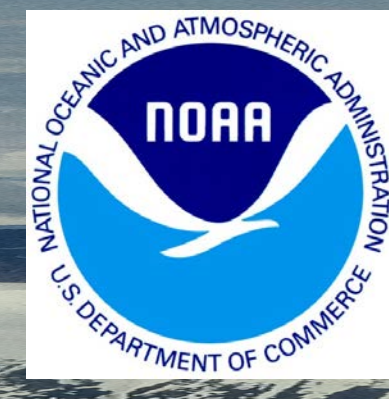


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 Sara Crepinsek
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Datagrams: Alert



NOAA Broadband Radiation Downwelling & Meteorological Scaffold/Tower

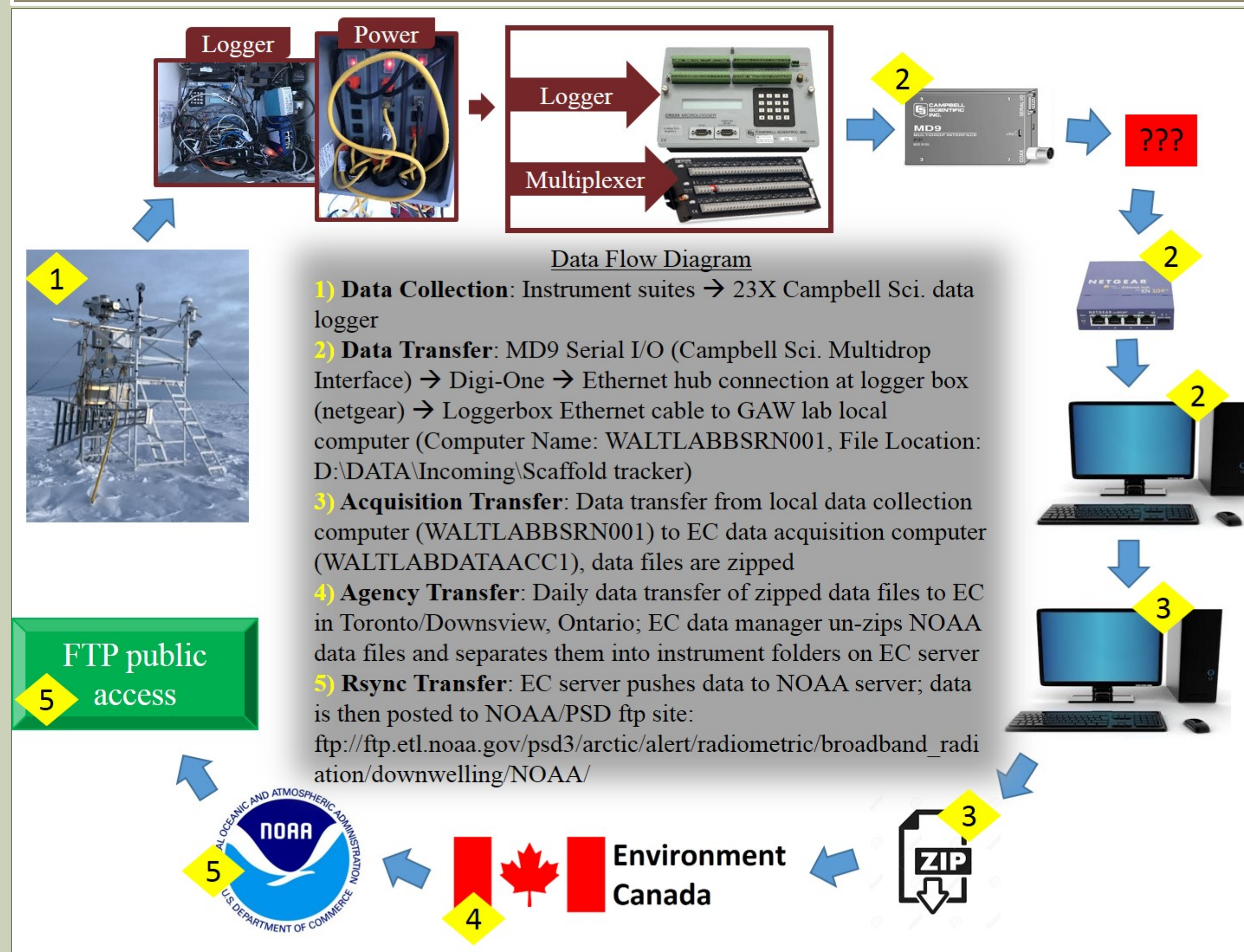
Contacts
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 Christopher.j.cox@noaa.gov
 Technician: Sara Crepinsek
 sara.crepinsek@noaa.gov

File name: (as of 1/9/17) Scaffold tracker-YYYY-MM-DD.dat
 File location on ingest Server: /home/alert/Scaffold tracker/

lineID	Year	Julian Day	GMT/UTC Time [hhmm]	Inst. Temp [degC]	Direct 412nm [mV]	Direct 1050nm [mV]	Direct 675nm [mV]	Direct 862nm [mV]											
121	2014	359	20	10.463	0	0	0	0											
221	2014	359	20	12.038	0	0.16581	0	0											
101	2014	359	20	11.92	7.14	-0.2223	0.00134	131.09	131.37	0.00778	0.00042	0.00661	0.00044	-0.00801	0.00057	-0.00265	0.00021	-0.00799	0.00018
301	2014	359	20	999.77	135.87	1.691	197.6	-29.26	70.3										

Data Diagnostics Logger Info

Data Flow Description



Processing

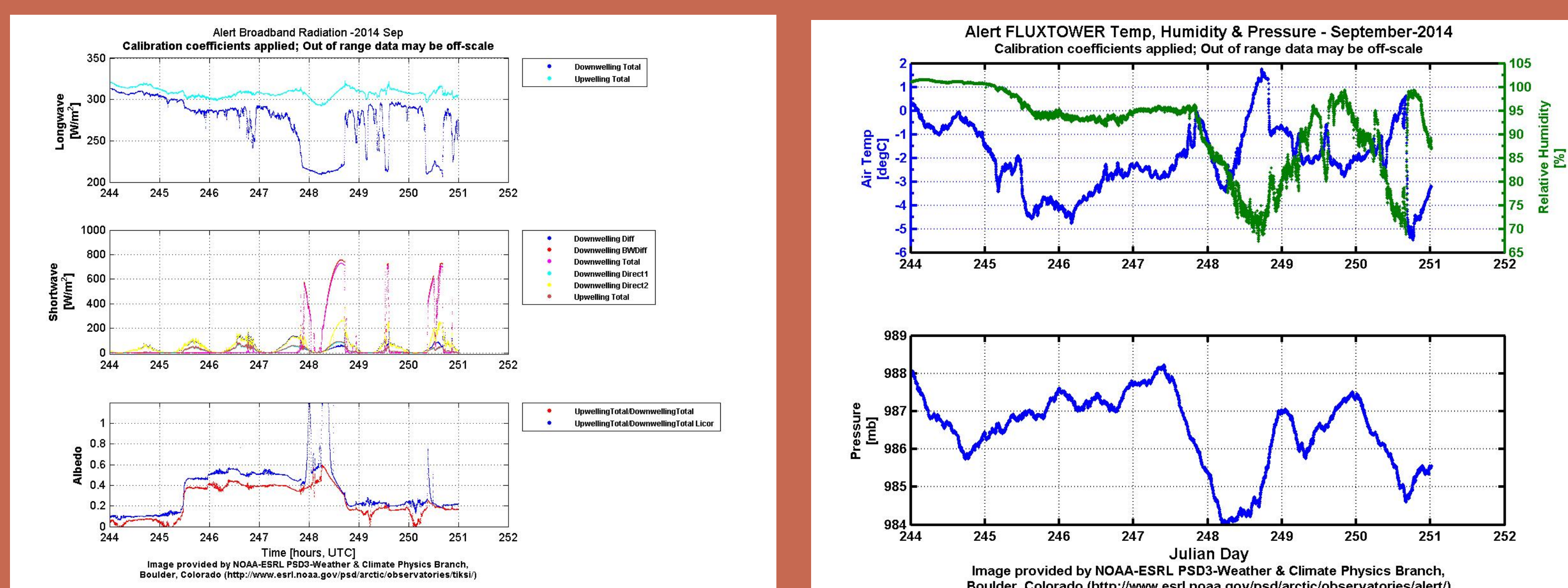
Files separated into individual raw files by instrument (locations below):

lineID 121: Sun photometer SPO2 **7**
 ftp://ftp.etl.noaa.gov/psd3/arctic/alert/aerosol/sun_photometer/SP O2/raw/
 lineID 221: Sun photometer SPO22 **8**
 ftp://ftp.etl.noaa.gov/psd3/arctic/alert/aerosol/sun_photometer/SP O22/raw/
 lineID 101: NOAA Broadband Radiation Downwelling **1 2 3 4 5 6**
 ftp://ftp.etl.noaa.gov/psd3/arctic/alert/radiometric/broadband_radiation/downwelling/NOAA/raw/
 lineID 301: Meteorological Scaffold/tower **9 10**
 ftp://ftp.etl.noaa.gov/psd3/arctic/alert/surface_properties/fluxtower/towermet/raw/

**** Column shift LineID 101 information ****
 In lineID 101, the above schematic is correct from 2005 (DOY 157) to present.

*For dates before 2005 (DOY 157), the columns are as follows:
 lineID101, Year, Julian Day, Time, Logger Battery Voltage, DW LW total, DW LW total std, DW LW total case temp, DW LW total dome temp, DW SW direct1, DW SW direct1 std, DW SW direct2, DW SW direct2 std, DW SW B&W diffuse, DW SW B&W diffuse std, DW SW K&Z diffuse, DW SW K&Z diffuse std, DW SW total, DW SW total std

Example Plots:



Ingest

Folder Name	File Name	FTP Location
Raw	Scaffold tracker-YYYY-MM-DD.dat	ftp://ftp.etl.noaa.gov/psd3/arctic/alert/radiometric/broadband_radiation/downwelling/NOAA/raw/
Ingest	alradiationbsrn.a1.YYYYMMDD.hhmss.txt	ftp://ftp.etl.noaa.gov/psd3/arctic/alert/radiometric/broadband_radiation/downwelling/NOAA/ingest/
Products	alradiationnoabsrn.b1.YYYYMMDD.hhmss.txt	ftp://ftp.etl.noaa.gov/psd3/arctic/alert/radiometric/broadband_radiation/products/quality_controlled/
Quicklooks	alradiationnoabsrn.a1.YYYYMMDD.hhmss.jpg	ftp://ftp.etl.noaa.gov/psd3/arctic/alert/radiometric/broadband_radiation/quicklooks/

IASOA Portal

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

BSRN archive

Pangaea:
http://www.pangaea.de/PHP/BSRN_Status.php?q=LR0100

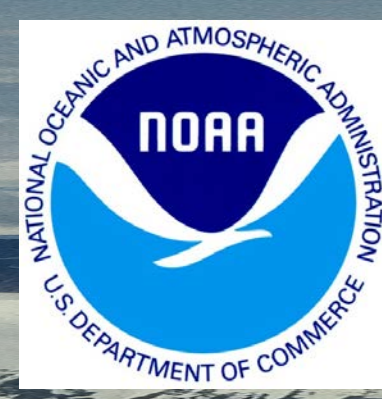
Product

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**

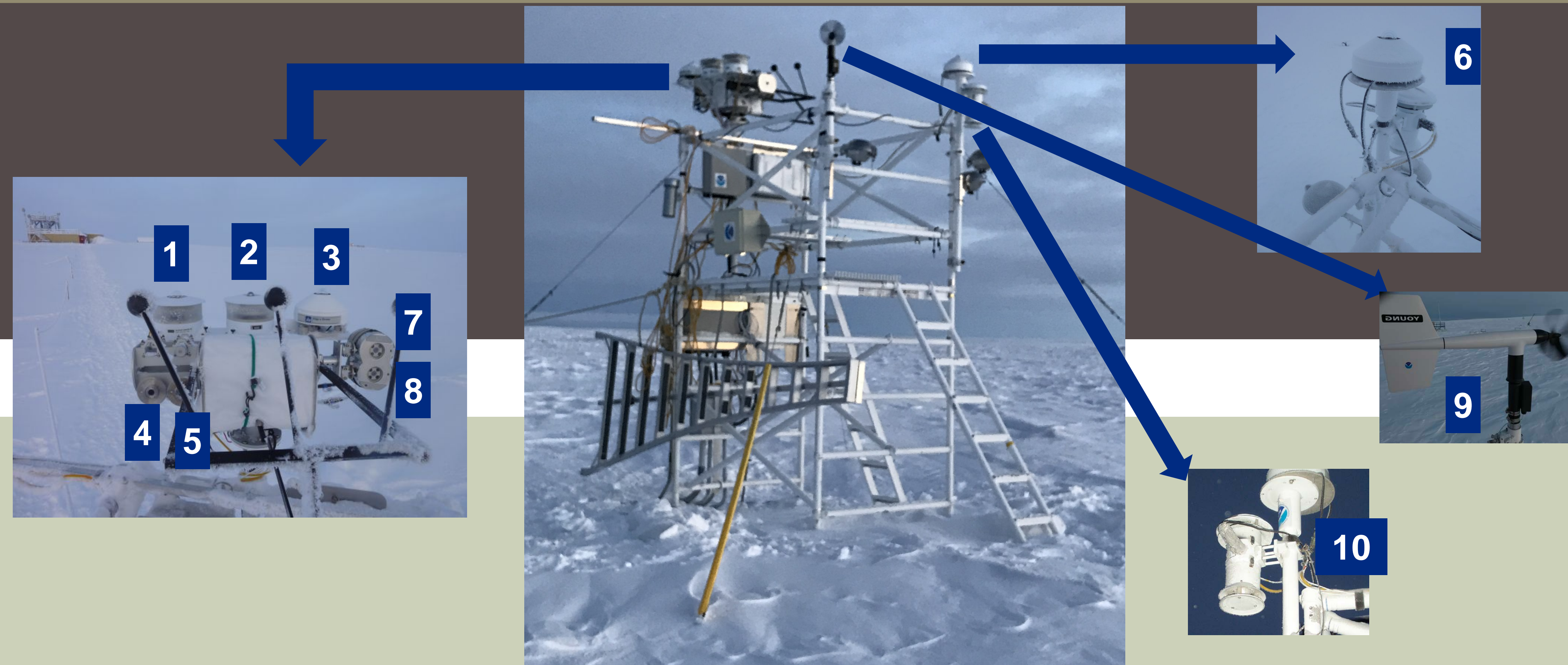


**NOAA Broadband Radiation Downwelling
& Meteorological Scaffold/Tower**

Contacts

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 Christopher.j.cox@noaa.gov
 Technician: Sara Crepinsek
 sara.crepinsek@noaa.gov

Instrument Specifications



Processing

Calibration Values:

- Downwelling Shortwave Diffuse (Eppley B&W PSP)
 - 9.25 $\mu\text{V}/\text{W}/\text{m}^2$ 3/7/2009 - present
 - 9.22 $\mu\text{V}/\text{W}/\text{m}^2$ 3/14/2007 - 3/6/2009
 - 9.01 $\mu\text{V}/\text{W}/\text{m}^2$ 3/25/2004 - 3/13/2007
- Downwelling Longwave Total (Eppley PIR)
 - 331.13 $\text{mV}/\text{W}/\text{m}^2$, Dome = 3.2 3/2009 - present (SN33911)
 - 284.09 $\text{mV}/\text{W}/\text{m}^2$, Dome = 3.2 2/2008 - 3/2009 (SN33688)
 - 312.50 $\text{mV}/\text{W}/\text{m}^2$, Dome = 3.2 3/2007 - 2/2008 (SN33911)
 - 280.11 $\text{mV}/\text{W}/\text{m}^2$, Dome = 3.2 8/2004 - 3/2007 (SN33688)
 - 279.994 $\text{mV}/\text{W}/\text{m}^2$, Dome = 3.30 4/13/2004 \rightarrow GMD orig cal
- Downwelling Shortwave Diffuse (K&Z CM22)
 - 9.23 $\mu\text{V}/\text{W}/\text{m}^2$ 3/13/2014 - present
 - 9.13 $\mu\text{V}/\text{W}/\text{m}^2$ 3/7/2009 - 3/12/2014
 - 9.08 $\mu\text{V}/\text{W}/\text{m}^2$ 3/14/2007 - 3/6/2009
 - 9.14 $\mu\text{V}/\text{W}/\text{m}^2$ 3/25/2004 - 3/13/2007
- Downwelling Shortwave Direct2 (Eppley NIP)
 - 7.92 $\mu\text{V}/\text{W}/\text{m}^2$ 3/7/2009 - present
 - 7.93 $\mu\text{V}/\text{W}/\text{m}^2$ 2/28/2008 - 3/6/2009
 - 7.91 $\mu\text{V}/\text{W}/\text{m}^2$ 3/14/2007 - 2/27/2008
 - 7.86 $\mu\text{V}/\text{W}/\text{m}^2$ 3/25/2004 - 3/13/2007
- Downwelling Shortwave Direct1 (Eppley NIP)
 - 7.81 $\mu\text{V}/\text{W}/\text{m}^2$ 3/7/2009 - present
 - 7.60 $\mu\text{V}/\text{W}/\text{m}^2$ 2/28/2008 - 3/6/2009
 - 7.56 $\mu\text{V}/\text{W}/\text{m}^2$ 3/14/2007 - 2/27/2008
 - 7.51 $\mu\text{V}/\text{W}/\text{m}^2$ 3/25/2004 - 3/13/2007
- Downwelling Shortwave Total (K&Z CM22)
 - 9.89 $\mu\text{V}/\text{W}/\text{m}^2$ 3/13/2014 - present
 - 8.82 $\mu\text{V}/\text{W}/\text{m}^2$ 3/7/2009 - 3/12/2014
 - 8.78 $\mu\text{V}/\text{W}/\text{m}^2$ 3/14/2007 - 3/6/2009
 - 8.81 $\mu\text{V}/\text{W}/\text{m}^2$ 3/25/2004 - 3/13/2007

Instrument Details

Specifications	1	2	3	4	5	6	7	8	9	10
Measurement	Downwelling Shortwave B&W Diffuse	Downwelling Longwave Total	Downwelling Shortwave K&Z Diffuse	Downwelling Shortwave Direct2	Downwelling Shortwave Direct1	Downwelling Shortwave Total	Sun photometer [nanometers]	Sun photometer [nanometers]	Wind speed, Wind direction	Temperature, Humidity
Serial #	33799	33688	030084	33856	33822	030083	1037	1047		
Instrument Manufacturer	Eppley Black&White PSP	Eppley PIR	Kipp&Zonen CM22	Eppley NIP	Eppley NIP	Kipp&Zonen CM22	Middleton Solar	Middleton Solar	R.M. Young Company	Vaisala
Type	Pyranometer (PSP)	Pyrgometer (PIR)	Pyranometer (PSP)	Pyrheliometer (NIP)	Pyrheliometer (NIP)	Pyranometer (PSP)	SPO2	SPO22	05305	HMP-235
Special Notes	n/a	n/a	- October 19, 2016 instrument was removed and sent back to NOAA for calibration - Internal/external components swapped with EC K&Z pyranometer model CM22 (SN080053) in March 2014 due to connector issue	n/a	n/a	- October 19, 2016 instrument was removed and sent back to NOAA for calibration - Internal/external components swapped with EC K&Z pyranometer model CMP22 (SN090058) in March 2014 due to connector issue	n/a	n/a	n/a	Aspirated
Height on Scaffold	3.3 m	3.3 m	3.3 m	3.3 m	3.3 m	3.3 m	3.3 m	3.3 m	3.3 m	3.3 m
Fan Included (y/n) If Yes, specify AC/DC fan	Yes; AC	Yes; AC	Yes; DC	Yes; AC	Yes; AC	Yes; DC	n/a	n/a	n/a	n/a
Case and Dome temps both measured (no/both/case/dome)	no	Case, Dome	no	no	no	no	n/a	n/a	n/a	n/a
Dome Correction Factor? (value/Not Applicable)	n/a	3.20	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Additional ventilation? (y/n/explain)	no	no	no	no	no	no	n/a	n/a	n/a	n/a
Heated/Aspirated? (y/n/both)	Aspirated	Aspirated	Heated, Aspirated	Aspirated	Aspirated	Heated, Aspirated	n/a	n/a	n/a	n/a
Is dome facing upward or downward?	Upward	Upward	Upward	Upward	Upward	Upward	n/a	n/a	n/a	n/a
Radiation measurement upwelling or downwelling?	Downwelling	Downwelling	Downwelling	Downwelling	Downwelling	Downwelling	n/a	n/a	n/a	n/a
Measurement Unit	mV	mV	mV	mV	mV	mV	mV	mV	Direction: Degrees Speed: m/s	Temp: Degree Celsius Humidity: %
Calibration factors	9.25 $\mu\text{V}/\text{W}/\text{m}^2$	331.13 $\text{W}/\text{mV}/\text{m}^2$	9.23 $\mu\text{V}/\text{W}/\text{m}^2$	7.92 $\mu\text{V}/\text{W}/\text{m}^2$	7.81 $\mu\text{V}/\text{W}/\text{m}^2$	9.89 $\mu\text{V}/\text{W}/\text{m}^2$	D412: 7.91 D1050: 7.66 D675: 7.73 D862: 7.70	D368: 8.14 D500: 7.75 D610: 7.75 D778: 7.62	no	no
Unit after Applied Calibration or Conversion	W/m ²	W/m ²	W/m ²	W/m ²	W/m ²	W/m ²	W/m ²	W/m ²	Direction: Degrees Speed: m/s	Temp: Degree Celsius Humidity: %
Additional Corrections Applied (y/n/explain)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Processing Conversions:

Shortwave Radiation (#1, #3, #4, #5, #6)
DESCRIPTION:
 SW = 1000 * Recorded value / calibration coefficient

UNITS:
 W/m² = 1000 * mV / $\mu\text{V}/\text{W}/\text{m}^2$

Longwave Radiation (#2)
DESCRIPTION:
 Sigma = 5.6704e-8, Emissivity = 1, DCF = dome correction factor, SF = calibration coefficient
 A = 0.0010295
 B = 0.0002391
 C = 0.0000001568
 LW_case = 1/(A+B*ln(T_case*1000)+C*ln(T_case*1000)³)
 LW_dome = 1/(A+B*ln(T_dome*1000)+C*ln(T_dome*1000)³)
 LW = SF*Recorded value+Sigma(E(LW_case⁴)+DCF((LW_case⁴)-(LW_dome⁴)))

UNITS:
 LW_case_mV = 1/(A+B*ln(mV*1000)+C*ln(mV*1000)³)
 LW_dome_mV = 1/(A+B*ln(mV*1000)+C*ln(mV*1000)³)
 W/m² = (mV/W/m²)*mV+Sigma(E(LW_case_mV⁴)+DCF((LW_case_mV⁴)-(LW_dome_mV⁴)))

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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