Preliminary Environmental Information Report

Appendix 12G: Dwelling Receptor Group 5-7: Glare Analysis Results

PEIR Appendices [PINS Ref: EN 010171]

Document Reference: EN 010171/PEIR APP/12G

Revision Number: 1

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Future Energy Llanwern Limited

Glare Analysis Results

Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Solar array 1	18.0	180.0	42,214	703.6	3,376	56.3	-
Solar array 2	18.0	180.0	26,063	434.4	3,170	52.8	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	1,385	23.1	42	0.7
OP 2	1,689	28.1	40	0.7
OP 3	700	11.7	1	0.0
OP 4	364	6.1	0	0.0
OP 5	902	15.0	7	0.1
OP 6	938	15.6	42	0.7
OP 7	965	16.1	45	0.8
OP 8	1,164	19.4	141	2.4
OP 9	2,644	44.1	558	9.3
OP 10	2,405	40.1	613	10.2
OP 11	355	5.9	11	0.2
OP 12	1,633	27.2	154	2.6
OP 13	195	3.2	0	0.0
OP 14	1,252	20.9	232	3.9
OP 15	2,283	38.0	399	6.7
OP 16	1,848	30.8	119	2.0
OP 17	2,221	37.0	241	4.0
OP 18	3,608	60.1	511	8.5
OP 19	1,925	32.1	141	2.4
OP 20	1,170	19.5	86	1.4
OP 21	740	12.3	13	0.2
OP 22	418	7.0	0	0.0
OP 23	826	13.8	0	0.0
OP 24	1,083	18.1	6	0.1
OP 25	2,184	36.4	58	1.0
OP 26	2,291	38.2	49	0.8
OP 27	1,851	30.9	62	1.0
OP 28	1,347	22.4	27	0.5
OP 29	1,060	17.7	85	1.4
OP 30	1,117	18.6	169	2.8
OP 31	872	14.5	1,549	25.8

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 32	179	3.0	0	0.0
OP 33	1,065	17.8	34	0.6
OP 34	420	7.0	0	0.0
OP 35	479	8.0	0	0.0
OP 36	525	8.8	0	0.0
OP 37	413	6.9	0	0.0
OP 38	510	8.5	0	0.0
OP 39	577	9.6	0	0.0
OP 40	674	11.2	0	0.0
OP 41	724	12.1	0	0.0
OP 42	721	12.0	0	0.0
OP 43	20	0.3	0	0.0
OP 44	20	0.3	0	0.0
OP 45	19	0.3	0	0.0
OP 46	2,038	34.0	0	0.0
OP 47	28	0.5	0	0.0
OP 48	2,180	36.3	0	0.0
OP 49	2,807	46.8	79	1.3
OP 50	41	0.7	0	0.0
OP 51	34	0.6	0	0.0
OP 52	1,336	22.3	0	0.0
OP 53	60	1.0	0	0.0
OP 54	1,231	20.5	0	0.0
OP 55	43	0.7	0	0.0
OP 56	68	1.1	0	0.0
OP 57	2,769	46.1	320	5.3
OP 58	2,350	39.2	484	8.1
OP 59	1,694	28.2	110	1.8
OP 60	1,817	30.3	118	2.0

PV: PV array 1 potential temporary after-image

Receptor results ordered by category of glare

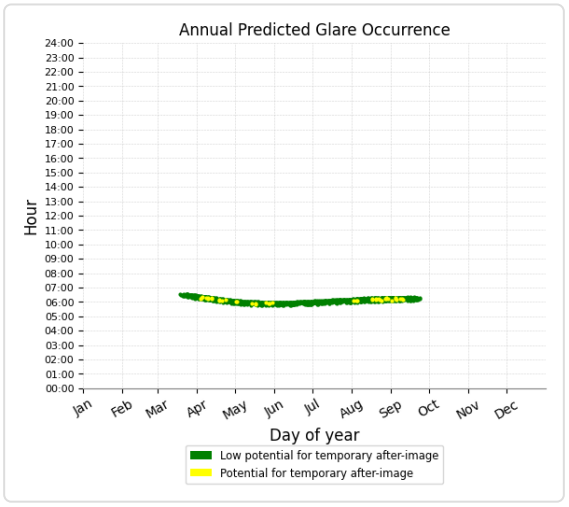
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	973	16.2	42	0.7
OP 2	1,076	17.9	40	0.7
OP 3	137	2.3	1	0.0
OP 5	556	9.3	7	0.1
OP 6	867	14.4	42	0.7
OP 7	872	14.5	45	0.8
OP 8	992	16.5	141	2.4
OP 9	1,550	25.8	558	9.3
OP 10	1,671	27.9	613	10.2
OP 11	355	5.9	11	0.2
OP 12	1,249	20.8	154	2.6
OP 14	1,252	20.9	232	3.9
OP 15	1,508	25.1	399	6.7
OP 16	1,351	22.5	119	2.0
OP 17	1,357	22.6	240	4.0
OP 18	1,705	28.4	461	7.7
OP 19	1,224	20.4	139	2.3
OP 20	1,035	17.2	86	1.4
OP 21	718	12.0	13	0.2
OP 24	839	14.0	6	0.1
OP 25	1,082	18.0	17	0.3
OP 26	1,181	19.7	10	0.2
OP 13	195	3.2	0	0.0
OP 22	319	5.3	0	0.0
OP 23	637	10.6	0	0.0
OP 27	925	15.4	0	0.0
OP 28	681	11.3	0	0.0
OP 30	15	0.2	0	0.0
OP 31	15	0.2	0	0.0
OP 32	179	3.0	0	0.0
OP 34	420	7.0	0	0.0
OP 35	479	8.0	0	0.0
OP 36	525	8.8	0	0.0
OP 37	413	6.9	0	0.0
OP 38	510	8.5	0	0.0
OP 39	577	9.6	0	0.0
OP 40	646	10.8	0	0.0

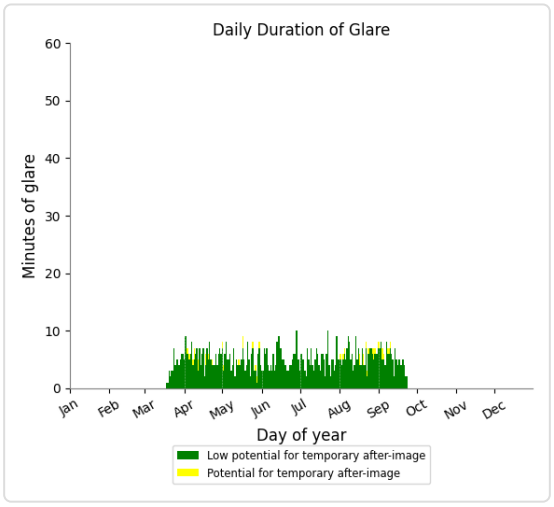
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 41	708	11.8	0	0.0
OP 42	677	11.3	0	0.0
OP 43	20	0.3	0	0.0
OP 44	20	0.3	0	0.0
OP 45	19	0.3	0	0.0
OP 46	1,019	17.0	0	0.0
OP 47	28	0.5	0	0.0
OP 48	1,195	19.9	0	0.0
OP 49	1,485	24.8	0	0.0
OP 50	41	0.7	0	0.0
OP 51	34	0.6	0	0.0
OP 52	1,286	21.4	0	0.0
OP 53	38	0.6	0	0.0
OP 54	1,176	19.6	0	0.0
OP 55	43	0.7	0	0.0
OP 56	39	0.7	0	0.0
OP 57	1,269	21.1	0	0.0
OP 58	1,142	19.0	0	0.0
OP 59	881	14.7	0	0.0
OP 60	1,008	16.8	0	0.0
OP 4	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 33	0	0.0	0	0.0

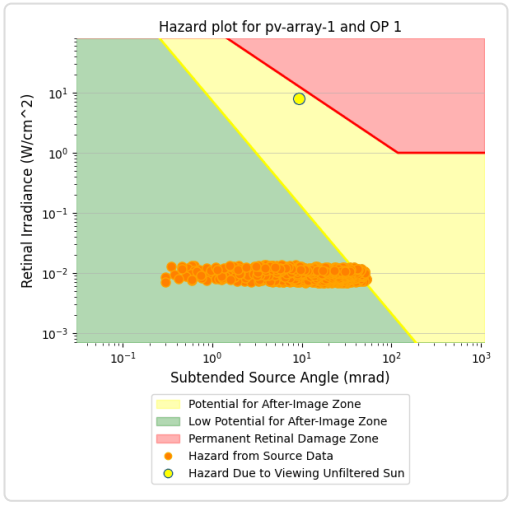
Solar array 1 and OP 1

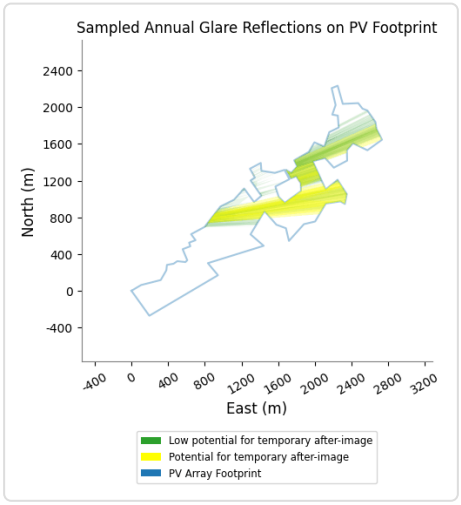
Yellow glare: 42 min.

Green glare: 973 min.





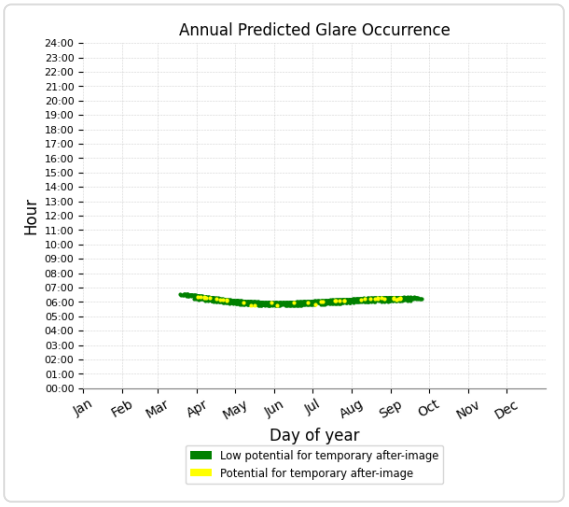


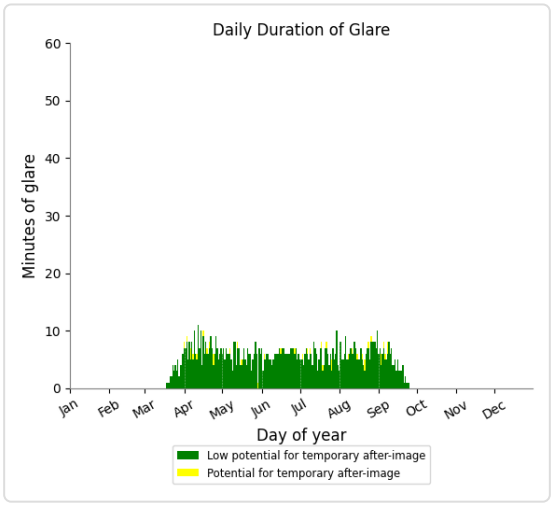


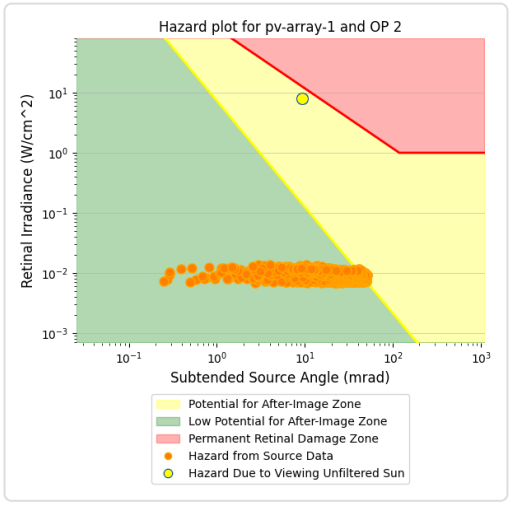
Solar array 1 and OP 2

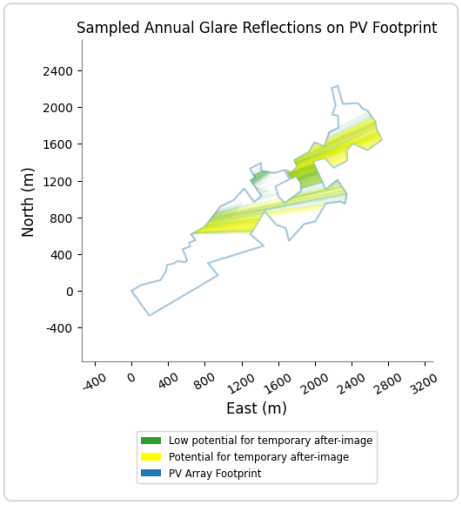
Yellow glare: 40 min.

Green glare: 1,076 min.





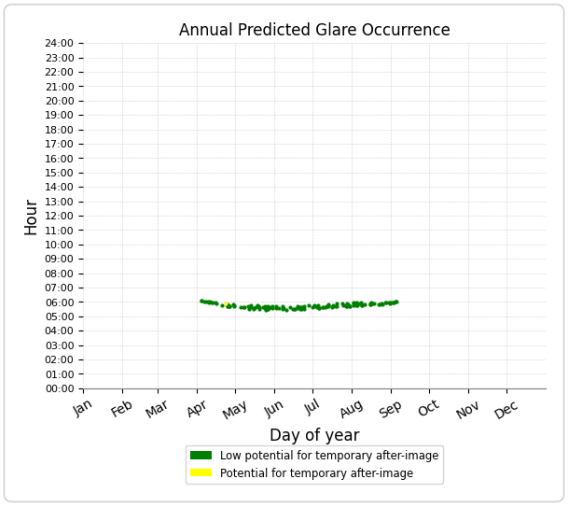


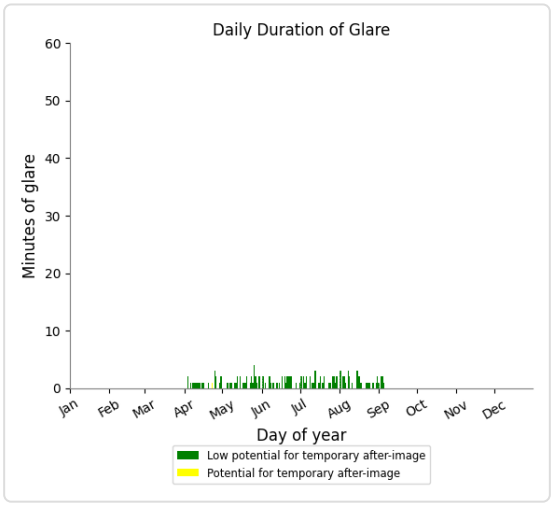


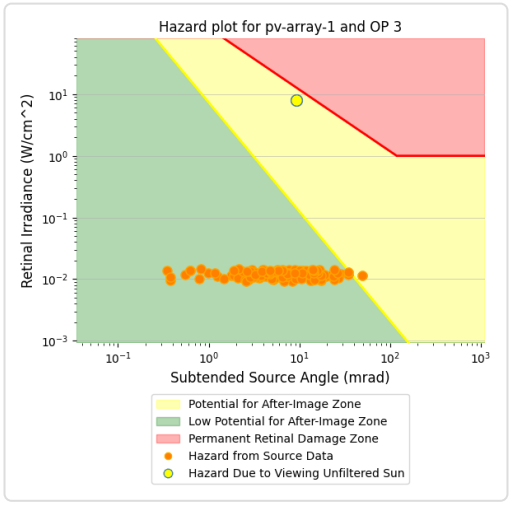
Solar array 1 and OP 3

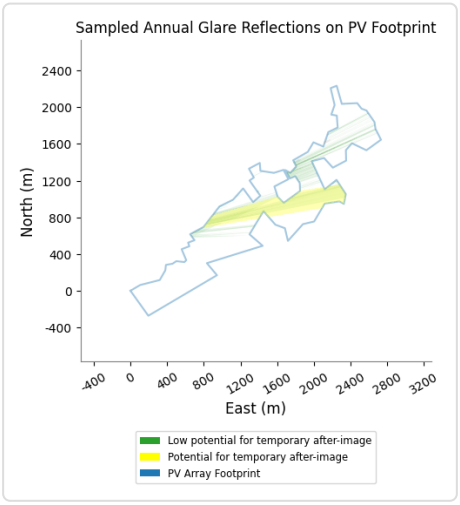
Yellow glare: 1 min.

Green glare: 137 min.





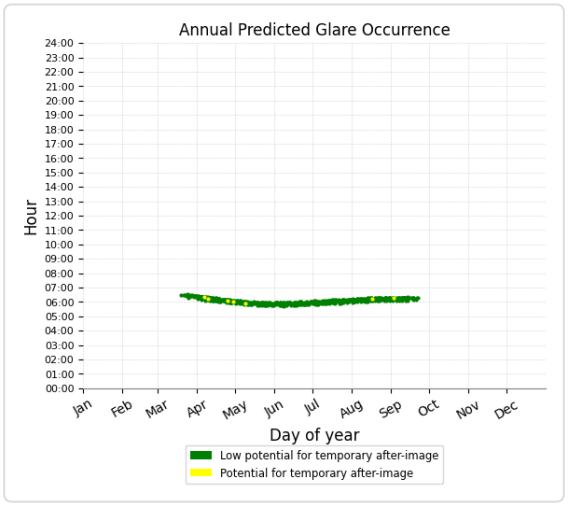


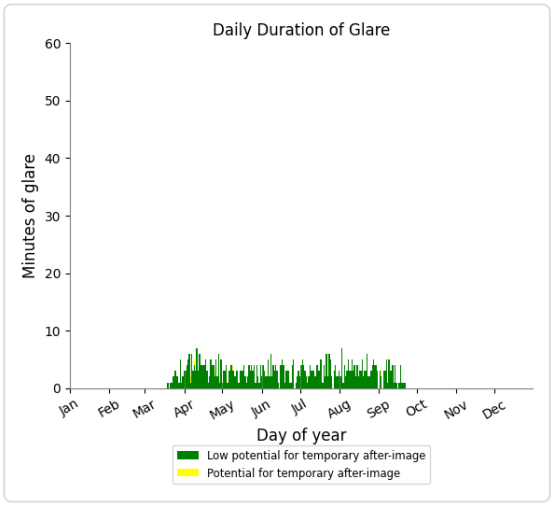


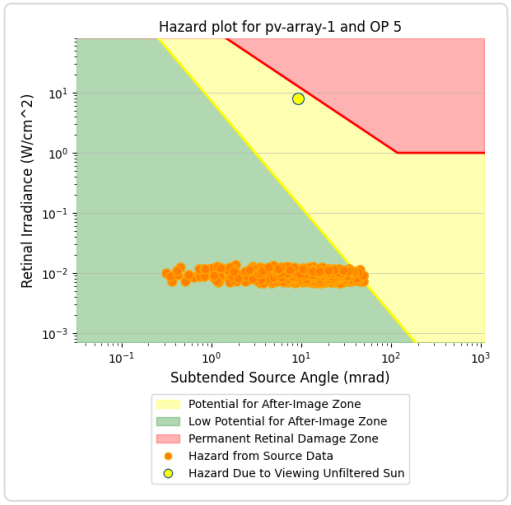
Solar array 1 and OP 5

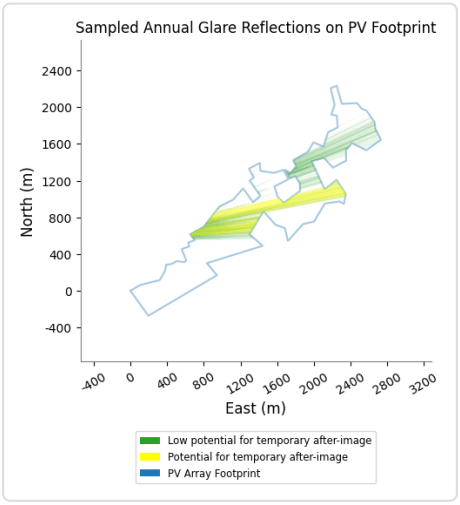
Yellow glare: 7 min.

Green glare: 556 min.





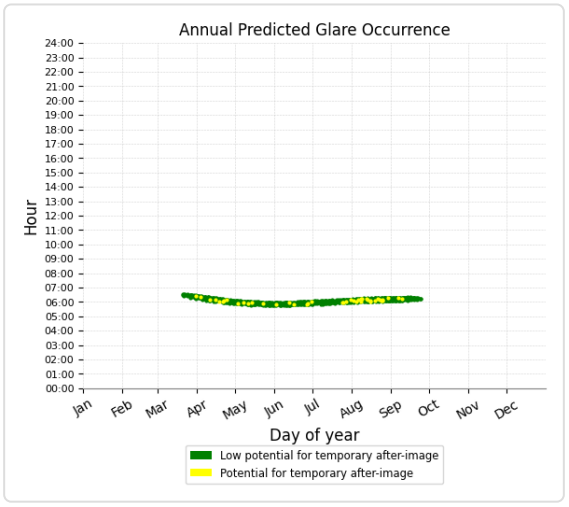


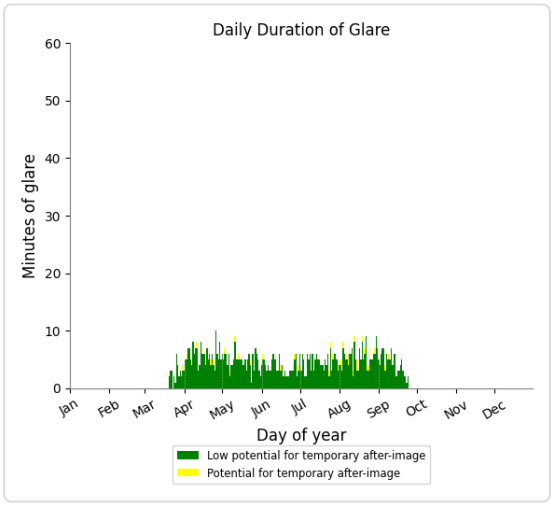


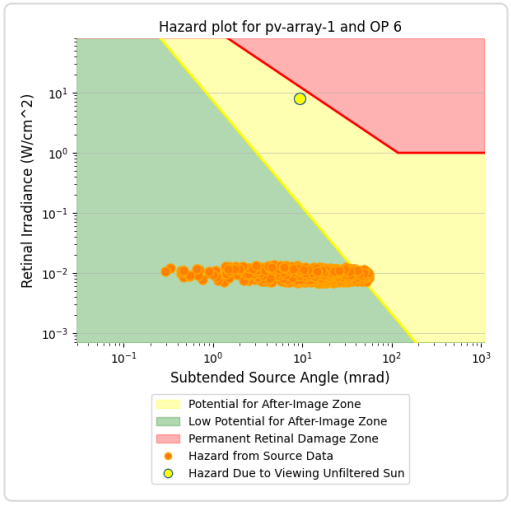
Solar array 1 and OP 6

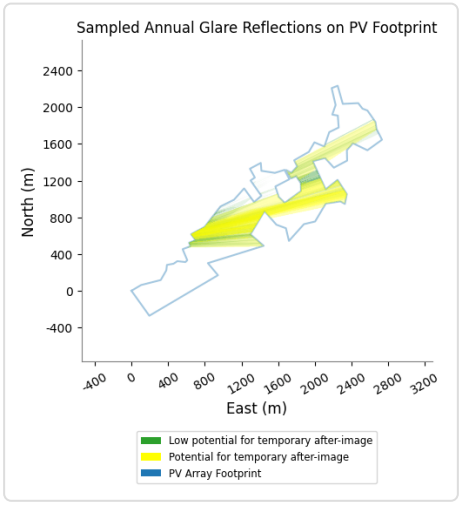
Yellow glare: 42 min.

Green glare: 867 min.





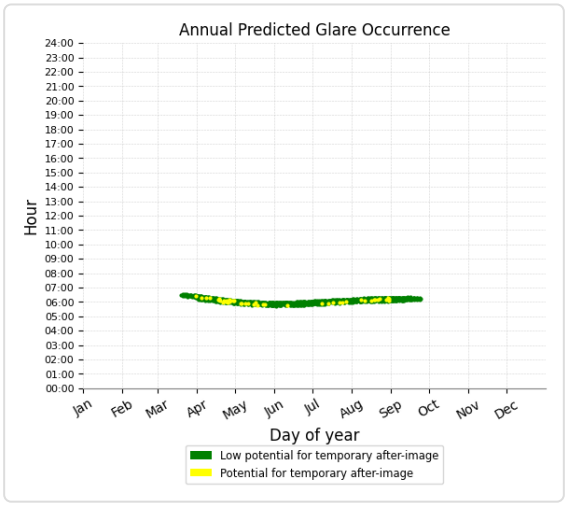


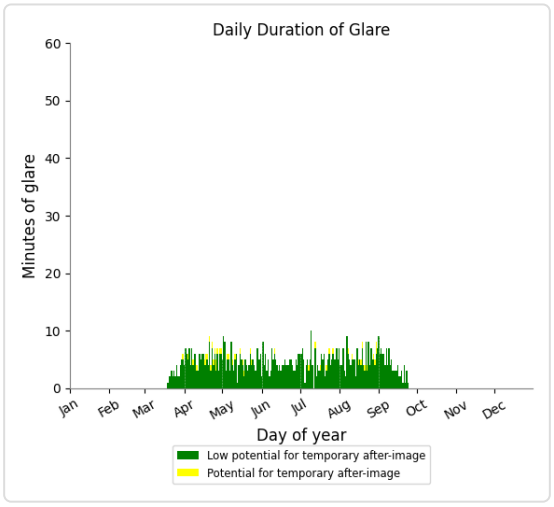


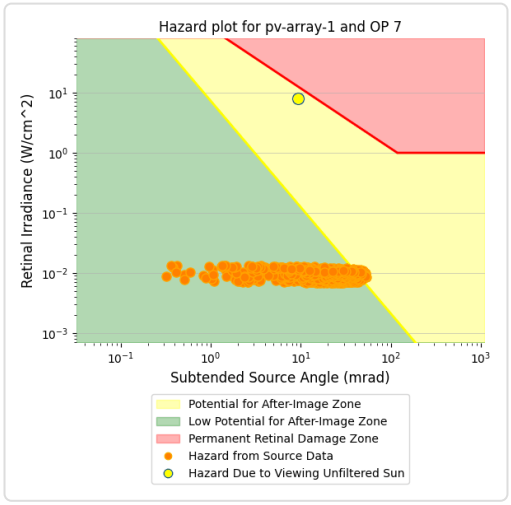
Solar array 1 and OP 7

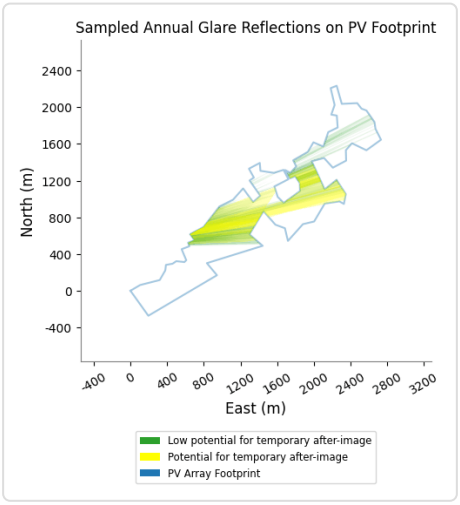
Yellow glare: 45 min.

Green glare: 872 min.





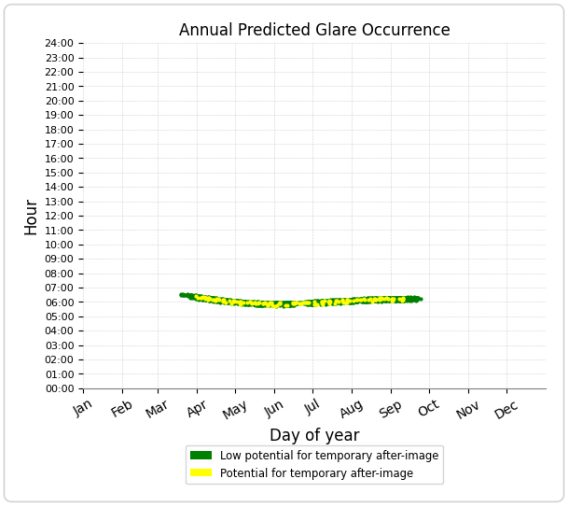


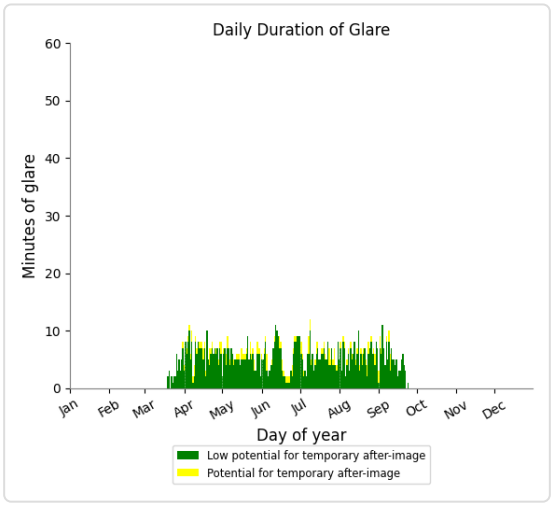


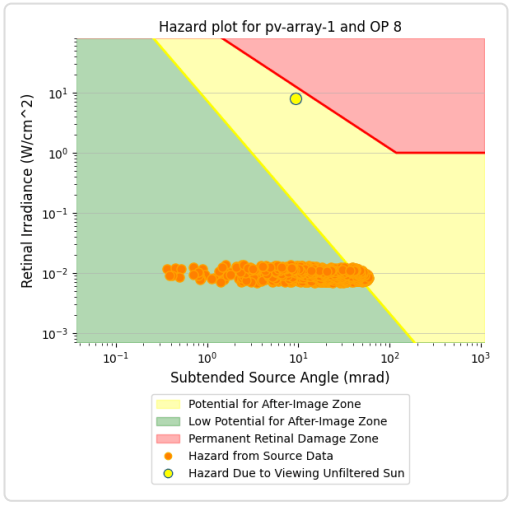
Solar array 1 and OP 8

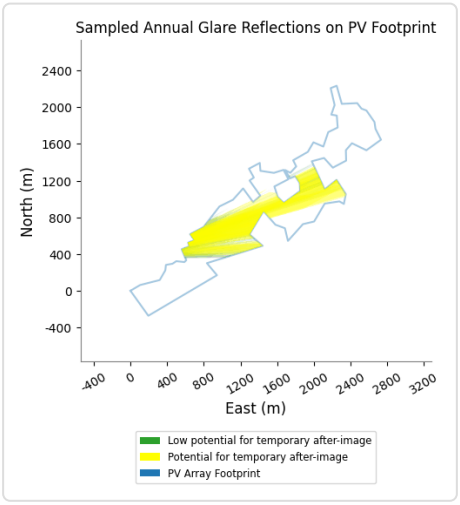
Yellow glare: 141 min.

Green glare: 992 min.





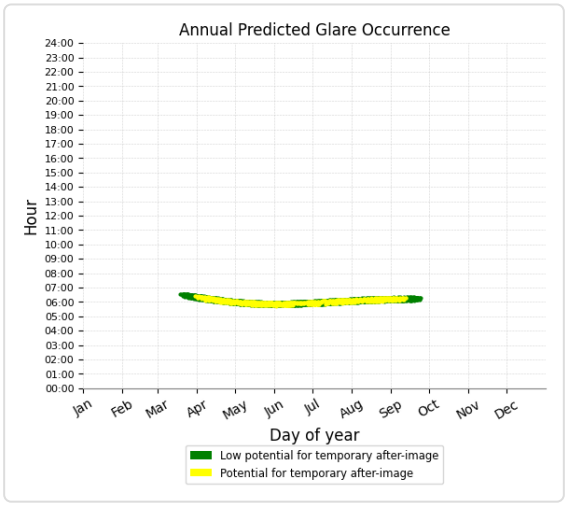


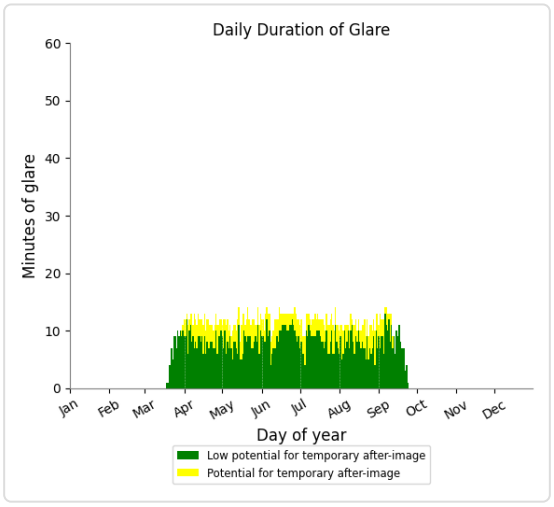


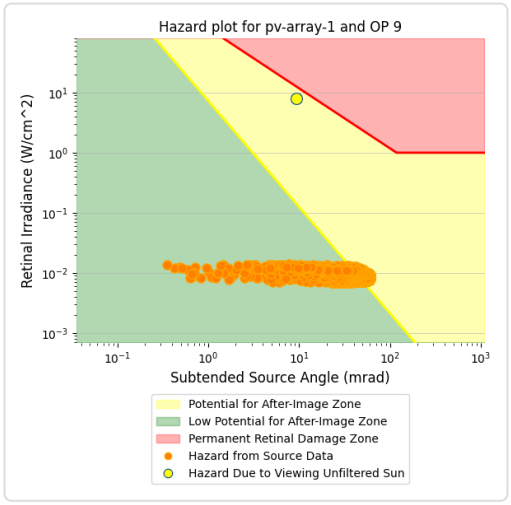
Solar array 1 and OP 9

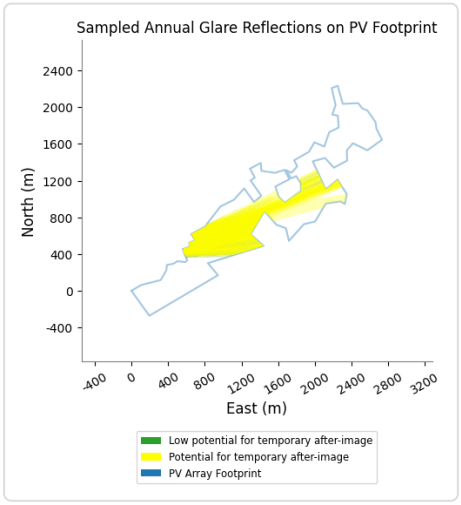
Yellow glare: 558 min.

Green glare: 1,550 min.





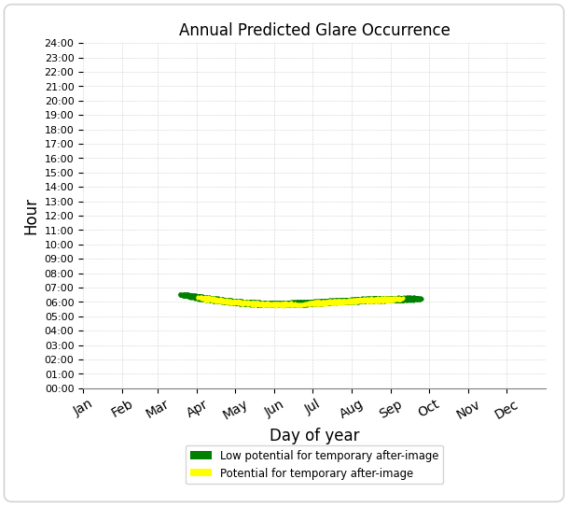


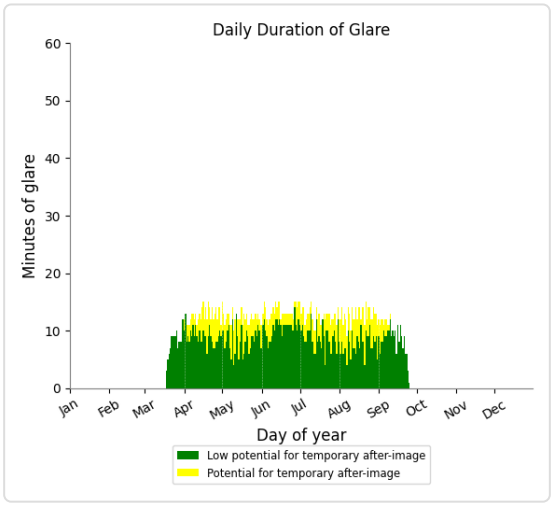


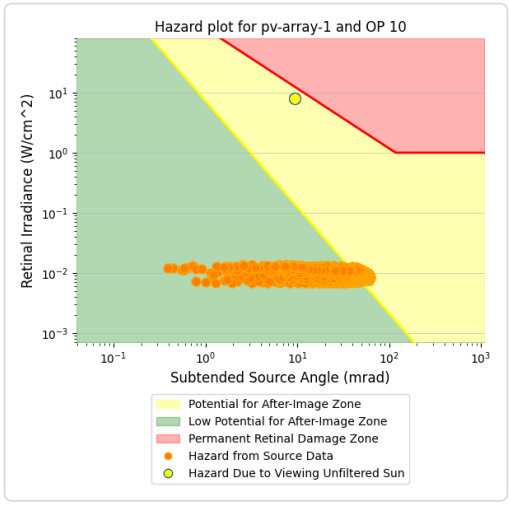
Solar array 1 and OP 10

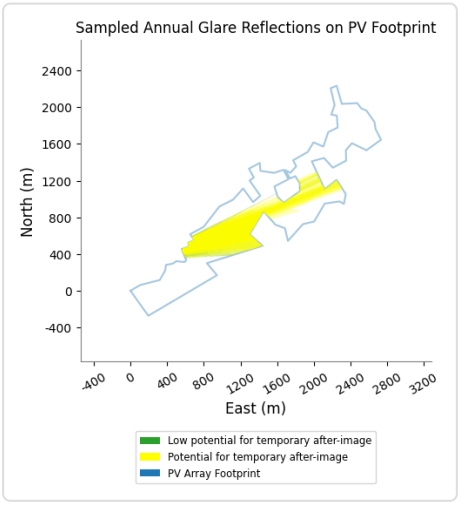
Yellow glare: 613 min.

Green glare: 1,671 min.





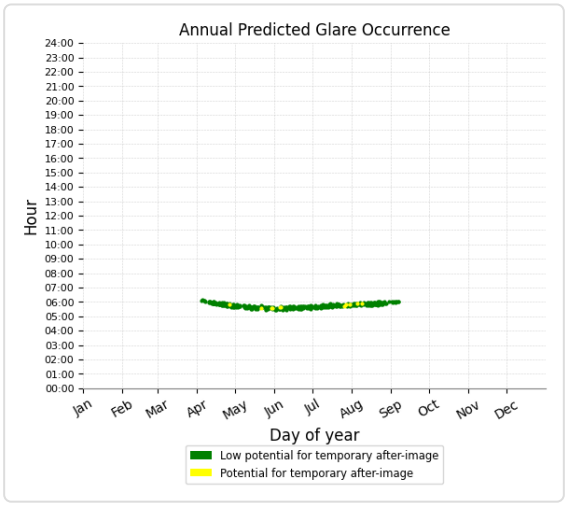


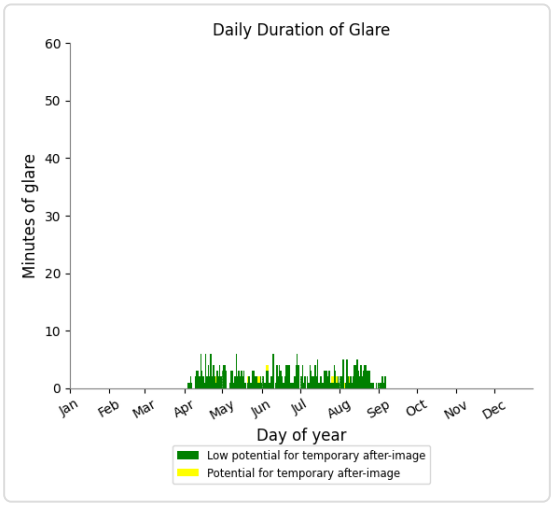


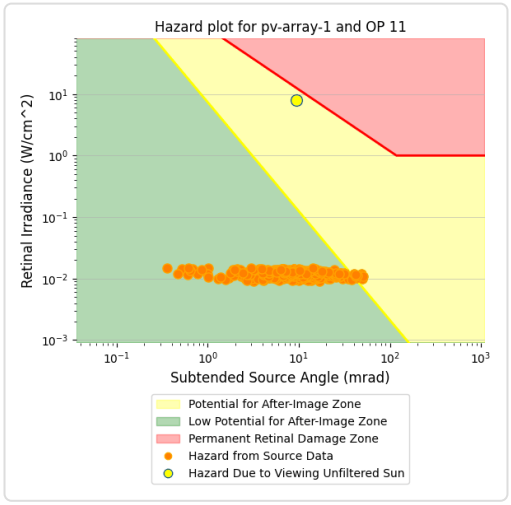
Solar array 1 and OP 11

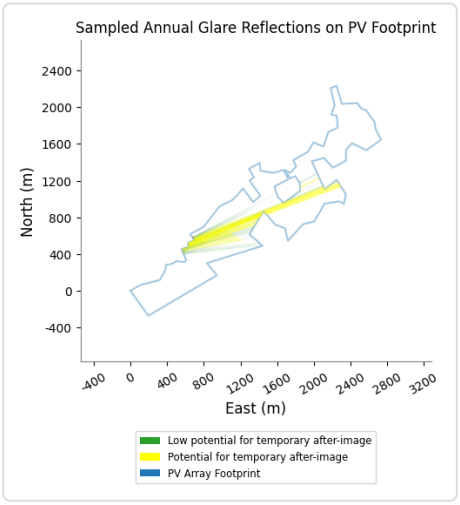
Yellow glare: 11 min.

Green glare: 355 min.





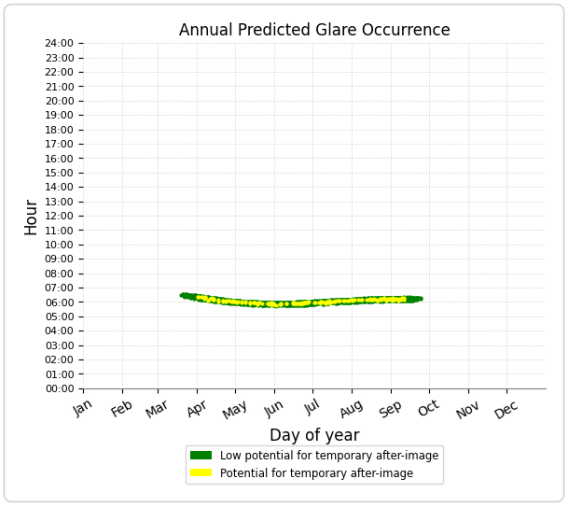


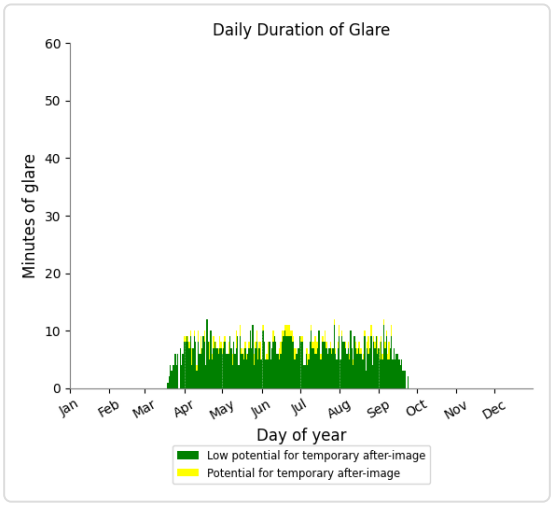


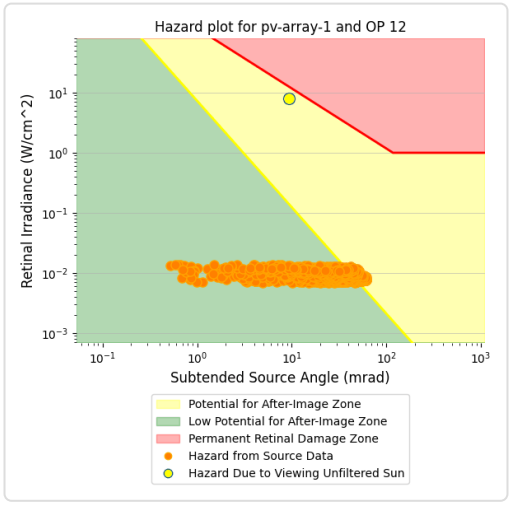
Solar array 1 and OP 12

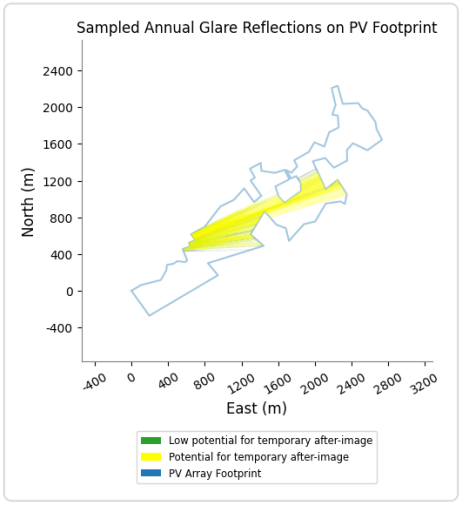
Yellow glare: 154 min.

Green glare: 1,249 min.





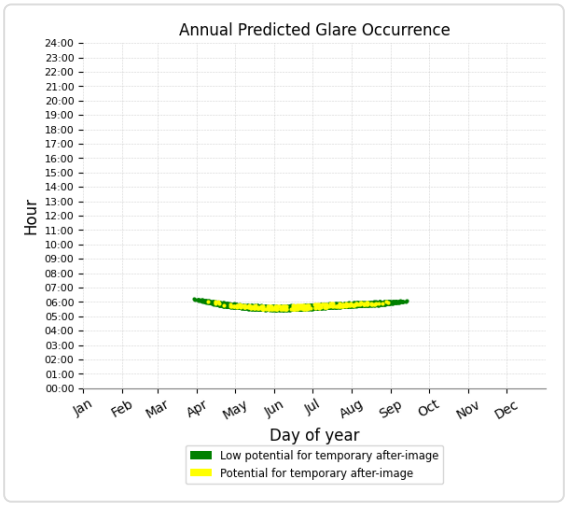


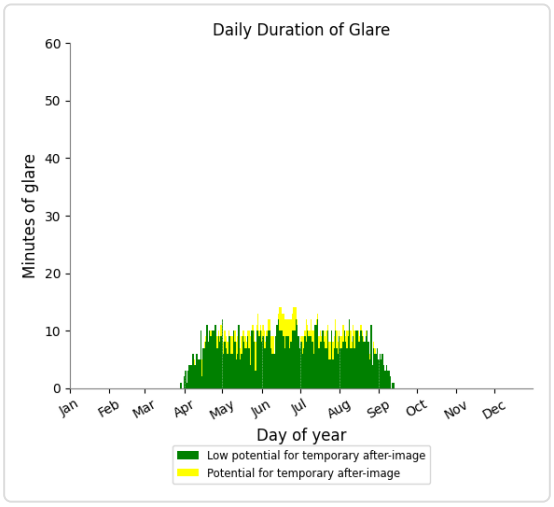


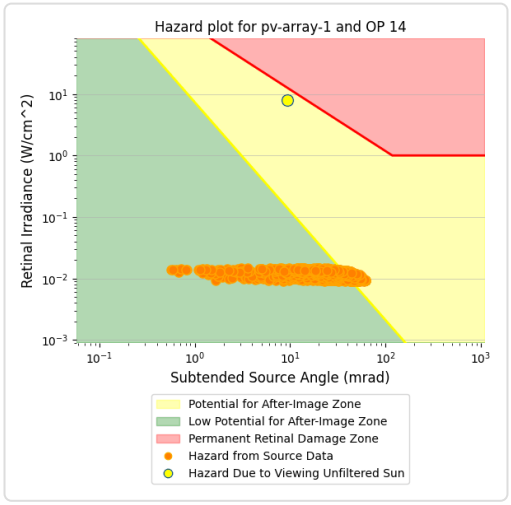
Solar array 1 and OP 14

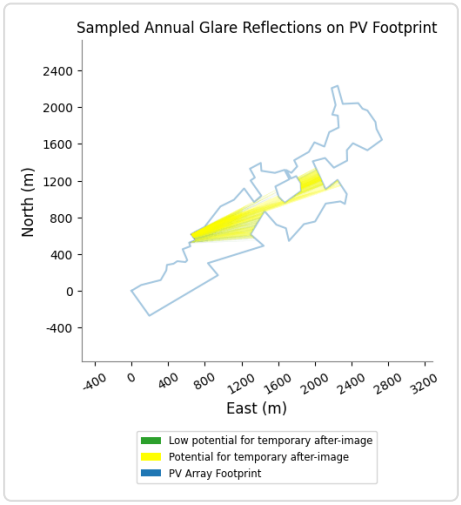
Yellow glare: 232 min.

Green glare: 1,252 min.





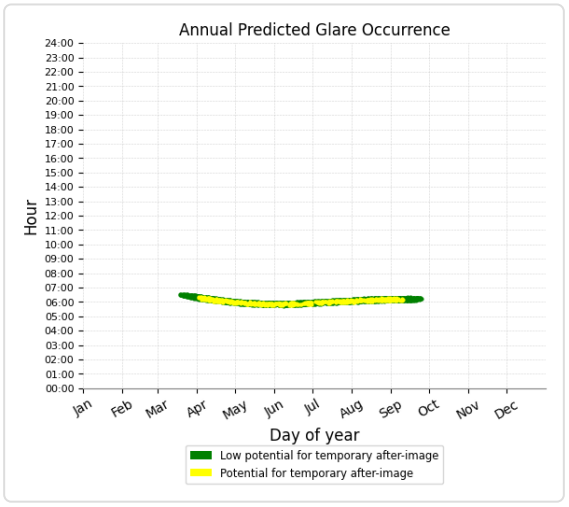


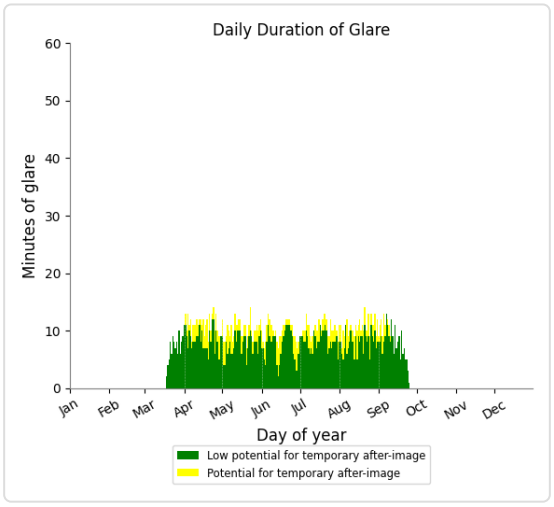


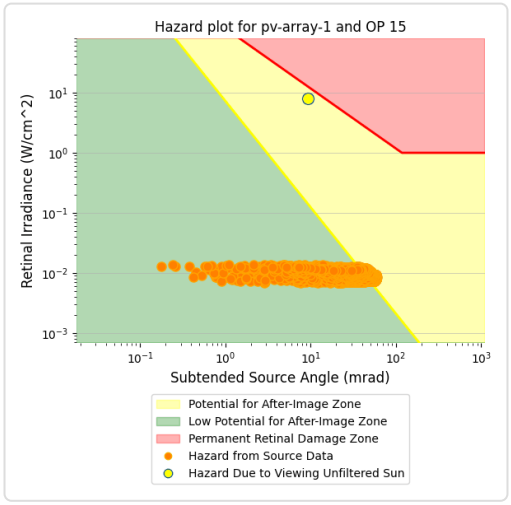
Solar array 1 and OP 15

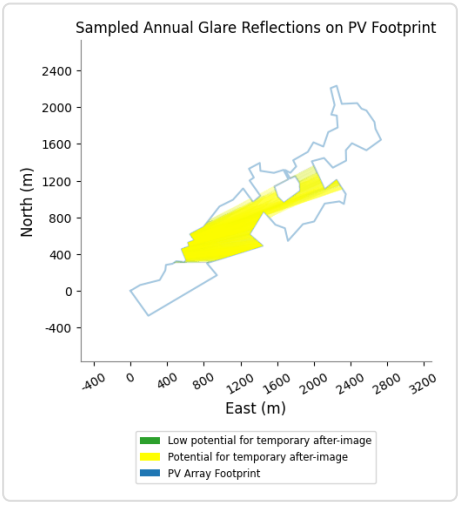
Yellow glare: 399 min.

Green glare: 1,508 min.





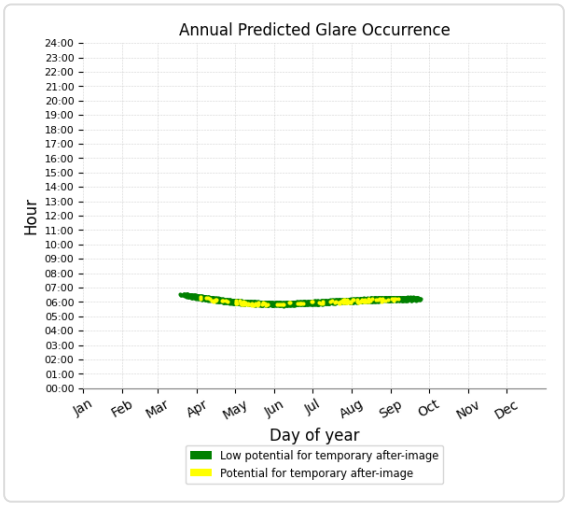


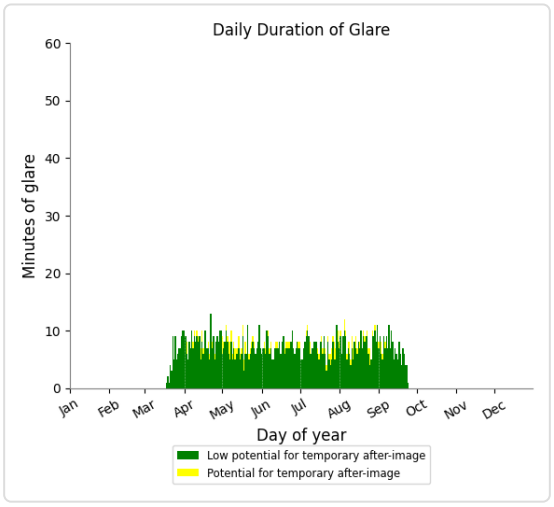


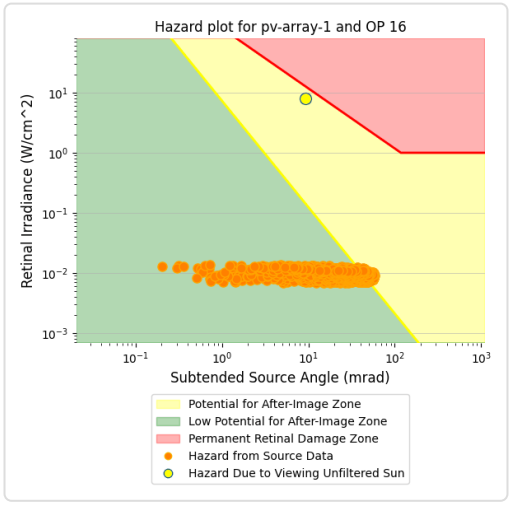
Solar array 1 and OP 16

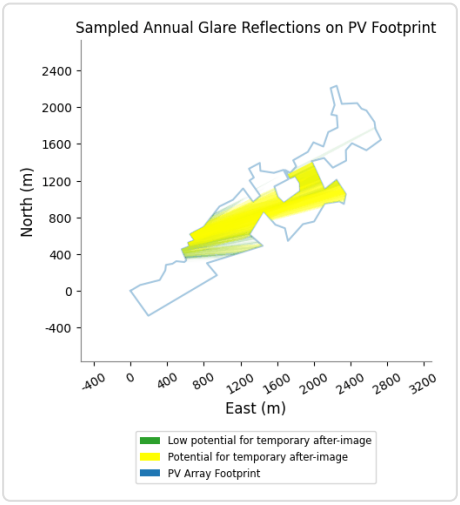
Yellow glare: 119 min.

Green glare: 1,351 min.





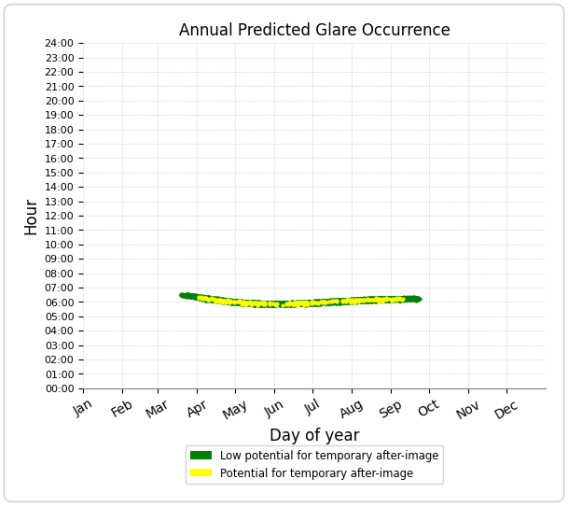


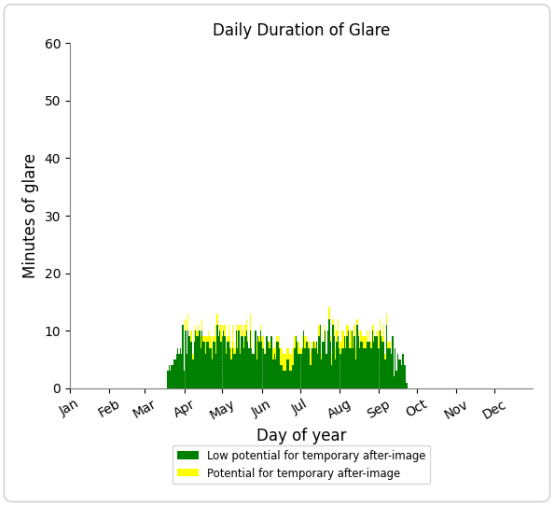


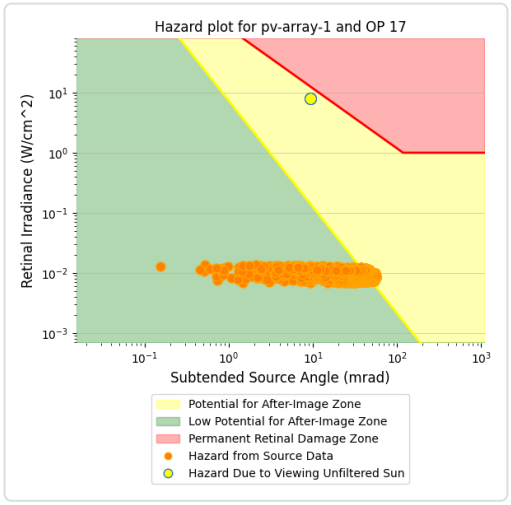
Solar array 1 and OP 17

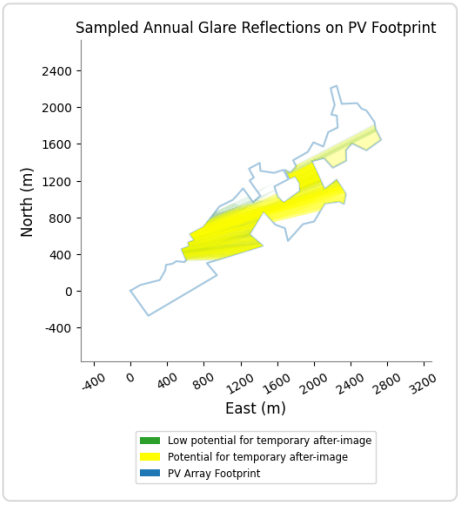
Yellow glare: 240 min.

Green glare: 1,357 min.





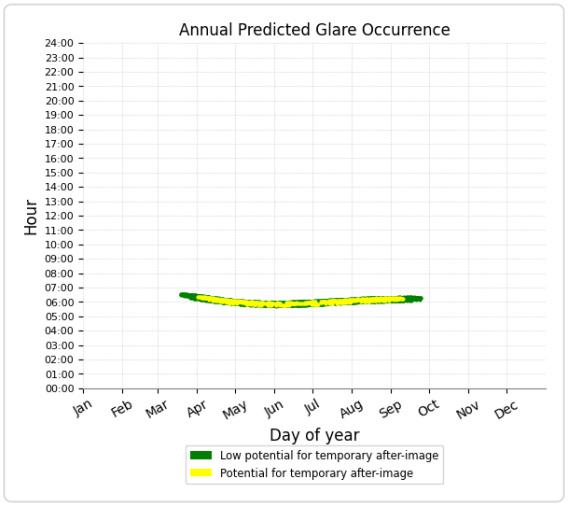


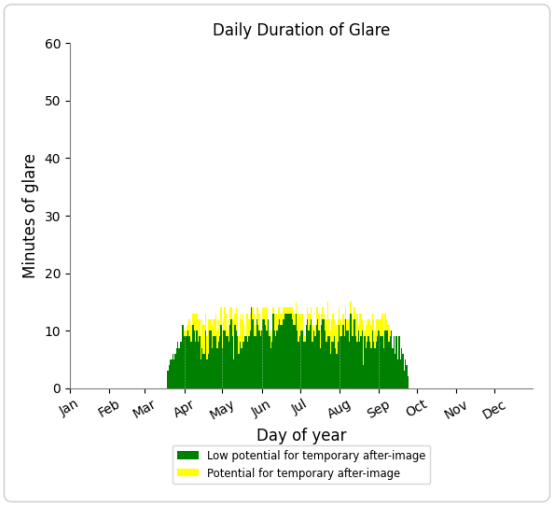


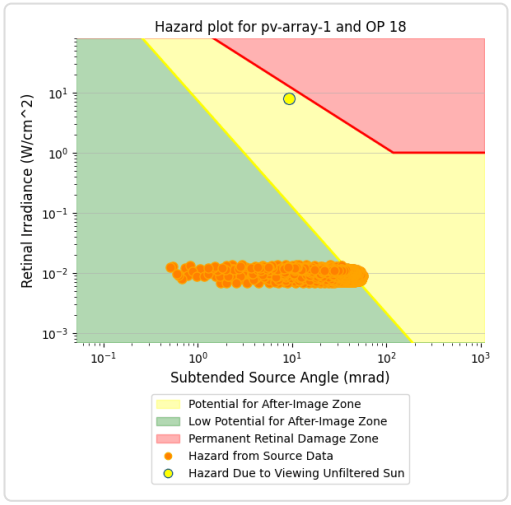
Solar array 1 and OP 18

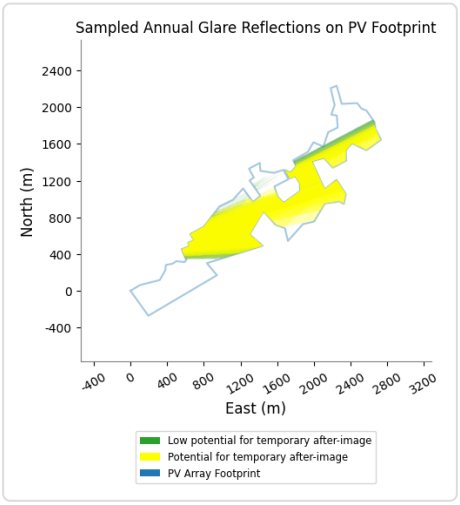
Yellow glare: 461 min.

Green glare: 1,705 min.





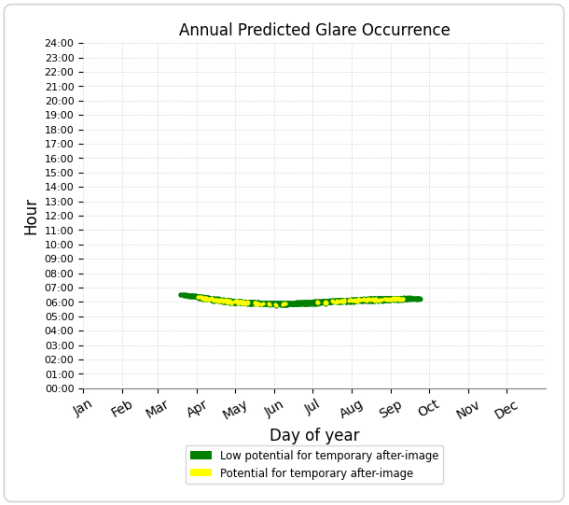


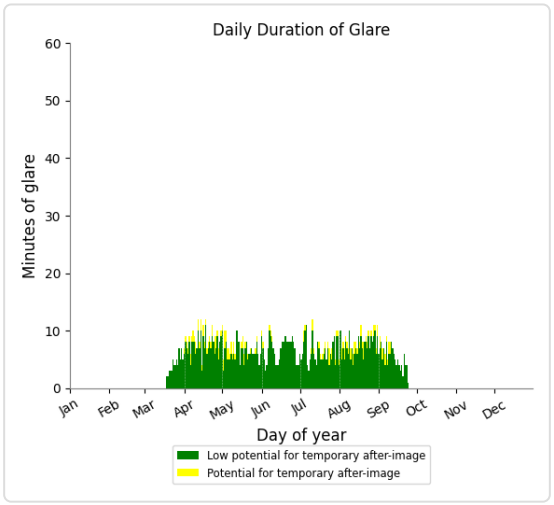


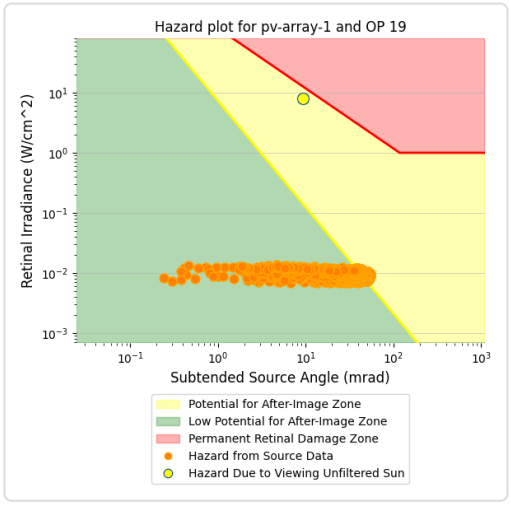
Solar array 1 and OP 19

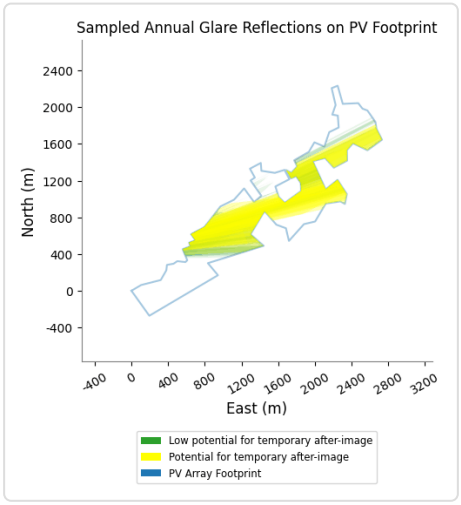
Yellow glare: 139 min.

Green glare: 1,224 min.





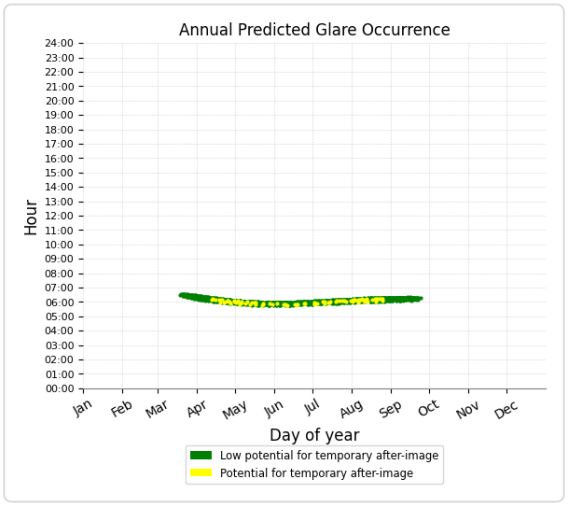


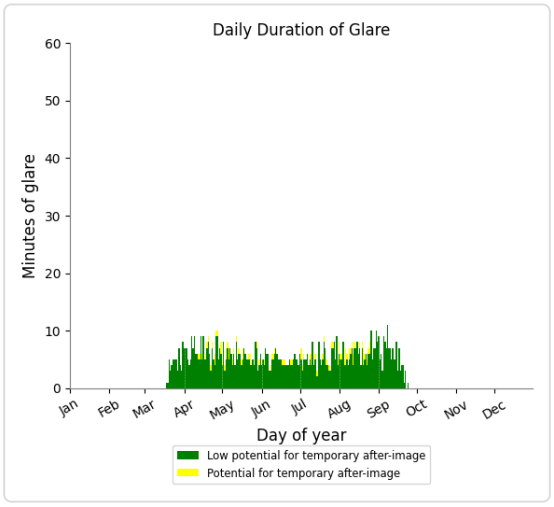


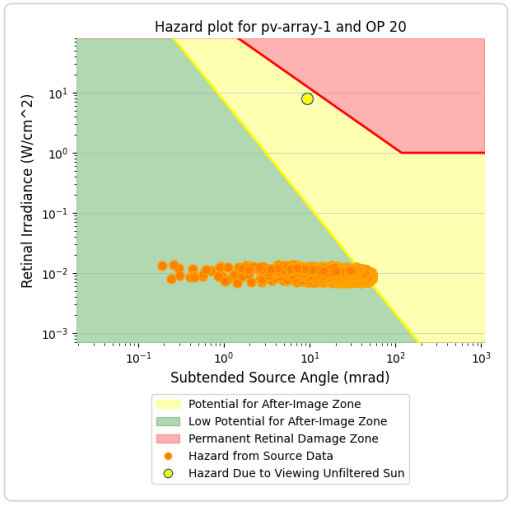
Solar array 1 and OP 20

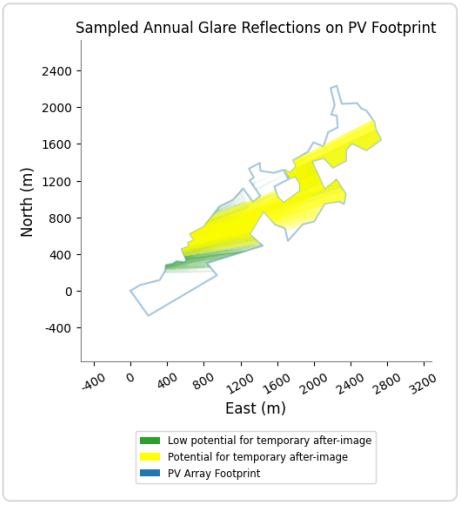
Yellow glare: 86 min.

Green glare: 1,035 min.





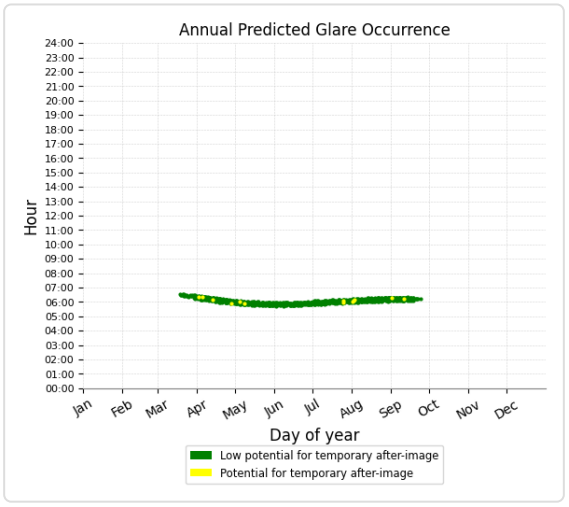


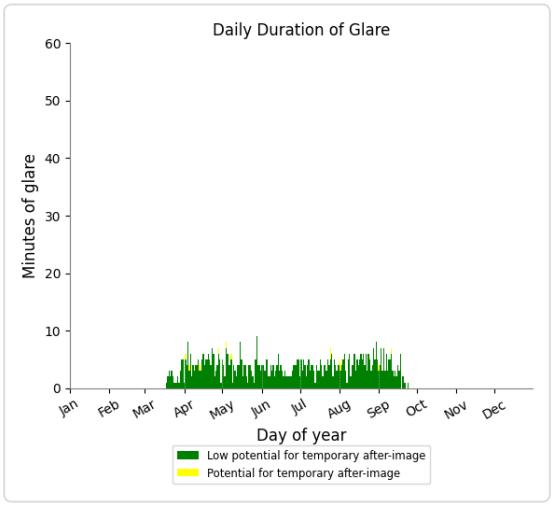


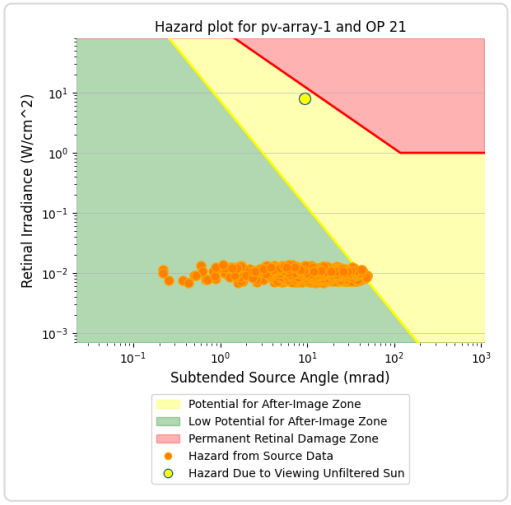
Solar array 1 and OP 21

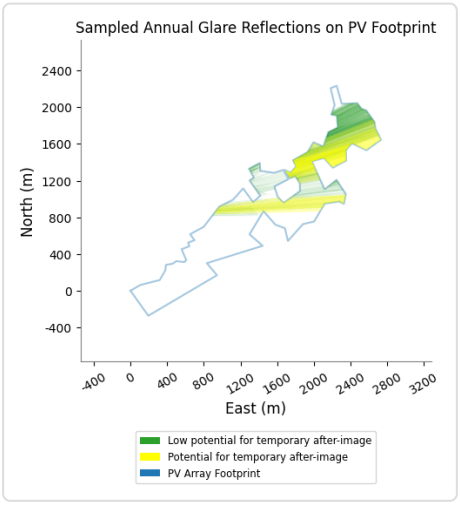
Yellow glare: 13 min.

Green glare: 718 min.





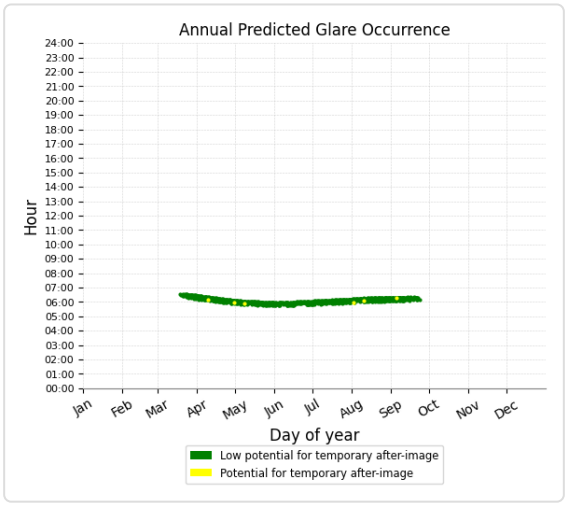


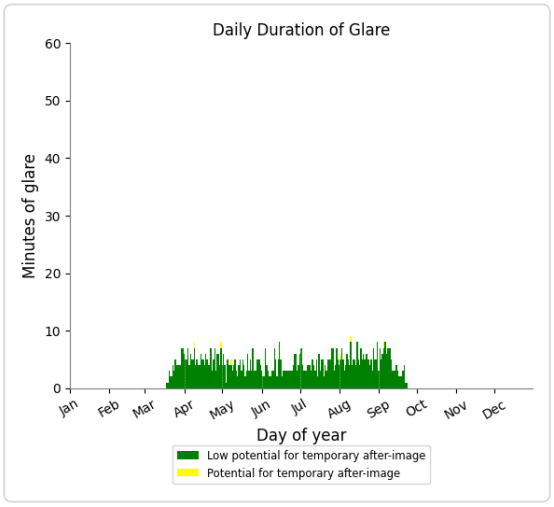


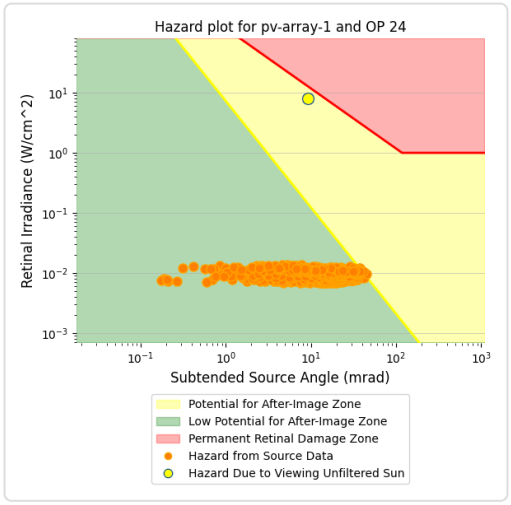
Solar array 1 and OP 24

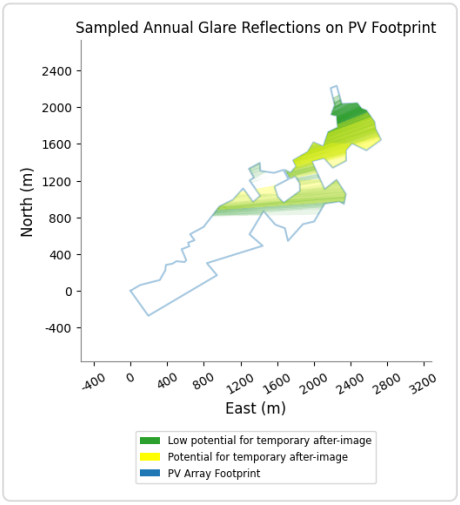
Yellow glare: 6 min.

Green glare: 839 min.





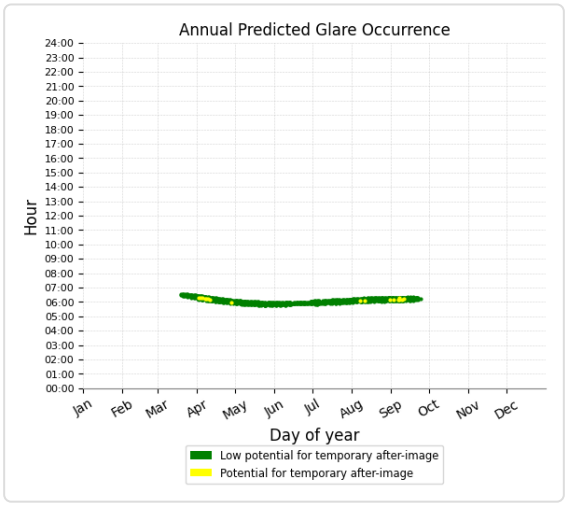


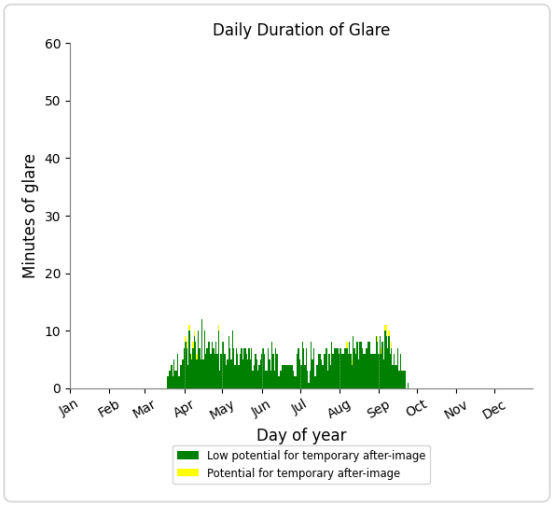


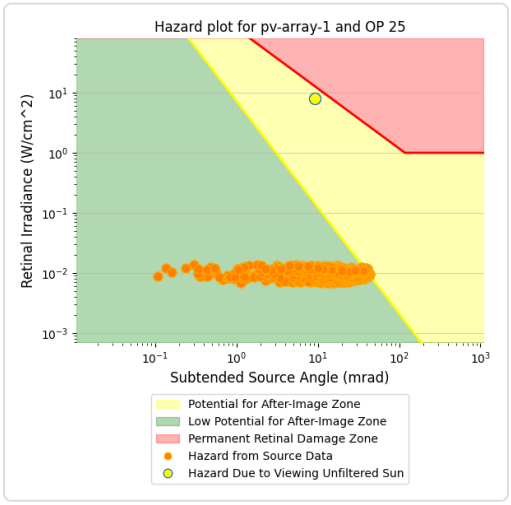
Solar array 1 and OP 25

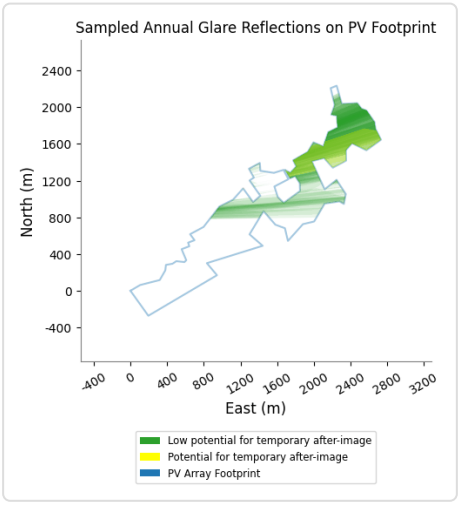
Yellow glare: 17 min.

Green glare: 1,082 min.





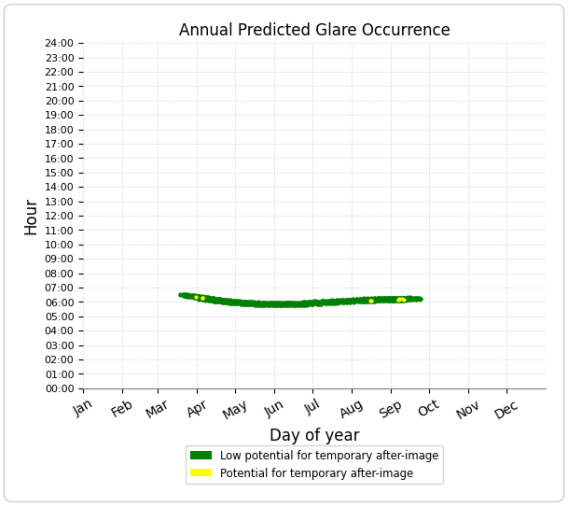


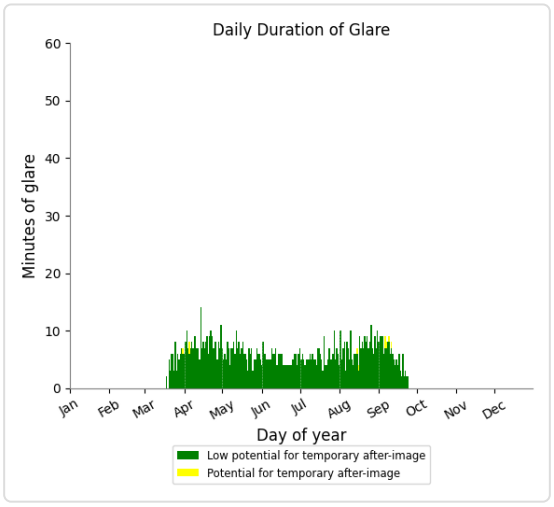


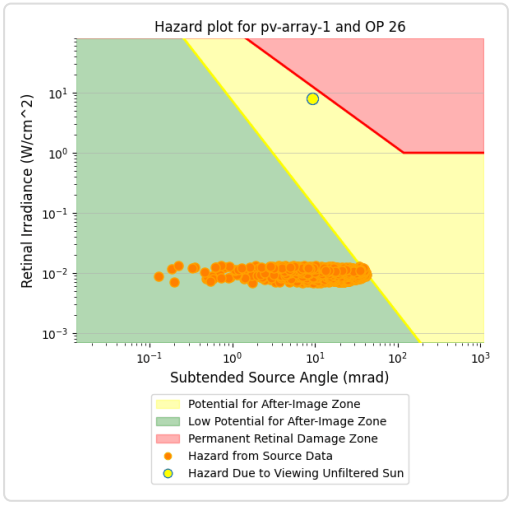
Solar array 1 and OP 26

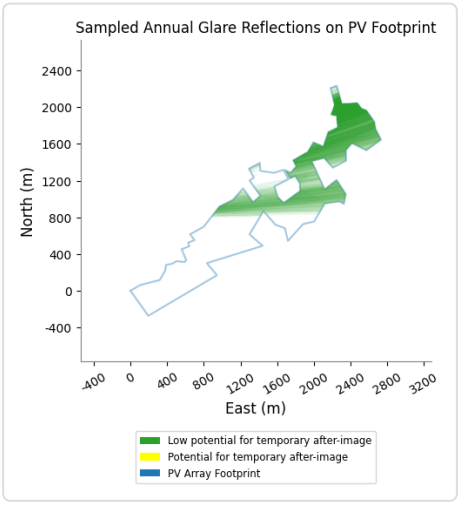
Yellow glare: 10 min.

Green glare: 1,181 min.





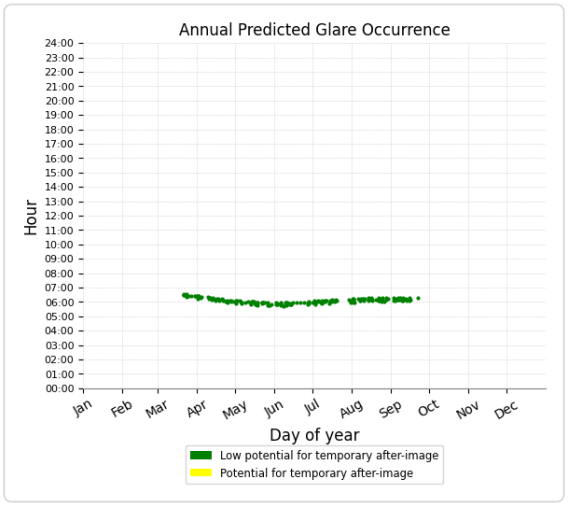


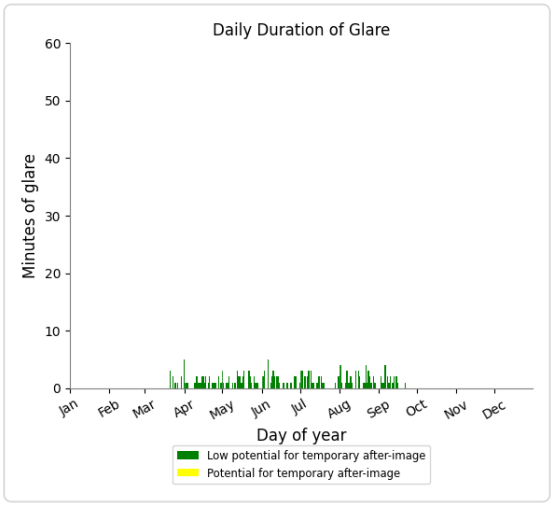


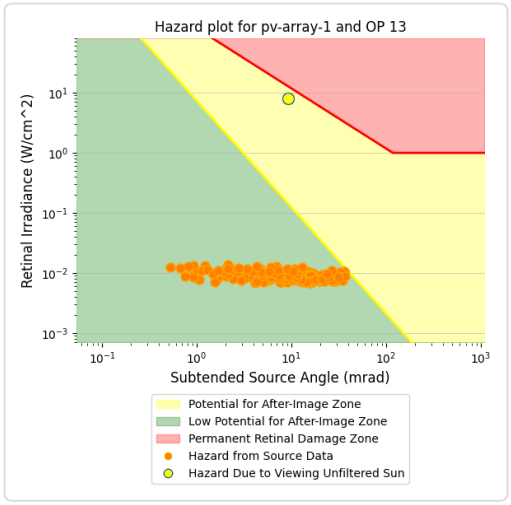
Solar array 1 and OP 13

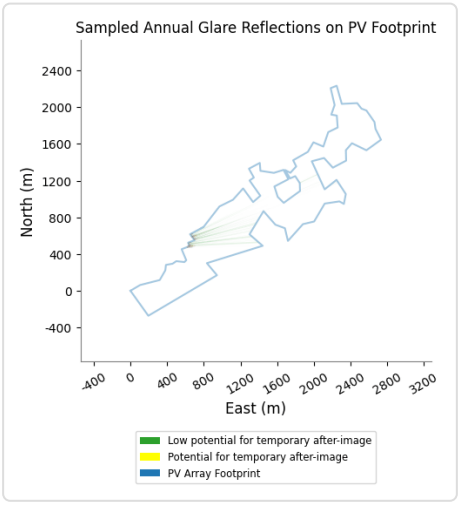
Yellow glare: none

Green glare: 195 min.





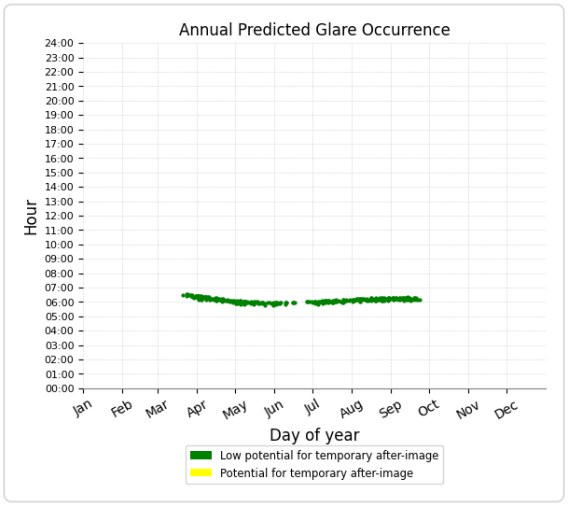


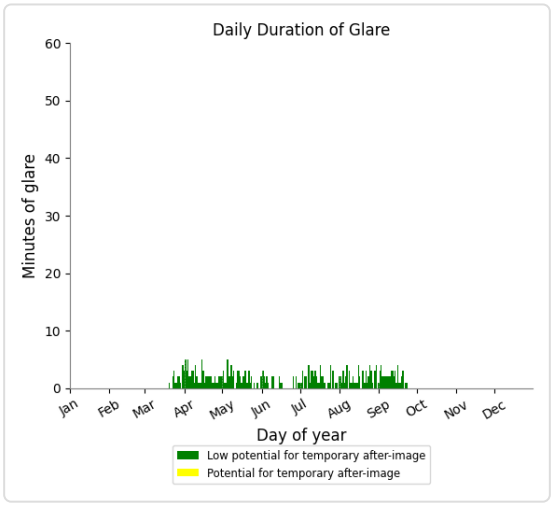


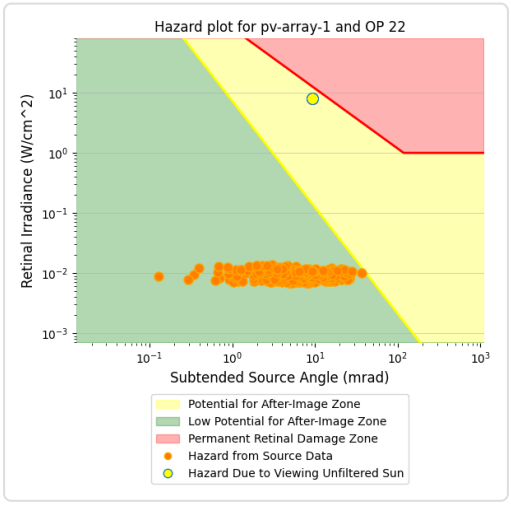
Solar array 1 and OP 22

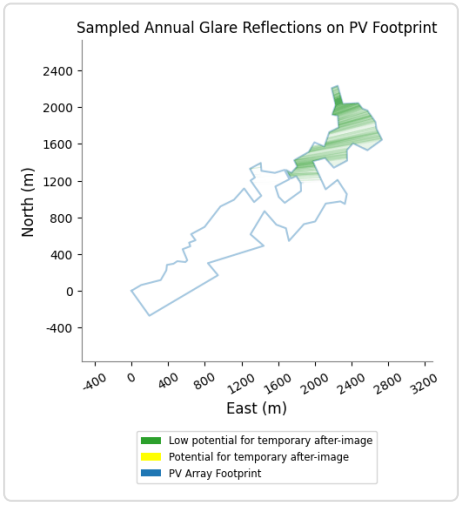
Yellow glare: none

Green glare: 319 min.





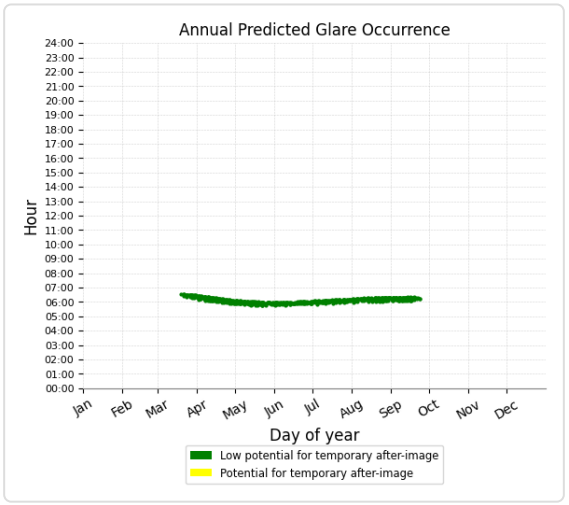


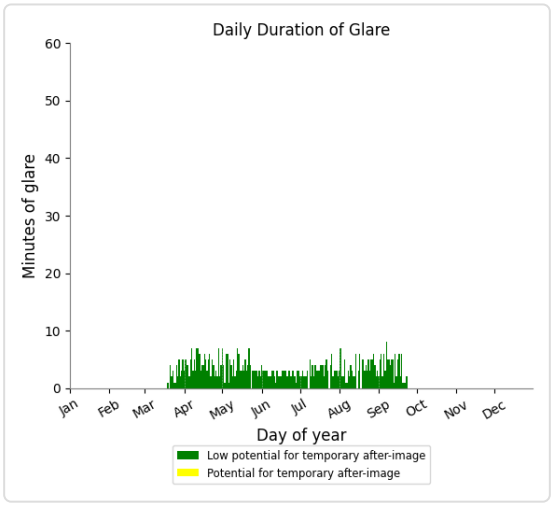


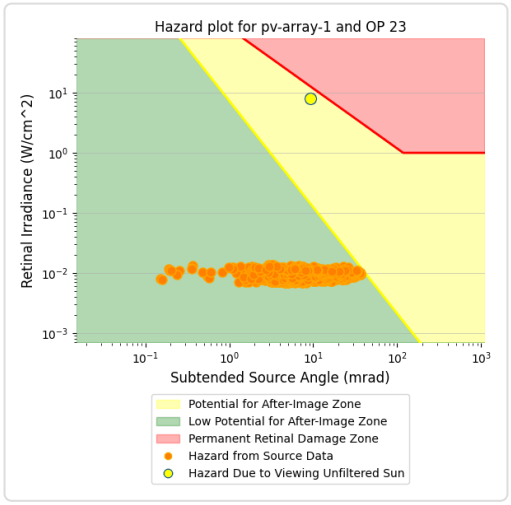
Solar array 1 and OP 23

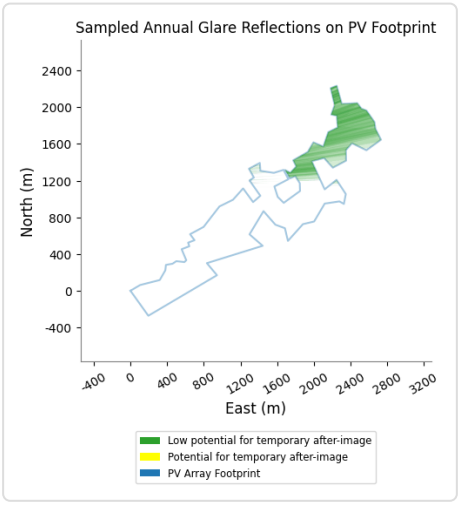
Yellow glare: none

Green glare: 637 min.





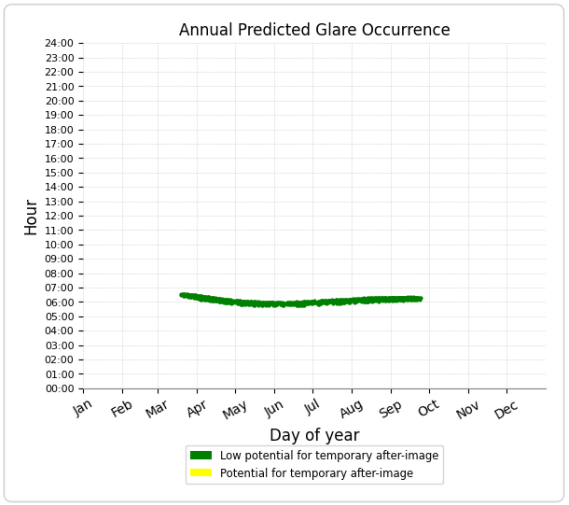


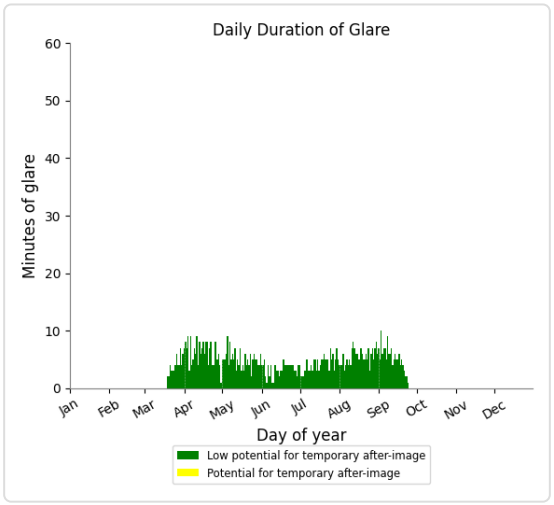


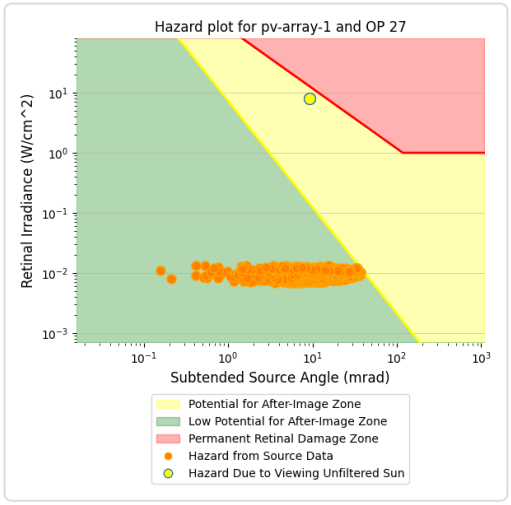
Solar array 1 and OP 27

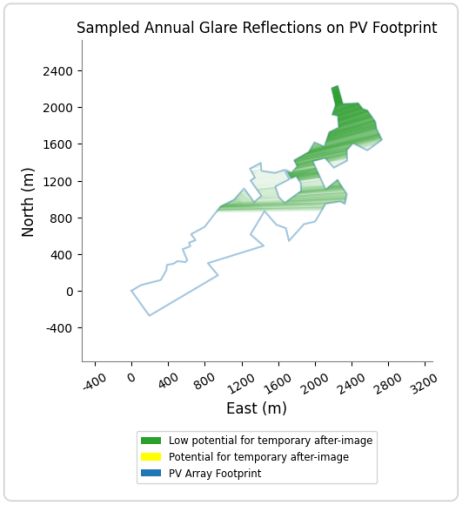
Yellow glare: none

Green glare: 925 min.





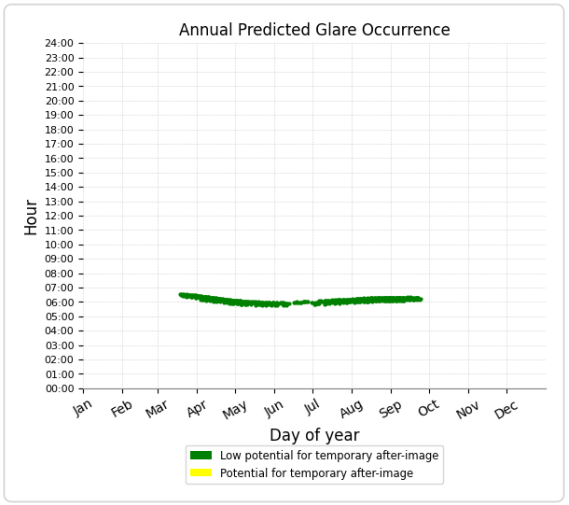


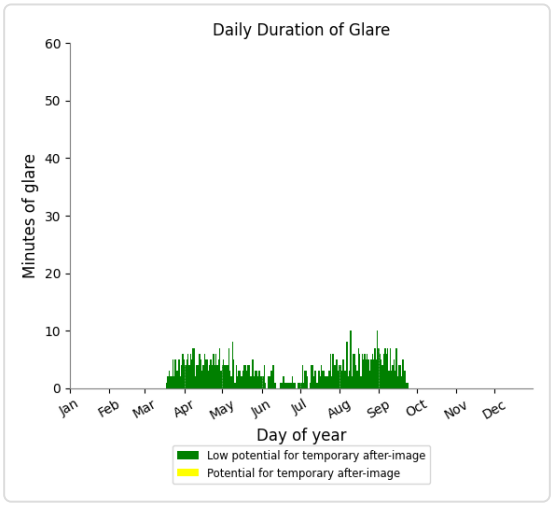


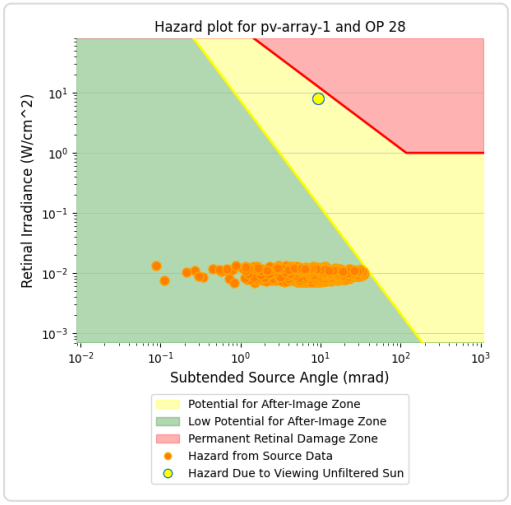
Solar array 1 and OP 28

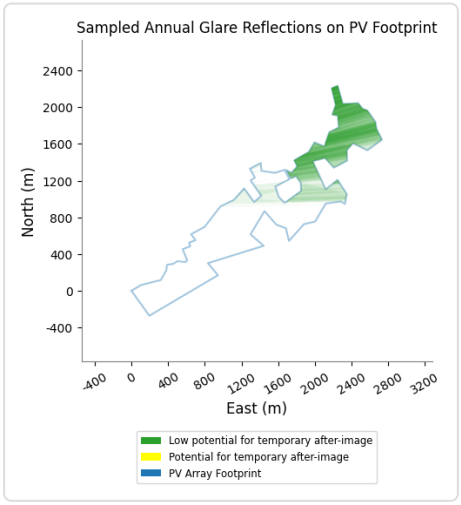
Yellow glare: none

Green glare: 681 min.





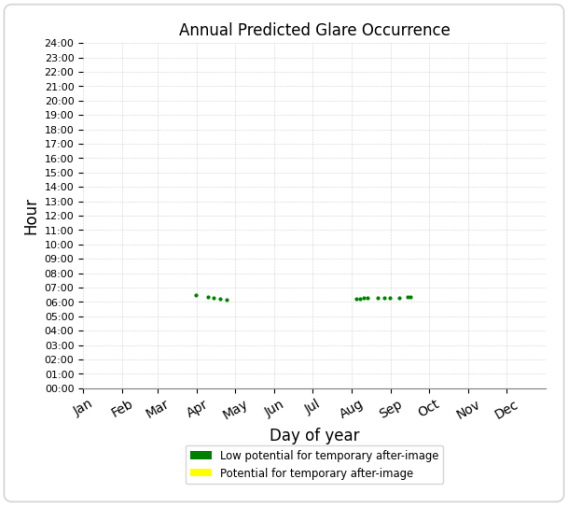


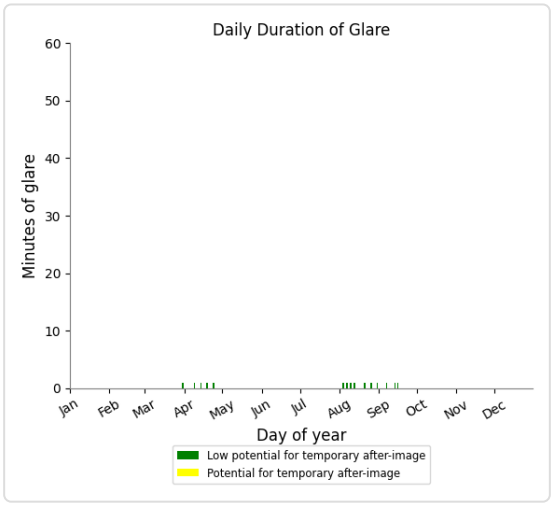


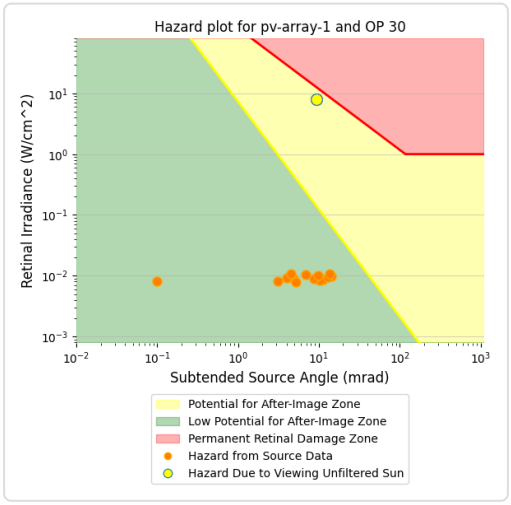
Solar array 1 and OP 30

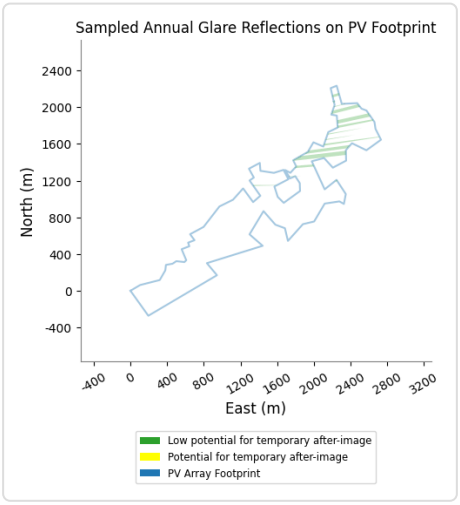
Yellow glare: none

Green glare: 15 min.





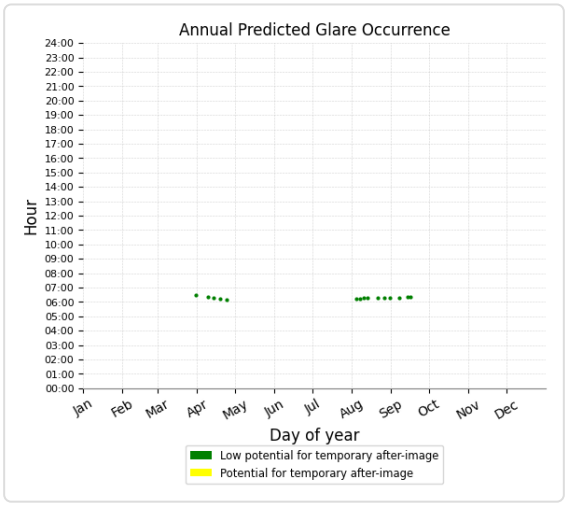


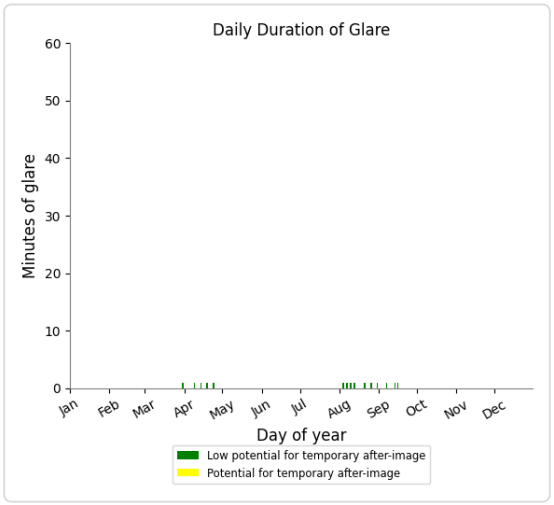


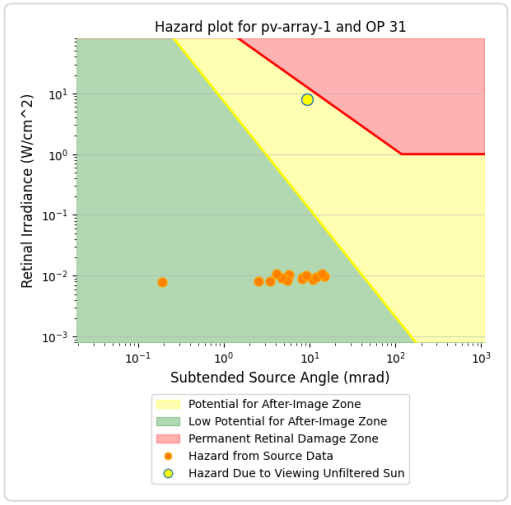
Solar array 1 and OP 31

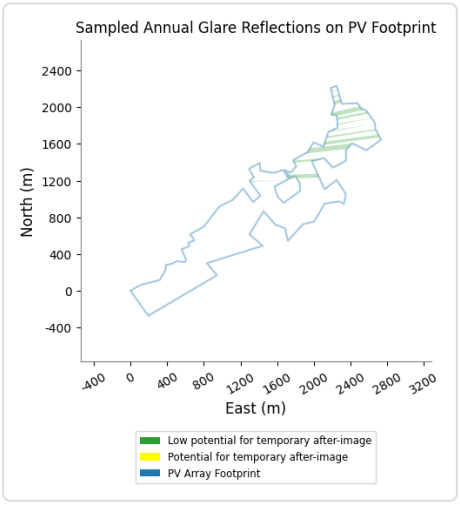
Yellow glare: none

Green glare: 15 min.





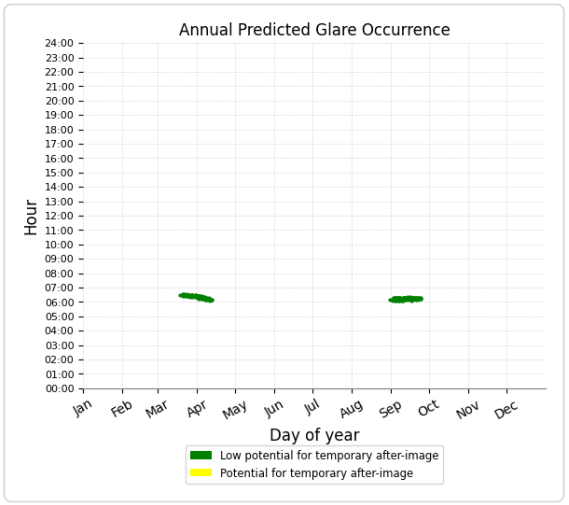


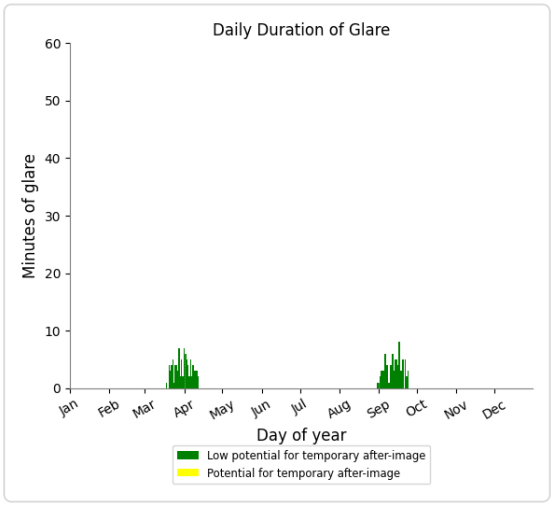


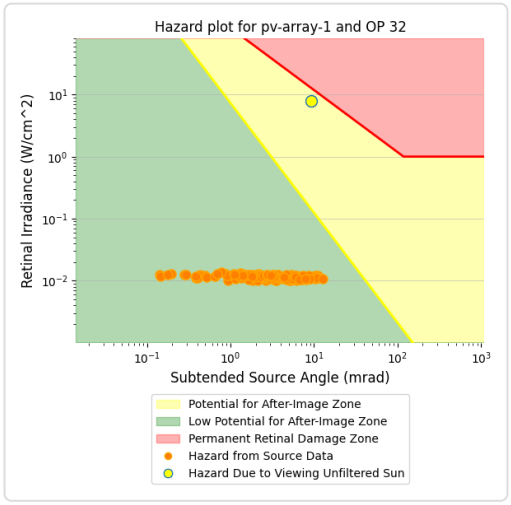
Solar array 1 and OP 32

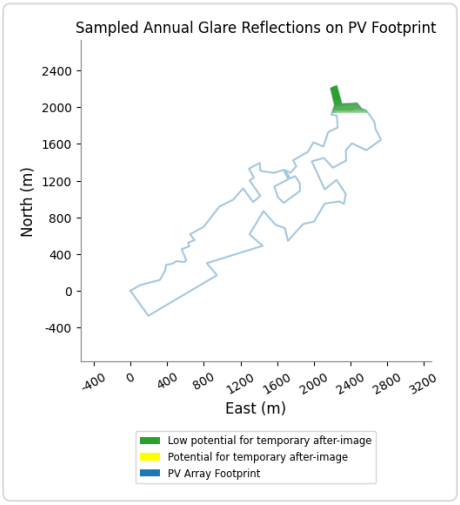
Yellow glare: none

Green glare: 179 min.





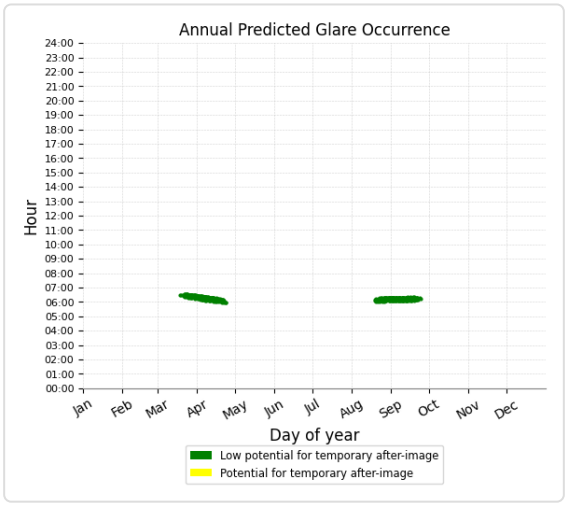


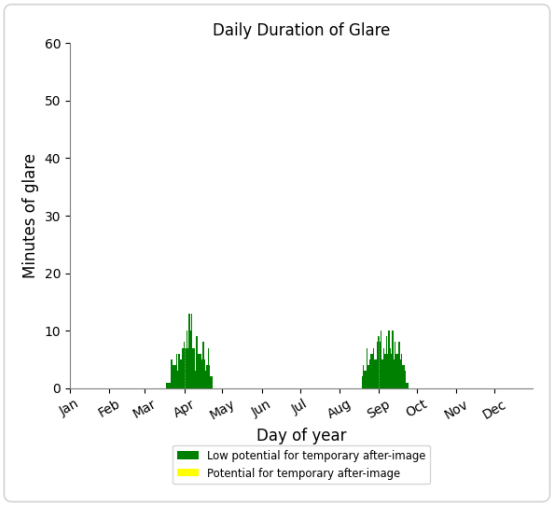


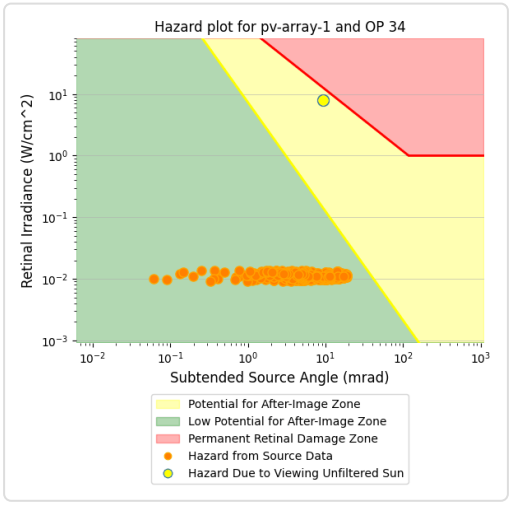
Solar array 1 and OP 34

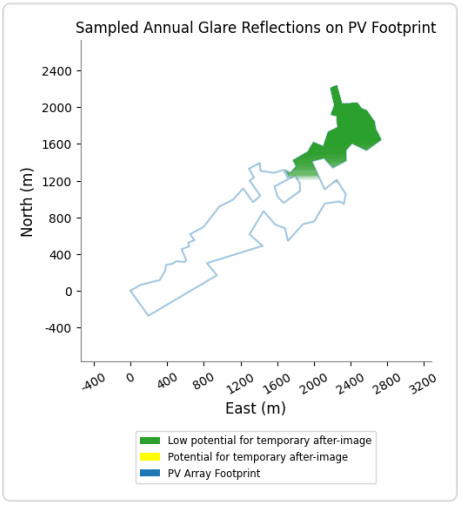
Yellow glare: none

Green glare: 420 min.





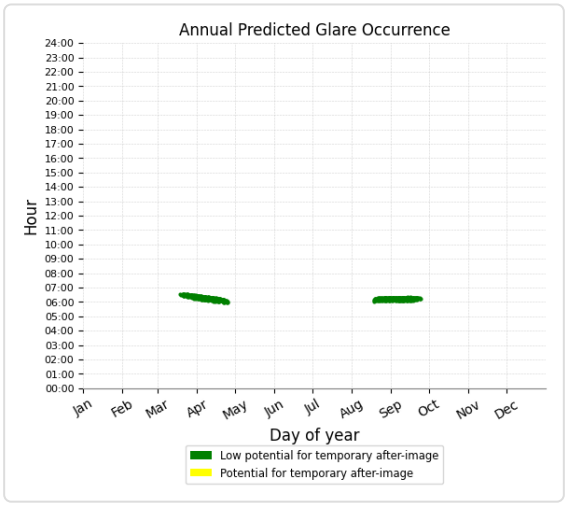


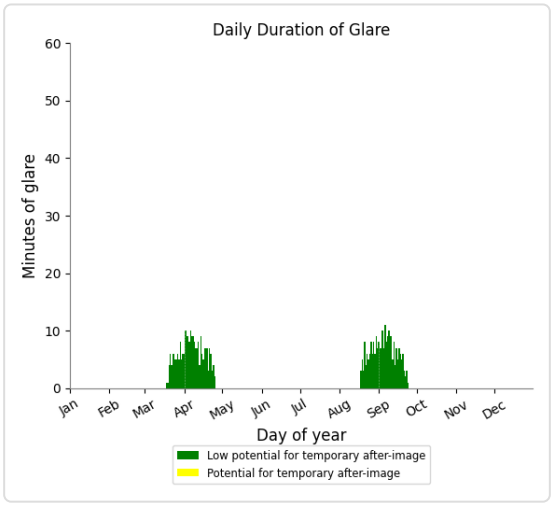


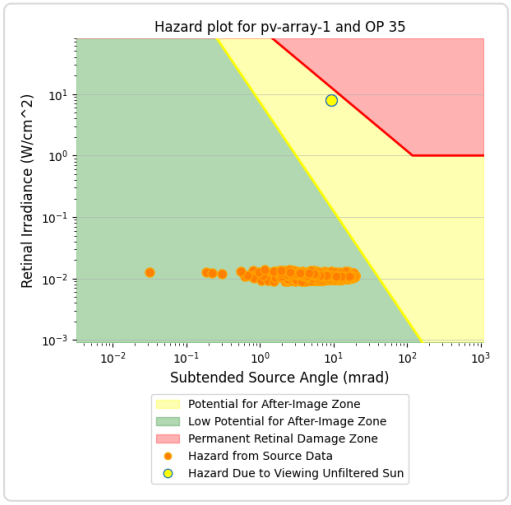
Solar array 1 and OP 35

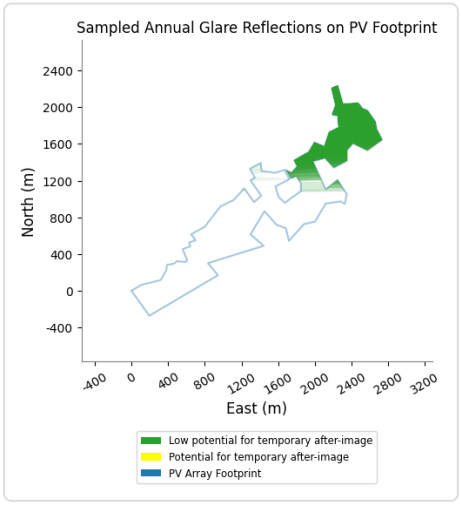
Yellow glare: none

Green glare: 479 min.





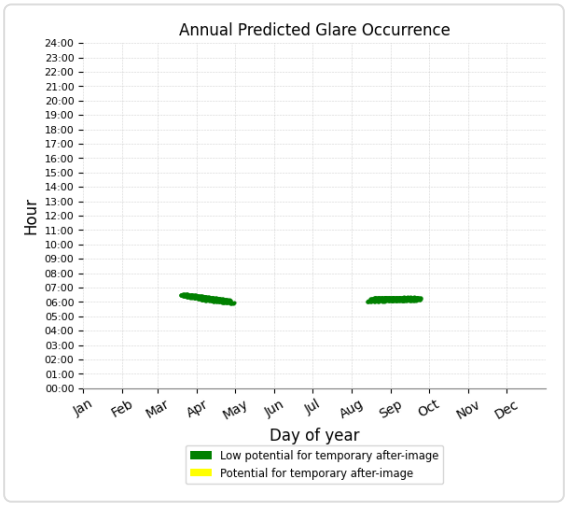


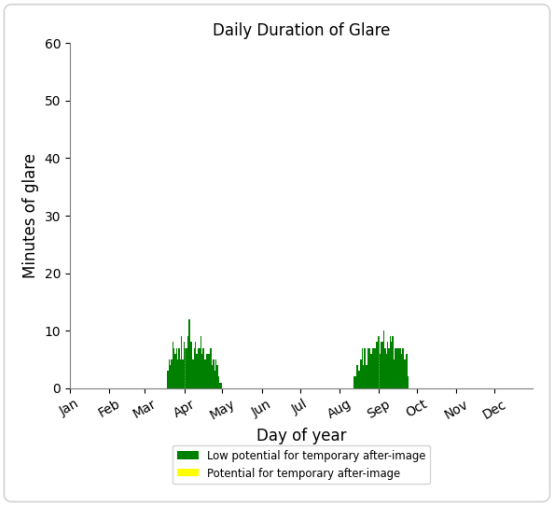


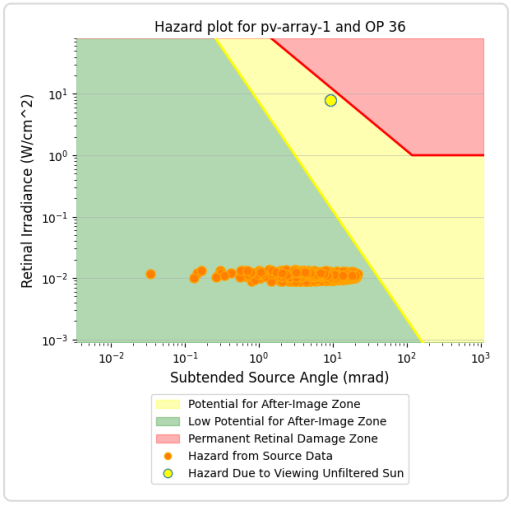
Solar array 1 and OP 36

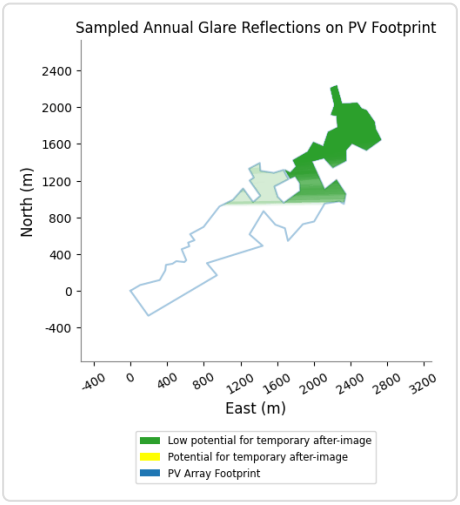
Yellow glare: none

Green glare: 525 min.





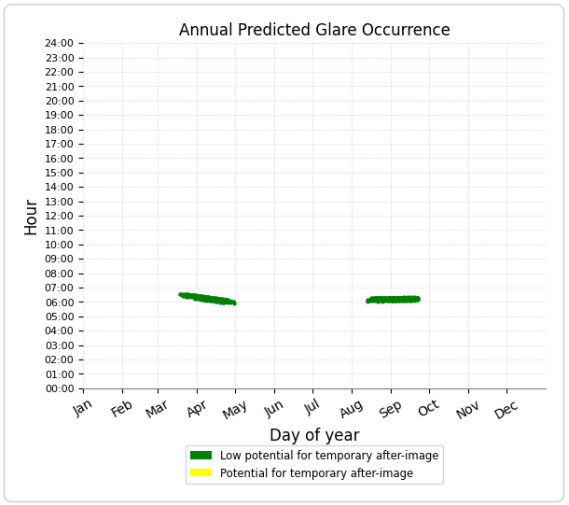


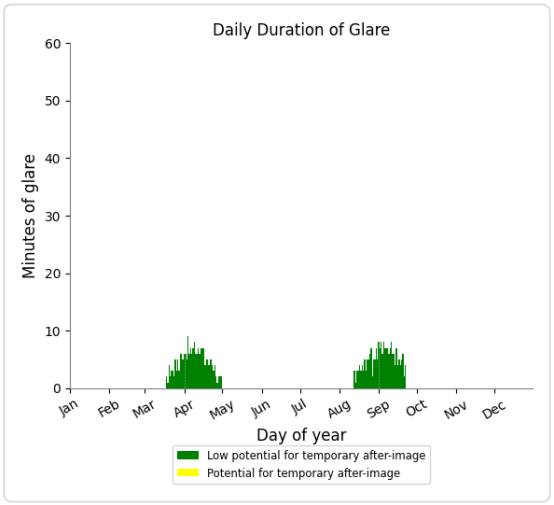


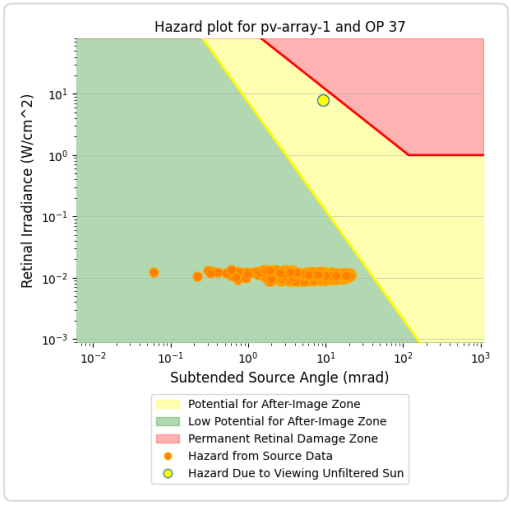
Solar array 1 and OP 37

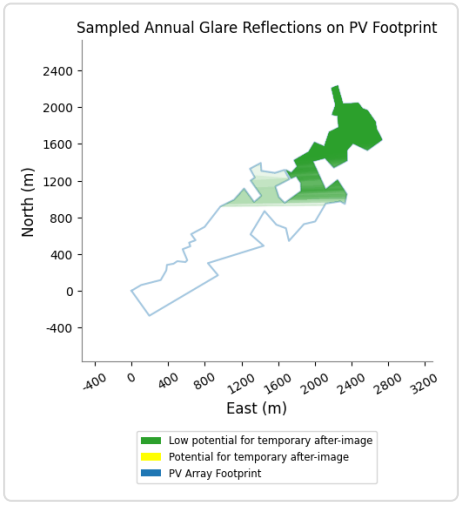
Yellow glare: none

Green glare: 413 min.





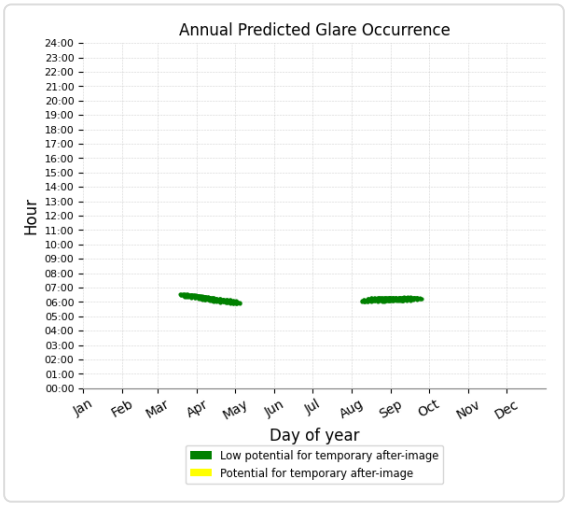


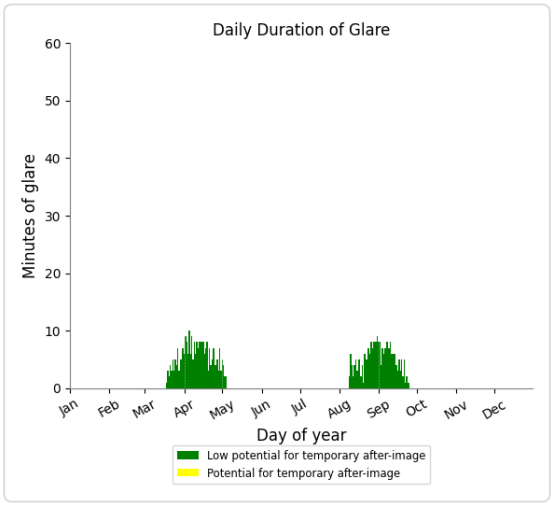


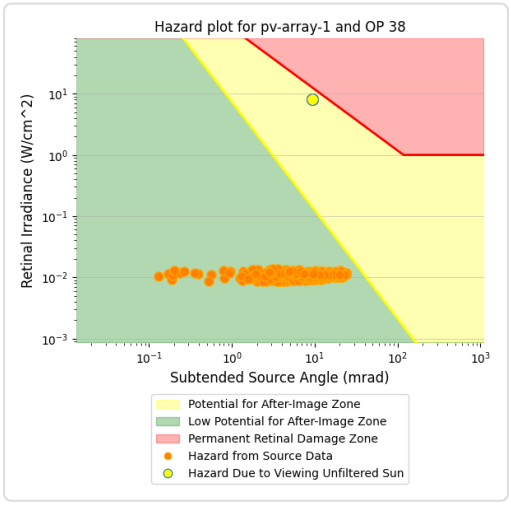
Solar array 1 and OP 38

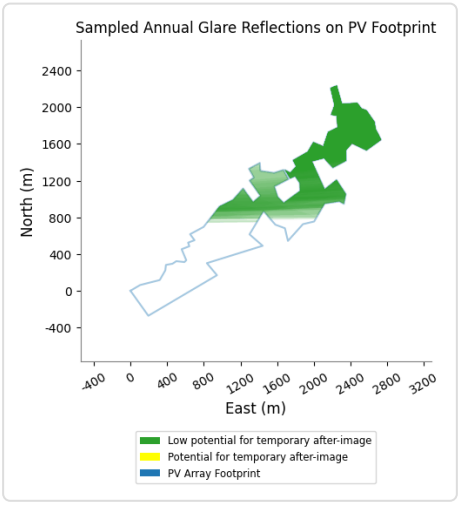
Yellow glare: none

Green glare: 510 min.





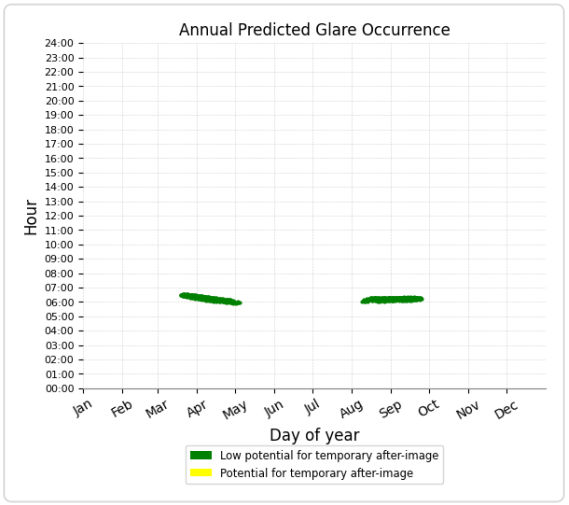


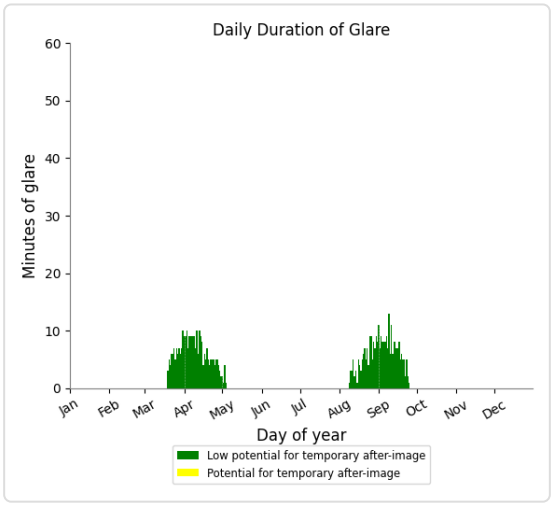


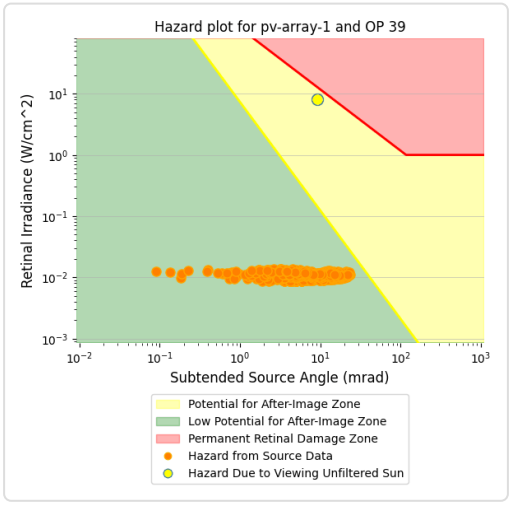
Solar array 1 and OP 39

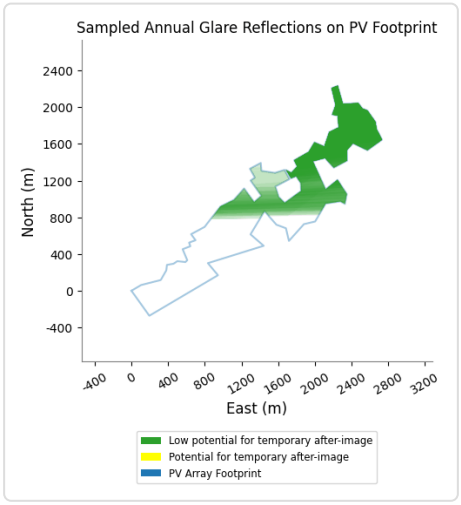
Yellow glare: none

Green glare: 577 min.





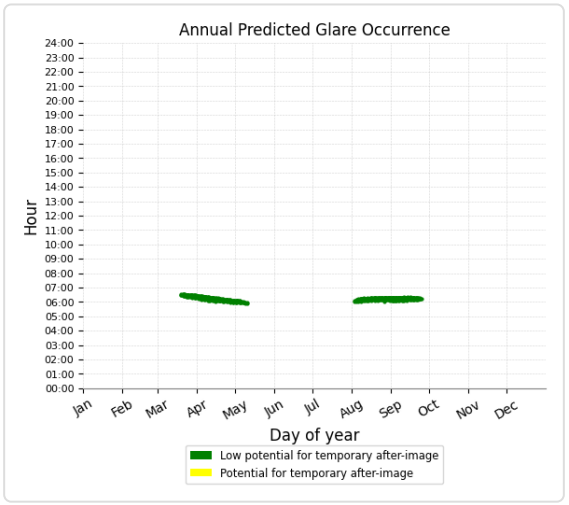


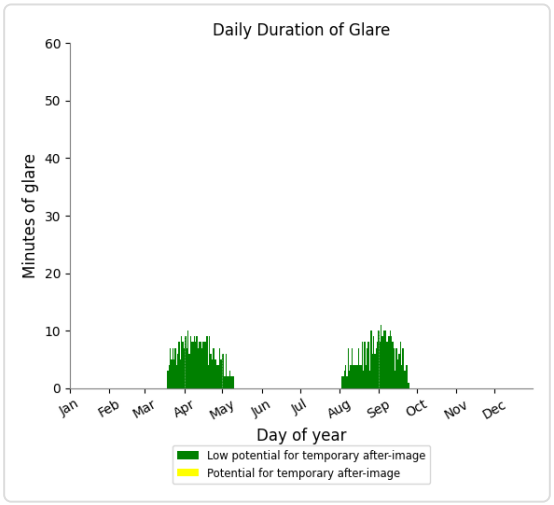


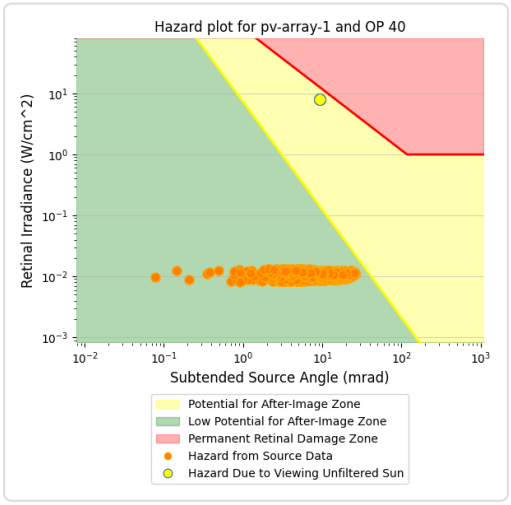
Solar array 1 and OP 40

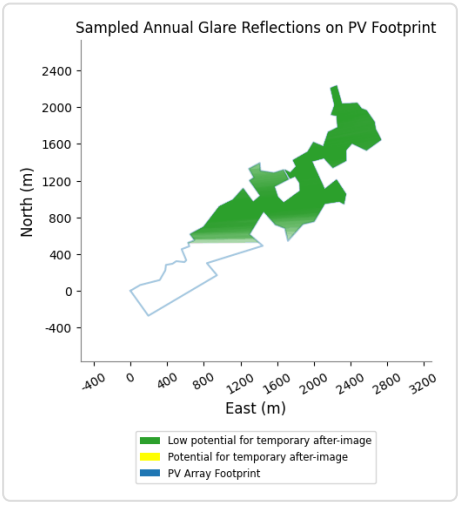
Yellow glare: none

Green glare: 646 min.





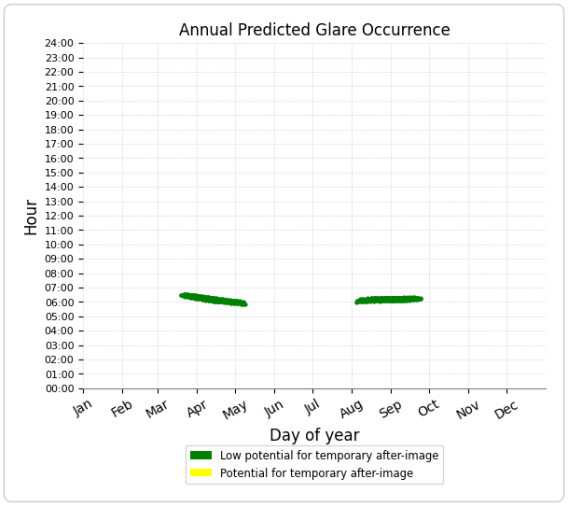


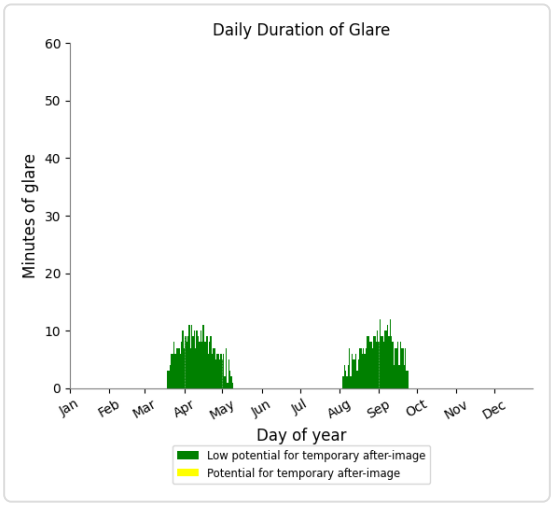


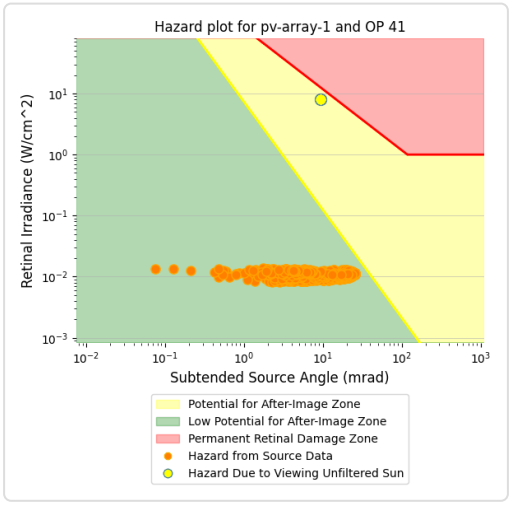
Solar array 1 and OP 41

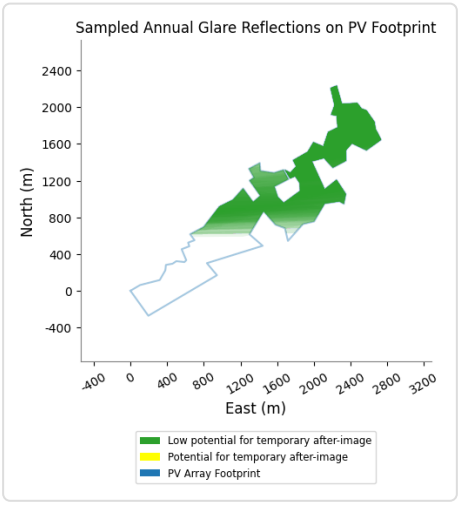
Yellow glare: none

Green glare: 708 min.





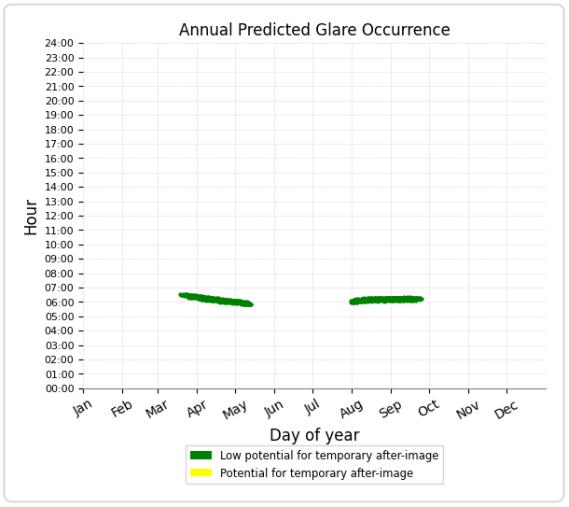


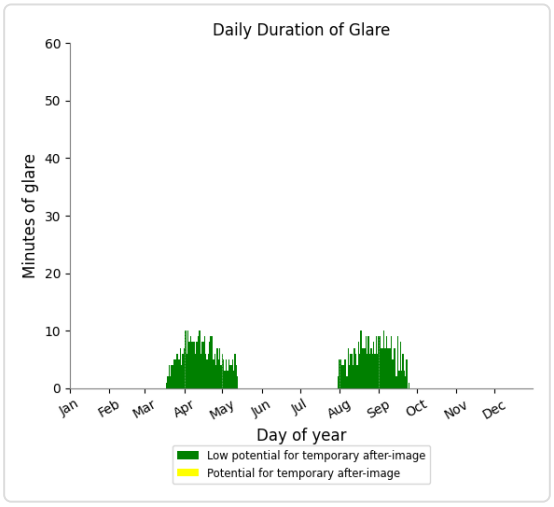


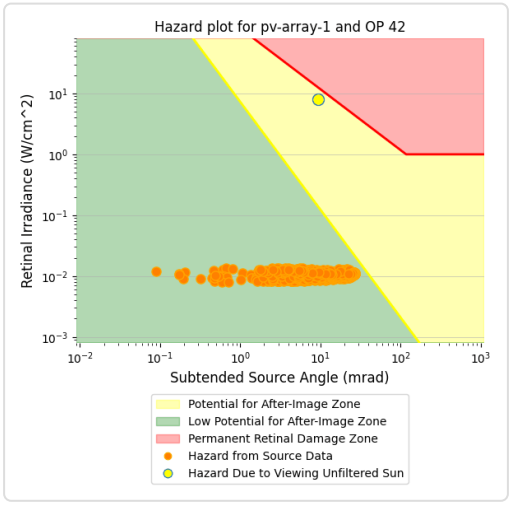
Solar array 1 and OP 42

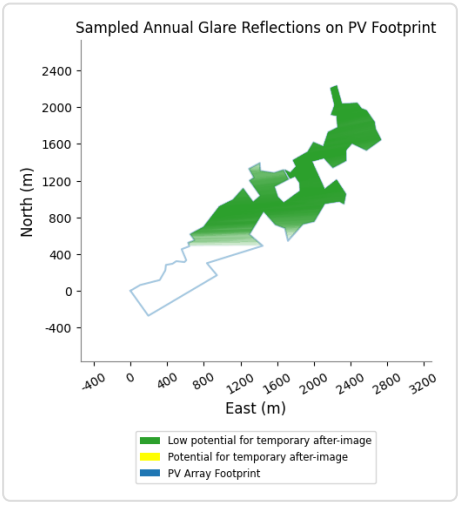
Yellow glare: none

Green glare: 677 min.





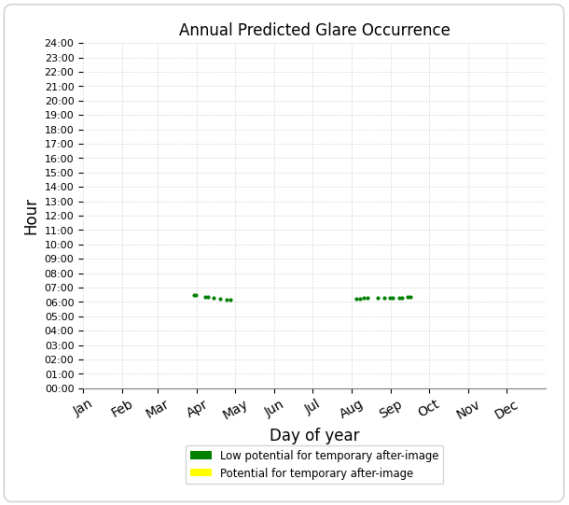


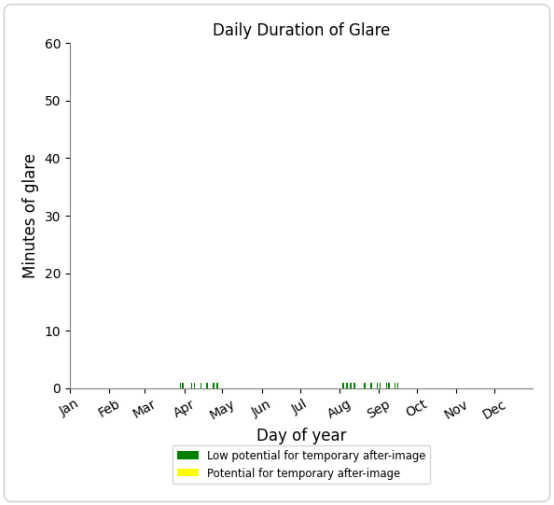


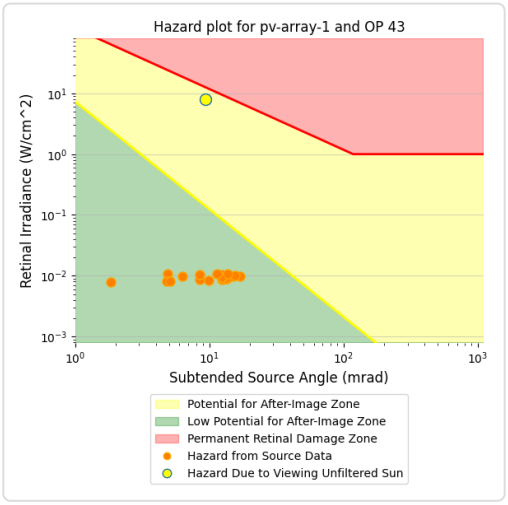
Solar array 1 and OP 43

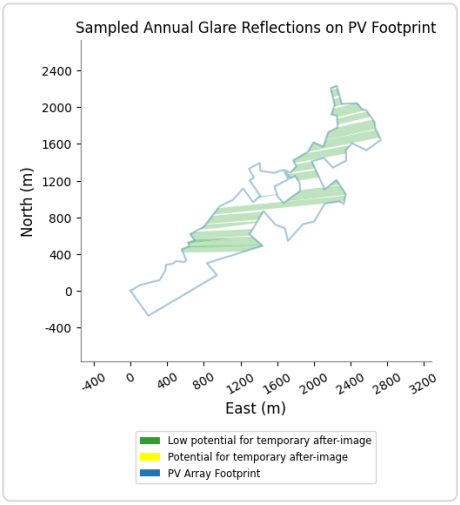
Yellow glare: none

Green glare: 20 min.





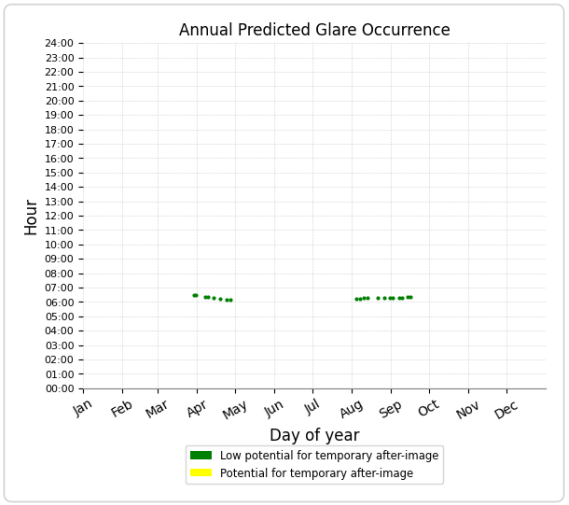


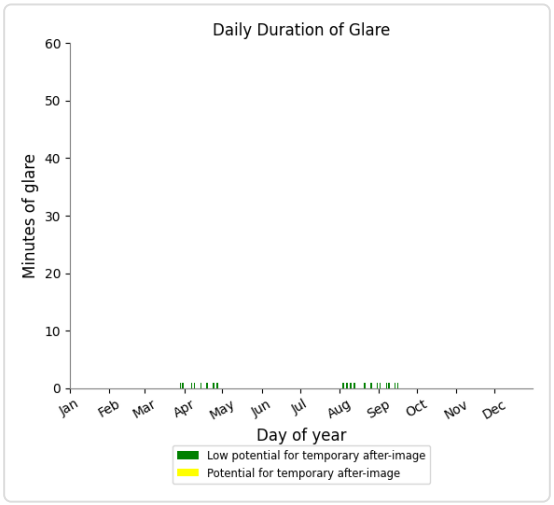


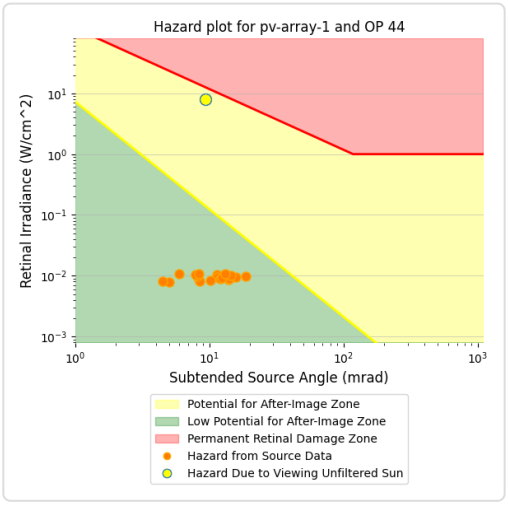
Solar array 1 and OP 44

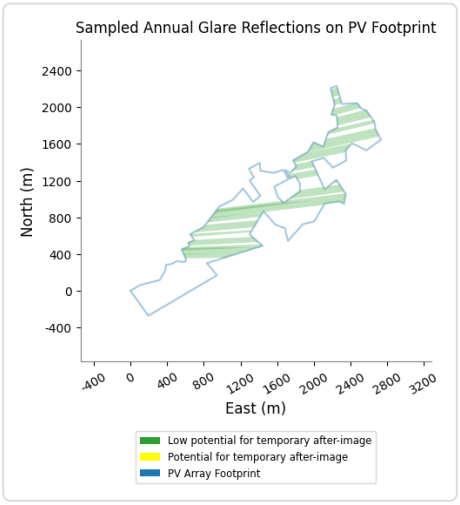
Yellow glare: none

Green glare: 20 min.





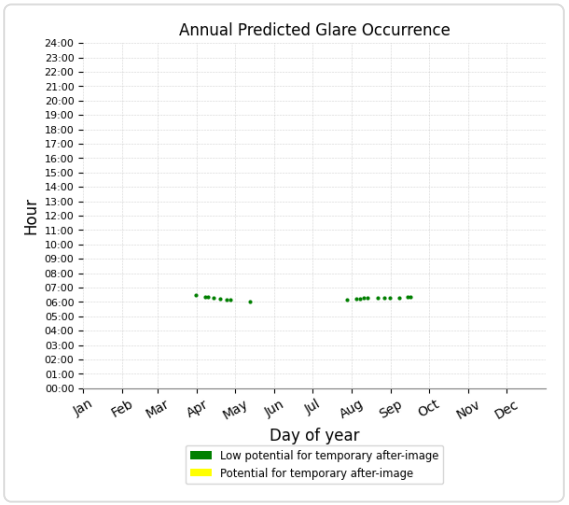


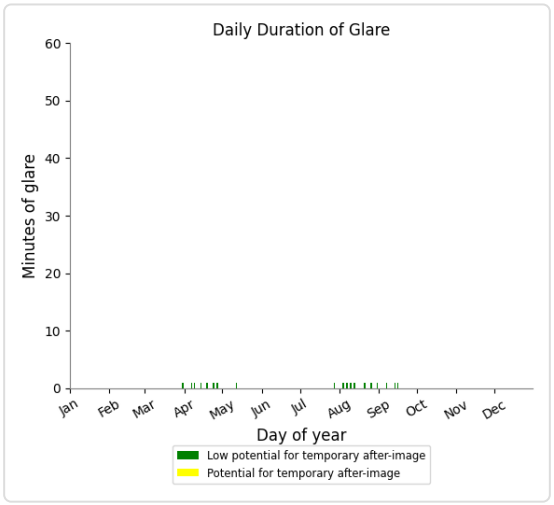


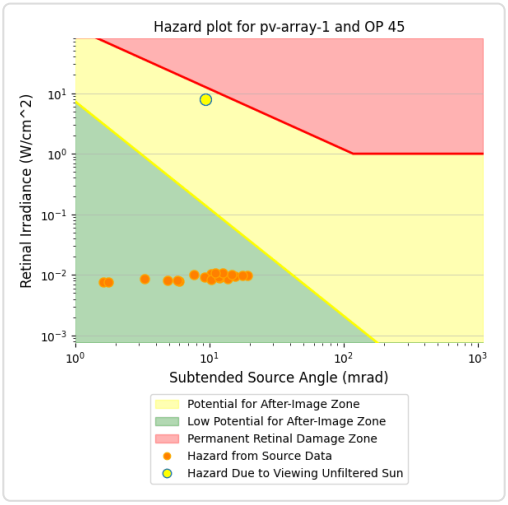
Solar array 1 and OP 45

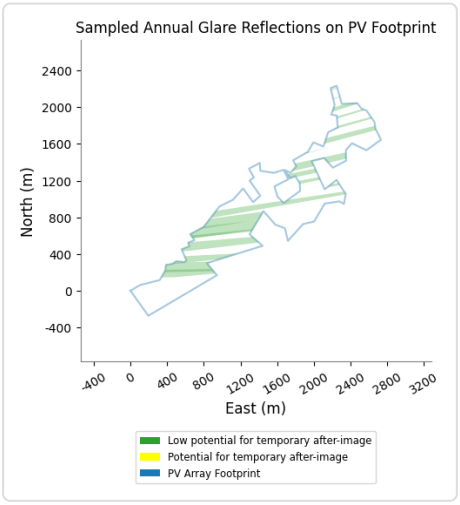
Yellow glare: none

Green glare: 19 min.





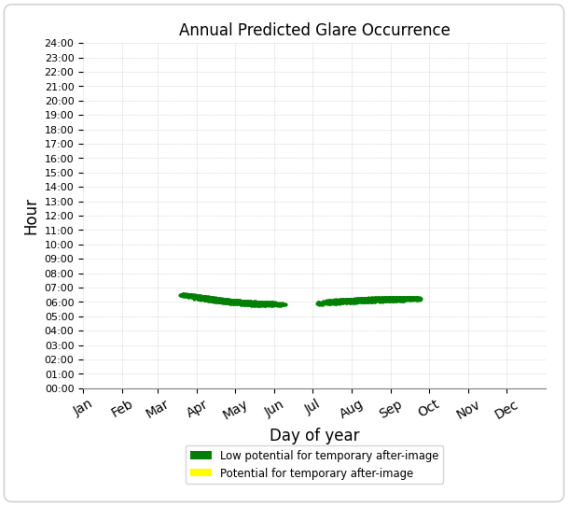


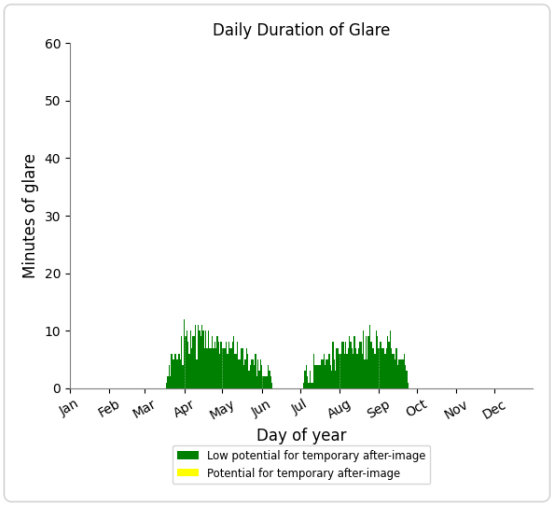


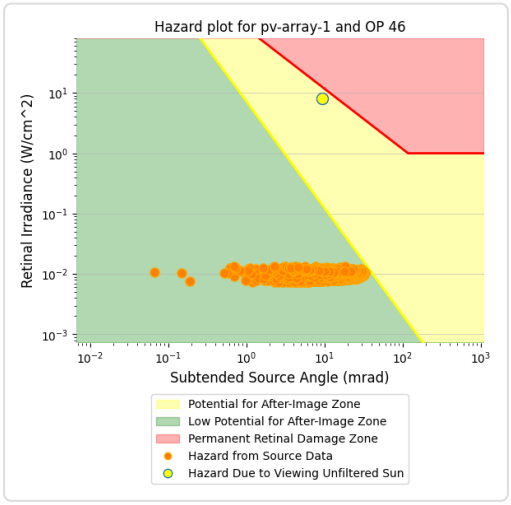
Solar array 1 and OP 46

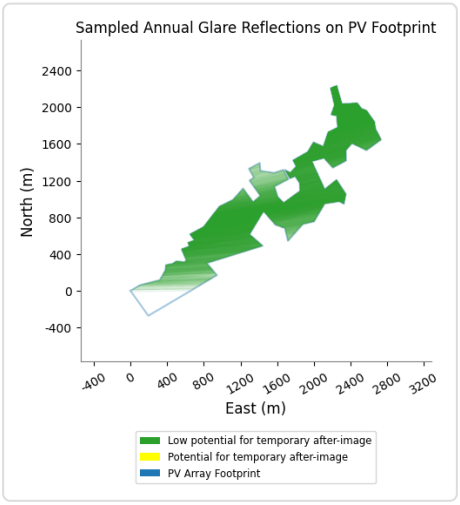
Yellow glare: none

Green glare: 1,019 min.





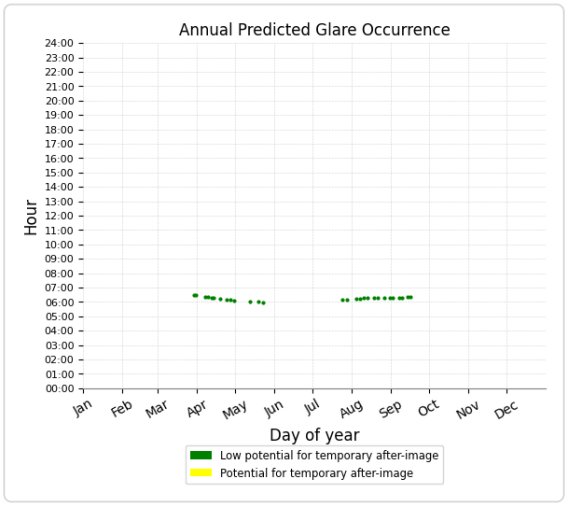


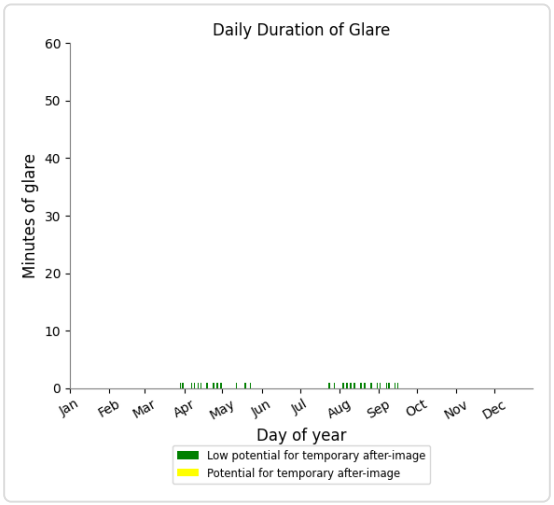


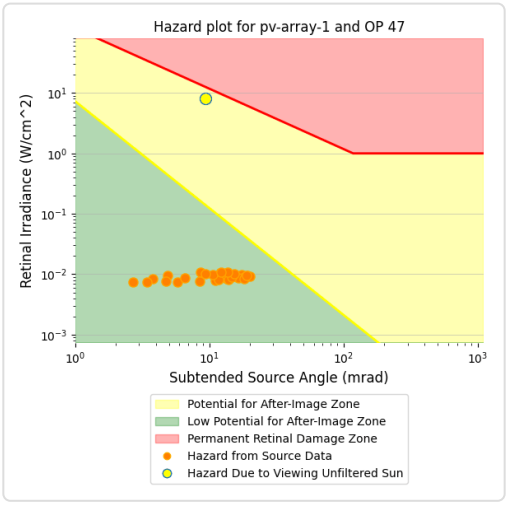
Solar array 1 and OP 47

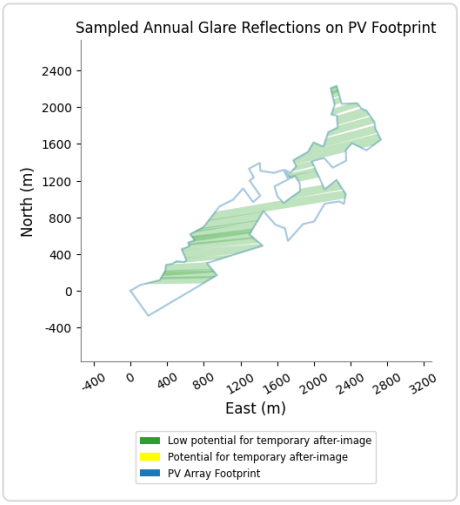
Yellow glare: none

Green glare: 28 min.





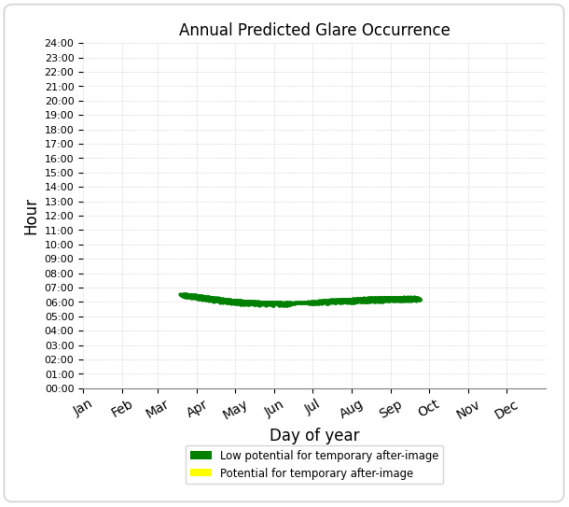


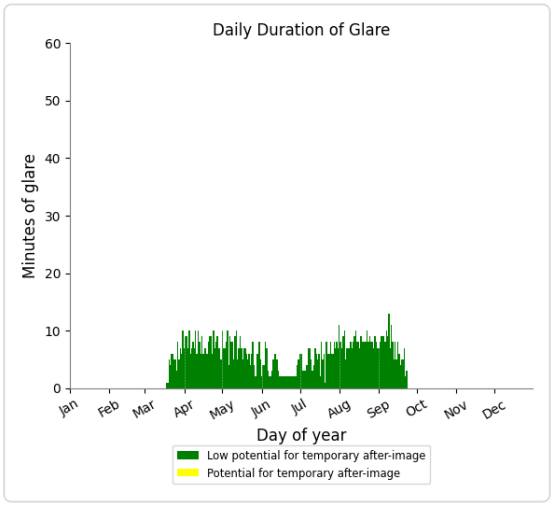


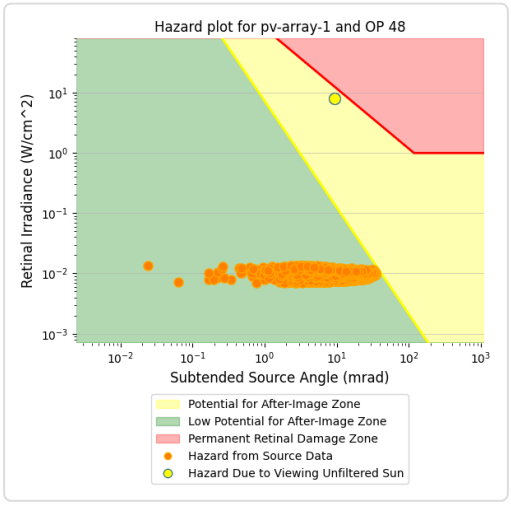
Solar array 1 and OP 48

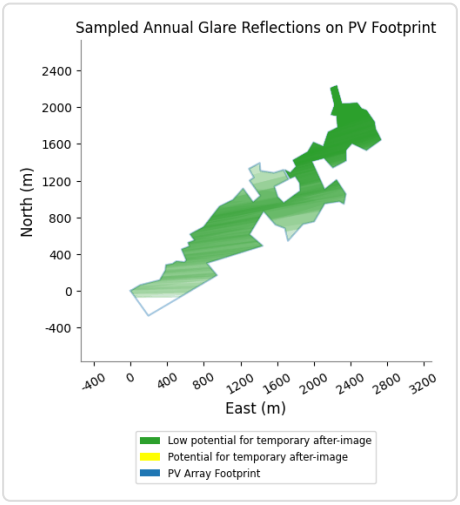
Yellow glare: none

Green glare: 1,195 min.





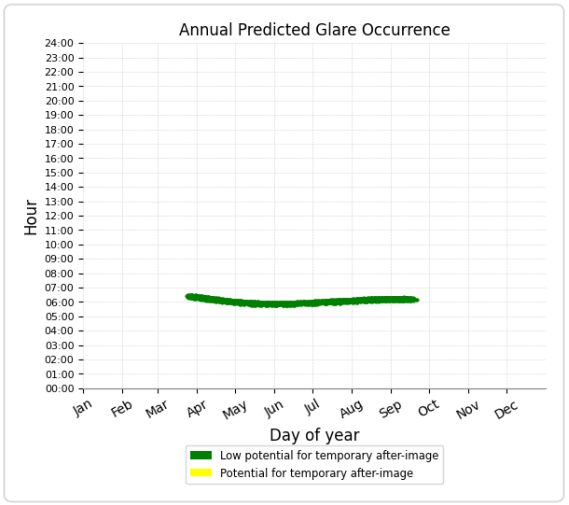


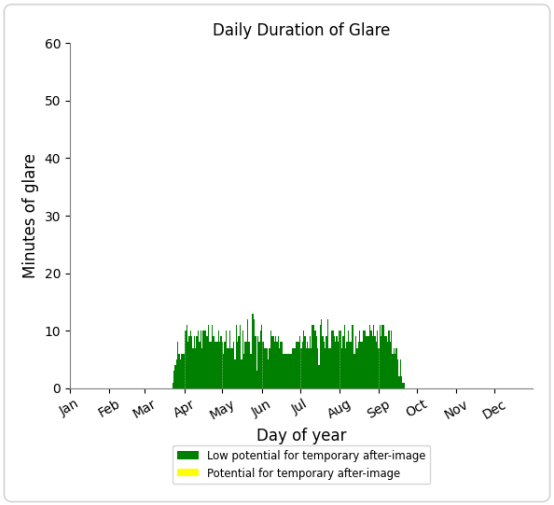


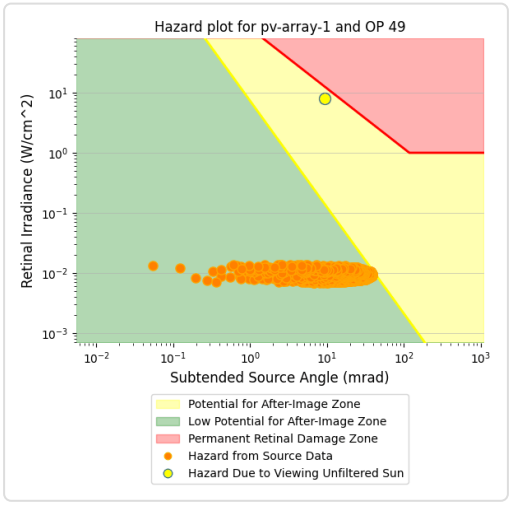
Solar array 1 and OP 49

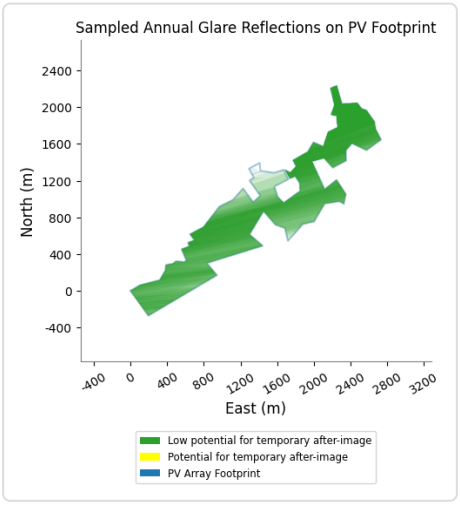
Yellow glare: none

Green glare: 1,485 min.





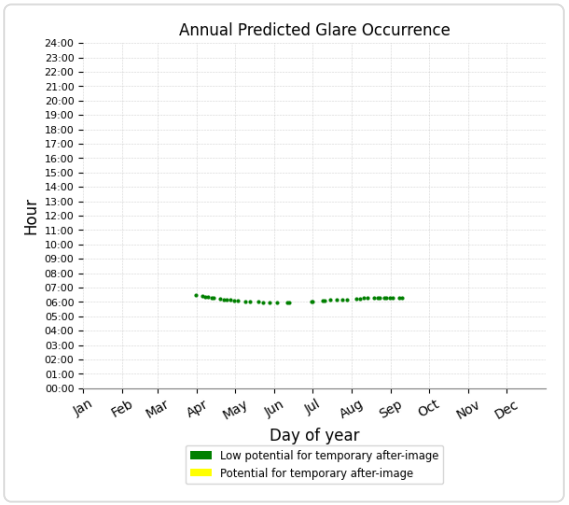


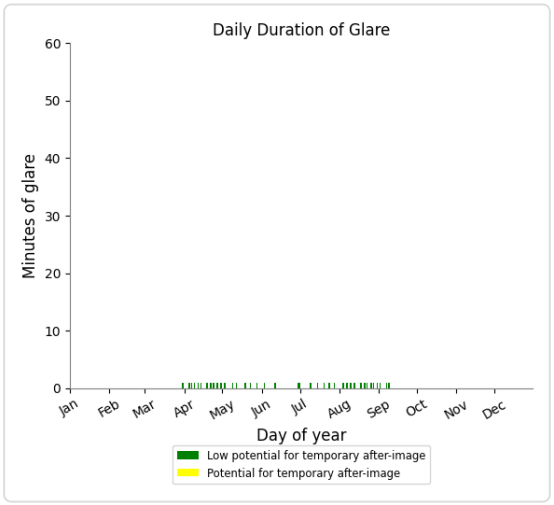


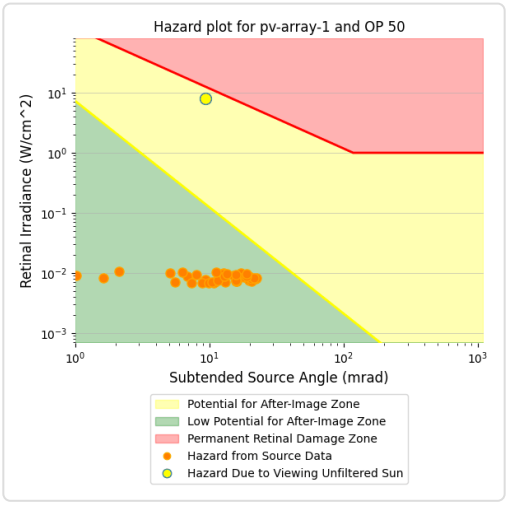
Solar array 1 and OP 50

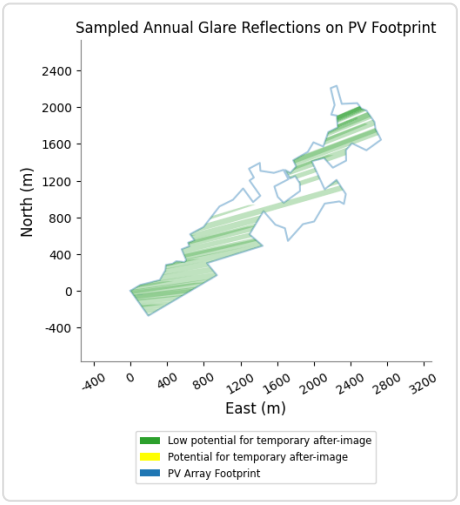
Yellow glare: none

Green glare: 41 min.





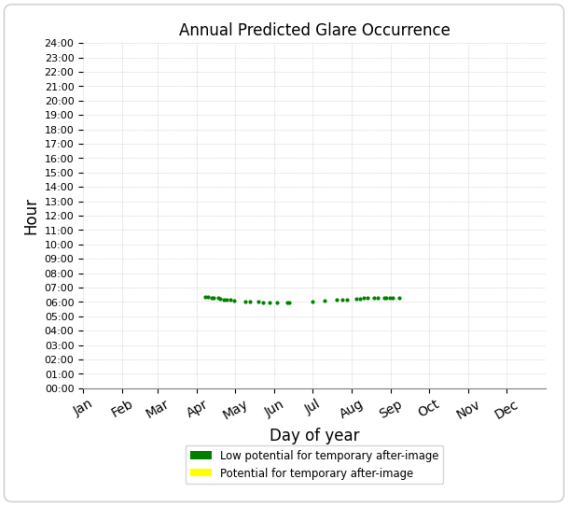


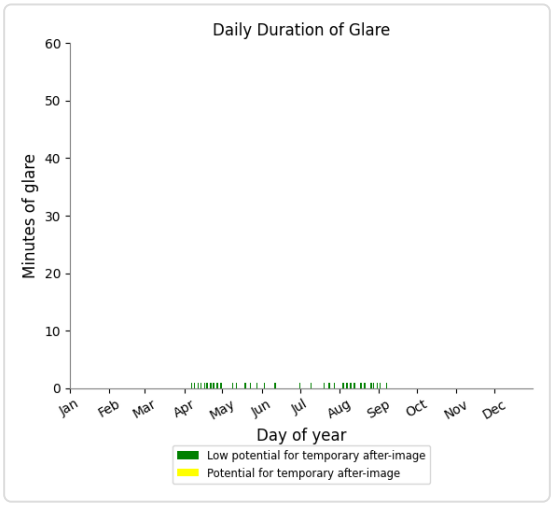


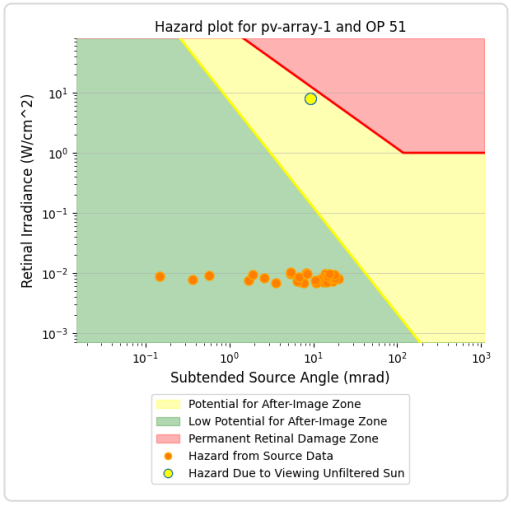
Solar array 1 and OP 51

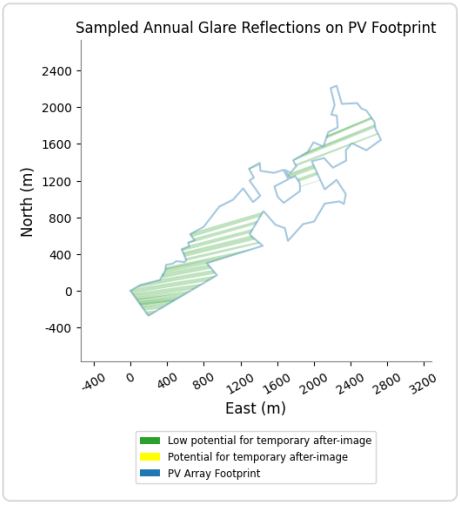
Yellow glare: none

Green glare: 34 min.





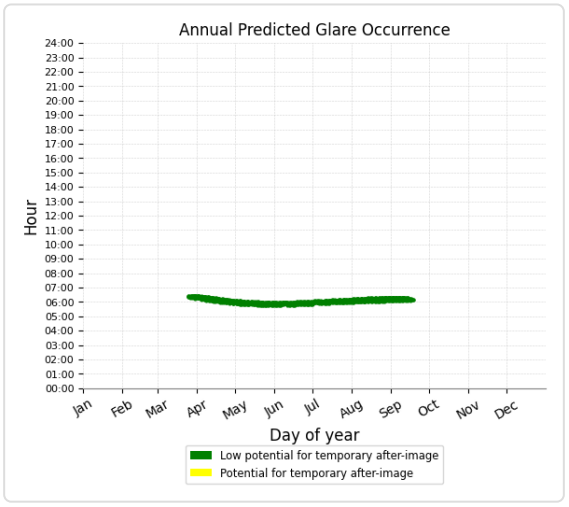


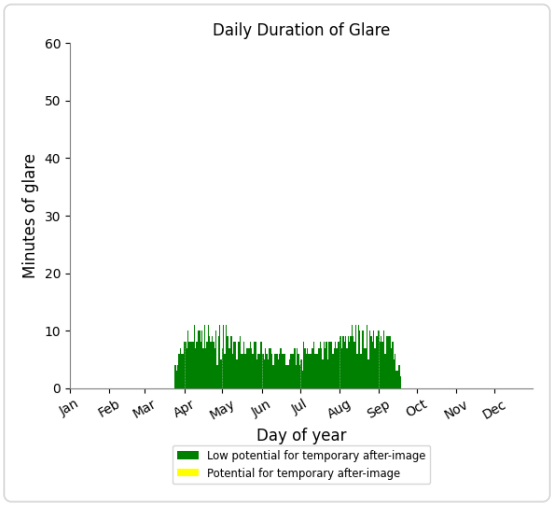


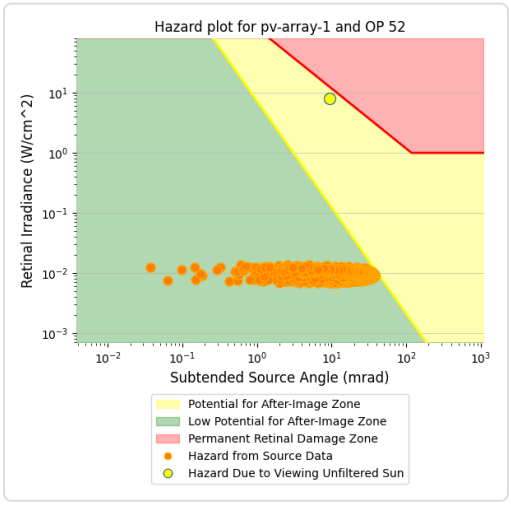
Solar array 1 and OP 52

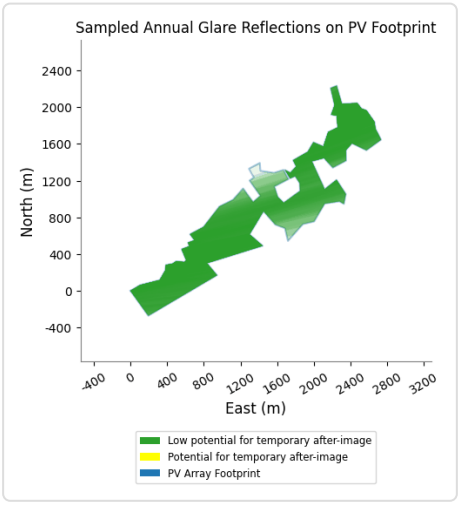
Yellow glare: none

Green glare: 1,286 min.





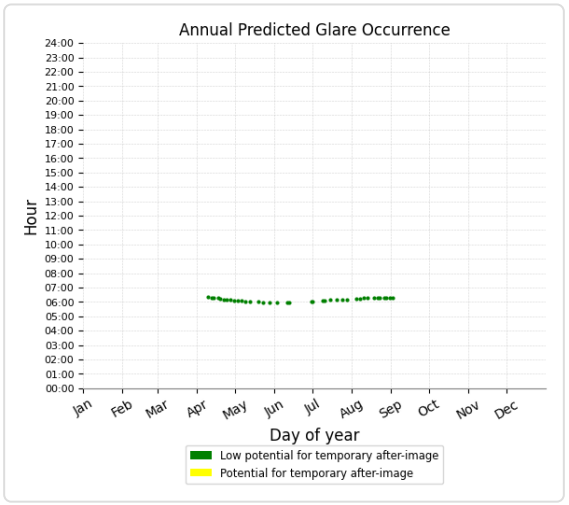


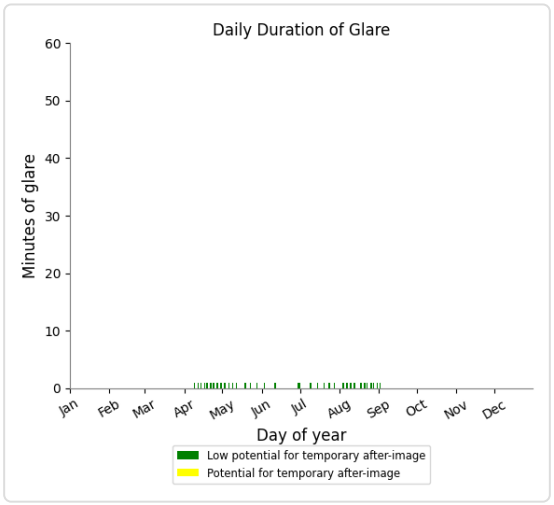


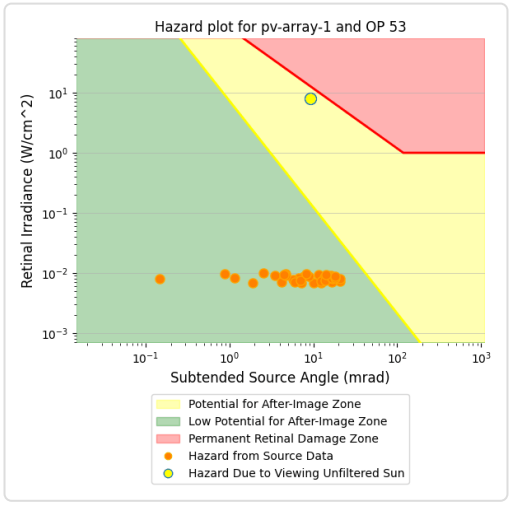
Solar array 1 and OP 53

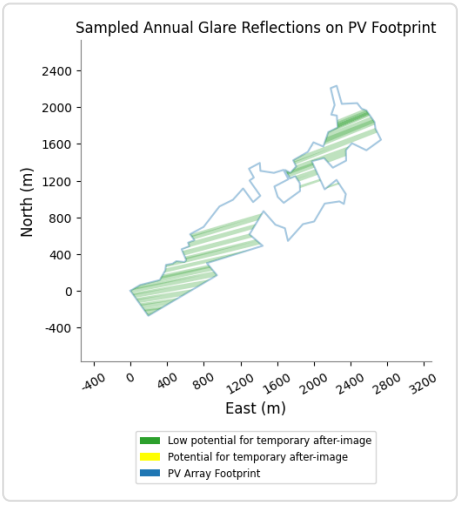
Yellow glare: none

Green glare: 38 min.





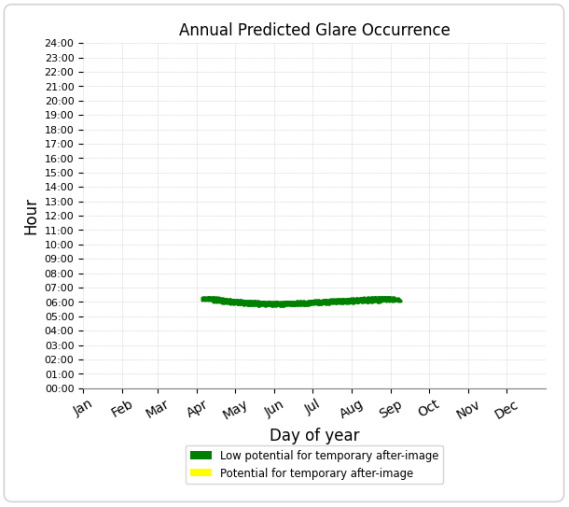


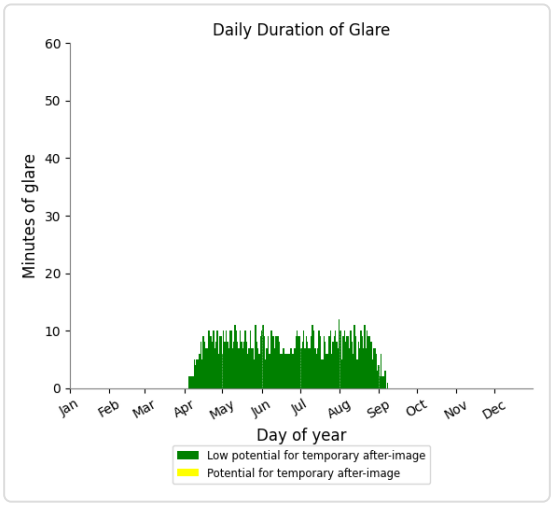


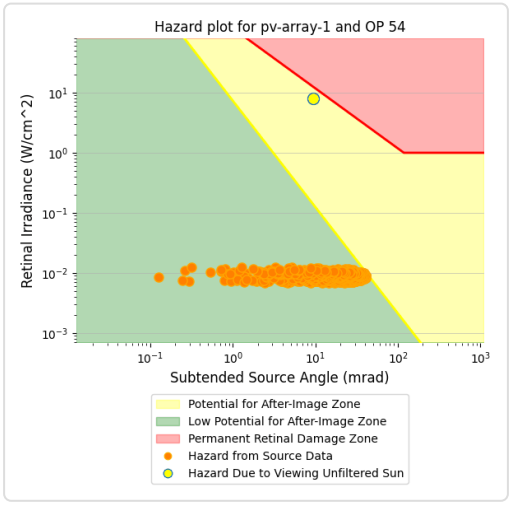
Solar array 1 and OP 54

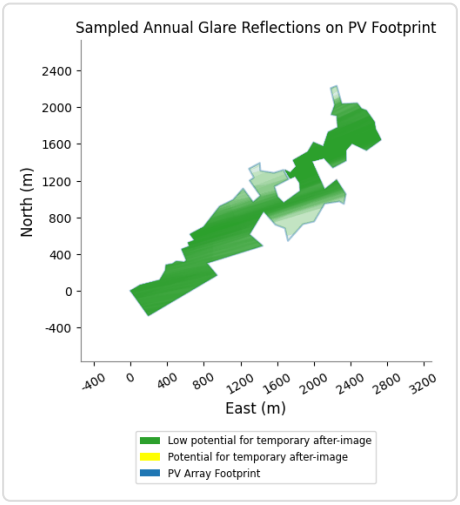
Yellow glare: none

Green glare: 1,176 min.





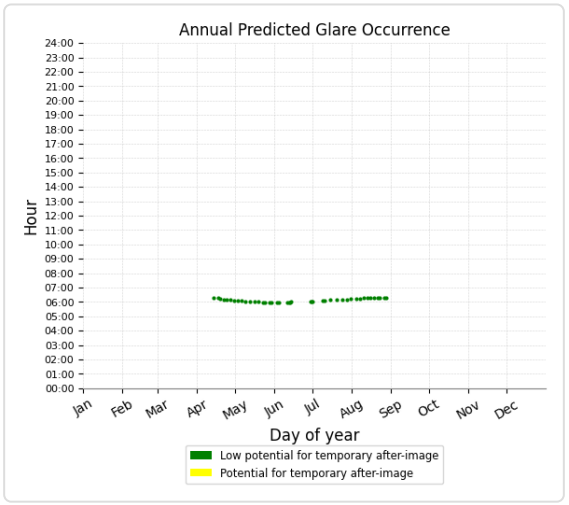


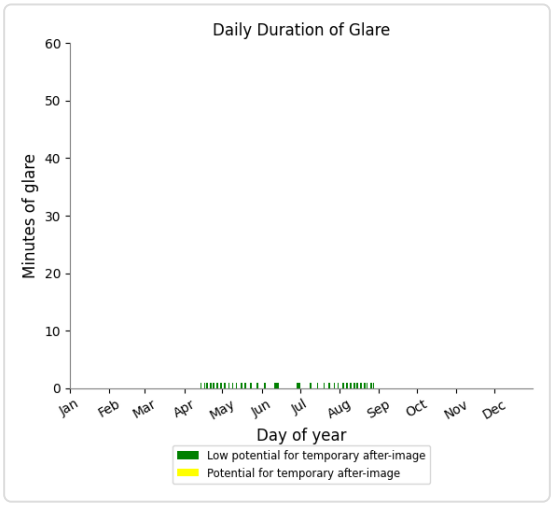


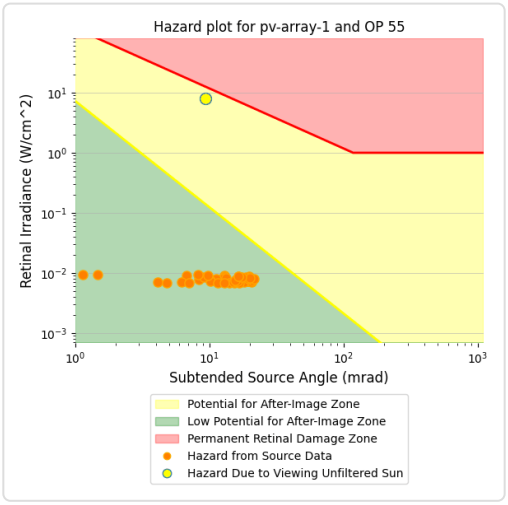
Solar array 1 and OP 55

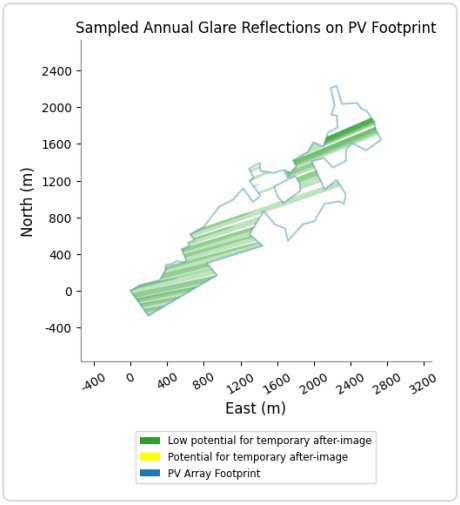
Yellow glare: none

Green glare: 43 min.





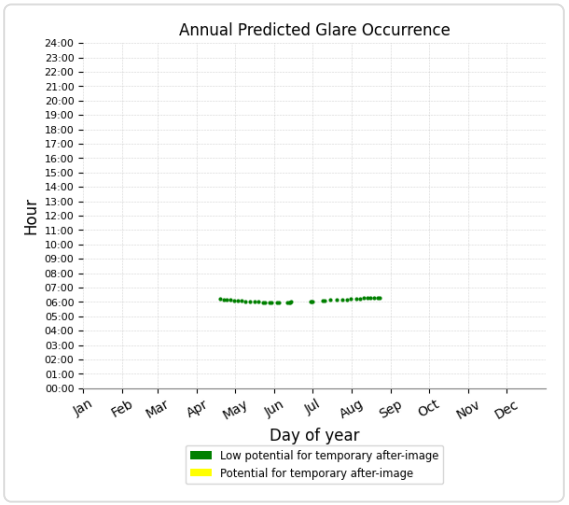


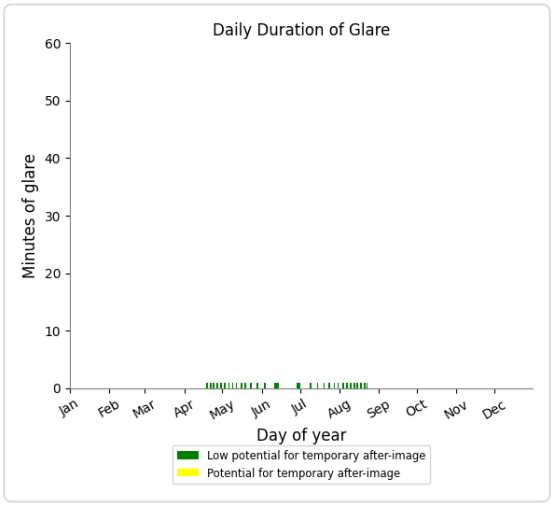


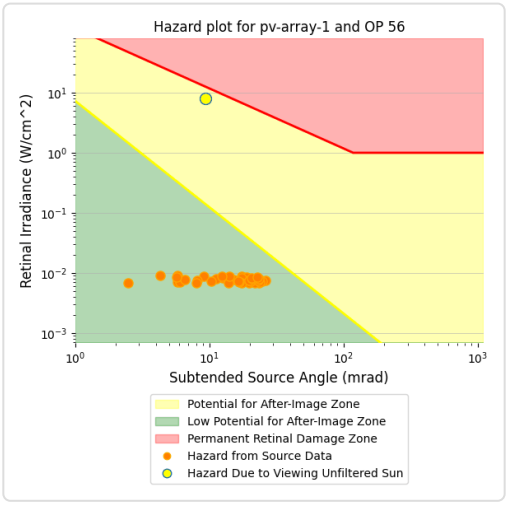
Solar array 1 and OP 56

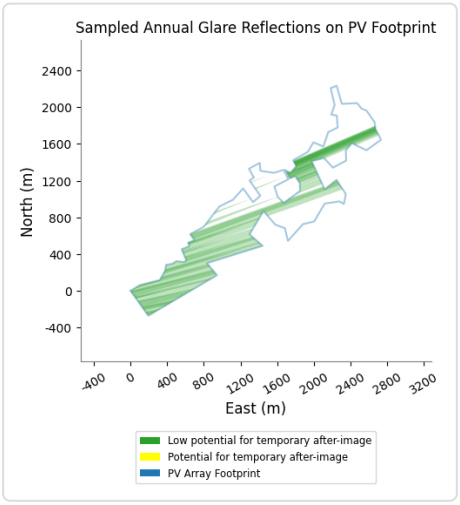
Yellow glare: none

Green glare: 39 min.





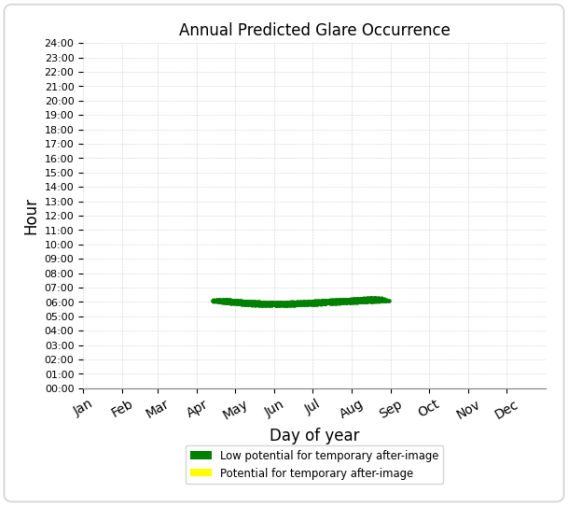


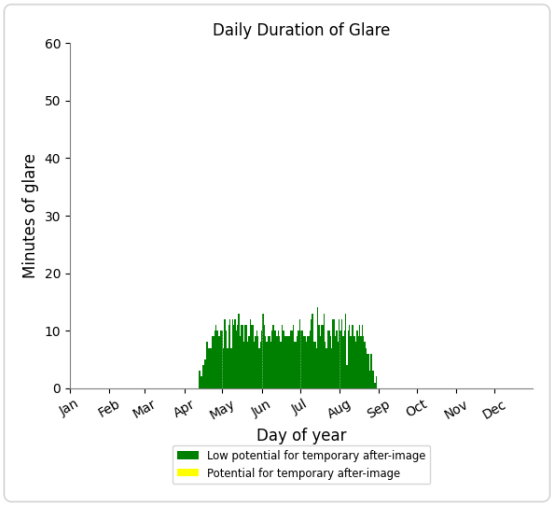


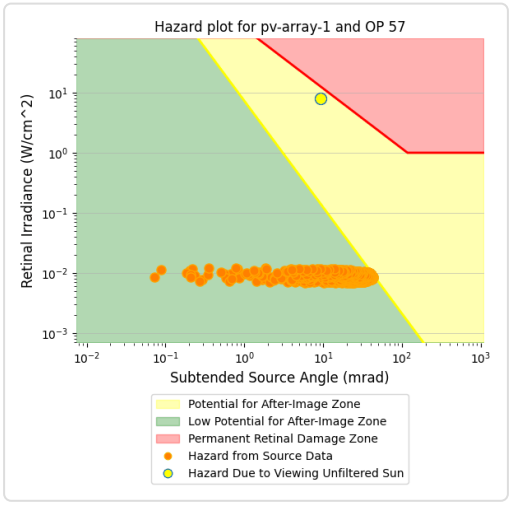
Solar array 1 and OP 57

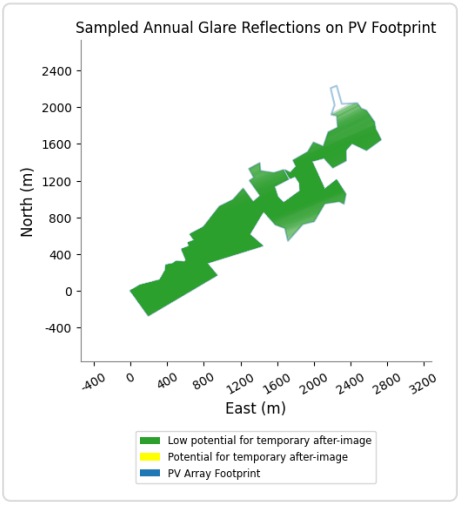
Yellow glare: none

Green glare: 1,269 min.





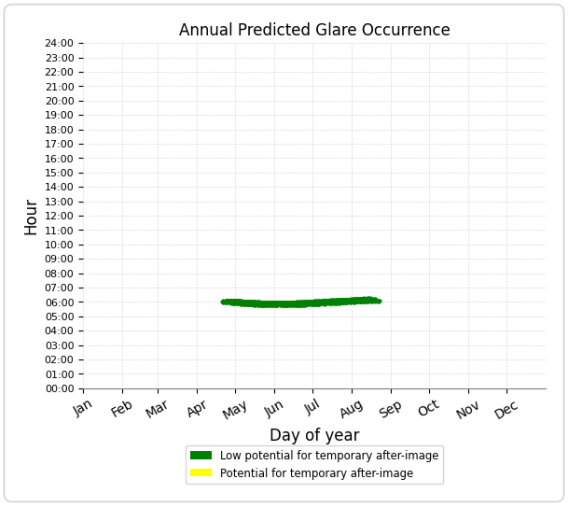


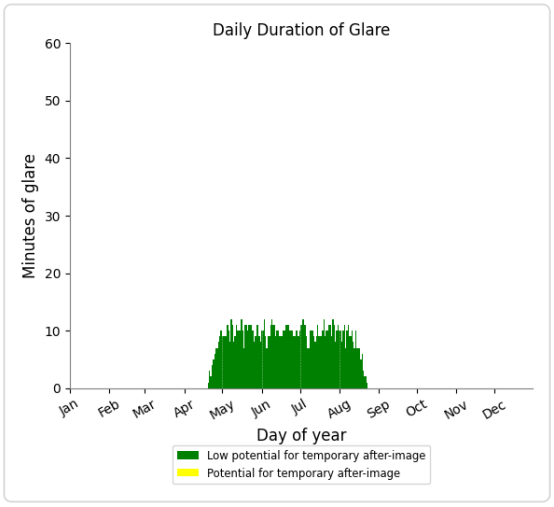


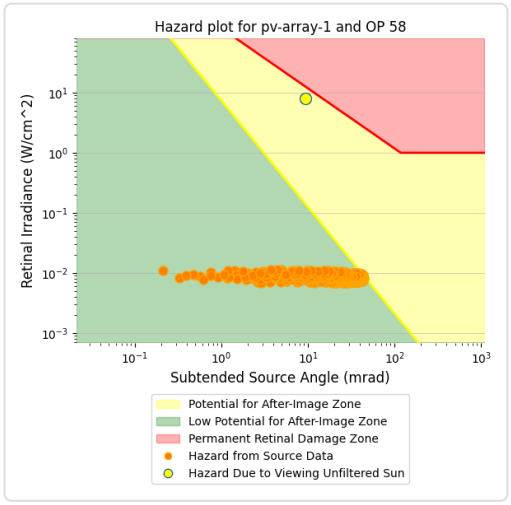
Solar array 1 and OP 58

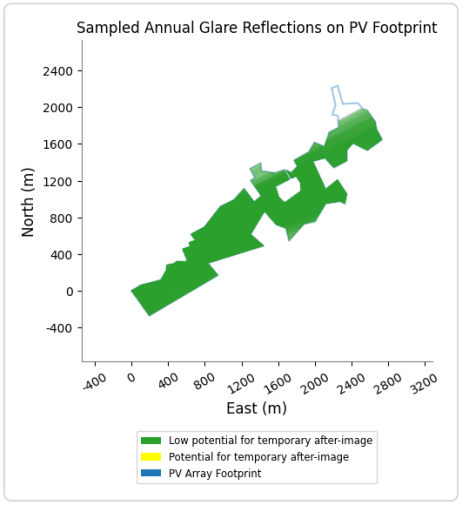
Yellow glare: none

Green glare: 1,142 min.





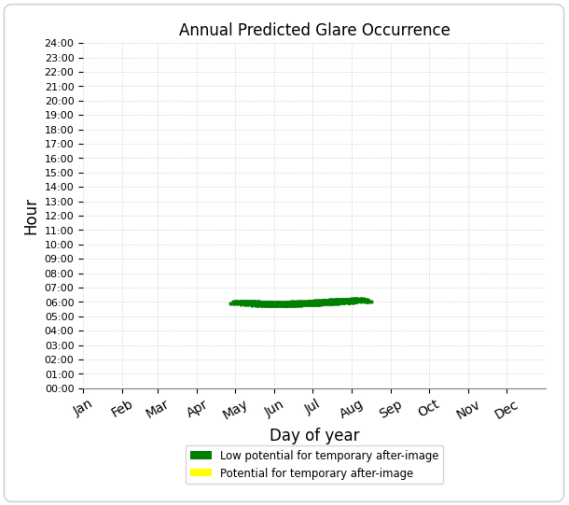


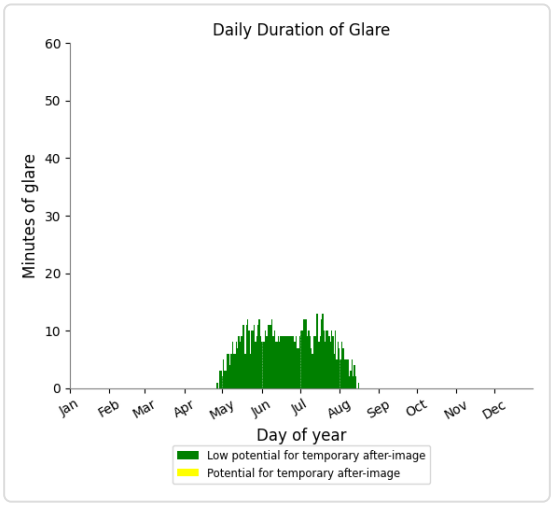


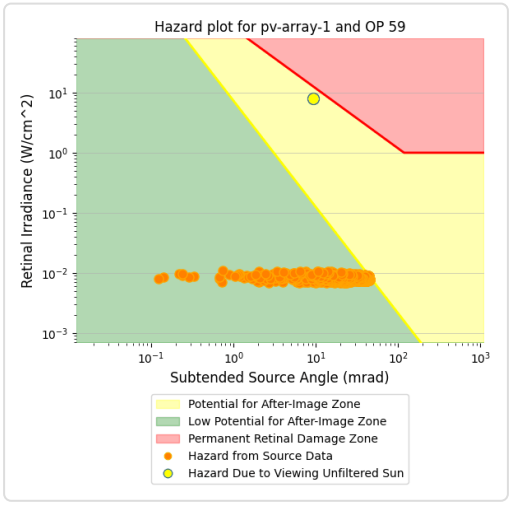
Solar array 1 and OP 59

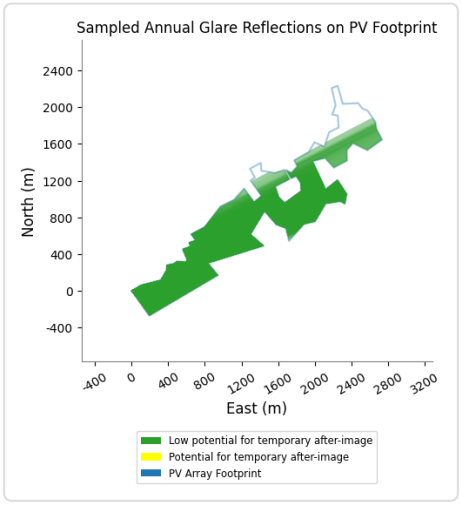
Yellow glare: none

Green glare: 881 min.





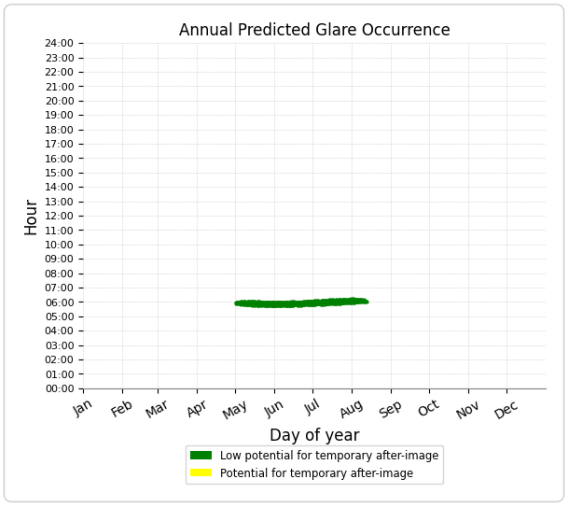


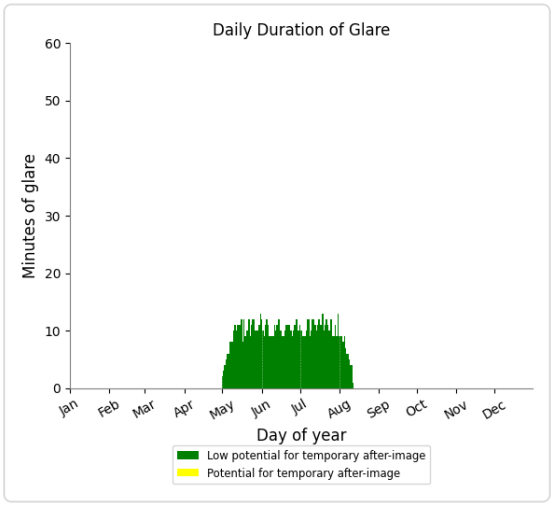


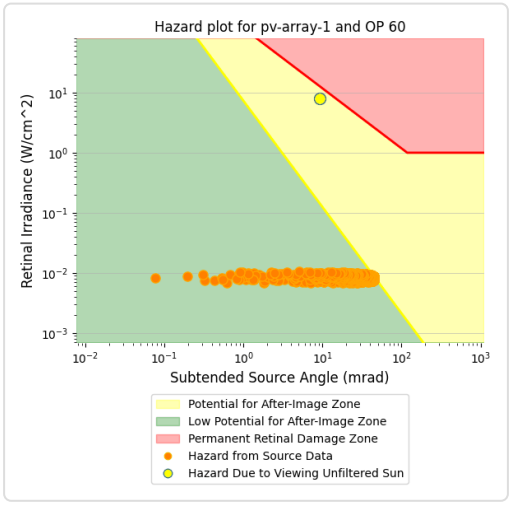
Solar array 1 and OP 60

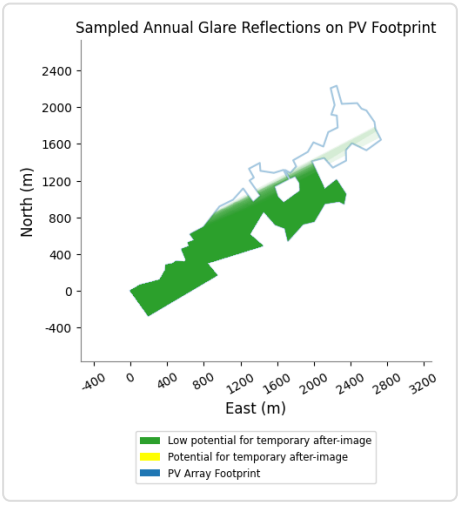
Yellow glare: none

Green glare: 1,008 min.









Solar array 1 and OP 4

No glare found

Solar array 1 and OP 29

No glare found

Solar array 1 and OP 33

No glare found

Solar: Solar array 2 potential temporary after-image

Receptor results ordered by category of glare

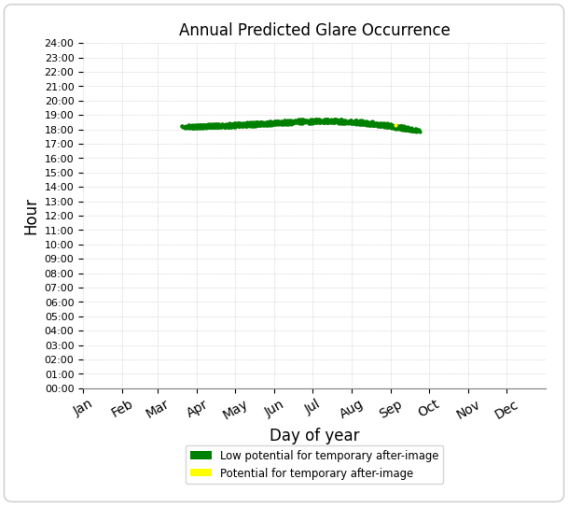
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 17	864	14.4	1	0.0
OP 18	1,903	31.7	50	0.8
OP 19	701	11.7	2	0.0
OP 25	1,102	18.4	41	0.7
OP 26	1,110	18.5	39	0.7
OP 27	926	15.4	62	1.0
OP 28	666	11.1	27	0.5
OP 29	1,060	17.7	85	1.4
OP 30	1,102	18.4	169	2.8
OP 31	857	14.3	1,549	25.8
OP 33	1,065	17.8	34	0.6
OP 49	1,322	22.0	79	1.3
OP 57	1,500	25.0	320	5.3
OP 58	1,208	20.1	484	8.1
OP 59	813	13.6	110	1.8
OP 60	809	13.5	118	2.0
OP 1	412	6.9	0	0.0
OP 2	613	10.2	0	0.0
OP 3	563	9.4	0	0.0
OP 4	364	6.1	0	0.0
OP 5	346	5.8	0	0.0
OP 6	71	1.2	0	0.0
OP 7	93	1.6	0	0.0
OP 8	172	2.9	0	0.0
OP 9	1,094	18.2	0	0.0
OP 10	734	12.2	0	0.0
OP 12	384	6.4	0	0.0
OP 15	775	12.9	0	0.0
OP 16	497	8.3	0	0.0
OP 20	135	2.2	0	0.0
OP 21	22	0.4	0	0.0
OP 22	99	1.6	0	0.0
OP 23	189	3.1	0	0.0
OP 24	244	4.1	0	0.0
OP 40	28	0.5	0	0.0
OP 41	16	0.3	0	0.0
OP 42	44	0.7	0	0.0
OP 46	1,019	17.0	0	0.0
OP 48	985	16.4	0	0.0

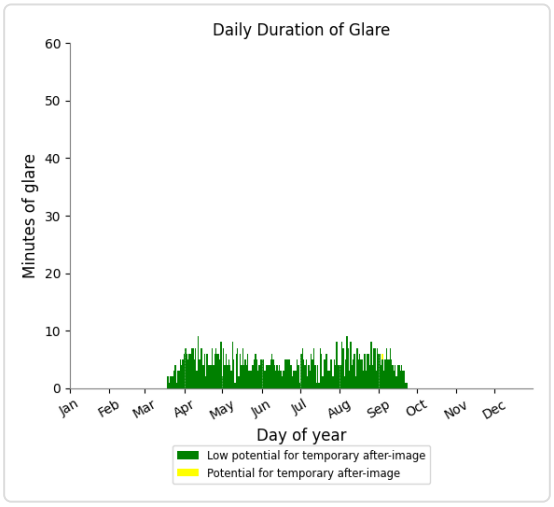
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 52	50	0.8	0	0.0
OP 53	22	0.4	0	0.0
OP 54	55	0.9	0	0.0
OP 56	29	0.5	0	0.0
OP 11	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 43	0	0.0	0	0.0
OP 44	0	0.0	0	0.0
OP 45	0	0.0	0	0.0
OP 47	0	0.0	0	0.0
OP 50	0	0.0	0	0.0
OP 51	0	0.0	0	0.0
OP 55	0	0.0	0	0.0

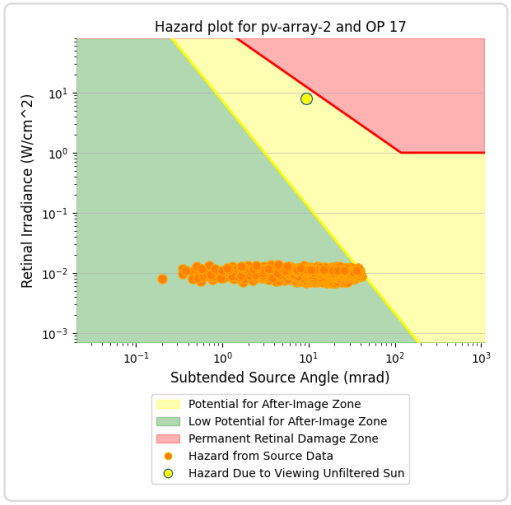
Solar array 2 and OP 17

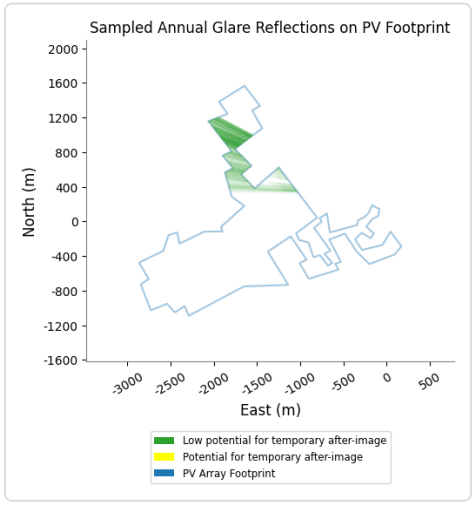
Yellow glare: 1 min.

Green glare: 864 min.





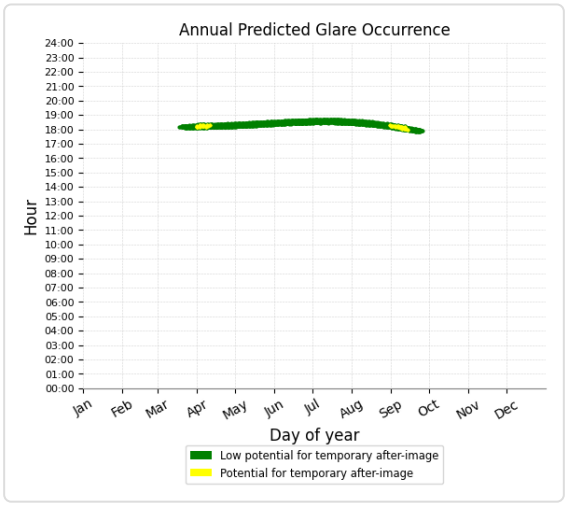


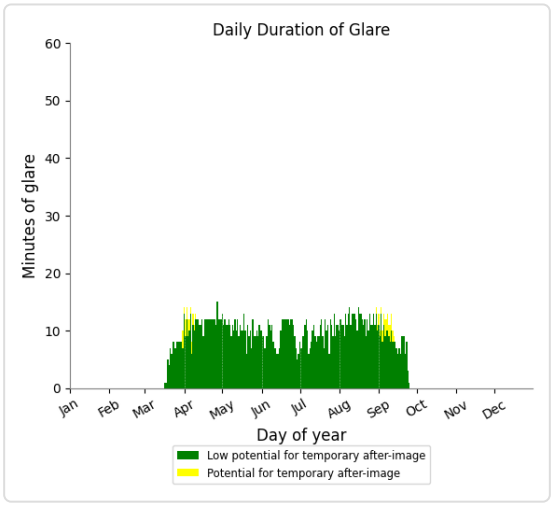


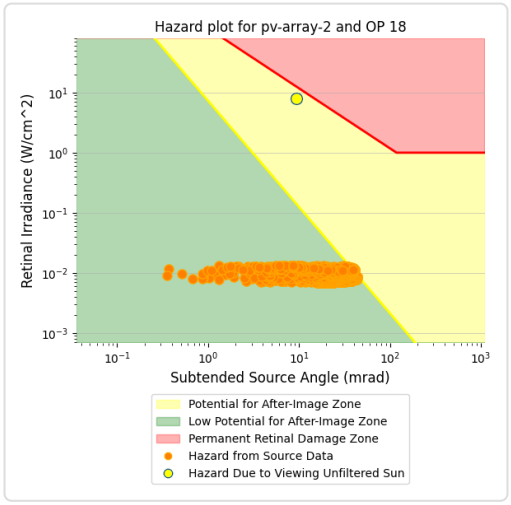
Solar array 2 and OP 18

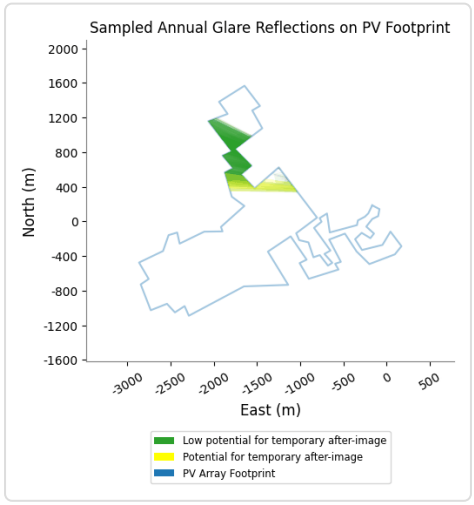
Yellow glare: 50 min.

Green glare: 1,903 min.





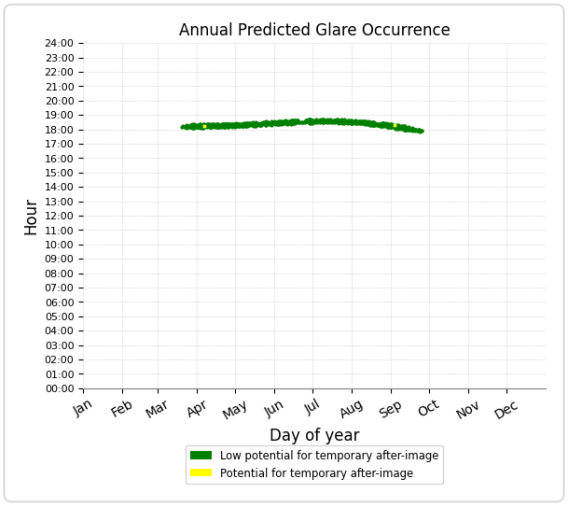


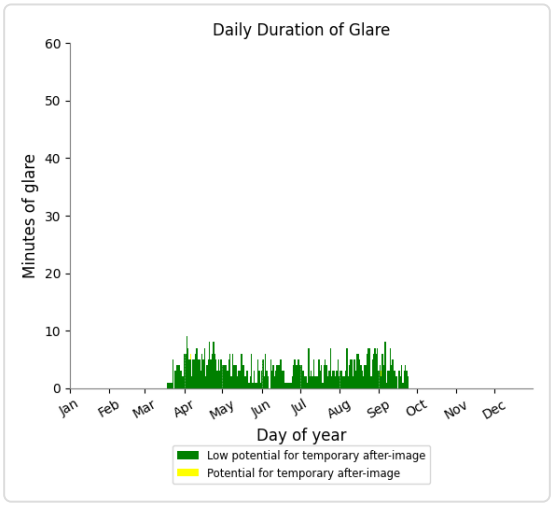


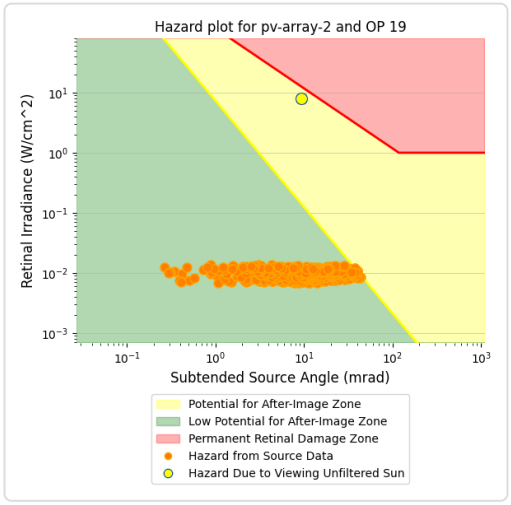
Solar array 2 and OP 19

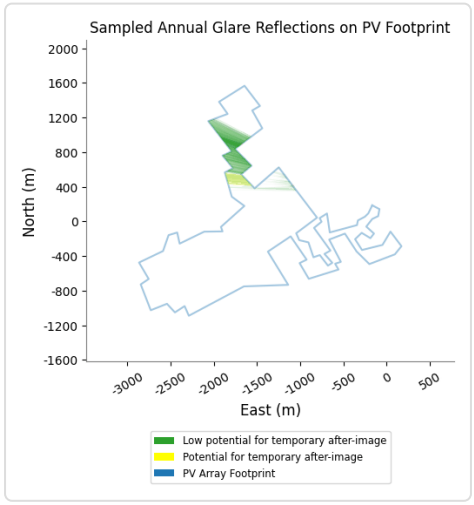
Yellow glare: 2 min.

Green glare: 701 min.





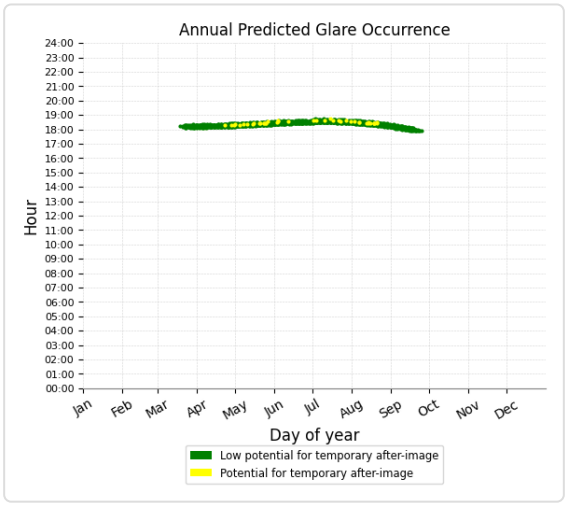


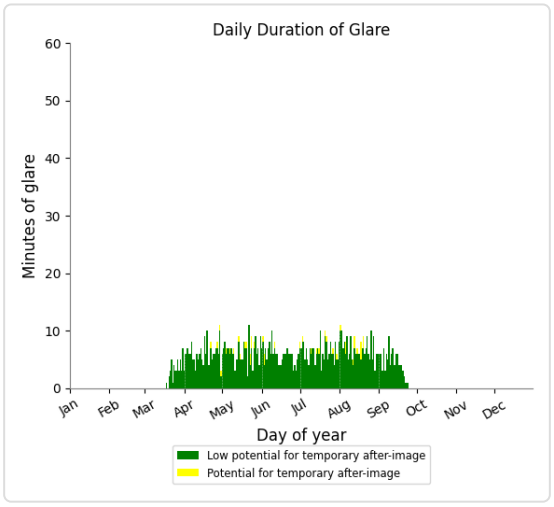


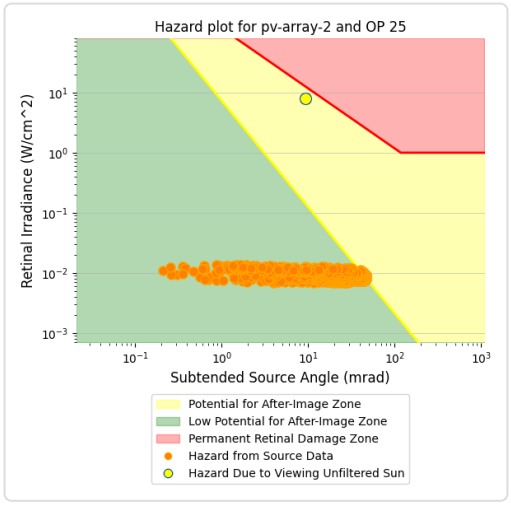
Solar array 2 and OP 25

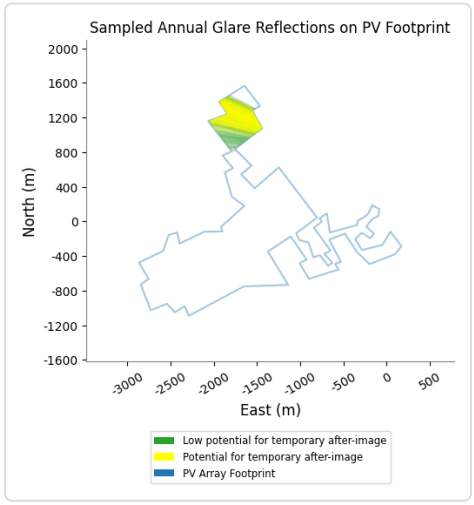
Yellow glare: 41 min.

Green glare: 1,102 min.





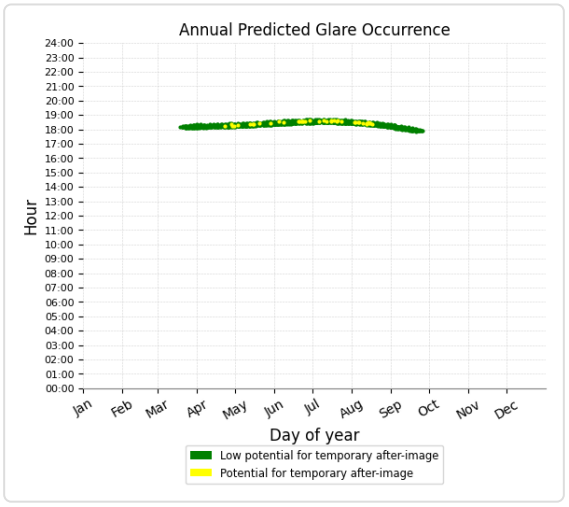


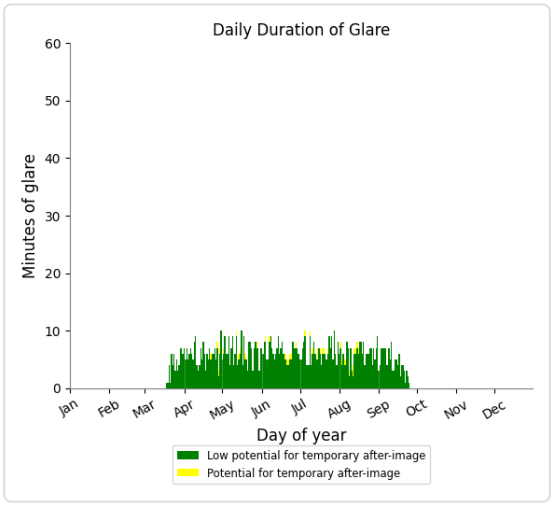


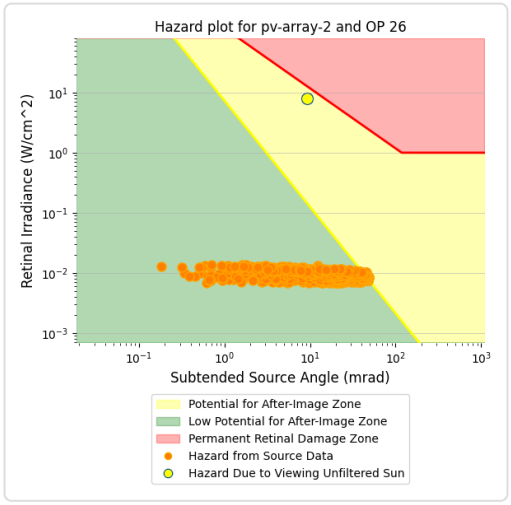
Solar array 2 and OP 26

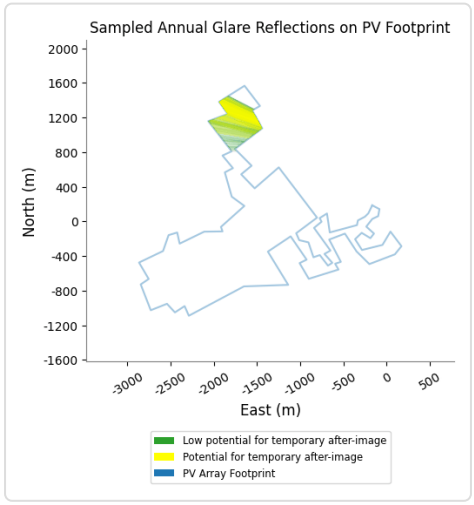
Yellow glare: 39 min.

Green glare: 1,110 min.





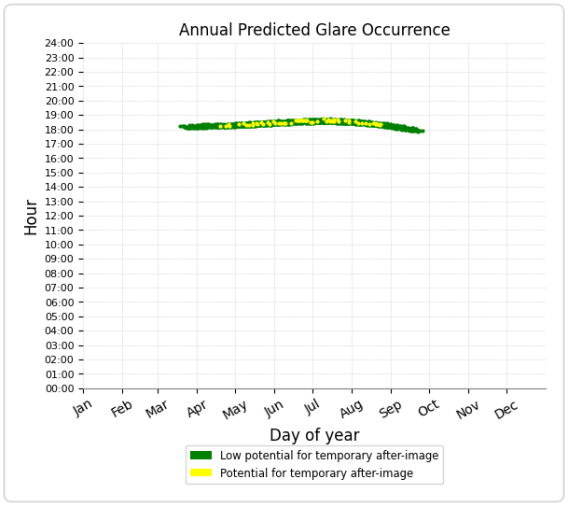


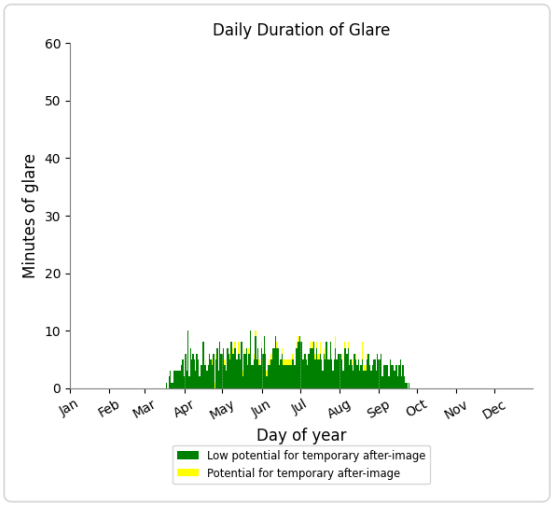


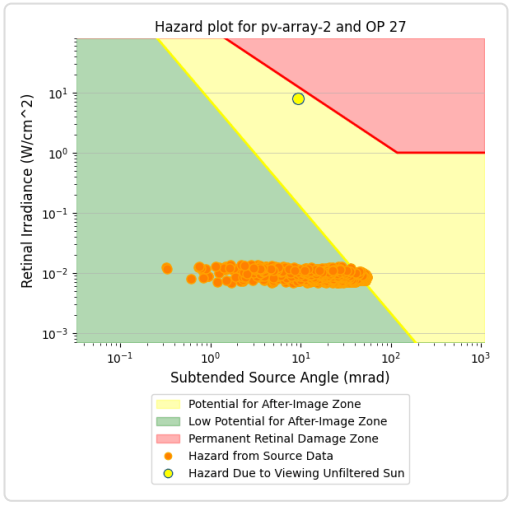
Solar array 2 and OP 27

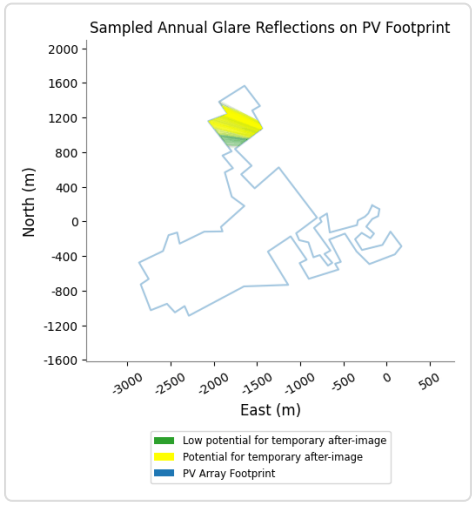
Yellow glare: 62 min.

Green glare: 926 min.





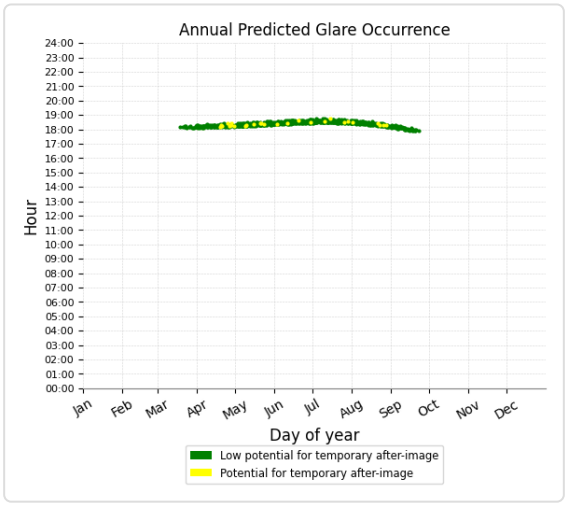


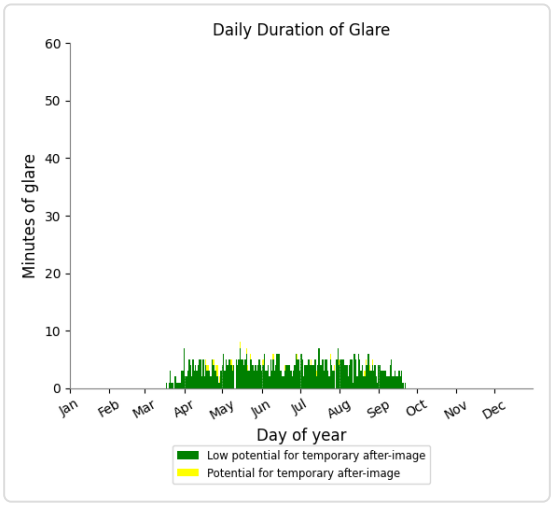


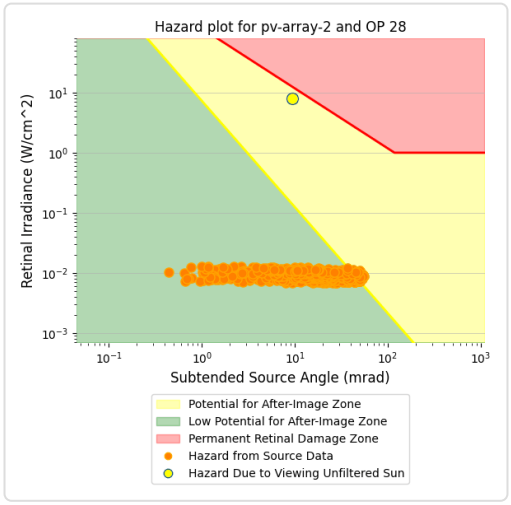
Solar array 2 and OP 28

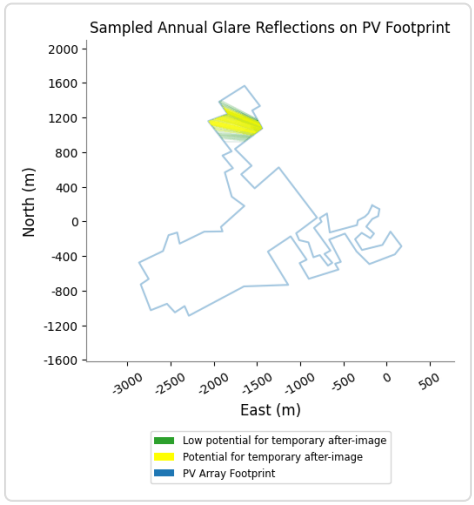
Yellow glare: 27 min.

Green glare: 666 min.





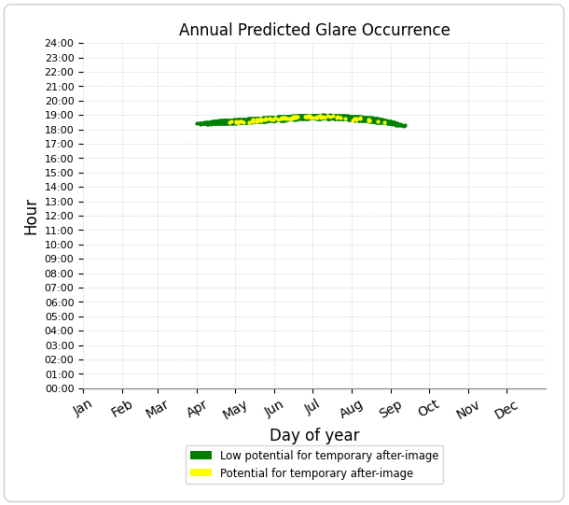


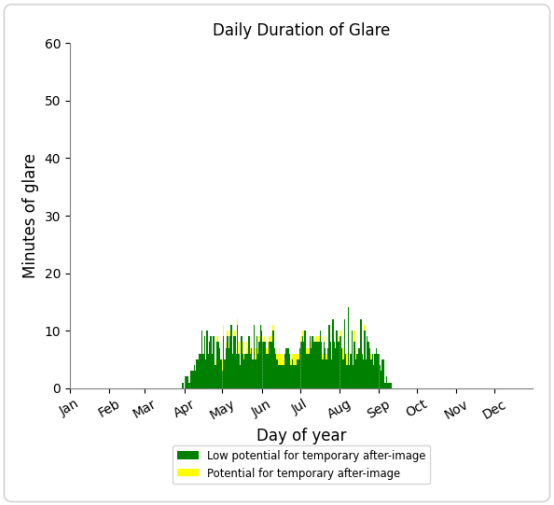


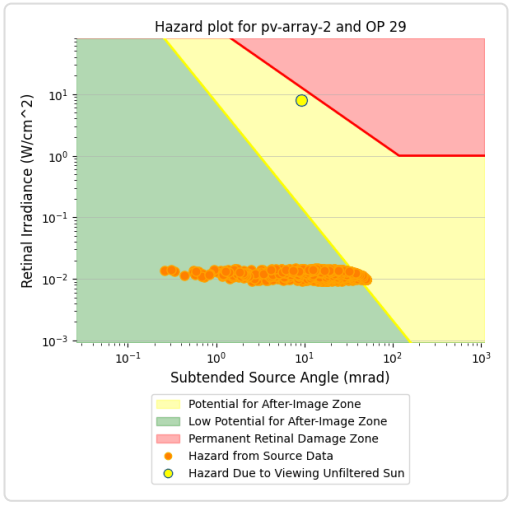
Solar array 2 and OP 29

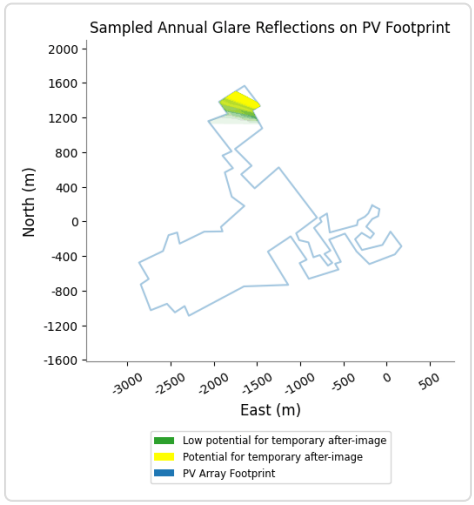
Yellow glare: 85 min.

Green glare: 1,060 min.





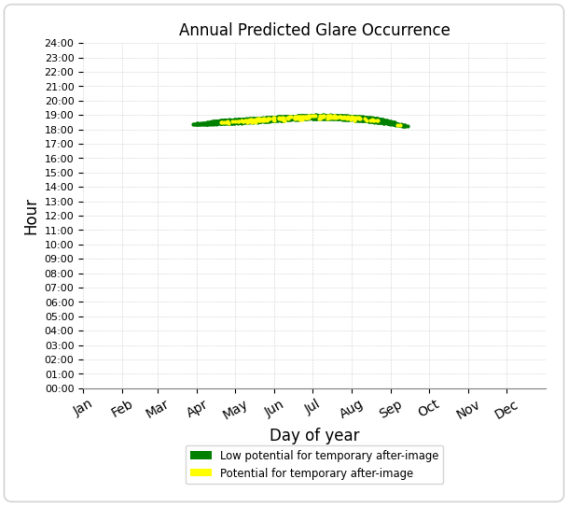


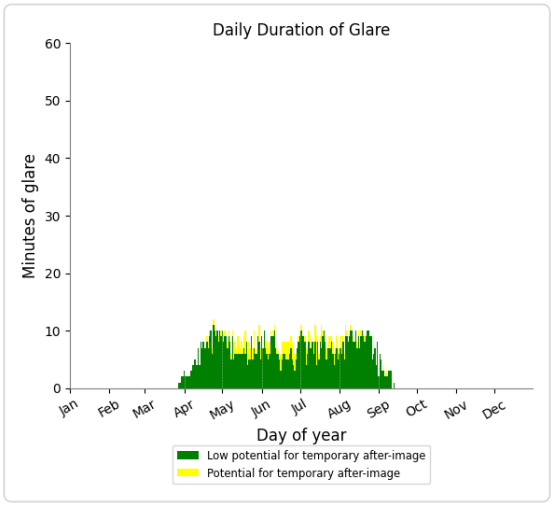


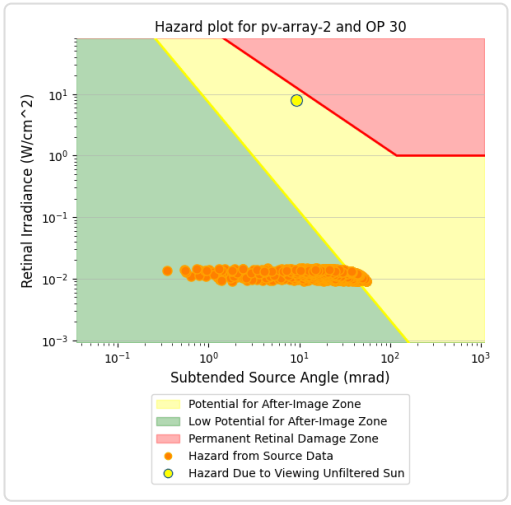
Solar array 2 and OP 30

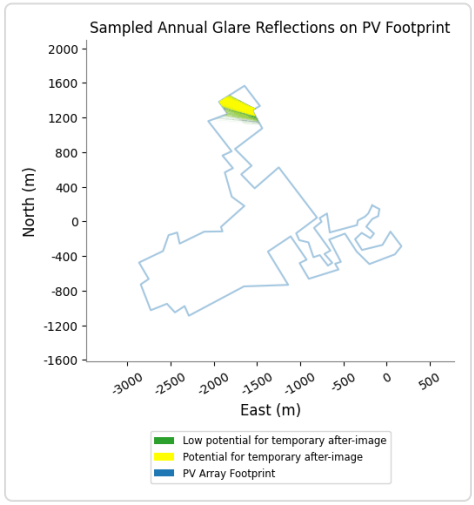
Yellow glare: 169 min.

Green glare: 1,102 min.





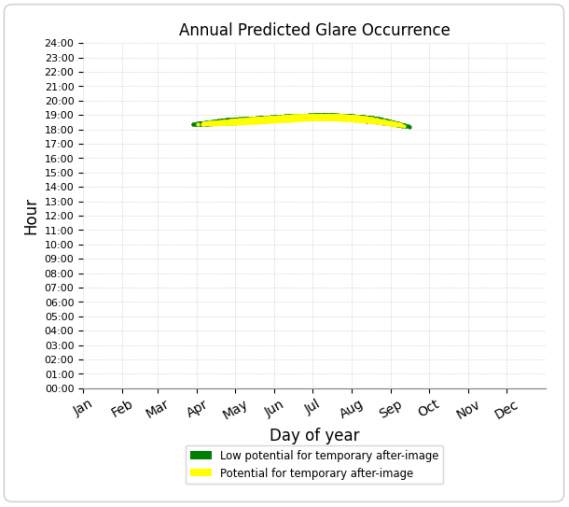


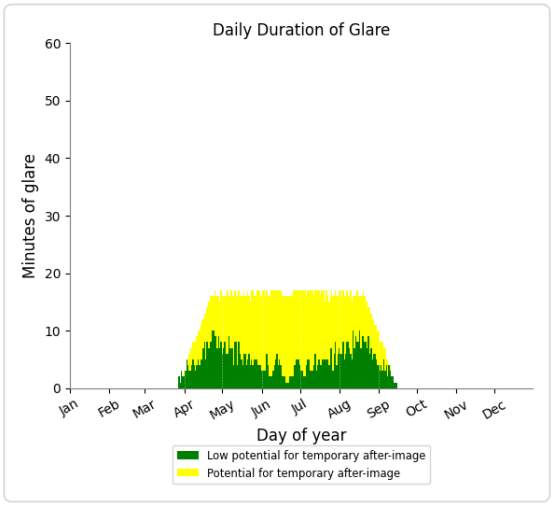


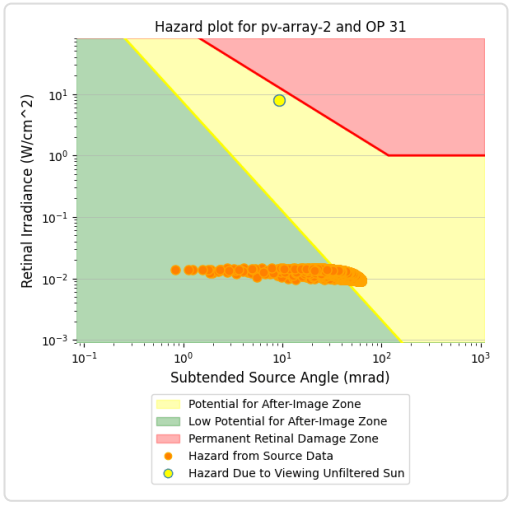
Solar array 2 and OP 31

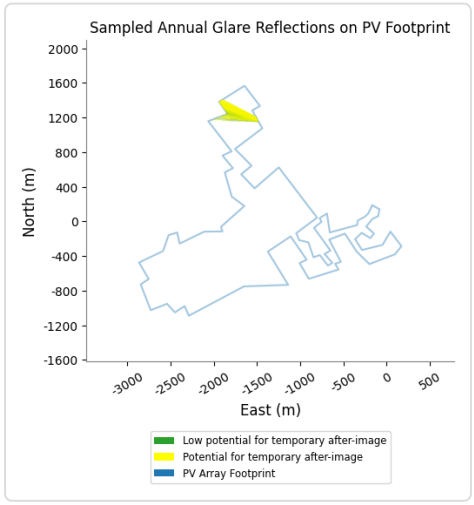
Yellow glare: 1,549 min.

Green glare: 857 min.





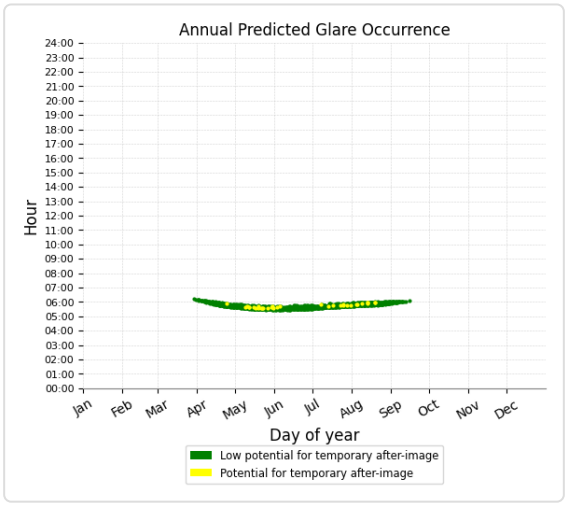


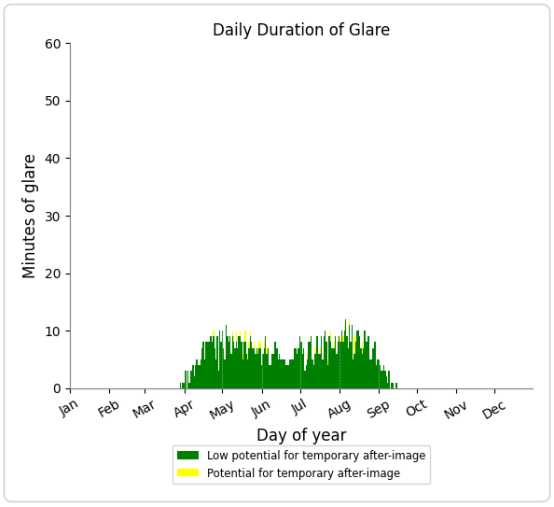


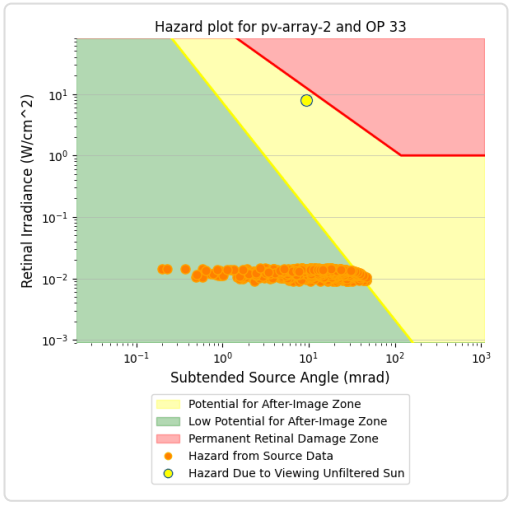
Solar array 2 and OP 33

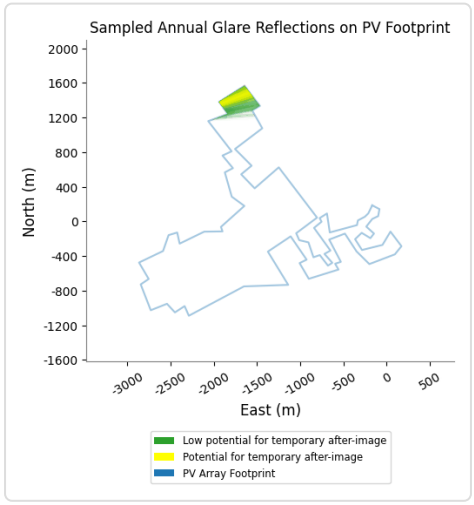
Yellow glare: 34 min.

Green glare: 1,065 min.





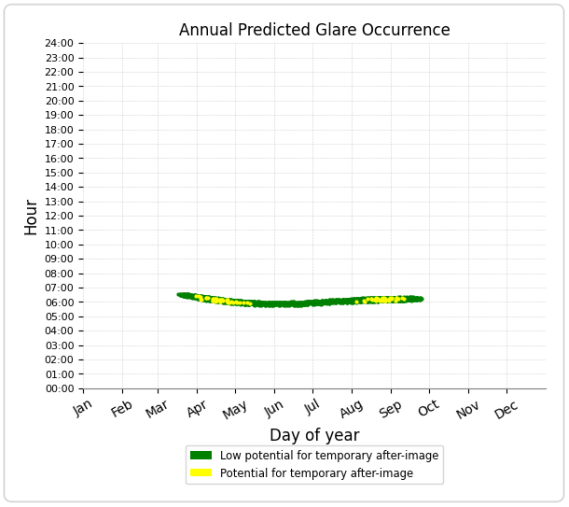


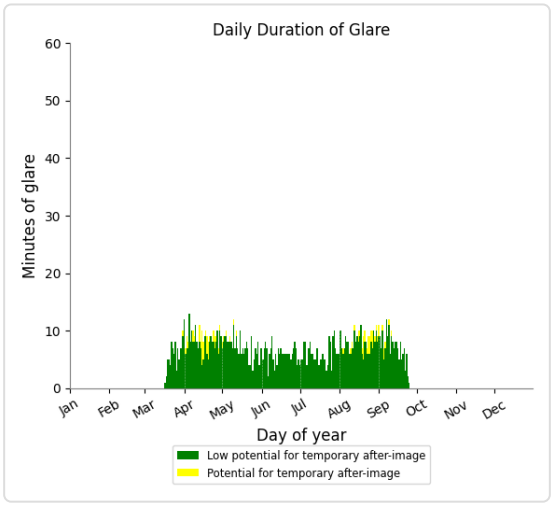


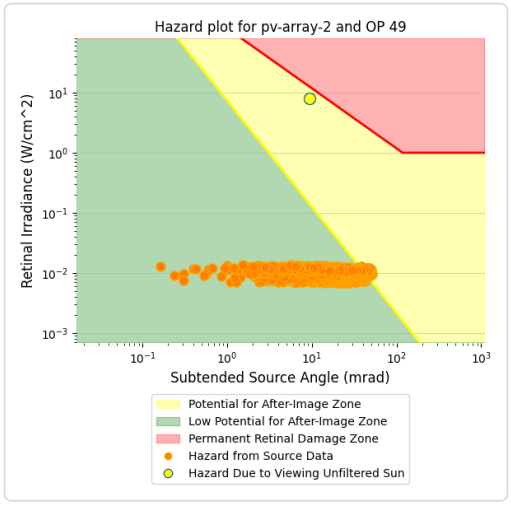
Solar array 2 and OP 49

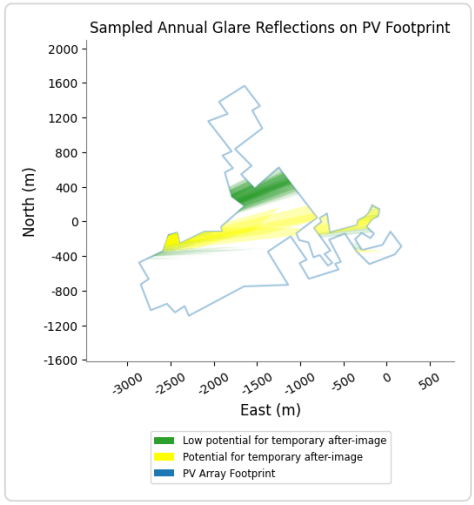
Yellow glare: 79 min.

Green glare: 1,322 min.





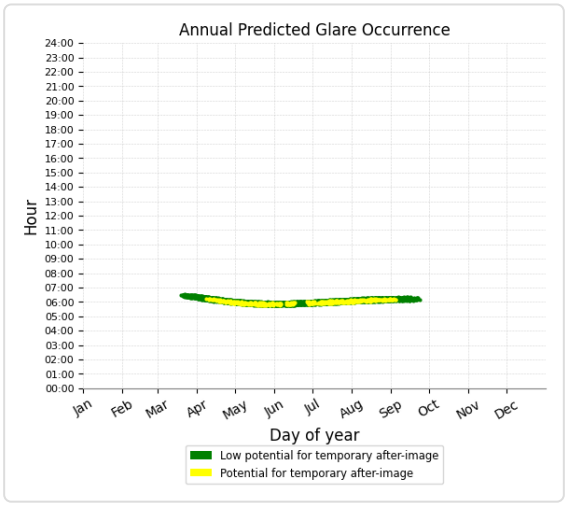


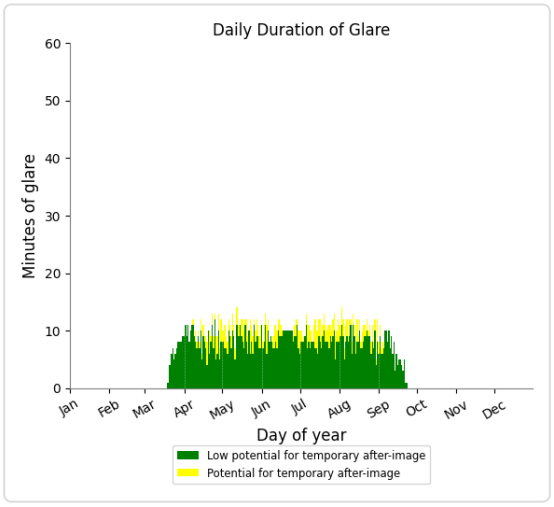


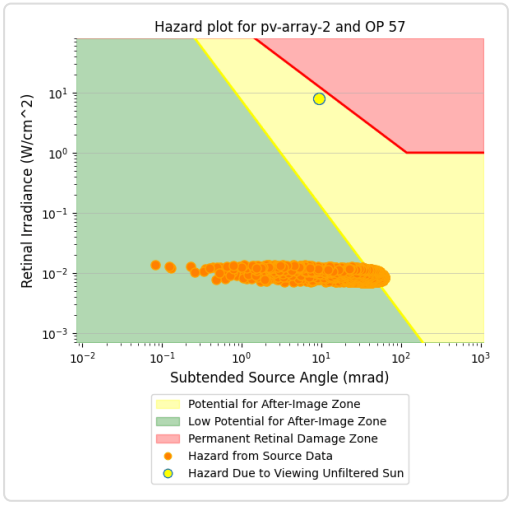
Solar array 2 and OP 57

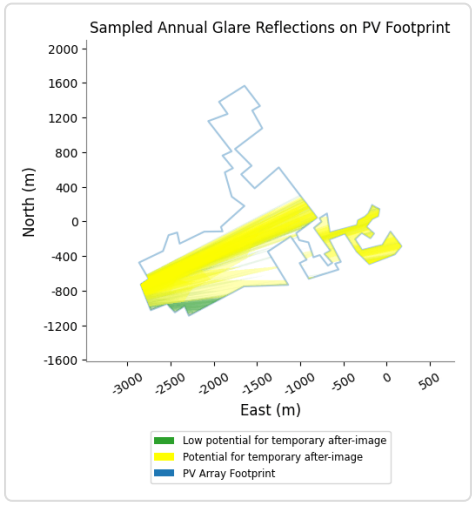
Yellow glare: 320 min.

Green glare: 1,500 min.





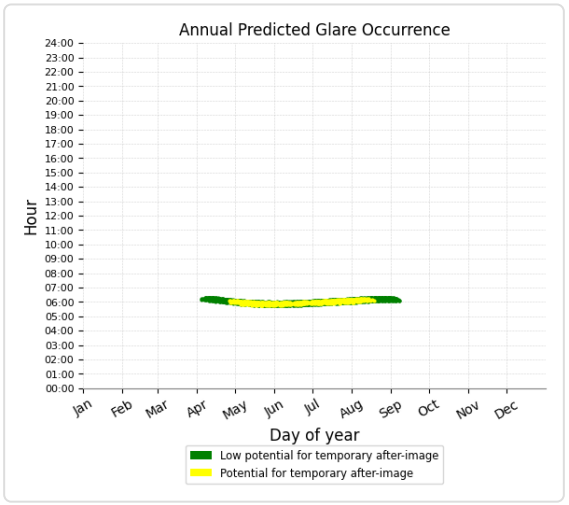


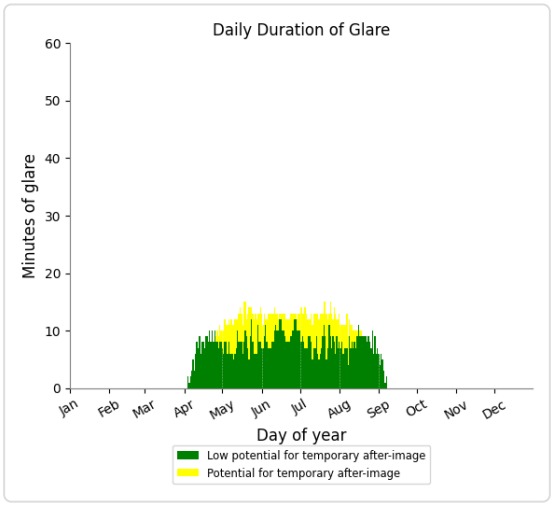


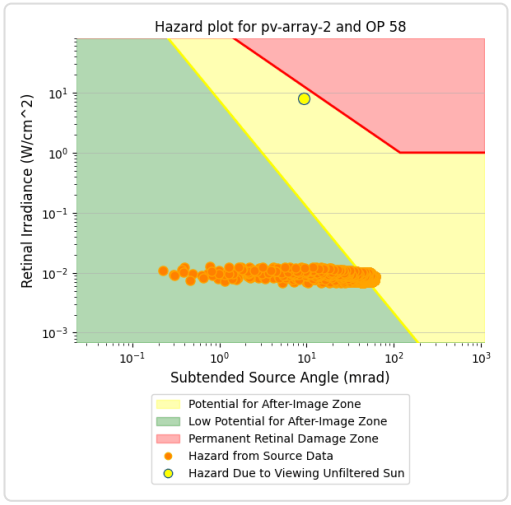
Solar array 2 and OP 58

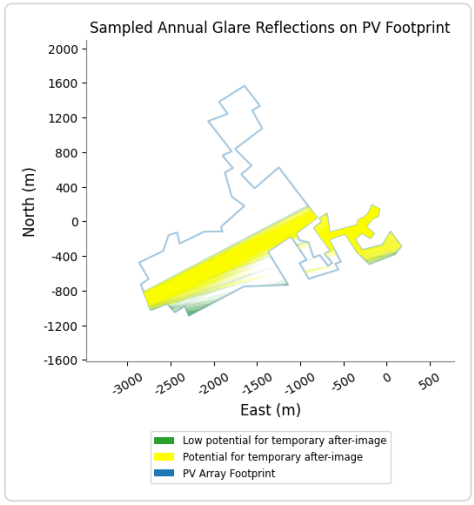
Yellow glare: 484 min.

Green glare: 1,208 min.





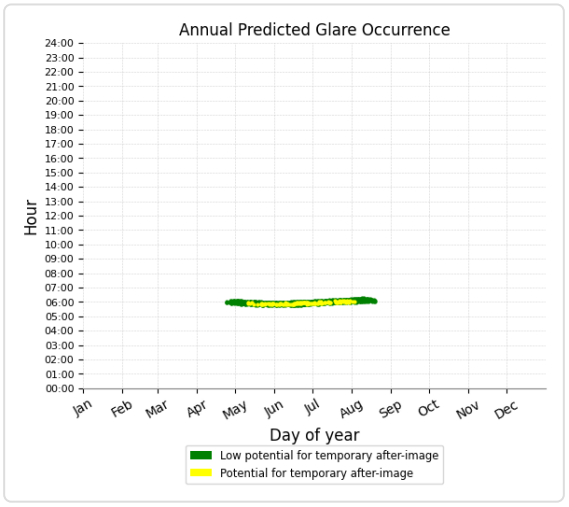


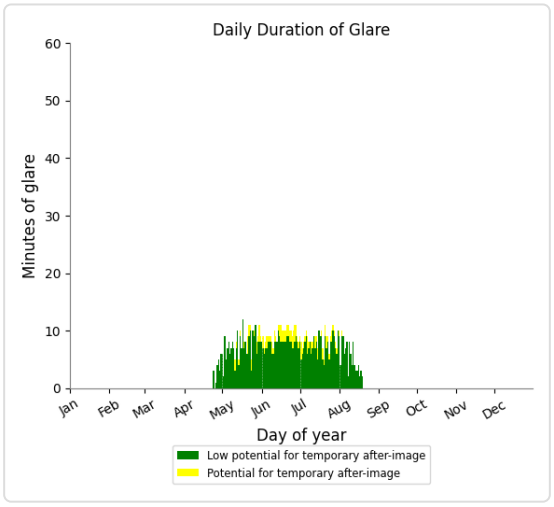


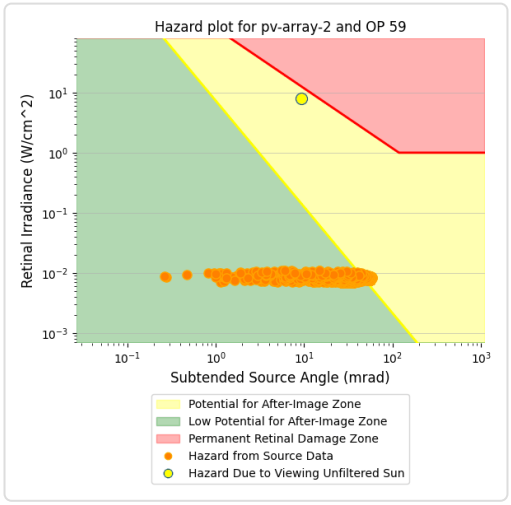
Solar array 2 and OP 59

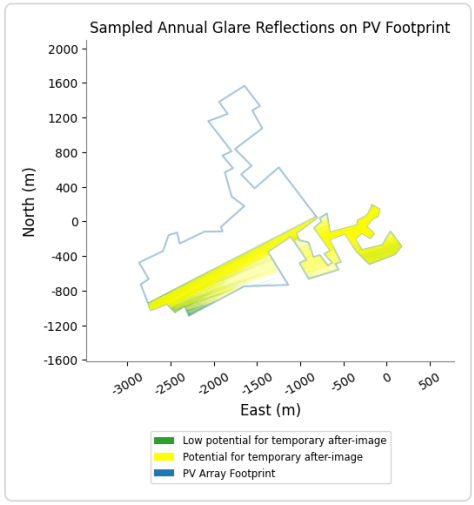
Yellow glare: 110 min.

Green glare: 813 min.





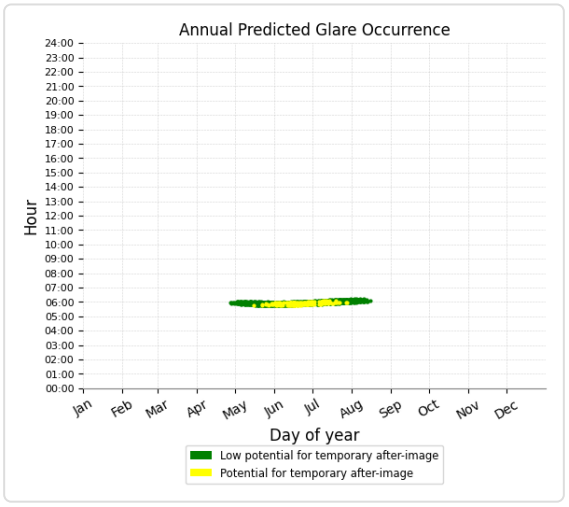


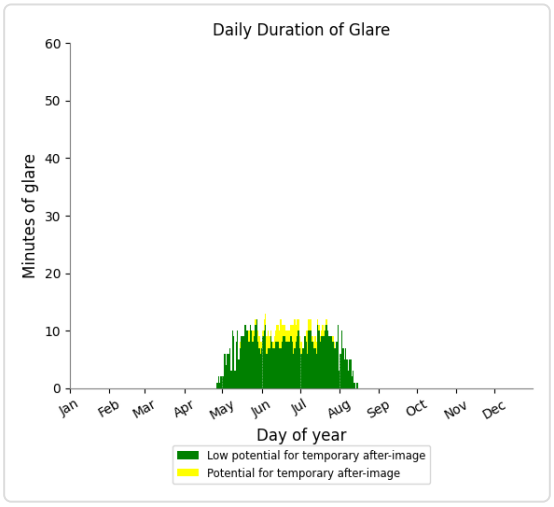


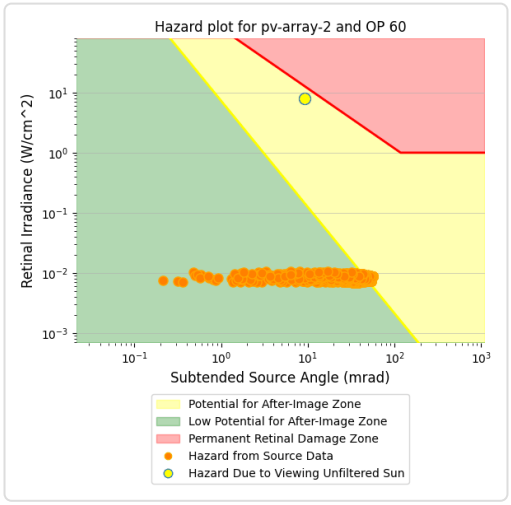
Solar array 2 and OP 60

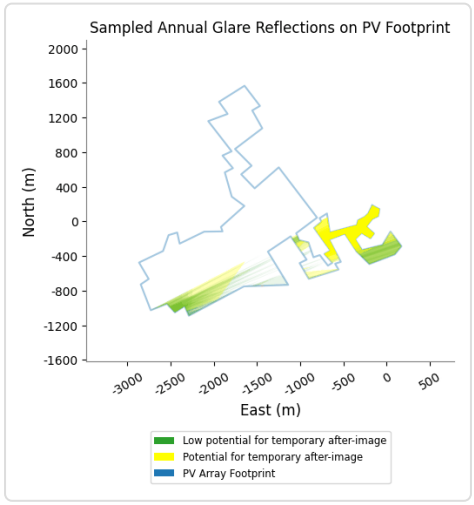
Yellow glare: 118 min.

Green glare: 809 min.





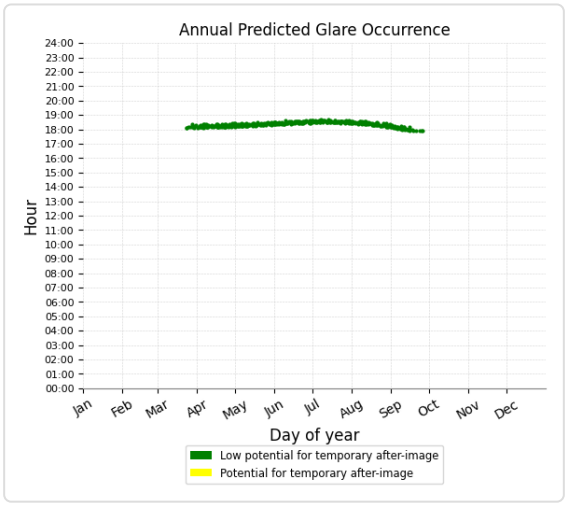


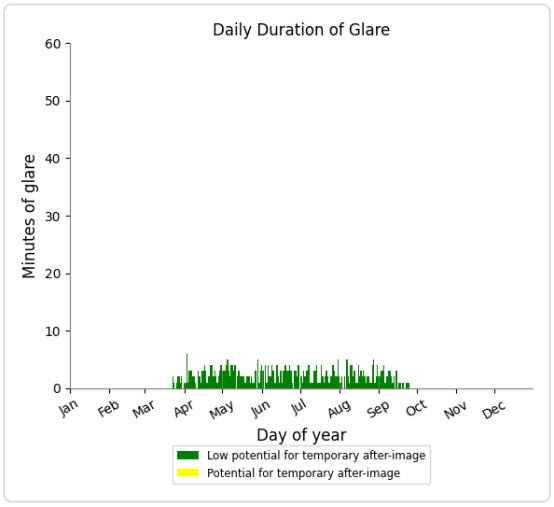


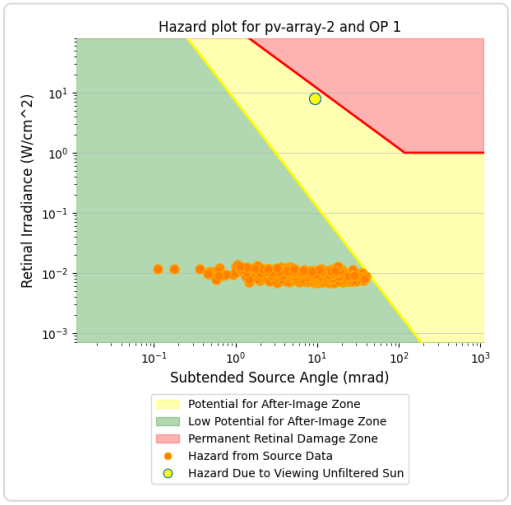
Solar array 2 and OP 1

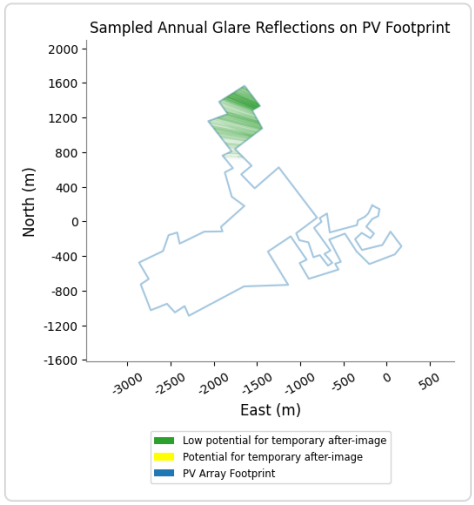
Yellow glare: none

Green glare: 412 min.





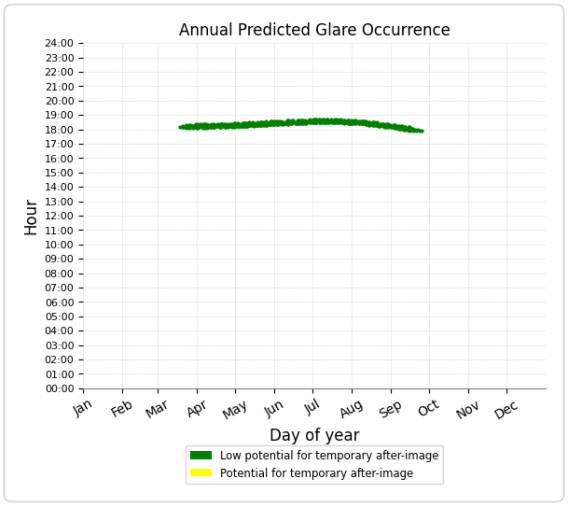


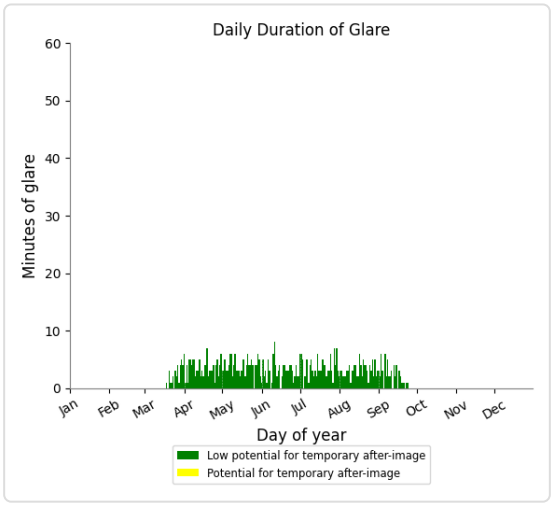


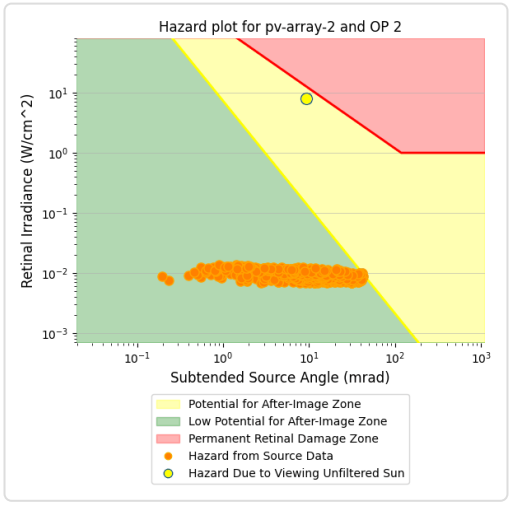
Solar array 2 and OP 2

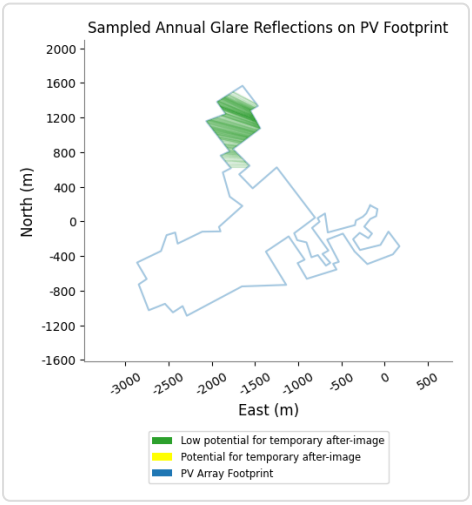
Yellow glare: none

Green glare: 613 min.





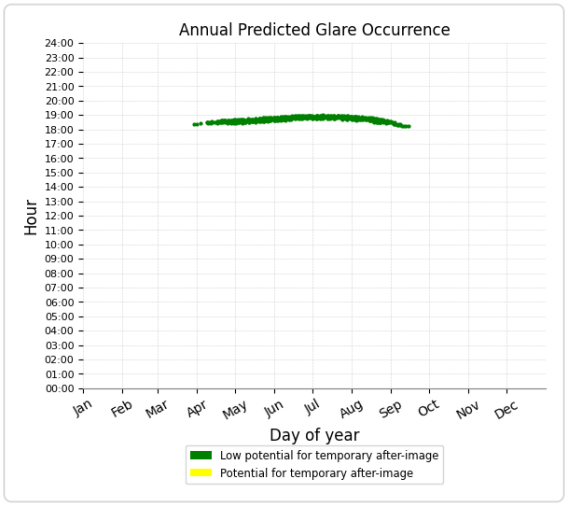


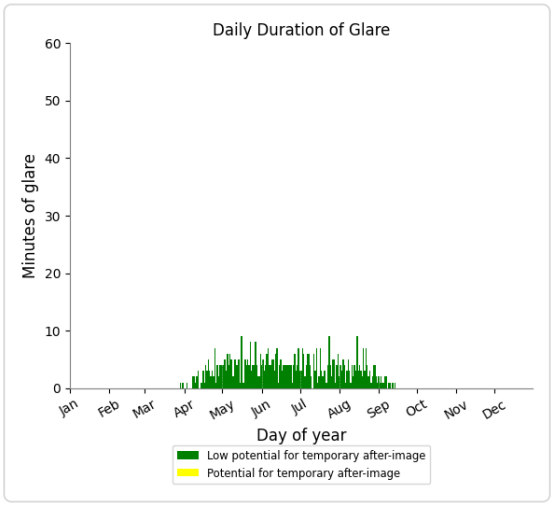


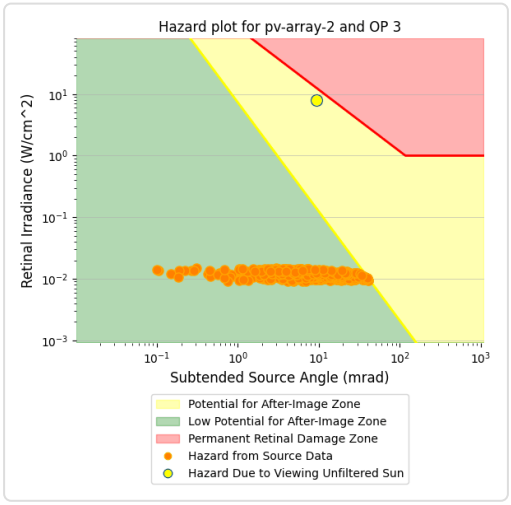
Solar array 2 and OP 3

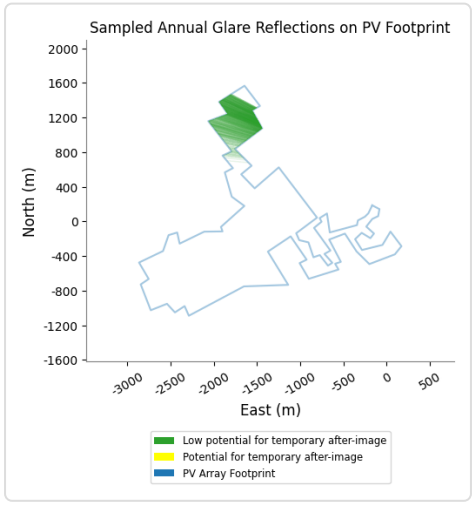
Yellow glare: none

Green glare: 563 min.





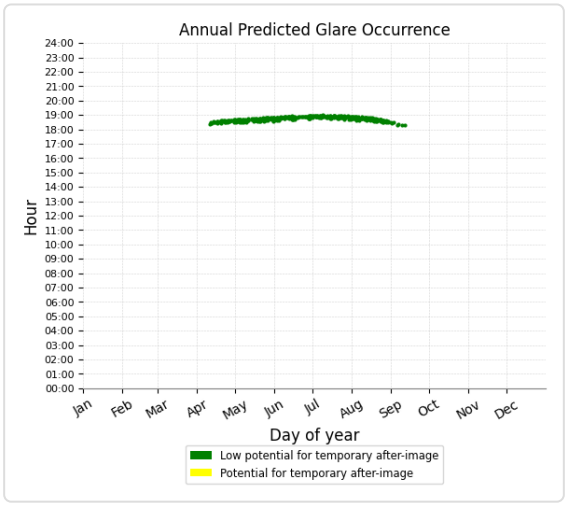


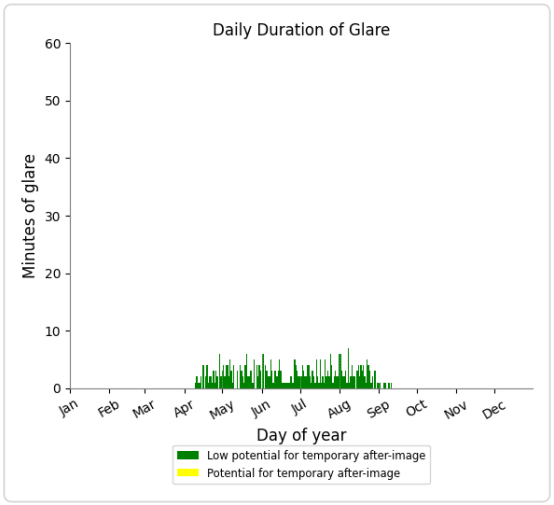


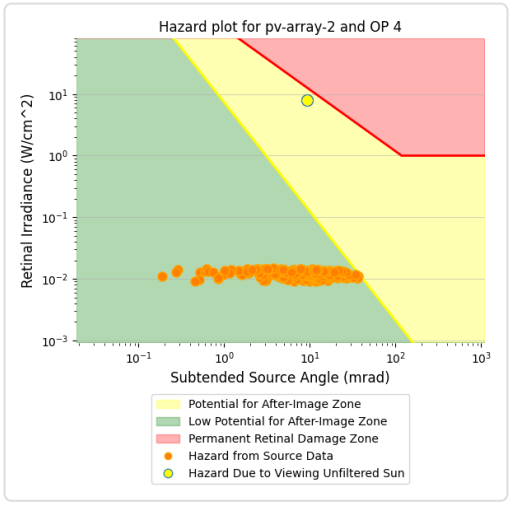
Solar array 2 and OP 4

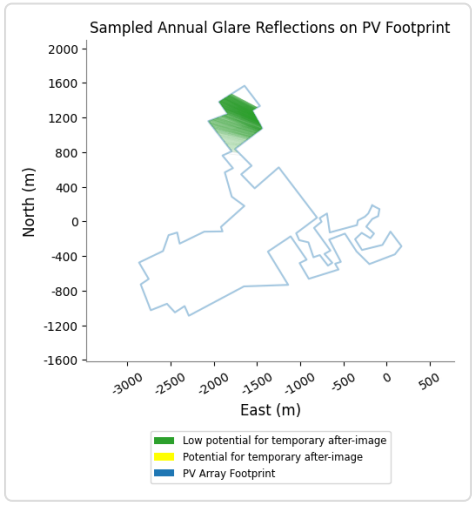
Yellow glare: none

Green glare: 364 min.





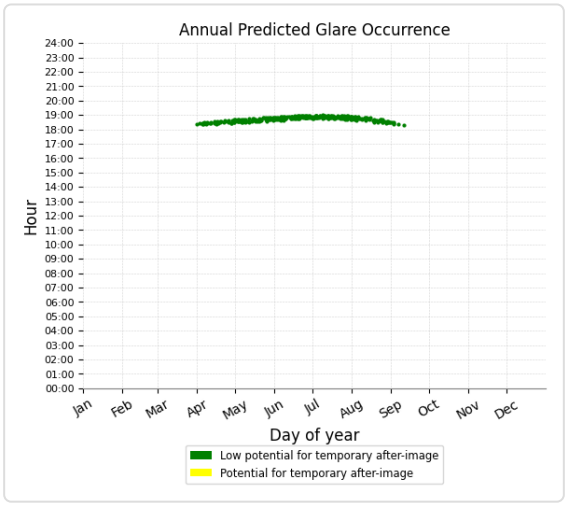


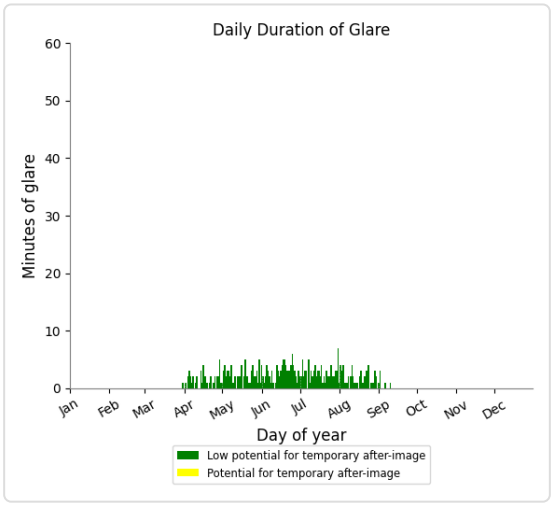


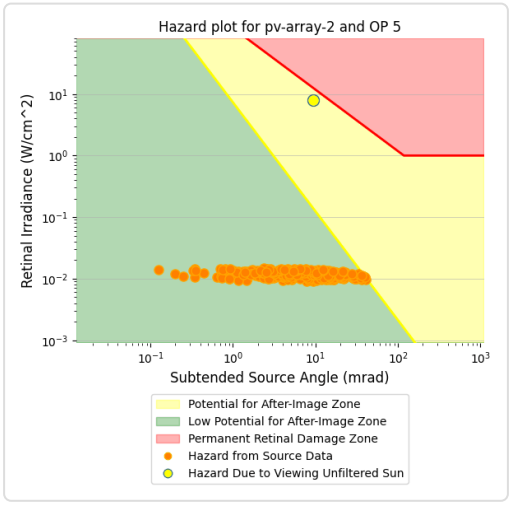
Solar array 2 and OP 5

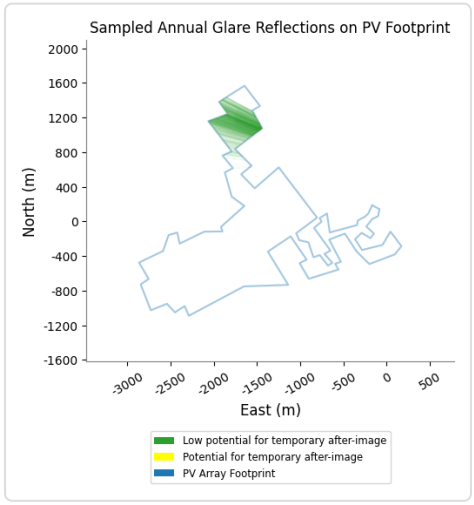
Yellow glare: none

Green glare: 346 min.





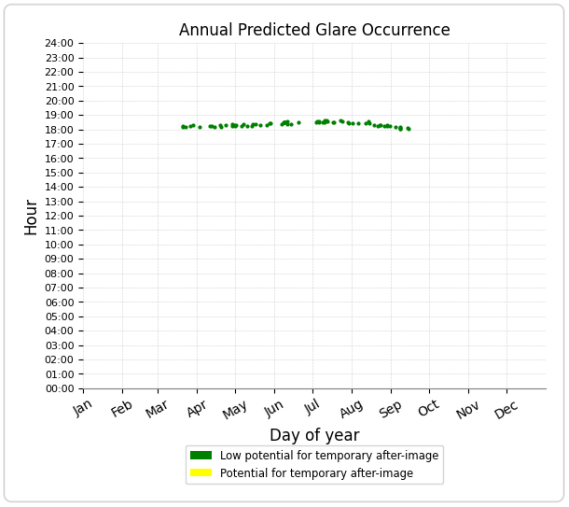


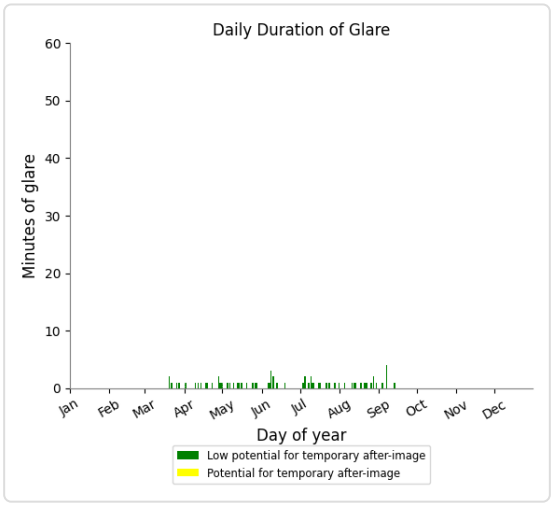


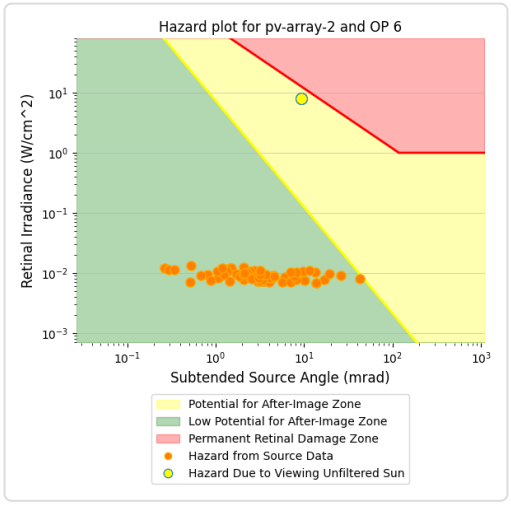
Solar array 2 and OP 6

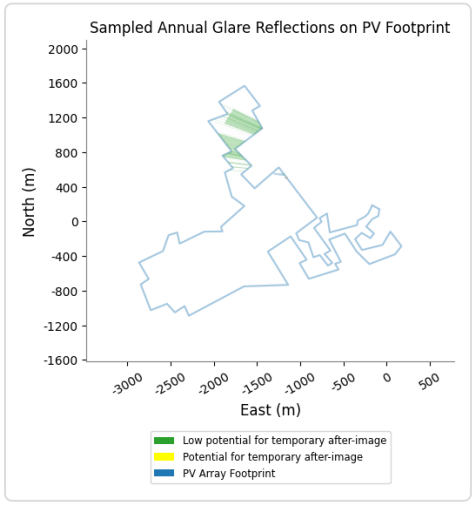
Yellow glare: none

Green glare: 71 min.





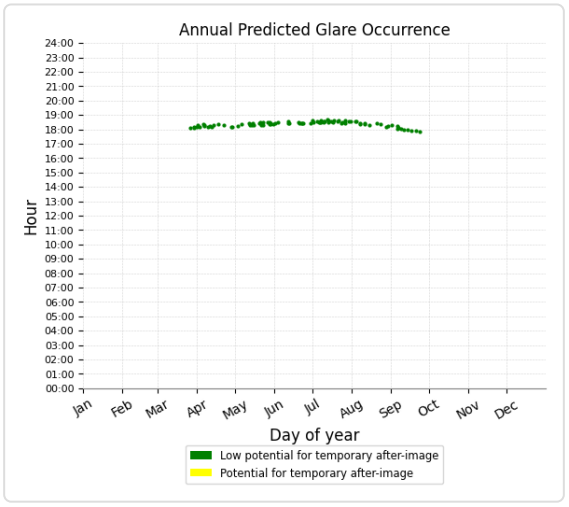


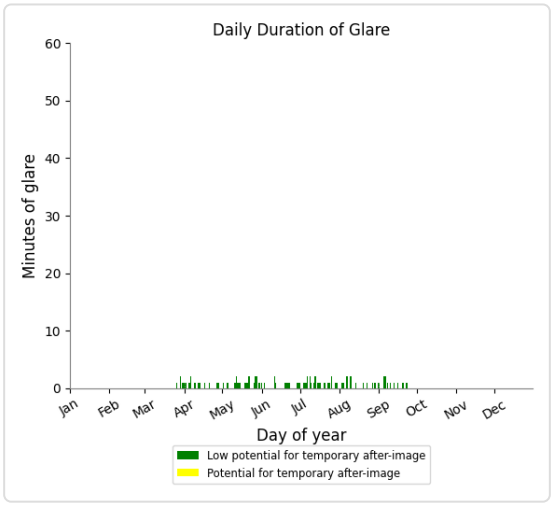


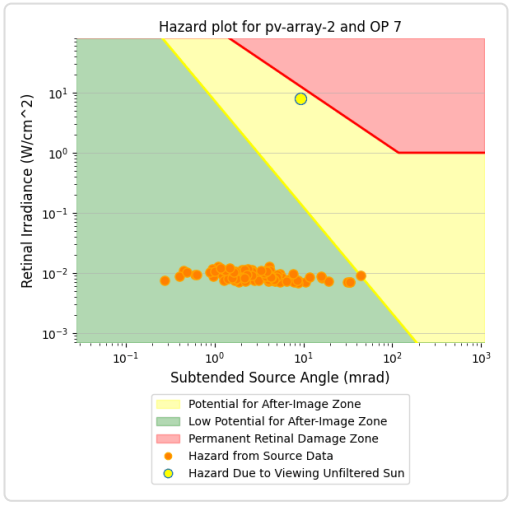
Solar array 2 and OP 7

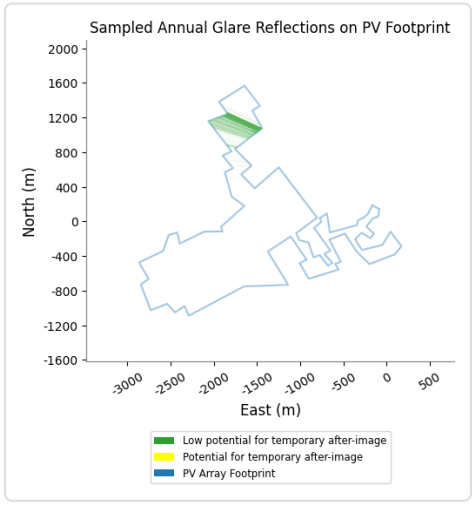
Yellow glare: none

Green glare: 93 min.





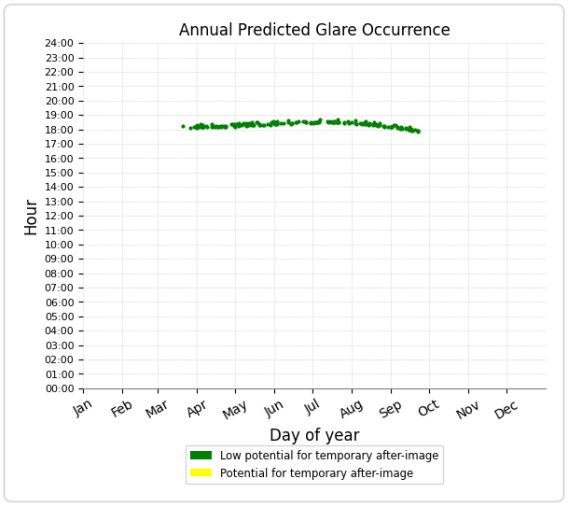


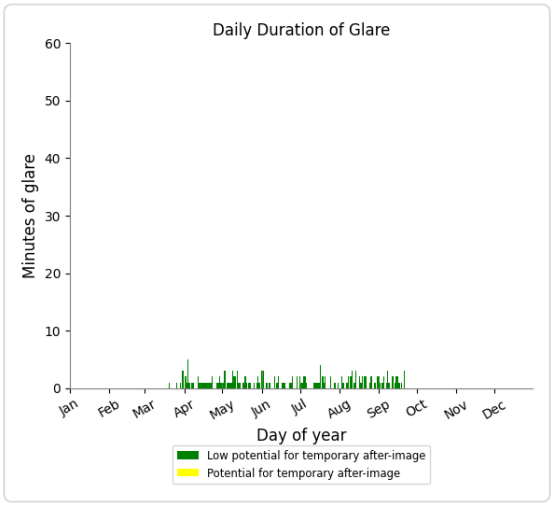


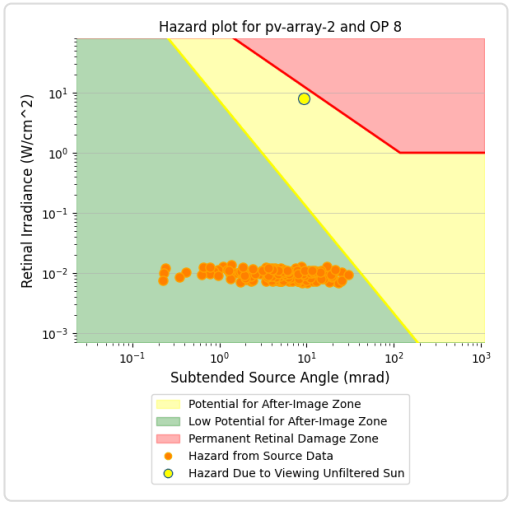
Solar array 2 and OP 8

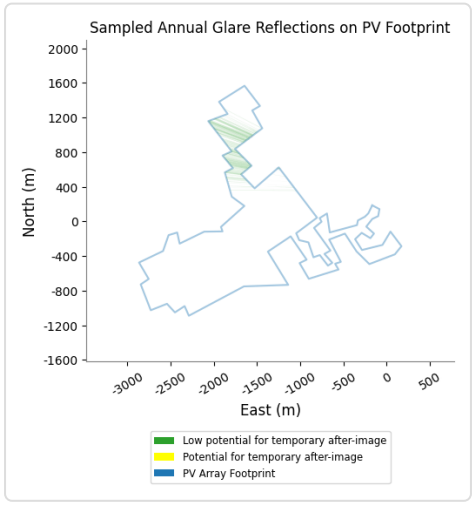
Yellow glare: none

Green glare: 172 min.





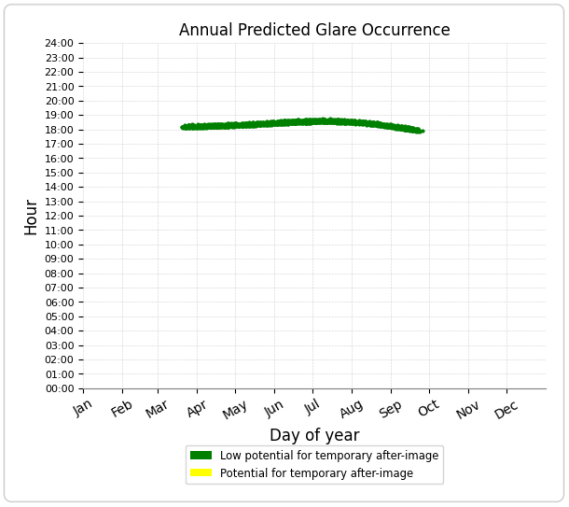


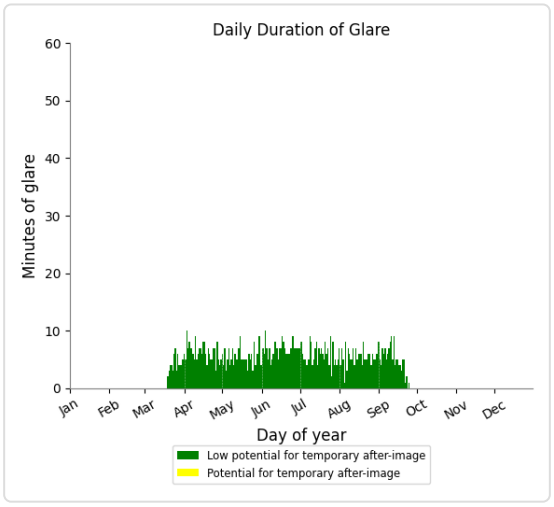


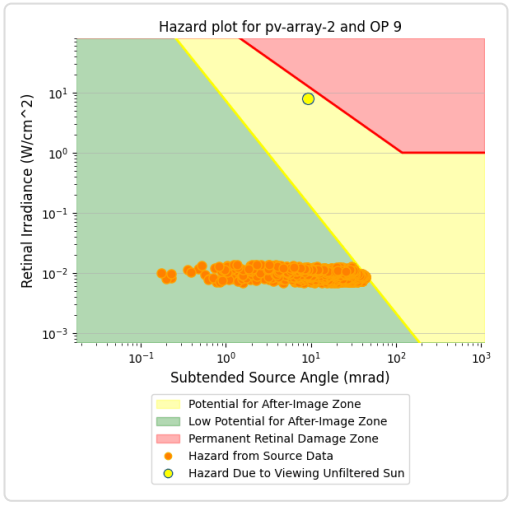
Solar array 2 and OP 9

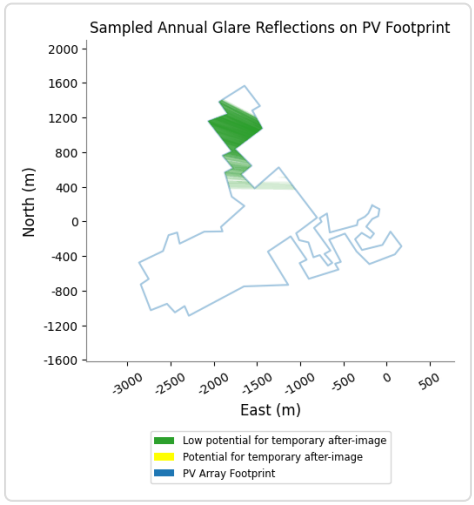
Yellow glare: none

Green glare: 1,094 min.





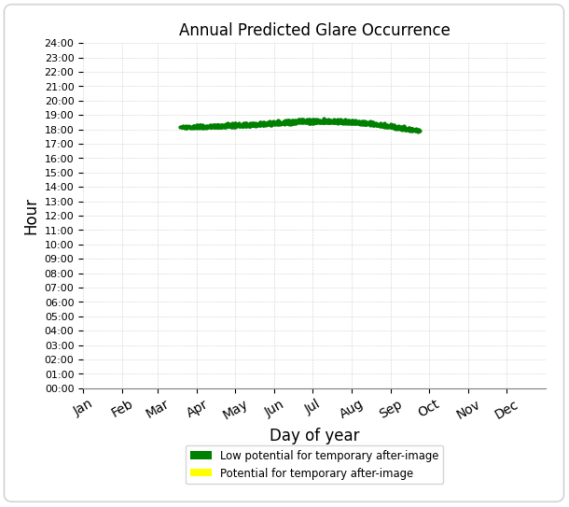


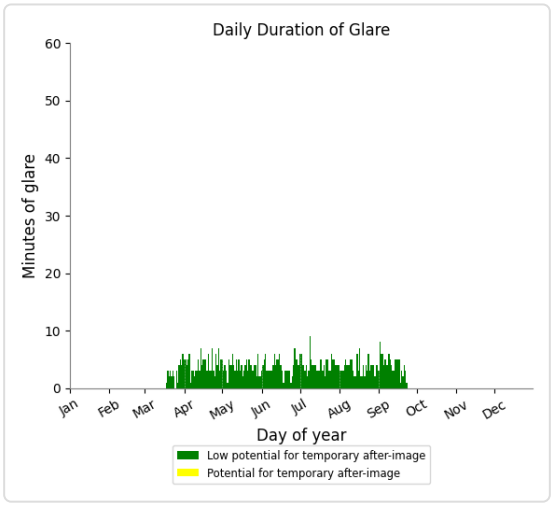


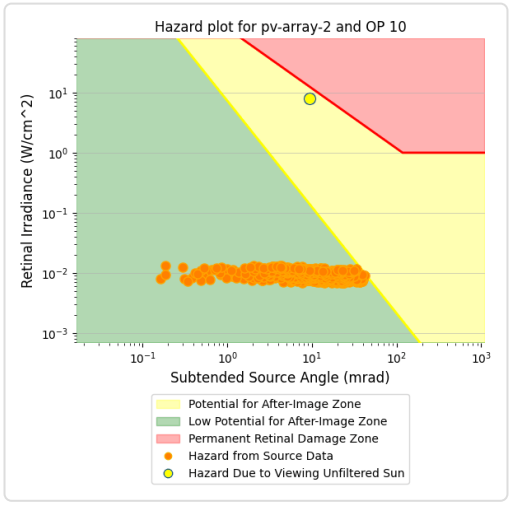
Solar array 2 and OP 10

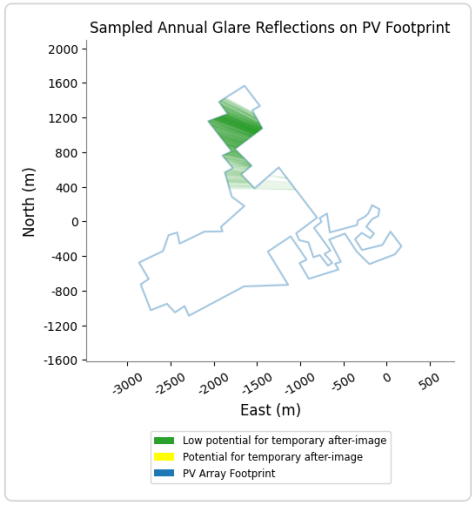
Yellow glare: none

Green glare: 734 min.





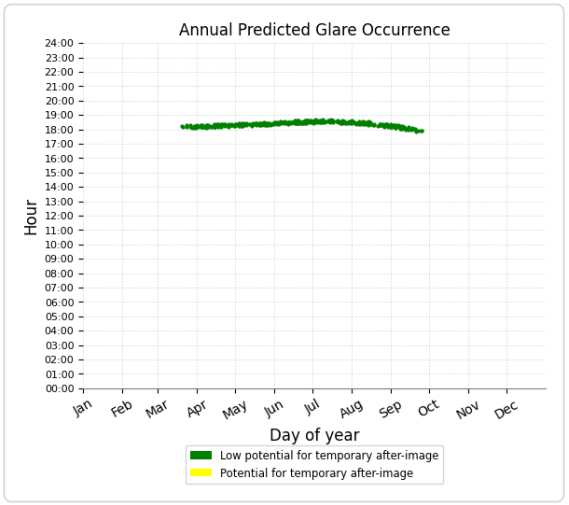


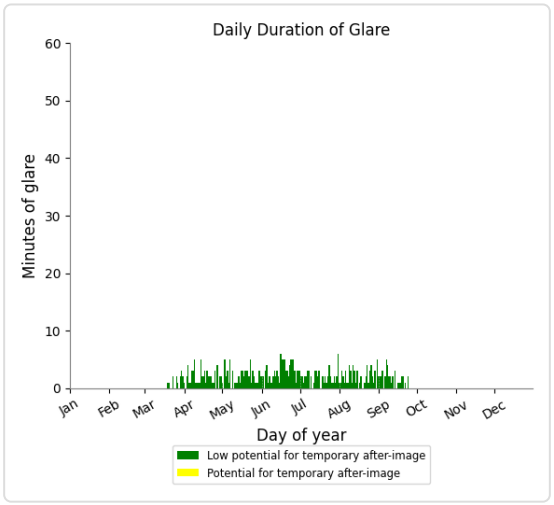


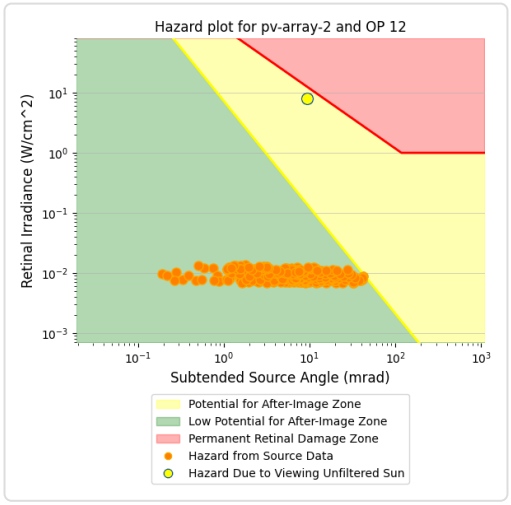
Solar array 2 and OP 12

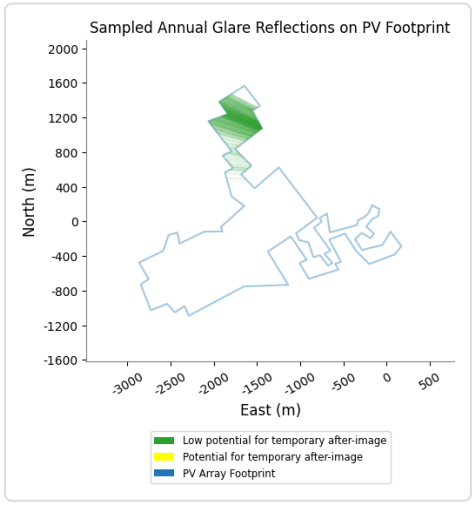
Yellow glare: none

Green glare: 384 min.





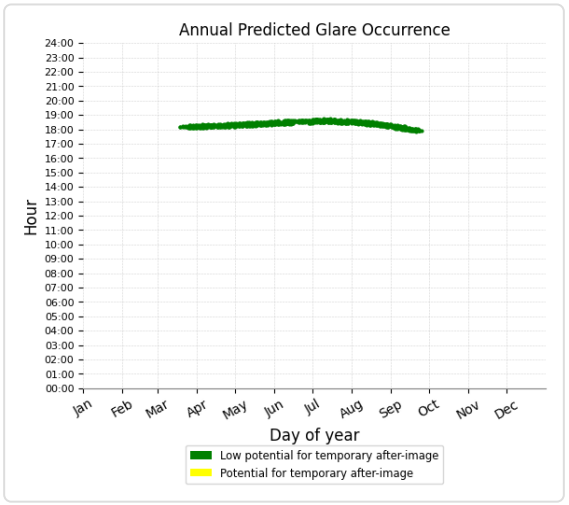


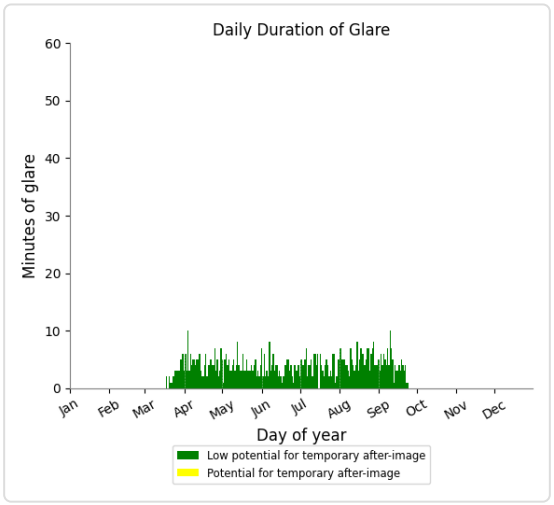


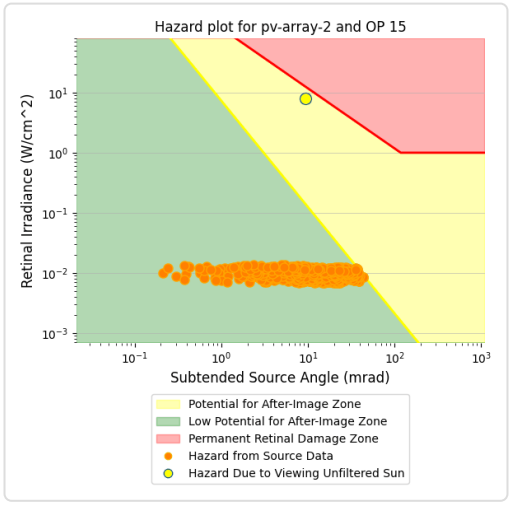
Solar array 2 and OP 15

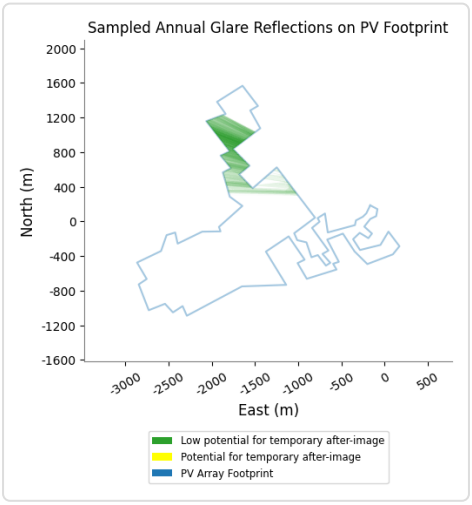
Yellow glare: none

Green glare: 775 min.





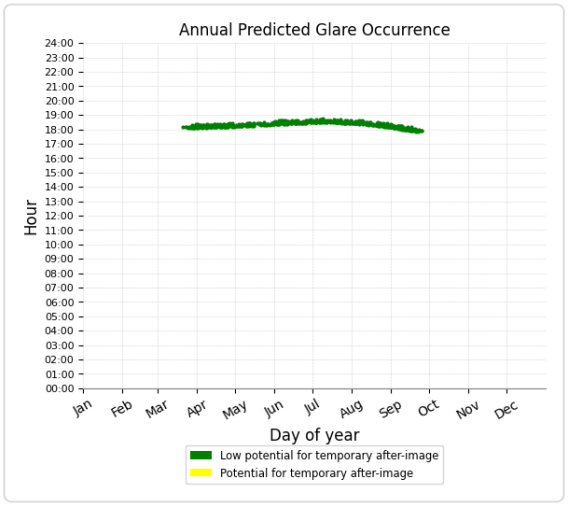


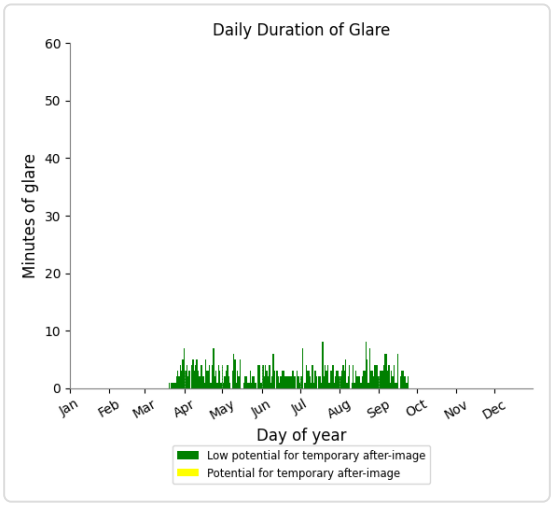


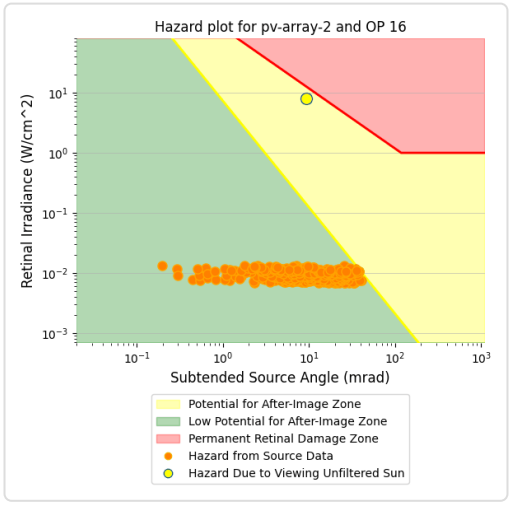
Solar array 2 and OP 16

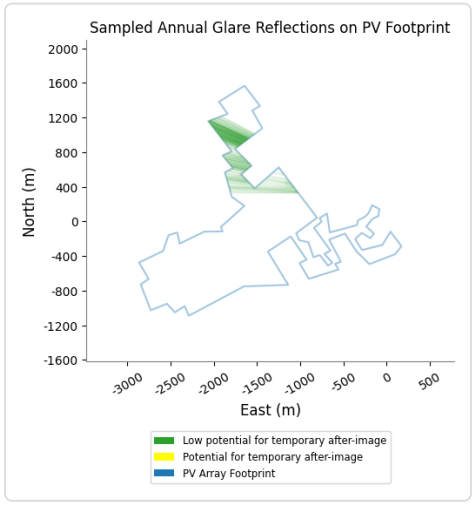
Yellow glare: none

Green glare: 497 min.





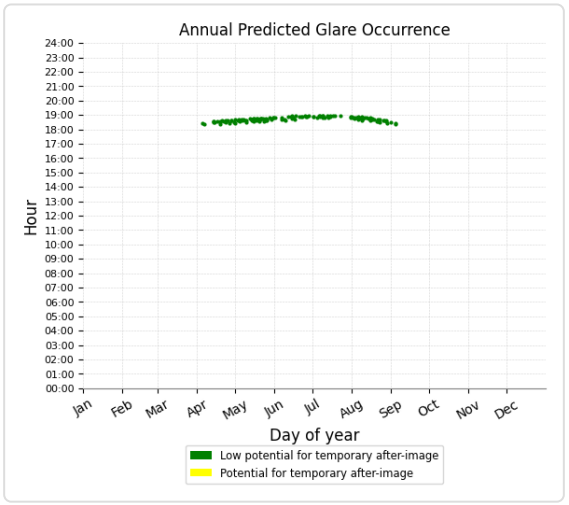


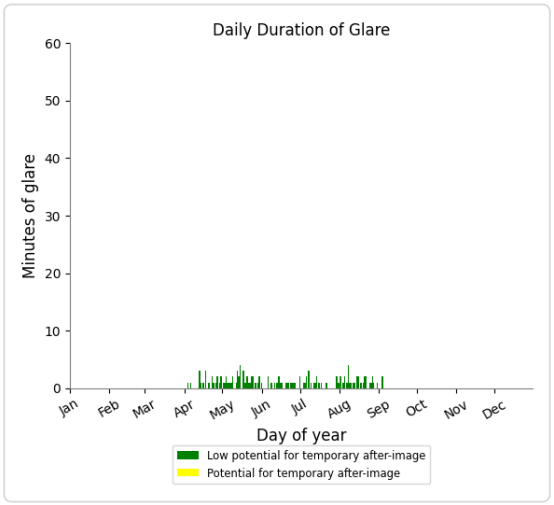


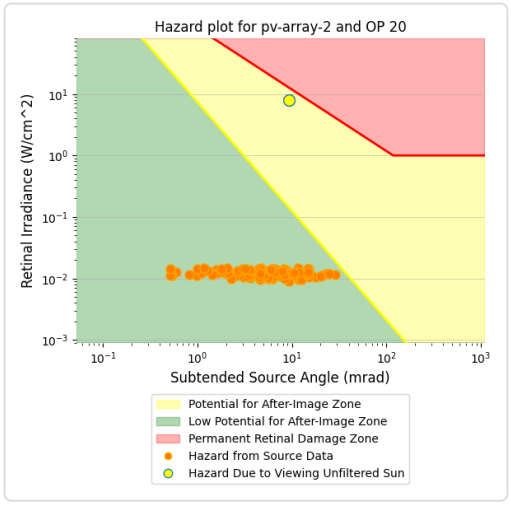
Solar array 2 and OP 20

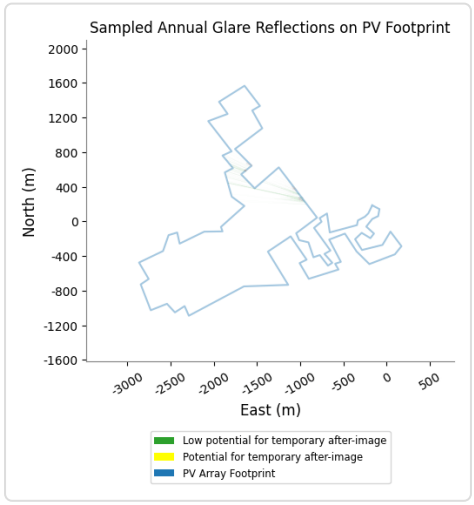
Yellow glare: none

Green glare: 135 min.





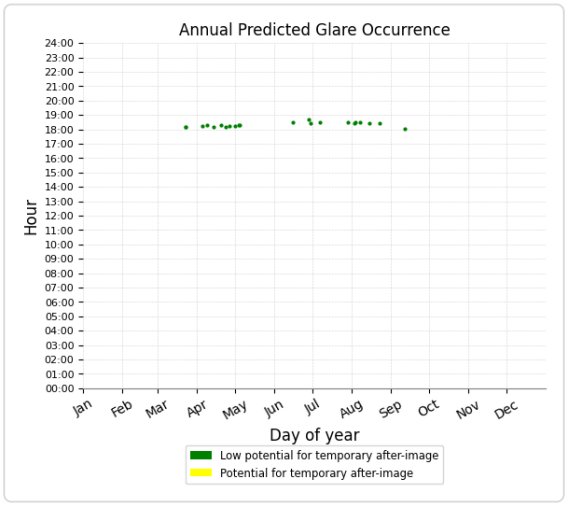


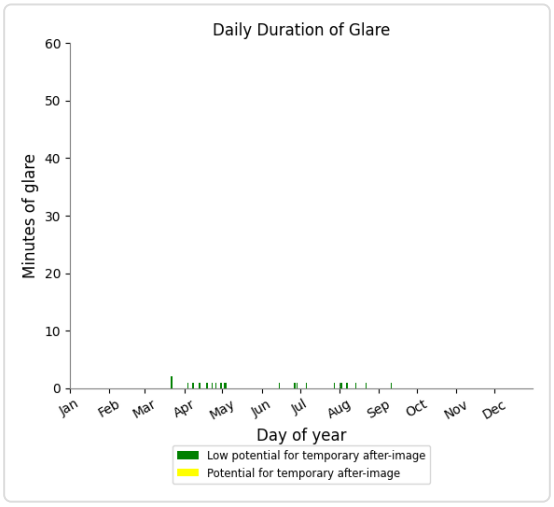


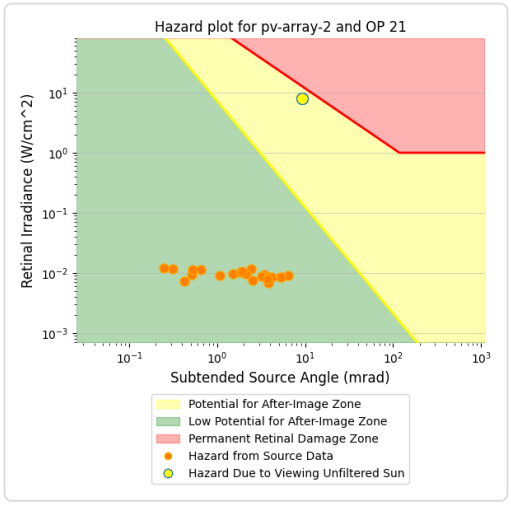
Solar array 2 and OP 21

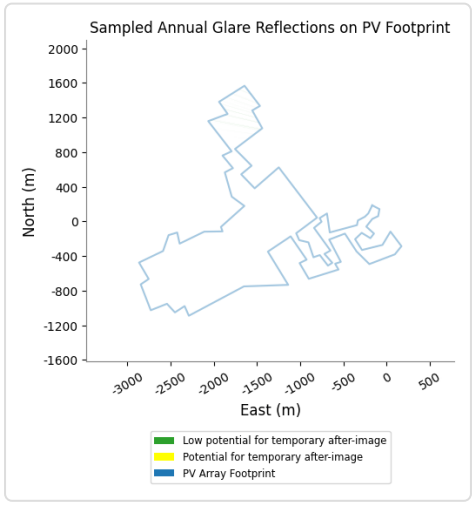
Yellow glare: none

Green glare: 22 min.





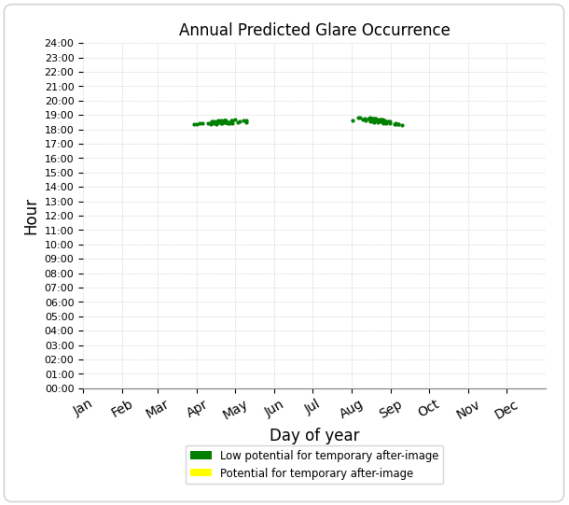


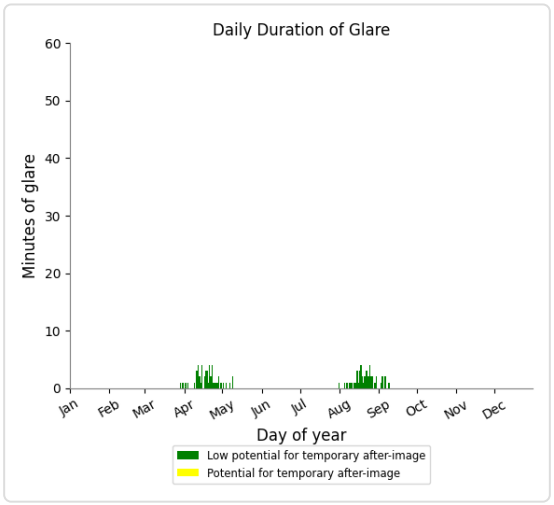


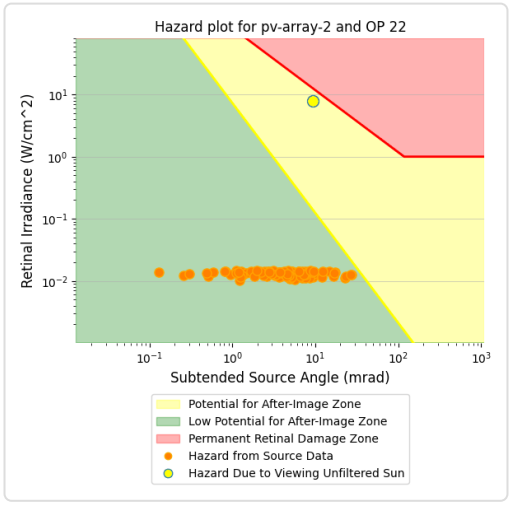
Solar array 2 and OP 22

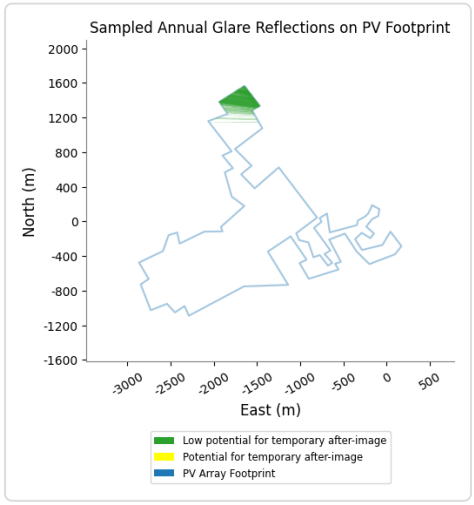
Yellow glare: none

Green glare: 99 min.





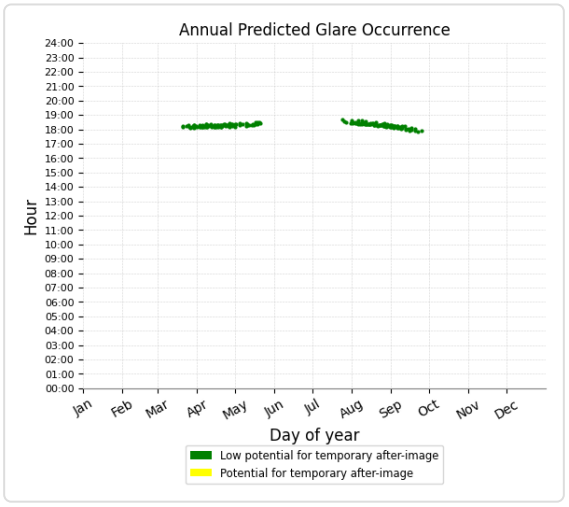


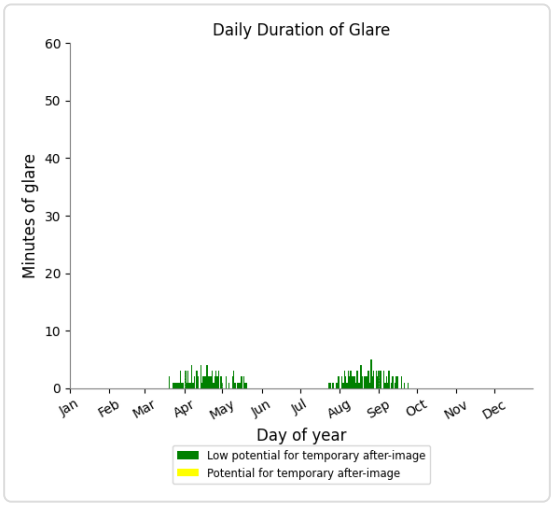


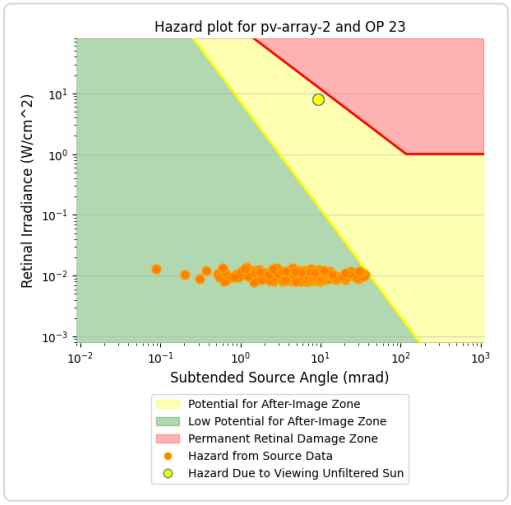
Solar array 2 and OP 23

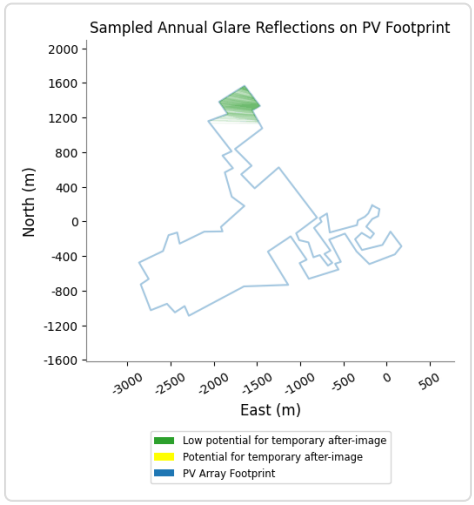
Yellow glare: none

Green glare: 189 min.





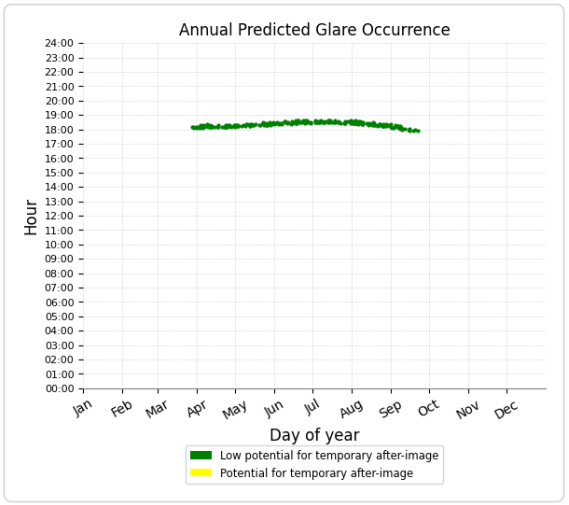


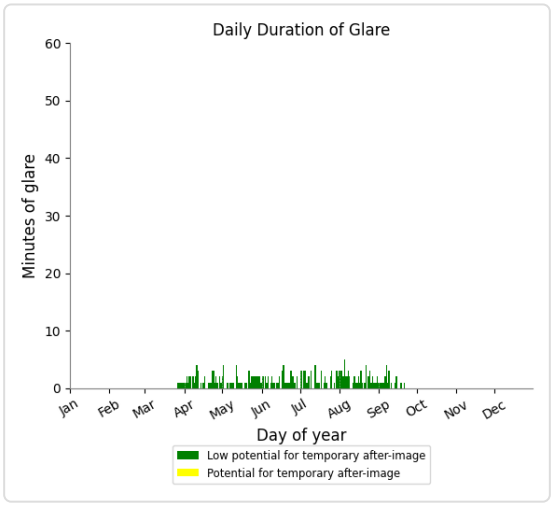


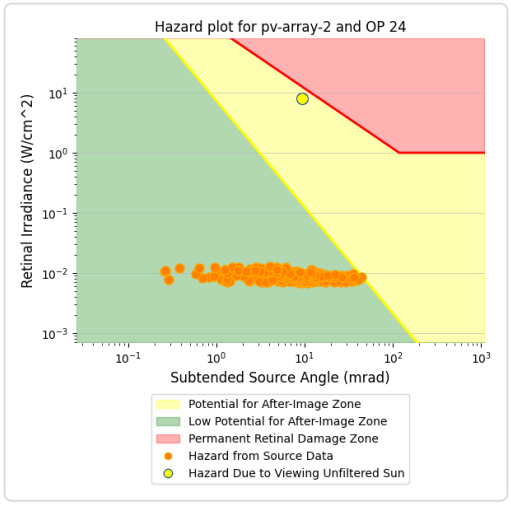
Solar array 2 and OP 24

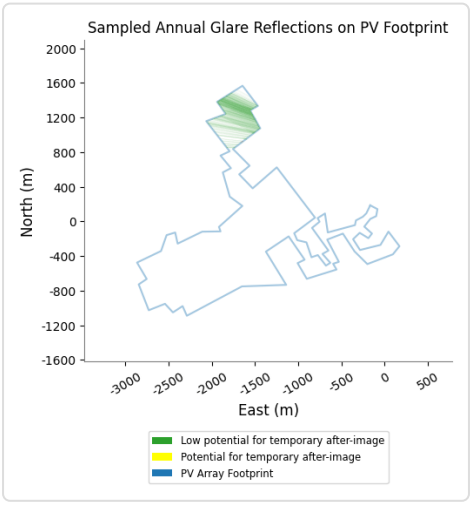
Yellow glare: none

Green glare: 244 min.





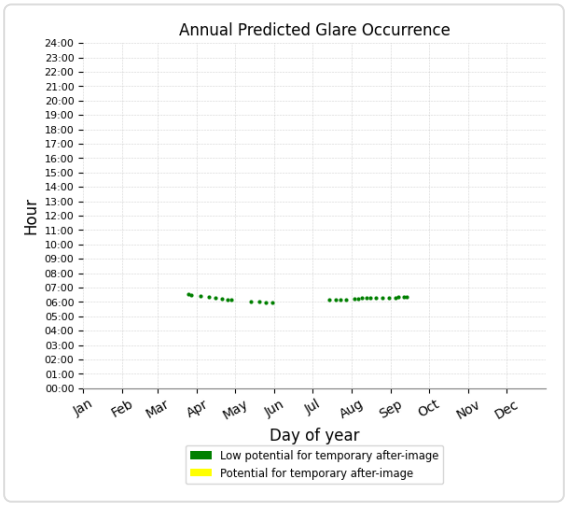


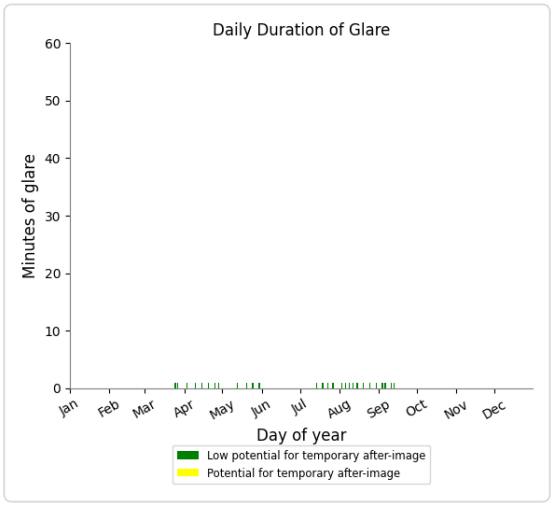


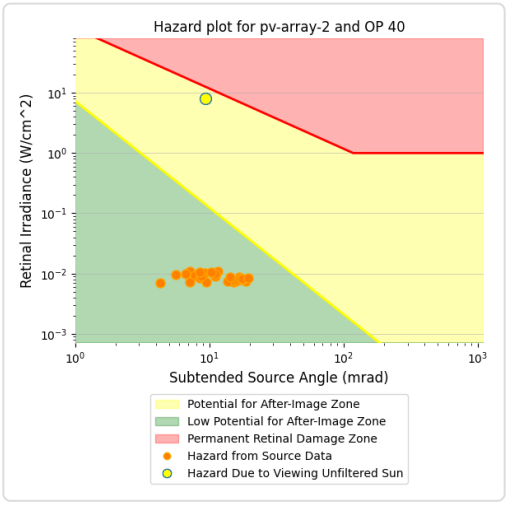
Solar array 2 and OP 40

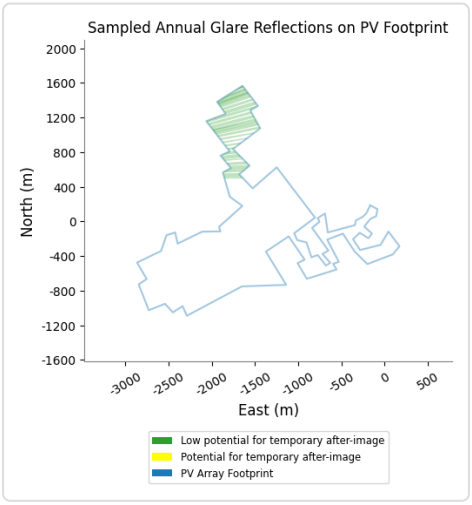
Yellow glare: none

Green glare: 28 min.





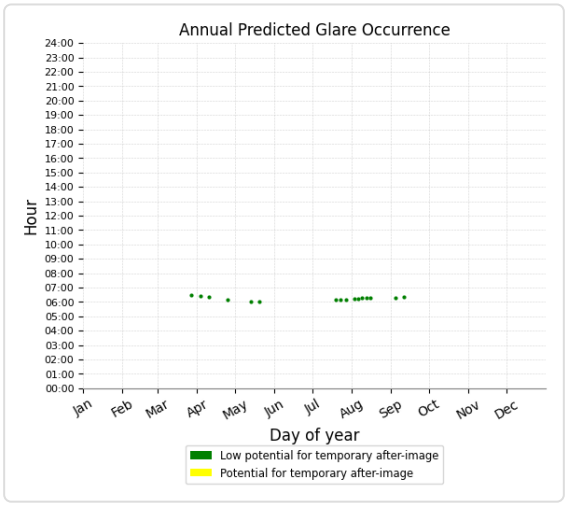


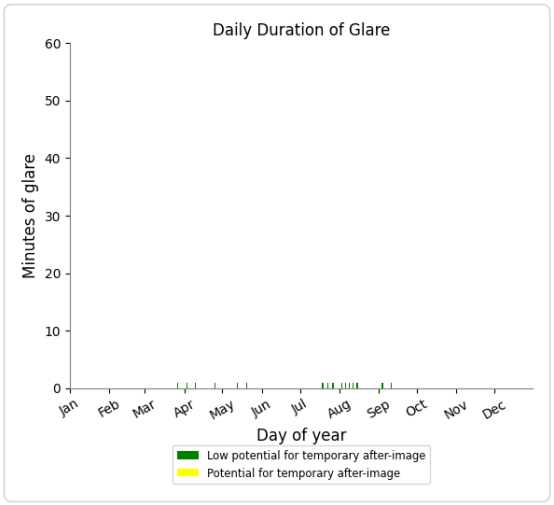


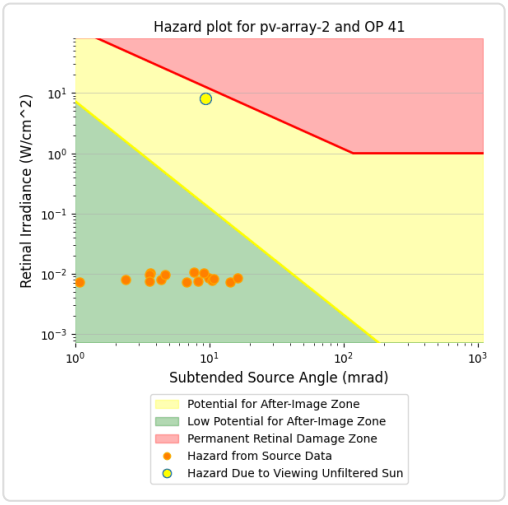
Solar array 2 and OP 41

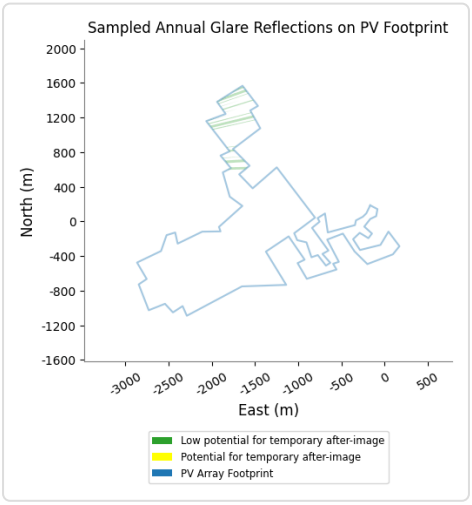
Yellow glare: none

Green glare: 16 min.





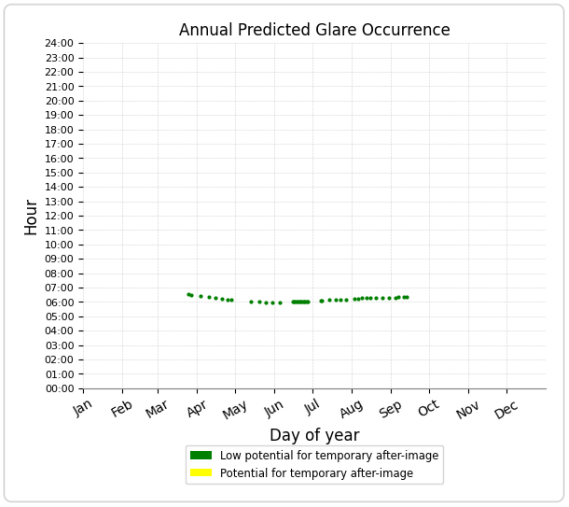


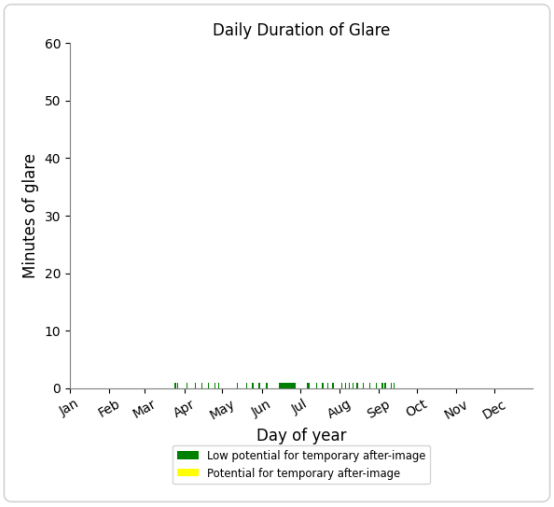


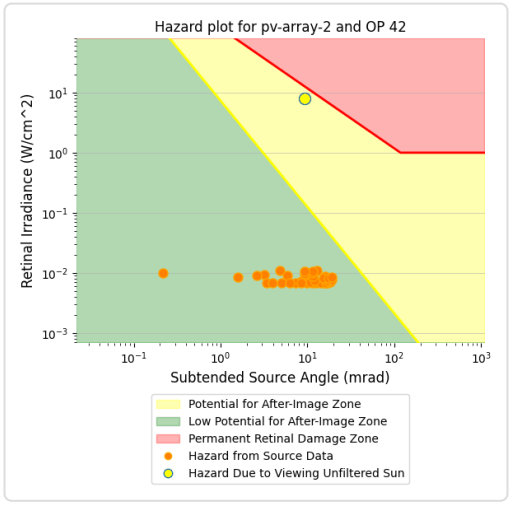
Solar array 2 and OP 42

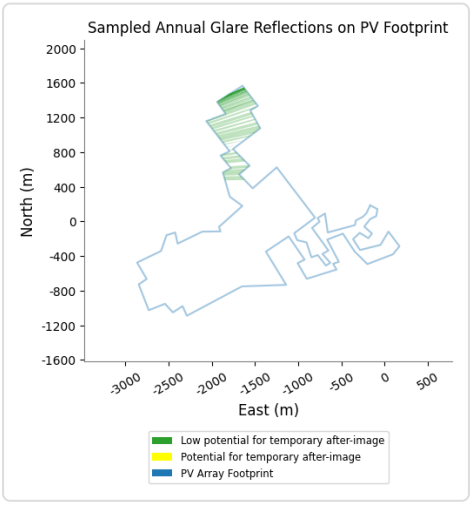
Yellow glare: none

Green glare: 44 min.





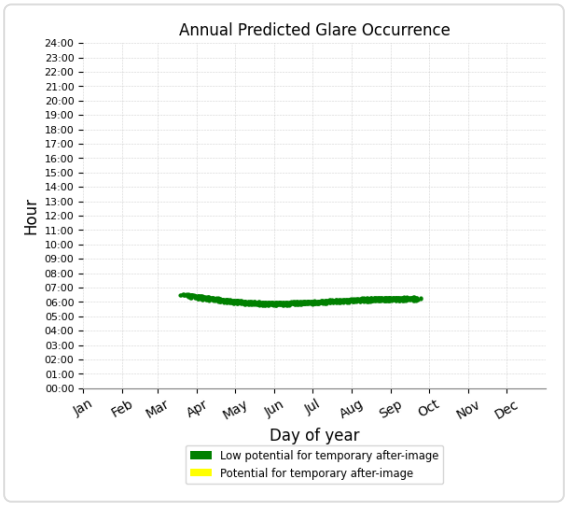


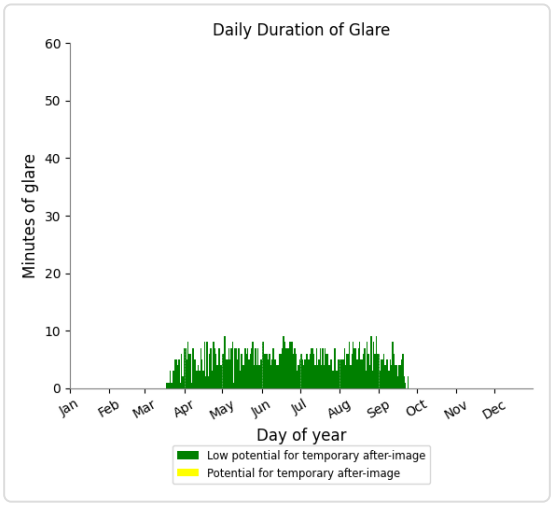


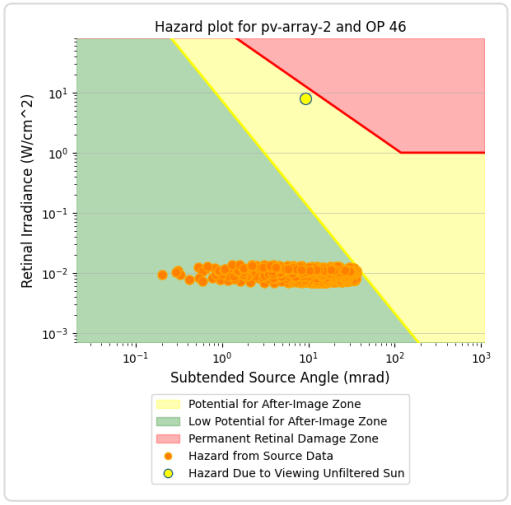
Solar array 2 and OP 46

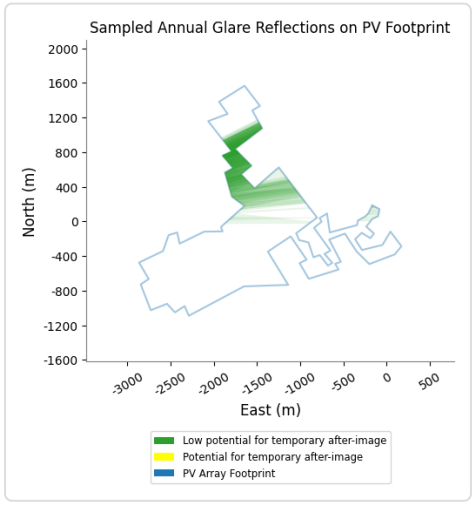
Yellow glare: none

Green glare: 1,019 min.





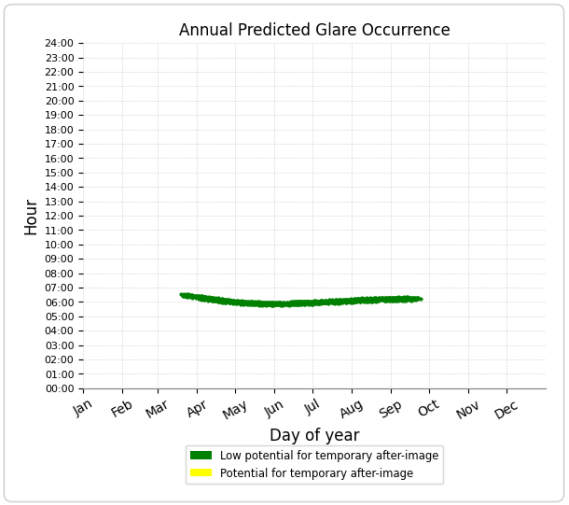


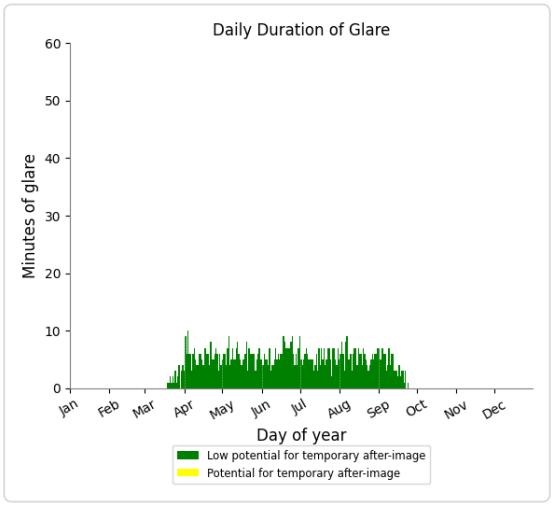


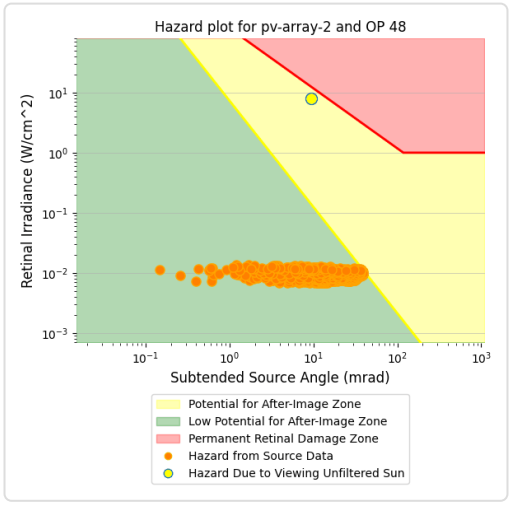
Solar array 2 and OP 48

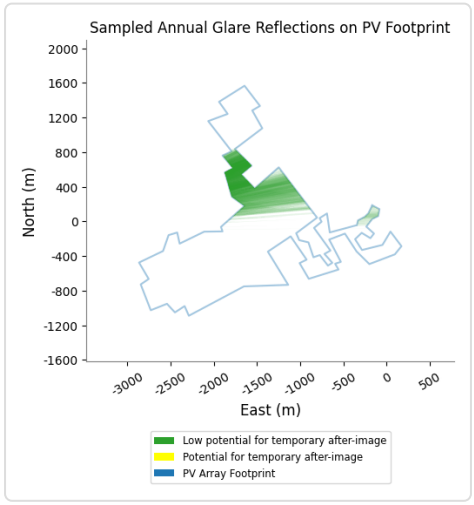
Yellow glare: none

Green glare: 985 min.





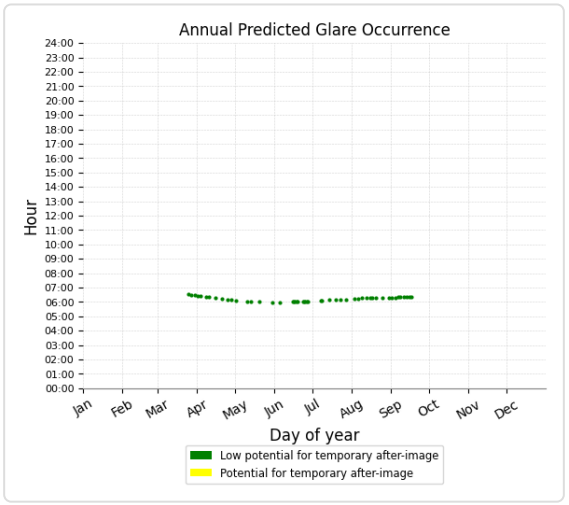


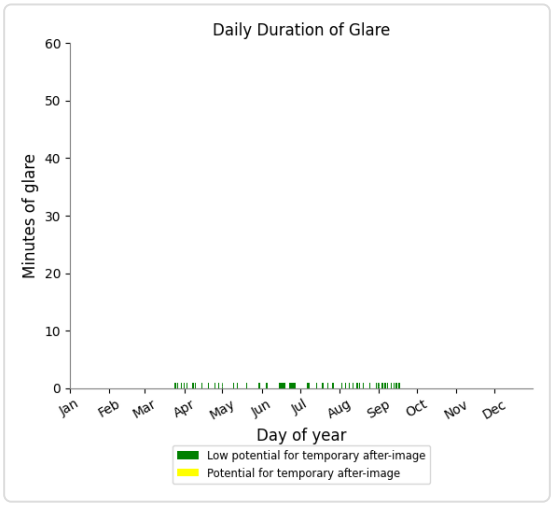


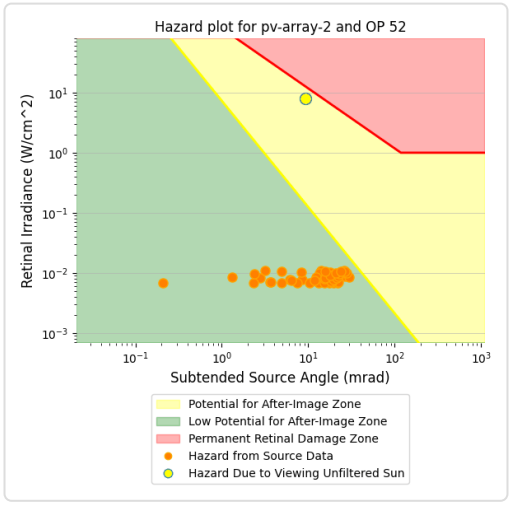
Solar array 2 and OP 52

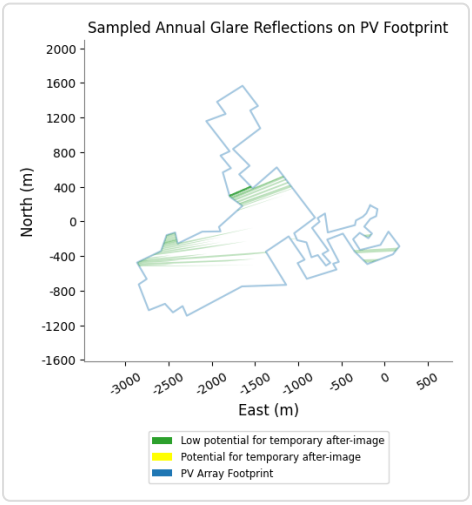
Yellow glare: none

Green glare: 50 min.





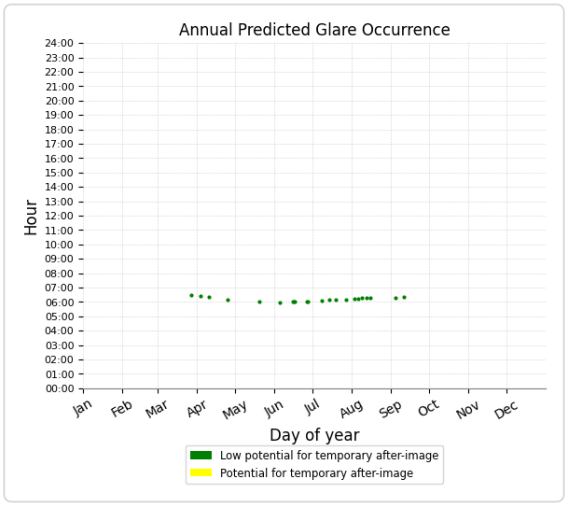


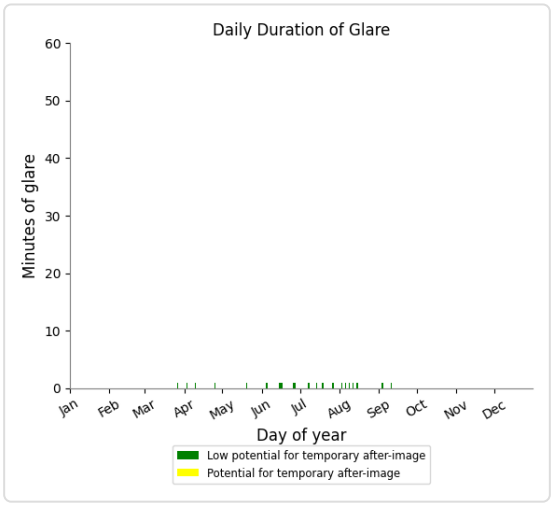


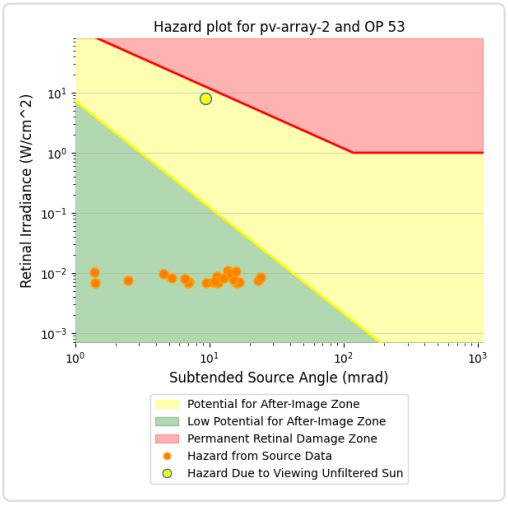
Solar array 2 and OP 53

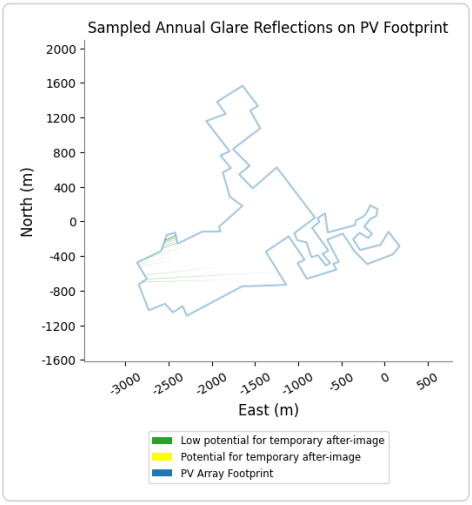
Yellow glare: none

Green glare: 22 min.





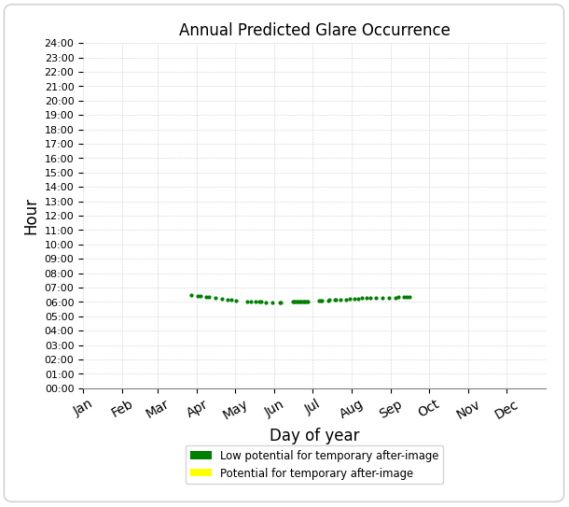


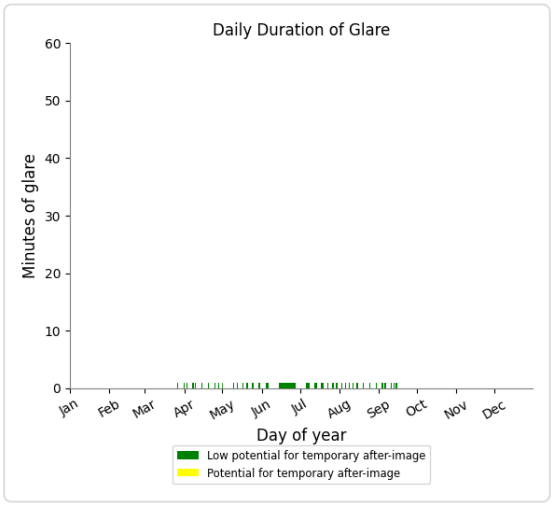


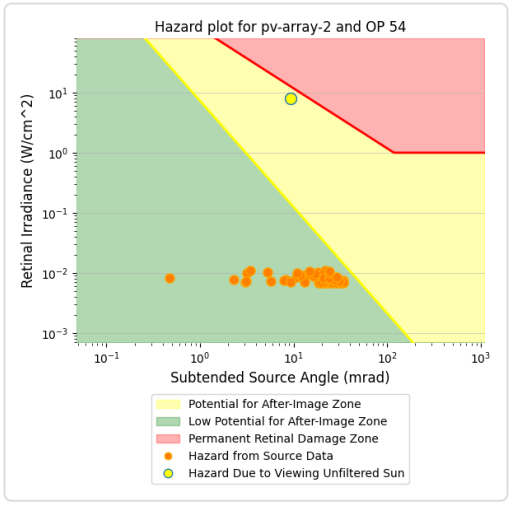
Solar array 2 and OP 54

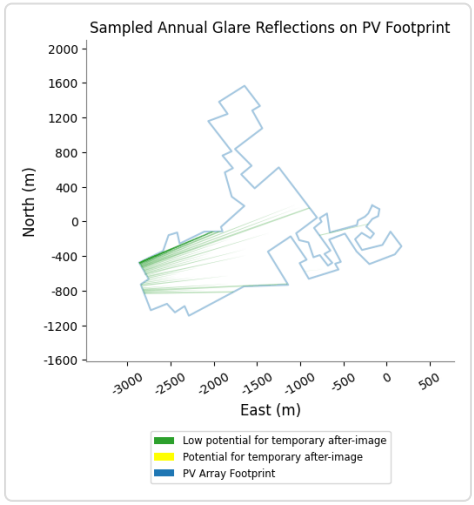
Yellow glare: none

Green glare: 55 min.





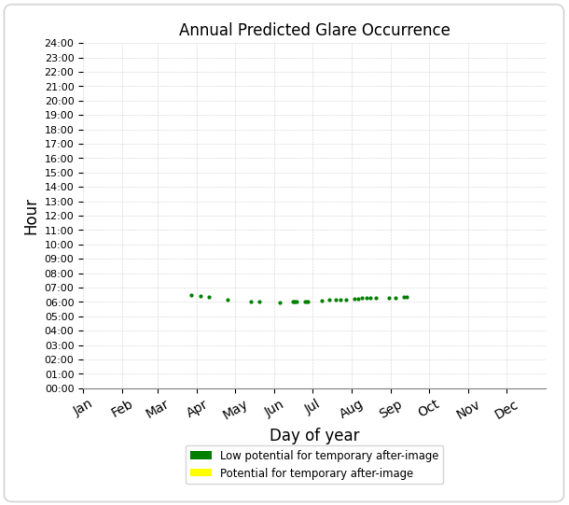


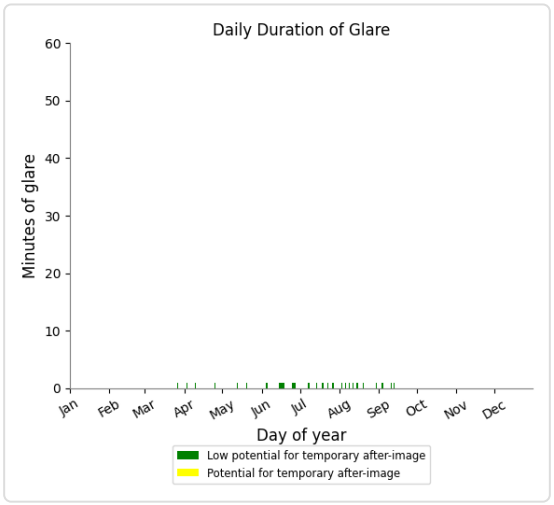


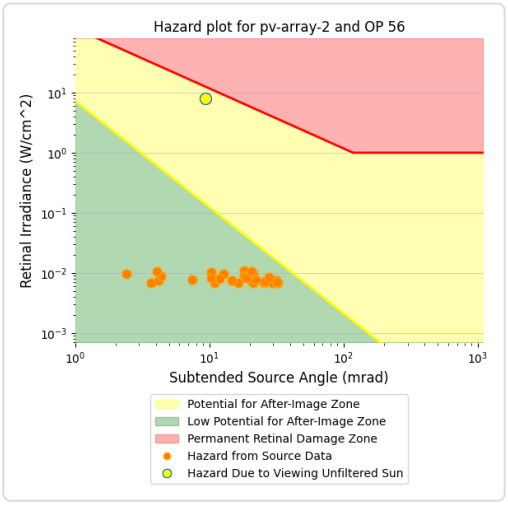
Solar array 2 and OP 56

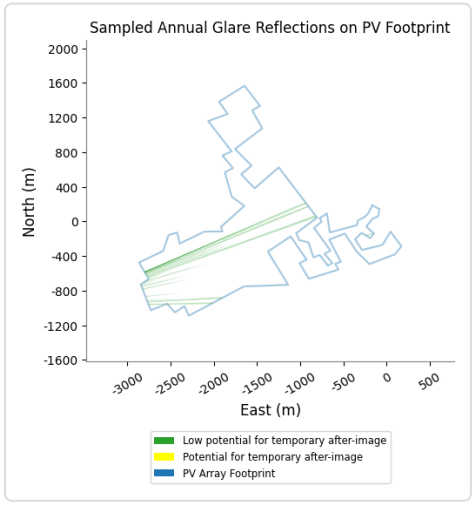
Yellow glare: none

Green glare: 29 min.









Solar array 2 and OP 11

No glare found

Solar array 2 and OP 13

No glare found

Solar array 2 and OP 14

No glare found

Solar array 2 and OP 32

No glare found

Solar array 2 and OP 34

No glare found

Solar array 2 and OP 35

No glare found

Solar array 2 and OP 36

No glare found

Solar array 2 and OP 37

No glare found

Solar array 2 and OP 38

No glare found

Solar array 2 and OP 39

No glare found

Solar array 2 and OP 43

No glare found

Solar array 2 and OP 44

No glare found

Solar array 2 and OP 45

No glare found

Solar array 2 and OP 47

No glare found

Solar array 2 and OP 50

No glare found

Solar array 2 and OP 51

No glare found

Solar array 2 and OP 55

No glare found