CO2 CARBON ISOTOPE RATIOS AT THE NIWOT RIDGE AMERIFLUX SITE
Release 2.3 May 20, 2015

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Data were collected using a tunable diode laser absorption spectrometer as described in these publications (the first group is most relevant, the second group includes papers from a preliminary experiment at Niwot Ridge in 2003, and an instrumentation paper):


Data Version History:

Version 1: released May 2007
2003 data used in Bowling et al. (2005), Schaeffer et al. (2008), and Zobitz et al. (2006, 2007)


Version 2.1 – 2.2
Shared with a few interested colleagues.

Version 2.3
Released Jan 2010, updated periodically with new data. New time stamp format used.
Note – the instrument failed on Nov 8 2014 and there is no data from then until end of 2014.
This release includes 2003 data from ver 1 (unchanged).
POLICY REGARDING USE OF THIS DATA

(This is primarily the data-sharing policy of the National Oceanic and Atmospheric Administration, Global Monitoring Division, Carbon Cycle Greenhouse Gases Group, with which we are not affiliated. However, we have adopted their policy and they deserve credit for the text below.)

We reserve the right to modify this data in the future (for example, unknown new corrections may be required). Changes will be posted to data website.

These data are made freely available to the public and the scientific community in the belief that their wide dissemination will lead to greater understanding and new scientific insights. The availability of these data does not constitute publication of the data. We rely on the ethics and integrity of the user to assure that we receive fair credit for our work. If the data are obtained for potential use in a publication or presentation, Dave Bowling should be informed at the outset of the nature of this work. If the data are essential to the work, or if an important result or conclusion depends on our data, co-authorship or acknowledgement in publications may be appropriate. This should be discussed at an early stage in the work. Manuscripts using our data should be sent to Dave Bowling for review before they are submitted for publication so we can ensure that the quality and limitations of the data are accurately represented. Any publication of these data must include appropriate acknowledgement of funding sources listed above.

Use of these data implies an agreement to reciprocate. Laboratories making similar measurements agree to make their own data available to the general public and to the scientific community in an equally complete and easily accessible form. Modelers are encouraged to make available to the community, upon request, their own tools used in the interpretation of the data, namely well documented model code, transport fields, and additional information necessary for other scientists to repeat the work and to run modified versions. Model availability includes collaborative support for new users of the models.

Every effort is made to produce the most accurate and precise measurements possible. However, we reserve the right to make corrections to the data based on recalibration of standard gases or for other reasons deemed scientifically justified. We are not responsible for results and conclusions based on use of these data without regard to this warning.
DATA DESCRIPTION AND FILE FORMATS

VER1: Data for 2003 did not change in the version 2.x releases. Relevant files:
data policy ver1.doc
2003_Niwot_TDL_data_6min_v1.txt

VER2: Relevant files:
data policy ver 2.3 150520.doc (this file)
Niwot_TDL_data_30min_v2_3_150520.txt
Niwot_TDL_data_30min_v2_3_150520.mat (Matlab format version of the same)
Niwot_read_data_v2_3.m

VER2 files are comma-delimited text files, one file for the period Sept 2005-May 2015. There may be up to 9 heights measured during a given measurement cycle, including these heights above ground:
0.1, 0.5, 1.0, 2.0, 5, 7, 9, 11, and 21.5 m

The 21.5m height is co-incident with the eddy covariance measurement height on the AmeriFlux tower (PI Russ Monson, University of Colorado). During 2003, a complete cycle (all heights) was measured every 6 minutes, during 2005 and later, a complete cycle was measured every 10 minutes. Data from 2003 represent measurements every 6 minutes, and the time stamp represents the middle of the 6-minute measurement period.
Data from 2005-2014 are 30-min means of the 10-minute measurements. Time stamps represent the beginning of the 30-minute (or 10-minute) period. Earlier versions of this documentation file (081022) listed this incorrectly as the middle.

Ver 2.3 data can be read by the Matlab file Niwot_read_data_v2_3.m

The period of record is:
2003, day 184 to day 289
2004, no data
2005, day 257 to day 365
2006-present, continuous with some gaps

Data files have the following columns, in order:
Decimal day (continuous, relative to 2006, Jan 1 2006 at midnight = day 1.0)
Year
Month
Day of month
Hour
minute
CO2 21.5m (ppm)
CO2 11m
CO2 9m
CO2 7m
CO2 5m
CO2 2m
CO2 1m
CO2 0.5m
CO2 0.1m
d13C 21.5m (permil)
d13C 11m
d13C 9m
d13C 7m
d13C 5m
d13C 2m
d13C 1m
d13C 0.5m
d13C 0.1m
Missing data are indicated by NaN.