

S1 Description of fouling correction, onsite probe maintenance and water sampling

After every 12 measurements (3 h), the probe was automatically cleaned with compressed air to inhibit bio-fouling and the accumulation of sediments.

Onsite maintenance was conducted biweekly (cleaning manually with detergent and HCl, flushing with deionized water).

- 5 The first measurement after each cleaning was considered to represent the true absorption spectrum, with no bio-fouling or sediment influence. The difference between the last measurement before and the first one after maintenance showed how much the probe drifted within the two weeks since the last maintenance. Before UV-Vis measurements were further processed, each of the absorption spectra was corrected for this drift by subtracting an exponential function fitted to the raw data.
- 10 For C_{DOC} measurements, sample water was filtered (0.45 μm cellulose acetate filter, Th.Geyer, Germany), acidified with 30% HCl and stored dark and cool in glass bottles until laboratory analysis was conducted.

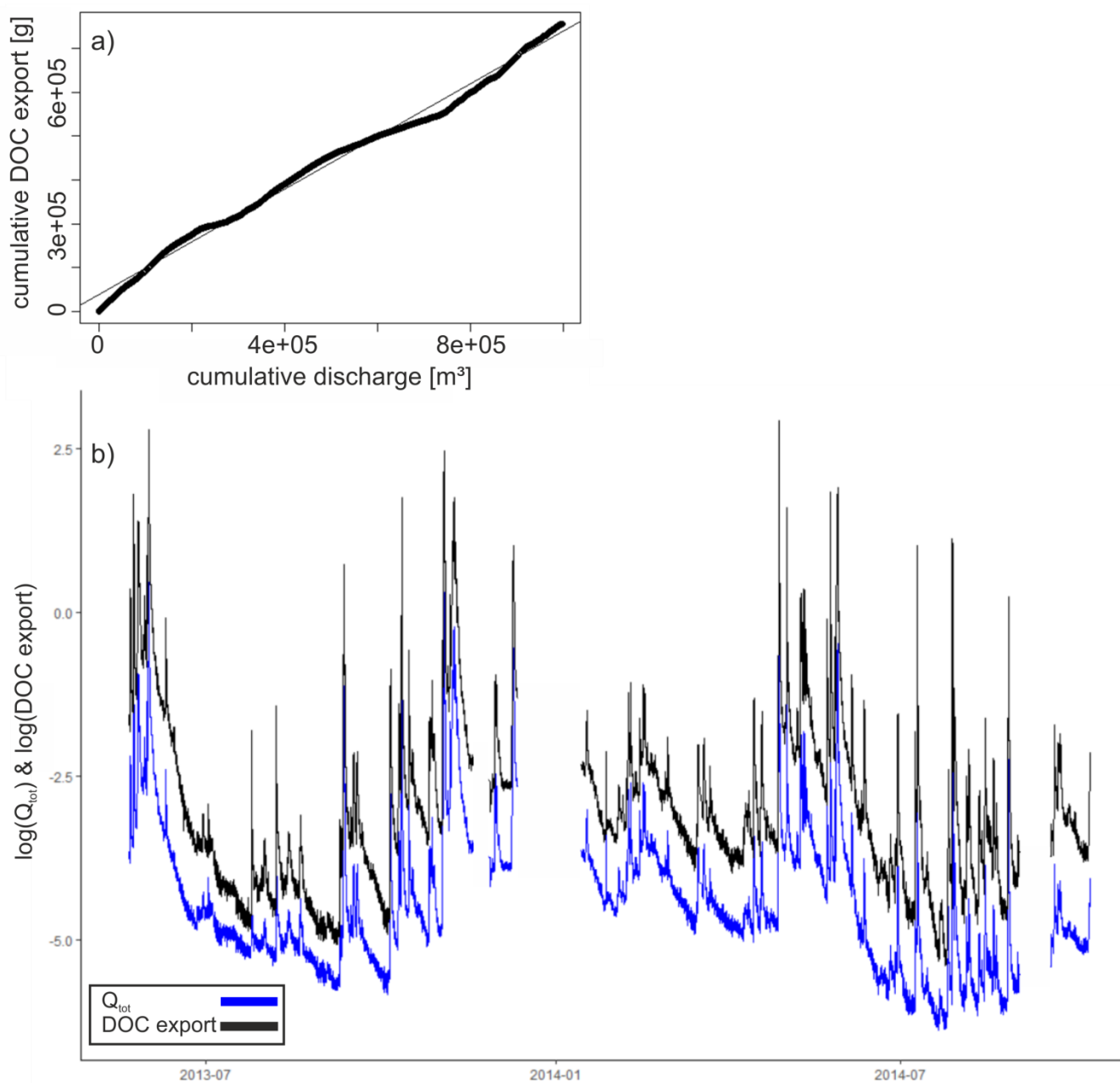


Fig. S1: a) cumulative discharge vs cumulative DOC export. Straight line indicates 1:1 line. b) Comparison of discharge and DOC export in log space over time.

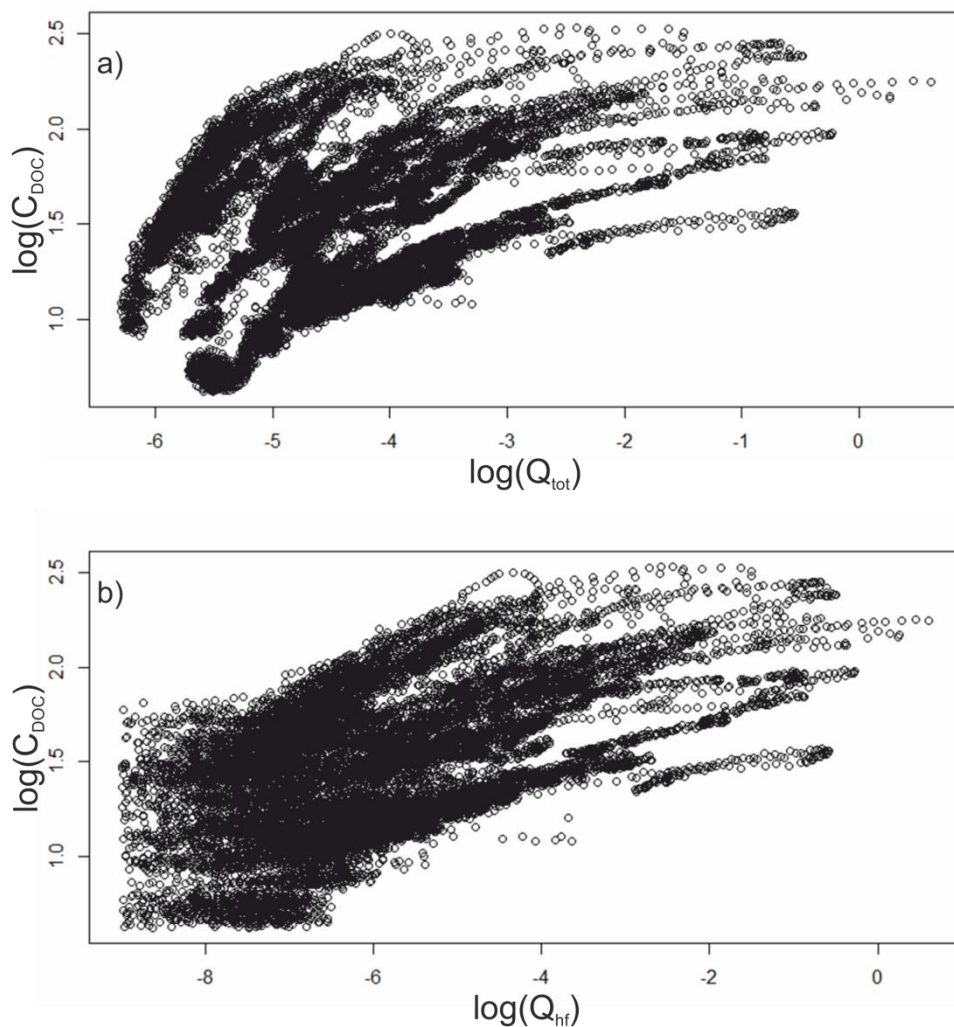


Fig. S2: Linearization of C_{DOC} by (a) Q_{tot} and (b) Q_{hf} in double log space.

Table S 1: Model evaluation of the C_{DOC} , $SUVA_{254}$ and $S_{275-295}$ models. All model parameters were highly significant ($p < 0.001$).

	C_{DOC} model			$SUVA_{254}$ model			$S_{275-295}$ model		
	Estimate	Std. Error	t value	Estimate	Std. Error	t value	Estimate	Std. Error	t value
Intercept	2.6E+00	1.1E-02	234.5	6.6E+00	2.5E-02	261.6	2.7E-02	1.3E-04	212.9
$\log(Q_{hf})$	1.9E-01	1.8E-03	109.0	4.0E-01	4.0E-03	99.4	1.7E-03	2.0E-05	86.7
AI_{60}	-5.2E-02	1.0E-03	-52.0	-1.1E-01	2.3E-03	-48.8	-5.1E-04	1.1E-05	-45.2
DNT_{30}	-3.1E-04	4.5E-06	-68.9	-6.3E-04	1.0E-05	-62.2	-6.8E-07	5.0E-08	-13.6
Q_b	-2.3E+01	6.8E-01	-34.4	-6.8E+01	1.5E+00	-44.1	-3.9E-01	7.7E-03	-50.8
$\log(Q_{hf}) \times Q_b$	-4.4E+00	1.4E-01	-31.4	-1.5E+01	3.2E-01	-45.7	-1.0E-01	1.6E-03	-63.2
$AI_{60} \times DNT_{30}$	5.6E-04	4.2E-06	133.0	9.5E-04	9.5E-06	100.4	-5.1E-07	4.8E-08	-10.8
$DNT_{30} \times Q_b$	-2.7E-02	8.1E-04	-33.8	-8.0E-02	1.8E-03	-43.8	-3.8E-04	9.2E-06	-41.9

Table S2: Overview of R^2 of the total dataset. Subsets of the modelled dataset were extracted and compared to the measured values.

	R^2 total	R^2 events only (subsetting from the whole dataset)	R^2 non-events (subsetting from the whole dataset)
C_{DOC} model	0.72	0.61	0.67
$SUVA_{254}$ model	0.64	0.54	0.58
$S_{275-295}$ model	0.65	0.79	0.62

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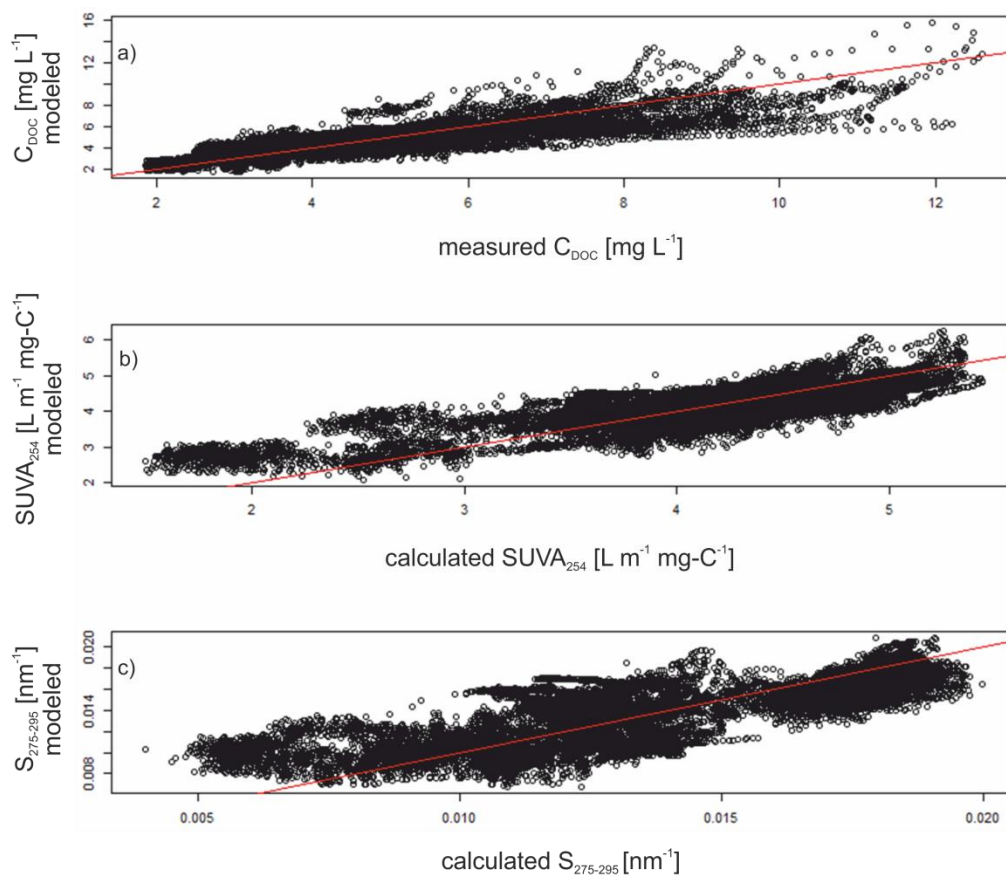


Fig. S3: Modelled vs. measured values of (a) C_{DOC} , (b) $SUVA_{254}$ and (c) $S_{275-295}$. Red line indicates 1:1 line. Maximum residuals are 6.03 mg L⁻¹, -1.52 L m⁻¹ mg-C⁻¹ and -6.5×10^{-3} nm⁻¹ for the C_{DOC} , $SUVA_{254}$ and $S_{275-295}$ models, respectively.

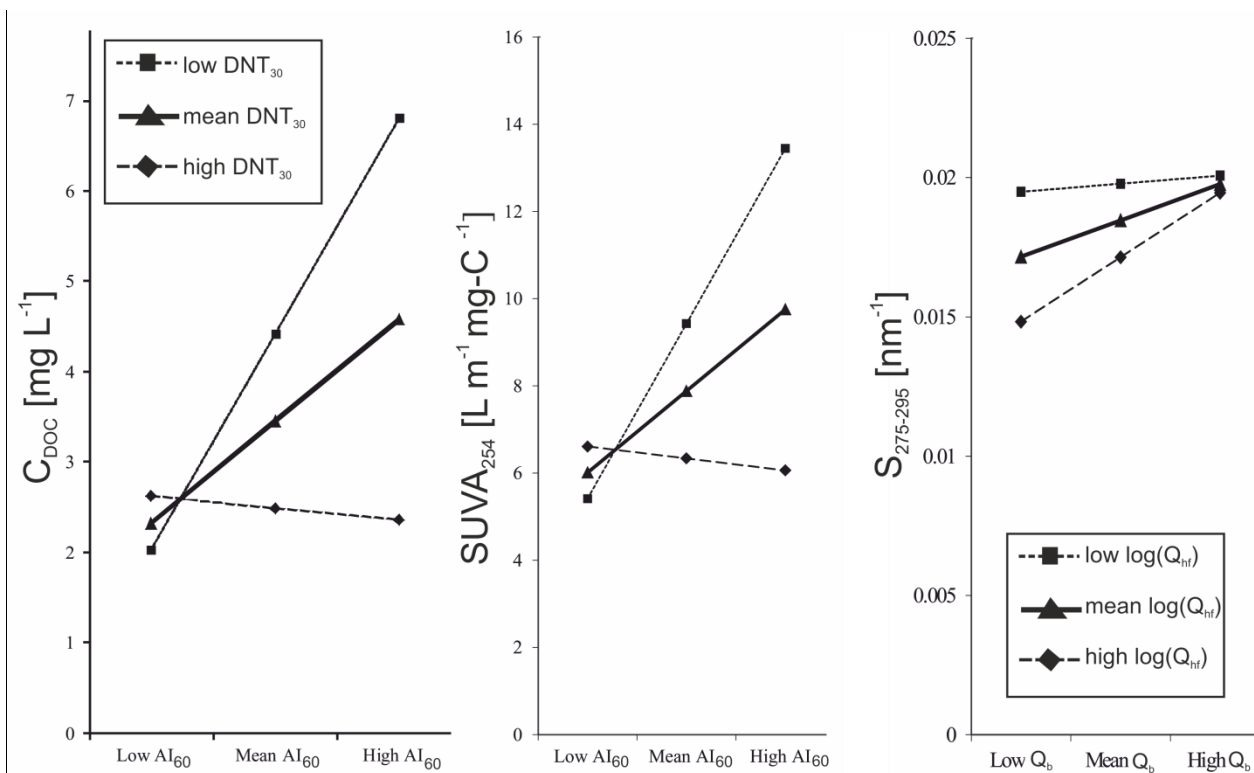


Fig. S4: Impact of the interaction $DNT_{30} \times Al_{60}$ on (a) C_{DOC} and (b) $SUVA_{254}$. Panel (c) shows the impact of the interaction $DNT_{30} \times Q_b$ on $S_{275-295}$.