

Meteorological Post Processing Documentation and Task Lists for 2013/2014

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 that begin with the station ID.

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Appendix

Array I.D. key
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

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

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).

$$\begin{aligned}
 &= [\text{RH3m}] * (6.107799961 + [\text{AirT3m}] * (0.4436518521 + [\text{AirT3m}] * (0.01428945805 + [\text{AirT3m}] * (0.0002650648471 + \\
 &[\text{AirT3m}] * (0.000003031240396 + [\text{AirT3m}] * (0.0000002034080948 + 0.0000000006136820929 * [\text{AirT3m}])))))) / \\
 &(6.109177956 + [\text{AirT3m}] * (0.503469897 + [\text{AirT3m}] * (0.01886013408 + [\text{AirT3m}] * (0.0004176223716 + [\text{AirT3m}] * \\
 &(0.00000582472028 + [\text{AirT3m}] * (0.0000004838803174 + 0.000000001838826904 * [\text{AirT3m}]))))))
 \end{aligned}$$

Lake Bonney Met Station (BOYM)

Filename: BOYM_201314_SM01.dat, BOYM_201314_T01.dat
 Author of this report: Hassan Basagic
 File Period: 3/5/2013 7:30 to 11/21/2013 17:45; 11/21/2013 18:00 to 1/7/2014 1:00
 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 boy_201112_v1

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 (%)	Low correction
7	mean air temp. @ 1 meters (C)	rclow
8	mean solar flux going down (W/m2) – PY51356	ok
9	mean solar flux going up (W/m2) – PY56364	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) – Q23204	divide by 200, multiply by 292.51
17	mean soil temperature @ 0 cm in soil (C)	rclow
18	mean soil temperature @ 5 cm in soil (C)	rclow
19	mean soil temperature @ 10 cm in soil (C)	rclow
20	sample depth from sensor to surface (cm)	Measured depth * -100
21	mean up-facing pyrgeometer, rad. comp. (W/m2) - 30831F3	divide by 250; multiply by 277.01
22	mean up-facing pyrgeometer hemisphere temp	Eppley
23	mean up-facing pyrgeometer thermopile (W/m2)	Eppley
24	mean up-facing pyrgeometer case temp	Eppley
25	mean down-facing pyrgeometer, rad. comp. (W/m2) - 32059F3	divide by 250; multiply by 227.79
26	mean down-facing pyrgeometer hemisphere temp	Eppley
27	mean down-facing pyrgeometer thermopile (W/m2)	Eppley
28	mean down-facing pyrgeometer case temp	Eppley
29	sample precipitation (mm)	ok
30	sample of battery voltage	o1

Notes:

- Station visit on 11/21/13 17:30 by Basagic, Cronin, and Doran. Time adjusted back 1 hour at 17:33. All input values look good except for missing ultrasonic distance ranger. Recorded serial numbers for down facing pyranometer (PY56364), up facing pyranometer (PY513356), and quantum (Q23204). Wind monitor is aligned north. No station maintenance. Swapped storage module at 17:46.
- Post-processing: Previously missing data from 12/22/2012 13:00 to 12/25/2012 5:15 processed from SM01. Clock was mistakenly set 1 hour ahead on Sept 29, 2013 after 7:15 via telemetry connection. Times between Sept 29, 2013 and Nov 21, 2013 17:45 were corrected. No missing data. Battery voltage low = 12.3v.

Bonney Riegel Met Station (BRMM): not visited, no data available.

Bonney Riegel Sensit Station (BRSM): not visited, no data available.

Bonney Riegel Theta Soil Station (BRTS)

Filename: BRTS_201213_SM02.dat
Author of this report: Hassan Basagic
File Period: 11/23/2012 17:30 to 1/16/2013 10:50
Sampling Frequency: SoilTemp = 1 hr
Averaging and Output Interval: SoilTemp = 1 hr
Program Name BRTS_201112_V1.dld

1	Array (102)	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
9	ThetaProbe_1	ok
10	ThetaProbe_2	ok
11	ThetaProbe_3	ok
12	ThetaProbe_4	ok
13	Battery voltage	ok

Notes:

1. Station visit on 1/17/2012 by Eric Sokol to download storage module at 10:50.
2. This file was post processed in January 2014, and is therefore included in this report. No missing data.

Lake Brownworth Met Station (BRHM)

Filename: BRHM_201314_SM001.dat
 Author of this report: Hassan Basagic
 File Period: 11/27/2012 14:45 to 11/18/2013 11:45
 Sampling Frequency: sonic every 60 minutes, wind speed every 4 sec, other every 30 sec
 Averaging and Output Interval: every 15 minutes
 Program Name brhm_201112_v1

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 coming down (W/m ²) – old PY40423, new PY28347	ok
8	mean solar flux going up (W/m ²) – old PY27929, new PY28349	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) - Q32567	multiply by 1.3960
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	sample of battery voltage	o1

Notes:

1. Station visit on 11/18/13 at 10:58. Time adjusted -7 min at 11:10. Checked input values and wind alignment, all values look good, except the ultrasonic ranger is still not working.
2. Station maintenance: on 11/18/13 swapped up facing pyranometer (old: PY40423, new PY28347) at 11:54, down facing pyranometer (PY27929 , PY28349) at 11:35, RH at 11"45. Station power at 11:58 to swap one of two batteries. Not connecting with the radio. Removed sonic to test in lab.
3. Post processing: No missing data. Sonic did not operate, flagged all data as bad.

Canada Glacier (CAAM)

Filename: CAAM_201314_SM01.dat, CAAM_201314_T001.dat
Author of this report: Hassan Basagic
File Period: 2/7/13 7:30 to 11/11/13 15:00; 11/11/13 15:15 to 1/4/14 0:15
Sampling Frequency: wind speed every 4 sec; all other every 30 sec
Averaging and Output Interval: every 15 minutes
Program Name CAAM_201112_v1

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 (%)	Low correction
7	Aspirated mean air temp @ 3m (C)	rclow
8	mean solar flux coming down (W/m ²) – old PY20565 , new PY23277	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. Station visit on Nov 11, 2013 14:00. Adjusted clock back 1 hour at 14:02. Input values and wind alignment looked good. Station legs did not need adjusting, only about 5 cm above surface.
2. Station maintenance on Nov 11, 2013: swapped up facing pyranometer (old: PY20565 , new: PY2327) at 14:35, swapped RH at 14:10.
3. Post processing notes: Data processed with telemetry file. No missing data. Clock was set 1 hour ahead on Oct 3, 2013 after 13:15 via telemetry connection. Times between Oct 3, 2013 and Nov 11, 2013 were corrected. Sonic transducer looking good. No missing data. Winter battery low was 9.5v, this battery will need to be replaced next season.

Explorers Cove Met Station (EXEM)

Filename: No files submitted
Author of this report: Hassan Basagic
File Period:
Sampling Frequency: prec every 60 minutes, wind every 4 secs.; others: every 30 secs.
Averaging and Output Interval: every 15 minutes

Notes:

1. No station visit in 2013-2014 field season.
2. Post processing: Attempted to post process telemetry file 201213_T01 and 201314. File 201213 is missing data from Dec 16, 2012 12:00 to the end of the calendar year. This data is on the storage module at the station and should be post processed when retrieved. Telemetry file 201314_T01 has too many data gaps to process. This data should be downloaded from the station storage module and post processed when retrieved.

Commonwealth Glacier Met Station (COHM)

Filename: COHM_201314_SM01.dat, COHM_201314_SM02.dat
 Author of this report: Hassan Basagic
 File Period: 3/5/2013 7:00 to 11/8/2013 14:45; 11/8/2013 15:00 to 11/14/2013 15:30
 Sampling Frequency: sonic every 60 minutes, wind every 4 secs.; other every 30 secs.
 Averaging and Output Interval: every 15 minutes
 Program Name: cohms_201112_v1

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 air temp. @ 1 meters (C)	rclow
8	mean solar flux coming down (W/m ²) - 33733F3	divide by 100; multiply by 119.62
9	mean solar flux going up (W/m ²) - 31435F3	divide by 100; multiply by 128.04
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 incoming IR pyrgeometer output (pins A-B) (W/m ²) - 32348F3	divide by 250; multiply by 262.47
17	mean incoming IR hemisphere temp. (pins A-C) (mv)	eppley
18	mean incoming IR thermopile output (pins F-G)(W/m ²)	eppley
19	mean incoming IR case temp. (pins E-D)(mv)	eppley
20	mean outgoing IR pyrgeometer output (pins A-B)(W/m ²) - 29786F3	divide by 250; multiply by 276.24
21	mean outgoing IR hemisphere temp. (pins F-G) (mv)	eppley
22	mean outgoing IR thermopile (pins A-C) (W/m ²)	eppley
23	mean outgoing IR case temp. (pins E-D) (mv)	eppley
24	ice temperature @ 50cm (original depth, mV*0.01)	Offline
25	ice temperature @ 100cm (original depth, mV*0.01)	Offline
26	IRT thermistor (mV)	o1
27	IRT raw ice surface temp mV	o1
28	Surface Temperature (C)	Ok
29	sample depth from sensor to surface (m)	measured depth* -100
30	sample of battery voltage	ok

Notes:

1. Station visit on 11/8/2013 at 14:20. Datalogger time and date are correct. Input values look good except ice temps, which were not reinstalled after station relocation. Wind in alignment. Snow covering surface below station. Station maintenance: Swapped RH at 14:45. Swapped sonic ranger unit (old height = 64 cm; new height = 63.4). Measured sonic height = 64 cm. Station legs do not need lowering. Connection wire at sonic head was a little loose prior to swap. Swapped SM4M storage module at 15:05. Attempted to load new program to remove ice temps from program but received an error message (ERR140). Aborted new program and run with old program.
2. Station visit on 11/14/2013 at 15:30. All inputs look good including new sonic installed at last visit. Station maintenance: swapped CR10x at 15:35; station power off 15:32 to 15:35. Loaded new program COHM_201314_v1 that removed ice temps from program. Swapped SM at 15: 44.
3. Post processing: No missing data. Last two lines ofSM02 were bad data and removed. Ice temps all flagged as bad.

Filename: COHM_201314_T02.DAT
 Author of this report: Hassan Basagic
 File Period: 11/14/2013 15:45 to 1/4/2014 1:00
 Sampling Frequency: sonic every 60 minutes, wind every 4 secs.; other every 30 secs.
 Averaging and Output Interval: every 15 minutes
 Program Name: COHM_201314_v1

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 air temp. @ 1 meters (C)	rclow
8	mean solar flux coming down (W/m ²) - 33733F3	divide by 100; multiply by 119.62
9	mean solar flux going up (W/m ²) - 31435F3	divide by 100; multiply by 128.04
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 incoming IR pyrgeometer output (pins A-B) (W/m ²) - 32348F3	divide by 250; multiply by 262.47
17	mean incoming IR hemisphere temp. (pins A-C) (mv)	eppley
18	mean incoming IR thermopile output (pins F-G)(W/m ²)	eppley
19	mean incoming IR case temp. (pins E-D)(mv)	eppley
20	mean outgoing IR pyrgeometer output (pins A-B)(W/m ²) - 29786F3	divide by 250; multiply by 276.24
21	mean outgoing IR hemisphere temp. (pins F-G) (mv)	eppley
22	mean outgoing IR thermopile (pins A-C) (W/m ²)	eppley
23	mean outgoing IR case temp. (pins E-D) (mv)	eppley
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	ok

Notes:

1. Processed telemetry file. Note that ice temps have been removed. No missing data.

Explorers Cove Met Station (EXEM) – station not visited; no report.

F6 Met Station (F6MM)

Filename: F6MM_201314_SM01.dat
 Author of this report: Hassan Basagic
 File Period: 11/23/12 10:00 to 11/24/13 11:15
 Sampling Frequency: sonic every 60 min, wind every 4 sec; others: every 30 sec
 Averaging and Output Interval: every 15 min
 Program Name: FSM1112v2.dld

1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	AirT@1m	rclow
6	AirT@30cm – average	rclow
7	AirT@30cm – sample	o1
8	SwRadIn. @ 82 cm (W/m ²) – PY25307	ok
9	mean horizontal wind speed (m/s) @ 1m	ok
10	resultant mean wind speed (m/s) @ 1m	o1
11	resultant mean wind direction (degrees from north) @ 1m	ok
12	standard deviation of wind direction (degrees) @ 1m	ok
13	maximum wind speed (m/s) @ 1m	ok
14	minimum wind speed (m/s) @ 1m	ok
15	mean horizontal wind speed (m/s) @ 3m	ok
16	resultant mean wind speed (m/s) @ 3m	o1
17	resultant mean wind direction (degrees from north) @ 3m	ok
18	standard deviation of wind direction (degrees) @ 3m	ok
19	maximum wind speed (m/s) @ 3m	ok
20	minimum wind speed (m/s) @ 3m	ok
21	mean soil temperature @ 20 cm in soil	rclow
22	Sonic Ranger Depth (cm)	Measured depth * -100
23	sample of battery voltage	o1

Notes:

1. Station visited on 11/24/2013 between 11:20 and 11:28. CR10X time was correct and input values look good. Wind sensors are properly aligned. Snow has accumulated at site, covering entire area. Swapped SM at 11:25. No maintenance performed.
2. Post processing notes: First 11 lines of data were from another station and deleted.
3. Voltage winter low = 11.9v. Ultra sonic transducer starting fail. Needs replacement.

F6 Sensit Met Station (F6SM)

Filename: F6SM_201314_SM01.dat
Author of this report: Hassan Basagic
File Period: 11/23/2012 10:00 to 11/24/2013 at 11:15
Sampling Frequency: 60 seconds
Averaging and Output Interval: every 15 min
Program Name: F6S1112V1.dld

1	array I.D.	o1
2	Year	Ok
3	Day	Ok
4	Time	Ok
5	PC_1	Sensor failed
6	PC_2	Sensor failed
7	sample of battery voltage	Ok

Notes:

1. Station visited on 11/24/2013 between 11:20 and 11:28. CR10X time correct. Lower sensit was covered in snow.
2. Post processing notes: No missing lines of data. Sensit at 30 cm did not record any events. Several events were recorded at 100 cm, however they registered only as "1". This site should be removed and sensors recalibrated. All data flagged all as 'Bad'.

F6 Theta Soil Station (F6TS)

Filename: F6ST_201213_SM02.dat, F6ST_201314_SM01.dat
Author of this report: Hassan Basagic
File Period: 11/23/2012 10:15 to 1/17/2013 12:00; 1/17/2013 at 12:15 to 1/24/2013 11:30
Sampling Frequency: SoilTemp = 1 hr, Theta = 24 hrs
Averaging and Output Interval: SoilTemp = 1 hr, Theta = 24 hrs
Program Name: F6TS_201112_v1.dld

1	Array (113)	ok
2	Year	ok
3	Day	ok
4	Time	ok
5	SoilT1	rclow
6	SoilT2	rclow
7	SoilT3	rclow
8	SoilT4	rclow
9	Theta_1	ok
10	Theta_2	ok
11	Theta_3	ok
12	Theta_4	ok
13	Voltage	ok

Notes:

1. Station visit on 1/17/2012 by Eric Sokol to download storage module at 12:05.
2. Station visited on 11/24/2014 to swap storage module at 11:32. Snow covering enclosure. Removed snow from solar panel.
3. Post processing notes: Two files processed together. No data is missing.

Mt. Fleming Met Station (FLMM)

Filename: FLMM_201314_SM01.DAT
Author of this report: Hassan Basagic
File Period: 12/26/2012 13:00 to 12/4/2013 15:15
Sampling Frequency: wind every 4 sec; others: every 30 sec
Averaging and Output Interval: every 15 min
Program Name: flmm_201112_v1.dld

1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	AirT2m (C)	ok
6	RH1.3m (%)	Low correction
7	wspd_U_WVT (m/s)	ok
8	wspd_U_WVT (m/s)	o1
9	WDir DU (degrees)	ok
10	WDir Std Dev	ok
11	WSpd Max (m/s)	ok
12	WSpd Max (m/s)	ok
13	Pressure (mbar)	ok
14	Voltage	o1

Notes:

1. Station visit on 12/4/2013 at 15:00 by Thomas Nysten. Station in good working order.
2. Post-processing: No missing data. Winter battery power looks good.

Lake Fryxell Met Station (FRLM)

Filename: FRLM_201314_SM01.dat, FRLM_201314_T01.dat
 Author of this report: Hassan Basagic
 File Period: 2/13/13 6:15 to 11/24/2013 10:00; 11/24/2013 10:15 to 1/7/2014 6:00
 Sampling Frequency: sonic every 60 min, wind every 4 sec; others: every 30 sec
 Averaging and Output Interval: every 15 min
 Program Name: FRL201112v2

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 down (W/m ²) - PY41099	ok
8	mean solar flux going up (W/m ²) - PY23276	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) - Q99253	divide by 200, multiply by 248.59
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 (m)	measurement * -100
20	sample of battery voltage	o1

Notes:

1. Station visited on 11/24/2013 at 9:47. CR10X time matches GPS time. Inputs look good. Wind sensor is in alignment.
2. Station maintenance on 11/24/2013: Datalogger power off between 9:54 and 9:56 to swap CR10x. Swapped SM4M at 10:02.
3. Post processing notes: Processed one telemetry file with SM01. No missing data. The transducer on the ultrasonic distance ranger is continuing to fail, values above 100 and zeroes were rejected and flagged as bad.

Friis Hills Met Station (FRSM)

Filename: FRSM_201314_SM01.dat; FRSM_201314_T01.dat
Author of this report: Hassan Basagic
File Period: 11/28/2012 10:00 to 11/21/2013 11:15; 11/21/2013 11:30 to 1/4/2014 7:15
Sampling Frequency: wind every 4 sec; others: every 30 sec
Averaging and Output Interval: every 15 min
Program Name: FRSM_201112_v1

1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	Mean air temp. @ 2.5 m (C)	ok
6	Mean RH @ 2.5m (%)	ok
7	NetRad (W m ⁻²)	ok
8	NetRad (W m ⁻²) Correction	ok
9	mean horizontal wind speed (m/s)	ok
10	WSpd_U_WVT L	o1
11	resultant mean wind direction (degrees from north)	ok
12	standard deviation of wind direction (degrees)	ok
13	Wind Speed Max (m/s)	ok
14	Wind Speed Min (m/s)	ok
15	Pressure (mbar)	ok

Notes:

1. Station visit on 11/21/2013 at 11:00 by Hassan Basagic, Kyle Cronin, and Peter Doran. Datalogger time adjusted back 1 hour. Input values look good except. Wind sensor is in alignment.
2. Station maintenance on 11/21/2013: swapped RH at 11:13.
3. Post-processing: Data processed with telemetry file. No missing data. Clock was set 1 hour ahead on 10/2/2013 after 19:00 via telemetry connection. Times between Oct 2, 2013 and Nov 21, 2013 were corrected. No missing lines of data. Deleted last 33 lines of data from SM01, it was from another site.
4. Needs program sheet at station. Add voltage to program output.

Lake Hoare Met Station (HOEM)

Filename: HOEM_201314_SM01.dat, HOEM_201314_T01.DAT
 Author of this report: Hassan Basagic
 File Period: 02/13/2013 01:45 to 12/24/2013 01:30
 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: HOEM_201112_V3

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	Low correction
7	mean air temp @ 1 meter (C)	rclow
8	mean solar flux coming down (W/m ²) – PY20561	ok
9	mean solar flux going up (W/m ²) – PY20523	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. (mmols/s/m2) Q17248	divide by 200, multiply by 317.70
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	ok

Notes:

1. Station visit on Nov 12 2013, time of arrival 8:52. Station CR10x clock was ahead by 1 hour, did not correct until Nov 25, 2013 (see note 2). All channel inputs look good. This station will be removed next season due to rising lake levels. Station will be replaced by the new station located 200 meters away on higher ground. No maintenance performed at this time. Swapped SM at 9:04.
2. Station visit on Nov 25, 2013 at 20:48 to change clock back 1 hour.
3. Data processed with telemetry download on Dec 24, 2013. No missing data. Clock was set 1 hour ahead on Oct 3, 2013 after 13:00 via telemetry connection. Times between Oct 3, 2013 and Nov 25, 2013 were corrected. Sonic transducer looking good. Precipitation gage is lowering over time. Recommend adding mineral oil to prevent evaporation. Over winter battery voltage low was 12.02.

New Lake Hoare Met Station (HO2M)

Filename: HO2M_201313_SM01.dat; HO2M_201313_SM02.dat
 Author of this report: Hassan Basagic
 File Period: 12/27/2012 20:30 to 11/12/2013 10:30; 11/12/2013 10:45 to 11/16/13 13:15
 Sampling Frequency: wind every 4 sec.; others: every 30 sec.
 Averaging and Output Interval: every 15 minutes
 Program Name: Hoe2_201213_v1.dld

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) –old: PY28371, new: PY23277	ok
7	mean solar flux going up (W/m2) –old: PY20562, new: 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	mean P.A.R. (micromols/s/m2) – Q23199	bad
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. New station placed in service on Dec 27, 2012 at 20:30 by Thomas Nylen. Nylen moved the station and instruments from Beacon Valley to Lake Hoare earlier in the day. The station was installed on top of a small hill surrounded by Lake Hoare not far from the Lake Hoare main hut. The station is collocated near the existing Lake Hoare Station (HOE) which will need to be removed during the 2014-15 field season because of rising lake levels. Station configuration is the same as the former Beacon Valley met station.
2. Station visit on 11/12/13 at 10:35. Date and time correct and all input values look good. Added rocks to station legs and lined the outside of the soil temps with small rocks to prevent foot traffic through here. Swapped storage module at 10:38.
3. Station visit on 11/16/13 at 11:00. Date and time correct and all input values look good. Station maintenance: swapped upfacing pyranometer (old: PY28371, new: PY23277) at 11:46, swapped downward pyranometer (old: PY20562, new: PY28170) at 11:25, swapped RH sensor at 11:20, swapped wind sensor at 13:15. Power off at 13:20 to 13:22 to swap CR10x datalogger.
4. Post-processing: No data missing. Needs new unique array ID. Over winter battery good at 12.5v.

Howard Glacier Met Station (HODM)

Filename: HODM_201314_SM001.dat, HODM_201314_T01.dat
 Author of this report: Hassan Basagic
 File Period: 11/19/2012 13:30 to 11/15/2013 15:45; 11/15/2013 16:00 to 1/3/2014 7:15
 Sampling Frequency: sonic every 60 min, wind every 4 sec; others: every 30 sec
 Averaging and Output Interval: every 15 minutes
 Program Name: Hod1011v1.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) - 30884F3	divide by 100; multiply by 120.77
8	mean solar flux going up (W/m ²) - 32057F3	divide by 100; multiply by 114.29
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	ice temperature @ 50cm (original depth, mV*0.01)	Offline; removed from data file 11/15/13
16	ice temperature @ 100cm (original depth, mV*0.01)	Offline; removed from data file 11/15/13
17	mean air temp @ 1 meter m (C)	rclow
18	mean rh @ 1 meter (%)	lowe correction
19	sample depth from sensor to surface (cm)	measured depth * -100
20	sample of battery voltage	o1

Notes:

1. Station visited station on 11/15/2013 15:39. Datalogger time adjusted 1 hour back. Input values and wind alignment look good. Ice temps are no longer at station. Station legs look good.
2. Station maintenance on 11/15/2013. Loaded new program HODM_201314_01, new program removed ice temps from program and program output. Swapped SM4M at 1546.
3. Post-processing: Clock was set 1 hour ahead on 10/1/13 (274), after 7:30 via telemetry connection. Times between Oct 1, 2013 and 11/15/13 15:45 were adjusted back 1 hr. No missing data. Winter 2012 battery low 11.92v.

Miers Valley Met Station (MISM)

Filename: MISM_201314_SM01.dat; MISM_201314_T002.dat
 Author of this report: Hassan Basagic
 File Period: 3/1/13 9:15 to 11/21/13 14:15; 11/21/13 14:30 to 1/8/2014 3:00
 Sampling Frequency: wind every 4 secs.; ultrasonic every 1 hr; others every 30 secs.
 Averaging and Output Interval: every 15 minutes
 Program Name MISM_201112_v1.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) – old:PY28370; new:PY28169	ok
8	mean solar flux going up (W/m^2) – old: PY18656; new 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/m ²) – old: Q9916, new:Q30803	Old: divide by 200, multiply by 306.60 New: divide by 200, multiply by 224.04
16	mean soil temperature @ 0 cm in soil (C)	rclow
17	mean soil temperature @ 10 cm in soil (C)	rclow
18	pressure (mbars)	ok
19	distance to surface (m)	ok
20	sample of battery voltage	o1

Notes:

1. Station visit on 11/21/2013 at 12:45 by Basagic, Cronin, and Doran. Datalogger date and time are correct. Input values and wind alignment looks good. No ultrasonic at site, but station is still programed for measurement.
2. Station maintenance on 11/21/2013: Swapped up facing pyranometer (old: PY28370; new: PY28169) at 13:45. swapped down facing pyranometer (old: PY18656; new PY23250) at 13:15, and quantum (old: Q9916, new:Q30803) at 13:30.
3. Post-processing: Processed with telemetry data. Delete last line of data in SM01. No sonic ranger, all data flagged as missing. One line of missing data on August 30, 2013 (242) at 19:30. Air pressure data looks suspect. Winter battery low was 12.2v.

Taylor Glacier Met Station (TARM)

Filename: TARM_201314_SM01.dat, TARM_201314_T01.dat
 Author of this report: Hassan Basagic
 File Period: 3/4/13 17:45 to 11/13/2013 13:15; to 11/8/2014 13:30 to 1/8/14 7:15
 Sampling Frequency: depth every 60 minutes, wind every 4 secs.; others: every 30 secs.
 Averaging and Output Interval: every 15 minutes
 Program Name: TARM_201112_V1

1	array I.D.	o1
2	Year	o1
3	Day	ok
4	Time	ok
5	mean air temp. @ 3 meters (C)	rclow
6	mean R.H. @ 3 meters (%)	lowe correction
7	mean air temp @ 1m (C)	rclow
8	mean RH at 1m (%)	lowe correction
9	mean solar flux coming down (W/m ²) – 32057F3	divide by 100; multiply by 113.38
10	mean solar flux going up (W/m ²) – 29762F3	divide by 100; multiply by 125.79
11	mean horizontal wind speed (m/s)	ok
12	resultant mean wind speed (m/s)	o1
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	ice temp	Offline
18	surface temperature internal thermistor output (mV)	o1
19	surface temperature (mV)	o1
20	surface temperature (C)	ok
21	sample depth from sensor to surface (cm)	multiple by -100
22	sample of battery voltage	ok

Notes:

1. Station visit on 11/13/13 at 13:40. Datalogger time was adjusted one hour back. All input values and wind alignment look good. Ultrasonic distance = 78.4 cm to ice surface.
2. Station maintenance on 11/13/13: swapped RH at 1m at 12:50, swapped RH at 3m at 13:02, swapped wind sensor at 13:15, station power between 1324 and 13:28 to replace CR10x datalogger. Swapped storage module at 13:28.
3. Station visit on 11/21/13 by Basagic, Doran, and Cronin to lower station legs by 16.6 cm at 10:20. No other work.
4. Post processing: Clock was set 1 hour ahead on Oct 1, 2013 after 13:15 via telemetry connection. Times between Oct 1, 2013 and Nov 13, 2013 were corrected. No missing data. Winter battery min = 11.95.

Lake Vanda Met Station (VAAM)

Filename: VAAM_201314_T01.dat
 Author of this report: Hassan Basagic
 File Period: 3/6/13 8:00 to 1/3/2014 2:00
 Sampling Frequency: wind every 4 secs.; ultrasonic every 1 hr; others every 30 secs.
 Averaging and Output Interval: every 15 minutes
 Program Name vaam_201112_v1

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) - Q29773	divide by 200, multiply by 256.2893
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	ok

Notes:

1. Station visit on 11/24/13. CR10X date and time correct, input values and wind alignment look good. No station maintenance. Check wiring on solar panel and battery box, all looked okay.
2. Post processing: Processed one telemetry with storage module file. Several bad values for ultrasonic were flagged as "bad". Winter battery voltage low was 12.2v.

Lake Vida Met Station (VIAM)

Filename: VIAM_201314_SM01.dat and VIAM_201314_T01.dat
 Author of this report: Hassan Basagic
 File Period: 12/28/2012 10:45 to 1/2/2014 22:15
 Sampling Frequency: wind every 4 secs.; ultrasonic every 1 hr; others every 30 secs.
 Averaging and Output Interval: every 15 minutes
 Program Name: via1011v1

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 (%)	Low correction
7	mean solar flux coming down (W/m ²) – PY23271	ok
8	mean solar flux going up (W/m ²) – PY20565; PY18400	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) - Q30800	divide by 200, multiply by 222.23
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	distance to surface (m)	Measured depth * -100
20	sample of battery voltage	o1

Notes:

1. Station visit on 11/20/2013 at 9:35 to 10:35. Time adjusted back 1 hour on 11/20/2013 at 9:41. All inputs and wind alignment look good. Sonic sensor depth = 58.4cm.
2. Maintenance: on 11/20/2013 swapped down facing pyranometer (old: PY20565; new: PY18400) at 9:57. Swapped RH at 10:15. Power off 10:16 to 10:19 to swap CR10x. Swapped storage module at 10:20.
3. Post Processing: Telemetry radio is operational but telemetry file has numerous gaps over the past year. Processed one telemetry file with storage module file, which was complete through 11/20/2013. Clock was set 1 hour ahead on 10/1/13 (274), 2013 after 4:00 via telemetry connection. Times between Oct 1, 2013 and Nov 20, 2013 were adjusted back 1 hr.
4. Overwinter battery low was 11.95 v.

Appendix

Array ID and date of established date

Array ID	ID	Name	Date of Station Establishment
1	HOEM	Lake Hoare	Dec 1, 1993 by Peter Doran
2	FRLM	Lake Fryxell	Jan 6, 1994 by Peter Doran
3	BOYM	Lake Bonney	November 24, 1993 by Peter Doran
4	COHM	Commonwealth Glacier	November 22, 1993 by Peter Doran
5	HODM	Howard Glacier	November 20, 1993 by Peter Doran
6	TARM	Taylor Glacier	November 21, 1994 by Peter Doran
7	VAAM	Lake Vanda	November 24, 1994 by Peter Doran
8	BRHM	Lake Brownworth	November 13, 1996 by Peter Doran and DJ Osborne
9	EXEM	Explorer's Cove	Nov 21, 1997 by Peter Doran, DJ Osborne and K. Sauter
10	CAAM	Canada Glacier (without Eddy Sensors)	Nov 20, 1995 by Karen Lewis; reinstalled Jan 13, 1998
11	VIAM	Lake Vida	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	F6 Snow Fence, Met, and Sensit	Changed to F6 Met and F6 Sensit by Hassan Basagic
18	BENM	RETIRED Beacon Valley	Jan 27, 2000 by Susan Kaspari, Thomas Nylén and Adrian Green. Retired in Dec 2012.
19	LHPM	RETIRED Lake Hoare Precipitatio	January 26, 2002 by Thomas Nylén (also Upper Howard)
19	UHDM	RETIRED Upper Howard Met	Temporary station Retired in 2004.
19	BLDM	RETIRED Blood Falls	Temporary station 11/14/2004
20	BRMM	Bonney Snow Fence	Changed to Bonney Riegel Met and Sensit by Hassan Basagic
21	FRSM	Friis Hills	Installed by Cuffey et al., ???; absorbed by LTER.
22	FLMM	Mt. Fleming	Installed 10/16/06 by Univ of Wisc AWS
25	GADM	RETIRED Garwood Valley	Installed by Peter Doran; Removed from service in 2011-12
25	MISM	Miers Valley	Installed by Nylén 2011-12
26	GAFM	Garwood Valley Ice Cliff	December 2010 by Thomas Nylén
27	HTDR	Lake Hoare TDR Station	08-09 Season by Hassan Basagic
92	EXSM	RETIRED Explorers Cove Sensity	Installed by Hassan Basagic; Retired Nov 2012
95	F6SM	F6 Snowfence Sensit	Installed by Hassan Basagic
96		Lake Fryxell Sensit	Installed by Hassan Basagic, Data combined with Fryxell station data
97		RETIRED Lake Hoare Sensit	Installed by Hassan Basagic, Retired 12/2010
98		RETIRED Lake Bonney Sensit	Installed by Hassan Basagic in 2005/06, Retired 12/2010
99	BRSM	Bonney Riegel Sensit	Installed by Hassan Basagic
102	BRSS	Bonney Riegel Soil Station	
103	F6SS	F6 Soil station	
104	LHS3	LH Soil station 2	
105	LHS4	LH Soil station 4	
112	BRTS	Bonney Riegel Theta Station	
113	F6TS	F6 Soil station	
114	LHS1	Lake Hoare Soil station 1 Theta	1/28/2003
115	LHS2	Lake Hoare Soil station 3 Soil	1/28/2003
119	HJHM	RETIRED Hjorth Hill Met	Installed by Peter Doran; Removed from service