Supplement of Clim. Past, 17, 951–967, 2021
https://doi.org/10.5194/cp-17-951-2021-supplement

Climate of the Past
Open Access
EGU

Supplement of

Tree-ring-based spring precipitation reconstruction in the Sikhote-Alin' Mountain range

Olga Ukhvatkina et al.

Correspondence to: Olga Ukhvatkina (ukhvatkina@biosoil.ru)

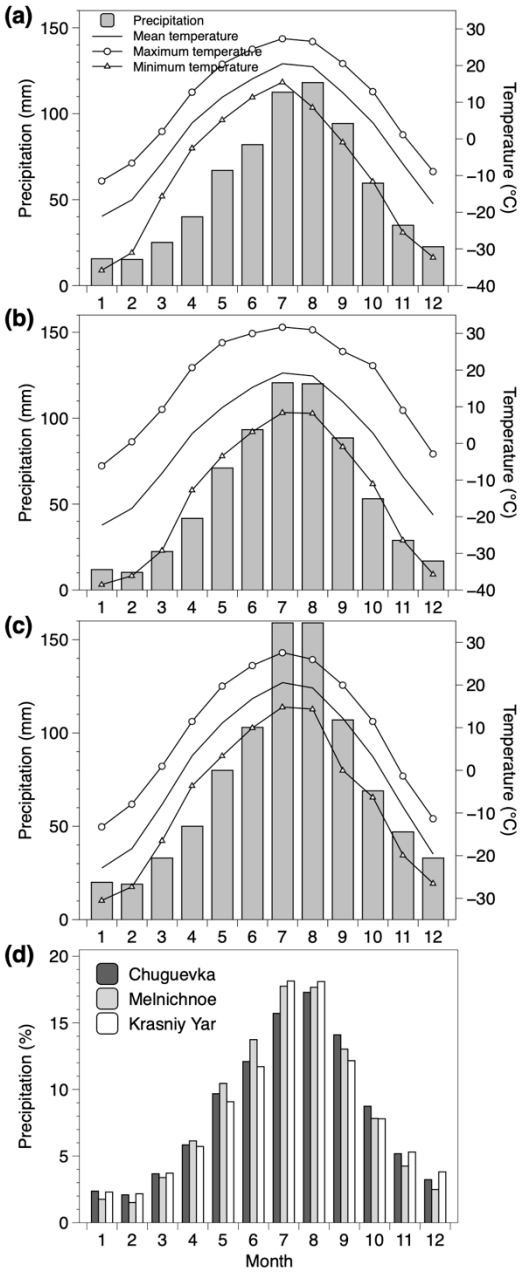


Figure S1: Monthly total precipitation and mean, minimum and maximum temperature at (a) Chuguevka (1936-2004), (b) Melnichnoe (1941-2009), and (c) Krasniy Yar (1940-2013) meteorological stations; (d) annual precipitation distribution in percent for all three meteorological stations.

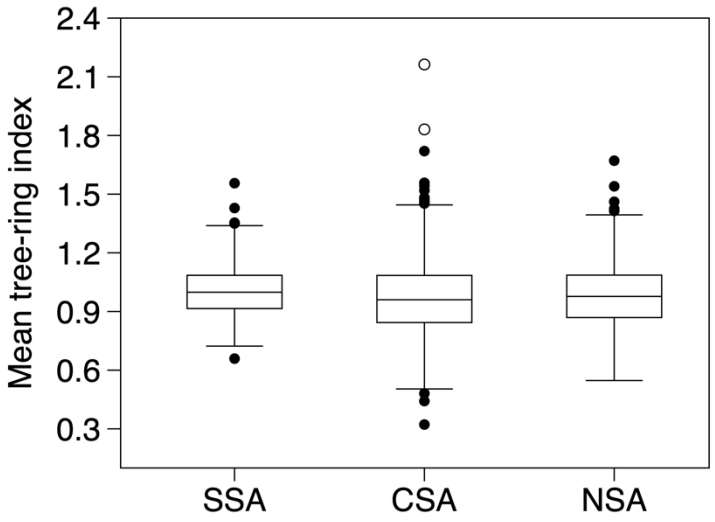


Figure S2: Mean tree-ring index for SSA, CSA and NSA chronologies. Boxes represent the interquartile range, and the horizontal line within the box shows the median. Whiskers extend to the 10th and 90th percentiles; the points show outliers and the circles show extremes beyond the 90th percentile.

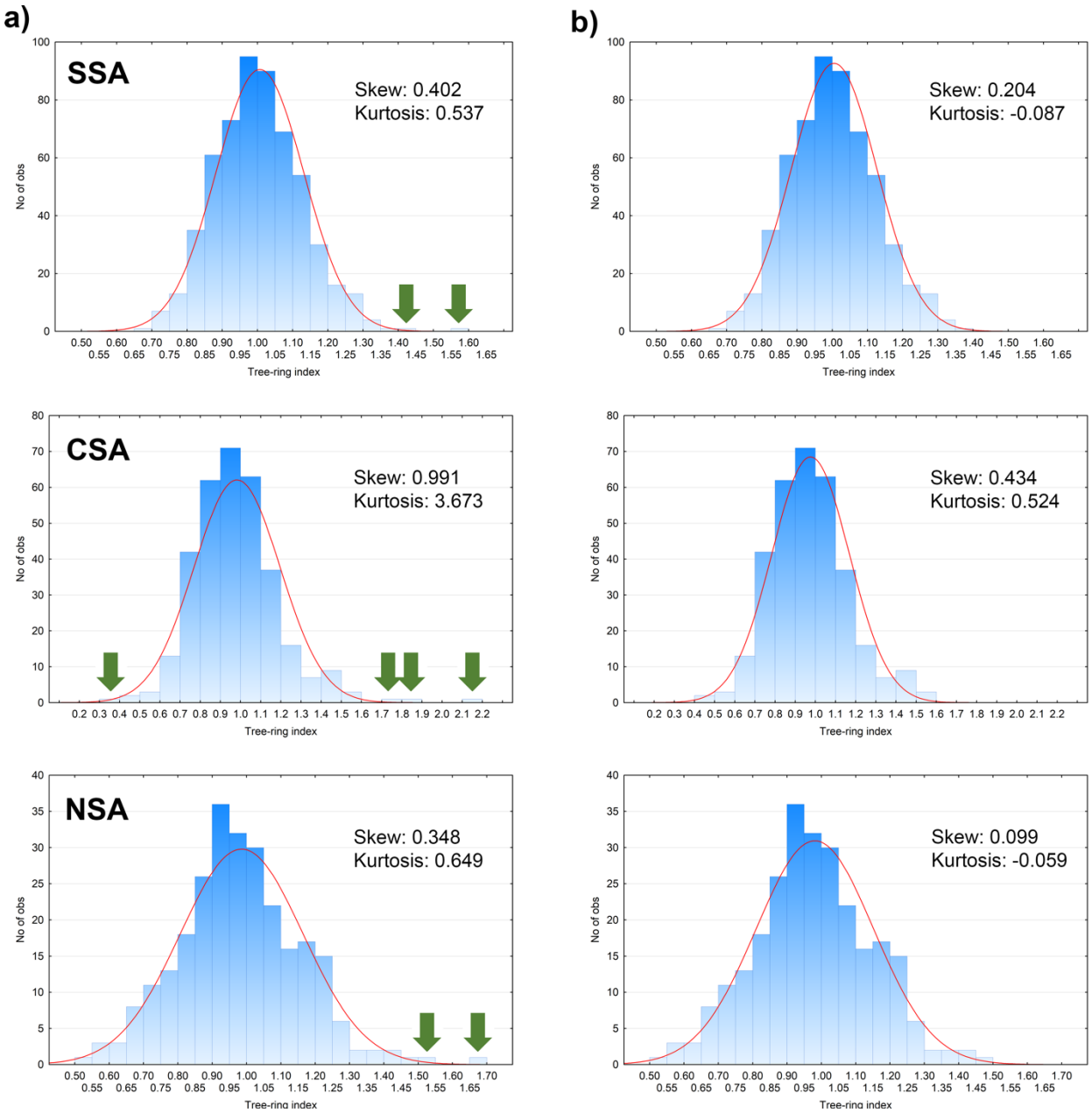


Figure S3: Distribution of the tree-ring indexes for SSA, CSA and NSA chronologies: before (a) and after (b) filtering outliers (using Z-score, with -3 and 3 as threshold values) in the beginning of the chronologies (where EPS < 0.85). Green arrows indicate outliers (the values are caused by the low sample depth); red lines are the fit with a normal curve.

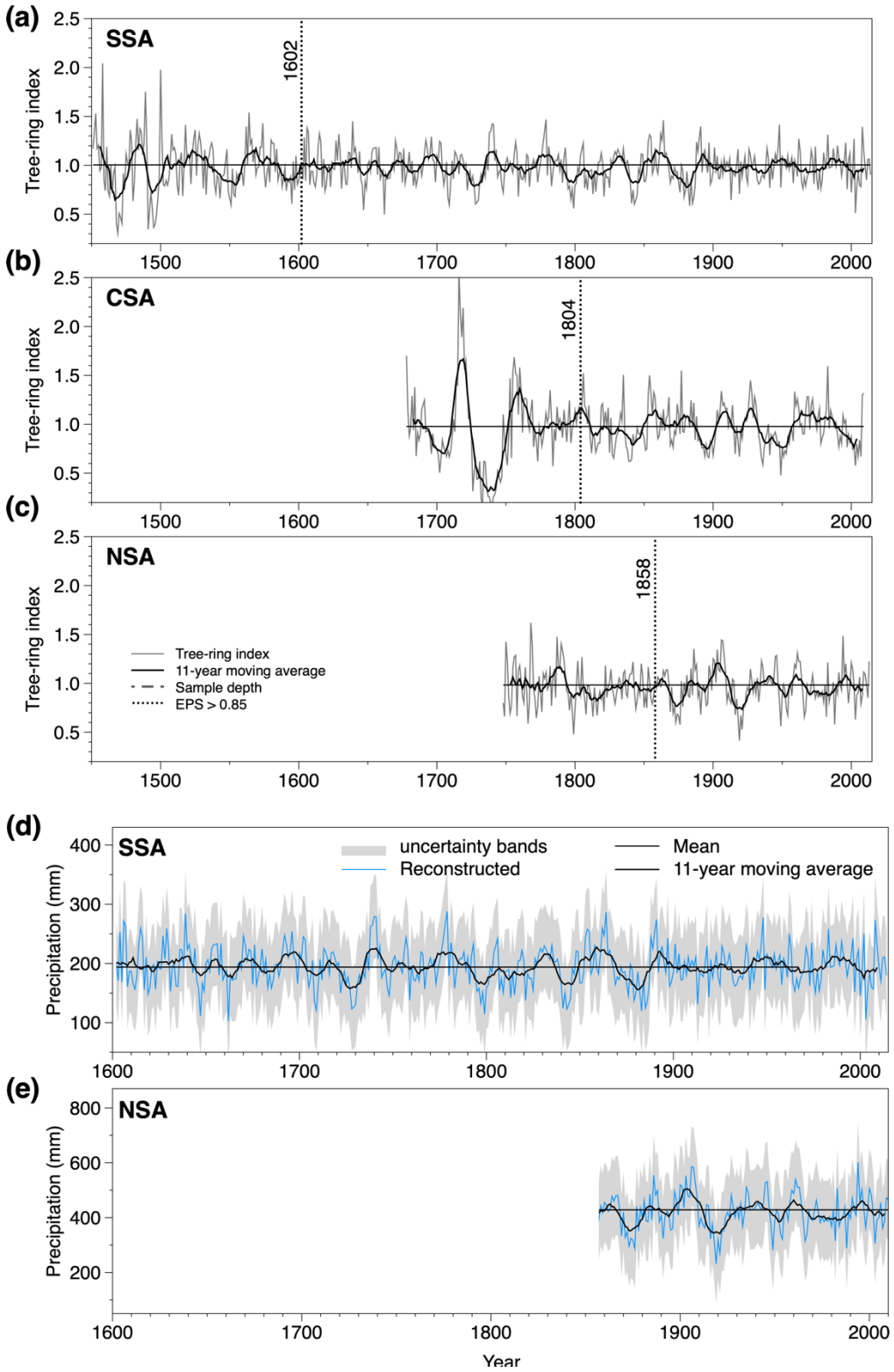


Figure S5: Standard chronologies (a-c) and corresponding precipitation reconstructions (d, e). Uncertainty bands estimated as twice the standard error of prediction (±2σ) (Wilks, 1995). CSA chronology was not used for reconstruction because as a result of evaluation the relationships between the ring-width index and observed monthly climate records in treeclim for RE and CE we obtained values 0.322 and -0.348, respectively. For SSA and NSA values of RE and CE were 0.298 and 0.297, 0.218 and 0.124, respectively.

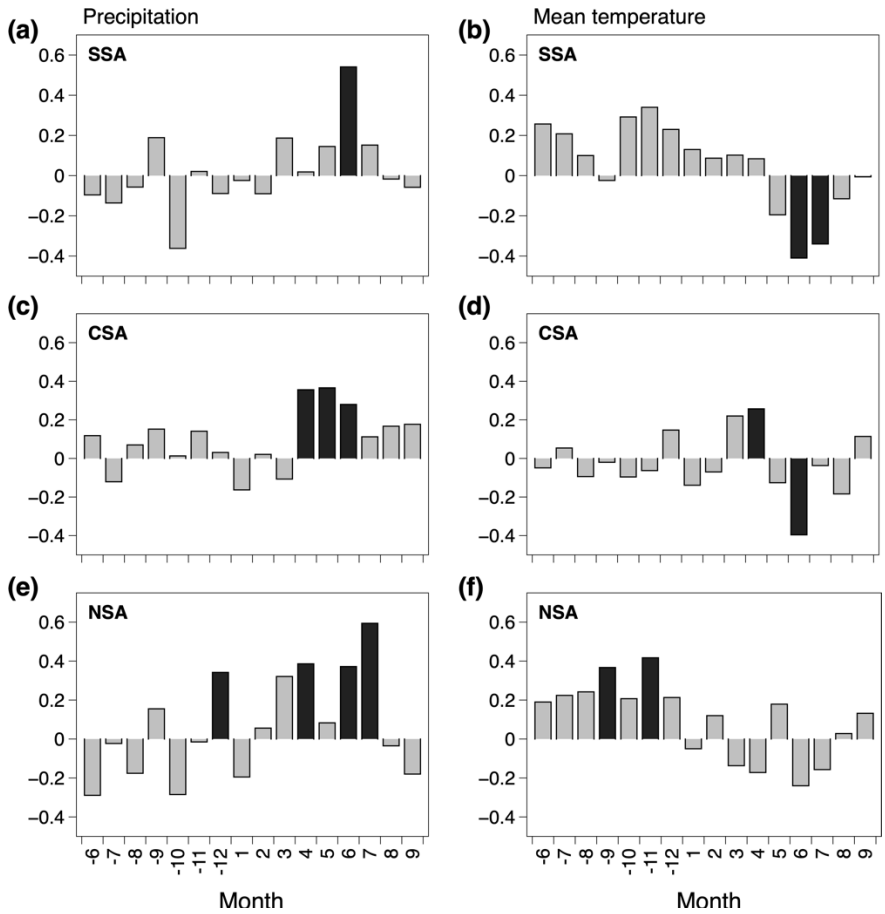


Figure S5: The correlation between the meteorological data (total precipitation and mean temperature) from Chuguevka meteorological station and SSA tree-ring width index (a, b), Melnichnoe meteorological station and CSA tree-ring width index (c, d), Krasniy Yar meteorological station and NSA tree-ring width index (e, f). Black bars denote significant values ($\alpha = 0.01$).

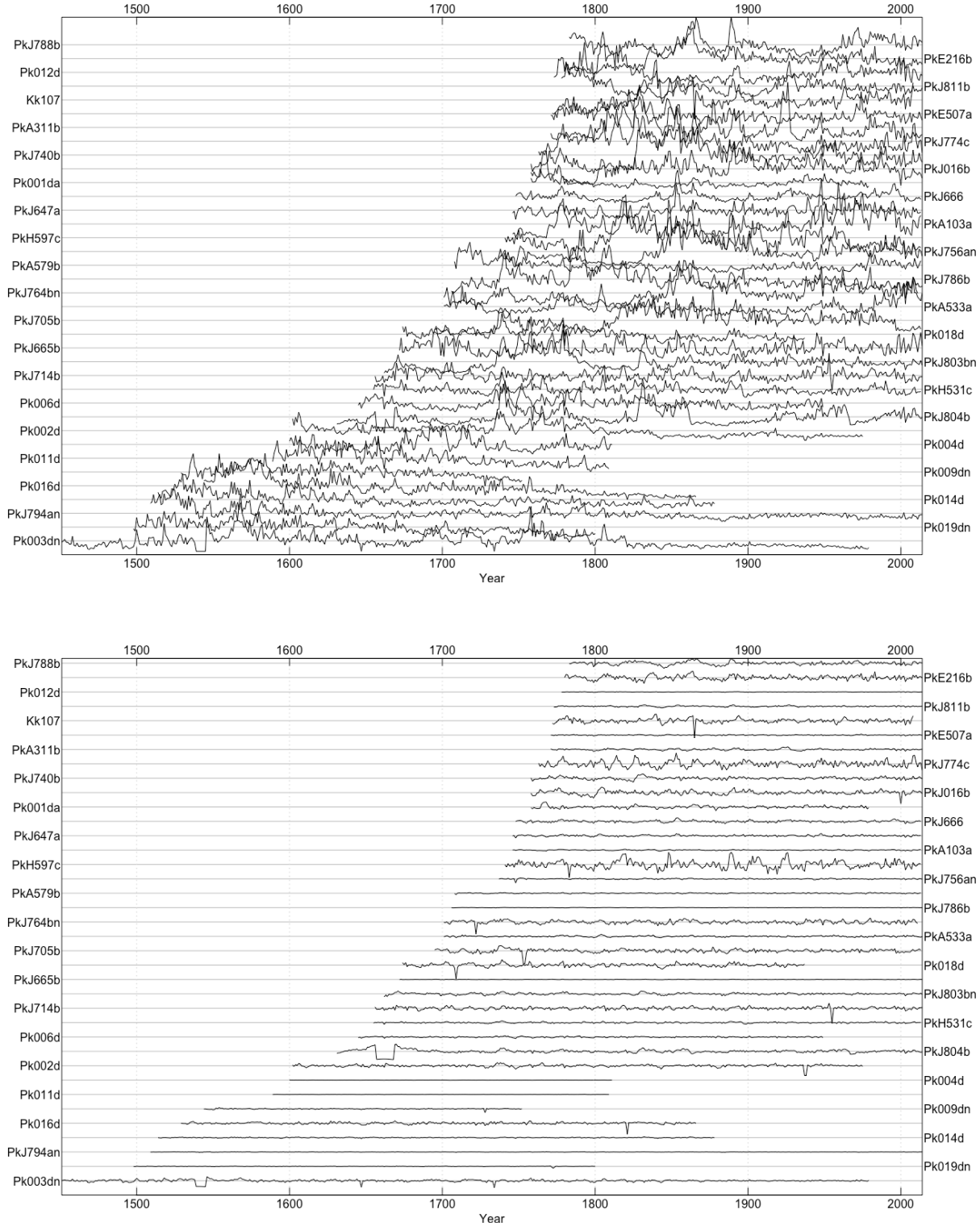


Figure S6. A spaghetti plot of the SSA ring widths: raw (top graph) and detrended (bottom graph).

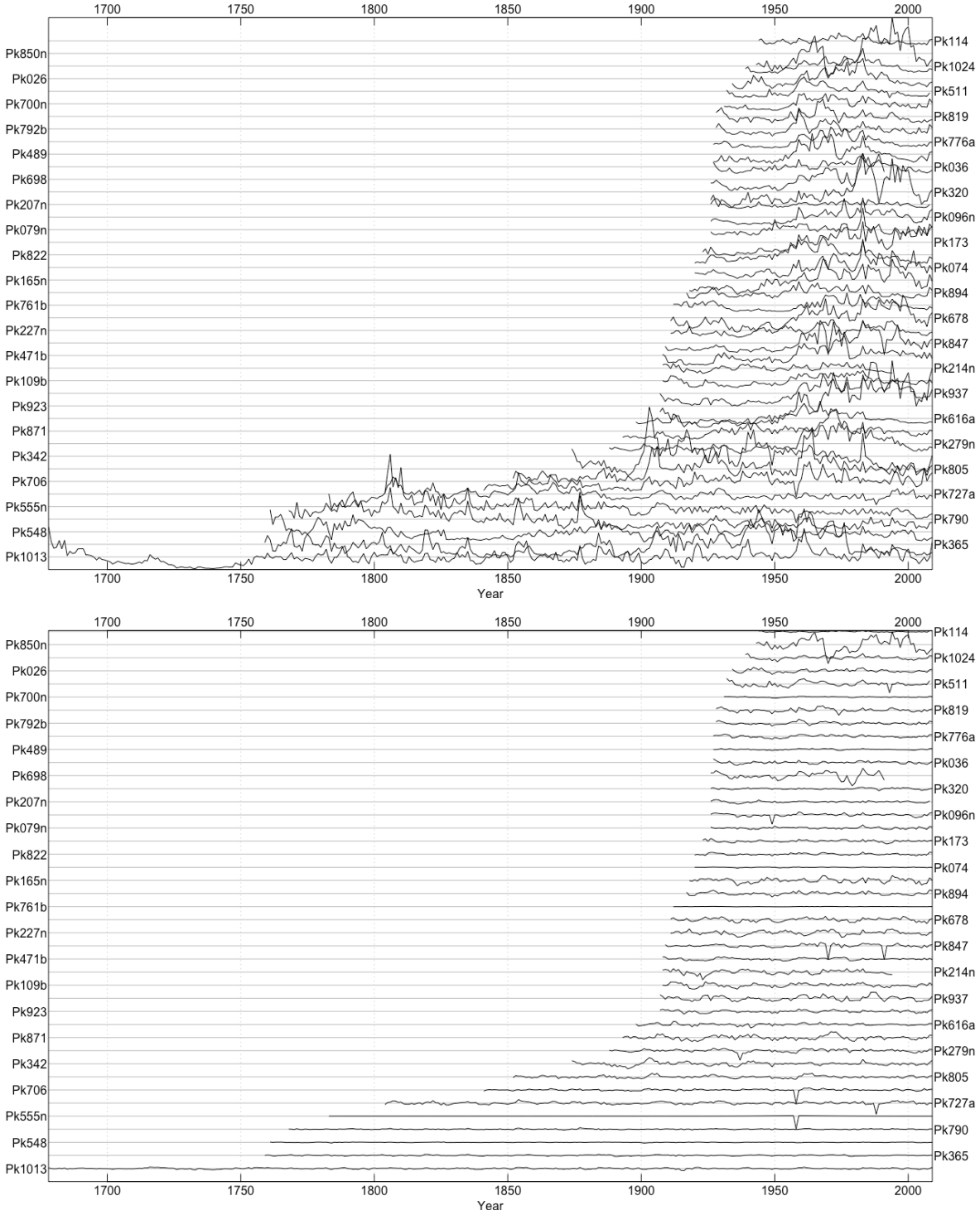


Figure S7. A spaghetti plot of the CSA ring widths: raw (top graph) and detrended (bottom graph).

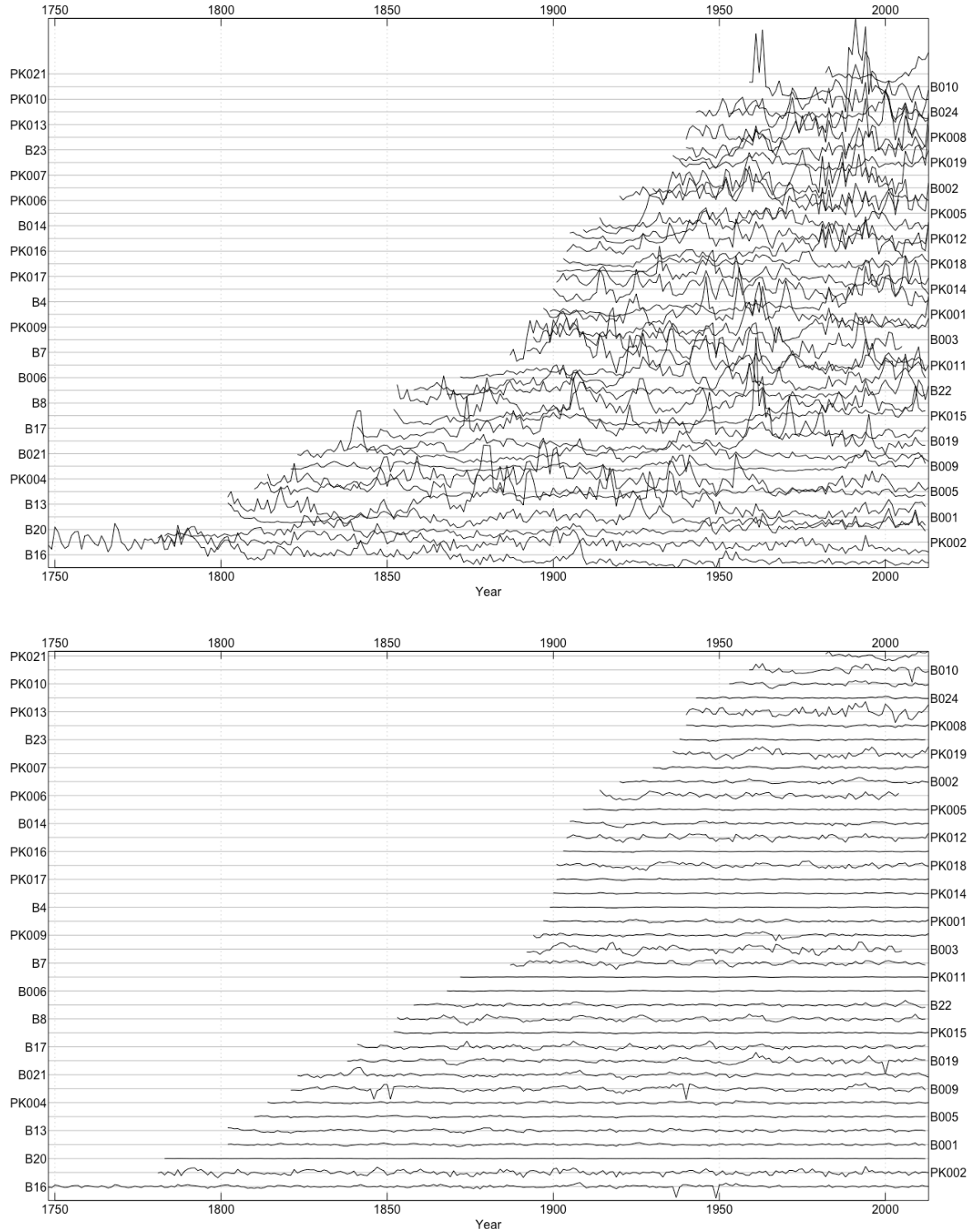


Figure S8. A spaghetti plot of the NSA ring widths: raw (top graph) and detrended (bottom graph).

Table S1. Data used for the static correlation analyses.

Index/Field	Used time range	Season
SOI (NCEP)	1882-2020	April-June (SSA), March-June (CSA), March-July (NSA)**
NINO3 (ERSST v5)	1880-2020	April-June (SSA), March-June (CSA), March-July (NSA)
NINO3.4 (ERSST v5)	1880-2020	April-June (SSA), March-June (CSA), March-July (NSA)
NINO4 (ERSST v5)	1880-2020	April-June (SSA), March-June (CSA), March-July (NSA)
PDO (HadSST3)	1850-2020	April-June (SSA), March-June (CSA), March-July (NSA)
AO (NCEP)	1950-2020	April-June (SSA), March-June (CSA), March-July (NSA)
PDSI* (scPDSI)	1901-2017	April-June (SSA), March-June (CSA), March-July (NSA)
CRU TS* v.4.03	1901-2019	April-June (SSA), March-June (CSA), March-July (NSA)

* For the analysis, we used the value of a 0.5-degree tile, within which the particular study site was located.

** In all cases, except for CRU TS, we used mean index value for the season. For CRU TS, we used the total precipitation for the season.

Table S2. Correlation between instrumental precipitation data and monthly climate indexes. April-June and July-September are the durations of the first and second stages of the summer monsoon, respectively; April-September is entire summer monsoon period. Significant correlations ($p < 0.05$) are marked in bold.

	Chuguevka			Melnichoye			Krasny Yar		
Index	Apr-Jun	Jul-Sep	Apr-Sep	Apr-Jun	Jul-Sep	Apr-Sep	Apr-Jun	Jul-Sep	Apr-Sep
SOI	0.151	0.199	**0.351**	0.037	0.107	0.140	-0.035	-0.072	-0.02
NINO3	0.021	-0.195	-0.194	0.080	0.033	0.030	0.130	-0.034	-0.012
NINO4	-0.055	-0.137	-0.185	-0.004	-0.013	-0.113	0.121	0.026	0.062
NINO3.4	-0.046	-0.184	**-0.399**	0.076	0.037	-0.034	0.130	0.030	0.043
PDO	-0.075	-0.158	**-0.331**	-0.037	-0.211	**-0.419**	-0.011	-0.188	-0.123
AO	0.188	-0.108	0.099	-0.009	0.002	0.062	0.175	0.114	**0.267**

COFECHA reports

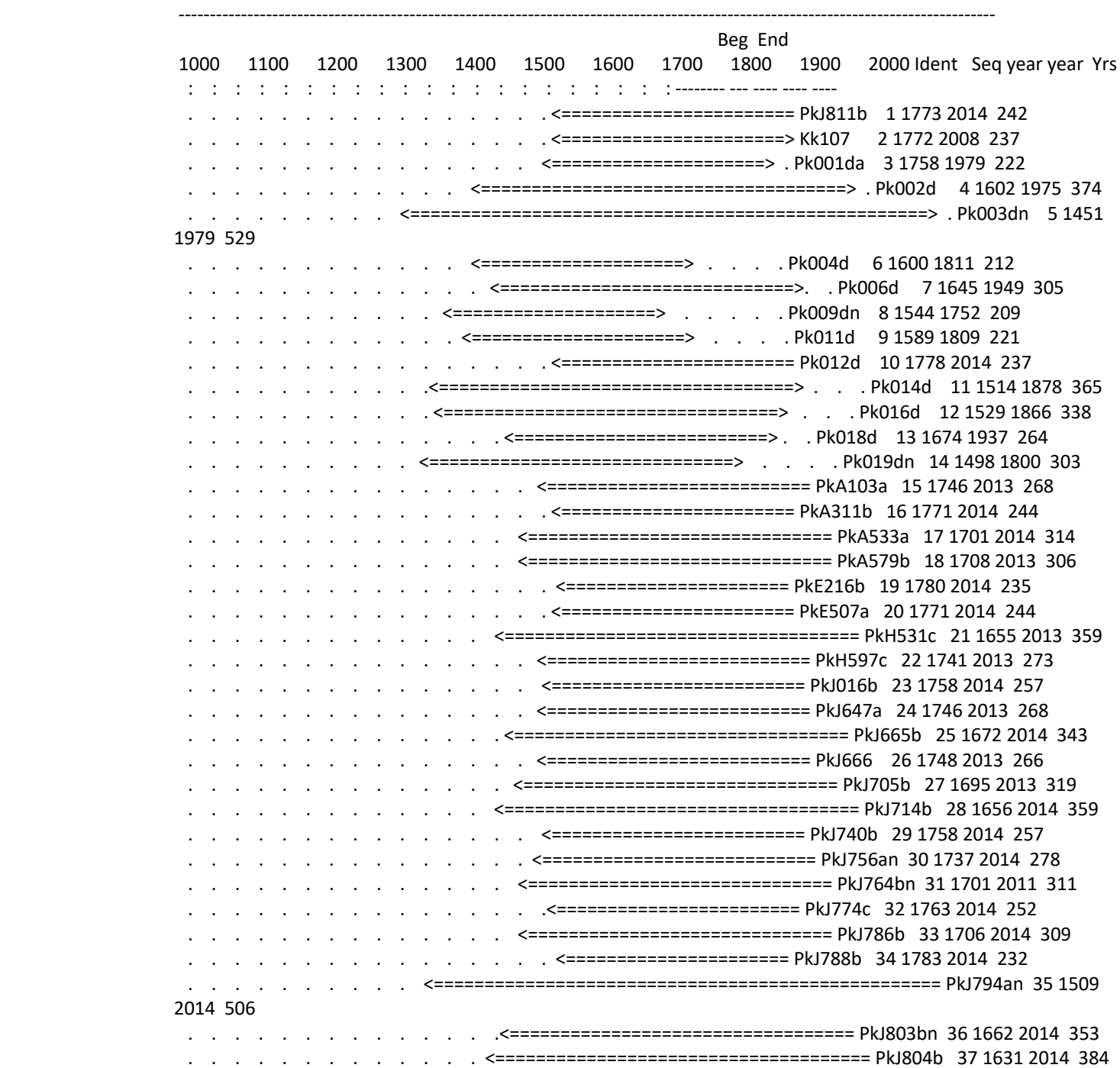
(SSA)

```
[]  Dendrochronology Program Library                    Run VUS    Program COF
[]
[]  P R O G R A M     C O F E C H A                                  Version 6.02P       0
---------------------------------------------------------------------------------------------------------------------------------

 QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS
cofechaOSX_pjk2012.f

 File of DATED series:   pk_gr.rwl

 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  1451 to  2014   564 years
 Continuous time span is            1451 to  2014   564 years
 Portion with two or more series is    1498 to  2014   517 years


                        ****************************************
                        *C* Number of dated series       37 *C*
                        *O* Master series 1451 2014  564 yrs *O*
                        *F* Total rings in all series  10995 *F*
                        *E* Total dated rings checked  10948 *E*
                        *C* Series intercorrelation    0.568 *C*
                        *H* Average mean sensitivity   0.254 *H*
                        *A* Segments, possible problems   14 *A*
                        *** Mean length of series      297.0 ***
                        ****************************************

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

 Kk107      1 absent rings:   1865
 Pk002d     2 absent rings:   1937  1938
 Pk016d     1 absent rings:   1821
```

Pk018d 1 absent rings: 1709
PkJ705b 2 absent rings: 1753 1754
PkJ714b 1 absent rings: 1955
PkJ764bn 1 absent rings: 1722
PkJ804b 12 absent rings: 1657 1658 1659 1660 1661 1662 1663 1664 1665 1666 1667 1668

21 absent rings 0.191%

PART 2: TIME PLOT OF TREE-RING SERIES:



PART 3: Master Dating Series:

Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab
						1500	3.784*	2	1550	-1.095*	6	1600	-0.709	8	1650	0.399	11
1451	-1.099*	1	1501	0.932	2	1551	-1.402*	6	1601	0.015	8	1651	0.386	11			
1452	0.345	1	1502	-0.634	2	1552	0.677	6	1602	0.009	9	1652	-0.203	11			
1453	1.908	1	1503	-0.774	2	1553	-1.031*	6	1603	-0.881	9	1653	0.778	11			
1454	-0.204	1	1504	-0.492	2	1554	-0.157	6	1604	1.678	9	1654	1.003	11			
1455	0.190	1	1505	-0.823	2	1555	-0.131	6	1605	-0.399	9	1655	0.885	12			
1456	-1.039*	1	1506	-0.825	2	1556	-0.482	6	1606	2.225*	9	1656	1.698	13			
1457	-0.654	1	1507	0.742	2	1557	-0.339	6	1607	2.080*	9	1657	-0.178	13	1<		
1458	5.041*	1	1508	0.935	2	1558	-0.578	6	1608	-1.193*	9	1658	1.369	13	1<		
1459	-0.896	1	1509	0.250	3	1559	-0.149	6	1609	-0.564	9	1659	-0.483	13	1		
1460	-1.230*	1	1510	0.440	3	1560	-1.298*	6	1610	-0.332	9	1660	-0.198	13	1<		
1461	1.240	1	1511	0.897	3	1561	-0.186	6	1611	-0.814	9	1661	0.174	13	1<		
1462	-0.894	1	1512	-1.470*	3	1562	1.924	6	1612	-0.983	9	1662	-2.968*	14	1		
1463	-1.003*	1	1513	-1.680*	3	1563	-0.467	6	1613	-0.569	9	1663	0.287	14	1<		
1464	0.849	1	1514	0.616	4	1564	1.694	6	1614	1.097	9	1664	-0.421	14	1		
1465	-0.559	1	1515	0.420	4	1565	0.560	6	1615	1.888	9	1665	-0.548	14	1		
1466	0.670	1	1516	-2.150*	4	1566	0.691	6	1616	1.296	9	1666	-0.405	14	1		
1467	1.129	1	1517	-0.360	4	1567	0.221	6	1617	-1.229*	9	1667	0.517	14	1<		
1468	-2.019*	1	1518	2.508*	4	1568	0.829	6	1618	0.357	9	1668	0.202	14	1<		
1469	-2.557*	1	1519	0.437	4	1569	-0.716	6	1619	-1.530*	9	1669	-0.012	14			
1470	-1.445*	1	1520	-0.037	4	1570	-0.675	6	1620	-1.098*	9	1670	1.487	14			
1471	-1.719*	1	1521	-0.242	4	1571	-0.955	6	1621	-0.008	9	1671	1.208	14			
1472	-2.134*	1	1522	-1.380*	4	1572	0.550	6	1622	0.198	9	1672	0.019	15			
1473	0.510	1	1523	-0.184	4	1573	0.448	6	1623	-1.298*	9	1673	1.097	15			
1474	-0.514	1	1524	0.979	4	1574	1.484	6	1624	0.245	9	1674	0.635	16			
1475	1.229	1	1525	1.243	4	1575	-0.495	6	1625	-0.216	9	1675	-1.189*	16			
1476	0.616	1	1526	-0.928	4	1576	-0.930	6	1626	-0.311	9	1676	0.980	16			
1477	0.233	1	1527	0.249	4	1577	-0.756	6	1627	1.533	9	1677	-1.134*	16			
1478	1.894	1	1528	0.925	4	1578	-0.098	6	1628	0.208	9	1678	-0.677	16			
1479	1.129	1	1529	0.553	5	1579	-0.925	6	1629	1.705	9	1679	-0.103	16			
1480	-1.707*	1	1530	0.770	5	1580	1.349	6	1630	0.528	9	1680	0.988	16			
1481	-0.891	1	1531	-1.208*	5	1581	1.099	6	1631	-1.721*	10	1681	-0.507	16			
1482	0.692	1	1532	0.303	5	1582	1.219	6	1632	-0.353	10	1682	0.522	16			
1483	1.687	1	1533	-1.673*	5	1583	-0.556	6	1633	-0.210	10	1683	-0.900	16			
1484	0.374	1	1534	0.459	5	1584	1.272	6	1634	-1.229*	10	1684	-0.487	16			
1485	1.191	1	1535	0.575	5	1585	-0.870	6	1635	-1.079*	10	1685	-1.383*	16			
1486	1.068	1	1536	0.809	5	1586	-0.655	6	1636	0.736	10	1686	-1.099*	16			
1487	0.251	1	1537	1.846	5	1587	0.289	6	1637	0.514	10	1687	-0.146	16			
1488	0.709	1	1538	0.721	5	1588	-1.068*	6	1638	-0.307	10	1688	-0.075	16			
1489	2.486*	1	1539	-1.100*	5	1589	-0.233	7	1639	2.557*	10	1689	-0.866	16			
1490	0.795	1	1540	-1.142*	5	1590	0.443	7	1640	0.850	10	1690	-0.021	16			
1491	-1.953*	1	1541	-0.623	5	1591	-0.417	7	1641	0.931	10	1691	0.611	16			
1492	-1.262*	1	1542	-0.785	5	1592	0.301	7	1642	0.254	10	1692	1.438	16			
1493	-0.619	1	1543	-1.770*	5	1593	-0.505	7	1643	-0.345	10	1693	0.905	16			
1494	-1.141*	1	1544	0.756	6	1594	-0.723	7	1644	0.785	10	1694	-0.159	16			
1495	-1.649*	1	1545	0.796	6	1595	-1.781*	7	1645	-0.608	11	1695	0.256	17			
1496	-1.545*	1	1546	0.889	6	1596	1.040	7	1646	-1.099*	11	1696	1.301	17			
1497	-1.270*	1	1547	0.722	6	1597	-1.282*	7	1647	-2.527*	11	1697	0.388	17			
1498	-0.818	2	1548	1.153	6	1598	1.413	7	1648	-0.817	11	1698	0.106	17			
1499	-0.510	2	1549	-0.880	6	1599	-0.689	7	1649	-1.285*	11	1699	-1.515*	17			

PART 3: Master Dating Series:

Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab
1700	0.249	17	1750	0.111	26	1800	-0.347	36	1850	-0.762	33	1900	-0.484	31	1950	0.448	29
1701	0.037	19	1751	0.426	26	1801	-0.367	35	1851	-0.952	33	1901	1.102	31	1951	0.060	29
1702	1.066	19	1752	0.039	26	1802	0.458	35	1852	-0.603	33	1902	-0.631	31	1952	0.009	29
1703	1.221	19	1753	0.221	25	1<	1803	0.244	35	1853	1.540	33	1903	0.639	31	1953	-0.154	29
1704	-0.223	19	1754	-0.045	25	1<	1804	1.236	35	1854	1.458	33	1904	-0.713	31	1954	0.560	29
1705	-1.060*	19	1755	-0.277	25		1805	1.370	35	1855	1.267	33	1905	-0.827	31	1955	-0.327	29 1<
1706	-0.163	20	1756	0.696	25		1806	1.843	35	1856	-0.840	33	1906	0.312	31	1956	0.163	29
1707	0.626	20	1757	1.777	25		1807	-0.711	35	1857	-0.574	33	1907	-0.471	31	1957	0.498	29
1708	-1.475*	21	1758	1.168	28		1808	-0.035	35	1858	0.535	33	1908	0.659	31	1958	-1.161*	29
1709	-1.869*	21	1	1759	-1.705*	28	1809	-0.834	35	1859	-0.547	33	1909	0.201	31	1959	0.394	29
1710	-0.640	21		1760	0.211	28	1810	0.211	34	1860	-0.917	33	1910	0.657	31	1960	-0.022	29
1711	0.663	21		1761	-0.515	28	1811	0.228	34	1861	0.019	33	1911	0.219	31	1961	-0.649	29
1712	-0.618	21		1762	-0.679	28	1812	0.364	33	1862	1.250	33	1912	0.786	31	1962	1.886	29
1713	1.173	21		1763	-0.285	29	1813	-1.209*	33	1863	0.859	33	1913	-2.295*	31	1963	0.945	29
1714	0.902	21		1764	-0.526	29	1814	0.361	33	1864	1.987	33	1914	-0.236	31	1964	-0.411	29
1715	0.691	21		1765	0.672	29	1815	-1.122*	33	1865	0.097	33	1<	1915	-0.144	31	1965	-1.245*	29
1716	-0.217	21		1766	0.872	29	1816	-0.222	33	1866	0.437	33		1916	-0.351	31	1966	-0.229	29
1717	0.987	21		1767	-1.058*	29	1817	0.585	33	1867	0.260	32		1917	0.424	31	1967	-1.039*	29
1718	1.093	21		1768	-0.103	29	1818	0.503	33	1868	-0.159	32		1918	1.629	31	1968	-0.394	29
1719	0.893	21		1769	-0.194	29	1819	1.063	33	1869	-1.230*	32		1919	-1.876*	31	1969	-0.291	29
1720	0.417	21		1770	0.409	29	1820	0.539	33	1870	-0.641	32		1920	0.571	31	1970	-0.066	29
1721	0.556	21		1771	-0.324	31	1821	-1.630*	33	1	1871	-0.574	32		1921	-0.542	31	1971	1.181	29
1722	-0.894	21	1	1772	-0.009	32	1822	-0.118	33		1872	0.236	32		1922	0.126	31	1972	0.727	29
1723	-0.073	21		1773	-1.243*	33	1823	-0.446	33		1873	0.045	32		1923	0.976	31	1973	-0.939	29
1724	0.403	21		1774	-0.450	33	1824	-0.539	33		1874	0.289	32		1924	-0.598	31	1974	1.607	29
1725	-0.430	21		1775	-0.129	33	1825	-1.369*	33		1875	-0.466	32		1925	-0.643	31	1975	-0.486	29
1726	0.113	21		1776	0.420	33	1826	0.451	33		1876	-1.243*	32		1926	1.417	31	1976	-1.349*	28
1727	-0.468	21		1777	0.780	33	1827	-0.068	33		1877	1.210	32		1927	1.042	31	1977	-0.066	28
1728	-1.760*	21		1778	1.354	34	1828	0.364	33		1878	0.657	32		1928	0.202	31	1978	-1.362*	28
1729	-1.439*	21		1779	1.915	34	1829	0.552	33		1879	-1.051*	31		1929	0.368	31	1979	-0.685	28
1730	-1.458*	21		1780	-0.975	35	1830	0.456	33		1880	-0.595	31		1930	0.939	31	1980	1.290	26
1731	-0.463	21		1781	0.754	35	1831	1.022	33		1881	0.449	31		1931	0.085	31	1981	0.124	26
1732	-0.003	21		1782	0.187	35	1832	0.807	33		1882	-0.543	31		1932	-0.715	31	1982	-0.084	26
1733	-0.465	21		1783	-1.640*	36	1833	0.281	33		1883	-1.829*	31		1933	-1.044*	31	1983	1.952	26
1734	-0.228	21		1784	-0.702	36	1834	0.063	33		1884	-0.148	31		1934	-0.896	31	1984	-0.304	26
1735	-0.340	21		1785	-0.061	36	1835	0.945	33		1885	-1.608*	31		1935	-0.527	31	1985	-0.246	26
1736	0.495	21		1786	0.336	36	1836	0.191	33		1886	-1.392*	31		1936	-0.227	31	1986	-0.280	26
1737	-0.270	22		1787	0.244	36	1837	0.233	33		1887	-0.556	31		1937	-0.512	31	1	1987	1.025	26
1738	1.297	22		1788	0.681	36	1838	0.624	33		1888	1.442	31		1938	0.251	30	1<	1988	-0.016	26
1739	1.280	22		1789	-0.158	36	1839	0.162	33		1889	1.128	31		1939	1.433	30		1989	-0.246	26
1740	1.556	22		1790	0.573	36	1840	-0.352	33		1890	1.406	31		1940	0.536	30		1990	1.121	26
1741	1.887	23		1791	-0.842	36	1841	-1.764*	33		1891	1.939	31		1941	-1.500*	30		1991	0.356	26
1742	-0.043	23		1792	0.786	36	1842	-0.753	33		1892	-0.221	31		1942	0.238	30		1992	0.064	26
1743	0.566	23		1793	1.475	36	1843	-1.648*	33		1893	0.755	31		1943	-0.833	30		1993	-0.820	26

1744 -0.689 23 1794 0.022 36 1844 -1.395* 33 1894 0.712 31 1944 -0.199 30 1994 0.049 26
1745 -0.464 23 1795 -0.813 36 1845 -1.197* 33 1895 0.006 31 1945 0.496 30 1995 0.489 26
1746 -0.232 25 1796 -0.624 36 1846 0.237 33 1896 -0.575 31 1946 0.056 30 1996 1.498 26
1747 -1.184* 25 1797 -1.189* 36 1847 -0.145 33 1897 1.239 31 1947 1.011 30 1997 -1.296* 26
1748 -1.634* 26 1798 -0.552 36 1848 0.878 33 1898 -1.144* 31 1948 2.515* 30 1998 0.302 26
1749 -0.418 26 1799 -1.999* 36 1849 0.749 33 1899 -1.018* 31 1949 -1.632* 30 1999 0.843 26

PART 3: Master Dating Series:

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

---

2000 -1.394* 26
2001 -0.158 26
2002 1.574 26
2003 -2.380* 26
2004 -0.616 26
2005 -0.200 26
2006 -0.763 26
2007 -1.005* 26
2008 2.161* 26
2009 1.098 25

2010 0.261 25
2011 -0.661 25
2012 0.494 24
2013 0.473 24
2014 -0.315 17

PART 5: CORRELATION OF SERIES BY SEGMENTS:

Correlations of 50-year dated segments, lagged 25 years
Flags: A = correlation under 0.3281 but highest as dated; * = correlation higher at other than dated position

Seq Series Time_span 1475 1500 1525 1550 1575 1600 1625 1650 1675 1700 1725 1750 1775 1800 1825 1850 1875 1900 1925 1950
1524 1549 1574 1599 1624 1649 1674 1699 1724 1749 1774 1799 1824 1849 1874 1899 1924 1949 1974 1999

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

1 PkJ811b 1773 2014 .48 .46 .51 .61 .72 .71 .75 .82 .81
2 Kk107 1772 2008 .54 .53 .57 .44 .51 .58 .77 .60 .32*
3 Pk001da 1758 1979 .49 .53 .44 .52 .73 .71 .55 .51 .54
4 Pk002d 1602 1975 .61 .45 .44 .53 .69 .71 .71 .66 .50 .51 .54 .60 .71 .63 .64
5 Pk003dn 1451 1979 .44 .44 .23* .31A .59 .76 .75 .72 .63 .44* .51 .70 .68 .58 .54 .60 .63 .60 .60 .61
6 Pk004d 1600 1811 .59 .55 .49 .45 .59 .42 .45 .55
7 Pk006d 1645 1949 .62 .62 .63 .58 .51 .52 .60 .55 .56 .66 .61 .54
8 Pk009dn 1544 1752 .36 .51 .63 .74 .65 .50 .65 .55 .52
9 Pk011d 1589 1809 .49 .59 .51 .55 .54 .41 .46 .47 .47
10 Pk012d 1778 2014 .60 .47 .40 .56 .63 .69 .59 .48
11 Pk014d 1514 1878 .53 .66 .66 .58 .66 .61 .49 .51 .49 .46 .39 .45 .54 .59 .61
12 Pk016d 1529 1866 .32A .23* .48 .72 .58 .35 .37 .44 .48 .58 .57 .52 .51
13 Pk018d 1674 1937 .66 .66 .74 .75 .78 .75 .65 .63 .72 .69 .62
14 Pk019dn 1498 1800 .48 .52 .39 .41 .50 .60 .63 .47 .49 .62 .51 .29* .31A
15 PkA103a 1746 2013 .46 .45 .60 .55 .47 .59 .60 .58 .53 .33
16 PkA311b 1771 2014 .49 .50 .43 .47 .59 .55 .46 .54 .63

```
 17 PkA533a  1701 2014                          .54  .52  .60  .42  .43  .54  .52  .57  .63  .61  .51
 18 PkA579b  1708 2013                          .58  .50  .59  .60  .42  .48  .50  .50  .48  .40  .50
 19 PkE216b  1780 2014                               .69  .49  .52  .72  .57  .50  .58  .63
 20 PkE507a  1771 2014                               .63  .59  .53  .59  .67  .65  .50  .55  .61
 21 PkH531c  1655 2013                     .63  .59  .66  .69  .66  .70  .68  .65  .61  .60  .60  .56  .63
 22 PkH597c  1741 2013                          .52  .61  .64  .53  .67  .74  .65  .53  .51  .47
 23 PkJ016b  1758 2014                          .38* .49  .54  .47  .69  .74  .71  .79  .73
 24 PkJ647a  1746 2013                          .67  .70  .73  .52  .60  .70  .73  .78  .73  .56
 25 PkJ665b  1672 2014                     .48  .49  .54  .43  .47  .41  .31A .50  .54  .64  .64  .57  .46
 26 PkJ666   1748 2013                          .61  .65  .70  .38  .43  .66  .57  .45  .36  .43
 27 PkJ705b  1695 2013                        .38  .34* .45  .56  .59  .61  .61  .52  .47  .47  .55  .65
 28 PkJ714b  1656 2014                     .49  .37  .49  .57  .57  .70  .63  .57  .74  .61  .53  .52  .52
 29 PkJ740b  1758 2014                          .59  .54  .62  .70  .63  .67  .61  .57  .58
 30 PkJ756an 1737 2014                          .48  .46  .57  .42  .34  .58  .65  .44  .32* .48
 31 PkJ764bn 1701 2011                          .47  .42  .36  .50  .50  .40  .55  .71  .58  .48  .61
 32 PkJ774c  1763 2014                          .51  .45  .43  .50  .54  .57  .56  .43  .46
 33 PkJ786b  1706 2014                          .44  .47  .31A .39  .55  .62  .69  .72  .67  .68  .51
 34 PkJ788b  1783 2014                               .51  .43  .51  .58  .65  .76  .69  .64
 35 PkJ794an 1509 2014      .54  .64  .60  .66  .69  .60  .65  .73  .70  .65  .52  .56  .66  .66  .72  .75  .64  .40  .41
 36 PkJ803bn 1662 2014                     .41  .41  .39  .66  .68  .56  .50  .54  .70  .68  .67  .71  .63
 37 PkJ804b  1631 2014                .46  .29A .38  .59  .71  .70  .67  .67  .36  .48  .70  .64  .56  .58
Av segment correlation  0.46 0.51 0.43 0.45 0.56 0.66 0.58 0.52 0.52 0.54 0.54 0.54 0.56 0.52 0.53 0.62 0.64 0.60
0.57 0.55
```

PART 5: CORRELATION OF SERIES BY SEGMENTS:

Correlations of 50-year dated segments, lagged 25 years

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

```
Seq Series  Time_span   1975
                        2024
--- -------- ---------  ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ----
  1 PkJ811b  1773 2014   .74
  2 Kk107    1772 2008   .47
 10 Pk012d   1778 2014   .59
 15 PkA103a  1746 2013   .50
 16 PkA311b  1771 2014   .62
 17 PkA533a  1701 2014   .56
 18 PkA579b  1708 2013   .56
 19 PkE216b  1780 2014   .72
 20 PkE507a  1771 2014   .65
 21 PkH531c  1655 2013   .65
 22 PkH597c  1741 2013   .58
 23 PkJ016b  1758 2014   .75
 24 PkJ647a  1746 2013   .68
 25 PkJ665b  1672 2014   .54
 26 PkJ666   1748 2013   .47
 27 PkJ705b  1695 2013   .51
 28 PkJ714b  1656 2014   .70
 29 PkJ740b  1758 2014   .69
 30 PkJ756an 1737 2014   .66
 31 PkJ764bn 1701 2011   .69
 32 PkJ774c  1763 2014   .64
 33 PkJ786b  1706 2014   .54
 34 PkJ788b  1783 2014   .72
 35 PkJ794an 1509 2014   .64
 36 PkJ803bn 1662 2014   .69
 37 PkJ804b  1631 2014   .70
Av segment correlation  0.63
```

PART 6: POTENTIAL PROBLEMS:

```
-----------------------------------------------------------------------------------------------------------------------------------

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

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

Kk107     1772 to  2008

[A] Segment   High  -10  -9  -8  -7  -6  -5  -4  -3  -2  -1   0  +1  +2  +3  +4  +5  +6  +7  +8  +9 +10
   --------- ----  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
   1950 1999    6   .12  .16  .08 -.20 -.07  .03 -.13 -.01  .17 -.02  .32|-.15 -.27  .33 -.16 -.43  .40* .05 -.04  .15  .12

[*] Early part of series cannot be checked from 1451 to 1497 -- not matched by another series

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

Pk003dn   1498 to  1979

[A] Segment   High  -10  -9  -8  -7  -6  -5  -4  -3  -2  -1   0  +1  +2  +3  +4  +5  +6  +7  +8  +9 +10
   --------- ----  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
   1525 1574   -2   .16  .16 -.07 -.21 -.01  .03  .15  .07  .32* .03  .23|-.08 -.06 -.32 -.24 -.11  .19 -.05  .07 -.01  .16
   1550 1599    0   .11  .14  .20 -.09  .22 -.03  .12  .13  .24 -.09  .31*-.36  .05 -.19 -.13 -.13  .24 -.16  .11 -.25  .05
   - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
   1700 1749    1  -.22 -.24 -.29  .01  .05 -.08  .21  .01  .18  .31  .44| .45* .20  .05  .04 -.10 -.25 -.48 -.19 -.38 -.22

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

Pk016d    1529 to  1866

[A] Segment   High  -10  -9  -8  -7  -6  -5  -4  -3  -2  -1   0  +1  +2  +3  +4  +5  +6  +7  +8  +9 +10
   --------- ----  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
   1529 1578    0   .16 -.03  .11  .22 -.27 -.10 -.05 -.14 -.02  .14  .32*-.09  .11 -.14 -.33 -.07 -.10  .08  .10  .24  .13
   1550 1599   -7  -.16  .03  .07  .26*-.04  .09 -.11 -.22 -.10 -.14  .23|-.14  .18  .14 -.17  .15  .05 -.04  .02  .20 -.10

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

Pk019dn   1498 to  1800

[A] Segment   High  -10  -9  -8  -7  -6  -5  -4  -3  -2  -1   0  +1  +2  +3  +4  +5  +6  +7  +8  +9 +10
   --------- ----  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
   1750 1799   -5  -.11 -.15  .04 -.44  .11  .30*-.08 -.07  .21 -.05  .29|-.10 -.17 -.10 -.10 -.09 -.08 -.01  .21 -.14  .05
   1751 1800    0  -.06 -.11  .04 -.41  .08  .28 -.09 -.13  .16 -.07  .31*-.09 -.17 -.10 -.09 -.09 -.04  .04  .24 -.23  .08

==========================================================================================================================================
```

PkJ016b 1758 to 2014

[A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10
--- ---
1758 1807 2 -.10 -.06 .12 -.02 -.09 -.22 -.21 -.34 .01 -.05 .38| .25 .44*-.01 -.02 .03 .00 -.17 .08 -.27 -.10

==========

PkJ665b 1672 to 2014

[A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10
--- ---
1800 1849 0 -.06 -.01 -.08 -.15 -.25 -.06 .00 .03 .25 .18 .31* .04 -.07 .11 .07 .16 -.12 -.02 -.36 -.13 -.20

==========

PkJ705b 1695 to 2013

[A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10
--- ---
1700 1749 1 -.02 -.24 -.08 -.15 .02 -.06 -.16 .09 .13 .24 .34| .36* .27 .27 .22 -.11 -.16 -.21 -.19 -.22 -.23

==========

PkJ756an 1737 to 2014

[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 1974 -9 -.15 .45*-.19 -.02 .15 -.30 -.17 .35 -.01 -.10 .32|-.24 -.21 .04 -.31 -.01 .42 -.13 .25 .18 -.27

==========

PkJ786b 1706 to 2014

[A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10
--- ---
1750 1799 0 .13 .03 .16 -.06 -.15 -.02 -.02 -.08 -.05 -.27 .31*-.05 -.05 .17 .04 -.10 .05 -.18 .18 -.23 -.06

==========

PkJ804b 1631 to 2014

[A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10
--- ---
1650 1699 0 -.14 .06 -.27 -.27 .18 -.13 -.11 .18 .20 .14 .29* .13 .25 -.19 .14 -.12 -.18 -.04 -.20 .03 .21

==========

PART 7: DESCRIPTIVE STATISTICS:

Seq	Series	Interval	Years	No. Segmt	No. Flags	No. with Master	Mean msmt	Max msmt	Std dev	Auto corr	Corr sens	Mean value	Max dev	Std corr	Auto AR ()
1	PkJ811b	1773	2014	242	10	0	0.666	1.13	3.22	0.557	0.830	0.225	0.85	0.315	-0.011 1
2	Kk107	1772	2008	237	10	1	0.529	1.29	4.20	0.618	0.735	0.257	0.97	0.318	-0.007 1
3	Pk001da	1758	1979	222	9	0	0.561	0.57	2.88	0.374	0.843	0.251	1.08	0.331	0.003 1
4	Pk002d	1602	1975	374	15	0	0.588	0.70	2.50	0.398	0.835	0.243	1.06	0.305	0.003 1
5	Pk003dn	1451	1979	529	20	3	0.566	0.77	4.19	0.500	0.777	0.275	1.47	0.407	-0.007 1
6	Pk004d	1600	1811	212	8	0	0.536	0.94	2.45	0.466	0.732	0.275	1.08	0.363	0.008 1
7	Pk006d	1645	1949	305	12	0	0.586	0.92	2.55	0.371	0.695	0.239	1.11	0.291	0.013 1
8	Pk009dn	1544	1752	209	9	0	0.555	1.04	2.39	0.402	0.629	0.247	0.89	0.300	-0.004 1
9	Pk011d	1589	1809	221	9	0	0.491	1.28	2.88	0.531	0.719	0.224	0.89	0.285	-0.005 1
10	Pk012d	1778	2014	237	9	0	0.573	1.26	4.21	0.651	0.750	0.250	0.96	0.303	-0.003 1
11	Pk014d	1514	1878	365	15	0	0.545	0.89	2.74	0.435	0.778	0.236	0.86	0.285	-0.009 1
12	Pk016d	1529	1866	338	13	2	0.496	1.01	3.33	0.682	0.891	0.265	0.99	0.326	0.008 1
13	Pk018d	1674	1937	264	11	0	0.691	0.91	2.42	0.344	0.719	0.218	0.92	0.286	0.001 1
14	Pk019dn	1498	1800	303	13	2	0.480	0.95	2.18	0.396	0.695	0.230	0.88	0.287	-0.002 1
15	PkA103a	1746	2013	268	11	0	0.522	1.36	4.32	0.660	0.755	0.242	1.18	0.333	-0.012 4
16	PkA311b	1771	2014	244	10	0	0.542	1.43	4.70	0.773	0.795	0.248	1.54	0.376	-0.027 1
17	PkA533a	1701	2014	314	12	0	0.541	0.99	3.00	0.467	0.745	0.216	0.99	0.294	0.002 1
18	PkA579b	1708	2013	306	12	0	0.509	0.73	2.40	0.366	0.787	0.254	0.77	0.297	0.018 2
19	PkE216b	1780	2014	235	9	0	0.626	1.22	3.44	0.591	0.849	0.241	0.88	0.273	-0.001 2
20	PkE507a	1771	2014	244	10	0	0.595	1.22	3.08	0.506	0.705	0.254	1.01	0.299	-0.007 1
21	PkH531c	1655	2013	359	14	0	0.632	0.92	2.17	0.277	0.557	0.215	0.94	0.284	0.014 1
22	PkH597c	1741	2013	273	11	0	0.572	1.67	4.77	0.805	0.782	0.258	1.07	0.326	-0.003 1
23	PkJ016b	1758	2014	257	10	1	0.621	1.22	3.21	0.551	0.679	0.297	1.16	0.381	-0.006 1
24	PkJ647a	1746	2013	268	11	0	0.675	0.82	3.09	0.390	0.519	0.326	1.39	0.430	-0.002 1
25	PkJ665b	1672	2014	343	14	1	0.514	1.08	2.66	0.432	0.496	0.296	1.26	0.371	-0.006 2
26	PkJ666	1748	2013	266	11	0	0.510	0.55	2.46	0.315	0.769	0.286	1.10	0.355	-0.012 3
27	PkJ705b	1695	2013	319	13	1	0.496	1.07	3.31	0.629	0.781	0.311	1.42	0.406	-0.013 1
28	PkJ714b	1656	2014	359	14	0	0.576	1.08	2.68	0.318	0.445	0.238	0.92	0.289	-0.001 2
29	PkJ740b	1758	2014	257	10	0	0.622	1.56	4.42	0.799	0.840	0.235	0.76	0.289	-0.004 1
30	PkJ756an	1737	2014	278	11	1	0.517	1.08	4.30	0.716	0.846	0.268	0.90	0.322	0.007 2
31	PkJ764bn	1701	2011	311	12	0	0.537	1.22	3.59	0.690	0.850	0.249	0.85	0.295	0.004 1
32	PkJ774c	1763	2014	252	10	0	0.524	1.44	3.97	0.626	0.726	0.262	0.81	0.326	0.008 1
33	PkJ786b	1706	2014	309	12	1	0.556	1.28	4.86	0.711	0.825	0.237	1.00	0.316	0.001 1
34	PkJ788b	1783	2014	232	9	0	0.638	1.20	3.20	0.568	0.807	0.239	0.84	0.302	-0.001 2
35	PkJ794an	1509	2014	506	20	0	0.623	0.72	2.53	0.373	0.772	0.247	0.87	0.297	-0.005 1
36	PkJ803bn	1662	2014	353	14	0	0.608	0.90	3.63	0.588	0.854	0.254	0.89	0.332	0.001 2
37	PkJ804b	1631	2014	384	15	1	0.572	0.78	3.53	0.551	0.821	0.266	1.34	0.443	0.010 2
Total or mean:		10995		438	14		0.568	1.03	4.86	0.517	0.747	0.254	1.54	0.327	-0.001

- = [COFECHA VUS COF] = -

(CSA)

[] Dendrochronology Program Library Run SAR Program COF
[]
[] P R O G R A M C O F E C H A Version 6.02P 0

QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS
cofechaOSX_pjk2012.f

File of DATED series: sar.rwl

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 1678 to 2009 332 years
Continuous time span is 1678 to 2009 332 years
Portion with two or more series is 1759 to 2009 251 years

```
**************************************
*C* Number of dated series       42 *C*
*O* Master series 1678 2009  332 yrs *O*
*F* Total rings in all series   4917 *F*
*E* Total dated rings checked   4836 *E*
*C* Series intercorrelation    0.560 *C*
*H* Average mean sensitivity   0.274 *H*
*A* Segments, possible problems    3 *A*
*** Mean length of series      117.0 ***
**************************************
```

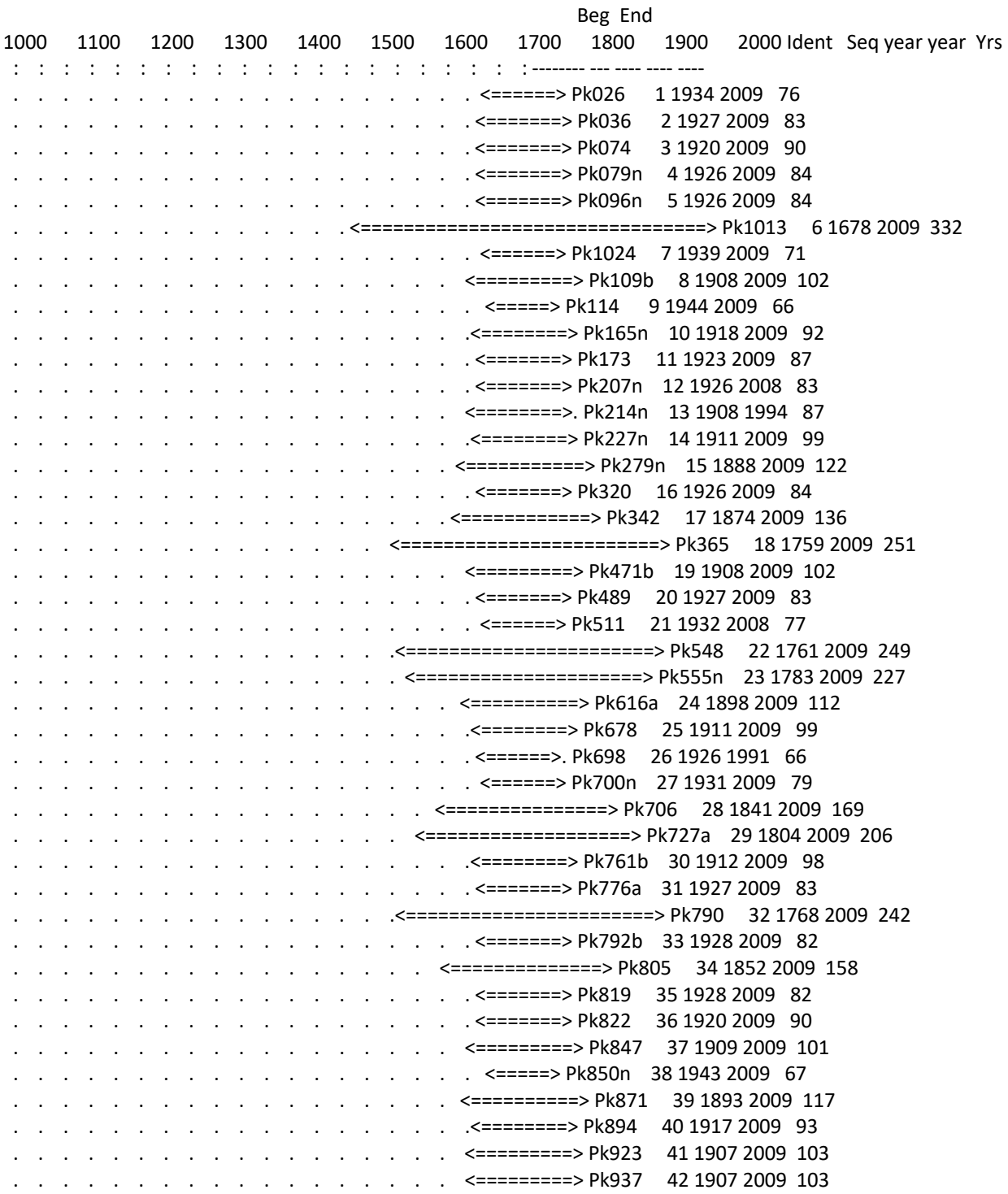
ABSENT RINGS listed by SERIES: (See Master Dating Series for absent rings listed by year)

Pk096n 1 absent rings: 1949
Pk214n 1 absent rings: 1923
Pk279n 1 absent rings: 1937
Pk511 1 absent rings: 1993
Pk555n 1 absent rings: 1958

Pk706 1 absent rings: 1958
Pk727a 1 absent rings: 1988
Pk847 2 absent rings: 1970 1991
Pk850n 1 absent rings: 1970

10 absent rings 0.203%

PART 2: TIME PLOT OF TREE-RING SERIES:



PART 3: Master Dating Series:

Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab
															1678	2.041*	1
															1679	-0.097	1
															1680	-1.148*	1
															1681	-0.732	1
															1682	0.957	1
															1683	-0.701	1
															1684	1.812	1
															1685	-2.117*	1
															1686	-0.617	1
															1687	-1.080*	1
															1688	-0.570	1
															1689	1.478	1
															1690	2.151*	1
															1691	2.896*	1
															1692	0.137	1
															1693	0.473	1
															1694	0.670	1
															1695	0.104	1
															1696	-1.711*	1
															1697	1.204	1
															1698	-0.098	1
															1699	-0.013	1

PART 3: Master Dating Series:

Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab
1700	-0.438	1	1750	-1.014*	1	1800	0.241	5	1850	-0.621	7	1900	-0.993	12	1950	-0.038	42
1701	-0.946	1	1751	-1.660*	1	1801	-0.448	5	1851	-1.375*	7	1901	-0.671	12	1951	-0.900	42
1702	-3.149*	1	1752	-0.564	1	1802	0.089	5	1852	-1.508*	8	1902	-0.201	12	1952	-0.719	42
1703	-1.261*	1	1753	1.519	1	1803	1.033	5	1853	1.084	8	1903	0.594	12	1953	-0.954	42
1704	0.746	1	1754	-1.844*	1	1804	-0.467	6	1854	2.136*	8	1904	0.486	12	1954	-0.360	42
1705	-0.159	1	1755	1.416	1	1805	0.818	6	1855	0.811	8	1905	0.771	12	1955	-0.705	42
1706	-0.781	1	1756	1.931	1	1806	2.369*	6	1856	0.394	8	1906	1.913	12	1956	-0.139	42
1707	-1.256*	1	1757	1.226	1	1807	0.350	6	1857	1.107	8	1907	0.370	14	1957	-0.096	42
1708	-0.931	1	1758	1.137	1	1808	0.256	6	1858	1.318	8	1908	0.719	17	1958	-0.786	42 2
1709	-1.491*	1	1759	0.056	2	1809	-0.434	6	1859	-0.080	8	1909	0.567	18	1959	1.461	42
1710	-1.234*	1	1760	2.293*	2	1810	1.315	6	1860	-0.999	8	1910	0.432	18	1960	0.814	42
1711	-0.680	1	1761	1.019	3	1811	-0.849	6	1861	-0.734	8	1911	-0.300	20	1961	1.294	42
1712	-0.052	1	1762	-1.080*	3	1812	-1.418*	6	1862	0.237	8	1912	0.192	21	1962	0.797	42
1713	-0.768	1	1763	-0.193	3	1813	-0.513	6	1863	0.065	8	1913	-0.172	21	1963	-0.147	42
1714	0.834	1	1764	0.360	3	1814	-0.711	6	1864	0.382	8	1914	0.512	21	1964	-0.026	42
1715	0.512	1	1765	0.580	3	1815	-1.274*	6	1865	-0.831	8	1915	-0.364	21	1965	-0.624	42
1716	3.656*	1	1766	-0.132	3	1816	-0.930	6	1866	0.308	8	1916	-1.190*	21	1966	-0.576	42
1717	2.213*	1	1767	-0.944	3	1817	-0.605	6	1867	0.444	8	1917	0.139	22	1967	0.172	42
1718	1.433	1	1768	0.615	4	1818	-0.701	6	1868	1.200	8	1918	-0.132	23	1968	0.985	42
1719	2.154*	1	1769	1.383	4	1819	1.704	6	1869	-1.152*	8	1919	-1.430*	23	1969	0.975	42
1720	0.566	1	1770	-1.003*	4	1820	1.772	6	1870	-0.835	8	1920	-0.128	25	1970	-0.408	42 2
1721	0.870	1	1771	0.455	4	1821	0.248	6	1871	-1.257*	8	1921	-0.510	25	1971	0.556	42

1722 0.293 1 1772 -0.771 4 1822 1.044 6 1872 -0.532 8 1922 -0.065 25 1972 0.743 42
1723 -0.425 1 1773 -1.791* 4 1823 -0.073 6 1873 -0.908 8 1923 0.040 26 1< 1973 -0.235 42
1724 -0.225 1 1774 0.162 4 1824 1.160 6 1874 0.702 9 1924 -0.076 26 1974 -0.393 42
1725 -0.544 1 1775 -0.025 4 1825 -1.081* 6 1875 0.330 9 1925 -0.169 26 1975 -0.694 42
1726 -2.170* 1 1776 -0.555 4 1826 0.971 6 1876 -0.967 9 1926 0.666 31 1976 0.350 42
1727 -1.319* 1 1777 -0.615 4 1827 -1.287* 6 1877 2.224* 9 1927 1.038 34 1977 0.502 42
1728 -0.667 1 1778 0.258 4 1828 -1.451* 6 1878 -0.425 9 1928 1.047 36 1978 -1.321* 42
1729 -1.178* 1 1779 0.700 4 1829 -0.700 6 1879 -0.446 9 1929 0.326 36 1979 -1.031* 42

1730 -0.887 1 1780 0.181 4 1830 -0.040 6 1880 0.206 9 1930 0.863 36 1980 -0.719 42
1731 0.373 1 1781 0.426 4 1831 0.362 6 1881 0.141 9 1931 0.809 37 1981 -0.175 42
1732 -1.477* 1 1782 2.032* 4 1832 0.367 6 1882 0.293 9 1932 0.287 38 1982 0.171 42
1733 -1.750* 1 1783 0.599 5 1833 1.028 6 1883 0.079 9 1933 -0.238 38 1983 2.839* 42
1734 1.905 1 1784 -1.834* 5 1834 0.621 6 1884 1.938 9 1934 -0.732 39 1984 -0.283 42
1735 2.377* 1 1785 0.172 5 1835 3.318* 6 1885 -0.250 9 1935 -1.240* 39 1985 0.640 42
1736 0.489 1 1786 -0.807 5 1836 0.227 6 1886 1.399 9 1936 -1.507* 39 1986 0.555 42
1737 -0.435 1 1787 0.394 5 1837 -0.341 6 1887 -0.212 9 1937 -0.444 39 1 1987 0.031 42
1738 -0.518 1 1788 0.434 5 1838 -0.677 6 1888 0.873 10 1938 0.067 39 1988 -0.065 42
1<
1739 -1.333* 1 1789 0.040 5 1839 -1.452* 6 1889 -0.477 10 1939 0.276 40 1989 0.175 42

1740 -1.554* 1 1790 -0.312 5 1840 -1.384* 6 1890 0.119 10 1940 0.847 40 1990 -0.316 42
1741 -1.034* 1 1791 -0.084 5 1841 -1.472* 7 1891 -0.247 10 1941 -0.700 40 1991 -0.887 42
1
1742 -1.154* 1 1792 1.137 5 1842 0.269 7 1892 -0.583 10 1942 0.683 40 1992 -0.173 41
1743 -0.913 1 1793 0.057 5 1843 -0.437 7 1893 -0.621 11 1943 0.498 41 1993 -0.495 41 1
1744 -0.086 1 1794 -0.602 5 1844 -0.234 7 1894 -0.376 11 1944 0.778 42 1994 1.190 41
1745 -0.744 1 1795 0.468 5 1845 0.596 7 1895 0.106 11 1945 0.845 42 1995 0.761 40
1746 -1.434* 1 1796 0.559 5 1846 0.089 7 1896 -1.202* 11 1946 0.499 42 1996 1.162 40
1747 -1.402* 1 1797 -0.796 5 1847 -0.085 7 1897 -0.804 11 1947 0.074 42 1997 -0.674 40
1748 1.507 1 1798 -0.912 5 1848 0.285 7 1898 -0.381 12 1948 0.297 42 1998 0.219 40
1749 0.034 1 1799 -0.483 5 1849 -0.137 7 1899 -0.533 12 1949 -1.818* 42 1 1999 -0.050 40

PART 3: Master Dating Series:

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

---

2000 0.273 40
2001 -0.322 40
2002 -0.346 40
2003 -1.294* 40
2004 -0.241 40
2005 -0.821 40
2006 -0.066 40
2007 -1.046* 40
2008 1.407 40
2009 1.433 38

PART 5: CORRELATION OF SERIES BY SEGMENTS:

Correlations of 50-year dated segments, lagged 25 years
Flags: A = correlation under 0.3281 but highest as dated; * = correlation higher at other than dated position

Seq Series Time_span 1750 1775 1800 1825 1850 1875 1900 1925 1950 1975
1799 1824 1849 1874 1899 1924 1949 1974 1999 2024

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

1 Pk026 1934 2009 .57 .46 .49

2	Pk036	1927	2009					.59	.50	.46		
3	Pk074	1920	2009					.55	.58	.66	.57	
4	Pk079n	1926	2009					.30A	.62	.68		
5	Pk096n	1926	2009					.51	.64	.62		
6	Pk1013	1678	2009	.53	.54	.74	.73	.63	.51	.49	.61	.69	.63
7	Pk1024	1939	2009					.71	.68	.67		
8	Pk109b	1908	2009					.38	.67	.58	.51	
9	Pk114	1944	2009					.50	.46	.59		
10	Pk165n	1918	2009					.41	.44	.65	.70	
11	Pk173	1923	2009					.52	.53	.62	.56	
12	Pk207n	1926	2008					.60	.67	.67		
13	Pk214n	1908	1994					.48	.43	.52		
14	Pk227n	1911	2009					.32A	.35	.49	.59	
15	Pk279n	1888	2009					.35	.34	.60	.72	.76
16	Pk320	1926	2009					.65	.58	.54		
17	Pk342	1874	2009				.46	.44	.50	.53	.68	.66
18	Pk365	1759	2009	.42	.40	.54	.61	.54	.59	.50	.43	.39	.42
19	Pk471b	1908	2009					.40	.53	.64	.58	
20	Pk489	1927	2009					.51	.56	.53		
21	Pk511	1932	2008					.47	.64	.67		
22	Pk548	1761	2009	.37	.41	.51	.50	.60	.57	.53	.41	.48	.61
23	Pk555n	1783	2009		.59	.72	.67	.65	.65	.55	.40	.43	.54
24	Pk616a	1898	2009					.42	.49	.53	.55	.53
25	Pk678	1911	2009					.51	.62	.66	.71	
26	Pk698	1926	1991					.53	.64			
27	Pk700n	1931	2009					.53	.71	.71		
28	Pk706	1841	2009			.50	.53	.56	.44	.40	.42	.50
29	Pk727a	1804	2009		.55	.65	.55	.50	.53	.39	.48	.58
30	Pk761b	1912	2009					.49	.55	.44	.45	
31	Pk776a	1927	2009					.56	.67	.69		
32	Pk790	1768	2009	.52	.60	.83	.79	.64	.54	.67	.54	.45	.50
33	Pk792b	1928	2009					.60	.69	.68		
34	Pk805	1852	2009				.56	.63	.67	.61	.65	.62
35	Pk819	1928	2009					.63	.58	.55		
36	Pk822	1920	2009					.69	.73	.81	.84	
37	Pk847	1909	2009					.51	.54	.44	.53	
38	Pk850n	1943	2009					.38	.46	.47		
39	Pk871	1893	2009					.64	.64	.52	.39	.48
40	Pk894	1917	2009					.52	.47	.48	.44	
41	Pk923	1907	2009					.58	.66	.70	.73	
42	Pk937	1907	2009					.36*	.58	.55	.60	
Av segment correlation				0.46	0.51	0.65	0.63	0.57	0.53	0.50	0.53	0.57	0.59

PART 6: POTENTIAL PROBLEMS:

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

==========

Pk079n   1926 to 2009

[A] Segment   High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1   0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10
  --------- ---- ---
  1926 1975   0   -.01 .06 .23 -.03 .10 .05 -.24 .01 -.06 -.21 .30*-.25 -.02 -.19 -.10 .09 .05 .14 .02 .23 -.11

[*] Early part of series cannot be checked from 1678 to 1758 -- not matched by another series

==========

Pk227n   1911 to 2009

[A] Segment   High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1   0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10
  --------- ---- ---
  1911 1960   0   -.14 -.11 .07 -.25 .11 -.16 .22 .01 -.03 .11 .32*-.22 .07 -.11 -.03 -.05 -.08 -.17 -.04 -.04 -.14

==========

Pk937   1907 to 2009

[A] Segment   High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1   0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10
  --------- ---- ---
  1907 1956   2   .00 -.23 -.21 -.08 -.26 -.05 -.01 .01 .26 .24 .36| .08 .39*-.02 .24 -.21 -.06 .07 -.15 -.35 .02

==========

PART 7: DESCRIPTIVE STATISTICS:

							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	Pk026	1934 2009	76	3	0	0.505	0.96	2.57	0.559	0.822	0.277	0.89	0.371	0.012	1
2	Pk036	1927 2009	83	3	0	0.511	0.62	1.48	0.324	0.771	0.292	1.31	0.423	0.013	1
3	Pk074	1920 2009	90	4	0	0.590	0.93	3.15	0.602	0.730	0.342	1.36	0.441	-0.010	1
4	Pk079n	1926 2009	84	3	1	0.488	0.72	2.43	0.333	0.526	0.291	1.73	0.425	0.003	1
5	Pk096n	1926 2009	84	3	0	0.629	0.61	2.14	0.458	0.734	0.388	1.87	0.527	0.039	1
6	Pk1013	1678 2009	332	10	0	0.608	0.98	3.39	0.511	0.722	0.282	1.23	0.379	0.027	1
7	Pk1024	1939 2009	71	3	0	0.659	0.62	2.04	0.416	0.860	0.271	1.69	0.495	0.066	1
8	Pk109b	1908 2009	102	4	0	0.489	0.57	1.38	0.346	0.853	0.307	1.23	0.422	-0.017	3
9	Pk114	1944 2009	66	3	0	0.530	0.51	1.14	0.221	0.684	0.265	0.79	0.327	-0.007	1
10	Pk165n	1918 2009	92	4	0	0.579	1.27	2.92	0.676	0.822	0.257	0.82	0.307	0.001	1
11	Pk173	1923 2009	87	4	0	0.531	1.14	2.76	0.753	0.803	0.308	1.14	0.399	-0.013	1
12	Pk207n	1926 2008	83	3	0	0.626	0.35	0.84	0.174	0.663	0.313	1.61	0.460	-0.020	1
13	Pk214n	1908 1994	87	3	0	0.534	0.42	0.90	0.220	0.642	0.390	1.19	0.429	-0.010	1
14	Pk227n	1911 2009	99	4	1	0.462	0.60	1.45	0.331	0.769	0.293	1.57	0.427	-0.021	1
15	Pk279n	1888 2009	122	5	0	0.567	0.79	2.60	0.642	0.868	0.315	1.19	0.418	-0.036	1
16	Pk320	1926 2009	84	3	0	0.614	1.72	4.80	0.995	0.808	0.260	1.00	0.331	-0.037	1
17	Pk342	1874 2009	136	6	0	0.585	1.86	5.77	0.933	0.788	0.243	2.04	0.378	-0.014	1
18	Pk365	1759 2009	251	10	0	0.506	1.35	4.17	0.816	0.831	0.252	1.19	0.357	0.035	1
19	Pk471b	1908 2009	102	4	0	0.523	0.90	2.50	0.518	0.840	0.251	0.80	0.351	0.014	2
20	Pk489	1927 2009	83	3	0	0.505	0.96	2.59	0.600	0.787	0.282	1.25	0.363	0.010	2
21	Pk511	1932 2008	77	3	0	0.527	0.52	1.65	0.408	0.875	0.398	1.84	0.624	-0.025	1
22	Pk548	1761 2009	249	10	0	0.484	1.11	2.86	0.442	0.755	0.204	0.93	0.255	-0.012	1
23	Pk555n	1783 2009	227	9	0	0.572	1.29	5.44	0.640	0.723	0.245	1.10	0.298	0.005	2
24	Pk616a	1898 2009	112	5	0	0.521	0.50	1.88	0.374	0.824	0.327	1.46	0.470	0.040	1
25	Pk678	1911 2009	99	4	0	0.627	1.40	3.21	0.711	0.827	0.245	0.89	0.313	0.004	1
26	Pk698	1926 1991	66	2	0	0.583	1.10	3.14	0.759	0.897	0.261	0.65	0.305	0.081	1
27	Pk700n	1931 2009	79	3	0	0.605	0.60	1.43	0.371	0.775	0.296	1.44	0.422	-0.039	1
28	Pk706	1841 2009	169	7	0	0.474	1.24	2.82	0.457	0.645	0.232	0.76	0.287	-0.001	3
29	Pk727a	1804 2009	206	8	0	0.518	0.85	2.55	0.367	0.775	0.225	1.05	0.293	-0.021	1
30	Pk761b	1912 2009	98	4	0	0.490	0.60	1.57	0.370	0.767	0.290	0.88	0.357	-0.033	1
31	Pk776a	1927 2009	83	3	0	0.656	0.55	1.71	0.431	0.852	0.303	0.82	0.382	0.042	1
32	Pk790	1768 2009	242	10	0	0.611	1.35	3.87	0.633	0.780	0.222	1.05	0.296	0.001	1
33	Pk792b	1928 2009	82	3	0	0.671	0.81	2.36	0.384	0.740	0.252	1.00	0.330	-0.037	1
34	Pk805	1852 2009	158	6	0	0.608	1.53	4.62	0.754	0.806	0.230	0.93	0.326	-0.028	1
35	Pk819	1928 2009	82	3	0	0.650	0.68	2.06	0.384	0.714	0.325	0.89	0.389	0.011	1
36	Pk822	1920 2009	90	4	0	0.766	0.86	2.31	0.507	0.844	0.244	1.33	0.356	-0.013	3
37	Pk847	1909 2009	101	4	0	0.518	0.92	2.71	0.676	0.704	0.351	1.04	0.400	-0.003	1
38	Pk850n	1943 2009	67	3	0	0.513	1.97	4.81	1.117	0.815	0.315	0.98	0.365	-0.032	1
39	Pk871	1893 2009	117	5	0	0.535	0.70	2.48	0.451	0.850	0.315	1.05	0.401	0.003	2
40	Pk894	1917 2009	93	4	0	0.547	0.63	1.50	0.312	0.686	0.276	1.07	0.381	-0.014	1
41	Pk923	1907 2009	103	4	0	0.675	1.85	5.43	1.372	0.894	0.259	1.12	0.353	-0.032	1
42	Pk937	1907 2009	103	4	1	0.506	1.11	3.58	0.793	0.904	0.254	0.94	0.336	0.000	2
Total or mean:		4917	193	3	0.560	1.01	5.77	0.562	0.777	0.274	2.04	0.366	-0.001		

- = [COFECHA SAR COF] = -

(NSA)

```
 []  Dendrochronology Program Library                    Run BIK    Program COF
[]
[]  P R O G R A M     C O F E C H A                                  Version 6.02P       0
-------------------------------------------------------------------------------------------------------------------------------
```

QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS
cofechaOSX_pjk2012.f

File of DATED series: best.rwl

CONTENTS:

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 1748 to 2013 266 years
Continuous time span is 1748 to 2013 266 years
Portion with two or more series is 1781 to 2013 233 years

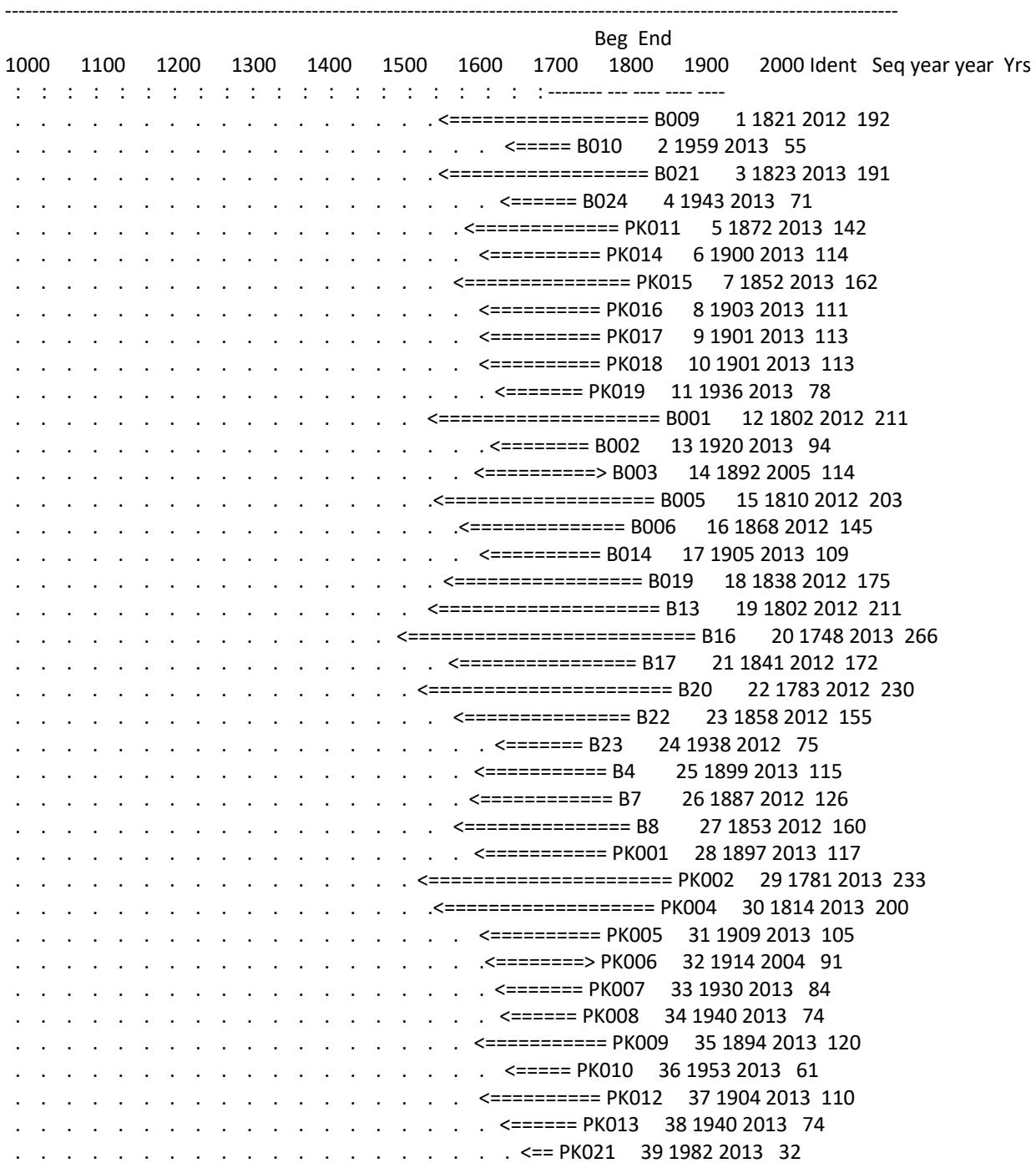
```
**************************************
*C* Number of dated series       39 *C*
*O* Master series 1748 2013  266 yrs *O*
*F* Total rings in all series   5204 *F*
*E* Total dated rings checked   5171 *E*
*C* Series intercorrelation    0.506 *C*
*H* Average mean sensitivity   0.280 *H*
*A* Segments, possible problems   24 *A*
*** Mean length of series     133.0 ***
**************************************
```

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

B009 3 absent rings: 1846 1851 1940
B010 1 absent rings: 2008
B019 1 absent rings: 2000
B16 2 absent rings: 1937 1949

7 absent rings 0.135%

PART 2: TIME PLOT OF TREE-RING SERIES:



PART 3: Master Dating Series:

Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab
1750	2.394*	1	1800	-0.348	3	1850	0.179	11	1900	0.908	22	1950	-0.307	36			
1751	1.395	1	1801	1.276	3	1851	-0.163	11	1<	1901	0.425	24	1951	0.236	36		
1752	-0.617	1	1802	1.275	5	1852	-0.690	12		1902	-0.381	24	1952	0.053	36		
1753	-1.578*	1	1803	0.571	5	1853	0.716	13		1903	1.163	25	1953	-1.200*	37		
1754	-1.187*	1	1804	-0.295	5	1854	-0.019	13		1904	0.245	26	1954	-1.482*	37		
1755	0.883	1	1805	1.361	5	1855	-0.754	13		1905	-0.295	27	1955	0.086	37		
1756	1.574	1	1806	-0.025	5	1856	-1.001*	13		1906	1.178	27	1956	0.071	37		
1757	1.683	1	1807	-0.797	5	1857	-0.146	13		1907	1.516	27	1957	-0.716	37		
1758	-1.973*	1	1808	-1.676*	5	1858	0.407	14		1908	1.300	27	1958	0.134	37		
1759	0.840	1	1809	-0.335	5	1859	0.538	14		1909	0.188	28	1959	0.747	38		
1760	1.150	1	1810	-0.104	6	1860	0.342	14		1910	-0.900	28	1960	0.557	38		
1761	0.123	1	1811	0.290	6	1861	0.309	14		1911	-0.313	28	1961	1.761	38		
1762	-0.758	1	1812	-0.187	6	1862	-0.232	14		1912	-0.471	28	1962	0.960	38		
1763	-1.145*	1	1813	-1.020*	6	1863	-0.407	14		1913	-0.703	28	1963	1.502	38		
1764	1.127	1	1814	0.584	7	1864	1.004	14		1914	1.127	29	1964	0.513	38		
1765	-0.293	1	1815	-1.147*	7	1865	0.461	14		1915	0.968	29	1965	-0.494	38		
1766	-2.421*	1	1816	-1.354*	7	1866	1.049	14		1916	-0.891	29	1966	-1.701*	38		
1767	-1.018*	1	1817	0.539	7	1867	1.462	14		1917	0.158	29	1967	-1.047*	38		
1768	4.051*	1	1818	0.626	7	1868	0.624	15		1918	-0.714	29	1968	0.316	38		
1769	2.798*	1	1819	0.120	7	1869	-1.124*	15		1919	-2.319*	29	1969	-0.427	38		
1770	-0.183	1	1820	-0.161	7	1870	0.315	15		1920	-0.871	30	1970	-0.440	38		
1771	-0.789	1	1821	-1.537*	8	1871	-1.183*	15		1921	-1.803*	30	1971	0.349	38		
1772	-2.165*	1	1822	1.237	8	1872	-0.584	16		1922	-0.458	30	1972	0.942	38		
1773	-1.427*	1	1823	0.277	9	1873	-1.333*	16		1923	-0.133	30	1973	0.031	38		
1774	0.780	1	1824	-0.150	9	1874	-0.106	16		1924	0.002	30	1974	-0.463	38		
1775	-0.469	1	1825	0.609	9	1875	-0.850	16		1925	0.450	30	1975	0.066	38		
1776	-1.987*	1	1826	1.730	9	1876	-1.564*	16		1926	0.124	30	1976	-0.055	38		
1777	0.877	1	1827	0.182	9	1877	0.875	16		1927	1.452	30	1977	-0.131	38		
1778	0.418	1	1828	0.062	9	1878	-0.610	16		1928	0.447	30	1978	-0.238	38		
1779	0.789	1	1829	-0.206	9	1879	0.404	16		1929	-0.011	30	1979	-0.301	38		
1780	-0.579	1	1830	-0.527	9	1880	0.118	16		1930	0.553	31	1980	-0.586	38		
1781	-0.319	2	1831	-0.065	9	1881	0.708	16		1931	-0.193	31	1981	0.632	38		
1782	1.124	2	1832	0.611	9	1882	-0.671	16		1932	0.835	31	1982	-1.594*	39		
1783	-1.906*	3	1833	0.254	9	1883	-0.744	16		1933	-1.234*	31	1983	1.775	39		
1784	0.069	3	1834	-0.375	9	1884	1.375	16		1934	-0.209	31	1984	-0.834	39		
1785	-0.026	3	1835	0.927	9	1885	-0.620	16		1935	1.181	31	1985	-0.098	39		
1786	-1.493*	3	1836	0.522	9	1886	2.325*	16		1936	0.831	32	1986	-0.138	39		
1787	2.549*	3	1837	-0.946	9	1887	1.243	17		1937	-0.412	32	1	1987	0.358	39	
1788	0.249	3	1838	-0.883	10	1888	1.634	17		1938	-0.175	33		1988	-2.178*	39	
1789	0.938	3	1839	-0.066	10	1889	-0.834	17		1939	-0.135	33		1989	-0.091	39	
1790	1.644	3	1840	0.925	10	1890	-0.239	17		1940	-0.082	35	1<	1990	-0.289	39	
1791	0.442	3	1841	0.296	11	1891	-2.161*	17		1941	0.442	35		1991	0.902	39	
1792	0.886	3	1842	1.171	11	1892	-0.492	18		1942	0.130	35		1992	0.176	39	
1793	-0.157	3	1843	-0.668	11	1893	-0.322	18		1943	-0.225	36		1993	-0.072	39	
1794	0.413	3	1844	-1.792*	11	1894	-0.421	19		1944	0.126	36		1994	2.328*	39	
1795	-0.592	3	1845	-0.835	11	1895	-0.983	19		1945	1.198	36		1995	0.422	39	
1796	-1.170*	3	1846	-0.276	11	1<	1896	-1.113*	19	1946	1.298	36		1996	0.875	39	
1797	-0.557	3	1847	-0.261	11		1897	0.701	20	1947	0.170	36		1997	-0.052	39	
1748	-0.761	1	1798	-0.663	3		1848	1.244	11	1898	0.055	20		1948	-0.665	36	
1998	-0.970	39															

1749 -1.516* 1 1799 -2.322* 3 1849 1.114 11 1899 -0.661 21 1949 -2.181* 36 1 1999 -0.226 39

PART 3: Master Dating Series:

Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab	Year	Value	No Ab
2000	0.826	39	1<														
2001	0.962	39															
2002	-0.123	39															
2003	-1.925*	39															
2004	-0.520	39															
2005	-0.547	38															
2006	0.639	37															
2007	-1.170*	37															
2008	-0.680	37	1														
2009	1.135	37															
2010	0.667	37															
2011	0.175	37															
2012	-0.627	37															
2013	1.178	25															

PART 5: CORRELATION OF SERIES BY SEGMENTS:

Correlations of 50-year dated segments, lagged 25 years
Flags: A = correlation under 0.3281 but highest as dated; * = correlation higher at other than dated position

Seq	Series	Time_span	1775 1800 1825 1850 1875 1900 1925 1950 1975 1824 1849 1874 1899 1924 1949 1974 1999 2024
1	B009	1821 2012	.07* .22* .49 .65 .49 .28A .47 .55
2	B010	1959 2013	.42 .36
3	B021	1823 2013	.33A .37 .58 .67 .58 .56 .63 .53
4	B024	1943 2013	.49 .46 .46
5	PK011	1872 2013	.45 .48 .55 .42 .58 .56
6	PK014	1900 2013	.56 .57 .71 .68
7	PK015	1852 2013	.53 .64 .59 .51 .67 .68
8	PK016	1903 2013	.64 .60 .72 .65
9	PK017	1901 2013	.37 .25A .43 .57
10	PK018	1901 2013	.31A .53 .58 .48
11	PK019	1936 2013	.60 .64 .58
12	B001	1802 2012	.37 .49 .61 .48 .23* .19* .41 .55
13	B002	1920 2013	.46 .42 .44 .42
14	B003	1892 2005	.43 .48 .48 .18* .17*
15	B005	1810 2012	.22A .09* .43 .57 .52 .55 .62 .69
16	B006	1868 2012	.58 .61 .48 .32A .33A .50
17	B014	1905 2013	.51 .36 .45 .52
18	B019	1838 2012	.47 .44 .57 .47 .41 .40 .43
19	B13	1802 2012	.39 .49 .54 .54 .53 .57 .73 .75
20	B16	1748 2013	.41 .40 .47 .65 .69 .48 .20* .49 .52
21	B17	1841 2012	.43 .44 .57 .45 .43 .44 .45
22	B20	1783 2012	.17* .22* .29* .54 .63 .59 .62 .59 .58
23	B22	1858 2012	.60 .72 .69 .59 .55 .50
24	B23	1938 2012	.49 .63 .56
25	B4	1899 2013	.55 .57 .35 .42 .49
26	B7	1887 2012	.57 .61 .56 .66 .64

```
 27 B8      1853 2012              .39  .55  .42  .47  .49  .46
 28 PK001   1897 2013                   .52  .52  .34* .49  .58
 29 PK002   1781 2013   .40* .31* .37  .63  .72  .64  .44  .50  .54
 30 PK004   1814 2013      .35  .34* .36  .47  .46  .42  .49  .61
 31 PK005   1909 2013                   .49  .54  .60  .68
 32 PK006   1914 2004                   .32A .32A .56  .56
 33 PK007   1930 2013                     .47  .55  .63
 34 PK008   1940 2013                     .70  .73  .70
 35 PK009   1894 2013                .43  .40  .48  .54  .48
 36 PK010   1953 2013                        .57  .67
 37 PK012   1904 2013                   .66  .64  .68  .68
 38 PK013   1940 2013                     .53  .62  .64
 39 PK021   1982 2013                          .56
Av segment correlation  0.33 0.30 0.37 0.52 0.57 0.50 0.46 0.54 0.56

PART 6:  POTENTIAL PROBLEMS:
-------------------------------------------------------------------------------------------------------------------------------

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


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

 B009     1821 to  2012

 [A] Segment   High  -10  -9  -8  -7  -6  -5  -4  -3  -2  -1   0  +1  +2  +3  +4  +5  +6  +7  +8  +9 +10
   --------- ----  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
   1821 1870   8   .14 .18 .01 .12 -.05 -.11 -.03 .10 -.04 .13 .07|-.05 -.11 -.14 -.18 -.23 .03 .13 .35*-.02 -.14
   1825 1874   8   .13 .09 -.12 -.03 -.16 -.19 .01 .05 .13 .18 .22| .05 .09 .02 -.11 -.10 -.10 .13 .25* .02 -.11
   - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
   1925 1974   0  -.05 -.04 -.26 -.04 .05 .03 .20 -.04 -.01 .23 .28*-.12 .06 -.02 .12 .12 .00 .06 -.14 .14 -.18


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

 B021     1823 to  2013

 [A] Segment   High  -10  -9  -8  -7  -6  -5  -4  -3  -2  -1   0  +1  +2  +3  +4  +5  +6  +7  +8  +9 +10
   --------- ----  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
   1823 1872   0  -.14 .21 .07 .05 .14 -.06 -.04 .04 -.33 .08 .33* .07 -.16 -.09 -.27 -.21 -.02 .27 .03 .10 .09


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

 PK017    1901 to  2013

 [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 1974   0   .19 .17 .06 .10 -.16 .20 -.04 -.01 .03 -.08 .25*-.21 -.20 .10 .07 -.22 -.01 -.07 .15 -.11 -.04


================================================================================================
=======================================
```

PK018 1901 to 2013

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

1901 1950 0 .12 .23 .03 .28 .11 .22 .18 -.02 -.20 .13 .31*-.01 .02 .00 -.23 .14 -.13 -.03 -.25 -.16 .08

==========

B001 1802 to 2012

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

1900 1949 -3 .12 -.08 -.12 -.08 -.04 -.17 -.10 .36*-.13 -.19 .23|-.04 .14 .19 .10 .11 .05 .05 -.03 -.18 -.04

1925 1974 1 .07 .05 .13 -.03 -.24 -.08 .06 .01 -.50 -.28 .19| .22* .17 -.05 .01 .17 -.06 -.06 -.09 .17 .10

==========

B003 1892 to 2005

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

1950 1999 8 -.08 -.12 -.04 .01 .13 -.03 -.09 .17 -.12 -.18 .18| .15 .09 .16 -.10 .12 -.21 -.23 .35* .01 -.15

1956 2005 8 -.06 -.21 .05 .12 .13 -.07 -.22 .09 -.07 -.06 .17| .05 .03 .18 -.04 .12 -.31 -.13 .45* - -

==========

B005 1810 to 2012

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

1810 1859 0 .00 .02 .11 .00 -.04 .10 .00 -.07 -.10 -.05 .22* .02 .08 -.11 -.22 -.17 .02 -.03 .14 .08 .09

1825 1874 8 .00 -.01 .04 .03 -.03 .09 .00 -.21 -.28 -.07 .09| .18 .03 -.14 -.22 -.16 .10 .15 .27* .03 .27

==========

B006 1868 to 2012

[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 1974 0 .12 .00 .05 .06 -.22 .17 -.04 -.19 -.44 -.21 .32* .07 -.05 .03 .19 .32 -.03 -.08 -.03 .09 .05

1950 1999 0 -.10 .16 .20 .11 .05 .05 -.08 -.10 -.21 -.39 .33*-.17 .10 -.03 .25 .00 -.04 -.09 .09 .19 -.02

[*] Early part of series cannot be checked from 1748 to 1780 -- not matched by another series

==========

B16 1781 to 2013

```
[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 1974   -5   .15 -.02  .01  .06 -.25  .25*-.05 -.16 -.40 -.18  .20|-.08 -.13 -.13  .20  .09  .23  .02  .18  .05 -.03
```

==========

```
B20      1783 to  2012

[A] Segment   High  -10  -9  -8  -7  -6  -5  -4  -3  -2  -1   0  +1  +2  +3  +4  +5  +6  +7  +8  +9 +10
  --------- ----  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
  1783 1832   -7  -.03  .10  .02  .28* .05  .03 -.12  .19 -.28 -.09  .17|-.04 -.02  .12 -.10  .18 -.09  .07  .04 -.09 -.08
  1800 1849   -7   .06  .12  .06  .30* .20 -.06  .12  .16 -.42 -.15  .22| .07 -.01  .02 -.05 -.12 -.10 -.07  .03 -.17  .04
  1825 1874   -3   .19 -.05 -.14  .02 -.06 -.22  .16  .31*-.03 -.08  .29| .11  .11  .20 -.03 -.26 -.08  .14 -.29  .01  .01
```

==========

```
PK001    1897 to  2013

[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 1974  -10   .39* .03 -.01 -.11 -.18 -.09 -.19 -.27 -.19  .09  .34| .06  .21 -.21 -.02  .21  .16 -.01 -.27 -.19  .00
```

==========

```
PK002    1781 to  2013

[A] Segment   High  -10  -9  -8  -7  -6  -5  -4  -3  -2  -1   0  +1  +2  +3  +4  +5  +6  +7  +8  +9 +10
  --------- ----  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
  1781 1830   -5   .06 -.13  .09  .03 -.22  .47* .20  .24  .27 -.18  .40|-.18 -.38 -.09 -.24 -.21 -.16  .00  .14  .15  .08
  1800 1849   -5  -.16  .06  .12  .04 -.09  .40* .18 -.12 -.05 -.10  .31| .04 -.10 -.02  .04 -.20 -.07 -.07 -.07 -.05 -.05
```

==========

```
PK004    1814 to  2013

[A] Segment   High  -10  -9  -8  -7  -6  -5  -4  -3  -2  -1   0  +1  +2  +3  +4  +5  +6  +7  +8  +9 +10
  --------- ----  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
  1825 1874   -6  -.12  .13 -.05  .13  .35*-.10 -.31 -.27 -.17 -.10  .34|-.04  .02 -.03  .00  .02  .18  .07  .06  .03  .02
```

==========

```
PK006    1914 to  2004

[A] Segment   High  -10  -9  -8  -7  -6  -5  -4  -3  -2  -1   0  +1  +2  +3  +4  +5  +6  +7  +8  +9 +10
  --------- ----  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
  1914 1963    0  -.25 -.18  .07  .08  .20 -.02 -.06 -.01  .16 -.12  .32* .04 -.28 -.04 -.04 -.08 -.16 -.23 -.23  .06  .31
  1925 1974    0  -.29 -.19 -.09 -.01  .12 -.07  .05  .07  .25 -.11  .32* .04 -.25 -.02  .09  .07 -.14 -.12 -.26  .06  .22
```

==========

PART 7: DESCRIPTIVE STATISTICS:

Seq	Series	Interval	No. Years	No. Segmt	No. with Flags	Mean Master	Max msmt	Std msmt	Auto dev	Mean corr	Max sens	Std value	Auto dev	AR corr ()
1	B009	1821 2012	192	8	3	0.416	0.44	1.76	0.318	0.683	0.355	1.33	0.418	-0.030 1
2	B010	1959 2013	55	2	0	0.413	1.25	5.74	1.170	0.421	0.536	1.72	0.658	0.049 1
3	B021	1823 2013	191	8	1	0.550	1.00	4.39	0.541	0.807	0.225	1.00	0.305	0.031 1
4	B024	1943 2013	71	3	0	0.454	1.27	2.92	0.447	0.567	0.247	0.75	0.305	0.028 1
5	PK011	1872 2013	142	6	0	0.484	1.14	4.49	0.800	0.812	0.274	1.42	0.429	-0.018 1
6	PK014	1900 2013	114	4	0	0.640	1.77	3.59	0.673	0.534	0.281	1.13	0.354	0.015 2
7	PK015	1852 2013	162	6	0	0.595	0.91	3.75	0.712	0.864	0.242	0.86	0.309	-0.009 4
8	PK016	1903 2013	111	4	0	0.662	1.33	4.05	0.871	0.741	0.303	0.80	0.335	-0.007 1
9	PK017	1901 2013	113	4	1	0.441	1.12	3.51	0.582	0.616	0.306	1.82	0.429	0.001 1
10	PK018	1901 2013	113	4	1	0.443	0.66	1.66	0.416	0.840	0.338	1.01	0.416	0.013 1
11	PK019	1936 2013	78	3	0	0.609	0.85	1.82	0.361	0.723	0.289	0.78	0.347	-0.046 1
12	B001	1802 2012	211	8	2	0.421	1.06	3.45	0.599	0.769	0.311	0.90	0.372	0.006 1
13	B002	1920 2013	94	4	0	0.423	1.53	6.28	1.005	0.817	0.280	1.23	0.418	0.021 1
14	B003	1892 2005	114	5	2	0.346	2.00	4.53	0.833	0.673	0.260	1.01	0.357	0.057 1
15	B005	1810 2012	203	8	2	0.474	0.98	2.05	0.331	0.762	0.180	0.64	0.230	-0.013 1
16	B006	1868 2012	145	6	2	0.492	1.46	4.97	0.911	0.795	0.269	5.90	1.216	-0.031 1
17	B014	1905 2013	109	4	0	0.477	1.40	2.84	0.783	0.859	0.239	0.65	0.333	-0.019 1
18	B019	1838 2012	175	7	0	0.455	1.03	9.20	1.036	0.696	0.333	1.87	0.501	0.006 1
19	B13	1802 2012	211	8	0	0.570	1.50	6.18	1.195	0.855	0.300	1.14	0.377	0.019 1
20	B16	1748 2013	266	9	1	0.494	1.07	3.56	0.728	0.833	0.316	1.29	0.385	-0.006 1
21	B17	1841 2012	172	7	0	0.464	1.26	5.28	0.770	0.729	0.282	1.91	0.420	0.018 1
22	B20	1783 2012	230	9	3	0.443	0.94	2.60	0.432	0.745	0.235	0.85	0.300	0.001 1
23	B22	1858 2012	155	6	0	0.577	1.31	4.19	0.476	0.686	0.203	0.77	0.283	0.029 1
24	B23	1938 2012	75	3	0	0.515	1.88	3.78	0.744	0.738	0.231	0.84	0.334	-0.052 1
25	B4	1899 2013	115	5	0	0.508	1.24	4.87	1.145	0.883	0.243	0.85	0.304	-0.004 1
26	B7	1887 2012	126	5	0	0.593	2.30	5.04	1.185	0.821	0.246	0.79	0.294	0.004 2
27	B8	1853 2012	160	6	0	0.451	1.47	4.60	0.802	0.719	0.306	1.19	0.402	-0.008 5
28	PK001	1897 2013	117	5	1	0.523	1.56	5.28	0.850	0.663	0.298	1.44	0.426	0.016 1
29	PK002	1781 2013	233	9	2	0.508	1.33	2.81	0.461	0.634	0.244	1.07	0.277	-0.002 1
30	PK004	1814 2013	200	8	1	0.447	1.71	4.93	0.749	0.658	0.260	1.02	0.326	-0.002 3
31	PK005	1909 2013	105	4	0	0.580	1.83	4.50	1.088	0.751	0.292	1.06	0.334	-0.005 1
32	PK006	1914 2004	91	4	2	0.385	2.35	4.87	1.170	0.840	0.266	4.48	1.687	0.001 2
33	PK007	1930 2013	84	3	0	0.583	3.11	7.06	1.088	0.500	0.254	0.63	0.296	-0.023 1
34	PK008	1940 2013	74	3	0	0.706	2.56	5.67	1.109	0.623	0.279	0.88	0.344	0.020 1
35	PK009	1894 2013	120	5	0	0.479	1.31	4.54	0.747	0.697	0.346	1.10	0.432	0.004 1
36	PK010	1953 2013	61	2	0	0.636	2.40	8.79	1.779	0.708	0.380	1.21	0.480	-0.004 1
37	PK012	1904 2013	110	4	0	0.676	1.45	3.00	0.689	0.634	0.308	1.31	0.408	0.008 1
38	PK013	1940 2013	74	3	0	0.590	2.39	5.74	1.117	0.596	0.301	0.67	0.333	0.011 1
39	PK021	1982 2013	32	1	0	0.563	0.90	2.60	0.602	0.846	0.290	1.09	0.389	0.009 2
Total or mean:			5204	203	24	0.506	1.37	9.20	0.755	0.734	0.280	5.90	0.408	0.002

- = [COFECHA BIK COF] = -