

Production of a Global Carbon “Climatology” for the WOCE/JGOFS Era: Results from the GLODAP SMP Effort

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Data Sets

- WOCE
- NOAA (CGC, OACES)
- JGOFS (Southern Ocean, EQPAC)
- Historical (GEOSECS, TTO-NAS, TTO-TAS, SAVE, INDIGO, Darwin #29, TPS-10,24,47,...)

Primary Parameters

- Hydrography (pressure, temperature, salinity, oxygen, nitrate, nitrite, silicate, phosphate)
- TCO₂
- Total Alkalinity
- CFC
- $\Delta^{14}\text{C}$

Data Products

Bottle Results

- Comma separated numeric tables in common format segregated by ocean. WOCE standard units. Cruise designation by integer code. These file will be too large for PC spreadsheet programs.
- Measured results with “infill”
- Simplified flags (0, 2, 9)
- Calculated parameters: depth, potential temperature, potential density (0,1,2,3,4), AOU, total anthropogenic CO₂, natural ¹⁴C, bomb ¹⁴C, mixing ratios*

Gridded Products

- Objective gridding on 1x1 degree square at 33 levels* to match Levitus climatologies. With a few exceptions the gridding is restricted to the convex hull of the station data. Gridding is by ocean followed by merging with smoothing at common edges.
- Correlation length scales of 1550 km E-W by 740 km N-S for $Z \leq 3000\text{m}$ and 740 km E-W by 740 km E-W below.
- “Smart vertical interpolation with limits.
- Error estimates for each surface.
- Interpolated input data for each surface.
- Matching topography.
- Values: TCO_2 , anthCO_2 , preindustrial CO_2 , alkalinity, $\Delta^{14}\text{C}$, bomb- ^{14}C , natural ^{14}C , water mass fraction*

Summary Products

- Global and basin inventories for mapped parameters
- One degree vertical integrals
- Mean zonal sections
- Mean basin depth profiles
- Water mass inventories*
- Stoichiometric nutrient and oxygen ratio distribution, variability and mean*
- Other????

Graphical Products

- GLODAP web site hosted by CDIAC with color depth sections along the cruise lines, station locations and access to gridded data via LAS