Baseline Surface Radiation Network


Ellsworth Dutton
† 2012-10-11
SOLYS 2


BSRN-Meeting
AWI Potsdam
August 2012

Brief BSRN History:

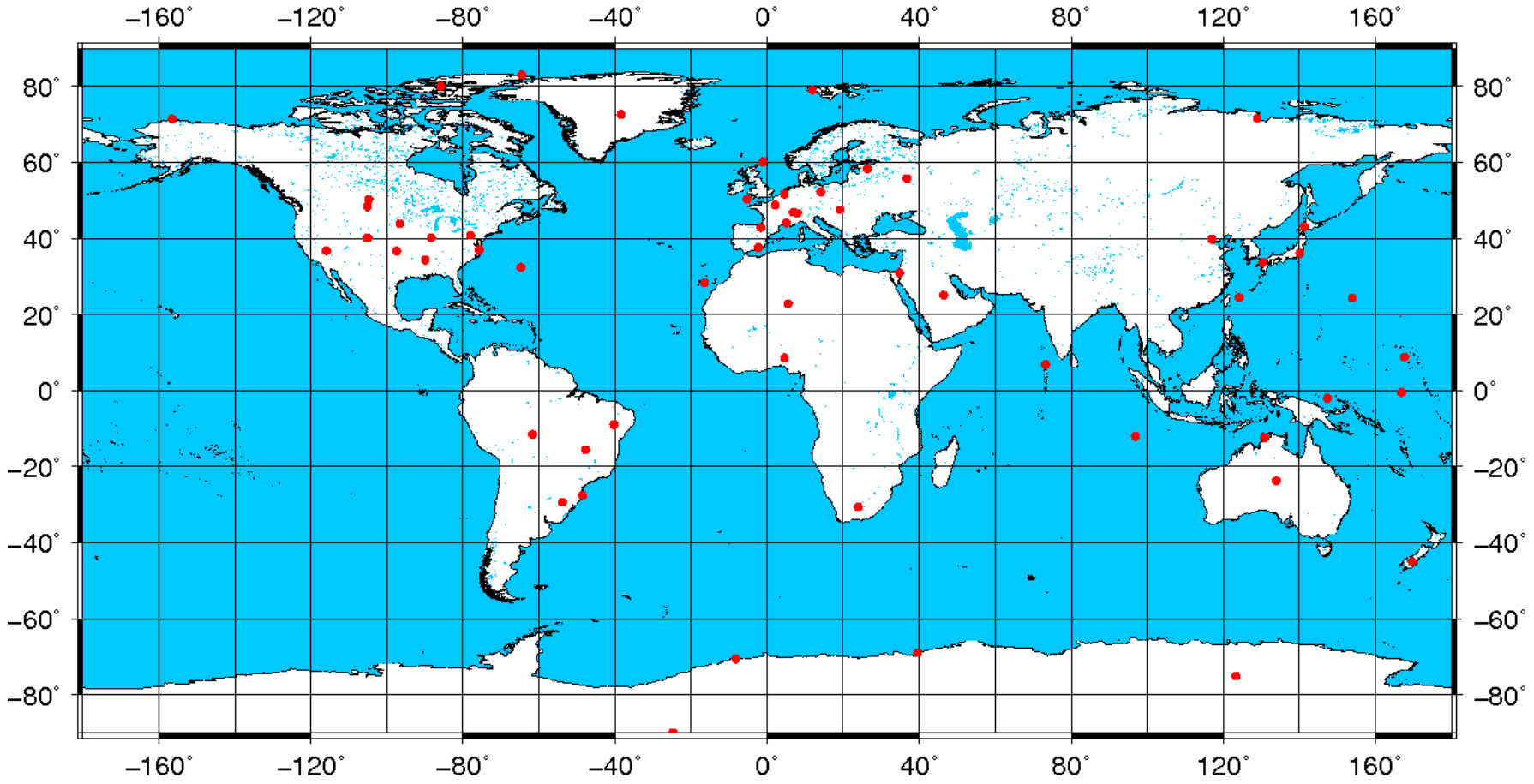
1. 1988: The WMO proposed the establishment of the BSRN.
2. 1992: The BSRN started with 5 sites and the WRMC at ETH Zurich under the direction of Prof. Atsumu Ohmura.
3. 2004: BSRN officially became a contributor to the Global Climate Observing System (GCOS).
4. 2008 July: After 15 years of nearly continuous operation at ETH Zurich, the archive moved to Alfred Wegener Institute (AWI) in Bremerhaven, Germany under the direction of Dr. Gert König-Langlo.
5. 2011 July: Cooperating Network with NDACC
6. 2012-10-11: Sudden death of the BSRN project manager Ells Dutton…

WRMC-BSRN

World Radiation Monitoring Center- Baseline Surface Radiation Network

hosted by AWI

Present State of the WRMC: 54 stations providing data



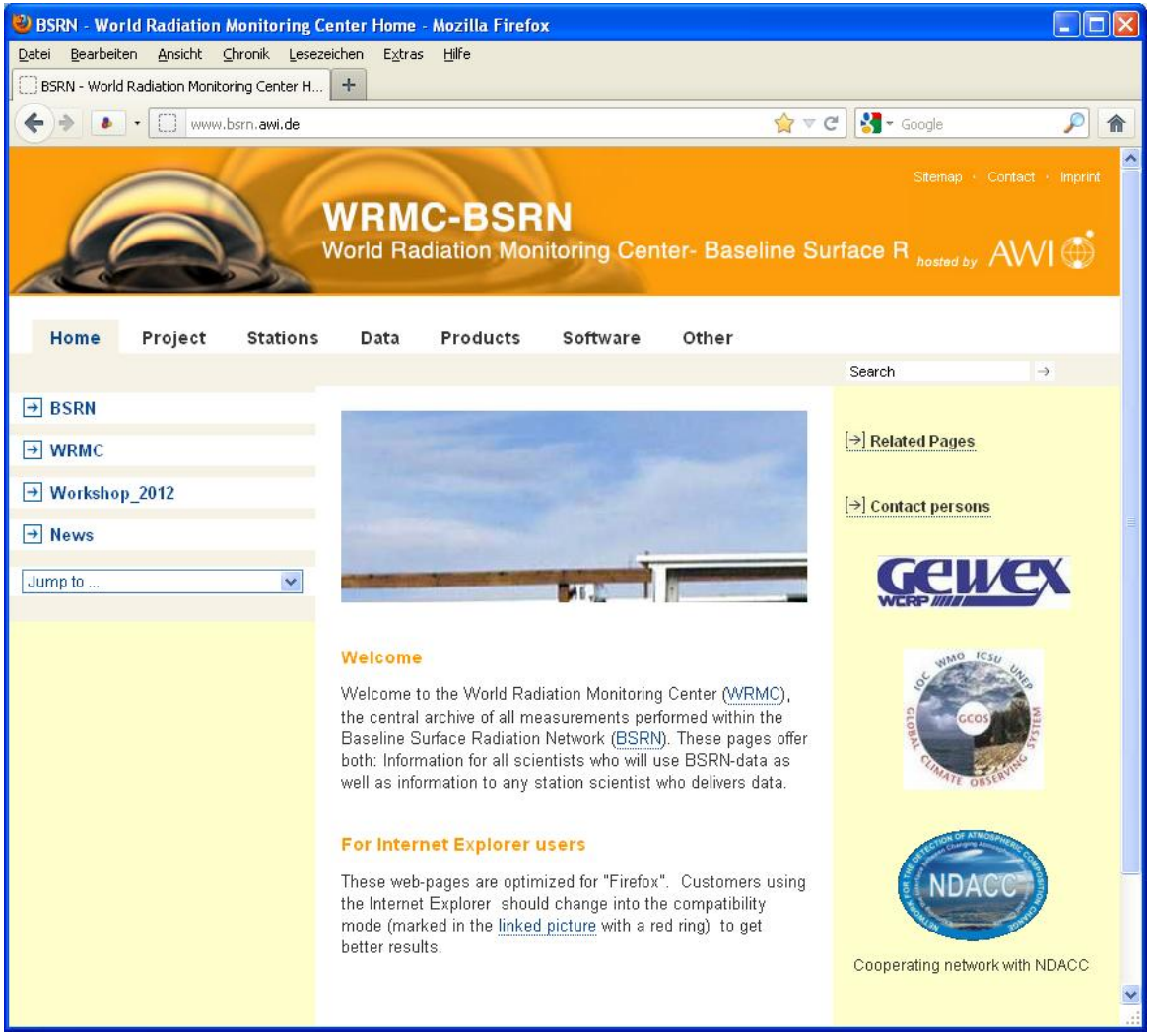
Present State of the WRMC: Datasets

The typical average interval for radiation data is 1 minute:

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

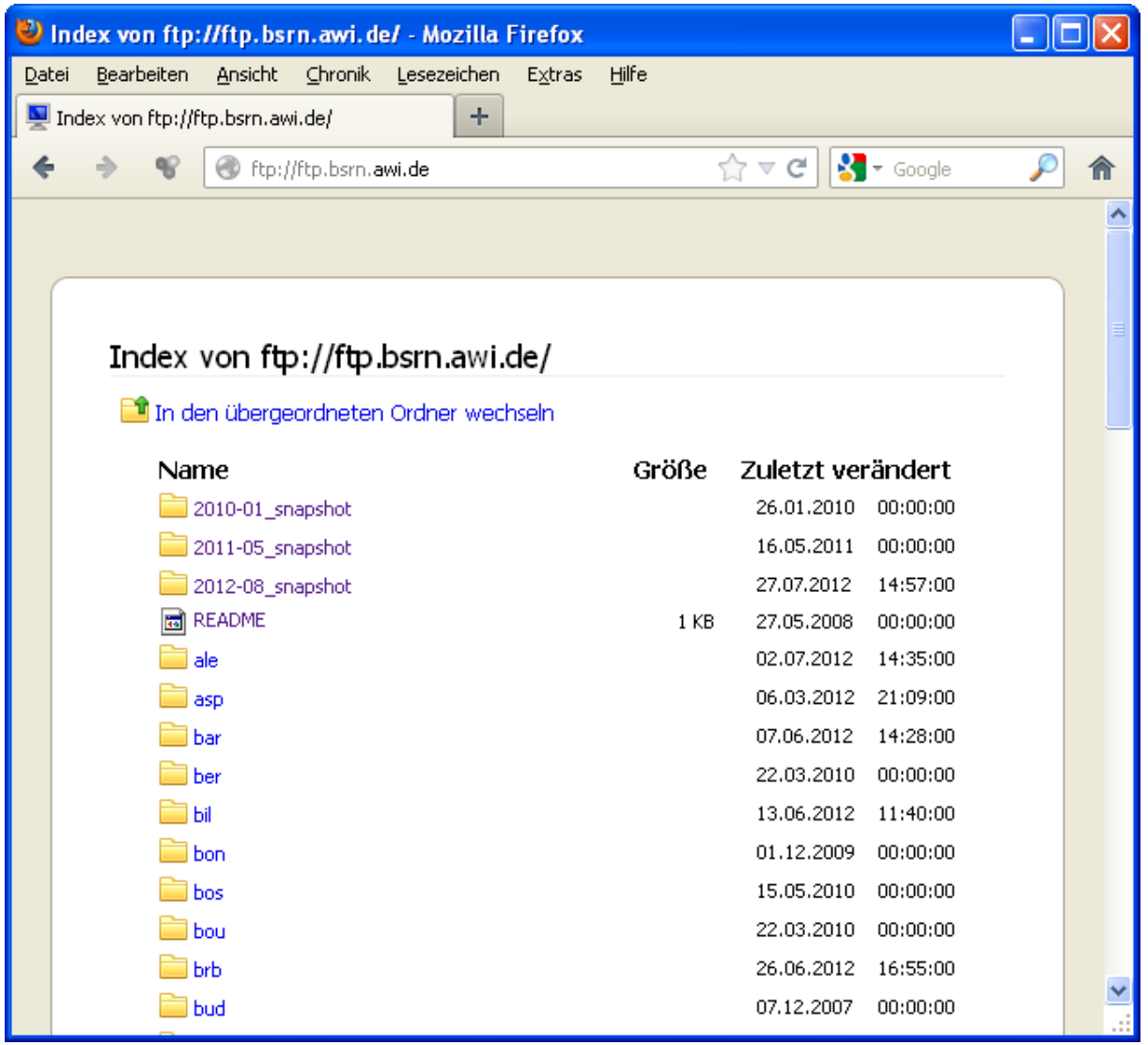
Infrastructure

1. Homepage:
   http://www.bsrn.awi.de



Infrastructure

1. Homepage:
   http://www.bsrn.awi.de
2. Ftp access:
   ftp://ftp.bsrn.awi.de/



Infrastructure

1. Homepage: http://www.bsrn.awi.de.
2. Ftp access: ftp://ftp.bsrn.awi.de/
3. PANGAEA access: http://www.pangaea.de/search?q=project:BSRN

What is PANGAEA?

1. PANGAEA is a Publishing Network for Geoscientific & Environmental Data (http://www.pangaea.de/).
2. PANGAEA guarantees long-term availability of its content.
3. PANGAEA follows the “Recommendations of the Commission on Professional Self Regulation in Science for safeguarding good scientific practice”.
4. Each dataset can be identified, shared, published and cited by using a Digital Object Identifier (DOI).

What offers PANGAEA?

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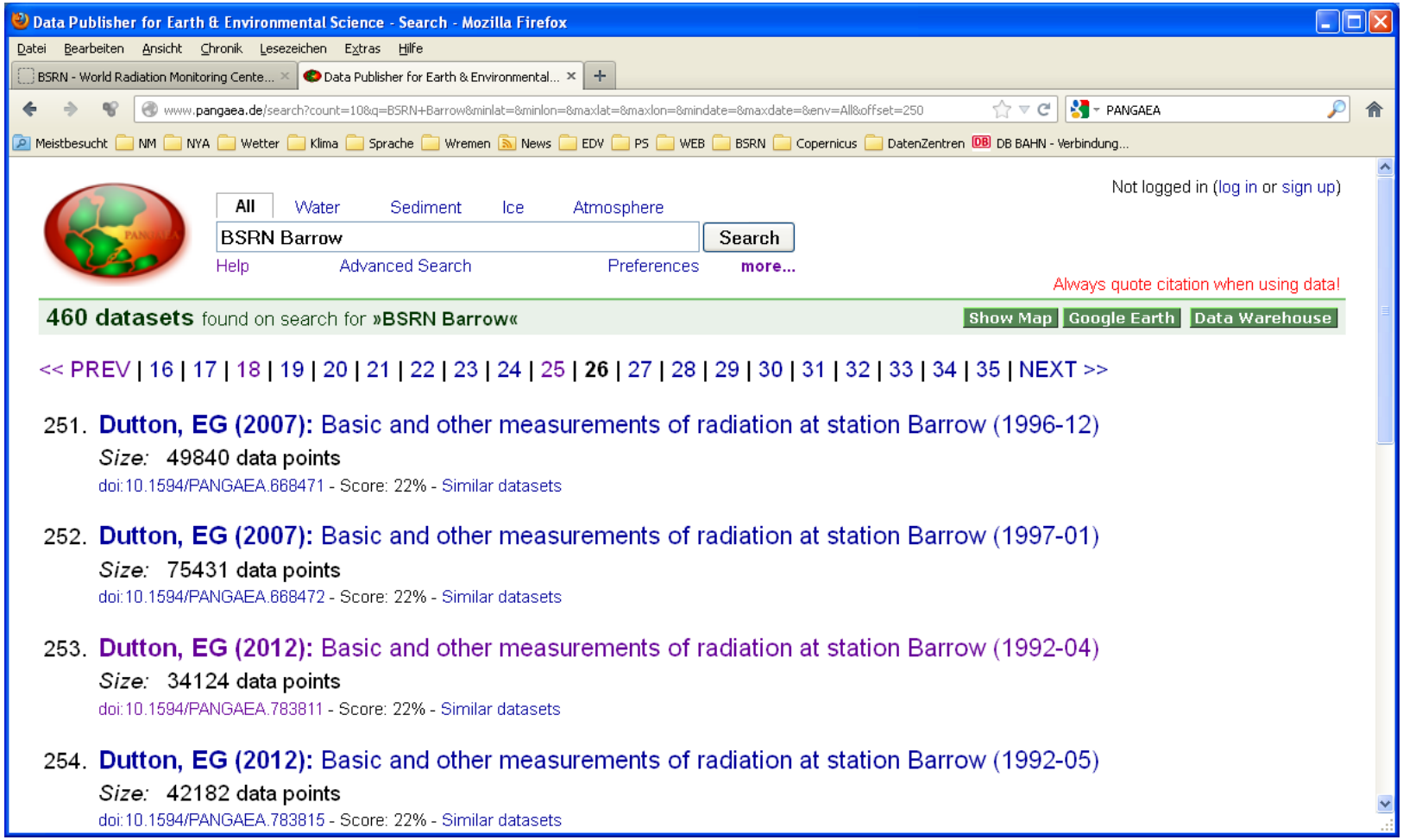

What offers PANGAEA?

PANGAEA presents well defined metadata for any dataset (no login)

Dutton, Ellsworth (2007): Basic and other measurements of radiation at station Barrow (2001-12) - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

http://doi.pangaea.de/10.1594/PANGAEA.668531

Citation: **Dutton, Ellsworth (2007):** Basic and other measurements of radiation at station Barrow (2001-12), *Climate Monitoring & Diagnostics Laboratory, Boulder*, doi:10.1594/PANGAEA.668531

Project(s): **Baseline Surface Radiation Network** (BSRN)

Coverage: *West:* -156.6070 * *East:* -156.6070 * *South:* 71.3230 * *North:* 71.3230

Minimum HEIGHT above ground: 2.0 m * *Maximum HEIGHT above ground:* 2.0 m

Date/Time Start: 2001-12-01T00:00:00 * *Date/Time End:* 2001-12-31T23:59:00

Event(s): **BAR** (Barrow) * *Latitude:* 71.3230 * *Longitude:* -156.6070 * *Elevation:* 8.0 m * *Date/Time:* 1992-01-01T00:00:00 * *Location:* Alaska, United States of America * *Campaign:* WCRP/GEWEX * *Device:* Monitoring station * *Comment:* BSRN station no: 22; Surface type: tundra; Topography type: flat, rural

Other version: ftp://ftp.bsrn.awi.de/bar/bar1201.dat.gz

Parameter(s):

Parameter	Short Name	Unit	Principal Investigator	Method	Comment
DATE/TIME	Date/Time				*Geocode*
HEIGHT above ground	Height	m			*Geocode*
LATITUDE	Latitude				*Geocode*
LONGITUDE	Longitude				*Geocode*
Diffuse radiation	DIF	W/m^2	Dutton, Ellsworth	Pyranometer, Eppley, 8-48, SN 32870, WRMC No. 22009	
Long-wave downward radiation	LWD	W/m^2	Dutton, Ellsworth	Pyrgeometer, Eppley, PIR, SN 27454, WRMC No. 22008	

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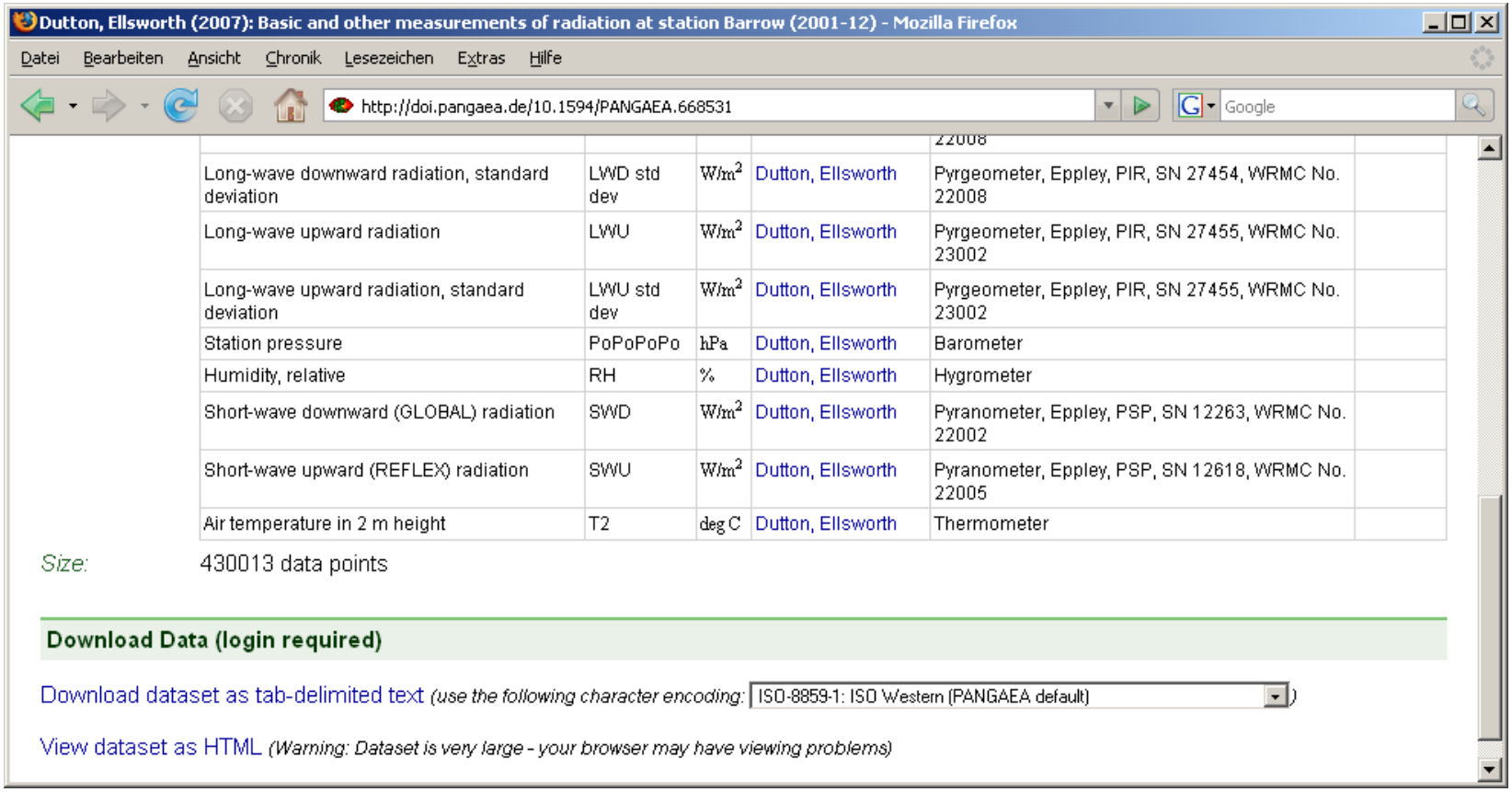


					22008
Long-wave downward radiation, standard deviation	LWD std dev	W/m²	Dutton, Ellsworth	Pyrgeometer, Eppley, PIR, SN 27454, WRMC No. 22008	
Long-wave upward radiation	LWU	W/m²	Dutton, Ellsworth	Pyrgeometer, Eppley, PIR, SN 27455, WRMC No. 23002	
Long-wave upward radiation, standard deviation	LWU std dev	W/m²	Dutton, Ellsworth	Pyrgeometer, Eppley, PIR, SN 27455, WRMC No. 23002	
Station pressure	PoPoPoPo	hPa	Dutton, Ellsworth	Barometer	
Humidity, relative	RH	%	Dutton, Ellsworth	Hygrometer	
Short-wave downward (GLOBAL) radiation	SWD	W/m²	Dutton, Ellsworth	Pyranometer, Eppley, PSP, SN 12263, WRMC No. 22002	
Short-wave upward (REFLEX) radiation	SWU	W/m²	Dutton, Ellsworth	Pyranometer, Eppley, PSP, SN 12618, WRMC No. 22005	
Air temperature in 2 m height	T2	deg C	Dutton, Ellsworth	Thermometer	

Size: 430013 data points

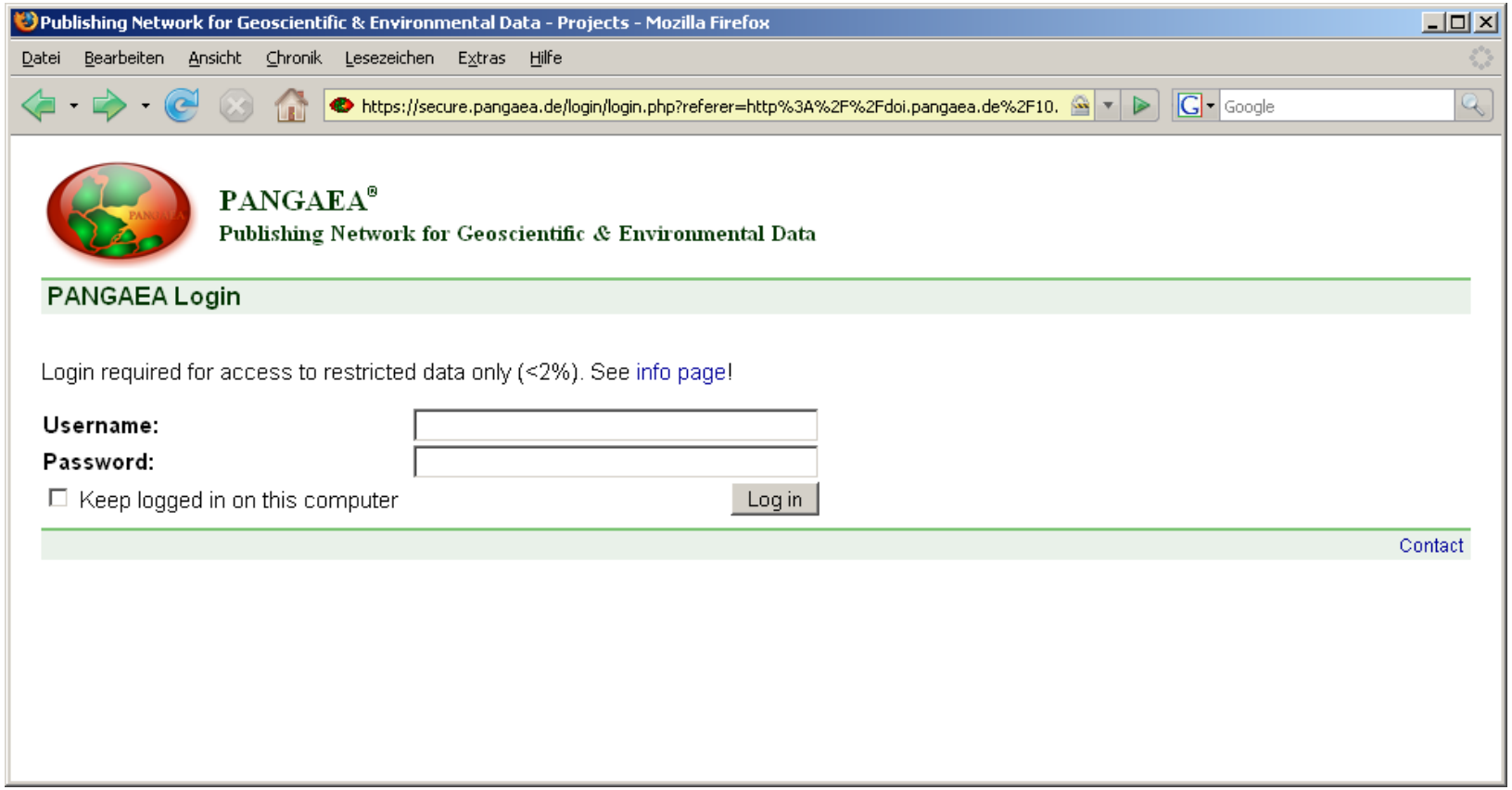
Download Data (login required)

Download dataset as tab-delimited text *(use the following character encoding:* ISO-8859-1: ISO Western (PANGAEA default) *)*

View dataset as HTML *(Warning: Dataset is very large - your browser may have viewing problems)*

What offers PANGAEA?

PANGAEA offers access restrictions



What offers PANGAEA?

PANGAEA presents the data itself in different formats (ftp, text, html)

Dutton, Ellsworth (2007): Basic and other measurements of radiation at station Barrow (2001-12) - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

http://doi.pangaea.de/10.1594/PANGAEA.668531?format=html

					22002
Short-wave upward (REFLEX) radiation	SWU	W/m^2	Dutton, Ellsworth	Pyranometer, Eppley, PSP, SN 12618, WRMC No. 22005	
Air temperature in 2 m height	T2	deg C	Dutton, Ellsworth	Thermometer	

Size: 430013 data points

Data

Download dataset as tab-delimited text *(use the following character encoding:* ISO-8859-1: ISO Western (PANGAEA default) *)*

Date/Time	Height [m]	SWD [W/m^2]	DIF [W/m^2]	LWD [W/m^2]	LWD std dev [W/m^2]	SWU [W/m^2]	LWU [W/m^2]	LWU std dev [W/m^2]	T2 [deg C]	RH [%]	PoPoPoPo [hPa]
2001-12-01T00:00	2	0	0	207	0.3	0			-16.9	74.6	1016
2001-12-01T00:01	2	0	0	206	0.3	0			-16.9	74.6	1016
2001-12-01T00:02	2	0	0	205	0.4	0			-16.9	75.2	1016
2001-12-01T00:03	2	0	0	203	0.5	0			-17.0	75.9	1016
2001-12-01T00:04	2	0	0	203	0.5	0			-17.0	75.2	1016
2001-12-01T00:05	2	0	0	202	0.3	0			-17.0	75.2	1016
2001-12-01T00:06	2	0	0	202	0.3	0			-17.0	75.2	1016
2001-12-01T00:07	2	0	0	201	0.4	0			-17.0	75.2	1016
2001-12-01T00:08	2	0	0	200	0.4	0			-17.0	74.6	1016

Google Earth Overlay

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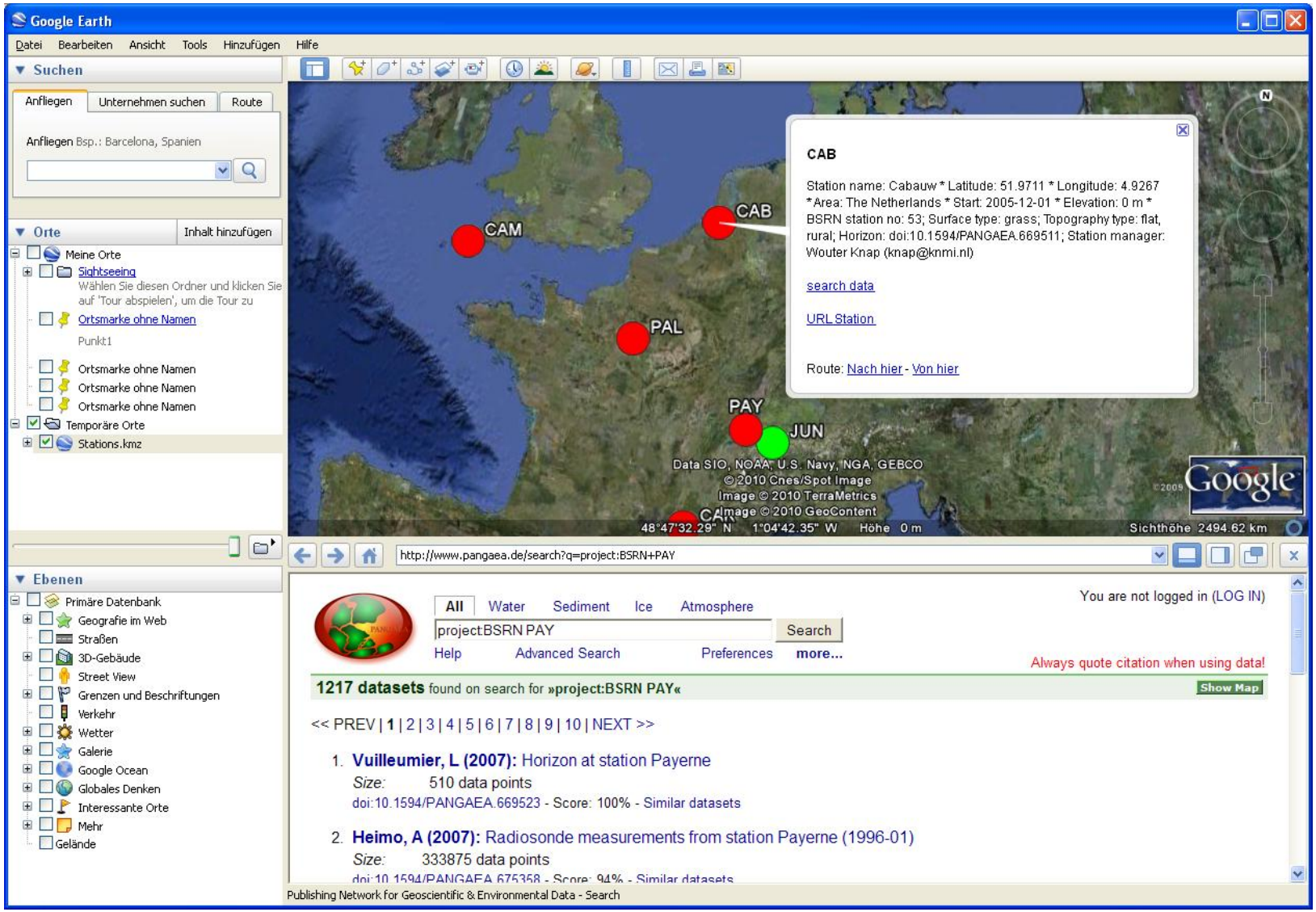
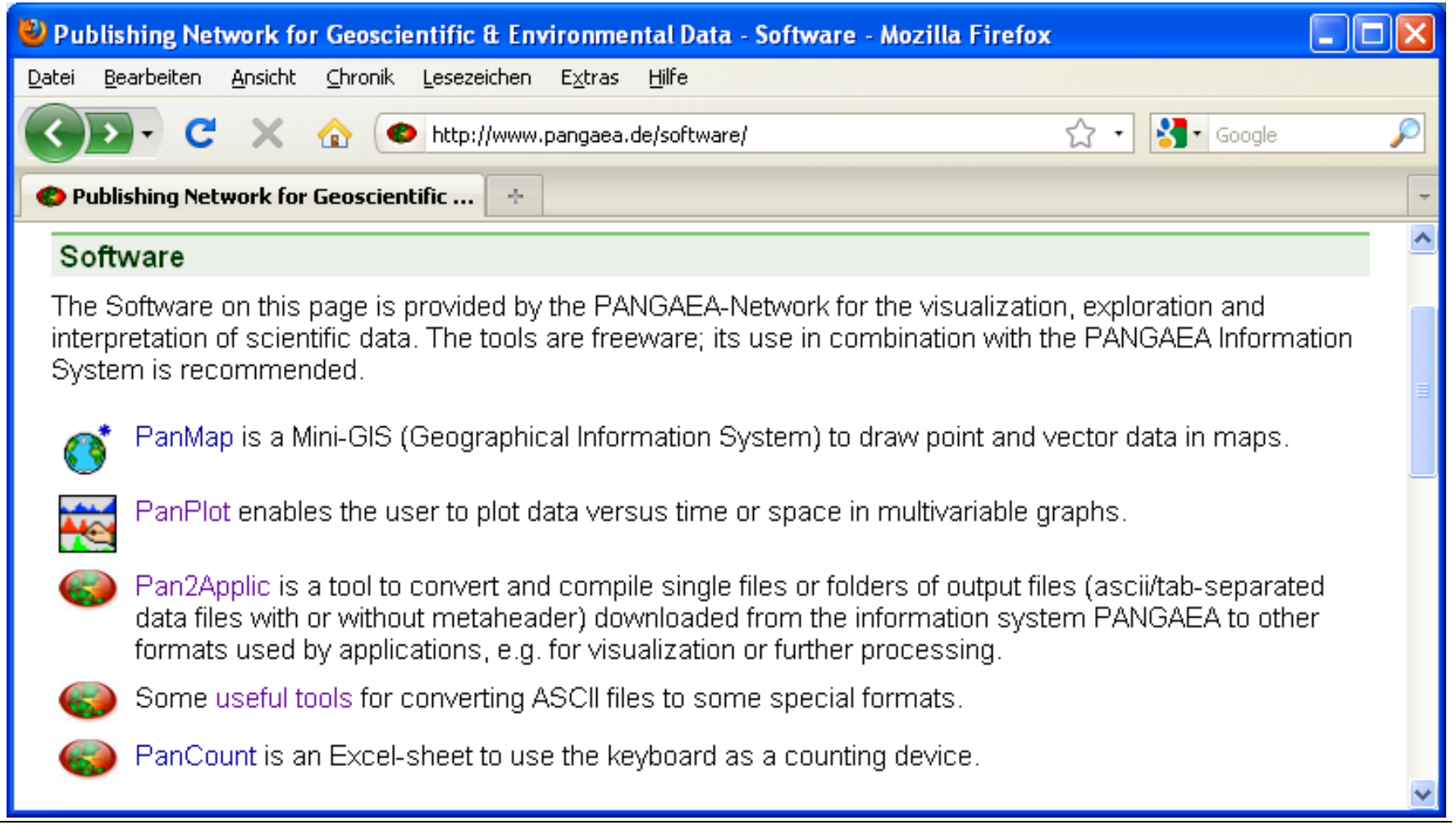


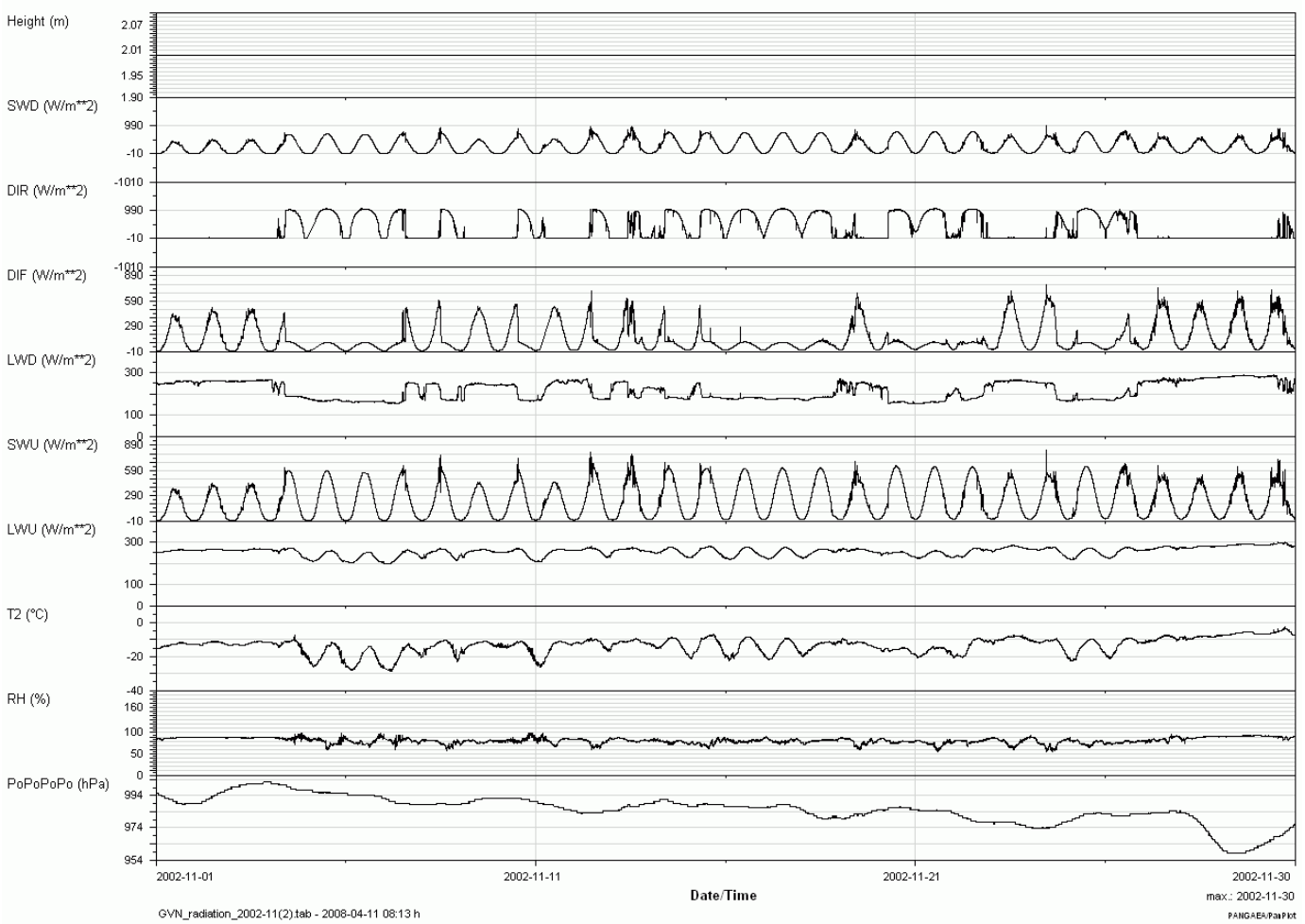
What offers PANGAEA?

Software



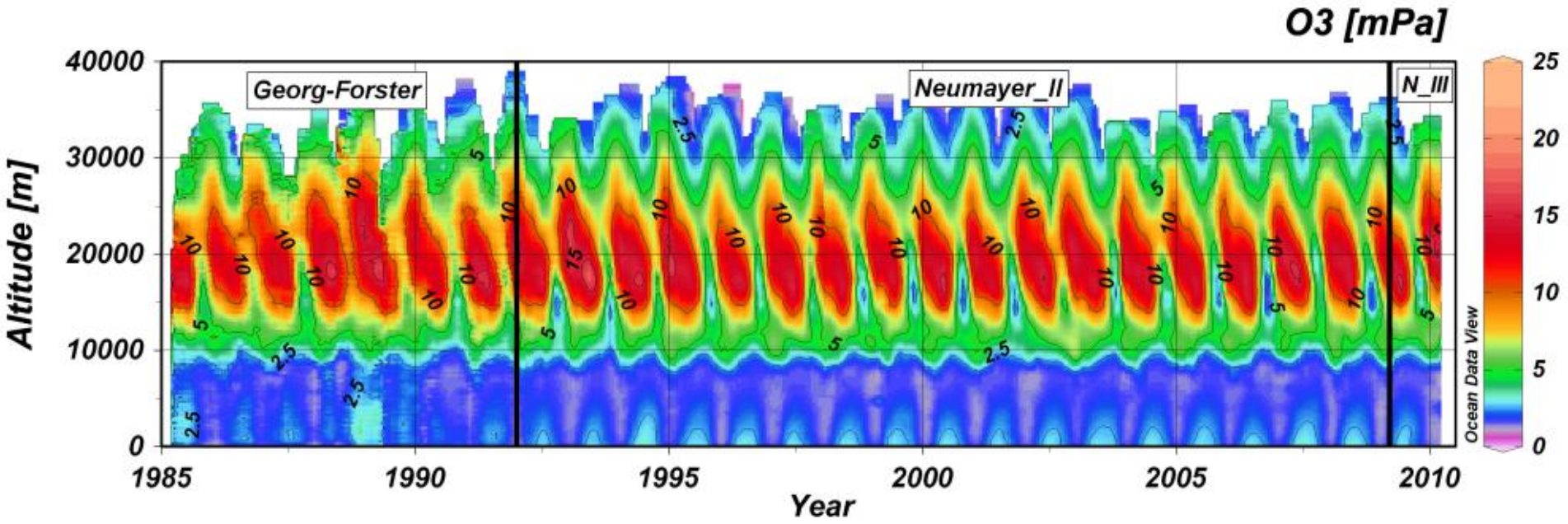
What offers PANGAEA?

Quicklook with PanPlot



What offers PANGAEA?

Ocean Data View example:



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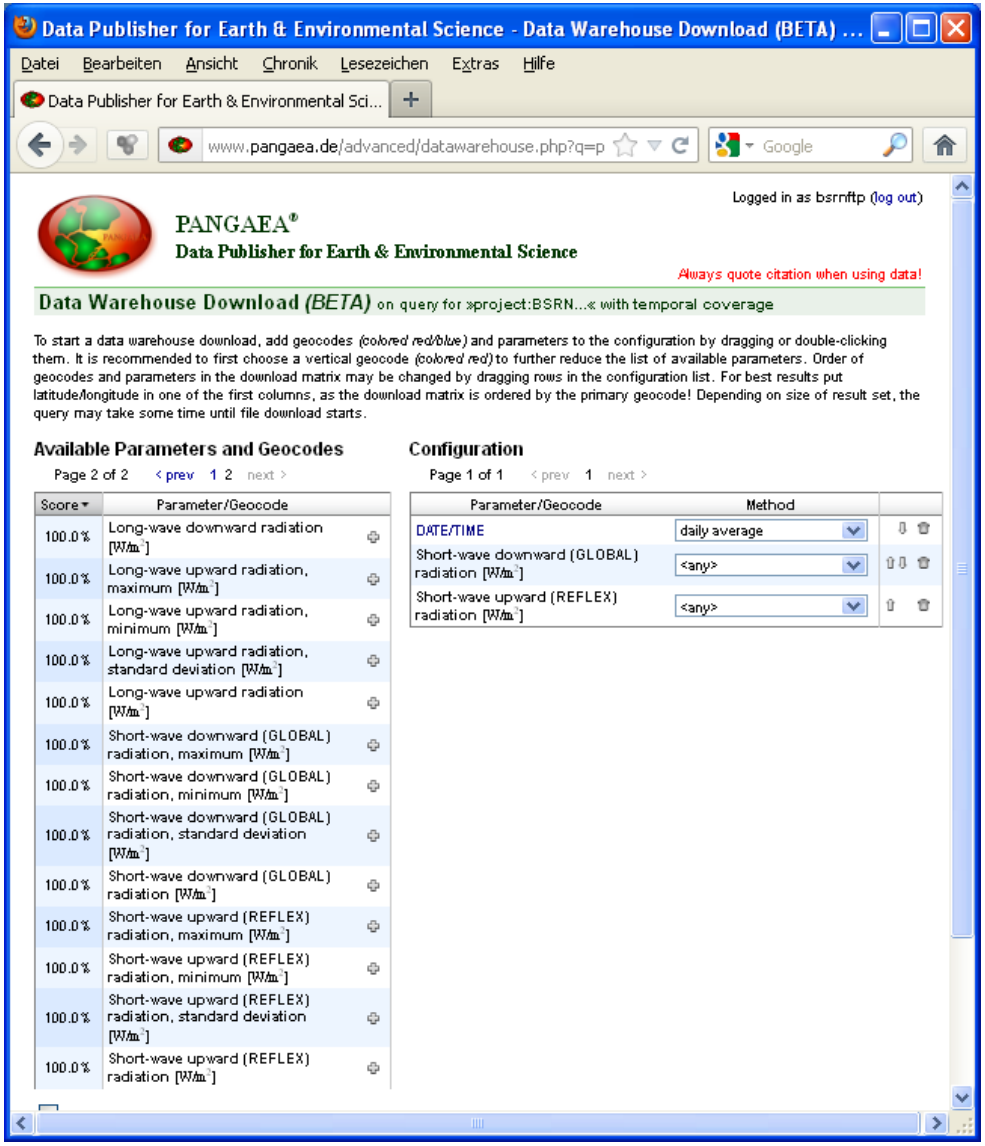

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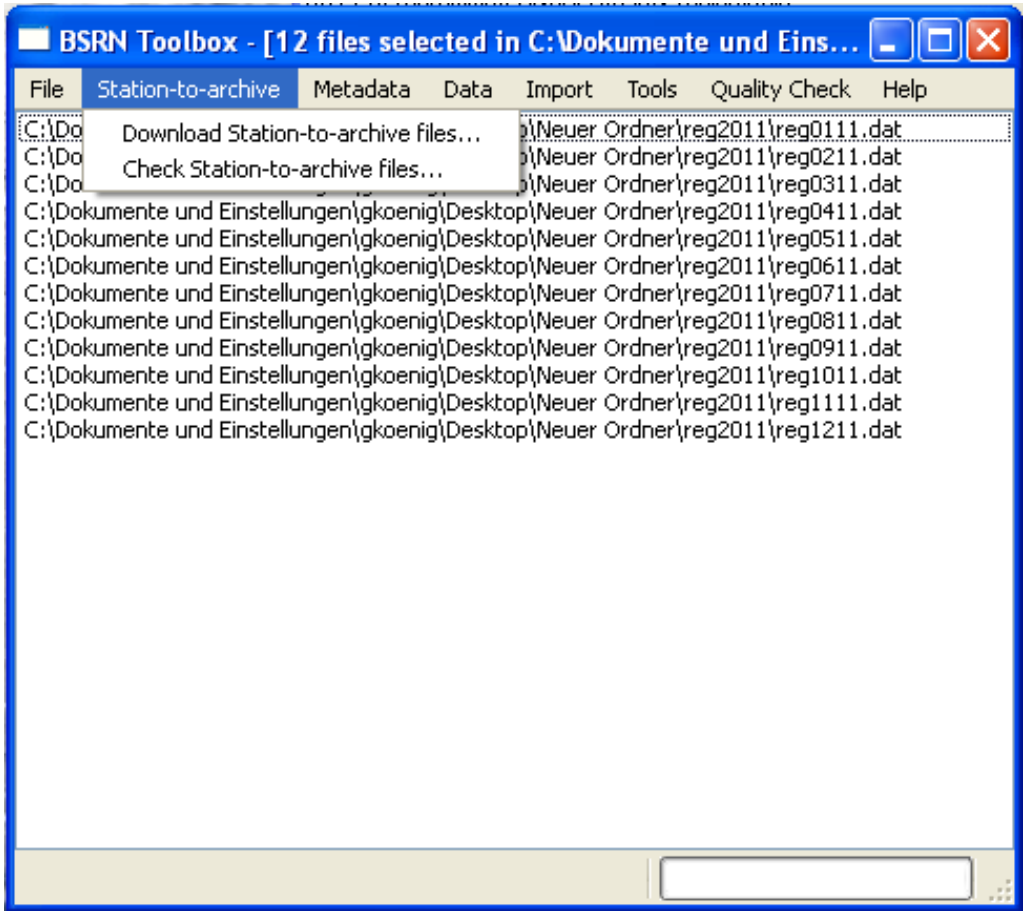
5. Software (BSRN-Toolbox, etc.)
   http://wiki.pangaea.de/wiki/BSRN_Toolbox



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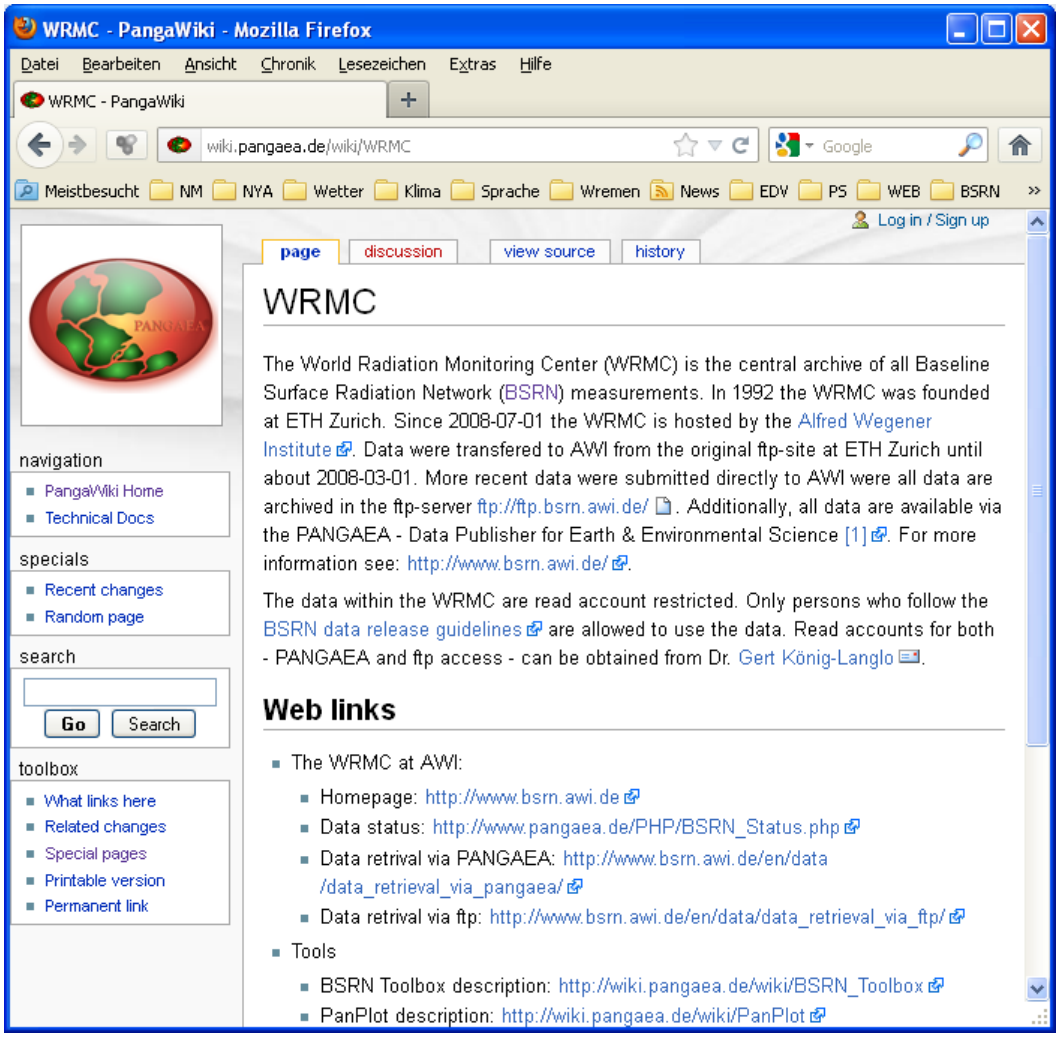
3. PANGAEA access: http://www.pangaea.de/search?q=project:BSRN
4. DataWarehouse:
5. Software (BSRN-Toolbox, etc.) http://wiki.pangaea.de/wiki/BSRN_Toolbox
6. PangaWiki: http://wiki.pangaea.de/wiki/WRMC



WRMC-BSRN
World Radiation Monitoring Center- Baseline Surface Radiation Network

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Present State of the WRMC: 6965 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)																							X
Alice Springs	ASP	Bruce Forgan (B.Forgan@bom.gov.au)					12	12	12	12	12	12	11	12	12	12	12	12							X
Barrow	BAR	Ellsworth Dutton (Ellsworth.G.Dutton@noaa.gov)		12	12	12	12	12	12	12	12	12	12	12	12	12									X
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
Tateno		a (ijima@met.kishou.go.jp)						11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	4	X
Tiksi		Vasilii Kustov (kustov@aari.ru)																				7	9		X
Toravere		Ain Kallis (kallis@aai.ee)									12	12	12	12	12	12	12	12	12	12	12	12	12	5	X
Xianghe	XIA	Xiangao Xia (xiangaoxia2000@yahoo.com)															12	12	12	8					X
Historical 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

~ 580 years of radiation measurements