

ISLSCP II Atmospheric Carbon Dioxide Consumption by Continental Erosion

Summary:

The Continental Atmospheric CO₂ Consumption data set represents gridded estimates for the riverine export of carbon and of sediments based on empirical models. All data exist for the overall continental area in a spatial resolution of 0.5 x 0.5 degree longitude/ latitude. There are two data files (*.zip) with this data set which describe the following: dissolved organic carbon (DOC) export, particulate organic carbon (POC) export, bicarbonate export, export of bicarbonate being of atmospheric origin (also called "atmospheric CO₂ consumption by rock weathering"), and sediment export.

Additional Documentation:

This data set is one of the products of the **International Satellite Land-Surface Climatology Project, Initiative II (ISLSCP II)** data collection which contains 50 global time series data sets for the ten-year period 1986 to 1995. A complete description of the data, it's derivation, acknowledgements, and references provided by the ISLSCP II Data Management Staff is included with this data set as a companion file named [1_atmos_co2_by_erosion_doc.pdf](#).

ISLSCP II is a consistent collection of data sets that were compiled from existing data sources and algorithms, and were designed to satisfy the needs of modelers and investigators of the global carbon, water and energy cycle. The data were acquired from a number of U.S. and international agencies, universities, and institutions. The data and documentation have undergone two peer reviews.

ISLSCP is one of several projects of Global Energy and Water Cycle Experiment (GEWEX) <http://www.gewex.org/> and has the lead role in addressing land-atmosphere interactions -- process modeling, data retrieval algorithms, field experiment design and execution, and the development of global data sets.

Related Data Sets:

- Additional [ISLSCP II](#) data sets are available from the Oak Ridge National Laboratory Distributed Active Archive Center ([ORNL DAAC](#)).

Data Citation:

Cite this data set as follows:

Ludwig, W., P. Amiotte-Suchet, J.L. Probst. 2011. ISLSCP II Atmospheric Carbon Dioxide Consumption by Continental Erosion. In Hall, Forrest G., G. Collatz, B. Meeson, S. Los, E. Brown de Colstoun, and D. Landis (eds.). ISLSCP Initiative II Collection. Data set. Available on-line [<http://daac.ornl.gov/>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. [doi: 10.3334/ORNLDAAC/1019](#)

File Information:

The archived data sets for ISLSCP II have been organized by categories. This data set is in the Carbon category.

Data Set Spatial Extent: Global gridded

Westernmost Longitude: -180 W

Easternmost Longitude: 180 E

Northernmost Latitude: 90 N

Southernmost Latitude: -90 S

Projection: Geographic

Data Set Spatial Resolution: 1.0 degree and 0.5 degree in both latitude and longitude

Data Set Temporal Extent: 1986 through 1995

Data File Format

All of the data files in each data set within the ISLSCP Initiative II data collection are in standard ESRI ArcGIS ASCII GRID format. The file format consists of numerical fields of varying length, which are delimited by a single space and arranged in columns and rows. There are 2 *.zip files with this data set, with 1 data file in 1.0 degree (1deg) and 1 in 0.5 degree (hdeg) resolution.

File Names:

continent_maps_1deg.zip: and **continent_maps_hdeg.zip:** When extrapolated, these contain ASCII files with the file extension .asc. in one (1d) degree (with 360 columns and 180 rows of data) or hdeg resolution (with 720 columns and 360 rows of data):

- cont_flux_co2rw_Xd_map.asc: bicarbonate export (atmospheric origin), also called "atmospheric CO2 consumption by rock weathering".
- cont_flux_doc_Xd_map.asc: dissolved organic carbon (DOC) export
- cont_flux_hco3_Xd_map.asc: bicarbonate export
- cont_flux_poc_Xd_map.asc: particulate organic carbon (POC) export
- cont_flux_tss_Xd_map.asc: sediment export

There are also "difference" files, in half degree only, with the same file names as above, with a file extension .dif. These are ASCII table "difference" files that hold all the points that did not match the ISLSCP II land/water mask, and were removed or added.

There is also one changemap file included in the hdeg .zip file: **cont_flux_hd_changemap.asc**. This file contains all points unchanged ("0"), and all points removed ("-1").

In addition to the ASCII data files, there are 11 image companion files (.gif) included for the visualization of [oceanic flux data](#).

Please refer to [0 atmos co2 erosion readme.txt](#) for a more complete description of the data files, image files, and naming conventions.

References:

Amiotte-Suchet, P. and Probst, J.L., 1995a. A global model for present day atmospheric/ soil CO₂ consumption by chemical erosion of continental rocks (GEM-CO₂). *Tellus*, 47B, 273-280.

Ludwig, W., Probst, J.-L., and Kempe, S. (1996a). Predicting the oceanic input of organic carbon by continental erosion. *Global Biogeochemical Cycles*, 10, p. 23-41.

Data Access:

These data are available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC) [<http://daac.ornl.gov>].

Data Archive Contact Information:

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