Round Lake Hourly Mean and Daily Daytime Average CO_2 Mixing Ratio Data from the Ring 2 Tall Tower Network in the U.S. Midwest

FILE NAMES:
rl_level1_hourly
rl_level1_dda
rl_level2_hourly
rl_level2_dda

DATA FORMAT: .csv

DATA VERSION: 20101109

STATION NAME: Round Lake

STATE: Minnesota

COUNTRY/TERRITORY: USA

LATITUDE: 43.5263 N

LONGITUDE: -95.4137 W

ELEVATION: 469 m AMSL

CONTRIBUTOR: Pennsylvania State University (PSU)

OBSERVATION CATEGORY: Air sampling observation

NUMBER OF SAMPLING HEIGHTS: 2

SAMPLING HEIGHTS: 30 m AGL (level 2), 110 m AGL (level 1)

PARAMETER: CO_2 dry mole fraction

TIME PERIOD: 2007 - 2009 (inclusive; all available data)

ACTUAL SAMPLING DATES:

Site Code	Full Name	Latitude (degrees N)	Longitude (degrees W)	Elevation (m AMSL)	Sampling Heights (m AGL)	Sampling Dates
RL	Round Lake, Minnesota	43.5263	-95.4137	469	Level 2 (30)	05/03/2007-04/21/2009
					Level 1 (110)	05/03/2007-11/04/2009

MISSING DATA: -999 [NOTE: The missing value -999 denotes missing CO_2 data, time, or both, or when error is estimated to be > 0.5 ppm (not recommended to be used). There are cases where both Time and CO_2 are -999, and also cases where only CO_2 is -999. This is an artifact of the data processing. When only CO_2 -999 indicates that the error is likely to be greater than 0.5 ppm, whereas when both Time and CO_2 are -999 indicates missing data (instrument off due to malfunction).]

TIME INTERVAL: hourly average or daily daytime average (dda; 12:00-17:00 local) (Note: Except during hours in which the field standards were sampled, the upper level (110–140 m AGL) at each site was sampled for 45 min and the lower level (30 m AGL) was sampled for 15 min of each hour. These values were then used to compute averages at hourly resolution. Daily daytime averages were calculated from hourly values between 12:00–17:00 local standard time.)

MEASUREMENT UNIT: ppm

MEASUREMENT METHOD: CRDS (Picarro) (NOTE: Instrument serial code is provided in the data files.)

SAMPLING TYPE: in situ

LOCAL TIME ZONE: CST (UTC - 6 hours)

TIME BASIS FOR REPORTING DATES AND TIMES: Coordinated Universal Time (UTC)

REFERENCE SCALE: Traceable to NOAA scale

CREDIT FOR USE:

TECHNICAL CONTACT: co2@meteo.psu.edu

DATA COLUMN HEADINGS:

Inst: Serial number of WS-CRDS (Picarro) instrument used to collect data

Site: 2 letter code indicating site of data collection

Level: Level of air sample. Level 1 is the higher level (110 m AGL) and level 2 is the lower level (30 m AGL).

Year: Year (YYYY)

DOY: Day of Year (DD). DOY = 1 is January 1.

Hour: Hour of collection (HH_UTC). Hour 0 = Midnight UTC. Only applies to hourly data.

Time: Fractional day of year, decimal time (UTC). Only applies to hourly data.

CO2 (ppm): Hourly mean CO_2 dry mole fraction in ppm or daily daytime average (dda) CO_2 dry mole fraction (12:00 – 17:00 local time) in ppm

QualityFlag:
1: error estimated to be < 0.1 ppm

2: error estimated to be > 0.1 ppm but < 0.2 ppm
3: error estimated to be > 0.2 ppm but < 0.3 ppm
4: error estimated to be > 0.3 ppm but < 0.5 ppm
5: error estimated to be > 0.5 ppm (not recommended to be used; CO2 listed as -999)
0: missing data (CO2 listed as -999)

The error was estimated based on the degree to which the daily field calibration tank measurement differed from their known values, or problems with flow rate or missing daily field calibration. The field calibration tank values for the Ring 2 sites are:
Kewanee: 360.84 and 395.48 ppm
Centerville: 361.00 and 396.14 ppm
Mead: 361.82 and 417.40 ppm
Round Lake: 337.76 and 364.16 ppm
Galesville: 360.54 and 422.89 ppm (after 11/3/08, 351.20 and 413.68 ppm)

Please contact PSU Department of Meteorology CO_2 group (co2@meteo.psu.edu) if you have any questions regarding the data.