Meteorological Post Processing Documentation and Task Lists for 2010/2011

McMurdo Dry Valley Long Term Ecological Research (LTER)

This document compiles the steps taken to post-process raw meteorological data files and notes from station visits. Each numbered output value is identified by column header name, unit of measurement, and post-processing instruction. Station notes document datalogger time adjustments, sensor status, sensor and station maintenance, time of storage module changes, equipment and data problems, and other observations. Files are listed alphabetically by file name.

Table of Contents

Appendix
Array I.D. key
Data Flags
Date of Establishment

File description and task list for files:
  o1=omit from level 1
  ok= no changes to get to level 1
  rclow= reverse temperatures to mV and apply clow subroutine to mV values using Steinhart-Hart equation
  bad= normally would be included in level 1 but number is suspect or know to be incorrect
  flag= reasonable number but needs a note attached concerning its collection
  Lowe= see note for relative humidity below

Relative humidity correction note: All of the relative humidity (RH) values were corrected for a systematic error in the measurement created by an instrument manufacturer error. All RH data with air temperatures below freezing were corrected using the vapor pressure over ice (rather than over water which was used initially). The error became quite large for very cold temperatures (the correction could grow to around 30%). The polynomials used for the correction is based on Lowe (1977).

=[RH3m]*(6.107799961 + [AirT3m] * (0.4436518521 + [AirT3m] * (0.01428945805 + [AirT3m] * (0.0002650648471 + [AirT3m] *(0.000003031240396 + [AirT3m] * (0.00000002034080948 + 0.00000000006136820929 * [AirT3m]))))))) / (6.109177956 + [AirT3m] * (0.503469897 + [AirT3m] * (0.01886013408 + [AirT3m] * (0.0004176223716 + [AirT3m] * (0.00000582472028 + [AirT3m] * (0.00000004838803174 + 0.0000000001838826904 * [AirT3m]))))))

Prepared by: Thomas Nylen, 2011 Portland State University, OR

Beacon Valley Met Station (BENM)

Filename:	BEN_201011_001.DAT	
Station:	Beacon Valley Met Station (BENM)	
Author of this report:	Thomas Nylen	
File Period:	11/20/2009 12:30\ (2009.886358) to 11/29/2010 15:00 (2010.911301)	
Sampling Frequency:	wind every 4 sec.; others: every 30 sec.	
Averaging and Output Interval:	every 15 minutes	
Program Name	ben087v1	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	mean air temp. @ 3 meters (C)	rclow
5	corrected mean R.H. @ 3 meters (%)	lowe correction
6	mean solar flux going down (W/m2) –**PY45665**	ok
7	mean solar flux going up (W/m2) – **PY18400**	ok
8	mean horizontal wind speed (m/s)	ok
9	resultant mean wind speed (m/s)	o1
10	resultant mean wind direction (degrees from north)	ok
11	standard deviation of wind direction (degrees)	ok
12	maximum wind speed (m/s)	ok
13	minimum wind speed (m/s)	ok
14	mean P.A.R. (micromols/s/m2) – **Q20275**	multiply by 1.18
15	mean soil temperature @ 0 cm in soil (C)	rclow
16	mean soil temperature @ 5 cm in soil (C)	rclow
17	mean soil temperature @ 10 cm in soil (C)	rclow
18	sample of battery voltage	o1

Notes:
1) No missing data
2) Time adjusted back 1 min and 38 secs on 11/28/2010 14:23.
3) Input values looked good
4) Wind monitor pointing north
5) Replaced wind sensor on 11/28/2010 14:30.
6) Installed new quantum, Q23199 (new multiplier is 1.48), replacing Q20275.
7) Swapped SM4M on 11/28/2010 15:03
8) Loaded new program, BEN1011v1 on 11/28/2010 15:00. Added year in new program.
9) Closed up box at on 11/28/2010 15:03
10) Task for next season, move and flip quantum arm to location with clear view of ground and install downward pyranometer on arm. Install nu-rail and cut connecting arm for up and down pyranometer. Install downward stand in nu-rail pointing upwards, and install quantum sensor. Replace leveling mounts with new ones with tapped out set screws. Install new serial cable for station.

Lake Bonney Met Station (BOYM)

Filename:	BOY_201011_001.dat	
Station:	Lake Bonney Met Station (BOYM)	
Author of this report:	Thomas Nylen	
File Period:	1/15/10 10:15 (2010.042266) to 12/16/10 15:30 (2010.960674)	
Sampling Frequency:	sonic and prec. every 60 minutes, wind speed every 4 sec, other every 30 sec	
Averaging and Output Interval:	every 15 minutes	
Program Name	Boy910v1	
1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	mean air temp. @ 3 meters (C)	rclow
6	corrected mean R.H. @ 3 meters (%)	Lowe correction
7	mean solar flux going down (W/m2) – **PY41099**	ok
8	mean solar flux going up (W/m2) – **PY40424**	ok
9	mean horizontal wind speed (m/s)	ok
10	resultant mean wind speed (m/s)	o1
11	resultant mean wind direction (degrees from north)	ok
12	standard deviation of wind direction (degrees)	ok
13	maximum wind speed (m/s)	ok
14	minimum wind speed (m/s)	ok
15	mean P.A.R. (micromols/s/m2) – **Q33906**	divide by 200, multiply by 292.51
16	mean soil temperature @ 0 cm in soil (C)	rclow
17	mean soil temperature @ 5 cm in soil (C)	rclow
18	mean soil temperature @ 10 cm in soil (C)	rclow
19	sample depth from sensor to surface (cm)	Measured depth * -100
20	mean up-facing pyrgeometer, rad. comp. (W/m2) - **30831F3**	divide by 250; multiply by 277.01
21	mean up-facing pyrgeometer hemisphere temp	Eppley
22	mean up-facing pyrgeometer thermopile (W/m2)	Eppley
23	mean up-facing pyrgeometer case temp	Eppley
24	mean down-facing pyrgeometer, rad. comp. (W/m2) -**32059F3**	divide by 250; multiply by 227.79
25	mean down-facing pyrgeometer hemisphere temp	Eppley
26	mean down-facing pyrgeometer thermopile (W/m2)	Eppley
27	mean down-facing pyrgeometer case temp	Eppley
28	sample precipitation (mm)	ok
29	sample of battery voltage	o1

Notes:
1) CR10X 4 minutes and 22 secs behind GPS time. Adjusted a12/16/2010 11:16.
2) Input values look good
3) Sonic height = 40 cm
4) Wind monitor is aligned north
5) Swapped quantum and replaced levelling mount between 1145 and 1200. Old serial number is 33906 and new is Q23204. New constant is 6.92
6) Swapped RH at 1202
7) Swapped wind at around 1215
8) Moved 20W Solar panel higher on the mast. The back of the panel was getting blasted at ground level.
9) Removed charge controller from main battery box. 20W panel already has an internal charge controller. Connect CR10X and solar panel directly to batteries.
10) Installed a second 100 amp/hr battery which was removed from the sensit cases.

11) No missing data
12) Ultrasonic sensor stopped working on 3/14/10 14:00 (2010.201598). Returned to station several days later and added sonic ranger instrument (from LH met station) back on. Did not have time to check if it was working.
13) Loaded new program, boy1011v1 (changed year, removed airt1m and changed some input locations) at 12/16/10 15:30 (2010.960674).
14) Swapped storage module at 12/16/10 15:30 (2010.960674)
15) Tighten cargo strap around prep gage.

Filename:	BOY_201011_002.dat, BOY_201011_003.dat	
Station:	Lake Bonney Met Station (BOYM)	
Author of this report:	Thomas Nylen	
File Period:	12/16/2010 15:45 (2010.960702) to 1/21/2011 22:30 (2011.060103)	
Sampling Frequency:	sonic and prec. every 60 minutes, wind speed every 4 sec, other every 30 sec	
Averaging and Output Interval:	every 15 minutes	
Program Name	Boy1011v1	
1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	rclow
5	mean air temp. @ 3 meters (C)	Lowe correction
6	corrected mean R.H. @ 3 meters (%)	ok
7	mean solar flux going down (W/m2) – **PY23269**	ok
8	mean solar flux going up (W/m2) – **PY23250**	ok
9	mean horizontal wind speed (m/s)	ok
10	resultant mean wind speed (m/s)	o1
11	resultant mean wind direction (degrees from north)	ok
12	standard deviation of wind direction (degrees)	ok
13	maximum wind speed (m/s)	ok
14	minimum wind speed (m/s)	ok
15	mean P.A.R. (micromols/s/m2) – **Q23204**	divide by 200, multiply by 239.25
16	mean soil temperature @ 0 cm in soil (C)	rclow
17	mean soil temperature @ 5 cm in soil (C)	rclow
18	mean soil temperature @ 10 cm in soil (C)	rclow
19	sample depth from sensor to surface (cm)	Measured depth * -100
20	mean up-facing pyrgeometer, rad. comp. (W/m2) - **30831F3**	divide by 250; multiply by 277.01
21	mean up-facing pyrgeometer hemisphere temp	Eppley
22	mean up-facing pyrgeometer thermopile (W/m2)	Eppley
23	mean up-facing pyrgeometer case temp	Eppley
24	mean down-facing pyrgeometer, rad. comp. (W/m2) -**32059F3**	divide by 250; multiply by 227.79
25	mean down-facing pyrgeometer hemisphere temp	Eppley
26	mean down-facing pyrgeometer thermopile (W/m2)	Eppley
27	mean down-facing pyrgeometer case temp	Eppley
28	sample precipitation (mm)	ok
29	sample of battery voltage	o1

Notes:
1) No missing data.
2) Moved downward pyranometer, pyrgeometer and sonic to north side of station, using the sonic arm. Rotated arm, and installed all three near the end. Cut solar radiation mounts in half, and moved lower half to sonic cross arm.
3) Removed extra cross-arm on the top of the station. Wind, upfacing pyranometer and upfacing pyrgeometer on top cross-arm. Rotated cross-arm 5-10 degrees clockwise to reduce obstruction of wind monitor.
4) Installed new 107 shield and probe at Ultrasonic Sensor height. Data will be used for ultrasonic temperature correction.

5) Moved battery box to south side of station to reduce obstructions at the north side of the station (solar/snow accumlation).
6) Loaded new program, boy1011v2.
7) CR10X behind 1 min and 22 seconds. Adjusted on 01/21/2011 2302.
8) Tasks for next season: purchase new sonic, which is smaller, and will not obstruct the two downfacing solar rad instruments. Rotate upper cross-arm so wind is south and radiation instruments are north. Add PAR sensor to upper cross arm (maybe get new cross-arm), and remove PAR arm. Replace prec fluid.

Lake Bonney Sensit Station (BYSM)

Filename:	bys06701.dat, bys07801.dat, bys07802.dat, bys07803.dat, bys07804.dat, bys08901.dat, bys08902.dat	
Station:	Lake Bonney Sensit Station (BYSM)	
Author of this report:	Thomas Nylen	
File Period:	01/26/2006 00:46 (2006.068581) to 01/02/2009 10:16 (2009.003912)	
Sampling Frequency:	60 secs	
Averaging and Output Interval:	every 15 minutes	
Program Name	BYS067V1.DLD	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	Particle Count	ok
5	sample of battery voltage	o1

Notes:
1) Older sensit files
2) Missing data: 01/26/2006 01:01; 01/26/2006 01:46 to 1/26/2006 07:16:00; 04/10/2007 11:01 to 01/30/2008 14:01; 07/10/2008 10:01 to 07/10/2008 18:16; 07/10/2008 18:31 to 07/10/2008 18:46; 07/10/2008 19:16; 07/16/2008 11:46 to 07/16/2008 22:16; 07/25/2008 18:01 to 07/26/2008 02:31; 07/27/2008 06:01 to 07/28/2008 15:16; 08/01/2008 18:31 to 11/25/2008 11:01; 01/02/2009 10:31; 12/18/2010 08:16; 12/18/2010 08:46 to 12/18/2010 09:01;
3) Duplicate lines of data: 11/25/2006 10:01, 11/25/2006 10:01, 11/25/2009 10:46

Filename:	bys08901.dat, bys09101.dat, bys09102.dat, BYS_201011_001.dat, BYS_201011_002.dat	
Station:	Lake Bonney Sensit Station (BYSM)	
Author of this report:	Thomas Nylen	
File Period:	01/02/2009 10:46 (2009.003969) to 01/02/2009 10:16 (2009.003912)	
Sampling Frequency:	60 secs	
Averaging and Output Interval:	every 15 minutes	
Program Name	Bys089v1	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	Particle Count	ok
5	Kinetic Energy	ok
6	sample of battery voltage	o1

Notes:
1) Added wire for Kinematic Energy measurement from the same sensor on Jan 2, 2009.
2) Swapped 100 amp/hr battery for a second 35 amp/hr battery from main met station on 12/16/2010 15:31.
3) Station was turned off for a day or so. No high winds. Marked data as missing on 12/16/2010 15:31.
4) Remove station 01/21/2011 2046 and move instruments to South Side LH.

Bonney Riegel Met Station (BRMM)

Filename:	bsn067_incomplete01.dat	
Station:	Bonney Riegel Met Station (BRMM)	
Author of this report:	Thomas Nylen	
File Period:	12/07/2006 13:00 (2006.932991) to 01/25/2007 18:30 (2007.067865)	
Sampling Frequency:	Sonic every 60 minutes, everything else 30 secs	
Averaging and Output Interval:	every 15 minutes	
Program Name	BS045V1.dld	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	mean soil P.A.R. +3.6 m (east) from snow fence (micromols/s/m2) – Q20520	multiply by 1.51614
5	mean soil P.A.R. +1.8 m (east) from snow fence (micromols/s/m2) – Q23210	multiply by 1.51614
6	mean Air P.A.R. @ 1.6 m (micromols/s/m2) – Q29775	multiply by 1.21737
7	mean air temp. @ 1.5 m (C)	rclow
8	mean soil temperature @ 0 cm in soil -1.9 m (west) of snow fence (C)	rclow
9	mean soil temperature @ 0 cm in soil +0.9 m (east) of snow fence (C)	rclow
10	mean soil temperature @ 0 cm in soil +1.8 m (east) of snow fence (C)	rclow
11	mean soil temperature @ 0 cm in soil +3.6 m (east) of snow fence (C)	rclow
12	measured depth (cm)	Measured depth * -100
13	Voltage L	o1

Notes:
1) Older data: Overlapping data between 1/25/2007 1845 to 1/26/2007 1115 in bsn067_incomplete01 and beginning of brm07801, delete last lines of data in older file
2) Missing data from previous file: Jan 4, 2006 14:15:00 to Dec 7, 2006 13:00:00

Filename:	bsn067_incomplete01.dat, brm07801.dat, brm07802.dat, brm08901.dat, brm08902.dat, brm09101.dat, BRM_201011_001.dat	
Station:	Bonney Riegel Met Station (BRMM)	
Author of this report:	Thomas Nylen	
File Period:	01/25/2007 18:30 (2007.067865) to 12/17/2010 11:30 (2010.960217)	
Sampling Frequency:	Wind every 4 secs, Sonic every 60 minutes, everything else 30 secs	
Averaging and Output Interval:	every 15 minutes	
Program Name	BRM078V1.DLD	
1	array I.D.	o1
2	Day	Ok
3	Time	ok
4	AirT1m_AVG L	rclow
5	WSpd_S_WVT L	ok
6	WSpd_U_WVT L	o1
7	WDir_DU_WVT L	ok
8	WDir_SDU_WVT L	ok
9	WSpdMax L	ok
10	WSpdMin L	ok
11	Depth L	Measured depth * -100

12	Battery L	o1

Notes:
1) Missing data between 01/26/2007 0900 and 01/26/2007 0915
2) Duplicate line on 11/25/2008 12:30:00 PM, delete second line
3) Duplicate line on 11/25/2009 1:00:00 PM, delete second line
4) Input Values look good.
5) Modified station on Dec 16 to add upper wind, move air temp from 1m to 30 cm above the surface, moved solar panels higher on the mast and move the box to face west.
6) Installed upward pyranonmeter, PY28169 at 2.53m above the surface.
7) CR10X ahead 8 minutes and 31 seconds, adjust on 12/16/10 11:18
8) Current wind height is 1.64m.
9) Loaded new program, BRM1011v1 on 12/16/10 11:30 (2010.962957)

Filename:	BRM_201011_002.dat	
Station:	Bonney Riegel Met Station (BRMM)	
Author of this report:	Thomas Nylen	
File Period:	12/17/2010 11:45 (2010.962985) to 12/17/2010 23:00 (2010.964269)	
Sampling Frequency:	Sonic every 60 minutes, everything else 30 secs	
Averaging and Output Interval:	every 15 minutes	
Program Name	BRM1011v1.ddl	
1	array I.D.	o1
2	Year_RTM L	ok
3	Day	ok
4	Time	ok
5	AirT30cm_AVG L	rclow
6	SwRadIn_AVG L	ok
7	WSpd_S_WVT L	ok
8	WSpd_U_WVT L	o1
9	WDir_DU_WVT L	ok
10	WDir_SDU_WVT L	ok
11	WSpdMax L	ok
12	WSpdMin L	ok
13	SoilT20cm_AVG L	rclow
14	Depth L	Measured depth * -100
15	Battery L	o1

Notes:
1) Delete PC instruction
2) Added upper wind monitor, but had wrong program. Need to reload later with correct program.

Filename:	BRM_201011_003.dat, BRM_201011_004.dat	
Station:	Bonney Riegel Met Station (BRMM)	
Author of this report:	Thomas Nylen	
File Period:	12/17/2010 23:15 (2010.964298) to 12/18/2010 10:15 (2010.965554)	
Sampling Frequency:	Wind every 4 secs, Sonic every 60 minutes, everything else 30 secs	
Averaging and Output Interval:	every 15 minutes	
Program Name	BRM1011v1.ddl	
1	array I.D.	o1
2	Year_RTM L	ok
3	Day	ok
4	Time	ok
5	AirT30c m_AVG L	rclow
6	SwRadIn_AVG L	ok

7	WSpd_S_WVT L	ok
8	WSpd_U_WVT L	o1
9	WDir_DU_WVT L	ok
10	WDir_SDU_WVT L	ok
11	WSpdMax L	ok
12	WSpdMin L	ok
13	SoilT20cm_AVG L	rclow
14	Depth L	Measured depth * -100
15	PC_TOT H	Not connected
16	Battery L	o1

Notes:

1) Loaded new program, BRM1011v2 at 12/18/2010 10:15 (2010.965554).

Filename:	BRM_201011_005.dat, BRM_201011_006.dat	
Station:	Bonney Riegel Met Station (BRMM)	
Author of this report:	Thomas Nylen	
File Period:	12/18/2010 10:30 (2010.965582) to 01/21/2011 16:45 (2011.059446)	
Sampling Frequency:	Wind every 4 secs, Sonic every 60 minutes, everything else 30 secs	
Averaging and Output Interval:	every 15 minutes	
Program Name	BRM1011v2.ddl	
1	array I.D.	o1
2	Year_RTM L	ok
3	Day	ok
4	Time	ok
5	AirT30c _AVG L	rclow
6	SwRadIn_AVG L	ok
7	WSpd1m_S_WVT L	ok
8	WSpd1m_U_WVT L	o1
9	WDir1m_DU_WVT L	ok
10	WDir1m_SDU_WVT L	ok
11	WSpdMax1m L	ok
12	WSpdMin1m L	ok
13	WSpd3m_S_WVT L	ok
14	WSpd3m_U_WVT L	o1
15	WDir3m_DU_WVT L	ok
16	WDir3m_SDU_WVT L	ok
17	WSpdMax3m L	ok
18	WSpdMin1m L	ok
19	SoilT20cm_AVG L	rclow
20	Depth L	Measured depth * -100
21	Battery L	o1

Notes:

1) Loaded new program, BRM1011v3 at 01/21/2011 16:45 (2011.059446).
2) Moved wind and sensit to 1m on new cross arm. Need to secure cross-arm better. install another 1" pole to secure cross-arm.
3) Added AirT1m

Bonney Riegel Sensit Station (BRSM)

Filename:	BRS07801.dat, BRS07802.dat, BRS07803.dat, BRS08901.dat, BRS08902.dat BRS09101.dat and BRS_201011_001.dat	
Station:	Bonney Riegel Sensit Station (BRSM)	
Author of this report:	Thomas Nylen	
File Period:	01/26/2007 10:16 (2007.069665) to 12/17/2010 12:31 (2010.963073)	
Sampling Frequency:	60 secs	
Averaging and Output Interval:	every 15 minutes	
Program Name	BRS078v1	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	PC20cm_TOT L	ok
5	PC100cm_TOT L	ok
6	sample of battery voltage	o1

Notes:
1) CR10X ahead 7 minutes and 49 seconds. Adjusted back on 12/17/2010 1233
2) Moved battery case to the east of the old fence to get it out of the way of the instruments.

Bonney Riegel Theta Soil Station (BRTS)

	Filename:	BRSS_201011_001.dat	
	Station:	Bonney Riegel Soil Station (BRSS)	
	Author of this report:	Thomas Nylen	
	File Period:	01/16/2003 21:00 (2003.043493) to 01/21/2011 16:00 (2011.056621)	
	Sampling Frequency:	SoilTemp = 1 hr	
	Averaging and Output Interval:	SoilTemp = 1 hr	
	Program Name	?????	
1	Array		o1
2	Year		ok
3	Day		ok
4	Time		ok
5	SoilTemp_1		ok
6	SoilTemp_2		ok
7	SoilTemp_3		ok
8	SoilTemp_4		ok

Notes:
1) Do not know the configuration of this station.
2) Processed all of the data going back to 2003
3) Various gaps and duplicate data lines in the data. Deleted second line of duplicate data.

	Filename:	BRTS_201011_001.dat	
	Station:	Bonney Riegel Theta Station (BRTS)	
	Author of this report:	Thomas Nylen	
	File Period:	01/17/2003 12:00 (2003.045205) to 01/21/2011 12:00 (2011.056164)	
	Sampling Frequency:	Theta = 24 hrs	
	Averaging and Output Interval:	Theta = 24 hrs	
	Program Name	?????	
1	Array		o1
2	Year		ok
3	Day		ok
4	Time		ok
5	ThetaProbe_1		ok
6	ThetaProbe_2		ok
7	ThetaProbe_3		ok
8	ThetaProbe_4		ok

Notes:
1) Do not know the configuration of this station.
2) Not sure if Array 112 is actually measuring Theta probes.
3) Processed all of the data going back to 2003

Lake Brownworth Met Station (BRHM)

Filename:	BRH_201011_001.dat	
Station:	Lake Brownworth Met Station (BRHM)	
Author of this report:	Thomas Nylen	
File Period:	12/01/2009 12:30 (2009.916495) to 11/19/2010 15:00 (2010.883904)	
Sampling Frequency:	sonic every 60 minutes, wind speed every 4 sec, other every 30 sec	
Averaging and Output Interval:	every 15 minutes	
Program Name	brh045v1	
1	array I.D.	o1
2	day	ok
3	time	ok
4	mean air temp. @ 3 meters (C)	rclow
5	corrected mean R.H. @ 3 meters (%)	lowe correction
6	mean solar flux coming down (W/m^2) – **PY40423**	ok
7	mean solar flux going up (W/m^2) – **PY27929**	ok
8	mean horizontal wind speed (m/s)	ok
9	resultant mean wind speed (m/s)	o1
10	resultant mean wind direction (degrees from north)	ok
11	standard deviation of wind direction (degrees)	ok
12	maximum wind speed (m/s)	ok
13	minimum wind speed (m/s)	ok
14	mean P.A.R. (micromols/s/m^2) - **Q32567**	multiply by 1.3960
15	mean soil temperature @ 0 cm in soil (C)	rclow
16	mean soil temperature @ 5 cm in soil (C)	rclow
17	mean soil temperature @ 10 cm in soil (C)	rclow
18	sample depth from sensor to surface (cm)	measured depth * -100
19	sample of battery voltage	o110

Notes:
1. Missing one line of data between this file and last.
2. Time adjusted +1 min and 23 secs on 11/19/2010 14:32
3. Check input values and wind alignment on 11/19/2010 14:45, all values look good. Ultrasonic ranger height was 58.5 cm (bare-ground).
4. Maintenance on 11/19/2010 14:45 to 15:00: replaced RH probe and wind anemometer
5. Swapped SM4M on 11/19/2010 15:00.
6. Loaded new program, BRH1011V1 on 11/19/2010 15:00. New program added year and modified input values.

Canada Glacier (CAAM, CA2M)

Filename:	CAA_201011_001.dat,	
Station:	Canada Glacier Met Station (CAAM)	
Author of this report:	Thomas Nylen	
File Period:	01/22/2010 13:15 (2010.059047) to 12/31/2010 15:15 (2010.999001)	
Sampling Frequency:	wind speed every 4 sec; all other every 30 sec	
Averaging and Output Interval:	every 15 minutes	
Program Name	caa089v1	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	mean air temp. (C)	rclow
5	corrected mean relative humidity (%)	Lowe correction
6	mean solar flux coming down (W/m^2) - **PY20565**	ok
7	mean solar flux going up (W/m^2) - **PY28170**	ok
8	mean horizontal wind speed (m/s)	ok
9	resultant mean wind speed (m/s)	o1
10	resultant mean wind direction (degrees from north)	ok
11	standard deviation of wind direction (degrees)	ok
12	maximum wind speed (m/s)	ok
13	minimum wind speed (m/s)	ok
14	sample battery voltage	o1

Notes:
1. Time adjusted back on CR10X by 3 min and 16 sec on Nov 4, 2010 @ 10:01
2. Moved station close to original location
3. Built station on new tripod, with ~2m 1.5" aluminum pipes drilled in the ice with kovaks drill. Used 1"-1.5" swivel couplings to connect the station to the aluminum pipe.
4. Moved downward facing pyranometer to new arm extended north from a 2" pipe screwed on to the bottom of the center mast. Replaced downward pyranometer with new one, PY18395
5. Moved IRT to same lower center post and used the old upper IRT mount to secure it to the frame.
6. Place both batteries for the two separate dataloggers in one box. Secured to south post.
7. Original heights from ice surface: IRT = 57cm, downfacing pyranometer = 47cm, RH = 276cm, Temps = 276cm, Wind = 358 cm, upfacing pyranometer = 305cm.
8. Cap on downward pyranometer not removed until following day or so.
9. WSpdMin and WspdMax are programmed incorrectly. Corrected on 1/10/2011 @ 1430
10. Moved regular airt3m to aspirated shield. Both temp probes are now in the same shield. Will run for a bit to calibrate the two.

Filename:	CAA_201011_002.dat, CAA_201011_003.dat, CAA_201011_004.dat	
Station:	Canada Glacier Met Station (CAAM)	
Author of this report:	Thomas Nylen	
File Period:	12/31/2010 18:45 (2010.999401) to 01/26/2011 14:00 (2011.070091)	
Sampling Frequency:	wind speed every 4 sec; all other every 30 sec	
Averaging and Output Interval:	every 15 minutes	
Program Name	caa1011v1	
1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	mean air temp. @ 3m (C)	rclow

6	corrected mean relative humidity (%)	Lowe correction
7	Aspirated mean air temp @ 3m (C)	rclow
8	mean solar flux coming down (W/m^2) - **PY20565**	ok
9	mean solar flux going up (W/m^2) - **PY18395**	ok
10	mean horizontal wind speed (m/s)	ok
11	resultant mean wind speed (m/s)	o1
12	resultant mean wind direction (degrees from north)	ok
13	standard deviation of wind direction (degrees)	ok
14	maximum wind speed (m/s)	ok
15	minimum wind speed (m/s)	ok
16	mV_therm_average	o1
17	mV_tpile_AVG	o1
18	Ice surface temp (C)	ok
19	sample battery voltage	o1

Notes:
1. Time adjusted back on CR10X by 3 min and 16 sec on Nov 4, 2010 @ 10:01
2. Wind Speed Max and Min were originally programmed incorrectly. Corrected on 01/10/2011 14:45 (2011.029081). Program corrected as well. Values marked bad in processed file.
3. Moved non-aspirated 107 temp probe to aspirated shield on 01/10/2011 14:30 (2011.029053), so both probes are measured side by side in the same shield. Moved back to original shield Jan 26, 2011 @ 1400
4. Swapped Sm4M on Jan 26, 2011 @ 1416

Filename:	CA2_201011_001.dat,	
Station:	Canada Glacier Met Station 2 (CA2M)	
Author of this report:	Thomas Nylen	
File Period:	1/22/10 13:15 (2010.061787) to 12/31/10 15:15 (2011.001741)	
Sampling Frequency:	wind speed every 4 sec; all other every 30 sec	
Averaging and Output Interval:	every 15 minutes	
Program Name	caa089v1	
1	Array	o1
2	Day_RTM L	ok
3	Hour_Minute_RTM L	ok
4	Temp_RMY_AVG L	rclow
5	d_T_C_AVG L	ok
6	d_mV_tpile_AVG L	o1
7	d_mV_thrm_AVG L	o1
8	u_T_C_AVG L	ok
9	u_mv_tpil_AVG L	o1
10	u_mV_ther_AVG L	o1
11	bat_Volts L	o1

Notes:
1. Removed upward facing IRT on 12/1/10 12:45   2010.919264. Moved to Garwood Ice Station
2. Moved downward IRT to main CR10X on 12/31/10 15:15
3. Reprogrammed CR10X to control fan on aspirated shield. Keep on until voltage gets below 11V, and do not turn back on until voltage is back up to 12.5V. New program is Caa_Fan_Control_1011v1.dld. Also record min and max voltage every 15 minutes to make it possible to determine if fan is on or off.
4. Removed charge controller that was connected with the 20W panel, because panel already has a charge controller on it.

Commonwealth Glacier Met Station (COHM)

Filename:	COH_201011_001.dat, COH_201011_002.dat, COH_201011_003.dat	
Station:	Commonwealth Glacier Met Station (COHM)	
Author of this report:	Thomas Nylen	
File Period:	11/17/09 12:15 (2009.88085) to 1/19/11 9:30 (2011.05314)	
Sampling Frequency:	sonic every 60 minutes, wind every 4 secs.; other every 30 secs.	
Averaging and Output Interval:	every 15 minutes	
Program Name:	coh089v1	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	mean air temp. @ 3 meters (C)	rclow
5	mean R.H. @ 3 meters (%)	lowe correction
6	mean solar flux coming down (W/m^2) - **33733F3**	divide by 100; multiply by 119.62
7	mean solar flux going up (W/m^2) – **31435F3**	divide by 100; multiply by 128.04
8	mean horizontal wind speed (m/s)	ok
9	resultant mean wind speed (m/s)	o1
10	resultant mean wind direction (degrees from north)	ok
11	standard deviation of wind direction (degrees)	ok
12	maximum wind speed (m/s)	ok
13	minimum wind speed (m/s)	ok
14	mean incoming IR pyrgeometer output (pins A-B) (W/m^2) - **32348F3**	divide by 250; multiply by 262.47
15	mean incoming IR hemisphere temp. (pins A-C) (mv)	eppley
16	mean incoming IR thermopile output (pins F-G)(W/m^2)	eppley
17	mean incoming IR case temp. (pins E-D)(mv)	eppley
18	mean outgoing IR pyrgeometer output (pins A-B)(W/m^2) – **29786F3**	divide by 250; multiply by 276.24
19	mean outgoing IR hemisphere temp. (pins F-G) (mv)	eppley
20	mean outgoing IR thermopile (pins A-C) (W/m2)	eppley
21	mean outgoing IR case temp. (pins E-D) (mv)	eppley
22	ice temperature @ 50cm (original depth, mV*0.01)	poly (n0=-105.05,n1=232.89,2=-494.81,n3=669.70, n4=-533.67,n5=247.01,n6=-61.29, n7=6.325
23	ice temperature @ 100cm (original depth, mV*0.01)	poly (n0=-106.23,n1=239.65,2=-512.50, n3=693.49 ,n4=-551.71,n5=254.79,n6=-63.07, n7=6.492
24	IRT thermistor (mV)	o1
25	IRT raw ice surface temp mV	o1
26	Surface Temperature (C)	ok
27	sample depth from sensor to surface (m)	measured depth* -100
28	sample of battery voltage	o1

Notes:
1. No missing data.
2. Datalogger clock +00:03:22 ahead. Adjusted back 00:03:22 on Nov 5, 2010 1434
3. All input values appear correct.
4. Swapped datalogger with recalibrated CR10X. Turned off datalogger on Nov 5, 2010 14:45:00 (local), swapped guts, and turned logger on at 14:48:20. 00:03:20 missing data. Checked time on new datalogger. No changes.
5. Sonic Depth was reprocessed using AirT3m because program refers to Airt1m which does not exist. Use formula: =SQRT((AirT3m+273.15)/273.15)*Sonic Depth?????

6. Swapped SM4M storage module with SM4M on November 5, 2010 at 1500
7. Battery box was repositioned on 01/19/2011 @ 0940 because of high ablation rates. Cable for solar panel was pulled out of ring terminal, which was connected to the battery. Turned power off to the station, re-crimped the wire and turned CR10X back on.
8. CR10X 1 minute and 20 seconds behind on 01/19/2011. Adjusted at 01/19/2011 @ 0958.
9. New program loaded, COH1011v1.dld on 1/19/11 9:30 (2011.05314).
10. Sonic height is 132 cm. Appears to be some sporadic errors in the sonic data in December/January 2010/11
11. wind is aligned north
12. Next year, move station to original location and drill in new aluminum footers and modify station similar to Canada Glacier.

Explorers Cove Met Station (EXEM)

	Filename:	EXE_201011_001.dat	
	Station:	Explorer's Cove Met Station (EXEM)	
	Author of this report:	Thomas Nylen	
	File Period:	11/9/10 10:30 (2010.858733) to 12/13/10 13:45 (2010.952255)	
	Sampling Frequency:	prec every 60 minutes, wind every 4 secs.; others: every 30 secs.	
	Averaging and Output Interval:	every 15 minutes	
	Program Name:	exe089v1	
1	array I.D.		o1
2	day		ok
3	time		ok
4	mean air temp. @ 3 meters (C)		rclow
5	mean RH @ 3 meters		lowe correction
6	mean solar flux coming up (W/m^2) - **PY56386**		ok
7	mean solar flux going down (W/m^2) - **PY51355**		ok
8	mean horizontal wind speed (m/s)		ok
9	resultant mean wind speed (m/s)		o1
10	resultant mean wind direction (degrees from north)		ok
11	standard deviation of wind direction (degrees)		ok
12	maximum wind speed (m/s)		ok
13	minimum wind speed (m/s)		ok
14	mean P.A.R. (micromols/s/m^2): **Q30801**		divide by 200, multiply by 221.64
15	mean soil temperature @ 0 cm (C)		rclow
16	mean soil temperature @ 5 cm (C)		rclow
17	mean soil temperature @ 10 cm (C)		rclow
18	sample precipitation (mm)		ok
19	sample battery voltage		o1

Notes:
1. Serial cable unplugged from datalogger when enclosure opened. Only data on logger available.
2. Datalogger 11 minutes and 52 secs behind GPS time. Not corrected because swapping datalogger.
3. Swapped wind on Dec 13, 2010 between 1240 and 1300
4. replaced pyranometer level mounts, sensors where removed from mount, mark data as bad
5. swapped datalogger on 12/13/10 13:30
6. loaded new program, exe1011v1 on 12/13/10 13:30.
7. Was going to move Sensit to main datalogger, but aux datalogger has sensit using two pulse channels. Need to check wiring before moving back to datalogger.
8. Belfort resistor pulled out of ground. Installed in AG, need to move to G.
9. Sensit height, 21 cm.
10. Wind is pointing north.
11. Need to replace serial cable with new black cables.
12. Deleted last line of the data. Recorded a line at 13:45, which is after the time the Storage module was swapped.

	Filename:	EXE_201011_002.dat	
	Station:	Explorer's Cove Met Station (EXEM)	
	Author of this report:	Thomas Nylen	
	File Period:	12/13/10 13:45 (2010.952255) to 01/05/2011 16:15 (2011.015554)	
	Sampling Frequency:	prec every 60 minutes, wind every 4 secs.; others: every 30 secs.	
	Averaging and Output Interval:	every 15 minutes	
	Program Name:	exe1011v1.dld	
1	array I.D.		o1

2	year	ok
3	day	ok
4	time	ok
5	mean air temp. @ 3 meters (C)	rclow
6	mean RH @ 3 meters	lowe correction
7	mean solar flux coming up (W/m^2) - **PY56386**	ok
8	mean solar flux going down (W/m^2) - **PY51355**	ok
9	mean horizontal wind speed (m/s)	ok
10	resultant mean wind speed (m/s)	o1
11	resultant mean wind direction (degrees from north)	ok
12	standard deviation of wind direction (degrees)	ok
13	maximum wind speed (m/s)	ok
14	minimum wind speed (m/s)	ok
15	mean P.A.R. (micromols/s/m^2): **Q30801**	divide by 200, multiply by 221.64
16	mean soil temperature @ 0 cm (C)	rclow
17	mean soil temperature @ 5 cm (C)	rclow
18	mean soil temperature @ 10 cm (C)	rclow
19	sensit	Bad, not hooked up
20	sample precipitation (mm)	ok
21	sample battery voltage	o1

Notes:
1. CR10X behind by 20 secs. Adjusted at 01/05/2011 16:09
2. Input values look good
3. Wind point north
4. Sensit, 21.5 cm from the surface to the bottom of the blue band
5. Upward Pyranometer = PY56386, Downward Pyranometer = PY51355 and Quantum = Q30801
6. RH3m replaced at 01/05/2011 1605
7. Tighten prec gage strap.
8. Moved solar panels higher. Lower panel backing is abraded.
9. Removed old storage module mount, and added new black serial cable.
10. Location, S 77 35 19.5, 163 25 02.9, 80.3 m
11. Replaced SM4M at 01/05/2011 1615. Loaded new program, exe1011v2. Had error message, E22 when started. Not sure why?. New program changed prec interval to 15 minutes. Dropped Sensit from main program.

Explorers Cove Sensit Station (EXSM)

Filename:	exe07802.dat, exe07803.dat, exe08901.dat, exe08902.dat	
Station:	Explorers Cove Sensit Station (EXSM)	
Author of this report:	Thomas Nylen	
File Period:	12/04/2007 11:15 (2007.9245719) to 01/09/2009 12:31 (2009.0233467)	
Sampling Frequency:	60 secs between 14-15, 29-30, 44-45 and 59-60 during each hour	
Averaging and Output Interval:	every 15 minutes	
Program Name	exs078v1, exe078v2	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	Particle Count	ok
5	sample of battery voltage	o1

1. Originally Sensit was installed on main datalogger, only measuring PC for a minute the 14th minute of a 15 minute interval.
2. Missing data between 01/09/2009 11:45 to 01/09/2009 12:16

Filename:	exs9101.dat, exs9102.dat, EXS_201011_001.dat, EXS_201011_002.dat	
Station:	Explorers Cove Sensit Station (EXSM)	
Author of this report:	Thomas Nylen	
File Period:	01/09/2009 12:46 (2009.0233752) to 01/05/2011 16:01 (2011.0127873)	
Sampling Frequency:	60 secs between 00-01, 15-16, 30-31 and 45-46 during each hour	
Averaging and Output Interval:	every 15 minutes	
Program Name	exs089v1	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	Particle Count	ok
5	Kinetic Energy	ok
6	sample of battery voltage	o1

1. CR10X behind by 23 minute ad 46 seconds. Adjusted at 01/05/2011 16:34
2. New program, exs1011v1 loaded at 01/05/2011 16:34.
3. First two lines of second file are redundant, because of the time adjustment.

F6 Met Station (F6MM)

Filename:	F6M_201011_001	
Station:	F6 Met Station (F6MM)	
Author of this report:	Thomas Nylen	
File Period:	11/27/2009 17:00 (2009.906050) to 12/23/2010 16:45 (2010.977255)	
Sampling Frequency:	sonic every 60 min, wind every 4 sec; others: every 30 sec	
Averaging and Output Interval:	every 15 min	
Program Name:	F6M910V1.DLD	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	mean air temp. @ 1.3 m (C)	rclow
5	mean Air P.A.R. @ 1.6 m (micromols/s/m^2) – **Q29764**	multiply by 1.18
6	mean horizontal wind speed (m/s)	ok
7	resultant mean wind speed (m/s)	o1
8	resultant mean wind direction (degrees from north)	ok
9	standard deviation of wind direction (degrees)	ok
10	maximum wind speed (m/s)	ok
11	minimum wind speed (m/s)	ok
12	mean soil temperature @ 0 cm in soil +3.8 m (east) of snow fence (C)	rclow
13	Sonic Ranger Depth (cm)	Measured depth * 100
14	sample of battery voltage	o1

Notes:
1. Rebuilt station on 12/23/2010.
2. CR10X behind 32 minutes and 18 seconds. Corrected on 12/23/2010 2224.
3. New sensor heights, wind @ 1m = 110cm, wind @ 3m = 290 cm, Sensit@30cm at 28 cm, Sensit@1m = 104cm, AirTemp@1m 98cm, AirT30cm = 28cm, sonic ranger = 101cm, pyranometer = 143cm, soil temp = 20 cm.
4. Loaded new program, F6Met1011v2

Filename:	F6M_201011_002-005.dat	
Station:	F6 Met Station (F6MM)	
Author of this report:	Thomas Nylen	
File Period:	12/23/2010 17:00 (2010.977283) to 01/04/2011 14:15 (2011.009846)	
Sampling Frequency:	sonic every 60 min, wind every 4 sec; others: every 30 sec	
Averaging and Output Interval:	every 15 min	
Program Name:	F6M1011V2.dld	
1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	AirT@1m	rclow
6	AirT@30cm	rclow
7	SwRadIn@82 cm (W/m^2) – PY?????	ok
8	mean horizontal wind speed (m/s) @ 1m	ok
9	resultant mean wind speed (m/s) @ 1m	o1
10	resultant mean wind direction (degrees from north) @ 1m	ok
11	standard deviation of wind direction (degrees) @ 1m	ok
12	maximum wind speed (m/s) @ 1m	ok

13	minimum wind speed (m/s) @ 1m	ok
14	mean horizontal wind speed (m/s) @ 3m	ok
15	resultant mean wind speed (m/s) @ 3m	o1
16	resultant mean wind direction (degrees from north) @ 3m	ok
17	standard deviation of wind direction (degrees) @ 3m	ok
18	maximum wind speed (m/s) @ 3m	ok
19	minimum wind speed (m/s) @ 3m	ok
20	mean soil temperature @ 20 cm in soil	rclow
21	Sonic Ranger Depth (cm)	Measured depth * -100
22	sample of battery voltage	o1

Notes:
1. Moved sensors around on 1/4/2011, so the wind, sonic and sensit are less obstructed.
2. Loaded new program, fsmet1011v3.dld. Forgot to add output instructions for wind at 3m.
3. New sensor heights, wind @ 1m = 100cm, wind @ 3m = 290 cm, Sensit@30cm at 30 cm, Sensit@1m = 102cm, AirTemp@1m = 100cm, AirT30cm = 30cm, sonic ranger = 82cm, pyranometer = 155cm, soil temp = 20 cm.

Filename:	F6M_201011_006-007.dat	
Station:	F6 Met Station (F6MM)	
Author of this report:	Thomas Nylen	
File Period:	1/4/11 14:30 (2011.009874) to 1/27/11 13:30 (2011.072774)	
Sampling Frequency:	sonic every 60 min, wind every 4 sec; others: every 30 sec	
Averaging and Output Interval:	every 15 min	
Program Name:	F6M1011V3.dld	
1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	AirT@1m	rclow
6	AirT@30cm	rclow
7	SwRadIn. @ 82 cm (W/m^2) – PY?????	ok
8	mean horizontal wind speed (m/s) @ 1m	ok
9	resultant mean wind speed (m/s) @ 1m	o1
10	resultant mean wind direction (degrees from north) @ 1m	ok
11	standard deviation of wind direction (degrees) @ 1m	ok
12	maximum wind speed (m/s) @ 1m	ok
13	minimum wind speed (m/s) @ 1m	ok
14	mean horizontal wind speed (m/s) @ 3m	ok
15	resultant mean wind speed (m/s) @ 3m	o1
16	resultant mean wind direction (degrees from north) @ 3m	ok
17	standard deviation of wind direction (degrees) @ 3m	ok
18	maximum wind speed (m/s) @ 3m	ok
19	minimum wind speed (m/s) @ 3m	ok
20	mean soil temperature @ 20 cm in soil	rclow
21	Sonic Ranger Depth (cm)	Measured depth * -100
22	sample of battery voltage	o1

Notes:
1. Module swapped by Chris Jaros
2. No missing data

F6 Sensit Station (F6SM)

Filename:	F6S_201011_001	
Station:	F6 Sensit Station (F6SM)	
Author of this report:	Thomas Nylen	
File Period:	12/21/2006 16:30 (2006.971747) to 12/23/2010 17:31 (2010.977342)	
Sampling Frequency:	60 seconds	
Averaging and Output Interval:	every 15 min	
Program Name:	Fs067v2	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	PC_1	ok
5	PC_2	ok
6	sample of battery voltage	o1

Notes:
1. Original station installed 12/21/2006 with one Sensit at 25cm. Installed second Sensit at 1m on 01/29/2007 13:16 (2007.078227).
2. Moved sensit to main post on Dec 23, 2010.
3. CR10X behind 26 minutes and 58 seconds. Corrected on 12/23/2010 2226.
4. New sensor heights, wind @ 1m = 110cm, wind @ 3m = 290 cm, Sensit@30cm at 28 cm, Sensit@1m = 104cm, AirTemp@1m 98cm, AirT30cm = 28cm, sonic ranger = 101cm, pyranometer = 143cm, soil temp = 20 cm.
5. Loaded new program, F6ST1011V1.dld.

F6 Theta Soil Station (F6TS)

Filename:	F6TS_201011_001.DAT	
Station:	F6 Theta Soil Station (F6SS)	
Author of this report:	Thomas Nylen	
File Period:	01/29/2003 20:00 (2003.078995) to 01/27/2011 13:00 (2011.072717)	
Sampling Frequency:	SoilTemp = 1 hr, Theta = 24 hrs	
Averaging and Output Interval:	SoilTemp = 1 hr, Theta = 24 hrs	
Program Name	F6????	
1	Array	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	SoilTemp_1	ok
6	SoilTemp_2	ok
7	SoilTemp_3	ok
8	SoilTemp_4	ok

Notes:
1) Need to inspect next season
2) Not sure if Array 102 is actually measuring soil probes.

Filename:	F6TS_201011_001.DAT	
Station:	F6 Theta Soil Station (F6TS)	
Author of this report:	Thomas Nylen	
File Period:	01/30/2003 12:00 (2003.080822) to 01/27/2011 12:00 (2011.072603)	
Sampling Frequency:	SoilTemp = 1 hr, Theta = 24 hrs	
Averaging and Output Interval:	SoilTemp = 1 hr, Theta = 24 hrs	
Program Name	F6????	
1	Array	ok
2	Year	ok
3	Day	ok
4	Time	ok
5	Secs	o1
6	Theta_1	ok
7	Theta_2	ok
8	Theta_3	ok
9	Theta_4	ok
10	Voltage (sometimes)	o1

Notes:
1) Need to inspect next season
2) Not sure if Array 112 (113?) is actually measuring Theta probes.

Mt. Fleming Met Station (FLMM)

Filename:	FLM_201011_001.DAT	
Station:	Mt. Fleming Met Station (FLMM)	
Author of this report:	Thomas Nylen	
File Period:	01/26/2008 12:30 (2008.069729) to 01/08/2011 10:40 (2011.020396)	
Sampling Frequency:	30 sec	
Averaging and Output Interval:	every 10 min	
Program Name:	NewAWS.CSI	
1	array I.D.	o1
2	Year (UTC)	ok
3	Day (UTC)	ok
4	Time (UTC)	ok
5	Seconds (UTC)	ok
6	AirT2m (C)	ok
7	Pressure (mbar)	ok
8	RH1.3m (%)	Lowe correction
9	wspd_U_WVT (m/s)	ok
10	wspd_U_WVT (m/s)	o1
11	WDir DU (degrees)	ok
12	WDir Std Dev	ok
13	WSpd Max (m/s)	ok
14	AirT1.3m (C)	ok

Notes:
1. Converted station to LTER format on Jan 8, 2011
2. Loaded new program FLM1011v1 on 12/23/2010 1007.
3. Cr10X 2 minutes and 29 secs behind. Adjusted to local time at 01/08/2011 1030.
4. The wind monitor pointing north. Declination at site is 153E
5. GPS position is S77 31.957 and E160 16.264.
6. The sensor names and heights are the following: AirT200cm = CSI 43347, AirT130cm and RH130cm = HMP45AC, Wind = RM Yound 05103 and Pressure = CSI 105
7. Moved pressure to location 3L (6)
8. Loaded new program, FLM1011v1.dld at 01/08/2011 @ 1045

Lake Fryxell Met Station (FRLM)

Filename	FRL_201011_001.dat, FRL_201011_002.dat; FRL_201011_003.dat	
Station:	Lake Fryxell Met Station (FRLM)	
Author of this report:	Thomas Nylen	
File Period:	01/11/2010 09:30 (2010.028482) to 12/23/2010 12:15 (2010.976741)	
Sampling Frequency:	sonic every 60 min, wind every 4 sec; others: every 30 sec	
Averaging and Output Interval:	every 15 min	
Program Name:	frl089v1	
1	array I.D.	o1
2	day	ok
3	time	ok
4	mean air temp. @ 3 meters (C)	rclow
5	mean RH @ 3 meters	lowe correction
6	mean solar flux coming down (W/m^2) - **PY20222**	ok
7	mean solar flux going up (W/m^2) - **PY23277**	ok
8	mean horizontal wind speed (m/s)	ok
9	resultant mean wind speed (m/s)	o1
10	resultant mean wind direction (degrees from north)	ok
11	standard deviation of wind direction (degrees)	ok
12	maximum wind speed (m/s)	ok
13	minimum wind speed (m/s)	ok
14	mean P.A.R. (micromols/s/m^2) - **Q29765**	divide by 200, multiply by 261.14
15	mean soil temperature @ 0 cm in soil (C)	rclow
16	mean soil temperature @ 5 cm in soil (C)	rclow
17	mean soil temperature @ 10 cm in soil (C)	rclow
18	sample depth from sensor to surface (m)	measurement * -100
19	particle count Sensit (1 min sample: hits per min)	ok
20	sample of battery voltage	o1

Notes:
1. No missing data.
2. SM swapped on November 21, 2010 14:30.
3. CR10X behind 34 seconds. Adjusted 12/23/2010 1102.
4. Input values look good on 12/23/2010
5. wind pointing north on 12/23/2010
6. On 12/23/2010, sonic height = 104.6, sensit height = 22.9
7. replaced leveling mounts for PAR and pyranometers on 12/23/2010.
8. replaced wind monitor on 12/23/2010
9. main case is cracked.
10. station needs to be moved to higher ground
11. replaced CR10x at 12/23/2010 1215
12. Swapped module at 12/23/10 12:15 (2010.979481), loaded new program frl1011v1.

Friis Hills Met Station (FRSM)

Filename:	FRS_201011_001.DAT	
Station:	Friis Hills Met Station (FRSM)	
Author of this report:	Thomas Nylen	
File Period:	11/12/2005 04:35 (2005.863537) to 12/20/2010 10:05 (2010.971014)	
Sampling Frequency:	30 sec	
Averaging and Output Interval:	every 5 min	
Program Name:	Friis782 and others	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	mean horizontal wind speed (m/s)	ok
5	resultant mean wind direction (degrees from north)	ok
6	standard deviation of wind direction (degrees)	ok
7	Mean air temp. @ 2.5 m (C)	ok
8	Mean RH @ 2.5m (%)	ok
9	NetRad (W m^{-2})	ok
10	Pressure (mbar)	ok

Notes:
1. Converted station to LTER format
2. CR10X time was set to UTC, but changed to local daylight saving time. CR10X 55 secs behind. Changed at 12/23/2010 0930. Changed output results to local time (UTC + 13hrs)
3. Wind Pointing north, declination at site is 152 degrees
4. GPS location: 77.74738, 161.51634
5. Sensor Heights: Temp/RH = 2.5m, Wind = 3.6m and NetRad = 2.05m
6. Loaded new program Friis1011v1 on 12/23/2010 1007.
7. Processed data back to 2005. Duplicated line of data on 1/18/2008 10:55 (local time). Deleted second extra line.
8. Replaced HMP45C RH sensor on Dec 16, 2008 @ 1304 (local). Wind direction alignment checked and is pointing north.
9. Pressure added by Wisconsin AWS group on 02/04/2008 11:00

Garwood Valley Met Station (GADM)

Filename:	gad08901.dat, gad9101.dat	
Station:	Garwood Valley Met Station (GADM)	
Author of this report:	Thomas Nylen	
File Period:	01/12/2008 10:15 2008.031307 to 12/07/2009 11:00 (2009.932763)	
Sampling Frequency:	unknown	
Averaging and Output Interval:	every 15 minutes	
Program Name	unknown	
1	array I.D.	o1
2	year	ok
3	day	ok
4	time	ok
5	average air temp. @ 3 meters (C)	rclow
6	average pondT1 (C)	not processed
7	average pondT2 (C)	not processed
8	average pondT3 (C)	not processed
9	average pondT4 (C)	not processed
10	average pondT5 (Soil Temp?) (C)	ok
11	average pondT6 (Soil Temp?) (C)	ok
12	mean horizontal wind speed (m/s)	ok
13	resultant mean wind speed (m/s)	o1
14	resultant mean wind direction (degrees from north)	ok
15	standard deviation of wind direction (degrees)	ok
16	maximum wind speed (m/s)	ok
17	minimum wind speed (m/s)	ok
18	average mean P.A.R. (micromols/s/m^2) – Q9916???	o1
19	average underwater P.A.R. (micromols/s/m^2)	not processed, do not know the constant
20	sample of Ultrasonic Height (cm)	ok
21	sample of battery voltage	o1

Notes:
1. Station originally established by Peter Doran. Do not know when exactly the station was established.
2. Do not have any of the original metadata. Not sure of sensor heights, constant number for underwater PAR.
3. Pond temps only hooked up for the first 10 days of the data file, except T5 and T6. T1-T4 not processed. Assume T5-6 are soil temp probes.
4. Originally the ultrasonic was positioned over the lake ice (???).
5. Processed PAR with a Calibration Constant: Output: 5.52 microamps per 1000 μmol s-1 m-2 , but results were too high. Even the raw data was too high. Mark data as Bad

Filename:	gad9102.dat, GAD_201011_001.dat	
Station:	Garwood Valley Met Station (GADM)	
Author of this report:	Thomas Nylen	
File Period:	12/07/2009 13:30 (2009.933048) to 12/08/2010 13:30 (2010.935788)	
Sampling Frequency:	wind every 4 secs.; ultrasonic every 1 hr; others every 30 secs.	
Averaging and Output Interval:	every 15 minutes	
Program Name	GAD910V1.CSI	
1	array I.D.	o1
2	day	ok
3	time	ok
4	mean air temp. @ 3 meters (C)	rclow

5	mean R.H. @ 3 meters (%)	lowe correction
6	mean solar flux coming down (W/m^2) – **PY28370**	ok
7	mean solar flux going up (W/m^2) – **PY18656**	ok
8	mean horizontal wind speed (m/s)	ok
9	resultant mean wind speed (m/s)	o1
10	resultant mean wind direction (degrees from north)	ok
11	standard deviation of wind direction (degrees)	ok
12	maximum wind speed (m/s)	ok
13	minimum wind speed (m/s)	ok
14	mean P.A.R. (micromols/s/m^2)	no sensor
15	distance to surface (m)	ok
16	mean soil temperature @ 0 cm in soil (C)	rclow
17	mean soil temperature @ 10 cm in soil (C)	rclow
18	sample of battery voltage	o1

Notes:
1. Station changed on Dec 7, 2009. Standard LTER configuration. PAR was never installed. SwRadIn value was recorded in PAR location.
2. Missing data before 08/22/2010 1045 and missing most of the data except airt3m, RH3m and SwRadin between beginning of file to end.
3. Time on old CR10X back 3 minutes and 26 seconds on 12/08/2010 1240, not corrected. New CR10X has correct time.
4. Input values on 12/08/2010 look good.
5. Wind adjusted 30 degrees clockwise on 12/08/2010 1300
6. Sonic sensor depth = ~1m. No longer above lake.
7. GPS position = 78 02.304 and 164 19.749
8. Swapped datalogger, time not corrected on old logger
9. tail of wind monitor gone.
10. Station power off to load new program and swap SM on November 19, 2010 at 1315. New program is via1011v1.
11. No PAR installed, but it was identify in the program. SwRadIn in Diff 5, not Diff 2. Changed program to eliminate Inst 15.
12. There is an extra line of data on next file, ignore.
13. Cross arm is loose. Tighten next visit.

Filename:	GAD_201011_002.dat, GAD_201011_003.dat, GAD_201011_004.dat	
Station:	Garwood Valley Met Station (GADM)	
Author of this report:	Thomas Nylen	
File Period:	12/08/2010 13:45 (2010.935816) to 01/27/2011 15:30 (2011.073002)	
Sampling Frequency:	wind every 4 secs.; ultrasonic every 1 hr; others every 30 secs.	
Averaging and Output Interval:	every 15 minutes	
Program Name	GAD910V1.CSI	
1	array I.D.	o1
2	day	ok
3	time	ok
4	mean air temp. @ 3 meters (C)	rclow
5	mean R.H. @ 3 meters (%)	lowe correction
6	mean solar flux coming down (W/m^2) – **PY28370**	ok
7	mean solar flux going up (W/m^2) – **PY18656**	ok
8	mean horizontal wind speed (m/s)	ok
9	resultant mean wind speed (m/s)	o1
10	resultant mean wind direction (degrees from north)	ok
11	standard deviation of wind direction (degrees)	ok

12	maximum wind speed (m/s)	ok
13	minimum wind speed (m/s)	ok
14	mean P.A.R. (micromols/s/m^2)	no sensor
15	distance to surface (m)	ok
16	mean soil temperature @ 0 cm in soil (C)	rclow
17	mean soil temperature @ 10 cm in soil (C)	rclow
18	sample of battery voltage	o1

Notes:
1. CR10X adjusted ahead 1 min and 30 seconds on 01/27/2011 @ 1532
2. Installed new wind monitor, tighten cross-arm
3. Installed Quantum, Q9916 on new radiation mount on cross-arm. Constant is 5.4. Installed jumper wire from 2L to AG.
4. Moved SwRadOut to Quantum arm, which was flipped from its normal position to move the sensor closer to the ground.
5. SwRadIn is also on new radiation mount on upper cross-arm.
6. Ultrasonic height = 94.7cm
7. Loaded new program, GAD1011v2 at 01/27/2011 15:30
8. Installed new pressure sensor

Garwood Ice Cliff Met Station (GAFM)

Filename:	gaf_201011_001.dat, gaf_201011_002.dat	
Station:	Garwood Ice Cliff Met Station (GAFM)	
Author of this report:	Thomas Nylen	
File Period:	12/6/10 16:30 (2010.930651) to 1/27/11 12:00 (2011.072603)	
Sampling Frequency:	sonic every 60 minutes, wind every 4 secs.; other every 30 secs.	
Averaging and Output Interval:	every 15 minutes	
Program Name:	gaf1011v1.dld	
1	array I.D.	o1
2	year	ok
3	Day	ok
4	Time	ok
5	mean air temp. @ 3 meters (C)	rclow
6	mean R.H. @ 3 meters (%)	lowe correction
7	mean solar flux coming down (W/m^2) -	ok
8	mean solar flux going up (W/m^2)	ok
9	mean horizontal wind speed (m/s)	ok
10	resultant mean wind speed (m/s)	o1
11	resultant mean wind direction (degrees from north)	ok
12	standard deviation of wind direction (degrees)	ok
13	maximum wind speed (m/s)	ok
14	minimum wind speed (m/s)	ok
15	mean south facing pyrgeometer (pins A-B) (W/m^2) - **32348F3**	divide by 250; multiply by 242.13
16	mean south facing IR hemisphere temp. (pins A-C) (mv)	eppley
17	mean south facing IR thermopile output (pins F-G)(W/m^2)	eppley
18	mean south facing IR case temp. (pins E-D)(mv)	eppley
19	mean south facing pyrgeometer (pins A-B)(W/m^2) – **29786F3**	divide by 250; multiply by 276.24
20	mean north facing IR hemisphere temp. (pins F-G) (mv)	eppley
21	mean north facing IR thermopile (pins A-C) (W/m2)	eppley
22	mean north facing IR case temp. (pins E-D) (mv)	eppley
23	DrySoilTemp	rclow
24	StreamTSide	rclow
25	Wet Soil	rclow
26	StreamT	rclow
27	IRT thermistor (mV)	o1
28	IRT raw ice surface temp mV	o1
29	Surface Temperature (C)	ok
30	sample depth from sensor to surface (m)	measured distance* -100
31	sample of battery voltage	o1

Notes:
1. Station established Dec 6, 2010 just to the north of the Garwood Ice Cliff and just south of the Garwood stream
2. Installed 107 temp probe in shield 2.6 m above the ground surface, a vaisala HMP45C RH probe in a shield 2.6 m above the surface, a RM Young 05103 Wind Monitor at 3.4 m above the surface, two Eppley PIR (one facing the ice cliff and one facing the opposite direction, two Licor pyranometers (again, one facing ice, once facing opposite direction) at 2.9 m above the surface, IRT at 2.9 m above the ground surface (pointing at the wall), a Campbell Sonic Ranger 2.7 meters above the ground (pointing at the ice cliff).
3. On Dec 28, 2010, high flow in the Garwood stream eroded part of the sediment underneath the station, and moved the station a bit counterclockwise. Ultrasonic and radiation sensors no longer facing ice cliff directly.

4. Visited the station on Jan 27, 2011. Station was straighten after stream flow eroded the sediments underneath the leg, removed guide wires, rotated upper cross arms clockwise 10 degrees, not sure location of soil/stream probes, one soil probes is not working.
5. CR10X corrected back 10 secs at 1156.

Howard Glacier Met Station (HODM)

	Filename:	HOD_20101_001.dat	
	Station:	Howard Glacier Met Station (HODM)	
	Author of this report:	Thomas Nylen	
	File Period:	11/30/2009 11:00 (2009.913584) to 11/10/2010 14:15 (2010.859161)	
	Sampling Frequency:	sonic every 60 min, wind every 4 sec; others: every 30 sec	
	Averaging and Output Interval:	every 15 minutes	
	Program Name:	hod089v1	
1	array I.D.		o1
2	Day		ok
3	Time		ok
4	mean air temp. @ 3 meters (C)		rclow
5	mean R.H. @ 3 meters (%)		lowe correction
6	mean solar flux coming down (W/m^2) - **30884F3**		divide by 100; multiply by 120.77
7	mean solar flux going up (W/m^2) - **32057F3**		divide by 100; multiply by 114.29
8	mean horizontal wind speed (m/s)		ok
9	resultant mean wind speed (m/s)		o1
10	resultant mean wind direction (degrees from north)		ok
11	standard deviation of wind direction (degrees)		ok
12	maximum wind speed (m/s)		ok
13	minimum wind speed (m/s)		ok
14	ice temperature @ 50cm (original depth, mV*0.01)		o1
15	ice temperature @ 100cm (original depth, mV*0.01)		o1
16	mean air temp @ 1 meter m (C)		rclow
17	mean rh @ 1 meter (%)		lowe correction
18	sample depth from sensor to surface (cm)		measured depth * -100
19	sample of battery voltage		o1

Notes:
1. The last two lines of hod1011.dat have the same time stamp. The time was changed back on the datalogger to 1415, which meant the +7 min 25 secs (time datalogger clock was ahead of real time) was lost when the time was changed. The next file will include the 15 minutes from 1415 to 1430.
2. Datalogger clock was reset back 7 minutes and 25 secs at 11/9/2010 @ 1415.
3. Input values looked good, except there are values for an IRT, which is not hooked up.
4. Wind alignment was checked, and is pointing north.
5. Sonic sensor depth is 123.6 cm
6. ice stake height is 156.2, 156.2, 156.2 and 156.4. Top ice problem (originally 50 cm in ice) has melted out.
7. SM4M swapped at 11/9/2010 @ 1416. Program is hod089v1, not hod089v2. Check programs to see why there are two in the active directory.

	Filename:	HOD_201011_002.dat	
	Station:	Howard Glacier Met Station (HODM)	
	Author of this report:	Thomas Nylen	
	File Period:	11/10/2010 14:30 (2010.859189) to 01/13/2011 15:30 (2011.034646)	
	Sampling Frequency:	sonic every 60 min, wind every 4 sec; others: every 30 sec	
	Averaging and Output Interval:	every 15 minutes	
	Program Name:	hod089v1	
1	array I.D.		o1
2	Day		ok
3	Time		ok
4	mean air temp. @ 3 meters (C)		rclow

5	mean R.H. @ 3 meters (%)	lowe correction
6	mean solar flux coming down (W/m^2) - **30884F3**	divide by 100; multiply by 120.77
7	mean solar flux going up (W/m^2) - **32057F3**	divide by 100; multiply by 114.29
8	mean horizontal wind speed (m/s)	ok
9	resultant mean wind speed (m/s)	o1
10	resultant mean wind direction (degrees from north)	ok
11	standard deviation of wind direction (degrees)	ok
12	maximum wind speed (m/s)	ok
13	minimum wind speed (m/s)	ok
14	ice temperature @ 50cm (original depth, mV*0.01)	o1
15	ice temperature @ 100cm (original depth, mV*0.01)	o1
16	mean air temp @ 1 meter m (C)	rclow
17	mean rh @ 1 meter (%)	lowe correction
18	sample depth from sensor to surface (cm)	measured depth * -100
19	sample of battery voltage	o1

Notes:
1. Datalogger clock is 36 seconds slow, changed at 01/13/2011 @ 1439.
2. Input values looked good, except there are values for an IRT, which is not hooked up.
3. Wind alignment was checked, and is pointing north.
4. Sonic sensor depth is 136 cm. The three 4"x4" were partially under the sonic when we arrived.
5. ice stake height is 188.5 (no board). Top ice probe (originally 50 cm in ice) has melted out.
6. SM4M swapped at 01/13/2011 @ 1530. New Program, hod1011v1 was loaded.
7. New downward pyranometer, 32058F3 (8.89) and upward pyranometer, 30853F3 (8.1)
8. Need to move station and put new legs on. Install downward pyranometer on arm similar to Canada Glacier. Could also put it on the end of the sonic arm. Also need to drill in ice probes.

Lake Hoare Met Station (HOEM)

Filename:	HOE_201011_001.dat, HOE_201011_002.dat and HOE_201011_003.dat	
Station:	Lake Hoare Met Station (HOEM)	
Author of this report:	Thomas Nylen	
File Period:	01/26/2010 13:00 (2010.0699772) to 11/12/2010 16:45 (2010.864926)	
Sampling Frequency:	sonic every 60 min, wind every 4 sec; others: every 30 sec	
Averaging and Output Interval:	every 15 minutes	
Program Name:	hoe089v2	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	mean air temp. @ 3 meters (C)	rclow
5	mean RH @ 3 meters	lowe correction
6	mean solar flux coming down (W/m^2) – **PY28349**	ok
7	mean solar flux going up (W/m^2) – **PY28347**	ok
8	mean horizontal wind speed (m/s)	ok
9	resultant mean wind speed (m/s)	o1
10	resultant mean wind direction (degrees from north)	ok
11	standard deviation of wind direction (degrees)	ok
12	maximum wind speed (m/s)	ok
13	minimum wind speed (m/s)	ok
14	mean P.A.R. (micromols/s/m2) –**Q30804**	divide by 200, multiply by 225.32
15	sample station barometric pressure (mbar)	ok
16	mean temperature difference 1&3 m (C)	multiply -1
17	total particle count – Sensit (count min^{-1})	ol
18	sample of battery voltage	ol

Notes:
1. No missing data. Extra line at Nov 7, 2010 @ 1430. Ignore second line. All channels look good.
2. Datalogger time was corrected back 13 min 55 sec on November 7, 2010 at 1430.
3. Checked values in field. All good.
4. Swapped SM4M on November 7, 2010 at 1445.
5. Installed a multiplexer, and connected air and soil temperature probes. Loaded new program, hoe1011v1 on Nov 12, 2010 @ 1630. Might be some errors on the next dataset. RH was not working for about 20 minutes, and it took a few minutes to get the AirT3m hooked up. Also the multiplexer H1 wire was not connected up to 1H on the datalogger for a few minutes as well.
6. Removed old precipitation gage housing.
7. Swapped SM4M for SM4M at 1630. Loaded new program from SM4M.

Filename:	HOE_201011_004.dat and HOE_201011_005.dat	
Station:	Lake Hoare (HOEM)	
Author of this report:	Thomas Nylen	
File Period:	11/12/2010 16:45 (2010.864926) to 11/22/2010 14:30 (2010.892066)	
Sampling Frequency:	sonic every 60 min, wind every 4 sec; prec every 1 minute, others, every 30 sec	
Averaging and Output Interval:	Prec every 1 and 15 minutes, other, 15 minutes	
Program Name:	Hoe1011v2	
1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	mean air temp. @ 3 meters (C)	rclow

6	mean RH @ 3 meters	lowe correction
7	mean air temp @ 1 meter (C)	rclow
8	mean solar flux coming down (W/m^2) – **PY28349**	ok
9	mean solar flux going up (W/m^2) – **PY28347**	ok
10	mean horizontal wind speed (m/s)	ok
11	resultant mean wind speed (m/s)	o1
12	resultant mean wind direction (degrees from north)	ok
13	standard deviation of wind direction (degrees)	ok
14	maximum wind speed (m/s)	ok
15	minimum wind speed (m/s)	ok
16	mean P.A.R. (micromols/s/m2) –**Q30804**	divide by 200, multiply by 225.32
17	mean soil temperature @ 0 cm	rclow
18	mean soil temperature @ 5 cm	rclow
19	mean soil temperature @ 10 cm	rclow
20	total particle count – Sensit (count min^{-1})	ok
21	sample station barometric pressure (mbar)	ok
22	mean temperature difference 1&3 m (C)	multiply -1
23	distance to surface (m)	measurement * -100
24	sample of battery voltage	ol

Notes:
1. Ignore first line of hoe10113.dat, otherwise no missing data
2. Data looks good. Edited bad or missing values when multiplexer was installed.

Filename:	Hoe_201011_006.dat, Hoe_201011_007.dat, Hoe_201011_008.dat, Hoe_201011_009.dat, Hoe_201011_10.dat, Hoe_201011_11.dat	
Station:	Lake Hoare (HOEM)	
Author of this report:	Thomas Nylen	
File Period:	11/22/2010 14:45 (2010.892095) to 12/22/2010 9:45 (2010.973716)	
Sampling Frequency:	sonic every 60 min, wind every 4 sec; prec every 1 minute, others, every 30 sec	
Averaging and Output Interval:	every 15 minutes	
Program Name:	Hoe1011v2	
1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	mean air temp. @ 3 meters (C)	rclow
6	mean RH @ 3 meters	Lowe correction
7	mean air temp @ 1 meter (C)	rclow
8	mean solar flux coming down (W/m^2) – **PY28349**	ok
9	mean solar flux going up (W/m^2) – **PY28347**	ok
10	mean horizontal wind speed (m/s)	ok
11	resultant mean wind speed (m/s)	o1
12	resultant mean wind direction (degrees from north)	ok
13	standard deviation of wind direction (degrees)	ok
14	maximum wind speed (m/s)	ok
15	minimum wind speed (m/s)	ok
16	mean P.A.R. (micromols/s/m2) –**Q30804**	divide by 200, multiply by 225.32
17	mean soil temperature @ 0 cm	rclow
18	mean soil temperature @ 5 cm	rclow
19	mean soil temperature @ 10 cm	rclow
20	total particle count – Sensit (count min^{-1})	ok

21	sample station barometric pressure (mbar)	ok
22	mean temperature difference 1&3 m (C)	multiply by -1
23	distance to surface (m)	measurement * -100
24	Prec Accum Real-Time (RT) Not Real-Time (NRT) Total (mm)	o1
25	Prec Accum. NRT Total (mm)	o1
26	Prec Accum Total NRT Sample (mm)	o1
27	Prec Bucket NRT Sample (mm)	ok
28	Prec Status	o1
29	sample of battery voltage	ol

Notes:
1. No missing data
2. Installed food grade glycol in prec gage (60 Glycol and 40% Water). About 11 cm of fluid measured on the side of the bucket
3. Swapped SwRad and PAR leveling mounts, which have larger set screws.
4. Added another 100 amp/hr battery, for a total of 200 amp/hrs. Power to datalogger connected directly to battery.
5. Data looks good. Edited bad or missing values when precip fluid was added and leveling mounts replaced for SwRad and PAR were installed.
6. Watchdog timer error was discovered on Dec 20, 2010. Station was not working for about a day. Deleted 1 min sampling of prep.
7. Tied down prec gage with wire on Dec 20, 2010 2100.
8. Moved SwRadOut to newly intalled arm (same as the PAR sensors), which is next to sonic.
9. Loaded new program, hoe1011v3 on Dec 22, 2010 0945.
10. Removed sensit from station on Dec 22, 2010 0945
11. Added one bottle of mineral oil to prep gage to limited evaporation of anti-freeze on 12/22/2010 10:00 (2010.9737443). Still getting evaporation of the prec fluid. Need to o

Filename:	Hoe_201011_12.dat	
Station:	Lake Hoare (HOEM)	
Author of this report:	Thomas Nylen	
File Period:	12/22/2010 10:00 (2010.973744) to 1/30/2011 21:15 (2011.081878)	
Sampling Frequency:	sonic every 60 min, wind every 4 sec; prec every 1 minute, others, every 30 sec	
Averaging and Output Interval:	every 15 minutes	
Program Name:	Hoe1011v3	
1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	mean air temp. @ 3 meters (C)	rclow
6	mean RH @ 3 meters	Lowe correction
7	mean air temp @ 1 meter (C)	rclow
8	mean solar flux coming down (W/m^2) – **PY28349**	ok
9	mean solar flux going up (W/m^2) – **PY28347**	ok
10	mean horizontal wind speed (m/s)	ok
11	resultant mean wind speed (m/s)	o1
12	resultant mean wind direction (degrees from north)	ok
13	standard deviation of wind direction (degrees)	ok
14	maximum wind speed (m/s)	ok
15	minimum wind speed (m/s)	ok
16	mean P.A.R. (micromols/s/m2) –**Q30804**	divide by 200, multiply by 225.32
17	mean soil temperature @ 0 cm	rclow
18	mean soil temperature @ 5 cm	rclow

19	mean soil temperature @ 10 cm	rclow
20	sample station barometric pressure (mbar)	ok
21	mean temperature difference 1&3 m (C)	multiply -1
22	distance to surface (m)	measurement * -100
23	Prec Accum Real-Time, Not Real-Time - Total	o1
24	Prec Accum. Not Real-Time – Total	o1
25	Prec Accum. Total Non Real-Time	o1
26	Prec Bucket Real-Time - Average	o1
27	Prec Sample Bucket Non Real-Time	Measurement – Previous Measurement
28	Prec Status	o1
29	sample of battery voltage	ol

Notes:
1.   No missing data

Lake Hoare Precipitation (LHPM)

Filename:	LHP_201011_001.dat	
Station:	Lake Hoare Precipitation (LHPM)	
Author of this report:	Thomas Nylen	
File Period:	January 26, 2010 at 1245 to November 7, 2010 (311) @ 1445	
Sampling Frequency:	every 30 sec	
Averaging and Output Interval:	Every 15 minutes	
Program Name	lhp910v1	
1	array I.D.	o1
2	Day	Ok
3	Time	Ok
4	mean soil temperature @ 0 cm	rclow
5	mean soil temperature @ 5 cm	rclow
6	mean soil temperature @ 10 cm	rclow
7	Prec	Not hooked up
8	Prec	Not hooked up
9	distance to surface (m)	ok
10	sample of battery voltage	ol

Notes:
1. No missing data.
2. Time was adjusted ahead 2 min 45 seconds on November 7, 2010 at 1433.
3. No Snow cover on ground
4. SM4M swapped on November 7, 2009 at 1445.
5. New precipitation gage not hooked up yet.
6. Combined LH and LH prec data together, since the stations will be combined.

Filename:	LHP_201011_002.dat	
Station:	Lake Hoare Precipitation (LHPM)	
Author of this report:	Thomas Nylen	
File Period:	November 7, 2010 (311) @ 1500 to November 12, 2010 @ 1615	
Sampling Frequency:	every 30 sec	
Averaging and Output Interval:	every 15 minutes	
Program Name	lhp910v1	
1	array I.D.	o1
2	Day	ok
3	Time	ok
4	mean soil temperature @ 0 cm	rclow
5	mean soil temperature @ 5 cm	rclow
6	mean soil temperature @ 10 cm	rclow
7	Prec	Not hooked up
8	Prec	Not hooked up
9	distance to surface (m)	ok
10	sample of battery voltage	ol

Notes:
1. Decommissioned station November 12, 2010 @ 1615. Moved to main met station.
2. New precipitation gage not hooked up yet.

Lake Hoare Theta Soil Station (LHS1 & LHS2)

	Filename:	theta_hoare03-04.dat, lhtheta0405.DAT, LHtheta0506.xls, LKHoare.xls	
	Station:	Lake Hoare Soil Station (LHS2)	
	Author of this report:	Thomas Nylen	
	File Period:	1/28/2003 12:00:00 to 1/30/2007 08:00:00	
	Sampling Frequency:	SoilTemp = 1 hr or 4 hr	
	Averaging and Output Interval:	SoilTemp = 1 hr or 4 hr	
	Program Name	?????	
1	Array		o1
2	Year		ok
3	Day		ok
4	Time		ok
5	SoilTemp_1		ok
6	SoilTemp_2		ok
7	SoilTemp_3		ok
8	SoilTemp_4		ok

Notes:
1) Do not know the configuration of this station.
2) Processed all of the data going back to 2003
3) Various gaps and duplicate data lines in the data.

	Filename:	theta_hoare03-04.dat, lhtheta0405.DAT, LHtheta0506.xls, LKHoare.xls	
	Station:	Lake Hoare Theta Station (LHS1)	
	Author of this report:	Thomas Nylen	
	File Period:	1/28/2003 12:00:00 to 1/30/2007 08:00:00	
	Sampling Frequency:	Theta = 24 hrs	
	Averaging and Output Interval:	Theta = 24 hrs	
	Program Name	?????	
1	Array		o1
2	Year		ok
3	Day		ok
4	Time		ok
5	ThetaProbe_1		ok
6	ThetaProbe_2		ok
7	ThetaProbe_3		ok
8	ThetaProbe_4		ok

Notes:
1) Do not know the configuration of this station.
2) Processed all of the data going back to 2003

Lake Hoare TDR Station (HTDR)

Filename:	tdr07801.dat, tdr07802.dat, tdr07803.dat, tdr07804.dat, tdr08901.dat, tdr08902.dat, tdr08903.dat, tdr08904.dat	
Station:	Lake Hoare TDR Station (HTDR)	
Author of this report:	Thomas Nylen	
File Period:	12/16/2007 14:00 (2007.957763) to 01/05/2009 16:45 (2009.012871)	
Sampling Frequency:	soil temps every 1 min, and TDR probes and snow depth once per hour	
Averaging and Output Interval:	every 15 minutes	
Program Name	TDR078V1.DLD	
1	array I.D.	o1
2	year	ok
3	day	ok
4	time	ok
5	Soil temperature 1 (C)	rclow
6	Soil temperature 2 (C)	rclow
7	Soil temperature 3 (C)	rclow
8	TDR 1 (water content)	Trend (0 to 100, -0.03 to 0.729, measured value*0.1138-0.1758)
9	TDR 2 (water content)	Trend (0 to 100, -0.033 to 0.718, measured value*0.1138-0.1758)
10	TDR 3 (water content)	Trend (0 to 100, -0.029 to0.716, measured value*0.1138-0.1758)
11	AirT1m	rclow
12	sonic height (cm)	ok
13	internal temperature (C)	ok
14	sample of battery voltage	o1

Notes:
1. Station installed Dec 16, 2007, just up from the LH helo pad.
2. Map of configuration to be produced separately

Filename:	tdr08905.dat, tdr09101.dat, tdr09102.dat, tdr09103.dat, HTDR_201011_001.DAT, HTDR_201011_002.DAT, HTDR_201011_003.DAT, HTDR_201011_004.DAT, HTDR_201011_005.DAT	
Station:	Lake Hoare TDR Station (HTDR)	
Author of this report:	Thomas Nylen	
File Period:	01/08/2009 14:00 (2009.020776) to 01/25/2011 14:00 (2011.067352)	
Sampling Frequency:	60 secs for temps; TDR and Sonic, once every 6 hours	
Averaging and Output Interval:	every 15 minutes	
Program Name	TDR089V1.dld, TDR1011V1.bak	
1	array I.D.	o1
2	year	ok
3	day	ok
4	time	ok
5	Soil temperature 1 (C)	rclow
6	Soil temperature 2 (C)	rclow
7	Soil temperature 3 (C)	rclow
8	Soil temperature 4 (C)	rclow
9	Soil temperature 5 (C)	rclow
10	TDR 1 (water content)	Trend (0 to 100, -0.03 to 0.729,

		measured value*0.1138-0.1758)
11	TDR 2 (water content)	Trend (0 to 100, -0.033 to 0.718, measured value*0.1138-0.1758)
12	TDR 3 (water content)	Trend (0 to 100, -0.029 to0.716, measured value*0.1138-0.1758)
13	TDR 4 (water content)	Trend (0 to 100, -0.007 to 0.794, measured value*0.1138-0.1758)
14	TDR 5 (water content)	Trend (0 to 100, -0.003 to 0.802, measured value*0.1138-0.1758)
15	AirT1m	ok pre-Nov 7, 2010, and rclow for values after Nov 7, 2010
16	sonic height (cm)	ok
17	internal temperature (C)	ok
18	sample of battery voltage	o1

Notes:
1. Site visit on Nov 7, 2010. Adjusted time ahead 28 seconds at 1711.
2. Theta probes not working. Replaced TDR100 with new one. Theta probes working again
3. Judd Sonic not working. Replaced with Campbell Scientific In SDR50. Sensors 46cm above the surface.
4. Added 107 temperature probe at same height as sonic height.
5. Loaded new program, LHDR1011v1.   All sensors working again.

Taylor Glacier Met Station (TARM)

Filename:	TAR_201011_001-018.dat	
Station:	Taylor Glacier Met Station (TARM)	
Author of this report:	Thomas Nylen	
File Period:	11/18/09 12:15 (2009.880850) to 11/29/10 16:00 (2010.911416)	
Sampling Frequency:	depth every 60 minutes, wind every 4 secs.; others: every 30 secs.	
Averaging and Output Interval:	every 15 minutes	
Program Name	tar078v3	
1	array I.D.	o1
2	day	ok
3	time	ok
4	mean air temp. @ 3 meters (C)	rclow
5	mean R.H. @ 3 meters (%)	lowe correction
6	mean air temp @ 1m (C)	rclow
7	mean RH at 1m (%)	lowe correction
8	mean solar flux coming down (W/m^2) – **29777F3**	divide by 100; multiply by 119.33
9	mean solar flux going up (W/m^2) - **29776F3**	divide by 100; multiply by 119.05
10	mean horizontal wind speed (m/s)	ok
11	resultant mean wind speed (m/s)	o1
12	resultant mean wind direction (degrees from north)	ok
13	standard deviation of wind direction (degrees)	ok
14	maximum wind speed (m/s)	ok
15	minimum wind speed (m/s)	ok
16	ice temp	ok
17	surface temperature internal thermister output (mV)	o1
18	surface temperature (mV)	o1
19	surface temperature (C)	ok
20	sample depth from sensor to surface (cm)	multiple by -100
21	sample of battery voltage	o1

Notes:
1. Multiple periods of missing data. Bad battery. Did n't hold a charge, and datalogger cut out when voltage went below 10.0V
2. Reset datalogger clock + 59 min 49 secs on 11/09/2010 13:00
3. Rotated wind vain 50 degrees counterclockwise on 11/09/2010 1310
4. SM swapped on 11/09/2010 1316.
5. Ice temps not hooked up, not included
6. Replaced battery on November 29, 2010 1600. Turned off station for a bit
7. Replaced wind on November 29, 2010 1600
8. Drilled nu-rail on cross arm and tighten center post.
9. Loaded new program, tar1011v1 and plugged power back into CR10X.

Filename:	TAR_201011_019.dat	
Station:	Taylor Glacier Met Station (TARM)	
Author of this report:	Thomas Nylen	
File Period:	11/29/10 16:00 (2010.911416) to 1/21/11 12:00 (2011.056164)	
Sampling Frequency:	depth every 60 minutes, wind every 4 secs.; others: every 30 secs.	
Averaging and Output Interval:	every 15 minutes	
Program Name	tar1011v1	
1	array I.D.	o1
2	year	ok

3	day	ok
4	time	rclow
5	mean air temp. @ 3 meters (C)	lowe correction
6	mean R.H. @ 3 meters (%)	rclow
7	mean air temp @ 1m (C)	lowe correction
8	mean RH at 1m (%)	divide by 100; multiply by 119.33
9	mean solar flux coming down (W/m^2) – **29777F3**	divide by 100; multiply by 119.05
10	mean solar flux going up (W/m^2) - **29776F3**	ok
11	mean horizontal wind speed (m/s)	o1
12	resultant mean wind speed (m/s)	ok
13	resultant mean wind direction (degrees from north)	ok
14	standard deviation of wind direction (degrees)	ok
15	maximum wind speed (m/s)	ok
16	minimum wind speed (m/s)	ok
17	surface temperature internal thermister output (mV)	o1
18	surface temperature (mV)	o1
19	surface temperature (C)	ok
20	sample depth from sensor to surface (cm)	multiple by -100
21	sample of battery voltage	o1

Notes:
1. Missing two lines of data between this file and last. Station was turned off while new battery was installed.
2. CR10X 15 secs ahead. Adjusted 01/21/2011 1201.
3. Sonic depth 121.5
4. Pulled multiplexer
5. Installed new serial cable

Lake Vanda Met Station (VAAM)

	Filename:	VAA_201011_001.dat	
	Station:	Lake Vanda Met Station (VAAM)	
	Author of this report:	Thomas Nylen	
	File Period:	11/20/2009 15:30 (2009.886701) to 11/19/2010 11:45 (2010.883533)	
	Sampling Frequency:	wind every 4 secs.; ultrasonic every 1 hr; others every 30 secs.	
	Averaging and Output Interval:	every 15 minutes	
	Program Name	vaa045v1	
1	array I.D.		o1
2	day		ok
3	time		ok
4	mean air temp. @ 3 meters (C)		rclow
5	mean R.H. @ 3 meters (%)		lowe correction
6	mean solar flux coming down (W/m^2) - PY41090		ok
7	mean solar flux going up (W/m^2) - PY20561		ok
8	mean horizontal wind speed (m/s)		ok
9	resultant mean wind speed (m/s)		o1
10	resultant mean wind direction (degrees from north)		ok
11	standard deviation of wind direction (degrees)		ok
12	maximum wind speed (m/s)		ok
13	minimum wind speed (m/s)		ok
14	mean P.A.R. (micromols/s/m^2) - **Q30794**		divide by 200, multiply by 223.13
15	mean soil temperature @ 0 cm in soil (C)		rclow
16	mean soil temperature @ 5 cm in soil (C)		rclow
17	mean soil temperature @ 10 cm in soil (C)		rclow
18	distance to surface (m)		measured depth * -100
19	sample of battery voltage		o1

Notes:
1. No missing data.
2. Adjusted datalogger back 13 min and 35 secs on 11/19/2010 10:32.
3. Checked input values and wind alignment at 10:30, all appear correct. Sonic sensor depth is 65.0 cm.
4. Maintenance: on November 19, 2010 swapped upward pyranometer sensor (old#py41090, new#PY40424) at 11:30, swapped downward pyranometer sensor (old#py20561, new#PY33485) at 11:15, swapped wind mnitor
5. Sonic ultrasonic ranger not working intermediately. Remove to replace resistor.
6. Wind monitor not working properly. Not sure problem. Monitor was replaced.
7. Station power off to load new program and swap SM on November 19, 2010 at 1145. New program is vaa1011v1.

	Filename:	VAA_201011_002.dat, VAA_201011_003	
	Station:	Lake Vanda Met Station (VAAM)	
	Author of this report:	Thomas Nylen	
	File Period:	11/19/2010 12:00 (2010.886301) to 11/29/2010 11:45 (2010.913670)	
	Sampling Frequency:	wind every 4 secs.; ultrasonic every 1 hr; others every 30 secs.	
	Averaging and Output Interval:	every 15 minutes	
	Program Name	vaa1011v1	
1	array I.D.		o1
2	day		ok
3	time		ok
4	mean air temp. @ 3 meters (C)		rclow
5	mean R.H. @ 3 meters (%)		lowe correction

6	mean solar flux coming down (W/m^2) - **PY40424**	ok
7	mean solar flux going up (W/m^2) - **PY33485**	ok
8	mean horizontal wind speed (m/s)	ok
9	resultant mean wind speed (m/s)	o1
10	resultant mean wind direction (degrees from north)	ok
11	standard deviation of wind direction (degrees)	ok
12	maximum wind speed (m/s)	ok
13	minimum wind speed (m/s)	ok
14	mean P.A.R. (micromols/s/m^2) - **Q30794**	divide by 200, multiply by 223.13
15	mean soil temperature @ 0 cm in soil (C)	rclow
16	mean soil temperature @ 5 cm in soil (C)	rclow
17	mean soil temperature @ 10 cm in soil (C)	rclow
18	distance to surface (m)	measured depth * -100
19	sample of battery voltage	o1

Notes:
1. No missing data.
2. Sonic ultrasonic ranger was not working, replaced with the same sonic with new RH chip

Lake Vida Met Station (VIAM)

Filename:	VIA_201011_001.dat	
Station:	Lake Vida Met Station (VIAM)	
Author of this report:	Thomas Nylen	
File Period:	12/01/2009 10:45 (2009.916296) to 11/19/2010 13:15 (2010.883704)	
Sampling Frequency:	wind every 4 secs.; ultrasonic every 1 hr; others every 30 secs.	
Averaging and Output Interval:	every 15 minutes	
Program Name	via045v1	
1	array I.D.	o1
2	day	ok
3	time	ok
4	mean air temp. @ 3 meters (C)	Rclow
5	mean R.H. @ 3 meters (%)	Lowe correction
6	mean solar flux coming down (W/m^2) – **PY20523**	ok
7	mean solar flux going up (W/m^2) – **PY45668**	ok
8	mean horizontal wind speed (m/s)	ok
9	resultant mean wind speed (m/s)	o1
10	resultant mean wind direction (degrees from north)	ok
11	standard deviation of wind direction (degrees)	ok
12	maximum wind speed (m/s)	ok
13	minimum wind speed (m/s)	ok
14	mean P.A.R. (micromols/s/m^2) - **Q30800**	divide by 200, multiply by 222.23
15	mean soil temperature @ 0 cm in soil (C)	Rclow
16	mean soil temperature @ 5 cm in soil (C)	Rclow
17	mean soil temperature @ 10 cm in soil (C)	Rclow
18	distance to surface (m)	Measured depth * -100
19	sample of battery voltage	o1

Notes:
1. Missing two lines of data between this file and last years. Not sure why.
2. Time adjusted back 6 minutes and 21 seconds on 11/17/2010 1231.
3. Input values and wind alignment on 11/17/2010 1300 appear correct.
4. Sonic sensor depth = 52.0 cm.
5. Maintenance: on November 19, 2010 swapped upward pyranometer sensor (old#py20523, new#PY51356) at 1245, swapped downward pyranometer sensor (old#py45668, new#PY56364) at 12:35
6. Station power off to load new program and swap SM on November 19, 2010 at 1315. New program is via1011v1.

Appendix

Array Ids

Location Codes					
Array ID	**4 ch ID**	**Name**	**Date of Station Establishment**	**Lat**	**Long**
1	HOEM	Lake Hoare (HOEM)	Dec 1, 1993 by Peter Doran		
2	FRLM	Lake Fryxell (FRLM)	Jan 6, 1994 by Peter Doran		
3	BOYM	Lake Bonney (BOYM)	November 24, 1993 by Peter Doran		
4	COHM	Commonwealth Glacier (COHM)	November 22, 1993 by Peter Doran		
5	HODM	Howard Glacier (HODM)	November 20, 1993 by Peter Doran		
6	TARM	Taylor Glacier (TARM)	November 21, 1994 by Peter Doran		
7	VAAM	Lake Vanda (VAAM)	November 24, 1994 by Peter Doran		
8	BRHM	Lake Brownworth (BRHM)	November 13, 1996 by Peter Doran and DJ Osborne		
9	EXEM	Explorer's Cove (EXEM)	Nov 21, 1997 by Peter Doran, DJ Osborne and K. Sauter		
10	CAAM	Canada Glacier (without Eddy Sensors) CAAM	Nov 20, 1995 by Karen Lewis; reinstalled Jan 13, 1998		
11	VIAM	Lake Vida (VIAM)	November 24, 1995 by Peter Doran		
12		RETIRED Hoare Submerged			
13		RETIRED Fryxell Submerged			
14		RETIRED Bonney East Submerged			
15		RETIRED Canada Gl. (w/ Eddy Sensors)			
16		RETIRED Bonney West Submerged			
17	F6MM	Fryxell Snow Fence (F6MM)	Changed to F6 Met and F6 Sensir by Hassan		
18	BENM	Beacon Valley (BENM)			
19	LHPM	Retired Lake Hoare Precipitation (LHPM)	January 26, 2002 by Thomas Nylen		
20	BRMM	Bonney Snow Fence (BRMM)	Changed to Bonney Riegel Met and Sensit by Hassan		
21	FRSM	Friis (FRSM)	Installed by Cuffey et al., ????	77.747	161.51634
22	FLMM	Mt. Fleming (FLMM)	Installed 10/16/06 by Univ of Wisc AWS		
25	GADM	Garwood Valley (GADM)	Installed by Peter Doran		
26	GAFM	Garwood Valley Ice Cliff (GAFM)	December 2010 by Thomas Nylen		
27	HTDR	Lake Hoare TDR Station	08-09 Season by Hassan		
92	EXSM	Explorers Cove Sensity (EXSM)	Installed by Hassan		
95	F6SM	F6 Snowfence Sensit (F6SM)			
96		Lake Fryxell Sensit	Data combined with Fryxell station data		
97		RETIRED Lake Hoare Sensit	Retired 12/2010		
98		RETIRED Lake Bonney Sensit	Retired 12/2010		
99	BRSM	Bonney Reigel Sensit (BRSM)	Hassan		
102	BRSS	Bonney Reigel Soil Station			
103	F6SS	F6 Soil station			
104	LHS3	LH Soil station 2			
105	LHS4	LH Soil station 4			
112	BRTS	Bonney Reigel Theta Station			
113	F6TS	F6 Soil station			
114	LHS1	LH Soil station 1 Theta	1/28/2003		
115	LHS2	LH Soil station 3 Soil	1/28/2003		

Data Flags

Definition	Flags	Post-processing	Data Manager
Out of Range	R	None	Flag as R, except flag as "U" when IceT20cm exceeds 0 degrees and "V" when IceT1m exceeds 0 degrees
Negative values zeroed out	Z	Converted to zero	Flag as Z
Bad Value - Value below zeroing value	T	Value omitted	Flag as F
Bad Value - Value is equal to -6999 or known to be questionable	B	None	Flag as B
Bad Value - Raw temp value (-53C and 32.79C) which exceeds the bracketed limited for bisection	F	Value omitted	Flag as B
SwRadOut is greater than a % of SwRadIN	S	None	Flag as S
Wdir and WDirStD zeroed out because WSpd = 0	N	Converted to zero	Flag as N

Value missing	M	None	Flag as M