

Carbon Dioxide Information Analysis Center (CDIAC)

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PROJECT START DATE: January 1, 1982

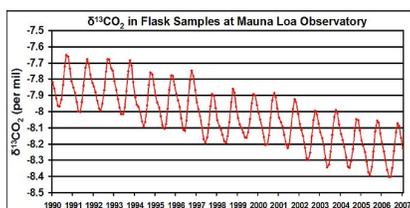
PROJECT END DATE: Ongoing

SPONSOR: US DOE, Office of Science, Office of Biological and Environmental Research (BER)

PARTNERS: National Aeronautic and Space Administration's (NASA), National Oceanic and Atmospheric Administration, US Department of Agriculture, National Science Foundation, US Geological Survey, US Global Change Research Program

PROJECT WEBSITE: <http://cdiac.ornl.gov/>

PROJECT DESCRIPTION



As part of a larger effort to increase user access to carbon isotope data, CDIAC has a link to the National Oceanic and Atmospheric Administration (NOAA), Earth System Research Laboratory (ESRL) carbon-13 flask data files.

The Carbon Dioxide Information Analysis Center (CDIAC) is the primary climate-change data and information analysis center of the U.S. Department of Energy (DOE). CDIAC is located at ORNL and includes the World Data Center for Atmospheric Trace Gases.

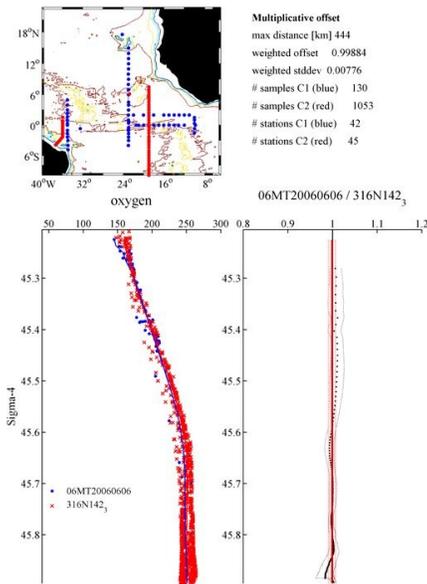
CDIAC's data holdings include records of the atmospheric concentrations of carbon dioxide (CO₂) and other radiatively active gases; the role of the terrestrial biosphere and the oceans in the biogeochemical cycles of greenhouse gases; emissions of carbon dioxide from fossil-fuel consumption and land-use changes; long-term climate trends; the effects of elevated carbon dioxide on vegetation; and the vulnerability of coastal areas to rising sea level. CDIAC provides data management support for major projects, including the AmeriFlux Network, continuous observations of ecosystem level exchanges of CO₂, water, energy and momentum at different time scales for sites in the Americas; the Ocean CO₂ Data Program of CO₂ measurements taken aboard ocean research vessels; DOE-supported FACE (Free Air CO₂ Enrichment) experiments, which evaluate plant and ecosystem response to elevated CO₂ concentrations, and HIPPO (High-Performance Instrumented Airborne Platform for Environmental Research Pole-to-Pole Observations), which measures greenhouse gases and other relevant atmospheric species pole-to-pole.



SIGNIFICANCE

The Carbon Dioxide Information Analysis Center (CDIAC) serves as the primary climate-change data and information analysis center for DOE. CDIAC responds to ~ 350,000 data and information requests annually from users worldwide. The CDIAC provides data in many environmental subject areas: carbon cycle, climate, coastal sensitivity to sea level rise; energy and socioeconomic systems; land-use and ecosystems; oceanic trace gases; solar and atmospheric radiation; trace gas emissions; vegetation response to CO₂ and climate; fossil-fuel CO₂ emissions; atmospheric trace gas measurements; and terrestrial carbon management. CDIAC's diverse data collection includes the world's largest collection of ocean carbonate chemistry measurements and estimates of car-

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Offset found between two cruises for oxygen.
Crossover analysis is an objective comparison of deep water data from one cruise with data from other cruises in the same area.

Tanhua, T. 2010. Matlab Toolbox to Perform Secondary Quality Control (2nd QC) on Hydrographic Data. ORNL/CDIAC-158. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee. doi:10.3334/CDIAC/otg.CDIAC_158

bon releases from fossil-fuel consumption at global, regional, and national scales. The CDIAC facilitates the exchange of data and access to data, helps improve and maintain the quality of valuable data sets, and provides value-added services to climate researchers. CDIAC's gridded fossil-fuel CO₂ emission data are being used as baseline data for the IPCC AR5 model runs.

INTERESTING FINDINGS

CDIAC has served as the primary climate-change data and information analysis center of DOE since 1982. For nearly 30 years, CDIAC has provided climate scientists with data and information from a variety of climate-related areas that are critical to valid climate research. CDIAC is continually providing new climate change products. Most recently, CDIAC has provided a link to the National Oceanic and Atmospheric Administration's Earth System Research Laboratory carbon-13 flask data files in an effort to increase user access to carbon isotope data. In August of 2010, The Matlab Toolbox to Perform Secondary Quality Control on Hydrographic Data became available at CDIAC. This package allows crossover analysis to be performed.

Also in August of 2010, two new data sets were made available on the CDIAC Web servers. The first is an annual update to global, regional, and national fossil-fuel CO₂ emissions, which contains estimates of emissions from 1751 to 2007. The second takes those emissions and maps them on a 1° degree latitude by one degree longitude basis for the entire globe. These data products were contributed by Thomas Boden, Gregg Marland, and Robert Andres. Recent CDIAC research results, publications, data products, and tools are highlighted monthly at <http://cdiac.ornl.gov/whatsnew.html>.