Biogeosciences Discuss., 11, C4687–C4688, 2014
www.biogeosciences-discuss.net/11/C4687/2014/


Biogeosciences Discussions
Open Access



# *Interactive comment on* "Technical Note: Large overestimation of pCO<sub>2</sub> calculated from pH and alkalinity in acidic, organic-rich freshwaters" *by* G. Abril et al.

**Anonymous Referee #3**

Received and published: 27 August 2014

I believe this is a well written and well structured manuscript on a topic of current and relevant interest to a wide community. The subject of methodological bias in calculated pCO2 values is extremely important as more and more people are beginning to utilise large datasets to estimate GHG contributions from inland water systems. Whilst the concept of overestimation is not new, particularly in relation to DOC rich systems, this study presents a very nice dataset with which to test the hypotheses and explore links to other water characteristics. My comments below, which are few, are aimed primarily at improving what I believe is a very good manuscript in its current format.

Introduction: whilst I realise there are practical limitations to the use of high temporal resolution sensors for in-situ CO2 monitoring and therefore the number of studies are



Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

so far limited, it may be worth highlighting submerged NDIR sensors as an alternative direct method to measure pCO2.

Methods: I am generally happy with the methods section, I felt it was well written and sufficiently detailed using standard and reliable methods. Results section 3.2: I think more could be made of the correlations that are described but not statistically modelled. Correlation statistics are not shown despite significant correlations being described.

General Comment: Could simple empirical modelling be used to attempt a correction for the bias? Whilst this may not work across all systems it would be very interesting to try. The authors have shown an important overestimation in studies which utilise large datasets of water quality to indirectly calculate pCO2 and subsequent evasion, they have not however attempted to produce a solution. If an additional calculation step, e.g. including a DOC correlation value, would allow better pCO2 estimates from the available data that would be extremely useful and significantly improve the science. This may not be possible but I would like to see evidence it had been attempted.

---

Interactive comment on Biogeosciences Discuss., 11, 11701, 2014.