Supplementary Material

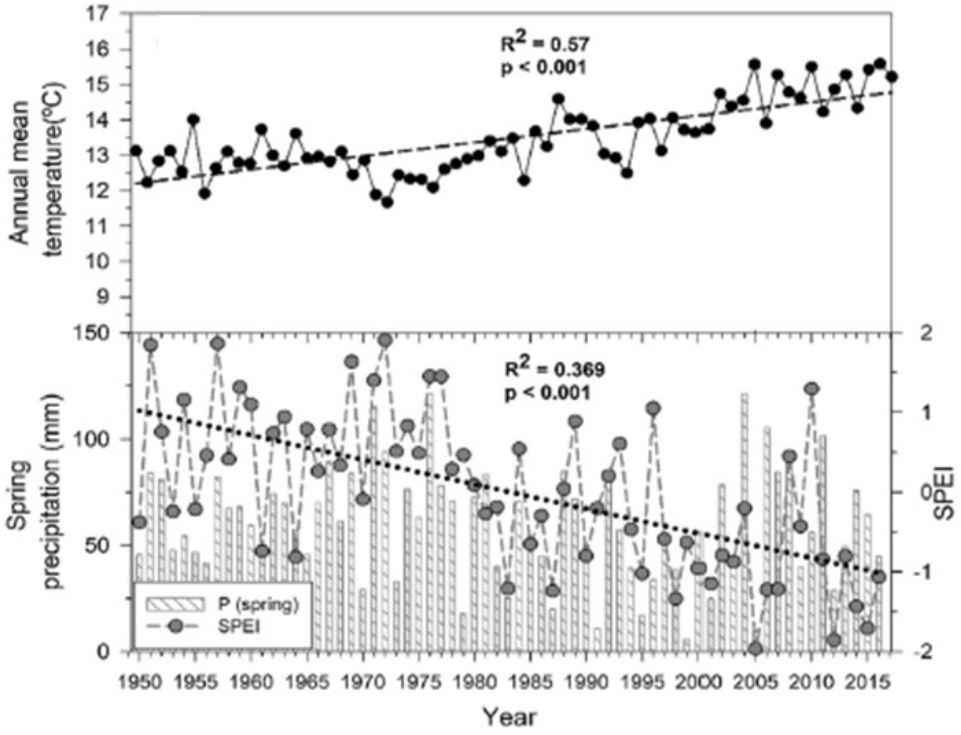

Figure S1. (Above) Historic climate characterization of the study considering mean annual temperature (T); (Below) spring precipitation (P) and the annual standardized precipitation evapotranspiration index (SPEI) for the 1950-2016 period (r^2 and *P* correspond to annual temperature and the SPEI statistics).

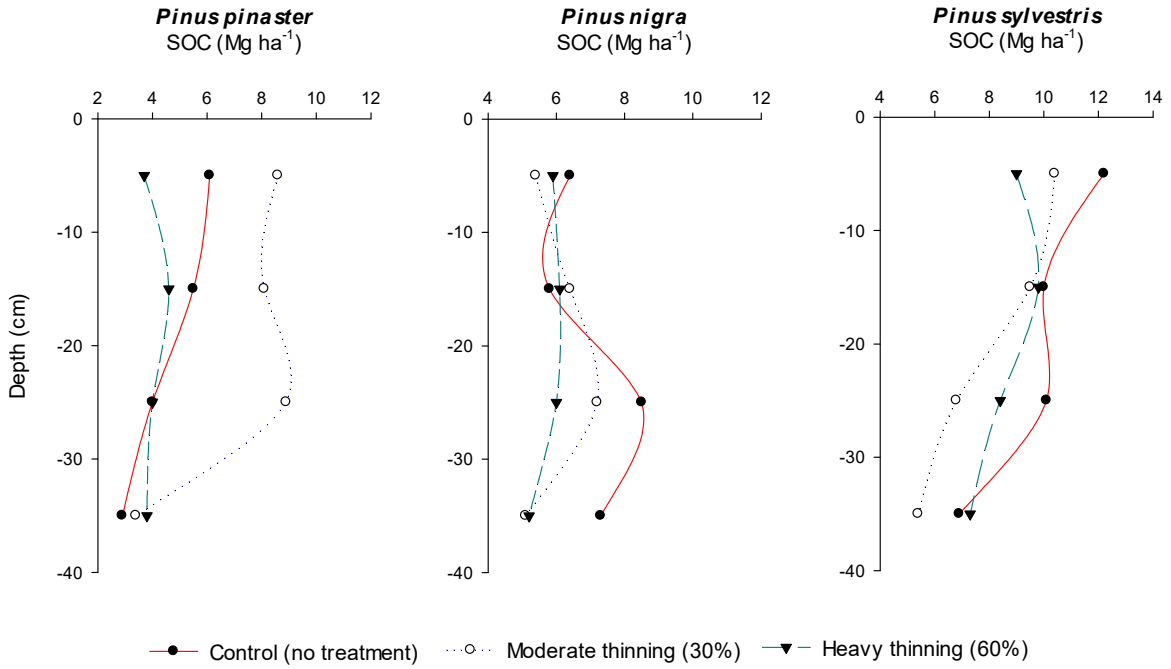

Figure S2. Depth distribution of SOC (Mg C ha^{-1}) by species and grade of thinning. Control or unthinned plots (0% of BA removed), moderate plots (30% of BA removed) and heavy plots (60% of BA removed) at Sª de Los Filabres (Almeria, Spain).

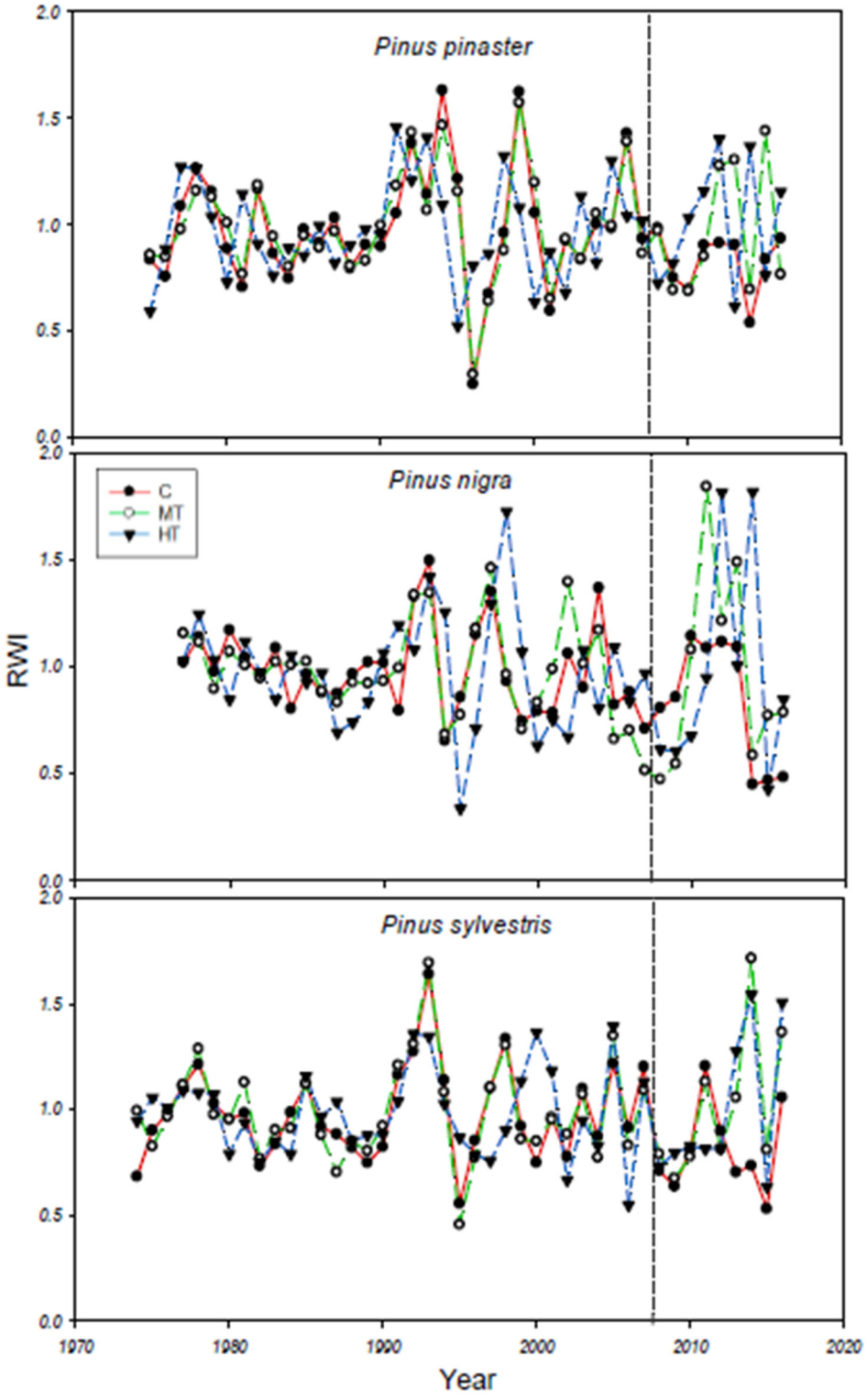

Figure S3. Chronologies of growth index (RWI) for *Pinus pinaster*, *Pinus nigra* and *Pinus sylvestris*. The vertical, dashed lines correspond to the 2008 thinning year. Treatments: C—control (0% BA removed); MT—moderate thinning (30% BA removed); HT—heavy thinning (60% BA removed).

Table S1. Selected biomass models for *Pinus* spp. W_s: biomass weight of the stem fraction; W_{b7}: biomass weight of the thick branch fraction with a diameter greater than 7 cm; $W_{b2\text{-}7}$: biomass weight of the medium branch fraction with a diameter between 2 and 7 cm; W_{b2+n}: biomass weight of the thin branch fraction with a diameter smaller than 2 cm, with needles; W_r: biomass weight of the belowground fraction (all in kg); d = dbh (cm); h = tree height (m). Equations were indexed by compartments for stem biomass (1), thick branches (2), medium branches (3), thin branches + needles (4) and toots (5).

Pinus pinaster	*Pinus nigra*	*Pinus sylvestris*	**Equation**
$W_s = 0.0278*d^{1.923}*h^{0.618}$	$W_s = 0.0403*d^{1.838}*h^{0.945}$	$W_s = 0.0154*d^2*h$	(1)
$W_{b7+}W_{b27} = 0.000381*d^{3.141}$	$W_{b7} = [0.228*(d-32.5)^2] *Z$ If d ≤ 32.5 cm then Z=0 If d > 32.5 cm then Z=1	$W_{b7} = [0.540*(d-37.5)^2-$ $0.0119*(d-37.5)^2*h] *Z$ If d ≤ 37.5 cm then Z=0 If d > 37.5 cm then Z=1	(2)
	$W_{b2\text{-}7} = 0.0521*d^2$	$W_{b2\text{-}7} = 0.0295*d^{2.742}*h^{-0.899}$	(3)
$W_{b2+n} = 0.0129*d^{2.320}$	$W_{b2+n} = 0.0720*d^2$	$W_{b2+n} = 0.530*d^{2.199}*h^{-1.153}$	(4)
$W_r = 0.00444*d^{2.804}$	$W_r = 0.0189*d^{2.445}$	$W_r = 0.130*d^2$	(5)

Table S2. ANOVA comparison of species with SOC distribution across horizons and total depth at Sª de Los Filabres (Almeria, Spain). Significant differences indicated by $p < 0.05$ and no significant differences by $p > 0.05$.

Species	**Depth (cm)**	**F**	***p***
Pinus pinaster	0–10	7.81	0.005
	10–20	3.21	0.002
	20–30	5.18	0.053
	30–40	0.36	0.011
	Total	6.39	0.700
Pinus nigra	0–10	0.68	0.510
	10–20	0.31	0.732
	20–30	2.16	0.122
	30–40	3.83	0.026
	Total	1.89	0.158
Pinus sylvestris	0–10	1.59	0.209
	10–20	0.07	0.931
	20–30	6.44	0.003
	30–40	1.40	0.252
	Total	1.23	0.297

Table S3. ANOVA multiple comparisons of total SOC for the studied species among treatments. Control (0%), moderate thinning (30%) and heavy thinning (60%) at Sª de Los Filabres (Almeria, Spain). Significant differences indicated by $p < 0.05$ and no significant differences by $p > 0.05$.

Specie	Control (0%)	Moderate thinning (30%)	Heavy thinning (60%)
Pinus pinaster	a	ab	a
Pinus nigra	a	a	a
Pinus sylvestris	b	b	b
F	10.93	3.25	17.71
p	0.000	0.045	0.000

Table S4. ANOVA comparison and post hoc analysis of standard BAIn, BAI pre- and post-thinning year against treatments (C, control; MT, moderate thinning; HT, heavy thinning at Sª de Los Filabres (Almeria, Spain). Significant differences indicated by $p < 0.05$ and no significant differences by $p > 0.05$. * $p < 0.05$, ** $p < 0.01$.

Specie	BAI	F	*p*	*p*	*p*	*p*
				C vs. MT	C vs. HT	MT vs. HT
Pinus pinaster	BAIn	1.431	0.243	-	-	-
	BAIpreT	1.424	0.246	-	-	-
	BAIpostT	1.861	0.180	-	-	-
Pinus nigra	BAIn	0.510	0.602	-	-	-
	BAIpreT	1.773	0.175	-	-	-
	BAIpostT	2.090	0.150	-	-	-
Pinus sylvestris	BAIn	4.691	0.010*	0.040	0.919	0.016
	BAIpreT	3.151	0.046*	0.062	0.967	0.107
	BAIpostT	7.082	0.004**	0.849	0.005	0.019