[] Dendrochronology Program Library Run RS\_F Program COF 12:38 Tue 21 Apr 2020 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 31159

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 QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS COF12K.for

 Title of run: Red Spruce, Big Moose Lake, NY (KT Smith

 File of DATED series: RS\_F.rrw

 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 not transformed to logarithms N

 5 CORRELATION is Pearson (parametric, quantitative)

 Critical correlation, 99% confidence level 0.3281

 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 1677 to 1993 317 years

 Continuous time span is 1677 to 1993 317 years

 Portion with two or more series is 1734 to 1993 260 years

 >> F172 1978 absent in 1 of 61 series, but is not usually narrow: master index is 0.058

 >> F172 1979 absent in 1 of 61 series, but is not usually narrow: master index is -0.092

 >> F481 1754 absent in 1 of 3 series, but is not usually narrow: master index is 0.547

 >> F461 1789 absent in 1 of 10 series, but is not usually narrow: master index is 0.388

 >> F462 1865 absent in 1 of 28 series, but is not usually narrow: master index is 0.084

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

 \*C\* Number of dated series 62 \*C\*

 \*O\* Master series 1677 1993 317 yrs \*O\*

 \*F\* Total rings in all series 8904 \*F\*

 \*E\* Total dated rings checked 8847 \*E\*

 \*C\* Series intercorrelation 0.607 \*C\*

 \*H\* Average mean sensitivity 0.219 \*H\*

 \*A\* Segments, possible problems 11 \*A\*

 \*\*\* Mean length of series 143.0 \*\*\*

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

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

 F172 2 absent rings: 1978 1979

 F221 3 absent rings: 1861 1862 1863

 F222 1 absent rings: 1862

 F331 6 absent rings: 1834 1835 1836 1837 1838 1839

 F371 1 absent rings: 1861

 F392 2 absent rings: 1860 1862

 F481 1 absent rings: 1754

 F461 4 absent rings: 1789 1861 1862 1863

 F462 4 absent rings: 1862 1863 1864 1865

 24 absent rings 0.270%

PART 2: TIME PLOT OF TREE-RING SERIES: Red Spruce, Big Moose Lake, NY (KT Smith 12:38 Tue 21 Apr 2020 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

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 . . . . . . . . . . . . . . . . . <=========>. . F191 1 1890 1991 102

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 . . . . . . . . . . . . . . . . . <===========>. . F132 12 1875 1991 117

 . . . . . . . . . . . . . . . . . <==========>. . F122 13 1887 1991 105

 . . . . . . . . . . . . . . . . .<============>. . F111 14 1865 1991 127

 . . . . . . . . . . . . . . . . . <===========>. . F161 15 1874 1991 118

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 . . . . . . . . . . . . . <===============================>. . F292 33 1677 1992 316

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 . . . . . . . . . . . . . . . . . <==========>. . F342 40 1888 1992 105

 . . . . . . . . . . . . . . . . <=============>. . F371 41 1856 1992 137

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 . . . . . . . . . . . . . . . <==================>. . F411 46 1808 1993 186

 . . . . . . . . . . . . . . . . <================>. . F412 47 1822 1993 172

 . . . . . . . . . . . . . . . . .<============>. . F422 48 1869 1993 125

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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

PART 2: TIME PLOT OF TREE-RING SERIES: Red Spruce, Big Moose Lake, NY (KT Smith 12:38 Tue 21 Apr 2020 Page 3

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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

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 . . . . . . . . . . . . . . . . . <=========>. . F452 54 1890 1993 104

 . . . . . . . . . . . . . . . . . <=========>. . F451 55 1895 1993 99

 . . . . . . . . . . . . . . . . . <===========>. . F471 56 1874 1993 120

 . . . . . . . . . . . . . . . . . <===========>. . F472 57 1877 1993 117

 . . . . . . . . . . . . . . . . <=============>. . F491 58 1856 1993 138

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 . . . . . . . . . . . . . . .<======================>. . F462 62 1763 1993 231

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

 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: Red Spruce, Big Moose Lake, NY (KT Smith 12:38 Tue 21 Apr 2020 Page 4

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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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 1700 -1.113 1 1750 1.083 2 1800 0.438 10 1850 1.495 19 1900 1.208 62

 1701 0.072 1 1751 2.019 3 1801 1.035 10 1851 1.799 21 1901 0.203 62

 1702 1.072 1 1752 -0.197 3 1802 0.038 10 1852 0.830 22 1902 -0.991 62

 1703 -0.384 1 1753 0.718 3 1803 0.466 10 1853 2.136 23 1903 0.519 62

 1704 -0.250 1 1754 0.547 3 1<< 1804 -0.016 10 1854 0.287 23 1904 0.725 62

 1705 1.834 1 1755 -0.931 3 1805 0.699 10 1855 -0.120 23 1905 0.251 62

 1706 1.770 1 1756 -1.312 3 1806 -0.216 10 1856 0.856 25 1906 0.033 62

 1707 0.029 1 1757 -1.003 3 1807 0.869 10 1857 -0.663 25 1907 -0.628 62

 1708 -1.030 1 1758 -1.156 4 1808 0.452 11 1858 -1.210 25 1908 -0.483 62

 1709 -1.441 1 1759 -1.214 5 1809 0.090 11 1859 -1.165 25 1909 -0.983 62

 1710 -2.186 1 1760 -0.043 6 1810 0.332 11 1860 -1.656 25 1 1910 0.048 62

 1711 -1.179 1 1761 -0.556 6 1811 0.756 11 1861 -1.868 25 3 1911 -2.352 62

 1712 -0.577 1 1762 -0.537 6 1812 -1.029 11 1862 -1.354 25 5 1912 -1.151 62

 1713 -2.395 1 1763 -0.303 7 1813 -0.055 12 1863 -1.101 26 3 1913 -0.007 62

 1714 -0.471 1 1764 -0.236 7 1814 -0.640 12 1864 -0.977 26 1 1914 -0.553 62

 1715 -0.752 1 1765 -0.019 7 1815 0.636 12 1865 0.084 28 1<< 1915 0.157 62

 1716 -1.529 1 1766 0.559 7 1816 0.025 12 1866 0.026 28 1916 1.580 62

 1717 -1.073 1 1767 0.449 7 1817 1.386 13 1867 0.570 29 1917 1.109 62

 1718 -0.834 1 1768 0.834 7 1818 0.437 13 1868 -0.079 30 1918 -0.405 62

 1719 -0.702 1 1769 0.861 7 1819 -0.533 13 1869 0.392 32 1919 0.130 62

 1720 0.582 1 1770 0.204 7 1820 -0.501 13 1870 0.277 33 1920 -0.460 62

 1721 -1.477 1 1771 1.737 7 1821 -0.364 13 1871 0.601 34 1921 1.648 62

 1722 1.314 1 1772 1.217 7 1822 -0.204 14 1872 0.114 34 1922 0.576 62

 1723 0.634 1 1773 -0.246 7 1823 0.429 14 1873 -0.415 34 1923 -0.227 62

 1724 2.677 1 1774 -0.403 7 1824 0.152 14 1874 1.322 36 1924 1.282 62

 1725 1.521 1 1775 -0.757 7 1825 0.774 15 1875 0.677 37 1925 -0.164 62

 1726 0.165 1 1776 -0.444 7 1826 0.050 15 1876 -0.014 39 1926 0.066 62

 1677 0.222 1 1727 0.918 1 1777 0.834 8 1827 0.888 15 1877 0.511 41 1927 0.418 62

 1678 -0.326 1 1728 1.624 1 1778 0.499 8 1828 -0.053 15 1878 0.177 45 1928 1.061 62

 1679 1.179 1 1729 1.459 1 1779 -0.379 9 1829 -0.019 15 1879 -0.898 45 1929 0.145 62

 1680 -0.877 1 1730 2.420 1 1780 0.309 9 1830 1.215 15 1880 0.463 49 1930 0.190 62

 1681 0.490 1 1731 -1.752 1 1781 -0.015 9 1831 0.685 15 1881 0.802 50 1931 0.390 62

 1682 0.495 1 1732 -0.557 1 1782 0.285 9 1832 1.702 15 1882 0.467 52 1932 0.567 62

 1683 4.337 1 1733 0.259 1 1783 0.004 9 1833 0.823 16 1883 -0.563 52 1933 -0.330 62

 1684 -0.910 1 1734 0.799 2 1784 -0.337 10 1834 -0.562 16 1 1884 -0.131 53 1934 -0.882 62

 1685 -1.793 1 1735 0.694 2 1785 1.195 10 1835 -1.401 16 1 1885 -0.237 53 1935 -2.168 62

 1686 -1.971 1 1736 -1.838 2 1786 0.998 10 1836 -0.471 16 1 1886 1.967 53 1936 -0.867 62

 1687 -1.006 1 1737 1.039 2 1787 -0.605 10 1837 -1.467 16 1 1887 -0.870 55 1937 -0.747 62

 1688 -1.373 1 1738 -1.222 2 1788 -0.529 10 1838 -1.608 16 1 1888 -0.475 56 1938 1.699 62

 1689 -1.232 1 1739 -1.105 2 1789 0.388 10 1<< 1839 -1.777 16 1 1889 0.351 56 1939 1.279 62

 1690 -0.988 1 1740 -0.273 2 1790 -1.222 10 1840 -0.366 16 1890 -0.591 58 1940 -0.122 62

 1691 -0.558 1 1741 -0.673 2 1791 -1.322 10 1841 -1.091 16 1891 0.095 58 1941 1.596 62

 1692 -0.095 1 1742 -0.614 2 1792 -1.715 10 1842 -0.737 16 1892 -0.872 58 1942 -0.156 62

 1693 1.011 1 1743 1.523 2 1793 -1.301 10 1843 -0.363 16 1893 -0.150 60 1943 -1.368 62

 1694 0.789 1 1744 -0.551 2 1794 -1.666 10 1844 -0.131 16 1894 0.652 60 1944 -0.851 62

 1695 1.195 1 1745 -0.848 2 1795 -0.366 10 1845 0.447 16 1895 -0.665 61 1945 0.177 62

 1696 0.189 1 1746 0.266 2 1796 -0.083 10 1846 0.044 16 1896 0.432 61 1946 -0.360 62

 1697 1.471 1 1747 -0.569 2 1797 1.269 10 1847 -0.360 17 1897 -0.184 62 1947 0.084 62

 1698 4.164 1 1748 -0.610 2 1798 0.977 10 1848 0.726 17 1898 0.073 62 1948 -2.299 62

 1699 -1.462 1 1749 -0.066 2 1799 0.288 10 1849 0.544 17 1899 0.089 62 1949 -0.735 62

PART 3: Master Dating Series: Red Spruce, Big Moose Lake, NY (KT Smith 12:38 Tue 21 Apr 2020 Page 5

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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 -1.154 62

 1951 -0.522 62

 1952 0.223 62

 1953 0.344 62

 1954 1.394 62

 1955 1.030 62

 1956 -1.654 62

 1957 -0.308 62

 1958 1.342 62

 1959 0.526 62

 1960 0.210 62

 1961 1.505 62

 1962 0.147 62

 1963 0.595 62

 1964 1.167 62

 1965 0.609 62

 1966 -0.419 62

 1967 -0.578 62

 1968 -0.923 62

 1969 0.846 62

 1970 -0.182 62

 1971 1.246 62

 1972 0.203 62

 1973 -0.119 62

 1974 -1.480 62

 1975 -0.040 61

 1976 -1.018 61

 1977 -0.173 61

 1978 0.058 61 1<<

 1979 -0.092 61 1<<

 1980 0.620 61

 1981 -1.483 61

 1982 -1.037 61

 1983 -0.436 61

 1984 -1.811 61

 1985 -0.706 61

 1986 -0.283 61

 1987 1.146 61

 1988 0.509 61

 1989 0.142 61

 1990 0.779 61

 1991 1.126 61

 1992 0.767 43

 1993 0.647 17

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PART 4: Master Bar Plot: Red Spruce, Big Moose Lake, NY (KT Smith 12:38 Tue 21 Apr 2020 Page 6

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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

 1700-d 1750---------D 1800-------B 1850----------F 1900---------E 1950-e

 1701-----@ 1751----------H 1801---------D 1851----------G 1901------A 1951---b

 1702---------D 1752----a 1802-----@ 1852--------C 1902-d 1952------A

 1703---b 1753--------C 1803-------B 1853----------I 1903-------B 1953-------A

 1704----a 1754-------B 1804-----@ 1854------A 1904--------C 1954----------F

 1705----------G 1755-d 1805--------C 1855----@ 1905------A 1955---------D

 1706----------G 1756-e 1806----a 1856--------C 1906-----@ 1956g

 1707-----@ 1757-d 1807--------C 1857--c 1907--c 1957----a

 1708-d 1758-e 1808-------B 1858-e 1908---b 1958---------E

 1709f 1759-e 1809-----@ 1859-e 1909-d 1959-------B

 1710i 1760-----@ 1810-------A 1860g 1910-----@ 1960------A

 1711-e 1761---b 1811--------C 1861g 1911i 1961----------F

 1712---b 1762---b 1812-d 1862-e 1912-e 1962------A

 1713j 1763----a 1813-----@ 1863-d 1913-----@ 1963--------B

 1714---b 1764----a 1814--c 1864-d 1914---b 1964---------E

 1715--c 1765-----@ 1815--------C 1865-----@ 1915------A 1965--------B

 1716f 1766-------B 1816-----@ 1866-----@ 1916----------F 1966---b

 1717-d 1767-------B 1817----------F 1867-------B 1917---------D 1967---b

 1718--c 1768--------C 1818-------B 1868-----@ 1918---b 1968-d

 1719--c 1769--------C 1819---b 1869-------B 1919------A 1969--------C

 1720--------B 1770------A 1820---b 1870------A 1920---b 1970----a

 1721f 1771----------G 1821---a 1871--------B 1921----------G 1971---------E

 1722---------E 1772---------E 1822----a 1872------@ 1922--------B 1972------A

 1723--------C 1773----a 1823-------B 1873---b 1923----a 1973----@

 1724----------K 1774---b 1824------A 1874---------E 1924---------E 1974f

 1725----------F 1775--c 1825--------C 1875--------C 1925----a 1975-----@

 1726------A 1776---b 1826-----@ 1876-----@ 1926-----@ 1976-d

 1677------A 1727---------D 1777--------C 1827--------D 1877-------B 1927-------B 1977----a

 1678----a 1728----------F 1778-------B 1828-----@ 1878------A 1928---------D 1978-----@

 1679---------E 1729----------F 1779---b 1829-----@ 1879--d 1929------A 1979-----@

 1680--d 1730----------J 1780------A 1830---------E 1880-------B 1930------A 1980--------B

 1681-------B 1731g 1781-----@ 1831--------C 1881--------C 1931-------B 1981f

 1682-------B 1732---b 1782------A 1832----------G 1882-------B 1932-------B 1982-d

 1683----------Q 1733------A 1783-----@ 1833--------C 1883---b 1933----a 1983---b

 1684--d 1734--------C 1784----a 1834---b 1884----a 1934--d 1984g

 1685g 1735--------C 1785---------E 1835f 1885----a 1935i 1985--c

 1686h 1736g 1786---------D 1836---b 1886----------H 1936--c 1986----a

 1687-d 1737---------D 1787--b 1837f 1887--c 1937--c 1987---------E

 1688-e 1738-e 1788---b 1838f 1888---b 1938----------G 1988-------B

 1689-e 1739-d 1789-------B 1839g 1889-------A 1939---------E 1989------A

 1690-d 1740----a 1790-e 1840---a 1890---b 1940----@ 1990--------C

 1691---b 1741--c 1791-e 1841-d 1891------@ 1941----------F 1991---------E

 1692-----@ 1742--b 1792g 1842--c 1892--c 1942----a 1992--------C

 1693---------D 1743----------F 1793-e 1843---a 1893----a 1943-e 1993--------C

 1694--------C 1744---b 1794g 1844----a 1894--------C 1944--c

 1695---------E 1745--c 1795---a 1845-------B 1895--c 1945------A

 1696------A 1746------A 1796-----@ 1846-----@ 1896-------B 1946---a

 1697----------F 1747---b 1797---------E 1847---a 1897----a 1947-----@

 1698----------Q 1748--b 1798---------D 1848--------C 1898-----@ 1948i

 1699f 1749-----@ 1799------A 1849-------B 1899-----@ 1949--c

PART 5: CORRELATION OF SERIES BY SEGMENTS: Red Spruce, Big Moose Lake, NY (KT S 12:38 Tue 21 Apr 2020 Page 5

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 Correlations of 50-year dated segments, lagged 25 years

 Flags: A = correlation under 0.3281 but highest as dated; B = correlation higher at other than dated position

 Seq Series Time\_span 1725 1750 1775 1800 1825 1850 1875 1900 1925 1950

 1774 1799 1824 1849 1874 1899 1924 1949 1974 1999

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 1 F191 1890 1991 .56 .65 .58 .68

 2 F192 1880 1991 .42 .56 .54 .73

 3 F182 1880 1991 .38 .67 .62 .55

 4 F142 1878 1991 .69 .77 .62 .62

 5 F171 1897 1991 .61 .74 .69 .55

 6 F141 1880 1991 .46 .70 .75 .77

 7 F162 1852 1991 .63 .64 .71 .75 .67

 8 F112 1876 1991 .47 .57 .80 .76

 9 F181 1887 1991 .49 .74 .67 .60

 10 F131 1877 1991 .70 .67 .75 .79

 11 F121 1893 1991 .50 .52 .64 .64

 12 F132 1875 1991 .60 .64 .77 .76

 13 F122 1887 1991 .53 .67 .74 .74

 14 F111 1865 1991 .39 .55 .75 .80 .73

 15 F161 1874 1991 .65 .65 .67 .70 .73

 16 F152 1851 1991 .69 .60 .66 .75 .67

 17 F172 1881 1991 .67 .79 .75 .73

 18 F151 1734 1991 .06B-.17B-.20B .13B .39B .44 .49 .63 .73 .61

 19 F232 1884 1992 .05B .41 .59 .66

 20 F271 1880 1992 .57 .75 .68 .62

 21 F272 1878 1992 .62 .74 .67 .59

 22 F241 1871 1992 .62 .64 .76 .81 .72

 23 F291 1869 1992 .59 .63 .73 .72 .65

 24 F231 1893 1992 .40 .47 .50 .60

 25 F282 1878 1992 .63 .80 .79 .68

 26 F221 1817 1992 .48 .62 .52 .39 .57 .77 .62

 27 F251 1758 1992 .53 .56 .56 .72 .73 .79 .84 .73 .73

 28 F222 1833 1992 .66 .64 .52 .66 .71 .55

 29 F281 1870 1992 .49 .54 .71 .71 .65

 30 F262 1863 1974 .60 .69 .67 .53

 31 F242 1784 1992 .64 .54 .61 .64 .66 .77 .78 .57

 32 F252 1779 1992 .59 .61 .82 .68 .62 .82 .80 .70

 33 F292 1677 1992 .18B .32B .69 .74 .79 .62 .61 .75 .77 .67

 34 F331 1777 1992 .51 .41 .66 .72 .71 .69 .69 .72

 35 F352 1847 1992 .60 .58 .51 .67 .66 .66

 36 F311 1878 1992 .61 .71 .85 .79

 37 F332 1868 1992 .54 .58 .73 .75 .72

 38 F341 1882 1992 .57 .69 .67 .60

 39 F372 1865 1992 .47 .55 .66 .87 .83

 40 F342 1888 1992 .41 .57 .69 .60

 41 F371 1856 1992 .58 .66 .74 .77 .73

 42 F361 1850 1992 .58 .59 .63 .70 .71

 43 F381 1850 1992 .64 .72 .80 .65 .67

 44 F392 1759 1992 .42 .57 .67 .77 .53 .58 .73 .77 .72

 45 F312 1853 1992 .57 .70 .72 .70 .52

 46 F411 1808 1993 .33B .66 .79 .67 .71 .71 .62

 47 F412 1822 1993 .52 .59 .84 .77 .78 .72 .66

 48 F422 1869 1993 .55 .58 .43 .51 .67

 49 F421 1825 1993 .60 .68 .65 .54 .55 .61

 50 F431 1813 1993 .37 .59 .67 .64 .60 .62 .66

 51 F432 1851 1993 .54 .63 .61 .62 .64

 52 F441 1867 1993 .62 .62 .62 .63 .66

 53 F442 1876 1993 .59 .70 .81 .74

 54 F452 1890 1993 .41 .51 .55 .65

 55 F451 1895 1993 .53 .58 .66 .57

 56 F471 1874 1993 .49 .47 .53 .55 .48

 57 F472 1877 1993 .45 .40 .44 .49

 58 F491 1856 1993 .54 .61 .60 .54 .58

 59 F492 1882 1993 .72 .73 .67 .60

 60 F481 1751 1993 .30A .53 .57 .71 .69 .70 .74 .74 .64

 61 F461 1760 1993 .20B .38 .68 .67 .68 .77 .80 .64 .59

 62 F462 1763 1993 .38 .45 .64 .78 .74 .68 .62 .57 .50

 Av segment correlation 0.12 0.28 0.47 0.52 0.66 0.61 0.58 0.67 0.69 0.66

PART 6: POTENTIAL PROBLEMS: Red Spruce, Big Moose Lake, NY (KT Smith 12:38 Tue 21 Apr 2020 Page 7

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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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 F191 1890 to 1991 102 years Series 1

 [B] Entire series, effect on correlation ( 0.627) is:

 Lower 1935>-0.031 1897>-0.020 1964<-0.018 1920>-0.016 1974>-0.015 1928<-0.012 Higher 1948 0.023 1921 0.021

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

 1897 +3.5 SD

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

 F192 1880 to 1991 112 years Series 2

 [B] Entire series, effect on correlation ( 0.536) is:

 Lower 1935>-0.032 1883>-0.021 1886<-0.017 1952<-0.015 1924<-0.015 1897>-0.012 Higher 1911 0.035 1956 0.028

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

 1883 +3.0 SD; 1935 +3.7 SD

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

 F182 1880 to 1991 112 years Series 3

 [B] Entire series, effect on correlation ( 0.475) is:

 Lower 1886<-0.031 1881<-0.030 1887>-0.020 1938<-0.017 1917<-0.014 1986>-0.011 Higher 1948 0.034 1911 0.033

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

 1986 +3.8 SD

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

 F142 1878 to 1991 114 years Series 4

 [B] Entire series, effect on correlation ( 0.649) is:

 Lower 1974>-0.019 1890>-0.017 1959>-0.011 1916<-0.009 1979>-0.009 1982>-0.008 Higher 1948 0.028 1911 0.023

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

 1890 +3.5 SD; 1959 +3.5 SD

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 F171 1897 to 1991 95 years Series 5

 [B] Entire series, effect on correlation ( 0.573) is:

 Lower 1897>-0.034 1984>-0.018 1903<-0.016 1985>-0.015 1954<-0.012 1921<-0.012 Higher 1948 0.040 1911 0.024

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

 1897 +3.4 SD; 1985 +3.4 SD

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

 F141 1880 to 1991 112 years Series 6

 [B] Entire series, effect on correlation ( 0.651) is:

 Lower 1886<-0.020 1908<-0.014 1921<-0.014 1881<-0.012 1914>-0.010 1892>-0.009 Higher 1948 0.029 1911 0.022

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 F162 1852 to 1991 140 years Series 7

 [B] Entire series, effect on correlation ( 0.667) is:

 Lower 1919<-0.010 1868>-0.009 1865<-0.009 1991<-0.009 1986>-0.009 1912>-0.007 Higher 1938 0.016 1956 0.012

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 F112 1876 to 1991 116 years Series 8

 [B] Entire series, effect on correlation ( 0.638) is:

 Lower 1916<-0.018 1881<-0.015 1918>-0.015 1905>-0.012 1906>-0.009 1921<-0.008 Higher 1948 0.017 1956 0.016

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

 1906 +3.2 SD

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

 F181 1887 to 1991 105 years Series 9

 [B] Entire series, effect on correlation ( 0.567) is:

 Lower 1887>-0.064 1985>-0.022 1907>-0.014 1902>-0.014 1956>-0.011 1960>-0.011 Higher 1911 0.032 1948 0.030

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1887 +4.0 SD; 1908 +3.2 SD; 1985 +3.9 SD

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 F131 1877 to 1991 115 years Series 10

 [B] Entire series, effect on correlation ( 0.732) is:

 Lower 1912<-0.009 1937>-0.007 1897<-0.006 1941<-0.006 1928<-0.006 1906>-0.006 Higher 1886 0.017 1921 0.012

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 F121 1893 to 1991 99 years Series 11

 [B] Entire series, effect on correlation ( 0.569) is:

 Lower 1911>-0.038 1973>-0.037 1900<-0.015 1958<-0.014 1902>-0.012 1904<-0.011 Higher 1981 0.017 1938 0.017

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1911 +3.5 SD; 1913 +3.1 SD; 1973 +4.6 SD

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

 F132 1875 to 1991 117 years Series 12

 [B] Entire series, effect on correlation ( 0.684) is:

 Lower 1882<-0.017 1920<-0.014 1911>-0.011 1903<-0.010 1962>-0.010 1906>-0.007 Higher 1886 0.019 1935 0.013

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 F122 1887 to 1991 105 years Series 13

 [B] Entire series, effect on correlation ( 0.636) is:

 Lower 1889<-0.021 1920<-0.018 1937>-0.014 1984>-0.011 1897>-0.010 1934>-0.010 Higher 1935 0.016 1948 0.014

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

 1896 +3.0 SD

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 F111 1865 to 1991 127 years Series 14

 [B] Entire series, effect on correlation ( 0.630) is:

 Lower 1873>-0.015 1881<-0.014 1869<-0.014 1867<-0.011 1900<-0.011 1887>-0.009 Higher 1911 0.020 1948 0.017

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 F161 1874 to 1991 118 years Series 15

 [B] Entire series, effect on correlation ( 0.682) is:

 Lower 1897>-0.021 1969<-0.011 1930>-0.011 1921<-0.011 1877<-0.010 1933>-0.009 Higher 1886 0.019 1981 0.012

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1886 +3.2 SD; 1897 +3.8 SD; 1916 +4.2 SD

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 F152 1851 to 1991 141 years Series 16

 [B] Entire series, effect on correlation ( 0.662) is:

 Lower 1923>-0.015 1914>-0.012 1971<-0.007 1876>-0.007 1872>-0.007 1983>-0.007 Higher 1948 0.015 1941 0.012

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

 1900 +3.4 SD

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

 F172 1881 to 1991 111 years Series 17

 [B] Entire series, effect on correlation ( 0.702) is:

 Lower 1881<-0.014 1887>-0.013 1888>-0.012 1978<-0.007 1983>-0.007 1926<-0.007 Higher 1948 0.019 1911 0.016

 [D] 2 Absent rings: Year Master N series Absent

 1978 0.058 61 1 >> WARNING: Ring is not usually narrow

 1979 -0.092 61 1 >> WARNING: Ring is not usually narrow

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

 1888 +3.1 SD

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 F151 1734 to 1991 258 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

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

 1734 1783 -2 .06 -.03 -.18 -.11 .11 -.06 -.01 .28 .37\*-.01 .06|-.13 -.06 .11 -.19 -.11 .00 .06 .14 -.25 -.05

 1750 1799 -3 -.11 -.06 -.20 -.15 .24 -.11 .15 .42\* .34 .03 -.17|-.16 .00 -.12 -.22 -.18 .27 .10 .04 -.11 .09

 1775 1824 -6 .02 .23 -.17 -.11 .39\*-.01 -.03 .15 .35 -.08 -.20|-.28 -.14 -.11 -.05 -.10 .31 .08 .16 -.05 .08

 1800 1849 -2 .13 .16 -.22 -.08 .02 -.06 .04 -.01 .52\* .06 .13| .04 -.04 .19 .09 -.06 .11 -.06 .02 -.09 -.15

 1825 1874 -2 .02 -.13 -.15 .06 .03 .33 .18 .18 .64\* .12 .39|-.01 .05 .22 -.20 -.17 .00 -.23 -.22 -.14 -.23

 [B] Entire series, effect on correlation ( 0.295) is:

 Lower 1791>-0.029 1751<-0.016 1770>-0.015 1739>-0.009 1752>-0.009 1819>-0.009 Higher 1956 0.016 1736 0.013

 1734 to 1783 segment:

 Lower 1770>-0.049 1751<-0.044 1752>-0.029 1739>-0.029 1754>-0.027 1734>-0.018 Higher 1736 0.078 1737 0.049

 1750 to 1799 segment:

 Lower 1791>-0.081 1770>-0.036 1754>-0.024 1752>-0.022 1785<-0.021 1797<-0.017 Higher 1792 0.030 1787 0.020

 1775 to 1824 segment:

 Lower 1791>-0.100 1819>-0.031 1785<-0.027 1806>-0.023 1797<-0.023 1802>-0.015 Higher 1812 0.046 1807 0.044

 1800 to 1849 segment:

 Lower 1819>-0.053 1808<-0.040 1806>-0.040 1834>-0.035 1802>-0.026 1801<-0.024 Higher 1832 0.043 1827 0.042

 1825 to 1874 segment:

 Lower 1858>-0.053 1834>-0.050 1855>-0.030 1836<-0.025 1831<-0.016 1857>-0.015 Higher 1853 0.056 1832 0.037

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

 1751 1752 4.9 SD

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

 1735 +3.6 SD; 1751 -4.9 SD; 1754 +4.6 SD; 1770 +4.4 SD; 1791 +7.2 SD; 1792 +3.3 SD; 1819 +4.3 SD;

 1858 +3.2 SD

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 F232 1884 to 1992 109 years Series 19

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

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

 1884 1933 8 -.19 -.24 .04 -.09 -.05 -.14 .10 .16 -.20 .04 .05| .15 -.04 -.07 .08 .05 .08 .03 .17\*-.03 -.12

 [B] Entire series, effect on correlation ( 0.375) is:

 Lower 1887>-0.049 1892>-0.038 1935>-0.023 1918>-0.022 1920>-0.013 1891<-0.011 Higher 1948 0.053 1984 0.020

 1884 to 1933 segment:

 Lower 1887>-0.098 1892>-0.072 1918>-0.044 1920>-0.024 1933>-0.018 1891<-0.016 Higher 1916 0.046 1895 0.040

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

 1886 1887 4.1 SD

 [E] Outliers 5 3.0 SD above or -4.5 SD below mean for year

 1887 +4.0 SD; 1892 +3.4 SD; 1920 +3.3 SD; 1935 +4.0 SD; 1936 +3.7 SD

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 F271 1880 to 1992 113 years Series 20

 [B] Entire series, effect on correlation ( 0.616) is:

 Lower 1971<-0.026 1880<-0.016 1884>-0.016 1892>-0.013 1894<-0.011 1942>-0.009 Higher 1935 0.016 1948 0.015

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 F272 1878 to 1992 115 years Series 21

 [B] Entire series, effect on correlation ( 0.615) is:

 Lower 1971<-0.021 1990<-0.014 1897<-0.011 1894<-0.011 1901>-0.010 1878<-0.010 Higher 1911 0.030 1935 0.014

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

 1901 +3.0 SD

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 F241 1871 to 1992 122 years Series 22

 [B] Entire series, effect on correlation ( 0.711) is:

 Lower 1915<-0.018 1911>-0.016 1982>-0.012 1899>-0.009 1877<-0.008 1974>-0.008 Higher 1935 0.011 1941 0.010

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

 1900 +3.5 SD

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 F291 1869 to 1992 124 years Series 23

 [B] Entire series, effect on correlation ( 0.655) is:

 Lower 1948>-0.023 1880<-0.016 1869<-0.013 1893>-0.011 1877<-0.010 1883>-0.010 Higher 1886 0.021 1935 0.015

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

 1893 +3.3 SD

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 F231 1893 to 1992 100 years Series 24

 [B] Entire series, effect on correlation ( 0.506) is:

 Lower 1935>-0.022 1911>-0.022 1924<-0.018 1928<-0.017 1933>-0.013 1941<-0.011 Higher 1938 0.031 1948 0.028

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1935 +3.0 SD; 1936 +3.2 SD; 1961 +3.1 SD

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 F282 1878 to 1992 115 years Series 25

 [B] Entire series, effect on correlation ( 0.672) is:

 Lower 1895>-0.018 1881>-0.013 1968>-0.010 1880<-0.010 1985>-0.009 1982>-0.009 Higher 1911 0.019 1956 0.016

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

 1881 +3.3 SD

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 F221 1817 to 1992 176 years Series 26

 [B] Entire series, effect on correlation ( 0.539) is:

 Lower 1817<-0.018 1883>-0.017 1918>-0.014 1900<-0.014 1822>-0.012 1980<-0.010 Higher 1956 0.018 1938 0.015

 [D] 3 Absent rings: Year Master N series Absent

 1861 -1.868 25 3

 1862 -1.354 25 5

 1863 -1.101 26 3

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1822 +4.0 SD; 1883 +4.3 SD; 1986 +3.0 SD

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 F251 1758 to 1992 235 years Series 27

 [B] Entire series, effect on correlation ( 0.692) is:

 Lower 1938<-0.010 1805>-0.009 1777<-0.008 1972>-0.007 1772<-0.005 1771>-0.005 Higher 1948 0.010 1886 0.009

 [E] Outliers 4 3.0 SD above or -4.5 SD below mean for year

 1771 +4.3 SD; 1785 +3.1 SD; 1805 +3.9 SD; 1972 +3.2 SD

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 F222 1833 to 1992 160 years Series 28

 [B] Entire series, effect on correlation ( 0.604) is:

 Lower 1883>-0.017 1980<-0.014 1900<-0.012 1946>-0.011 1991<-0.009 1833>-0.008 Higher 1941 0.013 1853 0.013

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

 1862 -1.354 25 5

 [E] Outliers 4 3.0 SD above or -4.5 SD below mean for year

 1840 +3.3 SD; 1883 +4.3 SD; 1946 +3.3 SD; 1990 +3.1 SD

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 F281 1870 to 1992 123 years Series 29

 [B] Entire series, effect on correlation ( 0.591) is:

 Lower 1881>-0.029 1906>-0.015 1988>-0.012 1968>-0.012 1882<-0.011 1879>-0.011 Higher 1948 0.015 1935 0.014

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

 1881 +5.7 SD; 1906 +3.2 SD

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 F262 1863 to 1974 112 years Series 30

 [B] Entire series, effect on correlation ( 0.589) is:

 Lower 1938<-0.028 1957>-0.018 1972>-0.017 1905>-0.014 1956>-0.013 1870>-0.012 Higher 1911 0.025 1948 0.020

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

 1957 +5.0 SD; 1958 +3.1 SD

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 F242 1784 to 1992 209 years Series 31

 [B] Entire series, effect on correlation ( 0.640) is:

 Lower 1982>-0.016 1845>-0.016 1975<-0.012 1816>-0.011 1804>-0.006 1899>-0.006 Higher 1941 0.009 1887 0.008

 [E] Outliers 5 3.0 SD above or -4.5 SD below mean for year

 1817 +3.2 SD; 1845 +5.2 SD; 1899 +3.3 SD; 1917 +3.3 SD; 1982 +3.9 SD

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 F252 1779 to 1992 214 years Series 32

 [B] Entire series, effect on correlation ( 0.700) is:

 Lower 1809<-0.011 1781>-0.007 1902>-0.007 1885>-0.007 1823>-0.007 1980<-0.007 Higher 1956 0.008 1941 0.007

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

 1874 +3.0 SD; 1902 +3.1 SD

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 F292 1677 to 1992 316 years Series 33

 [\*] Early part of series cannot be checked from 1677 to 1733 -- 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

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

 1734 1783 3 -.14 -.19 .08 -.02 -.13 .08 -.10 .07 -.13 -.22 .18|-.16 .25 .35\*-.03 .03 .21 -.26 -.16 -.05 -.24

 1750 1799 3 -.14 -.25 .11 -.16 -.18 .11 -.10 -.06 -.06 .00 .32| .07 .16 .46\* .21 -.08 .01 -.12 -.29 -.21 -.29

 [B] Entire series, effect on correlation ( 0.561) is:

 Lower 1765>-0.014 1743<-0.014 1734<-0.011 1754<-0.010 1739<-0.010 1753<-0.007 Higher 1935 0.008 1941 0.008

 1734 to 1783 segment:

 Lower 1765>-0.042 1739<-0.029 1754<-0.028 1734<-0.023 1753<-0.016 1735<-0.016 Higher 1736 0.064 1737 0.039

 1750 to 1799 segment:

 Lower 1765>-0.060 1754<-0.051 1753<-0.036 1771<-0.025 1768<-0.023 1767<-0.020 Higher 1785 0.045 1751 0.041

 [E] Outliers 6 3.0 SD above or -4.5 SD below mean for year

 1750 +3.6 SD; 1751 +4.0 SD; 1754 -4.6 SD; 1765 +4.5 SD; 1766 +3.9 SD; 1980 +3.9 SD

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 F331 1777 to 1992 216 years Series 34

 [B] Entire series, effect on correlation ( 0.656) is:

 Lower 1921<-0.010 1938<-0.009 1816>-0.008 1778<-0.007 1934>-0.007 1813<-0.006 Higher 1911 0.015 1886 0.011

 [D] 6 Absent rings: Year Master N series Absent

 1834 -0.562 16 1

 1835 -1.401 16 1

 1836 -0.471 16 1

 1837 -1.467 16 1

 1838 -1.608 16 1

 1839 -1.777 16 1

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

 1816 +3.4 SD

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 F352 1847 to 1992 146 years Series 35

 [B] Entire series, effect on correlation ( 0.626) is:

 Lower 1895>-0.017 1965>-0.012 1881<-0.010 1949>-0.010 1985>-0.010 1925>-0.007 Higher 1948 0.023 1958 0.010

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

 1895 +3.3 SD; 1965 +3.9 SD

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 F311 1878 to 1992 115 years Series 36

 [B] Entire series, effect on correlation ( 0.710) is:

 Lower 1882<-0.017 1900<-0.013 1915<-0.011 1975<-0.011 1896<-0.011 1912>-0.009 Higher 1911 0.019 1886 0.018

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

 1910 +3.2 SD; 1913 +3.1 SD

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 F332 1868 to 1992 125 years Series 37

 [B] Entire series, effect on correlation ( 0.668) is:

 Lower 1890>-0.022 1979>-0.015 1878<-0.010 1965>-0.009 1961<-0.009 1904<-0.008 Higher 1948 0.013 1956 0.012

 [E] Outliers 4 3.0 SD above or -4.5 SD below mean for year

 1890 +3.4 SD; 1891 +3.4 SD; 1965 +3.3 SD; 1979 +3.4 SD

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 F341 1882 to 1992 111 years Series 38

 [B] Entire series, effect on correlation ( 0.622) is:

 Lower 1948>-0.017 1955<-0.014 1902>-0.011 1920>-0.011 1899>-0.010 1882>-0.010 Higher 1911 0.025 1956 0.021

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 F372 1865 to 1992 128 years Series 39

 [B] Entire series, effect on correlation ( 0.682) is:

 Lower 1896<-0.018 1865<-0.017 1982>-0.015 1900<-0.011 1873>-0.010 1909>-0.008 Higher 1948 0.018 1956 0.013

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 F342 1888 to 1992 105 years Series 40

 [B] Entire series, effect on correlation ( 0.536) is:

 Lower 1924<-0.064 1986<-0.010 1957<-0.009 1990<-0.009 1979<-0.009 1909>-0.009 Higher 1911 0.034 1921 0.024

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

 1891 +3.3 SD; 1924 -4.9 SD

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 F371 1856 to 1992 137 years Series 41

 [B] Entire series, effect on correlation ( 0.697) is:

 Lower 1873>-0.011 1909>-0.010 1906>-0.009 1893<-0.008 1878>-0.007 1864>-0.006 Higher 1911 0.018 1938 0.015

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

 1861 -1.868 25 3

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 F361 1850 to 1992 143 years Series 42

 [B] Entire series, effect on correlation ( 0.652) is:

 Lower 1959>-0.015 1865>-0.011 1877<-0.010 1902>-0.009 1948>-0.009 1955<-0.008 Higher 1956 0.015 1886 0.015

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

 1865 +3.2 SD; 1902 +3.0 SD

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 F381 1850 to 1992 143 years Series 43

 [B] Entire series, effect on correlation ( 0.696) is:

 Lower 1971<-0.017 1960>-0.009 1959<-0.009 1883>-0.008 1935>-0.008 1895>-0.007 Higher 1948 0.016 1886 0.010

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

 1916 +3.0 SD

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 F392 1759 to 1992 234 years Series 44

 [B] Entire series, effect on correlation ( 0.646) is:

 Lower 1881<-0.025 1761>-0.011 1804>-0.009 1884<-0.007 1885>-0.007 1971<-0.007 Higher 1911 0.014 1938 0.008

 [D] 2 Absent rings: Year Master N series Absent

 1860 -1.656 25 1

 1862 -1.354 25 5

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

 1804 +3.3 SD; 1881 -5.2 SD

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 F312 1853 to 1992 140 years Series 45

 [B] Entire series, effect on correlation ( 0.620) is:

 Lower 1984>-0.025 1981>-0.019 1874<-0.018 1900<-0.010 1880<-0.010 1882<-0.008 Higher 1911 0.022 1886 0.020

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

 1910 +3.8 SD; 1984 +3.3 SD

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 F411 1808 to 1993 186 years Series 46

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

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 1808 1857 -4 .06 -.23 .11 -.26 .15 -.01 .43\* .22 .38 -.10 .33|-.05 .17 .22 .08 -.14 -.09 -.36 -.31 -.29 -.38

 [B] Entire series, effect on correlation ( 0.607) is:

 Lower 1819>-0.012 1816<-0.010 1814>-0.009 1832<-0.007 1830<-0.007 1840<-0.007 Higher 1886 0.016 1956 0.015

 1808 to 1857 segment:

 Lower 1819>-0.046 1814>-0.033 1816<-0.029 1840<-0.025 1834>-0.023 1830<-0.023 Higher 1853 0.068 1812 0.035

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

 1814 +3.5 SD; 1904 +3.1 SD

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 F412 1822 to 1993 172 years Series 47

 [B] Entire series, effect on correlation ( 0.679) is:

 Lower 1835>-0.023 1837>-0.010 1966>-0.010 1953<-0.007 1968>-0.006 1834>-0.006 Higher 1911 0.017 1956 0.013

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1835 +3.9 SD; 1969 +3.7 SD; 1971 +3.5 SD

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 F422 1869 to 1993 125 years Series 48

 [B] Entire series, effect on correlation ( 0.536) is:

 Lower 1937>-0.039 1955<-0.015 1939<-0.013 1986>-0.013 1902>-0.012 1987<-0.009 Higher 1911 0.030 1886 0.020

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

 1937 +5.8 SD; 1986 +3.0 SD

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 F421 1825 to 1993 169 years Series 49

 [B] Entire series, effect on correlation ( 0.571) is:

 Lower 1942>-0.023 1986>-0.013 1879>-0.012 1934>-0.011 1832<-0.011 1902>-0.009 Higher 1938 0.016 1921 0.014

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

 1942 +3.4 SD; 1986 +3.8 SD

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 F431 1813 to 1993 181 years Series 50

 [B] Entire series, effect on correlation ( 0.558) is:

 Lower 1817<-0.029 1814>-0.019 1900<-0.014 1815<-0.011 1830<-0.008 1826>-0.007 Higher 1921 0.014 1911 0.013

 [E] Outliers 5 3.0 SD above or -4.5 SD below mean for year

 1814 +3.6 SD; 1817 -4.6 SD; 1865 +3.7 SD; 1881 +3.1 SD; 1910 +4.7 SD

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 F432 1851 to 1993 143 years Series 51

 [B] Entire series, effect on correlation ( 0.600) is:

 Lower 1865>-0.014 1924<-0.012 1971<-0.011 1939<-0.010 1900<-0.009 1927<-0.009 Higher 1938 0.021 1886 0.015

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1865 +4.2 SD; 1891 +3.5 SD; 1952 +3.6 SD

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 F441 1867 to 1993 127 years Series 52

 [B] Entire series, effect on correlation ( 0.621) is:

 Lower 1954<-0.015 1903<-0.015 1870>-0.013 1921<-0.010 1895>-0.008 1934>-0.008 Higher 1911 0.014 1935 0.014

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

 1870 +3.1 SD

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 F442 1876 to 1993 118 years Series 53

 [B] Entire series, effect on correlation ( 0.693) is:

 Lower 1992<-0.014 1922>-0.012 1903<-0.010 1970>-0.008 1918>-0.008 1917<-0.007 Higher 1956 0.016 1935 0.012

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 F452 1890 to 1993 104 years Series 54

 [B] Entire series, effect on correlation ( 0.547) is:

 Lower 1949>-0.022 1902>-0.019 1891>-0.015 1950>-0.015 1939<-0.011 1938<-0.011 Higher 1948 0.031 1984 0.015

 [E] Outliers 4 3.0 SD above or -4.5 SD below mean for year

 1891 +3.6 SD; 1903 +3.1 SD; 1949 +3.1 SD; 1950 +3.8 SD

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 F451 1895 to 1993 99 years Series 55

 [B] Entire series, effect on correlation ( 0.545) is:

 Lower 1985>-0.023 1988<-0.020 1896<-0.015 1990<-0.011 1991<-0.008 1935>-0.008 Higher 1911 0.022 1938 0.020

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

 1985 +3.7 SD; 1987 +4.9 SD

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 F471 1874 to 1993 120 years Series 56

 [B] Entire series, effect on correlation ( 0.486) is:

 Lower 1935>-0.025 1920>-0.020 1976>-0.018 1928<-0.016 1992<-0.016 1875<-0.011 Higher 1938 0.030 1984 0.021

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1880 +3.2 SD; 1976 +3.8 SD; 1977 +3.8 SD

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 F472 1877 to 1993 117 years Series 57

 [B] Entire series, effect on correlation ( 0.471) is:

 Lower 1920>-0.033 1935>-0.017 1901>-0.015 1956>-0.013 1881<-0.012 1964<-0.010 Higher 1938 0.029 1886 0.027

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

 1920 +4.2 SD

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 F491 1856 to 1993 138 years Series 58

 [B] Entire series, effect on correlation ( 0.573) is:

 Lower 1917<-0.022 1925>-0.015 1902>-0.015 1928<-0.013 1872<-0.013 1955<-0.011 Higher 1911 0.020 1938 0.019

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1865 +3.3 SD; 1902 +3.4 SD; 1925 +4.2 SD

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 F492 1882 to 1993 112 years Series 59

 [B] Entire series, effect on correlation ( 0.683) is:

 Lower 1948>-0.013 1941<-0.011 1902>-0.009 1964<-0.009 1927>-0.009 1993<-0.008 Higher 1938 0.018 1956 0.013

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 F481 1751 to 1993 243 years Series 60

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

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

 1751 1800 0 -.12 -.02 .11 -.20 -.20 .05 .07 -.01 .01 .25 .30\*-.10 .27 .29 .06 -.13 -.24 -.25 -.08 .10 .06

 [B] Entire series, effect on correlation ( 0.580) is:

 Lower 1769>-0.023 1771<-0.013 1900<-0.008 1773>-0.008 1958<-0.007 1949>-0.006 Higher 1948 0.017 1886 0.014

 1751 to 1800 segment:

 Lower 1769>-0.057 1771<-0.051 1773>-0.025 1763<-0.018 1770<-0.017 1754<-0.016 Higher 1751 0.052 1797 0.046

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

 1754 0.547 3 1 >> WARNING: Ring is not usually narrow

 Present in series 18 F151 time span 1734 to 1991

 Present in series 33 F292 time span 1677 to 1992

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

 1769 +6.2 SD; 1973 +3.5 SD

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 F461 1760 to 1993 234 years Series 61

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

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 1760 1809 8 .05 .07 .00 -.07 .17 -.21 -.15 -.23 -.21 -.08 .20| .10 .07 .11 .17 .07 .05 -.05 .26\* .16 .00

 [B] Entire series, effect on correlation ( 0.601) is:

 Lower 1785<-0.020 1769<-0.009 1777>-0.008 1831>-0.007 1789<-0.006 1775>-0.006 Higher 1886 0.015 1911 0.013

 1760 to 1809 segment:

 Lower 1785<-0.087 1769<-0.037 1775>-0.026 1793>-0.025 1789<-0.025 1762>-0.014 Higher 1797 0.043 1771 0.036

 [D] 4 Absent rings: Year Master N series Absent

 1789 0.388 10 1 >> WARNING: Ring is not usually narrow

 1861 -1.868 25 3

 1862 -1.354 25 5

 1863 -1.101 26 3

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1777 +4.5 SD; 1945 +3.0 SD; 1973 +3.5 SD

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 F462 1763 to 1993 231 years Series 62

 [B] Entire series, effect on correlation ( 0.576) is:

 Lower 1916<-0.014 1808>-0.012 1772>-0.007 1765<-0.006 1785<-0.006 1907>-0.006 Higher 1911 0.017 1886 0.013

 [D] 4 Absent rings: Year Master N series Absent

 1862 -1.354 25 5

 1863 -1.101 26 3

 1864 -0.977 26 1

 1865 0.084 28 1 >> WARNING: Ring is not usually narrow

 [E] Outliers 5 3.0 SD above or -4.5 SD below mean for year

 1772 +5.1 SD; 1789 +3.9 SD; 1808 +3.6 SD; 1957 +3.1 SD; 1977 +3.4 SD

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PART 7: DESCRIPTIVE STATISTICS: Red Spruce, Big Moose Lake, NY (KT Smith 12:38 Tue 21 Apr 2020 Page 8

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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 F191 1890 1991 102 4 0 0.627 1.39 2.78 0.449 0.441 0.256 0.90 0.311 0.017 1

 2 F192 1880 1991 112 4 0 0.536 1.45 3.54 0.665 0.786 0.241 0.54 0.276 0.011 1

 3 F182 1880 1991 112 4 0 0.475 1.51 3.37 0.714 0.848 0.222 0.66 0.262 0.033 1

 4 F142 1878 1991 114 4 0 0.649 1.53 3.10 0.531 0.797 0.194 0.53 0.254 0.026 1

 5 F171 1897 1991 95 4 0 0.573 1.15 2.55 0.565 0.877 0.188 0.65 0.247 0.012 1

 6 F141 1880 1991 112 4 0 0.651 1.25 2.32 0.438 0.808 0.191 0.42 0.229 0.001 1

 7 F162 1852 1991 140 5 0 0.667 1.38 3.19 0.650 0.767 0.240 0.79 0.294 0.042 1

 8 F112 1876 1991 116 4 0 0.638 1.82 3.60 0.811 0.847 0.208 0.55 0.275 0.011 1

 9 F181 1887 1991 105 4 0 0.567 1.18 2.57 0.386 0.766 0.165 0.58 0.221 0.020 1

 10 F131 1877 1991 115 4 0 0.732 2.14 4.11 0.894 0.903 0.153 0.69 0.216 -0.013 1

 11 F121 1893 1991 99 4 0 0.569 2.19 3.17 0.514 0.679 0.151 0.53 0.183 -0.009 1

 12 F132 1875 1991 117 4 0 0.684 1.94 3.85 0.870 0.887 0.171 0.62 0.223 0.016 1

 13 F122 1887 1991 105 4 0 0.636 1.60 2.71 0.466 0.785 0.153 0.41 0.171 0.012 2

 14 F111 1865 1991 127 5 0 0.630 1.54 4.27 0.828 0.864 0.215 0.71 0.302 0.016 1

 15 F161 1874 1991 118 5 0 0.682 1.09 2.57 0.500 0.816 0.201 0.99 0.266 0.006 2

 16 F152 1851 1991 141 5 0 0.662 0.78 2.07 0.397 0.802 0.232 0.83 0.309 -0.040 1

 17 F172 1881 1991 111 4 0 0.702 1.10 2.33 0.633 0.883 0.293 0.88 0.350 0.011 1

 18 F151 1734 1991 258 10 5 0.295 0.69 2.52 0.612 0.947 0.226 1.01 0.305 -0.028 1

 19 F232 1884 1992 109 4 1 0.375 1.11 2.12 0.447 0.855 0.183 0.52 0.218 -0.019 1

 20 F271 1880 1992 113 4 0 0.616 1.86 4.42 1.095 0.940 0.156 0.47 0.203 -0.025 1

 21 F272 1878 1992 115 4 0 0.615 1.82 3.76 0.888 0.903 0.163 0.51 0.215 -0.011 1

 22 F241 1871 1992 122 5 0 0.711 1.18 3.86 0.836 0.890 0.244 0.87 0.324 -0.015 1

 23 F291 1869 1992 124 5 0 0.655 1.45 3.71 0.783 0.913 0.173 0.70 0.219 -0.008 1

 24 F231 1893 1992 100 4 0 0.506 1.36 2.30 0.328 0.546 0.180 0.64 0.235 0.020 1

 25 F282 1878 1992 115 4 0 0.672 1.23 3.23 0.670 0.939 0.157 0.59 0.192 0.005 1

 26 F221 1817 1992 176 7 0 0.539 0.97 2.45 0.519 0.889 0.223 0.72 0.304 -0.002 1

 27 F251 1758 1992 235 9 0 0.692 0.73 2.59 0.594 0.915 0.258 1.52 0.381 0.008 1

 28 F222 1833 1992 160 6 0 0.604 0.79 2.44 0.420 0.873 0.237 0.86 0.292 -0.056 1

 29 F281 1870 1992 123 5 0 0.591 1.17 3.99 0.804 0.946 0.157 0.93 0.216 0.010 1

 30 F262 1863 1974 112 4 0 0.589 1.37 2.97 0.736 0.922 0.191 0.77 0.258 0.008 1

 31 F242 1784 1992 209 8 0 0.640 1.08 5.56 1.027 0.912 0.275 1.48 0.406 0.007 1

 32 F252 1779 1992 214 8 0 0.700 1.09 3.35 0.921 0.945 0.232 1.08 0.310 0.030 1

 33 F292 1677 1992 316 10 2 0.561 0.57 2.66 0.585 0.959 0.250 1.21 0.362 -0.017 1

 34 F331 1777 1992 216 8 0 0.656 0.72 2.39 0.574 0.909 0.265 1.14 0.411 -0.023 1

 35 F352 1847 1992 146 6 0 0.626 0.77 3.00 0.643 0.890 0.292 1.04 0.365 -0.019 1

 36 F311 1878 1992 115 4 0 0.710 1.14 2.22 0.499 0.857 0.159 0.80 0.271 0.004 1

 37 F332 1868 1992 125 5 0 0.668 1.28 3.58 0.682 0.882 0.207 0.57 0.257 0.019 1

 38 F341 1882 1992 111 4 0 0.622 1.69 3.41 0.698 0.820 0.190 0.59 0.240 -0.017 1

 39 F372 1865 1992 128 5 0 0.682 1.44 2.98 0.526 0.855 0.162 0.47 0.228 -0.024 1

 40 F342 1888 1992 105 4 0 0.536 1.37 2.82 0.485 0.777 0.181 0.53 0.215 -0.001 1

 41 F371 1856 1992 137 5 0 0.697 1.59 3.44 0.717 0.872 0.224 1.07 0.396 0.014 1

 42 F361 1850 1992 143 5 0 0.652 1.41 3.28 0.742 0.876 0.234 0.94 0.334 0.058 1

 43 F381 1850 1992 143 5 0 0.696 0.76 1.81 0.424 0.873 0.259 1.82 0.564 0.019 1

 44 F392 1759 1992 234 9 0 0.646 0.70 1.67 0.423 0.903 0.251 0.78 0.338 -0.034 1

 45 F312 1853 1992 140 5 0 0.620 1.30 3.02 0.647 0.890 0.195 0.96 0.331 -0.027 1

 46 F411 1808 1993 186 7 1 0.607 0.99 2.48 0.632 0.916 0.219 1.07 0.348 -0.031 1

 47 F412 1822 1993 172 7 0 0.679 1.02 2.16 0.576 0.892 0.235 1.43 0.475 -0.031 1

 48 F422 1869 1993 125 5 0 0.536 1.11 2.92 0.589 0.875 0.189 0.84 0.269 0.043 1

PART 7: DESCRIPTIVE STATISTICS: Red Spruce, Big Moose Lake, NY (KT Smith 12:38 Tue 21 Apr 2020 Page 9

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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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 49 F421 1825 1993 169 6 0 0.571 1.19 3.53 0.753 0.904 0.224 0.84 0.299 -0.007 1

 50 F431 1813 1993 181 7 0 0.558 1.17 3.27 0.693 0.891 0.238 0.98 0.335 0.001 2

 51 F432 1851 1993 143 5 0 0.600 1.01 2.57 0.586 0.867 0.223 1.10 0.336 0.004 2

 52 F441 1867 1993 127 5 0 0.621 1.57 2.76 0.555 0.750 0.209 0.57 0.242 -0.003 1

 53 F442 1876 1993 118 4 0 0.693 2.07 3.98 0.756 0.762 0.218 0.63 0.257 0.011 1

 54 F452 1890 1993 104 4 0 0.547 1.04 2.89 0.591 0.905 0.213 0.80 0.270 -0.040 1

 55 F451 1895 1993 99 4 0 0.545 1.18 3.58 0.837 0.910 0.245 1.39 0.356 -0.051 1

 56 F471 1874 1993 120 5 0 0.486 1.13 3.64 0.740 0.911 0.187 0.72 0.242 0.024 3

 57 F472 1877 1993 117 4 0 0.471 1.12 2.47 0.606 0.862 0.217 0.92 0.333 -0.011 1

 58 F491 1856 1993 138 5 0 0.573 1.52 6.14 1.107 0.916 0.230 0.77 0.301 0.008 1

 59 F492 1882 1993 112 4 0 0.683 1.53 4.35 0.968 0.940 0.183 0.63 0.242 0.029 1

 60 F481 1751 1993 243 9 1 0.580 0.47 2.25 0.389 0.921 0.236 1.44 0.371 -0.036 1

 61 F461 1760 1993 234 9 1 0.601 0.71 2.40 0.492 0.908 0.265 1.59 0.412 -0.002 2

 62 F462 1763 1993 231 9 0 0.576 0.83 4.03 0.776 0.926 0.246 1.22 0.376 -0.024 1

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 Total or mean: 8904 333 11 0.607 1.16 6.14 0.646 0.872 0.219 1.82 0.308 -0.003

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