

Supplementary materials

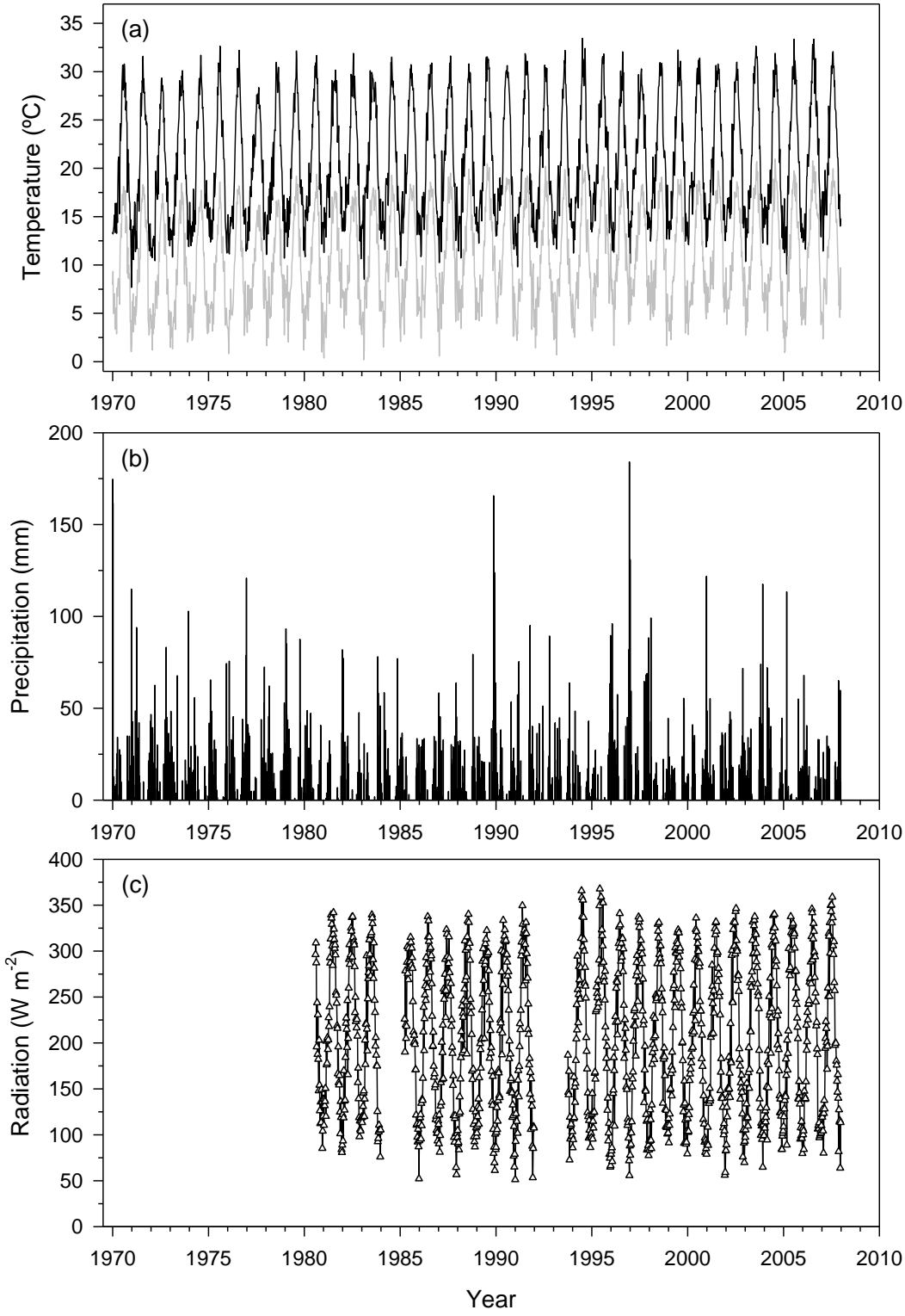


Figure S1. Climate variables obtained at weekly resolution for the study area including (a) mean maximum and minimum temperatures, (b) precipitation, and (c) radiation.

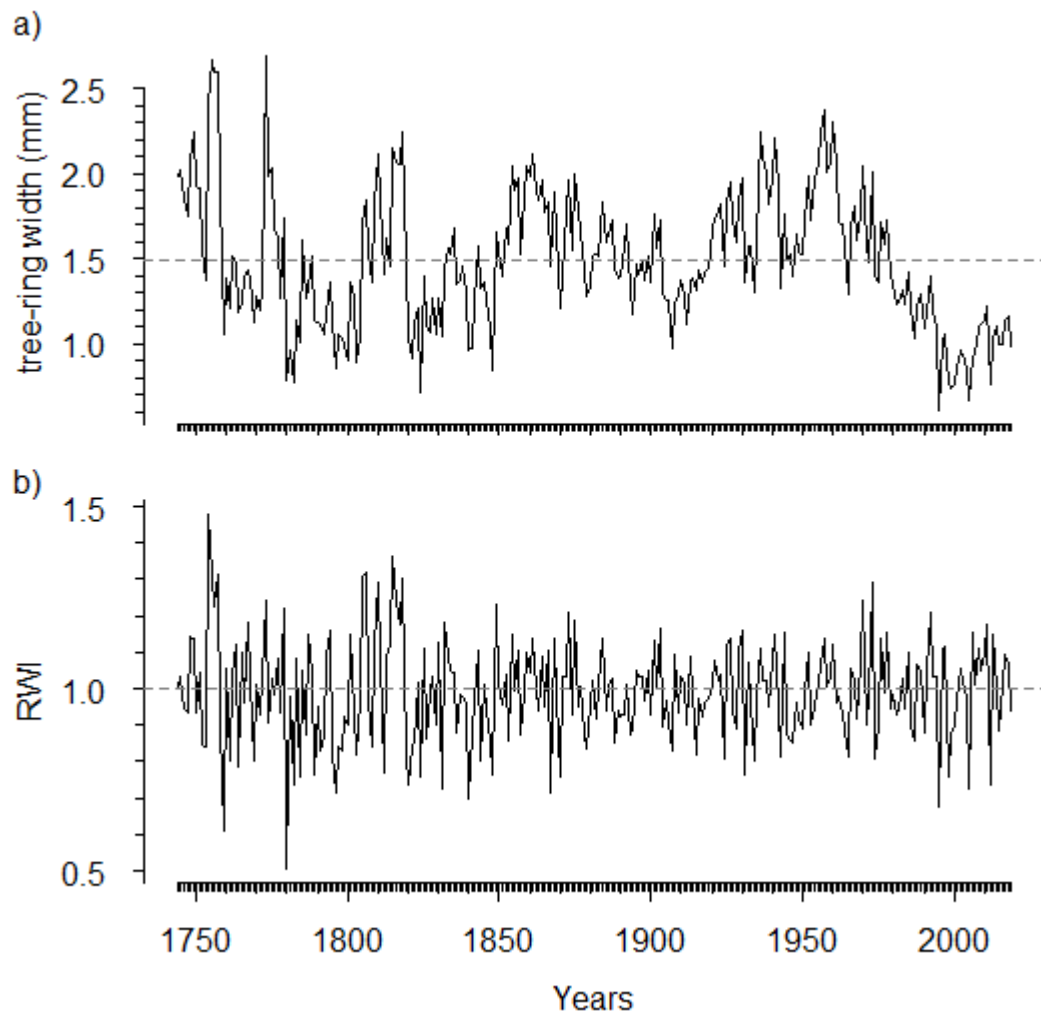


Figure S2. Raw tree-ring chronologies and ring width index of the *Abies pinsapo* in Sierra de las Nieves (South Spain).

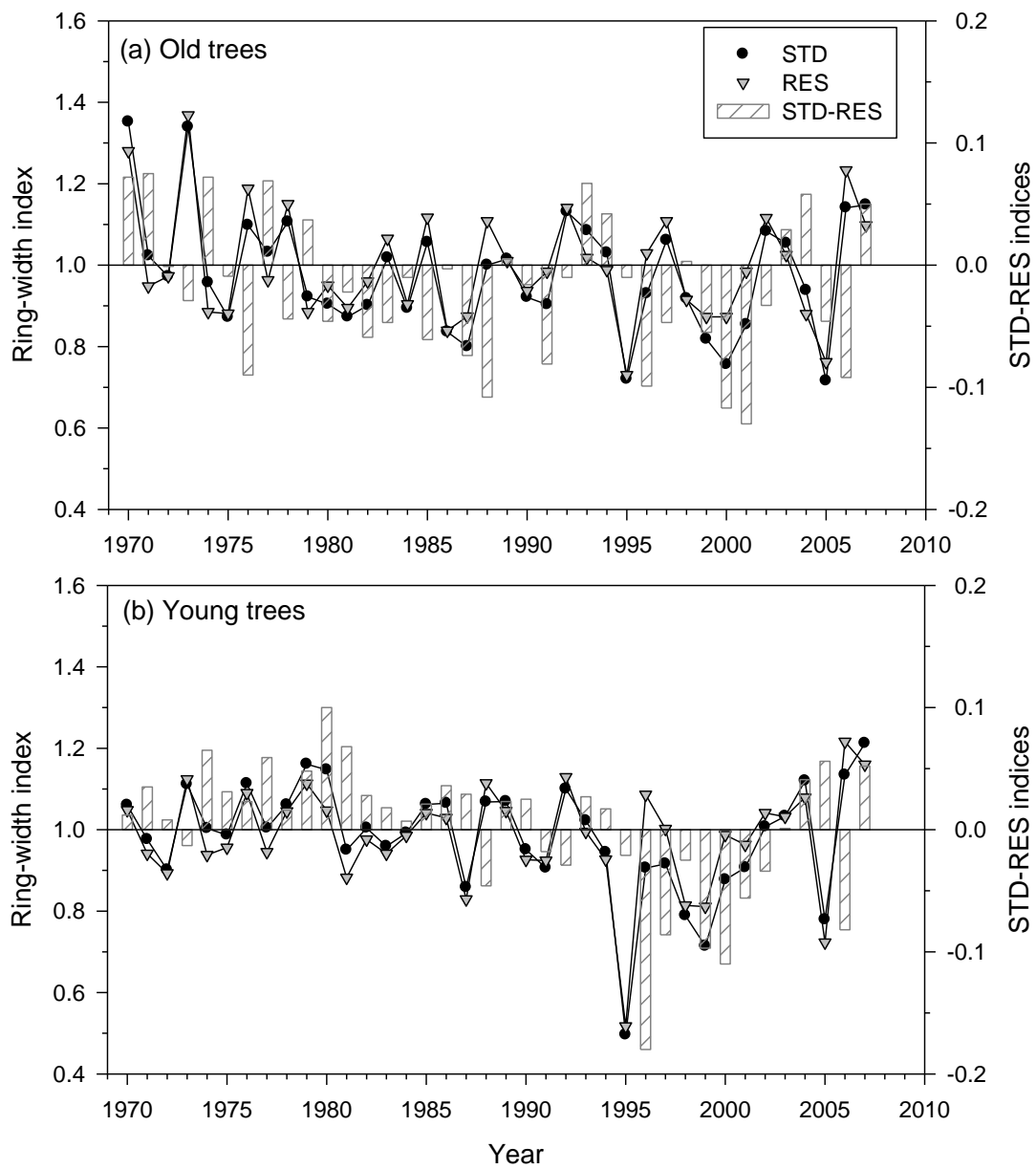


Figure S3. Comparison of the standard (STD) and residual (RES) indexed ring-width chronologies of old (a) and young (b) trees considering the best-replicated period (1970–2007). The bars show the differences (y right axes) between the STD and RES chronologies (STD-RES).

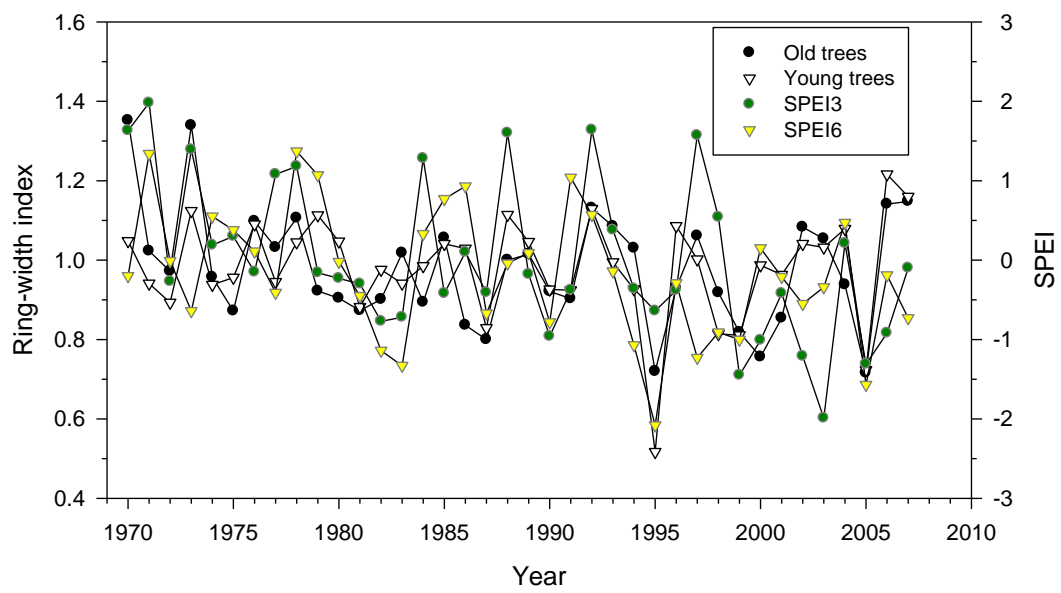


Figure S4. Mean series of residual ring-width indices (chronologies) of old and young trees and 3- (SPEI3) and 6-month SPEI (SPEI6) drought indices for the first week of August. These two scales of the SPEI gave the highest mean correlations with old (SPEI3, $r = 0.43$) and young (SPEI6, $r = 0.50$) trees, respectively.

Table S1. Site descriptions and characteristics of selected stands. Alt: Altitude above sea level; H and DBH: tree height and diameter at breast height, mean values (\pm SD).

SiteCode	Latitude	Longitude	Aspect	Slope (%)	Alt (m)	Cob A. pinsapo (%)	H (m)	DBH (cm)	Other species
SN0105	36°40'15"N	5°2'34"W	0*	0**	1157	25	10.86 \pm 1.85	34.73 \pm 12.7	<i>Quercus ilex</i> <i>Quercus</i> sp.
SN0109	36°39'33"N	5°3'43"W	NE	35-65	1174	20	9.00 \pm 1.84	26.72 \pm 18.1	
SN0110	36°39'41"N	5°3'9"W	N	35-65	1127	95	10.15 \pm 1.24	22.22 \pm 12.2	
SN0111	36°39'51"N	5°2'27"W	N	35-65	1191	100	10.98 \pm 2.13	42.52 \pm 28.1	
SN0112	36°39'53"N	5°1'51"W	NE	10-35	1177	80	4.17 \pm 1.44	20.65 \pm 11.6	
SN0200	36°44'39"N	4°58'58"W	N	35-65	840	95			
SN0201	36°44'10"N	4°58'42"W	N	10-35	931	100	11.52 \pm 2.03	27.75 \pm 15.8	
SN0202	36°43'21"N	5°0'25"W	W	35-65	1153	95	13.01 \pm 2.36	96.31 \pm 31.5	
SN0203	36°43'25"N	4°59'47"W	N	35-65	1296	100	5.55 \pm 2.57	32.27 \pm 20.8	
SN0204	36°43'32"N	4°59'14"W	E	35-65	1315	100	6.89 \pm 3.74	37.80 \pm 31.9	
SN0205	36°43'38"N	4°58'35"W	N	35-65	1229	90	7.89 \pm 2.39	36.07 \pm 13.6	
SN0206	36°43'36"N	4°57'50"W	N	35-65	769	80	10.17 \pm 2.06	27.36 \pm 14.5	
SN0208	36°42'49"N	5°1'11"W	N	10-35	1134	100	8.24 \pm 2.70	49.91 \pm 21.8	
SN0209	36°42'49"N	5°0'26"W	N	10-35	1409	100	4.67 \pm 3.23	30.40 \pm 24.8	
SN0210	36°42'57"N	4°59'41"W	NW	35-65	1394	100	8.51 \pm 2.10	38.52 \pm 10.5	
SN0211	36°42'58"N	4°59'8"W	NW	10-35	1504	90	5.59 \pm 1.43	36.45 \pm 20.5	
SN0212	36°43'1"N	4°58'25"W	NE	35-65	1319	90	6.10 \pm 1.61	18.88 \pm 8.6	
SN0213	36°43'14"N	4°57'46"W	N	10-35	1134	50	6.83 \pm 1.85	16.40 \pm 6.12	<i>Pinus</i> sp.
SN0215	36°42'0"N	5°2'18"W	N	35-65	1290	95	3.96 \pm 2.07	16.53 \pm 16.6	
SN0216	36°41'58"N	5°1'46"W	W	> 65	1418	100	6.91 \pm 2.11	53.49 \pm 26.9	
SN0217	36°42'11"N	5°0'57"W	NE	35-65	1497	95	6.47 \pm 1.71	38.25 \pm 23.5	
SN0221	36°42'35"N	4°58'18"W	NE	35-65	1152	70	7.43 \pm 1.94	29.06 \pm 14.6	
SN0222	36°42'40"N	4°57'41"W	W	35-65	791	100	6.20 \pm 2.47	18.18 \pm 9.9	
SN0223	36°41'27"N	5°2'15"W	NW	35-65	1399	100	10.08 \pm 5.93	56.14 \pm 39.8	
SN0224	36°41'33"N	5°1'33"W	N	10-35	1718	95	14.10 \pm 2.48	91.36 \pm 17.8	
SN0230	36°42'15"N	4°57'31"W	N	35-65	1100	95	7.31 \pm 2.51	19.80 \pm 9.49	
SN0233	36°41'19"N	4°59'26"W	E	35-65	1577	90	6.52 \pm 4.61	46.62 \pm 48.1	
SN0235	36°41'33"N	4°58'9"W	NE	35-65	833	95	8.50 \pm 2.52	25.95 \pm 14.1	
SN0237	36°40'35"N	5°0'29"W	SW	35-65	1515	90	23.87 \pm 6.29	84.80 \pm 23.6	
SN0238	36°40'44"N	5°0'1"W	N	35-65	1673	95	4.46 \pm 3.24	33.57 \pm 33.8	

* Not defined aspect; ** The plot is within a valley