Data sets utilized for this research are as follows:

# Derived Data

The three routes with location information only are stored in files route\_1.csv, route\_2.csv and route\_3.csv. They are used as input processed by the R script ship\_route\_calculations.R, which produces ship route information with specific datetimes: route\_1\_datetimes.csv, route\_2\_datetimes.csv and route\_3\_datetimes.csv.

These 3 files are then used as input processed by the R script add\_environmental\_data.R. This script extracts environmental data from satellite data by matching ship position by date. The final output used in the generation of figures is ship\_routes\_with\_environmental\_data.csv. This file was used to make Figure 2 and WebFigure 1.

The data dictionary for files route\_1\_datetimes.csv, route\_2\_datetimes.csv and route\_3\_datetimes.csv is located in file: route\_X\_datetimes\_data\_dictionary.csv

The data dictionary for the final output file ship\_routes\_with\_environmental\_data.csv is located in ship\_routes\_data\_dictionary.csv.

# External 3rd party data

## Global coverage

### Sea surface temperature

Canada Meteorological Center. 2016. CMC 0.1 deg global sea surface temperature analysis. Ver. 3.0. PO.DAAC, CA, USA. Dataset accessed [2016-03-05] at https://doi.org/10.5067/GHCMC-4FM03

### Salinity

E.U. Copernicus Marine Service Information (CMEMS). global-reanalysis-001-030-monthly. Dataset accessed [2016-03-05] at http://marine.copernicus.eu

### Photosynthetically Available Radiation

NASA Ocean Biology Processing Group. 2017. MODIS-Aqua Level 3 Mapped Photosynthetically Available Radiation Data Version R2018.0. NASA Ocean Biology DAAC. Dataset accessed [2021-03-17] at https://doi.org/10.5067/AQUA/MODIS/L3M/PAR/2018

### Chlorophyll-*a*

NASA Ocean Biology Processing Group. 2017. MODIS-Aqua Level 3 Mapped Chlorophyll Data Version R2018.0. NASA Ocean Biology DAAC. Dataset accessed [2021-03-17] at https://doi.org/10.5067/AQUA/MODIS/L3M/CHL/2018

## Location-specific supplements for data gaps

### Panama Canal

water temperature, salinity and chlorophyll-*a* concentrations

The Panama Canal Authority. 2021. Data accessed [2021-03-09] at https://smithsonian.figshare.com/articles/dataset/Panama\_Canal\_Authority\_Water\_Quality\_Monitoring/11793768/1

### Suez Canal

Chlorphyll*-a*

E.U. Copernicus Marine Service Information (CMEMS). dataset-oc-glo-bio-multi-l4-chl\_4km\_monthly-rep.nc. Dataset accessed [2016-03-05] at http://marine.copernicus.eu

### Miami

Chlorophyll-*a*

Data accessed [2021-03-18] at https://mdc.maps.arcgis.com/apps/webappviewer/index.html?id=3fd24515ee614f5db63924d7323a4ea7

### Norfolk

Chlorophyll-*a*

Data accessed [2021-03-18] at http://data.chesapeakebay.net/WaterQuality

### NY/NJ

Chlorophyll-*a*

Data accessed [2021-03-18] at https://www1.nyc.gov/assets/dep/downloads/pdf/water/nyc-waterways/harbor-water-quality-report/2016-new-york-harbor-water-quality-report.pdf

### LA

Chlorphyll-*a*

Data accessed [2021-03-18] at https://www.lacitysan.org/san/sandocview?docname=cnt029139