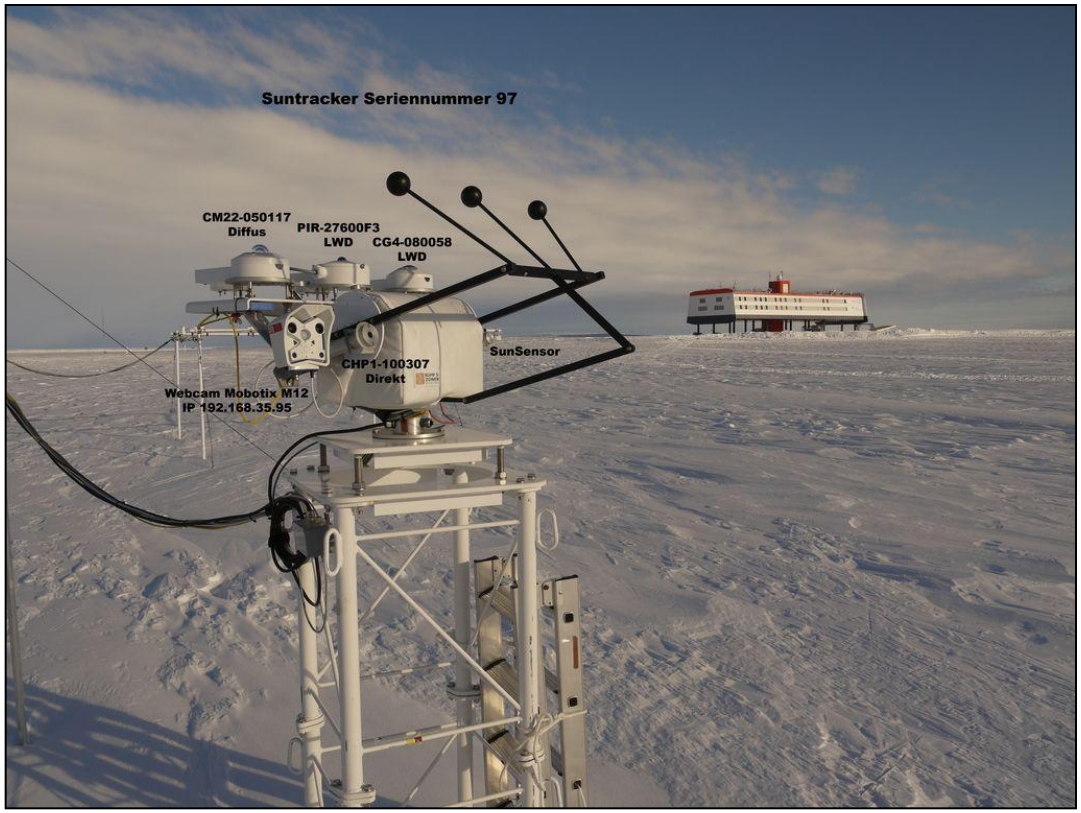
Archive Status and Neumayer

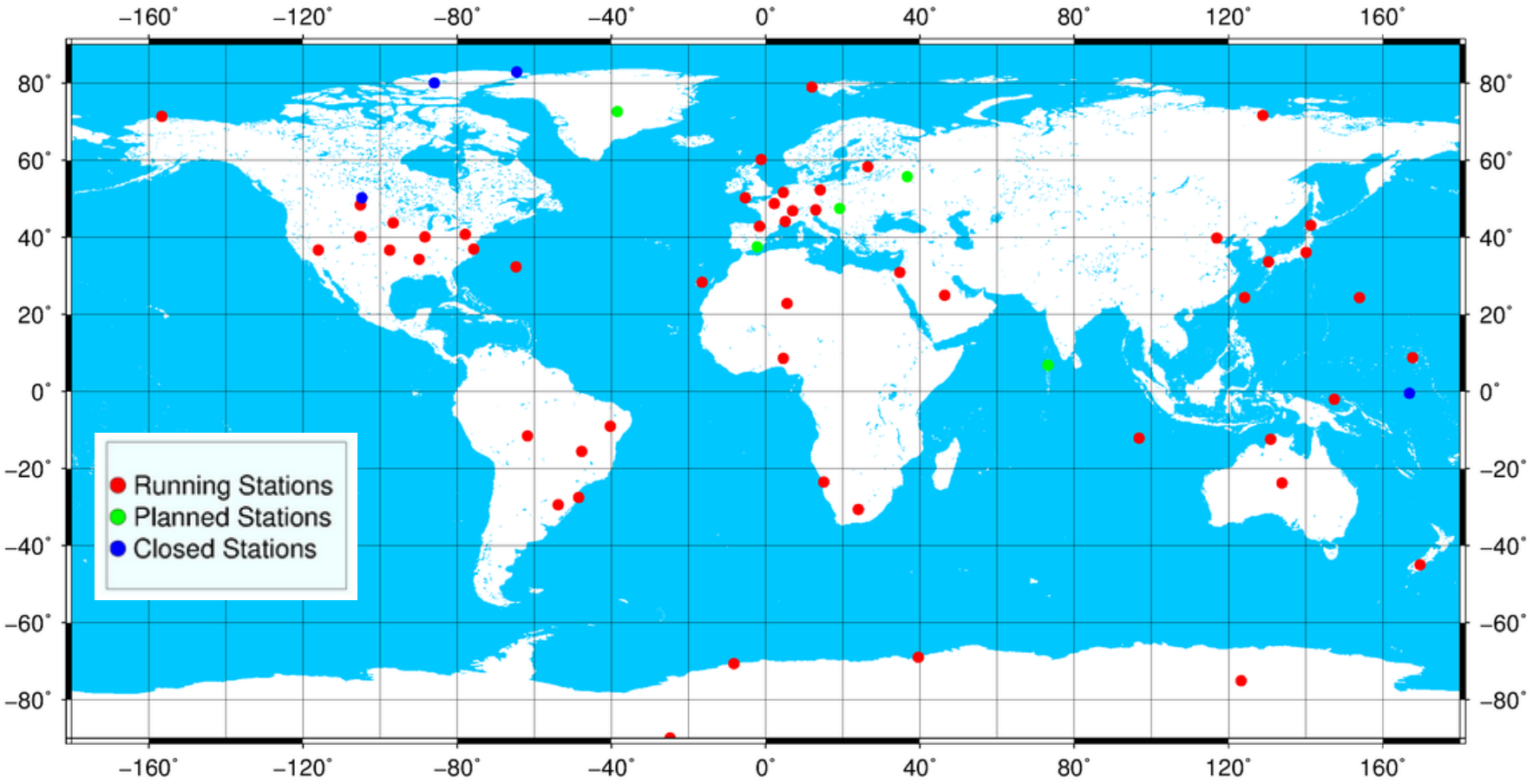


Staff of the WRMC

- Friedrich Richter (student, data curator)
- Amelie Bücker (PostDoc, data curator)
- Holger Schmithüsen(PhD student, BSRN-Toolbox, QC)
- Wolfgang Cohrs (technical coordinator)
- Rainer Sieger (PANGAEA administrator)
- Gert König-Langlo (director of the WRMC)

Present State of the WRMC:

58 (54) stations provided data



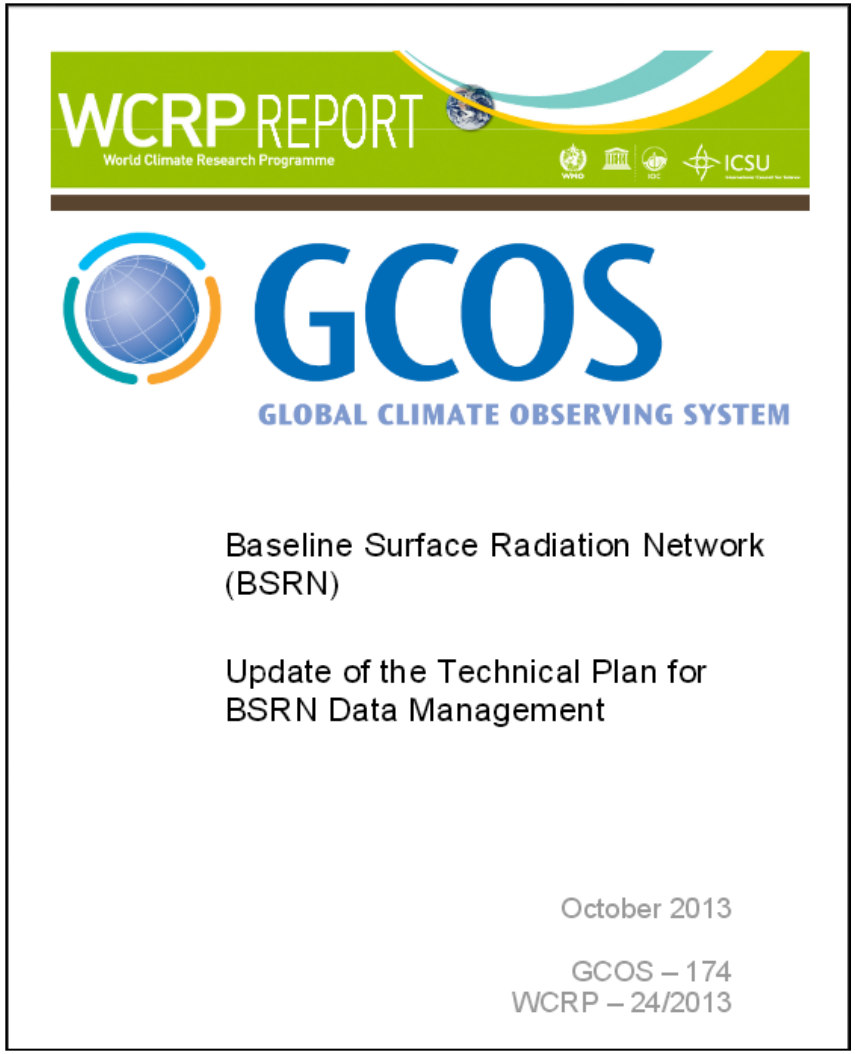
Present State of the WRMC: Datasets

The typical average interval for radiation data is 1 minute:	Stations 2014 (2012)
1. LR 0100: (Global, Diffuse, Direct, Long-wave down)	58 (54)
2. LR 0300: (Reflex, Long-wave up)	14 (9)
3. LR 0500: (UV)	14 (12)
4. LR 1000: (Synops)	13 (12)
5. LR 1100: (Upper air soundings)	29 (29)
6. LR 1200: (Total ozone)	9 (9)
~~7. LR 1300: (Aerosol optical depths) (under construction)~~	~~(14)~~
8. LR 1300: (Ceilometer data)	3 (3)
9. LR 30x0: (Radiation measurements from tower)	13 (13)

König-Langlo, G. , Sieger, R. , Schmithüsen, H. , Bücker, A. , Richter, F. and Dutton E.G. 2013:

The Baseline Surface Radiation Network and its World Radiation Monitoring Centre at the Alfred Wegener Institute.

www.wmo.int/pages/prog/gcos/Publications/gcos-174.pdf.



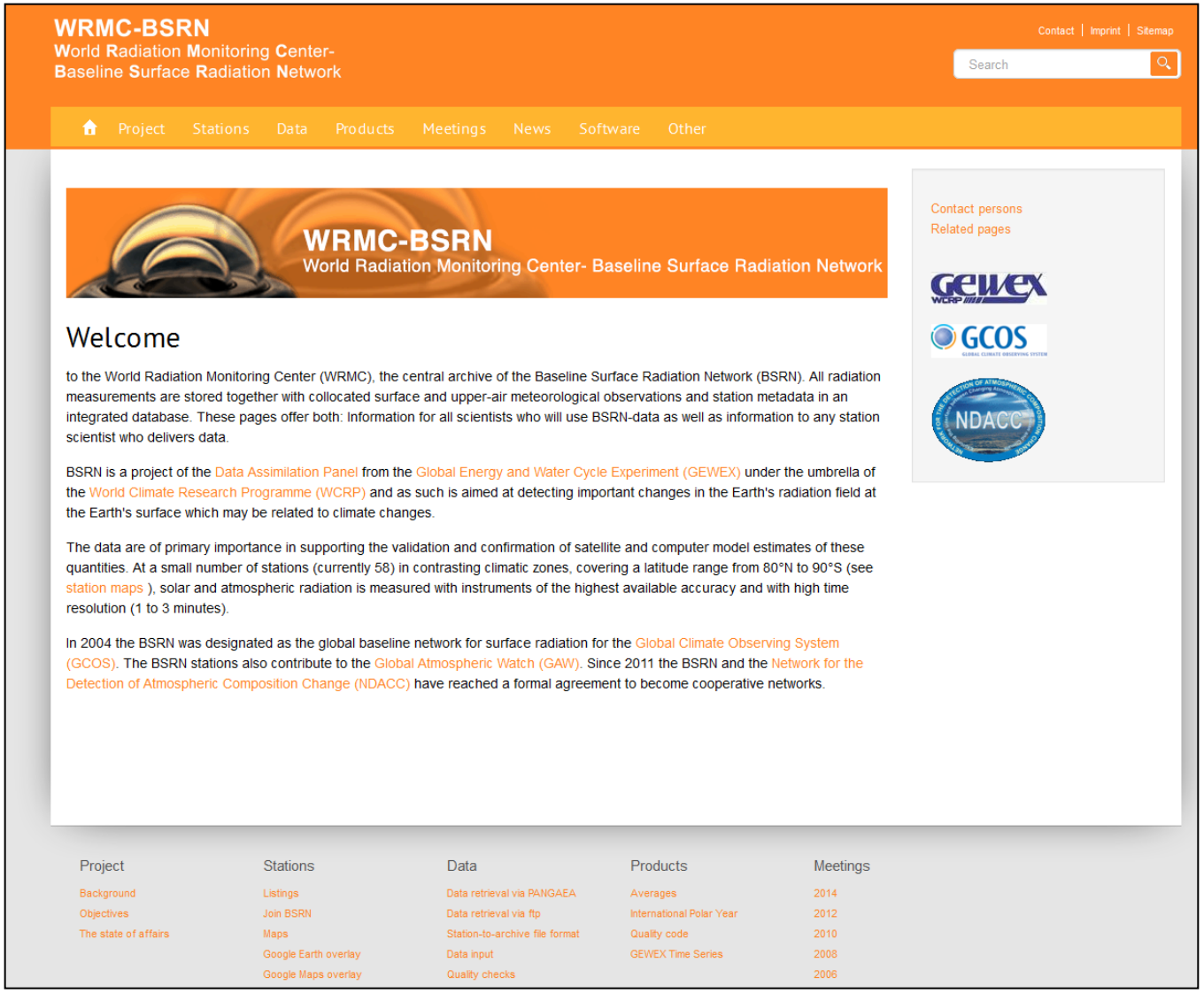
Minor changes in the station-to-archive files:

- LR1300 (AOD) was excluded (nobody used it before)
- LR4000 (Pyrgeometer temperatures at ground level) can be included
- LR4nnn (Pyrgeometer temperatures at nnn meters) can be included
- No conflicts with the former formats!!!

Logical record	Line no.	Description of field / format of line	Range of values	Missing code	Format of v./l.
4000	1	date [day]	1 - 31		I2
pyrgeo.	1	time [minute]	0 - 1439		I4
temp.	1	dome temperature 1 downward long-wave instrument [°C]		-99.9	F5.1
	1	dome temperature 2 downward long-wave instrument [°C]		-99.9	F5.1
	1	dome temperature 3 downward long-wave instrument [°C]		-99.9	F5.1
	1	body temperature downward long-wave instrument [°C]		-99.9	F5.1
	1	thermopile output downward long-wave instrument [W/m^2]		-999	I4
	1	dome temperature 1 upward long-wave instrument [°C]		-99.9	F5.1
	1	dome temperature 2 upward long-wave instrument [°C]		-99.9	F5.1
	1	dome temperature 3 upward long-wave instrument [°C]		-99.9	F5.1
	1	body temperature upward long-wave instrument [°C]		-99.9	F5.1
	1	thermopile output upward long-wave instrument [W/m^2]		-999	I4
		(X,I2,X,I4,4(F5.1,X),I4,3X, 4(F5.1,X),I4			
4nnn pyrgeo. temp. at nnn meter		pyrgeometer temperatures from instruments mounted on towers at a height of nnn meters are coded according to the definitions for pyrgeometers at standard height (~ 2 meters) see LR 4000.			

Redesign of:

http://www.bsrn.awi.de



Mailing Lists

- ***bsrn-stations@listserv.dfn.de***

  Communication between the BSRN/WRMC administration and all BSRN station scientists. Only persons included in this group are allowed to use it.

- ***bsrn-user@listserv.dfn.de***

  Communication between the BSRN/WRMC administration and all BSRN user. To avoid spam and too much mails the use of this list is restricted to the BSRN/WRMC administration.

Present State of the WRMC: 7825 (6719) station-months available

Station	Short name	Station manager currently in charge	pre BSRN	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	All
Alert	ALE	David Halliwell (David.Halliwell@ec.gc.ca)																							
Alice Springs	ASP	Bruce Forgan (B.Forgan@bom.gov.au)					12	12	12	12	12	12	11	12	12	12	12	12							
Barrow	BAR	Ellsworth Dutton (Ellsworth.G.Dutton@noaa.gov)		12	12	12	12	12	12	12	12	12	12	12	12	12									
Bermuda	BER	Ellsworth Dutton (Ellsworth.G.Dutton@noaa.gov)		12	12	12	12	12	12	12	12	12	12	12	10										X
Billings	BIL	Charles Long (chuck.long@pnl.gov)			4	12	12	12	12	12	12	12	11									7	12	4	X
Bondville	BON	John Augustine (John.A.Augustine@noaa.gov)					12	12	12	12	12	12								12	6				X
Boulder, SURFRAD	BOS	John Augustine (John.A.Augustine@noaa.gov)					5	12	12	12								2	12	12	6				X
Boulder	BOU	Ellsworth Dutton (Ellsworth.G.Dutton@noaa.gov)		12	12	12	12	12									12	12	12	12	12	2			X
Brasilia	BRB	Enio Bueno Pereira (eniobp@cptec.inpe.br)																8	10	4	9	12	12	5	X
Cabauw	CAB	Wouter Knap (knap@knmi.nl)															11	12	12	12	12	12	12	4	X
Camborne	CAM	Patrick Fishwick (patrick.fishwick@metoffice.com)											12	12	12	12	12	12	6						X
Carpentras	CAR	Jean-Philippe Morel (jean-philippe.morel@meteo.fr)								12	12	12	12	12	12	12	12	12	12	12	12	12	12	5	X
Chesapeake Light	CLH	Fred M. Denn (Frederick.M.Denn@nasa.gov)										8	12	11	12	12	12	12	12	12	12	12	12	6	X
Serra																									
Solar Village	SOV	Naif Al-Abbadi								3	12	12	12	12											X
South Pole	SPO	Ells		12	12	10	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	2			X
Syowa	SYO	go.jp)				12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11		X
Sioux Falls		stine@noaa.gov)													7	12	12	12	12	12	6				X
Tamanra		m_mimouni_dz@yahoo.fr)										10	12	12	12	12	12	12	12	12	12	12	12	4	X
		a (ijima@met.kishou.go.jp)						11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	4	X
		Vasilii Kustov (kustov@aari.ru)																				7	9		X
		Ain Kallis (kallis@aai.ee)									12	12	12	12	12	12	12	12	12	12	12	12	12	5	X
	XIA	Xiangao Xia (xiangaoxia2000@yahoo.com)															12	12	12	8					X
orical station	Eismitte		1																						X
	All			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			pre BSRN	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	All

~ 650 (560) years of radiation measurements

BSRN in Web of Science

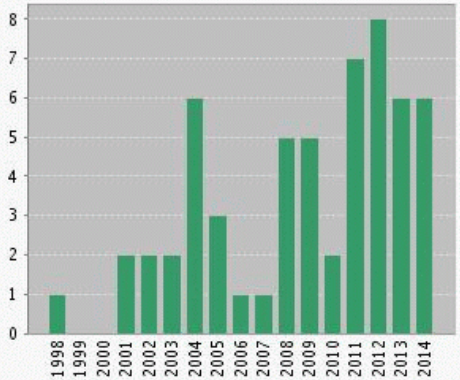
Citation Report: 57

(from Web of Science Core Collection)

You searched for: **TOPIC:** (BSRN) **...More**

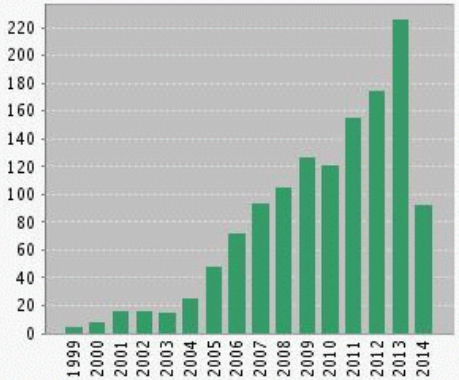
This report reflects citations to source items indexed within Web of Science Core Collection. Perform a Cited Reference Search to include citations to items not indexed within Web of Science Core Collection.

Published Items in Each Year



The latest 20 years are displayed.

Citations in Each Year



The latest 20 years are displayed.

Results found:	57
Sum of the Times Cited [?] :	1307
Sum of Times Cited without self-citations [?] :	1207
Citing Articles [?] :	997
Citing Articles without self-citations [?] :	953
Average Citations per Item [?] :	22.93
h-index [?] :	16

Sort by: **Times Cited -- highest to lowest**

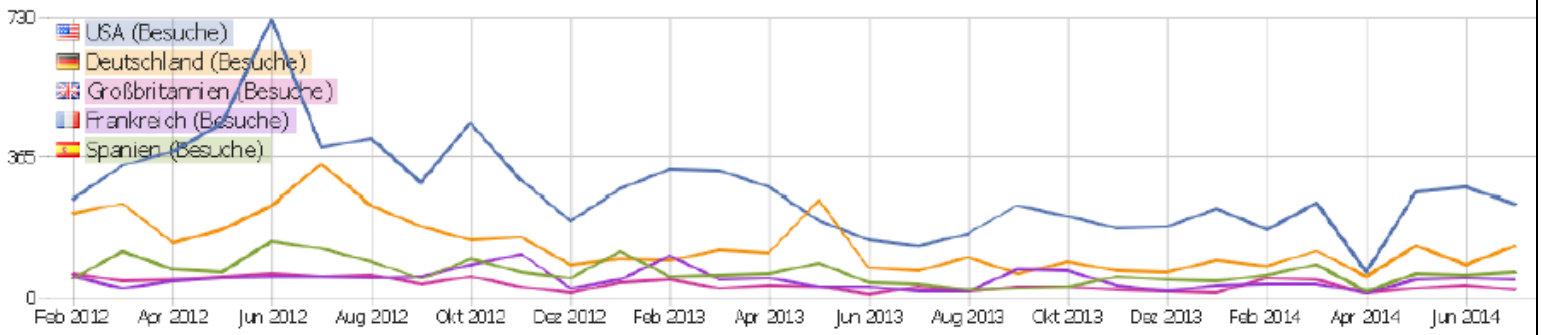
Page 1 of 6

Some Web Statistics: Actions per Month

Name	Wert
Seitenansichten	3123
Einmalige Seitenansichten	2241
Downloads	220
Einmalige Downloads	200
Ausgehende Verweise	1050
Einmalige ausgehende Verweise	928
Suchanfragen	0
Einmalige Suchbegriffe	0
Durchschnittliche Generierungszeit	1.08s

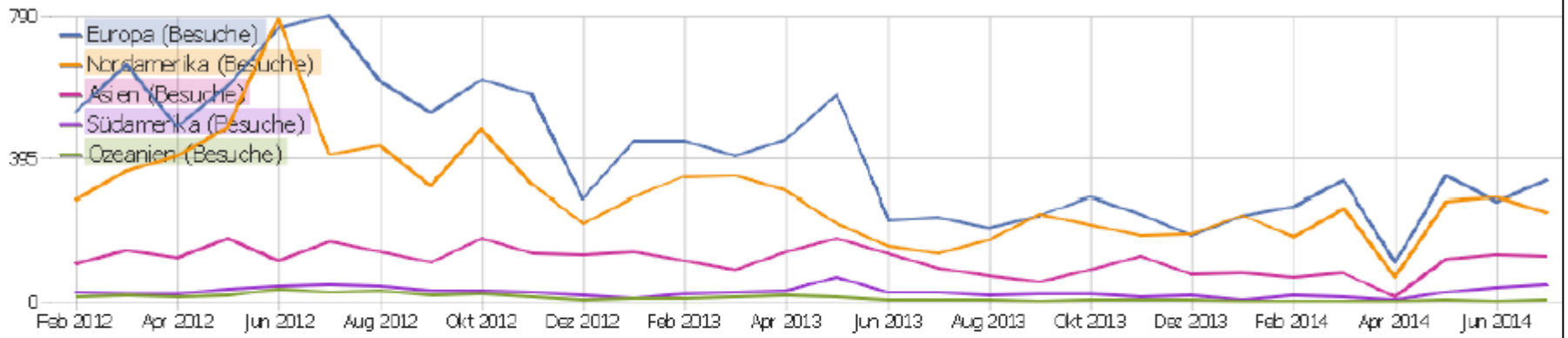
Some Web Statistics: Visiters per Country and Month

Land



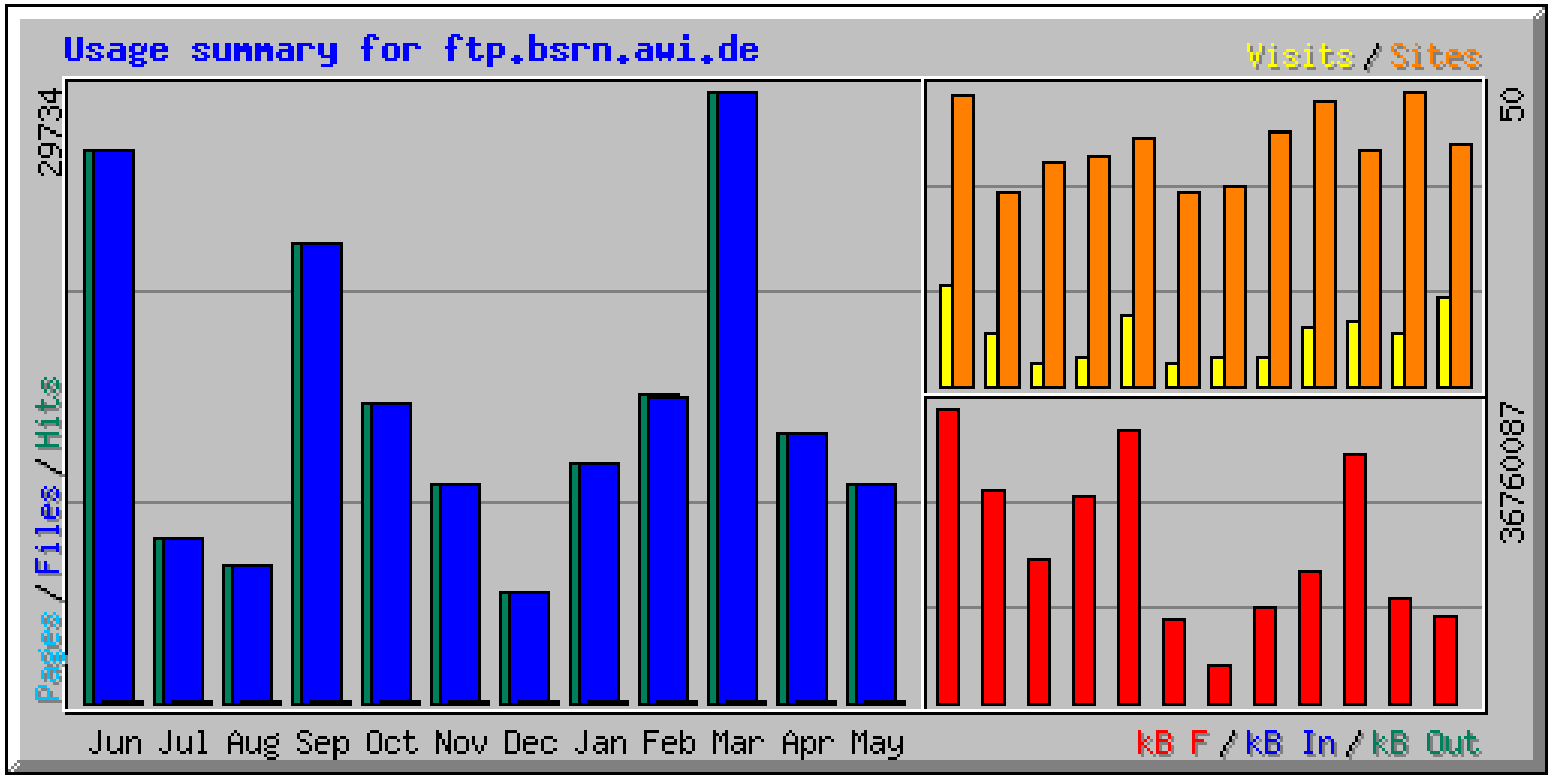
Land	Besuche	Aktionen	Aktionen pro Besuch	Durchschnittszeit auf der Webseite	Absprungsrate	Umsatz
USA	242	1212	5.01	00:04:21	28.1%	0 €
Deutschland	134	1193	8.9	00:11:21	17.16%	0 €
Japan	83	259	3.12	00:03:02	68.67%	0 €
Spanien	65	379	5.83	00:06:33	23.08%	0 €
Frankreich	47	307	6.53	00:05:16	12.77%	0 €
Brasilien	44	338	7.68	00:06:41	15.91%	0 €
China	35	168	4.8	00:07:14	34.29%	0 €
Großbritannien	19	107	5.63	00:04:31	31.58%	0 €
Niederlande	12	141	11.75	00:07:56	8.33%	0 €
Italien	11	37	3.36	00:00:24	18.18%	0 €
Estland	10	37	3.7	00:00:49	60%	0 €
Ungarn	8	32	4	00:03:39	25%	0 €
unbekannt	6	11	1.83	00:00:29	66.67%	0 €
Schweiz	5	25	5	00:00:30	40%	0 €

Some Web Statistics: Visiters per Continent and Month



Kontinent	Besuche	Aktionen	Aktionen pro Besuch	Durchschnittszeit auf der Webseite	Absprungsrate	Umsatz
Nordamerika	244	1218	4.99	00:04:22	28.28%	0 €
Europa	333	2344	7.04	00:07:22	21.92%	0 €
Asien	126	442	3.51	00:04:02	58.73%	0 €
Südamerika	45	342	7.6	00:06:35	15.56%	0 €
unbekannt	6	11	1.83	00:00:29	66.67%	0 €
Ozeanien	5	31	6.2	00:03:05	60%	0 €
Afrika	2	5	2.5	00:16:50	0%	0 €

FTP Statistics: ftp.bsrn.awi.de



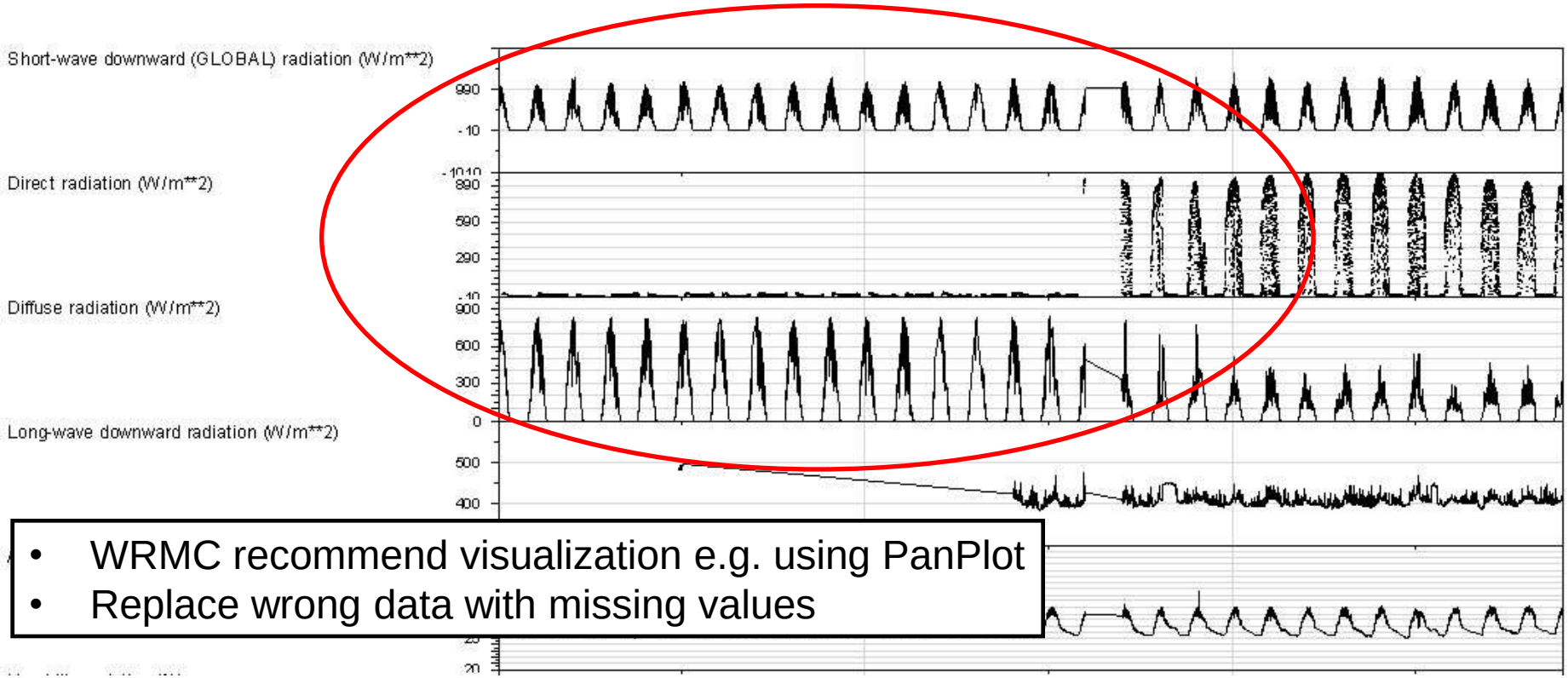
Quality control:

AIM:
BSRN/WRMC consists only of a small number of selected research stations which provides surface radiation fluxes of the **best possible quality** currently available.

Responsibility:
The BSRN station scientist (not the WRMC!!!) is responsible for the data quality of their station(s).

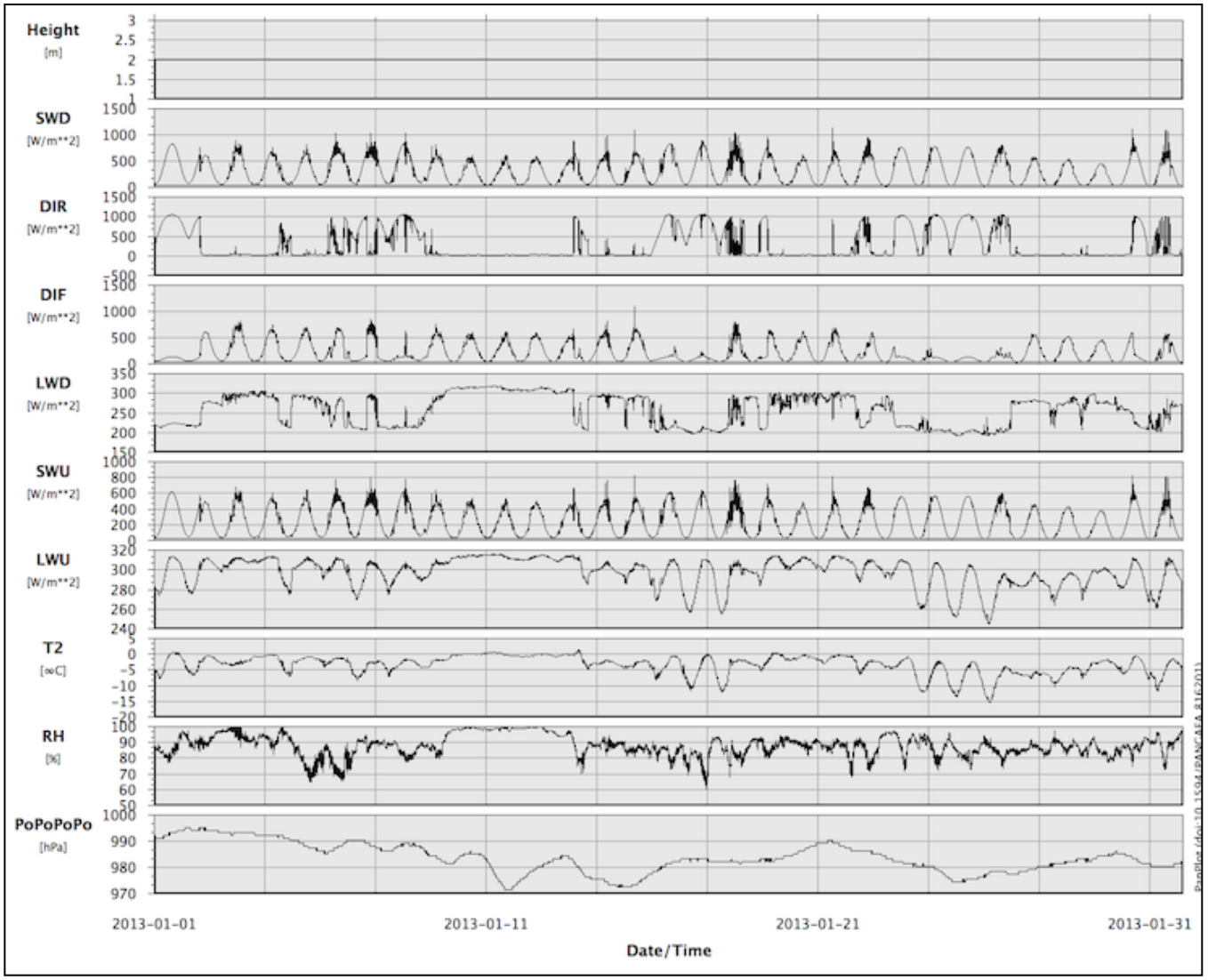
Help from the WRMC:
- Providing tools to station scientists to detect errors prior to data submission
- Handling errors detected from BSRN customers
- Doing incoming checks (since beginning of 2012)
- Refuse/delay to import data containing obvious errors
- Corresponding with station scientists about violated quality limits
- Providing tools to BSRN customers to perform quality control

Example: Solar tracker not working



- WRMC recommend visualization e.g. using PanPlot
- Replace wrong data with missing values

PanPlot2 now also working on Macs



Recommendations for station scientists

1. Visualize your station-to-archive file prior to submission.

2. Test the recommended quality limits prior to submission.

3. Do not submit your data before you are convinced to have reached an optimal quality. (Data submission should be regarded as something like a paper submission.)

4. Submitting new versions of the same measurements is possible, but should be regarded as an exception.

5. Announce that you have submitted new files in case you are not the station scientist.

6. Take possible comments from the WRMC as help to improve your data, not as criticism.

Recommendations for data users

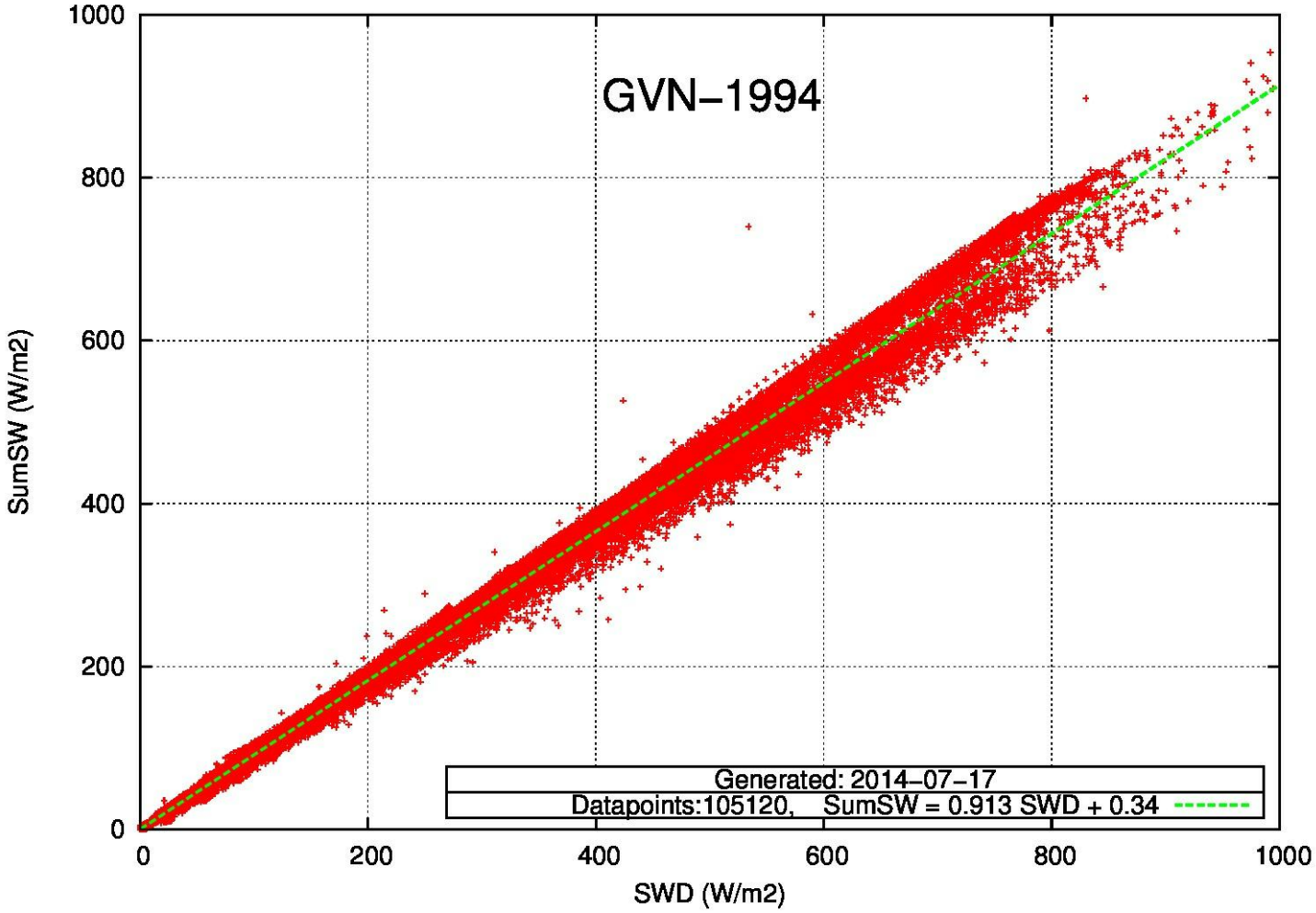
1. WRMC highly recommends that all users do their own quality checks of the data after extracting BSRN-data!!!

2. Since beginning of 2012 the WRMC offers a BSRN-Toolbox which can be used to perform quality checks.

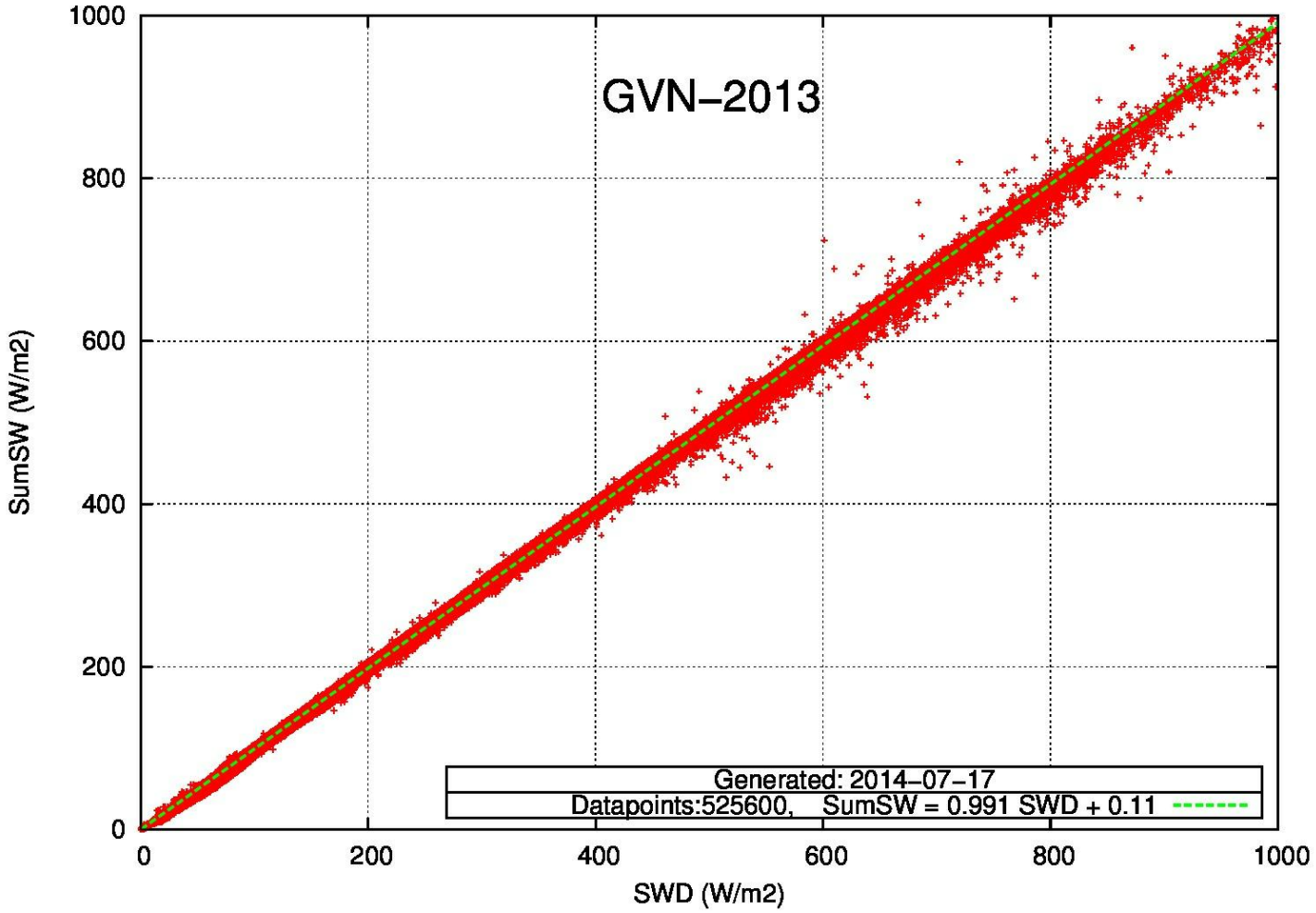
3. Any user who finds questionable data in the archive should inform me so I can contact the station scientists to solve the problem.

4. Please inform me about any publication based on BSRN-data so I can update the list: http://www.bsrn.awi.de/en/other/publications/.

SWD versus SumSW from Neumayer 1994 (Shadow Band)

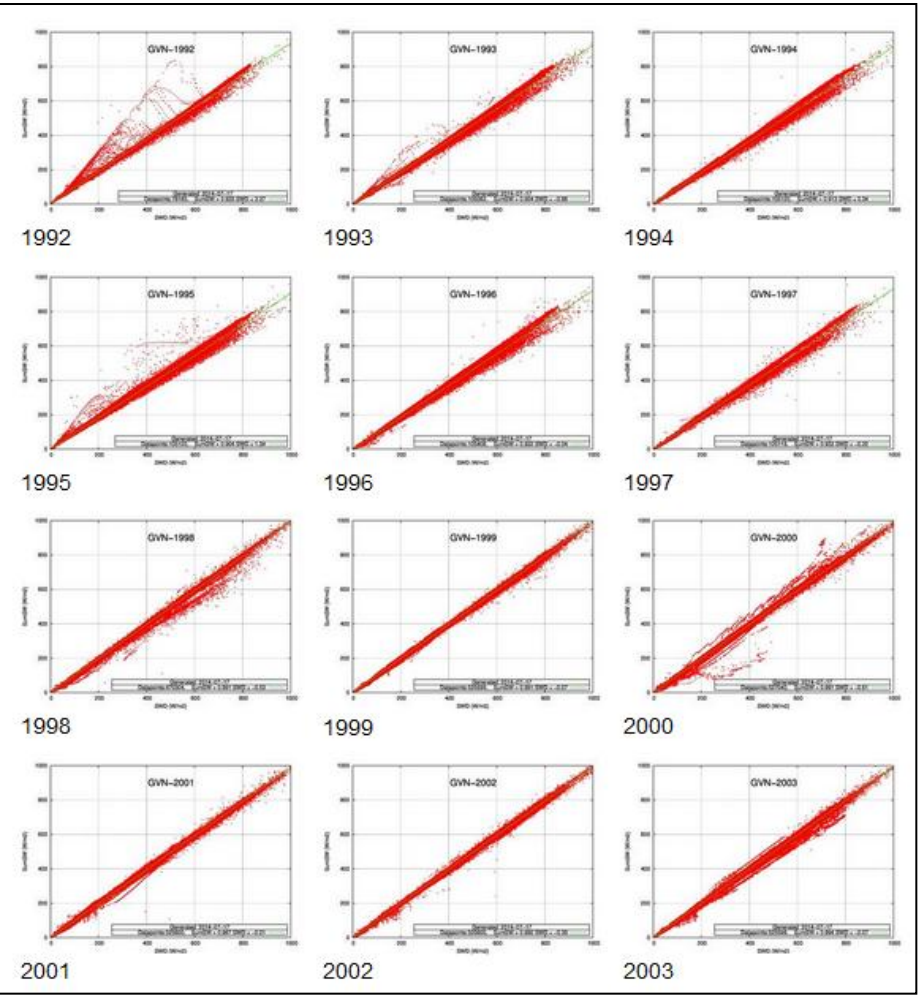


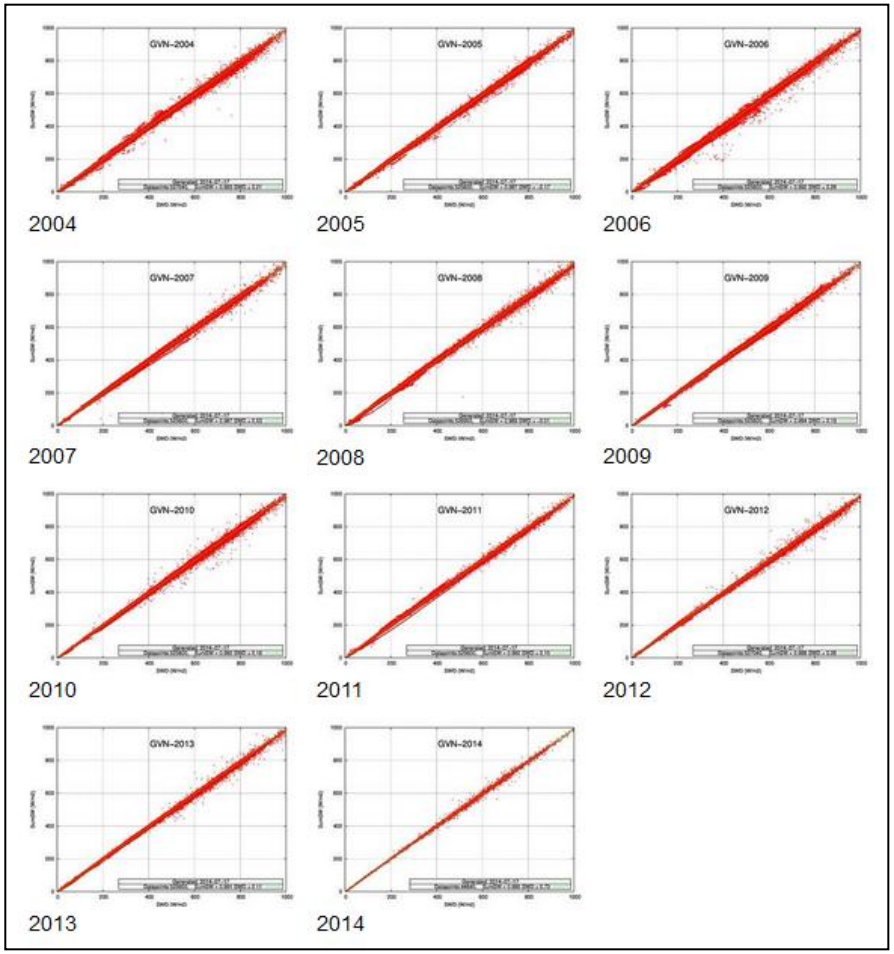
SWD versus SumSW from Neumayer 1994 (Solar Tracker)



The overall Data quality is increasing!!!

http://bsrn.awi.de/products/quality-code/comparisons/neumayer-station-gvn.html





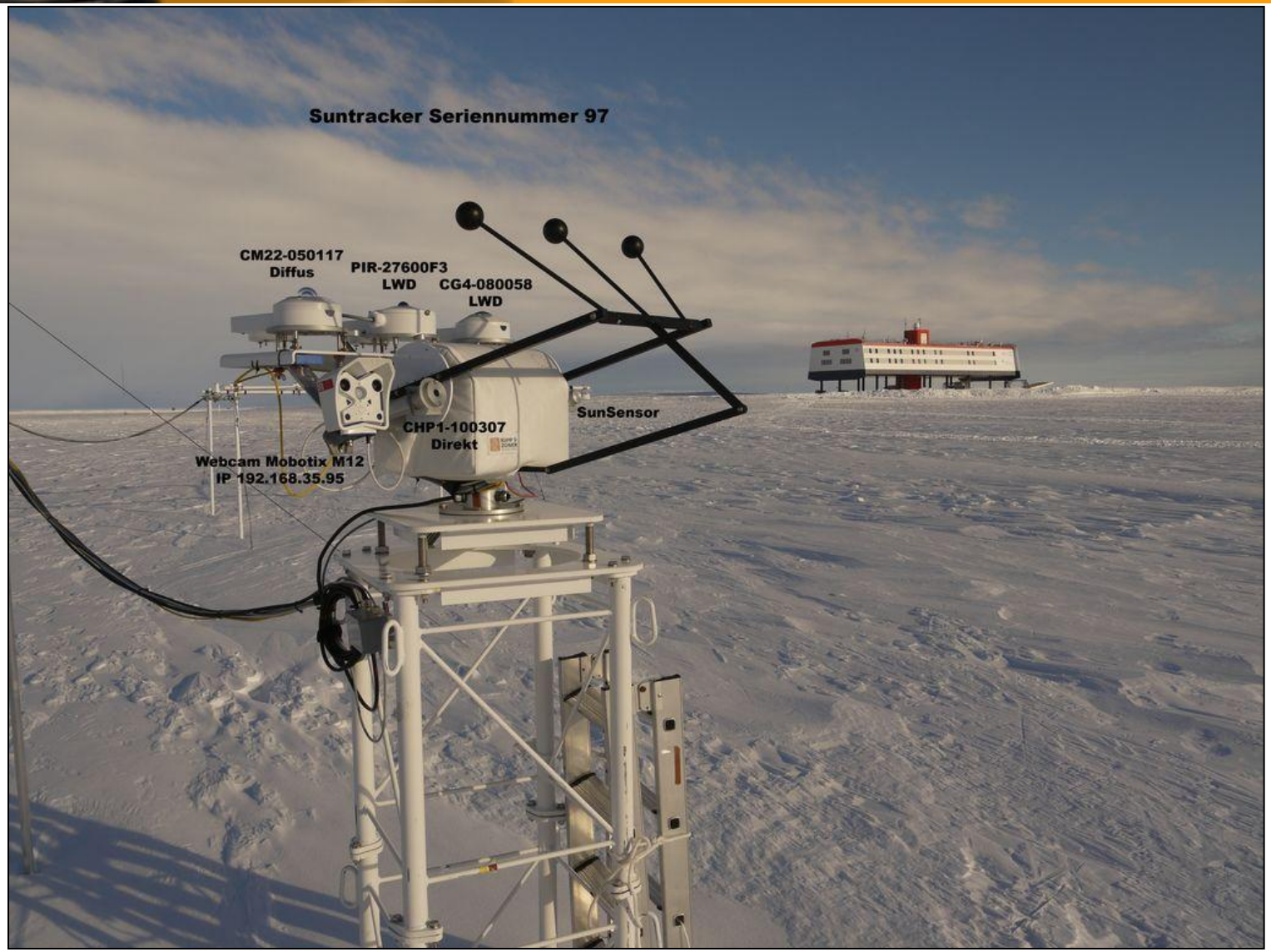
Neumayer Antarctic Station

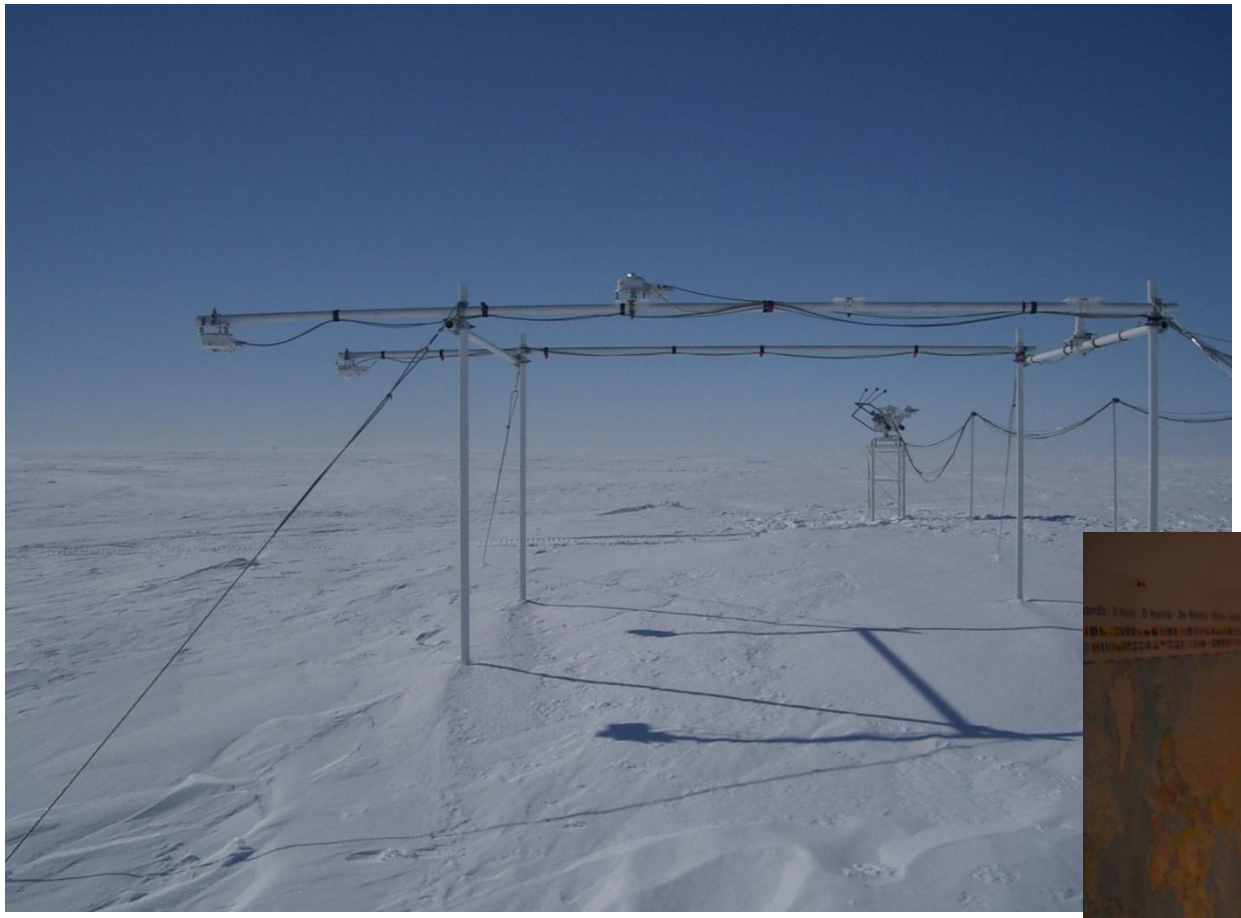
Gert König-Langlo, BSRN Meeting 2014

WRMC-BSRN

World Radiation Monitoring Center- Baseline Surface Radiation Network

hosted by AWI





- CNR4 (Kipp&Zonen)

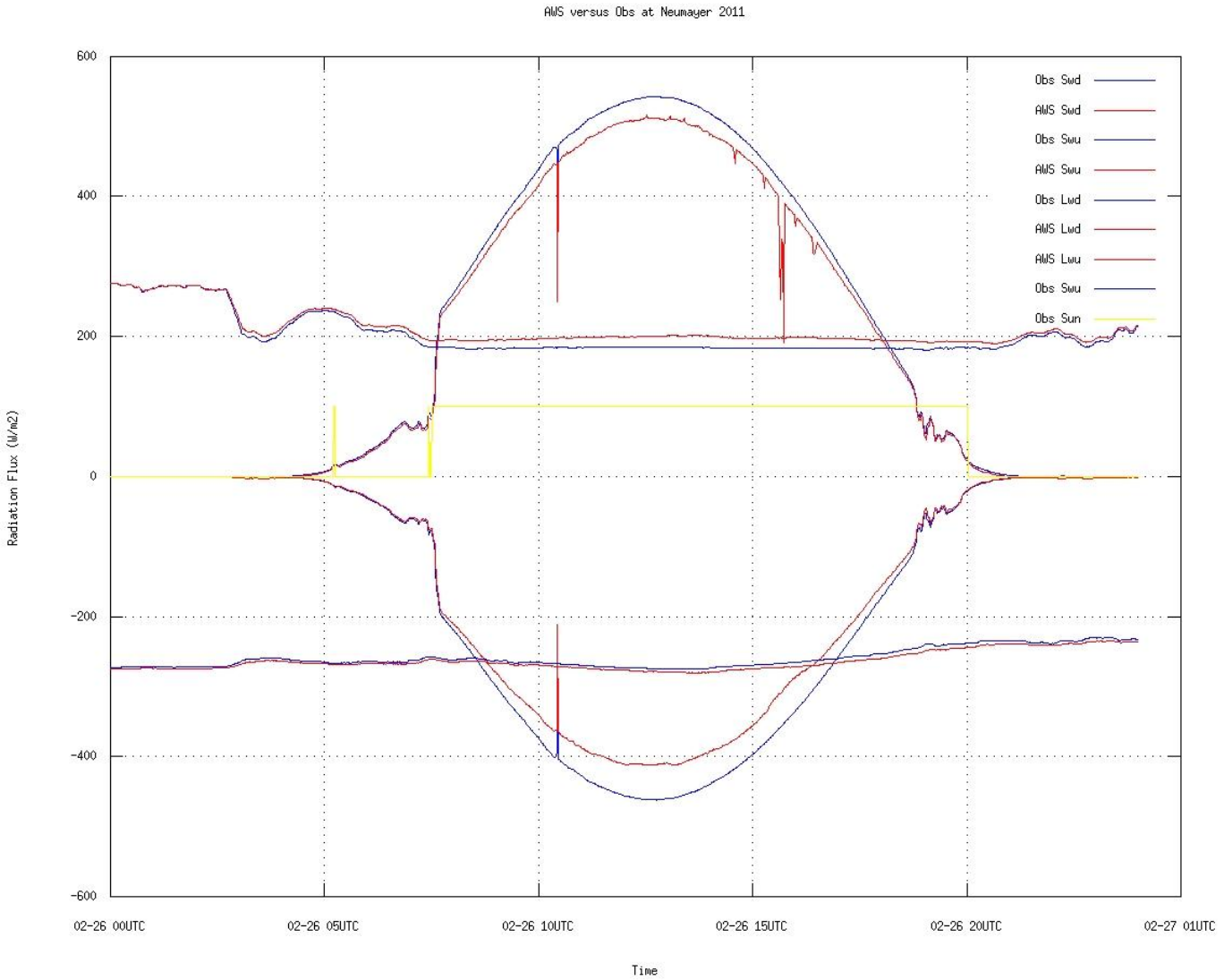
4 independent variables:

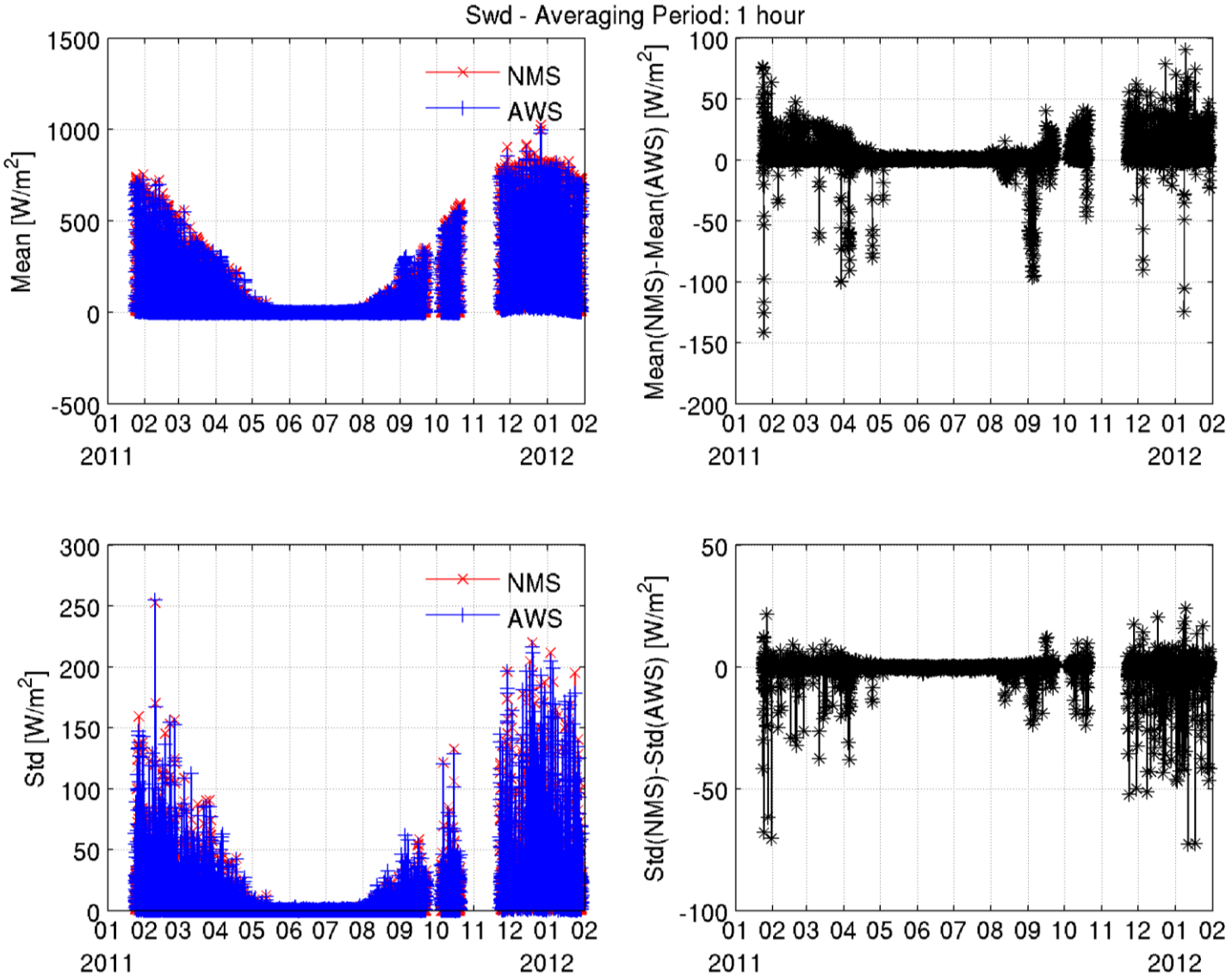
- Shortwave Down (SWD)
- Shortwave Up (SWU)
- Longwave Down (LWD)
- Longwave Up (LWU)

WRMC-BSRN

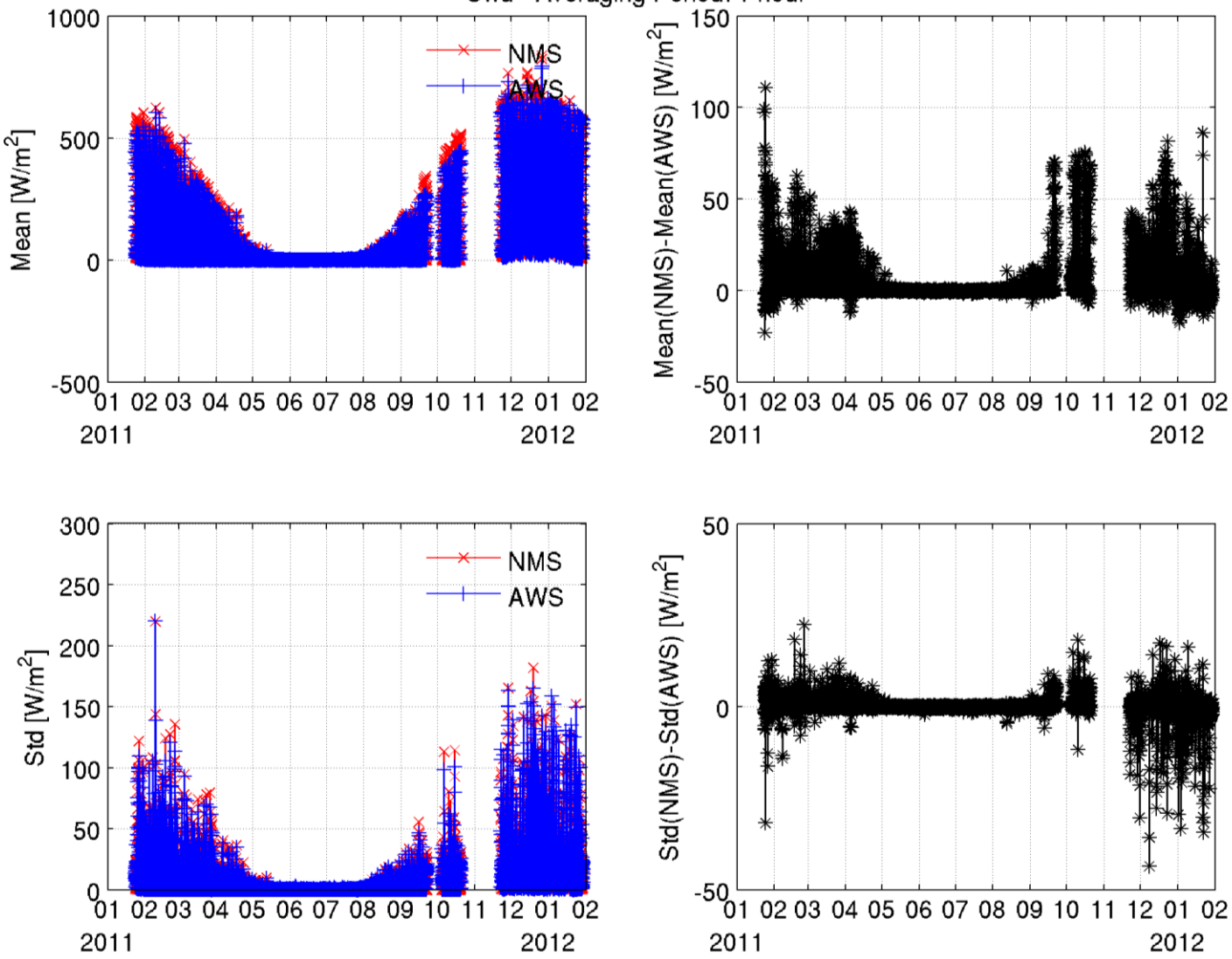
World Radiation Monitoring Center- Baseline Surface Radiation Network

hosted by AWI

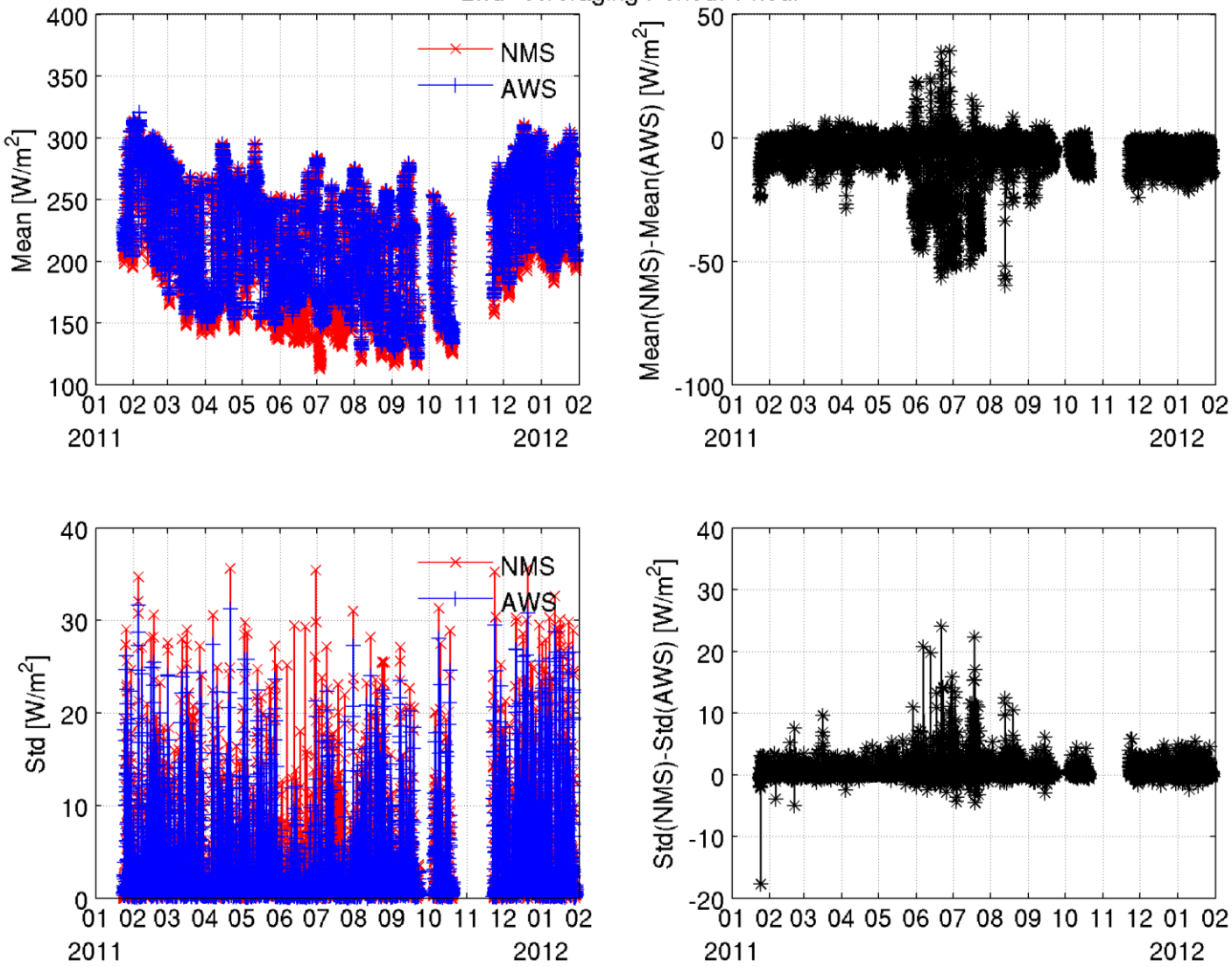


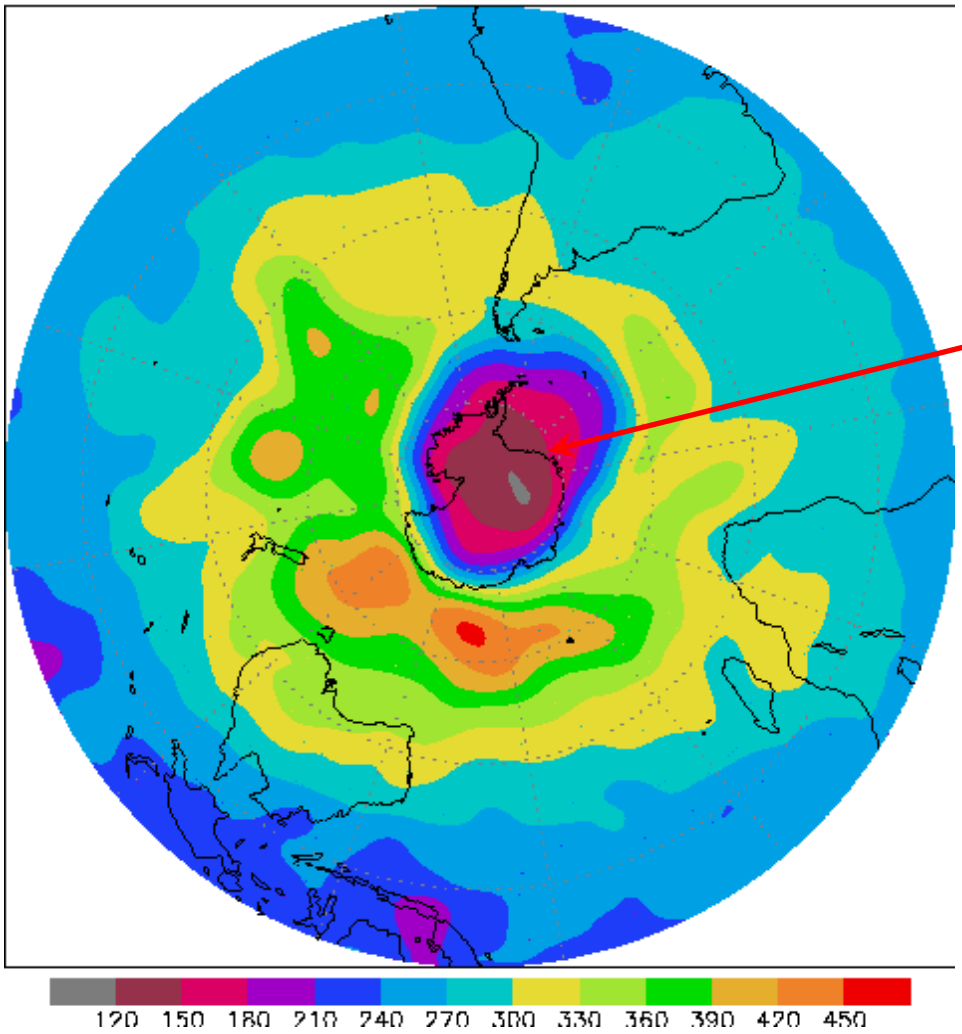

Swd - Averaging Period: 1 hour
Mean [W/m²]
NMS
AWS
Mean(NMS)-Mean(AWS) [W/m²]
Std [W/m²]
Std(NMS)-Std(AWS) [W/m²]
01 02 03 04 05 06 07 08 09 10 11 12 01 02
2011
2012

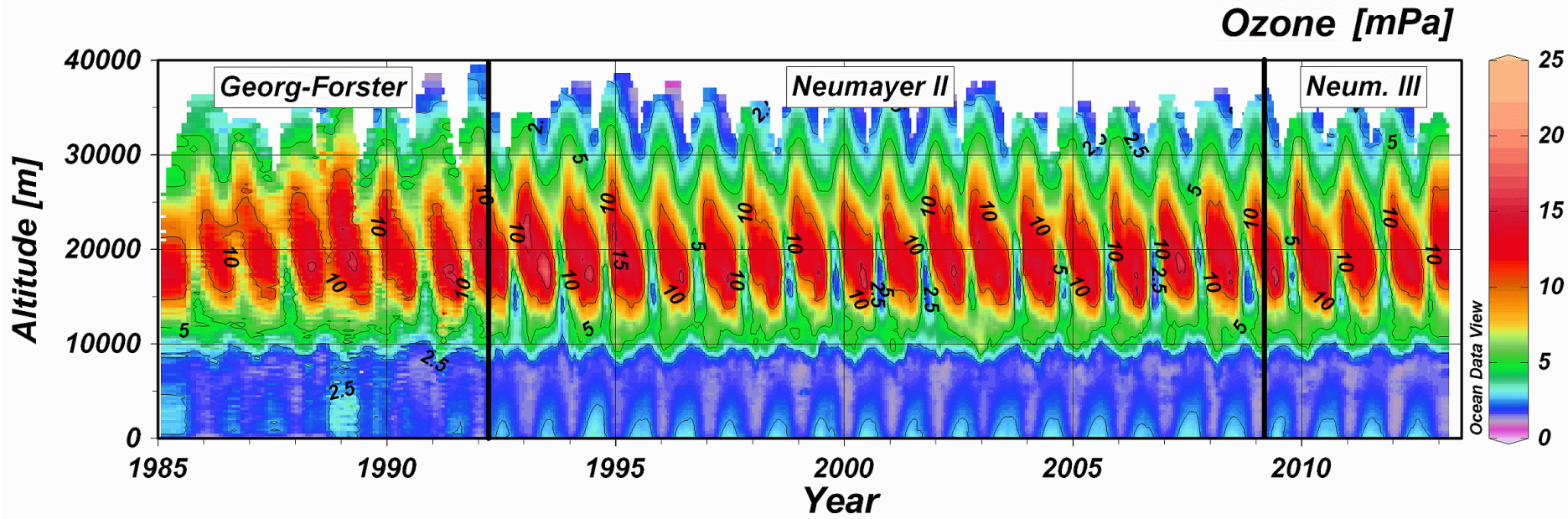
Swu - Averaging Period: 1 hour

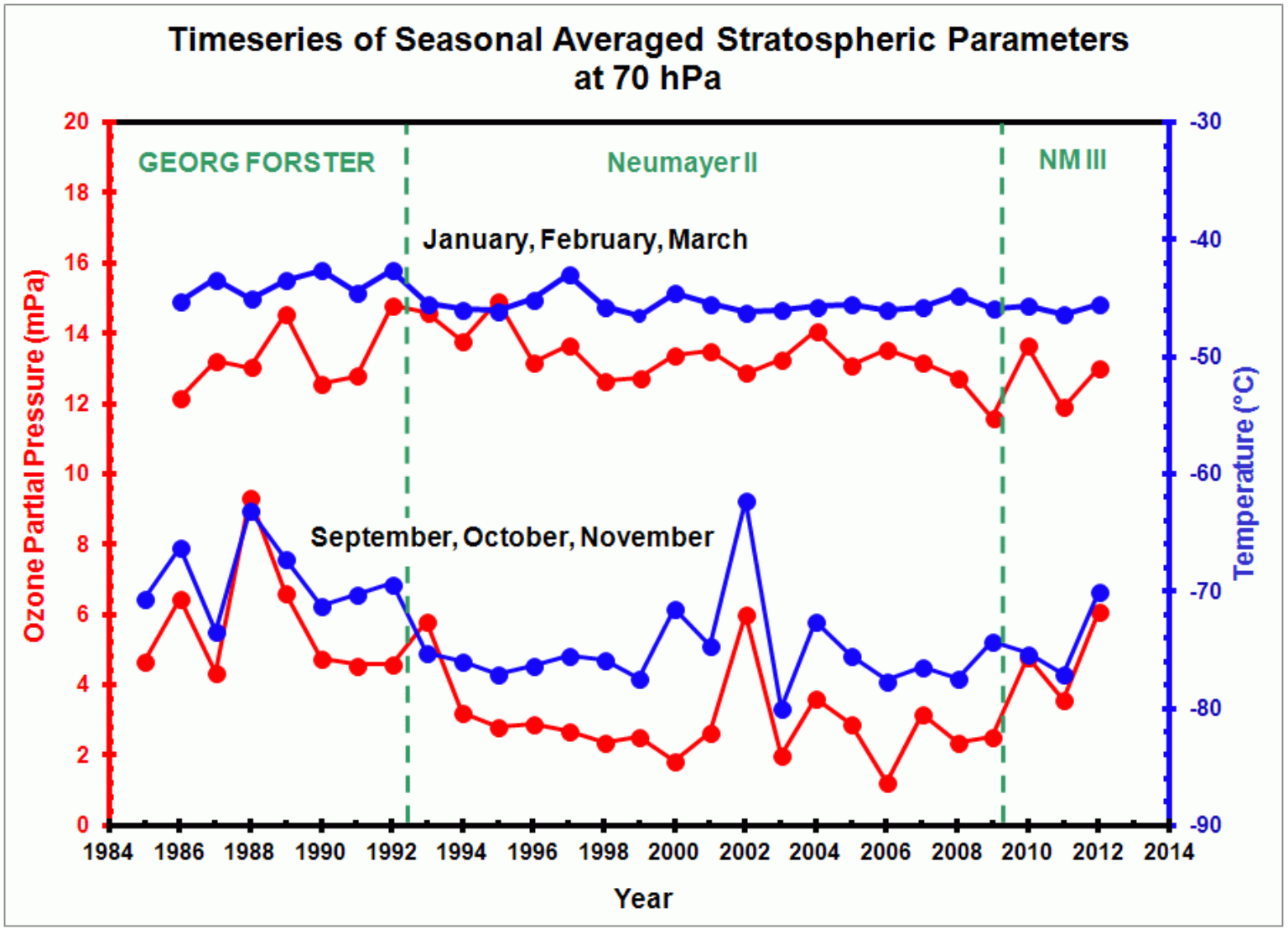


Lwd - Averaging Period: 1 hour




Neumayer
120 150 180 210 240 270 300 330 360 390 420 450


Ozone [mPa]
Georg-Forster
Neumayer II
Neum. III
Altitude [m]
40000
30000
20000
10000
0
1985
1990
1995
2000
2005
2010
Year
Ocean Data View
25
20
15
10
5
0


Timeseries of Seasonal Averaged Stratospheric Parameters at 70 hPa
GEORG FORSTER
Neumayer II
NM III
January, February, March
September, October, November
Ozone Partial Pressure (mPa)
Temperature (°C)
Year
0
2
4
6
8
10
12
14
16
18
20
-30
-40
-50
-60
-70
-80
-90
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014

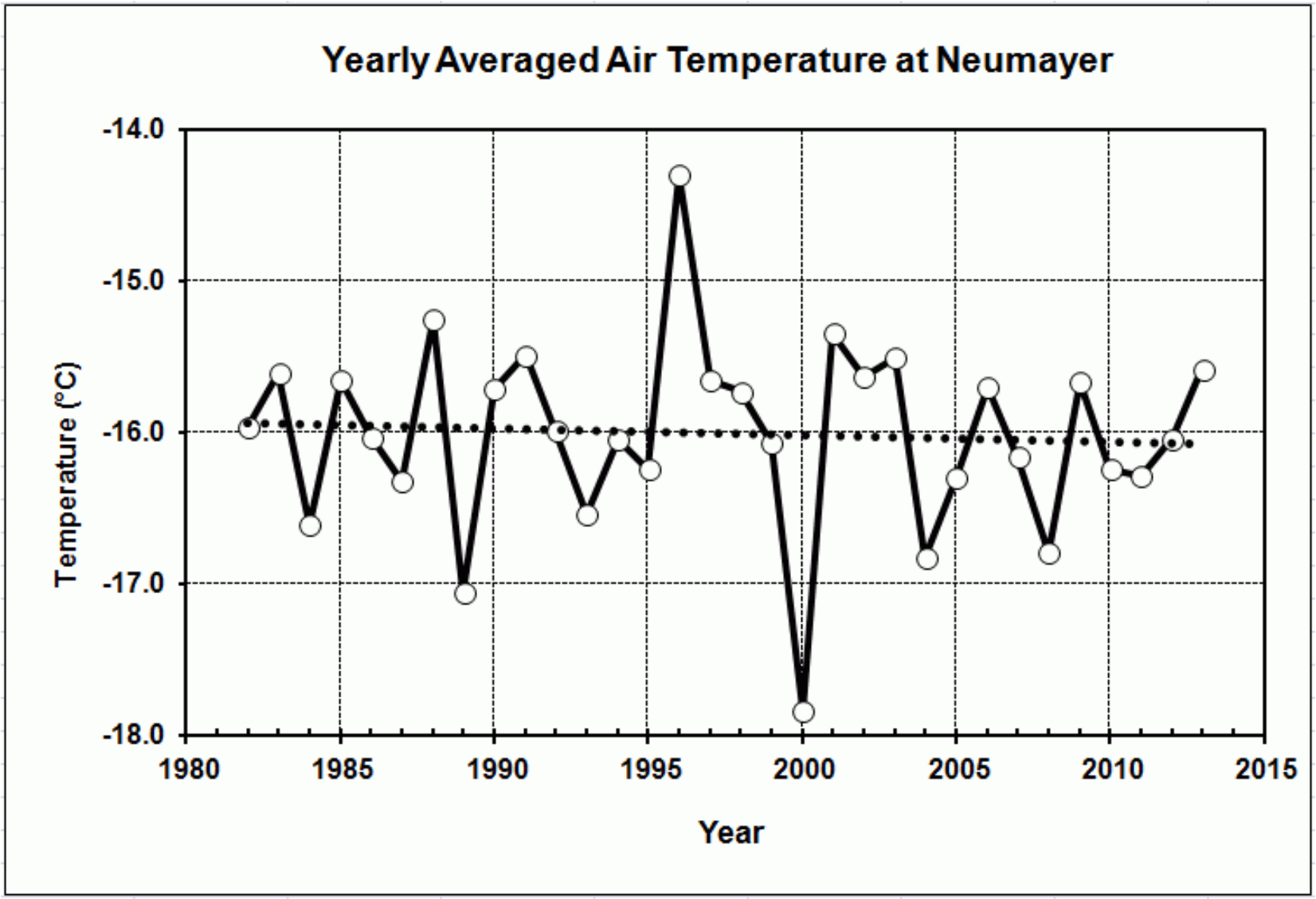
theguardian

News | Sport | Comment | Culture | Business | Money | Life & style

Environment › Ozone layer

Antarctica may heat up dramatically as ozone hole repairs, warn scientists

As blanket of ozone over southern pole seals up, temperatures on continent could soar by 3C, increasing sea level rise by 1.4m


Yearly Averaged Air Temperature at Neumayer
-14.0
-15.0
-16.0
-17.0
-18.0
Temperature (°C)
1980
1985
1990
1995
2000
2005
2010
2015
Year

Does increasing CO_2 cool Antarctica?

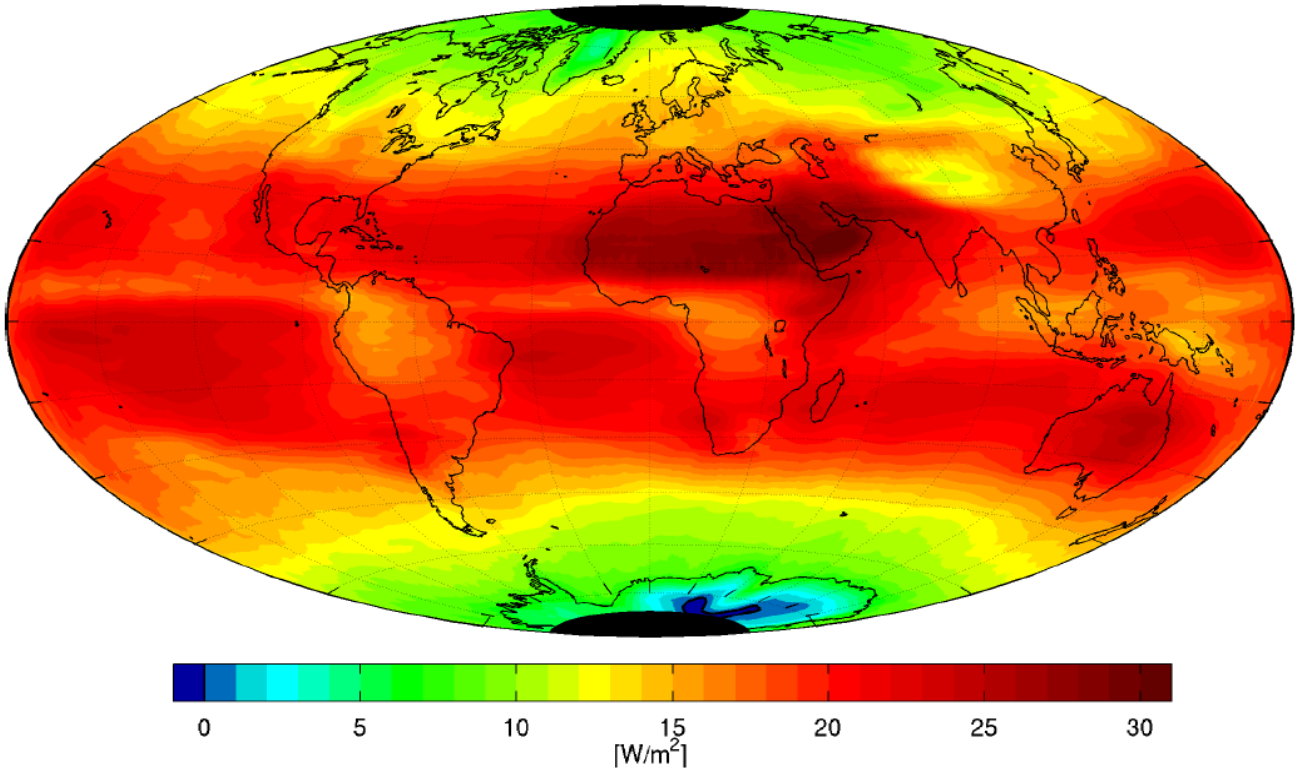


Figure 1: Yearly averaged greenhouse effect of CO_2 (equation 1) derived from 2006 TES thermal IR spectra [6]. The data shown comprises 586860 observed spectra from 173 global surveys, each consisting of 16 orbits. The calculations do not cover the entire 15 μm CO_2 band, due to the spectral limitations of the TES instrument. The orbit of the satellite does not allow data acquisition right at the poles.

H. Schmidthüsen


Thanks for your attention…