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ISLSCP II GlobalView: Atmospheric CO2 Concentrations

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Revision date: August 22, 2012

Summary:

The GlobalView Carbon Dioxide (CO₂) data product contains synchronized and smoothed time series of atmospheric CO₂ concentrations at selected sites that were created using the data extension and integration techniques described by Masarie and Tans, (1995). The information needed to derive this time series is also in this data set, along with extensive documentation. The longest period of coverage is from 1979 to 2001 with some sites having longer or shorter temporal coverage.

These techniques were developed using CO₂ measurements from the NOAA CMDL cooperative air sampling network and have been successfully applied to other trace gas measurement records. Carbon dioxide data from other laboratories have been extended and integrated with the NOAA CMDL measurements into GlobalView CO₂ with careful attention to both methodology and standard scales.

Note that the GlobalView CO₂ data products are derived from measurements but contain no actual data. To facilitate heterogenous CO₂ data use in carbon cycle modeling studies, the measurements have been processed (smoothed, interpolated, and extrapolated) resulting in extended records that are evenly incremented in time. Note that GLOBALVIEW- CO₂ data and documents are updated once every two years and the most up-to-date references are available at <http://www.cmdl.noaa.gov/ccgg/globalview/>.

There are 92 files with this data set which includes 89 *.zip data files. The other three files include 2 files with site information, one comma-delimited ASCII file (.csv), and one .dat file, and one .dat file which is a single reference marine boundary layer matrix file which contains CO₂ mixing ratios as a function of time and sine of latitude and is a by-product of the data extension procedure.

Additional information and GLOBALVIEW product updates maybe found at: <http://www.esrl.noaa.gov/gmd/ccgg/globalview/>.

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, project and workshop descriptions, acknowledgements, and references provided by the ISLSCP II Data Management Staff are included with this data set in the following companion files: [1_globalview_co2_doc.pdf](#) and [2_gv_co2_2003_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 US and international agencies, universities, and institutions. The data and documentation have undergone two peer reviews.

ISLSCP is one of several projects of the 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:

Masarie, K.A. 2012. ISLSCP II GlobalView: Atmospheric CO2 Concentrations. 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. <http://dx.doi.org/10.3334/ORNLDAAC/1111>

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: point measurements throughout the world

Westernmost Longitude: -180 W

Easternmost Longitude: 180 E

Northernmost Latitude: 90N

Southernmost Latitude: -90 S

Projection: Geographic

Data Set Temporal Extent: 1979 through 2001

Data File Format

There are 92 data files with this data set, which includes 89 compressed *.zip files and 3 additional files described below:

0_gv_table_co2.csv: contains a table with site information for all sites used in this data set and measurement labs.

0_globalview_co2_sites.dat: contains the full names of the sites with the abbreviations, latitude, longitude, and temporal coverage for all sites used in this data set.

0_ref_mbl_mtx_co2.dat: a single reference marine boundary layer matrix file which contains CO2 mixing ratios as a function of time and sine of latitude and is a by-product of the data extension procedure (see Masarie and Tans, 1995).

The 89 .zip files are named after the sampling site and the country or location of the site.

For example:

hat-japan_co2.zip: Site location is Hateruma Island, Japan

pfa-alaska_co2.zip: Site location is Poker Flats, Alaska, U.S.A.

When extrapolated the 89 .zip files contain the following number of dat files:

File name	# of dat files
aia-australia_co2.zip	35
alt-canada_co2.zip	23
ams-france_co2.zip	9
asc-ascension_island_co2.zip	5
ask-algeria_co2.zip	5
avi-virgin_islands_co2.zip	5
azr-azores_co2.zip	5
bal-poland_co2.zip	10
bhd-new_zealand_co2.zip	4
bme-bermuda_co2.zip	5
bmw-bermuda_co2.zip	5
brw-alaska_co2.zip	9
rumania_co2.zip	5
car-colorado_co2.zip	30
cba-alaska_co2.zip	9
cgo-australia_co2.zip	14
chr-christmas_island_co2.zip	5
cmn-italy_co2.zip	4
cmo-oregon_co2.zip	5

cpt-south_africa_co2.zip	4
cri-india_co2.zip	5
crz-crozet_island_co2.zip	5
daa-australia_co2.zip	5
eic-easter_island_co2.zip	5
esp-bc_canada_co2.zip	19
gmi-guam_co2.zip	5
goz-malta_co2.zip	5
gsn-korea_co2.zip	4
haa-hawaii_co2.zip	40
hat-japan_co2.zip	4
hun-hungary_co2.zip	25
ice-iceland_co2.zip	5
itn-north_carolina_co2.zip	20
izo-canary_islands_co2.zip	9
jbn-antarctica_co2.zip	4
key-florida_co2.zip	5
kum-hawaii_co2.zip	9
kzd-kazakstan_co2.zip	5
kzm-kazakstan_co2.zip	5
lef-wisconsin_co2.zip	35
ljo-california_co2.zip	4
lmp-italy_co2.zip	4
maa-antarctica_co2.zip	5
mbc-canada_co2.zip	5
mhd-ireland_co2.zip	13
mid-midway_island_co2.zip	5
mlo-hawaii_co2.zip	19
mnm-japan_co2.zip	4
mqa-macquarie_island_co2.zip	5
nwr-colorodo_co2.zip	5
opw-washington_state_co2.zip	5
orl-france_co2.zip	20
pal-finland_co2.zip	8
pfa-alaska_co2.zip	35
poc0-pacific_ocn_equatr_co2.zip	5
pocn-pacific_ocn_north_co2.zip	45
pocs-pacific_ocn_south_co2.zip	35
prs-italy_co2.zip	8
psa-antarctica_co2.zip	10
rpb-barbados_co2.zip	5
rta-cook_islands_co2.zip	25
ryo-japan_co2.zip	4
sbl-nova_scotia_canada_co2.zip	5
sch-germany_co2.zip	4
scsn-south_china_sea_co2.zip	35
sey-seychelle_islands_co2.zip	5
shm-alaska_co2.zip	5
sis-scotland_co2.zip	5
smo-samoa_co2.zip	13

spo-antarctica_s_pole_co2.zip	18
spo-antarctica_south_pl_co2.zip	18
stm-norway_atlantic_ocn_co2.zip	10
norway_atlantic_ocn_co2.zip	10
stp-canada_pacific_ocn_co2.zip	9
syo-antarctica_co2.zip	9
tap-korea_co2.zip	5
tdf-argentina_co2.zip	5
trm-france_co2.zip	5
uta-utah_co2.zip	5
uum-mongolia_co2.zip	5
wes-germany_north_sea_co2.zip	4
wis-israel_co2.zip	5
wkt-texas_co2.zip	30
wlg-china_co2.zip	9
wpo-western_pacific_ocn_co2.zip	48
yon-japan_co2.zip	4
zep-spitsbergen_co2.zip	9

The .dat file names use the following format:

site/prog_data_group_lab#_sampling_strategy_sampling_platform_qualifier_ch4.dat

where:

site/prog: 3-character alphanumeric field specifying site or program code.

data group: grouping of data within the file.

lab# (contributing laboratory): Two-character numeric field identifies the measurement laboratory (00-99).

Sampling strategy: Single alphanumeric character (0-9,a-z,A-Z) indicates the sampling strategy.

- D=Discrete
- C=Continuous/Quasi-continuous
- E=Event
- I=Integrated

Sampling platform: Single alphanumeric character (0-9,a-z,A-Z) indicates the sampling platform.

- 0=Single Fixed Position
- 1=Ship
- 2=aircraft
- 3=Tower
- 4=Kite
- 5=Balloon
- 6=Firn/Ice Core

Qualifier: Multiple alphanumeric character field (0-9,a-z,A-Z) identifies the file's contents. Files with the "ext", "wts", "var", and "seas" qualifier exist for all sites. Files with the "diu" qualifier accompany a subset of extended records derived from high-resolution measurement records where the diurnal cycle is a dominant feature of the observations. Files with the "tod" qualifier accompany a subset of extended records derived from discrete measurements where sample collection times have been made available.

- _ext=Extended Record
- _wts=Extension Weights
- _var=Atmospheric Variability
- _seas=Average Seasonal Cycle Statistics
- _diu=Average Diurnal Cycle Statistics
- _mtx=MBL Reference Matrix
- _tod=Sampling Time-Of-Day Summary

Example data file names:

cgo_02D0_ext_co2.dat: extended CO2 record derived from CSIRO discrete measurements at Cape Grim.

lef011_00C3_diu_co2.dat: average diurnal cycle of CO2 derived from CMDL continuous measurements from a tower in Wisconsin. Sampling height is 11

m.

orl035_11D2_seas_co2.dat: average seasonal cycle of CO2 derived from the LSCE discrete measurements from aircraft. Altitude bin is centered at 3.5 km.

orl035_11D2_var_co2.dat: average atmospheric variability of CO2 derived from the LSCE discrete measurements from aircraft. Altitude bin is centered at 3.5 km. Location is France.

Refer to [0_globalview_co2_sites.dat](#) for site names and site information.

Refer to [0_globalview_c02_readme.txt](#) and [1_globalview_co2_doc.pdf](#) for a more complete description of the data files and naming conventions.

References:

Masarie, K.A. and P.P Tans, "Extension and Integration of Atmospheric Carbon Dioxide Data into a Globally Consistent Measurement Record. Journal of Geophysical Research, Vol. 100, No. D6, p. 11593-11610. June 1995.

Data Access:

This data is available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC).

Data Archive Center:

Contact for Data Center Access Information:

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