

<b>Sample number</b>	<b>First sampling date, mo/day/yr</b>	<b>Second sampling date, mo/day/yr</b>	<b>Sample mass, <math>\mu\text{g C}</math></b>	<b><math>^{14}\text{CO}</math>, molecules / cc STP</b>	<b>Error</b>
Sample 1	11/14/17	11/21/17	21.8	9.83	0.25
Sample 2	11/28/17	12/4/17	22.6	11.48	0.36
Sample 3	11/28/17	12/5/17	22.0	11.08	0.34
Sample 4	12/12/17	12/19/17	21.6	7.52	0.21
Sample 5	12/26/17	1/2/18	21.6	8.60	0.30
Sample 6	12/26/17	1/2/18	21.8	8.39	0.30
Sample 7	1/11/18	1/18/18	22.2	10.44	0.27
Sample 8	1/25/18	2/1/18	22.1	8.45	0.31
Sample 9	1/25/18	2/1/18	21.7	8.39	0.32
Sample 10	2/8/18	2/15/18	23.1	12.94	0.38
Sample 11	2/8/18	2/15/18	21.8	13.04	0.38
Sample 12	2/22/18	3/1/18	22.1	9.51	0.25
Sample 14	3/6/18	3/15/18	21.4	9.76	0.32
Sample 16	4/5/18	4/12/18	21.9	6.74	0.18
Sample 17	4/17/18	4/26/18	22.4	9.92	0.32
Sample 18	4/17/18	4/26/18	21.4	9.68	0.32
Sample 19	5/3/18	5/8/18	21.9	8.66	0.23
Sample 20	5/18/18	5/24/18	21.7	8.25	0.30
Sample 21	5/18/18	5/24/18	21.4	8.72	0.31
Sample 22	5/31/18	6/7/18	22.1	9.81	0.26
Sample 23	6/19/18	N/A	21.5	5.44	0.16
Sample 24	6/26/18	7/3/18	20.9	6.99	0.29
Sample 25	6/26/18	7/3/18	20.8	6.77	0.28
Sample 26	7/12/18	7/17/18	21.2	5.92	0.27
Sample 27	7/12/18	7/17/18	20.6	6.21	0.28
Sample 28	8/2/18	N/A	50.4	4.99	0.12
Sample 29	8/14/18	N/A	50.6	6.11	0.32
Sample 30	8/14/18	N/A	50.4	6.41	0.31
Sample 31	8/21/18	8/28/18	49.3	5.75	0.12
Sample 32	9/4/18	9/11/18	48.3	6.35	0.24
Sample 33	9/4/18	9/11/18	49.7	6.55	0.24
Sample 35	10/4/18	10/11/18	52.0	6.89	0.25
Sample 36	10/4/18	10/11/18	49.7	6.98	0.25
Sample 37	10/18/18	10/25/18	49.8	6.94	0.13
Sample 38	11/1/18	11/6/18	50.0	8.22	0.25
Sample 39	11/1/18	11/6/18	48.2	8.02	0.25

Table S1. Summary of all successfully measured MLO  $^{14}\text{CO}$  samples. Samples with "N/A" indicated for second sampling date were collected in a single session. Sample carbon mass is as determined at ANSTO. Blank-corrected  $^{14}\text{CO}$  values are shown. Errors shown for  $^{14}\text{CO}$  are  $1 \sigma$ . Based on  $^{14}\text{CO}$  and  $[\text{CO}]$  values, we suspect that Samples 13 and 15 were accidentally switched during processing; these samples are therefore not included. Sample 34 was lost due to a procedural error.

Blank Number	First sampling date, mo/day/yr	Second sampling date, mo/day/yr	Sample mass, $\mu\text{g C}$	$^{14}\text{CO}$ , molecules / cc STP	Error
Blank 1	11/14/17	11/21/17	18.4	1.47	0.05
Blank 2	12/12/17	12/19/17	18.3	1.70	0.05
Blank 3	1/11/18	1/18/18	20.0	1.64	0.06
Blank 4	2/22/18	3/1/18	20.2	1.64	0.06
Blank 5	3/22/18	3/29/18	18.5	1.38	0.05
Blank 6	4/5/18	4/12/18	18.8	1.02	0.04
Blank 7	5/3/18	5/8/18	18.9	1.27	0.06
Blank 8	5/31/18	6/7/18	18.0	1.51	0.06
Blank 9	6/19/18	N/A	18.3	1.15	0.05
Blank 10	8/2/18	N/A	49.4	0.74	0.05
Blank 11	8/21/18	8/28/18	50.0	1.22	0.06
Blank 13	10/18/18	10/25/18	49.2	1.39	0.06

Table S2. Table S1. Summary of all successfully measured MLO  $^{14}\text{CO}$  blanks. Blanks with “N/A” indicated for second sampling date were collected in a single session. Sample carbon mass is as determined at ANSTO. Errors shown for  $^{14}\text{CO}$  are  $1 \sigma$ . Blank 12 was lost due to a procedural error.