

Figure S1. Basal Area Increment chronologies of *Pinus pinaster* from Sierra de Baza (South Spain): (a) Non-declining natural forests; (b) Declining natural forests (c) Non-declining plantations; (b) Declining plantations. The vertical lines correspond to marker droughts years 1990-1995, 1999, 2005, 2012 (dashed lines).

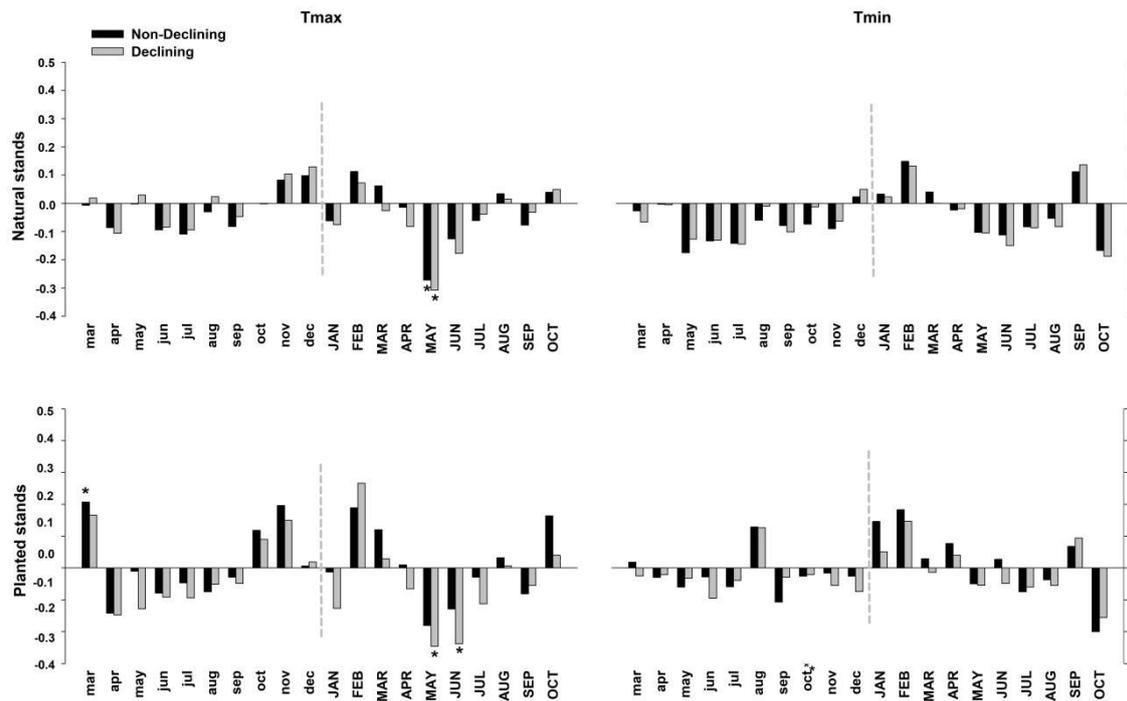


Figure S2. Pearson correlation coefficients obtained by comparing radial growth (ring-width indices) and monthly climatic data (Tmax: Mean maximum temperature; Tmin: Mean minimum temperature, 1954-2016) for non-declining (black bars) and declining (grey bars) *Pinus pinaster* in natural stands (upper plots) and in planted stands (lower plots). Monthly climatic data from previous year is abbreviated by lower case letter and from current year by capital letter, where the current year is the year of tree-ring formation. Bars with asterisks are significant values ($P < 0.05$).

Table S1. Predictors variables used for Principal Component Analysis for *Pinus pinaster* according to forest type and declining level.

Variables	COD	UNITS
<i>Climatic</i>		
Annual precipitation	PRC	mm
Annual radiation	RN	Julian/m ²
Annual sum of the negative differences between precipitation and reference evapotranspiration	SDEF	mm
Annual sum of the positive differences between precipitation and reference evapotranspiration	SSUP	mm
Aridity index	IAR	-
Average maximum temperature	T_MAX	°C
Average maximum temperature of the warmest months	TMC	°C
Average mean temperature	T_MED	°C
Average minimum temperature	T_MIN	°C
Average minimum temperature of coldest months	TMF	°C
Average of days with a maximum temperature equal or above 35°C	NDC	Days
Average of days with a minimum temperature equal or below 0°C	NDF	Days
Average reference evapotranspiration	ETO	mm
Average snow precipitation	SNOW	mm
Compound topographic index	HIDRO_ICT	-
Flow accumulation	HIDRO_ACUM	
Maximum temperature warmest month	TMAXC	°C
Minimum temperature coldest month	TMINF	°C
Sum of water balances at the end of each month	BH	mm
Topographic humidity index	HIDRO_ITH	-
<i>Edaphic</i>		
Active limestone	CA	%
Average clay content	ARC	%
Average fine soil content	TF	%
Average organic matter in the soil profile	MO	%
Average organic matter surface horizon	MO_SUP	%
Average sand content	ARE	%
Average silt content	LIM	%

Cation exchange capacity	CIC	meq/100g
Edaphic	EDAPH	Categorical
Lithology	LITHO	Categorical
Nitrogen content	N_SUP	%
Percent base saturation	PBS	%
Soil pH	PH	-
Soil depth	PS	cm
Substrate	SUBST	Dummy
Texture	TEXTURE	USDA
Water retention capacity	CRAD	mm/m
<i>Topographic</i>		
Aspect	TP_EXPO	Degree
Radiation in autumn	TP_RSD_O	Julian/m ²
DEM	TP_ELEV	m
East – west orientation	TP_ES_OE	Degree
North to south orientation	TP_SU_NO	Degree
Slope	TP_PEND	Degree
Radiation in spring	TP_RSD_P	Julian/m ²
Radiation in summer	TP_RSD_V	Julian/ m ²
Radiation in winter	TP_RSD_I	Julian/ m ²