

Line numbers here refer to the latest track-changes version.

--

Lines 22-23: the language here is biased, please adjust. The CO₂ sink is described as being actively strengthened by the farm, while the CO₂ source is implicitly described as being circumstantial (“experienced outflux”), not necessarily driven by the farm. On lines 267-268, both the CO₂ source and the sink are described as being actively caused by the kelp farms.

The main take-home message seems to be that kelp farms are not always sinks of CO₂ from the atmosphere as one might expect, but they can also act as CO₂ sources. However, only CO₂ uptake and not release is mentioned in the title, which could also be viewed as a continuation of the biased language mentioned in my point above. If you agree with my summary of the take-home message above, please adapt the title to better reflect it.

(Both comments above: I do not mean to imply that the authors have used biased language deliberately or that there is any ill intent!)

Additionally the title needs another word (e.g. “measurements”) after “localized air-sea flux” to make proper sense.

Line 115: please clarify whether the CRM used to calibrate the DIC measurements or as a check on some other calibration.

Lines 116-117: please mention how the TA instrument was calibrated.

Line 165-167: the statement that water mass properties are altered only by mixing is true only in the interior ocean. In the surface, evaporation/precipitation and air-sea heat fluxes also modify salinity and temperature. Indeed one could argue that ‘water mass’ is not an appropriate term to describe this surface layer variability. Please rephrase.

Line 421: one of the reviewers made a comment I believe is relevant to this point – asking how growing kelp can net release DIC. Your answer provided in the response is okay (“aging kelp became a strong net source of DIC relative to early stages of kelp growth”), but I think that it would be helpful to also provide a brief sentence on it in the manuscript (probably including the Xiong et al. citation), because it is still confusing to the reader as currently written.

--

Finally, the manuscript needs careful copy-editing. Some examples that I noticed can be found below but please check through everything again.

In the abstract, ‘seawater CO₂’ should be ‘seawater pCO₂’ or ‘seawater fCO₂’, as appropriate (several times).

Line 22: “flux” needs a direction (presumably “influx”?) and a from where (“influx from the atmosphere”?)

Lines 45-47: citation(s) needed.

Line 47: “a local refugia” => “local refugia” or “a local refugium”

Line 106: TM should be superscript or the [™] symbol? (after Science First)

Line 118: “electrode specific” => “electrode-specific”

Line 129: where did the errors for the constants come from? Needs citation.

Line 141: please provide the equation for the TA-S relationship.

Line 213: “within site” => “within-site”

Line 222: “indicate” => “indicated”

Line 226: unclosed parenthesis.

Line 374: “have” => “has”

Line 383: the added “also” doesn’t seem to make sense here

Line 393: “respectfully” => “respectively”

Line 393: “observed 12 January” => “observed on 12 January”

Line 398: remove comma after “(2014)”

Line 400: clarify which study is being referred to by “this study”