Riverine dissolved organic matter responds differently to alterations in two distinct hydrological regimes from Northern Spain

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1 Suplamentary Information

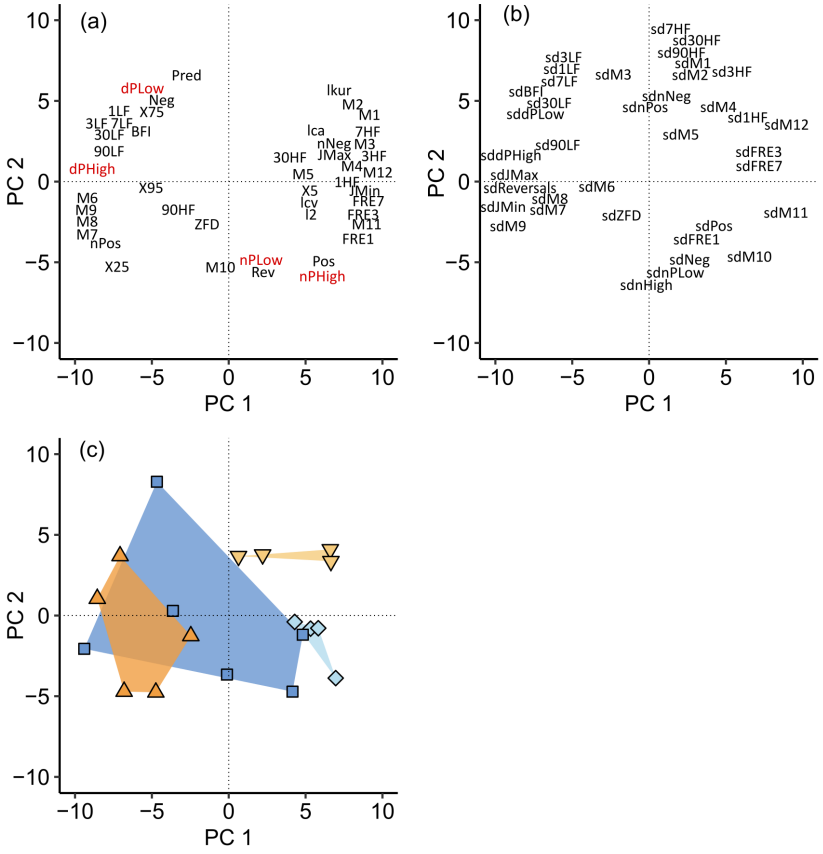

Figure S 1. A PCA based on flow indices to show the differences among the flow regimes. To improve visibility, variable scores (factor loadings) were plotted as points rather than the traditional arrows, and the indices (A) and their standard deviations (B) are separated. The scores of each river and the respective polygon indicating each flow regime (C) are given following the same color scheme; natural Atlantic (nA) in light blue, altered Atlantic (aA) in dark blue, natural Mediterranean (nM) in light orange, and altered Mediterranean (aM) in dark orange. The indices for the duration and number of low and high flow periods used to characterize flow regimes in Fig. 3 are indicated in red.

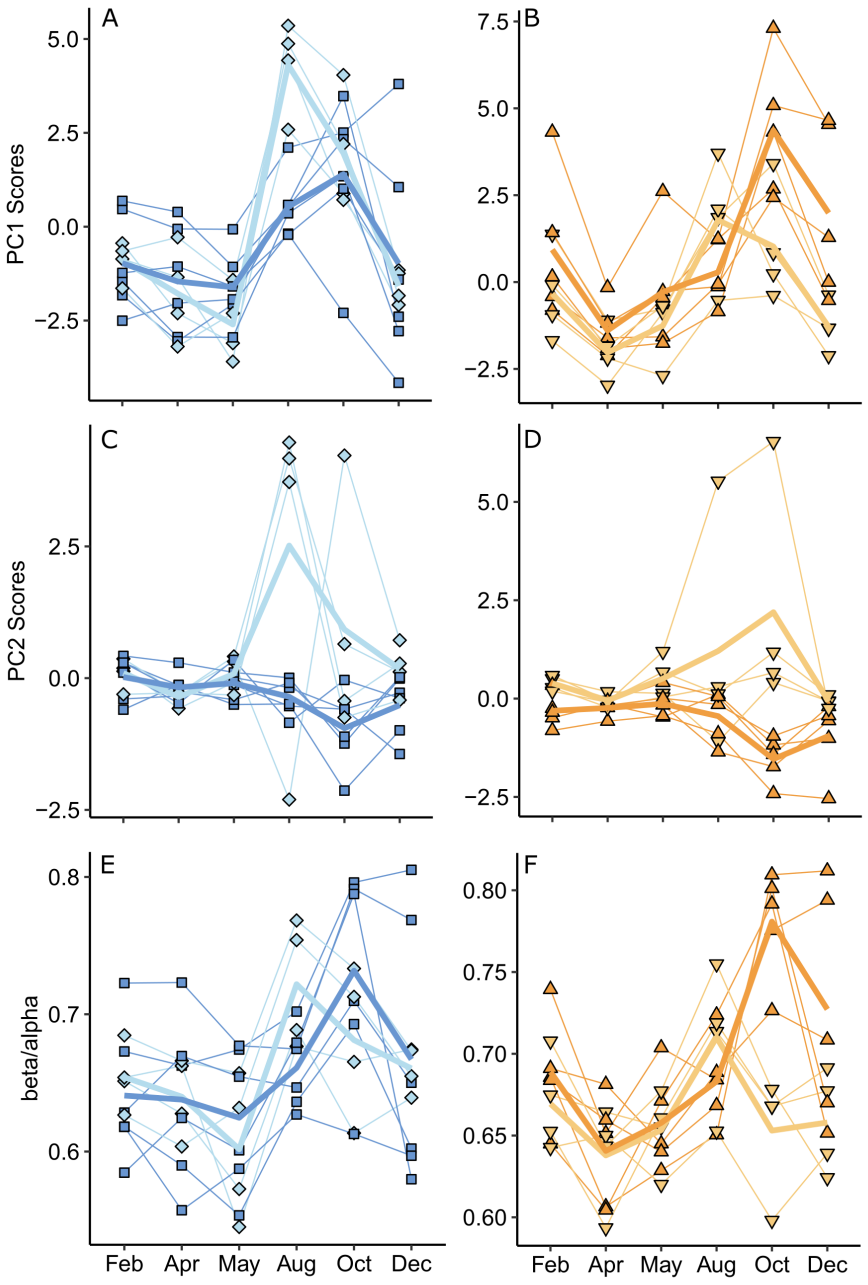

Figure S 2. Timelines of selected DOM indicators; (A-B) PC1 scores, (C-D) PC2 scores, (E-F) β/α where Mediterranean and Atlantic plots are separated. The values of each river are given following the same color scheme; natural Atlantic (nA) in light blue, altered Atlantic (aA) in dark blue, natural Mediterranean (nM) in light orange, and altered Mediterranean (aM) in dark orange. The thick lines are the monthly averages for the respective flow regimes.

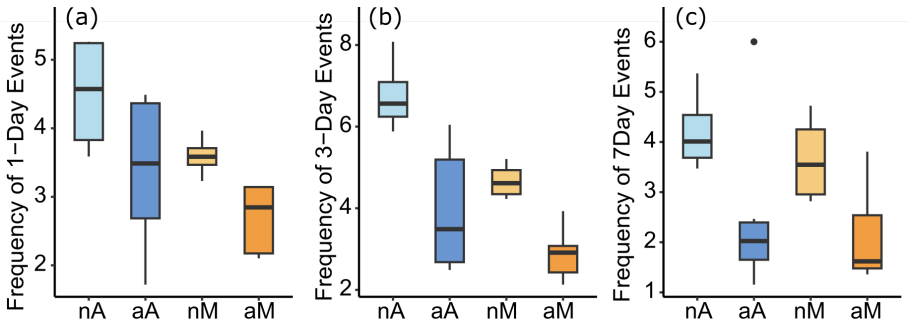

Figure S 3. The frequency of 1-day, 3-day and 7-day high flow events for natural Atlantic (nA) in light blue, altered Atlantic (aA) in dark blue, natural Mediterranean (nM) in light orange, and altered Mediterranean (aM) in dark orange

Table S 1: The list of indices and their abbreviation used in Peñas and Barquín (2019) are given in the table. The indices are grouped according to their flow describing properties and the total number of indices included in the model describing each flow regime component is given in parenthesis. The indices with VIP values >1 in the PLSR model are indicated with a *.

Group	Indice	SD	Description
Magnitude of annual and monthly flows (28)	l2	-	Linear moment of the calculated flow duration curve variance
	lcv	-	Linear moment that represents the CV of the calculated flow duration curve
	lca	-	Linear moment of skewness of the flow duration curve
	lkur*	-	Linear moment of kurtosis of the flow duration curve
	M1*	sdM1	Mean magnitude of flow of month X and their SD
	M2	sdM2	
	M3*	sdM3	
	M4*	sdM4	
	M5*	sdM5	
	M6*	sdM6*	
	M7*	sdM7*	
	M8*	sdM8*	
	M9*	sdM9*	
	M10*	sdM10*	
	M11*	sdM11*	
	M12*	sdM12*	
Magnitude and duration of annual extremes (28)	1HF*	sd1HF*	Magnitude of maximum annual flow of X-day duration and their SD
	3HF*	sd3HF	
	7HF*	sd4HF	
	30HF	sd30HF	
	90HF*	sd90HF	
	X25*	-	Magnitude of flows exceeded 25% of the time (high flow pulses)
	X5	-	Magnitude of flows exceeded 5% of the time (high flow pulses)
	1LF	sd1LF*	Magnitude of minimum annual flow of X-day duration and their SD
	3LF	sd3LF*	
	7LF	sd7LF*	
	30LF*	sd30LF*	
	90LF*	sd90LF*	

	X75	-	Magnitude of flows exceeded 75% of the time (high flow pulses)
	X95	-	Magnitude of flows exceeded 95% of the time (high flow pulses)
	ZFD	sdZFD	Number of zero flow days and its SD
	BFI*	sdBFI*	Seven-day minimum flow/mean annual daily flows and its SD
Timing of extreme flow events (5)	JMin*	sdJmin*	Date of the annual minimum flow
	JMax	sdJmax	Date of the annual maximum flow
	Pred	-	Predictability
Frequency and duration of high and low flow pulses (14)	FRE1*	sdFRE1*	Number of high flow events per year (upper threshold of X-time median flow over all years) and their SD
	FRE3*	sdFRE3	
	FRE7*	sdFRE7	
	nPHigh*	sdnPHigh*	Number of high pulses per year and its SD
	dPHigh*	sddPHigh*	Duration of high pulses per year and its SD
	nPLow	sdnPLow*	Number of low pulses per year and its SD
	dPLow	sddPLow*	Duration of low pulses per year and its SD
Rate and frequency of flow changes (10)	nPos*	sdnPos*	Number of days with increasing flow and its SD
	nNeg*	sdnNeg*	Number of days with decreasing flow and its SD
	Pos*	sdPos	Rise Rate and its SD
	Neg*	sdNeg	Fall Rate and its SD
	Rev*	sdRev*	Number of hydrological reversals and its SD

References

Peñas, F. J. and Barquín, J.: Assessment of large-scale patterns of hydrological alteration caused by dams, Journal of Hydrology, 572, 706–718, https://doi.org/10.1016/j.jhydrol.2019.03.056, 2019.