Scenario — PV
Old house to improve Austria - Inning 48.182, 15.417

Name	Slope °	Azimuth °	Wp	Wall d/h m	Face	Bifacial	Wp counted
Garage roof	1	0	10,740	—	front	—	yes
Roof West	22	90	19,800	—	front	—	yes
Terrace railing south	90	0	4,620	5 / 4	front	—	yes
Terrace railing north	90	180	4,620	5 / 4	front	—	yes
share central structure east part	8	-90	20,460	—	front	—	yes
share central strucure west part	8	90	20,460	—	front	—	yes
Total counted			80,700				

Location: My most visited location in “lower Austria”, just at the Tesla SuC.
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 2016-05-15 13:10 local (12:10 UTC) 57,191 W 0.709 W/Wp of 80,700 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=Austria+-+Inning&simname=PEN+EWG+only+roof+-+remain+with+air+heat+pump&lat=48.182&lon=15.417&startyear=2005&endyear=2023&loss=14.0&raddatabase=auto&usehorizon=1&outdir=%2Fhome%2Ffounder%2Finter

Scenario — house, heat pump, battery
Old house to improve Austria - Inning 48.182, 15.417

Chapter	Parameter	Value
Building	Design out / in / heat	-10.0 °C / 20.0 °C / 4,000 W
	Heat on / cool on / ground	24.0 °C / 26.0 °C / 10.0 °C
	Curve / flow min / max	1.0 / 25.0 °C / 55.0 °C
	Thermal mass of the house	25.0 kWh/K
	Household only	4.0 kWh/day
DHW	Litres at 40 °C / tank	120 L tank 62.0 °C 8–18 h
	Water out of the pipe Q1–Q4	8 °C 10 °C 12 °C 10 °C
Heat pump	Source	air
	COP −10/0/10 @ 35 °C	2.4 3.4 4.5
	COP −10/0/10 @ 50 °C	1.9 2.6 3.3
	kW −10/0/10 @ 35 °C	4.0 5.0 6.0
	kW −10/0/10 @ 50 °C	3.5 4.5 5.0
Battery	kWh / C-rate / SOC min–max–start	45.0 kWh C 0.5 5 / 95 / 50 %
	Nameplate	—
	Charge / discharge η	95 % / 90 %
Grid	Inverter / grid connection	12.0 kW / 12.0 kW
	Max export	12.0 kW
	Import cap Jan–Jun kW	Jan 10 Feb 9 Mar 8 Apr 6 May 4 Jun 4
	Import cap Jul–Dec kW	Jul 4 Aug 4 Sep 6 Oct 6 Nov 9 Dec 10
Cars	Lunch DC / night AC	0.0 kWh @ 30.0 kW night 6.0 kWh @ 4.0 kW

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

Records 1–10 contribution of each PV
Austria - Inning 48.182, 15.417

PV	2016-05-15 12:10	2009-06-13 11:10	2020-05-24 11:10	2020-05-24 12:10	2013-05-13 11:10	2009-06-13 12:10	2012-05-18 11:10	2009-06-03 11:10	2005-04-22 11:10	2013-05-28 11:10
Garage roof	8,180	8,369	8,302	8,095	8,243	8,121	8,219	8,251	8,152	8,224
Roof West	15,912	14,741	14,686	15,691	14,598	15,609	14,560	14,572	14,359	14,541
Terrace railing south	2,262	2,083	2,248	2,087	2,425	1,921	2,337	2,120	2,899	2,178
Terrace railing north	184	221	214	184	217	198	221	231	153	154
share central structure east part	14,623	15,608	15,436	14,512	15,308	14,636	15,276	15,365	15,102	15,305
share central strucure west part	16,031	15,819	15,710	15,850	15,596	15,854	15,554	15,608	15,375	15,561
Watt at record	57,191	56,841	56,596	56,419	56,387	56,338	56,167	56,146	56,039	55,963
Percent of installed peak	70.9	70.4	70.1	69.9	69.9	69.8	69.6	69.6	69.4	69.3

Values are watts at that hour. Date and time are UTC. Record 57,191 W (70.9 % of 80,700 Wp).

Hours at or above a share of the record
Austria - Inning 48.182, 15.417

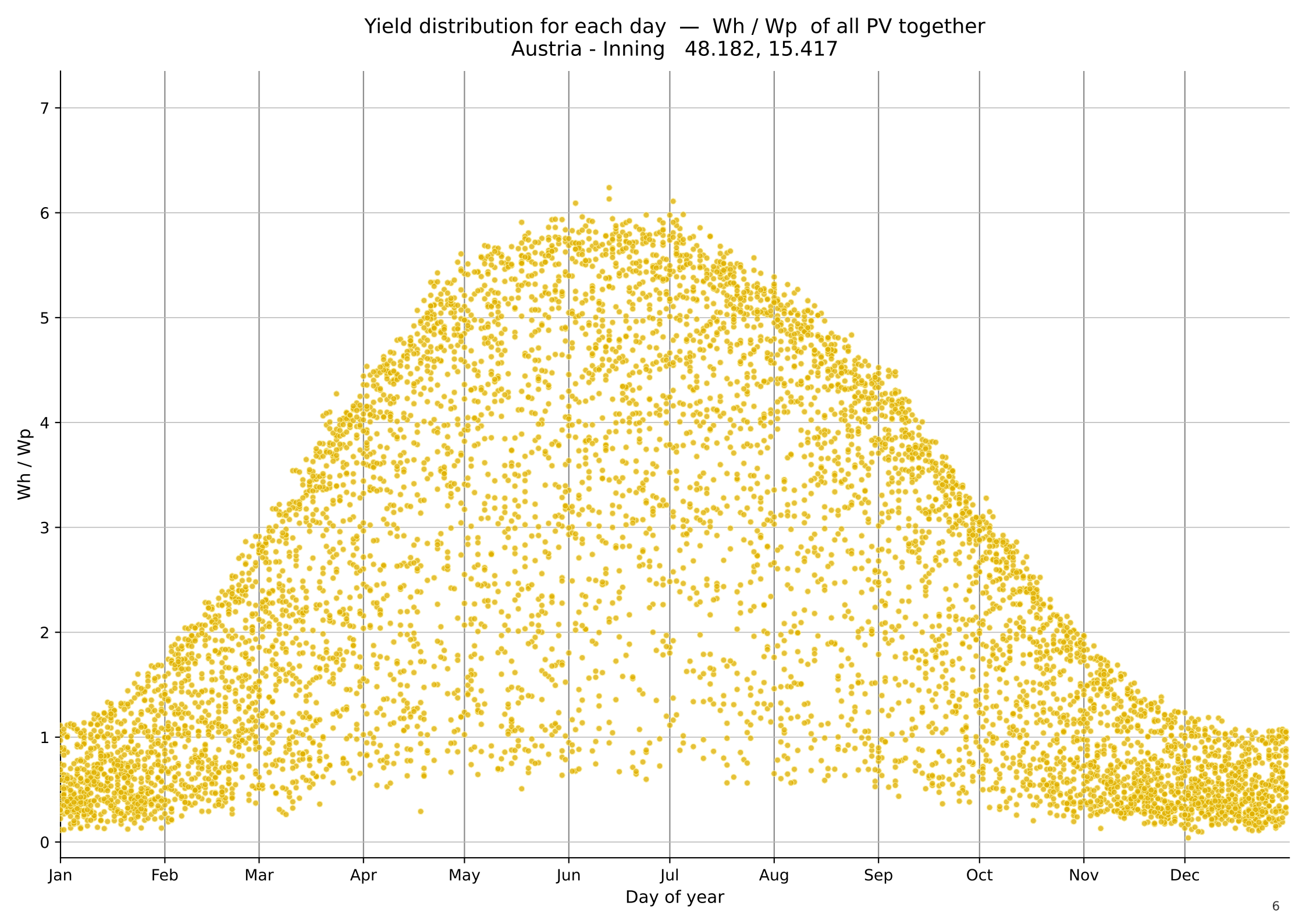
Of the record	Hours	Watts
98 %	8	56,048 W
96 %	32	54,904 W
94 %	90	53,760 W
92 %	272	52,616 W
90 %	646	51,472 W

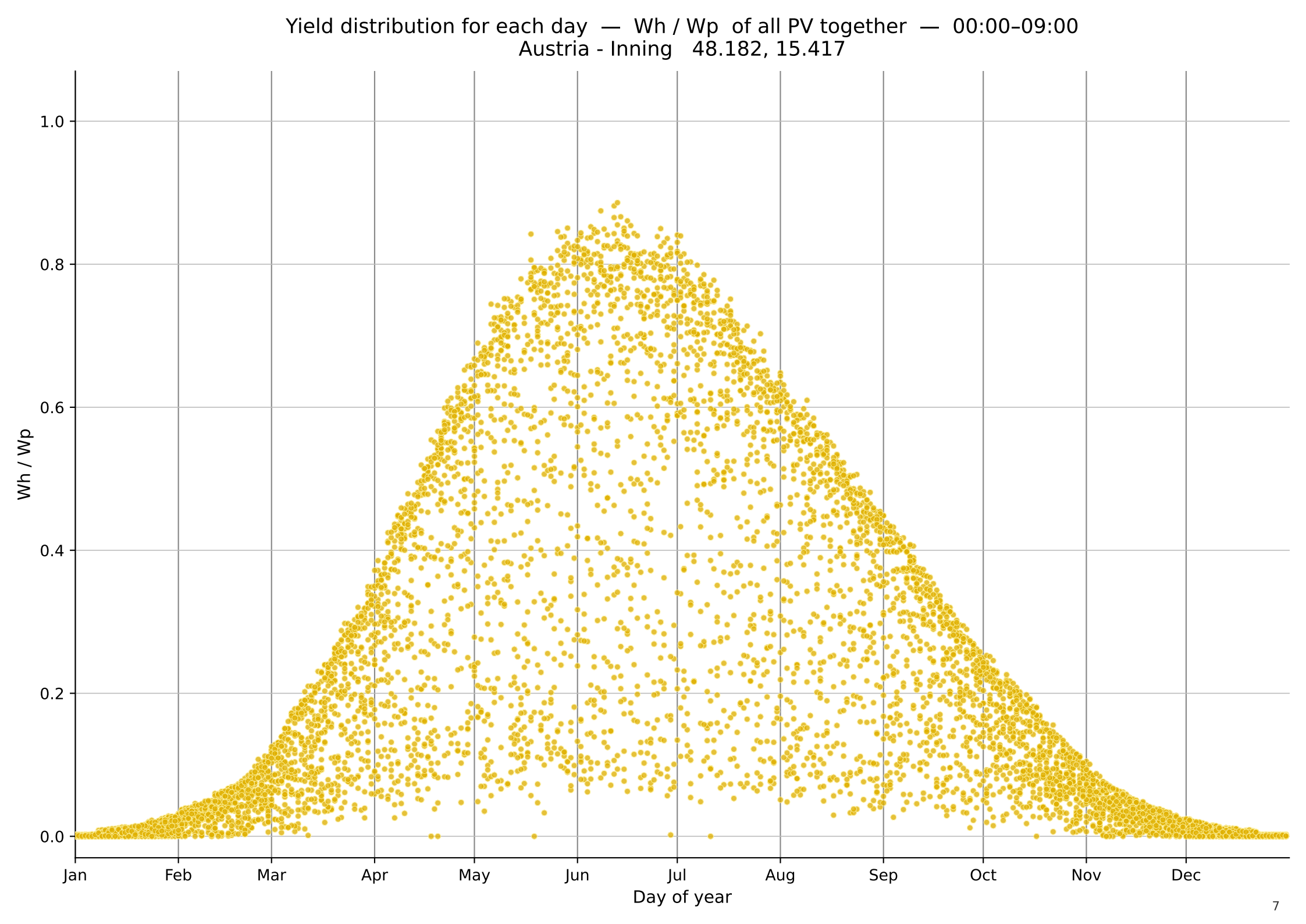
Record hour = 57,191 W combined.

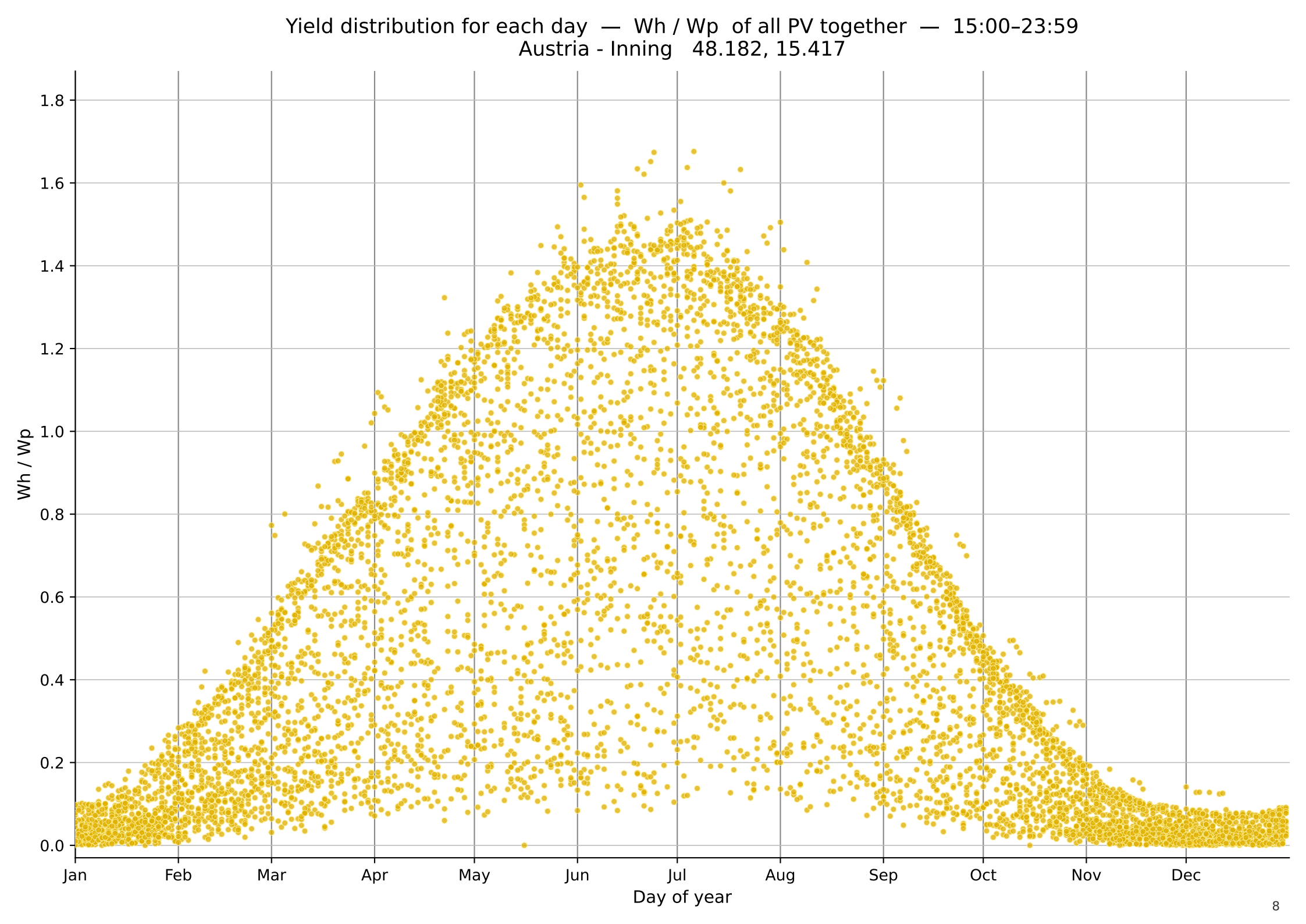
Records of each photovoltaic field
Austria - Inning 48.182, 15.417

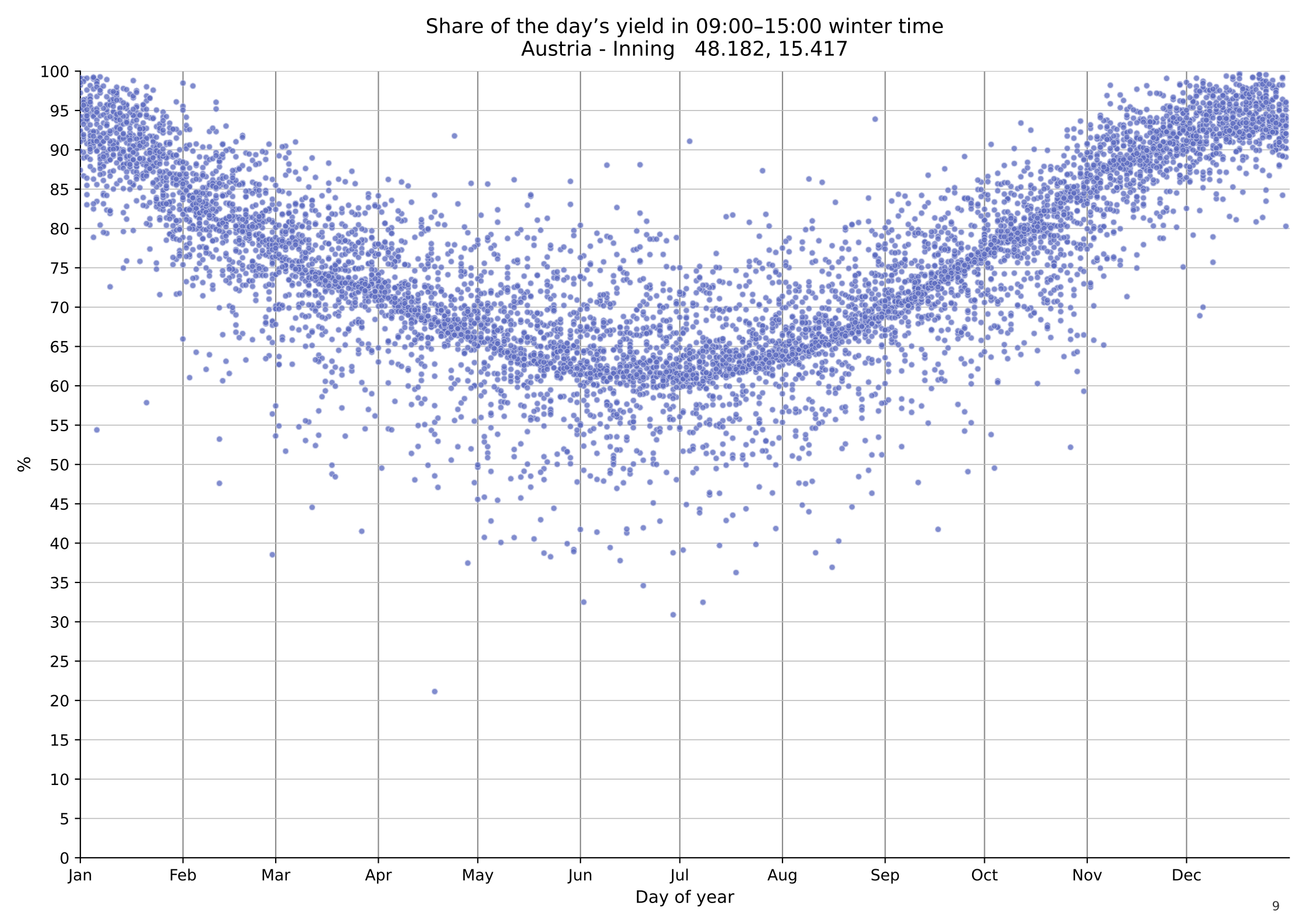
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
Garage roof	2009-06-13 11:10	8,369	77.9	8	33	112	320	671
Roof West	2016-05-15 12:10	15,912	80.4	3	12	30	118	333
Terrace railing south	2009-03-22 11:10	3,507	75.9	8	17	26	45	75
Terrace railing north	2023-06-13 05:10	812	17.6	1	8	25	50	108
share central structure east part	2009-06-13 10:10	15,860	77.5	5	35	121	334	777
share central strucure west part	2016-05-15 12:10	16,031	78.4	4	21	59	189	471

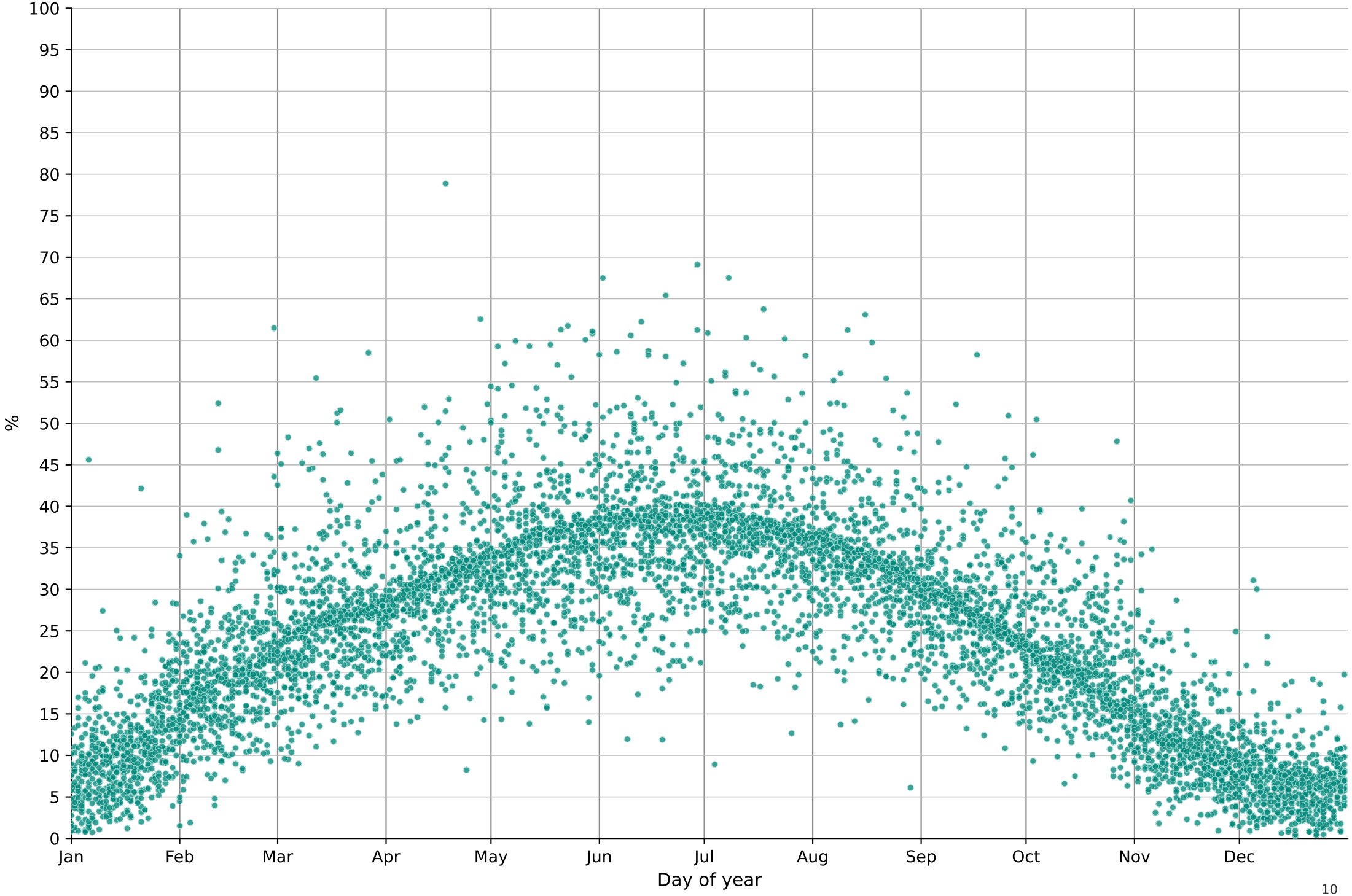
Watts is the highest hour of that field. % is of its own Wp. Hours are the count of hours at or above that share of its own record. Use this to size the MPPT or the inverter for that field.

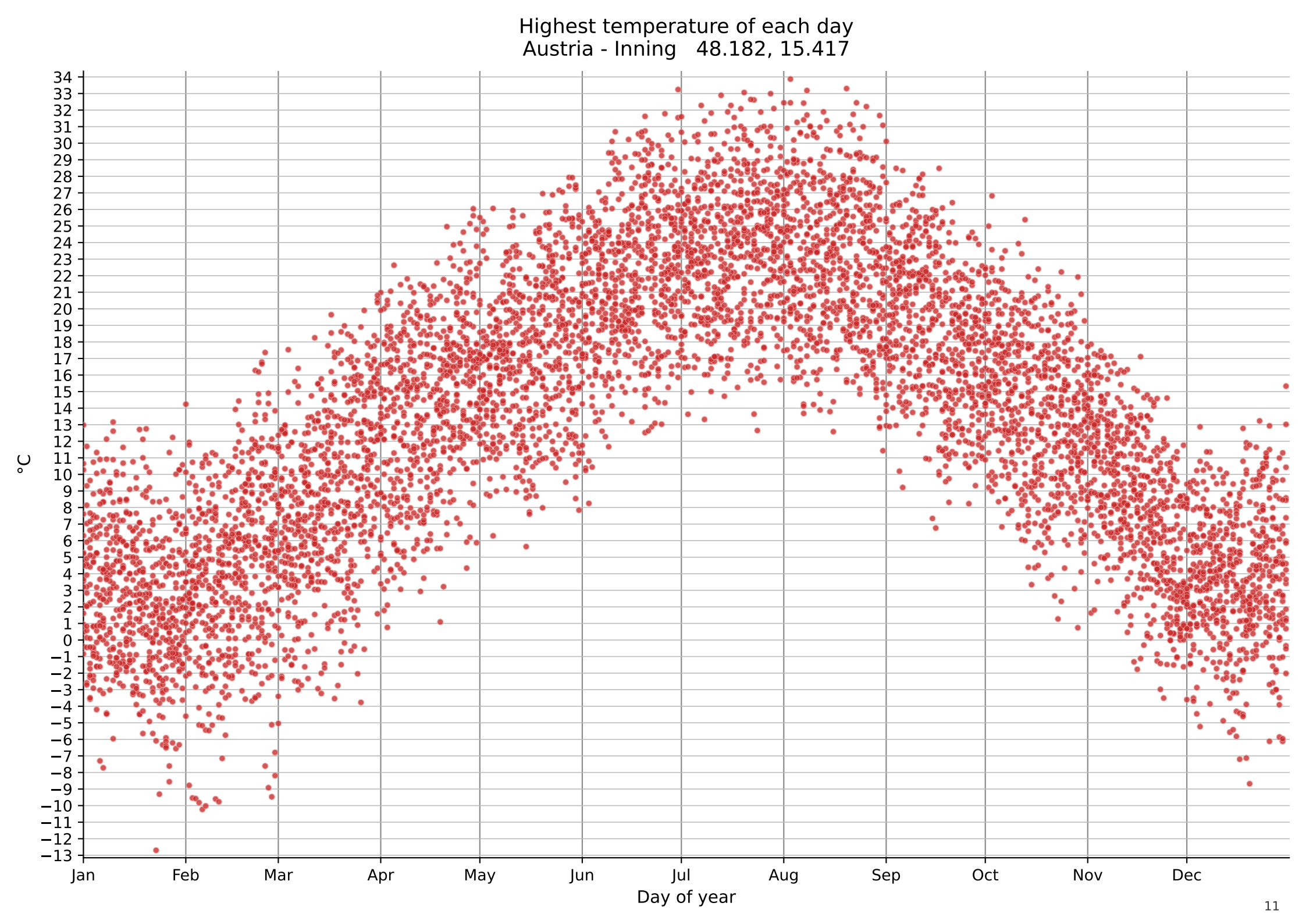

Yield distribution for each day — Wh / Wp of all PV together
Austria - Inning 48.182, 15.417
Wh / Wp
0
1
2
3
4
5
6
7
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

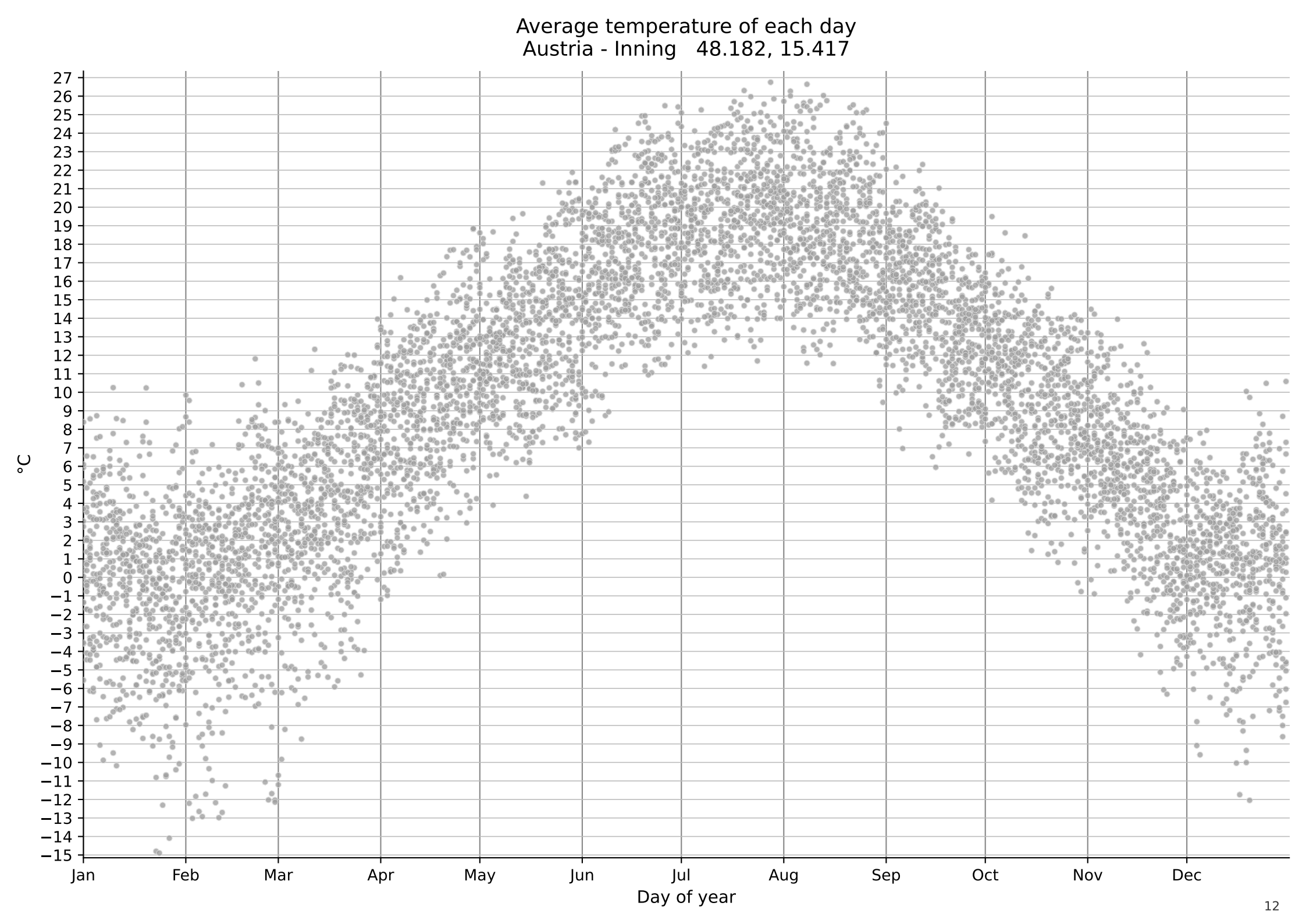

Yield distribution for each day — Wh / Wp of all PV together — 00:00–09:00
Austria - Inning 48.182, 15.417
1.0
0.8
0.6
0.4
0.2
0.0
Wh / Wp
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

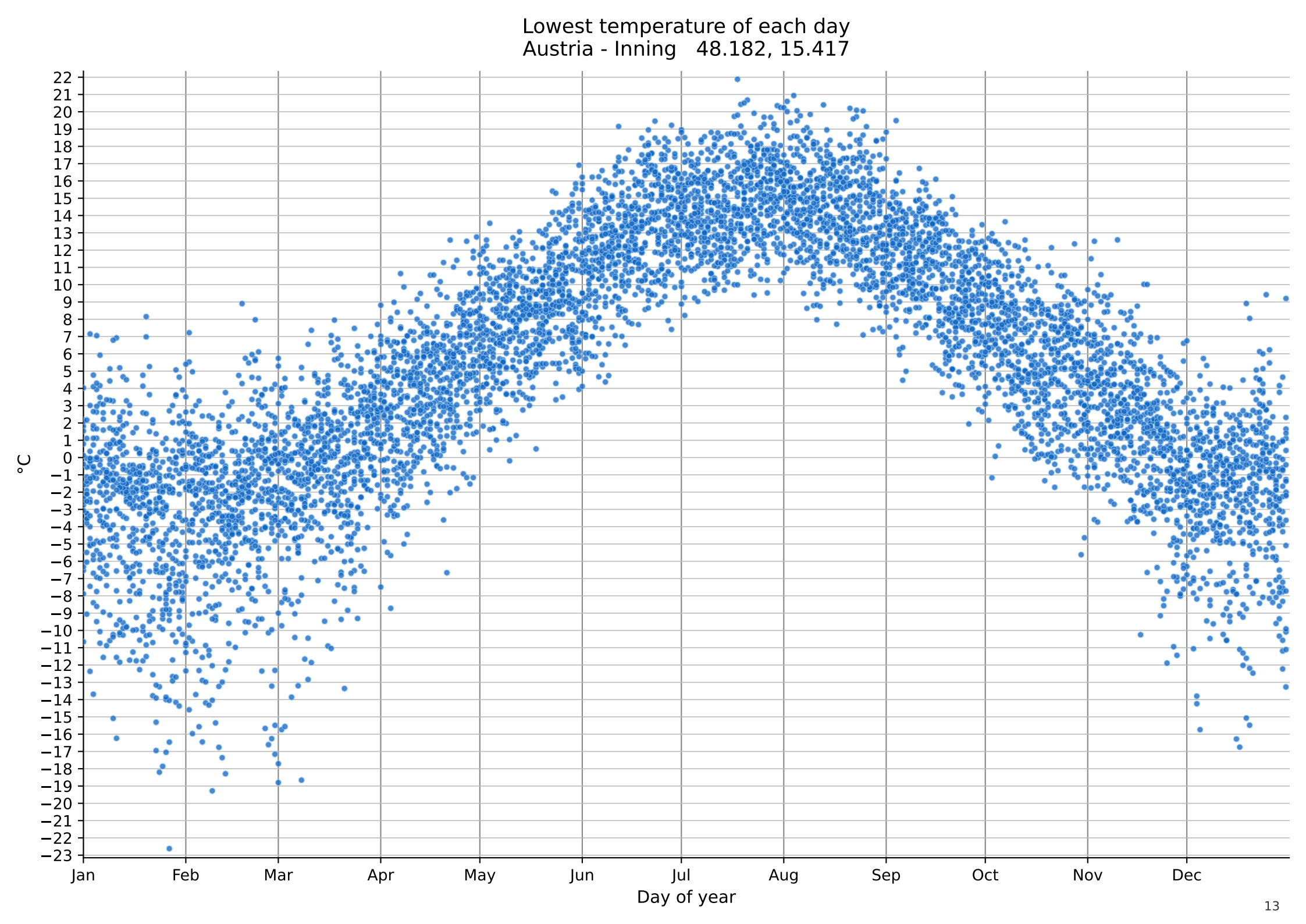

Yield distribution for each day — Wh / Wp of all PV together — 15:00–23:59
Austria - Inning 48.182, 15.417
Wh / Wp
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

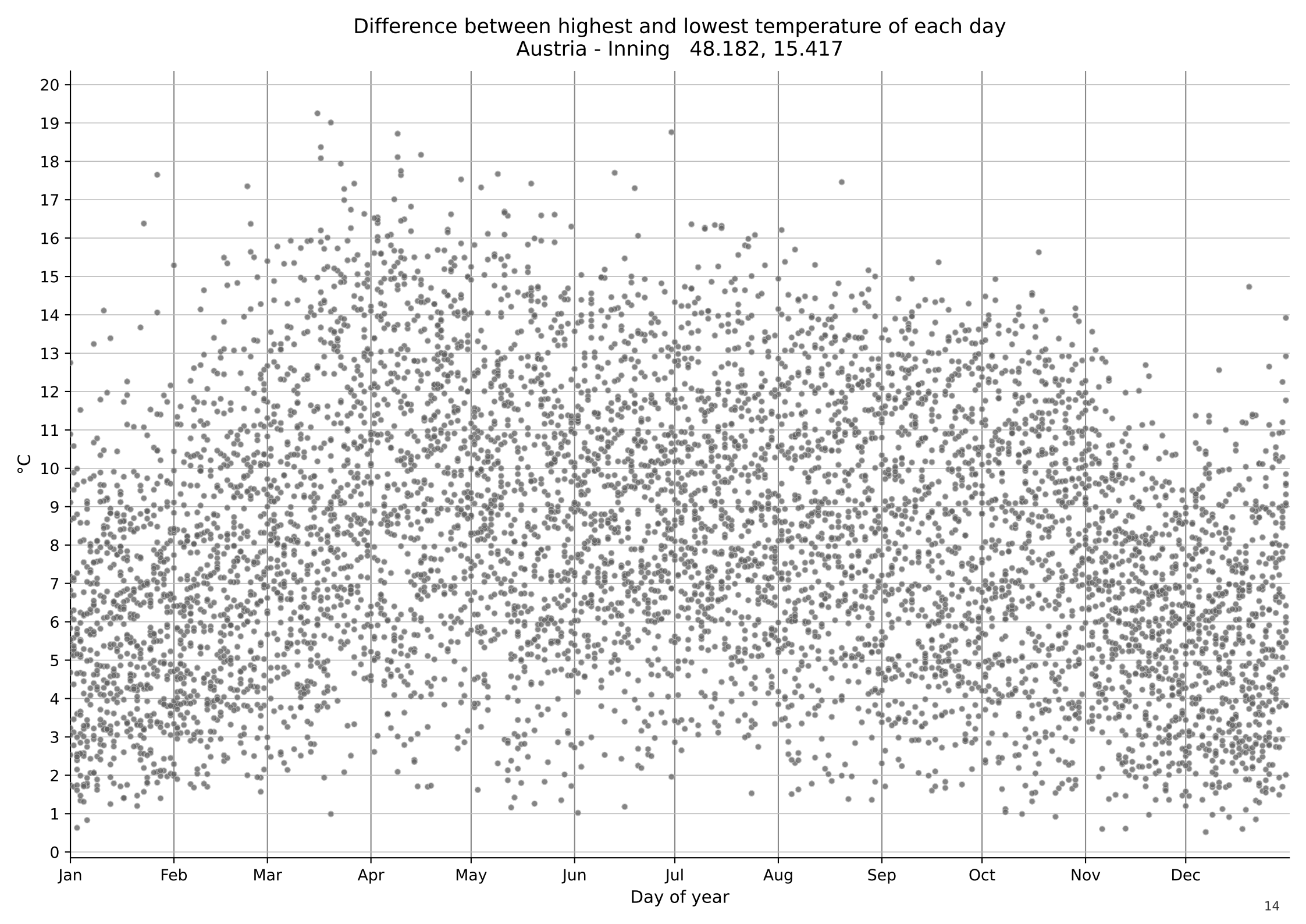

Share of the day’s yield in 09:00–15:00 winter time
Austria - Inning 48.182, 15.417
%
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Share of the day’s yield outside 09:00–15:00 winter time
Austria - Inning 48.182, 15.417
%
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


Highest temperature of each day
Austria - Inning 48.182, 15.417
°C
34
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
6
5
4
3
2
1
0
−1
−2
−3
−4
−5
−6
−7
−8
−9
−10
−11
−12
−13
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Average temperature of each day
Austria - Inning 48.182, 15.417
°C
27
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
−2
−3
−4
−5
−6
−7
−8
−9
−10
−11
−12
−13
−14
−15
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Lowest temperature of each day
Austria - Inning 48.182, 15.417
°C
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
−1
−2
−3
−4
−5
−6
−7
−8
−9
−10
−11
−12
−13
−14
−15
−16
−17
−18
−19
−20
−21
−22
−23
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Difference between highest and lowest temperature of each day
Austria - Inning 48.182, 15.417
°C
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

Monthly and yearly specific yield (kWh/kWp = Wh/Wp)
Austria - Inning 48.182, 15.417

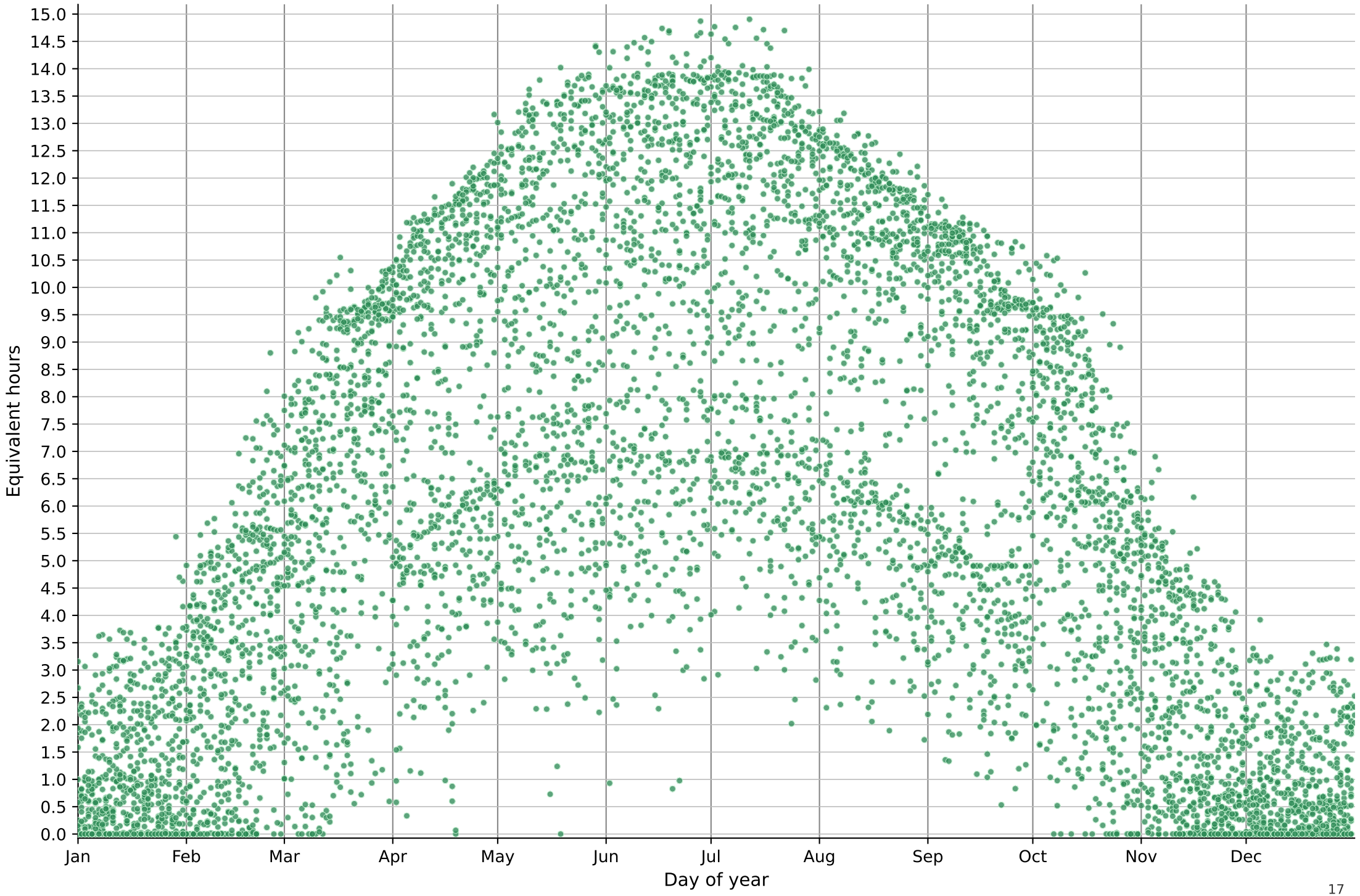
Month / year		Garage roof 1°/0° 10,740 Wp	Roof West 22°/90° 19,800 Wp	Terrace railing south 90°/0° 4,620 Wp	Terrace railing north 90°/180° 4,620 Wp	share central structure east 8°/-90° 20,460 Wp	share central strucure west p 8°/90° 20,460 Wp	All together
January	Maximum	32.84	30.08	7.26	7.26	33.23	30.45	28.50
	average	23.62	23.23	5.26	5.26	23.06	22.94	21.11
	minimum	17.95	18.03	4.09	4.09	17.27	18.14	16.56
February	Maximum	51.56	49.87	9.78	9.78	49.86	50.11	45.33
	average	41.81	41.12	8.23	8.23	40.57	40.99	37.27
	minimum	30.53	29.89	7.01	7.01	30.25	30.06	27.73
March	Maximum	103.67	99.70	40.02	16.17	101.33	101.42	92.65
	average	78.18	76.61	32.13	14.12	76.26	77.31	70.79
	minimum	60.95	58.23	23.96	12.21	60.47	59.76	55.18
April	Maximum	138.59	131.91	85.87	20.80	136.80	136.19	125.93
	average	110.61	106.56	68.54	18.98	108.84	109.36	101.20
	minimum	87.14	84.70	54.04	16.79	85.47	86.54	80.07
May	Maximum	144.59	139.02	75.98	26.21	142.58	143.40	131.60
	average	124.01	118.75	66.13	24.16	122.60	122.86	113.04
	minimum	91.48	88.28	48.94	22.30	90.46	90.92	83.93
June	Maximum	163.28	153.86	73.17	28.27	162.28	161.05	147.15
	average	135.71	130.27	62.75	26.40	134.18	134.75	123.31
	minimum	109.40	106.46	51.97	24.08	108.04	109.08	100.19
July	Maximum	158.88	151.66	77.19	27.83	157.42	157.25	143.86
	average	138.27	132.40	67.74	25.64	136.65	137.14	125.65
	minimum	102.76	99.10	50.02	23.06	101.57	102.08	93.83
August	Maximum	132.11	125.59	79.19	22.99	130.41	130.16	120.09
	average	117.75	113.81	70.61	19.99	115.74	116.75	107.73
	minimum	102.53	100.43	60.77	17.60	100.63	102.14	94.43
September	Maximum	104.79	103.01	59.73	16.42	101.99	103.90	95.65
	average	86.69	84.24	49.11	14.08	84.84	85.71	79.06
	minimum	69.95	67.69	40.19	11.80	68.91	69.01	63.98
October	Maximum	68.41	74.56	11.30	11.26	63.47	70.20	62.40
	average	54.55	54.92	9.83	9.80	52.48	54.25	48.92
	minimum	37.60	37.36	8.60	8.60	36.64	37.26	33.89
November	Maximum	33.54	33.83	6.47	6.47	32.07	32.85	29.89
	average	26.62	26.53	5.75	5.75	25.59	26.15	23.83
	minimum	20.26	20.38	5.33	5.33	19.74	20.05	18.41
December	Maximum	25.37	25.32	5.19	5.19	24.10	24.35	22.31
	average	19.18	19.08	4.19	4.19	18.56	18.63	17.14
	minimum	15.84	15.87	2.90	2.90	14.96	15.59	14.21
All years	Maximum	1,005.5	966.2	478.1	182.9	991.6	990.1	909.5
	average	957.0	927.5	450.3	176.6	939.4	946.8	869.0
	minimum	908.1	881.1	423.9	171.8	892.1	899.1	826.0

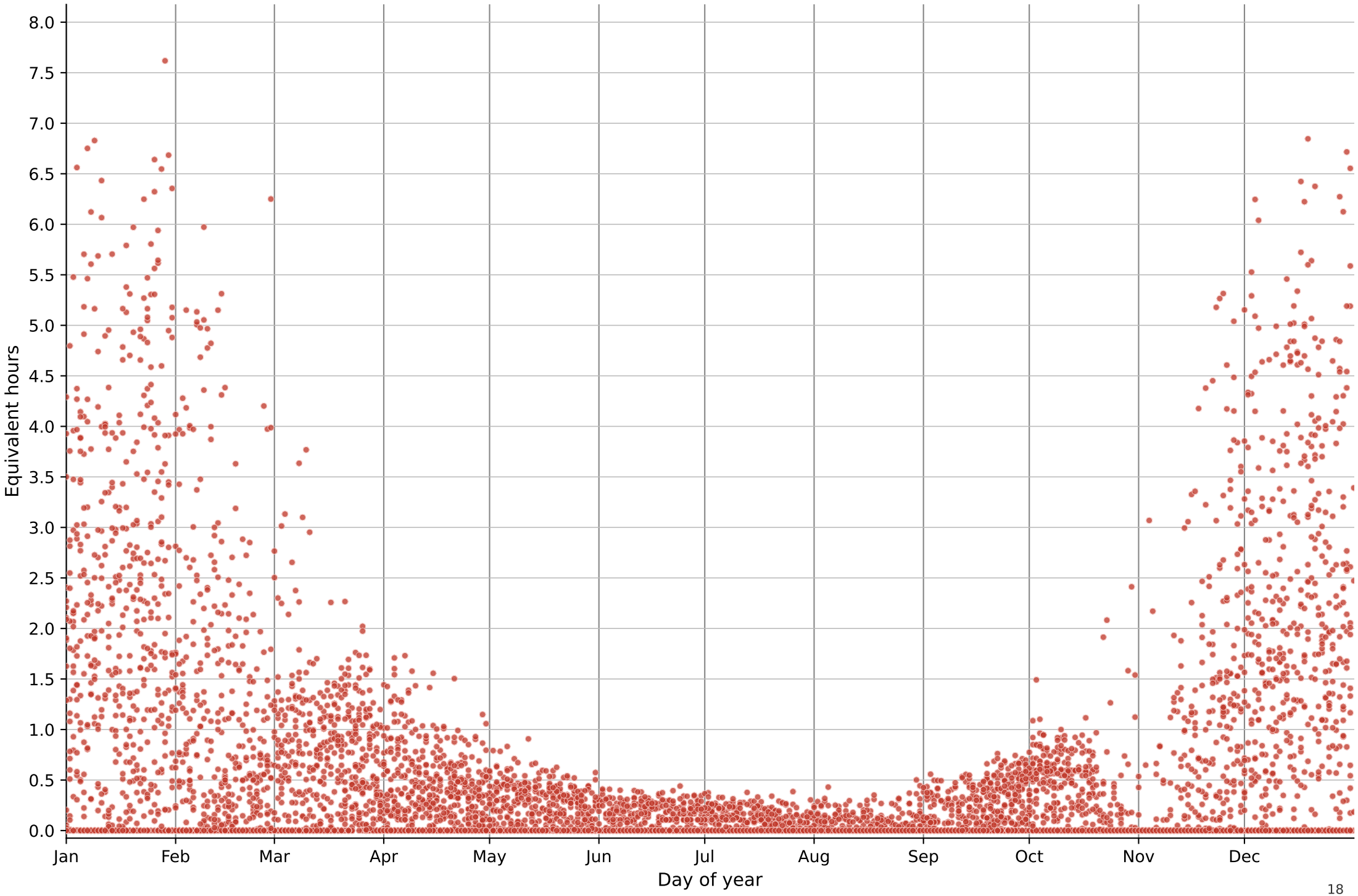
Highest combined yield hour: 2016-05-15 12:10 UTC 57,191.4 W (0.709 W/Wp) of 80,700 Wp installed. Use this hour to size battery charge power.

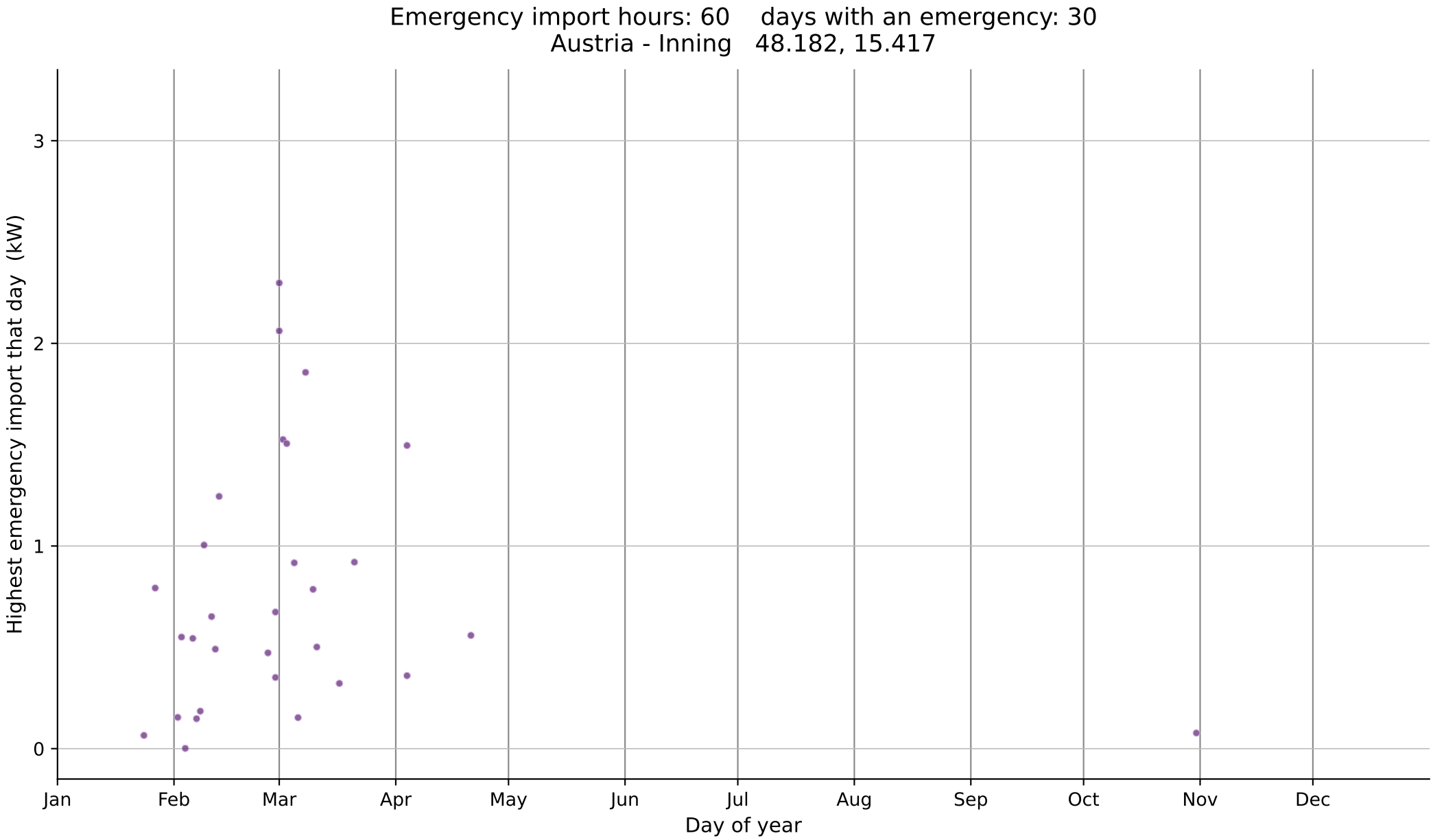
Monthly and yearly total yield (kWh)
Austria - Inning 48.182, 15.417

Month / year		Garage roof 1°/0° 10,740 Wp	Roof West 22°/90° 19,800 Wp	Terrace railing south 90°/0° 4,620 Wp	Terrace railing north 90°/180° 4,620 Wp	share central structure east 8°/-90° 20,460 Wp	share central strucure west p 8°/90° 20,460 Wp	All together
January	Maximum	352.68	595.63	33.54	33.54	679.89	622.93	2,300.30
	average	253.64	459.87	24.32	24.32	471.74	469.30	1,703.18
	minimum	192.81	356.93	18.91	18.91	353.24	371.18	1,336.54
February	Maximum	553.71	987.50	45.20	45.20	1,020.22	1,025.23	3,658.33
	average	449.02	814.20	38.04	38.04	830.07	838.63	3,008.01
	minimum	327.93	591.90	32.37	32.37	618.91	615.02	2,237.64
March	Maximum	1,113.39	1,974.12	184.90	74.72	2,073.19	2,075.08	7,477.09
	average	839.69	1,516.95	148.45	65.25	1,560.34	1,581.71	5,712.39
	minimum	654.63	1,153.01	110.72	56.41	1,237.19	1,222.68	4,453.08
April	Maximum	1,488.40	2,611.90	396.70	96.12	2,798.87	2,786.37	10,162.77
	average	1,188.00	2,109.91	316.63	87.68	2,226.85	2,237.60	8,166.67
	minimum	935.83	1,677.11	249.68	77.55	1,748.73	1,770.60	6,461.82
May	Maximum	1,552.93	2,752.50	351.04	121.11	2,917.26	2,933.89	10,620.19
	average	1,331.89	2,351.18	305.53	111.61	2,508.38	2,513.77	9,122.37
	minimum	982.45	1,748.01	226.09	103.02	1,850.80	1,860.25	6,773.47
June	Maximum	1,753.66	3,046.33	338.03	130.62	3,320.27	3,295.06	11,874.77
	average	1,457.52	2,579.32	289.91	121.99	2,745.36	2,757.00	9,951.10
	minimum	1,174.96	2,107.91	240.09	111.25	2,210.53	2,231.86	8,085.55
July	Maximum	1,706.42	3,002.90	356.62	128.59	3,220.71	3,217.23	11,609.49
	average	1,485.03	2,621.47	312.97	118.45	2,795.95	2,805.94	10,139.81
	minimum	1,103.61	1,962.25	231.08	106.55	2,078.03	2,088.65	7,572.02
August	Maximum	1,418.83	2,486.63	365.84	106.22	2,668.10	2,663.17	9,691.59
	average	1,264.60	2,253.51	326.23	92.35	2,368.10	2,388.66	8,693.45
	minimum	1,101.14	1,988.43	280.77	81.31	2,058.91	2,089.81	7,620.14
September	Maximum	1,125.43	2,039.67	275.95	75.86	2,086.76	2,125.85	7,718.93
	average	931.05	1,667.88	226.87	65.03	1,735.89	1,753.67	6,380.39
	minimum	751.23	1,340.33	185.69	54.53	1,409.95	1,411.88	5,162.86
October	Maximum	734.70	1,476.25	52.20	52.02	1,298.62	1,436.28	5,035.61
	average	585.91	1,087.48	45.43	45.30	1,073.71	1,109.95	3,947.77
	minimum	403.85	739.66	39.75	39.71	749.67	762.32	2,734.97
November	Maximum	360.26	669.76	29.90	29.90	656.20	672.20	2,411.85
	average	285.88	525.39	26.56	26.56	523.52	535.04	1,922.95
	minimum	217.55	403.60	24.60	24.60	403.95	410.24	1,485.53
December	Maximum	272.47	501.26	23.98	23.98	493.06	498.26	1,800.05
	average	206.03	377.79	19.33	19.33	379.64	381.16	1,383.28
	minimum	170.14	314.19	13.41	13.41	306.08	318.90	1,146.77
All years	Maximum	10,798.9	19,131.5	2,209.0	845.0	20,288.6	20,257.1	73,399.3
	average	10,278.3	18,365.0	2,080.3	815.9	19,219.5	19,372.4	70,131.4
	minimum	9,753.0	17,444.8	1,958.2	793.9	18,253.1	18,395.7	66,654.6

Highest combined yield hour: 2016-05-15 12:10 UTC 57,191.4 W (0.709 W/Wp) of 80,700 Wp installed. Use this hour to size battery charge power.


Export energy as equivalent hours (kWh / grid kW)
Austria - Inning 48.182, 15.417
Equivalent hours
15.0
14.5
14.0
13.5
13.0
12.5
12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Import energy as equivalent hours (kWh / grid kW)
Austria - Inning 48.182, 15.417
Equivalent hours
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
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
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export to grid													
month Maximum	579	1,497	2,828	3,401	3,751	4,080	4,146	3,635	3,030	2,563	1,075	628	27,913
month average	428	1,045	2,353	2,857	3,347	3,604	3,718	3,319	2,637	2,032	726	322	26,389
month minimum	304	554	1,677	2,151	2,703	3,112	2,988	2,967	2,278	1,262	438	213	24,769
day Maximum	65.3	105.6	126.6	157.9	173.1	178.4	178.9	158.2	140.4	127.0	82.8	47.0	178.9
day average	13.8	37.0	75.9	95.2	108.0	120.1	119.9	107.1	87.9	65.6	24.2	10.4	72.3
day minimum	0.0	0.0	0.0	0.0	0.0	9.9	24.2	20.7	6.4	0.0	0.0	0.0	0.0
Import from grid													
month Maximum	1,300	832	486	230	81	42	38	23	80	164	628	1,369	4,183
month average	708	291	223	117	59	30	21	14	61	92	194	666	2,475
month minimum	273	28	107	53	33	18	9	6	47	36	17	138	1,518
day Maximum	91.4	75.0	45.2	20.8	10.9	5.3	4.6	6.0	9.1	28.9	63.8	82.2	91.4
day average	22.8	10.3	7.2	3.9	1.9	1.0	0.7	0.4	2.0	3.0	6.5	21.5	6.8
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	2,457	2,200	1,636	975	688	512	487	513	599	907	1,441	2,349	13,232
month average	1,766	1,494	1,238	770	595	461	434	448	528	737	1,080	1,577	11,130
month minimum	1,242	1,048	924	578	505	401	402	398	449	602	881	1,149	9,882
day Maximum	118.6	112.8	103.8	59.2	34.7	25.4	21.5	22.5	27.5	57.4	84.9	108.4	118.6
day average	57.0	53.0	39.9	25.7	19.2	15.4	14.0	14.5	17.6	23.8	36.0	50.9	30.5
day minimum	21.6	20.0	18.4	11.4	11.0	11.0	10.9	10.9	10.9	13.9	17.3	21.0	10.9

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
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export													
month Maximum	39	118	281	309	359	385	388	339	289	266	87	35	2,646
month average	25	76	230	270	331	354	362	322	265	199	47	18	2,500
month minimum	18	34	157	212	291	315	322	294	227	109	26	12	2,335
day Maximum	6.3	12.7	17.1	16.5	17.4	19.2	18.3	16.7	16.8	17.7	10.1	2.7	19.2
day average	0.8	2.7	7.4	9.0	10.7	11.8	11.7	10.4	8.8	6.4	1.6	0.6	6.8
day minimum	0.0	0.0	0.0	0.0	0.0	0.6	2.3	1.1	0.3	0.0	0.0	0.0	0.0
Import													
month Maximum	348	228	144	58	20	10	9	6	21	45	159	374	1,124
month average	187	83	66	30	14	7	5	3	16	26	49	172	659
month minimum	72	9	30	13	8	4	2	1	12	9	4	33	410
day Maximum	22.8	21.0	12.5	5.8	2.7	1.4	1.2	1.4	2.5	7.5	17.3	22.1	22.8
day average	6.0	3.0	2.1	1.0	0.5	0.2	0.2	0.1	0.5	0.8	1.6	5.6	1.8
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	69	65	66	48	24	12	11	11	19	39	57	63	436
month average	64	56	46	32	17	11	9	9	13	23	57	63	399
month minimum	63	32	30	18	10	7	8	5	9	11	49	63	377
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	412	293	210	96	43	21	19	16	36	84	216	438	1,561
month average	251	139	111	61	31	18	14	12	29	49	106	235	1,058
month minimum	135	41	60	31	19	13	11	6	22	27	53	96	801
day Maximum	22.8	21.0	12.5	5.8	2.7	1.4	1.2	1.4	2.5	7.5	17.3	22.1	22.8
day average	6.0	3.0	2.1	1.0	0.5	0.2	0.2	0.1	0.5	0.8	1.6	5.6	1.8
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	-104	58	201	256	340	363	374	328	264	213	6	-62	1,772
month average	-226	-63	118	209	300	336	347	310	236	150	-58	-217	1,442
month minimum	-390	-238	-2	142	257	294	310	281	198	63	-182	-416	927
day Maximum	6.3	12.7	17.1	16.5	17.4	19.2	18.3	16.7	16.8	16.9	10.1	2.7	19.2
day average	-5.2	-0.3	5.3	8.0	10.2	11.6	11.5	10.3	8.3	5.6	-0.1	-5.0	5.0
day minimum	-22.5	-20.8	-12.5	-1.2	0.0	0.6	2.3	1.0	-0.7	-7.5	-17.0	-21.3	-22.5

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
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export total													
month Maximum	579	1,497	2,828	3,401	3,751	4,080	4,146	3,635	3,030	2,563	1,075	628	27,913
month average	428	1,045	2,353	2,857	3,347	3,604	3,718	3,319	2,637	2,032	726	322	26,389
month minimum	304	554	1,677	2,151	2,703	3,112	2,988	2,967	2,278	1,262	438	213	24,769
day Maximum	65.3	105.6	126.6	157.9	173.1	178.4	178.9	158.2	140.4	127.0	82.8	47.0	178.9
day average	13.8	37.0	75.9	95.2	108.0	120.1	119.9	107.1	87.9	65.6	24.2	10.4	72.3
day minimum	0.0	0.0	0.0	0.0	0.0	9.9	24.2	20.7	6.4	0.0	0.0	0.0	0.0
Export during high price hours													
month Maximum	17	200	804	1,110	1,336	1,365	1,392	1,271	1,096	766	164	0	8,823
month average	2	88	623	1,000	1,255	1,310	1,341	1,200	1,015	558	43	0	8,433
month minimum	0	1	344	871	1,115	1,216	1,277	1,141	844	267	0	0	7,862
day Maximum	13.4	40.0	57.6	61.5	63.6	65.3	65.0	64.8	64.6	61.7	32.5	0.0	65.3
day average	0.1	3.1	20.1	33.3	40.5	43.7	43.3	38.7	33.8	18.0	1.4	0.0	23.1
day minimum	0.0	-0.0	-0.0	0.0	0.0	2.7	16.2	2.5	0.5	0.0	0.0	0.0	-0.0
Export during medium price hours													
month Maximum	164	409	607	883	1,034	1,200	1,264	918	662	563	153	78	6,741
month average	101	309	512	695	857	993	1,034	816	557	377	105	49	6,403
month minimum	43	182	411	552	628	824	764	740	427	223	68	15	5,935
day Maximum	15.9	23.1	23.3	43.2	56.1	61.0	61.1	46.7	30.9	23.5	13.4	8.5	61.1
day average	3.2	11.0	16.5	23.2	27.6	33.1	33.4	26.3	18.6	12.1	3.5	1.6	17.5
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	483	889	1,530	1,447	1,415	1,517	1,549	1,520	1,288	1,299	763	559	12,353
month average	326	648	1,219	1,162	1,236	1,301	1,343	1,304	1,066	1,097	578	273	11,552
month minimum	211	371	889	729	919	998	929	1,055	865	771	355	174	10,600
day Maximum	45.1	55.2	66.1	70.4	70.4	70.4	70.5	70.5	70.5	58.7	56.9	42.3	70.5
day average	10.5	23.0	39.3	38.7	39.9	43.4	43.3	42.1	35.5	35.4	19.3	8.8	31.6
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
Austria - Inning 48.182, 15.417

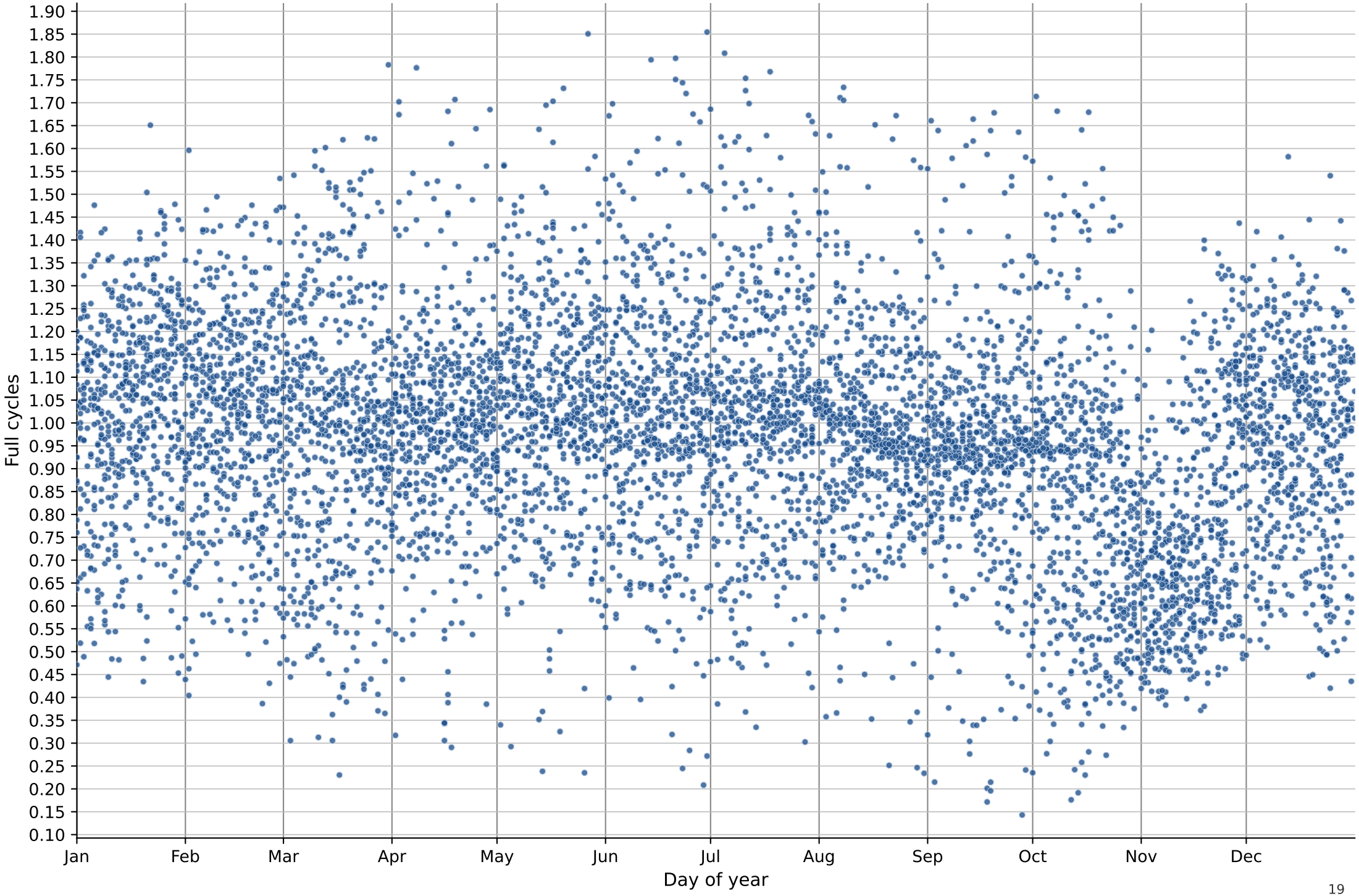
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	2,063	1,826	1,272	635	341	179	146	172	266	556	1,094	1,956	9,026
month average	1,395	1,160	881	433	250	129	94	108	197	389	738	1,215	6,991
month minimum	882	726	572	245	162	71	62	59	120	256	541	795	5,768
day Maximum	104.2	98.3	90.2	47.7	23.3	14.0	10.4	11.3	16.2	45.9	72.2	94.2	104.2
day average	45.0	41.1	28.4	14.4	8.1	4.3	3.0	3.5	6.6	12.6	24.6	39.2	19.1
day minimum	10.3	8.8	7.3	0.4	0.0	0.0	0.0	0.0	0.0	2.9	6.2	9.8	0.0
Cooling													
month Maximum	0	0	0	0	0	0	1	2	0	0	0	0	3
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	0.3	1.1	0.6	0.0	0.0	0.0	0.0	1.1
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
DHW													
month Maximum	87	84	58	39	37	33	31	32	33	40	48	83	556
month average	61	52	47	37	35	32	30	30	31	38	42	52	487
month minimum	49	42	42	33	33	30	29	29	29	35	40	43	458
day Maximum	4.5	4.5	4.3	1.6	1.4	1.3	1.2	1.2	1.3	1.6	2.8	4.2	4.5
day average	2.0	1.8	1.5	1.2	1.1	1.1	1.0	1.0	1.0	1.2	1.4	1.7	1.3
day minimum	1.3	1.3	1.1	1.0	1.0	1.0	0.9	0.9	0.9	1.0	1.1	1.2	0.9
Direct electric													
month Maximum	1,406	1,231	688	191	21	0	0	0	4	120	524	1,305	4,450
month average	785	623	363	75	4	0	0	0	0	39	250	619	2,759
month minimum	350	231	124	8	0	0	0	0	0	0	97	263	1,711
day Maximum	82.1	76.2	68.4	27.4	5.2	0.1	0.0	0.0	2.4	25.7	50.7	72.2	82.1
day average	25.3	22.1	11.7	2.5	0.1	0.0	0.0	0.0	0.0	1.3	8.3	20.0	7.6
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

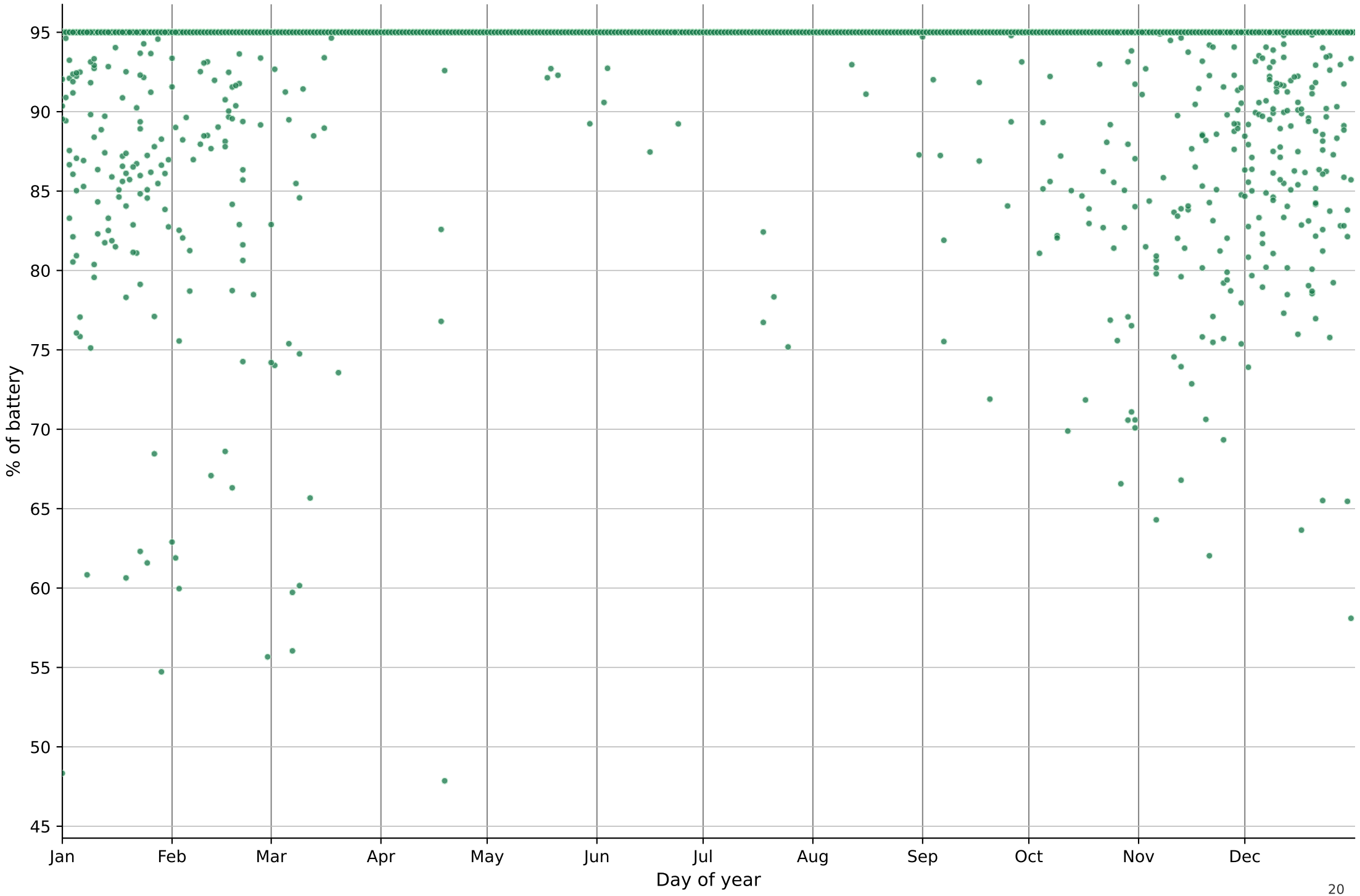
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

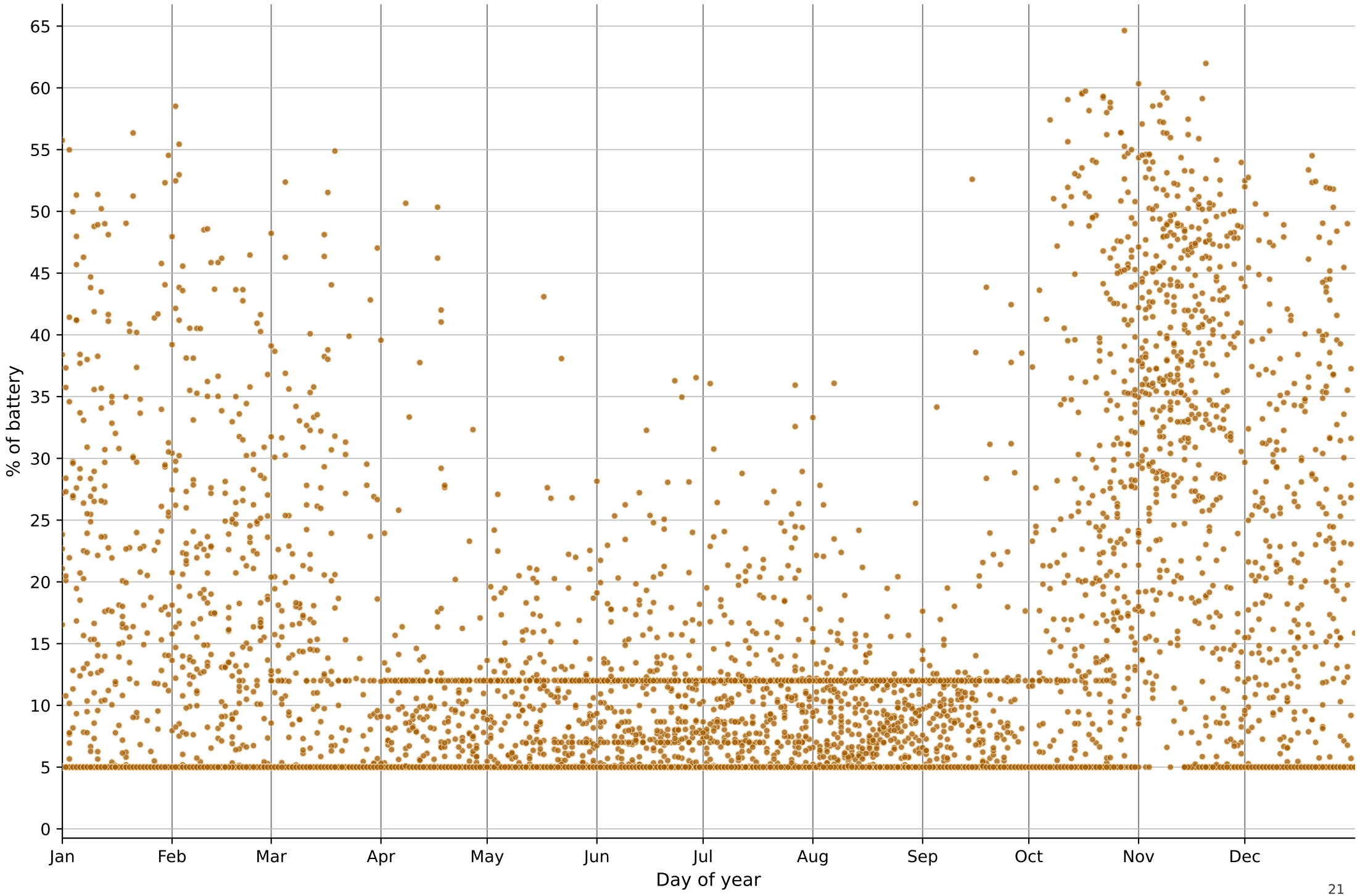
Battery
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	233	1,033	3,491	6,203	6,285	7,305	7,094	5,581	4,208	1,712	380	80	36,838
month average	88	646	2,235	4,542	5,117	5,800	5,887	4,828	3,171	1,154	225	29	33,720
month minimum	37	147	1,339	3,283	3,380	4,167	3,971	3,841	2,256	634	96	7	30,748
day Maximum	36.5	109.9	198.7	346.3	364.8	387.4	360.5	326.8	254.6	130.4	53.6	11.5	387.4
day average	2.8	22.9	72.1	151.4	165.1	193.3	189.9	155.7	105.7	37.2	7.5	0.9	92.3
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
Full cycles													
month Maximum	37	33	34	31	33	32	33	31	29	28	29	35	367
month average	32	29	31	30	32	31	32	31	28	26	23	30	353
month minimum	25	24	28	28	31	30	31	30	27	22	20	24	343
day Maximum	1.7	1.6	1.8	1.8	1.9	1.9	1.8	1.7	1.7	1.7	1.4	1.6	1.9
day average	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.8	0.8	1.0	1.0
day minimum	0.4	0.4	0.2	0.3	0.2	0.2	0.3	0.2	0.1	0.2	0.4	0.4	0.1
Charge C													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	6
month average	0	0	0	0	0	0	0	0	0	0	0	0	6
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	6
day Maximum	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5
day average	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.3
day minimum	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Discharge C													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	3
month average	0	0	0	0	0	0	0	0	0	0	0	0	3
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	3
day Maximum	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3
day average	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.2
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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 / 45 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 / 45 kWh)
Austria - Inning 48.182, 15.417
Full cycles
1.90
1.85
1.80
1.75
1.70
1.65
1.60
1.55
1.50
1.45
1.40
1.35
1.30
1.25
1.20
1.15
1.10
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
0.15
0.10
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Battery max charge state per day (45 kWh = 100 %)
Austria - Inning 48.182, 15.417
% of battery
95
90
85
80
75
70
65
60
55
50
45
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Battery min charge state per day (45 kWh = 100 %)
Austria - Inning 48.182, 15.417
% of battery
0
5
10
15
20
25
30
35
40
45
50
55
60
65
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year