

## ***Interactive comment on “CO<sub>2</sub> partial pressure and CO<sub>2</sub> emissions from the lower Red River (Vietnam)” by Thi Phuong Quynh Le et al.***

### **Anonymous Referee #2**

Received and published: 9 February 2018

#### General comments:

The authors reported new data on CO<sub>2</sub> partial pressure and CO<sub>2</sub> evasion from the lower Red River in Vietnam. This paper also provides useful water chemistry data of the river system. Considering that river systems in the Southeast Asia are under-represented in the global budget of riverine carbon fluxes despite their large river discharge and carbon loads, this study could provide valuable datasets. However, the paper can be improved further by (1) strengthening the estimates of CO<sub>2</sub> evasions, (2) providing detailed discussion on the observed patterns, and (3) reorganizing the paragraphs (e.g. some paragraphs in results fit to discussion, and vice versa). I would also suggest that the paper receive a thorough editing for grammar and clarity by the authors. Specific comments are below, which the authors can consider when revising

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the manuscript.

Specific comments:

Lines 43–47: These are confusing because the first one (2.7 Pg C yr<sup>-1</sup>) includes riverine carbon transport, mineralization, and deposition, while the second one (“a lower value” is for CO<sub>2</sub> evasion only. I don’t think the estimate of CO<sub>2</sub> evasion (2.1 Pg C yr<sup>-1</sup>) from inland waters by Raymond et al. (2013) is a lower value than the previous estimate. Lauerwald et al. (2015) provided a lower estimate, though.

Lines 125–126: Alkalinity measurement is critical for the calculation of pCO<sub>2</sub> and CO<sub>2</sub> evasion. Please provide more detailed information on how the alkalinity was measured and double checked. Was there a difference in alkalinity between filtered and unfiltered samples? It seems the turbidity can go up sometimes and I wonder how this could influence the alkalinity of filtered water.

Lines 138–: Have you measured CO<sub>2</sub> flux directly from the surface of the water and compared that with the calculated values? (e.g. Duc et al., 2013, Environmental Science & Technology, 47, 968-975)

Lines 143–: I agree with the other reviewers that using wind speed as a component in the equation may not appropriate. Detailed explanation is needed on why the equation was chosen.

Lines 256–269: Detailed explanation is needed in “discussion” on why there is such a large difference in the measured and calculated pCO<sub>2</sub>.

Lines 299–312: This paragraph would belong to discussion rather than results.

Discussion: The results and discussion are mixed.

Lines 400: Are the differences statistically significant?

Lines 411–422: This sentence is too long. Extracting only essential information would be better than this long sentence.

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Tables: Is the “+/-” standard error or standard deviation? Please clarify it.

Figures: Is the error bar standard error or standard deviation? Please clarify it.

Figure captions needs to more detailed description of the figures including explanations on legends.

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Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2017-505>, 2017.

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