Meteorological Post Processing Documentation and Task Lists for 2017/2018

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.

Station Reports

Appendix

Prepared by: James McClure, 2017-18 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	Value omitted (changed 2018)	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] * (0.00000002034080948 + 0.00000000006136820929 * [AirT3m])))))) / (6.109177956 + [AirT3m] * (0.503469897 + [AirT3m] * (0.01886013408 + [AirT3m] * (0.0004176223716 + [AirT3m] * (0.00000582472028 + [AirT3m] * (0.00000004838803174 + 0.0000000001838826904 * [AirT3m]))))))

Lake Bonney Met Station (BOYM)

Filename:	BOYM_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	11/17/2016 19:45 to 11/16/2017 20:30	
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 (%)	Lowe correction
7	mean air temp. @ 1 meters (C)	rclow
8	mean solar flux; incoming (up-facing) (W/m2) **Licor pyranometer; SN: PY27937**	Ok
9	mean solar flux; outgoing (down-facing) (W/m2) **Licor pyranometer; old SN: PY18656, new SN: PY28170**	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) **old SN: WM57319, new SN: WM85155**	Ok
15	minimum wind speed (m/s)	Ok
16	mean P.A.R. (micromols/s/m2) **Licor quantum; SN: Q29764**	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) **Eppley SN: 30831F3**	divide by 250; multiply by 277.01
22	mean up-facing pyrgeometer2 (W/m2) **Eppley SN: 30831F3**	Calculated from thermopile and hemisphere temp
23	mean down-facing pyrgeometer, rad. comp. (W/m2) **Eppley old SN: 32059F3, new SN: ?**	divide by 250; multiply by 227.79
24	mean down-facing pyrgeometer2 (W/m2) **Eppley old SN: 32059F3, new SN: ?**	Calculated from thermopile and hemisphere temp
25	sample precipitation (mm)	ok
26	sample of battery voltage	o1

Notes:

- Station visited on 11/21/2017 by K. Myers, M. Myers and J. McClure. All input values looked good.
- Time changed on CR10KD keyboard – station time 13:55, GPS time 14:23. Adjusted drift by 28 minutes.
- Power off at 14:40; power on at 15:15?
- Replaced down facing Licor pyranometer (old SN: PY27937, new SN:PY28170)

- Replaced Young Wind anemometer (old SN: WM57319 new SN: WM85155)
- Replaced Campbell SM4M storage module - new program loaded by T. Nylen (P8: BOYM_201718_V1.dld)
- Added 4L of glycol to precipitation gauge and a layer of mineral oil
- Replaced Down facing Eppley Pyrgeometer + cable (Existing Pyrgeometer bulb was broken upon arrival. Replaced w/ new but not currently working. Need to address next season).
- Ultrasonic not working beginning December 2016. Will need to replace in 2018/19.
- Replaced 12V battery for independent power supply to camera 12/14/17

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)

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

Lake Brownworth Met Station (BRHM)

Filename:	BRHM_2017_18_PROCESSED.csv	
Author of this report:	James McClure	
File Period:	12/10/2016 13:45 to 11/30/2017 14:45	
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; incoming (up-facing) (W/m^2) **Licor pyranometer; old SN: PY25306, new SN: PY20567**	ok
8	mean solar flux; outgoing (down-facing) (W/m^2) **Licor pyranometer; old SN: PY28370, new SN: PY28347**	ok
9	mean horizontal wind speed (m/s)	ok
10	resultant mean wind speed (m/s)	ok
11	resultant mean wind direction (degrees from north)	o1
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) – **Licor quantum; SN: Q17248**	ok 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)	measured depth * -100
20	sample of battery voltage	o1

Notes:
- Station visited on 11/30/2017 by K. Myers, M. Myers, and J. McClure. All input values looked good.
- Power off at 14:51, Power on at 15:36
- Replaced Upward Pyranometer (new SN: PY20567)
- Replaced Downward Pyranometer (new SN: PY28347)
- Replaced Campbell SM4M storage module (old SN: 6904, new SN: 1463, P8: BRHM_201112_V1.dld)
- Replaced Ultrasonic internal transducer (transducer is now working – was not working prior year)
- 2 batteries observed, marked 2012 and 2013.
- Data downloaded from SM4M successfully   - Data gaps recovered and updated for 2016-17 process sheet.

Canada Glacier (CAAM)

Filename:	CAAM_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	10/28/2016 12:00 to 11/27/2017 12:00	
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 (%)	Lowe correction
7	Aspirated mean air temp @ 3m (C)	rclow
8	mean solar flux; incoming (up-facing) (W/m^2) **Licor pyranometer; Old SN: PY20222, New SN: PY28349**	ok
9	mean solar flux; outgoing (down-facing) (W/m^2) **Licor pyranometer; Old SN: PY20565, New SN: PY23271**	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) **old SN: WM10365, new SN: WM31283**	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 11/27/2017 by K. Myers, M. Myers, and J. McClure. All input values looked good.
- Power off at 12:12, Power on at 12:52
- Replaced Young Wind Anemometer at 3 m (SN: WM31283)
- Replaced CR10X (Old SN: X44311, New SN: X09315)
- Station lowered by average ~9 cm and levelled.
- Downward facing pyranometer ~54 cm from ice after station was lowered.
- Replaced Campbell SM4M storage module (old SN: 6051, new SN: 5255, P8: CAAM_201011_V1.dld)

Commonwealth Glacier Met Station (COHM)

Filename:	COHM_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	10/28/2016 14:00 to 11/27/2017 13:30	
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; incoming (up-facing) (W/m^2) **Eppley pyranometer; SN: 29776F3**	divide by 100; multiply by 119.62
9	mean solar flux; outgoing (down-facing) (W/m^2) **Eppley pyranometer; old SN: 29763F3, new SN: 30853F3**	divide by 100; multiply by 132.63
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 pyrgeometer output2 (W/m^2) - **32348F3**	Calculated using hemisphere temp (pins A-C), thermophile output (pins F-G), and case temp (pins E-D)
20	mean outgoing IR pyrgeometer output (pins A-B)(W/m^2) – **29786F3**	divide by 250; multiply by 276.24
21	mean outgoing IR pyrgeometer output (W/m^2) – **29786F3**	Calculated using hemisphere temp (pins F-G), thermophile output (pins A-C), and case temp (pins E-D)
22	ice temperature @ 50cm (original depth, mV*0.01)	Offline
23	ice temperature @ 100cm (original depth, mV*0.01)	Offline
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 (cm)	measured depth* -100
28	sample of battery voltage	ok

Notes:
- Station visited on 11/27/2017 by K. Myers, M. Myers and J. McClure. All input values looked good.
- Power off at 13:32, power on at 14:52
- Replaced down facing Eppley Pyranometer (old SN: 29763F3, new SN: 30853F3)
- Replaced Ultrasonic Transducer (old SN: C10667, new SN: C11834) – Distance before lowering: 76 cm
- Replaced Campbell SM4M storage module with same program (P8: COHM_201314_V1.dld)
- Station lowered by 7.5 cm average and levelled.

- Down facing pyranometer distance before lowering: 79.5 cm, after lowering: 70.5 cm
- Down facing pyrgeometer distance before lowering: 80 cm
- Southern leg of tripod pole in glacier still needs replacement – remove one flight (< 5cm from joint)
- Need to bring extra pyra/pyrg mounting screws next year; up facing pyra screws rusted and unable to replace pyra and bring entire plate for Eppley

Explorers Cove Met Station (EXEM)

Filename:	EXEM_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	12/10/2016 15:15 to 11/22/2017 12:15	
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^2) **Licor pyranometer; old SN: PY23275, new SN: PY23277**	ok
8	mean solar flux; outgoing (down-facing) (W/m^2) **Licor pyranometer; old SN: PY28167, new SN: PY41090**	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) **Young Anemometer; new SN: WM15361**	ok
14	minimum wind speed (m/s)	ok
15	mean P.A.R. (mmols/s/m^2) **Licor quantum; SN: Q30804**	divide by 200, multiply by 229.63
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 11/22/2017 by K. Myers, M. Myers and J. McClure. All input values looked good.
- Power off at 12:19; power on at 14:32
- Replaced Relative Humidity @ 3m (old SN: W4230015, new SN: W4230011)
- Replaced upward facing Licor pyranometer (new SN: PY23277)
- Replaced downward facing Licor pyranometer (new SN: PY41090)
- Replaced anemometer 3m (new SN: WM15361)
- Refilled precipitation gauge w/ 4L glycol and layer of mineral oil 12/26/17

- Replaced Campbell SM4M storage module with same program (old SN: 6909 new SN: 6908) program P8: EXE1112V1.dld
- 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_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	12/9/2016 14:30 to 11/30/2017 12:45	
Sampling Frequency:	wind every 4 sec; others: every 30 sec	
Averaging and Output Interval:	every 15 min	
Program Name:	FLMM_201213_V2.dld	
1	array I.D.	o1
2	Year	ok
3	Day	ok
4	Time	ok
5	AirT2m (C)	ok
6	RH1.3m (%)	Lowe 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 11/30/2017 by K. Myers, M. Myers and J. McClure. All input values looked good.
- Power off at 13:00; power on at 13:09
- Replaced Relative Humidity 1.3m (old SN: X1210006, new SN: Y2820009)
- Replaced Campbell SM4M storage module (old SN: 3778 new SN: 3513) old program P8: FLMM_201213_V1.dld new program P8: FLMM_201213_V2.dld
- Filled in data gap and reprocessed for 2016/17 process sheet (12/2/15 15:05 —> 1/1/16 0:00 and 4/14/2016 16:45 —> 4/27/2016 3:45)

Lake Fryxell Met Station (FRLM)

Filename	FRLM_2017_18_PROCESSED.csv	
Author of this report:	James McClure	
File Period:	11/4/2016 17:15 to 12/11/2017 14:45	
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^2) **Licor pyranometer; SN: PY45665**	ok
8	mean solar flux; outgoing (down-facing) (W/m^2) **Licor pyranometer; SN: PY40423**	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) **Licor quantum; old SN: Q30794 new SN: Q28259**	divide by 200, multiply by 234.84
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)	measurement * -100
20	sample of battery voltage	o1

Notes:
- Station visited on 12/11/2017 by K. Myers, and M. Myers. All input values looked good.
- Power off at 15:03, on at 15:32
- Visited station again 12/12/17 @ 14:15 – values looked good, power on @ 14:18
- Replaced internal Ultrasonic transducer (C11856)
- Upward Quantum not level- releveled
- Replaced quantum sensor and mount (new SN: Q28259)
- StarDot camera not working – need to replace with new Campbell camera next year
- Replaced Campbell SM4M storage module (old SN: 6021 new SN: 1465) with same program P8: FRL_201112_v2
- Did not have enough pyranometers; need to change both upward and downward facing 2018/19 season
- GPS position: (Lat: 77° 36.678, Long: 163° 10.204)

Friis Hills Met Station (FRSM)

Filename:	FRSM_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	12/9/16 12:15 to 11/30/2017 11:00	
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^{-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:
- Station visited on 11/30/2017 by K. Myers, M. Myers and J. McClure. All input values looked good.
- Power off at 11:06; on at 11:30
- Replaced Young anemometer (new SN: WM27761) – Located higher than 3m*
- Replaced Relative Humidity @ 3m (old SN: Y2850111, new SN: U2340043)
- Replaced Campbell SM4M storage module (old SN: 6052, new SN: 4425) with same program (P8: FRSM_201314_V1.dld)
- Replaced CR10X (old SN: X27749, new SN: X14326)

New Lake Hoare Met Station (HO2M)

Filename:	HO2M_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	10/27/2016 16:15 to 11/29/2017 9:30	
Sampling Frequency:	wind every 4 sec.; others: every 30 sec.	
Averaging and Output Interval:	every 15 minutes	
Program Name	HOEM_201112_V3.dld	

#	Description	Status
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) **Licor pyranometer; old SN: PY20562, new SN: PY23276**	ok
7	mean solar flux; outgoing (down-facing) (W/m2) **Licor pyranometer; old SN: PY28371, new SN: 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) **Young Anemometer; old SN: WM27713, new SN: WM80553**	ok
13	minimum wind speed (m/s)	ok
14	mean P.A.R. (micromols/s/m2) **Licor quantum; SN: Q29766**	ok
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 11/29/2017 by K. Myers, M. Myers and J. McClure. All input values looked good.
- Power off at 10:00; power on at 11:18
- Visited again 11/29/2017: power off at 20:37; on at 21:10
- Replaced Relative Humidity HMP45ASP @ 3m (old SN: U2730007, new SN: W4230016)
- Replaced Upward Pyranometer (PY23276)
- Replaced Downward Pyranometer (PY20561)
- Replaced Young anemometer (SN: WM80553)
- Replaced CR10X (old SN: X28584, new SN: X35782)
- Replaced PTA-427 Barometer with CS106 (PTB110) Barometer (old SN: 607046, new SN: N0750442). CS106 input channel in the CR10X program was adjusted and uploaded by T. Nylen 1/16/18 and now has correct output pressure values.
- Replaced Campbell SM4M storage module (old SN: 1464, new SN: 5989) old program P8: HOEM_201112_V3.dld Current loaded program; HOEM_201718_V2.dld
- Manual measurement of ultrasonic 98 cm above ground.
- Replaced two 12 Volt station batteries

- Refilled precipitation gauge w/ 4L glycol and layer of mineral oil
- Gooseff UV Station serviced 11/29/2017 @ 10:08

Howard Glacier Met Station (HODM)

Filename:	HODM_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	10/28/2016 15:30 to 11/27/2017 15:15	
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^2) **Eppley pyranometer; SN: 33733F3**	divide by 100; multiply by 121.51
8	mean solar flux; outgoing (down-facing) (W/m^2) **Eppley pyranometer; SN: 29777F3**	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 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 11/27/2017 by K. Myers, M. Myers and J. McClure. All input values looked good.
- Power off at 15:30; on at 15:37
- Replaced Campbell SM4M storage module (old SN: 6902, new SN: 4377) with same program (P8: HODM_201314_V1.dld)
- Manual measurement of down facing Pyranometer 78 cm above snow (lots of snow around the station)
- Manual measurement of Ultrasonic 80 cm above snow (lots of snow around the station)
- Could not lower station -too much snow

Miers Valley Met Station (MISM)

Filename:	MISM_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	12/13/2016 14:30 to 12/29/2017 8:30	
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^2) **Licor pyranometer; SN: PY40424**	ok
8	mean solar flux going up; outgoing (down-facing) (W/m^2) **Licor pyranometer; SN: PY45668**	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) **Anemometer; old SN: WM47474, new SN: WM80545**	ok
14	minimum wind speed (m/s)	ok
15	mean P.A.R. (micromols/s/m^2) **Licor quantum; old SN: Q23204, new SN: Q23210**	Divide by 200, multiply by 237.88 (Q23204)
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 (cm)	ok
20	sample of battery voltage	o1

Notes:
- Station visited on 12/29/2017 by M. Myers and J. McClure. All input values looked good.
- Power off at 8:45; power on at 9:28
- Replaced Quantum PAR Sensor (old SN: Q23204, new SN: Q23210)
- Replaced Young anemometer (old SN: WM47474, new SN: WM80545)
- Replaced CR10X (old SN: X44863, new SN: X23872)
- Replaced Campbell SM4M storage module (old SN: 1466, new SN: 6917) with same program (P8: MISM_201112_V1.dld)
- (2) batteries observed, last changed Nov 2012 and Oct 2006
- Barometer accuracy needs to be checked next season

Taylor Glacier Met Station (TARM)

Filename:	TARM_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	12/9/2016 11:00 to 11/30/2017 9:45	
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^2) – **Eppley pyranometer 31437F3**	divide by 100; multiply by 125.47
10	mean solar flux; outgoing (pointing down) (W/m^2) – **Eppley pyranometer 31435F3**	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) **Anemometer; old SN: WM15192, new SN: WM47856**	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 11/30/2017 by K. Myers, M. Myers and J. McClure. All input values looked good.
- Power off at 9:50; on at 10:22
- Station lowered by 9.5cm average and levelled.
- Replaced Relative Humidity HMP45C @ 3m (old SN: V1110042, new SN: Y2710027)
- Replaced Relative Humidity HMP45C @ 1m (old SN: W4230007, new SN: W4230013)
- Replaced Young anemometer (old SN: WM15192, new SN: WM47856)
- Replaced Campbell SM4M storage module (new SN: 1471) with same program (P8: TARM_201112_V1.dld)
- Manual measurement of Eppley down facing Pyranometer 75.5 cm above ice before lowering (67cm after lowering)
- Manual measurement of Ultrasonic 76 cm above ice before lowering (65.5 cm after lowering)
- (2) batteries observed, last changed Nov 2012

Lake Vanda Met Station (VAAM)

Filename:	VAAM_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	12/8/2016 16:45 to 12/18/2017 8:00	
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; incoming (up-facing) (W/m^2) **Licor pyranometer; SN: PY27929**	ok
7	mean solar flux going up (W/m^2) **Licor pyranometer; SN: PY28348**	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) **Anemometer; old SN: WM47080, new SN: WM85158**	ok
13	minimum wind speed (m/s)	ok
14	mean P.A.R. (micromols/s/m^2) **Licor quantum; old SN: Q20275, new SN: Q20266**	divide by 200, multiply by 255.498 (Q20275)
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 (cm)	measured depth * -100
19	sample of battery voltage	ok

Notes:
- Station visited on 12/18/2017 by K. Myers, M. Myers and J. McClure. All input values looked good.
- Power off at 10:55; power on at 11:21
- Replaced RM Young anemometer (old SN: WM47080, new SN: WM85158)
- Replaced Quantum PAR (old SN: Q20275, new SN: Q20266)
- Replaced ultrasonic internal transducer (C11856)
- Replaced CR10X (old SN:X4063, new SN: 28678)
- Replaced Campbell SM4M storage module (new SN: 3778) with same program (P8: VAAM_201112_v1.dld)
- Manual measurement of ultrasonic = 60.5 cm above ground
- Met station location: -77.52567, 161.69129
- Telemetry used for this time-period because of SM4M failure.

Lake Vida Met Station (VIAM)

Filename:	VIAM_2017_18_PROCESSED	
Author of this report:	James McClure	
File Period:	12/10/2016 12:45 to 12/18/2017 12:00	
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 (%)	Lowe correction
7	mean solar flux; incoming (up-facing) (W/m^2) **Licor pyranometer; SN: PY20523**	ok
8	mean solar flux; outgoing (down-facing) (W/m^2) **Licor pyranometer; SN: PY56364**	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) **Anemometer; old SN: WM17809, new SN: WM47480**	ok
14	minimum wind speed (m/s)	ok
15	mean P.A.R. (micromols/s/m^2) **Licor quantum; SN: Q30805**	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 (cm)	Measured depth * -100
20	sample of battery voltage	o1

Notes:
- Station visited on 12/18/2017 by K. Myers, M. Myers and J. McClure. All input values looked good.
- Power off at 12:12; on at 12:36
- Replaced Young anemometer (old SN: WM17809, new SN: WM47480)
- Replaced internal Ultrasonic transducer (C11856)
- Replaced Campbell SM4M storage module (new SN: 5989) with same program (P8: VIA1213V1.dld)
- Manual measurement of ultrasonic 59 cm above ground
- Replaced (1) 12V 100 amp/hr station battery 12/18/17

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. Removed 2016.
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; Retired Dec 2016
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 Reigel Sensit	Installed by Hassan Basagic; removed 2016
102	BRSS	Bonney Reigel Soil Station	
103	F6SS	F6 Soil station	Removed Dec 2016
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	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