

* =mandatory field)

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 - **Dataset_Info:***
 - Dataset_ID*: [TAO140W_0N_May2008_Sep2009](#)
 - **Submission_Dates:***
 - Initial_Submission: [20101021](#) (YYYYMMDD)
 - Revised_Submission: [20130827](#) (YYYYMMDD)
 - **Cruise_Info:***
 - **Experiment**:
 - Experiment_Name*:
 - **Cruise:(-)**
 - Cruise_ID: (EXPOCODE)
 - Section: (Leg)
 - **Geographical_Coverage:***
 - Geographical_Region:
 - **Bounds**:
 - Westernmost_Longitude:
Enter decimal fractions of degrees:
or Degrees, Minutes, Seconds:
 - Easternmost_Longitude:
Enter decimal fractions of degrees: [-139.95](#) (+ = E, - = W)
or Degrees, Minutes, Seconds:
 - Northernmost_Latitude:
Enter decimal fractions of degrees: [+0.03](#) (+ = N, - = S)
 - Southernmost_Latitude:
Enter decimal fractions of degrees:
 - **Temporal_Coverage**:
 - Start_Date: [20080510](#) (YYYYMMDD)
 - End_Date: [20090903](#) (YYYYMMDD)
 - **Vessel:*** [Mooring platform](#)
 - Vessel_Name:
 - Vessel_ID:
 - Country:
 - Vessel_Owner:
- **Variables_Info:***
 - **Variable**:
 - Variable_Name and Description*:
- [xCO₂ SW \(wet\) \(umol/mol\) - Mole fraction of CO₂ in air in equilibrium with the seawater at sea surface temperature and measured humidity.](#)
- [CO₂ SW QF – Quality Flag for xCO₂ SW \(wet\).](#)
- [H₂O SW \(mmol/mol\) - Mole fraction of H₂O in air from equilibrator .](#)
- [xCO₂ Air \(wet\) \(umol/mol\) - Mole fraction of CO₂ in air from airblock, 4 feet above the sea surface at measured humidity.](#)
- [CO₂ Air QF – Quality Flag for xCO₂ Air \(wet\)](#)
- [H₂O Air \(mmol/mol\) - Mole fraction of H₂O in air from airblock, 4 feet above the sea surface.](#)

- Licor Atm Pressure (hPa) – Atmospheric pressure at the airblock, 4 feet above the sea surface
- Licor Temp (C) – Temperature of the Infrared Licor 820 in degrees Celsius
- % O₂ - The percent oxygen of the surface seawater divided by the percent oxygen of the atmosphere at 4 feet above the sea surface. Disclaimer: The oxygen measurement is made in the equilibrated air. We have found that the oxygen does not come to complete equilibrium so any rapid changes in oxygen do not get properly captured using this system. Therefore, we tend to use the oxygen data only as a qualitative sense of the biology. It is not a quantitative measure.
- SST (C) - Sea Surface Temperature collected by NOAA/PMEL/TAO provide internally recorded SST data at 10 minute resolution. Daily data was only available at time of CO₂ QC. NOAA/PMEL/TAO advises to check the TAO site at the time of use for the most accurate data available.
- Salinity - Sea Surface Salinity collected by NOAA/PMEL/TAO. Papa records conductivity data at 10 minute intervals and then computes hourly averaged salinity during post-processing. Daily data was only available at time of CO₂ QC. NOAA/PMEL/TAO advises to check the TAO site at the time of use for the most accurate data available.
- xCO₂ SW (dry) (umol/mol) – Mole fraction of CO₂ in air in equilibrium with the seawater at sea surface temperature (dry air).
- xCO₂ Air (dry) (umol/mol) – Mole fraction of CO₂ in air at the airblock, 4 feet above the sea surface (dry air).
- fCO₂ SW (sat) uatm – Fugacity of CO₂ in air in equilibrium with the seawater at sea surface temperature (100% humidity). Since the measurements are taken at the sea surface, warming calculations are not necessary.
- fCO₂ Air (sat) uatm – Fugacity of CO₂ in air at the airblock, 4 feet above the sea surface (100% humidity).
- dfCO₂ – Difference of the fugacity of the CO₂ in seawater and the fugacity of the CO₂ in air (fCO₂ SW - fCO₂ Air).

- **Method_Description:***

- **Equilibrator_Design:**

- Equilibrator_Type: (show pick list) Bubble Equilibrator
 - Equilibrator_Volume: (L) N/A
 - Water_Flow_Rate: (L/min) N/A
 - Headspace_Gas_Flow_Rate: (L/min) ~600 cc/min
 - Vented: (show pick list) Yes

- Measurement_Method: Absolute, non-dispersive infrared (NDIR) gas analyzer

- Manufacturer_of_Calibration_Gas: NOAA Earth System Research Laboratory (ESRL)

- **CO₂_Sensors:**

- **CO₂_Sensor:**

- Manufacturer: Licor
 - Model: Environmental_Control: LI-820
 - Resolution: 0.01 ppm
 - Uncertainty: < 2.5% of reading with 14 cm bench (stated)
<1.5 ppm determined in lab
 - CO₂_Sensor_Calibration: (For each calibration gas, document traceability to an internationally recognized scale, including date and place of last calibration. Include uncertainty of assigned value.)

At the beginning of each sample, the instrument self-calibrates using a zero and high standard. The zero standard is generated by cycling a small amount of air through a soda lime chamber. The high standard is from a cylinder of calibrated standard reference gas, 540.66 umol/mol, from ESRL. ESRL

standards are traceable to WMO x93 scale with a stated reproducibility of 0.06 micromole/mole.

- **Other_Sensors:**
 - Manufacturer: Oxygen Sensor
Maxtec
 - Model: Max-250
 - Resolution: 0.01 %
 - Uncertainty: $\pm 2.0\%$ Full Scale over operating temperature range
 $\pm 1.0\%$ Full Scale @ constant temperature and pressure
 - Calibration: (For each sensor of pressure, temperature, and salinity, document traceability to an internationally recognized scale, including date and place of last calibration.)
Factory calibrated before purchase. Recalibrated to sea level atmospheric air every 7 days.
- **Other_Sensors:**
 - Manufacturer: Humidity Sensor
Sensirion
 - Model: SHT71
 - Resolution: 0.01 %
 - Uncertainty: Measurement range: 0-100% RH
Absolute RH accuracy: $\pm 3\%$ RH (20-80% RH)
Repeatability RH: $\pm 0.1\%$ RH
 - Calibration: (For each sensor of pressure, temperature, and salinity, document traceability to an internationally recognized scale, including date and place of last calibration.)
Factory calibrated before purchase.
- Method_References: (Publication(s) describing method)

Sabine, C. (2005): High-resolution ocean and atmosphere pCO₂ time-series measurements. The State of the Ocean and the Ocean Observing System for Climate, Annual Report, Fiscal Year 2004, NOAA/OGP/Office of Climate Observation, Section 3.32a, 246–253.

- Additional Information

- All measurements are at sea surface temperature and atmospheric pressure.
- During the equilibration cycle, a closed loop of air equilibrates with seawater for 10 minutes. Once the equilibration period is complete, the pump stops and the system opens to the atmosphere allowing the pressure to equilibrate with atmospheric pressure. Measurements are recorded for 30 seconds at 2 hertz and then averaged.
- During the air cycle, fresh air is pumped through the detector for 1 minute. Once the pump stops, the system opens to the atmosphere allowing the pressure to equilibrate with atmospheric pressure. Measurements are recorded for 30 seconds at 2 hertz and then averaged.
- The gas streams for both the air cycle and equilibrator cycle are partially dried before entering the detector. The values listed as wet xCO₂ generally have relative humidity levels ranging from 40 to 80 percent. The humidity levels increase over the course of a deployment.
- Sampling occurs every 3 hours. The infrared detector is calibrated at the beginning of every sampling period. Averaged data and standard deviations for each measurement are transmitted back daily.
- To calculate the dry measurements, the water mole fraction in the Licor detector must be known. A relative humidity sensor is located immediately downstream of the detector.

- As part of the QC process, each data set is compared with the Marine Boundary Layer (MBL) data from GlobalView-CO₂. The CO₂ air data from this deployment, May 2008 to Sep 2009, were -3.7 ± 0.8 $\mu\text{mol/mol}$ on average of the MBL data and therefore a correction of +4 was applied to air and sea water data.

GLOBALVIEW-CO₂: Cooperative Atmospheric Data Integration Project - Carbon Dioxide. CD-ROM, NOAA ESRL, Boulder, Colorado [Also available on Internet via anonymous FTP to ftp.cmdl.noaa.gov, Path: ccg/co2/GLOBALVIEW], 2010

-During the QC process, an adjustment to the Licor pressure is also made based on each sensor's bias to barometric pressure as measured in the lab. For this system, the Licor pressure was adjusted by +0.12 kPa.

- The buoy moved about 10nm between 9:00 and 12:00 on December 28, 2008. Prior to that, the average latitude and longitude were +0.01 and -139.87, and after that the average latitude and longitude were +0.04 and -140.03. The average latitude and longitude recorded in the data file was the average of the entire deployment.

- No data = -9.999 or -999

- Data_set_References: (Publication(s) describing data set) None
- Citation: (How to cite this data set) Sutton, A., C. Sabine, and S. Maenner. 2009. High-resolution ocean and atmosphere pCO₂ time-series measurements from mooring TAO140W.
- **Data_Set_Link:**
 - URL*: http://www.pmel.noaa.gov/co2/moorings/eq_pco2/eq_pco2.htm
 - Label*: PMEL CO₂ Group – TAO140W mooring
 - Link_Note: (Optional instructions or remarks)(m s t)

Quality Flags definitions:

- 2 = Acceptable measurement;
- 3 = Questionable measurement;
- 4 = Bad measurement
- 5 = Not reported;
- 9 = Sample not drawn for this measurement from this bottle.

Quality Flag Log for this dataset.

Date	Measurement	Value (Dry)	Flag	Comments
5/27/2008 21:16	xCO ₂ _SW	491.9317406	3	CO ₂ data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
5/27/2008 21:16	xCO ₂ _Air	387.1226942	3	CO ₂ data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
5/29/2008 21:16	xCO ₂ _SW	499.6260869	3	CO ₂ data submitted was adjusted by - 2 ppm b/c span calibration was off as predicted by change in Licor temperature
5/29/2008 21:16	xCO ₂ _Air	387.3525181	3	CO ₂ data submitted was adjusted by - 2 ppm b/c span calibration was off as predicted by change in Licor temperature
7/5/2008 12:16	xCO ₂ _SW	588.1958179	3	150 ppm increase in CO ₂ sw over a day - no obvious clues in diagnostics
7/5/2008 15:16	xCO ₂ _SW	629.358692	3	150 ppm increase in CO ₂ sw over a day - no obvious clues in diagnostics

7/5/2008 18:16	xCO2_SW	546.644088	3	150 ppm increase in CO2 sw over a day - no obvious clues in diagnostics
7/5/2008 21:16	xCO2_SW	634.6627454	3	150 ppm increase in CO2 sw over a day - no obvious clues in diagnostics
7/6/2008 0:16	xCO2_SW	562.4454161	3	150 ppm increase in CO2 sw over a day - no obvious clues in diagnostics
7/6/2008 3:16	xCO2_SW	601.0302968	3	150 ppm increase in CO2 sw over a day - no obvious clues in diagnostics
7/6/2008 6:16	xCO2_SW	528.0573813	3	150 ppm increase in CO2 sw over a day - no obvious clues in diagnostics
7/6/2008 9:16	xCO2_SW	532.8139618	3	150 ppm increase in CO2 sw over a day - no obvious clues in diagnostics
7/6/2008 12:16	xCO2_SW	589.106393	3	150 ppm increase in CO2 sw over a day - no obvious clues in diagnostics
7/6/2008 15:16	xCO2_SW	649.7513168	3	150 ppm increase in CO2 sw over a day - no obvious clues in diagnostics
8/6/2008 6:16	xCO2_SW	487.7336401	3	CO2 data submitted was adjusted by + 2 ppm b/c span and zero calibration were off as predicted by change in Licor temperature
8/6/2008 6:16	xCO2_Air	385.8664179	3	CO2 data submitted was adjusted by + 2 ppm b/c span and zero calibration were off as predicted by change in Licor temperature
8/13/2008 0:16	xCO2_SW	496.9730221	3	CO2 data submitted was adjusted by - 2 ppm b/c span calibration was off as predicted by change in Licor temperature
8/13/2008 0:16	xCO2_Air	386.0702098	3	CO2 data submitted was adjusted by - 2 ppm b/c span calibration was off as predicted by change in Licor temperature
8/14/2008 9:16	xCO2_SW	555.127193	4	bad measurement due to change in pressure between equil pump on and off
9/14/2008 6:16	xCO2_SW	488.6539707	3	CO2 data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
9/14/2008 6:16	xCO2_Air	385.3688163	3	CO2 data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
9/28/2008 3:16	xCO2_SW	499.422216	3	CO2 data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
9/28/2008 3:16	xCO2_Air	384.8164211	3	CO2 data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
10/25/2008 18:16	xCO2_SW	536.7422621	3	likely bad measurement due to change in pressure between equil pump on and off
11/1/2008 21:16	xCO2_SW	508.7517533	3	CO2 data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
11/1/2008 21:16	xCO2_Air	384.7906446	3	CO2 data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
11/3/2008 6:16	xCO2_SW	508.3013714	3	likely bad measurement due to change in pressure between equil pump on and off
11/4/2008 0:16	xCO2_SW	501.1810056	3	likely bad measurement due to change in pressure between equil pump on and off
11/10/2008 12:16	xCO2_SW	497.7382041	3	CO2 data submitted was adjusted by - 2 ppm b/c span calibration was off as predicted by change in Licor temperature
11/10/2008 12:16	xCO2_Air	385.4593164	3	CO2 data submitted was adjusted by - 2 ppm b/c span calibration was off as predicted by change in Licor temperature
11/19/2008 3:16	xCO2_SW	553.9462956	3	likely bad measurement due to change in pressure between equil pump on and off
11/19/2008 6:16	xCO2_SW	556.4764166	3	likely bad measurement due to change in pressure between equil pump on and off
11/19/2008 9:16	xCO2_SW	553.3423592	3	likely bad measurement due to change in pressure between equil pump on and off
11/19/2008 12:16	xCO2_SW	549.5715918	3	likely bad measurement due to change in pressure between equil pump on and off
11/19/2008 15:16	xCO2_SW	563.222447	3	likely bad measurement due to change in pressure between equil pump on and off

11/19/2008 18:16	xCO2_SW	560.204533	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/19/2008 21:16	xCO2_SW	573.2394369	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/20/2008 0:16	xCO2_SW	571.8855961	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/20/2008 3:16	xCO2_SW	567.0801579	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/20/2008 6:16	xCO2_SW	562.077172	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/20/2008 9:16	xCO2_SW	556.6695527	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/20/2008 12:16	xCO2_SW	558.6470412	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/20/2008 15:16	xCO2_SW	554.8184514	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/20/2008 18:16	xCO2_SW	555.3216016	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/20/2008 21:16	xCO2_SW	557.525392	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/21/2008 0:16	xCO2_SW	548.139659	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/21/2008 3:16	xCO2_SW	545.5795031	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/21/2008 6:16	xCO2_SW	544.6463098	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/21/2008 9:16	xCO2_SW	542.758868	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/21/2008 12:16	xCO2_SW	544.0028434	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/21/2008 15:16	xCO2_SW	540.9454463	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/21/2008 18:16	xCO2_SW	538.4359094	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/21/2008 21:16	xCO2_SW	542.450754	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/22/2008 0:16	xCO2_SW	541.5507752	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/22/2008 3:16	xCO2_SW	537.4428537	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/22/2008 6:16	xCO2_SW	535.3518531	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/22/2008 9:16	xCO2_SW	533.7437246	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/22/2008 12:16	xCO2_SW	533.7971156	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/22/2008 15:16	xCO2_SW	529.4400873	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/22/2008 18:16	xCO2_SW	532.6555332	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/22/2008 21:16	xCO2_SW	533.8675836	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/23/2008 0:16	xCO2_SW	532.8852247	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/23/2008 3:16	xCO2_SW	533.8400973	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/23/2008 6:16	xCO2_SW	528.4266752	3	likely bad measurement due to change in
pressure between equil	pump on and off			

11/23/2008 9:16	xCO2_SW	521.5280777	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/26/2008 21:16	xCO2_SW	567.4317178	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/27/2008 0:16	xCO2_SW	593.2181211	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/27/2008 3:16	xCO2_SW	559.8093178	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/27/2008 6:16	xCO2_SW	565.6197421	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/27/2008 9:16	xCO2_SW	576.9503376	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/27/2008 12:16	xCO2_SW	573.5001884	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/27/2008 15:16	xCO2_SW	567.9967646	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/27/2008 18:16	xCO2_SW	579.1577055	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/27/2008 21:16	xCO2_SW	590.8482358	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/28/2008 0:16	xCO2_SW	593.6247709	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/28/2008 3:16	xCO2_SW	587.9971141	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/28/2008 6:16	xCO2_SW	585.5972095	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/28/2008 9:16	xCO2_SW	576.2483932	3	likely bad measurement due to change in
pressure between equil	pump on and off			
11/30/2008 0:16	xCO2_SW	569.0286351	3	likely bad measurement due to change in
pressure between equil	pump on and off			
12/1/2008 0:16	xCO2_SW	547.5938857	3	likely bad measurement due to change in pressure
between equil pump on and off				
12/2/2008 21:16	xCO2_SW	530.2747021	3	likely bad measurement due to change in
pressure between equil	pump on and off			
12/3/2008 0:16	xCO2_SW	546.2514585	3	likely bad measurement due to change in pressure
between equil pump on and off				
12/3/2008 3:16	xCO2_SW	541.5051264	3	likely bad measurement due to change in pressure
between equil pump on and off				
12/3/2008 6:16	xCO2_SW	538.640672	3	likely bad measurement due to change in pressure
between equil pump on and off				
12/3/2008 9:16	xCO2_SW	515.6801046	3	likely bad measurement due to change in pressure
between equil pump on and off				
12/3/2008 12:16	xCO2_SW	517.0487831	3	likely bad measurement due to change in
pressure between equil	pump on and off			
12/3/2008 15:16	xCO2_SW	518.5707587	3	likely bad measurement due to change in
pressure between equil	pump on and off			
12/3/2008 18:16	xCO2_SW	504.9788741	3	likely bad measurement due to change in
pressure between equil	pump on and off			
12/3/2008 21:16	xCO2_SW	521.7670287	3	likely bad measurement due to change in
pressure between equil	pump on and off			
12/4/2008 0:16	xCO2_SW	542.441515	3	likely bad measurement due to change in pressure
between equil pump on and off				
12/4/2008 3:16	xCO2_SW	532.4820528	3	likely bad measurement due to change in pressure
between equil pump on and off				
12/9/2008 12:16	xCO2_SW	514.6425697	3	CO2 data submitted was adjusted by - 2 ppm b/c
span calibration was off as predicted by change in Licor temperature				
12/9/2008 12:16	xCO2_Air	386.2004142	3	CO2 data submitted was adjusted by - 2 ppm b/c
span calibration was off as predicted by change in Licor temperature				

12/11/2008 18:16	xCO2_SW	498.1533347	3	CO2 data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
12/11/2008 18:16	xCO2_Air	385.3412633	3	CO2 data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
12/23/2008 9:16	xCO2_SW	537.6775046	3	likely bad measurement due to change in pressure between equil pump on and off
12/23/2008 12:16	xCO2_SW	502.0846574	3	likely bad measurement due to change in pressure between equil pump on and off
12/23/2008 15:16	xCO2_SW	524.9602935	3	likely bad measurement due to change in pressure between equil pump on and off
12/23/2008 18:16	xCO2_SW	547.8842724	3	likely bad measurement due to change in pressure between equil pump on and off
12/23/2008 21:16	xCO2_SW	575.6123589	3	likely bad measurement due to change in pressure between equil pump on and off
12/24/2008 0:16	xCO2_SW	575.8008024	3	likely bad measurement due to change in pressure between equil pump on and off
12/24/2008 3:16	xCO2_SW	566.0929163	3	likely bad measurement due to change in pressure between equil pump on and off
12/24/2008 6:16	xCO2_SW	549.1763349	3	likely bad measurement due to change in pressure between equil pump on and off
12/24/2008 9:16	xCO2_SW	547.508247	3	likely bad measurement due to change in pressure between equil pump on and off
12/24/2008 12:16	xCO2_SW	545.6780088	3	likely bad measurement due to change in pressure between equil pump on and off
12/24/2008 15:16	xCO2_SW	536.6521334	3	likely bad measurement due to change in pressure between equil pump on and off
12/24/2008 18:16	xCO2_SW	542.7916981	3	likely bad measurement due to change in pressure between equil pump on and off
12/24/2008 21:16	xCO2_SW	557.094347	3	likely bad measurement due to change in pressure between equil pump on and off
12/31/2008 0:16	xCO2_SW	586.3650064	3	likely bad measurement due to change in pressure between equil pump on and off
12/31/2008 3:16	xCO2_SW	583.4470844	3	likely bad measurement due to change in pressure between equil pump on and off
1/2/2009 3:16	xCO2_SW	577.1436923	3	likely bad measurement due to change in pressure between equil pump on and off
1/4/2009 6:16	xCO2_SW	639.7491161	3	likely bad measurement due to change in pressure between equil pump on and off
1/4/2009 9:16	xCO2_SW	608.2468275	3	likely bad measurement due to change in pressure between equil pump on and off
1/7/2009 0:16	xCO2_SW	549.044971	3	likely bad measurement due to change in pressure between equil pump on and off
1/7/2009 3:16	xCO2_SW	535.4299657	3	likely bad measurement due to change in pressure between equil pump on and off
1/8/2009 6:16	xCO2_SW	529.5658489	3	CO2 data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
1/8/2009 6:16	xCO2_Air	385.8669451	3	CO2 data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature
1/9/2009 0:16	xCO2_SW	574.6403187	3	likely bad measurement due to change in pressure between equil pump on and off
1/9/2009 3:16	xCO2_SW	553.4311178	3	likely bad measurement due to change in pressure between equil pump on and off
1/31/2009 6:16	xCO2_SW	501.8340376	3	CO2 data submitted was adjusted by - 2 ppm b/c span and zero calibration were off as predicted by change in Licor temperature
1/31/2009 6:16	xCO2_Air	388.2145095	3	CO2 data submitted was adjusted by - 2 ppm b/c span and zero calibration were off as predicted by change in Licor temperature
2/1/2009 18:16	xCO2_SW	492.2521837	3	CO2 data submitted was adjusted by + 2 ppm b/c span calibration was off as predicted by change in Licor temperature

2/1/2009 18:16 xCO2_Air 387.6196006 3 CO2 data submitted was adjusted by + 2 ppm b/c span
 calibration was off as predicted by change in Licor temperature
 2/6/2009 15:16 xCO2_SW 498.4162583 3 CO2 data submitted was adjusted by - 2 ppm b/c span
 calibration was off as predicted by change in Licor temperature
 2/6/2009 15:16 xCO2_Air 388.3680175 3 CO2 data submitted was adjusted by - 2 ppm b/c span
 calibration was off as predicted by change in Licor temperature
 4/15/2009 6:16 xCO2_SW 509.2322279 3 CO2 data submitted was adjusted by - 1 ppm b/c span
 calibration was off as predicted by change in Licor temperature
 4/15/2009 6:16 xCO2_Air 389.8733358 3 CO2 data submitted was adjusted by - 1 ppm b/c span
 calibration was off as predicted by change in Licor temperature
 4/17/2009 0:16 xCO2_SW 501.1275772 3 CO2 data submitted was adjusted by + 1 ppm b/c span
 calibration was off as predicted by change in Licor temperature
 4/17/2009 0:16 xCO2_Air 386.712892 3 CO2 data submitted was adjusted by + 1 ppm b/c span
 calibration was off as predicted by change in Licor temperature
 4/21/2009 6:16 xCO2_SW 497.7328202 3 CO2 data submitted was adjusted by - 2 ppm b/c span
 and zero calibration were off as predicted by change in Licor temperature
 4/21/2009 6:16 xCO2_Air 388.3110271 3 CO2 data submitted was adjusted by - 2 ppm b/c span
 and zero calibration were off as predicted by change in Licor temperature
 5/2/2009 12:16 xCO2_SW 498.5507115 3 CO2 data submitted was adjusted by - 1 ppm b/c span
 and zero calibration were off as predicted by change in Licor temperature
 5/2/2009 12:16 xCO2_Air 386.587506 3 CO2 data submitted was adjusted by - 1 ppm b/c span
 and zero calibration were off as predicted by change in Licor temperature
 5/18/2009 15:16 xCO2_SW 501.1788394 3 CO2 data submitted was adjusted by - 1 ppm b/c
 span calibration was off as predicted by change in Licor temperature
 5/18/2009 15:16 xCO2_Air 387.4714416 3 CO2 data submitted was adjusted by - 1 ppm b/c
 span calibration was off as predicted by change in Licor temperature
 7/13/2009 21:16 xCO2_SW 492.5766365 3 CO2 data submitted was adjusted by + 1 ppm b/c
 span calibration was off as predicted by change in Licor temperature
 7/13/2009 21:16 xCO2_Air 386.1450931 3 CO2 data submitted was adjusted by + 1 ppm b/c
 span calibration was off as predicted by change in Licor temperature