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A five-century tree-ring record from Spain reveals recent intensification of western Mediterranean precipitation extremes

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Supplementary material

Table S1: Intersite Pearson correlation matrices for the five residual site chronologies. Two different time periods are presented to assess the temporal coherence of the network. A) Common instrumental period (1952–1993): correlations are calculated for each site pair using all of their available common years. B) Full individual overlapping periods: correlations are calculated for all sites over a single, consistent period. All correlations are statistically significant ($p < 0.05$), with the exception of the JAR-VAN pair in the full overlapping period analysis.

A. Common overlapping period during the calibration period (1952-1993)					
	BEL	JAR	LIN	MOS	VAN
BEL	1.00	0.75	0.66	0.60	0.60
JAR	0.75	1.00	0.55	0.44	0.47
LIN	0.66	0.55	1.00	0.55	0.70
MOS	0.60	0.44	0.55	1.00	0.79
VAN	0.60	0.47	0.70	0.79	1.00

B. Individual overlapping periods					
	BEL	JAR	LIN	MOS	VAN
BEL	1.00	0.38	0.50	0.52	0.33
JAR	0.38	1.00	0.33	0.33	0.19
LIN	0.50	0.33	1.00	0.38	0.32
MOS	0.52	0.33	0.38	1.00	0.40
VAN	0.33	0.19	0.32	0.40	1.00

Table S2: Total overlapping periods between site chronologies. Number of overlapping years between each pair of site chronologies used for the correlation analysis in Table S1. The diagonal (in bold) shows the total length of each individual site chronology.

	BEL	JAR	LIN	MOS	VAN
BEL	**581**	520	297	314	109
JAR	520	**520**	297	302	97
LIN	297	297	**297**	283	78
MOS	314	302	283	**314**	109
VAN	109	97	78	109	**109**

Table S3: Statistical comparison of the full time series from the residual and variance-stabilized reconstructions over the common period 1505-2024.

Test	**Statistic**	**Value**	**p-value**	**Interpretation**
Pearson correlation	r	0.920	< 0.001	Very strong positive correlation between the series.
Paired t-test	t (df = 519)	1.715	0.087	No significant difference between the mean values of the two series.
Kolmogorov-Smirnov	D	0.063	0.246	The probability distributions of the two series are statistically indistinguishable.

Table S4: Comparison of calibration statistics for different climate targets and chronology types. The climate window is 320 days ending June 30 for precipitation and 12 months ending June for SPEI and 12-month precipitation. All calibrations are for the period 1951–2022.

Chronology type	**Climate target**	**Calibration Pearson r**	**p-value**
Residual	Precipitation (320 days, ending June 30)	0.749	<0.001
Standard	Precipitation (320 days, ending June 30)	0.746	<0.001
Standard	Precipitation (365 days, ending June 30)	0.741	<0.001
Residual	Precipitation (365 days, ending June 30)	0.738	<0.001
Standard	SPEI (12-month scale, ending June)	0.723	<0.001
Residual	SPEI (12-month scale, ending June)	0.721	<0.001