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2019

## Discrete CO<sub>2</sub>-System Measurements in the Chesapeake Bay Mainstem between 2016 and 2018

Elizabeth H. Shadwick

*Virginia Institute of Marine Science, shadwick@vims.edu*

Olivia A. De Meo

*Virginia Institute of Marine Science, odemeo@vims.edu*

Jaclyn R. Friedman

*Virginia Institute of Marine Science, jrfriedman@vims.edu*

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## Dataset Information

**Authors:** *Include full name and affiliated institution*

Dr. Elizabeth H. Shadwick<sup>1,2</sup>

Olivia A. De Meo<sup>1</sup>

Jaclyn R. Friedman<sup>1</sup>

<sup>1</sup>Virginia Institute of Marine Science, William & Mary, Gloucester Point, VA, USA

<sup>2</sup>Now at CSIRO Oceans & Atmosphere, Hobart, TAS, Australia

**Academic Department and/or Research Group:**

Physical Sciences, VIMS

**Title of Dataset:**

Discrete CO<sub>2</sub>-System Measurements in the Chesapeake Bay Mainstem between 2016 and 2018

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2019

**Description:** *Include information of data format and file types, software required to run/analyze files, and information about data collection methods, site location, etc.*

These are discrete observations of total dissolved inorganic carbon (DIC) and alkalinity (TA), and associated computed CO<sub>2</sub>-system parameters, from samples collected throughout the Chesapeake Bay mainstem between 2016 and 2018. Samples were collected on board the *R/V Kerhin* in Maryland and the *R/V Fay Slover* in Virginia at a subset of fixed stations in collaboration with the Chesapeake Bay Water Quality Monitoring Program. Samples were analyzed following standard procedures at the Virginia Institute of Marine Science. The DIC and TA data were then used to compute the remaining CO<sub>2</sub>-system parameters (pH, CO<sub>2</sub> partial pressure (pCO<sub>2</sub>), and carbonate saturation state). A detailed description of sample collection and analytical methods is given Friedman et al., 2019.

There is one comma separated file (csv) per cruise; the name of each file refers to the cruise number assigned by the Chesapeake Bay Monitoring Program. Each variable is structured with rows matching the depth variable, and columns matching the station variable. Where data is unavailable for a particular station and/or depth, the entry is 'NaN'. Variable names are in the first row; units are given in the second row. The table below lists all variables: variables appended with 'CBP' were measured by the Chesapeake Bay Monitoring Program and the data

was obtained from their online data repository; variables appended by 'VIMS' were measured, or calculated, at VIMS.

**File Description Table:** Use this table to describe your individual files and/or folders, add rows as needed.

<b>Variable Name</b>	<b>Description</b>
CRUISE_ID	Chesapeake Bay Program cruise number (CPB)
AGENCY	Agency – either MD DNR or VA DEQ (CPB)
LAB	Laboratory where Chesapeake Bay Program Data were analyzed (CBP)
STATION	Chesapeake Bay Program Station name (CBP)
LATITUDE	Station location (CBP)
LONGITUDE	Station location (CBP)
DATE	Sample collection date (CBP)
TIME	Sample collection time (CBP)
DEPTH	Sample collection depth (CBP)
ALKALINITY	Total alkalinity concentration (VIMS)
CALC_PH	pH [total scale] (VIMS)
CHLA	Chlorophyll-a concentration (CBP)
CO3	Carbonate ion concentration (VIMS)
DIC	Dissolved inorganic carbon concentration (VIMS)
DIN	Dissolved inorganic nitrogen (CBP)
DO	Dissolved oxygen concentration (CBP)
DOC	Dissolved organic carbon (CBP)
FSS	Fixed Suspended Solids (CBP)
HCO3	Bicarbonate ion concentration (VIMS)
NH4F	Ammonium (CBP)
NO23F	Nitrite + Nitrate (CBP)
NO2F	Nitrite (CBP)
NO3F	Nitrate (CBP)
OMEGA_ARAGONITE	Saturation state of aragonite (VIMS)
OMEGA_CALCITE	Saturation state of calcite (VIMS)
PC	Particulate Carbon (CBP)
PCO2	Partial pressure of CO <sub>2</sub> (VIMS)
PH	In situ pH [NBS scale] (CBP)
PO4F	Phosphate (CBP)
SALINITY	Salinity (CBP)
SIO4	Silicate (CBP)
TSS	Total Suspended Sediment (CBP)
WTEMP	Temperature (CBP)

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**Keywords:** *Please list terms to be used for indexing your data*

CO<sub>2</sub>-system; Chesapeake Bay Mainstem; Dissolved Inorganic Carbon; alkalinity; pH; CO<sub>2</sub> partial pressure; carbonate saturation state; Water Quality; Chesapeake Bay Water Quality Monitoring Program

**Associated Publications:**

Friedman, J.R., Shadwick, E.H., Friedrichs, M.A.M., Najjar, R.G., De Meo, O.A., Da, F., and Smith, J.L. (submitted) Seasonal variability of the CO<sub>2</sub>-system in a large coastal plain estuary, *J. Geophys. Res - Oceans*

