

Supplementary Material for

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Supplementary Table 1. List of samples in the modern oak chronology (AD 912-2004) and their tree-ring dates, radiocarbon dates, and correlations with the master chronology.

ID	Date (AD)		Correlations by segment*																	
	Tree Ring		¹⁴ C†		1750	1800	1850	1949	1999	1950	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950
	Inner	Outer	Lower	Upper							1599	1649	1699	1749	1799	1849	1899	1949	1999	2049
1	LMDc18	1920	2004	live tree							0.52									0.59
2	LMDc21	1866	2004	live tree							0.73	0.75	0.75							0.62
3	LMDc09	1860	2004	live tree							0.48	0.59	0.60							0.35
4	LMDc02	1893	2004	live tree							0.66	0.68	0.71							0.35
5	LMDc03	1891	2004	live tree							0.51	0.53	0.53							0.45
6	LMDc05	1858	2004	live tree							0.51	0.56	0.57							0.46
7	LMDc16	1872	2004	live tree							0.53	0.57	0.57							0.42
8	LMDc05	1875	2004	live tree							0.62	0.58	0.58							0.53
9	LMDc13	1867	2004	live tree							0.79	0.65	0.64							0.45
10	LMDc12	1876	2004	live tree							0.58	0.69	0.68							0.48
11	LMDc15	1894	2004	live tree							0.70	0.67	0.66							0.48
12	LMDc07	1853	2004	live tree							0.44	0.57	0.58							0.48
13	LMDc19	1872	2004	live tree							0.59	0.62	0.60							0.48
14	LMDc04	1903	2004	live tree							0.65	0.64								0.48
15	LMDc14	1872	2004	live tree							0.69	0.69	0.67							0.48
16	LMDc11	1850	2004	live tree							0.31	0.40	0.40							0.48
17	LMDc20	1900	2004	live tree							0.72	0.72								0.48
18	LMDc06	1870	2004	live tree							0.65	0.74	0.74							0.48
19	LMDc17	1888	2004	live tree							0.54	0.62	0.63							0.48
20	LCTc07	1909	2004	live tree							0.55									0.48
21	LCTc09	1908	2004	live tree							0.57									0.48
22	LCTc02	1872	2004	live tree							0.45	0.43	0.44							0.48
23	LCTc06	1924	2004	live tree							0.46									0.48
24	LCTc01	1923	2004	live tree							0.60									0.48
25	LCTc04	1921	2004	live tree							0.58									0.48
26	LCTc11	1927	2004	live tree							0.54									0.48
27	LCTc08	1935	2004	live tree							0.46									0.48
28	LCTc07	1909	2004	live tree							0.55									0.48
29	LCTc09	1908	2004	live tree							0.57									0.48
35	CROc12	1953	2004	live tree							0.37									0.48
36	CROc01	1917	2004	live tree							0.40									0.48
37	CROc11	1961	2004	live tree							0.35									0.48
38	CROc03	1914	2004	live tree							0.54									0.48
39	CROc06	1917	2004	live tree							0.38									0.48
40	CROc10	1902	2004	live tree							0.35	0.33								0.48
41	MED017a	1846	2002	live tree	0.63	0.65	0.66	0.64												0.48
42	MED017b	1834	2002	live tree	0.50	0.57	0.58	0.56												0.48
43	MED015a	1894	2002	live tree		0.36	0.34	0.34												0.48
44	MED015b	1883	2002	live tree		0.47	0.53	0.51												0.48
45	MED016a	1789	2002	live tree	0.54	0.53	0.51	0.49												0.48
46	MED016b	1808	2002	live tree	0.29	0.46	0.58	0.59												0.48
47	MED003a	1886	2002	live tree		0.59	0.61	0.60												0.48
48	MED003b	1881	2002	live tree		0.58	0.62	0.62												0.48
49	MED005a	1893	2002	live tree		0.52	0.51	0.52												0.48
50	MED005b	1887	2002	live tree		0.55	0.57	0.57												0.48
51	MED011a	1902	2002	live tree		0.48	0.44	0.43												0.48
52	MED011b	1897	2002	live tree		0.43	0.41	0.40												0.48
53	MED002a	1928	2002	live tree		0.40	0.57													0.48
54	MED002b	1876	2002	live tree		0.26	0.44	0.43												0.48
55	MED010a	1890	2002	live tree		0.41	0.41	0.41												0.48
56	MED010a	1885	2002	live tree		0.60	0.36	0.36												0.48
57	MED004a	1875	2002	live tree		0.57	0.48	0.47												0.48
58	MED004b	1877	2002	live tree			0.65	0.65												0.48
59	MED006a	1889	2002	live tree			0.57	0.54												0.48
60	MED014a	1909	2002	live tree			0.55													0.48
61	MED014b	1898	2002	live tree			0.61	0.60	0.58											0.48
62	MED012a	1805	2002	live tree	0.50	0.65	0.59	0.52	0.52											0.48
63	MED012b	1761	2002	live tree	0.50	0.66	0.58	0.46	0.43											0.48
64	MED013a	1909	2002	live tree			0.57													0.48
65	MED013b	1892	2002	live tree			0.57	0.59	0.59											0.48
66	MED001a	1923	2002	live tree				0.64												0.48
67	MED001b	1923	2002	live tree				0.63												0.48
68	MED018a	1846	2002	live tree	0.47	0.48	0.47	0.46												0.48
69	MED018b	1824	2002	live tree	0.41	0.48	0.51	0.51												0.48
70	MED019b	1893	2002	live tree			0.59	0.59	0.62											0.48
71	MED019c	1897	2002	live tree			0.64	0.63	0.67											0.48
72	MED019a	1826	1991	modern	0.55	0.62	0.55													0.48
73	MED109b	1827	1991	modern	0.48	0.55	0.51													0.48

*COFECHA output part 5: Correlations between each segment and that same segment once the series being tested has been removed from the master series (Grissino-Mayer 2001).

†Calibrated radiocarbon age (calAD) using INTCAL04 calibration curve (Reimer et al. 2004), lower and upper ranges are the 2 sigma calibrated result

Supplementary Table 1. (cont.) List of samples in the modern oak chronology (AD 912-2004) and their tree-ring dates, radiocarbon dates, and correlations with the master chronology.

ID	Date (AD)				Correlations by segment*										
	Tree Ring		$^{14}\text{C}^{\dagger}$		1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750
	Inner	Outer	Lower	Upper	1349	1399	1449	1499	1549	1599	1649	1699	1749	1799	1849
142	MED238b	1527	1613	1453	1644									0.58	
143	MED281b	1578	1668	1284	1410									0.53	
144	MED281c	1578	1667	1284	1410									0.52	
145	LCT068a	1535	1789	na										0.63	0.61
146	LCT068b	1534	1803	na										0.61	0.58
147	MED239a	1513	1674	1635	1898									0.41	0.47
148	MED239c	1511	1676	1635	1898									0.47	0.47
149	MED396a	1519	1632	1296	1443									0.63	0.67
150	MED406a	1514	1614	na										0.63	0.63
151	MED406b	1515	1613	na										0.58	
152	MED351a	1514	1621	na										0.57	0.58
153	MED351b	1512	1610	na										0.57	
154	WLD417a	1500	1596	1448	1668									0.56	
155	WLD417c	1514	1594	1448	1668									0.46	
156	MED394a	1490	1604	1279	1417									0.54	0.51
157	LMD007a	1505	1592	na										0.66	
158	LMD007b	1503	1592	na										0.68	
159	LMD070b	1497	1598	na										0.44	0.46
160	LMD070c	1498	1602	na										0.55	0.55
161	WLD010a	1479	1655	na										0.56	0.64
162	WLD010b	1479	1655	na										0.63	0.69
163	WLD033a	1475	1595	1487	1695									0.50	0.49
164	WLD033b	1475	1596	1487	1695									0.53	0.55
165	MED394a	1490	1604	1279	1417									0.54	0.51
166	MED394b	1494	1608	1279	1417									0.51	0.50
167	MED304a	1489	1613	1398	1524									0.56	0.56
168	MED304b	1488	1595	1398	1524									0.62	0.63
169	LMD009a	1487	1585	1635	1898									0.70	
170	LMD009b	1487	1585	1635	1898									0.76	
171	LCT080a	1480	1630	na										0.49	0.49
172	LCT080b	1479	1629	na										0.47	0.49
173	TMP165a	1451	1697	na										0.52	0.74
174	TMP165c	1484	1698	na										0.57	0.60
175	MED507a	1440	1650	na										0.41	0.44
176	MED507b	1440	1601	na										0.32	0.37
177	WLD421a	1437	1602	1458	1684									0.58	0.61
178	WLD421b	1437	1601	1458	1684									0.48	0.49
179	WLD416a	1430	1611	1448	1665									0.61	0.58
180	WLD416b	1430	1614	1448	1665									0.60	0.58
181	LCT065a	1408	1653	na										0.60	0.64
182	LCT065b	1408	1662	na										0.47	0.55
183	MED241a	1400	1536	na										0.55	0.64
184	MED241b	1400	1538	na										0.55	0.58
185	MED237a	1396	1547	1450	1680									0.53	0.55
186	MED237b	1396	1554	1450	1680									0.53	0.55
187	MED201a	1419	1532	1850										0.54	0.52
188	MED201b	1419	1532	1850										0.42	0.55
189	WLD036b	1401	1496	1459	1692									0.54	
190	WLD036c	1402	1497	1459	1692									0.73	
191	TMP074a	1371	1521	1449	1639									0.43	0.39
192	TMP074b	1371	1513	1449	1639									0.47	0.42
193	MED343a	1355	1495	1720	1819									0.49	0.50
194	MED343b	1361	1494	1720	1819									0.46	0.55
195	MED506a	1347	1566	na										0.56	0.59
196	MED506c	1334	1563	na										0.48	0.50
197	LMD072a	1333	1481	na										0.46	0.59
198	LMD072b	1334	1488	na										0.56	0.57
199	TMP199a	1324	1490	na										0.39	0.36
200	TMP199b	1324	1496	na										0.49	0.47
201	WLD064a	1297	1451	1384	1520	0.44	0.42	0.46	0.45					0.47	
202	WLD064b	1297	1438	1384	1520	0.50	0.47	0.50							
203	WLD021a	1305	1448	1373	1448									0.49	0.37
204	WLD021b	1305	1450	1373	1448									0.57	0.56
205	WLD017a	1308	1451	1388	1506									0.58	0.53
206	WLD017b	1314	1449	1388	1506									0.53	0.54
207	MED407a	1319	1449	1454	1648									0.47	0.46
208	MED407b	1319	1447	1454	1648									0.54	0.57

*COFECHA output part 5: Correlations between each segment and that same segment once the series being tested has been removed from the master series (Grissino-Mayer 2001).

^fCalibrated radiocarbon age (calAD) using INTCAL04 calibration curve (Stuiver et al. 1998), lower and upper ranges are the 2 sigma calibrated result