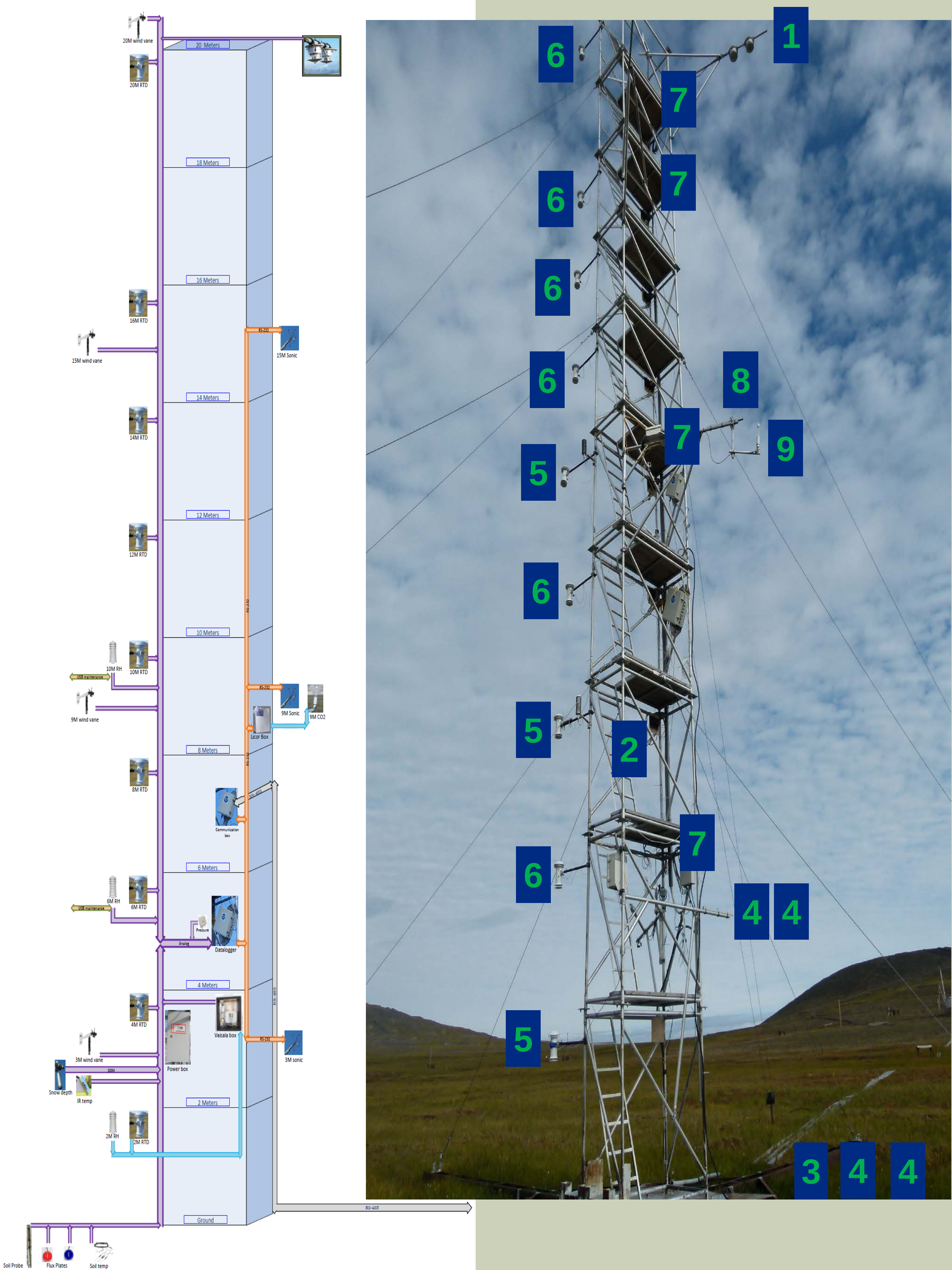




Campbell CR10X Data
Logger

Location: Clean Air Facility Tower Office
File name: tiktwrmetYYDDDDHH.dat (as of 2/11/14)
File location in Tiksi: E:\towermet

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	
101	Year	Julian Day	Hour min [UTC]	BatteryVol tage	Campbell Temp [degC]	LWupwell ing [mV]	LWupwelli ng STD	LWupwelli ng Case Temp [mV]	LWupwelli ng Dome Temp [mV]	PIR2 Temp (n/a)	PIR2 Temp STD (n/a)	PIR2 Case Temp (n/a)	PIR2 Dome Temp (n/a)	SWupwel ling [mV]	SWupwel ling STD	PSP2 mV (n/a)	PSP2 STD mV (n/a)											
301	Year	Julian Day	Hour min [UTC]	Pressure [mbar]	Pressure STD [mbar]	Wind Speed [m/s]	Wind Direction [deg]	Wind Direction sigma theta	Wind Speed STD	Wind Direction STD																		
311	Year	Julian Day	Hour min [UTC]	Ex [mV]	Ex STD [mV]	5cm [mV]	10cm [mV]	15cm [mV]	20cm [mV]	25cm [mV]	30cm [mV]	45cm [mV]	70cm [mV]	95cm [mV]	120cm [mV]	REF [mV]	5cm STD	10cm STD	15cm STD	20cm STD	25cm STD	30cm STD	45cm STD	70cm STD	95cm STD	120cm STD	REF STD	
320	Year	Julian Day	Hour min [UTC]	Soil ThermoCo uple [degC]	Soil ThermoC ouple STD	Flux plate A [mV]	Flux plate B [mV]	Flux plate A STD	Flux plate B STD	IR1 temp t- pile [mV]	IR1 temp case [mV]	IR1 temp t- pile STD	IR1 temp case STD	Surf. Height [mm]	Surf. Height STD	IR1 Therm Temp [degC]	IR1 Case temp [degC]											
330	Year	Julian Day	Hour min [UTC]	hmp155 6M Temp [degC]	hmp155 6M Hum [%]	hmp155 10M Temp [degC]	hmp155 10M Hum [%]	hmt330 2M Temp [degC]	hmt330 2M Hum [%]	6M Temp STD	6M Hum STD	10M Temp STD	10M Hum STD	2M Temp STD	2M Hum STD													
350	Year	Julian Day	Hour min [UTC]	4M Temp [degC]	4M r [calc. resis. Of therm]	4M e [V across ref. resistor]	4M m [V across therm]	8M Temp [degC]	8M r [calc. resis. Of therm]	8M e [V across ref. resistor]	8M m [V across therm]	12M Temp [degC]	12M r [calc. resis. Of therm]	12M e [V across ref. resistor]	12M m [V across therm]	14M Temp [degC]	14M r [calc. resis. Of therm]	14M e [V across ref. resistor]	14M m [V across therm]	16M Temp [degC]	16M r [calc. resis. Of therm]	16M e [V across ref. resistor]	16M m [V across therm]	20M Temp [degC]	20M r [calc. resis. Of therm]	20M e [V across ref. resistor]	20M m [V across therm]	
360	Year	Julian Day	Hour min [UTC]	4M Wdir [deg]	4M WSpd [m/s]	9M Wdir [deg]	9M WSpd [m/s]	15M Wdir [deg]	15M WSpd [m/s]	21M Wdir [deg]	21M WSpd [m/s]																	
375	Year	Julian Day	Hour min [UTC]	Service Switch																								
101	2012	93	0	14.62	-15.73	-0.07897	0.03147	76.273	-0.07897	0	0	0	0	0.23774	0.47033	0	0											
301	2012	93	0	1020.9	0.04205	0.02048	316.54	2.0278	0.028	2.8337		180.73	175.43	167.22	159.87	152.21	43.722	0.11631	0.12755	0.11523	0.1547	0.11583	0.15213	0.09636	0.12467	0.09347	0.0953	0.03616
311	2012	93	0	4956.9	0.72676	194.82	192.85	191.48	186.86	184.43		180.73	175.43	167.22	159.87	152.21	43.722	0.11631	0.12755	0.11523	0.1547	0.11583	0.15213	0.09636	0.12467	0.09347	0.0953	0.03616
320	2012	93	0	-24.982	0.01646	-0.35703	-0.39859	0.0006	0.00049	-0.10396	0.20073	0.00526	0.00053	3326.2	0.40768	-22.372	-20.361											
330	2012	93	0	-26.572	65.711	-26.309	65.684	-66.831	36.805	2.3919	1.1018	1.0972	0.66512	21.338	28.458													
350	2012	93	0	-30.158	-11.613	916.24	80.984	-29.299	-11.282	917.21	81.373	-29.071	-11.194	917.1	81.443	-28.88	-11.121	916.98	81.501	-28.821	-11.098	916.75	81.501	-28.335	-10.911	915.76	81.585	
360	2012	93	0	331.55	0.0678	344.52	0.06074	318.67	1.0573	316.05	0.02048																	
375	2012	93	0	1665																								



Calibration Values:

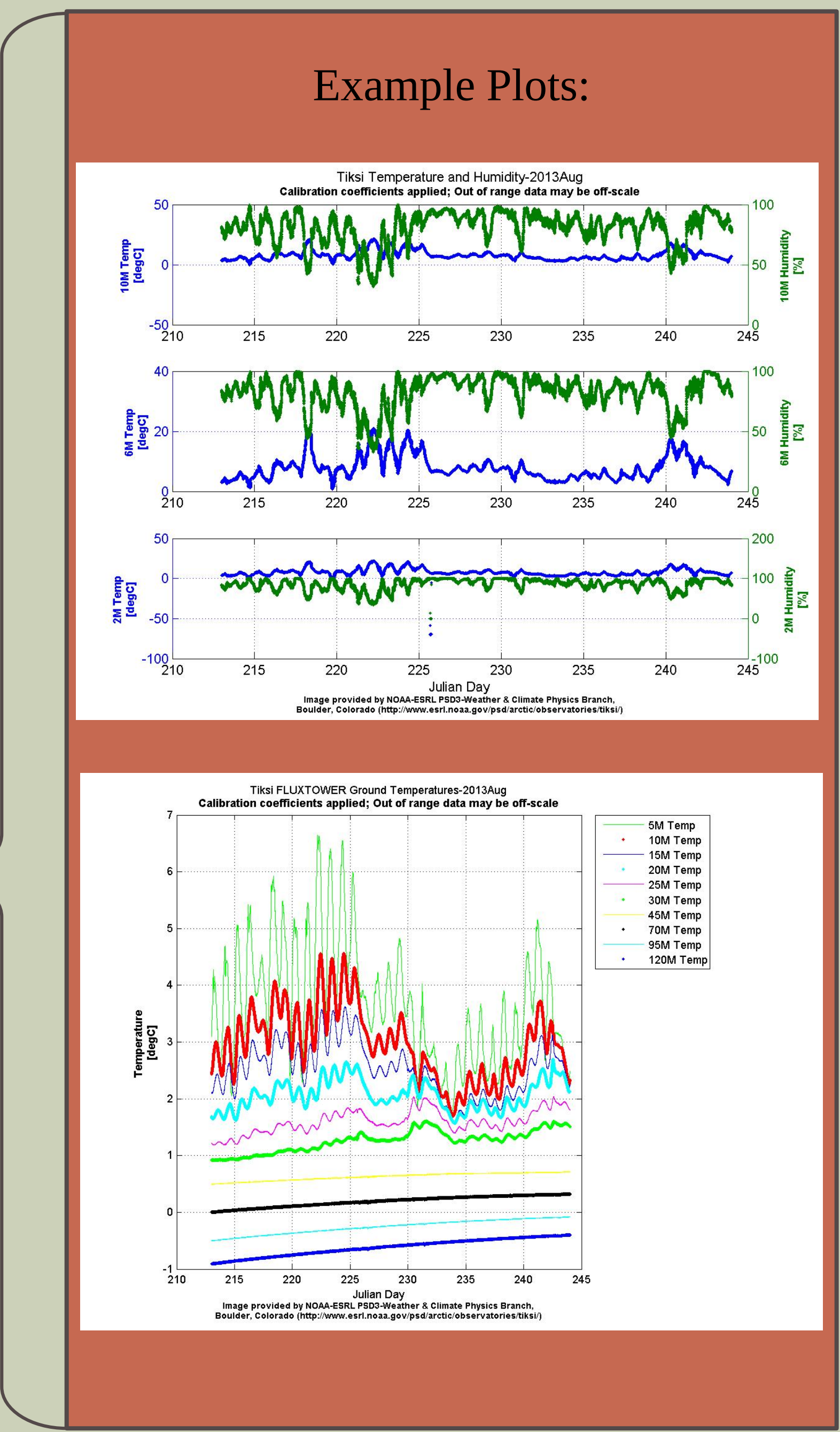
a. Upwelling Longwave Total (Eppley PIR)
309.598 W/m²/mV, Dome = 4.015 07/19/2011 – present
303.03 W/m²/mV, Dome = 3.5 07/01/1991 – 07/18/2011

b. Upwelling Shortwave Total (Eppley PSP)
8.05 μV/W/m² 07/26/2011 – present
8.05 μV/W/m² 04/30/1984 – 07/25/2011

Standardized Data Format:

Definitions:

sss - site identifier (e.g., tik)
inst - base instrument abbreviation
Fn - facility abbreviation (e.g., caf, cow, twr)
data processing level - ingest=a1,
products=b1



Folder Name	File Name	FTP Location
Raw	tiktwrmetYYJJhh.dat	ftp://ftp.etl.noaa.gov/psd3/arctic/tiksi/surface_properties/fluxtower/towermet/raw/YYYY/
Ingest	tikmettwr.a1.YYYYMMDD.hhmmss.txt	ftp://ftp.etl.noaa.gov/psd3/arctic/tiksi/surface_properties/fluxtower/towermet/ingest/YYYY/
Products	tiksoiltwr.b1.YYYYMMDD.hhmmss.txt tikradiationtwr.b1.YYYYMMDD.hhmmss.txt tikmeteorologicaltwr.b1.YYYYMMDD.hhmmss.txt	ftp://ftp.etl.noaa.gov/psd3/arctic/tiksi/surface_properties/fluxtower/towermet/products/YYYY/
Quicklooks	tik[measurement]twr.a1.YYYYMMDD.hhmmss.jpg	ftp://ftp.etl.noaa.gov/psd3/arctic/tiksi/surface_properties/fluxtower/towermet/quicklooks/YYYY/

IASOA Portal

Home:
<http://www.esrl.noaa.gov/psd/iasoa/>
Data:
<http://www.esrl.noaa.gov/psd/iasoa/dataataglance>

Example Product File:

DayFrac	Year	JulianDay	HourMin	LWTotalUpwelling[W/m^2]	SWTotalUpwelling[W/m^2]	QualityControl
182	2014	182	0	1817.33	92.313	06404-100
182.001	2014	182	1	1172.19	67.5764	06404-100
182.001	2014	182	2	575.113	57.7342	04404-100

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Datagrams:

Tiksi fluxtower - towermet



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Instrument Specifications

Instrument Details									
Specifications	1	2	3	4	5	6	7	8	9
Line ID#	101	301	311	320	330	350	360	Separate file	Separate file
Measurement	a. Upwelling Longwave Total b. Upwelling Shortwave Total	Pressure	Thermistor Soil Probe	a. IR surface temp b. Ground Height c. Conductive FluxA d. Conductive FluxB e. Soil Thermocouple	Temperature, Humidity	Aspirated Temperature	Wind Speed, Wind Direction	Licor: CO ₂ , H ₂ O, temp, pressure	Sonic: Wind direction, temp
Serial #	a. 36732 b. 36762	D5020014		a. 1972 b. 2233 c. 3502 d. 3507 e.	a. KdNc213889 (00932401010001500435) b. 01255610010 (0834029700508529) c. 01255610010 (0834026200508529)	a. 0918 b. 0918 c. 0918 d. 0918 e. 0918 f. 0918	a. b. c. d.	See Sonic/Licor Datagram	See Sonic/Licor Datagram
Instrument Manufacturer	a. Eppley PIR b. Eppley PSP	Vaisala	MRC	a. Apogee b. Campbell c. Hukseflux d. Hukseflux e. Campbell	Vaisala	RTD Logan	RM Young	Licor	ATI
Type	a. Pyrgeometer (PIR) b. Pyranometer (PSP)	PTB-110	TP-101	a. SI-111 b. SR50A c. HFP01 d. HFP01 e. TCAV-L	a. HMT-330 b. HMP-155 c. HMP-155	PT-100	3001	7500	SAIK-3K
Height Location on Tower	21m	5m	Depth: 5cm-120cm	a. 3.3m b. 3.3m c. Depth: 3cm d. Depth: 3cm e. Depth: between 2-6cm	a. 1.8m b. 5.8m c. 9.8m	a. 3.8m b. 8.0m c. 11.8m d. 13.8m e. 15.8m f. 19.9m	a. 3.7m b. 9.2m c. 15.5m d. 21.0m	a. 9m	a. 3m b. 9m c. 15m
Instrument Specifications	Aspirated, AC fan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Measurement Unit	mV	mbar	mV	a. Degree Celsius b. mm c. mV d. mV e. Degree Celsius	Temp: Degree Celsius Humidity: %	Degree Celsius	Direction: Degrees Speed: m/s	CO ₂ : mmol/m ³ H ₂ O: mmol/m ³ Temp: Degree Celsius Pressure: kPa	Direction: m/s Temp: Degree Celsius
Calibration factors (y/n/value)	a. 309.598 W/mV/m ² (Dome = 4.015) b. 8.05 μV/W/m ²	no	A=0.002478535 B=0.0002538399 C=0.0000002812234	a. Yes – internally in logger program b. no c. 62.4 μV/W/m ² d. 61.8 μV/W/m ² e. no	no	Have, but don't know heights	no	See Sonic/Licor Datagram	See Sonic/Licor Datagram
Unit after Applied Calibration or Conversion	W/m ²	mbar	Degree Celsius	a. Degree Celsius b. mm c. W/m ² d. W/m ² e. Degree Celsius	Temp: Degree Celsius Humidity: %	Degree Celsius	Direction: Degrees Speed: m/s	See Sonic/Licor Datagram	See Sonic/Licor Datagram
Additional Corrections Applied (y/n/explain)	no	no	REF = ((39.802*[measure dREF])/43.802)	b. Zero value for ground = 0.4897143	no	no	Add 180 degrees to wind direction, since instruments are placed on wrong side of tower	no	See Sonic/Licor Datagram



Datagrams: Tiksi fluxtower - towermet



Processing

Line 101:

Calibration Values:

PIR = 303.03 W/mV/m²
PSP = 8.05 μV/W/m²
Dome Correction Factor (**DCF**) = 3.5
Sigma = 5.6704 * 10[^](-8)
E = efficiency = 1

Calculations:

TCR = Case Temp in mV (**Data Column I**)
TDR = Dome Temp in mV (**Data Column J**)
TC = PIR Temp Conversion = 1/((0.0010295+0.0002391*log(TCR*1000)+0.0000001568*log(TCR*1000)^3))
TD = PIR Dome Conversion = 1/((0.0010295+0.0002391*log(TDR*1000)+0.0000001568*log(TDR*1000)^3))
V_PIR = data Column G (PIR thermopile in mV), **V_PSP** = data Column O (PSP thermopile in mV)
SF_PIR = 303.03 W/mV/m², **SF_PSP** = 8.05 μV/W/m²
PSP thermopile (W/m^2) = 1000*V_PSP/SF_PSP
PIR thermopile (W/m^2) = SF_PIR*V_PIR + SIGMA *(E*TC^4 + DCF*(TC^4 – TD^4))

Line 301:

Calculations:

Pressure (mb) = **Data Column E**
Pressure std (mb) = **Data Column F**

Line 311:

Calibration Values:

A = 0.002478535
B = 0.0002538399
C = 0.0000002812234

Calculations:

REF_original = Data Column Q
REF = ((39.802*REF_original)/43.802)
output = Data Columns G-P depending on which depth you are calculating (5cm-120cm)
D = (output - (REF - 87.15))
D = ln(D)
Temp = (1/(A+B*D+C*(D^3))) - 273.15

Line 320:

Calibration Values:

Esen plate A = 62.4*10[^](-6) V*m²/W
Esen plate B = 61.8*10[^](-6) V*m²/W
Ground height sensor = 3300 mm
Ground height actual zero = 0.4897143 mm

Calculations:

Flux Plates:

Vsen plate A (mV) = **Data Column G**
Vsen plate B (mV) = **Data Column H**
Flux Plate A (W/m²) = (Vsen plate A / Esen plate A) / 1000
Flux Plate B (W/m²) = (Vsen plate B / Esen plate B) / 1000

Ground Height:

IR Therm Temp (deg C) = **Data Column Q**
Data (mm) = **Data Column O**
Arg = (IR Therm Temp + 273.15) / 273.15
Ground Height (mm) = (ground height sensor – Data * sqrt (Arg)) + Ground height actual zero

Line 330:

Calculations:

Hmp155 6M Temp (deg C) = **Data Column E**
Hmp155 6M Humidity (%) = **Data Column F**
Hmp155 10M Temp (deg C) = **Data Column G**
Hmp155 10M Humidity (%) = **Data Column H**
Hmt330 2M Temp (deg C) = **Data Column I**
Hmt330 2M Humidity (%) = **Data Column J**

Line 350:

Calculations:

4M Temp (deg C) = **Data Column E**
8M Temp (deg C) = **Data Column I**
12M Temp (deg C) = **Data Column M**
14M Temp (deg C) = **Data Column Q**
16M Temp (deg C) = **Data Column U**
20M Temp (deg C) = **Data Column Y**

Line 360:

Calculations: ***NOTE: Add 180 degrees to wind direction, since instruments are placed on wrong side of tower***

4M Wind Direction (degree) = **Data Column E**
4M Wind Speed (m/s) = **Data Column F**
9M Wind Direction (degree) = **Data Column G**
9M Wind Speed (m/s) = **Data Column H**
15M Wind Direction (degree) = **Data Column I**
15M Wind Speed (m/s) = **Data Column J**
21M Wind Direction (degree) = **Data Column K**
21M Wind Speed (m/s) = **Data Column L**

Line 375:

Calculations: (on/off switch)

Data Column E
1665 = off 1666 = on