Stephen R. Springston (srs@bnl.gov)

Started: 4/28/2014

Last Update: 6/15/2015

Data Acknowledgement:

 See www.arm.gov/publications/procedures

 All instruments and the platform were provided with funds from the American Recovery and Reinvestment Act.

Program: GoAmazon IOP which for MAOS was conducted at the T3 site near Manacapuru, Amazonia, Brazil beginning ~2/1/2014.

Platform: The MAOS-C (Mobile Aerosol Observing System-Chemistry).

These file(s) contain(s) the CO data measured in MAOS-C (Mobile Aerosol Observing System-Chemistry). Data are reported at 1- resolution. All zero, calibration and non-operational periods have been removed (empty field or NAN).

Instrument: These files contain the CO, N2O and H2O measurements made with a Los Gatos ICOS Analyzer.

Air is sampled at 10-m AGL through a fast flow (~10 LPM) ½” o.d. PFA inlet. In MAOS C for GoAmazon, the fast-flow manifold was sleeved in a 2” flexible tube with a counterflow of warmer ambient air to prevent any condensation inside the structure. The inlet to the instrument is a ¼” PFA tube off a tee in the inlet manifold. There is a 47-mm diam. Teflon filter in-line with the sample (Millipore LSWP04700, 5µm LS) downstream of the calibration point.

The instrument simultaneously measures all three species. A standard addition calibration of CO is normally done 2/day at 03:00 and 15:00. The standard addition is made to the trace-gas sampling manifold and the actual concentration depends on the combined flow rate of all instruments plus bypass flow. This has some variation, but provides an excellent confirmation of the instrument response. The N2O and H2O measurements have not been calibrated.

File Structure:

As follows convention, data are reported as tab-delimited ASCII files. Files are formatted such that they are self documenting. For each data row:

Row 1: Filename

Row 4 (col 1 only): ARM Climate Research Facility

Row 5: SitePlatform

Row 7: Last revised date

Row 9: Instrument

Row 13: Instrument Mentor/Affiliation

Rows 14-19: Comments (operational conditions, calibrations, etc.)

Rows 21-24: Constants (usually defined in Comments)

Row 35: Column title

Row 36: Column units line 1

Row 37: Column units line 2

Row 40: First row of data

Data is given in an arbitrary number of columns. The first column is date/time

Time - Time is reported in UTC as set by an NTP server. Following convention, the time is the beginning of the period. The parameter reported at this time is the average of all points >= the time and < the next time. Data are reported at 1- s resolution. All non-operational periods have been removed (empty field or NAN).

Accuracy and Precision:

Carbon Monoxide – Units: ppmv (uncorrected for water vapor), Precision: ±0.002 ppmv (2 sigma @ 1s). Accuracy: greater of 0.002 ppmv or ~5% (Mentor estimate)

Nitrous Oxide – Units: ppmv (uncorrected for water vapor), Precision: To be determined. Accuracy: To be determined.

Water Vapor – Units: ppmv (uncorrected for water vapor), Precision: To be determined. Accuracy: To be determined.

Notes:

DQR 141010.1 - During the first IOP, the instrument displayed sporadic, step functions in N2O and H2O. The CO values appear unaltered and the CO standard additions showed consistent values. However, extensive conversations with the vendor led to changing the temperature sensor and replacing the hard drive (along with an updated software package). After that change on 2014-08-13, the unit began to periodically drop out on all three channels as of 2014-08-15 11:00. This went on until 2014-10-02 12:00 when the vendor was finally able to negotiate ARM network protocols and log into the system. Data between 2014-08-15 and 2014-10-02 should be considered suspect.

DQR 141010.6 – During a filter change, a new Operator inadvertently used the impermeable blue spacer instead of the white Teflon filter. A drop in sample pressure was noted. The Mentor identified the problem and the filter was replaced. The affected period is 2014-10-05 19:04 to 2014-10-07 13:11. The data for this period are irrecoverable.

Posting History

4/28/2014 Posting to: c1.xdc.arm.gov /incoming/AOS\_QC/GoAmazon/co

mao\_ReadMe\_CO.docx (This file in Word)

mao\_ReadMe\_CO.txt (This file in ASCII)

maomaoscs1.co.01s.00.20140101.000000.m02.tsv

maomaoscs1.co.01s.00.20140101.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20140101.000000.m02.tsv.plots.pdf

maomaoscs1.co.01s.00.20140201.000000.m02.tsv

maomaoscs1.co.01s.00.20140201.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20140201.000000.m02.tsv.plots.pdf

maomaoscs1.co.01s.00.20140301.000000.m02.tsv

maomaoscs1.co.01s.00.20140301.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20140301.000000.m02.tsv.plots.pdf

10/12/2014 Posting to: c1.xdc.arm.gov /incoming/AOS\_QC/mao/co

mao\_ReadMe\_CO.docx (This file in Word) (revised)

mao\_ReadMe\_CO.txt (This file in ASCII) (revised)

maomaoscs1.co.01s.00.20140401.000000.m02.tsv

maomaoscs1.co.01s.00.20140401.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20140401.000000.m02.tsv.plots.pdf

maomaoscs1.co.01s.00.20140501.000000.m02.tsv

maomaoscs1.co.01s.00.20140501.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20140501.000000.m02.tsv.plots.pdf

maomaoscs1.co.01s.00.20140601.000000.m02.tsv

maomaoscs1.co.01s.00.20140601.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20140601.000000.m02.tsv.plots.pdf

maomaoscs1.co.01s.00.20140701.000000.m02.tsv

maomaoscs1.co.01s.00.20140701.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20140701.000000.m02.tsv.plots.pdf

maomaoscs1.co.01s.00.20140801.000000.m02.tsv

maomaoscs1.co.01s.00.20140801.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20140801.000000.m02.tsv.plots.pdf

maomaoscs1.co.01s.00.20140901.000000.m02.tsv

maomaoscs1.co.01s.00.20140901.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20140901.000000.m02.tsv.plots.pdf

11/13/2014 Posting to: c1.xdc.arm.gov /incoming/AOS\_QC/mao/co

mao\_ReadMe\_CO\_20141113.docx (This file in Word)

mao\_ReadMe\_CO\_20141113.txt (This file in ASCII)

 Files of 1-Hz data and associated processing log files.

maomaoscs1.co.01s.00.20141001.000000.m02.tsv

maomaoscs1.co.01s.00.20141001.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20141001.000000.m02.tsv.plots.pdf

1/18/2015 Posting to: c1.xdc.arm.gov /incoming/AOS\_QC/mao/co

mao\_ReadMe\_CO\_20150118.docx (This file in Word)

mao\_ReadMe\_CO\_20150118.txt (This file in ASCII)

Monthly files of 1-Hz data as a tab-delimited text file, text processing log file(s) and associated pdf time series plots.

maomaoscs1.co.01s.00.20141101.000000.m02.tsv

maomaoscs1.co.01s.00.20141101.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20141101.000000.m02.tsv.plots.pdf

maomaoscs1.co.01s.00.20141201.000000.m02.tsv

maomaoscs1.co.01s.00.20141201.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20141201.000000.m02.tsv.plots.pdf

3/2/2015 Posting to: c1.xdc.arm.gov /incoming/AOS\_QC/mao/co

mao\_ReadMe\_CO\_20150302.docx (This file in Word)

mao\_ReadMe\_CO\_20150302.txt (This file in ASCII)

Monthly files of 1-Hz data as a tab-delimited text file, text processing log file(s) and associated pdf time series plots.

maomaoscs1.co.01s.00.20150101.000000.m02.tsv

maomaoscs1.co.01s.00.20150101.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20150101.000000.m02.tsv.plots.pdf

maomaoscs1.co.01s.00.20150201.000000.m02.tsv

maomaoscs1.co.01s.00.20150201.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20150201.000000.m02.tsv.plots.pdf

4/21/2015 Posting to: c1.xdc.arm.gov /incoming/AOS\_QC/mao/co

mao\_ReadMe\_CO\_20150421.docx (This file in Word)

mao\_ReadMe\_CO\_20150421.txt (This file in ASCII)

Monthly files of 1-Hz data as a tab-delimited text file, text processing log file(s) and associated pdf time series plots.

maomaoscs1.co.01s.00.20150301.000000.m02.tsv

maomaoscs1.co.01s.00.20150301.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20150301.000000.m02.tsv.plots.pdf

4/30/2015 Posting to: c1.xdc.arm.gov /incoming/AOS\_QC/mao/co

mao\_ReadMe\_CO\_20150430.docx (This file in Word)

mao\_ReadMe\_CO\_20150430.txt (This file in ASCII)

Monthly files of 1-Hz data as a tab-delimited text file, text processing log file(s) and associated pdf time series plots.

Note: This month’s files are a revision of the previous submission with identical data, but noting DQR D150327.13

maomaoscs1.co.01s.01.20150201.000000.m02.tsv

maomaoscs1.co.01s.01.20150201.000000.m02.tsv.log.txt

maomaoscs1.co.01s.01.20150201.000000.m02.tsv.plots.pdf

5/29/2015 Posting to: c1.xdc.arm.gov /incoming/AOS\_QC/mao/co

mao\_ReadMe\_CO\_20150529.docx (This file in Word)

mao\_ReadMe\_CO\_20150529.txt (This file in ASCII)

Monthly files of 1-Hz data as a tab-delimited text file, text processing log file(s) and associated pdf time series plots.

maomaoscs1.co.01s.00.20150401.000000.m02.tsv

maomaoscs1.co.01s.00.20150401.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20150401.000000.m02.tsv.plots.pdf

6/15/2015 Posting to: c1.xdc.arm.gov /incoming/AOS\_QC/mao/co

mao\_ReadMe\_CO\_20150615.docx (This file in Word)

mao\_ReadMe\_CO\_20150615.txt (This file in ASCII)

Monthly files of 1-Hz data as a tab-delimited text file, text processing log file(s) and associated pdf time series plots.

maomaoscs1.co.01s.00.20150501.000000.m02.tsv

maomaoscs1.co.01s.00.20150501.000000.m02.tsv.log.txt

maomaoscs1.co.01s.00.20150501.000000.m02.tsv.plots.pdf