ISLSCP II Carbon Dioxide Emissions from Fossil Fuels, Cement, and Gas Flaring

Summary:

This data set contains decadal (1950, 1960, 1970, 1980, 1990 and 1995) estimates of gridded fossil-fuel emissions, expressed in 1000 metric tons C per year per one degree latitude by one degree longitude. The CO_2 emissions are the summed emissions from fossil-fuel burning, hydraulic cement production and gas flaring. The years 1950 to 1990 were developed and compiled using somewhat different procedures and information than the 1995 data. The national annual estimates (Boden et al., 1996) from 1950 to 1990 were allocated to one degree grid cells based on gridded information on national boundaries and political units, and a 1984 gridded human population map (Andres et al., 1996). For the 1995 data, the population data base developed by Li (1996a) and documented by CDIAC (DB1016: Li, 1996b) was used as proxy to grid the 1995 emission estimates.

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. Selected data sets span even longer periods. 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 global data sets were mapped at consistent spatial (1, 0.5 and 0.25 degrees) and temporal (monthly, with meteorological data at finer (e.g., 3-hour)) resolutions and reformatted into a common ASCII format. 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.

Data Citation:

Cite this data set as follows:

Andres, R. J., G. Marland, I. Fung, E. Matthews, and A. L. Brenkert. 2008. ISLSCP II Carbon Dioxide Emissions from Fossil Fuels, Cement, and Gas Flaring. Data set. Available on-line [http://daac.ornl.gov/] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A.

File Information:

The archived data sets for ISLSCP II have been organized by the following categories:

- Carbon -- a collection of atmospheric and surface carbon data sets;
- Hydrology, Soils, and Topography -- a collection of hydroclimatology and surface elevation data sets;
- Near-Surface Meteorology -- a collection of climate and meteorology data sets;
- Radiation and Clouds -- a collection of radiation and cloud data sets;
- Snow, Sea Ice, and Oceans -- a collection of snow, oceans, and sea ice data sets;
- Socioeconomic -- a collection of societal- and economics-based data sets;
- Vegetation -- a collection of vegetation and albedo data sets; and
- Ancillary Data -- a collection of ancillary data sets (e.g., land outlines, land/water masks, lat/long grid coordinates).

This data set is in the Carbon category.

The files have been compressed using the PKZip program. Each uncompressed file contains space-delimited ASCII text with 360 values per line and 180 lines of data (1 degree resolution). Each line is terminated by a newline character. The data are structured so that the upperleft corner of the first pixel is located at 90 North latitude and 180 West longitude. Each pixel represents an 1 by 1 degree area, with the pixel edges falling on whole degree boundaries. These values represent CO_2 emissions from fossil fuel burning, hydraulic cement production, and gas flaring in mg of $C/cm^2/sec$.

Each file name is image for a given decade.

Example: **co2_emis_1d_1990.asc** contains the CO_2 emissions for 1990.

Documentation:

* **1_co2_emissions_doc.pdf:** CDIAC Gridded Carbon Dioxide Emissions (1950-1995).

* **0_co2_emissions_readme.txt**: Description of data files.

Data:

* **co2_emis_1d_1950-1995.zip**

References:

Andres, R.J., G. Marland, I. Fung, E. Matthews, and A.L. Brenkert. 1996b. Geographic patterns of carbon dioxide emissions from fossil-fuel burning, hydraulic cement production, and gas flaring on a one degree by one degree grid cell basis: 1950 to 1990. ORNL/CDIAC-97, NDP-058. Carbon Dioxide Analysis Center, Oak Ridge, Tennessee. Available from http://cdiac.esd.ornl.gov/epubs/ndp/ndp058/ndp058.html

Boden, T.A., G. Marland, and R.J. Andres, 1996. Estimates of global, regional, and national annual CO2 emissions from fossil-fuel burning, hydraulic cement production, and gas flaring: 1950-1992, Rep. ORNL/CDIAC-90, NDP-030/R6, 600 pp., Oak Ridge Nat. Lab., Oak Ridge, Tenn.

Li., Y.-F., A. McMillan, and M.T. Scholtz. 1996a. Global HCH usage with 1 degrees x 1 degrees longitude/latitude resolution. Environmental Science & Technology 30:3525-33.

Li., Y.-F. 1996b. Global Population Distribution (1990), Terrestrial Area and Country Name Information on a One by One Degree Grid Cell Basis. ORNL/CDIAC-96, DB1016, Carbon Dioxide Analysis Center, Oak Ridge, Tenn. http://cdiac.esd.ornl.gov/ndps/db1016.html

Data Access:

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

Data Archive Contact Information:

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