

# The Baseline Surface Radiation Network: Surface Radiation Observations for Climate Research

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The radiation budget of the Earth-atmosphere system plays a fundamental role in determining the thermal conditions and the circulation of the atmosphere and the ocean, shaping the main characteristics of the Earth's climate. Irradiances at the Earth's surface are especially important in understanding the climate processes, since the Earth's surface transforms approximately 60% of the solar radiation absorbed by the planet. The Baseline Surface Radiation Network (BSRN) is a project of the Global Energy and Water Cycle Experiment (GEWEX) Data Assimilation Panel (GDAP) under the umbrella of the World Climate Research Programme (WCRP) of the World Meteorological Organization (WMO). The BSRN network is aimed at providing high quality long-term surface radiative energy budget observations for detecting important changes in the radiation field at the Earth's surface which may be related to climate changes. In 2004, the BSRN was designated as the global baseline network for surface radiation for the Global Climate Observing System (GCOS), and the BSRN stations also contribute to the Global Atmospheric Watch (GAW). Currently the BSRN is comprised of 58 stations in contrasting climatic zones, covering a latitude range from 80°N to 90°S and as of the end of 2014 has produced 8000 monthly datasets available from the BSRN Archive. The NOAA ESRL Global Monitoring Division contributes data from 13 sites, thus constituting the largest contributor to the BSRN network. This presentation will give an overview of the BSRN effort, including sites, operational specifications, scientific advances, and current status and future plans.



## 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	2013	2014	All
Alert	ALE	David Halliwell (David.Halliwell@ec.gc.ca)						12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Alice Springs	ASP	Bruce Forgan (B.Forgan@bom.gov.au)						12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Darrow	DAR	Elsworth Dutton (Elsworth.G.Dutton@noaa.gov)		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Bermuda	BER	Elsworth Dutton (Elsworth.G.Dutton@noaa.gov)		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Billings	BIL	Charles Long (chuck.long@noaa.gov)		4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Bonville	BON	John Augustine (John.A.Augustine@noaa.gov)					12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Boulder, SURFRAD	BOS	John Augustine (John.A.Augustine@noaa.gov)					5	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Boulder	BOU	Elsworth Dutton (Elsworth.G.Dutton@noaa.gov)		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Brasilia	BRB	Enio Bueno Pereira (eniobp@cptec.inpe.br)															12	12	12	12	12	12	12	12	12	12	X
Cabauw	CAB	Wouter Knap (wkn@knmi.nl)															11	12	12	12	12	12	12	12	12	12	X
Camborne	CAM	Patrick Fishwick (patrick.fishwick@metoffice.co.uk)											12	12	12	12	12	12	12	12	12	12	12	12	12	12	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	12	12	12	X
Chersonese Light	CHL	Fred M. Denn (Fredrick.M.Denn@noaa.gov)										8	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Serra																											
Solar Village	SOV	Naf Al-Abbadi								3	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
South Pole	SPO	Elsworth Dutton (Elsworth.G.Dutton@noaa.gov)		12	12	10	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Syowa	SYO	Elsworth Dutton (Elsworth.G.Dutton@noaa.gov)		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Sioux Falls	SFX	Elsworth Dutton (Elsworth.G.Dutton@noaa.gov)													7	12	12	12	12	12	12	12	12	12	12	12	X
Tampere	TAM	Elsworth Dutton (Elsworth.G.Dutton@noaa.gov)										10	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Tokyo	TOK	Elsworth Dutton (Elsworth.G.Dutton@noaa.gov)						11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Ulaanbaatar	ULA	Elsworth Dutton (Elsworth.G.Dutton@noaa.gov)										12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	X
Xia	XIA	Xiangao Xia (xiangaoxia2000@yahoo.com)															12	12	12	12	12	12	12	12	12	12	X
Official station	Official station		1																								X
All	All			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			pre BSRN																								

**~ 650 (560) years of radiation measurements**

Gert König-Langlo, BSRN Meeting 2014

**Figure 1.** As of the end of 2014, the BSRN Archive houses 650 years' worth of data in monthly station data files from the 58 sites making up the network. This is a 90 data-year increase over the previous year-end total.