Data collected via relatively low-cost, high-precision CO2 mixing ratio measurement systems, developed in collaboration with NCAR-ATD, are reported here. These data were collected to support inverse analyses of the terrestrial carbon balance at regional to continental scales. The systems use LICOR-820 non-dispersive infrared analyzers rather than the more expensive, but lower noise LICOR-6262 or LICOR-7000, since fast time response is not required for this application and the noise of the LICOR-820 can be reduced sufficiently by averaging over two minutes. Two nafion driers are used, ensuring that the difference in water vapor concentration between the dried sample and the moistened calibration gases is less than 300 ppm (corresponding to an error in the [CO2] measurement of 0.1 ppm). Flow control, such that the flow rate changes by less than 4 cc/min between the sample air and calibration gases, is achieved using a mini-regulator. Leak tests are automated and the systems are temperature controlled. For more information, see Stephens et al. (2011).

The locations of the measurements are
Austin Cary, FL
Canaan Valley, WV
Chestnut Ridge, TN
Missouri Ozarks, MO
Fort Peck, MT
Tower heights ranged from 3 m AGL to 61 m AGL (see table below).

Site	Date Installed	Latitude	Longitude	Elevation (m_above_MSL)	Tower_Height (m AGL)
Austin Cary Memorial Forest, FL	Jan 2010 (decommissioned September 2014)	29.7381 N	82.2188W	44	32
Canaan Valley, WV	Sept 2007 (decommissioned July 2016)	39.1190 N	79.4523W	1026	10
Chestnut Ridge, TN	Sept 2006 (decommissioned March 2015)	35.9311 N	84.3324W	373	61

Missouri Ozarks, MO	Oct 2006 (decommissioned 2011)	38.7441 N	92.2000W	219	~30
Mead, NE *	Mar 2006 (decommissioned 2011)	41.1649 N	96.4701W	362	3 (6 during corn_season)
Fort Peck, MT (decommissioned July 2008)	Dec 2006 (decommissioned July 2008)	48.3079 N	105.1005W	634	~3

* Penn State Univ / Univ of Nebraska-Lincoln collaboration

Information on calibration tanks are in the below tables.

Austin Cary, FL
Calibration tank info (ppm CO2)

	Cal 1	Cal 2				
Dec 2009	361.82	417.40				
8 Dec 2010	348.11	394.59				

Canaan Valley, WV
Calibration tank info (ppm CO2)

	Cal 1	Cal 2	Cal 3	Cal 4	Target	Archive
19 Apr	339.30	364.48	394.59	415.68	361.14	361.98

2006						
7 Sept 2007	335.05	370.45	406.12	417.02	363.91	384.93
12 Jan 2010					371.70	

Chestnut Ridge, TN
Calibration tank info (ppm CO2)

	Cal 1	Cal 2	Cal 3	Cal 4	Target	Archive
Sept 2006	337.71	364.97	398.38	418.45	363.26	361.14
Nov 2010					364.67	
Dec 2012				427.23	398.31	

Missouri Ozarks, MO
Calibration tank info (ppm CO2)

	Cal 1	Cal 2	Cal 3	Cal 4	Target	Archive
1 Oct 2006	340.34	367.59	399.89	429.27	337.23	359.67
14 Dec 2006					379.76	
28 Apr 2007					382.67	
21 June 2008					365.88	
July 2009	334.01	353.91	382.45			
16 Nov 2009				396.14		
11 Feb				406.27	372.17	

2010						
Dec 2012	349.26	371.46		426.71	383.50	
Apr 2015					395.05	
16 Nov 2015			397.32		427.23	

Mead, NE
Calibration tank info (ppm CO2)

	Cal 1	Cal 2	Cal 3	Cal 4	Target	Archive
12 Mar 2006	336.48	361.17	389.09	416.37	363.27	358.90
24 Nov 2006					380.00	
19 Apr 2007					356.80	
Mar 2010					382.38	
May 2012	352.85	372.64	400.64	428.19	404.84	

Fort Peck, MT
Calibration tank info (ppm CO2)

	Cal 1	Cal 2	Cal 3	Cal 4	Target	Archive
6 Dec 2006	334.21	353.93	392.63	420.30	405.26	373.47
12 Dec 2007					361.98	

FAIR USE POLICY:

We reserve the right to make corrections to the data based on scientific grounds, e.g., recalibration of standard gases or discovery of operational issues not known at the time of the release. If the data are obtained for potential use in a publication or presentation, kindly inform Penn State personnel (co2data@meteo.psu.edu) of the nature of this work.

Thanks!