

***Interactive comment on “Technical note:
Seamless gas measurements across Land-Ocean
Aquatic Continuum – corrections and evaluation
of sensor data for CO₂, CH₄ and O₂ from field
deployments in contrasting environments” by
Anna Canning et al.***

Anonymous Referee #1

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In this paper the authors combine off the shelf sensors for pCO₂, pCH₄, pO₂ temperature and salinity into a flow through system and assess the utility of the system for measuring spatio-temporal variability of these parameters across the land-ocean interface.

Overall I found the paper to be well written and clearly presented. I have a few suggestion for improvement:

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1. To me, the pCH₄ system with an apparent offset from standard methods, as well as an extremely long response time does not sit well within the stated aims of developing a system capable of detecting spatio-temporal variations across the land ocean boundary. Can the authors expand upon this, perhaps the pCH₄ system described is advantageous for some experiments, but not so for others. Good to be upfront with the limitations as well as highlighting the benefits.

2. As the paper is currently written, it is hard to see what the advantage of the proposed system over the traditional methods for measuring these parameters. The description of calibrations, RT offsets etc are really useful, but I think a section dedicated to benefits over currently available systems would add value. This could cover aspects like power consumption, size, cost etc. For pCO₂ - equilibrator-NDIR systems can cover an equally large concentration range, are cheaper, and have an equally quick RT. So essentially I am left asking, what are the benefits of this system for pCO₂ measurements? Same for pCH₄, although sensor cost is higher than CO₂ NDIR and RT is also long (although quicker than reported for the Contros system presented here).

3. While the e-folding method of assessing RT is commonly used, I think it would also be useful to highlight the t₉₀ values. This gives the reader a more relevant and directly relevant understanding of RT without having to do additional calculations to assess actual RT.

A few typos Ref page 2 Ln 39 change PA to Raymond

Ln 281 The comment on no biofouling- later in the paper you highlight that biofouling may be responsible for some of the discrepancies (e.g. Ln 317). Best to keep the message consistent

Ln 396 What is meant by "abnormal peaks", perhaps rephrase

Ln 384 - "from point of stationary", while I understand what is meant here, the terminology is a bit clunky, perhaps rephrase.

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