

# Solargis<sup>®</sup> Report

## Solar Resource Overview

Site name:

**Plataforma Solar de Almeria, Spain**

Type of Data:

**15-minute time series**

Period:

**01/01/1994 - 31/12/2015**

Customer:

**Solargis s.r.o.**

Date of Issue:

**14 June 2016**

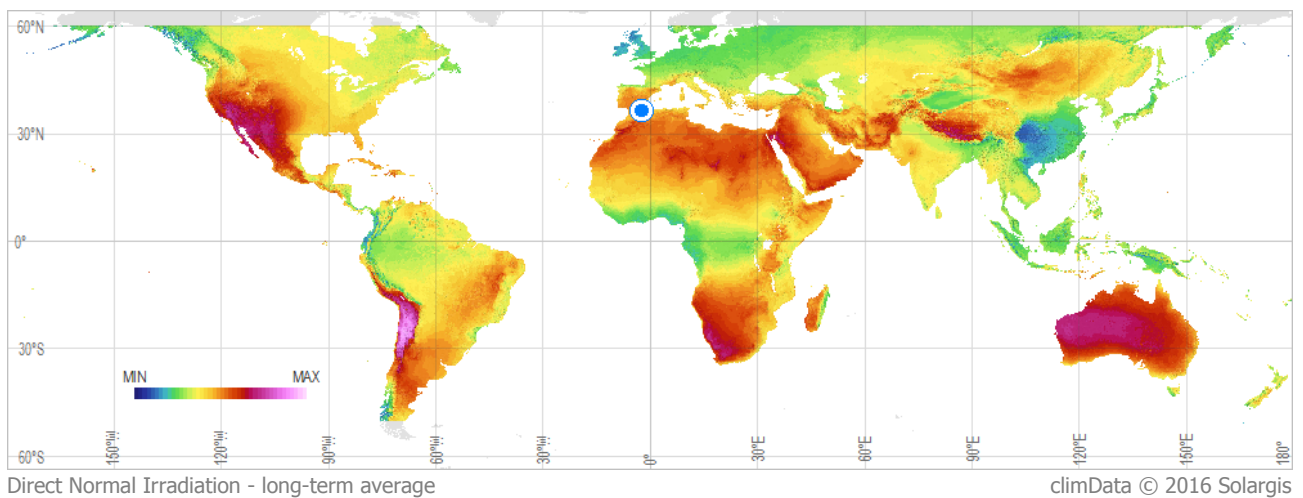
Issued by:

**Solargis s.r.o.**

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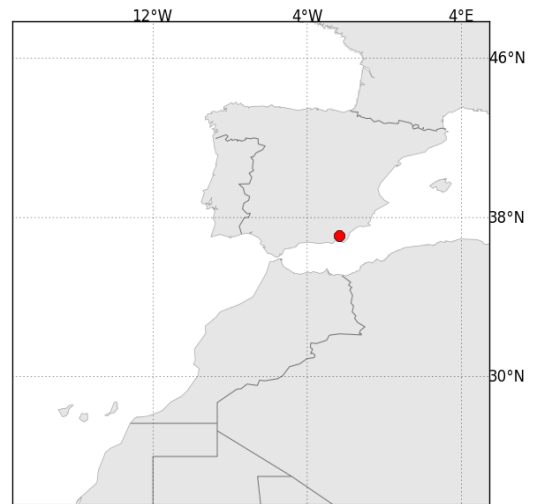
http://solargis.com



SITE: 37.094416°, -2.35985° | TYPE OF DATA: 15-minute time series | CUSTOMER: Solargis s.r.o.

### 1. Site Info

Site name: Plataforma Solar de Almeria, Spain  
 Latitude: 37.094416°  
 Longitude: -2.35985°  
 Elevation: 497 m a.s.l.



Location on the map: <http://solargis.info/imaps/#tl=Google:satellite&loc=37.094416,-2.359850&z=14>



Google Maps © 2016 Google

## 2. Executive Summary

Long-term average yearly values calculated from complete calendar years (1994-2015):

Global Horizontal Irradiation	<b>1871.6</b> kWh/m <sup>2</sup>
Direct Normal Irradiation	<b>2097.3</b> kWh/m <sup>2</sup>
Diffuse Horizontal Irradiation	<b>624.6</b> kWh/m <sup>2</sup>
Global Tilted Irradiation (fixed inclination: 33° azimuth: 180°)	<b>2165.2</b> kWh/m <sup>2</sup>
Air Temperature at 2 m	<b>16.4</b> °C

## 3. Solargis Database Description

Output from the climate database Solargis v2.1.3

### Solar Resource

Description: Data calculated from Meteosat MSG and MFG satellite data (© 2016 EUMETSAT) and from atmospheric data (© 2016 ECMWF and NOAA) by Solargis method

Spatial resolution: 250 m

### Meteorological Data

Description: Spatially disaggregated from CFSR and GFS (© 2016 NOAA) by Solargis method

Spatial resolution: Temperature 1 km, other meteorological parameters 33 km to 55 km

## 4. Data Overview

Type of data: 15-minute time series (time reference UTC+0)

Period: 01/01/1994 - 31/12/2015 (771360 records)

Parameters:

Code	Description	Data in CSV file	Overview in PDF file
GHI	Global horizontal irradiance [W/m2]	✓	✓
DNI	Direct normal irradiance [W/m2]	✓	✓
DIF	Diffuse horizontal irradiance [W/m2]	✓	✓
GTI	Global tilted irradiance [W/m2] (fixed inclination: 33 deg. azimuth: 180 deg.)	✓	✓
flagR	Cloud identification quality flag: 0: sun below horizon, 1: model value, 2: interpolated 1hour, 5: long term monthly median or persistence, 6: synthetic data	✓	✗
SE	Sun altitude angle [deg.]	✓	✗
SA	Sun azimuth angle [deg.]	✓	✗
TEMP	Air temperature at 2 m [deg. C]	✓	✓
AP	Atmospheric pressure [hPa]	✓	✗
RH	Relative humidity [%]	✓	✗
WS	Wind speed at 10 m [m/s]	✓	✗
WD	Wind direction [deg.]	✓	✗

Global horizontal irradiation: Monthly and yearly sums

GHI

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1994	91.9	109.1	160.1	193.1	215.6	241.9	241.6	215.5	170.1	105.2	91.2	86.0	1921.4
1995	92.2	109.2	152.8	191.1	224.3	218.8	244.4	211.6	164.0	124.2	82.0	68.3	1882.7
1996	74.7	107.5	145.8	173.1	208.8	238.0	238.5	217.7	146.0	129.6	89.9	61.1	1830.6
1997	67.6	115.2	172.2	158.1	213.4	231.8	240.5	202.2	150.6	123.3	80.5	68.9	1824.4
1998	79.9	96.4	165.4	191.9	179.2	235.2	252.5	215.3	151.4	138.2	89.9	81.9	1877.2
1999	83.0	107.2	158.3	203.0	219.3	237.8	245.3	223.1	165.8	104.6	87.2	73.0	1907.6
2000	88.1	121.2	157.8	184.9	197.6	248.0	249.0	214.7	170.6	122.4	84.9	72.0	1911.4
2001	85.8	109.5	151.4	193.0	198.2	245.5	239.8	216.4	158.2	121.9	77.5	65.0	1862.1
2002	83.8	115.9	146.6	171.8	215.9	233.7	247.5	213.9	157.0	122.0	85.5	74.9	1868.5
2003	91.3	87.6	138.9	177.7	219.6	230.6	248.6	222.2	171.7	101.0	77.2	76.5	1843.0
2004	95.3	106.2	132.1	185.2	187.1	233.6	236.0	213.3	152.6	125.0	91.5	68.3	1826.3
2005	101.1	100.0	145.6	202.6	227.0	245.4	248.2	212.7	170.1	126.8	91.8	78.7	1950.0
2006	73.4	98.4	167.3	171.0	189.6	218.6	242.6	220.2	165.8	122.2	79.5	75.6	1824.4
2007	84.3	98.2	162.4	139.4	223.4	241.9	254.3	206.0	159.9	115.0	91.4	77.0	1853.1
2008	88.7	87.7	166.6	193.3	195.4	232.9	238.4	220.9	142.1	104.3	93.3	72.6	1836.4
2009	76.1	106.0	152.1	184.7	223.9	240.0	244.7	218.9	138.7	130.6	96.9	69.6	1882.1
2010	80.0	82.7	128.3	162.6	236.2	229.4	240.0	207.7	161.0	123.5	84.4	78.0	1813.9
2011	76.7	114.5	137.0	169.3	192.9	223.8	235.2	221.9	176.1	126.7	82.1	82.4	1838.6
2012	92.9	118.8	165.5	190.3	232.3	237.8	247.5	211.1	157.2	122.2	71.8	79.6	1926.9
2013	87.8	109.0	138.9	173.0	205.5	249.2	244.4	206.8	159.1	129.8	93.3	77.5	1874.2
2014	85.2	101.6	160.7	195.2	235.2	231.3	246.6	219.9	159.2	132.2	86.0	85.6	1938.7
2015	95.6	98.6	148.3	171.8	214.1	240.8	246.6	200.6	162.6	115.6	101.6	85.8	1881.7
LTA*	85.2	104.6	152.5	180.7	211.6	235.7	244.2	214.2	159.5	121.2	86.8	75.4	1871.6

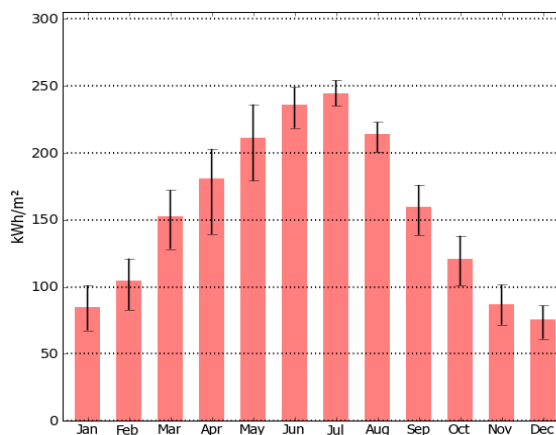
Unit: kWh/m<sup>2</sup>  Long-term average and yearly sums are calculated for complete years only

Monthly minimum: 61.1 (Dec 1996), 18% below Dec LTA

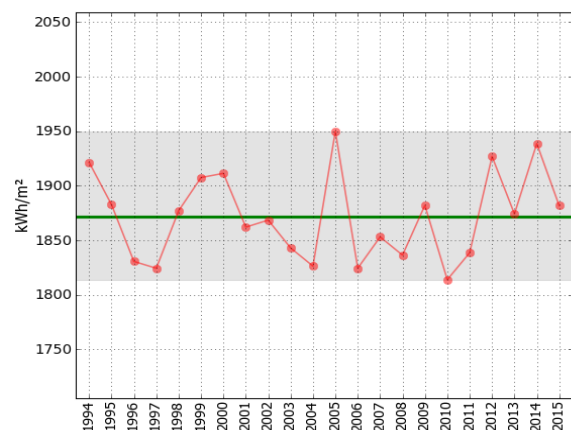
Monthly maximum: 254.3 (Jul 2007), 4% above Jul LTA

Yearly minimum: 1813.9 (2010), 3% below yearly LTA

Yearly maximum: 1950.0 (2005), 4% above yearly LTA



Monthly sums: long-term average, minimum and maximum



Interannual variability of yearly sums

\* LTA: long-term average

Note: Terrain shading is not considered. Occasional deviations in calculations may occur as a result of mathematical rounding and cannot be considered as a defect of algorithms.

Direct normal irradiation: Monthly and yearly sums

DNI

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1994	159.7	152.2	181.3	202.8	195.2	230.0	224.9	212.8	179.5	106.8	137.8	164.2	2147.3
1995	162.4	153.6	173.3	200.0	203.1	194.2	237.5	205.9	174.7	138.2	103.3	105.6	2052.0
1996	104.4	145.2	151.9	157.3	191.6	224.1	225.9	215.3	143.3	162.0	140.6	87.3	1948.8
1997	88.1	168.1	219.8	149.2	188.0	211.5	232.2	197.7	150.0	146.5	110.3	109.4	1970.8
1998	119.6	124.9	192.0	194.1	141.5	219.6	250.5	218.1	148.9	180.1	141.3	155.2	2085.7
1999	140.9	152.0	182.5	215.1	195.9	223.9	235.1	228.4	177.4	106.6	132.9	122.2	2112.9
2000	151.7	181.0	175.4	184.6	182.0	241.5	241.7	213.8	185.8	147.2	124.8	114.6	2144.3
2001	131.9	152.5	157.8	197.6	175.8	239.8	224.2	213.1	158.4	148.2	107.0	102.4	2008.7
2002	133.1	172.0	158.2	166.7	196.8	213.5	241.8	206.0	149.6	143.0	123.8	125.4	2030.0
2003	164.9	113.6	146.9	177.9	214.5	206.3	241.9	232.5	195.5	97.6	103.2	137.4	2032.2
2004	179.5	146.5	143.6	206.6	153.0	222.3	223.7	215.0	153.9	151.7	152.3	114.4	2062.5
2005	204.1	153.9	149.7	217.2	219.9	239.2	244.5	214.9	191.2	162.2	147.7	150.4	2294.8
2006	112.5	132.9	215.6	145.3	144.5	192.8	225.4	233.8	175.3	135.9	116.6	124.8	1955.4
2007	144.6	133.6	208.8	107.7	228.0	244.9	265.2	191.4	156.8	131.9	145.4	141.7	2100.0
2008	157.4	107.1	214.5	209.5	156.5	229.2	227.1	231.1	135.5	104.0	155.0	132.7	2059.6
2009	115.7	152.1	179.7	199.5	218.9	242.0	247.2	227.9	133.3	176.4	158.7	120.7	2172.1
2010	127.2	98.0	134.4	137.5	248.2	223.1	233.0	203.8	177.5	161.8	141.1	130.3	2015.8
2011	119.8	178.4	144.4	156.4	166.8	216.2	223.5	221.1	205.6	155.8	116.3	157.8	2062.3
2012	170.1	190.7	199.3	204.4	238.3	222.5	243.0	195.9	166.9	156.0	91.9	144.3	2223.3
2013	152.1	166.3	152.0	175.8	187.9	252.1	244.3	202.6	170.7	161.0	155.5	139.5	2159.9
2014	143.9	143.3	201.1	210.7	251.7	217.8	242.5	232.0	175.9	171.1	128.8	175.5	2294.4
2015	175.7	140.5	182.2	162.6	201.0	251.3	246.0	186.1	178.9	137.2	187.9	157.7	2207.1
LTA*	143.6	148.1	175.7	180.8	195.4	225.4	237.3	213.6	167.5	144.6	132.8	132.4	2097.3

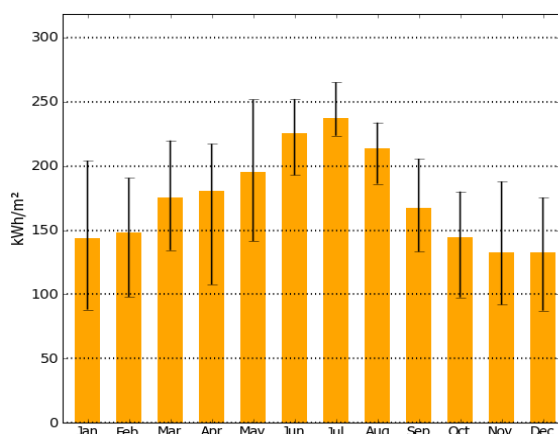
Unit: kWh/m<sup>2</sup>  Long-term average and yearly sums are calculated for complete years only

Monthly minimum: 87.3 (Dec 1996), 34% below Dec LTA

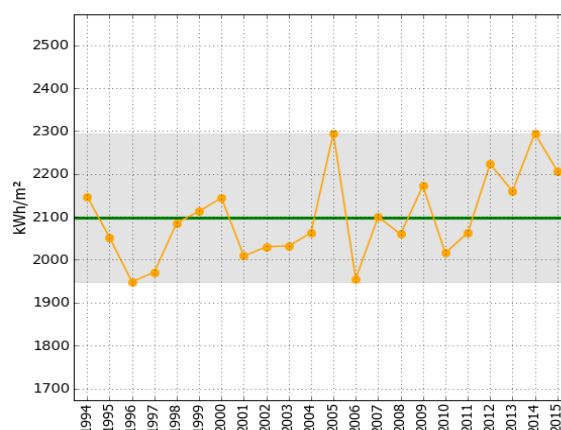
Monthly maximum: 265.2 (Jul 2007), 11% above Jul LTA

Yearly minimum: 1948.8 (1996), 7% below yearly LTA

Yearly maximum: 2294.8 (2005), 9% above yearly LTA



Monthly sums: long-term average, minimum and maximum



Interannual variability of yearly sums

\* LTA: long-term average

Note: Terrain shading is not considered. Occasional deviations in calculations may occur as a result of mathematical rounding and cannot be considered as a defect of algorithms.

Diffuse horizontal irradiation: Monthly and yearly sums

DIF

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1994	27.4	34.0	53.8	59.6	76.4	73.4	77.6	68.5	57.4	49.2	31.6	24.2	633.0
1995	26.9	35.1	51.1	60.9	79.1	75.9	73.0	70.1	57.1	52.1	37.5	28.1	646.8
1996	32.1	36.6	54.1	70.0	75.8	76.2	75.0	69.9	56.9	44.7	30.1	28.1	649.5
1997	32.3	32.8	46.9	61.2	79.1	77.8	74.6	68.2	58.1	46.5	33.5	26.9	637.9
1998	31.9	34.1	52.6	63.0	81.1	75.4	72.1	65.8	58.0	45.3	29.5	24.2	632.8
1999	26.9	33.9	52.1	61.5	79.1	75.9	75.1	65.3	55.9	47.8	30.1	27.2	630.7
2000	27.2	33.2	56.7	63.1	68.1	73.9	74.8	67.2	55.2	44.8	31.9	28.9	625.0
2001	31.9	35.8	57.9	61.2	76.4	72.1	78.0	69.5	58.1	44.8	31.9	26.4	644.0
2002	28.6	32.0	52.3	61.7	77.1	76.2	74.3	72.8	63.7	48.0	32.2	27.6	646.4
2003	24.7	33.1	52.7	61.7	70.9	79.9	75.0	63.9	51.9	48.7	32.8	25.3	620.6
2004	23.6	35.3	48.7	50.2	80.9	71.9	74.5	65.4	57.9	45.3	27.6	26.5	607.8
2005	21.3	28.3	57.7	59.5	72.2	72.3	73.2	67.7	54.4	43.1	29.9	23.0	602.4
2006	29.3	35.2	44.3	74.7	84.4	79.9	80.1	62.7	58.4	50.9	31.1	28.4	659.3
2007	28.0	34.2	45.1	68.9	68.1	67.1	66.6	75.6	62.1	45.8	29.8	24.4	615.6
2008	26.4	37.9	43.7	57.9	83.3	71.5	76.3	63.6	58.5	50.1	28.5	24.5	622.2
2009	29.4	33.1	49.5	57.6	73.4	67.4	69.2	65.3	58.0	41.3	29.5	24.9	598.7
2010	29.4	36.3	49.9	73.7	65.7	70.7	73.2	69.1	53.3	41.1	25.8	28.8	616.9
2011	29.6	30.5	53.6	67.2	76.9	70.2	77.3	70.9	50.5	45.3	32.6	23.7	628.2
2012	26.1	29.1	50.7	58.5	67.1	77.2	73.6	76.8	56.3	41.9	33.7	26.1	617.0
2013	28.0	31.5	51.7	60.1	75.1	68.6	71.1	69.3	54.9	46.4	28.5	26.7	611.9
2014	28.0	33.8	47.0	57.7	61.8	76.2	73.1	64.2	51.9	44.9	31.2	21.0	591.0
2015	26.3	32.9	46.2	63.1	73.5	64.4	72.0	74.2	53.5	46.5	24.0	26.3	602.8
LTA*	28.0	33.6	50.8	62.4	74.8	73.4	74.1	68.5	56.5	46.1	30.6	26.0	624.6

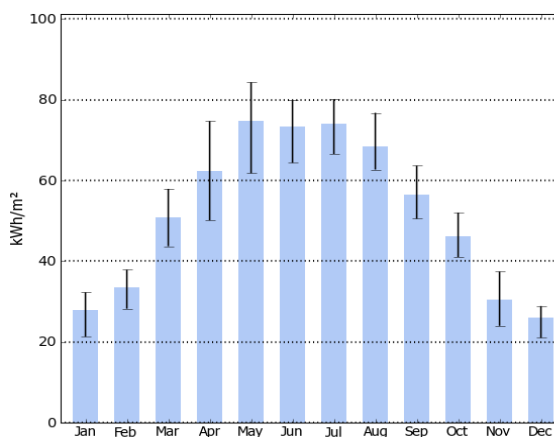
Unit: kWh/m<sup>2</sup>  Long-term average and yearly sums are calculated for complete years only

Monthly minimum: 21.0 (Dec 2014), 18% below Dec LTA

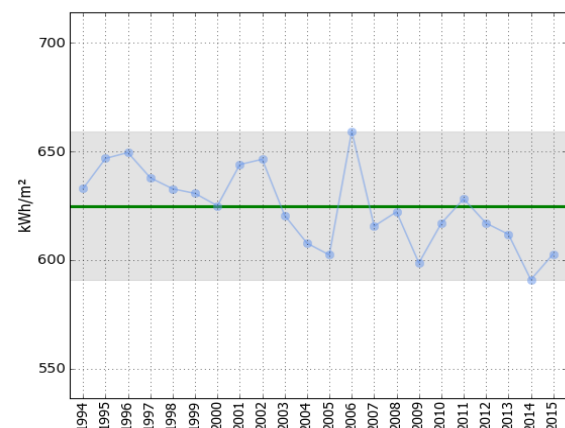
Yearly minimum: 591.0 (2014), 5% below yearly LTA

Monthly maximum: 84.4 (May 2006), 12% above May LTA

Yearly maximum: 659.3 (2006), 6% above yearly LTA



Monthly sums: long-term average, minimum and maximum



Interannual variability of yearly sums

\* LTA: long-term average

Note: Terrain shading is not considered. Occasional deviations in calculations may occur as a result of mathematical rounding and cannot be considered as a defect of algorithms.

**Global tilted irradiation: Monthly and yearly sums**  
fixed inclination: 33° azimuth: 180°

**GTI**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1994	155.0	159.2	198.6	208.2	209.9	223.6	229.0	223.2	198.3	137.4	144.7	154.7	2241.8
1995	156.8	159.6	188.4	206.9	217.0	202.6	231.1	217.4	192.6	164.6	123.0	113.6	2173.7
1996	117.8	154.8	176.6	184.8	199.1	219.1	225.9	225.1	171.7	176.5	143.6	98.4	2093.5
1997	103.7	169.3	217.7	168.2	207.1	214.1	227.0	207.9	173.3	166.2	123.8	115.7	2094.1
1998	128.7	135.9	207.1	206.2	171.3	217.1	238.8	222.6	174.7	190.7	144.3	146.5	2183.8
1999	138.7	157.8	196.6	220.0	212.6	219.2	232.2	230.8	194.9	135.5	137.5	124.6	2200.5
2000	148.7	180.2	195.4	197.6	190.6	228.4	235.9	222.5	200.7	165.0	132.9	121.1	2218.9
2001	139.2	159.6	184.1	209.0	189.4	226.2	226.3	223.9	183.7	165.8	119.2	108.3	2134.6
2002	136.7	171.3	179.2	181.6	207.9	216.6	233.8	221.1	180.7	165.2	133.4	128.2	2155.6
2003	155.3	124.3	170.9	190.4	210.8	213.0	234.3	229.3	201.8	129.0	117.2	133.8	2110.0
2004	165.6	153.4	162.7	198.2	178.8	215.3	223.0	219.5	179.2	168.7	149.0	116.1	2129.5
2005	179.0	147.0	176.2	217.5	218.8	226.1	234.5	219.9	200.2	172.9	147.1	140.7	2279.8
2006	118.3	141.0	210.2	181.3	183.9	201.2	229.4	227.7	194.3	161.7	123.9	128.9	2101.8
2007	142.2	140.1	205.1	145.3	214.1	222.0	239.1	211.6	185.4	152.4	145.3	135.0	2137.8
2008	150.3	123.4	209.1	206.5	188.4	213.0	225.0	228.8	162.6	134.5	151.4	127.3	2120.2
2009	121.7	153.8	187.9	196.8	215.1	220.0	230.1	226.2	157.1	180.6	156.1	119.6	2165.1
2010	130.6	114.3	154.7	171.4	227.2	210.5	226.6	214.7	188.3	169.0	135.4	133.3	2076.2
2011	124.7	171.5	166.1	180.8	185.3	205.0	221.4	229.5	207.4	169.7	126.6	147.6	2135.5
2012	159.7	177.9	206.8	203.6	223.7	218.9	233.6	218.9	182.3	165.8	107.7	139.8	2238.7
2013	147.6	161.9	168.7	185.6	197.4	228.8	230.4	212.3	185.8	176.0	151.2	135.4	2181.2
2014	141.9	147.5	200.9	208.3	226.5	212.2	232.3	226.5	184.2	181.8	134.1	157.2	2253.5
2015	164.0	143.0	185.0	182.5	206.7	219.7	232.2	206.8	190.3	154.8	170.6	152.3	2207.8
LTA*	142.1	152.1	188.5	193.2	203.7	216.9	230.5	221.2	185.9	162.9	137.2	130.8	2165.2

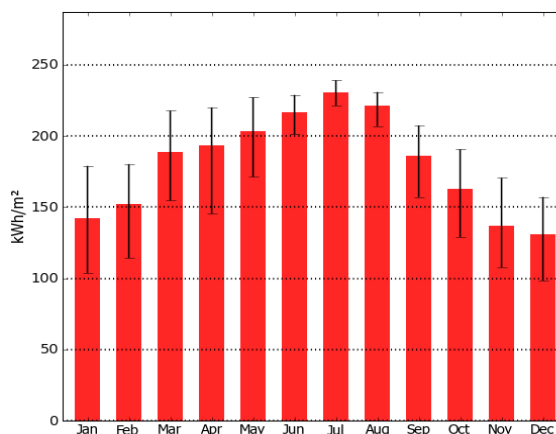
Unit: kWh/m<sup>2</sup>  Long-term average and yearly sums are calculated for complete years only

Monthly minimum: 98.4 (Dec 1996), 24% below Dec LTA

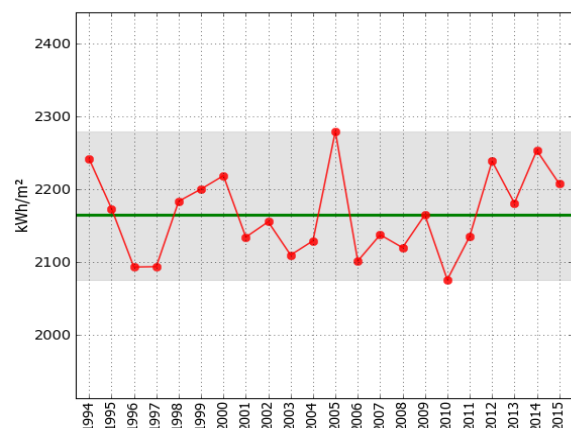
Monthly maximum: 239.1 (Jul 2007), 3% above Jul LTA

Yearly minimum: 2076.2 (2010), 4% below yearly LTA

Yearly maximum: 2279.8 (2005), 5% above yearly LTA



Monthly sums: long-term average, minimum and maximum



Interannual variability of yearly sums

\* LTA: long-term average

Note: Terrain shading is not considered. Occasional deviations in calculations may occur as a result of mathematical rounding and cannot be considered as a defect of algorithms.

Average diurnal (24 hour) air temperature at 2 m

TEMP

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1994	8.8	9.9	12.8	13.9	19.2	22.2	27.6	27.3	20.5	16.7	13.9	10.8	17.0
1995	9.6	11.7	11.8	13.8	18.8	21.0	25.7	25.2	19.8	17.7	14.3	11.3	16.8
1996	10.2	8.2	10.7	14.0	16.7	21.6	24.4	24.1	19.4	16.2	12.4	10.0	15.7
1997	9.0	11.6	12.9	14.8	18.0	22.0	23.3	24.2	21.6	18.6	13.4	10.6	16.7
1998	9.6	10.4	13.1	14.1	16.4	22.6	25.9	25.3	22.3	16.5	12.9	8.6	16.5
1999	8.7	8.9	11.3	15.3	19.5	22.2	25.2	25.9	21.6	17.3	10.4	9.2	16.3
2000	6.9	11.8	12.2	13.6	18.5	22.5	25.0	25.3	21.6	16.1	11.7	10.3	16.3
2001	9.7	10.1	14.6	15.3	17.2	24.1	24.8	25.7	21.3	18.7	10.8	8.8	16.8
2002	9.1	11.0	12.2	13.7	17.5	23.1	24.2	23.7	21.3	17.5	13.4	10.9	16.5
2003	8.4	8.4	11.9	14.2	18.0	24.7	26.5	26.6	21.7	16.7	12.5	9.6	16.7
2004	10.5	9.9	11.2	13.1	15.4	23.4	24.8	26.0	22.7	18.5	11.6	9.1	16.4
2005	7.3	6.9	11.2	14.7	19.3	23.2	26.2	24.7	20.9	17.2	11.2	8.8	16.0
2006	7.2	8.6	13.0	15.8	19.4	22.0	26.3	24.4	22.0	18.8	13.7	9.0	16.7
2007	9.1	11.5	11.7	13.0	18.7	22.0	25.1	24.6	21.1	16.7	12.2	9.6	16.3
2008	10.1	10.3	13.0	14.9	17.1	21.5	25.4	25.3	21.1	16.8	10.5	8.1	16.2
2009	8.1	9.0	12.0	13.4	18.7	24.0	27.0	25.4	20.9	18.9	14.5	10.8	16.9
2010	8.6	9.4	10.5	14.1	17.0	21.4	25.9	25.4	21.5	16.6	11.7	9.6	16.0
2011	7.5	8.8	9.8	15.1	17.6	22.1	25.1	25.6	21.7	16.4	11.9	9.1	15.9
2012	7.7	5.6	10.0	13.3	18.8	24.6	25.1	27.5	20.7	16.4	11.3	9.5	15.9
2013	9.0	7.8	10.6	13.5	16.2	20.4	24.0	24.1	21.0	18.8	11.0	7.5	15.4
2014	8.9	9.4	10.7	16.4	17.4	22.1	24.3	25.0	22.3	18.5	12.1	8.2	16.3
2015	8.0	7.5	11.7	14.2	19.8	22.1	27.5	25.6	21.1	17.2	12.6	10.2	16.5
LTA*	8.7	9.4	11.8	14.3	18.0	22.5	25.4	25.3	21.3	17.4	12.3	9.5	16.4

Unit: °C

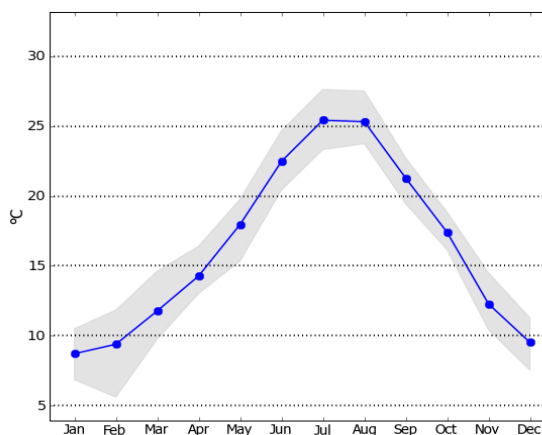
Long-term average and yearly averages are calculated for complete years only

Monthly minimum: 5.6 (Feb 2012), 3.8 below Feb LTA

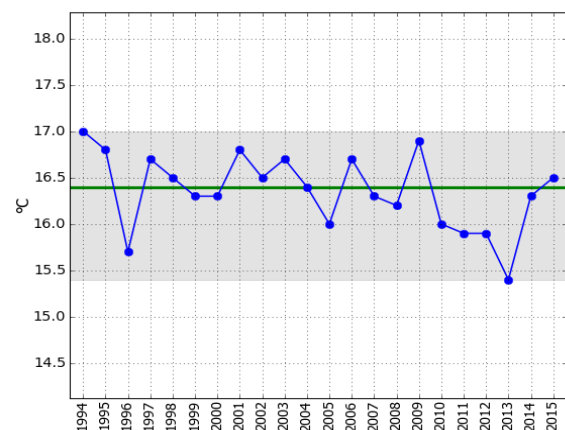
Monthly maximum: 27.6 (Jul 1994), 2.2 above Jul LTA

Yearly minimum: 15.4 (2013), 1.0 below yearly LTA

Yearly maximum: 17.0 (1994), 0.6 above yearly LTA



Monthly long-term average, minimum and maximum



Interannual variability of yearly averages

\* LTA: long-term average

Note: Occasional deviations in calculations may occur as a result of mathematical rounding and cannot be considered as a defect of algorithms.



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## 6. Data Uncertainty

### Solar Resource

Quality of Solargis data is determined by underlying models, spatial and temporal resolution of atmospheric and meteorological inputs, and their accuracy. Solargis data has been validated at 170+ locations, where high quality measurements were available. Statistics such as bias and RMSD are used for estimation of user's uncertainty. Solargis model demonstrates stable performance globally, and uncertainty lies within the margins described below.

For objective evaluation, the model has to be evaluated with quality-controlled data measured using high standard and professionally maintained instruments. If validation at a particular site shows higher deviations, there is high probability that there are issues with local measurements.

Uncertainty of Solargis GHI and DNI yearly summaries for 80% of observations is within the range of  $\pm 4\%$  and  $\pm 8\%$  ( $\pm 5\%$  and  $\pm 10\%$  for 90% of observations), respectively. In complex geographies and extreme cases, uncertainty of GHI and DNI yearly summaries can be as high as  $\pm 8\%$  and  $\pm 15\%$ , respectively.

Regions where lower uncertainty (below or equal to  $\pm 4\%$  for yearly GHI and  $\pm 8\%$  for DNI) can be typically expected: Most of Europe and North America below latitude approx.  $50^\circ$  (see exceptions below), South Africa, Chile, Brazil, Australia, Japan, Morocco, Mediterranean region and Arabian Peninsula (except the Gulf region). Lower uncertainty is expected in regions with good availability of high-quality ground measurements.

Regions where higher uncertainty can be expected (above  $\pm 4\%$  for yearly GHI and above  $\pm 8\%$  for DNI): high latitudes (approx. above  $50^\circ$ , high mountains, regions with regular snow and ice coverage, high-reflectance deserts, urbanized and industrialized areas, regions with high and dynamically changing concentrations of atmospheric aerosols (Northern India, West Africa, Gulf region, some regions in China), coastal zone (approx. up to 15 km from water) and humid tropical climate. Higher uncertainty is also assumed in regions with limited or no availability of high-quality ground measurements.

### Meteorological Data

Meteorological parameters are derived from the numerical weather models CFSR, CFSv2 and GFSprod. Compared to solar resource data, they have lower spatial and temporal resolution, and lower accuracy. They characterize wider geographic region rather than a specific site. Especially relative humidity, wind speed and wind direction values have higher uncertainty, they may not accurately characterize the local microclimate and should be used with caution.

More about Solargis models, the underlying algorithms, input data and uncertainty can be consulted at:

<http://solargis.info/doc/methods>

## 7. Service Provider

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