

Dear Reviewer,

We would like to extend our thanks for your constructive review of our manuscript. Below we respond point by point to each of your comments. All changes in the manuscript and supplemental material documents are written in purple for clarity.

Comment 1: Use of colors in Figures, in particular Fig 1-2-3 : these figures are not very accessible to readers with color-vision deficiencies. Modifying the symbols used or working with more clearly distinguishable symbol fills offer an easy fix. See suggestions in Figure preparation guidelines offered on the EGU journals' website.

We thank the reviewer for pointing out this out. We revised all figures to improve accessibility for readers with color-vision deficiencies. Specifically, we replaced the original colour scheme with a colourblind-safe palette based on the Okabe-Ito design, as it ensures clear visual separation among regions. In addition, marker contrast was enhanced through consistent use of black edges. These changes were applied consistently throughout the manuscript.

Comment 2: L91 mentions that much of the presented have been exploited in previous publications, but Table 1 does not provide citations for many of the cruises where data were collected – does that mean e.g. that data from cruise 1-13 have not been published previously? This is not quite clear.

To clarify, Table 1 lists references that correspond to previously archived components of individual cruise datasets, rather than all studies that have used or interpreted these data. Data from many earlier cruises contributed to scientific publications but have not previously been archived as complete, quality-controlled datasets. The text has been revised to make this distinction explicit.

Comment 3: L184: total nitrogen: is this really total (particulate + dissolved) nitrogen, or should this be total dissolved nitrogen (sum of inorganic DIN species and DON)? The methods information in the supplement does not make me any wiser, since it just mentions it was measured on a TOC analyser but not whether or not samples were filtered and if so, on what type of filters

Samples were filtered through 0.45 μm (Millipore polycarbonate (MA) or Nuclepore cellulose nitrate membrane) filters prior to analysis and, therefore, the reported nitrogen concentrations represent the dissolved fraction (i.e. total dissolved nitrogen (DIN + DON)). The manuscript and the supplemental material have been revised to include the filtration procedures and terminology.

Comment 4: it might be useful to mention for each of the parameters which fraction of the data were flagged as questionable, and whether there are any patterns in this (e.g. from certain cruises, certain cruise days, etc.)

We agree that summarizing the distribution of quality flags improves transparency. We added a new table (Table 5) summarizing the number and proportion of flagged values (flag = 3) for each parameter across the dataset. No systematic patterns associated with specific cruises, regions, or sampling periods were identified. Flagged values are generally isolated and likely reflect individual outliers rather than systematic issues.

Comment 5: L327: “indicating the presence of unidentified alkalinity”: yes, or: a problem with the pH data or issues with carbonate system equilibrium constants used? The discussion on carbonate system inconsistencies is an important one, and also points out the difficulty in applying a systematic quality control procedure as done for the other parameters.

The text was revised to clarify that discrepancies in the carbonate system may arise from multiple sources, including uncertainties in pH measurements, the choice of equilibrium constants, and potential contributions from organic alkalinity, rather than attributing them solely to “unidentified alkalinity” (Fradette, 2025).

several of the plots show a couple of data that visually really jump out, and for which it's not clear to me why they were not flagged. For example:

Comment 6: Figure 8, DSi versus nitrate for the upper SLE has one datapoint well above the rest of the data.

This data point has now been assigned a QC flag of 3 (questionable) and removed from the figure for clarity.

Comment 7: Figure 9, AOU vs nitrite for Sffjord: one sample point deviates from all others.

This data point has now been assigned a QC flag of 3 (questionable) and removed from the figure for clarity.

Comment 8: Figures 12-13-16: 2 datapoints somewhat above and below 100m depth at Saguenay Fjord jump out with markedly higher salinity, TA, and $d^{18}\text{O-H}_2\text{O}$. That is internally consistent, but still very odd. Could this point to mislabeling or evaporation during sample storage?

These data points are internally consistent across multiple parameters but remain anomalous relative to surrounding observations. As the origin of these deviations cannot be definitively determined (potential sampling or analytical artefacts), their flag was left as is as it passed our systematic QC analysis.

Comment 9: Figure 13 pH_TS at Gulf of St-Lawrence: one exceptionally low pH seems highly unlikely.

This data point has now been assigned a QC flag of 3 (questionable) and removed from the figure for clarity.

Comment 10: Figure 11 and corresponding text: provide regression info for water isotope relationships (rather than mentioning the slope is close to 8)

The revised manuscript includes regression statistics for the water isotope relationships. Specifically, the slope, intercept, and R^2 are now reported in the main text.

References

Fradette, C.: Evaluating Data Quality of Coastal Spectrophotometric pH Measurements: Implications for Ocean Acidification and Ocean Alkalinity Enhancement Research, Dalhousie University, Halifax, NS, 127 pp., 2025.