[] Dendrochronology Program Library Run SUG Program COF 13:01 Thu 15 Feb 2012 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 28172

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QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

File of DATED series: SUG001\_ACSA

CONTENTS:

Part 1: Title page, options selected, summary, absent rings by series

Part 2: Histogram of time spans

Part 3: Master series with sample depth and absent rings by year

Part 4: Bar plot of Master Dating Series

Part 5: Correlation by segment of each series with Master

Part 6: Potential problems: low correlation, divergent year-to-year changes, absent rings, outliers

Part 7: Descriptive statistics

RUN CONTROL OPTIONS SELECTED VALUE

1 Cubic smoothing spline 50% wavelength cutoff for filtering

32 years

2 Segments examined are 50 years lagged successively by 25 years

3 Autoregressive model applied A Residuals are used in master dating series and testing

4 Series transformed to logarithms Y Each series log-transformed for master dating series and testing

5 CORRELATION is Pearson (parametric, quantitative)

Critical correlation, 99% confidence level .3281

6 Master dating series saved N

7 Ring measurements listed N

8 Parts printed 1234567

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

Time span of Master dating series is 1941 to 2011 71 years

Continuous time span is 1941 to 2011 71 years

Portion with two or more series is 1953 to 2011 59 years

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

\*C\* Number of dated series 2 \*C\*

\*O\* Master series 1941 2011 71 yrs \*O\*

\*F\* Total rings in all series 130 \*F\*

\*E\* Total dated rings checked 118 \*E\*

\*C\* Series intercorrelation .692 \*C\*

\*H\* Average mean sensitivity .463 \*H\*

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

\*\*\* Mean length of series 65.0 \*\*\*

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

20b 1 absent rings: 1990

1 absent rings .769%

PART 2: TIME PLOT OF TREE-RING SERIES: 13:01 Thu 15 Feb 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

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

. . . . . . . . . . . . . . . . . . <======> . 20a 1 1941 2011 71

. . . . . . . . . . . . . . . . . . <=====> . 20b 2 1953 2011 59

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

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: 13:01 Thu 15 Feb 2012 Page 3

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Year Value No Ab Year Value No Ab Year Value No Ab Year Value No Ab Year Value No Ab Year Value No Ab

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1950 1.011 1 2000 .735 2

1951 .772 1 2001 .145 2

1952 -.841 1 2002 -.825 2

1953 .658 2 2003 -.182 2

1954 1.284 2 2004 .160 2

1955 -.740 2 2005 -.074 2

1956 .838 2 2006 .137 2

1957 1.369 2 2007 -.119 2

1958 .081 2 2008 -.045 2

1959 -.086 2 2009 .528 2

1960 -.137 2 2010 .203 2

1961 -.374 2 2011 -.631 2

1962 -.302 2

1963 -.383 2

1964 -.950 2

1965 -.460 2

1966 -.209 2

1967 -4.994 2

1968 -.389 2

1969 .289 2

1970 .889 2

1971 1.214 2

1972 .470 2

1973 .445 2

1974 .688 2

1975 .477 2

1976 .915 2

1977 1.051 2

1978 1.068 2

1979 .656 2

1980 -2.042 2

1981 -.927 2

1982 -.648 2

1983 -.454 2

1984 .507 2

1985 -.754 2

1986 -1.330 2

1987 -.551 2

1988 .556 2

1989 1.261 2

1990 -.965 2 1

1941 .126 1 1991 .650 2

1942 1.242 1 1992 .123 2

1943 .616 1 1993 .867 2

1944 -.957 1 1994 .051 2

1945 -.236 1 1995 -.708 2

1946 -2.772 1 1996 -.128 2

1947 .056 1 1997 .215 2

1948 -1.038 1 1998 1.223 2

1949 1.005 1 1999 .671 2

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PART 4: Master Bar Plot: 13:01 Thu 15 Feb 2012 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---------D 2000--------C

1951--------C 2001-----A

1952-c 2002-c

1953--------C 2003---a

1954----------E 2004-----A

1955-c 2005----@

1956--------C 2006-----A

1957----------E 2007----@

1958-----@ 2008----@

1959----@ 2009-------B

1960----a 2010-----A

1961---a 2011--c

1962---a

1963---b

1964-d

1965--b

1966---a

1967t

1968---b

1969------A

1970---------D

1971----------E

1972-------B

1973-------B

1974--------C

1975-------B

1976---------D

1977---------D

1978---------D

1979--------C

1980h

1981-d

1982--c

1983--b

1984-------B

1985-c

1986e

1987--b

1988-------B

1989----------E

1990-d

1941-----A 1991--------C

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

1943-------B 1993--------C

1944-d 1994-----@

1945---a 1995-c

1946k 1996----a

1947-----@ 1997------A

1948-d 1998----------E

1949---------D 1999--------C

PART 5: CORRELATION OF SERIES BY SEGMENTS: 13:01 Thu 15 Feb 2012 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 1950 1975

1999 2024

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1 20a 1941 2011 .82 .69

2 20b 1953 2011 .81 .67

Av segment correlation .81 .68

PART 6: POTENTIAL PROBLEMS: 13:01 Thu 15 Feb 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 50-year segments of series filtered with 32-year spline,

at every point from ten years earlier (-10) to ten years later (+10) than dated

[B] Effect of those data values which most lower or raise correlation with master series

Symbol following year indicates value in series is greater (>) or lesser (<) than master series value

[C] Year-to-year changes very different from the mean change in other series

[D] Absent rings (zero values)

[E] Values which are statistical outliers from mean for the year

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20a 1941 to 2011 71 years Series 1

[\*] Early part of series cannot be checked from 1941 to 1952 -- not matched by another series

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

Lower 2010> -.038 2004< -.033 1995> -.031 2008< -.020 1958> -.017 1987< -.016 Higher 1967 .185 1990 .014

[E] Outliers 8 3.0 SD above or -4.5 SD below mean for year

1958 +4.1 SD; 1981 +3.1 SD; 1987 -5.8 SD; 1995 +7.4 SD; 2004 -7.4 SD; 2006 +3.4 SD; 2007 +3.7 SD;

2010 +5.4 SD

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20b 1953 to 2011 59 years Series 2

[B] Entire series, effect on correlation ( .694) is:

Lower 2010< -.036 2004> -.032 1995< -.030 2008> -.020 1987> -.016 1958< -.016 Higher 1967 .176 1990 .017

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

1990 -.965 2 1

Present in series 1 20a time span 1941 to 2011

[E] Outliers 8 3.0 SD above or -4.5 SD below mean for year

1987 +5.8 SD; 1995 -7.4 SD; 2003 +3.5 SD; 2004 +7.4 SD; 2005 +4.1 SD; 2008 +3.8 SD; 2009 +3.0 SD;

2010 -5.4 SD

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

PART 7: DESCRIPTIVE STATISTICS: 13:01 Thu 15 Feb 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 ()

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1 20a 1941 2011 71 2 0 .691 2.39 5.48 1.466 .750 .453 2.51 .426 -.047 1

2 20b 1953 2011 59 2 0 .694 2.37 7.10 1.484 .672 .476 2.41 .401 -.037 2

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Total or mean: 130 4 0 .692 2.38 7.10 1.474 .714 .463 2.51 .414 -.043

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