water

Supplemental

Streams with Riparian Forest Buffers versus Impoundments Differ in Discharge and DOM Characteristics for Pasture Catchments in Southern Amazonia

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Table 1. Mean (±95% CI, n = 11 Dam; n = 15 Forest), minimum and maximum pH, oxidation-reduction potential (E_h) and water temperature (T_w) by month for Dam and Forest catchments at the research site.

Date	Month	Forest			Dams		
		pH	E_h (mV)	T_w (°C)	pH	E_h (mV)	T_w (°C)
25/07/2016	Jul/16	6.84 ± 0.09 (6.49 − 7.21)	438 ± 15 (391 − 481)	24.67 ± 0.89 (23.20 − 30.20)	5.97 ± 0.24 (5.47 − 6.65)	497 ± 13 (474 − 547)	27.35 ± 0.36 (26.40 − 28.50)
05/11/2016	Nov/16	6.65 ± 0.04 (6.46 − 6.79)	374 ± 20 (310 − 452)	28.73 ± 1.00 (27.10 − 34.00)	6.20 ± 0.27 (5.35 − 6.99)	434 ± 36 (329 − 512)	32.54 ± 1.19 (27.50 − 36.00)
07/03/2017	Mar/17	6.34 ± 0.03 (6.22 − 6.50)	388 ± 7 (355 − 413)	27.45 ± 0.39 (26.70 − 29.50)	5.76 ± 0.16 (5.08 − 6.10)	406 ± 19 (359 − 486)	30.17 ± 0.73 (27.60 − 31.80)
29/04/2017	Abr/17	6.38 ± 0.07 (6.13 − 6.60)	374 ± 9 (341 − 404)	27.28 ± 0.48 (26.20 − 29.50)	5.83 ± 0.14 (5.20 − 6.10)	383 ± 13 (342 − 423)	28.77 ± 0.46 (27.40 − 30.20)
28/08/2017	Aug/17	6.65 ± 0.14 (5.95 − 6.94)	364 ± 11 (330 − 397)	25.05 ± 1.13 (23.30 − 32.60)	6.10 ± 0.15 (5.76 − 6.57)	379 ± 20 (316 − 436)	28.85 ± 0.61 (26.50 − 30.00)
Mean all months		**6.57**	**387**	**26.61**	**5.97**	**419**	**29.54**

Table S2. Mean (±95% CI), minimum and maximum dissolved organic carbon (DOC), fluorescence index (FI), spectral slope ratio (SR), humification index (HIX), biological index (BIX) and relative abundance of each PARAFAC component (% of total fDOM) by month in the Dam and Forest catchments at the research site.

Catchment	Hydrological Month	Variables							
		DOC	**FI**	**SR**	**HIX**	**BIX**	**C1 (%)**	**C2 (%)**	**C3 (%)**
Forest	Jul/16	2.20 ± 0.14 (1.91–2.88)	1.34 ± 0.02 (1.29 – 1.44)	0.85 ± 0.01 (0.80 – 0.89)	3.39 ± 1.5 (2.29 – 4.22)	0.72 ± 0.04 (0.66 – 0.97)	32.3 ± 1.4 (25.2 – 53.2)	41.3 ± 1.2 (32.7 – 43.4)	26.3 ± 2.5 (21.5 – 42.1)
	Nov/16	5.83 ± 0.17 (5.26 – 6.47)	1.29 ± 0.01 (1.27 – 1.32)	0.79 ± 0.03 (0.74 – 0.95)	5.51 ± 0.36 (4.16 – 6.81)	0.65 ± 0.02 (0.62 – 0.79)	39.2 ± 1.2 (33.9 – 41.7)	44.6 ± 1.0 (40.0 – 46.6)	16.2 ± 2.1 (11.6 – 26.1)
	Mar/17	2.84 ± 0.14 (2.30 – 3.14)	1.29 ± 0.01 (1.24 – 1.33)	0.82 ± 0.01 (0.80 – 0.90)	4.21 ± 0.34 (2.33 – 5.53)	0.66 ± 0.02 (0.62 – 0.79)	35.3 ± 1.5 (29.5 – 39.5)	42.1 ± 1.7 (33.7 – 48.6)	22.6 ± 3.0 (15.5 – 36.8)
	Abr/17	1.92 ± 0.06 (1.66 – 2.20)	1.31 ± 0.01 (1.27 – 1.35)	0.78 ± 0.001 (0.77 – 0.81)	4.12 ± 0.22 (3.36 – 4.83)	0.66 ± 0.001 (0.65 – 0.67)	35.4 ± 0.5 (32.9 – 36.8)	44.4 ± 0.4 (42.6 – 45.1)	20.2 ± 0.8 (18.3 – 23.5)
	Aug/17	2.27 ± 0.08 (2.03 – 2.71)	1.33 ± 0.01 (1.29 – 1.39)	0.86 ± 0.07 (0.74 – 1.35)	3.54 ± 0.27 (2.28 – 4.24)	0.73 ± 0.02 (0.67 – 0.84)	32.7 ± 1.4 (26.3 – 35.9)	41.2 ± 0.5 (39.1 – 42.6)	26.2 ± 1.6 (22.1 – 33.4)
Dam	Jul/16	1.62 ± 0.44 (0.33 – 2.84)	1.41 ± 0.06 (1.23 – 1.62)	1.25 ± 0.17 (0.77 – 1.74)	1.96 ± 0.44 (0.82 – 3.13)	0.91 ± 0.06 (0.79 – 1.10)	21.2 ± 2.1 (15.0 – 27.0)	34.3 ± 6.1 (17.3 – 44.7)	44.5 ± 7.9 (28.3 – 65.8)
	Nov/16	3.23 ± 0.79 (0.48 – 6.37)	1.33 ± 0.04 (1.25 – 1.50)	1.10 ± 0.13 (0.61 – 1.39)	2.93 ± 0.52 (1.35 – 4.14)	0.74 ± 0.02 (0.69 – 0.82)	28.1 ± 2.4 (20.1 – 35.3)	39.5 ± 3.2 (29.0 – 45.8)	32.4 ± 5.1 (21.5 – 50.9)
	Mar/17	1.84 ± 0.42 (0.13 – 257)	1.38 ± 0.11 (1.28 – 1.95)	0.96 ± 0.12 (0.84 – 1.55)	1.37 ± 0.40 (0.54 – 3.08)	1.52 ± 0.38 (0.71 – 3.12)	15.1 ± 4.5 (4.3 – 30.3)	25.3 ± 4.9 (12.8 – 43.8)	59.6 ± 9.3 (26.7 – 82.9)
	Abr/17	2.67 ± 0.68 (0.15 – 3.77)	1.38 ± 0.06 (1.27 – 1.70)	0.86 ± 0.09 (0.68 – 1.30)	2.52 ± 0.38 (1.10 – 3.64)	0.73 ± 0.04 (0.67 – 0.90)	27.1 ± 2.7 (13.5 – 32.2)	41.1 ± 1.6 (35.9 – 46.6)	31.9 ± 3.5 (23.3 – 45.6)
	Aug/17	1.59 ± 0.35 (0.14 – 2.22)	1.38 ± 0.07 (1.27 – 1.68)	1.22 ± 0.13 (0.68 – 1.53)	1.98 ± 0.39 (0.52 – 2.80)	0.85 ± 0.10 (0.75 – 1.33)	23.1 ± 2.7 (11.6 – 26.9)	34.7 ± 3.5 (24.9 – 41.5)	42.1 ± 5.8 (31.6 – 61.4)

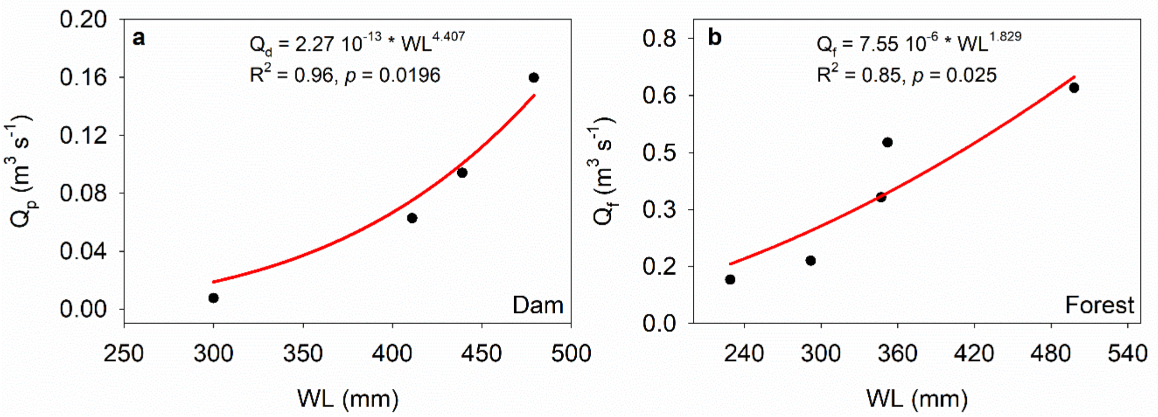

Figure 1. Power functions between discharge and water level (WL) in Forest and Dam catchments at Pedra Alta Ranch near Alta Floresta, Mato Grosso, Brazil.

Calibration Curves for DOC Concentration

DOC concentration was measured using a portable multi—parameter submersible UV-Vis probe (Spectro::lyser®-S::can MESSTECHNIK GmbH, Vienna, Austria). The probe came with a standard manufacturer's global calibration for DOC concentrations (<17 mg/L). We corrected the DOC concentration measurements derived from the s::can global calibration using a calibration curve developed with solutions of known DOC concentration prepared from standards obtained from the International Humic Substances Society. We diluted 7.3 mg of Suwannee River standard (52.63% C) into 250 mL of water (15 mg/L of DOC) and the solution was then diluted successively to obtain lower concentrations of DOC.

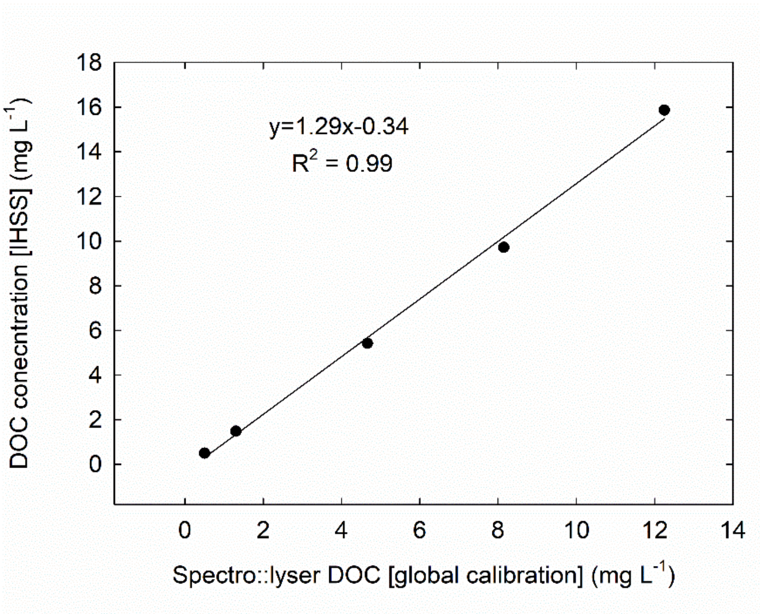

Figure 2. Calibration curve for DOC concentrations developed using IHSS SRHA standard II (2S10H).

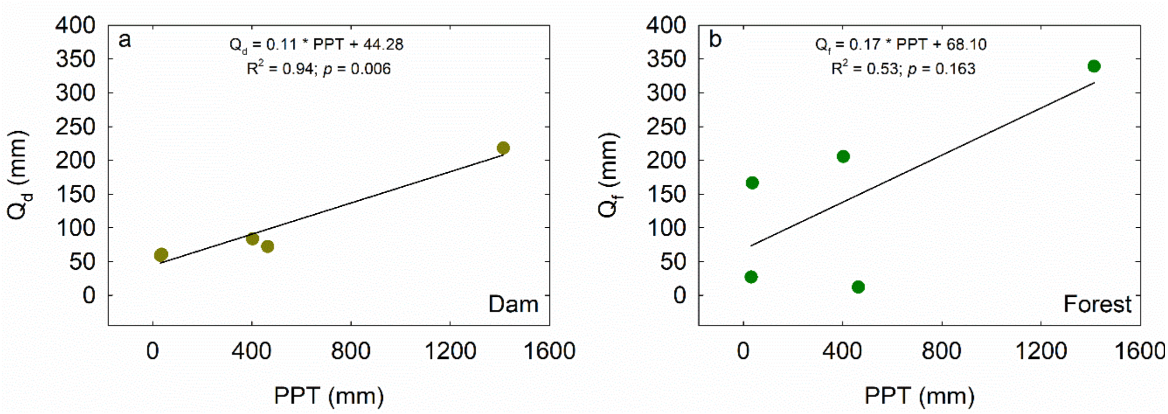

Figure 3. Linear regressions of Forest (**a**) and Dam (**b**) catchment cumulative discharge (Q, mm) versus cumulative precipitation (PPT, mm) in the hydrological months.