



Supplement of

Temperature dependence of the relationship between $p\text{CO}_2$ and dissolved organic carbon in lakes

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Supplementary information

In order to correct the potential contribution of organic acids on $p\text{CO}_2$ values, we used the linear relationship between DOC concentrations and the log of difference of calculated and measured $p\text{CO}_2$ from Abril et al. 2015; (for both variables were used medians, Supplementary Figure 1). The same procedure was performed between pH and the log of difference of calculated and measured $p\text{CO}_2$ (Supplementary Figure 2). Using both equations, we corrected each $p\text{CO}_2$ value used in Figure S3.

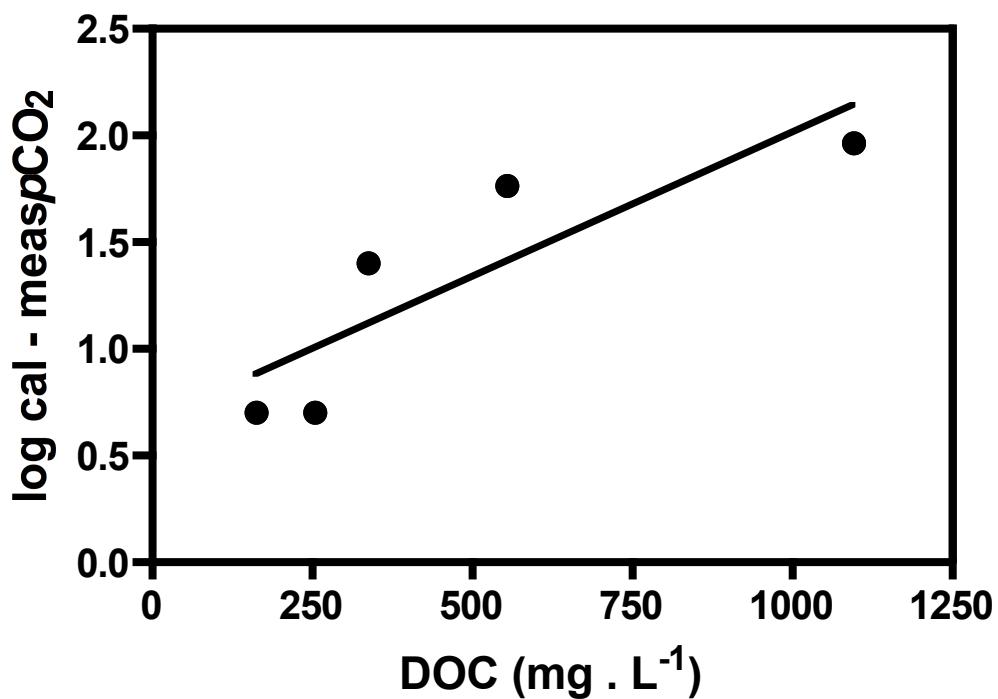


Figure S1: Fitted linear regression between log of the medians values of the relative difference between calculated and measured $p\text{CO}_2$ and ranked DOC. Linear regression ($p > 0.05$, not significant).

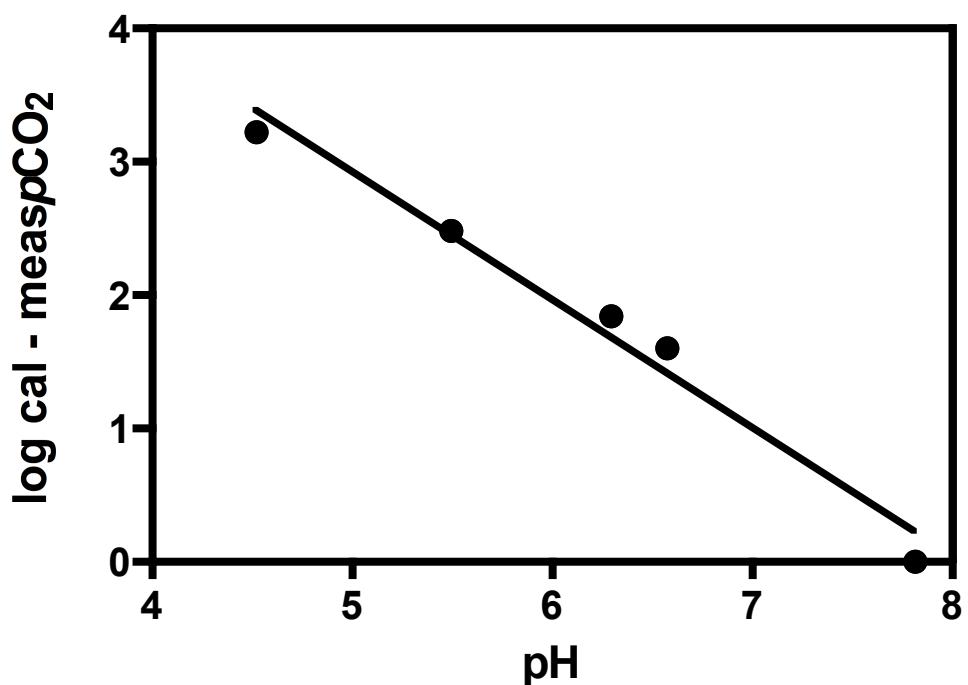


Figure S2: Fitted linear regression between log of the medians values of the relative difference between calculated and measured $p\text{CO}_2$ and ranked pH. Linear regression, $p < 0.05$, $R^2 = 0.73$, $\log \text{cal-meas } p\text{CO}_2 = 0.0014 \times \text{pH} + 0.6536 (\pm 0.27)$

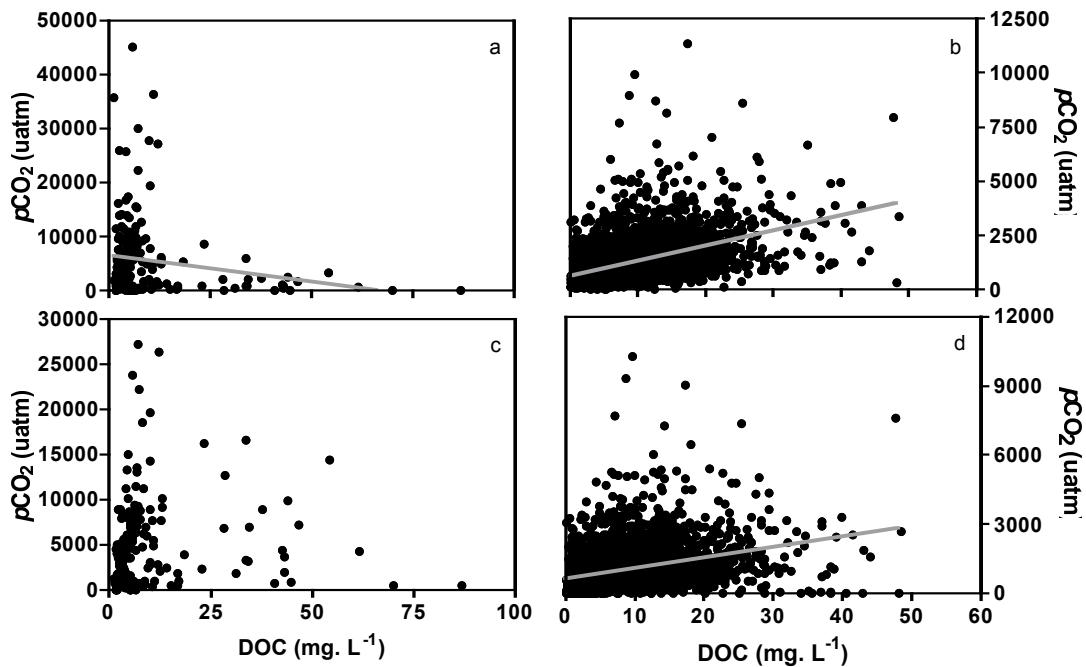


Figure S3: The relationship between $p\text{CO}_2$ values and DOC concentrations for surface lake waters after correcting the contribution of organic acids on TA and subsequent $p\text{CO}_2$ data for the low latitude lakes (a and c) and Sobek lakes (b and d). The fitted linear regression of the relative difference between calculated and measured $p\text{CO}_2$ with ranked DOC (a and b) and pH (c and d) according Abril et al. 2015. A non-significant linear regression was observed for pH corrected data of low-latitude lakes (figure S3c, $p > 0.05$, $n = 194$). The solid line represents the fitted linear regression for negative relationship between $p\text{CO}_2$ values and DOC concentrations for DOC corrected data of low-latitude lakes (Linear regression, $p < 0.05$, $R^2 = 0.03$, $n = 194$, $p\text{CO}_2 = -98.76 (\pm 39.92) \times \text{DOC} + 6529 (\pm 641.1)$, Figure S3a) and positive relationship between $p\text{CO}_2$ values and DOC concentrations for other latitudes showed in Sobek's data (Linear regression, $p < 0.05$, $R^2 = 0.20$, $p\text{CO}_2 = 64.43 (\pm 2.04) \times \text{DOC} + 625.1 (\pm 20.87)$ and $R^2 = 0.12$, $p\text{CO}_2 = 45.70 (\pm 1.84) \times \text{DOC} + 623.8 (\pm 18.83)$) for DOC corrected data and pH corrected data (S3c and S3d, respectively, $N = 4,433$ for both).

Table S1. Data compilation from the literature

Lake (State)	Reference
Lago Ipê	Barreto, 2005.
Lago Amarela (MG)	Petrucio, 2006.
Lago Dom Helvécio (MG)	Petrucio, 2006.
Lago Carioca (MG)	Petrucio, 2006.
Lago Palmeirinha (MG)	Petrucio, 2006.
Lago Águas Claras (MG)	Petrucio, 2006.
Lago Jacaré (MG)	Petrucio, 2006.
Lago Barra (MG)	Petrucio, 2006.
Lagoa do Guaraná (MS)	Pagioro, 1999.
Lagoa Garças (PR)	Ulloa, 2004.
Lagoa Pombas (PR)	Ulloa, 2004.
Lago Genipapo (PR)	Ulloa, 2004.
Lago Osmar (PR)	Ulloa, 2004.
Lagoa Manezinho (PR)	Ulloa, 2004.
Lago Bilé (PR)	Ulloa, 2004.
Lago Óleo	Romeiro, 2005.
Lago Carão	Araújo Rocha, 2003.
Lago Manezinho	Ulloa, 2004.
Lago dos Reis (AM)	Field Sampling
Lago Pupunha (AM)	Field Sampling
Lago Cujubim Pequeno	Field Sampling
Lago Cujubim Grande	Field Sampling
Lago Maravilha (RO)	Field Sampling
Lago Camargo (SP)	Costa, 2000.
Lagoa Coqueiral (SP)	Costa, 2000.
Lagoa dos Cavalos (SP)	Costa, 2000.
Lagoa do Batoque (CE)	teses UFRJ (216)
Lagoa Comprida (RJ)	MacCord ,2007.
Lagoa de Grussáí (RJ)	Pereira, 2000.
Lagoa do Campelo (RJ)	Esteves, 2010.

Supplementary References

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