[] Dendrochronology Program Library Run M1F1 Program COF 16:42 Mon 09 Jan 2012 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 28134

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 QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

 Title of run: MIC001\_FAGR\_Corr1-40

 File of DATED series: MIC001\_FAGR\_Compact\_Corr1

 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 40 years lagged successively by 20 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 .3665

 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 1932 to 2011 80 years

 Continuous time span is 1932 to 2011 80 years

 Portion with two or more series is 1933 to 2011 79 years

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

 \*C\* Number of dated series 16 \*C\*

 \*O\* Master series 1932 2011 80 yrs \*O\*

 \*F\* Total rings in all series 1017 \*F\*

 \*E\* Total dated rings checked 1016 \*E\*

 \*C\* Series intercorrelation .680 \*C\*

 \*H\* Average mean sensitivity .234 \*H\*

 \*A\* Segments, possible problems 10 \*A\*

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

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

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

 3a 1 absent rings: 1984

 3b 1 absent rings: 1984

 2 absent rings .197%

PART 2: TIME PLOT OF TREE-RING SERIES: MIC001\_FAGR\_Corr1-40 16:42 Mon 09 Jan 2012 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

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

 . . . . . . . . . . . . . . . . . . <=====> . 1a 1 1953 2011 59

 . . . . . . . . . . . . . . . . . . <======> . 1b 2 1948 2011 64

 . . . . . . . . . . . . . . . . . . . <===> . 2a 3 1973 2011 39

 . . . . . . . . . . . . . . . . . . <=====> . 2b 4 1954 2011 58

 . . . . . . . . . . . . . . . . . . <=======> . 3a 5 1932 2011 80

 . . . . . . . . . . . . . . . . . . <=======> . 3b 6 1933 2011 79

 . . . . . . . . . . . . . . . . . . <=====> . 4a 7 1950 2011 62

 . . . . . . . . . . . . . . . . . . <======> . 4b 8 1949 2011 63

 . . . . . . . . . . . . . . . . . . <======> . 5a 9 1949 2011 63

 . . . . . . . . . . . . . . . . . . <======> . 5b 10 1948 2011 64

 . . . . . . . . . . . . . . . . . . <=====> . 6a 11 1951 2011 61

 . . . . . . . . . . . . . . . . . . <=====> . 6b 12 1952 2011 60

 . . . . . . . . . . . . . . . . . . <======> . 18a 13 1948 2011 64

 . . . . . . . . . . . . . . . . . . <======> . 18b 14 1944 2011 68

 . . . . . . . . . . . . . . . . . . <=====> . 19a 15 1950 2011 62

 . . . . . . . . . . . . . . . . . . <======> . 19b 16 1941 2011 71

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

 1050 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600 1650 1700 1750 1800 1850 1900 1950 2000 2050

 1950 .575 11 2000 -.871 16

 1951 .559 12 2001 .951 16

 1952 .787 13 2002 .867 16

 1953 .425 14 2003 .339 16

 1954 .428 15 2004 1.353 16

 1955 .293 15 2005 .236 16

 1956 .838 15 2006 -1.813 16

 1957 -5.226 15 2007 .264 16

 1958 -.210 15 2008 .625 16

 1959 .258 15 2009 1.079 16

 1960 -.544 15 2010 .166 16

 1961 .639 15 2011 -2.573 16

 1962 -.562 15

 1963 -.590 15

 1964 1.007 15

 1965 1.155 15

 1966 .059 15

 1967 .249 15

 1968 -.405 15

 1969 -.163 15

 1970 .271 15

 1971 -.294 15

 1972 -.033 15

 1973 -1.237 16

 1974 -.572 16

 1975 .090 16

 1976 .649 16

 1977 .519 16

 1978 .465 16

 1979 .540 16

 1980 -.262 16

 1981 -.873 16

 1932 .531 1 1982 .508 16

 1933 1.587 2 1983 -.755 16

 1934 1.613 2 1984 -1.593 16 2

 1935 .773 2 1985 -.450 16

 1936 .461 2 1986 -.259 16

 1937 -.587 2 1987 .120 16

 1938 -.364 2 1988 1.318 16

 1939 -.218 2 1989 -.578 16

 1940 -.288 2 1990 .001 16

 1941 .548 3 1991 .450 16

 1942 -.389 3 1992 .492 16

 1943 -1.108 3 1993 .536 16

 1944 -2.033 4 1994 .038 16

 1945 -.746 4 1995 -.745 16

 1946 -.922 4 1996 -1.324 16

 1947 1.435 4 1997 .405 16

 1948 .667 7 1998 .339 16

 1949 .526 9 1999 .553 16

PART 5: CORRELATION OF SERIES BY SEGMENTS: MIC001\_FAGR\_Corr1-40 16:42 Mon 09 Jan 2012 Page 5

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 Correlations of 40-year dated segments, lagged 20 years

 Flags: A = correlation under .3665 but highest as dated; B = correlation higher at other than dated position

 Seq Series Time\_span 1920 1940 1960 1980

 1959 1979 1999 2019

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

 1 1a 1953 2011 .84 .65 .76

 2 1b 1948 2011 .88 .55 .67

 3 2a 1973 2011 .71

 4 2b 1954 2011 .79 .60 .73

 5 3a 1932 2011 .34A .33A .18B .57

 6 3b 1933 2011 .76 .76 .36A .47

 7 4a 1950 2011 .52 .63 .78

 8 4b 1949 2011 .31B .66 .66

 9 5a 1949 2011 .87 .38B .55

 10 5b 1948 2011 .85 .46 .55

 11 6a 1951 2011 .86 .48 .46

 12 6b 1952 2011 .82 .32A .49

 13 18a 1948 2011 .39B .32B .74

 14 18b 1944 2011 .61 .30B .66

 15 19a 1950 2011 .87 .59 .69

 16 19b 1941 2011 .78 .45 .59

 Av segment correlation .55 .70 .48 .62

PART 6: POTENTIAL PROBLEMS: MIC001\_FAGR\_Corr1-40 16:42 Mon 09 Jan 2012 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 40-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

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

 1a 1953 to 2011 59 years Series 1

 [B] Entire series, effect on correlation ( .833) is:

 Lower 1968> -.018 1984< -.017 1963< -.011 1990< -.010 1953> -.006 1964< -.006 Higher 1957 .157 2004 .004

 1a Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1953 229 219 187 194 51 141 162

 1960 142 190 157 104 140 173 171 165 184 164

 1970 166 118 137 98 111 112 125 134 140 126

 1980 100 106 129 103 66 104 143 163 232 125

 1990 117 166 195 170 182 146 159 210 210 212

 2000 154 241 222 207 257 219 152 202 187 174

 2010 117 71

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

 1b 1948 to 2011 64 years Series

 [B] Entire series, effect on correlation ( .812) is:

 Lower 1989< -.016 1990< -.014 2011> -.012 1968> -.011 1996> -.010 1966> -.008 Higher 1957 .201 2006 .004

 1b Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1948 202 156

 1950 158 181 164 165 177 124 179 36 124 140

 1960 115 136 111 118 145 170 170 180 165 146

 1970 145 119 126 92 96 118 146 115 116 128

 1980 118 125 165 122 129 149 151 189 225 97

 1990 118 168 201 213 208 182 197 201 208 187

 2000 149 213 189 176 191 145 114 204 201 245

 2010 183 97

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 2a 1973 to 2011 39 years Series 3

 [B] Entire series, effect on correlation ( .706) is:

 Lower 1989> -.038 1996> -.024 1973> -.016 1974> -.015 1982< -.015 1985< -.013 Higher 2011 .141 2000 .012

 2a Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1973 73 102 101 123 140 153 154

 1980 127 122 125 74 64 84 180 263 335 324

 1990 368 363 301 293 287 246 278 285 278 289

 2000 247 302 356 325 345 258 200 279 311 346

 2010 318 138

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 2b 1954 to 2011 58 years Series 4

 [B] Entire series, effect on correlation ( .774) is:

 Lower 2005< -.033 1996> -.019 1963> -.008 1968> -.007 1982< -.007 1999< -.006 Higher 1957 .076 2011 .027

 2b Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1954 143 94 83 15 55 76

 1960 75 119 110 134 173 174 153 167 155 140

 1970 119 93 88 67 64 74 101 122 117 117

 1980 102 120 126 101 86 122 183 189 267 198

 1990 235 269 272 255 222 192 236 270 255 219

 2000 183 245 240 243 289 185 125 179 200 236

 2010 180 81

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

 3a 1932 to 2011 80 years Series 5

 [\*] Early part of series cannot be checked from 1932 to 1932 -- not matched by another series

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

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

 1933 1972 0 - - - - - - - - - -.06 .34\*-.08 .03 -.16 -.02 -.03 .03 .03 -.07 -.07 -.55

 1940 1979 0 - - -.28 .03 -.20 .14 -.05 -.06 .05 -.15 .33\*-.11 -.01 -.11 -.04 -.14 .04 .04 -.06 -.03 -.43

 1960 1999 -5 .07 .02 -.28 -.10 -.18 .23\*-.07 .00 -.03 -.15 .18|-.05 .05 .02 .07 -.18 .15 .09 -.07 .02 -.02

 [B] Entire series, effect on correlation ( .422) is:

 Lower 1957> -.052 1946< -.046 1987< -.025 1977< -.017 1996> -.015 1963> -.014 Higher 2011 .065 2006 .025

 1933 to 1972 segment:

 Lower 1946< -.125 1938< -.027 1963> -.026 1936> -.017 1949< -.011 1940< -.010 Higher 1957 .051 1933 .030

 1940 to 1979 segment:

 Lower 1946< -.103 1977< -.036 1963> -.027 1942> -.009 1949< -.008 1940< -.008 Higher 1973 .028 1944 .026

 1960 to 1999 segment:

 Lower 1987< -.063 1996> -.049 1989> -.048 1977< -.044 1963> -.042 1982< -.014 Higher 1984 .118 1973 .061

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

 1984 -1.593 16 2

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

 1946 -4.7 SD; 1957 +4.4 SD

 3a Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1932 17 40 48 38 54 28 22 48

 1940 39 63 78 77 38 81 11 302 161 108

 1950 134 137 183 176 198 156 177 123 221 205

 1960 171 231 134 230 213 224 139 107 117 109

 1970 86 90 97 49 49 60 69 30 39 40

 1980 39 44 44 49 0 37 45 12 88 130

 1990 165 203 196 197 167 176 239 236 257 234

 2000 172 189 188 171 232 175 121 183 169 177

 2010 141 99

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

 3b 1933 to 2011 79 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

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

 1960 1999 0 -.06 .03 -.23 -.23 -.17 .30 -.19 .16 .07 -.24 .36\* .03 -.11 .18 -.04 -.15 .07 -.01 -.09 .03 -.03

 [B] Entire series, effect on correlation ( .659) is:

 Lower 1977< -.027 1989> -.020 1946> -.017 1938> -.015 1963> -.015 1996> -.014 Higher 1957 .179 2011 .015

 1960 to 1999 segment:

 Lower 1989> -.079 1977< -.069 1996> -.051 1963> -.046 1982< -.017 1970< -.014 Higher 1984 .073 1973 .062

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

 1984 -1.593 16 2

 3b Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1933 40 56 44 27 24 55 41

 1940 61 60 36 33 35 88 128 180 169 179

 1950 195 206 189 167 180 160 200 97 199 223

 1960 160 233 139 225 295 294 209 166 128 108

 1970 79 87 105 49 45 45 58 23 32 43

 1980 28 34 34 41 0 31 21 19 74 126

 1990 184 205 235 211 193 151 208 199 215 244

 2000 189 214 260 223 242 180 158 226 203 164

 2010 130 95

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 4a 1950 to 2011 62 years Series 7

 [B] Entire series, effect on correlation ( .601) is:

 Lower 1957> -.093 1953> -.021 1995> -.019 1959< -.016 2005> -.010 1977> -.007 Higher 2011 .050 1973 .009

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

 1953 +3.0 SD; 1957 +3.7 SD

 4a Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1950 370 355 385 486 331 346 307 188 238 161

 1960 125 169 133 136 180 154 125 96 60 81

 1970 70 66 71 53 90 104 116 170 150 166

 1980 115 91 147 104 106 165 128 134 160 123

 1990 148 162 177 205 186 237 179 245 210 252

 2000 184 303 311 256 296 298 139 266 261 281

 2010 246 112

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 4b 1949 to 2011 63 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

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

 1949 1988 4 .01 .07 -.06 -.13 -.26 .12 -.10 .00 .12 -.18 .31| .05 -.14 -.14 .55\*-.20 -.07 -.06 -.16 .11 .11

 [B] Entire series, effect on correlation ( .399) is:

 Lower 1953< -.136 1957> -.048 1959< -.012 2000> -.010 1986> -.008 1963> -.006 Higher 2011 .038 1973 .017

 1949 to 1988 segment:

 Lower 1953< -.171 1957> -.061 1959< -.015 1986> -.010 1963> -.007 1956< -.005 Higher 1973 .029 1988 .017

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

 1957 +4.5 SD

 4b Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1949 325

 1950 342 361 401 178 226 337 273 156 173 130

 1960 108 128 109 134 170 152 113 100 71 90

 1970 98 82 89 70 100 128 149 169 159 160

 1980 156 131 160 159 151 162 232 262 274 206

 1990 228 224 237 267 221 172 182 225 263 254

 2000 275 378 373 368 355 260 208 272 288 282

 2010 217 134

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

 5a 1949 to 2011 63 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

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

 1960 1999 -6 -.08 .00 -.19 -.28 .40\* .07 -.06 .17 .07 -.04 .38|-.23 -.35 .08 -.26 .02 .04 -.05 .15 .14 .21

 [B] Entire series, effect on correlation ( .804) is:

 Lower 1986< -.032 1994> -.012 2005> -.008 1961< -.008 1984> -.008 2011> -.007 Higher 1957 .251 1964 .003

 1960 to 1999 segment:

 Lower 1986< -.110 1994> -.041 1961< -.028 1984> -.017 1998< -.012 1987< -.010 Higher 1989 .053 1964 .041

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

 1957 -5.0 SD

 5a Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1949 195

 1950 222 225 206 169 167 149 147 21 132 147

 1960 131 119 121 103 157 162 125 120 123 156

 1970 178 151 130 122 142 154 186 191 192 206

 1980 187 169 243 166 171 255 51 111 272 153

 1990 151 192 255 354 395 255 211 230 208 239

 2000 208 262 255 229 260 260 157 206 197 237

 2010 162 86

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 5b 1948 to 2011 64 years Series 10

 [B] Entire series, effect on correlation ( .762) is:

 Lower 2011> -.028 1989> -.026 1968< -.020 2007< -.014 2000> -.010 1962> -.010 Higher 1957 .278 2006 .008

 5b Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1948 148 183

 1950 158 133 146 136 130 151 185 26 155 195

 1960 151 150 153 142 171 188 156 138 82 103

 1970 147 137 141 117 141 147 160 140 145 174

 1980 150 114 207 160 156 167 220 224 266 228

 1990 196 177 146 129 131 111 84 144 116 162

 2000 133 148 139 91 112 96 34 44 90 106

 2010 57 31

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 6a 1951 to 2011 61 years Series 11

 [B] Entire series, effect on correlation ( .771) is:

 Lower 2011> -.032 1992< -.011 2003< -.011 1974< -.010 1980> -.009 1983> -.009 Higher 1957 .286 2009 .003

 6a Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1951 278 299 328 284 278 303 67 243 274

 1960 238 248 190 236 272 258 206 221 208 222

 1970 272 255 237 204 181 207 217 217 218 220

 1980 232 204 268 209 183 191 196 170 173 116

 1990 141 135 119 125 124 118 96 131 132 128

 2000 111 139 112 76 140 125 79 98 140 209

 2010 152 89

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

 6b 1952 to 2011 60 years Series 12

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

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

 1960 1999 0 -.03 .17 -.14 -.14 .07 .10 -.24 -.05 -.20 .04 .32\*-.12 -.08 -.03 .06 .10 .02 -.18 -.14 -.14 .07

 [B] Entire series, effect on correlation ( .775) is:

 Lower 1984> -.023 1992< -.019 1993< -.017 1980> -.013 1974< -.013 1976< -.008 Higher 1957 .252 2011 .019

 1960 to 1999 segment:

 Lower 1984> -.076 1992< -.048 1993< -.045 1980> -.040 1983> -.022 1976< -.020 Higher 1988 .055 1962 .032

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

 1984 +3.2 SD

 6b Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1952 282 246 241 262 320 86 269 334

 1960 258 278 205 251 263 287 220 244 208 206

 1970 240 248 227 224 200 230 232 271 270 277

 1980 304 230 298 268 288 249 283 282 301 220

 1990 212 218 161 150 153 135 151 188 213 198

 2000 168 188 180 130 181 152 106 118 144 132

 2010 102 18

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

 18a 1948 to 2011 64 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

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

 1948 1987 -6 -.12 -.01 -.05 -.12 .58\* .00 -.15 .13 -.10 -.05 .39|-.23 -.09 .05 .00 .07 .04 -.15 -.17 .03 .22

 1960 1999 -6 -.10 -.01 -.07 -.17 .72\* .13 -.15 .14 -.22 -.05 .32|-.29 -.20 -.05 -.16 .16 .05 -.03 .02 -.11 .30

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

 Lower 1963< -.188 1988< -.010 1973> -.006 1974> -.004 1968> -.004 1953< -.004 Higher 2011 .036 1957 .025

 1948 to 1987 segment:

 Lower 1963< -.303 1973> -.006 1974> -.005 1953< -.005 1968> -.004 1964< -.003 Higher 1957 .152 1984 .013

 1960 to 1999 segment:

 Lower 1963< -.233 1988< -.030 1973> -.022 1968> -.011 1964< -.011 1974> -.009 Higher 1989 .081 1984 .028

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

 1962 1963 -4.4 SD

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

 1957 +3.1 SD; 1963 -8.4 SD

 18a Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1948 427 520

 1950 462 369 340 253 265 263 271 143 218 229

 1960 192 229 138 22 115 148 162 200 190 196

 1970 213 163 185 175 215 224 198 228 223 216

 1980 202 176 199 151 118 181 175 156 153 66

 1990 134 202 230 242 222 156 166 245 220 229

 2000 156 224 199 172 212 167 101 155 160 197

 2010 176 82

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 18b 1944 to 2011 68 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

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

 1960 1999 -3 -.03 .30 .01 -.09 .02 .17 -.31 .53\*-.26 -.30 .30|-.16 .06 .07 -.04 -.08 .07 -.04 .07 -.06 .00

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

 Lower 1989> -.031 1960< -.023 2000< -.020 1965< -.017 1946> -.013 1968> -.008 Higher 2011 .049 1957 .037

 1960 to 1999 segment:

 Lower 1989> -.112 1965< -.057 1968> -.027 1979< -.020 1974> -.014 1977< -.013 Higher 1988 .055 1962 .039

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

 1989 +3.5 SD

 18b Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1944 36 97 213 347 326 298

 1950 228 248 285 281 242 233 193 120 171 173

 1960 120 178 140 135 148 127 109 126 142 148

 1970 167 146 146 127 156 162 158 128 132 117

 1980 103 114 150 129 107 173 264 347 430 443

 1990 358 280 269 261 254 226 217 247 238 237

 2000 165 235 234 256 257 207 166 206 203 223

 2010 243 118

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

 19a 1950 to 2011 62 years Series 15

 [B] Entire series, effect on correlation ( .822) is:

 Lower 1996< -.035 1960> -.012 1986< -.009 1958< -.009 1973> -.006 1977> -.006 Higher 1957 .178 2006 .005

 19a Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1950 199 201 164 155 122 104 169 16 62 81

 1960 121 137 95 102 142 124 83 99 83 81

 1970 85 83 96 91 105 123 141 156 132 123

 1980 80 82 116 85 65 96 70 90 112 92

 1990 107 109 107 107 78 74 44 81 84 107

 2000 91 107 105 103 143 117 81 126 128 125

 2010 107 77

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 19b 1941 to 2011 71 years Series 16

 [B] Entire series, effect on correlation ( .713) is:

 Lower 1996< -.055 1947< -.025 1986< -.012 1960> -.011 1973> -.009 1969< -.009 Higher 1957 .216 2011 .017

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

 1996 -6.0 SD

 19b Ring measurements

 Annual values

 Date 0 1 2 3 4 5 6 7 8 9

 1941 33 27 16 13 15 48 56 66 92

 1950 160 149 157 175 173 146 212 23 124 208

 1960 217 222 185 156 196 195 142 157 133 111

 1970 121 118 137 137 143 159 149 153 131 130

 1980 109 87 114 100 90 102 80 110 115 89

 1990 83 87 109 107 93 90 61 99 98 108

 2000 97 114 107 114 127 117 83 93 102 120

 2010 109 51

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PART 7: DESCRIPTIVE STATISTICS: MIC001\_FAGR\_Corr1-40 16:42 Mon 09 Jan 2012 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 1a 1953 2011 59 3 0 .833 1.57 2.57 .457 .549 .222 2.49 .371 .007 1

 2 1b 1948 2011 64 3 0 .812 1.55 2.45 .396 .454 .203 2.33 .335 -.039 1

 3 2a 1973 2011 39 1 0 .706 2.30 3.68 .977 .859 .177 2.36 .450 .041 2

 4 2b 1954 2011 58 3 0 .774 1.57 2.89 .684 .842 .225 2.62 .500 .026 2

 5 3a 1932 2011 80 4 3 .422 1.23 3.02 .743 .749 .357 2.91 .489 -.012 1

 6 3b 1933 2011 79 4 1 .659 1.31 2.95 .803 .876 .314 2.48 .398 -.097 1

 7 4a 1950 2011 62 3 0 .601 1.89 4.86 .934 .814 .235 2.69 .520 -.100 1

 8 4b 1949 2011 63 3 1 .399 2.04 4.01 .874 .832 .176 2.45 .404 -.083 2

 9 5a 1949 2011 63 3 1 .804 1.83 3.95 .636 .558 .248 2.25 .291 -.040 2

 10 5b 1948 2011 64 3 0 .762 1.41 2.66 .460 .595 .250 2.31 .316 -.065 1

 11 6a 1951 2011 61 3 0 .771 1.89 3.28 .658 .706 .190 2.46 .312 -.053 1

 12 6b 1952 2011 60 3 1 .775 2.17 3.34 .646 .627 .190 2.30 .336 -.073 1

 13 18a 1948 2011 64 3 2 .508 2.03 5.20 .819 .791 .245 2.39 .365 .075 1

 14 18b 1944 2011 68 3 1 .625 2.01 4.43 .800 .826 .182 2.42 .452 -.073 1

 15 19a 1950 2011 62 3 0 .822 1.06 2.01 .329 .500 .235 2.37 .352 -.026 1

 16 19b 1941 2011 71 3 0 .713 1.15 2.22 .482 .721 .216 2.37 .358 -.043 1

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

 Total or mean: 1017 48 10 .680 1.66 5.20 .664 .707 .234 2.91 .391 -.037

 - = [ COFECHA M1F1 COF ] = -