

Supplementary Data

S1. p values and standard errors for all intercepts and gradients, for all six models from section 3.2 - alternative DOC proxy comparison. These correspond to figures 2, 3 and 4.

		Intercept	Intercept	Gradient	Gradient
	Model	SE	P value	SE	P value
Afon Ddu ditch	Spectre area	0.430	0.000	0.017	0.000
	Phenolics	1.291	0.654	0.051	0.000
	254 nm	0.422	0.000	0.017	0.000
	263 nm	0.416	0.000	0.016	0.000
	Tipping/Carter	0.937	0.173	0.037	0.000
	400 nm	0.786	0.000	0.031	0.000
Afon Ddu pore	Spectre area	2.398	0.700	0.051	0.000
	Phenolics	2.910	0.000	0.062	0.000
	254 nm	2.377	0.177	0.051	0.000
	230 nm	2.266	0.013	0.048	0.000
	Tipping/Carter	1.843	0.033	0.039	0.000
	400 nm	2.705	0.011	0.058	0.000
Alwen streams	Spectre area	1.006	0.407	0.059	0.000
	Phenolics	0.810	0.066	0.047	0.000
	254 nm	0.913	0.283	0.053	0.000
	230 nm	0.800	0.437	0.047	0.000
	Tipping/Carter	0.738	0.012	0.043	0.009
	400 nm	1.628	0.609	0.095	0.000

S2. Results of the two-wavelength model of Carter *et al.* (2012) using model parameters derived from our data (“parameterised”) and the parameters cited by Carter *et al.* The data is supplementary to table 4.

		Mean diff (mg L ⁻¹)	Nash-Sutcliffe	Model R2	RMSE
Ditch water	Parameterised	1.69	0.94	0.97	2.39
	Carter <i>et al.</i> parameters	2.73	87	0.93	3.36
Pore water	Parameterised	3.2	0.92	0.93	3.89
	Carter <i>et al.</i> parameters	12.15	0.1	0.93	13.43
Stream water	Parameterised	1.04	0.98	0.97	1.44
	Carter <i>et al.</i> parameters	1.75	0.96	0.97	2.03

Model parameters used by Carter *et al.*, and the parameters used in our analysis.

Carter <i>et al.</i>	A	B
E270	69.3	15.4
E350	30	0
Ditch water		
E270	66	15.4
E350	30	0
Pore water		
E270	58.8	15.4
E350	30	0
Stream water		
E270	64.7	15.4
E350	30	0

S3. The relationship between rainfall (total rainfall in the 30 days before each sampling trip) and water colour in ditches in the Afon Ddu catchment (using 400 nm as water colour), $p = 0.02$. Water becomes less coloured as rainfall increases. Data are from 25 sampling days between 29/10/2010 and 11/10/2012. Each data point is taken as the mean of absorbance at 400 nm for all twelve ditches. Rainfall data is taken from a site 27 km away, that is the same altitude as the Afon Ddu. Rainfall data belong to the Centre for Ecology and Hydrology, citation:

Sowerby, A., Emmett, B.A. (2014). Daily automated weather station (AWS) data from Climoor fieldsite in Clocaenog Forest. NERC-Environmental Information Data Centre doi:10.5285/01592784-807b-453a-ac52-0478ad616484.

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