[] Dendrochronology Program Library Run MHW\_L Program COF 12:07 Wed 21 Feb 2007 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 26351

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

Title of run: Mount Hunger-Waterbury-Low Corr3-30

File of DATED series: mhw\_low\_compact\_corr3-30.dta

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 30 years lagged successively by 15 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 .4226

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 1914 to 2006 93 years

Continuous time span is 1914 to 2006 93 years

Portion with two or more series is 1915 to 2006 92 years

>> 184b 1959 absent in 1 of 20 series, but is not usually narrow: master index is .661

>> 184b 1970 absent in 1 of 20 series, but is not usually narrow: master index is .302

>> 184b 1988 absent in 1 of 20 series, but is not usually narrow: master index is .319

>> 184b 1995 absent in 1 of 20 series, but is not usually narrow: master index is -.135

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

184b 5 absent rings: 1959 1970 1988 1990 1995

185b 1 absent rings: 2000

186a 1 absent rings: 1985

186b 1 absent rings: 1987

8 absent rings .461%

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 .109 20 2000 -1.658 20 1

1951 .780 20 2001 .585 20

1952 .723 20 2002 .141 20

1953 .230 20 2003 -.656 20

1954 .367 20 2004 1.073 20

1955 1.150 20 2005 .934 20

1956 1.287 20 2006 -.191 20

1957 -1.493 20

1958 -.918 20

1959 .661 20 1<<

1960 -.703 20

1961 -.258 20

1962 -.457 20

1963 .561 20

1914 -2.672 1 1964 .972 20

1915 .386 2 1965 .299 20

1916 -.237 8 1966 -.146 20

1917 -1.005 8 1967 .348 20

1918 .618 9 1968 -2.077 20

1919 -.507 11 1969 .856 20

1920 1.391 13 1970 .302 20 1<<

1921 1.794 14 1971 -.760 20

1922 1.245 14 1972 .383 20

1923 -.663 16 1973 .743 20

1924 .592 17 1974 -.466 20

1925 -.428 18 1975 .412 20

1926 .554 18 1976 -.493 20

1927 .580 18 1977 -.072 20

1928 -.633 18 1978 .836 20

1929 -.956 18 1979 .043 20

1930 -.647 18 1980 .642 20

1931 .034 19 1981 .139 20

1932 -2.513 19 1982 .993 20

1933 -.146 19 1983 -.067 20

1934 1.104 19 1984 .240 20

1935 .952 19 1985 -1.664 20 1

1936 -2.565 20 1986 -1.211 20

1937 -1.051 20 1987 -.638 20 1

1938 -.660 20 1988 .319 20 1<<

1939 1.029 20 1989 .665 20

1940 1.367 20 1990 -.740 20 1

1941 .594 20 1991 .800 20

1942 1.324 20 1992 -.879 20

1943 1.297 20 1993 -.444 20

1944 1.011 20 1994 1.237 20

1945 -3.059 20 1995 -.135 20 1<<

1946 -1.634 20 1996 -.645 20

1947 .974 20 1997 .803 20

1948 -.728 20 1998 1.031 20

1949 -.339 20 1999 -.291 20

PART 5: CORRELATION OF SERIES BY SEGMENTS: Mount Hunger-Waterbury-Low Corr3-30 12:07 Wed 21 Feb 2007 Page 5

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Correlations of 30-year dated segments, lagged 15 years

Flags: A = correlation under .4226 but highest as dated; B = correlation higher at other than dated position

Seq Series Time\_span 1905 1920 1935 1950 1965 1980

1934 1949 1964 1979 1994 2009

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

1 181a 1915 2006 .75 .73 .72 .41A .41A .64

2 181b 1916 2006 .56 .62 .69 .60 .62 .42A

3 182a 1920 2006 .58 .54 .48 .49 .45

4 182b 1931 2006 .59 .63 .36B .43 .41A

5 183a 1916 2006 .57 .60 .54 .28B .44B .45

6 183b 1923 2006 .63 .43 .38B .56 .33A

7 184a 1914 2006 .51 .65 .72 .70 .52 .54

8 184b 1936 2006 .53B .35A .39A .57

9 185a 1916 2006 .80 .75 .66 .28B .37A .42A

10 185b 1916 2006 .76 .82 .73 .25B .06B .18B This is as good as it is going to get

11 186a 1916 2006 .72 .76 .80 .57 .26B .30A

12 186b 1916 2006 .67 .72 .63 .46 .61 .60

13 187a 1919 2006 .70 .72 .63 .33A .48 .27A

14 187b 1920 2006 .67 .55 .35A .36B .25B

15 188a 1925 2006 .56B .59 .43B .46 .70

16 188b 1919 2006 .78 .77 .74 .61 .18B .17B

17 189a 1924 2006 .33B .37B .20B .25B .49

18 189b 1921 2006 .47 .45 .41A .30A .39A

19 190a 1918 2006 .47 .52 .74 .64 .71 .62

20 190b 1923 2006 .59 .62 .70 .76 .68

Av segment correlation .66 .64 .62 .44 .43 .44

181a 1915 to 2006 92 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

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

1950 1979 0 -.27 .16 .00 -.30 -.32 .12 .04 .23 -.01 .01 .41\*-.18 -.29 .29 -.19 .07 .16 -.17 -.01 -.15 -.14

1965 1994 0 -.11 -.10 -.23 .11 -.28 .39 -.11 .05 .12 -.19 .41\*-.29 .09 .17 -.10 .01 .08 -.21 -.21 .03 .18

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

Lower 1945> -.023 1969< -.021 1990< -.017 1974> -.013 1973< -.013 1961< -.010 Higher 1936 .028 1957 .017

1950 to 1979 segment:

Lower 1969< -.084 1973< -.050 1974> -.048 1961< -.033 1966> -.024 1958> -.015 Higher 1957 .139 1960 .029

1965 to 1994 segment:

Lower 1969< -.074 1973< -.043 1974> -.042 1968> -.026 1981< -.021 1966> -.018 Higher 1994 .047 1982 .027

181a Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1915 236 234 183 216 197

1920 220 250 215 155 166 138 158 178 168 172

1930 172 217 149 179 215 211 119 105 122 271

1940 310 298 356 347 338 213 200 290 186 200

1950 250 268 269 259 214 226 325 179 220 243

1960 168 135 130 187 250 187 210 220 146 117

1970 108 95 132 100 146 143 112 126 158 135

1980 149 72 138 78 77 64 62 60 94 92

1990 34 102 56 72 112 77 47 60 77 72

2000 45 69 66 37 89 131 100

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

181b 1916 to 2006 91 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

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

1977 2006 0 .10 .05 -.09 .04 -.06 -.16 .32 -.21 .09 -.13 .42\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .532) is:

Lower 1945> -.029 1989< -.023 1927< -.019 2004< -.016 1928> -.015 1999> -.009 Higher 1968 .033 1936 .030

1977 to 2006 segment:

Lower 1989< -.075 2004< -.063 1999> -.035 1979> -.026 2006> -.024 1980< -.019 Higher 1985 .142 1992 .048

181b Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1916 273 249 274 237

1920 241 272 233 153 179 157 190 144 203 194

1930 181 211 141 176 189 217 122 143 165 305

1940 355 389 384 430 378 272 269 394 248 269

1950 225 235 254 224 223 253 277 209 225 221

1960 148 174 173 247 270 247 156 144 85 182

1970 165 140 136 135 143 151 138 144 129 151

1980 106 106 137 93 81 30 60 84 121 49

1990 61 111 40 49 94 73 52 65 129 115

2000 73 116 63 53 48 73 96

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

182a 1920 to 2006 87 years Series 3

[B] Entire series, effect on correlation ( .510) is:

Lower 1985> -.030 1957> -.028 1921< -.021 1943< -.021 1967< -.016 1948> -.012 Higher 1945 .076 1968 .038

182a Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1920 427 299 366 282 287 191 190 197 180 247

1930 200 286 228 244 342 372 190 332 265 411

1940 432 501 385 215 169 47 202 248 292 350

1950 222 320 428 335 356 294 287 301 245 367

1960 314 338 289 290 277 290 181 140 87 187

1970 212 170 247 300 204 167 128 169 216 179

1980 191 129 124 87 102 122 102 123 120 93

1990 73 61 19 30 59 32 19 75 128 85

2000 20 34 39 25 78 150 194

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

182b 1931 to 2006 76 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

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

1950 1979 -9 .15 .41\* .20 -.22 .11 .03 -.31 -.27 .10 -.21 .36|-.12 .13 .16 .00 -.13 -.16 -.28 .09 .15 -.14

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

1977 2006 0 -.04 .34 -.03 .20 -.10 .10 .26 .13 -.22 .00 .41\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .527) is:

Lower 1932> -.037 1940< -.021 1955< -.014 1994< -.014 2006> -.013 1961> -.012 Higher 1945 .077 1936 .076

1950 to 1979 segment:

Lower 1961> -.061 1955< -.047 1970< -.037 1962> -.032 1960> -.031 1979> -.027 Higher 1968 .153 1957 .045

1977 to 2006 segment:

Lower 1994< -.069 2006> -.050 1977< -.029 1987> -.027 2004< -.024 1989< -.022 Higher 1990 .043 1992 .042

182b Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1931 330 336 311 339 380 141 346 263 602

1940 323 402 424 391 292 115 307 491 359 493

1950 318 360 372 308 287 256 280 236 263 260

1960 272 384 316 278 294 237 160 156 108 165

1970 107 138 122 132 101 115 82 67 144 148

1980 166 122 126 108 105 72 78 102 96 57

1990 27 49 26 30 34 27 24 76 125 58

2000 43 68 78 44 57 62 100

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

183a 1916 to 2006 91 years Series 5

[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 1979 8 -.24 -.14 .23 -.26 -.28 .16 -.02 .25 .16 -.23 .28| .01 -.09 .03 -.09 -.17 -.05 .06 .32\*-.10 .01

1965 1994 3 -.18 -.06 .24 -.21 -.08 .08 -.30 .11 -.17 -.12 .44|-.09 -.03 .45\*-.09 .13 -.07 -.07 -.12 -.05 .34

[B] Entire series, effect on correlation ( .432) is:

Lower 1932> -.050 1982< -.029 1950< -.023 1957> -.022 1960< -.020 2002> -.012 Higher 1945 .084 1936 .027

1950 to 1979 segment:

Lower 1957> -.076 1950< -.045 1956< -.027 1974> -.023 1965< -.021 1958> -.018 Higher 1960 .032 1955 .031

1965 to 1994 segment:

Lower 1982< -.139 1965< -.049 1974> -.033 1979> -.018 1980< -.016 1984< -.013 Higher 1985 .063 1994 .062

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

1932 +3.4 SD

183a Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1916 211 151 165 179

1920 236 247 218 161 155 142 186 180 190 254

1930 234 335 355 414 313 218 126 212 146 445

1940 305 266 278 265 266 121 223 336 253 303

1950 167 290 337 243 256 321 228 244 263 255

1960 154 197 198 248 224 167 181 224 184 226

1970 202 192 251 314 244 249 122 220 281 241

1980 131 150 46 99 76 34 24 63 67 96

1990 36 130 76 90 186 78 84 126 69 66

2000 57 83 172 100 126 108 115

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

183b 1923 to 2006 84 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

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

1950 1979 10 -.09 .02 -.01 -.29 .02 -.03 -.10 .02 -.24 .15 .38|-.39 .23 .03 .19 -.22 -.06 -.07 .02 -.14 .39\*

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

1977 2006 0 -.43 -.04 -.15 -.22 .07 .18 -.11 .21 -.25 -.19 .33\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .444) is:

Lower 1958< -.069 1982< -.028 1923> -.021 1964< -.019 1939< -.017 2005< -.014 Higher 1932 .028 1936 .028

1950 to 1979 segment:

Lower 1958< -.129 1964< -.045 1951< -.028 1976> -.021 1962> -.012 1956< -.012 Higher 1957 .091 1968 .042

1977 to 2006 segment:

Lower 1982< -.100 2005< -.047 2000> -.045 2004< -.040 1995> -.036 1988< -.021 Higher 1985 .115 1994 .073

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

1958 -6.2 SD

183b Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1923 169 191 167 209 188 198 202

1930 186 254 152 320 355 322 158 242 168 183

1940 354 467 551 566 432 209 348 478 303 448

1950 279 260 416 336 349 329 300 236 190 286

1960 280 289 299 280 249 289 279 376 255 325

1970 276 241 261 326 224 239 241 203 319 150

1980 146 133 63 76 152 39 21 111 59 69

1990 33 78 74 135 238 183 125 188 102 97

2000 105 171 156 88 73 53 66

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

184a 1914 to 2006 93 years Series 7

[\*] Early part of series cannot be checked from 1914 to 1914 -- not matched by another series

[B] Entire series, effect on correlation ( .598) is:

Lower 1917> -.016 1949< -.015 1928> -.014 1938> -.012 1990> -.011 1925< -.011 Higher 1945 .044 1968 .027

184a Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1914 217 318 322 419 556 464

1920 466 463 380 360 404 274 363 299 353 298

1930 315 298 235 286 300 286 214 254 352 424

1940 354 300 302 252 276 148 168 207 175 124

1950 173 208 178 176 210 236 309 147 164 162

1960 147 148 95 144 163 112 171 132 58 99

1970 87 89 149 139 108 186 177 97 206 110

1980 168 74 79 71 87 34 47 116 202 196

1990 147 102 58 66 66 58 44 90 104 48

2000 40 59 65 56 98 73 81

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

184b 1936 to 2006 71 years Series 8

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

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

1936 1965 -9 -.09 .55\* .03 -.25 -.16 .10 .01 -.45 -.25 .07 .53| .09 -.30 .23 .36 -.03 -.43 .03 .16 -.26 -.20

1950 1979 0 -.09 .06 -.17 .03 -.16 -.23 .19 -.11 .01 .32 .35\*-.29 -.14 .05 .08 -.21 -.03 -.11 .24 .05 .10

1965 1994 0 .01 .12 -.21 .21 .02 -.32 -.02 -.04 .14 .11 .39\*-.19 -.01 -.13 -.04 -.39 .11 .10 .13 -.10 .01

[B] Entire series, effect on correlation ( .314) is:

Lower 1959< -.081 1936> -.048 1970< -.033 1988< -.027 1948> -.017 1971> -.014 Higher 1945 .094 1968 .020

1936 to 1965 segment:

Lower 1959< -.234 1936> -.094 1948> -.033 1942< -.018 1941< -.017 1960> -.012 Higher 1945 .241 1939 .033

1950 to 1979 segment:

Lower 1959< -.148 1971> -.033 1970< -.028 1966> -.026 1976> -.016 1960> -.013 Higher 1968 .093 1957 .029

1965 to 1994 segment:

Lower 1970< -.080 1988< -.067 1971> -.038 1966> -.030 1977< -.018 1976> -.017 Higher 1968 .069 1985 .057

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

1959 1960 4.1 SD

[D] 5 Absent rings: Year Master N series Absent

1959 .661 20 1 >> WARNING: Ring is not usually narrow

1970 .302 20 1 >> WARNING: Ring is not usually narrow

1988 .319 20 1 >> WARNING: Ring is not usually narrow

1990 -.740 20 1

1995 -.135 20 1 >> WARNING: Ring is not usually narrow

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

1959 -5.6 SD

184b Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1936 237 207 187 293

1940 240 153 151 209 161 83 121 179 186 173

1950 149 204 154 152 143 162 165 97 71 0

1960 82 74 69 85 94 124 214 177 61 100

1970 0 118 83 118 98 67 108 35 92 124

1980 133 109 136 99 74 19 29 70 0 37

1990 0 43 26 31 33 0 31 67 73 15

2000 17 58 108 65 116 90 77

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

185a 1916 to 2006 91 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 1979 -3 -.27 -.02 .15 -.09 -.04 .05 -.10 .30\*-.38 -.06 .28|-.22 -.10 .07 -.05 .11 .08 -.04 .21 -.05 -.03

1965 1994 0 -.24 -.03 .04 -.19 -.20 .09 -.09 .07 .02 -.21 .37\*-.25 -.02 .15 -.25 .04 .31 .02 .12 -.19 .09

1977 2006 0 -.08 .10 .00 -.24 -.18 -.10 -.10 -.03 .08 .03 .42\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .559) is:

Lower 1947< -.035 1979< -.031 2001< -.025 1963< -.019 1974> -.014 1992> -.013 Higher 1945 .078 1936 .031

1950 to 1979 segment:

Lower 1979< -.080 1963< -.063 1974> -.047 1962> -.028 1973< -.020 1950> -.014 Higher 1957 .107 1969 .053

1965 to 1994 segment:

Lower 1979< -.098 1974> -.047 1992> -.043 1973< -.023 1987< -.014 1981> -.010 Higher 1985 .102 1969 .051

1977 to 2006 segment:

Lower 2001< -.087 1979< -.084 1992> -.057 2003> -.026 1995> -.016 1981> -.015 Higher 1985 .095 2000 .058

185a Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1916 339 288 299 237

1920 286 349 266 231 246 191 247 243 199 193

1930 188 198 148 181 217 206 110 168 180 141

1940 177 151 202 162 146 63 114 105 119 112

1950 175 125 125 113 138 147 164 77 91 157

1960 124 78 146 82 129 97 101 130 82 159

1970 150 80 84 77 109 76 76 64 68 29

1980 61 89 75 51 50 19 43 22 54 59

1990 30 90 56 29 54 42 16 38 49 24

2000 3 7 18 33 49 26 19

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

185b 1916 to 2006 91 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 1979 4 .07 .31 -.01 .12 -.06 -.31 .09 -.02 -.46 -.05 .25| .14 .09 .02 .31\*-.01 -.32 -.13 -.07 -.13 .15

1965 1994 -3 -.06 .21 -.25 -.03 .25 .14 .18 .28\*-.15 -.04 .06|-.19 .05 -.19 -.11 -.01 -.07 -.11 -.05 .02 .12

1977 2006 -3 -.01 .03 .02 .16 .10 .14 .03 .51\* .08 -.36 .18| - - - - - - - - - -

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

Lower 1916< -.031 1985> -.030 1968> -.024 1994< -.018 1967< -.013 1962> -.012 Higher 1945 .088 1936 .051

1950 to 1979 segment:

Lower 1968> -.059 1967< -.049 1962> -.046 1964< -.034 1960> -.033 1972< -.031 Higher 1957 .109 1971 .046

1965 to 1994 segment:

Lower 1985> -.107 1994< -.052 1968> -.046 1967< -.041 1986> -.028 1972< -.026 Higher 1969 .074 1971 .060

1977 to 2006 segment:

Lower 1985> -.132 1994< -.084 1986> -.030 1996> -.026 1988< -.025 1991< -.022 Higher 2000 .150 2004 .061

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

2000 -1.658 20 1

185b Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1916 322 352 371 335

1920 347 381 335 284 298 275 293 296 256 275

1930 217 207 127 155 238 216 94 177 150 214

1940 172 134 166 154 173 72 140 173 138 152

1950 186 222 167 159 143 147 147 121 130 149

1960 161 140 188 193 125 177 117 82 115 157

1970 160 67 70 92 69 72 76 83 106 59

1980 62 86 102 76 81 83 69 34 20 20

1990 5 19 18 13 10 10 30 41 26 25

2000 0 37 24 21 44 22 19

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

186a 1916 to 2006 91 years Series 11

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

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

1965 1994 9 .17 -.16 .18 .02 .02 -.11 -.21 -.13 .27 -.14 .26|-.09 -.17 .06 -.04 -.21 .03 -.11 .00 .33\*-.30

1977 2006 0 .22 -.05 -.12 .23 -.05 -.51 -.19 .19 .16 .03 .30\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .625) is:

Lower 1990> -.025 1928> -.020 2002< -.011 1971> -.010 1968> -.010 1992> -.010 Higher 1945 .031 1932 .027

1965 to 1994 segment:

Lower 1990> -.088 1971> -.033 1992> -.029 1967< -.021 1975< -.018 1966> -.017 Higher 1985 .089 1969 .062

1977 to 2006 segment:

Lower 1990> -.104 2002< -.040 1992> -.034 1987< -.018 1984< -.018 1994< -.016 Higher 1985 .097 1991 .032

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

1985 -1.664 20 1

186a Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1916 219 162 275 252

1920 352 328 328 263 291 293 285 316 319 258

1930 222 227 150 221 281 284 191 218 187 230

1940 234 198 214 229 224 136 131 266 173 183

1950 163 193 190 163 158 216 202 100 150 192

1960 162 191 131 169 134 124 156 101 79 194

1970 129 109 72 62 24 40 20 29 77 69

1980 110 54 90 76 31 0 33 9 46 90

1990 101 101 58 36 41 43 37 48 43 27

2000 23 28 6 14 38 50 10

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

186b 1916 to 2006 91 years Series 12

[B] Entire series, effect on correlation ( .614) is:

Lower 1945> -.024 1950< -.019 1921< -.015 1957> -.013 1984< -.010 1941< -.009 Higher 1936 .050 1932 .030

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

1987 -.638 20 1

186b Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1916 255 276 353 367

1920 478 377 524 397 502 470 470 468 365 327

1930 274 327 177 253 305 277 120 206 181 197

1940 224 154 192 252 239 164 119 203 133 170

1950 101 146 154 189 195 228 174 141 138 150

1960 97 103 112 141 135 99 140 111 72 104

1970 129 134 199 183 95 103 109 127 126 117

1980 81 63 69 64 32 7 20 0 38 47

1990 18 47 32 29 58 53 46 71 71 59

2000 29 50 13 13 22 50 31

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

187a 1919 to 2006 88 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 1979 0 -.33 -.10 .30 -.13 -.08 .24 .16 -.14 -.10 -.02 .33\*-.24 -.22 .07 .17 -.15 .09 -.07 -.01 .28 .11

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

1977 2006 0 .25 -.12 .17 -.04 .19 -.23 -.25 .00 -.03 -.27 .27\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .487) is:

Lower 1998< -.091 1960> -.019 1990> -.016 1962< -.015 1964< -.013 1925> -.013 Higher 1936 .042 1945 .021

1950 to 1979 segment:

Lower 1960> -.071 1964< -.049 1962< -.040 1971> -.026 1979> -.020 1978< -.018 Higher 1955 .041 1968 .037

1977 to 2006 segment:

Lower 1998< -.291 1990> -.057 1999> -.026 1979> -.016 1978< -.013 1984< -.013 Higher 1985 .131 2000 .063

187a Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1919 188

1920 348 454 389 331 462 490 469 396 183 87

1930 186 216 195 324 350 409 187 233 250 303

1940 381 324 327 435 367 241 257 323 214 246

1950 257 276 284 233 259 314 274 226 207 234

1960 251 207 159 189 166 164 157 190 157 190

1970 223 190 182 155 128 151 114 103 104 143

1980 132 139 133 105 80 40 78 68 127 173

1990 159 131 91 108 117 75 67 97 39 103

2000 69 183 125 111 158 153 120

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

187b 1920 to 2006 87 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 1979 0 -.03 -.06 .12 -.07 .23 -.27 -.12 .01 .02 -.04 .35\*-.10 .12 .03 -.15 -.09 -.05 -.19 -.13 .21 .01

1965 1994 -6 -.03 -.08 .13 -.07 .56\*-.37 -.19 -.09 .00 -.31 .36|-.12 .02 .13 -.11 .07 -.17 .02 -.08 -.01 .01

1977 2006 -6 .22 -.05 .11 -.03 .27\* .00 -.18 -.31 -.19 -.20 .25| - - - - - - - - - -

[B] Entire series, effect on correlation ( .454) is:

Lower 1974< -.054 1982< -.023 1957> -.022 1990> -.017 1971> -.013 1928> -.012 Higher 1968 .035 1932 .033

1950 to 1979 segment:

Lower 1957> -.084 1974< -.070 1971> -.040 1959< -.024 1960> -.017 1979> -.015 Higher 1968 .150 1955 .022

1965 to 1994 segment:

Lower 1974< -.073 1982< -.066 1990> -.051 1971> -.038 1986> -.019 1979> -.013 Higher 1968 .135 1985 .067

1977 to 2006 segment:

Lower 1982< -.108 1990> -.068 2005< -.046 1998< -.035 2002> -.026 1986> -.023 Higher 1985 .154 2000 .067

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

1974 -5.5 SD

187b Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1920 408 443 361 311 325 244 295 304 307 303

1930 243 219 158 254 267 218 176 150 211 282

1940 305 263 310 278 411 242 195 296 176 217

1950 271 248 227 226 239 260 243 220 166 167

1960 183 195 172 201 189 178 145 145 81 143

1970 105 142 155 130 25 60 92 100 92 124

1980 111 58 29 64 103 24 76 83 163 121

1990 123 89 50 49 78 41 18 31 21 18

2000 7 32 83 58 87 29 34

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

188a 1925 to 2006 82 years Series 15

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

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

1925 1954 -1 .10 .13 -.07 -.09 -.31 -.04 .10 -.14 -.34 .56\* .56|-.01 .07 -.11 .01 -.18 -.28 -.24 .30 .11 -.26

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

1950 1979 -3 -.06 .05 .02 -.32 .06 -.04 -.07 .49\*-.17 -.26 .43|-.17 -.08 .24 -.16 .19 -.02 -.43 .09 -.16 -.13

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

Lower 1968> -.021 1985> -.017 1971< -.017 1925> -.016 1948> -.015 1949< -.012 Higher 1936 .023 2000 .014

1925 to 1954 segment:

Lower 1946< -.064 1949< -.038 1925> -.035 1948> -.030 1950> -.012 1932> -.009 Higher 1936 .065 1945 .038

1950 to 1979 segment:

Lower 1968> -.073 1963< -.029 1970< -.025 1971< -.023 1950> -.017 1957> -.016 Higher 1960 .034 1969 .030

188a Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1925 386 319 315 149 183

1930 165 189 164 174 270 252 135 137 209 234

1940 294 245 316 236 268 168 124 222 253 173

1950 306 287 267 291 251 267 288 222 223 301

1960 198 222 198 189 228 186 183 203 194 241

1970 168 132 168 179 159 234 184 220 240 219

1980 269 234 268 177 175 177 140 125 154 193

1990 106 158 117 137 172 78 79 119 163 91

2000 47 126 84 87 134 147 107

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

188b 1919 to 2006 88 years Series 16

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

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

1965 1994 -3 .01 -.13 .00 -.23 .06 -.18 -.14 .42\* .18 -.07 .18|-.41 .10 -.12 .08 -.04 -.19 .33 -.12 .01 -.29

1977 2006 -3 .19 -.10 -.04 .12 -.32 -.06 -.04 .48\*-.02 -.07 .17| - - - - - - - - - -

[B] Entire series, effect on correlation ( .529) is:

Lower 1988< -.089 1992> -.022 1985> -.021 1978< -.017 1990> -.013 1926< -.012 Higher 1932 .024 1968 .019

1965 to 1994 segment:

Lower 1988< -.189 1992> -.056 1985> -.053 1978< -.042 1990> -.033 1966> -.007 Higher 1968 .116 1974 .039

1977 to 2006 segment:

Lower 1988< -.178 1992> -.062 1985> -.059 1978< -.040 1990> -.038 1996> -.009 Higher 2000 .070 2004 .048

188b Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1919 222

1920 323 302 270 179 223 204 168 215 145 154

1930 197 209 132 243 291 244 150 133 214 265

1940 297 276 285 289 254 150 148 166 135 162

1950 259 296 249 258 236 278 250 189 195 236

1960 162 192 196 212 243 243 215 180 143 179

1970 181 150 148 170 116 191 125 140 112 95

1980 143 144 196 130 191 158 120 105 60 122

1990 142 159 167 120 144 82 116 121 153 104

2000 77 116 135 112 192 176 85

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

189a 1924 to 2006 83 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

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

1924 1953 8 -.29 -.03 -.11 -.07 -.25 .17 .14 .33 -.34 .07 .33| .00 -.05 -.32 .24 -.06 -.21 -.20 .44\* .38 -.10

1935 1964 9 -.12 .10 .06 .09 -.31 -.02 .11 .11 -.34 .03 .37| .01 -.13 -.17 -.08 .12 -.25 -.19 .08 .48\*-.21

1950 1979 5 -.08 .26 .10 .05 -.16 -.11 -.14 .15 -.31 -.23 .20| .05 -.03 .07 -.12 .30\*-.03 -.13 -.01 .14 -.04

1965 1994 -3 -.15 .17 -.16 -.07 .00 .08 -.10 .25\*-.15 -.13 .25|-.17 .07 -.14 .13 .03 -.06 .16 -.04 .08 .24

[B] Entire series, effect on correlation ( .337) is:

Lower 1945> -.053 1968> -.051 1955< -.021 1991< -.016 1960> -.015 1932> -.013 Higher 1957 .059 1936 .019

1924 to 1953 segment:

Lower 1945> -.117 1928< -.045 1925> -.024 1932> -.022 1952< -.017 1938> -.016 Higher 1936 .055 1947 .033

1935 to 1964 segment:

Lower 1945> -.127 1955< -.050 1960> -.031 1959< -.026 1952< -.017 1938> -.016 Higher 1957 .135 1936 .049

1950 to 1979 segment:

Lower 1968> -.178 1955< -.052 1960> -.047 1974> -.034 1959< -.026 1962> -.024 Higher 1957 .323 1971 .042

1965 to 1994 segment:

Lower 1968> -.223 1991< -.055 1974> -.041 1978< -.016 1979< -.008 1975< -.007 Higher 1994 .071 1982 .041

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

1945 +3.4 SD; 1968 +3.4 SD

189a Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1924 271 294 245 255 80 127

1930 140 161 176 192 219 220 168 159 254 243

1940 260 228 343 330 324 282 229 329 214 186

1950 254 214 189 173 217 172 200 136 178 159

1960 196 177 196 196 201 173 131 159 179 163

1970 135 96 153 145 131 102 91 90 80 62

1980 71 67 93 57 77 59 47 61 67 66

1990 62 50 48 63 134 112 139 122 134 85

2000 75 128 81 93 180 158 92

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189b 1921 to 2006 86 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 1979 0 -.16 .28 .23 -.06 -.11 -.20 .00 -.15 -.20 -.23 .41\* .08 -.08 .25 .00 .20 -.12 -.21 .06 .07 -.31

1965 1994 0 .19 -.03 .00 .02 .04 .03 .06 -.19 .06 -.03 .30\*-.28 -.07 -.04 .17 -.06 .11 .18 -.16 .01 -.03

1977 2006 0 .38 -.16 -.26 .38 .23 -.16 -.08 .00 -.06 -.17 .39\* - - - - - - - - - -

[B] Entire series, effect on correlation ( .434) is:

Lower 1945> -.057 1928< -.021 1974> -.017 1962> -.012 2003> -.011 1985> -.011 Higher 1957 .043 1932 .030

1950 to 1979 segment:

Lower 1974> -.062 1962> -.043 1960> -.026 1959< -.021 1972< -.021 1958> -.014 Higher 1957 .295 1968 .022

1965 to 1994 segment:

Lower 1974> -.073 1985> -.042 1990> -.036 1972< -.030 1980< -.024 1966< -.017 Higher 1968 .075 1992 .049

1977 to 2006 segment:

Lower 2003> -.056 1985> -.055 1990> -.042 1980< -.027 1978< -.018 1981< -.010 Higher 2004 .049 1992 .048

189b Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1921 226 236 174 185 196 195 193 63 81

1930 109 123 89 143 186 197 148 131 182 185

1940 222 189 225 234 226 205 160 231 180 185

1950 221 209 170 150 140 184 196 93 128 138

1960 156 168 200 179 177 135 79 101 96 114

1970 105 99 89 105 137 140 111 114 96 84

1980 77 69 121 113 112 93 59 70 107 96

1990 89 86 65 62 93 90 69 80 86 78

2000 78 110 87 113 156 116 58

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190a 1918 to 2006 89 years Series 19

[B] Entire series, effect on correlation ( .550) is:

Lower 1929< -.079 1918< -.020 1936> -.014 1928> -.013 1925> -.011 1963< -.010 Higher 1945 .033 1932 .028

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

1928 1929 -4.2 SD

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

1929 -5.2 SD

190a Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1918 182 205

1920 224 233 261 201 307 271 258 268 225 20

1930 136 106 51 109 149 157 113 135 139 138

1940 171 140 157 164 153 90 90 187 110 139

1950 179 167 242 215 163 214 195 130 167 218

1960 145 149 124 120 166 157 134 191 101 121

1970 108 83 96 101 90 69 54 56 72 50

1980 56 60 73 72 62 22 26 26 26 47

1990 22 54 19 65 102 74 63 70 93 25

2000 19 46 46 36 30 51 10

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190b 1923 to 2006 84 years Series 20

[B] Entire series, effect on correlation ( .653) is:

Lower 1936> -.041 1948> -.021 1925> -.012 1947< -.010 1929> -.008 1961< -.007 Higher 1945 .065 1932 .025

190b Ring measurements

Annual values

Date 0 1 2 3 4 5 6 7 8 9

1923 223 282 349 359 398 298 306

1930 300 274 159 173 259 278 209 171 127 180

1940 204 198 165 173 139 66 86 120 172 147

1950 197 205 145 194 195 221 203 112 156 167

1960 96 83 91 149 171 124 150 190 97 230

1970 208 119 159 142 96 111 77 101 84 69

1980 68 78 109 56 59 39 48 35 48 51

1990 20 52 26 38 80 50 37 56 64 36

2000 26 50 30 8 19 29 10

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PART 7: DESCRIPTIVE STATISTICS: Mount Hunger-Waterbury-Low Corr3-30 12:07 Wed 21 Feb 2007 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 181a 1915 2006 92 6 2 .596 1.63 3.56 .778 .816 .248 2.63 .523 -.022 1

2 181b 1916 2006 91 6 1 .532 1.76 4.30 .898 .862 .244 2.50 .449 -.019 1

3 182a 1920 2006 87 5 0 .510 2.10 5.01 1.154 .820 .325 2.60 .532 .040 1

4 182b 1931 2006 76 5 2 .527 1.98 6.02 1.364 .795 .297 2.60 .376 -.053 1

5 183a 1916 2006 91 6 2 .432 1.92 4.45 .888 .682 .314 2.63 .441 -.011 1

6 183b 1923 2006 84 5 2 .444 2.27 5.66 1.191 .766 .309 2.67 .407 .040 1

7 184a 1914 2006 93 6 0 .598 1.95 5.56 1.198 .889 .267 2.79 .507 -.090 1

8 184b 1936 2006 71 4 3 .314 1.04 2.93 .662 .728 .597 2.58 .516 -.034 1

9 185a 1916 2006 91 6 3 .559 1.22 3.49 .802 .879 .359 2.58 .448 -.050 2

10 185b 1916 2006 91 6 3 .546 1.38 3.81 .980 .927 .299 2.48 .372 -.033 1

11 186a 1916 2006 91 6 2 .625 1.45 3.52 .948 .888 .366 2.57 .428 -.002 2

12 186b 1916 2006 91 6 0 .614 1.64 5.24 1.281 .917 .335 2.54 .406 -.059 1

13 187a 1919 2006 88 6 2 .487 2.09 4.90 1.083 .832 .247 2.70 .521 -.011 1

14 187b 1920 2006 87 5 3 .454 1.70 4.43 1.044 .886 .322 2.56 .384 .006 1

15 188a 1925 2006 82 5 2 .554 1.96 3.86 .671 .649 .240 2.63 .568 .054 1

16 188b 1919 2006 88 6 2 .529 1.82 3.23 .609 .699 .229 2.53 .485 -.027 1

17 189a 1924 2006 83 5 4 .337 1.58 3.43 .751 .830 .212 2.57 .484 -.051 1

18 189b 1921 2006 86 5 3 .434 1.35 2.36 .518 .790 .193 2.45 .409 -.030 2

19 190a 1918 2006 89 6 0 .550 1.20 3.07 .714 .805 .318 2.64 .396 -.015 1

20 190b 1923 2006 84 5 0 .653 1.35 3.98 .895 .883 .321 2.63 .457 .043 1

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Total or mean: 1736 110 36 .518 1.67 6.02 .923 .819 .300 2.79 .455 -.016

- = [ COFECHA MHW\_LCOF ] = -