Scenario — PV
Simple house in rural off-grid Africa Namibia - Tsumkwe -19.592, 20.503

Name	Slope °	Azimuth °	Wp	Wall d/h m	Face	Bifacial	Wp counted
roof east	25	-90	1,500	—	front	—	yes
roof west	25	90	1,500	—	front	—	yes
Total counted			3,000				

Location: Typical rural off-grid area in Namibia.
Database PVGIS-SARAH3 2005–2023 loss 14 % azimuth 0 = south, 90 = west, −90 = east.
Price bands and charts use UTC+1 from longitude (15° per hour), not the political time zone.
Peak hour 2017-11-16 11:03 local (10:03 UTC) 2,458 W 0.819 W/Wp of 3,000 Wp.
Database gaps: 10 days with 0 yield while the sun reached the horizon at noon. 2008-01-23, 2008-03-01, 2008-03-06, 2008-05-17, 2008-05-18, 2009-04-18, 2009-04-19, 2009-08-15, 2009-08-16, 2016-10-16. Yield charts skip them. The simulation uses the lowest-yield day of that month.
Sell when the export price is above 0. At 0 cent export PV yield only, not the battery. Do not sell when the earning is negative. At 15:00 import/export scheduling.

Click here to work on this simulation. If the click does nothing, copy the address below and paste it in the browser. PEGE energy sim server has to run.

http://127.0.0.1:8765/form?name=Namibia+-+Tsumkwe&simname=We+start+with+3+kW+PV+and+16+kWh+battery&lat=-19.592&lon=20.503&startyear=2005&endyear=2023&loss=14.0&raddatabase=auto&usehorizon=1&outdir=%2Fhome%2Ffounder%2Finter

Scenario — house, heat pump, battery
Simple house in rural off-grid Africa Namibia - Tsumkwe -19.592, 20.503

Chapter	Parameter	Value
Building	Design out / in / heat	10.0 °C / 20.0 °C / 800 W
	Heat on / cool on / ground	17.0 °C / 26.0 °C / 19.0 °C
	Curve / flow min / max	0.4 / 25.0 °C / 55.0 °C
	Thermal mass of the house	25.0 kWh/K
	Household only	2.0 kWh/day
DHW	Litres at 40 °C / tank	100 L tank 62.0 °C 8–18 h
	Water out of the pipe Q1–Q4	21 °C 19 °C 18 °C 20 °C
Heat pump	Source	air
	COP −10/0/10 @ 35 °C	1.8 2.2 2.8
	COP −10/0/10 @ 50 °C	1.5 1.8 2.3
	kW −10/0/10 @ 35 °C	0.8 1.0 1.2
	kW −10/0/10 @ 50 °C	0.6 0.8 1.2
Battery	kWh / C-rate / SOC min–max–start	16.0 kWh C 0.5 5 / 95 / 50 %
	Nameplate	Standard 16 × 314 Ah LFP
	Charge / discharge η	95 % / 90 %
Grid	Inverter / grid connection	3.0 kW / 0.0 kW
	Max export	0.0 kW
	Import cap Jan–Jun kW	Jan 1 Feb 1 Mar 1 Apr 1 May 1 Jun 1
	Import cap Jul–Dec kW	Jul 1 Aug 1 Sep 1 Oct 1 Nov 1 Dec 1
Cars	Lunch DC / night AC	0.0 kWh @ 0.0 kW night 2.0 kWh @ 1.0 kW

Clock is winter time UTC+1. Emergency import is an hour above the monthly kW cap.

Records 1–10 contribution of each PV
Namibia - Tsumkwe -19.592, 20.503

PV	2017-11-16 10:03	2006-12-31 11:03	2011-01-31 11:03	2017-12-27 11:03	2007-01-01 11:03	2015-11-22 10:03	2007-12-30 11:03	2008-01-28 11:03	2022-02-07 11:03	2007-01-01 10:03
roof east	1,267	1,172	1,192	1,161	1,164	1,246	1,158	1,176	1,179	1,273
roof west	1,191	1,263	1,242	1,258	1,250	1,164	1,249	1,228	1,225	1,129
Watt at record	2,458	2,435	2,433	2,418	2,414	2,410	2,407	2,404	2,404	2,402
Percent of installed peak	81.9	81.2	81.1	80.6	80.5	80.3	80.2	80.1	80.1	80.1

Values are watts at that hour. Date and time are UTC. Record 2,458 W (81.9 % of 3,000 Wp).

Hours at or above a share of the record
Namibia - Tsumkwe -19.592, 20.503

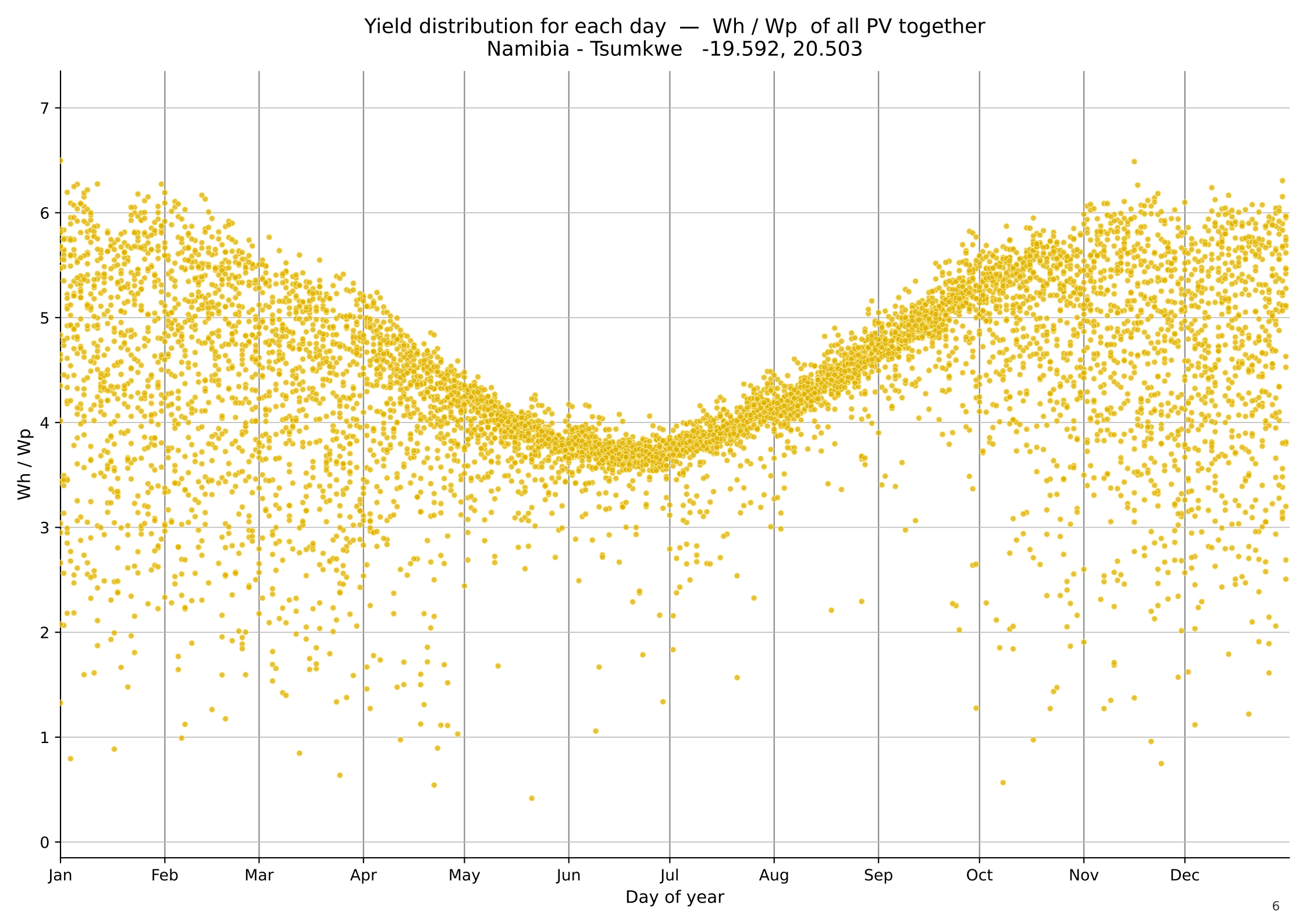
Of the record	Hours	Watts
98 %	6	2,409 W
96 %	23	2,360 W
94 %	84	2,311 W
92 %	303	2,262 W
90 %	809	2,212 W

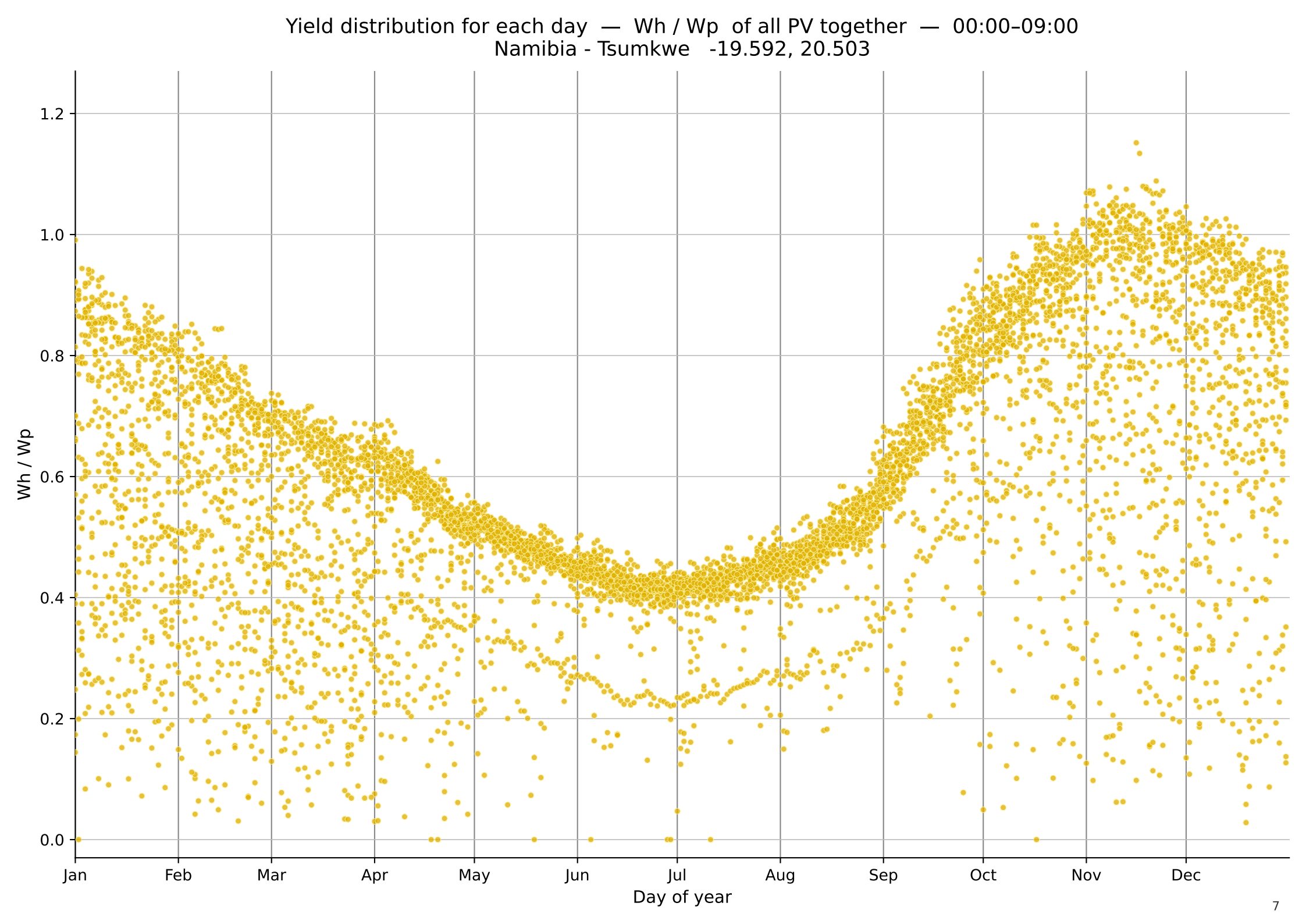
Record hour = 2,458 W combined.

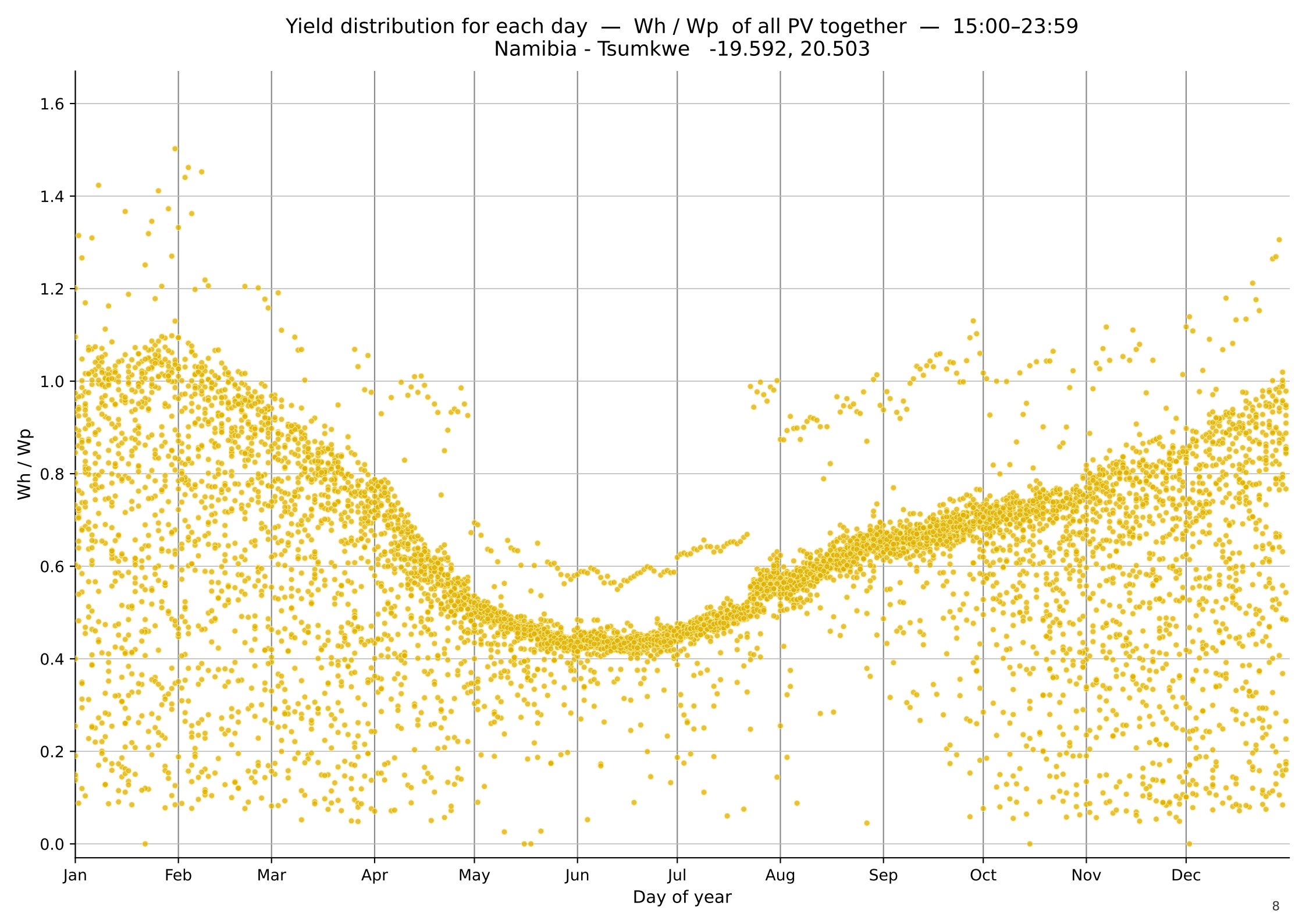
Records of each photovoltaic field
Namibia - Tsumkwe -19.592, 20.503

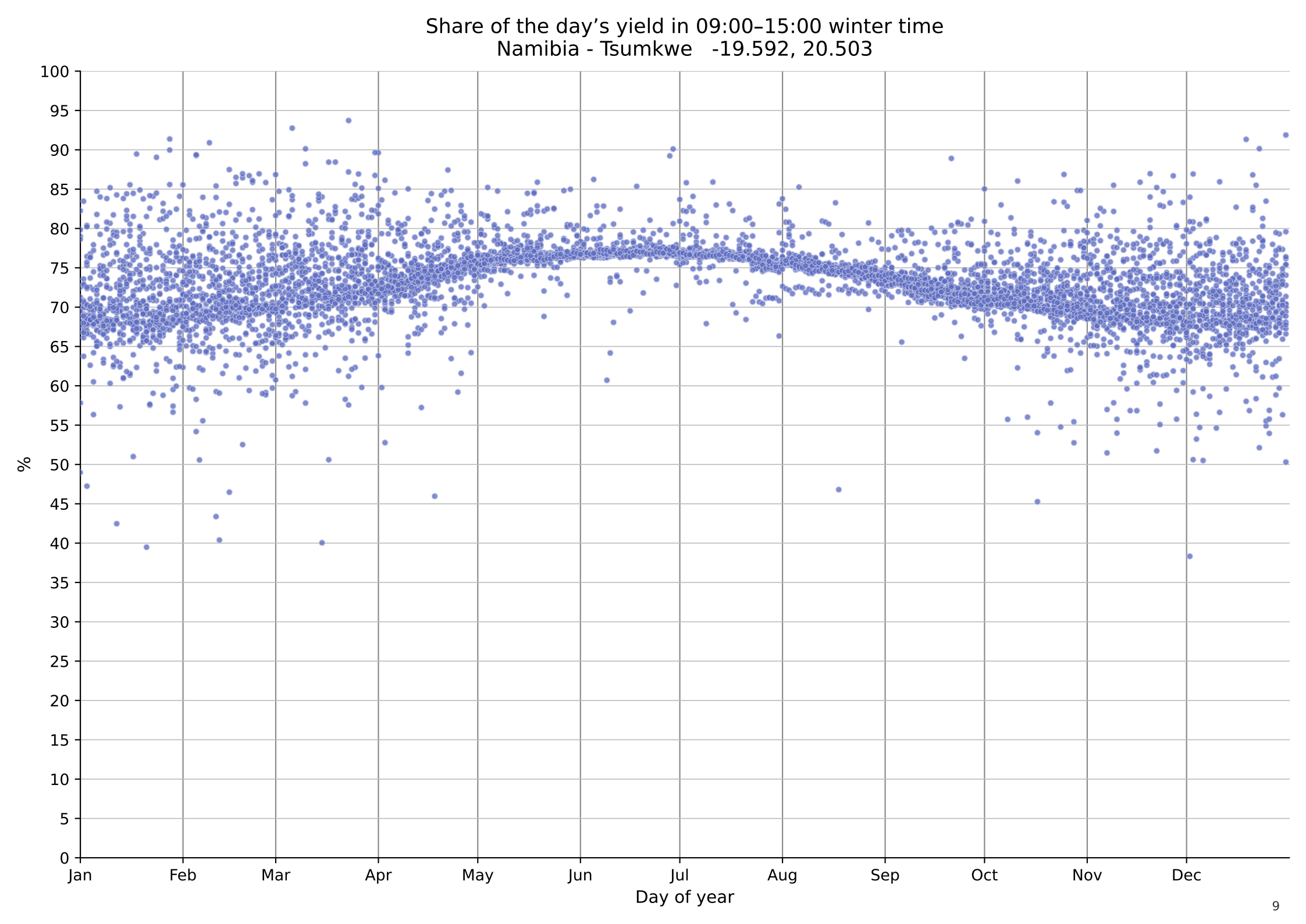
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
roof east	2017-11-16 09:03	1,332	88.8	3	8	55	229	727
roof west	2005-12-31 12:03	1,360	90.6	1	1	15	52	152

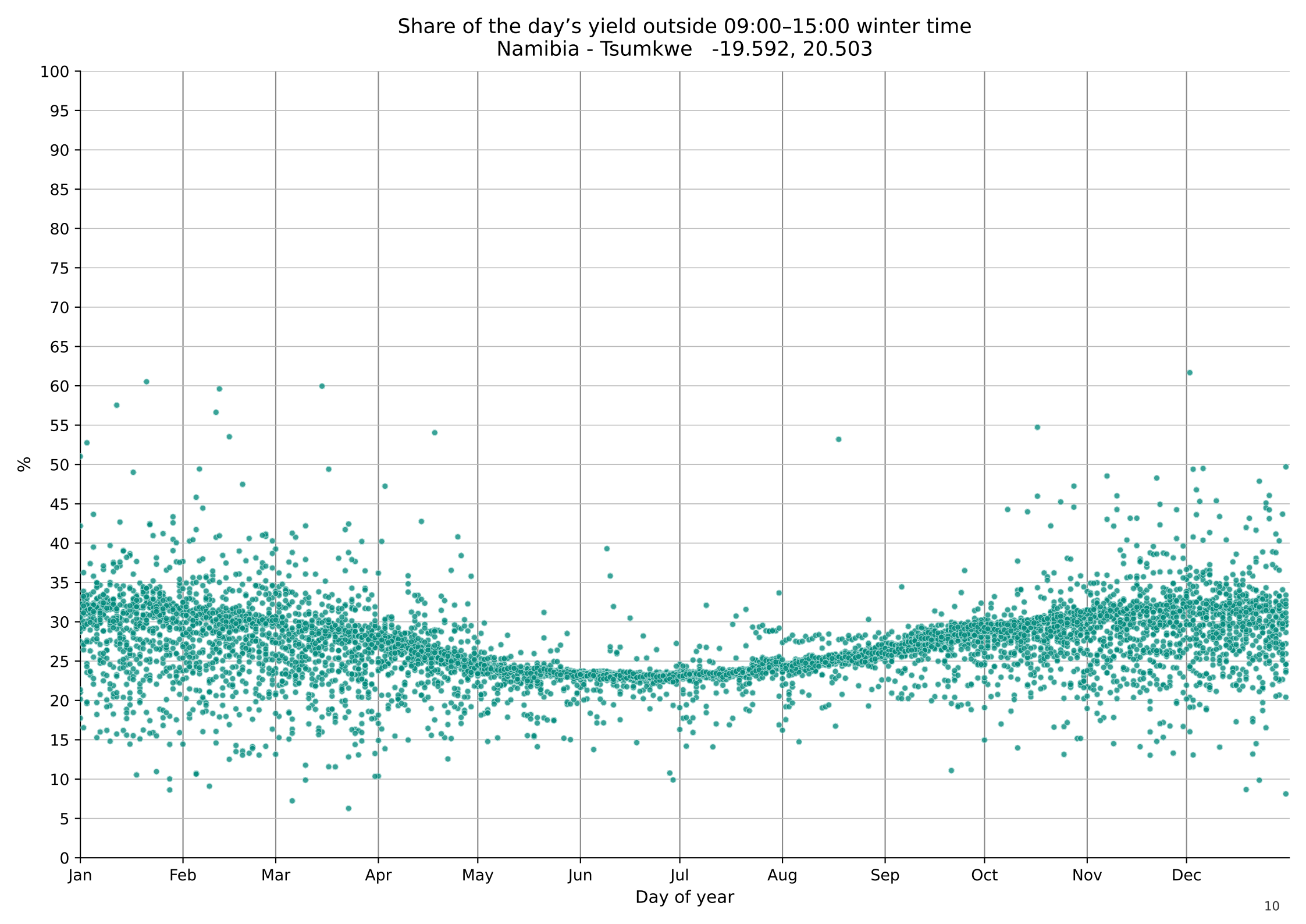
Watts is the highest hour of that field. % is of its own Wp. Hours are the count of hours at or above that share of its own record. Use this to size the MPPT or the inverter for that field.

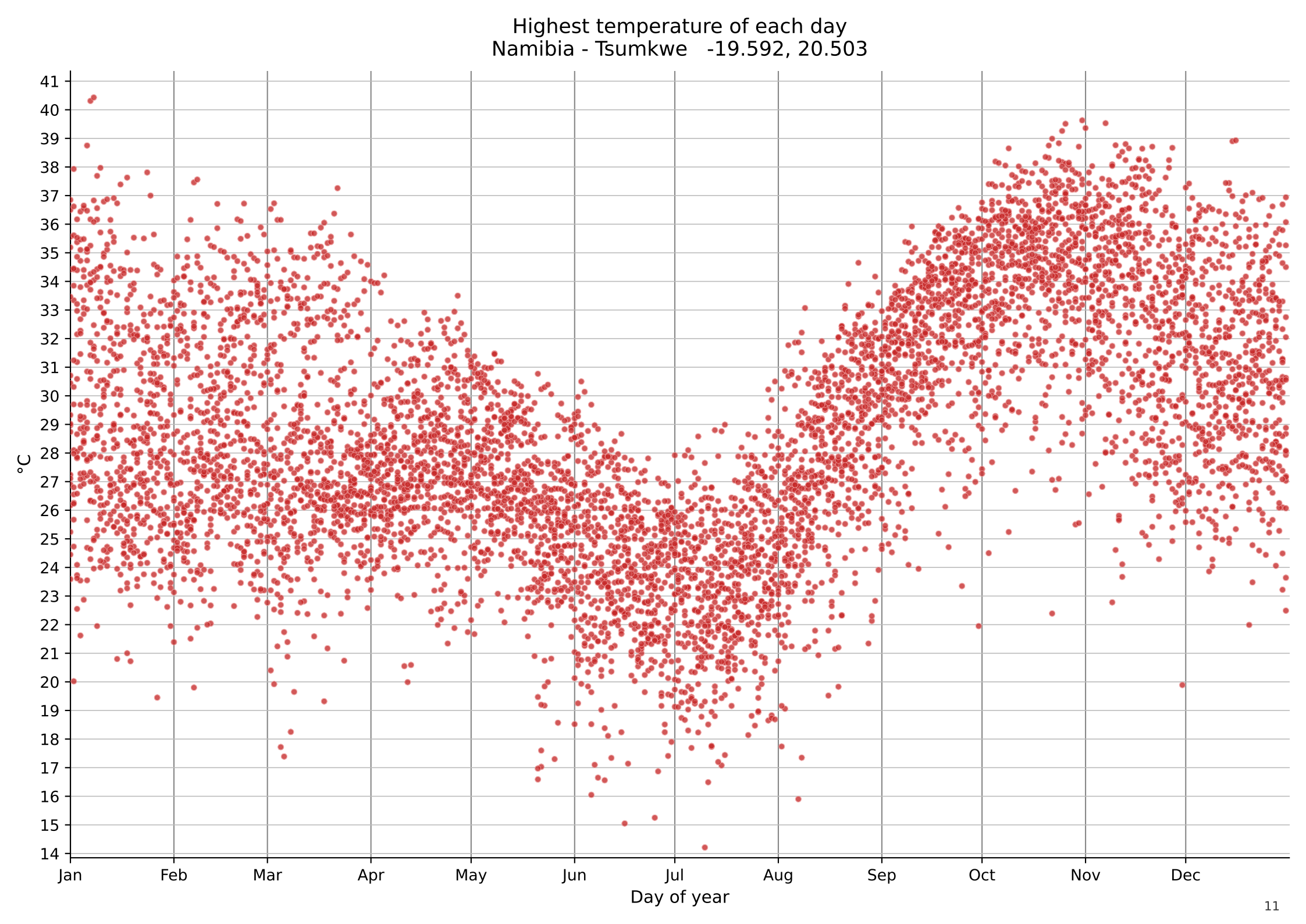

Yield distribution for each day — Wh / Wp of all PV together
Namibia - Tsumkwe -19.592, 20.503
Wh / Wp
0
1
2
3
4
5
6
7
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

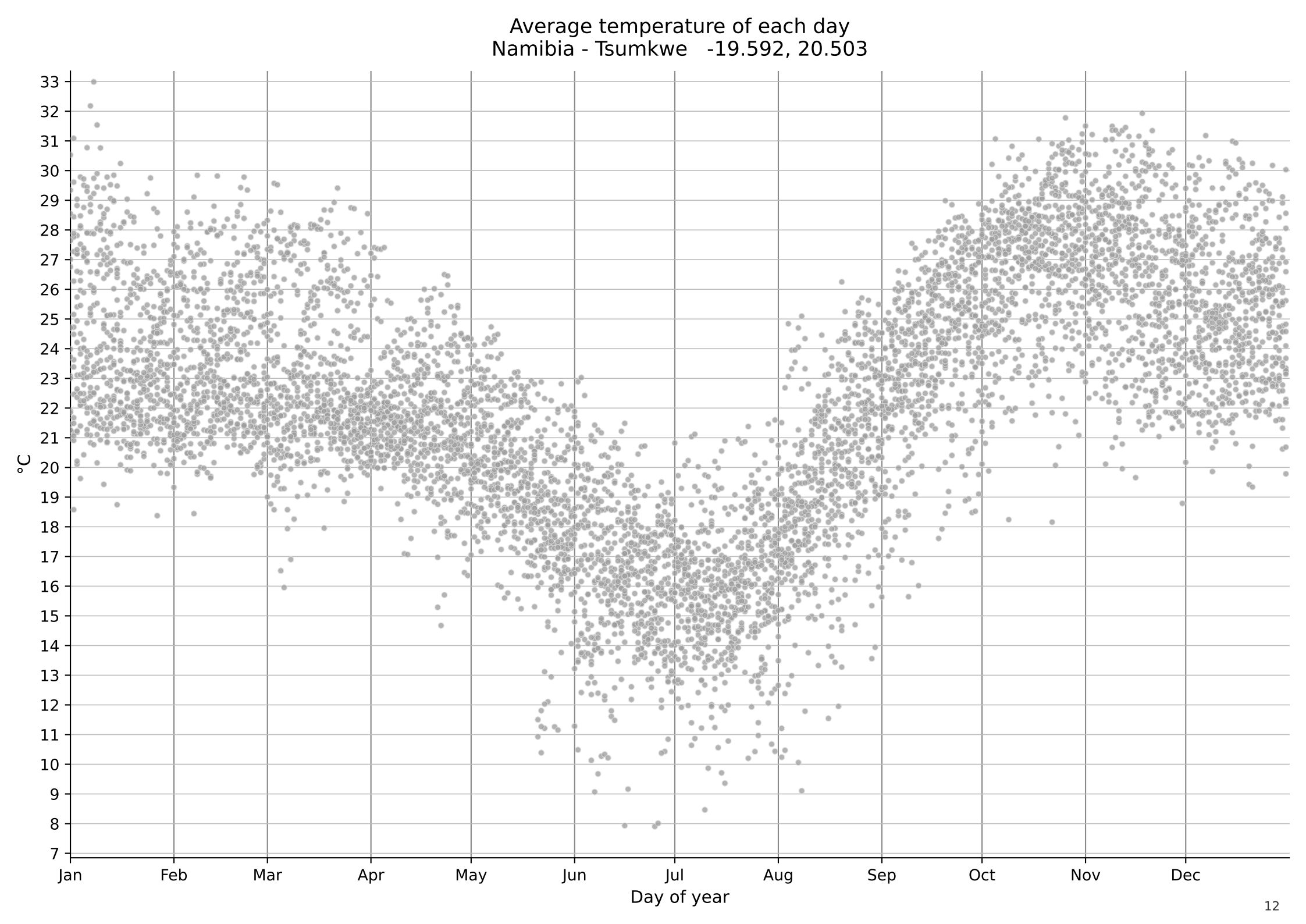

Yield distribution for each day — Wh / Wp of all PV together — 00:00–09:00
Namibia - Tsumkwe -19.592, 20.503
Wh / Wp
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

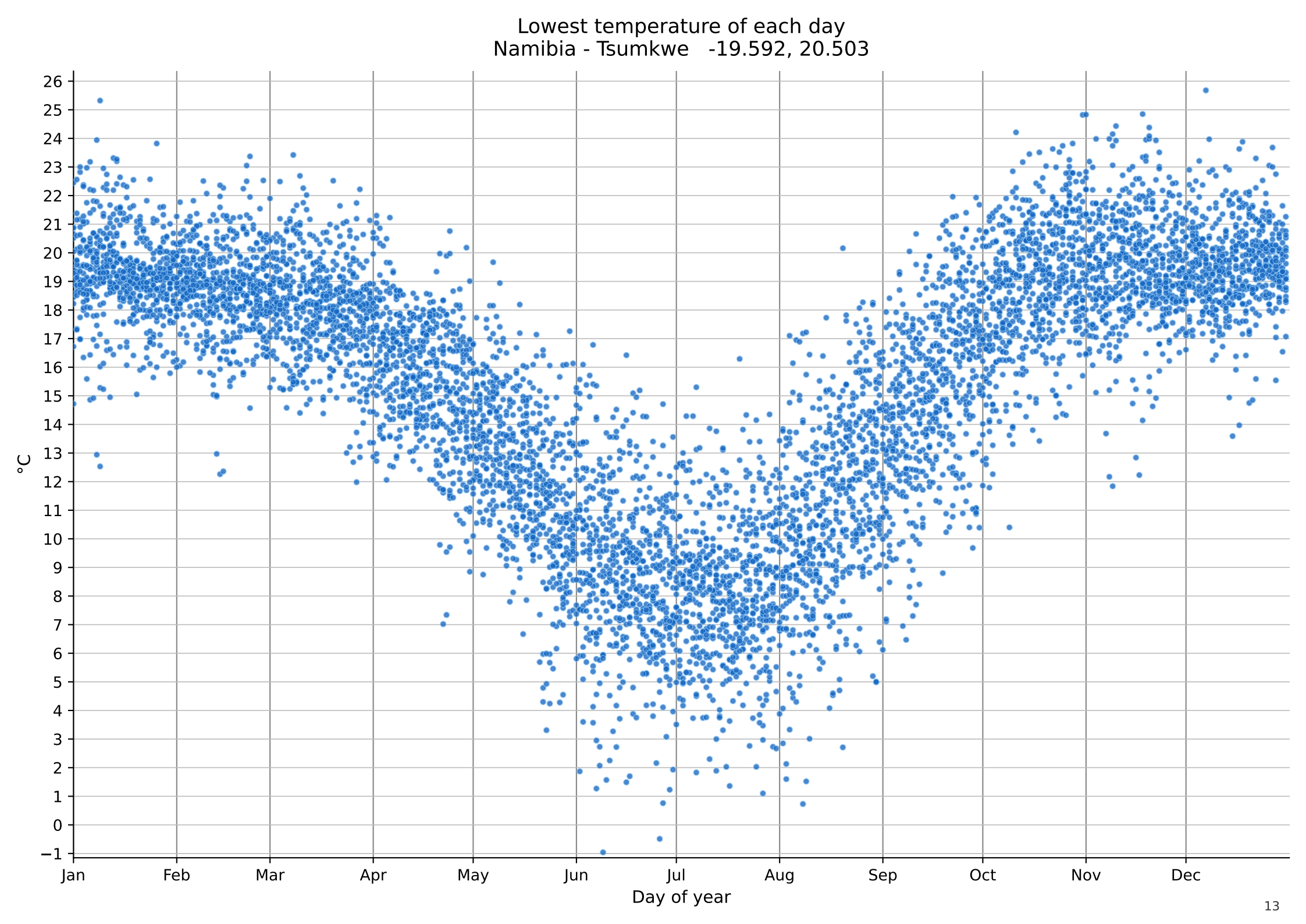

Yield distribution for each day — Wh / Wp of all PV together — 15:00–23:59
Namibia - Tsumkwe -19.592, 20.503
Wh / Wp
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

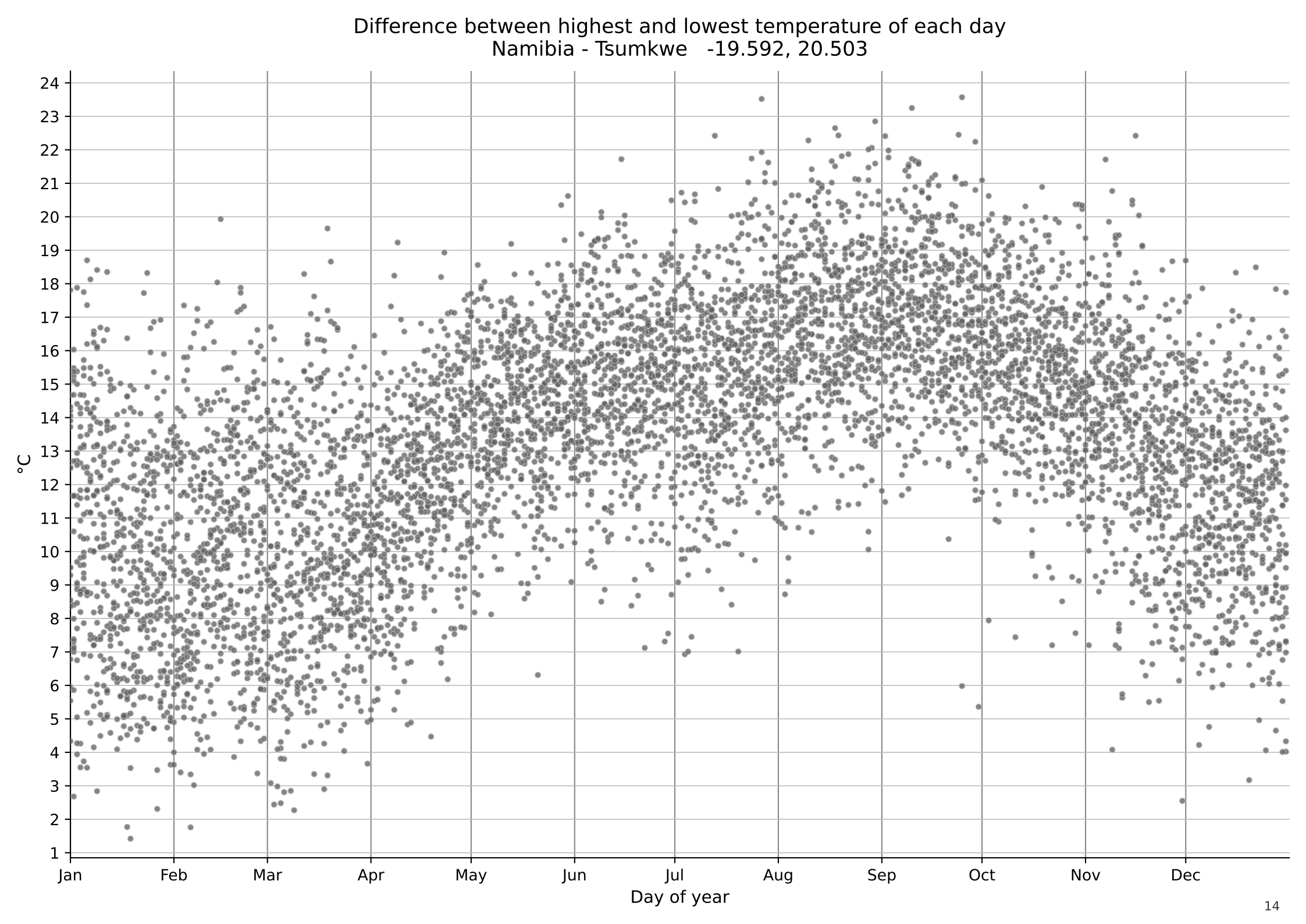

Share of the day’s yield in 09:00–15:00 winter time
Namibia - Tsumkwe -19.592, 20.503
%
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Share of the day’s yield outside 09:00–15:00 winter time
Namibia - Tsumkwe -19.592, 20.503
%
Day of year
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100


Highest temperature of each day
Namibia - Tsumkwe -19.592, 20.503
°C
41
40
39
38
37
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Average temperature of each day
Namibia - Tsumkwe -19.592, 20.503
°C
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Lowest temperature of each day
Namibia - Tsumkwe -19.592, 20.503
°C
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
−1
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Difference between highest and lowest temperature of each day
Namibia - Tsumkwe -19.592, 20.503
°C
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

Monthly and yearly specific yield (kWh/kWp = Wh/Wp)
Namibia - Tsumkwe -19.592, 20.503

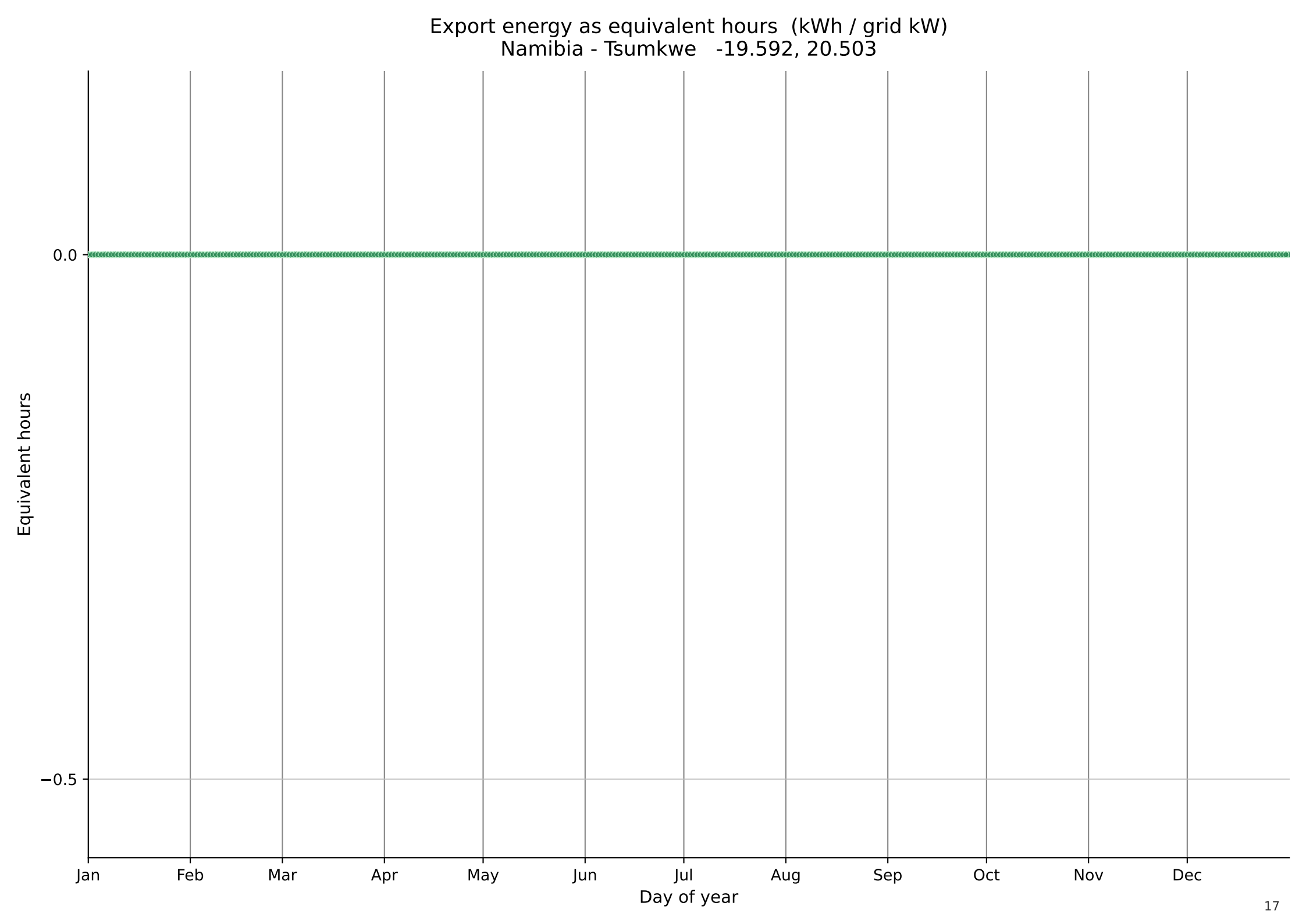
Month / year		roof east 25°/-90° 1,500 Wp	roof west 25°/90° 1,500 Wp	All together
January	Maximum	160.54	157.19	156.39
	average	144.05	138.94	141.49
	minimum	117.95	112.04	115.00
February	Maximum	143.58	141.34	142.35
	average	129.63	123.94	126.78
	minimum	107.27	107.03	107.15
March	Maximum	147.33	137.54	142.43
	average	131.52	125.29	128.40
	minimum	118.12	113.42	115.77
April	Maximum	139.62	135.91	137.76
	average	123.88	119.92	121.90
	minimum	107.26	100.24	103.75
May	Maximum	125.55	124.44	124.27
	average	121.16	117.51	119.34
	minimum	109.64	105.95	107.79
June	Maximum	115.06	117.17	113.66
	average	110.86	109.01	109.94
	minimum	98.54	100.44	102.08
July	Maximum	126.75	133.79	124.99
	average	120.66	118.12	119.39
	minimum	109.83	107.84	110.92
August	Maximum	138.36	148.13	137.65
	average	133.93	134.56	134.24
	minimum	120.01	128.22	128.23
September	Maximum	152.57	166.12	151.80
	average	146.33	146.32	146.32
	minimum	135.11	136.44	136.25
October	Maximum	164.25	166.17	161.60
	average	154.30	149.19	151.74
	minimum	137.70	133.41	135.66
November	Maximum	168.96	158.12	163.54
	average	144.34	138.35	141.35
	minimum	125.68	118.87	124.50
December	Maximum	160.49	163.91	154.94
	average	147.83	140.37	144.10
	minimum	136.39	127.61	132.00
All years	Maximum	1,678.9	1,727.9	1,643.9
	average	1,608.5	1,561.5	1,585.0
	minimum	1,495.0	1,495.8	1,531.1

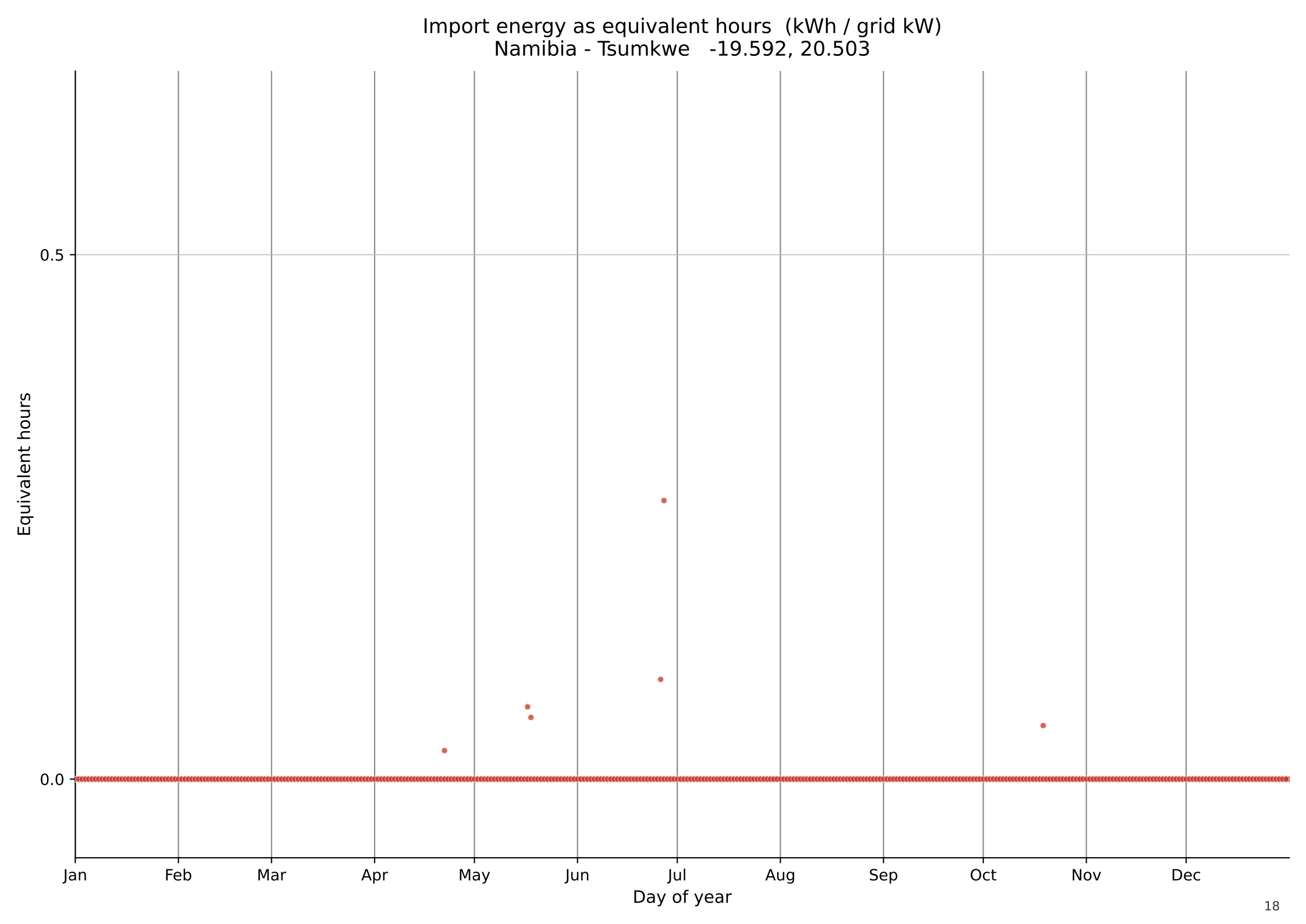
Highest combined yield hour: 2017-11-16 10:03 UTC 2,458.2 W (0.819 W/Wp) of 3,000 Wp installed. Use this hour to size battery charge power.

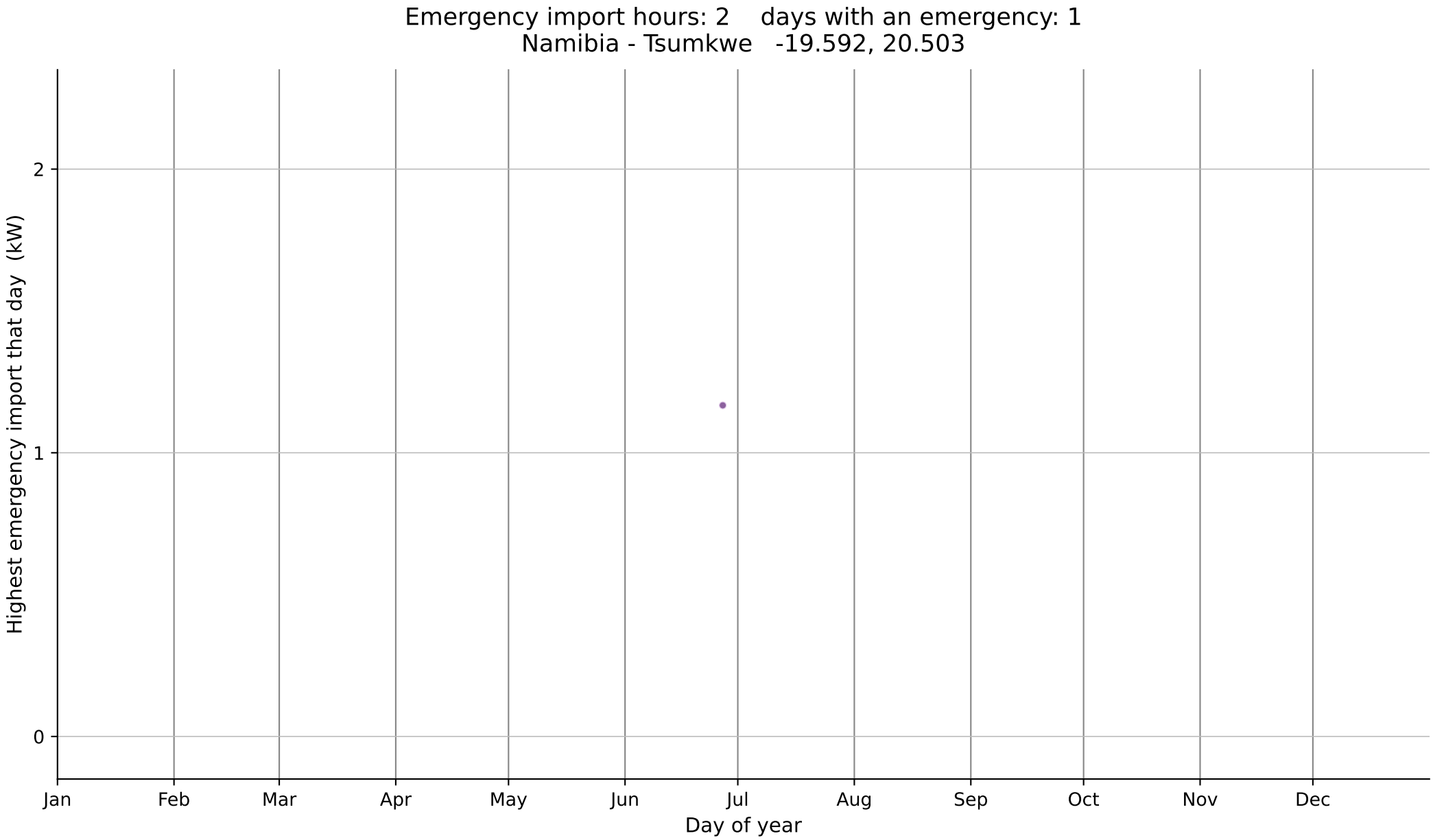
Monthly and yearly total yield (kWh)
Namibia - Tsumkwe -19.592, 20.503

Month / year		roof east 25°/-90° 1,500 Wp	roof west 25°/90° 1,500 Wp	All together
January	Maximum	240.82	235.78	469.18
	average	216.07	208.40	424.47
	minimum	176.92	168.06	344.99
February	Maximum	215.37	212.00	427.04
	average	194.44	185.91	380.35
	minimum	160.90	160.54	321.45
March	Maximum	221.00	206.30	427.30
	average	197.27	187.94	385.21
	minimum	177.18	170.13	347.31
April	Maximum	209.42	203.87	413.29
	average	185.82	179.88	365.70
	minimum	160.89	150.36	311.25
May	Maximum	188.32	186.66	372.81
	average	181.74	176.27	358.01
	minimum	164.46	158.92	323.38
June	Maximum	172.58	175.75	340.97
	average	166.30	163.51	329.81
	minimum	147.81	150.66	306.25
July	Maximum	190.13	200.69	374.98
	average	180.99	177.18	358.16
	minimum	164.74	161.77	332.75
August	Maximum	207.55	222.20	412.96
	average	200.90	201.84	402.73
	minimum	180.02	192.32	384.70
September	Maximum	228.85	249.18	455.40
	average	219.49	219.48	438.97
	minimum	202.67	204.66	408.75
October	Maximum	246.37	249.25	484.79
	average	231.45	223.78	455.23
	minimum	206.55	200.12	406.98
November	Maximum	253.45	237.18	490.63
	average	216.51	207.53	424.04
	minimum	188.52	178.30	373.49
December	Maximum	240.74	245.87	464.83
	average	221.75	210.56	432.31
	minimum	204.58	191.42	396.00
All years	Maximum	2,518.3	2,591.8	4,931.7
	average	2,412.7	2,342.3	4,755.0
	minimum	2,242.5	2,243.7	4,593.3

Highest combined yield hour: 2017-11-16 10:03 UTC 2,458.2 W (0.819 W/Wp) of 3,000 Wp installed. Use this hour to size battery charge power.


Export energy as equivalent hours (kWh / grid kW)
Namibia - Tsumkwe   -19.592, 20.503
0.0
−0.5
Equivalent hours
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Import energy as equivalent hours (kWh / grid kW)
Namibia - Tsumkwe -19.592, 20.503
0.5
0.0
Equivalent hours
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year



Emergency = this hour’s grid import is above the month’s max import kW. 2 kW means up to 48 kWh in 24 hours. More than 2 kW in an hour is the higher grid fee.
Import inside that cap is not an emergency. Preferred cheap hours are 00:00–06:00 and 09:00–15:00 winter time.

Energy in kWh
Namibia - Tsumkwe -19.592, 20.503

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export to grid													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	-0
month average	-0	-0	-0	-0	-0	0	-0	-0	-0	-0	-0	-0	-0
month minimum	-0	-0	-0	-0	-0	0	-0	-0	-0	-0	-0	-0	-0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
day minimum	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
Import from grid													
month Maximum	0	0	0	0	2	6	0	0	0	1	0	0	6
month average	0	0	0	0	0	0	0	0	0	0	0	0	1
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.5	1.2	4.5	0.0	0.0	0.0	0.9	0.0	0.0	4.5
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total energy used for house													
month Maximum	177	155	187	166	167	221	237	181	168	208	201	191	2,022
month average	152	135	150	157	164	170	191	170	163	165	163	156	1,937
month minimum	147	132	147	151	160	155	165	163	160	148	143	148	1,859
day Maximum	10.6	7.2	7.1	7.1	7.9	16.5	13.8	10.0	7.6	9.4	9.2	8.5	16.5
day average	4.9	4.8	4.8	5.2	5.3	5.7	6.2	5.5	5.4	5.3	5.4	5.0	5.3
day minimum	4.7	4.7	4.7	4.8	4.8	4.8	4.9	4.8	4.8	4.8	4.8	4.8	4.7

Month rows: kWh in that month. Day rows: best / average / worst day.
Total energy used for house = household + car + heating + cooling + DHW + direct electric.
PV not exported and not marked wasted is still in the battery, or could not leave because the grid was already full. It is not house use.

Energy by price
Namibia - Tsumkwe -19.592, 20.503

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	-0
month average	-0	-0	-0	-0	-0	0	-0	-0	-0	-0	-0	-0	-0
month minimum	-0	-0	-0	-0	-0	0	-0	-0	-0	-0	-0	-0	-0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
day minimum	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
Import													
month Maximum	0	0	0	0	0	2	0	0	0	0	0	0	2
month average	0	0	0	0	0	0	0	0	0	0	0	0	0
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.1	0.2	1.6	0.0	0.0	0.0	0.3	0.0	0.0	1.6
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peak grid fee													
month Maximum	0	0	0	3	6	14	0	0	0	2	0	0	14
month average	0	0	0	0	0	1	0	0	0	0	0	0	1
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Import incl. peak fee													
month Maximum	0	0	0	3	7	16	0	0	0	2	0	0	16
month average	0	0	0	0	0	1	0	0	0	0	0	0	1
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.1	0.2	1.6	0.0	0.0	0.0	0.3	0.0	0.0	1.6
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Balance													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	-0
month average	-0	-0	-0	-0	-0	-1	-0	-0	-0	-0	-0	-0	-1
month minimum	-0	-0	-0	-3	-7	-16	-0	-0	-0	-2	-0	-0	-16
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
day minimum	-0.0	-0.0	-0.0	-0.1	-0.2	-1.6	-0.0	-0.0	-0.0	-0.3	-0.0	-0.0	-1.6

Currency in Your units. Import and export use the cent/kWh of that hour. Peak fee 6.33 / kW / month is the highest import hour of the month (hourly stand-in for the 15-minute peak) and is added to that month's
Sell only when export is above 0. At 0 cent, export PV yield only, not the battery. Do not sell when the earning is negative.

Export in kWh during price hours
Namibia - Tsumkwe -19.592, 20.503

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export total													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	-0
month average	-0	-0	-0	-0	-0	0	-0	-0	-0	-0	-0	-0	-0
month minimum	-0	-0	-0	-0	-0	0	-0	-0	-0	-0	-0	-0	-0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
day minimum	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
Export during high price hours													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	-0
month average	-0	-0	-0	-0	-0	0	-0	-0	-0	-0	-0	-0	-0
month minimum	-0	-0	-0	-0	-0	0	-0	-0	-0	-0	-0	-0	-0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
day minimum	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
Export during medium price hours													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	0
month average	-0	-0	0	-0	0	0	0	0	0	0	0	0	-0
month minimum	-0	-0	0	-0	0	0	0	0	0	0	0	0	-0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	-0.0	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0
day minimum	-0.0	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0
Export during low price hours													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	0
month average	0	0	0	0	-0	0	-0	0	-0	0	-0	-0	-0
month minimum	0	0	0	0	-0	0	-0	0	-0	0	-0	-0	-0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	0.0	0.0	0.0	0.0	-0.0	0.0	-0.0	0.0	-0.0	0.0	-0.0	-0.0	-0.0
day minimum	0.0	0.0	0.0	0.0	-0.0	0.0	-0.0	0.0	-0.0	0.0	-0.0	-0.0	-0.0

kWh exported while that price band was active. Not the money. Winter time. High 06:00–09:00 and 17:00–20:00, sold first. Low 09:00–15:00, sold last. Medium is the rest.

Heat pump
Namibia - Tsumkwe -19.592, 20.503

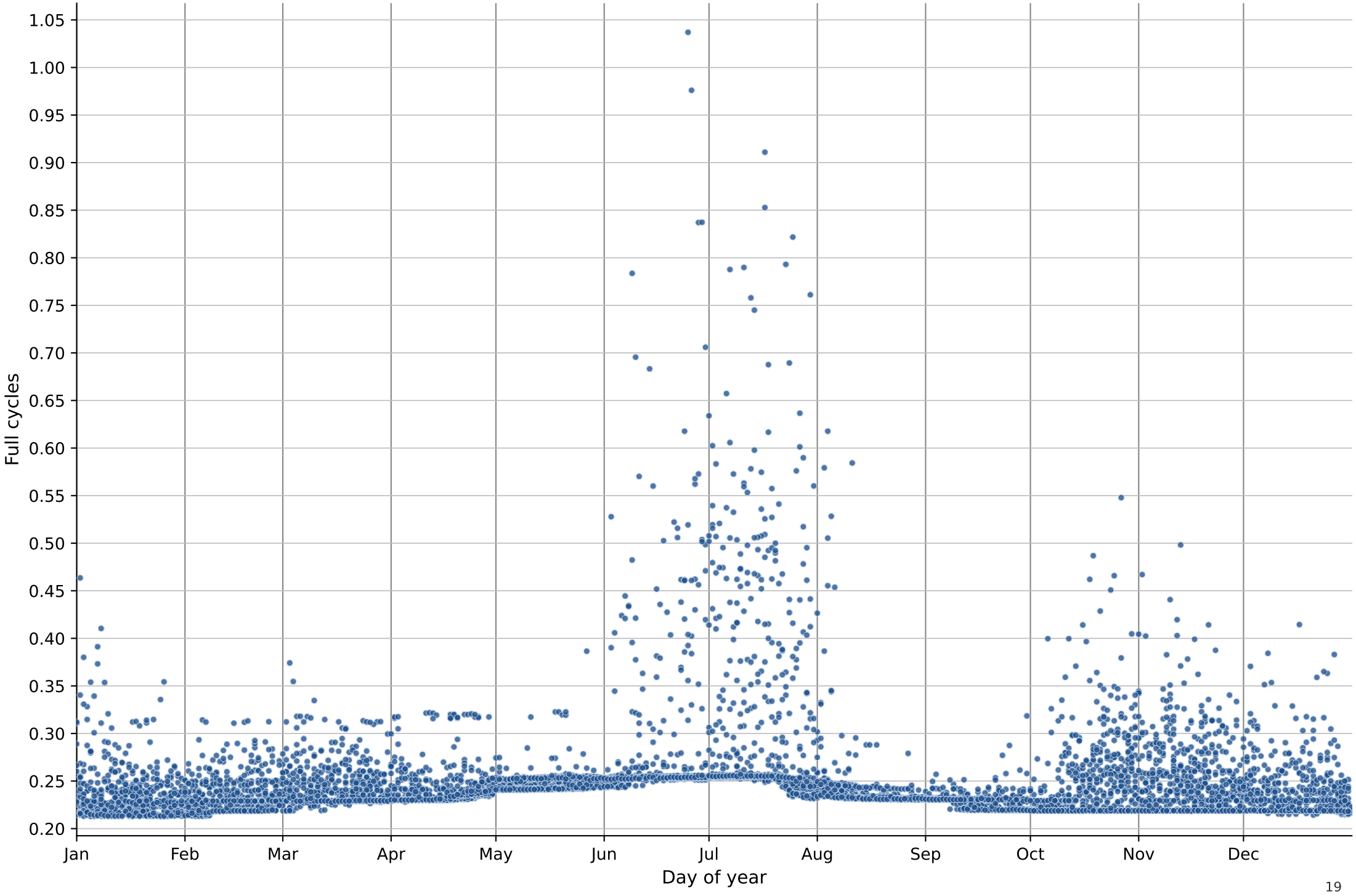
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	0	0	0	14	17	74	84	29	12	0	0	0	216
month average	0	0	0	4	12	24	38	18	3	0	0	0	99
month minimum	0	0	0	0	0	9	13	8	0	0	0	0	41
day Maximum	0.0	0.0	0.0	2.1	3.1	11.3	8.7	5.1	2.4	0.0	0.0	0.0	11.3
day average	0.0	0.0	0.0	0.1	0.4	0.8	1.2	0.6	0.1	0.0	0.0	0.0	0.3
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cooling													
month Maximum	31	23	40	22	13	1	0	5	19	60	58	43	216
month average	6	2	3	8	3	0	0	1	15	17	20	8	84
month minimum	0	0	0	0	0	0	0	0	3	0	0	0	5
day Maximum	5.9	2.4	2.4	2.3	2.3	0.5	0.0	2.3	2.7	4.6	4.4	3.8	5.9
day average	0.2	0.1	0.1	0.3	0.1	0.0	0.0	0.0	0.5	0.6	0.7	0.3	0.2
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DHW													
month Maximum	23	21	23	25	26	27	29	28	26	24	23	24	297
month average	23	21	23	24	26	26	28	27	25	24	23	24	293
month minimum	22	20	22	24	25	25	27	26	25	24	23	24	290
day Maximum	0.8	0.8	0.8	0.9	1.0	1.2	1.2	1.2	0.9	0.8	0.8	0.8	1.2
day average	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8
day minimum	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.7
Direct electric													
month Maximum	8	1	1	0	1	37	30	7	0	14	15	4	72
month average	1	0	0	0	0	5	10	1	0	2	3	1	23
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	2.7	0.4	0.5	0.0	0.7	7.4	5.0	3.0	0.0	1.8	1.8	1.3	7.4
day average	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.1	0.1	0.0	0.1
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

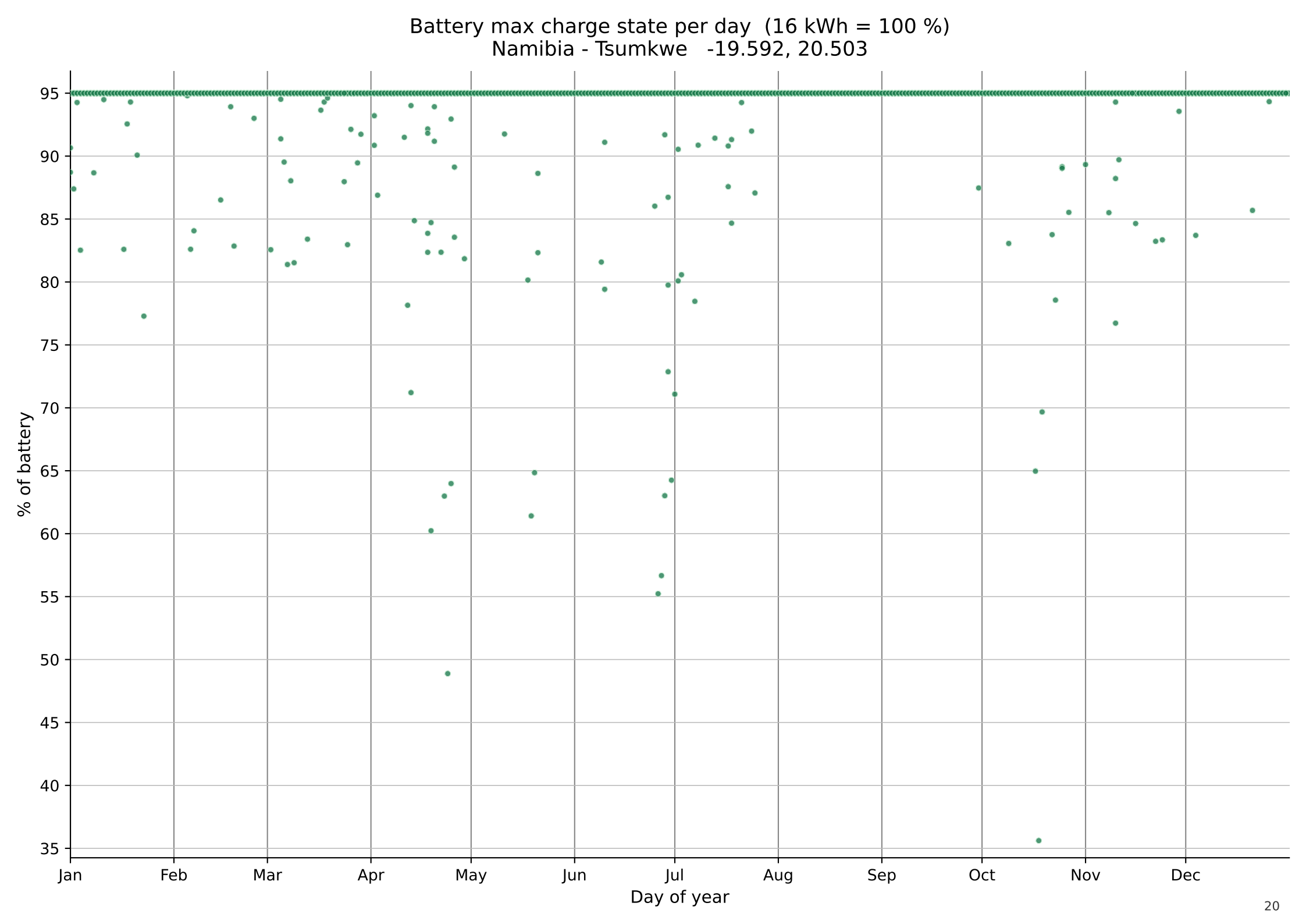
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

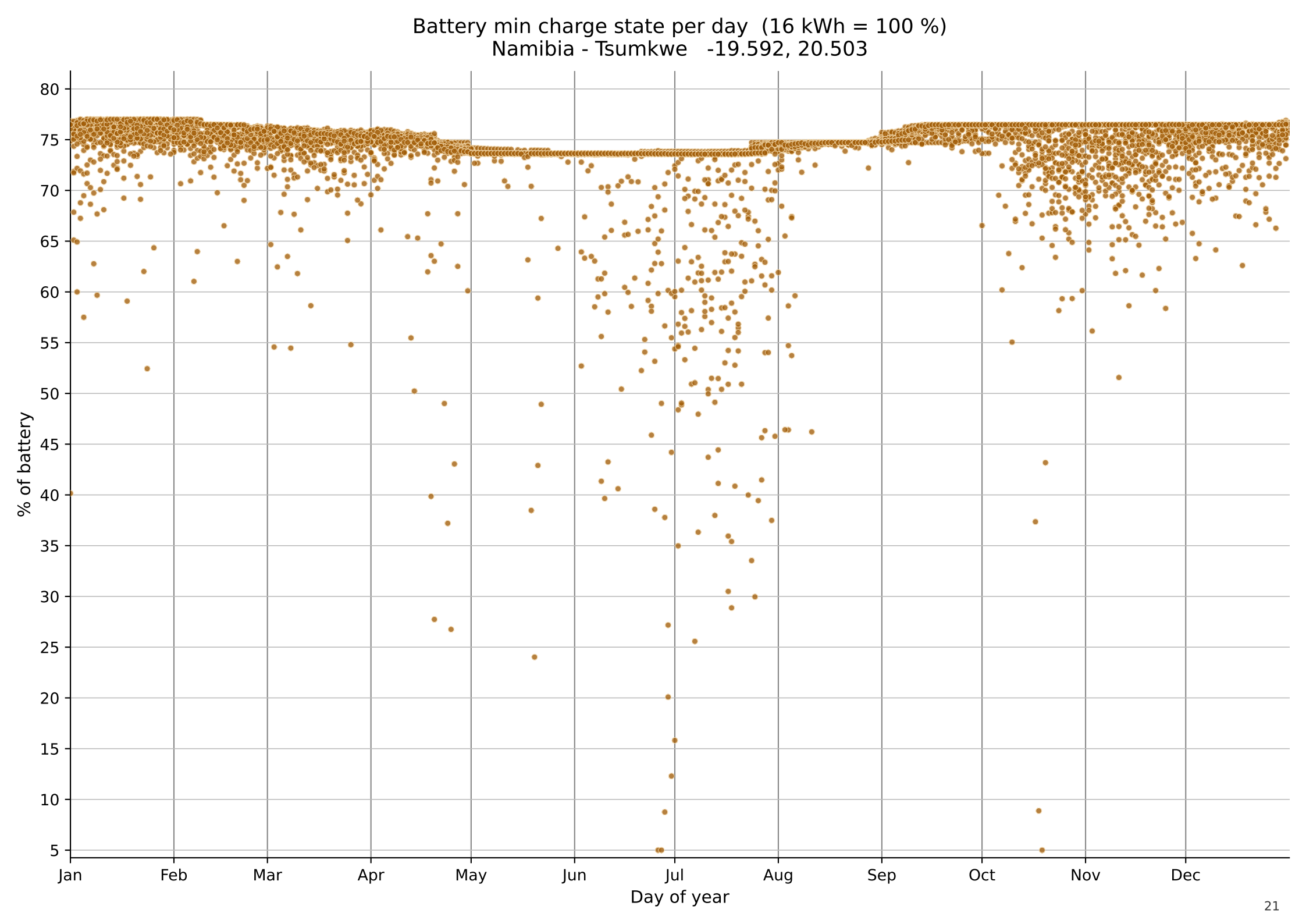
Battery
Namibia - Tsumkwe -19.592, 20.503

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	307	285	264	247	199	165	188	232	280	319	304	304	2,873
month average	261	235	224	198	182	148	152	222	264	279	249	265	2,678
month minimum	173	178	189	145	154	109	101	207	233	213	193	234	2,528
day Maximum	14.4	13.5	12.2	10.6	8.3	7.2	8.0	9.8	12.2	12.7	14.3	13.8	14.4
day average	8.4	8.3	7.2	6.6	5.9	4.9	4.9	7.2	8.8	9.0	8.3	8.5	7.3
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0
Full cycles													
month Maximum	8	7	9	8	8	12	13	8	7	9	9	8	99
month average	7	7	8	7	8	8	10	7	7	8	8	7	92
month minimum	7	6	7	7	8	8	8	7	7	7	7	7	87
day Maximum	0.5	0.3	0.4	0.3	0.4	1.0	0.9	0.6	0.3	0.5	0.5	0.4	1.0
day average	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.3
day minimum	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Charge C													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	1
month average	0	0	0	0	0	0	0	0	0	0	0	0	1
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	1
day Maximum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
day average	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Discharge C													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	1
month average	0	0	0	0	0	0	0	0	0	0	0	0	0
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.2
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Wasted = PV left when the export price is negative and the battery is full. Full cycles = discharge kWh / 16 kWh. Battery export only into hours whose export price is above 0, highest price first. At 0 cent only P


Battery cycles per day (discharge / 16 kWh)
Namibia - Tsumkwe -19.592, 20.503
Full cycles
1.05
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Battery max charge state per day (16 kWh = 100 %)
Namibia - Tsumkwe -19.592, 20.503
% of battery
95
90
85
80
75
70
65
60
55
50
45
40
35
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Battery min charge state per day (16 kWh = 100 %)
Namibia - Tsumkwe -19.592, 20.503
% of battery
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year