Inorganic Carbon

ECV IN BRIEF

Domain: Ocean
Subdomain: Biogeochemical Carbon Cycle and other GHGs
Scientific Area: Carbon Cycle and other GHGs
Products: Interior ocean carbon storage.

At least 2 of: Dissolved Inorganic Carbon (DIC), Total Alkalinity (TA) or pH; pCO2 (to provide Air-sea flux of CO2)

The ocean is a major component of the global carbon cycle, absorbing enormous quantities of carbon in natural cycles driven by the ocean circulation, biogeochemistry and biology. Since seawater has very high capacity for absorbing carbon, the ocean has an inhibitory effect on the atmospheric accumulation of carbon dioxide and related greenhouse effect. The net ocean carbon uptake depends significantly on chemical and biological activity, and therefore it varies due to changing oceanic conditions and ecosystem composition. The chemical pathways of the inorganic carbon in the ocean mean that this uptake causes a decline in ocean pH, also known as ocean acidification.

ECV Product

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>DEFINITION</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior ocean carbon storage. At least 2 of: Dissolved Inorganic Carbon (DIC), Total Alkalinity (TA) or pH</td>
<td>Interior ocean carbon storage, calculated from at least two of Dissolved Inorganic Carbon, Total Alkalinity or pH. [mol C kg-1]</td>
<td>decadal</td>
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<tr>
<td>pCO2 (to provide Air-sea flux of CO2)</td>
<td>Surface ocean partial pressure of CO2 [µatm]</td>
<td>Weekly to decadal</td>
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1 Current Products and Requirements as in the Implementation Plan 2016 (GCOS-200). GCOS is reviewing and will update the requirements until 2022. More information on: gcos.wmo.int and climatdata.wmo.int.
This list provides sources for openly accessible data sets with worldwide coverage for which metadata is available. It is curated by the respective GCOS ECV Steward(s). The list does not claim to be complete. Anyone with a suitable dataset who would like it to be added to this list should contact GCOS.

- National Centers for Environmental Information Ocean Carbon Data System (NCEI OCADS): [https://www.nodc.noaa.gov/ocads/](https://www.nodc.noaa.gov/ocads/)
- Lamont-Doherty Earth Observatory (LDEO) Climatology: [https://www.nodc.noaa.gov/ocads/oceans/LDEO_Underway_Database/](https://www.nodc.noaa.gov/ocads/oceans/LDEO_Underway_Database/)

**Anthropogenic CO2 in the ocean**

![Figure left: Column inventory of anthropogenic CO2 in mid-1990s. Figure right: Long-term linear trend of pCO2 – pCO2air over the 1982 through 2011 period.](image)
