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[] P R O G R A M C O F E C H A Version 6.06P 30279

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

Title of run: VMC495\_BE

File of DATED series: VMC495\_BEAL\_Corr2

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 1913 to 2015 103 years

Continuous time span is 1913 to 2015 103 years

Portion with two or more series is 1913 to 2015 103 years

>> 202A 1977 absent in 1 of 27 series, but is not usually narrow: master index is -.198

>> 206B 1956 absent in 1 of 21 series, but is not usually narrow: master index is -.338

>> 275A 1953 absent in 1 of 21 series, but is not usually narrow: master index is -.083

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

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

\*O\* Master series 1913 2015 103 yrs \*O\*

\*F\* Total rings in all series 2193 \*F\*

\*E\* Total dated rings checked 2193 \*E\*

\*C\* Series intercorrelation .548 \*C\*

\*H\* Average mean sensitivity .315 \*H\*

\*A\* Segments, possible problems 17 \*A\*

\*\*\* Mean length of series 73.1 \*\*\*

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

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

102A 1 absent rings: 2015

202A 1 absent rings: 1977

203B 1 absent rings: 2015

205A 1 absent rings: 2015

205B 1 absent rings: 2015

206B 1 absent rings: 1956

207A 1 absent rings: 2015

212A 1 absent rings: 2015

212B 1 absent rings: 2015

217B 1 absent rings: 2015

275A 1 absent rings: 1953

11 absent rings .502%

PART 2: TIME PLOT OF TREE-RING SERIES: VMC495\_BE 13:09 Thu 23 Nov 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

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

. . . . . . . . . . . . . . . . . . . <===> . 102A 1 1976 2015 40

. . . . . . . . . . . . . . . . . .<=========> . 102B 2 1917 2015 99

. . . . . . . . . . . . . . . . . . <======> . 202A 3 1941 2015 75

. . . . . . . . . . . . . . . . . .<=========> . 202B 4 1913 2015 103

. . . . . . . . . . . . . . . . . . . <===> . 203A 5 1978 2015 38

. . . . . . . . . . . . . . . . . . . <===> . 203B 6 1972 2015 44

. . . . . . . . . . . . . . . . . . . <==> . 204A 7 1985 2015 31

. . . . . . . . . . . . . . . . . . . <==> . 204B 8 1986 2015 30

. . . . . . . . . . . . . . . . . .<=========> . 205A 9 1913 2015 103

. . . . . . . . . . . . . . . . . .<=========> . 205B 10 1919 2015 97

. . . . . . . . . . . . . . . . . . <=======> . 206A 11 1935 2015 81

. . . . . . . . . . . . . . . . . . <======> . 206B 12 1940 2015 76

. . . . . . . . . . . . . . . . . .<=========> . 207A 13 1913 2015 103

. . . . . . . . . . . . . . . . . .<=========> . 207B 14 1918 2015 98

. . . . . . . . . . . . . . . . . . <========> . 212A 15 1922 2015 94

. . . . . . . . . . . . . . . . . . <========> . 212B 16 1922 2015 94

. . . . . . . . . . . . . . . . . . <=======> . 213A 17 1930 2015 86

. . . . . . . . . . . . . . . . . . <========> . 213B 18 1929 2015 87

. . . . . . . . . . . . . . . . . . . <===> . 214A 19 1976 2015 40

. . . . . . . . . . . . . . . . . . <=====> . 214B 20 1952 2015 64

. . . . . . . . . . . . . . . . . . <=======> . 215A 21 1938 2015 78

. . . . . . . . . . . . . . . . . . .<====> . 216A 22 1966 2015 50

. . . . . . . . . . . . . . . . . . . <===> . 216B 23 1973 2015 43

. . . . . . . . . . . . . . . . . . <======> . 217A 24 1940 2015 76

. . . . . . . . . . . . . . . . . . <========> . 217B 25 1927 2015 89

. . . . . . . . . . . . . . . . . . <=======> . 275A 26 1930 2015 86

. . . . . . . . . . . . . . . . . . .<====> . 275B 27 1969 2015 47

. . . . . . . . . . . . . . . . . . <=====> . 281A 28 1951 2015 65

. . . . . . . . . . . . . . . . . . <========> . 281B 29 1921 2015 95

. . . . . . . . . . . . . . . . . . <=======> . 215B 30 1935 2015 81

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

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: VMC495\_BE 13:09 Thu 23 Nov 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

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

1950 .715 19 2000 -.318 30

1951 1.942 20 2001 -.584 30

1952 .873 21 2002 -.687 30

1953 -.083 21 1<< 2003 -2.104 30

1954 .389 21 2004 .643 30

1955 .025 21 2005 -.240 30

1956 -.338 21 1<< 2006 -1.513 30

1957 -.802 21 2007 -.436 30

1958 -.245 21 2008 .267 30

1959 -.293 21 2009 1.333 30

1960 .423 21 2010 -.106 30

1961 .607 21 2011 .621 30

1962 -.499 21 2012 1.480 30

1913 -.783 3 1963 .313 21 2013 1.140 30

1914 -.537 3 1964 1.432 21 2014 1.626 30

1915 -1.026 3 1965 .144 21 2015 -3.210 30 8

1916 .786 3 1966 -.470 22

1917 .093 4 1967 -.181 22

1918 -.898 5 1968 -.262 22

1919 .454 6 1969 .262 23

1920 .906 6 1970 -.539 23

1921 .343 7 1971 -.092 23

1922 .499 9 1972 -.115 24

1923 -1.854 9 1973 .302 25

1924 .664 9 1974 -.246 25

1925 -.284 9 1975 .519 25

1926 .408 9 1976 -.312 27

1927 .982 10 1977 -.198 27 1<<

1928 .116 10 1978 .412 28

1929 -.250 11 1979 -1.490 28

1930 -.608 13 1980 .575 28

1931 1.535 13 1981 -.046 28

1932 .963 13 1982 .304 28

1933 .153 13 1983 -.461 28

1934 .597 13 1984 -.437 28

1935 .291 15 1985 -1.026 29

1936 -3.456 15 1986 -.160 30

1937 -1.920 15 1987 -.212 30

1938 .873 16 1988 -.093 30

1939 .100 16 1989 .863 30

1940 .509 18 1990 1.456 30

1941 -.596 19 1991 .223 30

1942 1.183 19 1992 1.152 30

1943 1.134 19 1993 1.160 30

1944 .626 19 1994 1.372 30

1945 -1.183 19 1995 .777 30

1946 -1.075 19 1996 .831 30

1947 1.122 19 1997 -1.032 30

1948 -3.550 19 1998 -.450 30

1949 -.589 19 1999 -.627 30

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PART 4: Master Bar Plot: VMC495\_BE 13:09 Thu 23 Nov 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

1950--------C 2000---a

1951----------H 2001--b

1952--------C 2002-c

1953----@ 2003h

1954------B 2004-------C

1955-----@ 2005---a

1956---a 2006f

1957-c 2007--b

1958---a 2008------A

1959---a 2009----------E

1960-------B 2010----@

1961-------B 2011-------B

1962--b 2012----------F

1913-c 1963------A 2013---------E

1914--b 1964----------F 2014----------G

1915-d 1965-----A 2015m

1916--------C 1966--b

1917-----@ 1967----a

1918-d 1968---a

1919-------B 1969------A

1920--------D 1970--b

1921------A 1971----@

1922-------B 1972----@

1923g 1973------A

1924--------C 1974---a

1925---a 1975-------B

1926-------B 1976---a

1927---------D 1977----a

1928-----@ 1978-------B

1929---a 1979f

1930--b 1980-------B

1931----------F 1981----@

1932---------D 1982------A

1933-----A 1983--b

1934-------B 1984--b

1935------A 1985-d

1936n 1986----a

1937h 1987----a

1938--------C 1988----@

1939-----@ 1989--------C

1940-------B 1990----------F

1941--b 1991------A

1942---------E 1992---------E

1943---------E 1993---------E

1944-------C 1994----------E

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

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

1947---------D 1997-d

1948n 1998--b

1949--b 1999--c

PART 5: CORRELATION OF SERIES BY SEGMENTS: VMC495\_BE 13:09 Thu 23 Nov 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 1900 1925 1950 1975

1949 1974 1999 2024

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

1 102A 1976 2015 .57

2 102B 1917 2015 .41 .45 .48 .63

3 202A 1941 2015 .47 .07B .30A

4 202B 1913 2015 .36B .30B .26B .49

5 203A 1978 2015 .51

6 203B 1972 2015 .33B

7 204A 1985 2015 .80

8 204B 1986 2015 .50

9 205A 1913 2015 .38 .38 .18B .43

10 205B 1919 2015 .49 .50 .25B .42

11 206A 1935 2015 .65 .41 .63

12 206B 1940 2015 .56 .44 .66

13 207A 1913 2015 .53 .58 .19A .40

14 207B 1918 2015 .51 .58 .24B .57

15 212A 1922 2015 .61 .59 .46 .33

16 212B 1922 2015 .61 .60 .50 .53

17 213A 1930 2015 .74 .43 .63

18 213B 1929 2015 .51 .30B .48

19 214A 1976 2015 .55

20 214B 1952 2015 .24B .71

21 215A 1938 2015 .74 .47 .54

22 216A 1966 2015 .57

23 216B 1973 2015 .63

24 217A 1940 2015 .74 .48 .56

25 217B 1927 2015 .50 .44 .46

26 275A 1930 2015 .34B .42 .65

27 275B 1969 2015 .56

28 281A 1951 2015 .25B .57

29 281B 1921 2015 .49 .61 .36 .52

30 215B 1935 2015 .16B .18B .27A

Av segment correlation .49 .53 .36 .53

PART 6: POTENTIAL PROBLEMS: VMC495\_BE 13:09 Thu 23 Nov 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

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

102A 1976 to 2015 40 years Series 1

[B] Entire series, effect on correlation ( .627) is:

Lower 1997> -.036 1976> -.021 1984< -.014 2006< -.014 1986< -.010 2001> -.009 Higher 2015 .061 1979 .014

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

2015 -3.210 30 8

>> WARNING: Last ring in series is ABSENT

102A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1976 473 374 375 216

1980 467 345 208 143 115 124 128 220 133 166

1990 203 126 221 198 293 150 251 190 112 90

2000 104 132 119 84 158 93 30 65 58 93

2010 58 73 139 117 113 0

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

102B 1917 to 2015 99 years Series 2

[B] Entire series, effect on correlation ( .504) is:

Lower 1921< -.046 1937> -.016 1974> -.013 1977< -.012 1919< -.012 1945> -.010 Higher 1936 .050 2015 .048

102B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1917 116 111 100

1920 168 88 126 101 151 129 181 193 130 141

1930 150 139 147 70 94 83 16 111 71 31

1940 23 27 39 123 90 90 94 170 68 48

1950 78 121 79 67 78 111 137 142 165 202

1960 203 198 224 283 276 188 175 238 263 252

1970 253 232 216 243 364 275 213 138 180 107

1980 202 227 184 191 142 141 189 179 201 251

1990 300 241 338 298 287 240 284 160 86 109

2000 176 152 76 96 173 108 33 109 94 180

2010 140 135 186 190 200 17

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

202A 1941 to 2015 75 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

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

1950 1999 -9 -.21 .40\* .05 -.17 -.27 .01 .02 -.12 -.18 .00 .07| .15 -.01 .07 -.06 .26 .19 .07 .03 .19 .10

1966 2015 0 -.23 .03 -.15 -.02 -.20 -.02 -.11 -.14 -.21 -.01 .30\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .402) is:

Lower 1996< -.055 2004< -.045 1964< -.026 2006> -.018 1957< -.015 1942< -.015 Higher 2015 .103 1948 .103

1950 to 1999 segment:

Lower 1996< -.084 1964< -.056 1997> -.028 1999> -.021 1955> -.019 1987> -.018 Higher 1957 .051 1951 .040

1966 to 2015 segment:

Lower 1996< -.089 2004< -.075 2006> -.028 1997> -.019 2014< -.017 1987> -.014 Higher 2015 .266 2003 .055

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

1977 -.198 27 1 >> WARNING: Ring is not usually narrow

202A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1941 132 183 187 260 203 251 539 213 382

1950 348 388 305 284 276 384 246 122 166 156

1960 142 208 126 175 76 97 102 166 193 154

1970 69 65 40 17 20 18 16 0 39 22

1980 47 66 92 86 103 73 119 201 171 195

1990 137 109 125 126 113 114 71 106 79 129

2000 93 103 127 82 68 99 117 108 140 140

2010 140 176 160 129 96 19

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

202B 1913 to 2015 103 years Series 4

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

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

1913 1962 9 - - - - - - - - - - .36|-.17 -.13 -.12 .07 -.04 -.06 -.10 -.20 .44\*-.08

1925 1974 9 -.02 .23 -.06 .02 -.15 -.15 -.08 .25 .13 -.25 .30|-.03 -.08 -.17 .08 -.06 -.05 -.04 -.19 .46\*-.11

1950 1999 -9 .06 .27\*-.01 -.04 -.02 -.02 -.17 -.10 .12 -.21 .26| .11 .16 .04 .21 .08 .17 -.12 -.03 .07 -.23

[B] Entire series, effect on correlation ( .356) is:

Lower 1964< -.058 1939< -.038 1913> -.016 1919< -.016 1936> -.013 1915> -.012 Higher 1948 .100 2015 .046

1913 to 1962 segment:

Lower 1939< -.092 1913> -.031 1919< -.029 1936> -.026 1915> -.023 1927< -.018 Higher 1948 .208 1947 .026

1925 to 1974 segment:

Lower 1964< -.103 1939< -.059 1936> -.027 1927< -.017 1941> -.017 1946> -.013 Higher 1948 .233 1947 .027

1950 to 1999 segment:

Lower 1964< -.191 1999> -.019 1985> -.019 1974> -.017 1966> -.012 1991> -.012 Higher 1979 .160 1997 .041

202B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1913 133 108 110 168 94 45 17

1920 26 30 29 11 29 10 26 25 49 59

1930 66 78 94 105 112 86 90 102 258 10

1940 301 388 440 414 298 195 378 627 159 175

1950 189 202 199 191 128 133 104 67 77 110

1960 212 145 100 190 71 63 101 88 107 124

1970 106 171 107 141 178 167 100 89 143 39

1980 78 102 135 87 106 156 189 208 233 296

1990 275 289 322 228 190 168 157 103 119 183

2000 203 181 130 101 71 82 82 82 74 75

2010 59 79 125 189 203 19

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

203A 1978 to 2015 38 years Series 5

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

Lower 1980< -.147 1993< -.019 2006> -.016 1979> -.013 1994< -.010 1988> -.008 Higher 2015 .068 2003 .054

203A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1978 508 394

1980 194 449 663 444 354 236 315 369 487 496

1990 474 352 348 262 262 292 355 187 209 217

2000 223 160 218 123 265 141 181 155 210 250

2010 154 255 263 263 236 24

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

203B 1972 to 2015 44 years Series 6

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

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

1972 2015 -2 -.11 -.02 -.35 -.21 .15 .04 .18 .06 .36\*-.05 .33| - - - - - - - - - -

[B] Entire series, effect on correlation ( .617) is:

Lower 1993< -.031 1989< -.022 1979> -.021 2001< -.020 1977> -.020 2006> -.019 Higher 2015 .288 2009 .011

1972 to 2015 segment:

Lower 1993< -.031 1989< -.022 1979> -.021 2001< -.020 1977> -.020 2006> -.019 Higher 2015 .288 2009 .011

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

2015 -3.210 30 8

>> WARNING: Last ring in series is ABSENT

203B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1972 233 269 227 215 156 453 461 366

1980 520 405 494 317 387 226 308 258 180 195

1990 256 296 348 233 257 348 316 241 203 245

2000 181 143 163 147 186 179 175 167 150 205

2010 163 201 152 139 194 0

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

204A 1985 to 2015 31 years Series 7

[B] Entire series, effect on correlation ( .801) is:

Lower 2006> -.025 1988< -.016 2005> -.015 1985> -.013 2010> -.010 2011< -.009 Higher 2015 .141 2003 .021

204A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1985 276 277 241 225 244

1990 348 238 344 273 361 311 324 153 213 197

2000 210 184 222 147 308 249 276 240 202 231

2010 210 191 272 239 268 34

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

204B 1986 to 2015 30 years Series 8

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

Lower 1986< -.055 2006> -.045 1994< -.036 1998> -.033 1991< -.028 1988< -.021 Higher 2015 .373 2003 .029

204B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1986 104 154 133 192

1990 214 158 227 250 210 300 340 268 403 306

2000 331 259 317 228 360 298 317 287 219 228

2010 218 245 267 240 266 19

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

205A 1913 to 2015 103 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

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

1950 1999 1 -.30 .10 .14 -.29 -.20 .07 .13 -.15 .11 -.13 .18| .33\*-.01 -.11 .09 .13 -.01 -.01 -.20 .10 -.13

[B] Entire series, effect on correlation ( .415) is:

Lower 1961< -.091 1936> -.020 1918> -.018 1996< -.009 2003> -.009 1962> -.008 Higher 1948 .084 1923 .017

1950 to 1999 segment:

Lower 1961< -.187 1962> -.030 1985> -.028 1955> -.022 1996< -.020 1974> -.016 Higher 1979 .040 1951 .033

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

1960 1961 -4.2 SD 1961 1962 4.7 SD

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

2015 -3.210 30 8

>> WARNING: Last ring in series is ABSENT

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

1961 -6.0 SD

205A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1913 124 136 111 158 149 229 266

1920 302 269 267 158 271 224 198 225 173 173

1930 182 201 214 216 237 185 132 73 102 160

1940 144 81 102 166 149 58 93 157 54 45

1950 74 118 92 65 90 144 109 40 88 99

1960 93 30 96 139 180 100 98 107 129 147

1970 139 187 202 250 248 241 114 130 111 77

1980 106 78 99 74 62 106 110 65 118 100

1990 80 69 106 84 70 66 30 19 24 15

2000 11 22 15 18 45 23 7 11 13 14

2010 5 12 31 38 39 0

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

205B 1919 to 2015 97 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

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

1950 1999 3 .16 .12 -.17 -.24 -.10 -.06 .06 -.20 .05 .13 .25|-.01 -.12 .38\* .10 .09 -.01 .15 .10 .10 -.20

[B] Entire series, effect on correlation ( .499) is:

Lower 1992< -.022 1921< -.022 1959< -.017 1948> -.017 1962> -.014 1958< -.014 Higher 1936 .033 2015 .029

1950 to 1999 segment:

Lower 1992< -.072 1962> -.052 1958< -.029 1959< -.026 1978< -.022 1980< -.015 Higher 1951 .067 1979 .051

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

2015 -3.210 30 8

>> WARNING: Last ring in series is ABSENT

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

1959 -4.9 SD

205B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1919 311

1920 363 189 228 133 237 248 210 239 269 229

1930 243 281 305 268 218 244 165 191 382 289

1940 295 261 473 381 347 193 113 232 177 273

1950 256 374 289 235 245 261 250 194 134 99

1960 199 245 247 238 225 187 150 144 149 142

1970 120 89 97 141 106 85 25 33 25 13

1980 32 40 34 69 118 107 154 126 165 201

1990 153 149 53 158 123 97 100 54 33 11

2000 18 29 17 27 90 62 19 46 48 69

2010 22 15 55 50 40 0

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

206A 1935 to 2015 81 years Series 11

[B] Entire series, effect on correlation ( .692) is:

Lower 1962< -.017 1979> -.016 1937> -.013 1939> -.012 1974< -.011 1970> -.010 Higher 1948 .068 1936 .048

206A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1935 214 34 166 195 255

1940 206 177 250 133 86 58 59 68 4 26

1950 32 58 23 20 16 11 12 13 31 26

1960 44 90 39 47 65 60 101 155 188 160

1970 219 158 202 188 88 143 157 330 537 453

1980 615 453 443 289 336 241 218 155 227 255

1990 294 272 276 323 332 295 266 160 220 229

2000 208 214 211 104 125 83 47 50 77 89

2010 69 111 67 63 93 8

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

206B 1940 to 2015 76 years Series 12

[B] Entire series, effect on correlation ( .686) is:

Lower 1984> -.017 1985> -.014 1966> -.012 2002> -.009 1944< -.009 1991< -.009 Higher 2015 .103 1948 .025

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

1956 -.338 21 1 >> WARNING: Ring is not usually narrow

206B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1940 151 104 129 79 38 17 46 83 7 31

1950 43 151 82 45 34 14 0 5 13 11

1960 15 26 10 7 38 38 49 55 62 46

1970 46 50 43 55 25 46 64 57 70 76

1980 176 142 290 221 477 452 571 427 269 320

1990 387 252 279 368 360 314 363 248 278 211

2000 168 191 224 135 141 114 87 66 143 200

2010 133 82 102 87 98 7

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

207A 1913 to 2015 103 years Series 13

[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 -.16 -.08 .05 -.01 -.08 .06 -.04 -.01 .19 .16 .19\*-.11 .18 .07 .17 -.07 .10 .01 -.13 -.21 -.24

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

Lower 1923> -.022 1999< -.018 1976> -.015 1950< -.014 1997> -.013 1921> -.012 Higher 2015 .088 1936 .057

1950 to 1999 segment:

Lower 1997> -.048 1976> -.048 1950< -.040 1973< -.020 1966> -.019 1954< -.018 Higher 1979 .072 1964 .057

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

2015 -3.210 30 8

>> WARNING: Last ring in series is ABSENT

207A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1913 83 118 131 201 243 227 348

1920 261 343 374 330 391 343 377 303 282 254

1930 290 306 249 203 172 185 102 104 167 145

1940 142 153 160 182 162 97 126 95 46 72

1950 49 61 60 37 31 34 36 45 53 30

1960 36 65 42 38 92 34 49 60 41 49

1970 29 25 33 21 25 32 52 35 34 25

1980 30 32 39 36 46 43 36 37 47 56

1990 57 60 54 57 75 64 50 61 56 38

2000 44 53 73 40 66 64 51 60 58 93

2010 59 54 73 62 67 0

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

207B 1918 to 2015 98 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

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

1950 1999 2 .11 -.01 -.16 -.05 .05 -.16 -.43 .03 -.11 .20 .24|-.15 .45\* .16 .16 .07 .13 .17 .21 -.03 -.23

[B] Entire series, effect on correlation ( .542) is:

Lower 1951< -.018 1918< -.016 1920< -.014 1977< -.014 1938< -.013 1923> -.012 Higher 1948 .127 1936 .038

1950 to 1999 segment:

Lower 1951< -.066 1957> -.023 1952> -.022 1995< -.019 1966> -.017 1984> -.014 Higher 1979 .079 1964 .042

207B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1918 203 409

1920 299 371 298 301 401 381 286 319 303 338

1930 383 341 249 211 265 205 86 96 90 143

1940 90 76 73 115 121 54 84 74 11 56

1950 74 52 91 70 52 46 55 67 70 62

1960 74 107 77 61 97 80 80 46 26 41

1970 43 49 48 76 62 77 86 50 71 55

1980 81 101 115 123 149 108 130 158 128 173

1990 182 138 124 135 104 47 41 43 22 16

2000 25 26 49 26 57 37 19 33 49 66

2010 43 46 60 51 59 15

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

212A 1922 to 2015 94 years Series 15

[B] Entire series, effect on correlation ( .564) is:

Lower 1937< -.048 1956< -.015 1976> -.014 2006> -.014 2004< -.007 2012< -.007 Higher 2015 .025 1948 .020

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

1936 1937 -4.7 SD

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

2015 -3.210 30 8

>> WARNING: Last ring in series is ABSENT

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

1937 -5.0 SD

212A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1922 117 91 109 100 137 165 126 127

1930 148 221 160 132 173 187 116 52 243 174

1940 217 141 284 257 266 199 179 305 148 281

1950 353 271 199 165 190 191 98 109 114 105

1960 126 185 93 119 124 104 73 86 77 115

1970 79 116 98 130 122 171 178 122 106 56

1980 49 56 41 38 21 28 23 25 25 57

1990 45 42 35 30 34 36 32 25 16 21

2000 8 11 15 13 17 22 66 151 166 149

2010 51 85 56 61 59 0

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

212B 1922 to 2015 94 years Series 16

[B] Entire series, effect on correlation ( .639) is:

Lower 1937< -.102 1966< -.012 1977> -.009 1976> -.008 2003> -.008 1922< -.008 Higher 1948 .048 2015 .039

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

1937 1938 5.4 SD

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

2015 -3.210 30 8

>> WARNING: Last ring in series is ABSENT

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

1937 -5.9 SD

212B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1922 169 148 197 223 227 267 208 204

1930 209 283 238 209 225 248 167 72 248 196

1940 269 216 327 292 304 227 195 258 140 263

1950 298 389 361 238 275 299 239 233 223 206

1960 226 276 246 282 257 230 109 113 114 193

1970 152 233 167 193 198 330 379 460 428 292

1980 225 223 181 175 179 133 212 195 222 234

1990 255 257 240 208 256 221 155 86 81 63

2000 56 75 55 54 60 60 29 39 55 70

2010 30 29 25 23 40 0

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

213A 1930 to 2015 86 years Series 17

[B] Entire series, effect on correlation ( .720) is:

Lower 1955> -.012 1970< -.012 1973> -.011 1956> -.010 1959> -.009 1937> -.008 Higher 1948 .075 1936 .036

213A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1930 376 567 455 381 471 406 248 391 554 480

1940 413 391 405 377 403 263 187 376 138 248

1950 313 403 341 262 305 402 367 263 196 300

1960 232 162 101 124 147 132 124 108 98 70

1970 27 40 42 139 67 80 63 76 77 22

1980 38 42 50 46 26 37 39 26 62 132

1990 79 108 129 108 137 58 44 44 26 24

2000 60 64 33 27 49 40 19 32 45 53

2010 27 28 45 37 44 9

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

213B 1929 to 2015 87 years Series 18

[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 -8 -.06 -.21 .30\*-.08 -.10 -.16 -.11 .08 -.06 .03 .30| .13 .18 -.11 .09 -.09 .15 -.12 -.15 .06 -.12

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

Lower 1968< -.051 1949< -.014 1937> -.013 1930< -.011 1959> -.011 1970< -.011 Higher 1948 .102 2015 .021

1950 to 1999 segment:

Lower 1968< -.065 1959> -.026 1957> -.023 1976> -.019 1981> -.018 1996< -.017 Higher 1979 .025 1970 .025

213B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1929 316

1930 237 404 460 412 493 431 323 442 445 412

1940 344 349 539 358 379 254 234 310 164 166

1950 250 284 244 244 264 205 144 209 221 289

1960 224 165 142 153 192 184 167 156 84 127

1970 79 109 104 108 112 151 131 100 104 76

1980 108 121 67 74 67 59 54 45 88 82

1990 77 51 76 64 77 43 28 31 21 23

2000 37 32 26 15 23 28 9 39 53 85

2010 47 30 55 35 48 7

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214A 1976 to 2015 40 years Series 19

[B] Entire series, effect on correlation ( .552) is:

Lower 1976< -.026 2006< -.023 2007< -.022 1979> -.021 1988< -.012 2003> -.012 Higher 1997 .017 2014 .013

214A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1976 281 517 500 496

1980 682 455 645 480 464 442 648 490 415 504

1990 640 498 544 580 579 582 614 353 364 355

2000 428 370 342 292 378 279 114 140 218 262

2010 184 178 179 209 204 18

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

214B 1952 to 2015 64 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

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

1952 2001 -7 .08 .10 -.33 .44\*-.04 -.15 -.13 -.10 .13 -.15 .24| .10 .13 .06 .04 .00 .00 .06 -.14 -.11 .12

[B] Entire series, effect on correlation ( .521) is:

Lower 1955< -.121 1956> -.023 1977> -.018 1979> -.014 1963< -.012 1975< -.011 Higher 2015 .107 2003 .037

1952 to 2001 segment:

Lower 1955< -.112 1956> -.036 1977> -.026 1975< -.020 1963< -.020 1979> -.020 Higher 1997 .076 1990 .032

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

1955 1956 4.0 SD

214B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1952 328 393 424 40 427 349 367 242

1960 246 257 170 104 163 108 70 54 86 75

1970 90 88 159 229 194 175 178 490 456 367

1980 496 347 505 421 432 395 418 375 437 568

1990 564 455 432 499 458 426 376 297 343 374

2000 355 296 278 196 284 208 174 244 270 275

2010 195 222 243 163 198 21

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

215A 1938 to 2015 78 years Series 21

[B] Entire series, effect on correlation ( .674) is:

Lower 2015> -.047 1979> -.019 1945> -.010 1960< -.010 1974< -.008 1995< -.007 Higher 1948 .137 1947 .007

215A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1938 155 152

1940 183 99 161 140 102 115 85 158 32 93

1950 156 157 122 134 138 111 102 121 178 169

1960 125 163 116 170 204 163 143 135 149 124

1970 110 104 140 126 98 158 124 140 169 179

1980 222 229 185 140 126 101 131 164 135 179

1990 247 269 299 386 319 170 185 160 132 112

2000 101 88 104 52 117 76 23 20 26 38

2010 31 73 87 83 87 5

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216A 1966 to 2015 50 years Series 22

[B] Entire series, effect on correlation ( .572) is:

Lower 2006> -.052 1989< -.027 1988< -.023 1987> -.014 1972> -.014 1993< -.012 Higher 2015 .293 2003 .021

216A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1966 30 65 65 114

1970 106 192 241 240 194 171 191 173 165 182

1980 257 173 235 198 265 219 310 342 199 200

1990 309 229 261 253 287 289 391 225 369 320

2000 295 240 297 224 297 438 528 504 483 525

2010 376 322 357 345 389 54

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

216B 1973 to 2015 43 years Series 23

[B] Entire series, effect on correlation ( .633) is:

Lower 2006> -.037 1989< -.030 1978< -.019 1976> -.017 2005> -.014 1977< -.013 Higher 2015 .189 2003 .036

216B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1973 247 214 228 252 159 192 210

1980 310 169 202 226 227 200 308 316 208 212

1990 344 250 286 249 257 257 351 202 319 265

2000 265 195 199 169 325 286 271 255 219 272

2010 217 214 240 221 248 27

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

217A 1940 to 2015 76 years Series 24

[B] Entire series, effect on correlation ( .688) is:

Lower 2002< -.017 2007< -.012 1960< -.010 1955> -.010 1979> -.008 1956> -.007 Higher 1948 .102 1951 .012

217A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1940 217 208 241 231 239 203 195 274 182 288

1950 290 417 286 305 306 347 334 247 258 237

1960 226 269 228 246 339 248 283 306 325 251

1970 198 215 249 343 288 391 288 337 325 261

1980 285 176 205 185 165 135 175 212 351 381

1990 380 376 317 417 316 204 199 171 233 196

2000 207 219 104 106 158 135 92 56 71 168

2010 97 81 101 157 205 14

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217B 1927 to 2015 89 years Series 25

[B] Entire series, effect on correlation ( .537) is:

Lower 1948> -.045 1930< -.018 2013< -.018 1990< -.011 1929< -.010 1953> -.009 Higher 1936 .087 2015 .037

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

2015 -3.210 30 8

>> WARNING: Last ring in series is ABSENT

217B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1927 395 418 296

1930 205 305 331 374 350 311 142 188 280 252

1940 265 266 318 264 218 97 63 87 65 87

1950 176 250 288 334 311 270 209 132 137 54

1960 58 51 53 49 108 65 77 63 73 176

1970 122 183 216 175 107 180 85 63 100 71

1980 104 94 91 75 50 48 40 55 89 114

1990 83 77 136 149 178 124 129 103 66 57

2000 106 62 36 45 88 58 32 76 107 127

2010 127 188 337 171 133 0

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

275A 1930 to 2015 86 years Series 26

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

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

1930 1979 9 -.12 -.03 -.11 .16 -.06 -.09 .24 .12 -.22 -.24 .34|-.06 -.13 .05 -.07 .03 .05 .03 -.07 .44\*-.02

[B] Entire series, effect on correlation ( .520) is:

Lower 1948> -.069 1937> -.025 1979> -.018 1939< -.015 2003> -.013 1942< -.013 Higher 2015 .144 1936 .038

1930 to 1979 segment:

Lower 1948> -.073 1937> -.046 1939< -.032 1979> -.029 1942< -.024 1940< -.022 Higher 1936 .145 1951 .037

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

2002 2003 4.2 SD

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

1953 -.083 21 1 >> WARNING: Ring is not usually narrow

275A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1930 408 600 528 427 364 360 142 357 327 78

1940 23 15 10 5 2 2 13 22 3 6

1950 27 58 13 0 24 11 10 5 19 14

1960 24 38 18 18 58 51 23 42 31 33

1970 45 56 85 78 52 71 74 214 273 311

1980 440 272 374 402 434 306 346 288 301 276

1990 273 238 307 355 370 308 275 201 237 204

2000 176 159 115 160 273 224 195 165 173 198

2010 119 158 175 115 151 28

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

275B 1969 to 2015 47 years Series 27

[B] Entire series, effect on correlation ( .555) is:

Lower 1989< -.065 1970> -.034 1990< -.033 2006> -.025 1975< -.024 1993< -.015 Higher 2015 .328 2003 .022

275B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1969 86

1970 149 125 124 93 70 72 63 176 184 176

1980 299 215 272 237 281 277 354 306 302 198

1990 200 199 372 299 457 545 400 341 418 387

2000 292 260 234 193 282 233 256 251 232 231

2010 143 214 215 170 171 28

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

281A 1951 to 2015 65 years Series 28

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

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

1951 2000 -7 .15 -.07 .07 .47\*-.12 .15 .12 -.22 -.28 -.01 .25|-.15 .24 -.05 .22 -.07 -.08 .00 -.17 -.14 .01

[B] Entire series, effect on correlation ( .506) is:

Lower 1970> -.024 1963< -.023 1977< -.021 1997> -.019 1999> -.017 1957> -.016 Higher 2015 .112 2003 .033

1951 to 2000 segment:

Lower 1970> -.042 1963< -.034 1997> -.033 1957> -.028 1999> -.026 1974> -.022 Higher 1951 .069 1990 .030

281A Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1951 455 307 228 326 231 210 266 251 265

1960 260 259 188 132 252 217 141 129 90 134

1970 273 275 131 239 348 304 205 67 131 84

1980 125 103 87 85 61 80 90 108 212 257

1990 307 221 206 163 162 142 197 197 196 264

2000 246 201 209 99 142 84 38 60 95 84

2010 30 104 250 179 217 14

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

281B 1921 to 2015 95 years Series 29

[B] Entire series, effect on correlation ( .508) is:

Lower 1921> -.025 1923> -.022 1924< -.021 1977< -.019 1937> -.018 1997> -.017 Higher 1936 .071 2015 .029

281B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1921 108 80 92 65 63 103 137 95 121

1930 153 257 182 195 202 210 73 320 348 387

1940 328 183 401 421 268 198 177 381 168 272

1950 424 388 311 196 262 176 137 171 121 204

1960 254 200 241 244 273 291 190 175 254 360

1970 256 226 221 225 303 280 263 161 211 126

1980 276 278 290 257 203 206 263 327 377 348

1990 333 220 252 257 257 222 329 336 315 207

2000 200 150 101 83 203 99 71 205 263 406

2010 227 359 463 298 291 22

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

215B 1935 to 2015 81 years Series 30

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

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

1935 1984 1 -.01 .00 .16 -.14 -.08 .00 -.12 .05 -.16 -.02 .16| .24\*-.17 -.02 .12 .01 -.18 -.12 .00 -.02 .09

1950 1999 3 -.07 .09 .00 -.22 .08 -.12 -.08 .17 -.12 .07 .18| .18 -.23 .19\* .00 -.04 .18 -.39 -.07 .10 -.06

1966 2015 0 -.07 .07 -.01 -.06 .17 -.08 -.04 .23 -.02 -.06 .27\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .308) is:

Lower 1973< -.062 1982< -.033 1994< -.017 1947< -.014 1970> -.010 1939> -.010 Higher 2015 .059 1936 .033

1935 to 1984 segment:

Lower 1973< -.089 1982< -.046 1947< -.022 1970> -.014 1969< -.014 1937> -.014 Higher 1936 .082 1948 .049

1950 to 1999 segment:

Lower 1973< -.095 1982< -.043 1994< -.037 1970> -.031 1977> -.017 1961< -.014 Higher 1997 .073 1985 .038

1966 to 2015 segment:

Lower 1973< -.088 1982< -.044 1994< -.026 1970> -.019 2009< -.013 1969< -.012 Higher 2015 .105 1997 .032

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

1973 -4.6 SD

215B Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1935 99 88 130 132 166

1940 160 106 153 159 103 92 94 95 91 102

1950 158 161 157 133 116 136 129 110 104 125

1960 147 125 115 206 199 152 133 138 160 128

1970 163 142 123 88 117 165 184 216 199 162

1980 163 189 131 145 198 152 168 157 125 217

1990 270 207 183 231 162 153 180 108 129 121

2000 183 208 182 112 133 80 31 34 31 35

2010 35 61 63 54 54 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 102A 1976 2015 40 1 0 .627 1.69 4.73 1.106 .697 .408 2.74 .582 .027 1

2 102B 1917 2015 99 4 0 .504 1.56 3.64 .758 .748 .321 2.77 .530 -.024 1

3 202A 1941 2015 75 3 2 .402 1.44 5.39 .987 .741 .351 2.88 .570 -.004 2

4 202B 1913 2015 103 4 3 .356 1.41 6.27 1.015 .666 .355 2.66 .457 -.102 1

5 203A 1978 2015 38 1 0 .507 2.89 6.63 1.305 .622 .318 2.64 .671 -.112 1

6 203B 1972 2015 44 1 1 .617 2.49 5.20 1.074 .653 .269 2.54 .463 -.022 1

7 204A 1985 2015 31 1 0 .801 2.42 3.61 .662 .134 .260 2.50 .561 -.064 3

8 204B 1986 2015 30 1 0 .495 2.45 4.03 .798 .439 .257 2.68 .593 -.068 1

9 205A 1913 2015 103 4 1 .415 1.14 3.02 .739 .848 .357 2.54 .422 -.027 2

10 205B 1919 2015 97 4 1 .499 1.60 4.73 1.062 .840 .360 2.66 .462 .029 1

11 206A 1935 2015 81 3 0 .692 1.62 6.15 1.291 .868 .372 2.55 .519 -.097 1

12 206B 1940 2015 76 3 0 .686 1.36 5.71 1.317 .885 .459 2.88 .441 -.046 1

13 207A 1913 2015 103 4 1 .560 1.06 3.91 .985 .946 .254 2.80 .473 .005 1

14 207B 1918 2015 98 4 1 .542 1.17 4.09 1.016 .912 .311 2.45 .361 -.047 1

15 212A 1922 2015 94 4 0 .564 1.12 3.53 .778 .782 .318 2.59 .451 -.061 1

16 212B 1922 2015 94 4 0 .639 1.95 4.60 .968 .834 .244 2.50 .375 -.004 1

17 213A 1930 2015 86 3 0 .720 1.68 5.67 1.548 .900 .346 2.68 .433 .009 1

18 213B 1929 2015 87 3 1 .546 1.64 5.39 1.359 .917 .287 2.68 .488 .000 1

19 214A 1976 2015 40 1 0 .552 3.98 6.82 1.693 .759 .241 2.48 .516 .089 1

20 214B 1952 2015 64 2 1 .521 2.90 5.68 1.419 .729 .281 2.54 .433 -.090 1

21 215A 1938 2015 78 3 0 .674 1.36 3.86 .651 .771 .289 2.44 .326 -.095 1

22 216A 1966 2015 50 1 0 .572 2.63 5.28 1.168 .724 .246 2.43 .447 -.094 1

23 216B 1973 2015 43 1 0 .633 2.39 3.51 .574 -.005 .232 2.49 .552 .052 1

24 217A 1940 2015 76 3 0 .688 2.36 4.17 .881 .730 .230 2.73 .446 -.057 1

25 217B 1927 2015 89 3 0 .537 1.50 4.18 1.005 .832 .333 2.62 .424 .062 1

26 275A 1930 2015 86 3 1 .520 1.66 6.00 1.492 .892 .445 2.53 .384 -.058 1

27 275B 1969 2015 47 1 0 .555 2.36 5.45 1.080 .777 .237 2.51 .444 .000 1

28 281A 1951 2015 65 2 1 .506 1.80 4.55 .886 .646 .351 2.85 .645 -.022 1

29 281B 1921 2015 95 4 0 .508 2.33 4.63 .954 .541 .308 2.61 .461 -.036 1

30 215B 1935 2015 81 3 3 .308 1.34 2.70 .512 .755 .214 2.81 .498 -.006 2

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Total or mean: 2193 79 17 .548 1.76 6.82 1.029 .761 .315 2.88 .467 -.029

- = [ COFECHA BEAL COF ] = -