# GLODAPv2.2022: A data product of internally consistent ocean biogeochemical observations

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**Abstract** - The **Global Ocean Data Analysis Project (GLODAP**, www.glodap.info**)** data product provides access to quality controlled surface to bottom ocean biogeochemical data, with an emphasis on seawater inorganic carbon. **GLODAPv2.2022** is an update of the previous version. GLODAPv2.2022 includes measurements from more than 1.4 million water samples from the global oceans collected on 1085 cruises. The data for the 13 core variables have undergone extensive quality control, especially systematic evaluation of bias.

Data are available at https://www.nodc.noaa.gov/ocads/oceans/GLODAPv2_2022/

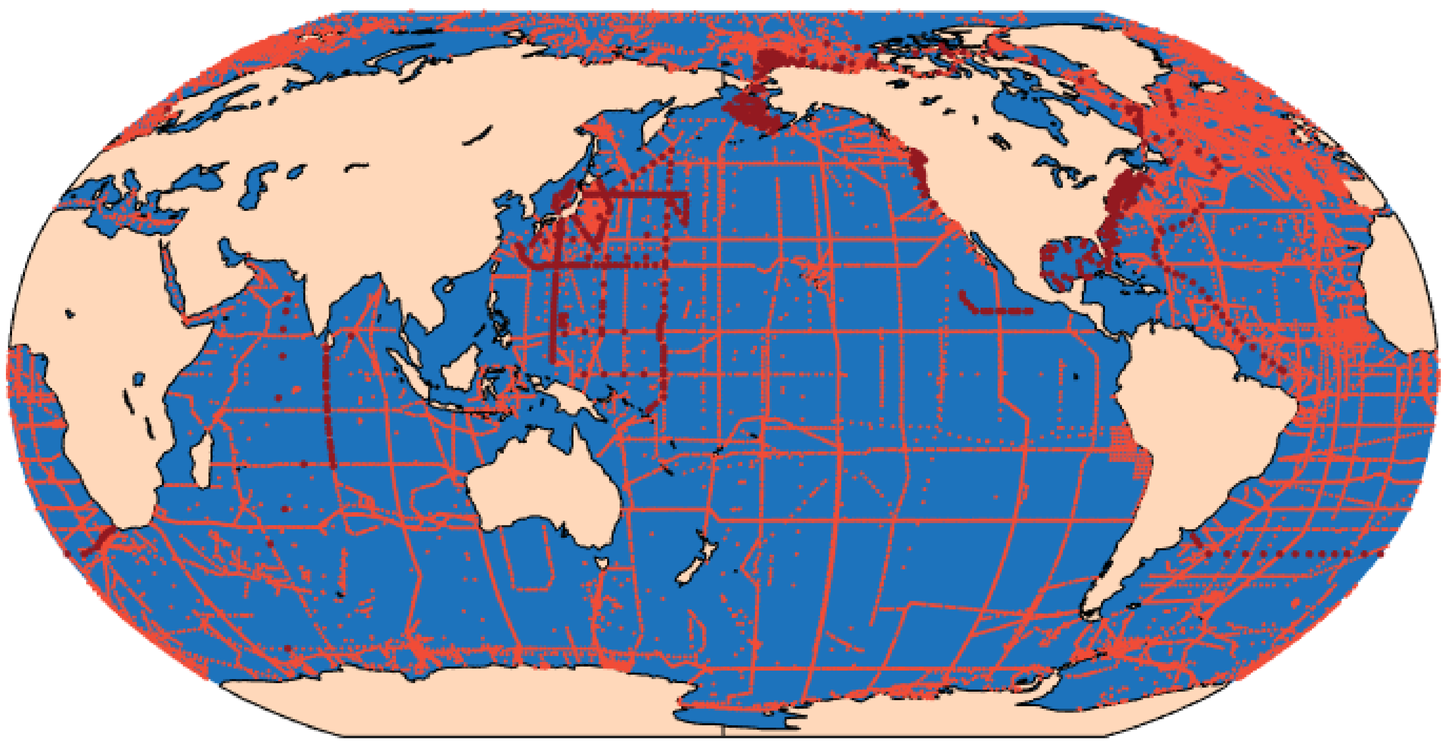

***Figure 1.*** *Station locations of all stations in GLODAPv2.2022. Stations in dark red indicate stations new to this edition.*

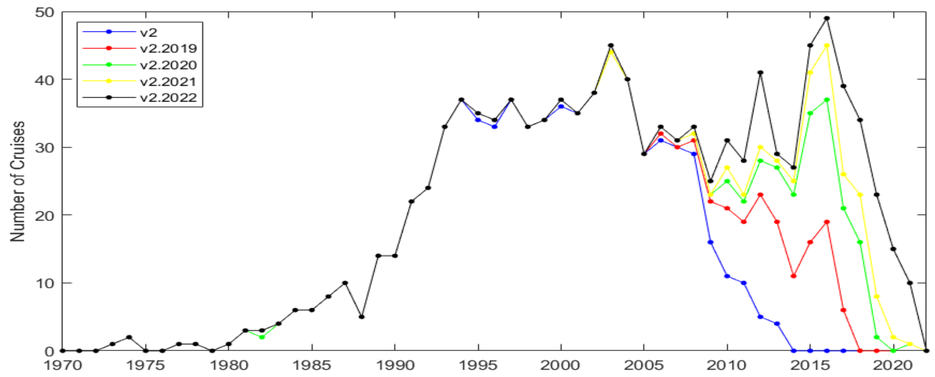


***Figure 2.*** *Number of cruises per year in GLODAPv2, GLODAPv2.2019, GLODAPv2.2020, GLODAPv2.2021 and GLODAPv2.2022*

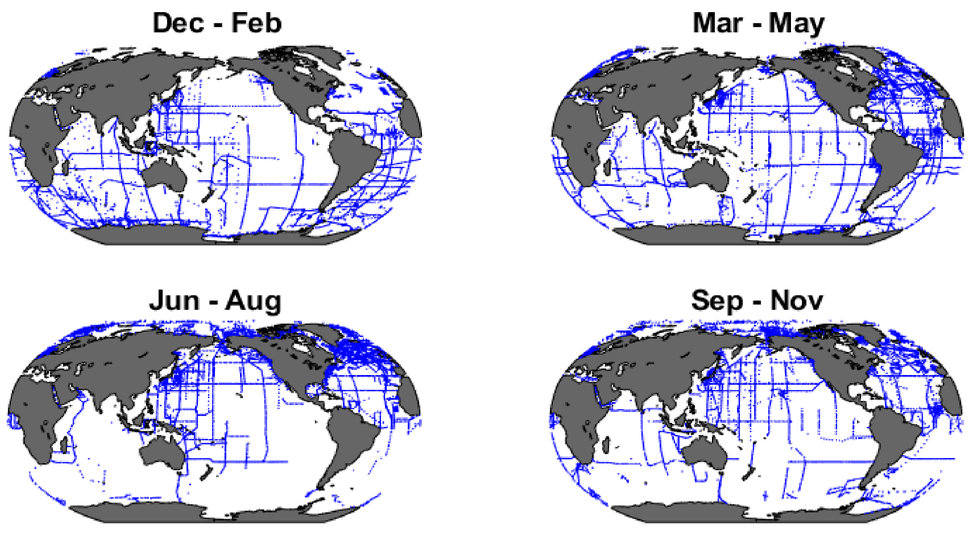


***Figure 3.*** *Seasonal distribution of data in GLODAPv2.2022.*

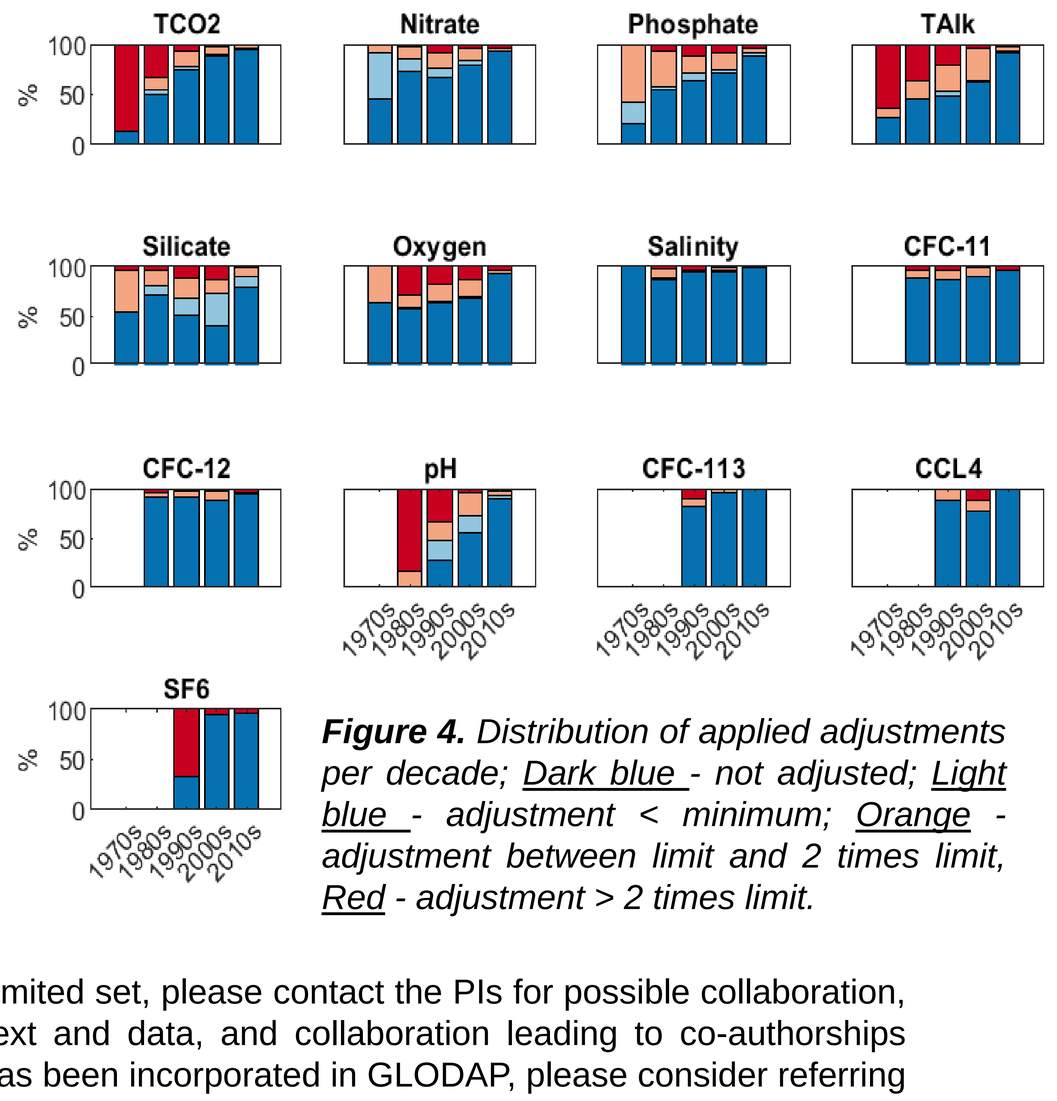


***Figure 4.*** *Distribution of applied adjustments per decade; Dark blue - not adjusted; Light blue - adjustment < minimum; Orange - adjustment between limit and 2 times limit, Red - adjustment > 2 times limit.*

## Key features of GLODAPv2.2022

- A total of 1085 cruises in v2.2022
- Includes more than 1.4 million water samples
- The data for the 13 core variables (salinity, oxygen, nitrate, silicate, phosphate, dissolved inorganic carbon, total alkalinity, pH, CFC-11, CFC-12, CFC-113, CCl4 and SF6) have undergone extensive quality control, especially systematic evaluation of bias.
- The data are available as:
  - Single files as submitted by the data originator but updated to WOCE exchange format
  - Merged data product with adjustments applied to minimize bias.
- The data product is estimated to be consistent to better than
  - 0.005 in salinity,
  - 1% in oxygen,
  - 2% in nutrients
  - 4 µmol $kg^{-1}$ in dissolved inorganic carbon and total alkalinity
  - 0.01–0.02 in pH
  - 5% in the halogenated transient tracers.

## Key NEW features of GLODAPv2.2022

- 96 additional cruises
- Extension of time coverage until 2021
- 2nd QC of SF6

**FAIR Data Use Statement:** If you make heavy use of data from a single cruise or a limited set, please contact the PIs for possible collaboration, and use the DOI of individual cruises. The PIs normally possess insight on context and data, and collaboration leading to co-authorships promotes further sharing of data. If relaying heavily on a particular data product that has been incorporated in GLODAP, please consider referring to those products.

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**References:** Lauvset, S., Lange N., et al., 2022., Earth Syst. Sci. Data, submitted; Lauvset, S., Lange N., et al., 2021., Earth Syst. Sci. Data, 10.5194/essd-2021-234; Olsen, A., Lange N., et al., 2020., Earth Syst. Sci. Data, 10.5194/essd-2020-165.; Olsen, A., Lange, N., et al., 2019. Earth Syst. Sci. Data, 10.5194/essd-11-1437-2019; Olsen, A., Key, R.M. et al., 2016. Earth Syst. Sci. Data, 10.5194/essd-8-297-2016; Lauvset, S. K, Key R.M et al., 2016. Earth Syst. Sci. Data, 10.5194/essd-8-325-2016; Key, R.M., Olsen A., et al., 2015., 10.3334/CDIAC/OTG.NDP093_GLODAPv2