

Please find replies to the comments of reviewer 1 below in red.

1) This may be a more appropriate comment for the “Climate targets, carbon dioxide removal and the potential role of Ocean Alkalinity Enhancement” chapter (which I assume is the GBP’s introduction), but there is inconsistent use of “marine CDR” (*Climate targets...*) vs. the shortened “mCDR” here.

For the OAE guide, we have decided to abbreviate marine carbon dioxide removal with mCDR.

2) Line 41: this should read “with K_{sp} describing the temperature, salinity AND PRESSURE dependent...”

Thank you for pointing this out. The omission has been corrected.

3) Line 46 and throughout: it is unclear what is meant by “amount contents”

Amount content was defined on line 29 as the amount content of atoms in a seawater sample

4) The description of the Deffeyes diagrams should be made clearer and additional colour should be considered for those figures. The light grey and dark grey lines are difficult to distinguish from the black.

We have modified the Deffeyes diagrams, as suggested, to make them more easy to read.

5) Line 315: missing a reference

Thank you for pointing this out, we have added a reference.

6) Line 338: given the earlier focus on saturation state (and its importance to OAE), the brief intro to ‘weather’ vs ‘climate’ definitions in this paragraph would benefit from a short sentence clarifying that these definitions are based on achieving a desired uncertainty in [carbonate] (or for ‘climate’ a *change* in [carbonate])

The ‘climate’ or ‘weather’ definition applies to all carbonate chemistry species, whether they are measured directly, e.g. DIC, or calculated, e.g. DIC from measured TA and pH, or calcium carbonate saturation state. It depends what parameter one is interested in.

7) Figure 4: link the caption directly back to how this is used to check for linearity of response.

Thank you for the suggestion, we have modified the caption accordingly.

8) Throughout: some issues with missing italics for “f” in fCO_2 , and occasionally italicised chemical symbols.

We went through the text and turned the f in fCO_2 italic and removed any italic font from chemical symbols.

9) Line 390: delete or clarify “(compare Figure 4)”

We have added the notion ‘like for DIC’ and also amended the caption for Figure 4.

10) Section 2.3.3: Although the authors are correct to caution (at length) about the use of unpurified dye, someone new to the field may be unaware of the potential downfalls of potentiometric measurements. It would be helpful to include a reference to Bockmon's 2015 "An inter-laboratory comparison assessing the quality of seawater carbon dioxide measurements" paper and highlight how quickly the uncertainty of a potentiometric can exceed the limits for climate/weather measurements.

Thank you for this suggestion, we have added the Bockmon & Dickson 2015 reference.