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Summit
NOAA Broadband Radiation

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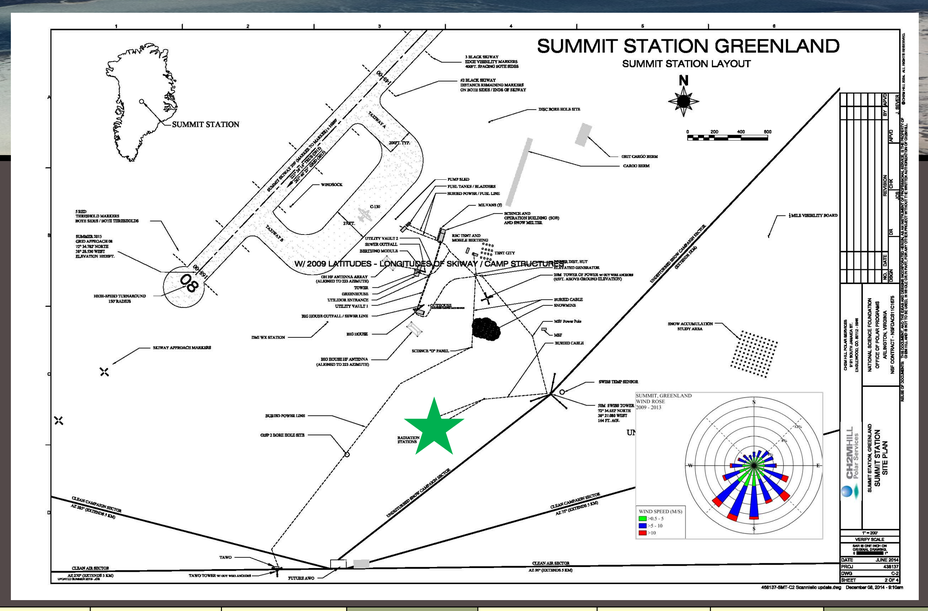
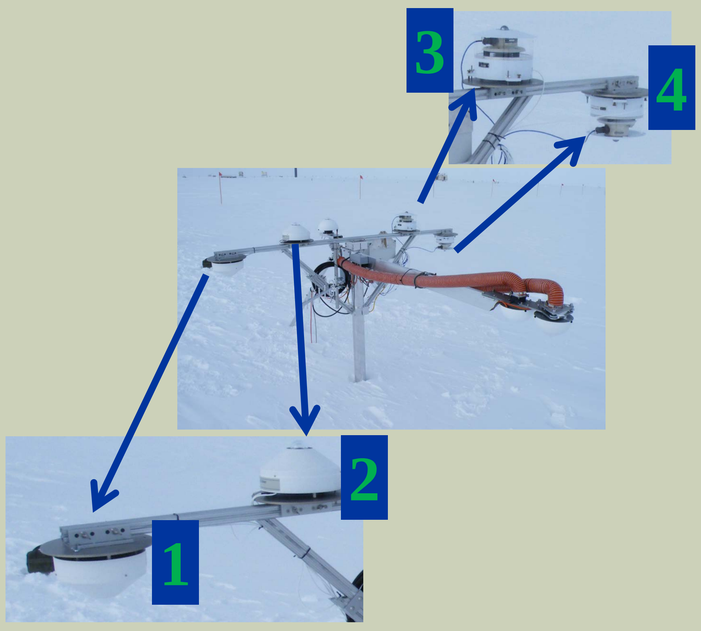


★ Indicates current location of instrument

File name: iceJJJ.1YY(as of 3/11/14)
Old File name: ICEJJJ.1YY

ID#	Year	Day	HHMM	Campbell battery voltage	Data logger temp (degC)	Downwelling longwave infrared (mV)	Downwelling longwave std (mV)	Downwelling longwave case temp (mV)	Downwelling longwave dome temp (mV)	Upwelling longwave infrared (mV)	Upwelling longwave infrared std (mV)	Upwelling longwave case temp (mV)	Upwelling longwave dome temp (mV)	Upwelling shortwave global (mV)	Upwelling shortwave global std (mV)	Downwelling shortwave global (mV)	Downwelling shortwave global std (mV)	Upwelling shortwave global fan	Downwelling shortwave global fan	Downwelling longwave infrared fan	Upwelling longwave infrared fan
101	2014	96	1256	12.05	-6.599	-.16783	.00124	86.666	86.407	-.02485	.00148	89.113	87.394	2.6096	.05944	-99999	-99999	3231	3230	6200	6172
101	2014	96	1257	12.05	-6.568	-.16552	.00074	86.508	86.01	-.02125	.00074	88.973	86.934	2.6751	.02421	-99999	-99999	3217	3230	6192	6180

Data | Diagnostics | Logger Info



Instrument Details

Specifications	1	2	3	4
Measurement	Upwelling Shortwave Global	Downwelling Shortwave Global	Downwelling Longwave Infrared	Upwelling Longwave Infrared
Serial #	000022	020049	27415	28139
Instrument Manufacturer	Kipp&Zonen CM22	Kipp&Zonen CM22	Eppley PIR	Eppley PIR
Type	Pyranometer (PSP)	Pyranometer (PSP)	Pyrgeometer (PIR)	Pyrgeometer (PIR)
Housing Manufacturer	Kipp&Zonen	Kipp&Zonen	Eppley	Eppley
Fan Included (y/n) If Yes, specify AC/DC fan	Yes; DC	Yes; DC	Yes; DC (comes with stock AC, but switched out to DC)	Yes; DC (comes with stock AC, but switched out to DC)
Case and Dome temps both measured (no/both/case/dome)	no	no	Case, Dome	Case, Dome
Dome Correction Factor? (value/Not Applicable)	n/a	n/a	3.05	2.60
Additional ventilation? (y/n/explain)	no	no	no	no
Heated/Aspirated? (y/n/both)	Heated, Aspirated	Heated, Aspirated	Aspirated	Aspirated
Is dome facing upward or downward?	Downward	Upward	Upward	Downward
Radiation measurement upwelling or downwelling?	Upwelling Radiation	Downwelling Radiation	Downwelling Radiation	Upwelling Radiation
Calibration factors	9.00 microVolts/W/m^2	9.05 microVolts/W/m^2	259.67 W/mV/m^2	252.62 W/mV/m^2
Additional Corrections Applied (y/n/explain)				

Summit Data Center

FTP File locations at NOAA:
From Summit Data Center to: C:\bak
then transferred to:
T:\Summit\BBradiation\BBradiation_Data\NOAA\YYYY\

BSRN Archive

NOAA

Quicklooks

Processing

Calibration Values: SF_PIR_D_IR = 259.67; pyrgeometer D_IR
SF_PSP_D_GLOBAL = 9.05; pyranometer D_GLOBAL
SF_PIR_U_IR = 252.62; pyrgeometer U_IR
SF_PSP_U_GLOBAL = 9.00; pyranometer U_GLOBAL
DCF_D_IR = 3.05; (dome correction factor)
DCF_U_IR = 2.60; (dome correction factor)
Sigma = 5.6704*10^(-8);
E = 1;

Calculations in MATLAB:
TCR_U = Upwelling Case Temp in mV TCR_D = Downwelling Case Temp in mV
TDR_U = Upwelling Dome Temp in mV TDR_D = Downwelling Dome Temp in mV

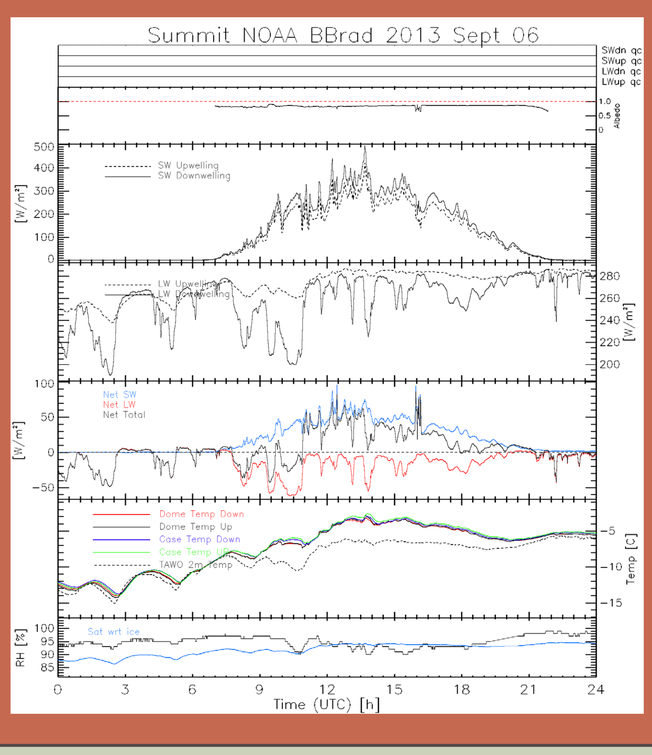
Case Temp Conversion (mV to Kelvin) in MATLAB:
TC_U = 1./((0.0010295+0.0002391.*log(TCR_U.*1000)+0.0000001568.*log(TCR_U.*1000).^3));
TC_D = 1./((0.0010295+0.0002391.*log(TCR_D.*1000)+0.0000001568.*log(TCR_D.*1000).^3));

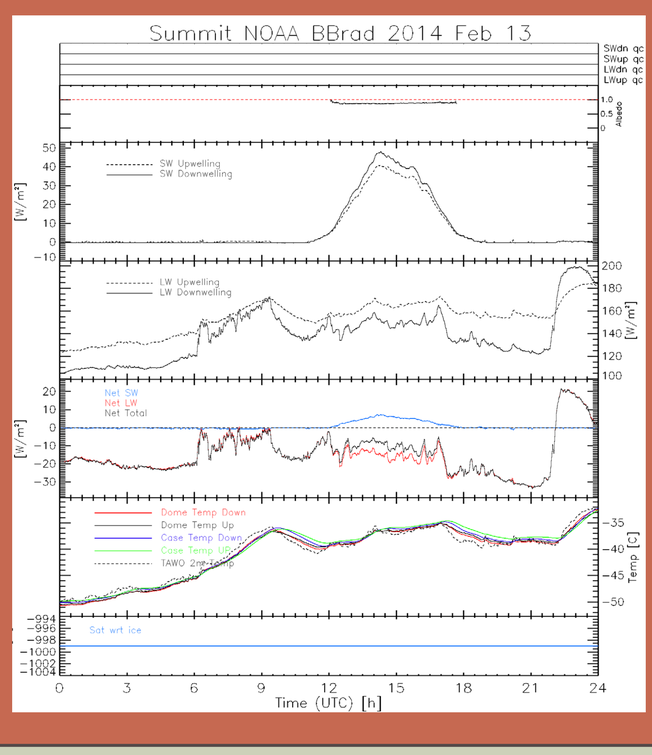
Dome Temp Conversion (mV to Kelvin) in MATLAB:
TD_U = 1./((0.0010295+0.0002391.*log(TDR_U.*1000)+0.0000001568.*log(TDR_U.*1000).^3));
TD_D = 1./((0.0010295+0.0002391.*log(TDR_D.*1000)+0.0000001568.*log(TDR_D.*1000).^3));

Up- and Down-welling Longwave Infrared (PIR) in MATLAB:
PIR_D_IR = SF_PIR_D_IR*V_PIR_D_IR+Sigma*(E*(TC_D.^4)+DCF_D_IR*((TC_D.^4)-(TD_D.^4)));
PIR_U_IR = SF_PIR_U_IR*V_PIR_U_IR+Sigma*(E*(TC_U.^4)+DCF_U_IR*((TC_U.^4)-(TD_U.^4)));

Up- and Down-welling Shortwave Global (PSP) in MATLAB:
PSP_D_GLOBAL = 1000.*V_PSP_D_GLOBAL./SF_PSP_D_GLOBAL;
PSP_U_GLOBAL = 1000.*V_PSP_U_GLOBAL./SF_PSP_U_GLOBAL;

Example Plots:





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

IASOA Portal

Product

Product File: smtbbradnoaaX1.a1.20140406.00.00.00.dat

DayFrac	Year	DOY	HourMin	BattVolt	SW total Downwelling [W/m2]	SW total Upwelling [W/m2]	LW total Downwelling [W/m2]	LW total Upwelling [W/m2]	Case temp Upwelling [degK]	Dome temp Upwelling [degK]	Case temp Downwelling [degK]	Dome temp Downwelling [degK]	Fan SW Upwelling	Fan SW Downwelling	Fan LW Upwelling	Fan LW Downwelling
96.0000	2014	96	0000	12.06	-0.369061	-0.371111	185.78	204.519	247.949	247.501	247.715	247.406	3229	3210	6159	6206
96.0007	2014	96	0001	12.06	-0.369061	-0.371111	185.906	204.652	247.951	247.505	247.72	247.415	3219	3210	6149	6201

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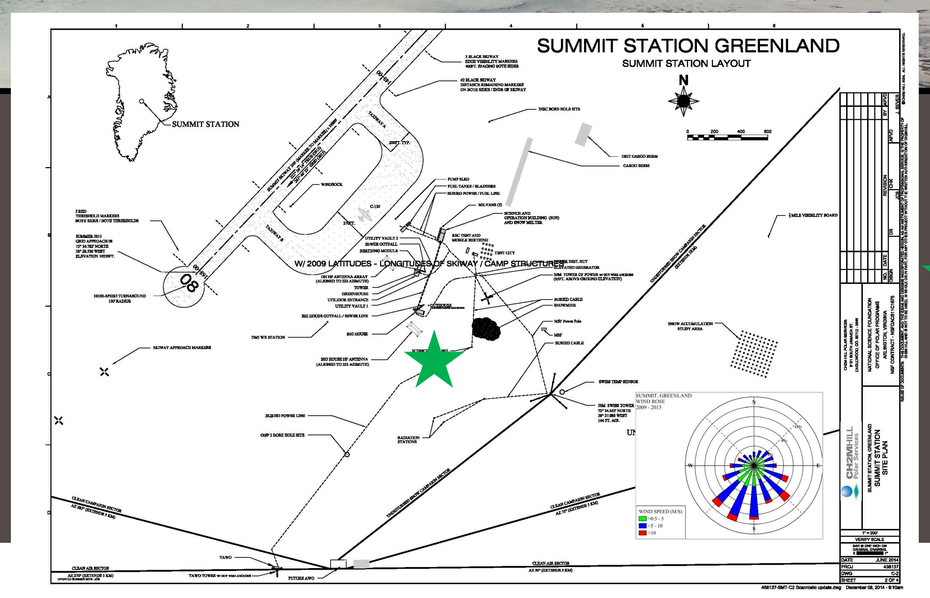
Datagrams:
Summit
ETH Broadband Radiation

Contacts
Technician:
techs@summitcamp.org



Indicates current location of instrument

File name:
Old File name:

Data	Diagnostics	Logger Info

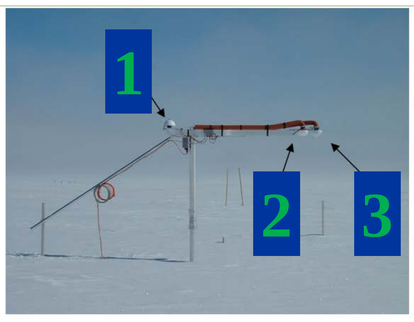


Fig 1a: Fixed arm with instruments I 1-3

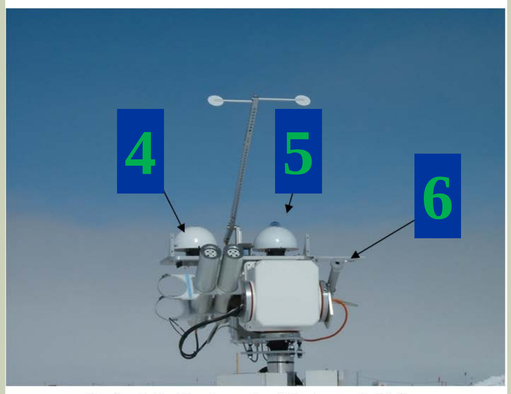


Fig 2a: Solar Tracker with all Instruments I 1-3

Summit Data Center

BSRN Archive

NOAA

FTP File locations at NOAA:
From Summit Data Center to:
then transferred to:

Quicklooks

Processing

Calibration Values:
Sigma = 5.6704*10^(-8);
E = 1;
Calculations in MATLAB:

Case Temp Conversion (mV to Kelvin) in MATLAB:

Dome Temp Conversion (mV to Kelvin) in MATLAB:

Up- and Down-welling Longwave Infrared (PIR) in MATLAB:

Up- and Down-welling Shortwave Global (PSP) in MATLAB:

Instrument Details

Specifications	1 = I1	2 = I2	3 = I3	4 = I2	5 = I1	6 = I3
Measurement	Downwelling Shortwave Global	Upwelling Longwave Infrared	Upwelling Shortwave Global	Downwelling Longwave Infrared	Downwelling Shortwave Diffuse	Downwelling Shortwave Direct
Serial #	010797	036083	010798	036084	960308	940063
Instrument Manufacturer	Kipp&Zonen CM22	Kipp&Zonen CG4	Kipp&Zonen CM22	Kipp&Zonen CG4	Kipp&Zonen CM21	Kipp&Zonen CH1
Type	Pyranometer (PSP)	Pyrgeometer (PIR)	Pyranometer (PSP)	Pyrgeometer (PIR)	Pyranometer (PSP)	Pyrheliometer (PSP)
Housing Manufacturer	Kipp&Zonen	Kipp&Zonen	Kipp&Zonen	Kipp&Zonen	Kipp&Zonen	Kipp&Zonen
Fan Included (y/n) If Yes, specify AC/DC fan						
Case and Dome temps both measured (no/both/case/dome)						
Dome Correction Factor? (value/Not Applicable)						
Additional ventilation? (y/n/explain)	Yes,	Yes,	Yes,			
Heated/Aspirated? (y/n/both)						
Is dome facing upward or downward?	Upward	Downward	Downward	Upward	Upward	Upward
Radiation measurement upwelling or downwelling?	Downwelling	Upwelling	Upwelling	Downwelling	Downwelling	Downwelling
Calibration factors	10.99 microVolts/W/m^2	86.96 W/m^2/mV	11.67 microVolts/W/m^2	70.18 W/m^2/mV	12.79 microVolts/W/m^2	9.69 microVolts/W/m^2

Example Plots:

Product

IASOA Portal

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

Product File:

Official Data Submission to an Archive	Data Cable	rsync	NOAA server