

Overall statements

The revised manuscript "Air-water CO₂ evasion from U.S. East Coast estuaries" by Goossens, N., Gildas, L.G., Arndt, S., Wei-Jun, C., Regnier, P. has improved substantially. The authors added several sections and additional tables which improved the text. Unfortunately there are still a lot of flaws in the manuscript. After correcting these minor bugs I suggest to accept the manuscript for publishing in Biogeosciences.

Detailed statements

There is still some confusion on the number of estuaries (43) handled by the model. Table S2, for example, includes 40 estuaries, Table 4 has 42. I know, the problem is that some rivers enter the same box. But anyway, this discrepancy in the presentation must be corrected within the entire manuscript.

In the following the line numbers refer to bg-2016-278-manuscript-version4.pdf.

L558 ff and your letter to the reviewer:

You discuss the outgassing of small and large estuaries saying that the surface area act as a limiting factor for gas exchange. Then I would expect smaller gas exchange per surface unit for smaller estuaries.

L169 NAR Fig. 1; Tab. 4 includes 11 estuaries .. 558 km²

L174 MAR (Tab. 4) 18 entries .. 9298 km²

L182 SAR (Tab. 4) 13 entries .. 959 km²

L193 Friedrichs and Hofmann2001 : Reference missing

L254 Fischer 1976: Reference missing

L295 The primary production module does not include nutrients, grazing pressure, turbidity. The only phytoplankton group is diatoms. Please comment on these shortenings.

L312 World Ocean Atlas, 2009: Reference missing

L467 UNH/GRDC Database: give a reference

L468 Fekete et al 2000: Reference missing

L473 is it July 2003 or July 2013? Compare L487

L481 I think you exchanged the display of pH upstream and downstream in the tables, as they do not fit to Fig. 7

L490 Compare pCO₂ along the salinity gradient, or change text here.

L500 "Although .." Improve grammar.

L501 is it really a trend?

L502 I see only 6 systems

L503 I see only 5 systems

L507 "local observations"

L544 "B0"

L468 Savenije 2000: Reference missing

L564 "2013b"

L567 Zeebe and Wolf-Gladrow 2001: Reference missing

L717 "discuss"

L721 "watersheds"

L723 "contained by" -> "covered by"

L730 (b, B0, H)

L772 omit "is"

L789 Antonov et al., 2014: Reference missing

L802 "Chlorophyll-a"

L802 omit "and" -> "For DIC and alkalinity boundary conditions .."

L804 "are extracted"

L812-815 Improve grammar.

L841 Mayer and Eyre, 2012: Reference missing

L897 "suggests"

L967 Abril 2002 does not fit to L39

L998 Billen et al: Not called

L1062 Hartmann 2012 does not fit to L165

L1176 Paerl et al: Not called

L1262 Thieu et al: Not called

L1282 Van der Burgh: Not called

L1306 Tab. 2 omit Florida Bay as this was not modeled.

L1353 In the text you discuss Fig. 7b as Delaware (L486).

L1378 –FCO₂ should be also at the y-axis