 1980-----@

1881-----@ 1931---b 1981----a

1882----------I 1932----a 1982----a

1883---a 1933-------B 1983--b

1884---------D 1934--c 1984i

1885--d 1935------A 1985--c

1886---------D 1936----@ 1986------A

1887-----@ 1937----a 1987---------E

1888------A 1938--------C 1988----a

1889---b 1939---------E 1989----@

1890-----@ 1940---b 1990---------D

1891--c 1941-e 1991---------E

1892-------B 1942---b 1992----------F

1893-----@ 1943------A 1993---------E

1894-------B 1944-e 1994---b

1895-d 1945----@ 1995---a

1896--d 1946-----@ 1996-e

1897-------B 1947-----@ 1997-d

1898--------C 1948j 1998---b

1899j 1949f 1999-------B

PART 5: CORRELATION OF SERIES BY SEGMENTS: LB1400B\_corr3-50 11:51 Wed 27 Dec 2017 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 1850 1875 1900 1925 1950 1975

1899 1924 1949 1974 1999 2024

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

1 1001A 1906 2015 .66 .66 .35 .27A

2 1001B 1904 2015 .80 .62 .30A .48

3 1002A 1857 2015 .52 .59 .74 .71 .72 .67

4 1002B 1857 2015 .60 .72 .79 .78 .77 .76

5 1003A 1881 2015 .86 .82 .72 .67 .59

6 1004A 1923 2015 .64 .68 .67 .56

7 1004B 1928 2015 .54 .51 .45

8 1004C 1916 2015 .52 .53 .54 .46

9 1005A 1874 2015 .69 .69 .74 .68 .66 .50

10 1005B 1875 2015 .81 .75 .73 .77 .75

11 1008A 1914 2015 .54 .62 .69 .63

12 1008B 1878 2015 .61 .65 .83 .62 .52

13 1010A 1916 2015 .67 .67 .70 .74

14 1010B 1916 2015 .73 .73 .66 .67

15 1011A 1935 2015 .62 .67 .65

16 1011B 1940 2015 .53 .53 .61

17 1012A 1893 2015 .75 .69 .44B .40 .58

18 1012B 1898 2015 .75 .74 .46 .50 .65

19 1014A 1877 2015 .72 .70 .64 .37 .40

20 1014B 1878 2013 .56 .74 .58 .42 .51

21 1015B 1911 2015 .50 .50 .34 .39

22 1241A 1850 2015 .50 .51 .62 .63 .60 .59

23 1241B 1850 2015 .54 .61 .60 .62 .53 .66

24 1265A 1953 2015 .43 .47

25 1265B 1942 2015 .47 .45 .46

26 1356A 1925 2015 .81 .75 .63

27 1356B 1928 2015 .67 .63 .38

28 1387A 1912 2015 .70 .72 .62 .52

29 1387B 1924 2015 .75 .75 .54 .41

30 1003B 1886 2015 .72 .70 .67 .72 .69

Av segment correlation .57 .68 .69 .64 .57 .56

PART 6: POTENTIAL PROBLEMS: LB1400B\_corr3-50 11:51 Wed 27 Dec 2017 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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1001A 1906 to 2015 110 years Series 1

[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 2015 0 -.07 -.15 .03 -.20 .05 .10 -.01 .20 -.09 .23 .27\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .486) is:

Lower 2004< -.028 1982< -.021 2001< -.015 1907> -.010 1913< -.009 1906> -.009 Higher 1911 .040 1926 .032

1966 to 2015 segment:

Lower 2004< -.057 1982< -.033 2001< -.023 1987< -.018 1972> -.016 2015> -.016 Higher 2011 .034 2006 .027

1001A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1906 83 76 57 71

1910 74 31 84 41 47 61 64 56 44 83

1920 90 99 113 84 109 98 68 128 87 93

1930 80 88 78 92 79 103 128 108 114 160

1940 114 101 155 145 100 99 130 122 59 87

1950 86 83 325 293 562 486 371 341 340 217

1960 133 196 193 275 172 173 183 226 198 181

1970 177 270 269 271 193 173 104 114 112 113

1980 95 61 40 57 48 58 54 45 52 47

1990 47 61 57 52 48 45 39 25 42 34

2000 38 25 36 31 27 50 36 47 45 48

2010 58 47 48 68 100 97

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

1001B 1904 to 2015 112 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

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

1950 1999 0 .00 -.06 -.01 -.17 -.03 .16 -.13 -.04 .17 .12 .30\*-.16 .02 .08 .14 -.04 .04 .14 -.07 .21 -.05

[B] Entire series, effect on correlation ( .630) is:

Lower 1969< -.016 1956< -.014 1988> -.013 1995> -.013 1957< -.013 1984> -.012 Higher 1926 .034 1911 .017

1950 to 1999 segment:

Lower 1969< -.040 1988> -.033 1957< -.033 1995> -.029 1956< -.028 1962> -.024 Higher 1992 .037 1954 .035

1001B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1904 210 185 122 84 106 127

1910 140 55 138 143 138 141 151 125 84 129

1920 161 161 155 133 141 148 79 128 111 101

1930 88 115 116 142 95 118 149 162 208 214

1940 162 158 218 239 149 175 201 200 101 107

1950 102 243 450 353 634 439 117 158 432 442

1960 346 359 396 429 238 218 241 269 302 145

1970 154 266 180 240 110 71 40 70 60 43

1980 58 33 24 38 33 40 39 33 41 38

1990 27 35 49 29 26 50 36 23 28 24

2000 34 30 52 30 40 49 33 46 34 57

2010 62 42 43 47 61 61

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1002A 1857 to 2015 159 years Series 3

[B] Entire series, effect on correlation ( .623) is:

Lower 1876< -.040 1972< -.011 1862> -.011 1857< -.008 1938< -.007 1983> -.007 Higher 1899 .015 1984 .012

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

1862 +3.0 SD

1002A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1857 107 161 119

1860 160 142 203 161 149 162 234 205 213 187

1870 172 153 141 112 115 134 15 27 50 50

1880 58 64 118 70 86 61 65 45 43 32

1890 37 40 38 40 49 43 42 73 80 28

1900 34 43 90 80 95 95 69 43 31 39

1910 61 44 46 72 83 84 88 83 44 36

1920 42 51 54 46 52 59 30 35 34 30

1930 13 12 19 23 11 15 14 15 15 25

1940 22 21 42 57 57 73 83 73 48 48

1950 52 82 152 194 303 344 321 414 470 361

1960 294 320 228 276 150 157 195 254 207 183

1970 220 169 94 156 86 121 76 90 107 90

1980 91 85 102 109 48 68 72 97 73 60

1990 76 87 100 73 55 59 46 41 47 43

2000 39 43 48 42 43 59 42 59 47 76

2010 90 44 59 52 62 57

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

1002B 1857 to 2015 159 years Series 4

[B] Entire series, effect on correlation ( .710) is:

Lower 1887< -.013 1870< -.013 1877> -.013 1874< -.011 2002< -.007 1919< -.006 Higher 1926 .016 1984 .010

1002B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1857 118 153 129

1860 150 125 150 148 190 175 192 166 160 104

1870 73 85 101 77 53 95 73 68 74 48

1880 60 52 76 42 58 26 56 21 31 20

1890 25 27 32 23 48 26 29 46 59 18

1900 30 37 86 100 102 88 51 36 33 37

1910 55 26 35 41 61 52 42 39 14 13

1920 21 27 18 14 17 24 5 13 18 25

1930 14 13 15 17 13 21 28 26 34 41

1940 33 22 32 51 42 55 44 55 30 32

1950 25 28 81 155 299 339 251 369 357 289

1960 263 310 185 286 143 134 181 255 196 162

1970 182 200 162 198 138 148 105 118 156 135

1980 108 111 152 111 56 115 151 182 122 107

1990 141 147 165 175 80 76 58 67 86 66

2000 72 87 74 45 69 78 57 65 62 89

2010 118 74 101 91 110 87

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1003A 1881 to 2015 135 years Series 5

[B] Entire series, effect on correlation ( .753) is:

Lower 1973< -.021 2005< -.018 2003> -.010 1934> -.008 2015> -.005 1995< -.005 Higher 1899 .020 1911 .011

1003A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1881 146 168 128 155 105 153 146 129 112

1890 121 82 93 82 100 68 59 68 57 20

1900 42 51 60 74 102 106 61 44 34 56

1910 63 30 49 60 66 89 88 98 44 68

1920 79 64 48 36 56 69 34 62 67 63

1930 24 19 15 31 31 49 34 33 32 62

1940 32 25 23 37 28 38 50 55 19 40

1950 42 127 297 281 400 386 314 379 478 418

1960 420 459 288 343 184 207 222 259 211 278

1970 302 320 196 92 75 83 99 152 192 169

1980 306 291 275 151 82 99 207 252 147 178

1990 234 318 237 230 144 80 88 95 132 141

2000 130 144 211 146 169 99 53 90 68 109

2010 140 93 92 102 159 149

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1004A 1923 to 2015 93 years Series 6

[B] Entire series, effect on correlation ( .600) is:

Lower 2009< -.029 1985< -.017 1933< -.014 1986< -.013 1924< -.012 2006> -.011 Higher 1948 .044 1984 .021

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

1931 +3.0 SD

1004A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1923 171 129 130 105 148 153 145

1930 129 168 119 85 101 80 70 77 110 123

1940 87 76 78 104 101 126 127 152 80 116

1950 90 193 179 141 190 178 212 263 282 223

1960 189 245 176 227 193 195 249 297 225 282

1970 231 249 277 265 206 249 229 250 210 193

1980 209 160 198 201 115 89 99 133 132 200

1990 194 168 193 188 112 117 103 100 107 136

2000 125 141 166 126 209 213 141 196 104 67

2010 143 102 108 103 122 99

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1004B 1928 to 2015 88 years Series 7

[B] Entire series, effect on correlation ( .517) is:

Lower 1933< -.052 1985< -.051 2011> -.026 1974> -.015 1930> -.010 1991< -.010 Higher 1948 .064 1984 .039

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

1975 +3.3 SD; 1985 -4.6 SD

1004B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1928 153 156

1930 142 136 125 94 108 117 131 106 122 107

1940 88 99 88 95 86 93 115 130 68 105

1950 91 162 170 135 176 189 196 202 285 221

1960 160 180 143 184 135 161 191 229 242 299

1970 261 246 248 272 267 347 287 241 241 253

1980 244 280 242 236 187 165 225 244 228 211

1990 212 194 225 240 229 217 172 153 161 219

2000 197 211 260 175 274 358 249 320 168 193

2010 201 257 288 248 257 199

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1004C 1916 to 2015 100 years Series 8

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

Lower 1953< -.025 1934> -.020 2003> -.019 1993< -.018 1920< -.013 1924< -.011 Higher 1948 .050 1984 .022

1004C Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1916 99 73 44 65

1920 45 100 91 68 57 55 57 72 83 99

1930 88 89 91 76 95 78 63 70 87 100

1940 83 64 79 81 86 119 113 122 85 125

1950 101 167 140 104 159 160 173 211 229 173

1960 147 197 137 178 158 181 212 258 196 267

1970 209 202 226 207 171 220 177 203 190 199

1980 141 139 142 119 83 79 89 120 124 169

1990 195 170 162 99 89 117 106 125 136 146

2000 148 138 169 152 222 214 151 224 110 73

2010 88 91 95 108 151 122

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1005A 1874 to 2015 142 years Series 9

[B] Entire series, effect on correlation ( .629) is:

Lower 2014< -.046 1876> -.014 1992< -.014 1926> -.014 1887> -.008 1960> -.008 Higher 1899 .020 1964 .013

1005A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1874 114 119 126 63 147 97

1880 138 136 230 82 98 83 122 167 165 62

1890 62 98 94 93 95 43 71 106 92 29

1900 32 49 87 92 80 91 50 42 36 57

1910 88 58 83 108 120 144 121 110 52 63

1920 102 118 122 95 127 166 99 119 144 128

1930 82 74 68 84 70 110 99 86 114 122

1940 117 99 154 197 159 233 259 305 161 135

1950 131 356 463 271 572 507 421 435 511 421

1960 593 358 267 354 181 205 210 257 252 260

1970 355 281 225 273 158 194 181 212 199 158

1980 179 157 137 135 110 142 166 172 106 120

1990 174 132 87 74 61 100 74 71 91 109

2000 106 77 112 79 96 101 62 87 69 98

2010 93 74 93 105 53 86

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

1005B 1875 to 2015 141 years Series 10

[B] Entire series, effect on correlation ( .752) is:

Lower 1975< -.010 1931< -.010 1926> -.010 2011> -.007 1875< -.006 1934> -.006 Higher 1899 .015 1984 .009

1005B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1875 50 52 51 100 105

1880 106 118 240 158 163 122 153 102 111 112

1890 136 108 129 107 121 78 97 126 135 55

1900 63 82 153 162 157 140 79 56 57 63

1910 74 51 72 78 78 108 97 97 69 72

1920 96 83 82 92 102 107 77 94 109 89

1930 59 48 65 88 90 108 94 95 120 122

1940 84 87 112 138 117 146 162 214 118 180

1950 170 328 644 449 497 466 315 410 437 382

1960 295 327 224 310 172 180 240 292 271 328

1970 351 217 147 201 139 105 114 135 112 101

1980 136 113 130 132 77 104 112 125 80 89

1990 92 108 106 98 58 58 40 49 72 88

2000 87 73 95 60 73 95 55 92 71 92

2010 99 91 108 119 97 77

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

1008A 1914 to 2015 102 years Series 11

[B] Entire series, effect on correlation ( .606) is:

Lower 1926> -.021 2001< -.016 1934> -.011 1929< -.010 1917< -.010 1981> -.007 Higher 1964 .023 2006 .020

1008A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1914 133 114 104 82 64 71

1920 92 82 73 59 82 107 76 99 77 53

1930 43 33 55 63 56 60 51 31 41 54

1940 24 31 40 44 48 60 67 49 23 33

1950 41 56 169 251 392 377 489 476 407 311

1960 275 327 275 375 138 87 146 245 246 230

1970 219 212 163 181 121 124 136 153 148 140

1980 136 162 156 94 60 78 84 116 118 80

1990 135 170 172 175 128 84 80 75 108 91

2000 101 65 116 86 112 109 70 84 76 83

2010 104 92 85 79 106 101

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

1008B 1878 to 2015 138 years Series 12

[B] Entire series, effect on correlation ( .615) is:

Lower 1984> -.027 2011> -.022 1901> -.018 2001< -.017 1903< -.016 1911> -.011 Higher 1948 .024 1964 .012

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

1901 +3.3 SD; 1984 +3.0 SD

1008B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1878 122 144

1880 249 246 323 146 148 96 135 81 76 67

1890 68 59 109 105 120 61 69 146 180 91

1900 144 366 368 186 146 105 55 22 12 19

1910 56 56 72 141 158 152 140 139 78 97

1920 114 127 125 110 163 171 121 135 126 108

1930 88 83 100 121 108 110 98 92 112 157

1940 118 80 88 106 75 102 138 152 50 112

1950 129 247 312 327 349 318 354 463 521 441

1960 369 447 272 252 137 121 213 273 248 232

1970 251 234 237 223 141 147 116 109 95 82

1980 75 71 68 93 114 114 117 132 75 86

1990 130 131 121 122 105 105 84 88 85 78

2000 83 61 102 63 82 101 96 103 89 106

2010 124 146 157 162 176 136

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

1010A 1916 to 2015 100 years Series 13

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

Lower 1974> -.017 1930> -.017 1920< -.011 1939< -.010 1931> -.009 1983> -.009 Higher 1926 .020 2006 .012

1010A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1916 101 68 50 60

1920 55 66 92 83 82 85 60 89 112 118

1930 121 142 131 144 106 110 94 85 114 121

1940 105 142 146 207 161 252 268 217 138 160

1950 140 315 341 293 434 333 437 498 537 282

1960 381 448 345 455 309 269 399 459 435 486

1970 407 322 273 336 351 335 250 248 253 214

1980 241 273 333 311 157 197 252 240 187 172

1990 238 232 256 193 152 164 164 194 210 212

2000 178 240 314 157 231 203 96 135 109 125

2010 200 102 127 161 199 126

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

1010B 1916 to 2015 100 years Series 14

[B] Entire series, effect on correlation ( .698) is:

Lower 1925< -.013 1992< -.011 1930> -.009 1993< -.007 1959< -.006 1977< -.006 Higher 1926 .033 1948 .007

1010B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1916 109 67 38 51

1920 48 55 78 65 78 59 33 68 111 110

1930 95 104 115 100 80 89 105 120 160 135

1940 100 105 116 158 123 151 176 203 150 220

1950 188 451 412 289 379 332 351 492 505 272

1960 303 398 315 311 266 236 312 373 371 413

1970 277 330 267 306 217 331 185 153 209 139

1980 129 142 153 139 96 150 193 374 237 233

1990 244 215 157 126 96 160 118 127 153 253

2000 196 238 244 166 322 227 173 217 176 246

2010 259 160 257 287 313 235

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

1011A 1935 to 2015 81 years Series 15

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

Lower 2008> -.020 2003> -.019 1976> -.016 1962> -.015 1948> -.011 1959> -.008 Higher 1984 .032 1964 .030

1011A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1935 85 101 101 123 110

1940 110 106 92 138 118 198 201 251 213 242

1950 231 379 446 497 479 370 366 387 525 522

1960 363 381 464 403 260 284 414 430 426 533

1970 514 561 368 435 346 500 514 424 379 259

1980 333 321 289 276 139 212 255 338 186 199

1990 245 308 424 454 295 390 252 296 236 345

2000 310 309 343 277 259 279 149 198 234 301

2010 303 143 173 206 169 150

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1011B 1940 to 2015 76 years Series 16

[B] Entire series, effect on correlation ( .575) is:

Lower 2008> -.022 1961< -.019 1940> -.018 2003> -.017 1988< -.017 1951< -.017 Higher 1984 .033 2011 .016

1011B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1940 81 69 102 137 95 163 155 166 78 110

1950 104 20 255 528 563 385 228 313 398 213

1960 243 78 61 79 62 69 124 179 201 282

1970 362 278 231 362 276 358 183 232 256 244

1980 295 380 313 278 147 177 223 289 142 171

1990 213 246 199 225 154 163 147 182 190 254

2000 211 288 407 275 265 301 180 281 275 269

2010 275 133 190 233 200 148

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1012A 1893 to 2015 123 years Series 17

[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 -8 -.01 -.07 .48\*-.07 .03 -.12 .09 -.29 -.12 -.18 .44|-.28 -.13 -.24 .04 -.03 .18 .09 .25 .01 .26

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

Lower 2014< -.020 1957< -.015 1955< -.014 1954< -.012 1934< -.010 1974> -.009 Higher 1911 .022 1926 .018

1925 to 1974 segment:

Lower 1957< -.040 1955< -.037 1954< -.032 1974> -.017 1930> -.014 1934< -.014 Higher 1926 .081 1964 .021

1012A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1893 146 155 102 97 121 162 83

1900 100 88 169 206 194 216 147 125 131 133

1910 174 95 128 154 166 160 140 140 84 137

1920 130 131 139 115 141 137 97 121 132 148

1930 133 99 93 121 67 94 97 123 131 146

1940 109 102 104 111 109 142 178 189 127 160

1950 138 188 171 233 133 43 34 45 101 118

1960 128 238 216 278 176 217 240 311 281 276

1970 298 288 240 276 248 264 206 238 177 158

1980 135 133 130 100 75 110 95 142 152 145

1990 206 212 249 236 168 214 119 126 118 187

2000 147 114 131 119 133 151 103 133 122 148

2010 152 99 98 98 67 68

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1012B 1898 to 2015 118 years Series 18

[B] Entire series, effect on correlation ( .596) is:

Lower 1954< -.038 1974< -.021 1955< -.012 2015> -.011 1957< -.006 1910< -.006 Higher 1911 .016 2006 .016

1012B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1898 135 68

1900 111 104 214 263 208 156 129 108 107 118

1910 100 50 86 73 149 162 142 144 81 148

1920 147 140 136 105 113 134 100 159 136 113

1930 98 83 95 99 77 88 85 132 133 169

1940 132 99 112 158 109 126 153 146 89 154

1950 125 140 246 296 106 51 66 115 165 193

1960 134 262 147 277 189 216 253 306 353 408

1970 349 330 242 320 94 201 185 248 252 182

1980 178 168 175 169 134 208 198 222 189 143

1990 211 224 240 260 165 153 87 133 111 172

2000 124 145 156 115 123 127 74 92 91 89

2010 108 80 76 73 89 92

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1014A 1877 to 2015 139 years Series 19

[B] Entire series, effect on correlation ( .576) is:

Lower 2006> -.037 1984> -.014 1911> -.013 1951< -.009 1914< -.007 2014< -.007 Higher 1926 .031 1899 .018

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

2006 +3.1 SD

1014A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1877 34 48 60

1880 81 108 164 108 86 47 68 60 49 49

1890 58 45 68 43 39 44 52 65 77 32

1900 46 49 92 101 96 69 37 22 20 31

1910 51 41 31 42 26 40 43 45 28 24

1920 35 43 29 22 22 24 9 20 34 43

1930 29 33 51 43 31 48 34 50 58 136

1940 104 103 137 169 124 195 197 184 97 152

1950 138 43 107 544 790 544 398 763 696 515

1960 536 507 370 363 217 212 260 260 151 111

1970 74 74 97 94 79 52 60 56 52 42

1980 46 44 79 72 79 135 169 166 113 82

1990 106 113 141 117 106 86 84 109 94 113

2000 141 124 192 87 137 144 199 207 173 158

2010 177 130 120 137 115 113

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1014B 1878 to 2013 136 years Series 20

[B] Entire series, effect on correlation ( .545) is:

Lower 1883< -.028 1951< -.021 1969< -.009 1948> -.009 1882< -.008 2008> -.008 Higher 2003 .022 1926 .021

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

1883 -7.1 SD

1014B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1878 144 88

1880 96 83 76 26 56 43 54 53 59 58

1890 83 40 57 35 36 31 40 38 50 29

1900 55 49 80 84 65 49 29 15 9 15

1910 39 14 7 12 12 23 20 37 15 23

1920 37 49 27 20 25 29 8 25 28 24

1930 14 15 31 50 26 44 41 65 70 93

1940 44 45 45 57 50 86 141 180 145 173

1950 122 7 223 394 473 424 333 386 393 263

1960 219 266 158 251 191 214 249 308 202 140

1970 114 184 195 133 121 106 117 80 67 51

1980 87 63 93 90 84 109 131 155 126 104

1990 143 151 226 179 167 160 116 125 131 125

2000 125 118 149 97 137 145 142 162 169 191

2010 212 179 206 198

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1015B 1911 to 2015 105 years Series 21

[B] Entire series, effect on correlation ( .413) is:

Lower 2006> -.033 1981< -.027 1911> -.018 1961< -.015 1925< -.012 1912< -.012 Higher 2003 .020 1974 .016

1015B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1911 98 80 71 90 106 131 147 108 103

1920 95 112 125 115 121 78 46 123 127 87

1930 55 88 62 93 56 43 28 35 46 91

1940 53 35 42 50 36 59 82 72 57 63

1950 66 188 350 680 816 555 573 577 557 425

1960 499 244 291 423 237 216 272 239 128 100

1970 75 97 67 75 26 34 69 60 55 74

1980 96 47 57 65 63 103 99 97 80 90

1990 127 156 202 150 148 82 74 104 142 163

2000 164 191 225 164 178 188 234 250 194 178

2010 249 244 244 285 314 262

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1241A 1850 to 2015 166 years Series 22

[B] Entire series, effect on correlation ( .566) is:

Lower 1857> -.020 2014< -.020 1934< -.017 1883> -.016 1889> -.009 2015> -.008 Higher 1948 .023 1926 .011

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

1857 +3.3 SD

1241A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1850 147 203 154 260 247 285 246 257 229 158

1860 185 113 127 163 133 112 162 193 155 109

1870 102 103 59 47 54 41 40 24 18 25

1880 28 17 45 45 46 36 53 41 39 51

1890 35 31 39 39 39 30 20 28 34 14

1900 25 12 32 74 85 116 97 88 95 98

1910 99 45 50 60 67 110 96 68 38 50

1920 54 69 51 43 62 109 55 84 69 85

1930 77 68 66 78 38 48 94 85 87 118

1940 82 87 112 113 90 105 133 125 61 91

1950 78 126 178 254 301 267 178 305 320 267

1960 211 366 302 315 267 285 347 369 239 221

1970 325 348 347 344 207 301 261 255 192 138

1980 182 176 142 145 147 194 234 208 126 140

1990 192 148 197 233 143 133 81 97 116 172

2000 112 107 145 103 114 137 101 124 90 94

2010 123 77 86 87 66 83

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1241B 1850 to 2015 166 years Series 23

[B] Entire series, effect on correlation ( .589) is:

Lower 1883> -.017 1862< -.015 1857> -.015 1934> -.010 1922< -.009 1936> -.008 Higher 1899 .027 1926 .023

1241B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1850 182 177 205 351 288 269 263 263 232 196

1860 170 100 76 146 163 194 212 216 157 102

1870 130 123 77 74 92 65 51 33 35 35

1880 38 22 44 48 49 28 35 26 37 29

1890 34 35 43 40 37 27 19 33 40 11

1900 20 13 26 52 47 47 54 41 50 59

1910 79 39 51 59 77 80 70 75 48 73

1920 69 71 40 43 48 51 25 47 40 60

1930 50 43 30 41 55 53 85 50 68 84

1940 47 62 75 104 59 79 105 88 57 84

1950 57 74 158 448 529 524 397 484 427 461

1960 314 402 308 373 260 188 301 344 294 291

1970 331 247 204 244 184 259 212 308 189 128

1980 161 167 129 109 113 154 148 158 101 112

1990 161 149 188 197 147 206 154 138 97 160

2000 129 139 153 99 108 149 73 110 92 124

2010 142 81 112 111 126 100

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1265A 1953 to 2015 63 years Series 24

[B] Entire series, effect on correlation ( .403) is:

Lower 2015< -.083 1962> -.033 1953< -.027 1974> -.023 2011> -.018 1964> -.017 Higher 2008 .018 1967 .017

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

2015 -5.2 SD

1265A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1953 208 313 319 335 413 446 336

1960 373 440 559 507 441 414 466 608 525 474

1970 398 399 323 324 341 360 166 139 158 181

1980 205 174 222 58 67 109 127 185 172 218

1990 324 271 264 278 160 168 133 146 140 211

2000 217 212 247 172 206 203 180 221 169 181

2010 188 182 169 193 185 134

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1265B 1942 to 2015 74 years Series 25

[B] Entire series, effect on correlation ( .538) is:

Lower 1984> -.022 1974> -.020 1996> -.019 1980< -.018 1976> -.017 1978< -.012 Higher 2003 .043 1964 .040

1265B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1942 22 32 16 37 47 40 36 31

1950 45 129 199 163 314 298 316 376 393 267

1960 335 321 330 388 292 338 434 479 446 523

1970 428 370 438 403 392 405 425 352 256 243

1980 214 227 249 232 238 268 292 280 259 199

1990 218 262 232 235 187 173 212 211 194 203

2000 180 227 286 191 270 227 179 203 182 236

2010 221 212 269 251 330 212

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1356A 1925 to 2015 91 years Series 26

[B] Entire series, effect on correlation ( .725) is:

Lower 2009< -.021 2015> -.016 1934> -.010 1983< -.009 2005< -.009 2011> -.007 Higher 1926 .032 1948 .020

1356A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1925 118 83 112 133 151

1930 109 106 126 140 126 142 112 112 136 115

1940 106 79 72 91 75 124 196 225 95 127

1950 125 220 165 134 163 183 209 252 290 176

1960 151 222 164 254 148 162 242 310 233 290

1970 245 240 264 275 222 282 248 363 329 289

1980 275 303 255 176 163 248 291 294 211 345

1990 433 386 417 369 250 174 212 190 230 259

2000 263 289 361 171 195 156 127 179 102 66

2010 109 93 106 100 103 105

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1356B 1928 to 2015 88 years Series 27

[B] Entire series, effect on correlation ( .546) is:

Lower 2009< -.033 1974> -.026 1939< -.025 2003> -.020 2006> -.016 2010< -.015 Higher 1948 .057 1964 .031

1356B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1928 157 155

1930 129 128 133 138 144 157 125 146 177 139

1940 144 115 168 211 162 178 186 193 108 140

1950 146 272 203 155 195 177 177 251 246 149

1960 122 203 140 180 123 136 185 232 190 215

1970 183 205 212 230 236 244 186 243 227 202

1980 242 208 163 126 110 132 185 181 123 160

1990 173 142 132 127 61 63 89 85 145 155

2000 211 222 232 175 244 345 206 258 123 14

2010 51 78 95 147 108 127

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1387A 1912 to 2015 104 years Series 28

[B] Entire series, effect on correlation ( .613) is:

Lower 2011> -.031 1926> -.017 1914< -.014 2009< -.014 1974> -.014 1921< -.010 Higher 1948 .035 1984 .022

1387A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1912 130 92 52 133 122 91 56 63

1920 55 54 87 82 138 126 86 119 137 113

1930 89 92 71 81 64 80 72 89 111 107

1940 80 70 92 100 82 120 99 101 56 80

1950 83 189 161 144 210 180 218 365 434 235

1960 216 254 197 242 187 163 243 275 200 310

1970 238 280 280 269 254 227 244 231 204 226

1980 242 218 210 149 103 100 138 207 142 141

1990 145 126 210 165 129 106 126 118 133 145

2000 145 139 145 93 142 125 106 119 76 73

2010 116 122 108 112 104 101

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1387B 1924 to 2015 92 years Series 29

[B] Entire series, effect on correlation ( .596) is:

Lower 1975< -.049 2006> -.037 1988> -.022 2011> -.021 1941> -.016 2013< -.013 Higher 1926 .042 2003 .028

1387B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1924 154 143 95 174 166 164

1930 106 146 128 134 118 142 124 122 159 163

1940 145 163 132 178 122 177 154 175 132 147

1950 131 232 177 147 250 215 197 286 336 196

1960 196 250 163 231 154 167 216 202 188 257

1970 148 153 112 129 114 94 110 142 129 137

1980 152 161 162 160 127 132 143 190 198 156

1990 175 164 167 150 124 127 115 107 119 124

2000 151 123 156 90 103 116 127 137 85 95

2010 116 104 82 75 88 99

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1003B 1886 to 2015 130 years Series 30

[B] Entire series, effect on correlation ( .718) is:

Lower 1930< -.025 1887> -.010 1918> -.009 2006< -.009 1965> -.007 1994> -.006 Higher 1899 .018 1911 .010

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

1931 -4.8 SD

1003B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1886 121 111 91 65

1890 61 47 67 58 49 43 31 71 69 19

1900 36 48 74 90 95 97 53 29 14 35

1910 64 27 42 50 64 91 106 89 59 94

1920 93 84 81 63 74 84 45 53 59 55

1930 16 11 14 33 32 45 42 35 39 65

1940 44 51 72 80 66 69 91 82 34 47

1950 48 126 185 263 533 474 358 471 419 307

1960 259 354 221 303 190 257 264 318 246 219

1970 254 266 142 110 93 104 104 97 103 117

1980 201 155 85 72 49 72 124 195 115 131

1990 144 177 172 155 148 141 89 97 125 159

2000 137 164 169 115 130 195 102 117 114 168

2010 167 113 120 129 183 161

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PART 7: DESCRIPTIVE STATISTICS: LB1400B\_corr3-50 11:51 Wed 27 Dec 2017 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 1001A 1906 2015 110 4 1 .486 1.15 5.62 .946 .867 .236 2.69 .448 -.055 2

2 1001B 1904 2015 112 4 1 .630 1.38 6.34 1.154 .808 .284 2.56 .393 -.030 1

3 1002A 1857 2015 159 6 0 .623 .95 4.70 .821 .917 .247 2.52 .388 -.086 1

4 1002B 1857 2015 159 6 0 .710 .92 3.69 .757 .889 .305 2.59 .413 -.077 1

5 1003A 1881 2015 135 5 0 .753 1.32 4.78 1.053 .889 .299 2.54 .421 -.015 1

6 1004A 1923 2015 93 4 0 .600 1.59 2.97 .587 .770 .207 2.57 .470 -.002 1

7 1004B 1928 2015 88 3 0 .517 1.93 3.58 .656 .794 .166 2.70 .477 .058 1

8 1004C 1916 2015 100 4 0 .491 1.32 2.66 .531 .806 .198 2.64 .529 -.023 1

9 1005A 1874 2015 142 6 0 .629 1.50 5.93 1.091 .836 .272 2.71 .497 -.034 1

10 1005B 1875 2015 141 5 0 .752 1.38 6.44 1.007 .862 .223 2.90 .454 -.027 1

11 1008A 1914 2015 102 4 0 .606 1.27 4.89 .974 .896 .241 2.57 .447 .057 1

12 1008B 1878 2015 138 5 0 .615 1.46 5.21 .934 .855 .237 2.59 .348 -.057 1

13 1010A 1916 2015 100 4 0 .704 2.17 5.37 1.171 .844 .219 2.58 .453 -.061 2

14 1010B 1916 2015 100 4 0 .698 2.02 5.05 1.082 .796 .251 2.74 .460 -.026 1

15 1011A 1935 2015 81 3 0 .618 2.99 5.61 1.262 .807 .203 2.42 .463 -.040 1

16 1011B 1940 2015 76 3 0 .575 2.19 5.63 1.042 .653 .316 2.65 .509 -.083 1

17 1012A 1893 2015 123 5 1 .591 1.49 3.11 .573 .770 .208 2.36 .356 -.062 1

18 1012B 1898 2015 118 5 0 .596 1.53 4.08 .699 .703 .257 2.49 .376 -.056 1

19 1014A 1877 2015 139 5 0 .576 1.24 7.90 1.412 .879 .283 2.53 .331 -.052 1

20 1014B 1878 2013 136 5 0 .545 1.09 4.73 .929 .894 .321 2.54 .356 -.089 1

21 1015B 1911 2015 105 4 0 .413 1.61 8.16 1.482 .897 .267 2.66 .487 -.010 2

22 1241A 1850 2015 166 6 0 .566 1.29 3.69 .891 .895 .256 2.62 .400 .004 1

23 1241B 1850 2015 166 6 0 .589 1.32 5.29 1.109 .907 .267 2.72 .452 -.033 1

24 1265A 1953 2015 63 2 0 .403 2.64 6.08 1.278 .884 .183 2.44 .369 -.014 1

25 1265B 1942 2015 74 3 0 .538 2.52 5.23 1.165 .898 .190 2.76 .632 -.057 1

26 1356A 1925 2015 91 3 0 .725 1.96 4.33 .872 .793 .224 2.57 .456 .008 1

27 1356B 1928 2015 88 3 0 .546 1.66 3.45 .546 .616 .239 2.70 .511 .044 1

28 1387A 1912 2015 104 4 0 .613 1.47 4.34 .724 .816 .215 2.65 .467 .073 1

29 1387B 1924 2015 92 4 0 .596 1.51 3.36 .455 .598 .187 2.72 .609 -.040 1

30 1003B 1886 2015 130 5 0 .718 1.22 5.33 .977 .877 .285 2.52 .395 -.033 2

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Total or mean: 3431 130 3 .608 1.51 8.16 .940 .834 .248 2.90 .437 -.030

- = [ COFECHA LB140COF ] = -