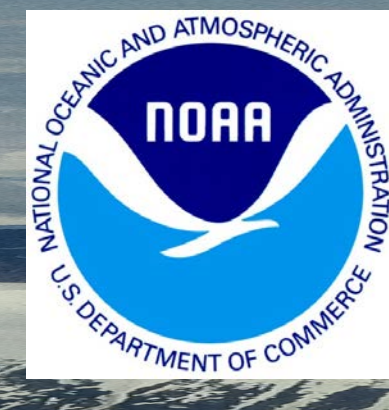


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Datagrams: Alert



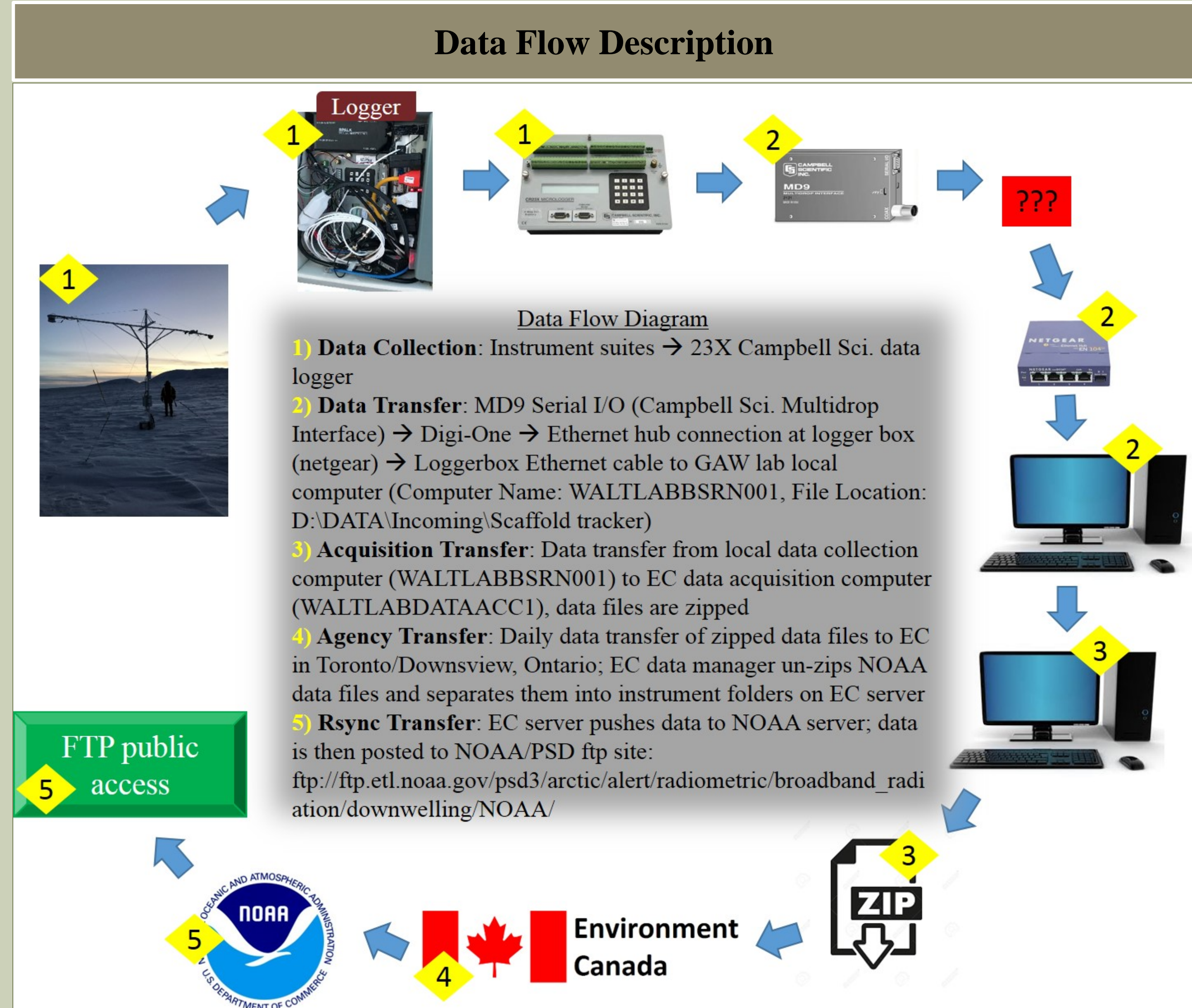
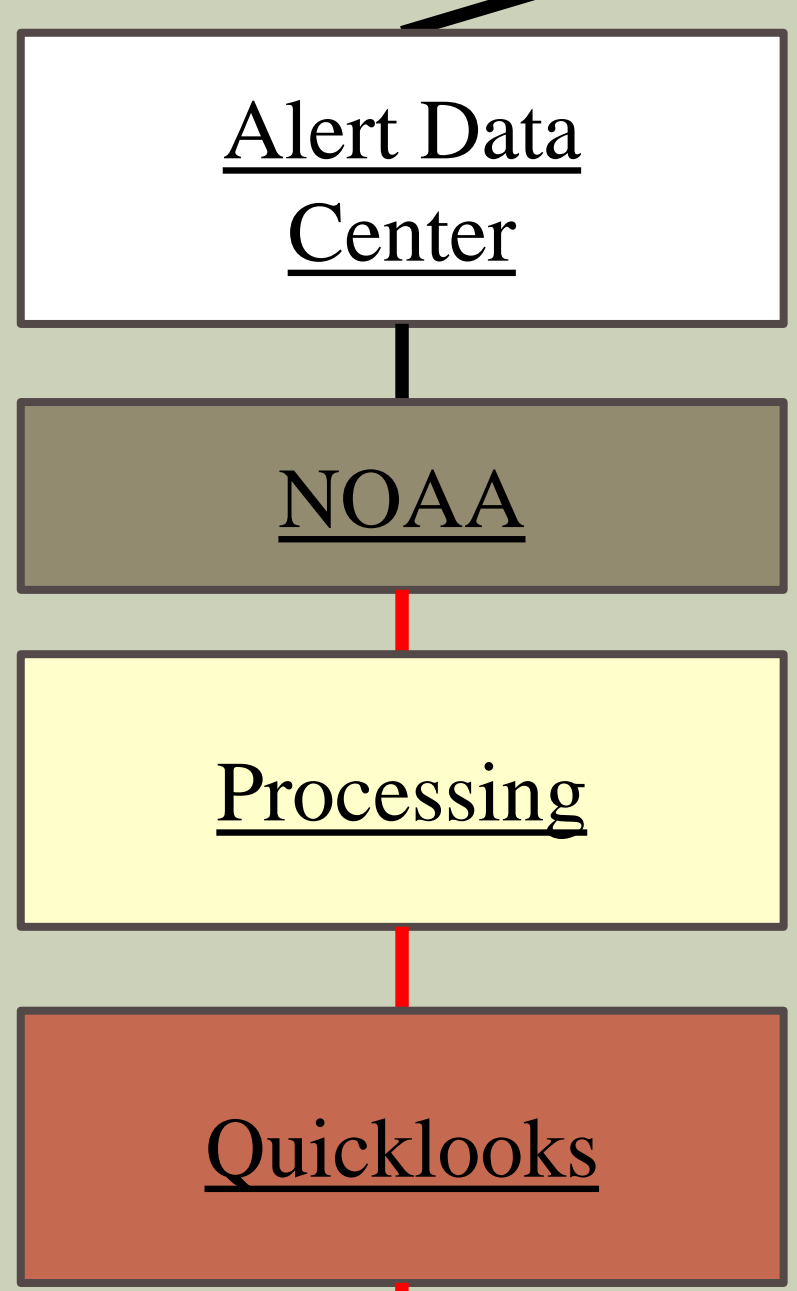
NOAA Broadband Radiation Upwelling & Meteorological Albedo Rack

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File name: (as of 1/10/17) Albedo rack-YYYY-MM-DD.dat
 File location on ingest Server: /home/alert/Albedo rack/

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O					
lineID	Year	Julian Day	GMT/UTC Time [HHMM]	Logger Battery Voltage	Upwelling Longwave Total [mV]	Upwelling Longwave Total std	Upwelling Longwave Total case temp [mV]	Upwelling Longwave Total dome temp [mV]	Upwelling Shortwave Total [mV]	Upwelling Shortwave Total std	Licor Downwelling Shortwave Total [mV]	Licor Downwelling std	Licor Upwelling Shortwave Total [mV]	Licor Upwelling std					
lineID 301	Year	Julian Day	GMT/UTC Time [HHMM]	Thermistor Case Temp [ohms]	SR50 snow depth distance to ground [m]														
lineID 311	Year	Julian Day	GMT/UTC Time [HHMM]	T0 Excite [mV]	5cm [mV]	10cm [mV]	15cm [mV]	20cm [mV]	25cm [mV]	30cm [mV]	45cm [mV]	70cm [mV]	95cm [mV]	120cm [mV]	REF resistor avg	Tqx1 avg [mV]	Tqx2 avg [mV]		
lineID 320	Year	Julian Day	GMT/UTC Time [HHMM]	Temp/Humidity [not connected]	Temp/Humidity std [no sensor]	Flux Plate1	Flux Plate1 [redundant]	Flux Plate1 std	Flux Plate1 std [redundant]										
101	2014	358	10	11.76	-0.10585	0.00186	146.24	148.09	-0.0059	0.00148	-0.0033	0	-0.00176	0.00041					
301	2014	358	10	179.98	3.7041														
311	2014	358	10	5014.7	226.82	217.87	212.15	208.28	206.58	205.22	199.63	192.72	186.43	182.28	89.21	63.091	60.237		
320	2014	358	10	0	0	-0.3921	-0.3921	0.00016	0.00016										

Data Diagnostics Logger Info



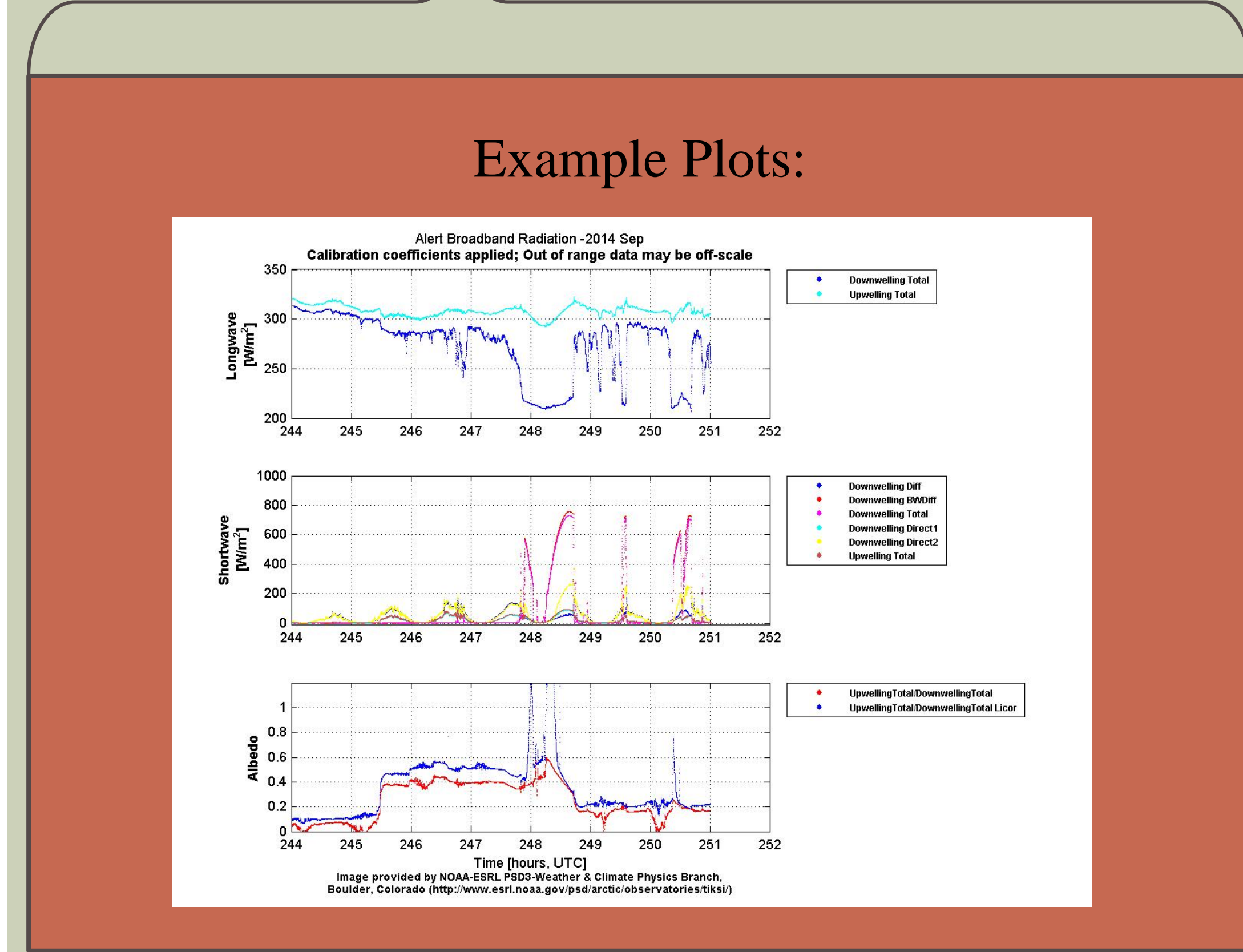
Files separated into individual raw files by instrument (locations below):

lineID 101: NOAA Broadband Radiation Upwelling 1 2 3
 ftp://ftp.etl.noaa.gov/psd3/arctic/alert/radiometric/broadband_radiation/upwelling/NOAA/raw/

lineID 301: 4
 ftp://ftp.etl.noaa.gov/psd3/arctic/alert/surface_properties/fluxtower/towermet/raw/

lineID 311: 5
 ftp://ftp.etl.noaa.gov/psd3/arctic/alert/surface_properties/fluxtower/towermet/raw/

lineID 320: 6 7
 ftp://ftp.etl.noaa.gov/psd3/arctic/alert/surface_properties/fluxtower/towermet/raw/



Ingest

Folder Name	File Name	FTP Location
Raw	Albedo rack-YYYY-MM-DD.dat	ftp://ftp.etl.noaa.gov/psd3/arctic/alert/radiometric/broadband_radiation/upwelling/NOAA/raw/
Ingest	altradiationbsrn.a1.YYYYMMDD.hmmss.txt	ftp://ftp.etl.noaa.gov/psd3/arctic/alert/radiometric/broadband_radiation/upwelling/NOAA/ingest/
Products	altradiationnoabsrn.b1.YYYYMMDD.hmmss.txt	ftp://ftp.etl.noaa.gov/psd3/arctic/alert/radiometric/broadband_radiation/products/quality_controlled/
Quicklooks	altradiationnoabsrn.a1.YYYYMMDD.hmmss.jpg	ftp://ftp.etl.noaa.gov/psd3/arctic/alert/radiometric/broadband_radiation/quicklooks/

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

IASOA Portal

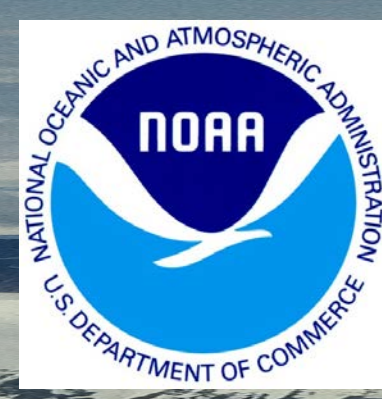
Product

Example Product File:

DayFrac	Year	JulianDay	HourMin	SWDiff Downwelling [W/m^2]	SWDiff BWDow nwellling [W/m^2]	SWTotal Downwelling [W/m^2]	SWDir1 Downwelling [W/m^2]	SWDir2 Downwelling [W/m^2]	LWTotal Downwelling [W/m^2]	SWTotal Upwelling [W/m^2]	LWTotal Upwelling [W/m^2]	Albedo	SWTotal DownwellingLi [W/m^2]	SWTotal UpwellingLi [W/m^2]	LicroAlbedo	Quality Control
182	2014	182	0	39.4151	35.3059	73.4739	300.342	296.683	134.115	251.635	313.396	3.42482	383.548	277.874	0.724483	0008000 0008830 3330000 0
182.001	2014	182	1	39.4053	35.5135	75.5624	321.711	317.654	134.244	229.188	313.15	3.03309	369.173	249.748	0.676506	0008000 0008830 3330000 0

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**Datagrams:
Alert**

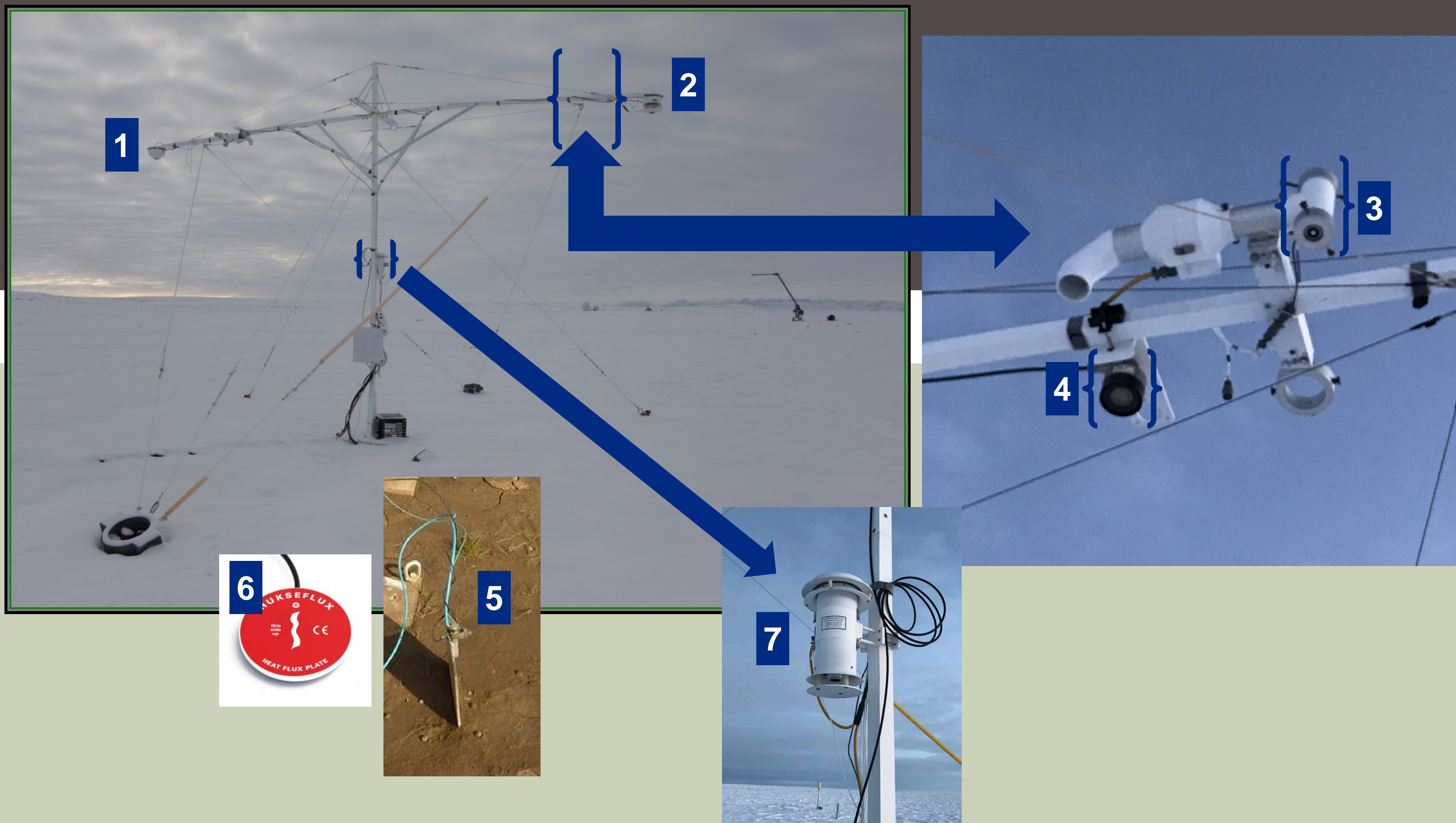


**NOAA Broadband Radiation Upwelling
& Meteorological Albedo Rack**

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Instrument Specifications



Processing

Calibration Values:

- Upwelling Shortwave Total (K&Z CM22)
 - 9.48 $\mu\text{V}/\text{W}/\text{m}^2$ 3/13/2014 – present
 - 9.49 $\mu\text{V}/\text{W}/\text{m}^2$ 3/7/2009 – 3/12/2014
 - 9.50 $\mu\text{V}/\text{W}/\text{m}^2$ 3/14/2007 – 3/6/2009
 - 9.54 $\mu\text{V}/\text{W}/\text{m}^2$ 3/25/2004 – 3/13/2007
- Upwelling Longwave Total (Eppley PIR)
 - 330.03 $\text{mV}/\text{W}/\text{m}^2$, Dome = 3.2 3/2009– present (SN33913)
 - 322.58 $\text{mV}/\text{W}/\text{m}^2$, Dome = 3.2 2/2008– 3/2009 (SN33689)
 - 317.46 $\text{mV}/\text{W}/\text{m}^2$, Dome = 3.2 2/2007– 2/2008 (SN33913)
 - 304.87 $\text{mV}/\text{W}/\text{m}^2$, Dome = 3.2 8/2004 – 2/2007 (SN33689)
 - 303.306 $\text{mV}/\text{W}/\text{m}^2$, Dome = 3.60 11/28/2007 → GMD orig cal
 - 304.925 $\text{mV}/\text{W}/\text{m}^2$, Dome = 3.85 4/15/2004 → GMD orig cal
- 3a. Downwelling Shortwave Total (Licor LI-200)
 - 10.40 $\mu\text{V}/\text{W}/\text{m}^2$ 07/01/2004 – present
- 3b. Upwelling Shortwave Total (Licor LI-200)
 - 11.10 $\mu\text{V}/\text{W}/\text{m}^2$ 07/01/2004 – present

Instrument Details

Specifications	1	2	3	4	5	6	7
Measurement	Upwelling Shortwave Total	Upwelling Longwave Total	a. Licor Downwelling Shortwave Total b. Licor Upwelling Shortwave Total	Snow Depth Sensor	Thermistor Soil Probe	Flux Plate	Temperature/Humidity
Serial #	030085	33689	a. PY2263 b. PY2249	4540	n/a	2778	
Instrument Manufacturer	Kipp&Zonen CM22	Eppley PIR	Licor	Campbell Scientific	MRC	Hukseflux	Vaisala
Type	Pyranometer (PSP)	Pygeometer (PIR)	LI-200	SR50A	TP-101	HFP01	HMP-235
Special Notes	- October 19, 2016 instrument was removed and sent back to NOAA for calibration - Internal/external components swapped with EC K&Z pyranometer model CMP22 (SN090057) in March 2014 due to connector issue	n/a	n/a	n/a	Depth: 5cm-120cm	n/a	NOT CONNECTED
Height	4m	4m	4m	4m	4m	4m	2m
Fan Included (y/n) If Yes, specify AC/DC fan	Yes; DC	Yes; AC	n/a	n/a	n/a	n/a	Yes
Case and Dome temps both measured (no/both/case/dome)	No	Yes	n/a	n/a	n/a	n/a	n/a
Dome Correction Factor? (value/Not Applicable)	n/a	3.6	n/a	n/a	n/a	n/a	n/a
Additional ventilation? (y/n/explain)	no	no	n/a	n/a	n/a	n/a	n/a
Heated/Aspirated? (y/n/both)	Aspirated	Heated, Aspirated	n/a	n/a	n/a	n/a	Aspirated
Is dome facing upward or downward?	Downward	Downward	n/a	n/a	n/a	n/a	n/a
Radiation measurement upwelling or downwelling?	Upwelling	Upwelling	n/a	n/a	n/a	n/a	n/a
Measurement Unit	mV	mV	mV	meter	mV	mV	
Calibration factors	9.48 $\mu\text{V}/\text{W}/\text{m}^2$	303.31 $\text{W}/\text{mV}/\text{m}^2$	a. 10.40 $\mu\text{V}/\text{W}/\text{m}^2$ b. 11.10 $\mu\text{V}/\text{W}/\text{m}^2$	n/a	n/a	63.1 $\mu\text{V}/\text{W}/\text{m}^2$	n/a
Unit after Applied Calibration or Conversion	W/m^2	W/m^2	W/m^2	mm	Degrees Celsius	W/m^2	
Additional Corrections Applied (y/n/explain)	n/a	n/a	n/a	Zero value for ground = 3848.1 mm	n/a	n/a	n/a

Processing Conversions:

Shortwave Radiation (#1, #3)
DESCRIPTION:
 $\text{SW} = 1000 * \text{Recorded value} / \text{calibration coefficient}$

UNITS:
 $\text{W}/\text{m}^2 = 1000 * \text{mV} / \mu\text{V}/\text{W}/\text{m}^2$

Longwave Radiation (#2)
DESCRIPTION:
 $\text{Sigma} = 5.6704\text{e-}8$, Emissivity = 1, DCF = dome correction factor, SF = calibration coefficient
 $A = 0.0010295$
 $B = 0.0002391$
 $C = 0.0000001568$
 $\text{LW}_{\text{case}} = 1/(A+B*\ln(T_{\text{case}}*1000)+C*\ln(T_{\text{case}}*1000)^3)$
 $\text{LW}_{\text{dome}} = 1/(A+B*\ln(T_{\text{dome}}*1000)+C*\ln(T_{\text{dome}}*1000)^3)$
 $\text{LW} = \text{SF} * \text{Recorded value} + \text{Sigma}(E(\text{LW}_{\text{case}}^4) + \text{DCF}(\text{LW}_{\text{case}}^4) - (\text{LW}_{\text{dome}}^4))$

UNITS:
 $\text{LW}_{\text{case_mV}} = 1/(A+B*\ln(\text{mV}*1000)+C*\ln(\text{mV}*1000)^3)$
 $\text{LW}_{\text{dome_mV}} = 1/(A+B*\ln(\text{mV}*1000)+C*\ln(\text{mV}*1000)^3)$
 $\text{W}/\text{m}^2 = (\text{mV}/\text{W}/\text{m}^2) * \text{mV} + \text{Sigma}(E(\text{LW}_{\text{case_mV}}^4) + \text{DCF}((\text{LW}_{\text{case_mV}}^4) - (\text{LW}_{\text{dome_mV}}^4)))$

Snow Depth (#4)
DESCRIPTION/UNITS:
 $\text{Snow_depth_zero} = 0$
 $\text{Snow_depth_instrument_height} = 4000 \text{ mm}$
 $\text{Arg} = \text{IR temp in degrees Celsius}$
 $\text{Snow Depth in mm} = (\text{Snow_depth_instrument_height} - \text{Recorded Value in mm} * \text{sqrt}(\text{Arg})) - \text{Snow_depth_zero}$

Thermistor Soil Probe (#5)
DESCRIPTION/UNITS:
 $A = 0.002478535$
 $B = 0.0002538399$
 $C = 0.0000002812234$
 $\text{REF} = \text{mV}$
 $D = (\text{Recorded Value in mV}) - \text{REF} + 87.15$
 $D = \ln(D)$
 $\text{Temp in degrees Celsius} = (1/(A + B * D + C * D^3)) - 273.15$

Flux Plate (#6)
DESCRIPTION/UNITS:
 $\text{Esen} = \text{calibration factor} [63.1\text{e-}6]$
 $\text{Vsen} = (\text{Recorded Value in mV}) / 1000$
 $\text{Flux in W}/\text{m}^2 = \text{Vsen} / \text{Esen}$

Processing Quality Control Techniques:

Historical Quality Control Techniques:
 Long, C. N., & Shi, Y. (2008). An Automated Quality Assessment and Control Algorithm for Surface Radiation Measurements. OASJ, 2, 23-37. doi: 10.2174/1874282300802010023

Younkin, K., & Long, C. N. (2004). Improved Correction of IR Loss in Diffuse Shortwave Measurements: An ARM Value Added Product.

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