Supplemental Material for “Gulf of St. Lawrence and Estuary Dataset (GOSLED): A 20-year compilation of quality-controlled biogeochemical observations (2003-2023)”

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S1 Individual cruise maps

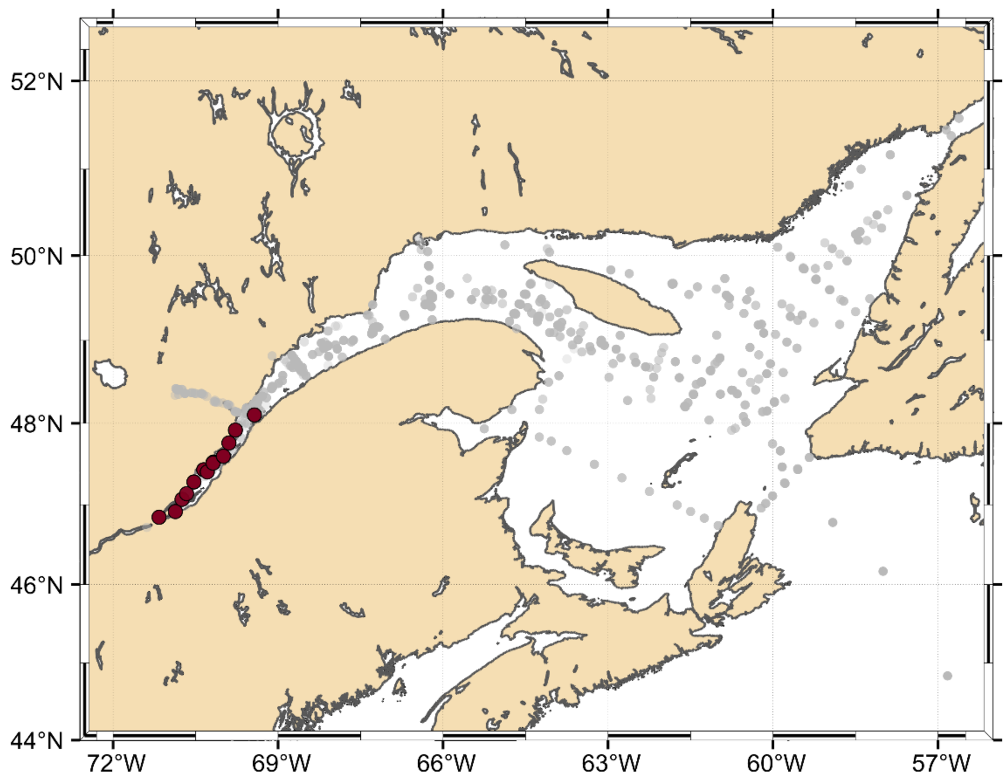

Figure S1. Cruise 01 (2003-05-08 to 2003-05-11); 17 stations. Regions: Lower St. Lawrence Estuary (LSLE), Upper St. Lawrence Estuary (USLE). Variables measured: CTD profiles, dissolved oxygen (DO), total alkalinity (TA), dissolved organic carbon (DOC).

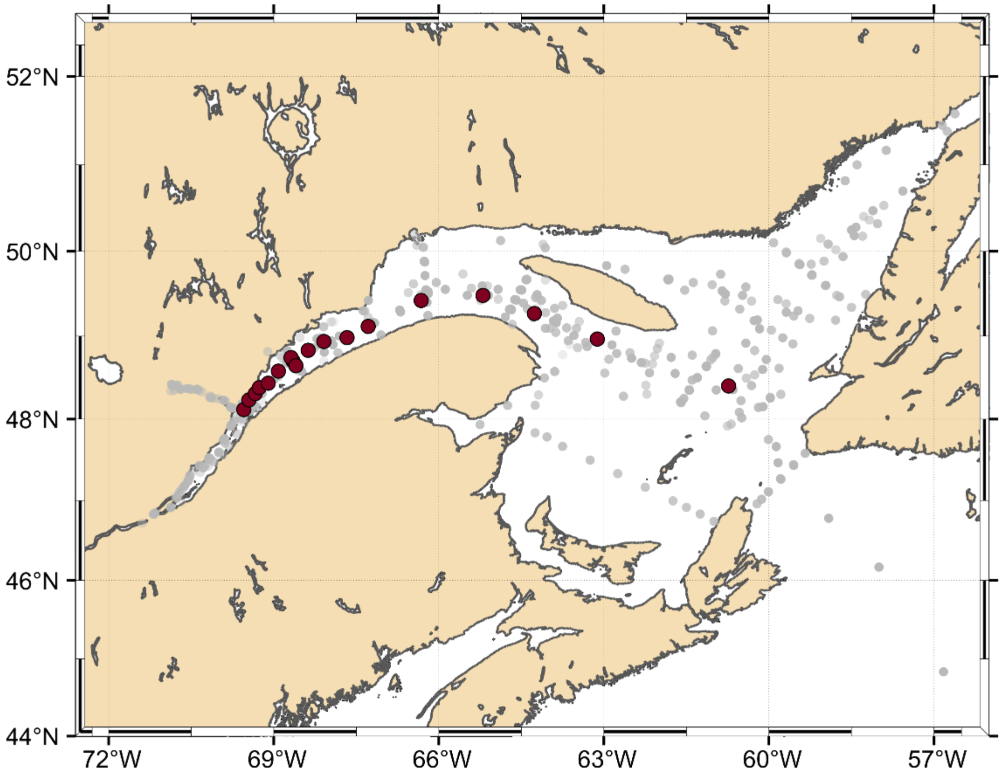

Figure S2. Cruise 02 (2003-07-09 to 2003-07-14); 19 stations. Regions: Gulf of St. Lawrence (GSL; LC), LSLE. Variables measured: CTD profiles, DO, TA.

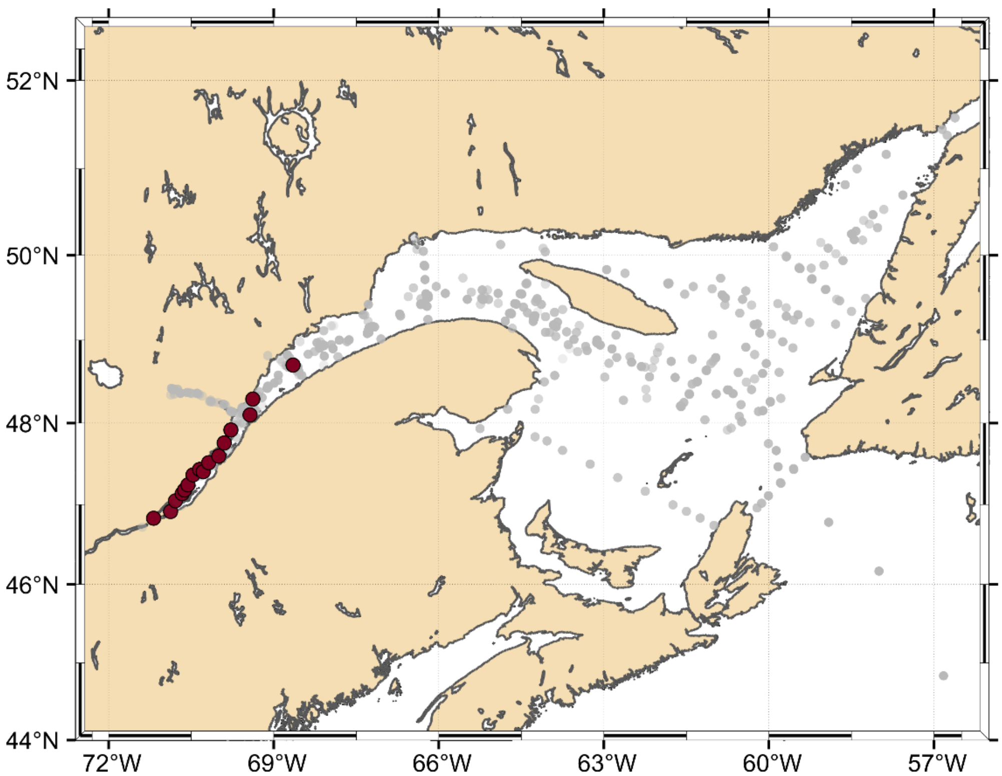

Figure S3. Cruise 03 (2006-06-11 to 2006-06-16); 18 stations. Regions: LSLE, USLE. Variables measured: CTD profiles, DO, TA, pH, soluble reactive phosphate (SRP), DOC, $\delta^{13}C_{DIC}$, $\delta^{13}C_{DOC}$.

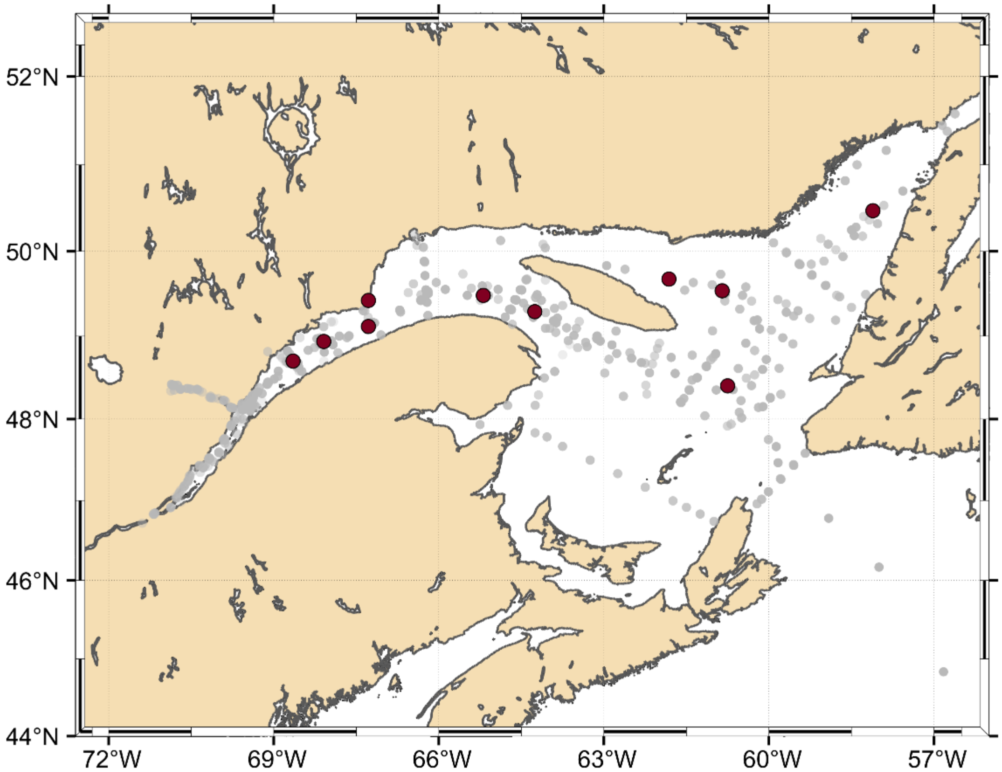

Figure S4. Cruise 04 (2006-08-15 to 2006-08-20); 11 stations. Regions: GSL (LC, EC), LSLE. Variables measured: CTD profiles, DO, TA, pH, DOC, $\delta^{13}C_{DIC}$, $\delta^{13}C_{DOC}$.

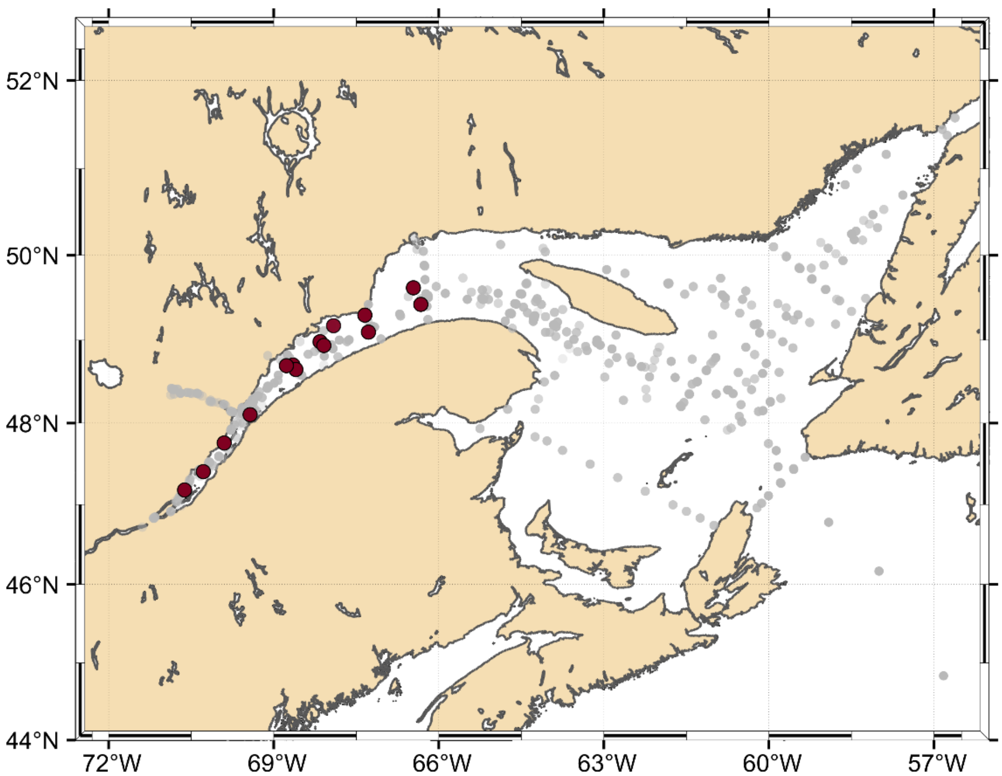

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Figure S5. Cruise 05 (2007-05-14 to 2007-05-19); 15 stations. Regions: GSL (LC), LSLE, USLE. Variables measured: CTD profiles, DO, TA, pH, SRP, DOC, $\delta^{13}C_{DIC}$, $\delta^{13}C_{DOC}$, $\delta^{18}O$.

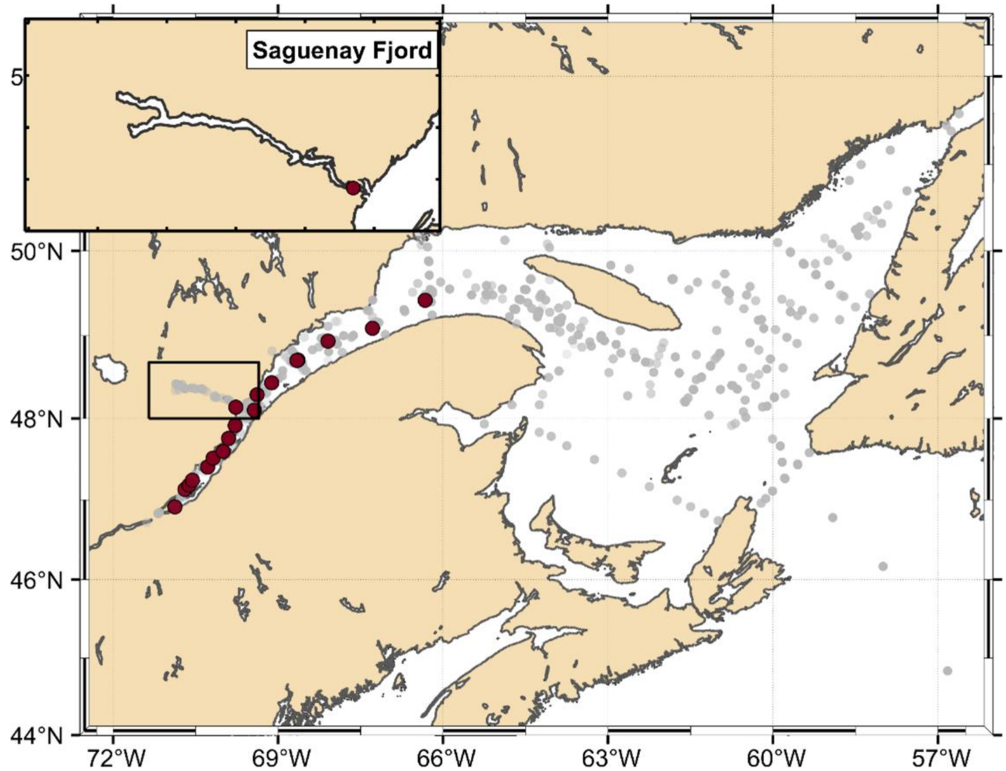


Figure S6. Cruise 06 (2009-06-08 to 2009-06-13); 18 stations. Regions: GSL (LC), LSLE, USLE, Saguenay Fjord (SF). Variables measured: CTD profiles, DO, TA, pH, Silicate (DSi), DOC, $\delta^{13}C_{DIC}$, $\delta^{18}O$.

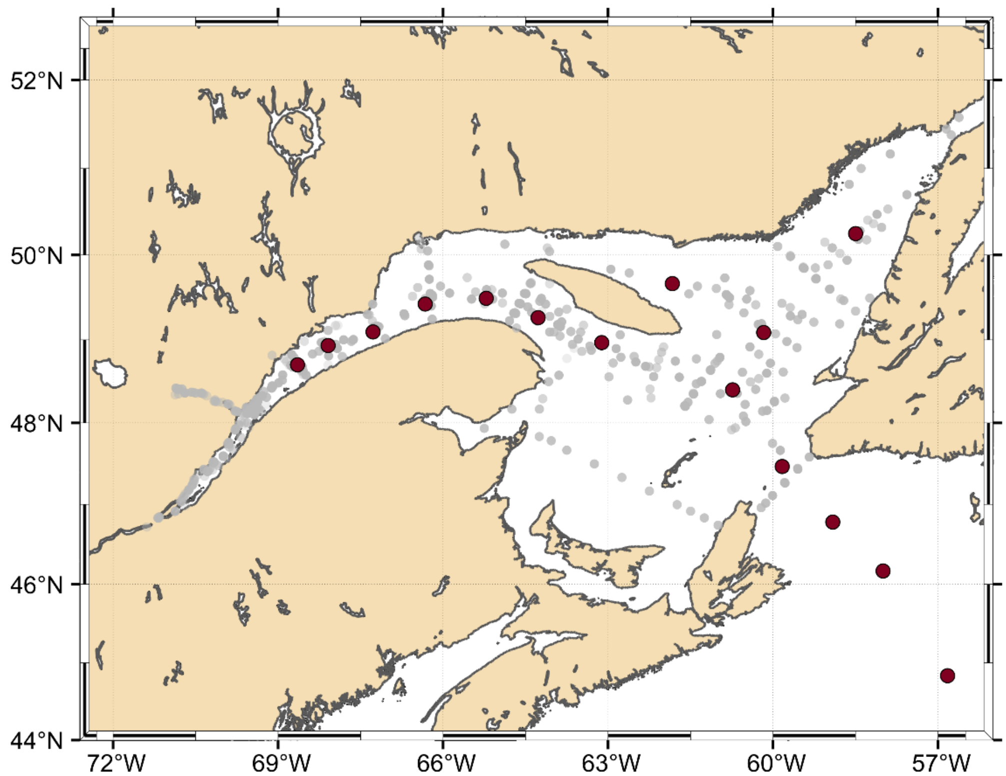


Figure S7. Cruise 07 (2010-07-02 to 2010-07-11); 15 stations. Regions: GSL (LC, AC, EC), LSLE. Variables measured: CTD profiles, DO, TA, pH, DSi, DOC, $\delta^{18}O$.

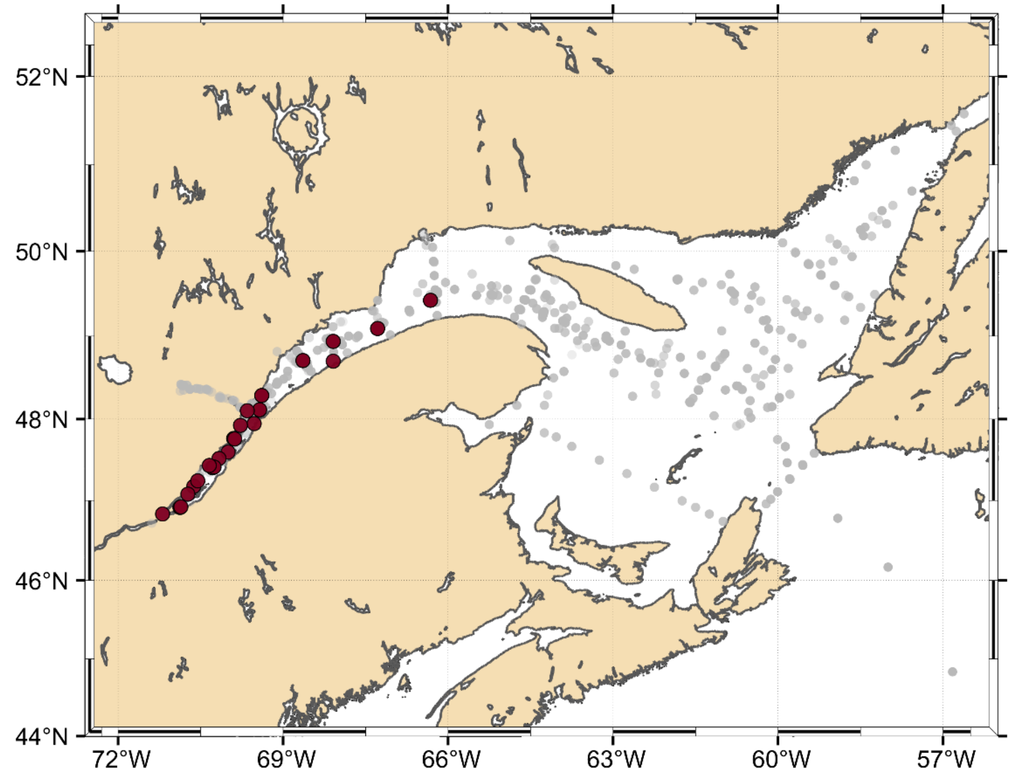


Figure S8. Cruise 08 (2011-05-16 to 2011-06-02); 23 stations. Regions: GSL (LC), LSLE, USLE. Variables measured: CTD profiles, DO, TA, pH, fugacity of CO_2 (fCO_2), DSi, SRP, DOC, $\delta^{13}C_{DIC}$, $\delta^{18}O$.

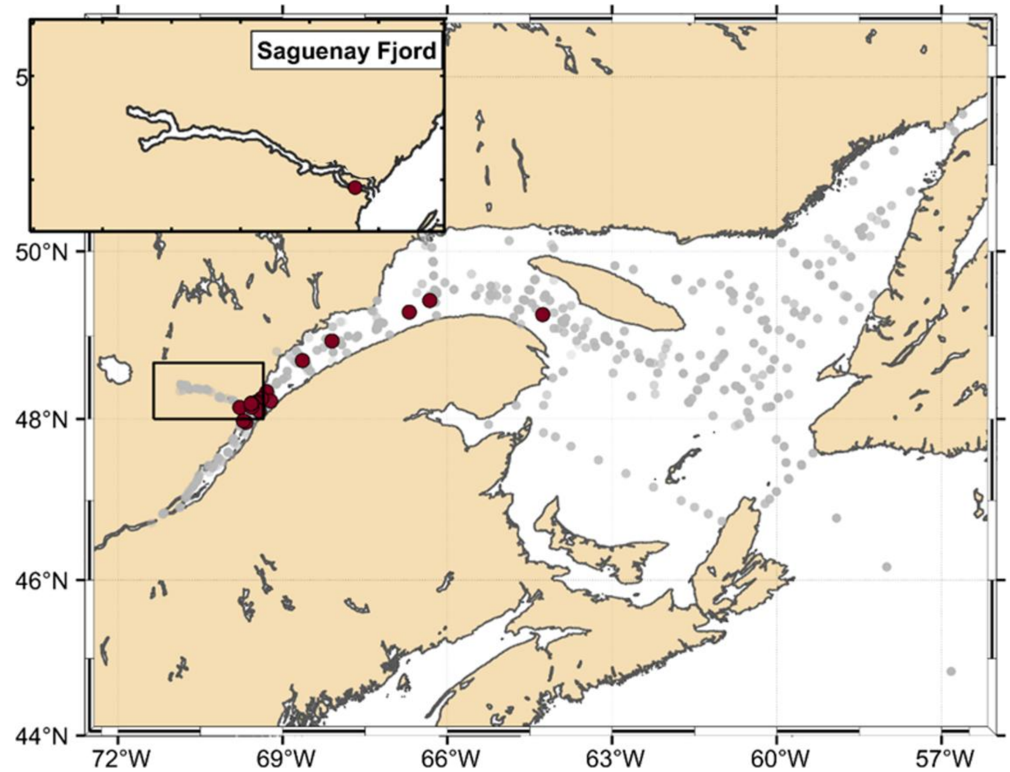


Figure S9. Cruise 09 (2013-06-03 to 2013-06-13); 19 stations. Regions: GSL (LC), LSLE, USLE, SF. Variables measured: CTD profiles, DO, TA, pH, DSi, SRP, Nitrate (NO_3^-), Nitrite (NO_2^-), Ammonium (NH_4^+), DOC, $\delta^{13}C_{DOC}$, $\delta^{18}O$.

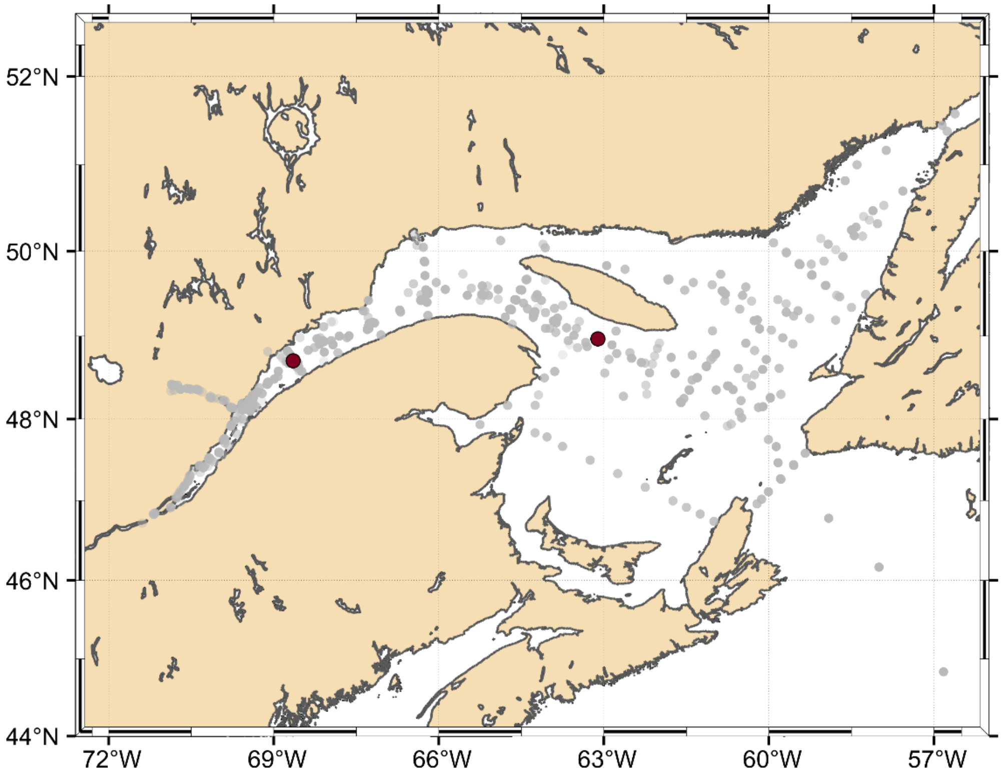


Figure S10. Cruise 10 (2014-09-13 to 2014-09-15); 2 stations. Regions: GSL (LC), LSLE. Variables measured: CTD profiles, DO, DIC, TA, pH, DSi, SRP, δ^{18}O.

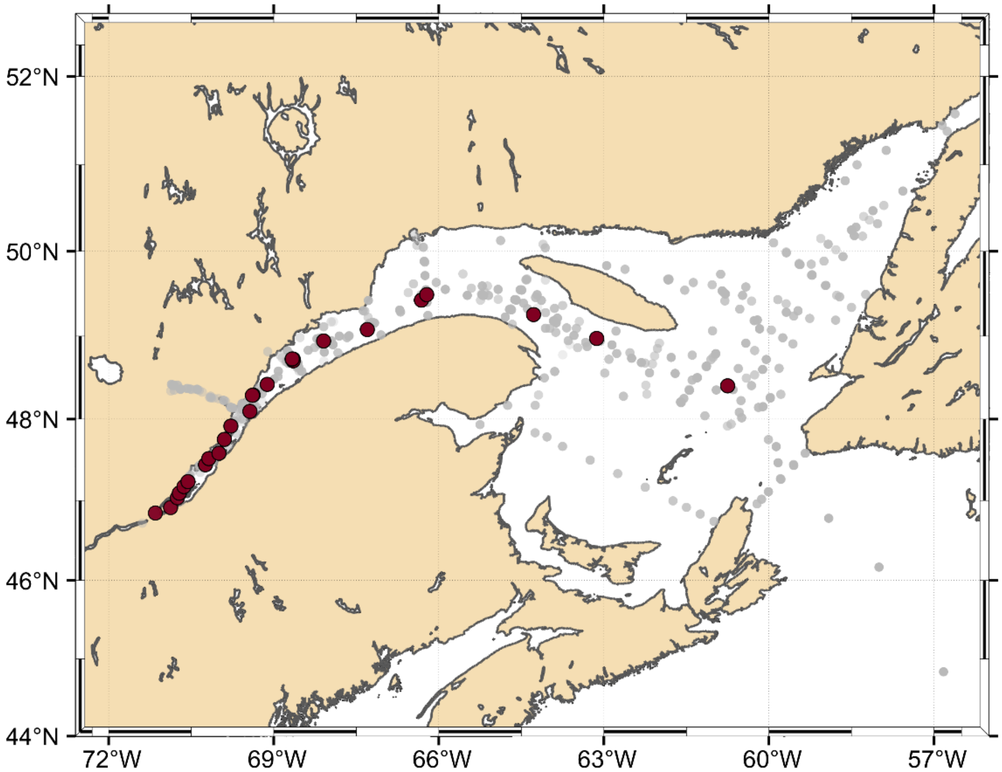
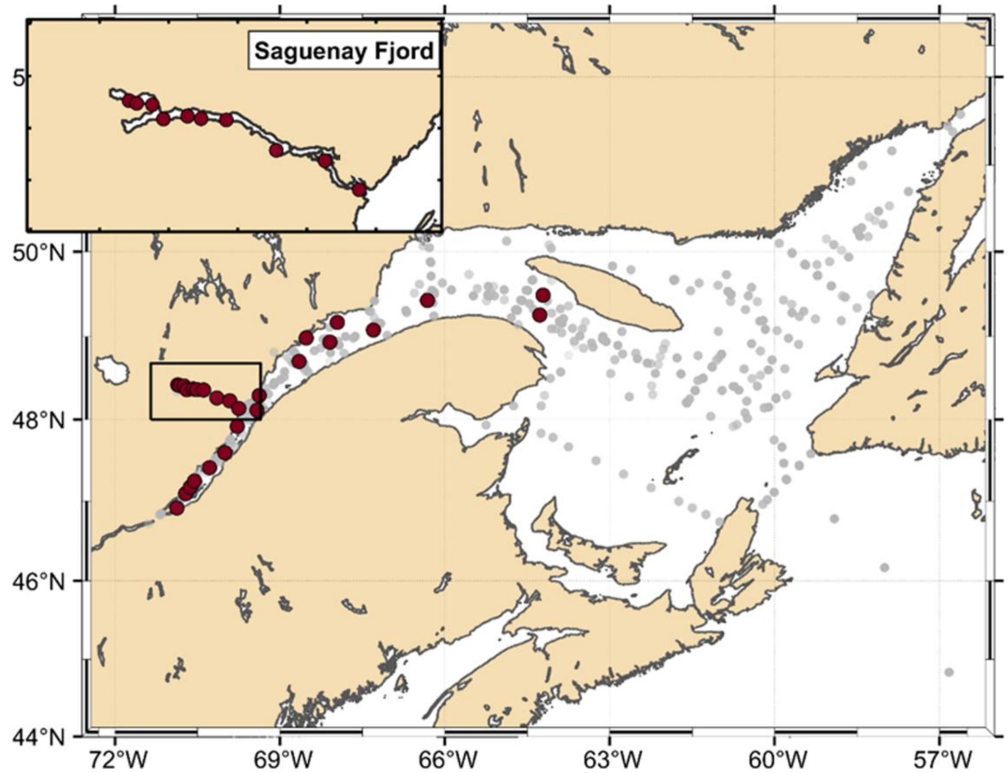


Figure S11. Cruise 11 (2016-05-18 to 2016-05-26); 27 stations. Regions: GSL (LC), LSLE, USLE. Variables measured: CTD profiles, DO, DIC, TA, pH, DSi, SRP, δ^{13}C$_{DIC}$, δ^{18}O.



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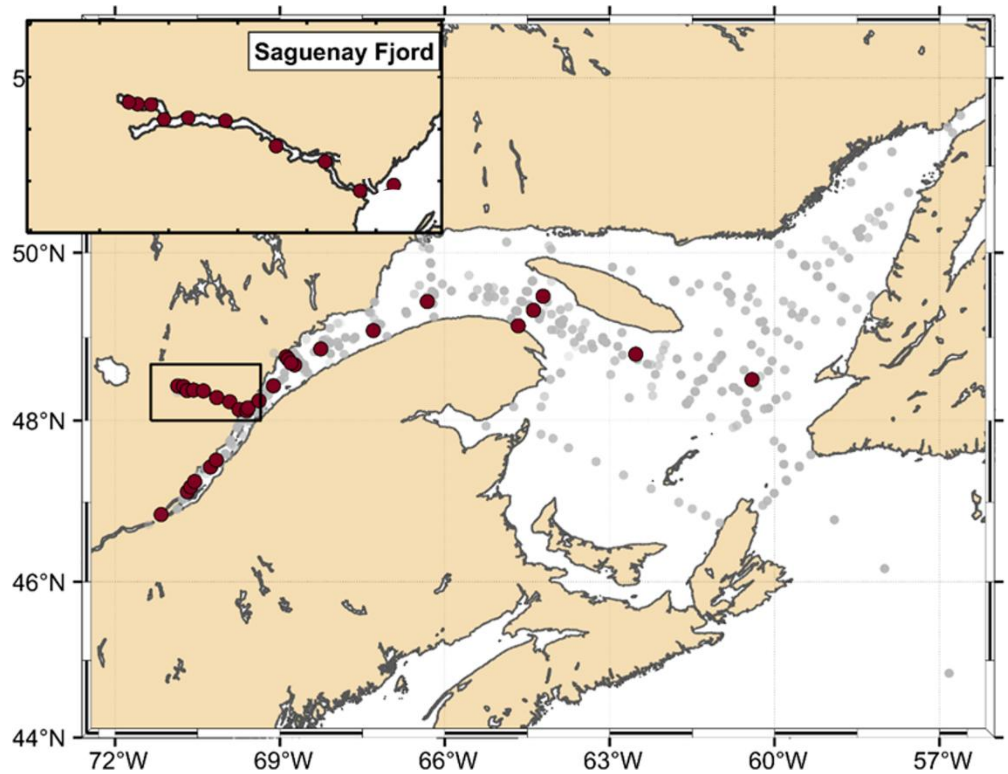

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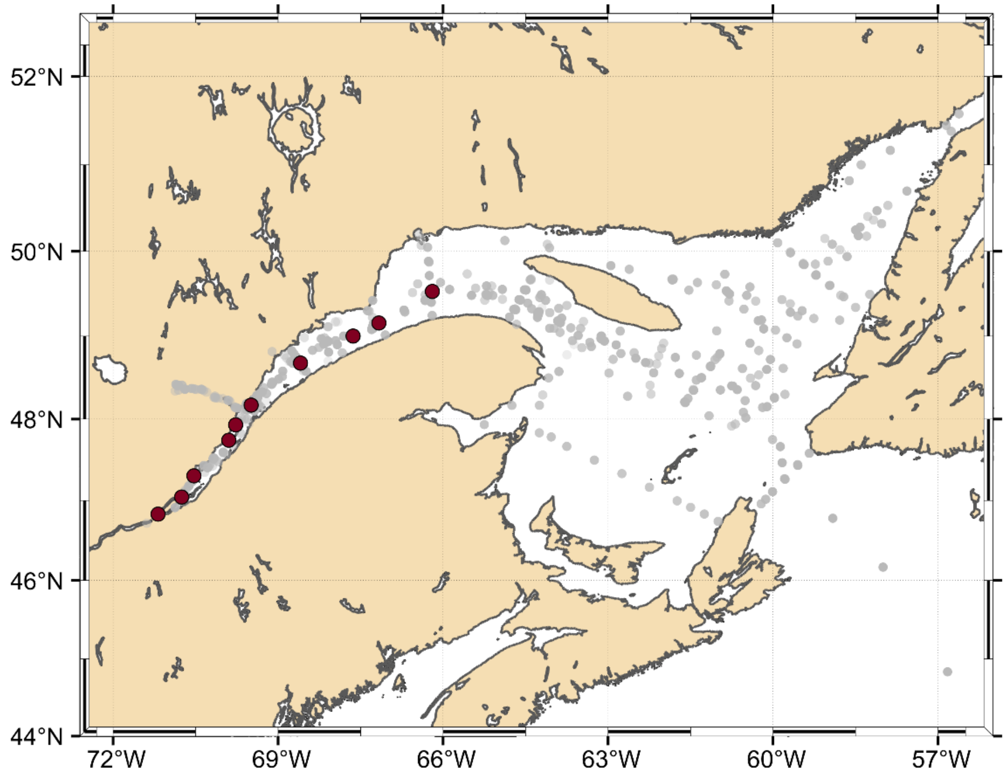

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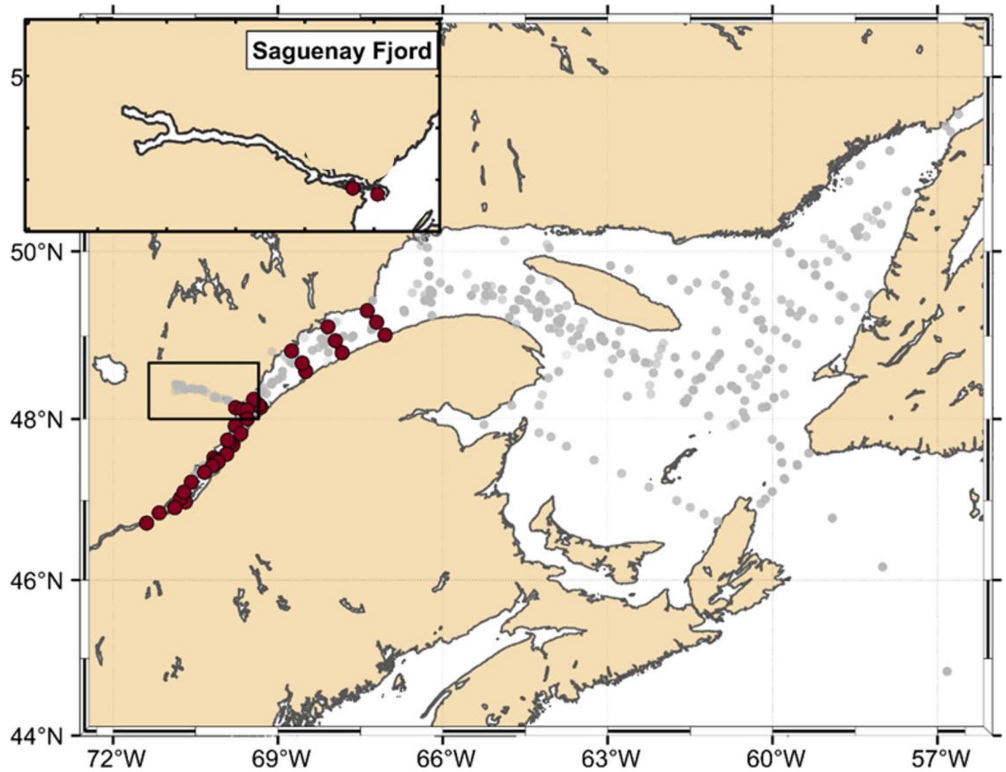

Figure S15. Cruise 15 (2019-06-19 to 2019-06-30); 35 stations. Regions: LSLE, USLE, SF. Variables measured: CTD profiles, DO, DIC, TA, pH, DSi, SRP, NO_3^-, NO_2^-, $\delta^{18}O$.

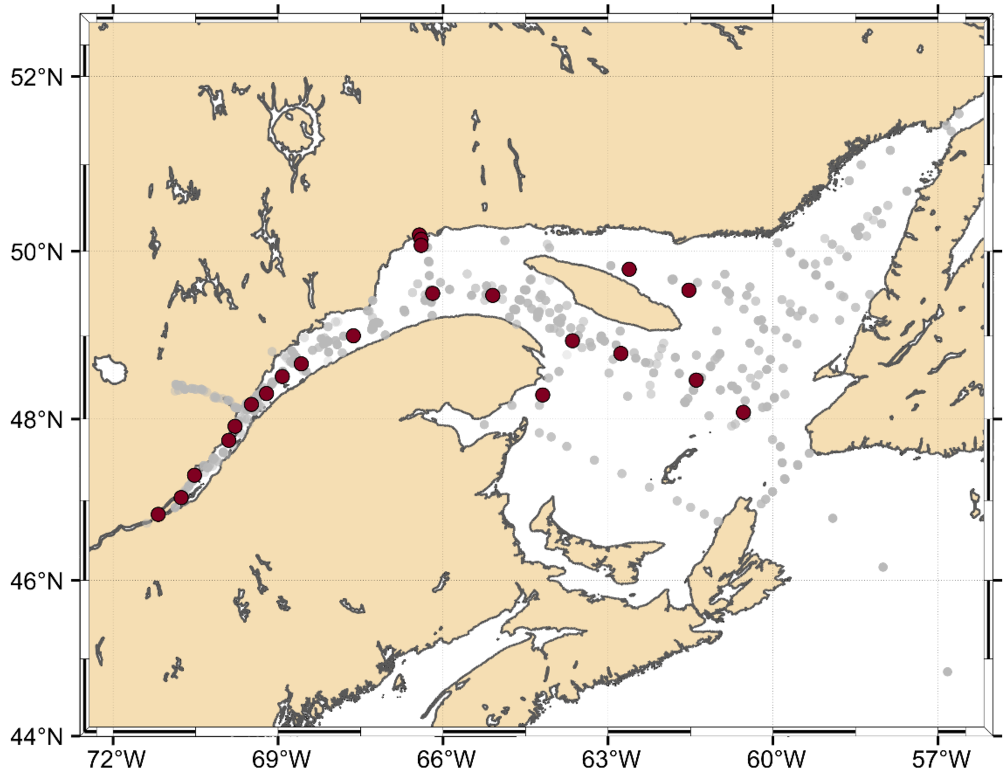

Figure S16. Cruise 16 (2020-02-28 to 2020-03-13); 22 stations. Regions: GSL (LC, AC), LSLE, USLE. Variables measured: CTD profiles, DO, DIC, TA, pH, δ$^{13}C_{DIC}$, δ^{18}O.

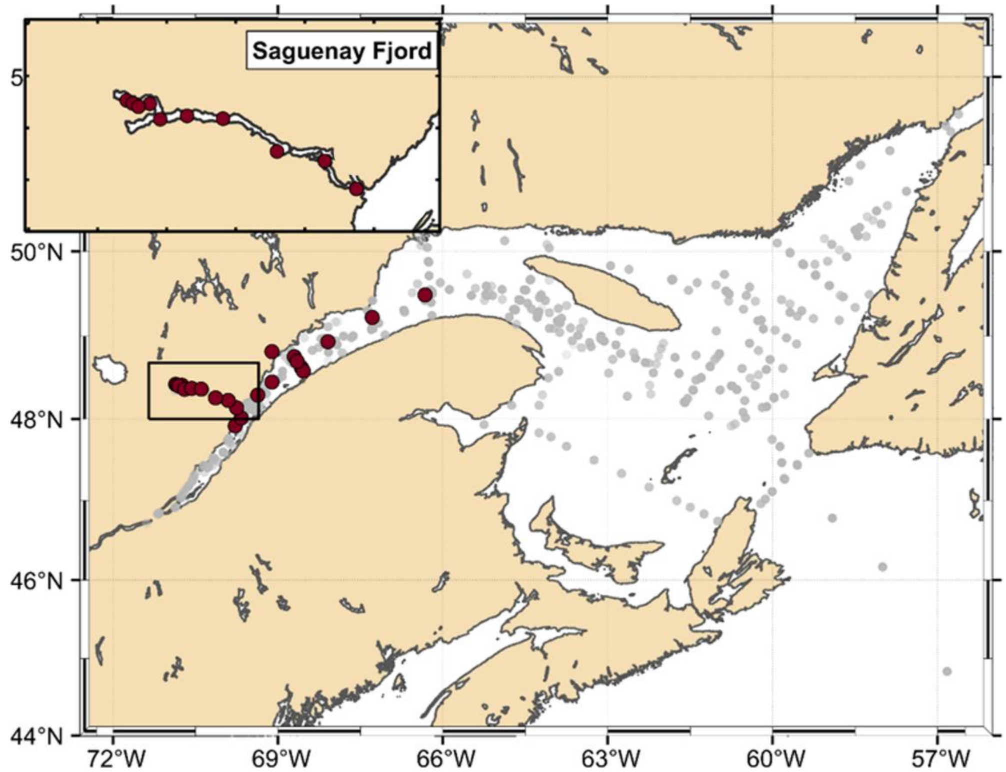

Figure S17. Cruise 17 (2021-08-25 to 2021-08-30); 23 stations. Regions: GSL (LC), LSLE, SF. Variables measured: CTD profiles, DO, DIC, TA, pH, fCO_2, DOC, δ$^{13}C_{DIC}$, δ^{18}O.

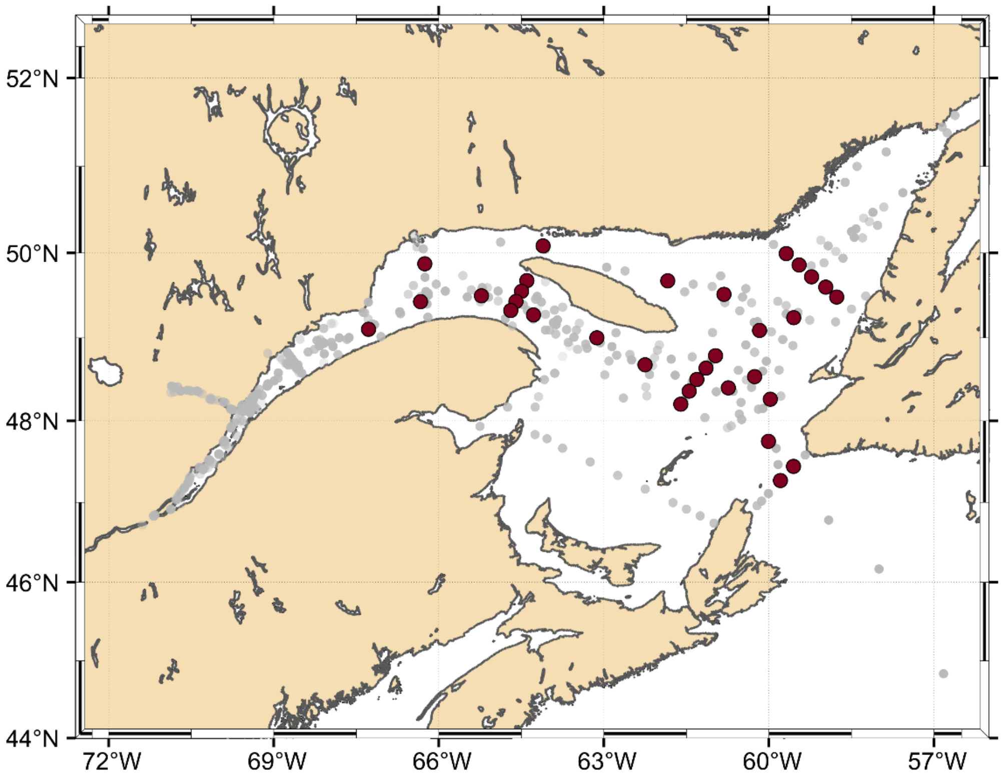

Figure S18. Cruise 18 (2021-10-22 to 2021-10-29); 32 stations. Regions: GSL (LC, AC, EC), LSLE. Variables measured: CTD profiles, DO, DIC, TA, pH, DSi, SRP, NO_3^-, NO_2^-, NH_4^+, DOC, total nitrogen (TN), $\delta^{13}C_{DIC}$, $\delta^{18}O$, δD.

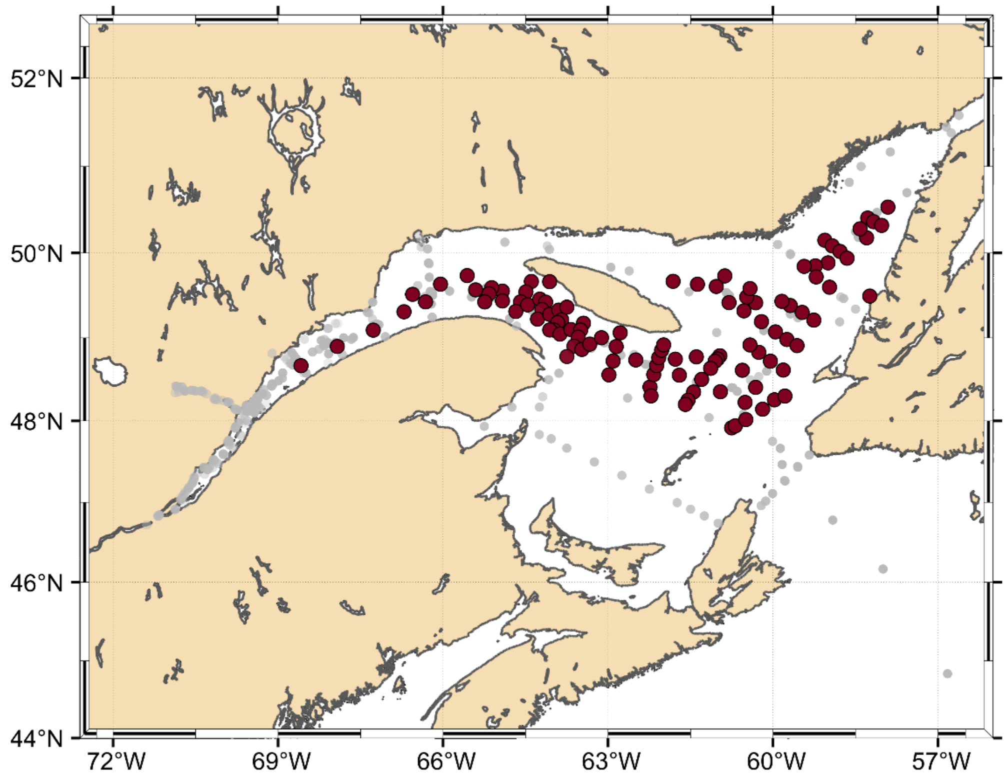

Figure S19. Cruise 19 (2022-06-11 to 2022-06-23); 112 stations. Regions: GSL (LC, AC, EC), LSLE. Variables measured: CTD profiles, DO, DIC, TA, pH, DSi, SRP, NO_3^-, NO_2^-, NH_4^+, nitrous oxide (N_2O), $\delta^{13}C_{DIC}$, $\delta^{18}O$, δD, CFC-12, SF_6, CF_3SF_5.

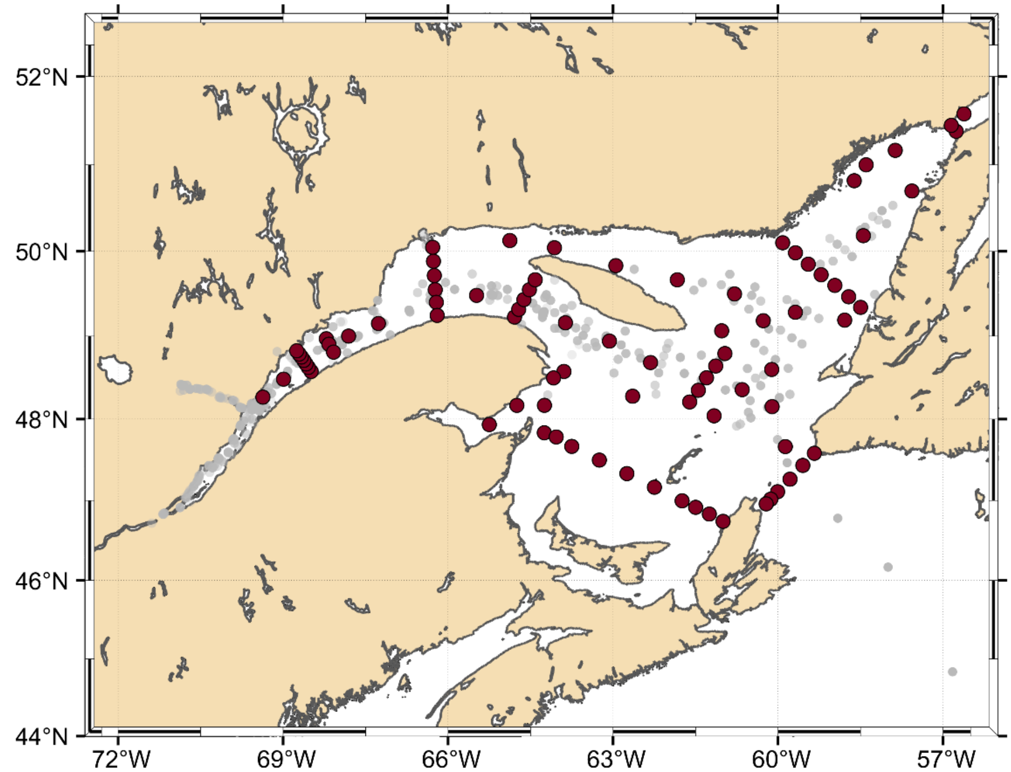

Figure S20. Cruise 20 (2022-10-25 to 2022-11-10); 85 stations. Regions: GSL (LC, AC, EC), LSLE. Variables measured: CTD profiles, DO, DIC, TA, pH, DSi, SRP, NO_3^-, NO_2^-, $\delta^{13}C_{DIC}$, $\delta^{18}O$, δD, CFC-12, SF_6, CF_3SF_5.

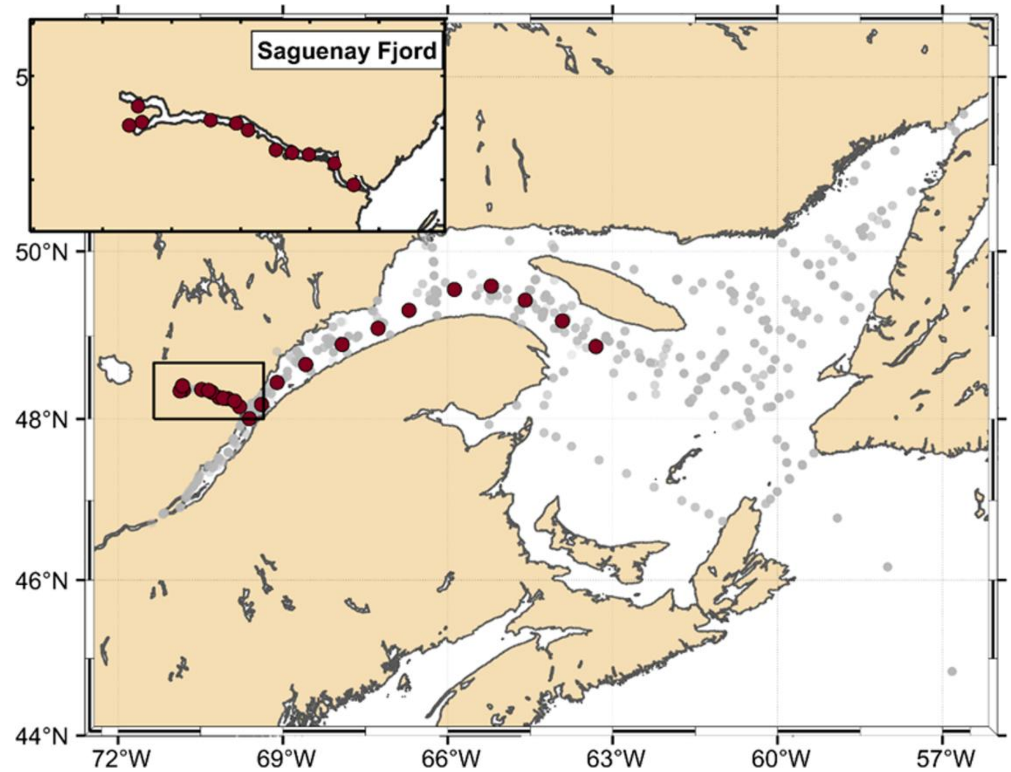

Figure S21. Cruise 21 (2023-07-05 to 2023-07-11); 23 stations. Regions: GSL (LC), LSLE, SF. Variables measured: CTD profiles, DO, DIC, TA, $\delta^{13}C_{DIC}$.

S2 Description of analytical methods

This section documents the analytical protocols used for the Gulf of St. Lawrence and Estuary Dataset (GOSLED), including instrumentation, calibration, and precision/uncertainty. Each subsection lists a method code that links to the parameter-cruise cross reference (Table S1).

<u>Hydrography</u>

CTD-1: CTD Temperature (CTDTEMP) and Salinity (CTDSAL)

Conducted by: Various research groups (McGill, ISMER, Dalhousie, DFO-MLI)

In-situ temperature and practical salinity were measured with a Sea-Bird SBE 911+ CTD equipped with dual platinum thermistors and conductivity cells. Sensors were factory-calibrated within 12 months prior to deployment. Conductivity calibrations were verified pre- and post-cruise against discrete salinity samples analyzed by potentiometric titration ($AgNO_3$ standardized using IAPSO reference seawater). In most cases, discrete samples were collected from near-surface waters (~3 m), as salinity can vary significantly over the length of the Niskin bottle in the upper water column. On select cruises (i.e. June 2013, November 2017, May 2018, June 2019, etc..), discrete salinity samples spanning the full water column were analyzed in the DFO-MLI laboratory with a Guildline Autosal 8400 salinometer calibrated with IAPSO standard seawater. The instrument has an accuracy of $S_P < 0{,}002$. Raw data (24 Hz) were processed with SBE Data Processing software: de-spiking, alignment of conductivity to temperature and pressure, thermal-lag correction, and 1 dbar bin averaging. The reproducibility of these measurements was typically ± 0.5 %.

<u>Dissolved Oxygen</u>

O2-1: Winkler Dissolved Oxygen (Oxygen)

Conducted by: Various research groups (McGill, ISMER, Dalhousie, DFO-MLI)

Discrete Niskin-bottle samples were analyzed onboard by Winkler titration (Grasshoff et al., 2009). Samples were drawn via short, flexible silicone tubing with minimal air contamination. Immediately upon collection, manganous chloride and alkaline iodide reagents were added, followed by acidification and titration within 1-2 h using amperometric or starch-indicator endpoints. Replicate precision was typically within ± 0.5 %, corresponding to ± 1-2 μmol kg^{-1} for oxygen concentrations of 200-300 μmol kg^{-1}. These values served as primary standards for calibrating the CTD oxygen sensors (Method O2-2) and as independent discrete measurements in the dataset.

O2-2: CTD Dissolved Oxygen (CTDOXY)

Conducted by: Various research groups (McGill, ISMER, Dalhousie, DFO-MLI)

A Sea-Bird SBE-43 Clark-type membrane sensor provided continuous O_2 profiles. Each sensor was factory-calibrated and adjusted to paired Winkler measurements (O2-1). Raw sensor voltages were converted to O_2 concentrations (μmol kg^{-1}) following Sea-Bird's calibration equation that applies in-situ pressure and temperature compensation. Precision of the calibrated data was ± 1-2 μmol kg^{-1} with total uncertainty ≤ 2 %.

<u>pH on the Total Scale (pH_TS_measured)</u>

Sample handling (all pH methods): for onboard measurements, seawater sampled directly from Niskin bottles were transferred to 125 mL plastic bottles without headspace. The latter were immersed in water bath maintained a 25(±0.1)°C before spectrophotometric measurements; for delayed measurements, samples were transferred to and stored in 250 mL or 500 mL borosilicate glass bottles, $HgCl_2$-poisoned and kept dark/cool; cell pathlength = 10 cm unless otherwise noted; temperature 25.00 ± 0.05 °C.

pH-1: Spectrophotometric pH (2021 and prior, Salinity > 5)

Conducted by: A. Mucci group (McGill University) pH on the total hydrogen-ion scale was determined spectrophotometrically using m-cresol purple and phenol red indicators on a HP-8453A UV–Vis diode-array spectrophotometer (5 cm quartz cell, 25 ± 0.1 °C). The salinity dependence of the dissociation constants and molar absorptivities of the indicators were taken from Robert-Baldo et al. (1985) and Clayton and Byrne (1993). Replicate precision was better than ± 0.005 pH units (see Delaigue et al. (2020) for further details). Dye additions were kept ≤ 2 µL per 10 mL to minimize perturbation.

pH-2: Potentiometric pH (Salinity < 5)

Conducted by: A. Mucci group (McGill University)

For low-salinity waters, pH was measured on the NBS scale using a Radiometer GK2401C combination electrode at 25 ± 0.1 °C linked to a PHM84 pH/mV meter, calibrated with NIST (formerly NBS) traceable buffers (4.00, 7.00, 10.00). It was subsequently converted to the total hydrogen scale, pH_T, according to the electrode response to a TRIS (tris(hydroxymethyl)aminomethane) buffer solution prepared at S_P = 5 and for which the pH_T was assigned at 25 °C (Millero, 1986). Precision was better than ± 0.005 pH units.

pH-3: Spectrophotometric pH (AZMP 2022)

Conducted by: Fisheries and Oceans Canada (MLI)

Samples were $HgCl_2$-poisoned and stored in the dark until analysis. pH was measured spectrophotometrically using purified m-cresol purple (Robert Byrne, University of South Florida) in 10 cm quartz cells maintained at 25 ± 0.05 °C on Agilent Cary 60 spectrophotometers (Gibb et al., 2023). Absorbances (434, 578, 730 nm) were recorded. Daily TRIS (S_P = 30) measurements verified accuracy ± 0.003 pH units. No explicit dye-perturbation correction was applied..

pH-4: Spectrophotometric pH (post 2021)

Conducted by: CERC.OCEAN (Dalhousie University)

pH was measured with an Apollo SciTech AS-Spec-pH_2 automated system (Fradette, 2025). An Agilent Cary 60 spectrophotometer and Tecan Cavro XLP syringe pump delivered 11 µL of purified mCP per 10 mL sample to a 10 cm water-jacketed cell (25.00 ± 0.05 °C). Double-dye additions (11 µL, 22 µL) quantified dye perturbation (β); absorbances (434, 487, 578, 705 nm) were baseline and impurity-corrected (Douglas and Byrne, 2017a, b; Liu et al., 2011). Daily Dickson CRM checks yielded accuracy and repeatability of ± 0.004 pH units.

pH-5: Spectrophotometric pH (2023)

Conducted by: L. Pascal (Université du Québec à Rimouski, ISMER)

Identical to pH-1.

Total Alkalinity (TALK)

Sample handling (all TA/DIC): borosilicate bottles filled overflowing, no headspace, poisoned with $HgCl_2$ (100 µL sat. per 250 mL), stored dark at room temperature; measurements corrected to 25 °C.

TA-1: Radiometer (pre Sept.2021)

Conducted by: A. Mucci group (McGill University)

Total Alkalinity was measured using a Radiometer TitraLab 865 with a Red Rod pHC2001 electrode; HCl titrant (0.1 M in 0.45 M NaCl) standardized with Dickson CRMs. Reproducibility was better than ≤ 0.1 %.

TA-2: VINDTA 3C (pre Sept.2021)

Conducted by: A. Mucci (McGill University) and H. Thomas (Dalhousie University)

Total Alkalinity was measured on a VINDTA 3C (Mirianda) following (Dickson et al., 2007). Each sequence included triplicate CRMs and blank corrections. Precision was ± 2 µmol kg^{-1}, and accuracy was ≤ 0.05 % vs CRMs.

TA-3: Metrohm Open-Cell (post Sept.2021)

Conducted by: CERC.OCEAN (Dalhousie University)

Measurements were conducted using a Metrohm LL-Ecotrode Plus and Dosimat 876 Plus titrator connected to an Agilent 34970A voltmeter. Open-cell titrations followed Dickson et al. (2007); CRMs #186 and #197 were run daily. Precision was ± 3 µmol kg^{-1}.

TA-4: VINDTA C Open-Cell

Conducted by: Fisheries and Oceans Canada (MLI)

TA was determined using a VINDTA 3C system via open-cell potentiometric titration following established protocols (Dickson et al., 2007; Mintrop et al., 2000). Titrations were performed with 0.1 M hydrochloric acid to the Gran equivalence point using a computer-controlled Dosimat dispenser (Metrohm AG) coupled to a combination glass electrode (Aquatrode). Certified Reference Materials were analyzed regularly (approximately every 2 days) and used to adjust titrant concentration, with the resulting correction factor applied to all TA calculations. Analytical precision from replicates was better than ± 0.1 %.

Dissolved Inorganic Carbon (DIC)

DIC-1: Coulometry / VINDTA (pre Sept.2021)

Conducted by: A. Mucci (McGill University), G. Chaillou (ISMER_UQAR), and H. Thomas (Dalhousie University)

DIC was quantified by SOMMA coulometry or VINDTA 3C; 2014 samples used a SciTech Apollo NDIR analyzer. Calibrations with gravimetrically-prepared Na_2CO_3 and CRM solutions. Precision was ± 0.2 %.

DIC-2: CRDS (post Sept.2021)

Conducted by: CERC.OCEAN (Dalhousie University)

DIC and $\delta^{13}C_{DIC}$ were measured simultaneously with an Apollo AS-D1 acidification system coupled to a Picarro G2201-i CRDS (Cheng et al., 2019; Su et al., 2019). Two-point CRM calibration (#186, #197); Precision was ± 4 µmol kg^{-1} and $\delta^{13}C$ ± 0.15 ‰.

DIC-3: Coulometry / VINDTA 3C

Conducted by: Fisheries and Oceans Canada (MLI)

DIC was measured using a VINDTA 3C system following automated acidification and purge-and-trap extraction. Samples were acidified with phosphoric acid (1 M, 8.5 %) and warmed to 25 °C. Released CO_2 was purged with ultrahigh-purity nitrogen gas, dried, and directed into a coulometric cell for titration and photometric quantification (Johnson et al., 1993). Duplicate or triplicate analyses indicate an analytical precision of better than ± 0.1 %.

Fugacity of CO_2 (fCO2_measured)

fCO_2-1: Pro-Oceanus CO_2-Pro CV

Conducted by: A. Mucci group (McGill University)

Continuous measurements were conducted using a CO_2-Pro CV probe (Pro-Oceanus Systems) with NDIR detection with certified gas calibration. Data was logged every 7 s after 15 min equilibration. Accuracy was ± 1 % and precision was better than ≤ 0.2 %.

Nutrient (Silicate, Reactive Phosphate, Nitrate, Nitrite, Ammonium)

General handling: subsamples filtered through 0.45 µm or 0.8 µm polyethersulfone disposable syringe filters; acid-washed and DI-rinsed labware; for shipboard NH_4^+ immediate analysis; for others frozen at −20 °C or -80 °C within minutes of collection.

NUT-1: Phosphate and Silicate Spectrophotometry (pre Sept 2021)

Conducted by: A. Mucci group (McGill University)

Soluble reactive phosphate (SRP) and dissolved silicate (DSi) were measured spectrophotometrically according to procedures described in Grasshoff et al. (2009). Methods used were a phospho-molybdate-antimony reaction (10 cm cell) for SRP and a molybdate-blue method (1 cm cell) for DSi (Grasshoff et al., 2009). Detection limits were ≈ 0.01 µmol L^{-1} and precision was typically better than ≤ 5 %.

NUT-2: NO_3^-, NO_2^-, SRP, and DSi (pre Sept.2021)

Conducted by: J-É Tremblay's group (Université Laval)

NO_3^-, NO_2^-, SRP, and DSi measured on a Bran + Luebbe AutoAnalyzer III using the Hansen & Koroleff (2007) protocols. DL 0.02–0.10 µmol L^{-1}; replicate precision ± 3 %.

NUT-3: NH_4^+ Fluorometry (pre Sept 2021)

Conducted by: J-É Tremblay's group (Université Laval)

NH_4^+ was analyzed by the fluorometric OPA method (Holmes et al., 1999). Detection limit was 0.01 µmol L^{-1} and precision was better than ± 0.02 µmol L^{-1}.

NUT-4: Skalar SAN++ (post Sept.2021)

Conducted by: CERC.OCEAN (Dalhousie University)

Nutrients were measured on a Skalar SAN++ continuous-flow analyzer. Calibrations used KANSO CRMs every 20 samples and analytical QA/QC followed McGrath et al. (2019). Precision was better than ± 3 % with detection limits ranging 0.02–0.05 µmol L^{-1} depending on the nutrient.

NUT-5: Seal Analytical AutoAnalyzer 3 and Alpkem AutoAnalyzer (AZMP 2022)

Conducted by: Fisheries and Oceans Canada (MLI)

Nutrients were analyzed using Seal Analytical AutoAnalyzer 3 (Blais et al., 2023; Gibb et al., 2023). Colorimetric methods employed included cadmium reduction for NO_3^- + $NO_2^-$and ascorbic-acid molybdate for SRP and DSi. Calibrations were conducted with certified standards (SUPELCO, LabChem). Detection limits ranged from 0.007–0.03 µmol L^{-1} and precision was better than ± 3 %.

NUT-6: Seal Analytical AutoAnalyzer 500 (2023)

Conducted by: Université du Québec à Rimouski (ISMER)

Identical to NUT-2.

<u>Dissolved Organic Carbon (DOC) and Total Nitrogen (TC)</u>

DOC-1: Aurora OI 1030C HTCO or Shimadzu TOC-VCPH 5000A HTCO (pre Sept.2021)

Conducted by: Y. Gélinas' group (Concordia University)

DOC was measured with an Aurora OI 1030C HTCO or a Shimadzu TOC-VCPH 5000A HTCO analyzer at 680 °C (Barber et al., 2017; Lalonde et al., 2014). Samples were filtered (0.7 µm pre-combusted GF/F), acidified (pH 2), and stored at 4 °C. β-alanine or potassium hydrogen phthalate (KHP) standards were used for calibration and precision was better than ± 0.1 mg C L^{-1}.

DOC-2: Shimadzu TOC-L TNM-L (post Sept.2021)

Conducted by: CERC.OCEAN (Dalhousie University)

DOC and total N was analyzed on a Shimadzu TOC-L CPH with TNM-L module (ASTM D8-83-16). Combustion occurred at 720 °C oxidized C and N to CO_2 and NO, detected by NDIR and chemiluminescence. Calibrations were conducted with KHP and KNO_3 standards. Precision was better than ± 2 µmol C kg^{-1} and ± 0.2 µmol N kg^{-1}.

<u>*Stable Isotopes (Delta_C13_DIC, Delta_C13_DOC, Delta_O18_H2O, and Delta_D_H2O)*</u>

ISO-1: $\delta^{13}C_{DIC}$-IRMS (pre Sept.2021)

Conducted by: A. Mucci group (McGill University)

Samples ($HgCl_2$-poisoned) were analyzed at on a Micromass Isoprime CF-IRMS + MultiFlow system at the GEOTOP (UQÀM) *Stable Light Isotope Laboratory (Dr. J.-F. Hélie)*. Results were normalized to NBS-19/LSVEC Precision was better than ± 0.1 ‰.

ISO-2: $\delta^{13}C_{DIC}$ Picarro CRDS (Post-2021)

Conducted by: CERC.OCEAN (Dalhousie University)

$\delta^{13}C_{DIC}$ was measured simultaneously with DIC (DIC-2) on the Apollo AS-D1 + Picarro G2201-i system (Cheng et al., 2019; Su et al., 2019). CRMs #186/#197 were used for calibration. Precision was better than ± 0.15 ‰.

ISO-3: $\delta^{13}C_{DOC}$ Aurora OI 1030C + IRMS

Conducted by: Y. Gélinas' group (Concordia University)

DOC-derived CO_2 from an Aurora OI 1030C HTCO was analyzed on a GV/V Isoprime IRMS (Barber et al., 2017; Lalonde et al., 2014). Precision was typically ± 0.2–1.0 ‰ (matrix dependent).

ISO-4: $\delta^{18}O$ of H_2O (pre Sept.2021)

Conducted by: A. Mucci group (McGill University)

$\delta^{18}O$ was measured by CO_2 equilibration (Epstein and Mayeda, 1953) on a Micromass AquaPrep + Isoprime universal triple collector IRMS in dual inlet mode at the GEOTOP (UQÀM) *Stable Light Isotope Laboratory (Dr. J.-F. Hélie)*. Data were normalized against the three internal reference waters, themselves calibrated against Vienna Standard Mean Ocean Water (V-SMOW) and Vienna Standard Light Arctic Precipitation (V-SLAP). The results are reported on the δ scale in ‰ relative to V-SMOW. Precision was better than ± 0.05 ‰.

ISO-5: $\delta^{18}O$ and δD of H_2O (post Sept.2021)

Conducted by: CERC.OCEAN (Dalhousie University)

$\delta^{18}O$ and δD were measured by Picarro L2130-i CRDS calibrated to V-SMOW2/SLAP2 (Walker et al., 2016). The results are reported on the δ scale in ‰ relative to V-SMOW. Precision was better than ± 0.05 ‰ and ± 0.8 ‰ respectively.

<u>*Nitrous Oxide (N_2O), Transient Tracers (CFC-12 and SF_6), and a Deliberate Tracer (CF_3SF_5)*</u>

TRC-1: N_2O GC-ECD

Conducted by: CERC.OCEAN (Dalhousie University)

Discrete 20 mL sample vials were analyzed on an Agilent 7890B GC-ECD with a 7697A headspace sampler. Analytical methods are described in detail in Pascal et al. (2025). The detection limit was ≈ 0.2 nM and precision were better than ± 2 %.

TRC-2: CFC-12 and SF_6 GC-ECD purge-and-trap

Conducted by: T. Tanhua's group (GEOMAR)

Utilizing a GC-ECD in combination with a purge-and-trap unit (PT5) and following methods described in Bullister et al. (2002) and Tanhua et al. (2004). Detection limits were 0.02 pmol kg^{-1} (CFC-12), 0.03 fmol kg^{-1} (SF_6) and precision was better than ≈ 2 %.

TRC-3: CF_3SF_5

Conducted by: T. Tanhua's group (GEOMAR)

Analyzed using the same GC-ECD + purge and trap system described in TRC-2 and in further detail in (Gerke et al., 2024, 2025; Stevens et al., 2024). Calibrated was conducted with custom, in house standards and results yielded a precision of ± 3 %.

Table S1. Analytical methods applied for each cruise included in the Estuary and Gulf of St. Lawrence dataset (GOSLED, 2003–2023). Each row lists the start and end dates of sampling and the analytical method codes corresponding to Section S1 (Description of Analytical Methods). Method codes identify instrumentation, calibration procedures, and analytical laboratories used for each parameter.

Cruise #	Start date	End date	Methods
1	2003/05/08	2003/05/11	CTD-1, O2-2, TA-1. DOC-1
2	2003/07/09	2003/07/14	CTD-1, O2-1, O2-2, TA-1, pH-1
3	2006/06/11	2006/06/16	CTD-1, O2-2, TA-1, pH-1, pH-2, NUT-1, DOC-1, ISO-1, ISO-3
4	2006/08/15	2006/08/20	CTD-1, O2-1, O2-2, TA-1, pH-1, DOC-1, ISO-1, ISO-3
5	2007/05/14	2007/05/19	CTD-1, O2-2, TA-1, pH-1, pH-2, NUT-1. DOC-1, ISO-1, ISO-3, ISO-4
6	2009/06/08	2009/06/13	CTD-1, O2-1, TA-1, pH-1, pH-2, NUT-1, DOC-1, ISO-1, ISO-4
7	2010/07/02	2010/07/11	CTD-1, O2-1, O2-2, TA-1, pH-1, NUT-1, DOC-1, ISO-4
8	2011/05/16	2011/06/02	CTD-1, O2-1, O2-2, TA-1, pH-1, pH-2, fCO_2-1, NUT-1, DOC-1, ISO-1, ISO-4
9	2013/06/03	2013/06/13	CTD-1, O2-1, O2-2, TA-1, pH-1, pH-2, NUT-2, NUT-3, DOC-1, ISO-3, ISO-4
10	2014/09/13	2014/09/15	CTD-1, O2-1, O2-2, TA-1, TA-2, DIC-1, pH-1, NUT-1, ISO-4
11	2016/05/18	2016/05/26	CTD-1, O2-1, O2-2, TA-1, TA-2, DIC-1, pH-1, pH-2, NUT-1, ISO-1, ISO-4
12	2017/06/13	2017/06/20	CTD-1, O2-1, O2-2, TA-1, TA-2, DIC-1, pH-1, pH-2, NUT-1, DOC-1, ISO-1, ISO-4
13	2018/05/24	2018/06/01	CTD-1, O2-1, O2-2, TA-1, TA-2, DIC-1, pH-1, pH-2, fCO_2-1, NUT-1, DOC-1, ISO-4
14	2019/02/03	2019/02/07	CTD-1, O2-1, O2-2, TA-1, pH-1, pH-2, NUT-2, ISO-4
15	2019/06/19	2019/06/30	CTD-1, O2-1, O2-2, TA-1, TA-2, DIC-1, pH-1, pH-2, NUT-2, ISO-4
16	2020/02/28	2020/03/13	CTD-1, O2-1, O2-2, TA-1, TA-2, DIC-1, pH-1, pH-2, ISO-1, ISO-4
17	2021/08/25	2021/08/30	CTD-1, O2-1, O2-2, TA-1, TA-2, DIC-1, pH-1, pH-2, fCO_2-1, DOC-1, ISO-1, ISO-4
18	2021/10/22	2021/10/29	CTD-1, O2-1, O2-2, TA-3, DIC-2, pH-1, NUT-4, DOC-2, ISO-2, ISO-5
19	2022/06/11	2022/06/23	CTD-1, O2-1, O2-2, TA-3, DIC-2, pH-1, NUT-4, TRC-1, TRC-2, TRC-3, ISO-2, ISO-5
20	2022/10/25	2022/11/10	CTD-1, O2-1, O2-2, TA-4, DIC-2, DIC-3, pH-3, NUT-5, ISO-2, ISO-4, TRC-2, TRC-3
21	2023/07/05	2023/07/11	CTD-1, O2-1, O2-2, TA-3, DIC-2, pH-6, ISO-2, NUT-6

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