

## Meteorological Post Processing Documentation and Task Lists for 2016/2017

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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Array I.D. key  
Date of Establishment

Prepared by: Krista Myers, 2016-17 Field Season, Louisiana State University

**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).

$$=[RH3m]*(6.107799961 + [AirT3m] * (0.4436518521 + [AirT3m] * (0.01428945805 + [AirT3m] * (0.0002650648471 + [AirT3m] * (0.000003031240396 + [AirT3m] * (0.0000002034080948 + 0.0000000006136820929 * [AirT3m])))))) / (6.109177956 + [AirT3m] * (0.503469897 + [AirT3m] * (0.01886013408 + [AirT3m] * (0.0004176223716 + [AirT3m] * (0.00000582472028 + [AirT3m] * (0.0000004838803174 + 0.000000001838826904 * [AirT3m]))))))$$

### Lake Bonney Met Station (BOYM)

Filename: BOYM\_2016\_17\_PROCESSED  
 Author of this report: Krista Myers  
 File Period: 11/18/2015 19:00 to 11/20/2016 05:15  
 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: BOYM\_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; incoming (up-facing) (W/m2) <b>Licor pyranometer; old SN: PY51356, new SN: PY27937</b>	Ok
9	mean solar flux; outgoing (down-facing) (W/m2) <b>Licor pyranometer; SN: PY18656</b>	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) <b>SN: WM57319</b>	Ok
15	minimum wind speed (m/s)	Ok
16	mean P.A.R. (micromols/s/m2) <b>Licor quantum; old SN: Q28265, new SN: Q29764</b>	Q28265 divide by 200, multiply by 243.83 Q29764 divide by 200, multiply by 239.95
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) <b>Eppley SN: 30831F3</b>	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) <b>Eppley SN: 32059F3</b>	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 visited on 11/17/2016 by K. Myers and L. Winslow. All input values looked good.
- Power cycled station at 18:33; power unplugged at 18:40

- Replaced relative humidity sensor @ 3 m (old SN: U2730014, new SN: Y3250058)
- Replaced quantum sensor (old SN: Q28265, new SN: Q29764)
- Replaced upward facing Licor pyranometer (old SN: PY51356, new SN: PY27937)
- Replaced Campbell CR10X (new SN: X23868)
- Replaced Campbell SM4M storage module (P8: BOYM\_201112\_V1.dld)
- Downloaded data from StarDot camera

**Bonney Riegel Met Station (BRMM)**

Bonney Riegel Met Station was completely disassembled and removed on 11/26/2016 by K. Myers, J. Lawrence, and J. Darling.

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

Bonney Riegel Sensit Station was completely disassembled and removed on 11/26/2016 by K. Myers, J. Lawrence, and J. Darling.

**Bonney Riegel Theta Soil Station (BRTS): not visited, no data available**

### Lake Brownworth Met Station (BRHM)

Filename: BRHM\_2016\_17\_PROCESSED\_Updated\_180222  
 Author of this report: Krista Myers, James McClure  
 File Period: 11/12/2015 13:45 to 12/10/2016 13:00  
 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; incoming (up-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY25306</b>	ok
8	mean solar flux; outgoing (down-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY28370</b>	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 <sup>2</sup> ) – <b>Licor quantum; old SN: Q30806, new SN: Q17248</b>	multiply by 1.100817 (Q30806); multiply by 1.595018 (Q17248)
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) – <b>C2867</b>	measured depth * -100
20	sample of battery voltage	o1

#### Notes:

- Station visited on 12/10/2016 by K. Myers, J. Lawrence, and L. Winslow. All input values looked good.
- Power off at 1310
- Replaced relative humidity sensor @ 3 m (new SN: U2340002)
- Replaced quantum sensor (old SN: Q30806, new SN: Q17248), quantum sensor not totally level (was like that when we arrived). Will need new mount next year.
- Replaced Campbell CR10X (new SN: 19225)
- Replaced Campbell SM4M storage module (old SN: 5253, new SN: 6904, P8: BRHM\_201112\_v1.dld)
- 2 batteries observed, marked 2012 and 2013.
- Filled gap from visit 11/12/15 13:45 → 1/1/16 0:00 (filled in with telemetry + reprocessed)
- Data downloaded from telemetry – SM4M storage module download wasn't working. Gap in data from 4/13/2016 08:15 to 5/7/2016 23:00. (Could not locate data from telemetry or SM4M files)
- Data gap from 7/30/16 8:15 → 8/1/16 8:30 (Could not locate data from telemetry or SM4M files)

### Canada Glacier (CAAM)

Filename: CAAM\_2016\_17\_PROCESSED  
Author of this report: Krista Myers  
File Period: 11/7/2015 00:00 to 10/28/2016 11:30  
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; incoming (up-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY20222</b>	ok
9	mean solar flux; outgoing (down-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY20565</b>	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:

- Station visited on 10/28/2016 by K. Myers, J. Lawrence, L. Winslow, and T. Bellagamba. All input values looked good.
- Power off between 11:34 – 11:55
- Replaced relative humidity sensor at 3 m (old SN: U2520038, new SN: V1140044)
- Station lowered by ~30 cm and levelled.
- Downward facing pyranometer ~60 cm from ice after station was lowered.

### Commonwealth Glacier Met Station (COHM)

Filename: COHM\_2016\_17\_PROCESSED\_Updated\_180312  
 Author of this report: Krista Myers, James McClure  
 File Period: 11/7/2015 15:45 to 10/28/2016 07:00  
 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\_v2

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; incoming (up-facing) (W/m <sup>2</sup> ) <b>Eppley pyranometer; SN: 29776F3</b>	divide by 100; multiply by 120.34
9	mean solar flux; outgoing (down-facing) (W/m <sup>2</sup> ) <b>Eppley pyranometer; SN: 29763F3</b>	divide by 100; multiply by 120.05
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	mean incoming IR pyrgeometer output (pins A-B) (W/m <sup>2</sup> ) - <b>32348F3</b>	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 <sup>2</sup> )	eppley
19	mean incoming IR case temp. (pins E-D)(mv)	eppley
20	mean outgoing IR pyrgeometer output (pins A-B)(W/m <sup>2</sup> ) – <b>29786F3</b>	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 <sup>2</sup> )	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:

- Station visited on 10/28/2016 by K. Myers, J. Lawrence, L. Winslow, and T. Bellagamba. All input values looked good.
- Power off between 12:49 – 13:48
- Accidentally replaced downward facing Eppley pyrgeometer with Eppley pyranometer (old SN: 29763F3, new SN: 30884F3). Need to replace next season. Data reported as “outgoing IR” is really outgoing shortwave radiation.
- Replaced Campbell CR10X (old SN: X36154, new SN: X13999)
- Replaced Campbell SM4M storage module with same program (P8: COHM\_201314\_v2.dld)
- Station lowered by ~27 cm and levelled.



- Southern leg of tripod pole in glacier may need replacement - or remove top pole
- Data missing 12/3/15 13:45 + 14:00 (Could not locate data from telemetry or SM4M files)
- Data downloaded from telemetry – SM4M storage module download wasn't working. Gap in data from 4/13/2016 10:30 to 5/19/2016 09:45. (Could not locate data from telemetry or SM4M files)
- On 8/16/16 7:15 (day 229) Julian day starts logging 1 day behind (post process side I changed Date column and Year.Date column equations = (C#+1) (Dates now match at end)
- Data missing day visited 10/28/16 7:00 —> 12:45 (Could not locate data from telemetry or SM4M files)

## Explorers Cove Met Station (EXEM)

Filename: EXEM\_2016\_17\_PROCESSED  
 Author of this report: Krista Myers  
 File Period: 11/12/2015 00:00 to 12/10/2016 14:45  
 Sampling Frequency: prec every 60 minutes, wind every 4 secs.; others: every 30 secs.  
 Averaging and Output Interval: every 15 minutes  
 Program Name: EXE1112v1.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; incoming (up-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY23275</b>	ok
8	mean solar flux; outgoing (down-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY28167</b>	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. (mmols/s/m <sup>2</sup> ) <b>Licor quantum; old SN: Q33906, new SN: Q30804</b>	divide by 200, multiply by 289.95
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	sample precipitation (mm)	ok
20	sample battery voltage	ok

### Notes:

- Station visited on 12/10/2016 by K. Myers, J. Lawrence, and J. Darling. All input values looked good.
- Power off between 14:50 – 15:09
- Replaced quantum sensor (new SN: Q30804)
- Replaced Campbell CR10X (new SN: X23866)
- Replaced Campbell SM4M storage module with same program (new SN: 6909, P8: EXE\_1112\_V1.dld)
- Screws on pyranometer and quantum sensor are stripped – bring new screws and replace next year. Wasn't able to take out pyranometer because of this. Need to replace entire mount + upward facing pyranometer.
- 2 batteries observed, both from 2012

**F6 Met Station (F6MM)**

F6 Met Station was completely disassembled and removed on 11/9/2016 by J. Lawrence and L. Winslow.

**F6 Sensit Met Station (F6SM)**

F6 Sensit Met Station was completely disassembled and removed on 11/9/2016 by J. Lawrence and L. Winslow.

### Mt. Fleming Met Station (FLMM)

Filename: FLMM\_2016\_17\_PROCESSED\_UPDATED\_180223  
Author of this report: Krista Myers, James McClure  
File Period: 12/2/2015 13:15 to 12/9/2016 14:00  
Sampling Frequency: wind every 4 sec; others: every 30 sec  
Averaging and Output Interval: every 15 min  
Program Name: FLMM\_201213\_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:

- Station visited on 12/9/2016 by K. Myers, J. Lawrence, and J. Darling. All input values looked good.
- Power off between 14:09 – 14:20
- Replaced anemometer (RM Young, new SN WM31296)
- Did not replaced Campbell SM4M storage module because new SM4M had different program (currently has P8: FLMM\_201213\_V1.dld replaced by T. Nylén 2014)
- Batteries are in very old rock boxes, should be replaced next year.
- Filled gap from visit 12/2/15 15:05 → 1/1/16 0:00 (filled in with telemetry + reprocessed)
- Data gap from 12/15/15 8:45 → 12/15/15 10:45 (Could not locate data from telemetry or SM4M files)
- Data deleted on 4/14/2016 16:45 because values unreliable (flagged as B). Station not recording data from 4/14/2016 17:00 – 4/26/2016 03:45. (filled in with telemetry + reprocessed)

### Lake Fryxell Met Station (FRLM)

Filename: FRLM\_2016\_17\_PROCESSED.csv  
 Author of this report: Krista Myers  
 File Period: 12/12/2015 00:15 to 5/24/2016 04:30  
 Sampling Frequency: sonic every 60 min, wind every 4 sec; others: every 30 sec  
 Averaging and Output Interval: every 15 min  
 Program Name: FRL\_201112\_v2

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; incoming (up-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY45665</b>	ok
8	mean solar flux; outgoing (down-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY40423</b>	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 <sup>2</sup> ) <b>Licor quantum; SN: Q30794</b>	divide by 200, multiply by 229.63
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:

- Station was found on its side in early November 2016. Main pole of tripod was snapped at joint. Main pole was replaced, and station was rectified.
- No data between May 24, 2015 and November 4, 2016
- Station visited on 11/4/2016 by L. Winslow. Time adjusted to match GPS time.
- Power off between 16:47 – 17:12
- Replaced Campbell CR10X (old SN: X23872, new SN: X23287)
- Height of ultra sonic measured manually as 57 cm.

## Friis Hills Met Station (FRSM)

Filename: FRSM\_2016\_17\_PROCESSED  
Author of this report: Krista Myers  
File Period: 12/1/15 19:15 to 12/9/2016 11:45  
Sampling Frequency: wind every 4 sec; others: every 30 sec  
Averaging and Output Interval: every 15 min  
Program Name: FRSM\_201314\_V1.dld

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 <sup>-2</sup> )	ok
8	NetRad (W m <sup>-2</sup> ) 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:

- Station visited on 12/9/2016 by K. Myers, J. Lawrence, and J. Darling. All input values looked good.
- Power off between 11:45 – 12:10
- Attempted to replaced wind monitor (RM Young), however new anemometer was not working. Original anemometer was reinstalled.
- Replaced Campbell SM4M storage module (old SN: 6052, new SN: 4425) with same program (P8: FRSM\_201314\_V1.dld)
- Batteries are in very old rock boxes, should be replaced next year.

## New Lake Hoare Met Station (HO2M)

Filename: HO2M\_2016\_17\_PROCESSED  
 Author of this report: Krista Myers  
 File Period: 11/10/2015 7:45 to 10/27/2016  
 Sampling Frequency: wind every 4 sec.; others: every 30 sec.  
 Averaging and Output Interval: every 15 minutes  
 Program Name: HOEM\_201112\_V2.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; incoming (up-facing) (W/m2) <b>Licor pyranometer; SN: PY20562</b>	ok
7	mean solar flux; outgoing (down-facing) (W/m2) <b>Licor pyranometer; SN: PY28371</b>	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) <b>Licor quantum; old SN: Q29765, new SN: Q29766</b>	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:

- Station visited on 10/27/2016 by K. Myers, J. Lawrence, and L. Winslow. All input values looked good.
- Power off between 15:25 – 17:50 (multiple power cycles during this time)
- Replaced quantum sensor (Licor, old SN: Q29765, new SN: Q29766)
- Replaced Campbell SM4M storage module (P8: HOEM\_201112\_V2.dld, new SN: 1464)
- Manual measurement of ultrasonic 98 cm above ground.

## Howard Glacier Met Station (HODM)

Filename: HODM\_2016\_17\_PROCESSED  
 Author of this report: Krista Myers  
 File Period: 11/6/2015 13:30 to 10/28/2016 14:45  
 Sampling Frequency: sonic every 60 min, wind every 4 sec; others: every 30 sec  
 Averaging and Output Interval: every 15 minutes  
 Program Name: HODM\_201314\_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; incoming (up-facing) (W/m <sup>2</sup> ) <b>Eppley pyranometer; SN: 33733F3</b>	divide by 100; multiply by 121.51
8	mean solar flux; outgoing (down-facing) (W/m <sup>2</sup> ) <b>Eppley pyranometer; SN: 29777F3</b>	divide by 100; multiply by 121.21
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:

- Station visited on 10/28/2016 by K. Myers, J. Lawrence, L. Winslow, and T. Bellagamba. All input values looked good.
- Power off between 14:34 – 15:26
- Replaced relative humidity sensor @ 1 m (old SN: U2340010, new SN: V1140043)
- Replaced relative humidity sensor @ 3 m (old SN: U2730016, new SN: Y2850072)
- Replaced wind monitor (RM Young, old SN: WM47856, new SN: WM85183)
- Replaced Campbell CR10X (old SN: X40361, new SN: X23165)
- Replaced Campbell SM4M storage module (old SN: 5255, new SN: 6902) with same program (P8: HODM\_201314\_V1.dld)
- Station lowered by 35 cm and levelled.



## Miers Valley Met Station (MISM)

Filename: MISM\_2016\_17\_PROCESSED  
 Author of this report: Krista Myers  
 File Period: 2/7/2016 9:15 to 12/13/2016 13:45  
 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; incoming (up-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; old SN: PY28169, new SN: PY40424</b>	ok
8	mean solar flux going up; outgoing (down-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; old SN: PY23250, new SN: PY45668</b>	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 <sup>2</sup> ) <b>Licor quantum; SN: Q23204</b>	Divide by 200, multiply by 237.88
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:

- Station visited on 12/13/2016 by K. Myers and J. Lawrence. All input values looked good.
- Power off between 13:58 – 14:17
- Replaced upward facing Licor pyranometer (new SN: PY40424)
- Replaced downward facing Licor pyranometer (new SN: PY45668)
- Replaced Campbell SM4M storage module (old SN: 5989, new SN: 1466) with same program (P8: MISM\_201112\_V1.dld)
- Replaced relative humidity sensor @ 3 m (new SN: U2020021)
- Took GPS of met station (78° 6.068, 163° 47.259)

## Taylor Glacier Met Station (TARM)

Filename: TARM\_2016\_17\_PROCESSED  
 Author of this report: Krista Myers  
 File Period: 12/1/2015 19:30 to 12/9/2016 10:15  
 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; incoming (pointing up) (W/m <sup>2</sup> ) – <b>Eppley pyranometer 31437F3</b>	divide by 100; multiply by 125.47
10	mean solar flux; outgoing (pointing down) (W/m <sup>2</sup> ) – <b>Eppley pyranometer 31435F3</b>	divide by 100; multiply by 130.38
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:

- Station visited on 12/9/2016 by K. Myers, J. Lawrence, and J. Darling. All input values looked good.
- Power off between 10:25 – 11:00
- Station lowered by ~30 cm and levelled.
- Replaced Campbell SM4M storage module (new SN: 1468) with same program (P8: TARM\_201112\_V1.dld)
- Replaced Campbell CR10X (old SN: X36197, new SN: X28585)
- Replaced ultra sonic internal transducer. Initial height of sonic was 91 cm. New height after station was lowered was 62 cm.
- (2) batteries observed, last changed 2011 & 2012

## Lake Vanda Met Station (VAAM)

Filename: VAAM\_2016\_17\_PROCESSED\_Updated\_180226  
 Author of this report: Krista Myers, James McClure  
 File Period: 12/1/2015 14:30 to 12/8/2016 14:15  
 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; incoming (up-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY27929</b>	ok
7	mean solar flux going up (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY28348</b>	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 <sup>2</sup> ) <b>Licor quantum; SN: Q20275</b>	divide by 200, multiply by 255.4983
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:

- Station visited on 12/8/2016 by K. Myers, J. Lawrence, J. Darling, and T. Nylén. All input values looked good.
- Power off between 14:25 – 16:26
- Station was moved from near Kiwi huts to southern side of the Onyx due to encroaching lake levels. Old location was on peninsula and would be underwater in a few years.
- Replaced relative humidity sensor @ 254 cm above ground
- Replaced sonic internal transducer
- Sensor heights at new location: temp – 244 cm; upward facing pyranometer – 250 cm; wind – 284 cm
- Manual measurement of ultra sonic – 60.5 cm
- Solar panel is falling apart – will need to replace next year
- New met station location: -77.52567, 161.69129
- Telemetry used for this time period because SM4M was not collected in the field. Some data gaps. Will need to reprocess when SM4M data is downloaded in 2017/18 season.
- Filled gap from visit 12/1/15 14:25 → 1/1/16 0:00 (filled in with telemetry + reprocessed)
- Updated PAR correction # for Quantum **SN: Q20275** installed 12/1/15
- Data gap 1/15/2016 2:15 → 2/5/2016 22:45 (Could not locate data from telemetry or SM4M files)
- Data gap 4/13/2016 8:00 → 5/8/2016 22:45 (Could not locate data from telemetry and No SM4M file available)

- Data gap 7/30/2016 8:00 → 8/1/2016 8:15 (Could not locate data from telemetry and No SM4M file available)

## Lake Vida Met Station (VIAM)

Filename: VIAM\_2016\_17\_PROCESSED\_Updated\_180312  
 Author of this report: Krista Myers, James McClure  
 File Period: 12/2/2015 17:45 to 12/10/2016 12:15  
 Sampling Frequency: wind every 4 secs.; ultrasonic every 1 hr; others every 30 secs.  
 Averaging and Output Interval: every 15 minutes  
 Program Name: VIA1213v1.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 (%)	Low correction
7	mean solar flux; incoming (up-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY20523</b>	ok
8	mean solar flux; outgoing (down-facing) (W/m <sup>2</sup> ) <b>Licor pyranometer; SN: PY56364</b>	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 <sup>2</sup> ) <b>Licor quantum; old SN: Q20526, new SN: Q30805</b>	divide by 200, multiply by 182.48 (Q20526) divide by 200, multiply by 136.80 (Q30805)
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:

- Station visited on 12/10/2016 by K. Myers, J. Lawrence, and J. Darling. All input values looked good.
- Power off between 12:18 – 12:33
- Replaced quantum sensor (Licor, old SN: Q20526, new SN: Q30805)
- Replaced relative humidity @ 3m (Vaisala, old SN: Y2820008, new SN: U2730015)
- Replaced Campbell SM4M storage module (new SN: 6917) with same program (P8: VIA201213V1.dld)
- Manual measurement of ultra sonic 58 cm
- Filled data gap from visit 12/2/15 17:40 → 1/1/16 0:00 (filled in with telemetry + reprocessed)
- Additional gap in data from 3/17/2016 20:00 to 5/8/2016 01:00 due to failure in telemetry system (filled in with telemetry + reprocessed)

## 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, Retired on Nov 7, 2014 by Maciej Obryk
1A	HO2M	Lake Hoare	Dec 27, 2012 by Thomas Nylen
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, moved to new location due to lake level rise on 12/8/2016 (new GPS = -77.52567, 161.69129)
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 Nylen and Adrian Green. Retired in Dec 2012.
19	LHPM	RETIRED Lake Hoare Precipitatio	January 26, 2002 by Thomas Nylen (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 Nylen 2011-12
26	GAFM	Garwood Valley Ice Cliff	December 2010 by Thomas Nylen
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, Retired Dec 2016
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

