

Reviewer 1 - Response from Authors

This data set is valuable and useful for future comprehensive analysis and modeling work along the Atlantic Coasts. The continuation of these efforts is essential to monitor ocean acidification and to support fisheries management.

Thank you!

However, there are several minor comments that authors should pay attention to:

1). Equation (5), the expression of saturate state is wrong. And the symbol of the solubility product (K_{sp} or K_{sp}^) is not consistent with the main text.*

Our apologies, this is now corrected

2). Line 115 – 120. The geographic names are not labeled in either Figure 1 or Figure 3, which leads to confusion. In addition, it is hard to distinguish the TCEN transect, CGSL, and LC transect from Figure 3, especially when the names are not well labeled. Also, several other geographic names are mentioned in the main text yet are not labeled in Figure 1 or 3.

Thanks for catching this, we will update the figures with the corresponding labels and make the transects clearer.

3). Line 150 -155. The Rimouski Station and 26 are not found in Figure 1 or Figure 3

Thanks for catching this, we will update the figures.

4). Line 190 -195. What equations are used to calculate pH from absorbance value? Are pH samples corrected for dye perturbation?

This will be clarified during the revision of the manuscript (the scientists responsible for these measurements are currently at sea).

As far as we can tell, the 2014 pH across the entire Atlantic Zone was calculated following the equations with dye perturbation correction described in Dickson et al. (2007). Since 2019, pH measured in the Quebec region is not corrected for dye perturbation, but the m-cresol dye is visually inspected each day measurements are made to ensure its stability over time.

5). Table 1. It is very useful to give a summary of the cruise information. However, I would strongly recommend adding one column to indicate what is measured carbonate parameters during the cruise because some syntheses only would like to use the measured data instead of extrapolated and calculated values.

Thanks for the suggestion, this will be added.

5). *The font size of the axis and color bar are too small in all the surface figures. Especially in Figures 6,7, 8. Also, the unit should be consistent as the main text ($\mu\text{mol kg}^{-1}$)*

This will be corrected

6). *Throughout the whole text including the figures, the p of pCO_2 should be in italics*

This is now corrected

7). *I would suggest Figure9 a and b as one figure and c and d as another since they are not focusing on the same issue.*

This will be done.