



W&M ScholarWorks

---

Data

Virginia Institute of Marine Science

---

6-26-2020

## Associated dataset: Relative impacts of global changes and regional watershed changes on the inorganic carbon balance of the Chesapeake Bay

Pierre St-Laurent

*Virginia Institute of Marine Science*, [pst-laurent@vims.edu](mailto:pst-laurent@vims.edu)

Marjorie A.M. Friedrichs

*Virginia Institute of Marine Science*, [marjy@vims.edu](mailto:marjy@vims.edu)

Follow this and additional works at: <https://scholarworks.wm.edu/data>

 Part of the [Oceanography Commons](#)

---

### Recommended Citation

St-Laurent, Pierre and Friedrichs, Marjorie A.M., "Associated dataset: Relative impacts of global changes and regional watershed changes on the inorganic carbon balance of the Chesapeake Bay" (2020). <https://doi.org/10.25773/a36n-2e90>

This Data is brought to you for free and open access by the Virginia Institute of Marine Science at W&M ScholarWorks. It has been accepted for inclusion in Data by an authorized administrator of W&M ScholarWorks. For more information, please contact [scholarworks@wm.edu](mailto:scholarworks@wm.edu).

## Dataset Information

### Authors:

Pierre St-Laurent and Marjorie A.M. Friedrichs, Virginia Institute of Marine Science (VIMS), William & Mary

### Academic Department and/or Research Group:

Department of Biological Sciences, VIMS

### Title of Dataset:

Associated dataset: Relative impacts of global changes and regional watershed changes on the inorganic carbon balance of the Chesapeake Bay

### Publication Date:

Manuscript accepted in "Biogeosciences" on June 26, 2020

### Description:

This dataset features the results from the numerical simulations described in the associated publication (St-Laurent et al. 2020, Biogeosciences, <https://doi.org/10.5194/bg-2020-117>). The dataset is in the standard, self-documented NetCDF format (extension .nc); see <https://www.unidata.ucar.edu/software/netcdf/> for more information. Files in this format can be manipulated and displayed by a wide range of freely available software. The dataset includes a total of six (6) files that correspond to the six numerical experiments described in the Section "Methods" of the associated publication (St-Laurent et al.). Detailed information about the open source numerical model used in the study (Regional Ocean Modeling System, ROMS) is available at [www.myroms.org](http://www.myroms.org). Additional information about the biogeochemical module is available in the "Supplementary" document of the associated publication (St-Laurent et al.).

### File Description Table:

File Name	Description
experiment_2000_2014_control.nc	Individual terms of the carbon budget for the Control experiment described in the associated publication (St-Laurent et al.)
experiment_1900_1914_atmos_co2.nc	Same as above, but for the sensitivity experiment on atmospheric CO2 concentrations
experiment_1900_1914_temperature.nc	Same as above, but for the sensitivity experiment on temperatures
experiment_1900_1914_n_loadings.nc	Same as above, but for the sensitivity experiment on riverine nitrogen loadings
experiment_1900_1914_c_ta_loadings.nc	Same as above, but for the sensitivity experiment on riverine carbon and alkalinity loadings
experiment_1900_1914_all.nc	Same as above, but for the sensitivity experiment combining all the historical changes at once

**Provide an estimate of overall size of datafiles:**

Four (4) megabytes.

**Abstract:** *Include if data have a unique abstract*

The dataset is a permanent archive of the results presented in the associated publication (St-Laurent et al. 2020, Biogeosciences).

This study used a biogeochemical module embedded in the Regional Ocean Modeling System (ROMS) to examine the relative impacts of global changes and regional watershed changes on the inorganic carbon balance of the Chesapeake Bay over the past century. The numerical experiments contrast the periods 1900-1914 and 2000-2014 and the results are fully described in the associated publication.

**Funding:**

This study is the result of research funded by the National Oceanic and Atmospheric Administration's Ocean Acidification Program under award NA18OAR0170430 to the Virginia Institute of Marine Science. This research was also supported by the National Science Foundation (collaborative grants OCE-1537013, 1536996), NASA IDS (NNX14AF93G) and NASA Carbon Cycle Science to WETCARB (NNX14AM37G). This work used the Extreme Science and Engineering Discovery Environment (XSEDE) supercomputer Comet at SDSC through allocation OCE-160013, which is supported by the National Science Foundation grant number ACI-1548562. The authors also acknowledge William & Mary Research Computing (<https://www.wm.edu/it/rc>) for providing computational resources and/or technical support that have contributed to the results reported within this manuscript.

**Keywords:**

Chesapeake Bay, estuaries, rivers, carbon cycling, modeling

**Associated Publications:**

St-Laurent, P., M.A.M. Friedrichs, R.G. Najjar, E.H. Shadwick, H. Tian, Y. Yao, E.G. Stets, 2020, Relative impacts of global changes and regional watershed changes on the inorganic carbon balance of the Chesapeake Bay, Biogeosciences, <https://doi.org/10.5194/bg-2020-117>, accepted June 26, 2020.

**Additional information:**

Pierre St-Laurent ORCID #: 0000-0002-1700-950