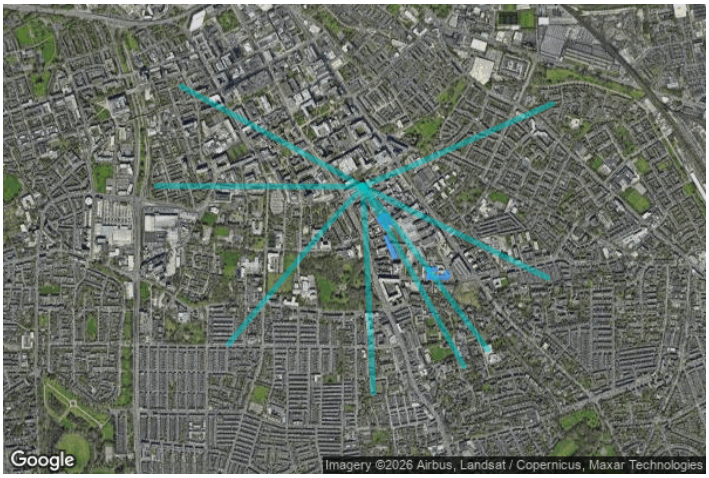
FORGESOLAR GLARE ANALYSIS

Project: **MRI PV**
Site configuration: **MRI01**

Created 03 Feb, 2026
Updated 06 Feb, 2026
Time-step 1 minute
Timezone offset UTC0
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 500 kW to 1 MW
(1,000 kW / 32,400 m^2 limit)
Site ID 170340.28313

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
CSB01	4.0	68.0	86,641	1,444.0	0	0.0	-
CSB02	4.0	248.0	83,888	1,398.1	0	0.0	-
PCB01	10.0	46.0	123,533	2,058.9	0	0.0	-
PCB02	10.0	66.0	99,582	1,659.7	0	0.0	-
PCB03	10.0	53.0	84,708	1,411.8	0	0.0	-
PMB01	4.0	90.0	75,641	1,260.7	0	0.0	-
PMB02	4.0	180.0	86,139	1,435.7	0	0.0	-
PMB03	4.0	0.0	70,237	1,170.6	0	0.0	-
PMB04	4.0	0.0	76,717	1,278.6	0	0.0	-
PMB05	4.0	241.0	70,713	1,178.5	0	0.0	-

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
Flight path A	69,108	1,151.8	0	0.0
Flight path B	73,144	1,219.1	0	0.0
Flight path C	56,466	941.1	0	0.0
Flight path D	182,682	3,044.7	0	0.0
Flight path E	86,403	1,440.0	0	0.0
Flight path F	183,431	3,057.2	0	0.0
Flight path G	145,347	2,422.4	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path H	61,218	1,020.3	0	0.0

Component Data

PV Arrays

Name: CSB01
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 68.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.461019	-2.226874	41.89	20.00	61.89
2	53.461044	-2.226764	41.76	20.00	61.76
3	53.460704	-2.226534	42.72	20.00	62.72
4	53.460709	-2.226506	42.72	20.00	62.72
5	53.460642	-2.226462	42.94	20.00	62.94
6	53.460602	-2.226628	42.87	20.00	62.87
7	53.460707	-2.226701	42.50	20.00	62.50
8	53.460715	-2.226672	42.54	20.00	62.54

Name: CSB02
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 248.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.460554	-2.226539	43.07	20.00	63.07
2	53.460132	-2.226266	44.03	20.00	64.03
3	53.460178	-2.226069	43.97	20.00	63.97
4	53.460502	-2.226285	43.37	20.00	63.37
5	53.460484	-2.226374	43.35	20.00	63.35
6	53.460574	-2.226437	43.11	20.00	63.11

Name: PCB01
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 46.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.461830	-2.227381	43.27	8.30	51.58
2	53.462016	-2.227080	43.37	8.30	51.68
3	53.461974	-2.227003	43.13	8.30	51.44
4	53.461786	-2.227312	43.07	8.30	51.37

Name: PCB02
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 66.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.461938	-2.226976	43.00	8.30	51.31
2	53.461985	-2.226793	42.96	8.30	51.26
3	53.461611	-2.226501	41.71	8.30	50.02
4	53.461562	-2.226688	41.26	8.30	49.57

Name: PCB03
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 53.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



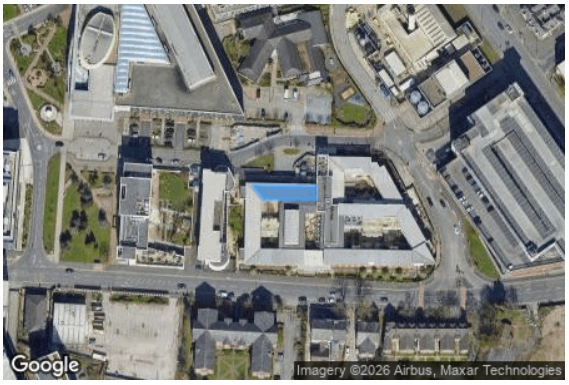
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.461762	-2.227325	43.02	8.30	51.33
2	53.461792	-2.227255	42.98	8.30	51.28
3	53.461443	-2.226807	41.19	8.30	49.49
4	53.461410	-2.226882	41.41	8.30	49.72

Name: PMB01
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 90.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.459635	-2.223754	44.01	7.20	51.21
2	53.459575	-2.223652	43.79	7.20	50.99
3	53.459335	-2.223660	44.00	7.20	51.20
4	53.459286	-2.223759	44.28	7.20	51.48

Name: PMB02
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.459653	-2.223715	43.92	7.20	51.12
2	53.459648	-2.223181	43.07	7.20	50.27
3	53.459584	-2.223181	43.04	7.20	50.24
4	53.459586	-2.223629	43.72	7.20	50.92

Name: PMB03
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 0.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.459265	-2.223734	44.22	0.00	44.22
2	53.459320	-2.223639	43.95	0.00	43.95
3	53.459318	-2.223284	43.22	0.00	43.22
4	53.459260	-2.223282	43.31	0.00	43.31

Name: PMB04
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 0.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.459322	-2.223084	43.22	11.40	54.62
2	53.459315	-2.222351	43.71	11.40	55.11
3	53.459247	-2.222353	43.79	11.40	55.19
4	53.459255	-2.223085	43.31	11.40	54.71

Name: PMB05
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 241.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.459331	-2.222334	43.71	11.40	55.11
2	53.459365	-2.222226	43.79	11.40	55.19
3	53.459523	-2.222373	43.48	11.40	54.88
4	53.459489	-2.222475	43.31	11.40	54.71

Route Receptors

Name: Flight path A
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



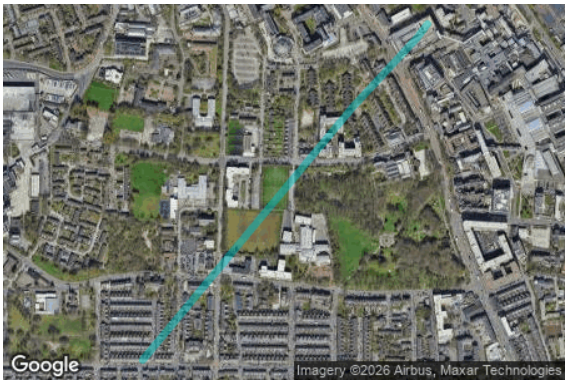
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463249	-2.228587	44.19	25.00	69.19
2	53.463398	-2.229070	44.21	75.00	119.21
3	53.464337	-2.231881	41.66	120.00	161.66
4	53.467581	-2.241838	36.89	325.00	361.89

Name: Flight path B
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



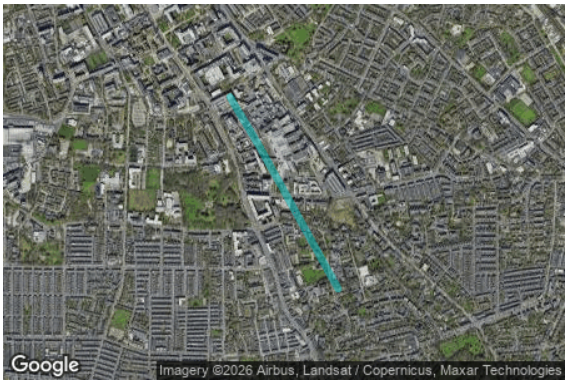
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463238	-2.228560	44.19	25.00	69.19
2	53.463232	-2.229118	43.76	75.00	118.76
3	53.463228	-2.232360	41.95	120.00	161.95
4	53.463254	-2.243647	35.00	325.00	360.00

Name: Flight path C
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



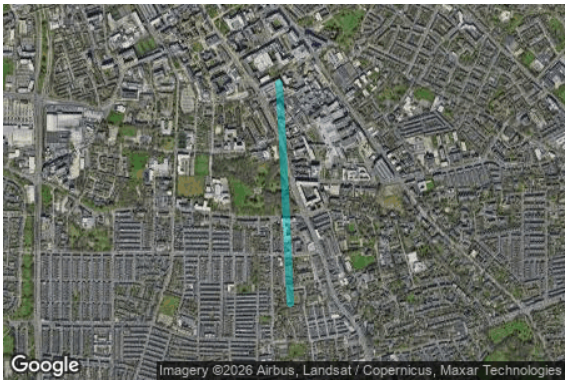
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463234	-2.228574	44.16	25.00	69.16
2	53.462963	-2.228912	43.15	75.00	118.15
3	53.461554	-2.231122	39.73	120.00	159.73
4	53.456380	-2.238364	37.99	325.00	362.99

Name: Flight path D
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



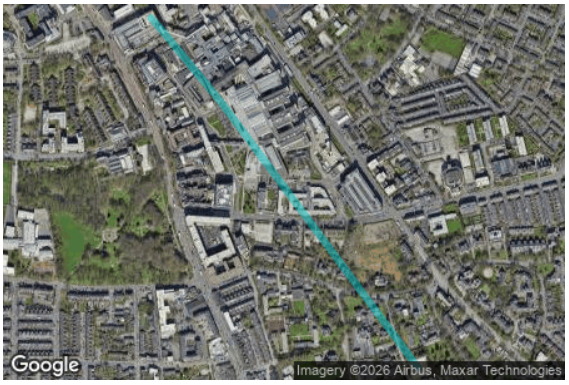
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463234	-2.228556	44.17	25.00	69.17
2	53.462942	-2.228283	43.89	75.00	118.89
3	53.461295	-2.226622	41.59	120.00	161.59
4	53.455412	-2.221135	47.06	325.00	372.06

Name: Flight path E
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



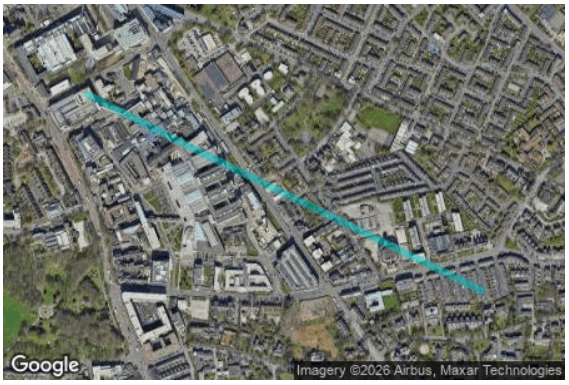
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463234	-2.228555	44.17	25.00	69.17
2	53.462889	-2.228510	43.50	75.00	118.50
3	53.460995	-2.228315	43.22	120.00	163.22
4	53.454265	-2.227768	39.58	325.00	364.58

Name: Flight path F
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



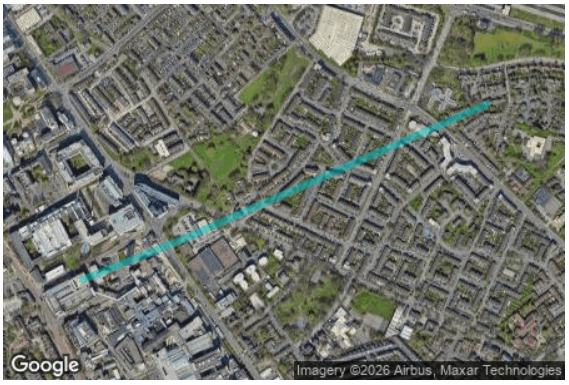
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463254	-2.228549	44.22	25.00	69.22
2	53.462996	-2.228168	44.13	75.00	119.13
3	53.461527	-2.226130	41.97	120.00	161.97
4	53.456126	-2.219378	46.31	325.00	371.31

Name: Flight path G
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463256	-2.228543	44.25	25.00	69.25
2	53.463102	-2.228046	44.28	75.00	119.28
3	53.462230	-2.225188	44.01	120.00	164.01
4	53.459260	-2.215017	48.00	325.00	373.00

Name: Flight path H
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463257	-2.228536	44.25	25.00	69.25
2	53.463380	-2.228021	44.69	75.00	119.69
3	53.464095	-2.225026	44.16	120.00	164.16
4	53.466829	-2.214651	46.77	325.00	371.77

Glare Analysis Results

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
CSB01	4.0	68.0	86,641	1,444.0	0	0.0	-
CSB02	4.0	248.0	83,888	1,398.1	0	0.0	-
PCB01	10.0	46.0	123,533	2,058.9	0	0.0	-
PCB02	10.0	66.0	99,582	1,659.7	0	0.0	-
PCB03	10.0	53.0	84,708	1,411.8	0	0.0	-
PMB01	4.0	90.0	75,641	1,260.7	0	0.0	-
PMB02	4.0	180.0	86,139	1,435.7	0	0.0	-
PMB03	4.0	0.0	70,237	1,170.6	0	0.0	-
PMB04	4.0	0.0	76,717	1,278.6	0	0.0	-
PMB05	4.0	241.0	70,713	1,178.5	0	0.0	-

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
Flight path A	69,108	1,151.8	0	0.0
Flight path B	73,144	1,219.1	0	0.0
Flight path C	56,466	941.1	0	0.0
Flight path D	182,682	3,044.7	0	0.0
Flight path E	86,403	1,440.0	0	0.0
Flight path F	183,431	3,057.2	0	0.0
Flight path G	145,347	2,422.4	0	0.0
Flight path H	61,218	1,020.3	0	0.0

PV: CSB01 low potential for temporary after-image

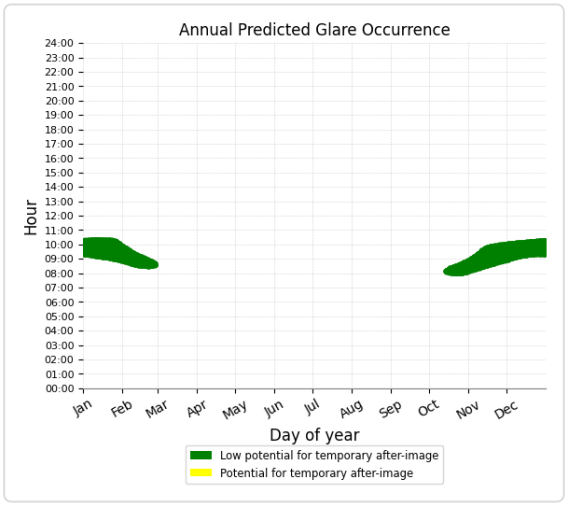
Receptor results ordered by category of glare

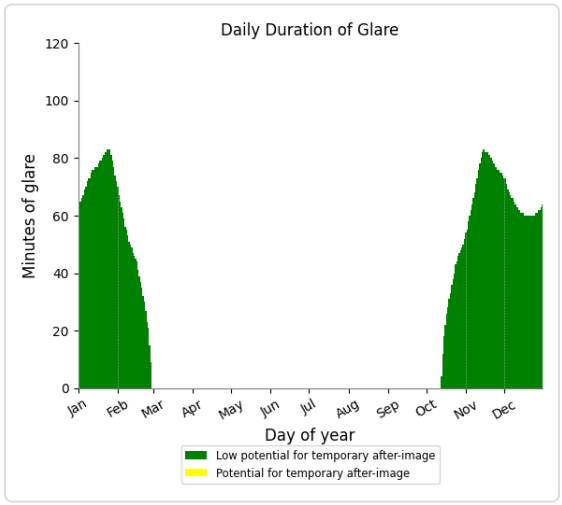
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	8,363	139.4	0	0.0
Flight path B	8,076	134.6	0	0.0
Flight path C	7,532	125.5	0	0.0
Flight path D	18,782	313.0	0	0.0
Flight path E	9,806	163.4	0	0.0
Flight path F	14,286	238.1	0	0.0
Flight path G	13,307	221.8	0	0.0
Flight path H	6,489	108.2	0	0.0

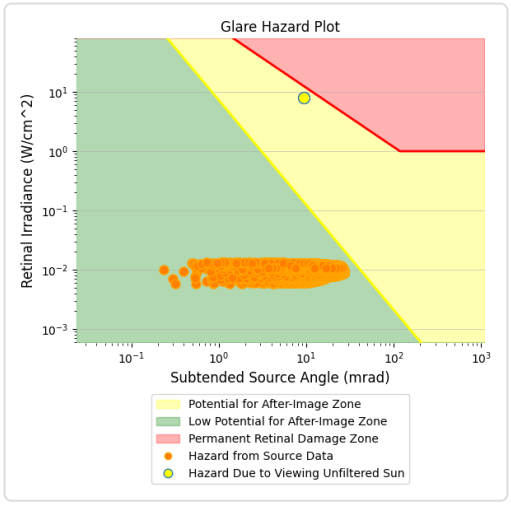
CSB01 and Route: Flight path A

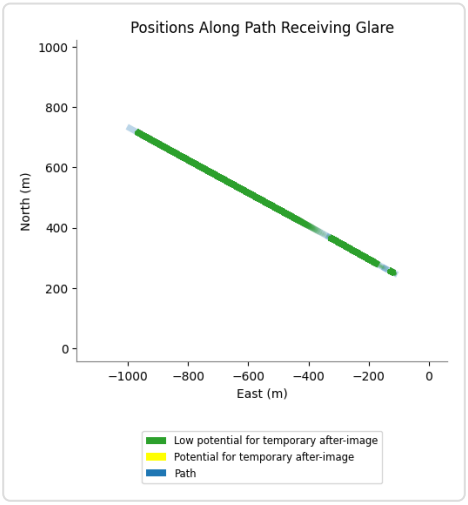
Yellow glare: none

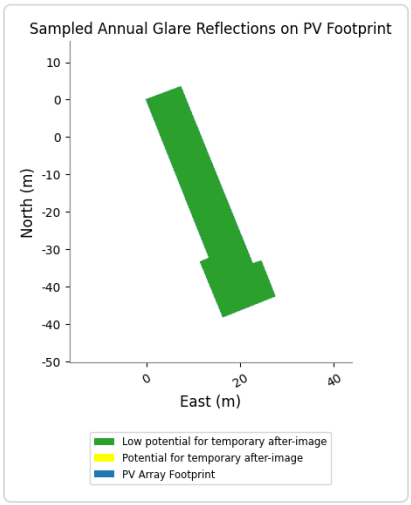
Green glare: 8,363 min.







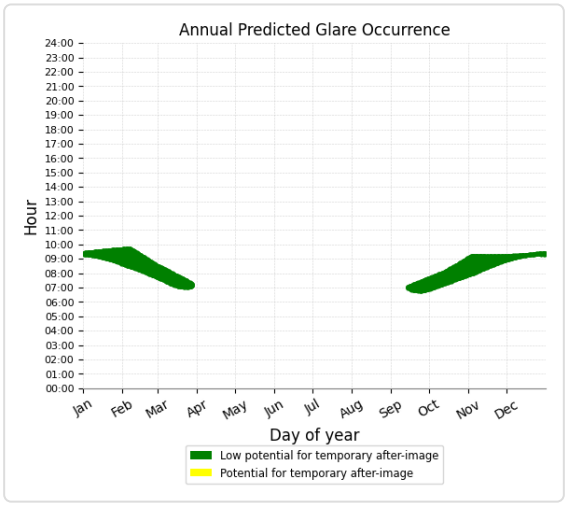


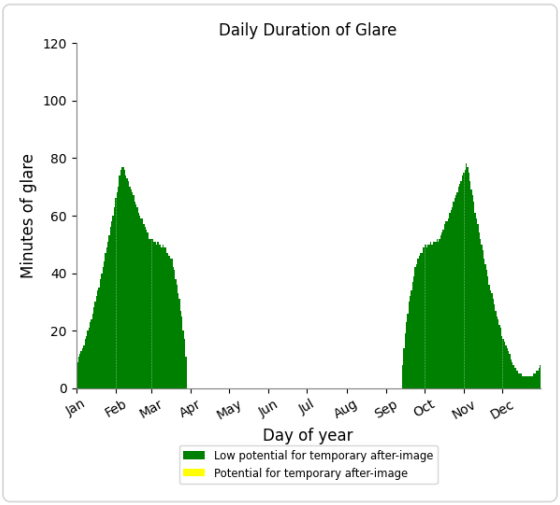


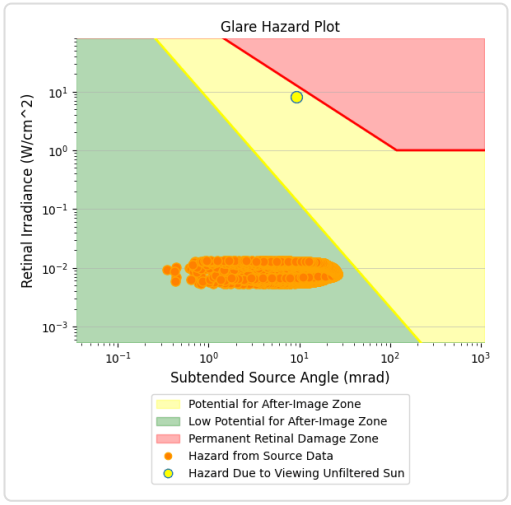
CSB01 and Route: Flight path B

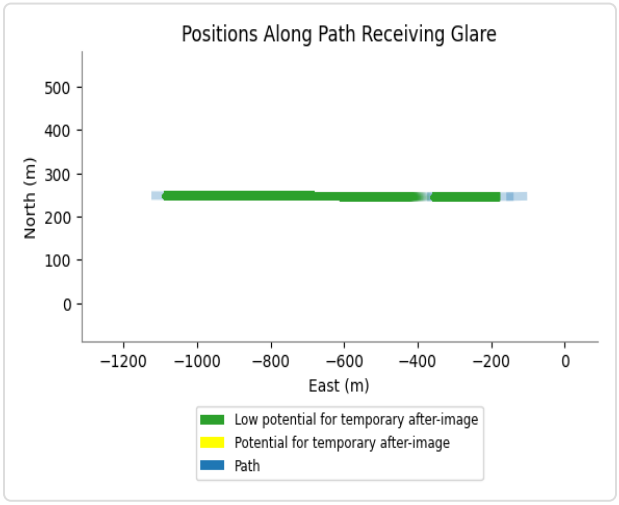
Yellow glare: none

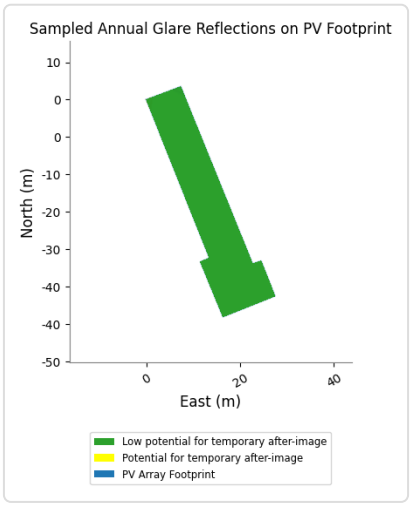
Green glare: 8,076 min.







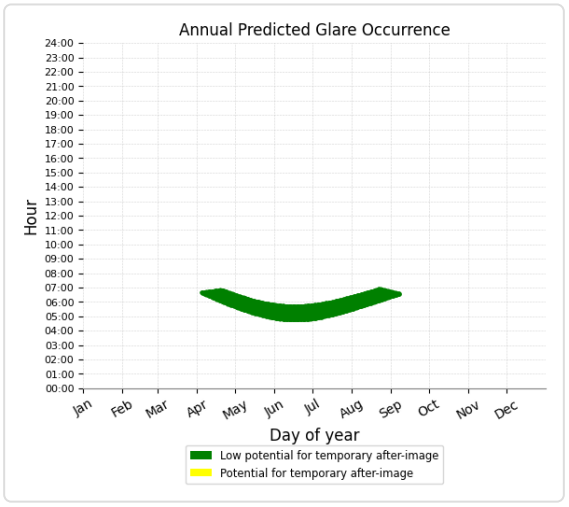


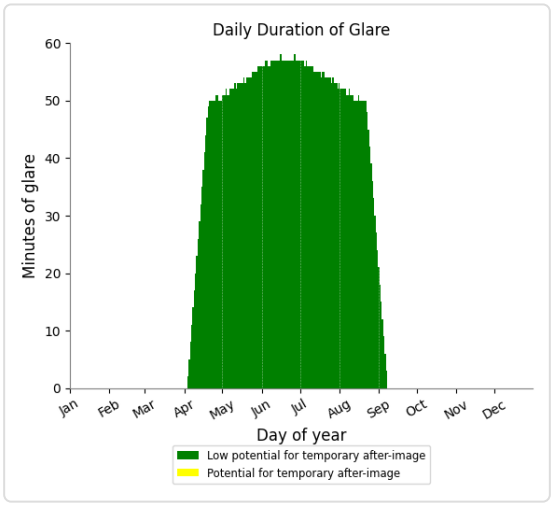


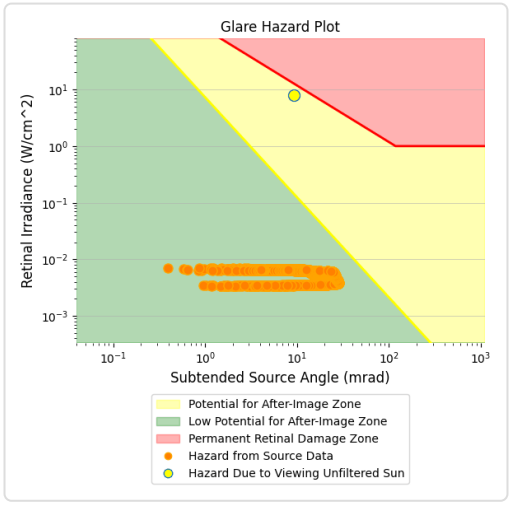
CSB01 and Route: Flight path C

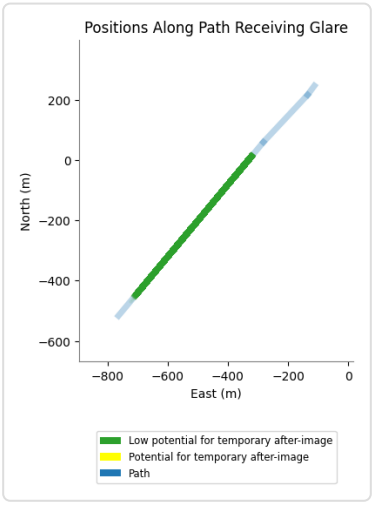
Yellow glare: none

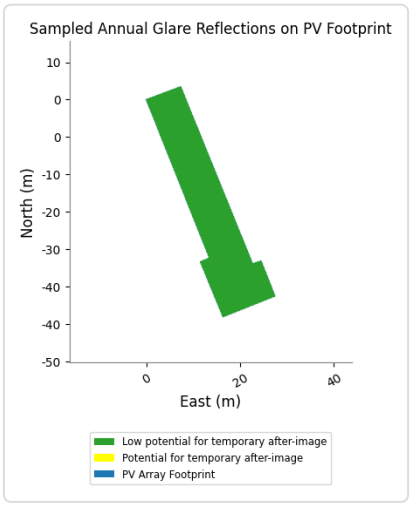
Green glare: 7,532 min.







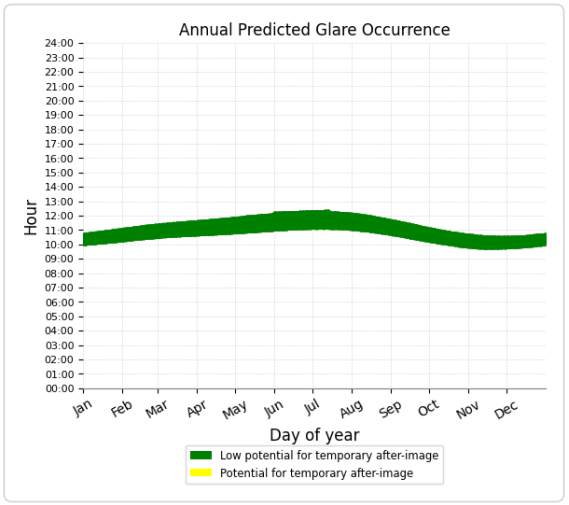


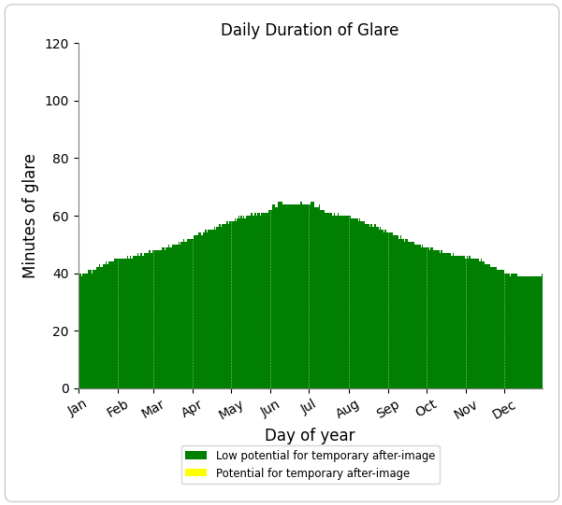


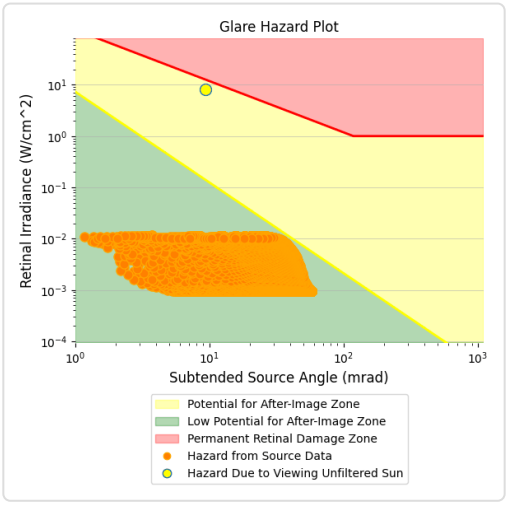
CSB01 and Route: Flight path D

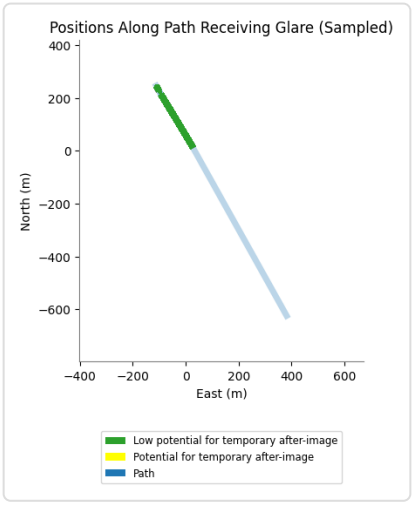
Yellow glare: none

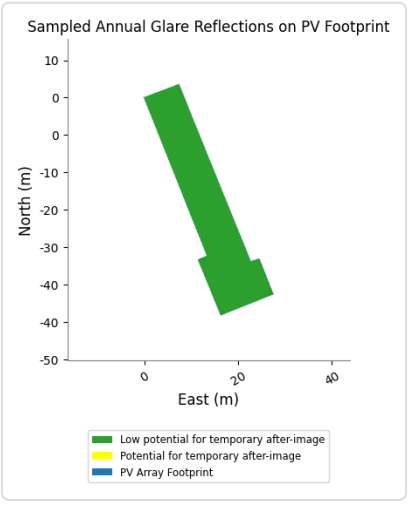
Green glare: 18,782 min.







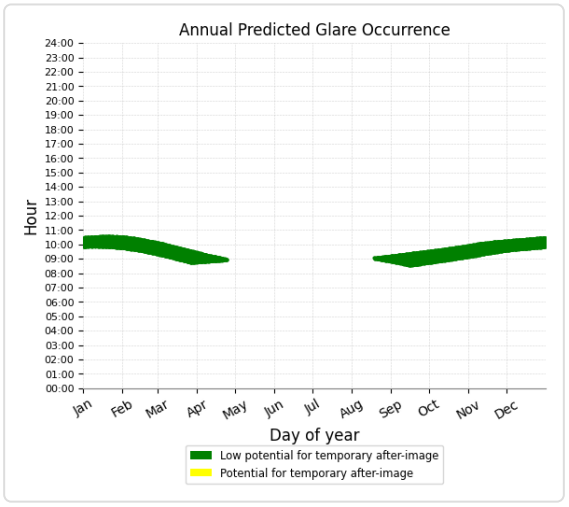


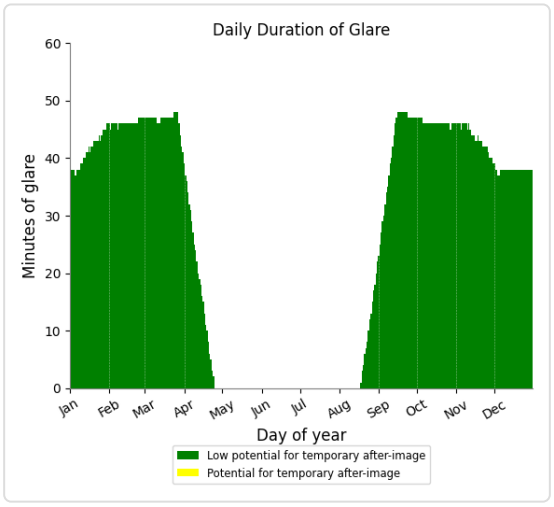


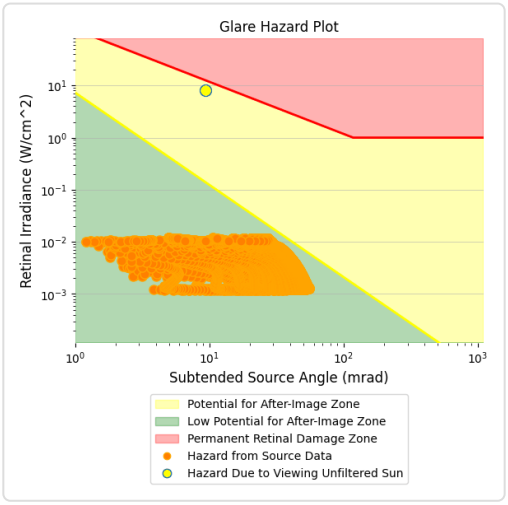
CSB01 and Route: Flight path E

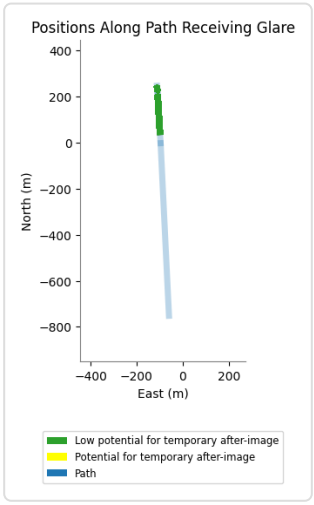
Yellow glare: none

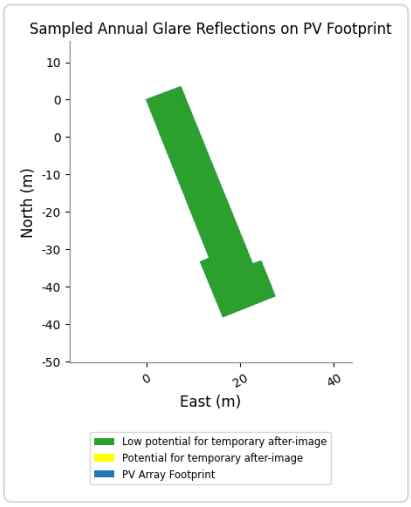
Green glare: 9,806 min.







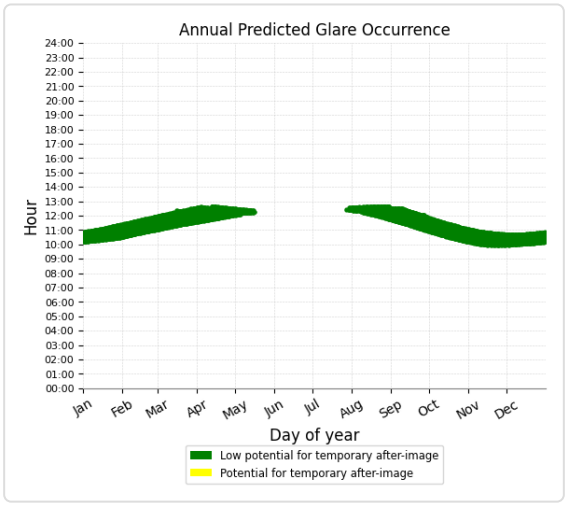


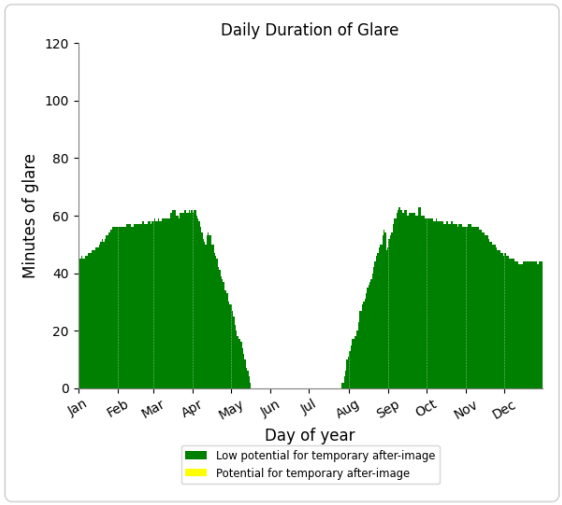


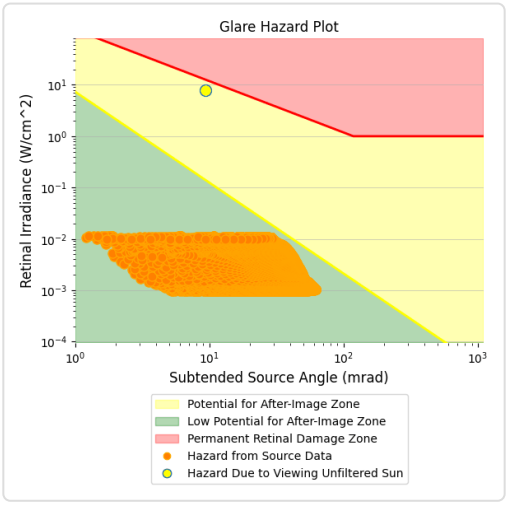
CSB01 and Route: Flight path F

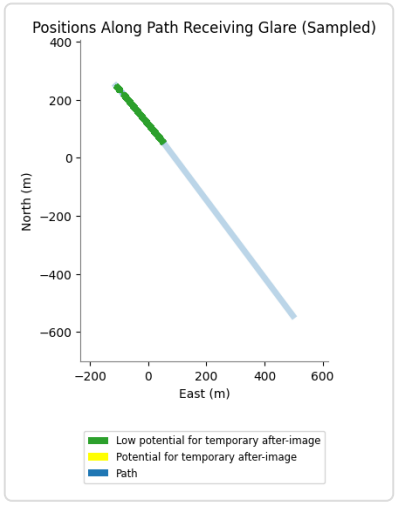
Yellow glare: none

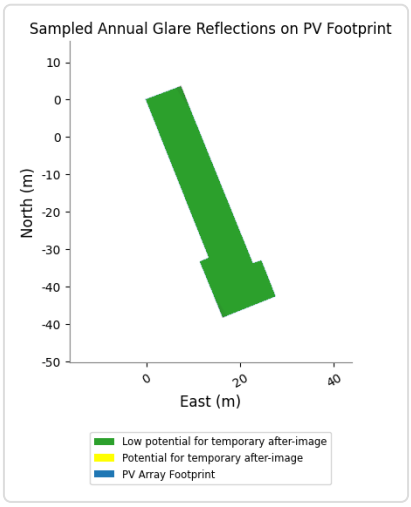
Green glare: 14,286 min.







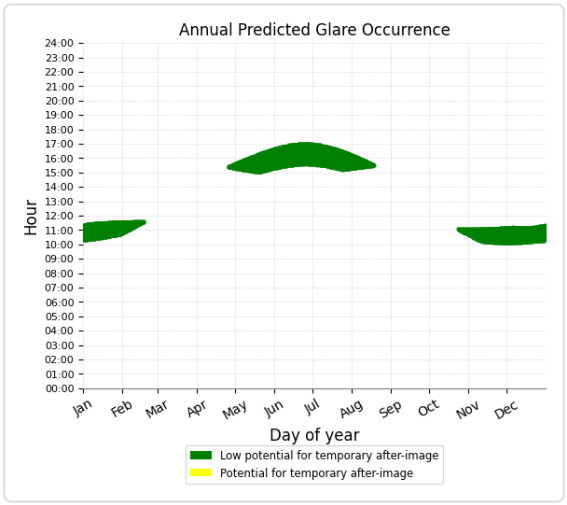


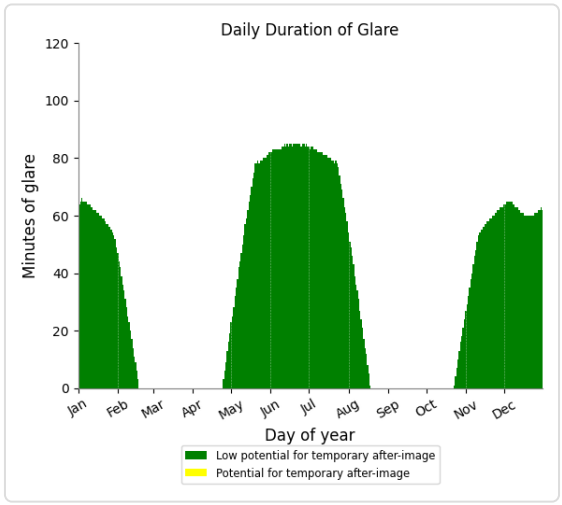


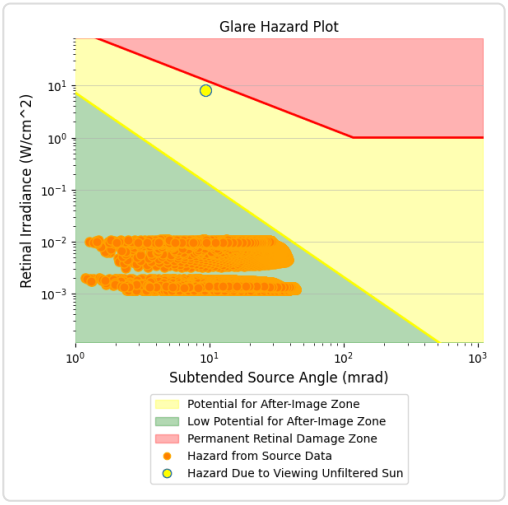
CSB01 and Route: Flight path G

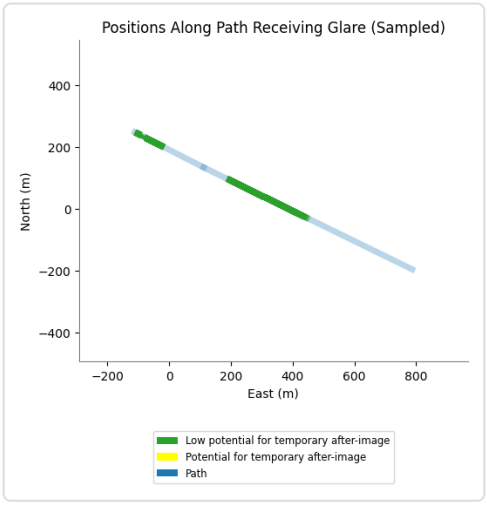
Yellow glare: none

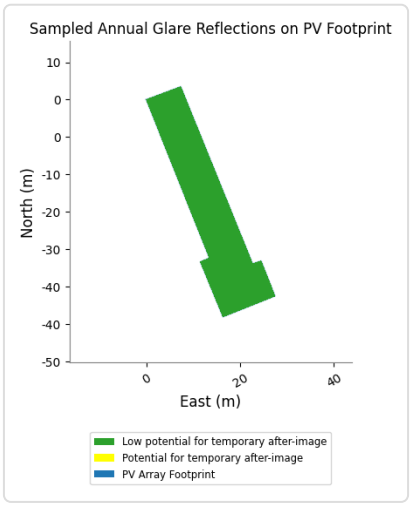
Green glare: 13,307 min.







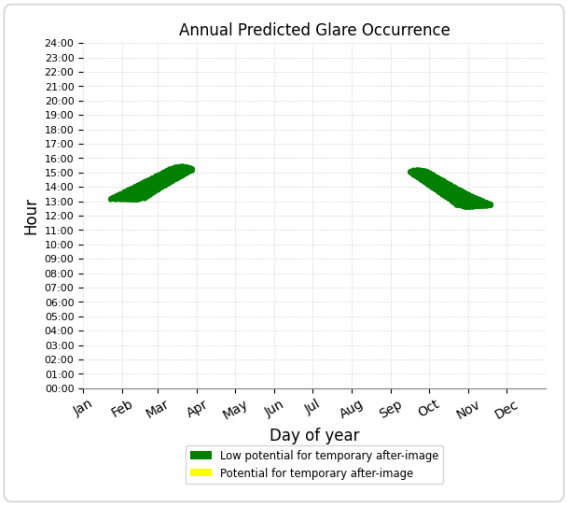


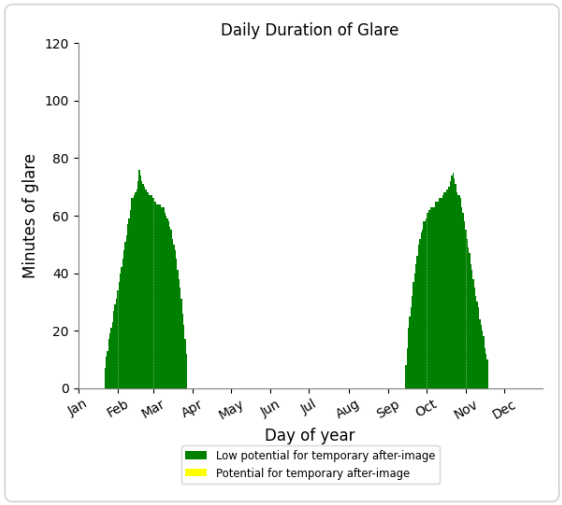


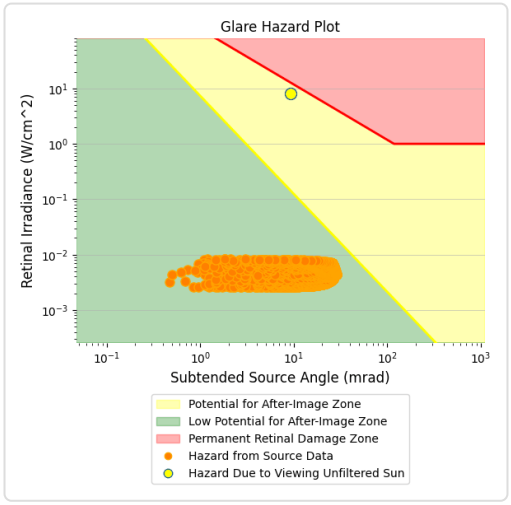
CSB01 and Route: Flight path H

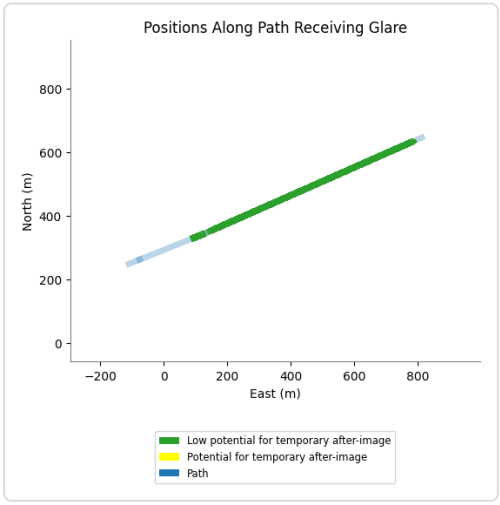
Yellow glare: none

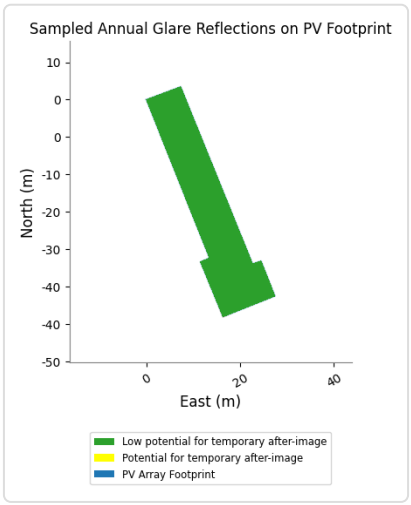
Green glare: 6,489 min.











PV: CSB02 low potential for temporary after-image

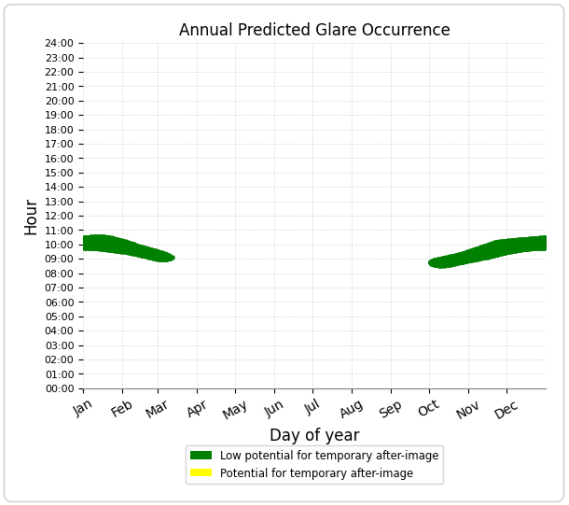
Receptor results ordered by category of glare

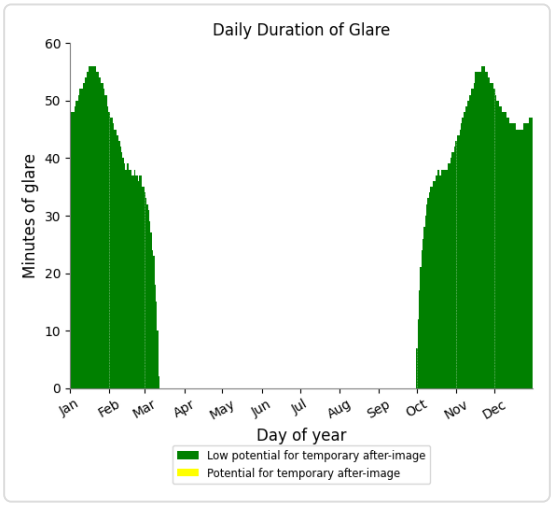
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	7,058	117.6	0	0.0
Flight path B	6,469	107.8	0	0.0
Flight path C	3,585	59.8	0	0.0
Flight path D	21,964	366.1	0	0.0
Flight path E	9,457	157.6	0	0.0
Flight path F	15,035	250.6	0	0.0
Flight path G	11,124	185.4	0	0.0
Flight path H	9,196	153.3	0	0.0

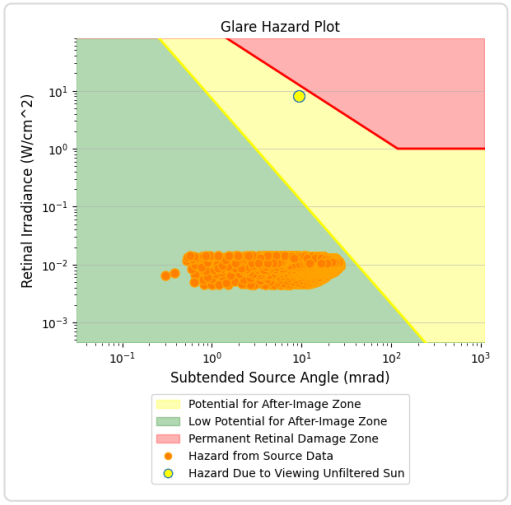
CSB02 and Route: Flight path A

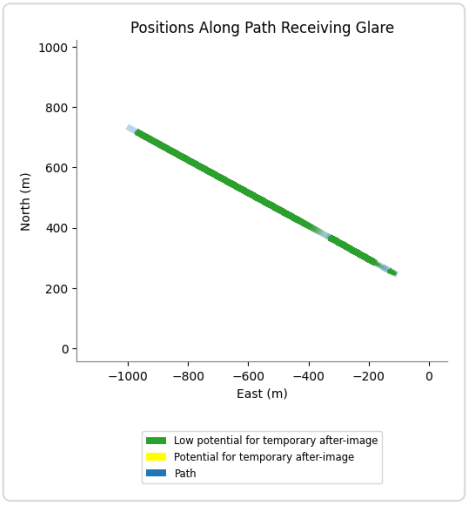
Yellow glare: none

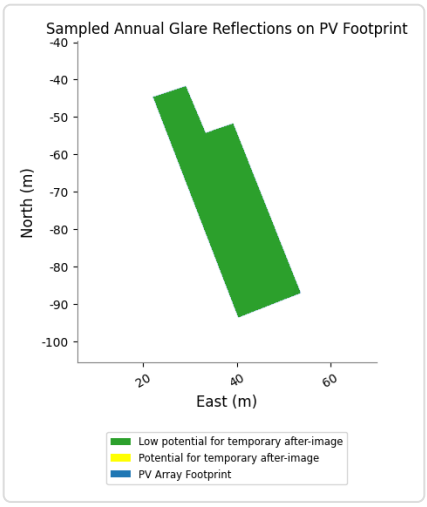
Green glare: 7,058 min.







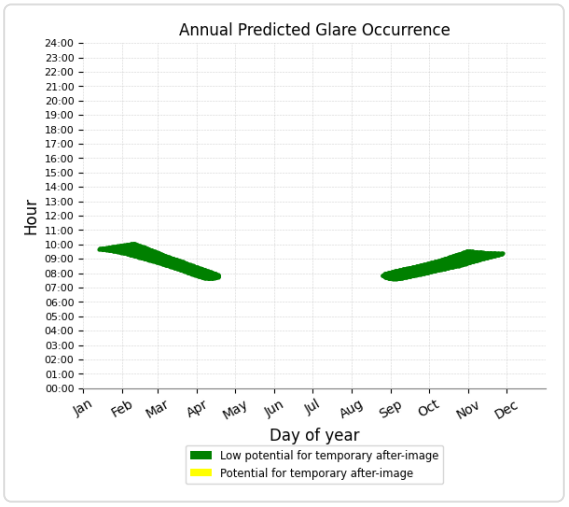


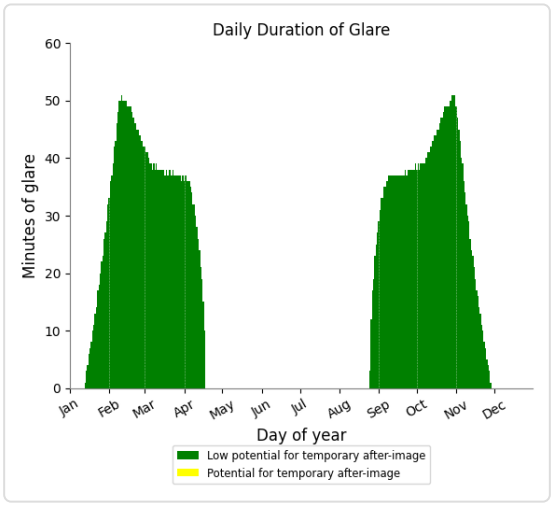


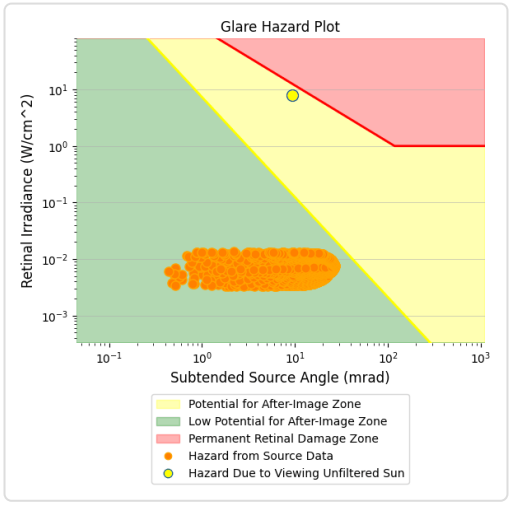
CSB02 and Route: Flight path B

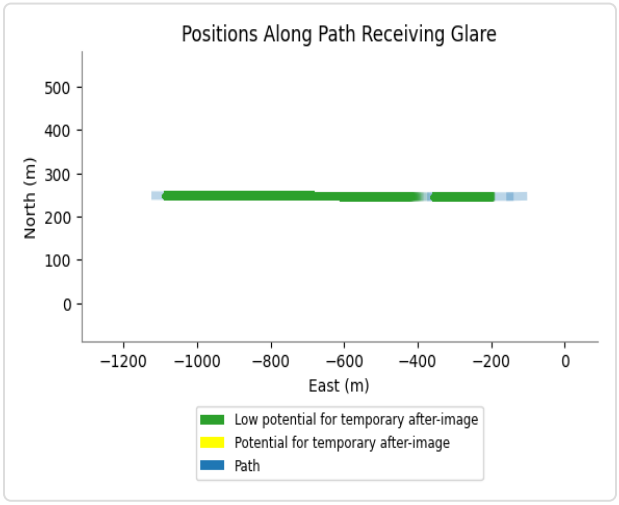
Yellow glare: none

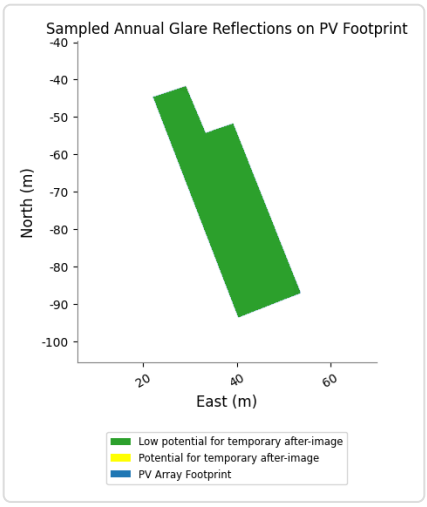
Green glare: 6,469 min.







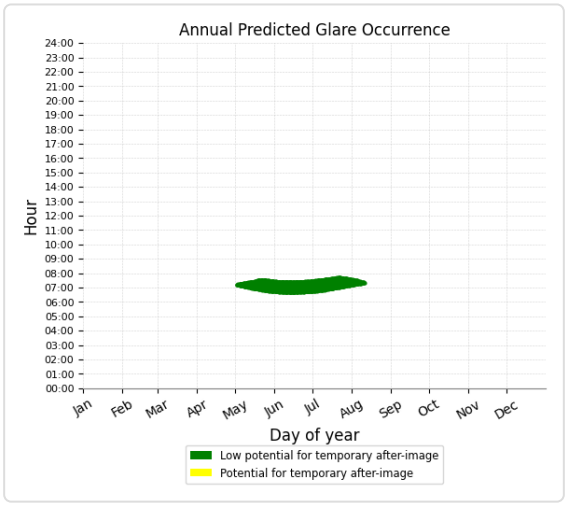


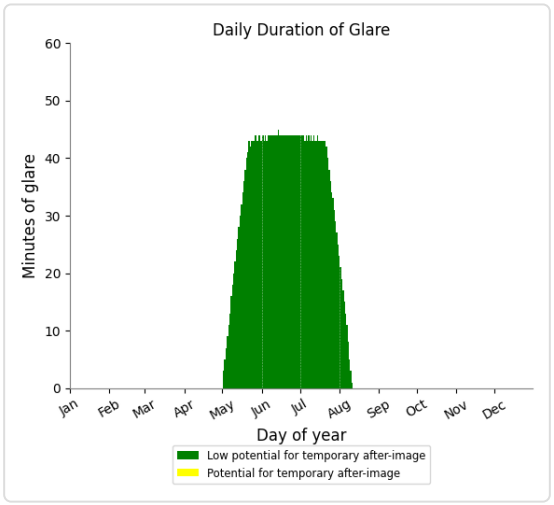


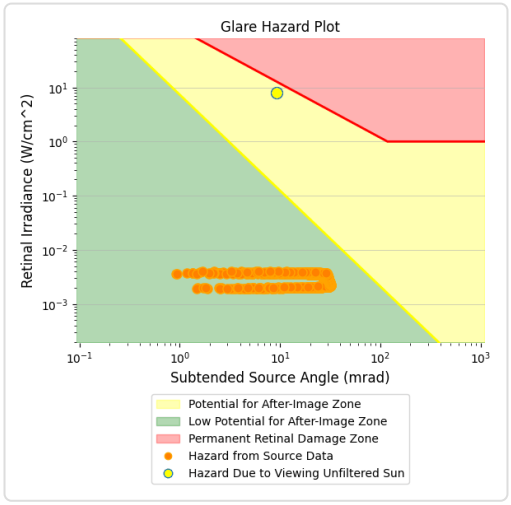
CSB02 and Route: Flight path C

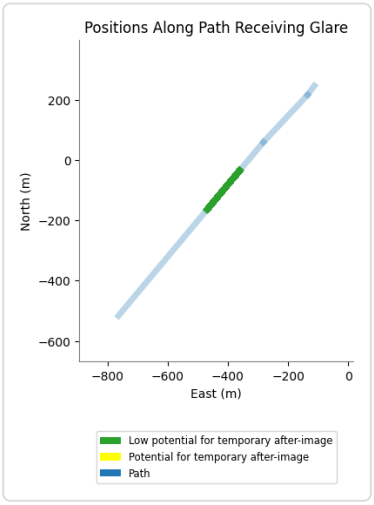
Yellow glare: none

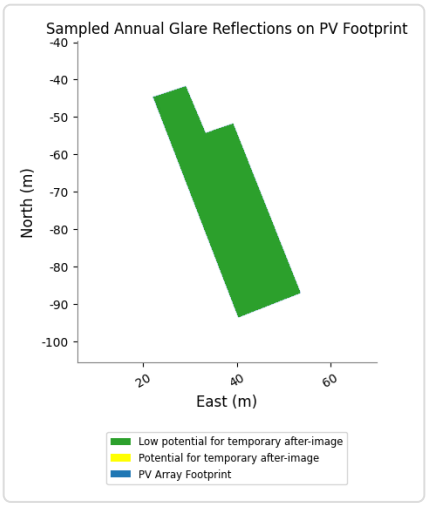
Green glare: 3,585 min.







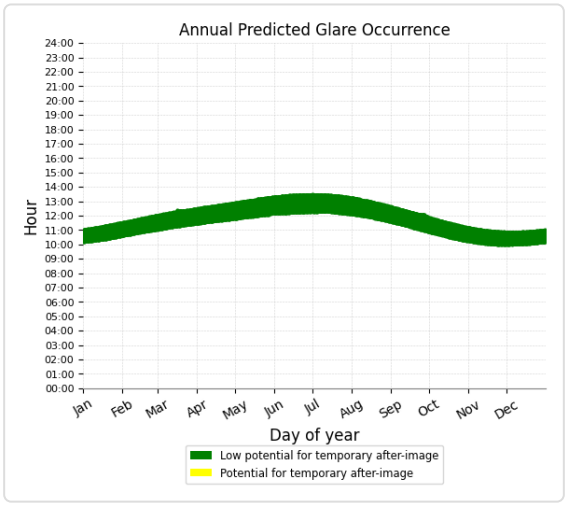


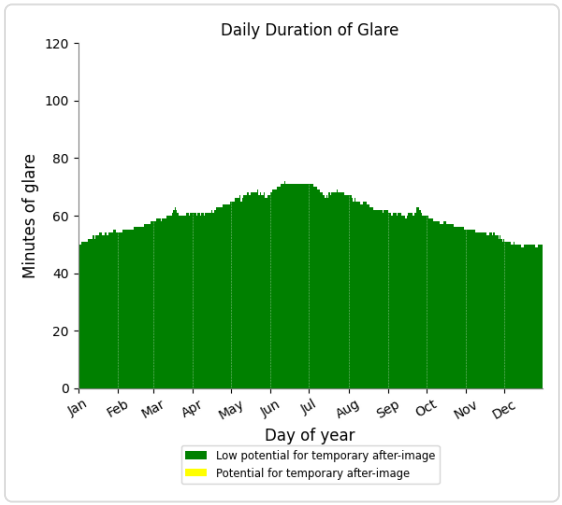


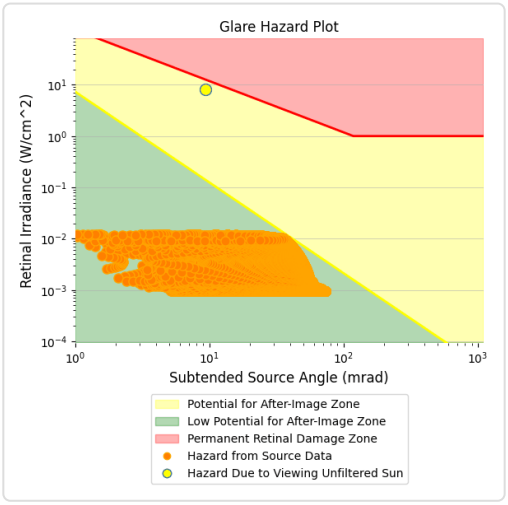
CSB02 and Route: Flight path D

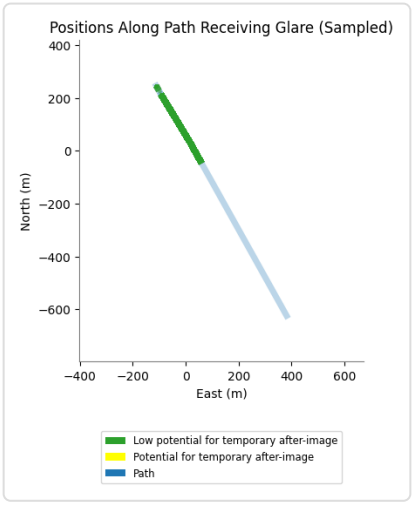
Yellow glare: none

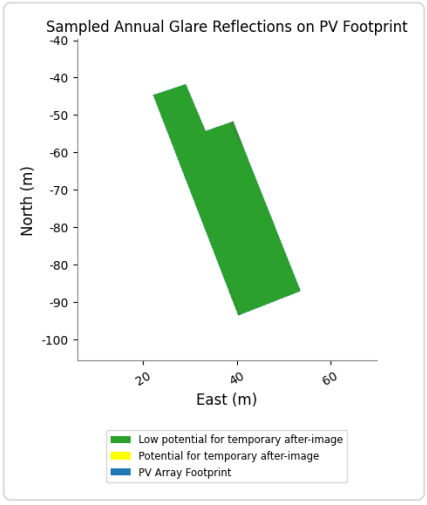
Green glare: 21,964 min.







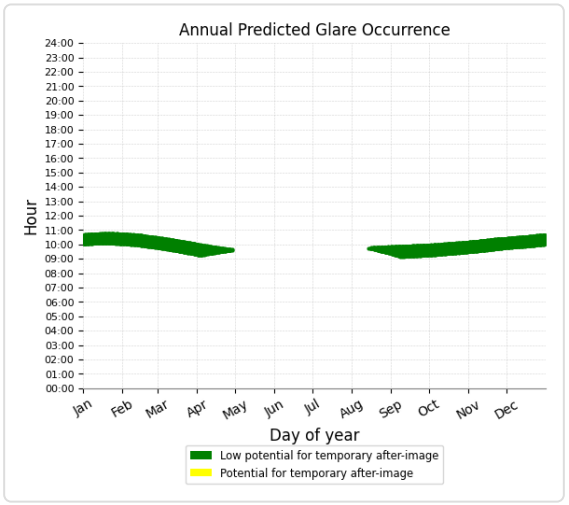


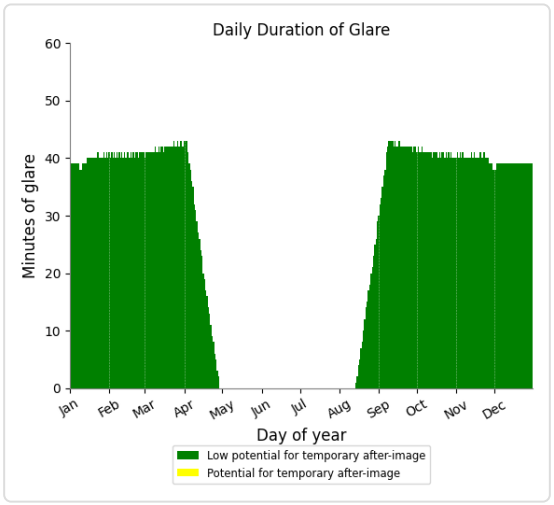


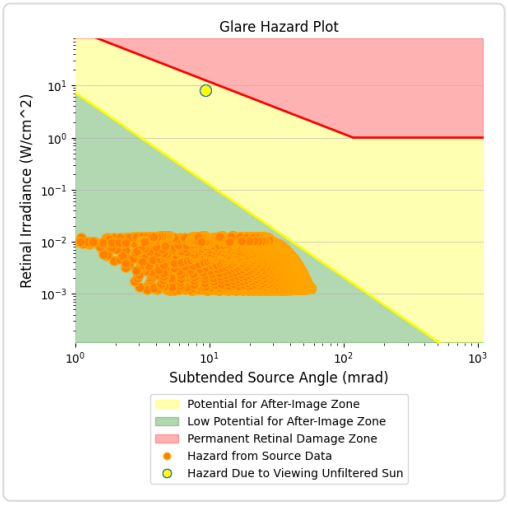
CSB02 and Route: Flight path E

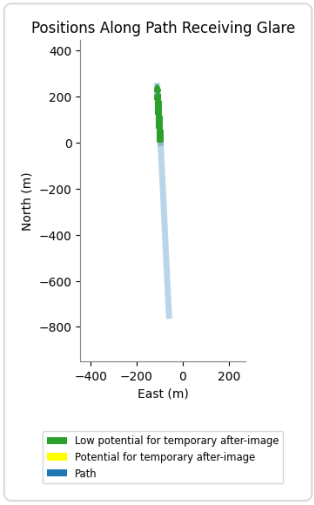
Yellow glare: none

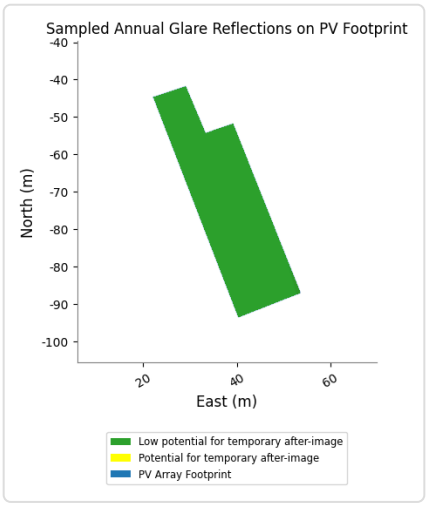
Green glare: 9,457 min.







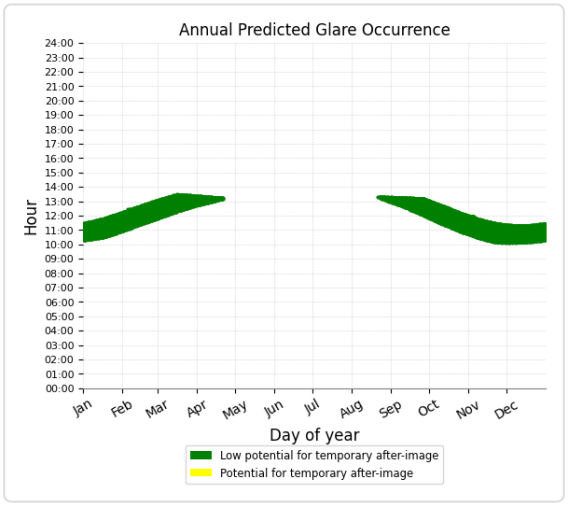


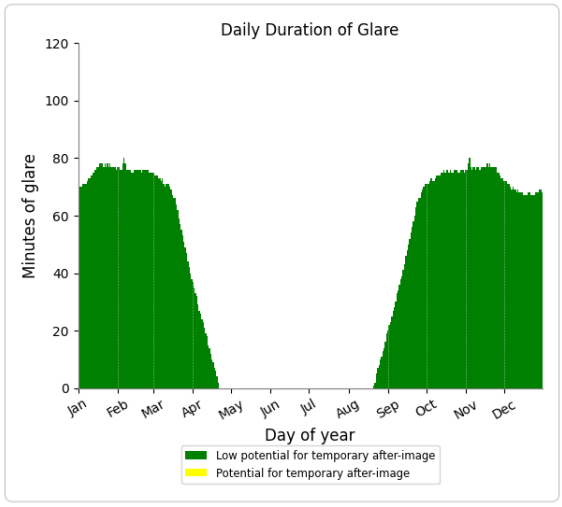


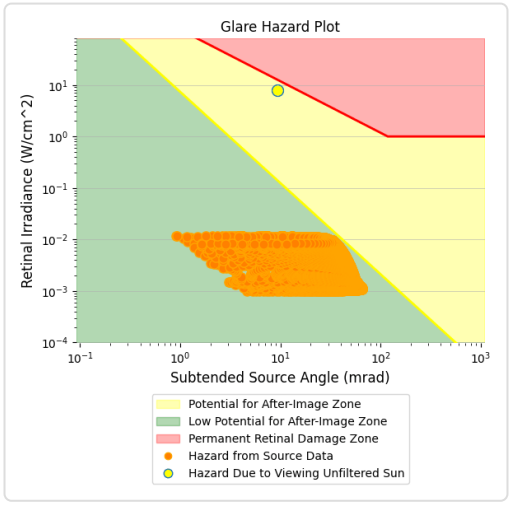
CSB02 and Route: Flight path F

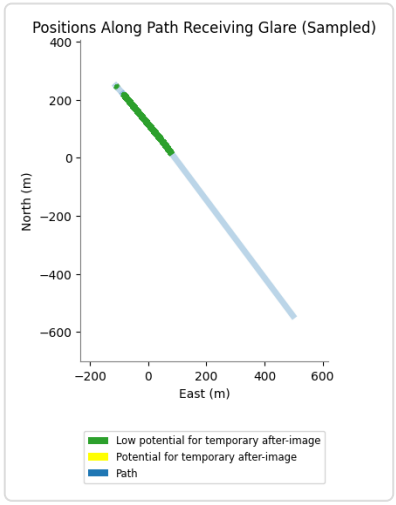
Yellow glare: none

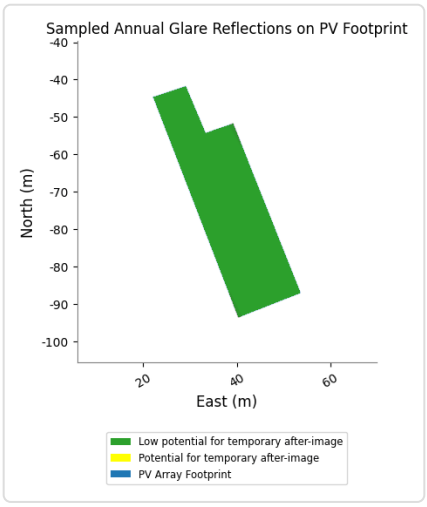
Green glare: 15,035 min.







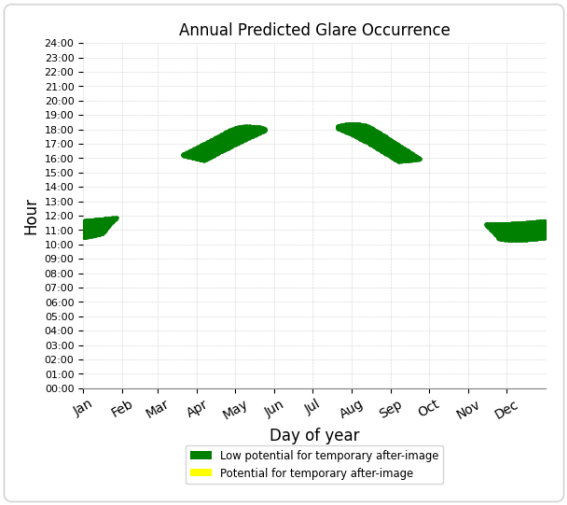


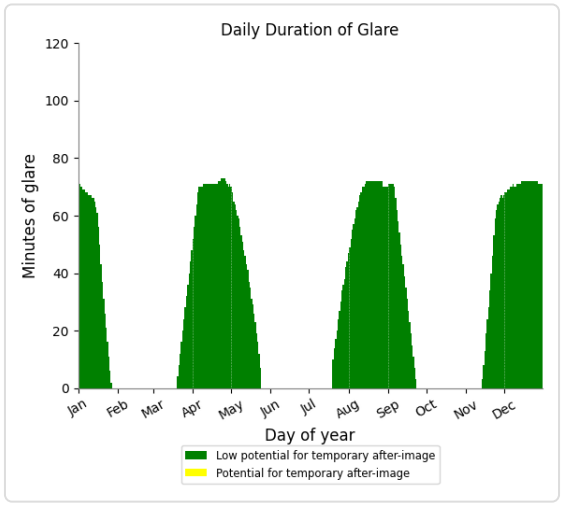


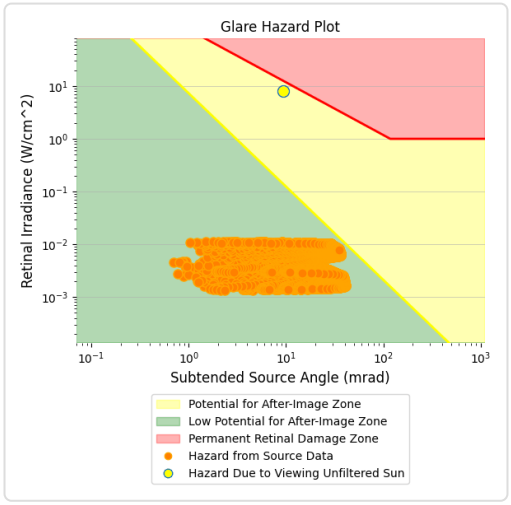
CSB02 and Route: Flight path G

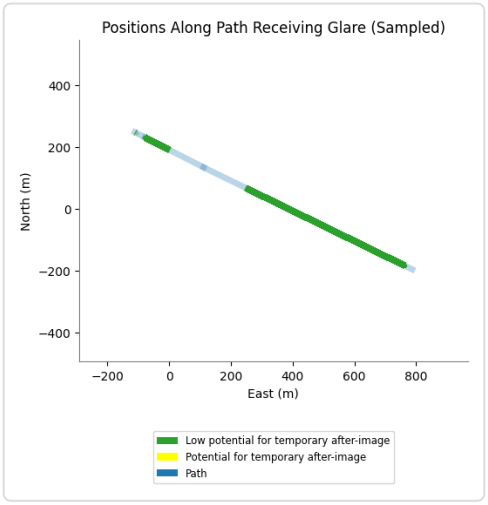
Yellow glare: none

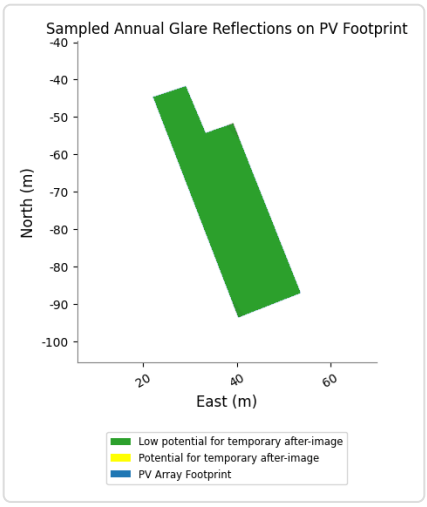
Green glare: 11,124 min.







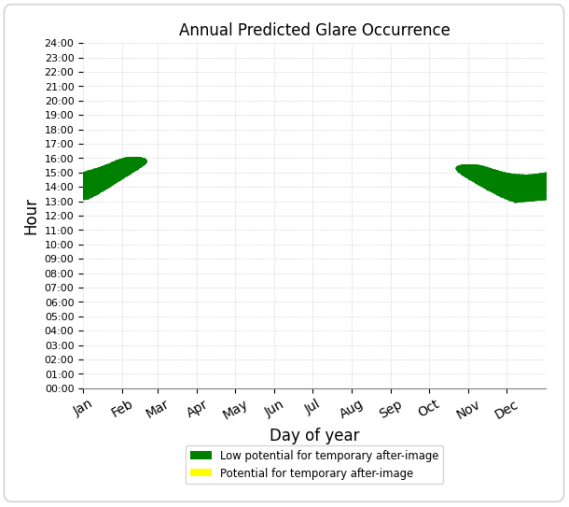


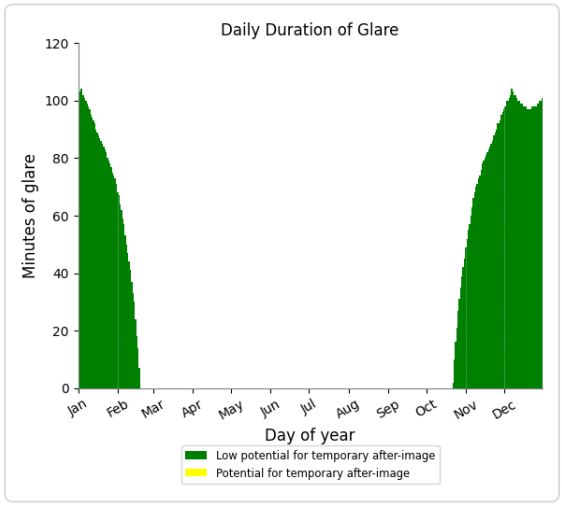


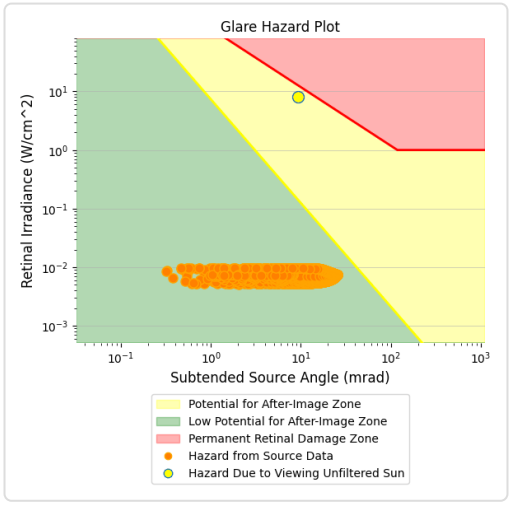
CSB02 and Route: Flight path H

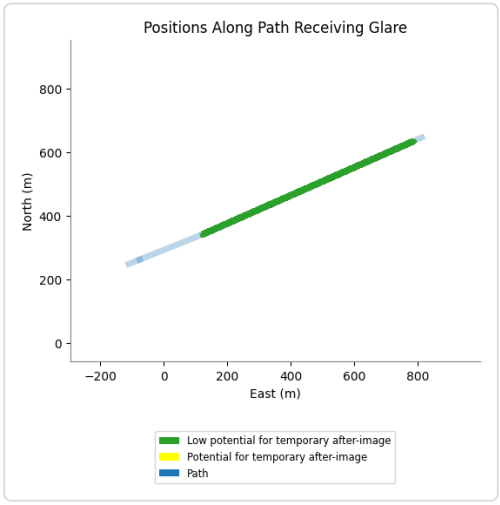
Yellow glare: none

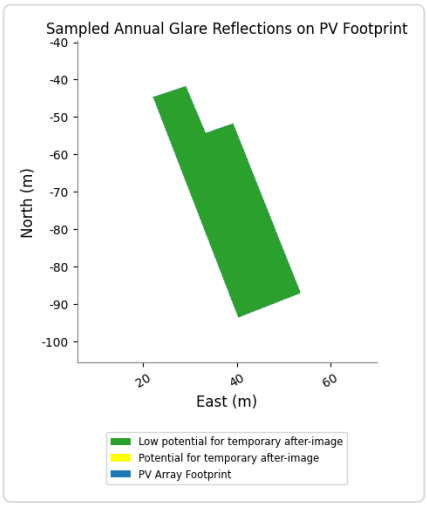
Green glare: 9,196 min.











PV: PCB01 low potential for temporary after-image

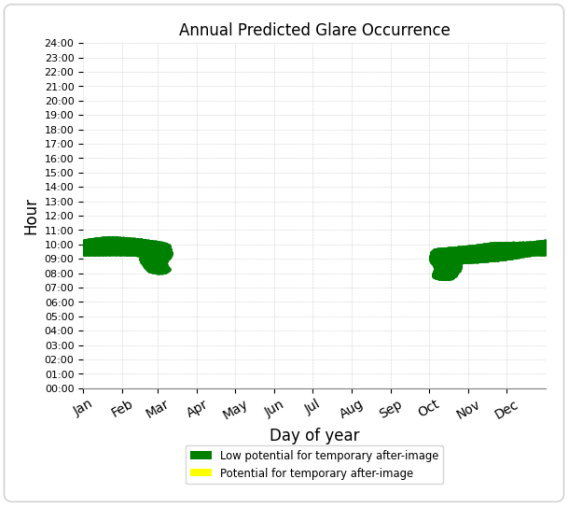
Receptor results ordered by category of glare

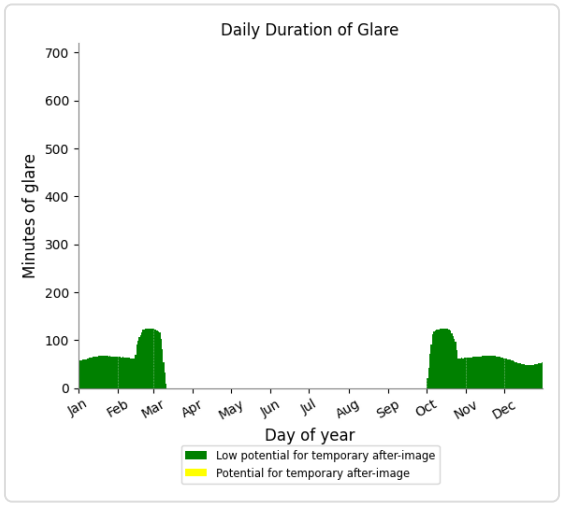
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	12,026	200.4	0	0.0
Flight path B	7,940	132.3	0	0.0
Flight path C	7,892	131.5	0	0.0
Flight path D	26,727	445.4	0	0.0
Flight path E	18,341	305.7	0	0.0
Flight path F	27,559	459.3	0	0.0
Flight path G	15,742	262.4	0	0.0
Flight path H	7,306	121.8	0	0.0

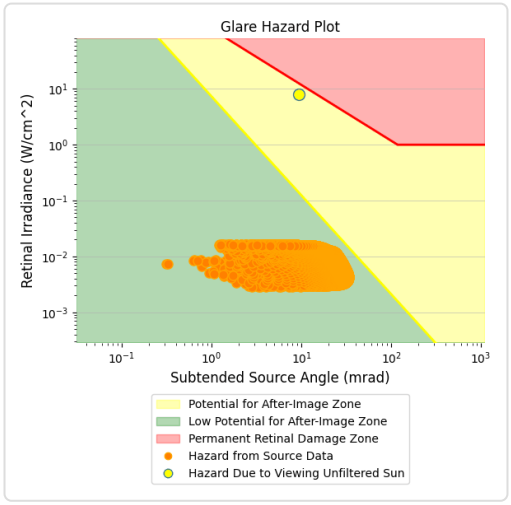
PCB01 and Route: Flight path A

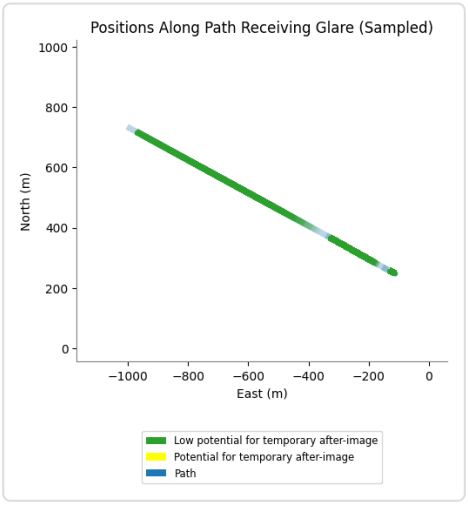
Yellow glare: none

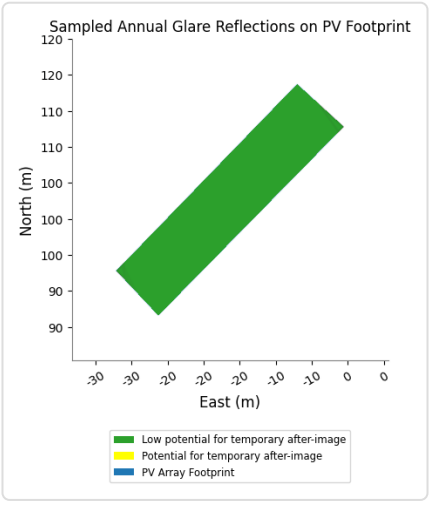
Green glare: 12,026 min.







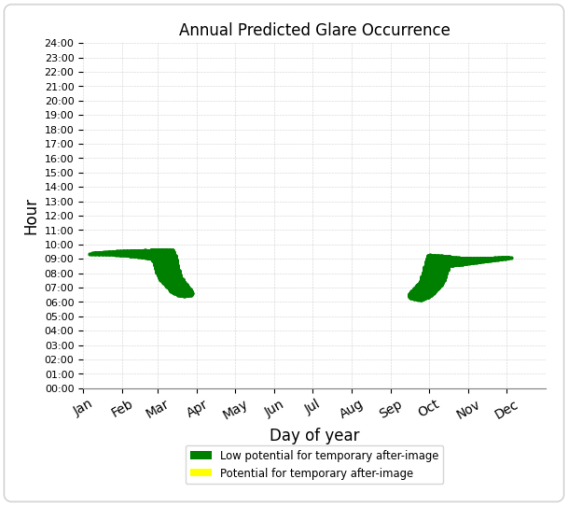


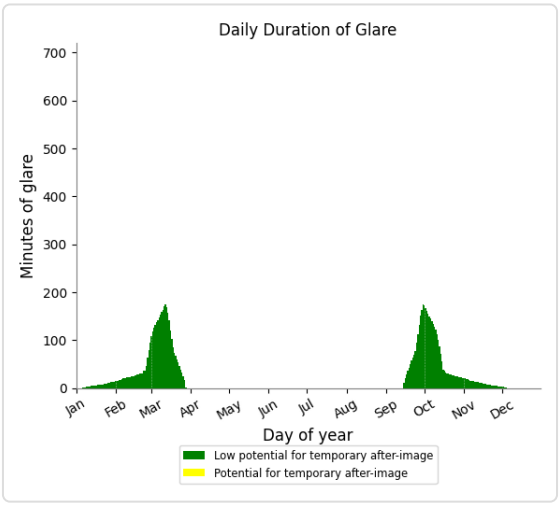


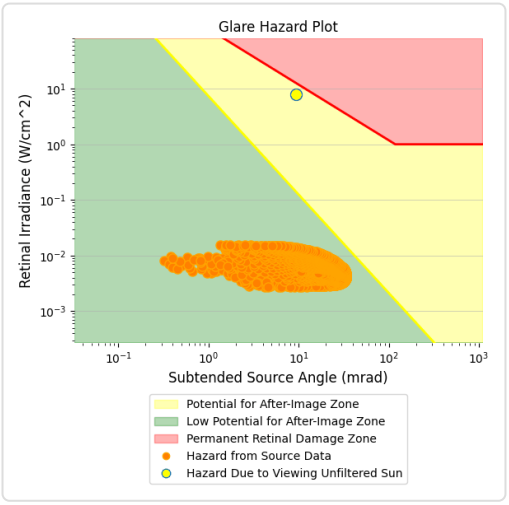
PCB01 and Route: Flight path B

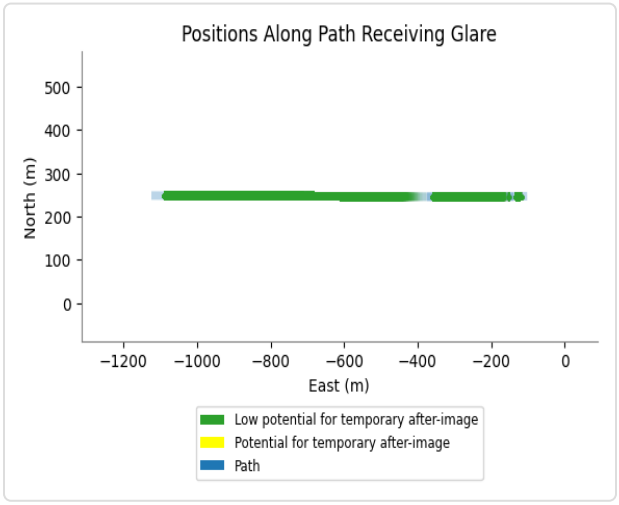
Yellow glare: none

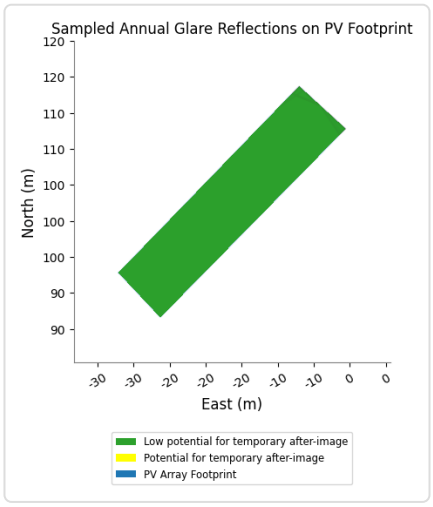
Green glare: 7,940 min.







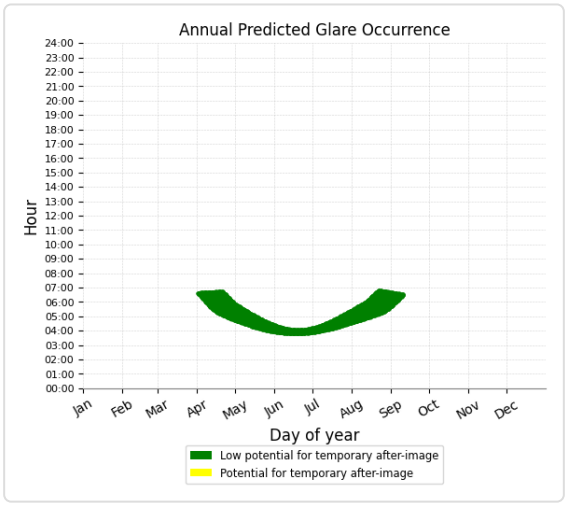


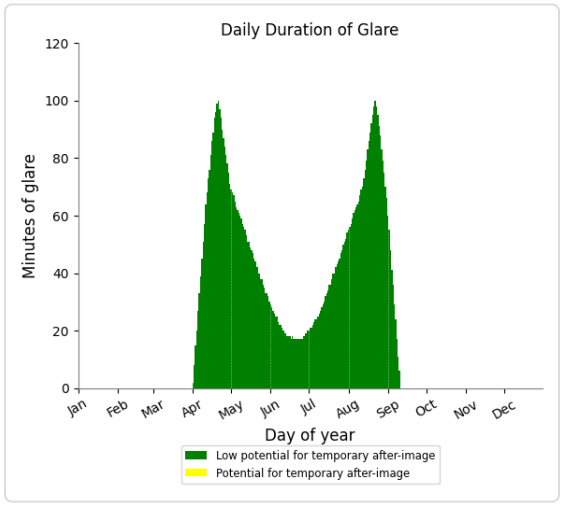


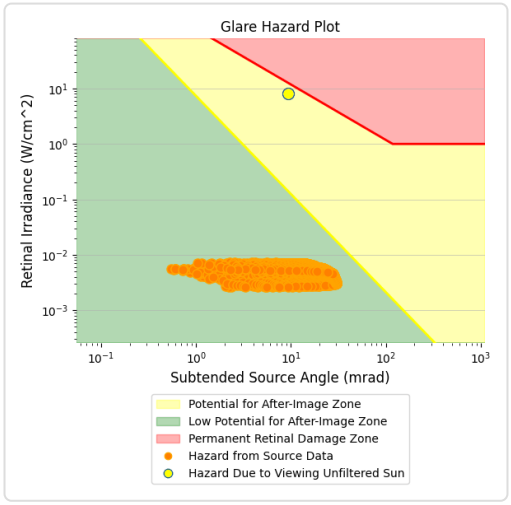
PCB01 and Route: Flight path C

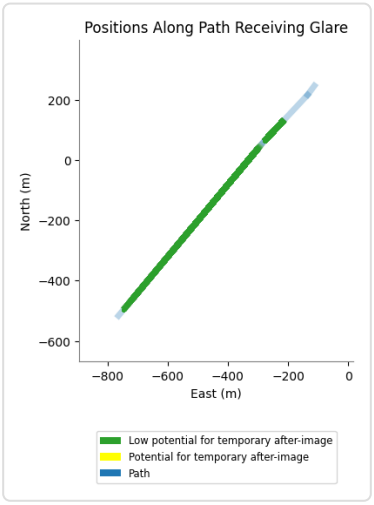
Yellow glare: none

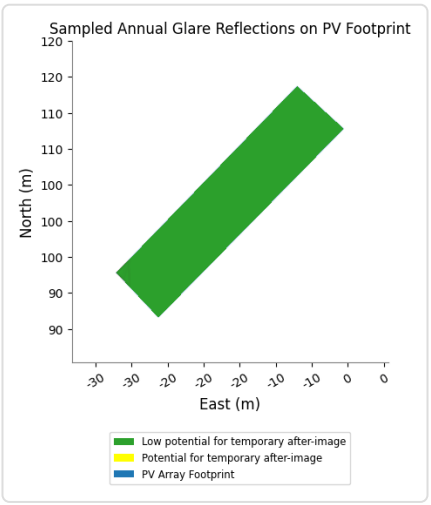
Green glare: 7,892 min.







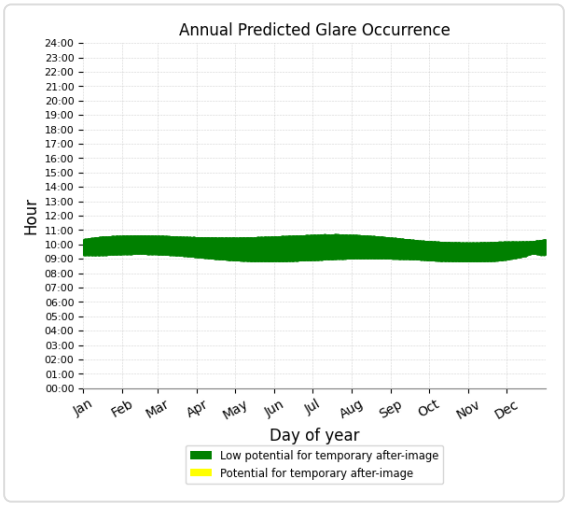


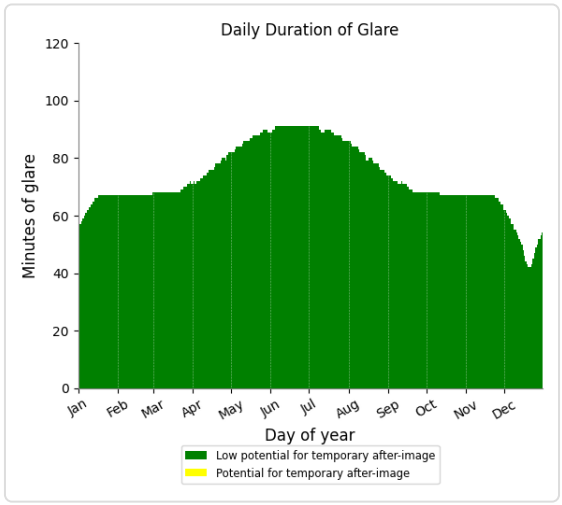


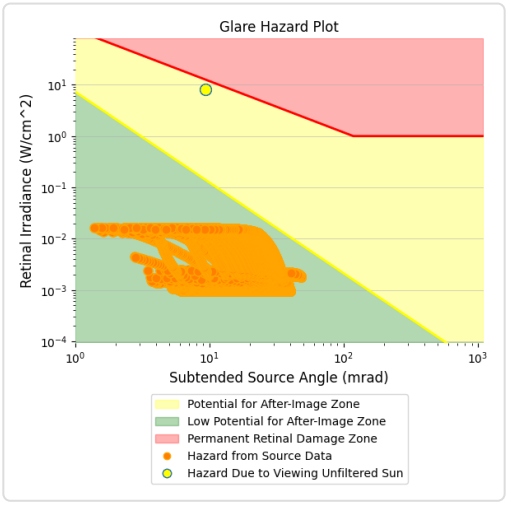
PCB01 and Route: Flight path D

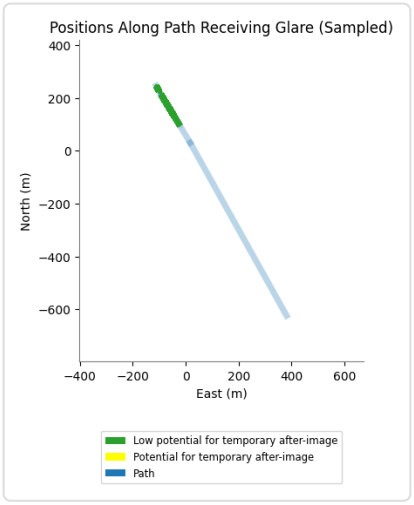
Yellow glare: none

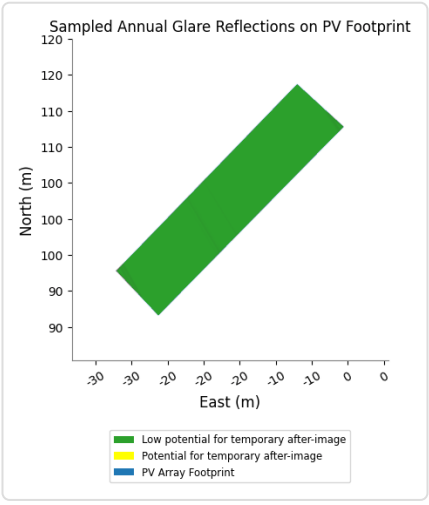
Green glare: 26,727 min.







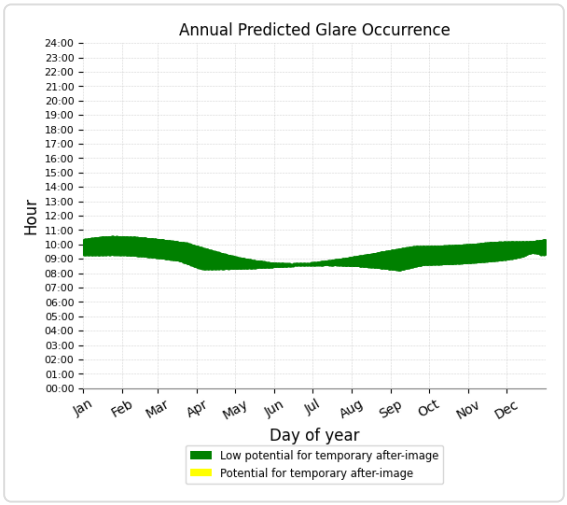


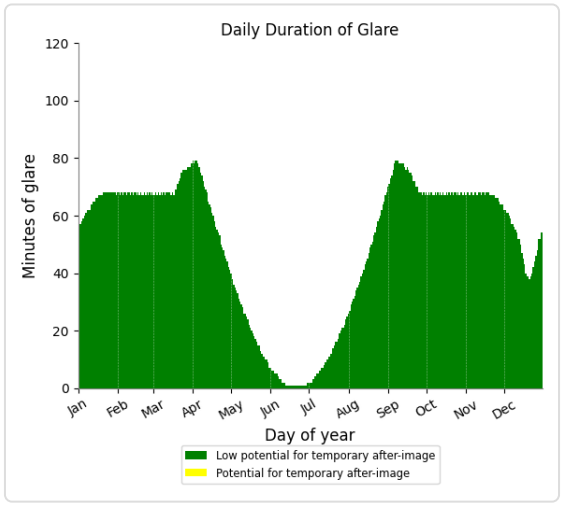


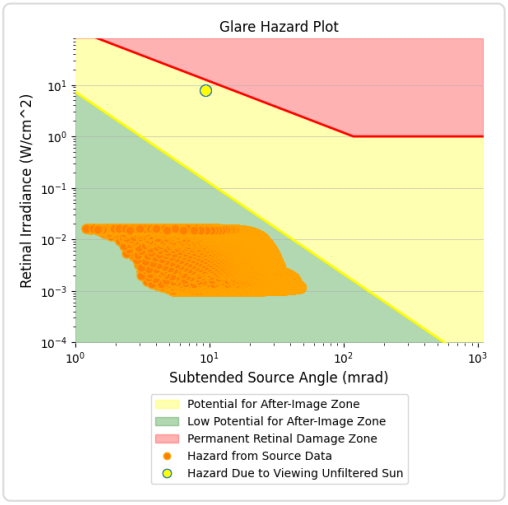
PCB01 and Route: Flight path E

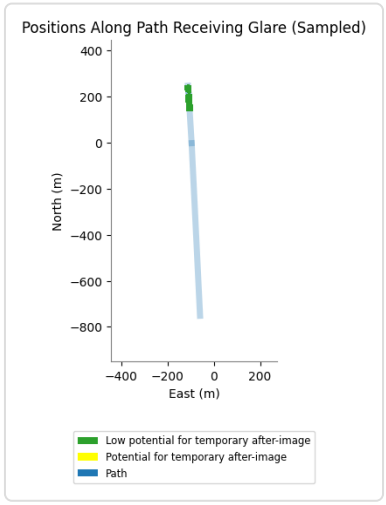
Yellow glare: none

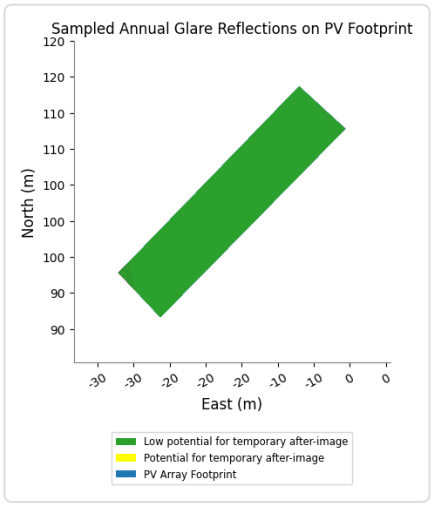
Green glare: 18,341 min.







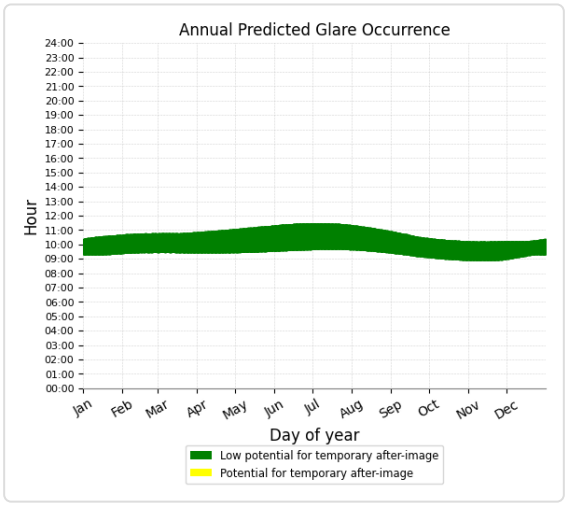


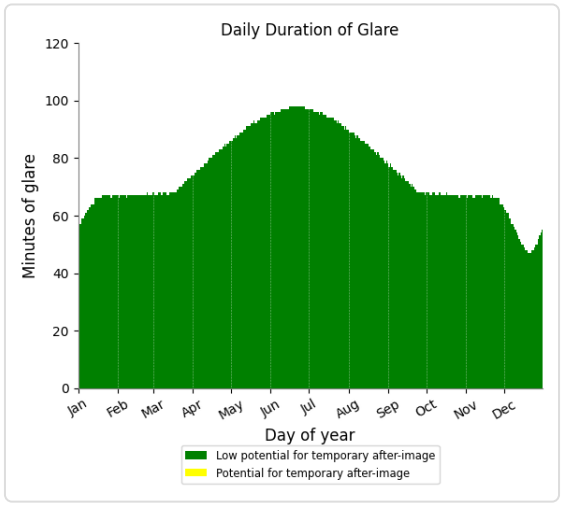


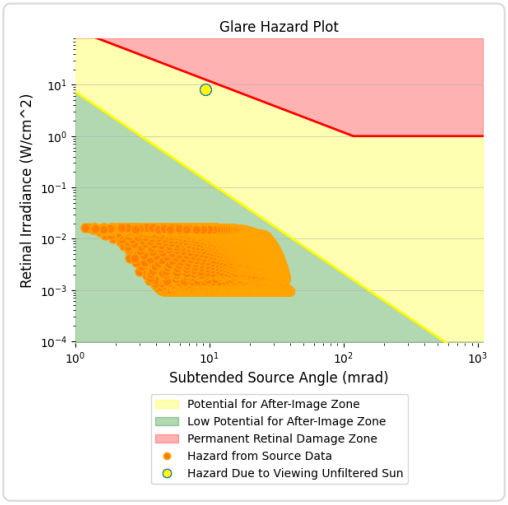
PCB01 and Route: Flight path F

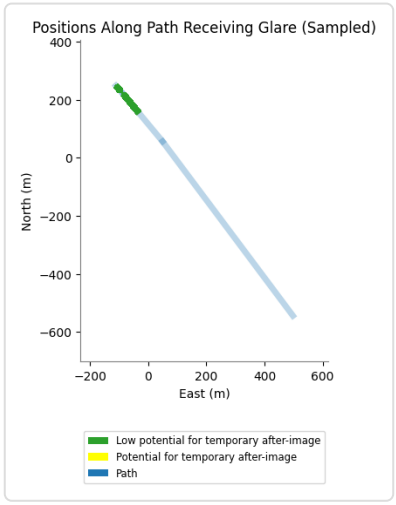
Yellow glare: none

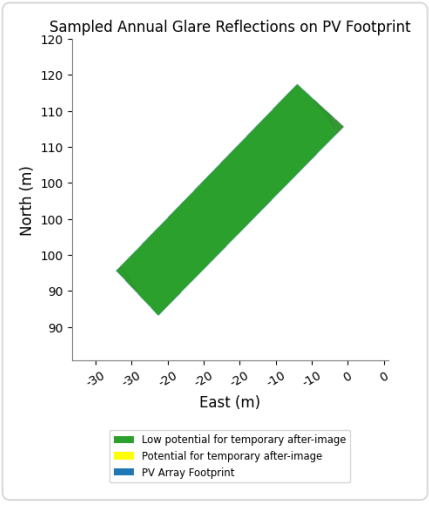
Green glare: 27,559 min.







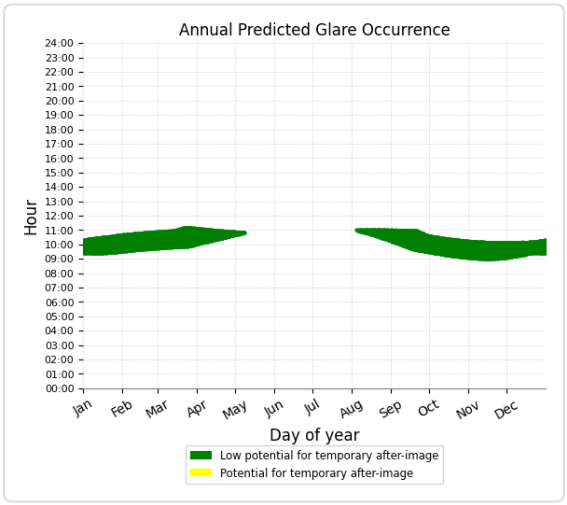


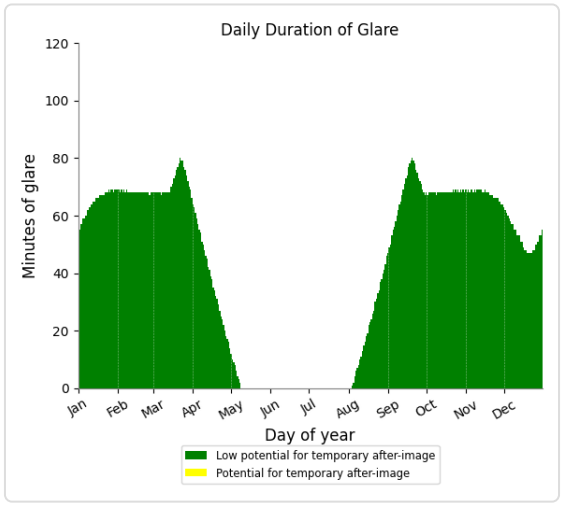


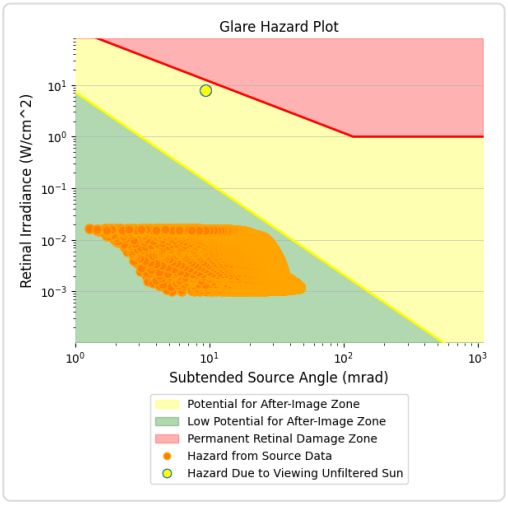
PCB01 and Route: Flight path G

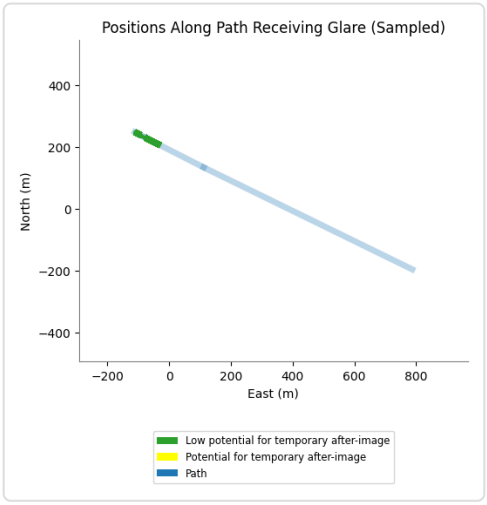
Yellow glare: none

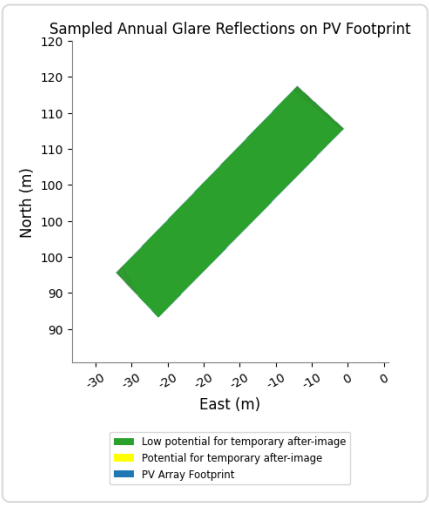
Green glare: 15,742 min.







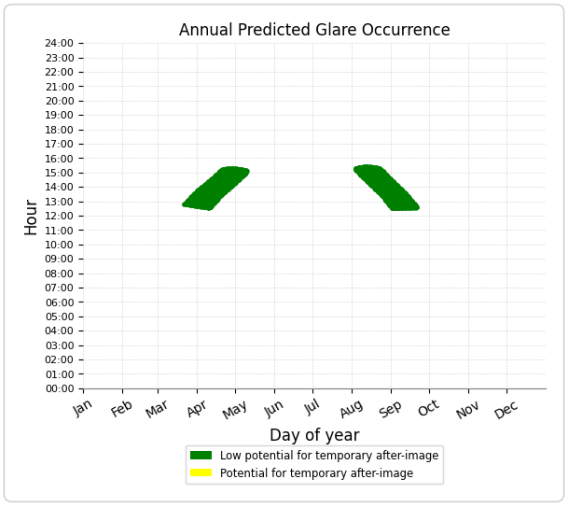


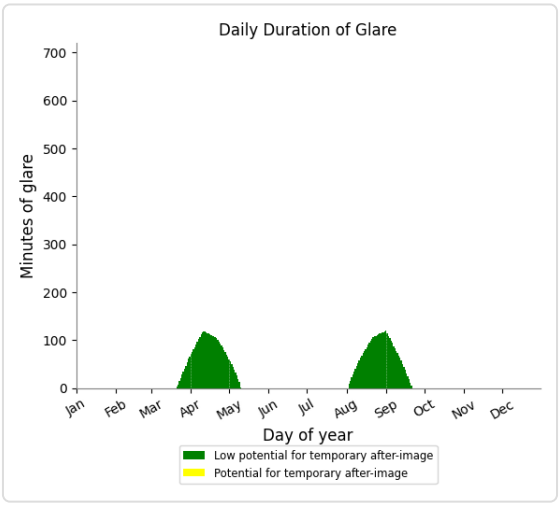


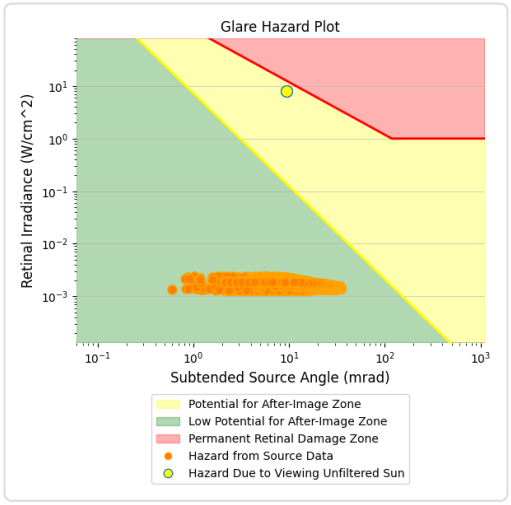
PCB01 and Route: Flight path H

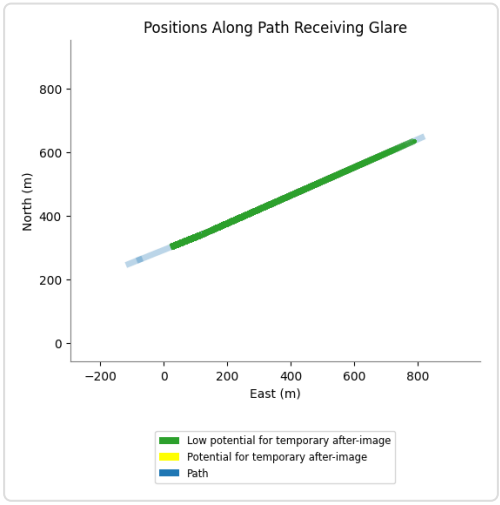
Yellow glare: none

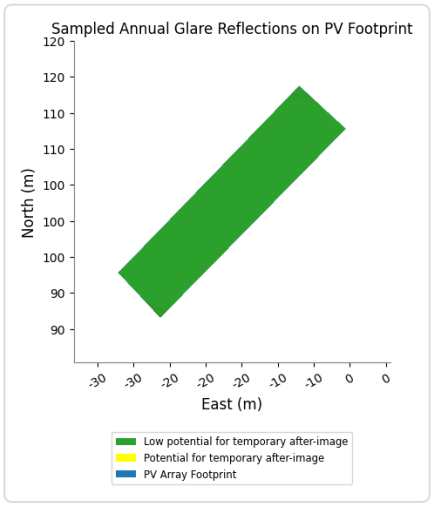
Green glare: 7,306 min.











PV: PCB02 low potential for temporary after-image

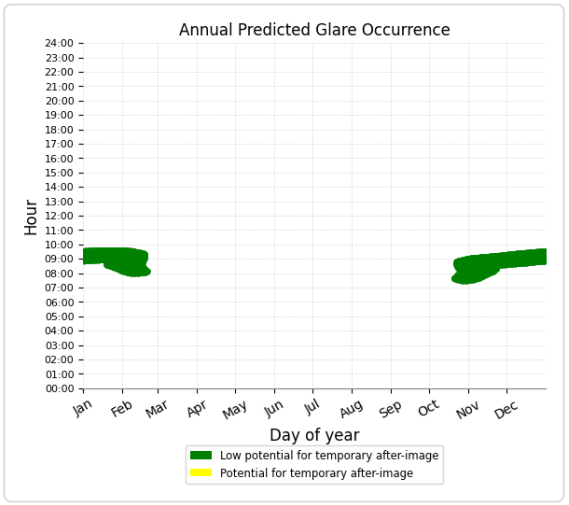
Receptor results ordered by category of glare

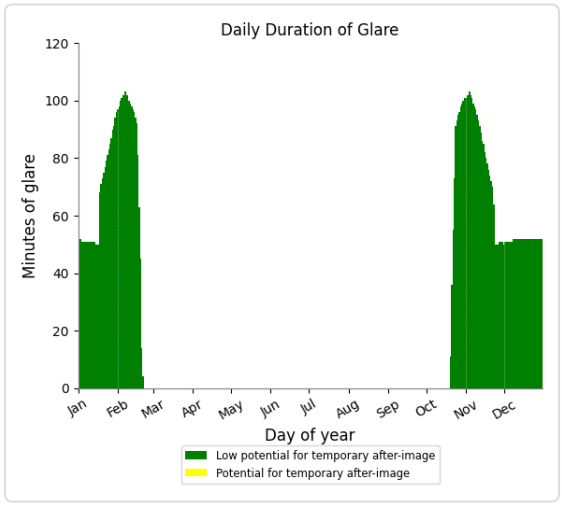
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	8,753	145.9	0	0.0
Flight path B	9,286	154.8	0	0.0
Flight path C	4,966	82.8	0	0.0
Flight path D	21,911	365.2	0	0.0
Flight path E	9,871	164.5	0	0.0
Flight path F	23,514	391.9	0	0.0
Flight path G	14,143	235.7	0	0.0
Flight path H	7,138	119.0	0	0.0

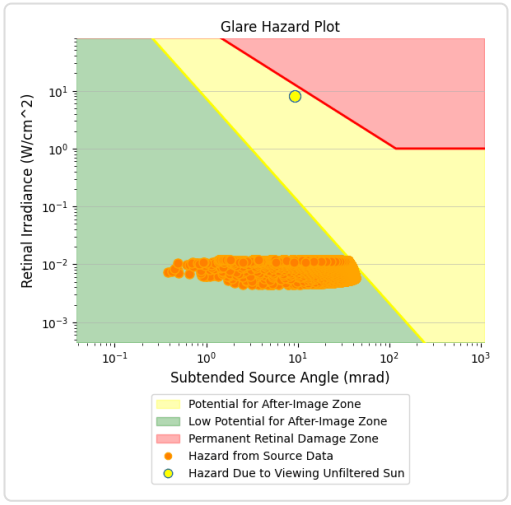
PCB02 and Route: Flight path A

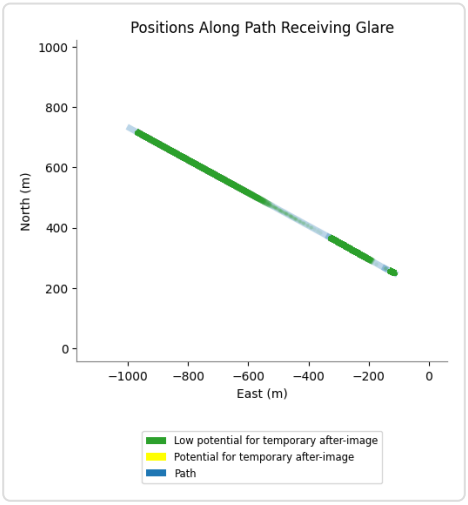
Yellow glare: none

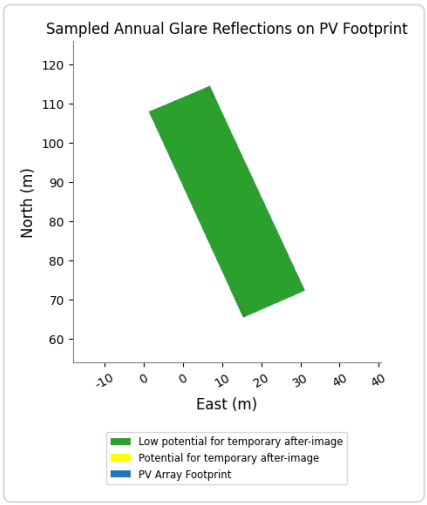
Green glare: 8,753 min.







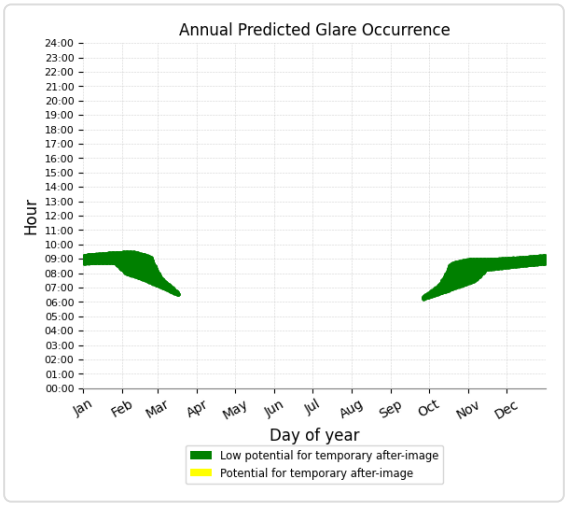


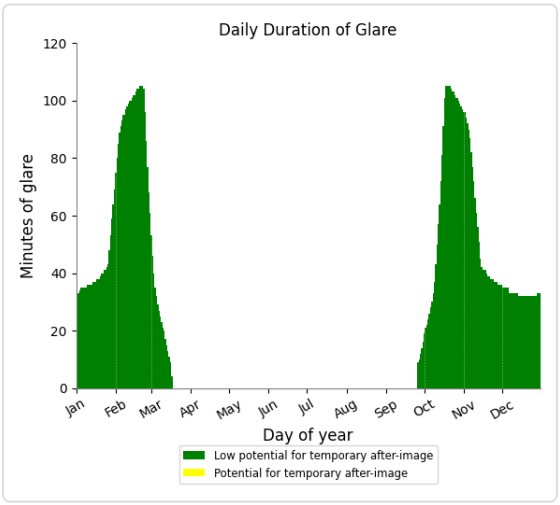


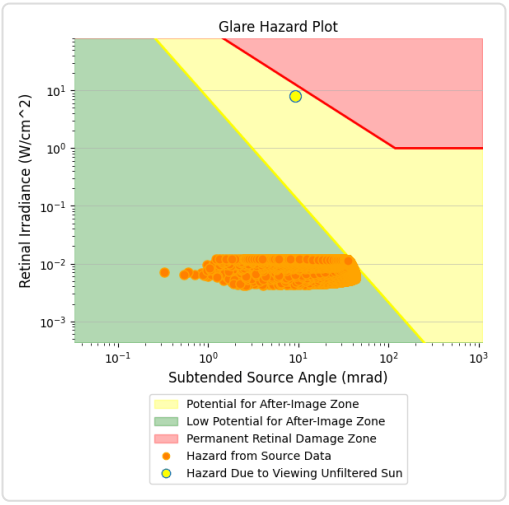
PCB02 and Route: Flight path B

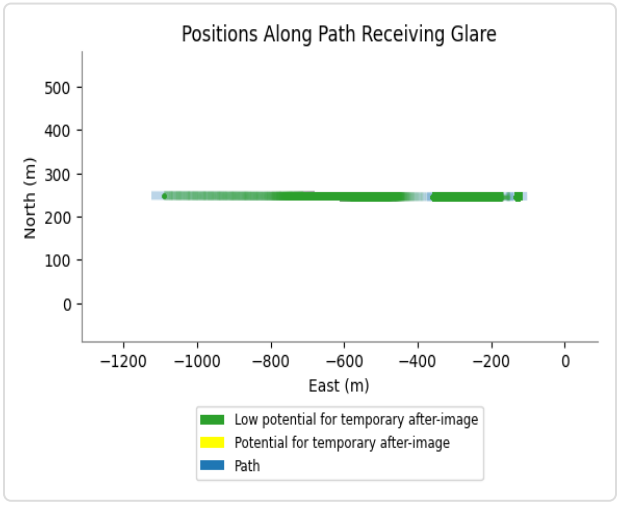
Yellow glare: none

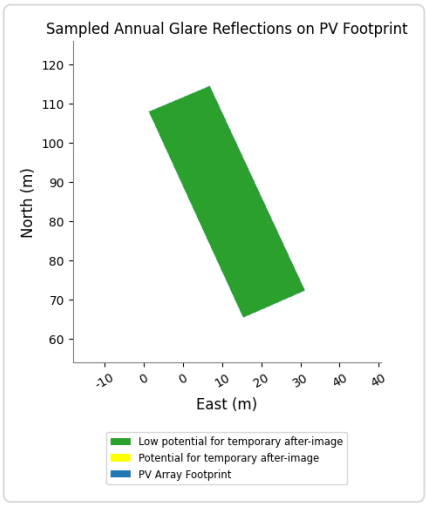
Green glare: 9,286 min.







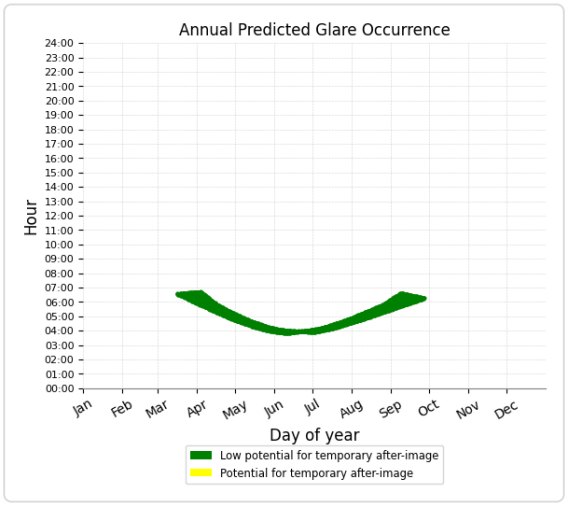


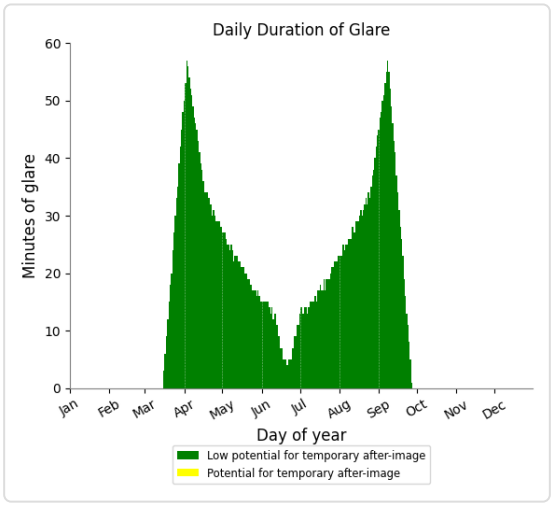


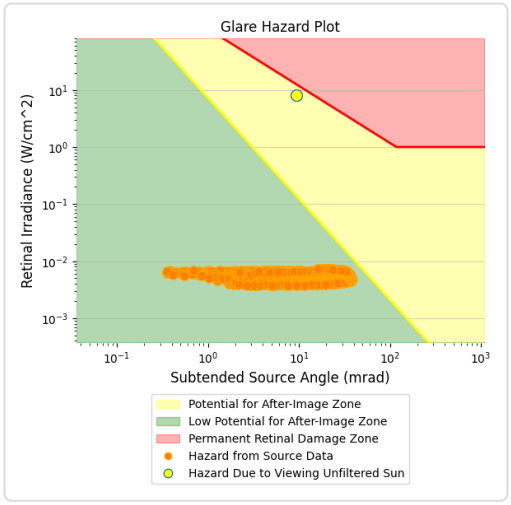
PCB02 and Route: Flight path C

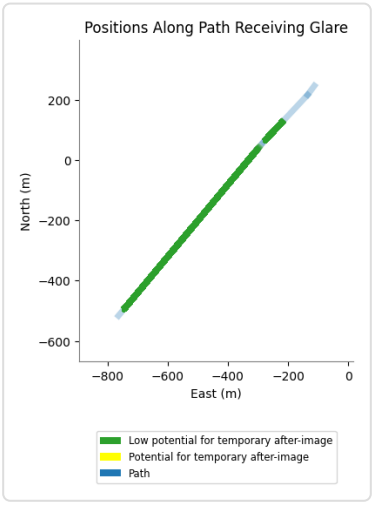
Yellow glare: none

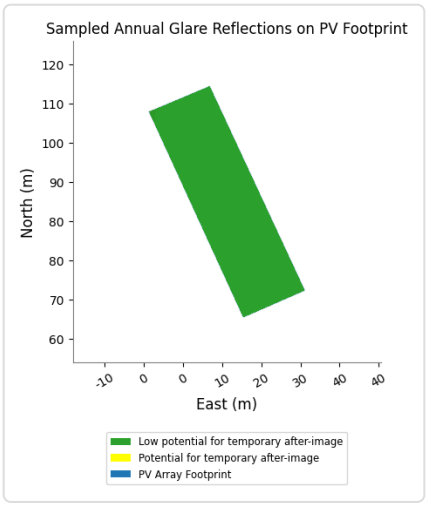
Green glare: 4,966 min.







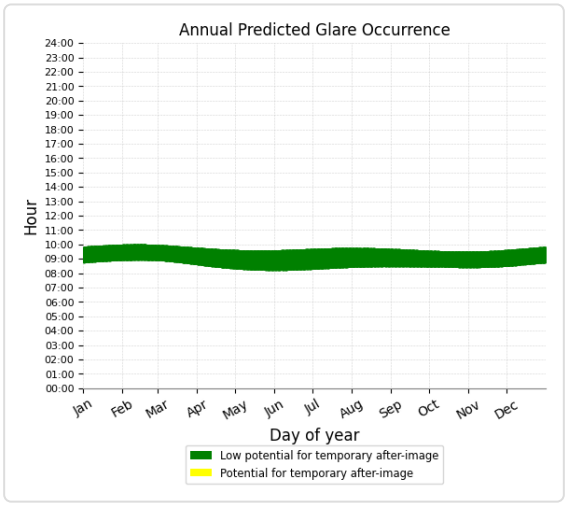


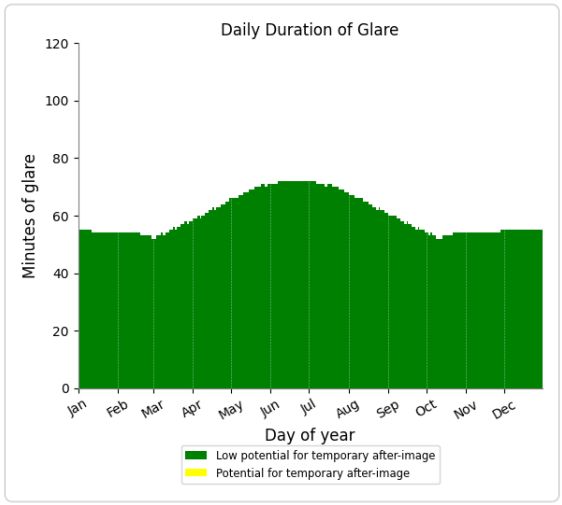


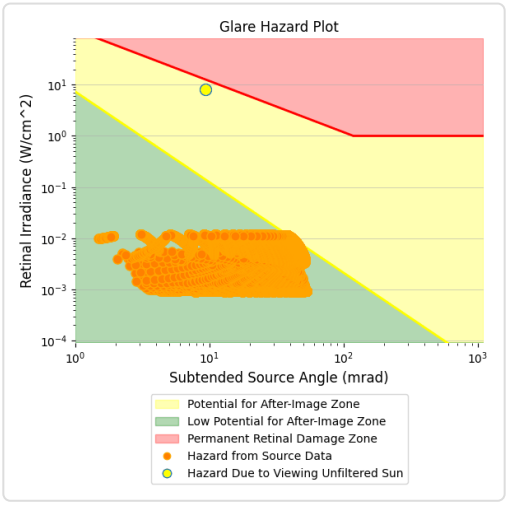
PCB02 and Route: Flight path D

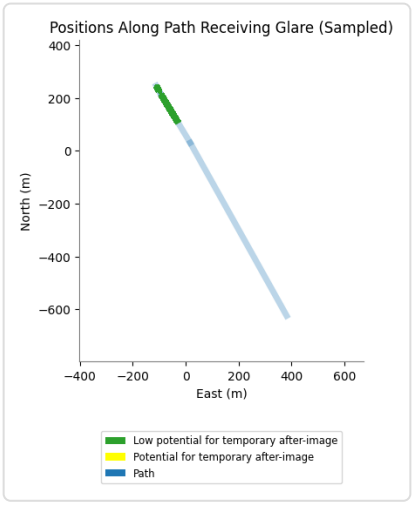
Yellow glare: none

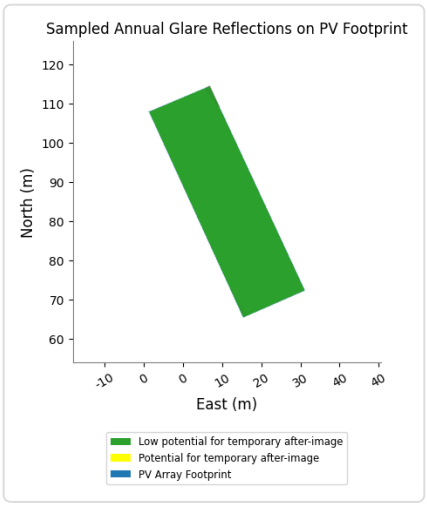
Green glare: 21,911 min.







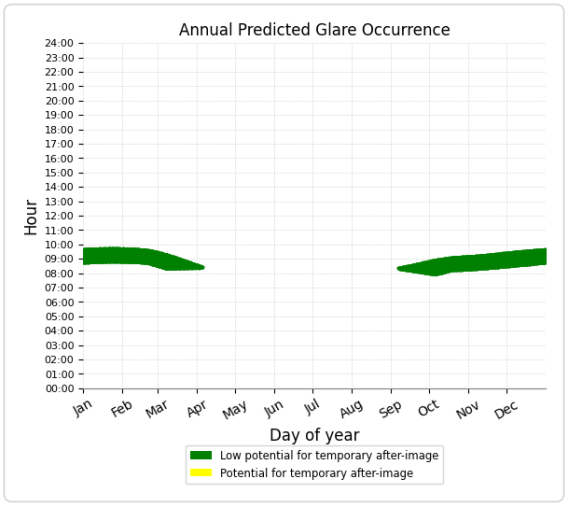


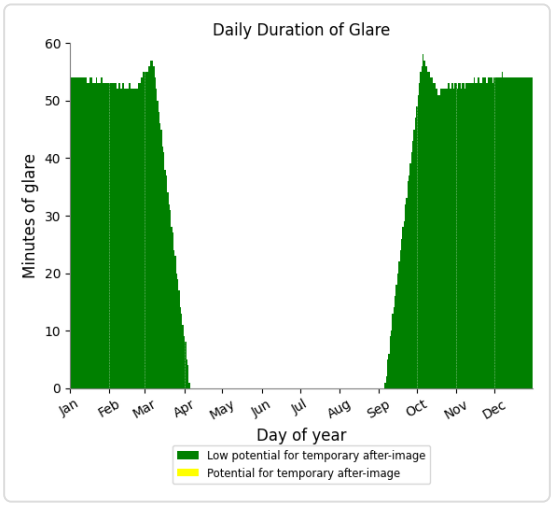


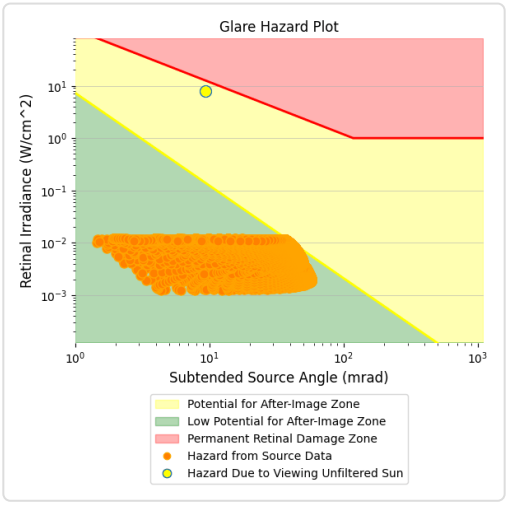
PCB02 and Route: Flight path E

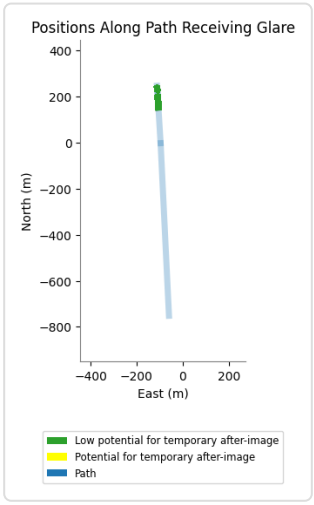
Yellow glare: none

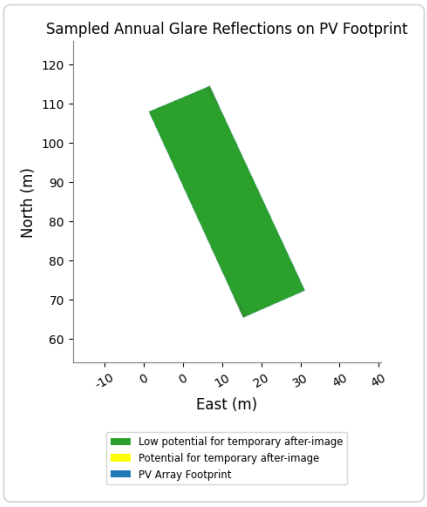
Green glare: 9,871 min.







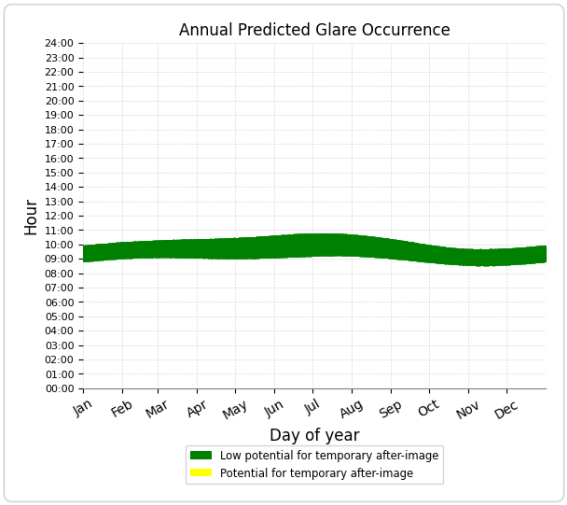


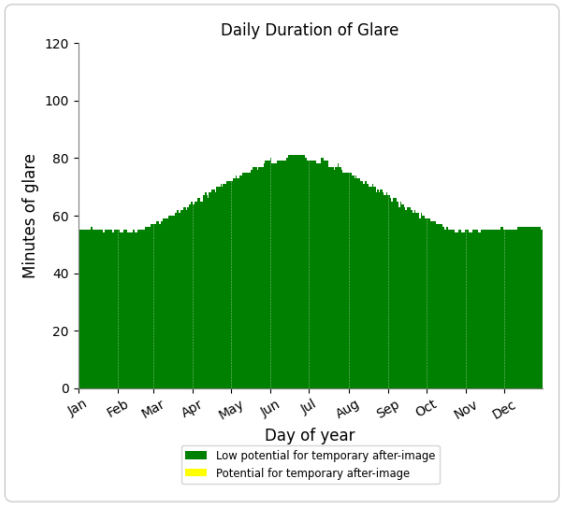


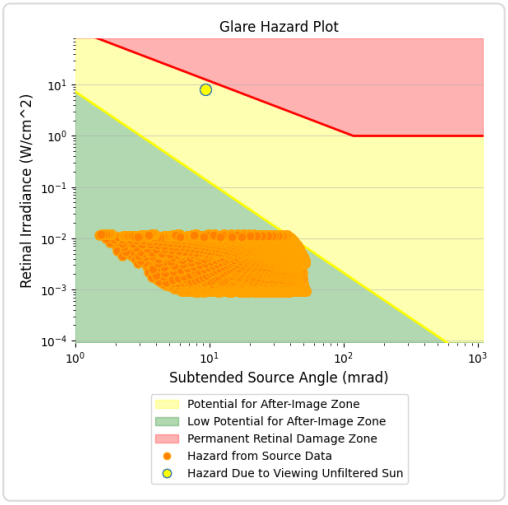
PCB02 and Route: Flight path F

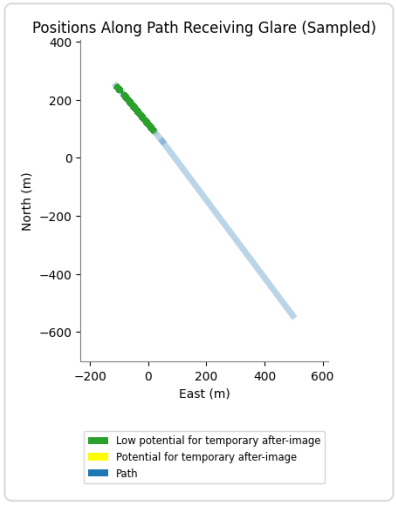
Yellow glare: none

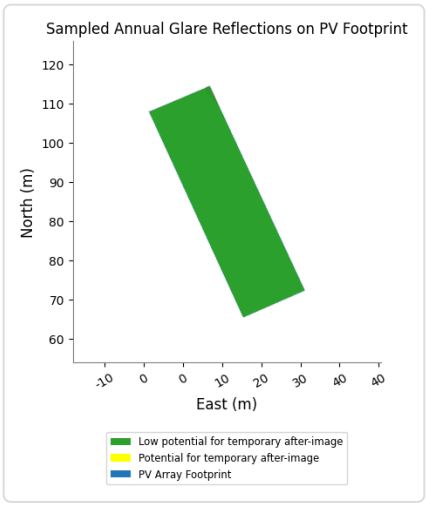
Green glare: 23,514 min.







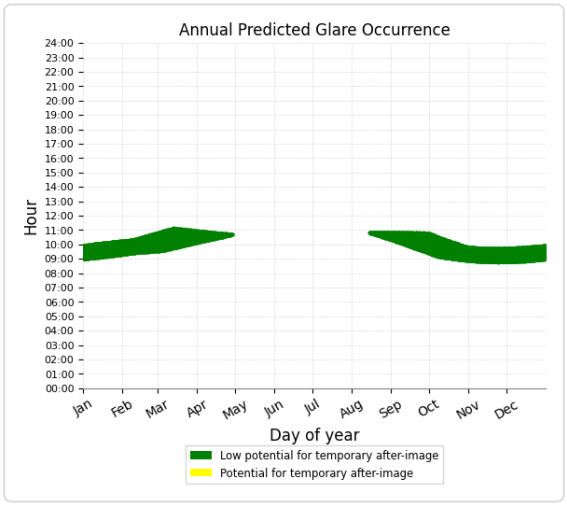


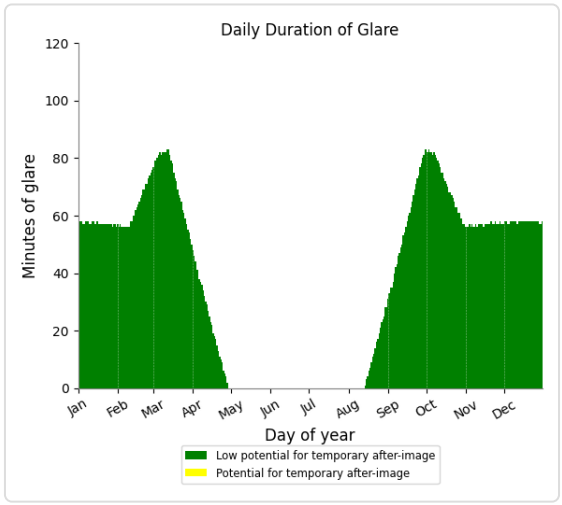


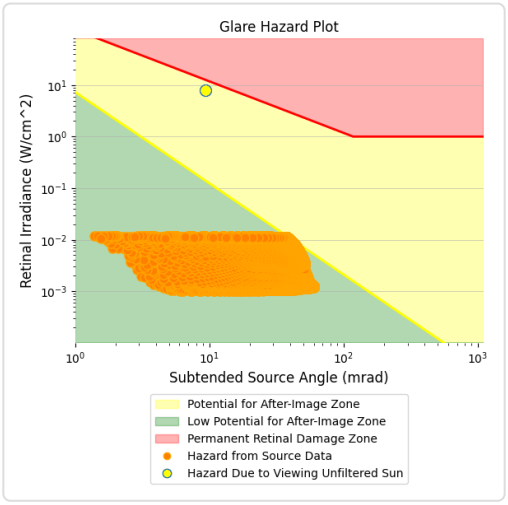
PCB02 and Route: Flight path G

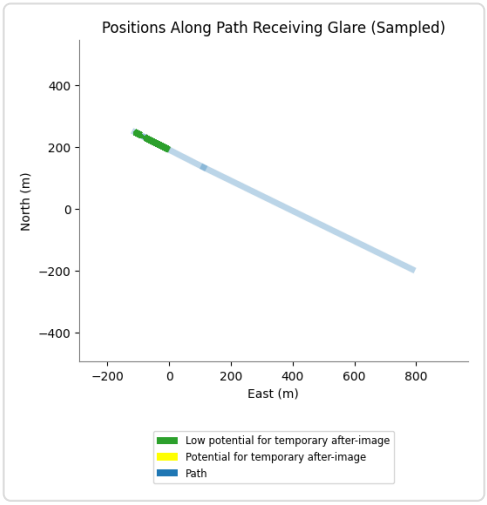
Yellow glare: none

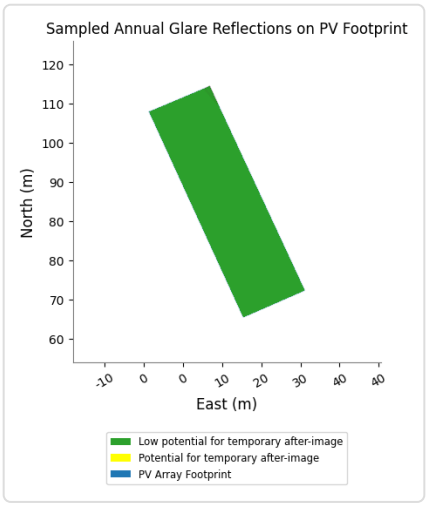
Green glare: 14,143 min.







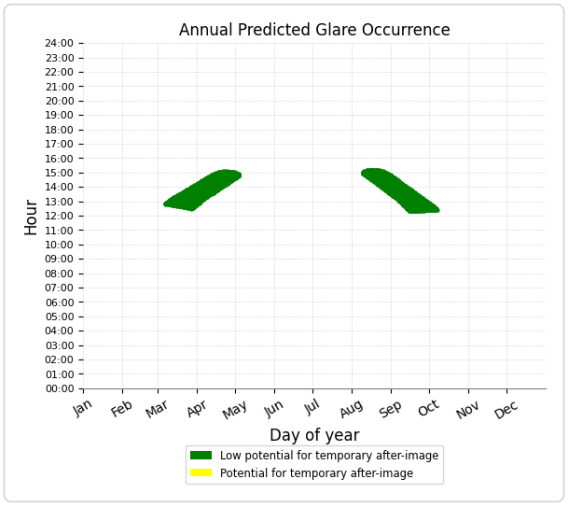


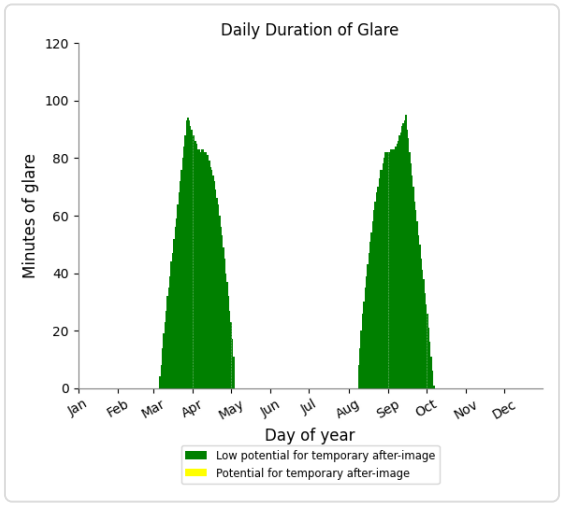


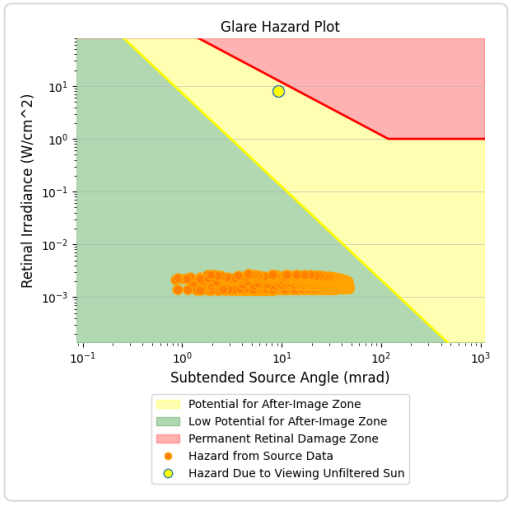
PCB02 and Route: Flight path H

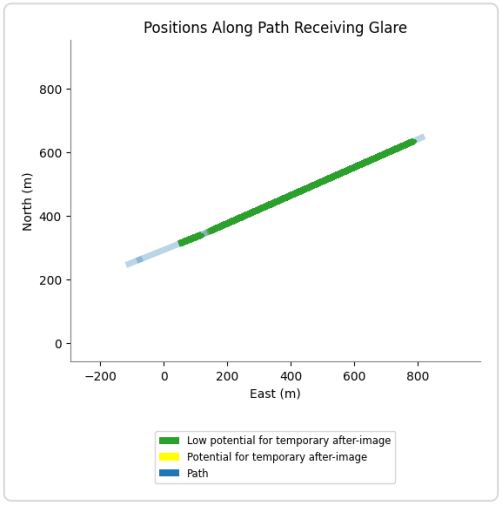
Yellow glare: none

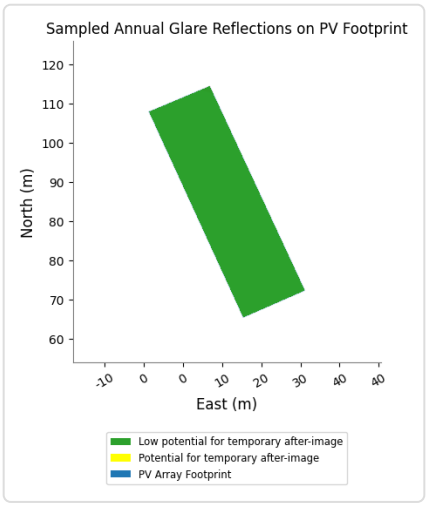
Green glare: 7,138 min.











PV: PCB03 low potential for temporary after-image

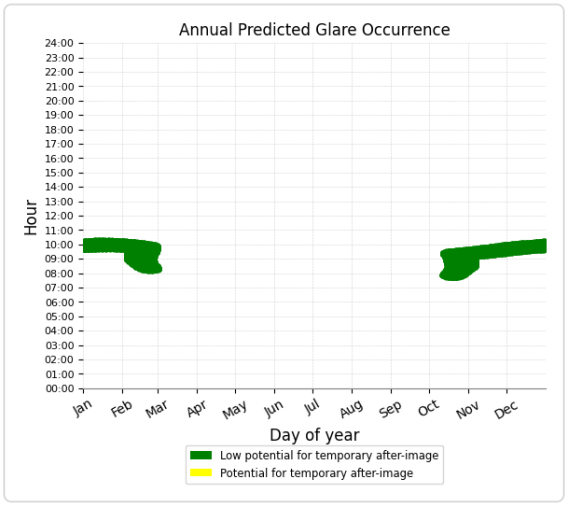
Receptor results ordered by category of glare

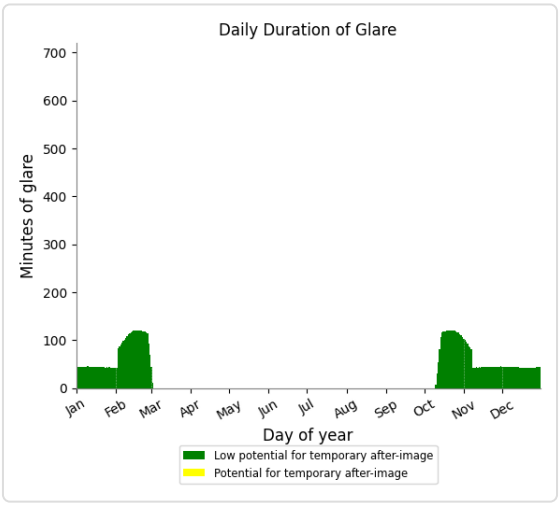
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	9,637	160.6	0	0.0
Flight path B	7,706	128.4	0	0.0
Flight path C	7,133	118.9	0	0.0
Flight path D	16,096	268.3	0	0.0
Flight path E	13,467	224.4	0	0.0
Flight path F	15,645	260.8	0	0.0
Flight path G	8,404	140.1	0	0.0
Flight path H	6,620	110.3	0	0.0

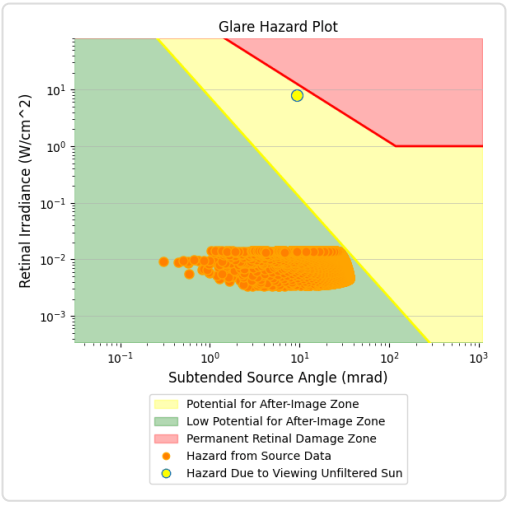
PCB03 and Route: Flight path A

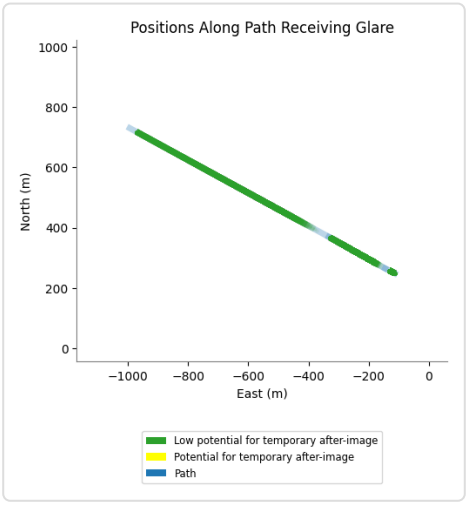
Yellow glare: none

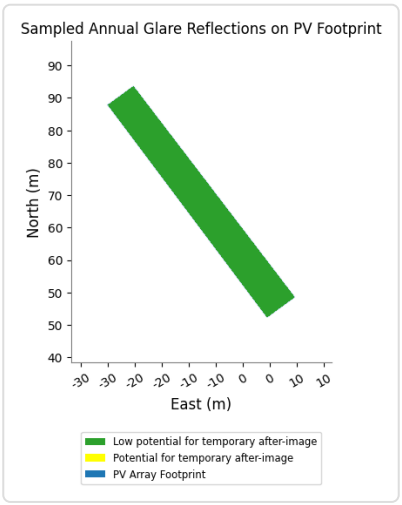
Green glare: 9,637 min.







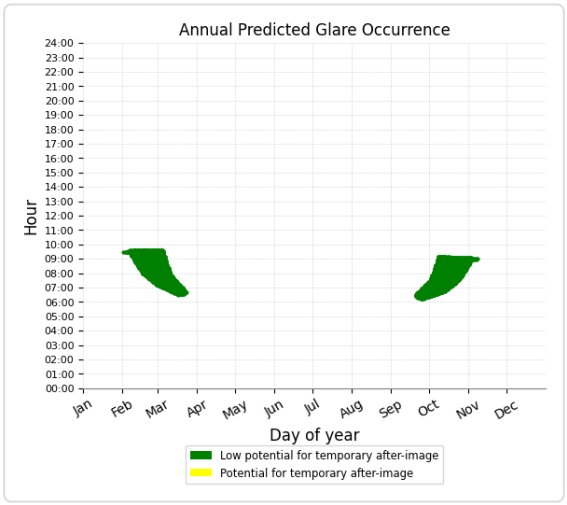


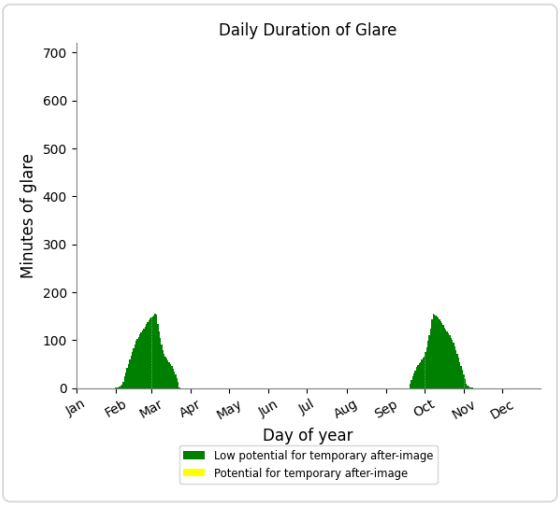


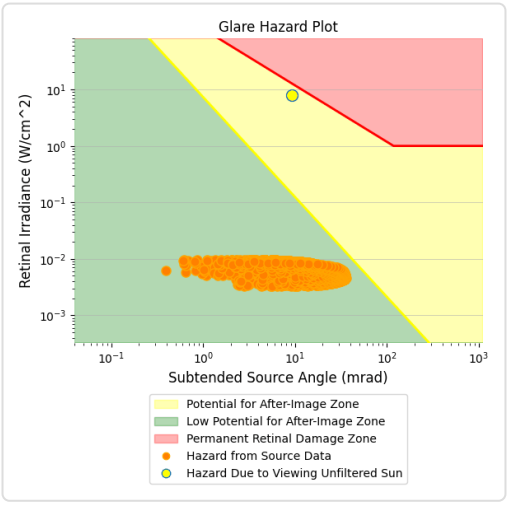
PCB03 and Route: Flight path B

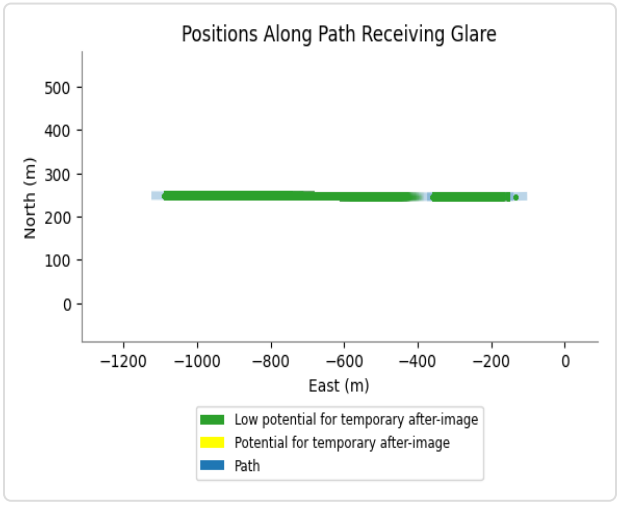
Yellow glare: none

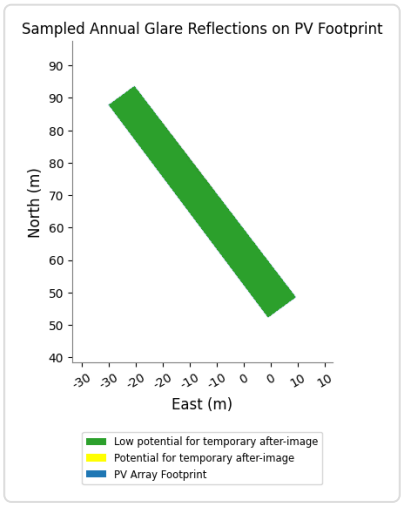
Green glare: 7,706 min.







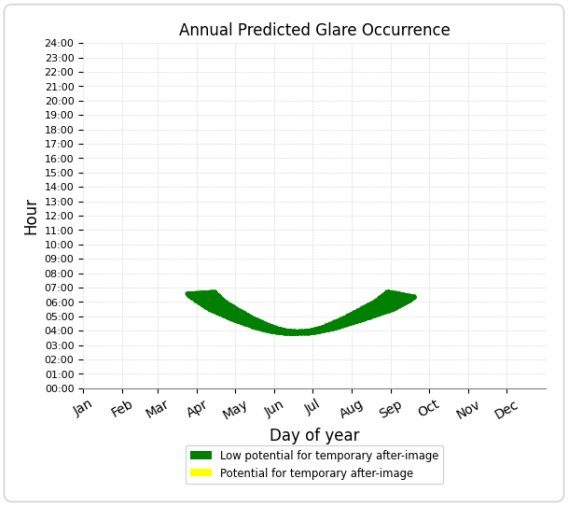


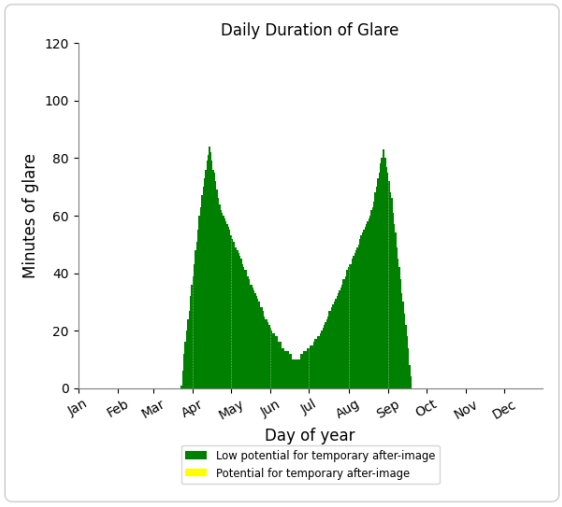


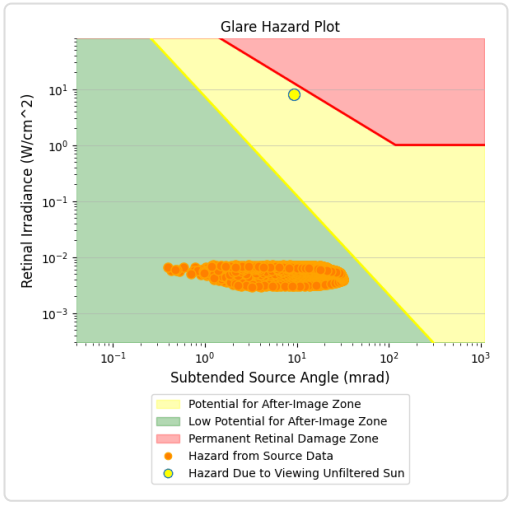
PCB03 and Route: Flight path C

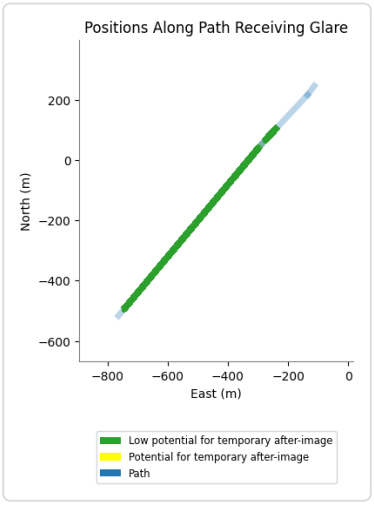
Yellow glare: none

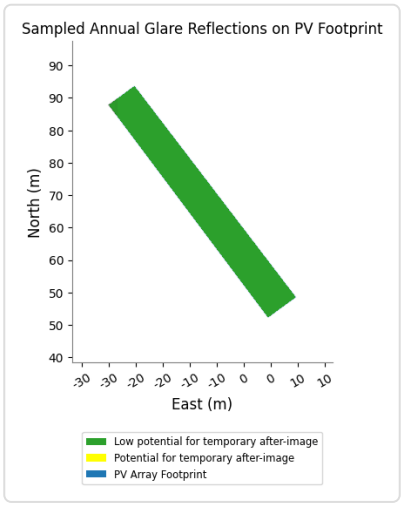
Green glare: 7,133 min.







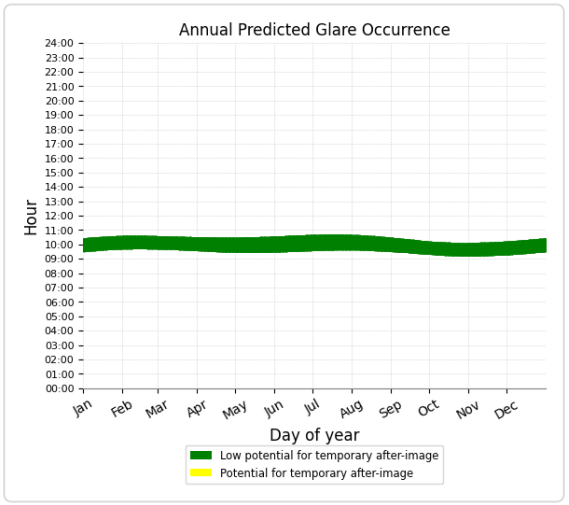


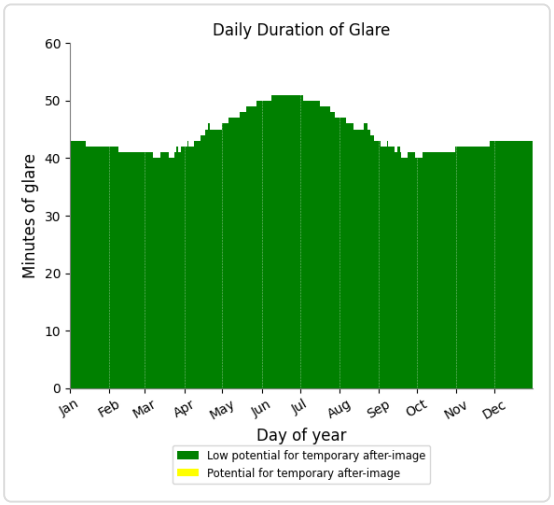


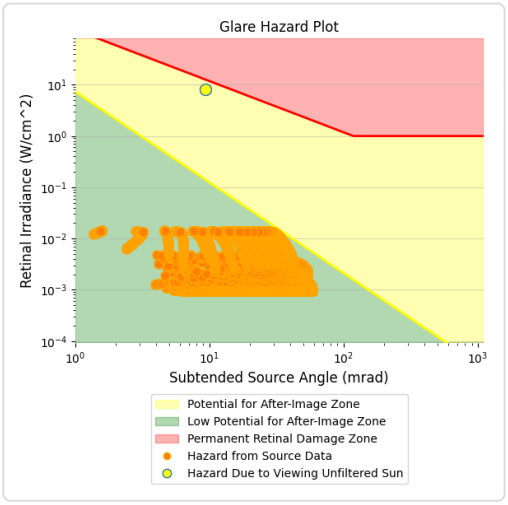
PCB03 and Route: Flight path D

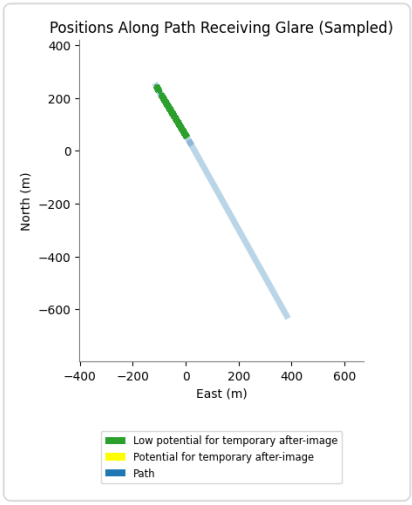
Yellow glare: none

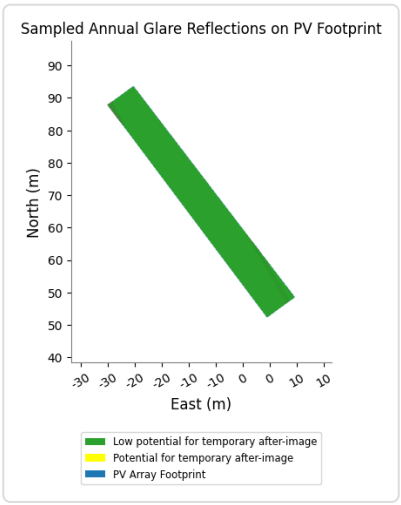
Green glare: 16,096 min.







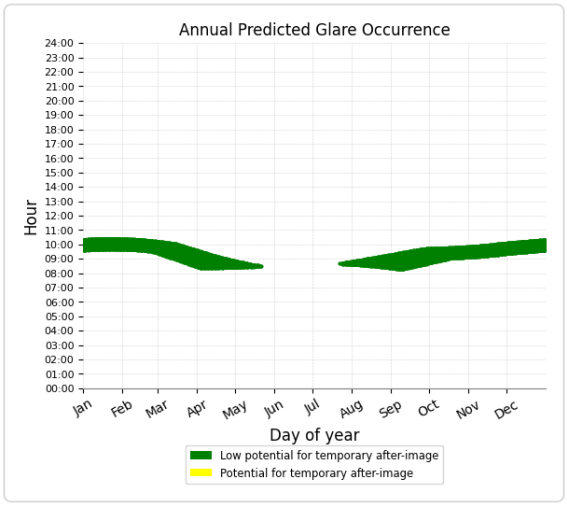


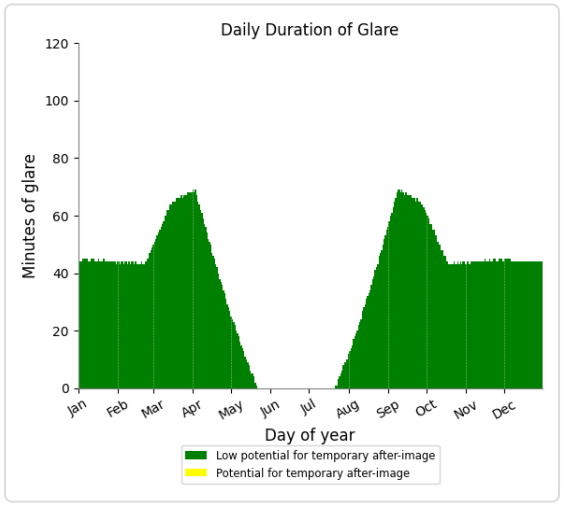


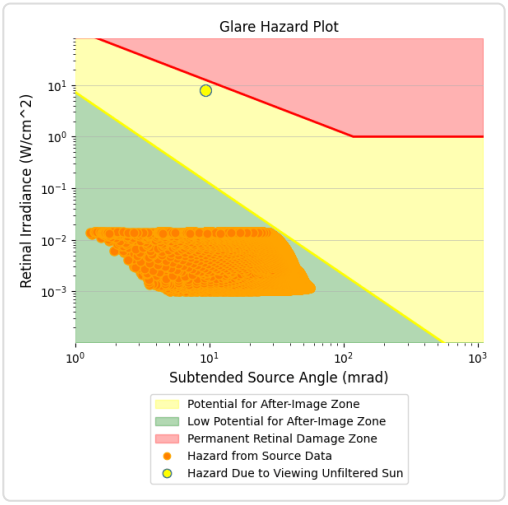
PCB03 and Route: Flight path E

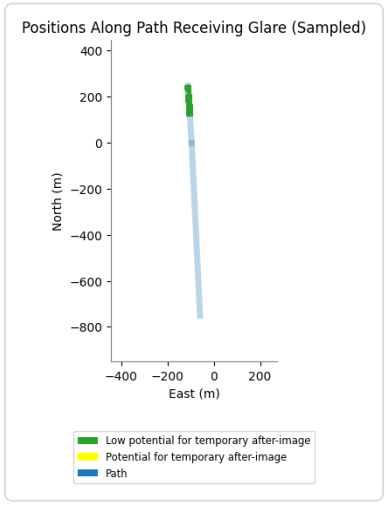
Yellow glare: none

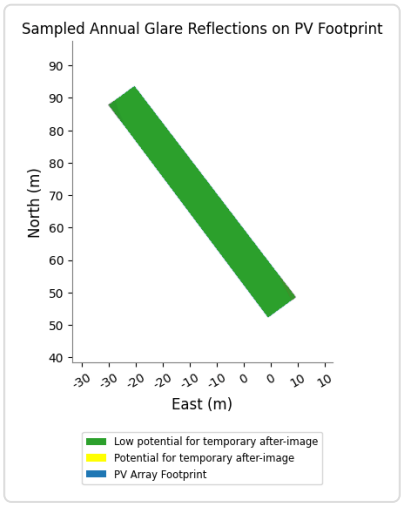
Green glare: 13,467 min.







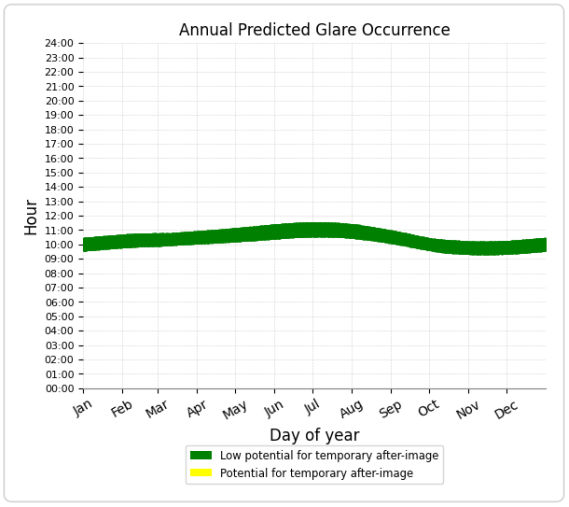


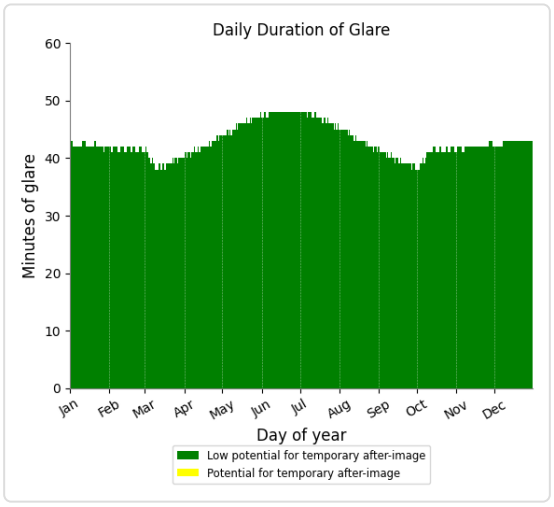


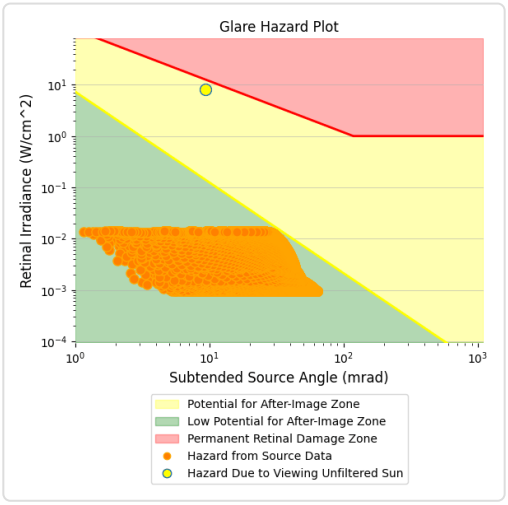
PCB03 and Route: Flight path F

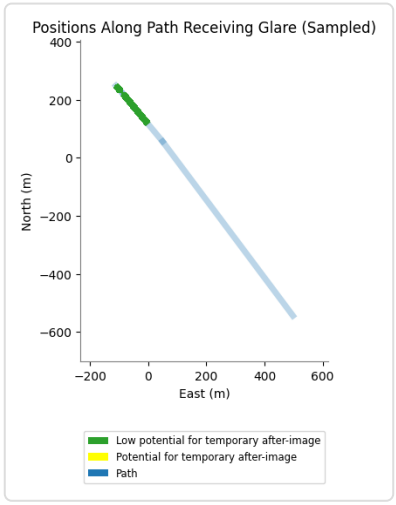
Yellow glare: none

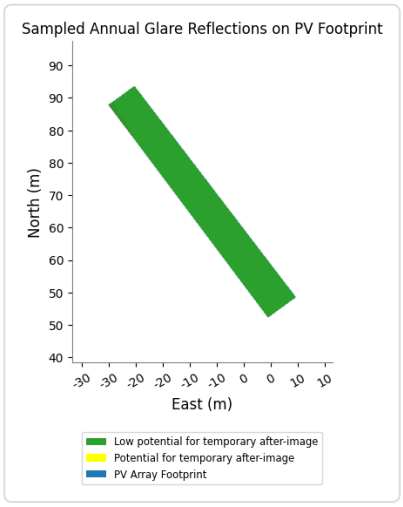
Green glare: 15,645 min.







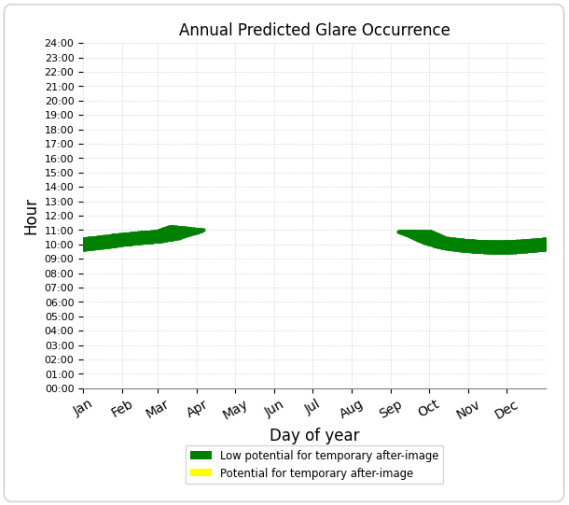


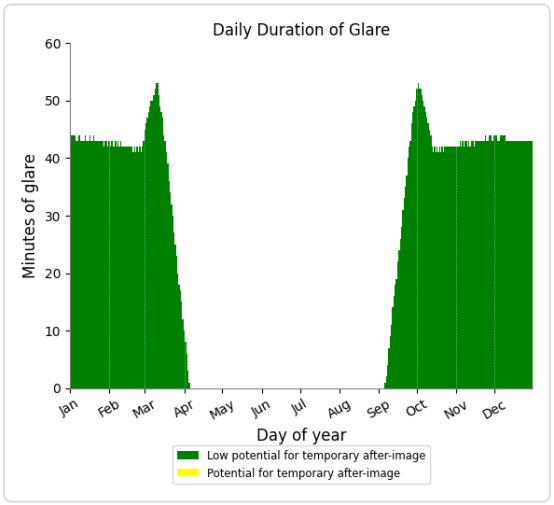


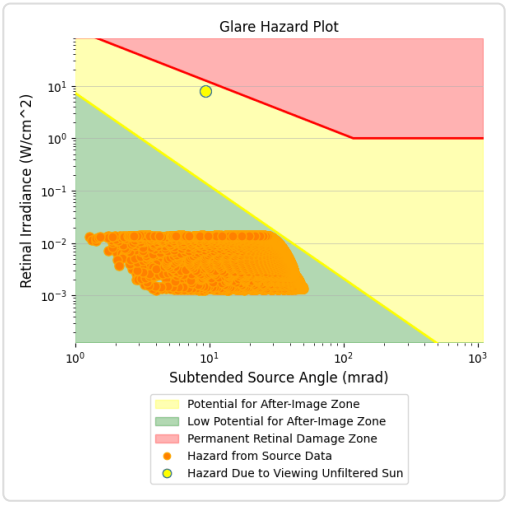
PCB03 and Route: Flight path G

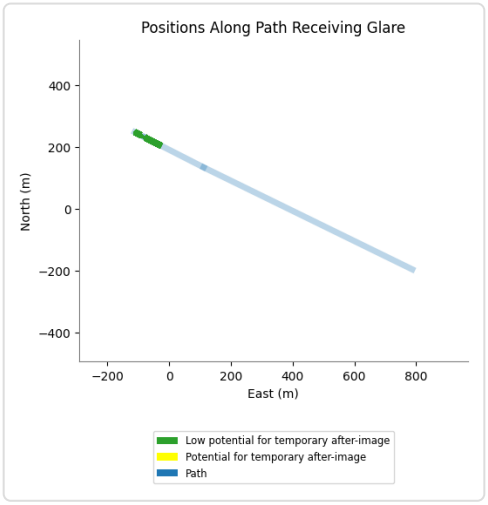
Yellow glare: none

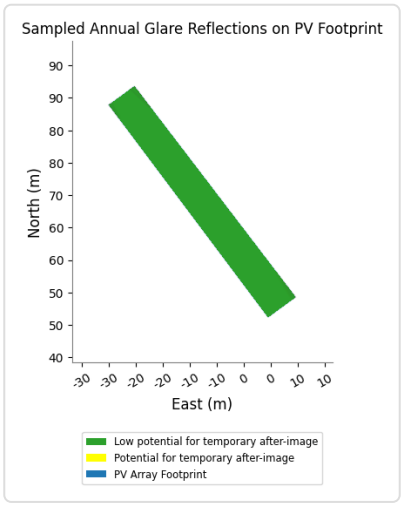
Green glare: 8,404 min.







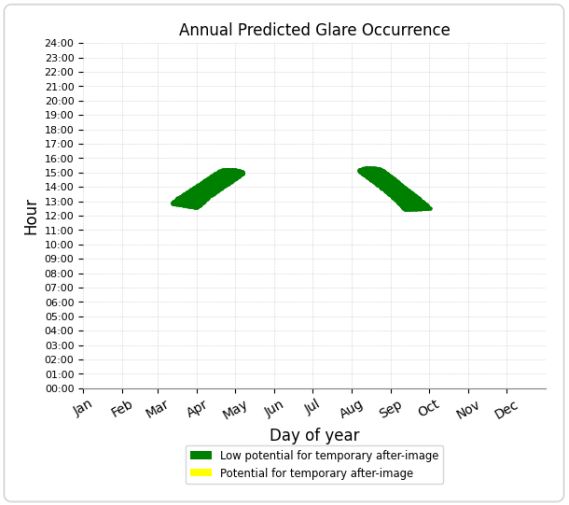


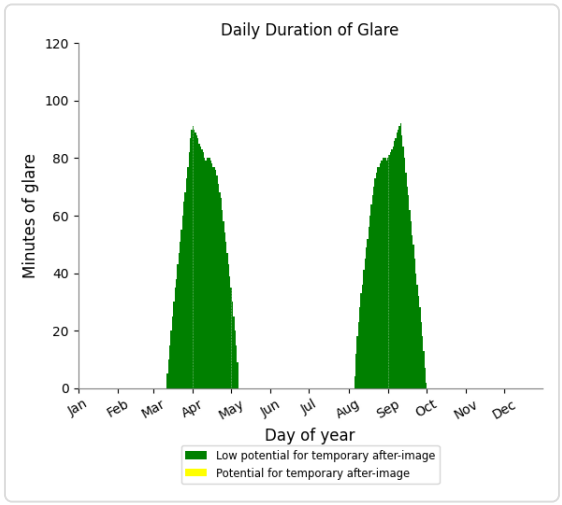


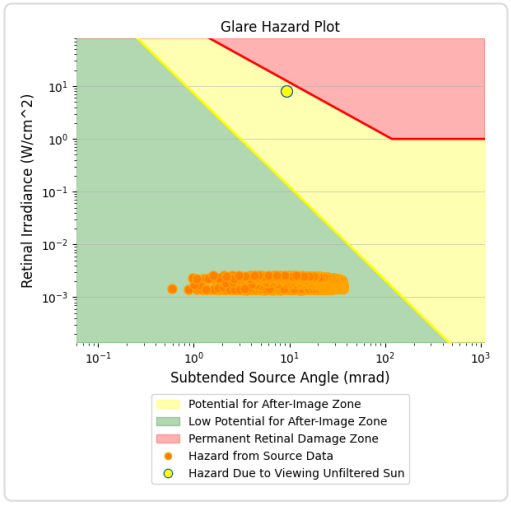
PCB03 and Route: Flight path H

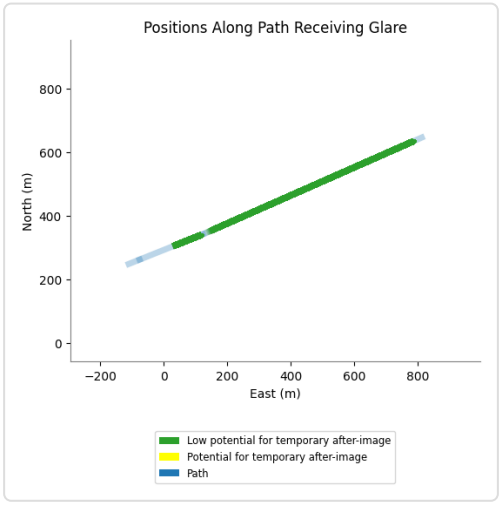
Yellow glare: none

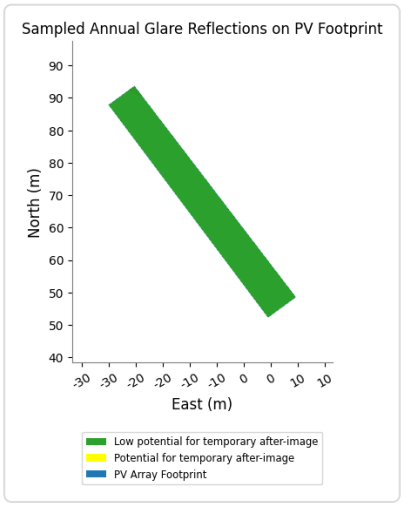
Green glare: 6,620 min.











PV: PMB01 low potential for temporary after-image

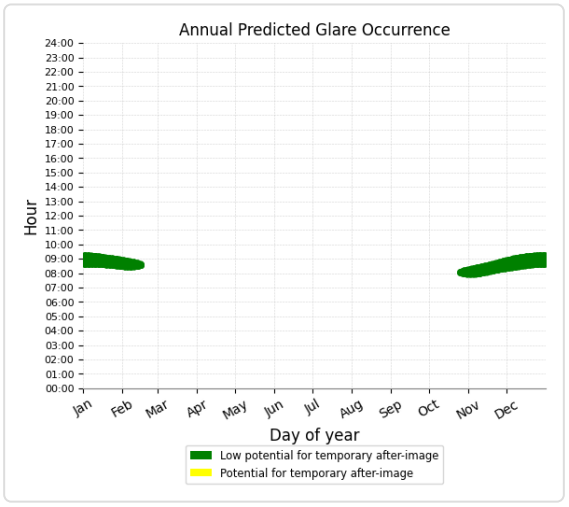
Receptor results ordered by category of glare

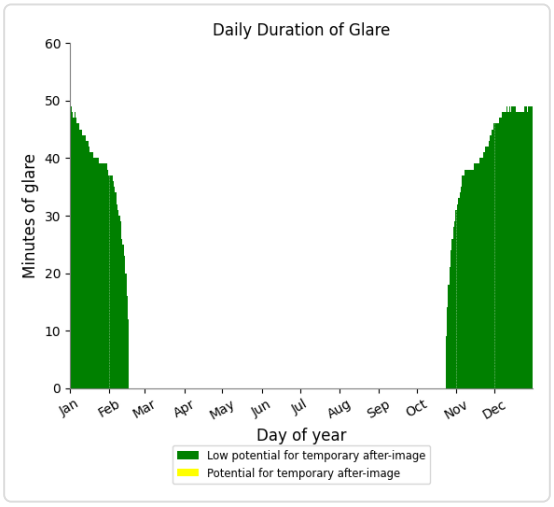
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	4,605	76.8	0	0.0
Flight path B	7,013	116.9	0	0.0
Flight path C	4,420	73.7	0	0.0
Flight path D	16,703	278.4	0	0.0
Flight path E	5,344	89.1	0	0.0
Flight path F	18,760	312.7	0	0.0
Flight path G	14,221	237.0	0	0.0
Flight path H	4,575	76.2	0	0.0

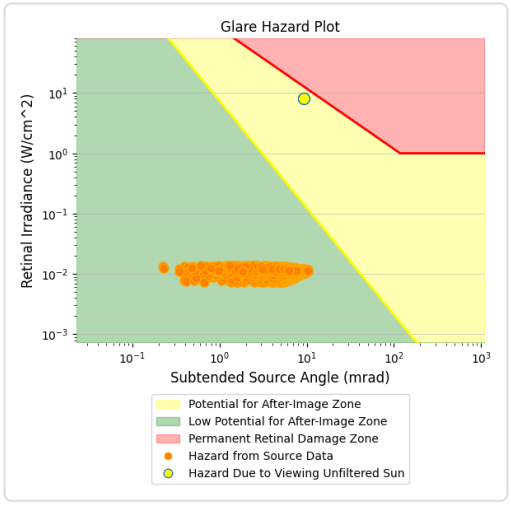
PMB01 and Route: Flight path A

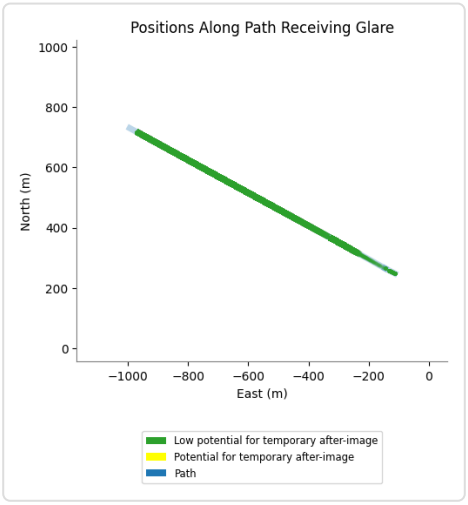
Yellow glare: none

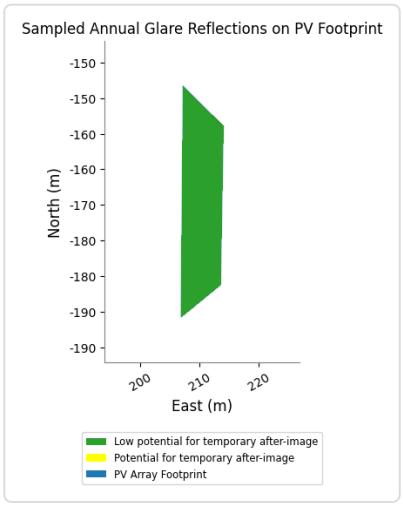
Green glare: 4,605 min.







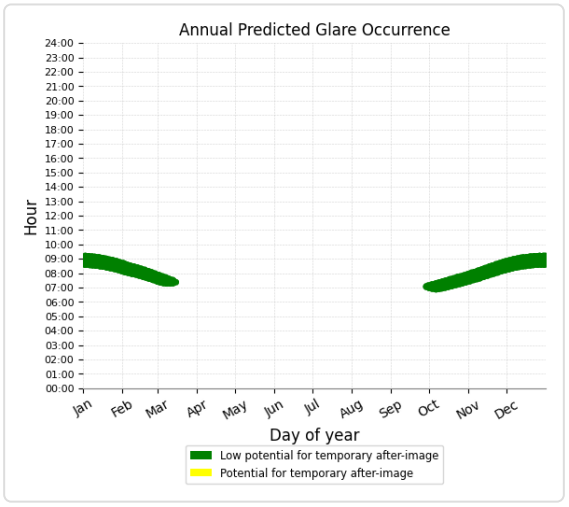


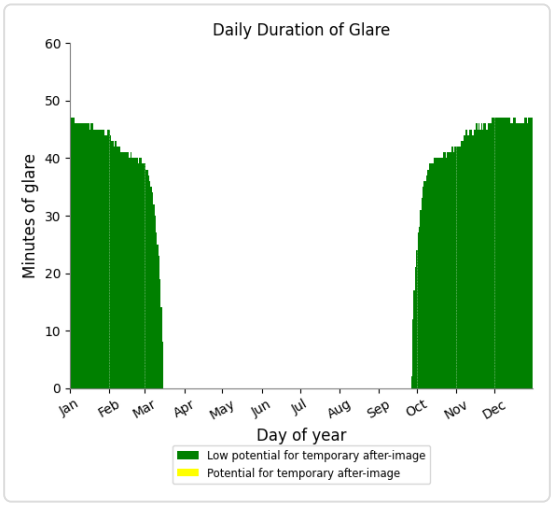


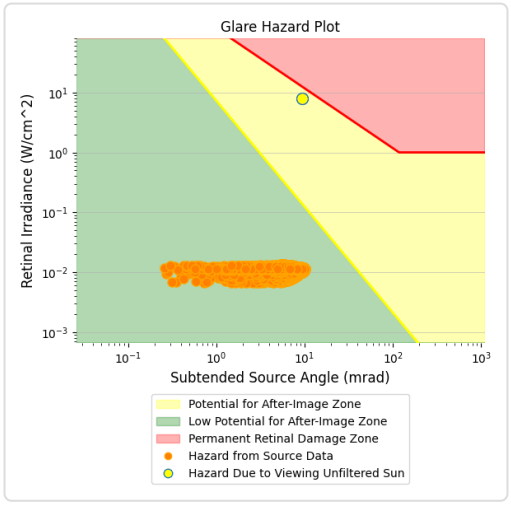
PMB01 and Route: Flight path B

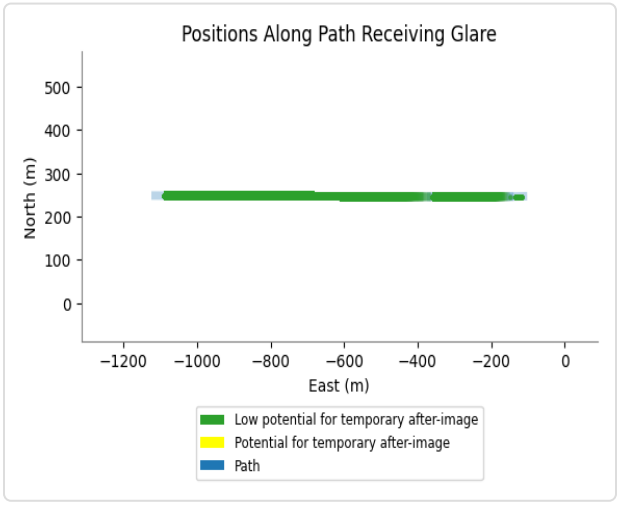
Yellow glare: none

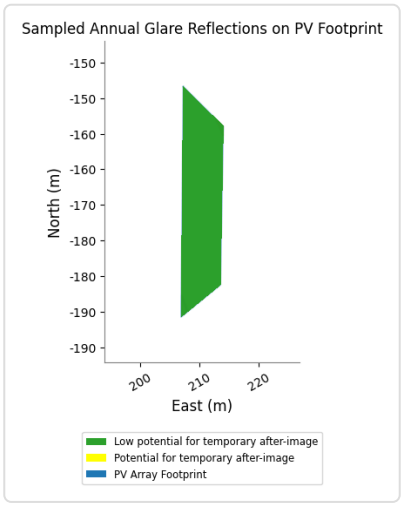
Green glare: 7,013 min.







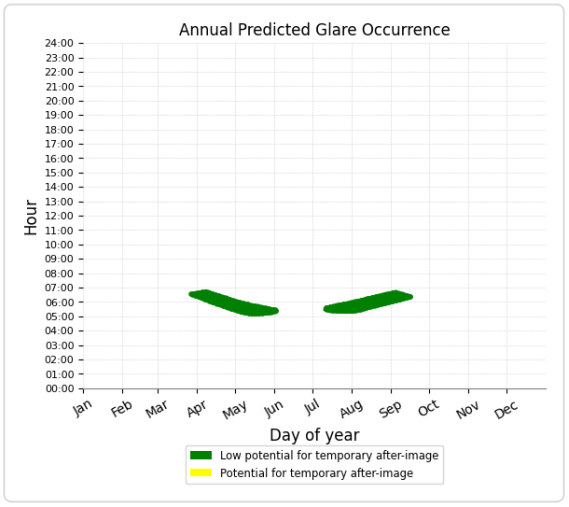


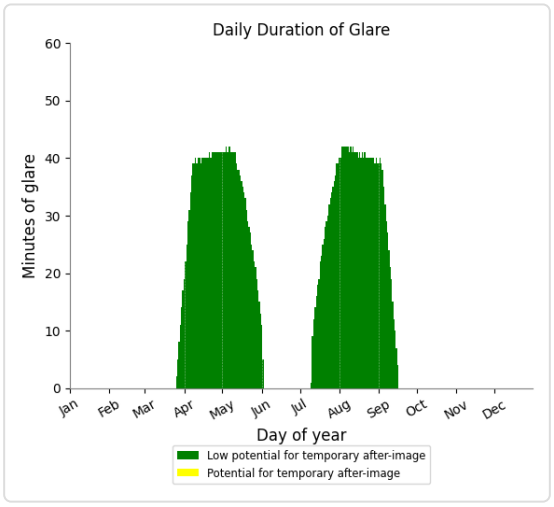


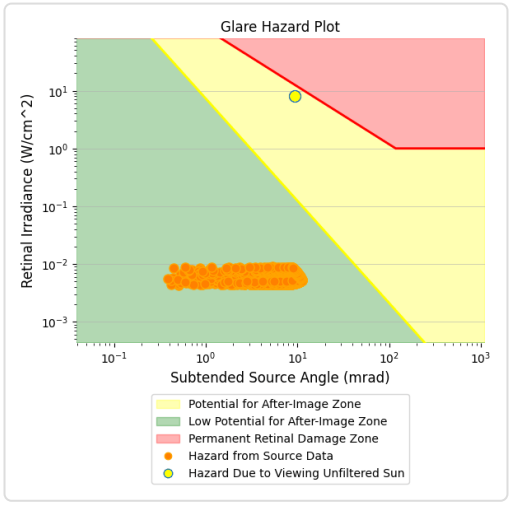
PMB01 and Route: Flight path C

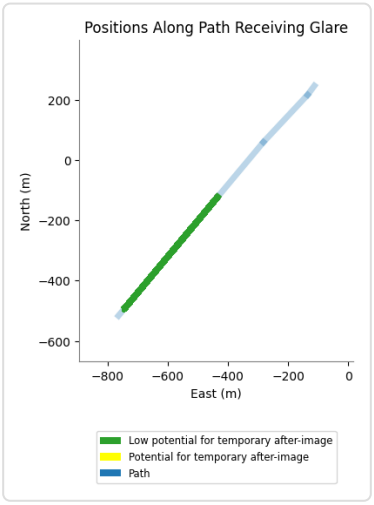
Yellow glare: none

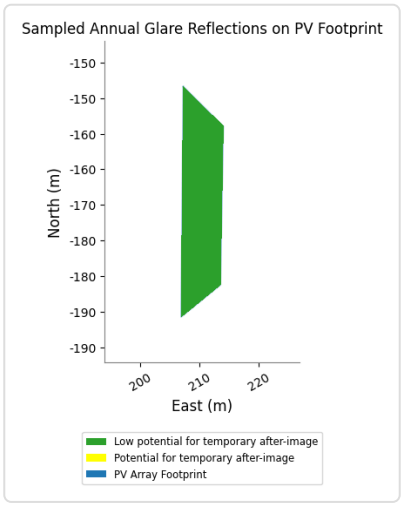
Green glare: 4,420 min.







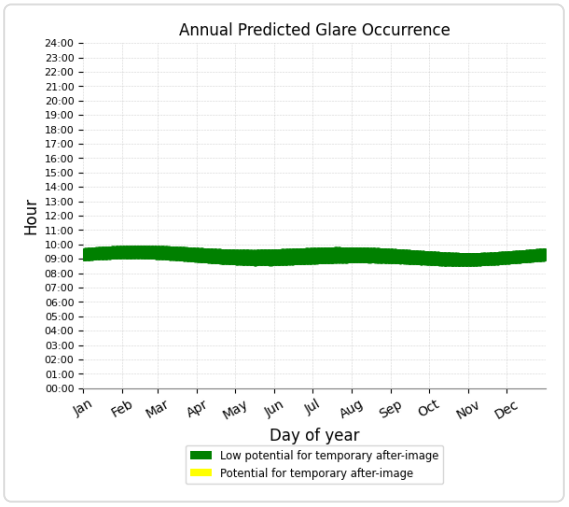


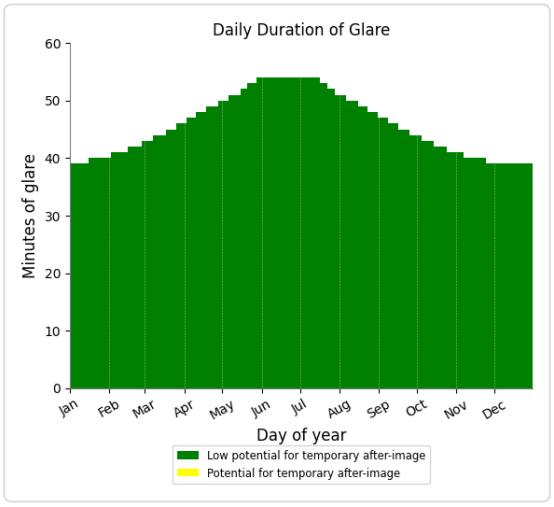


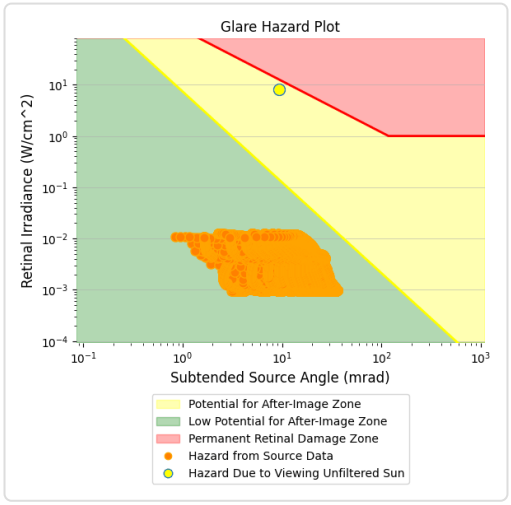
PMB01 and Route: Flight path D

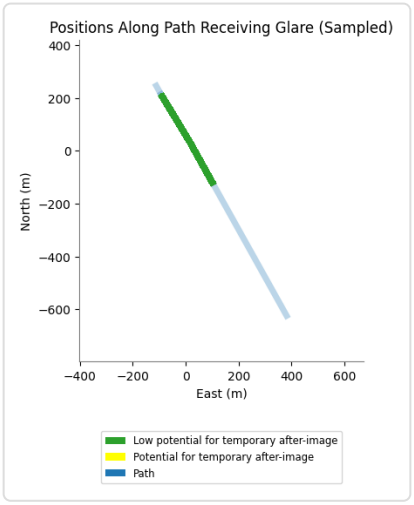
Yellow glare: none

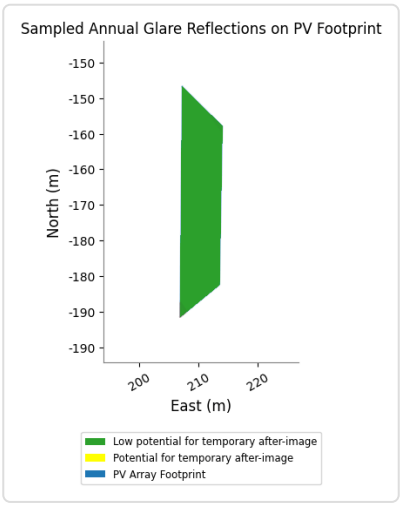
Green glare: 16,703 min.







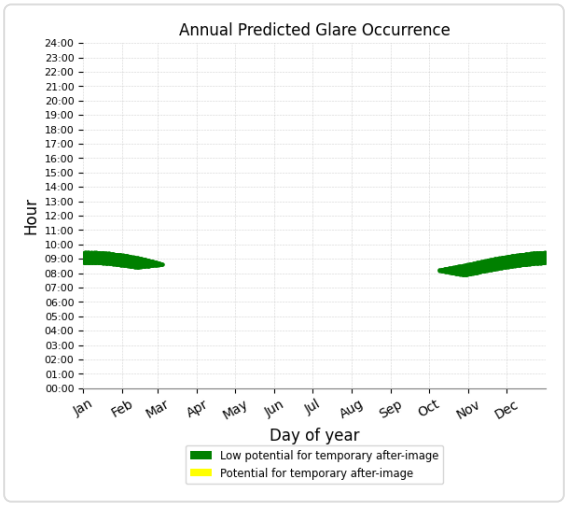


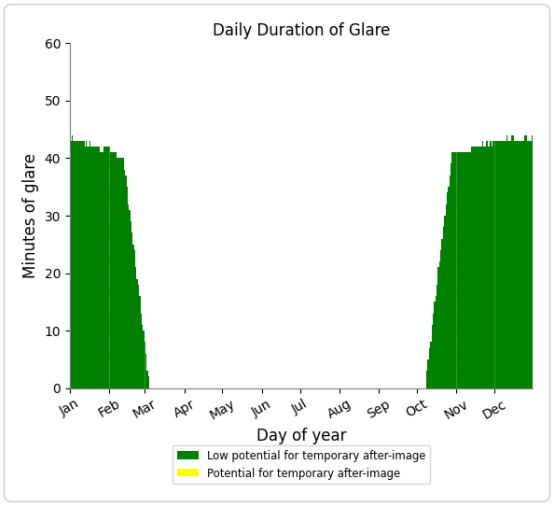


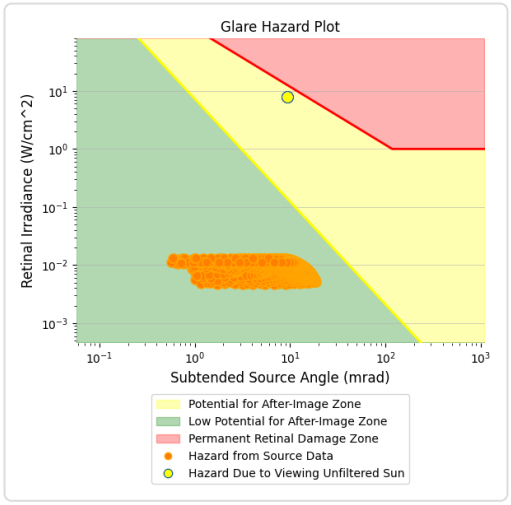
PMB01 and Route: Flight path E

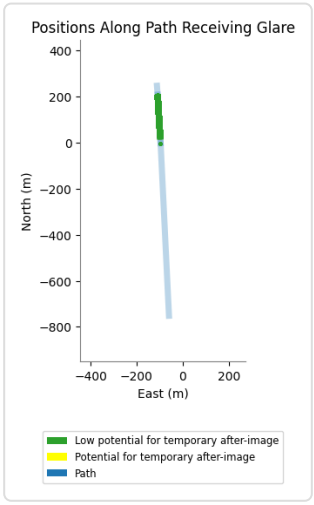
Yellow glare: none

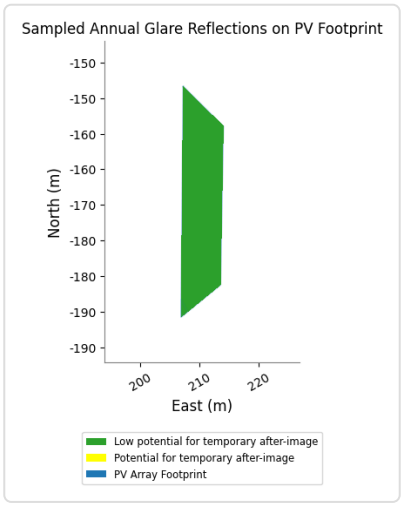
Green glare: 5,344 min.







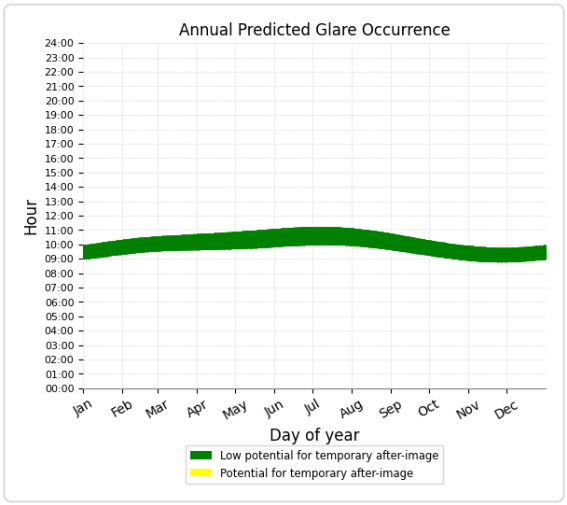


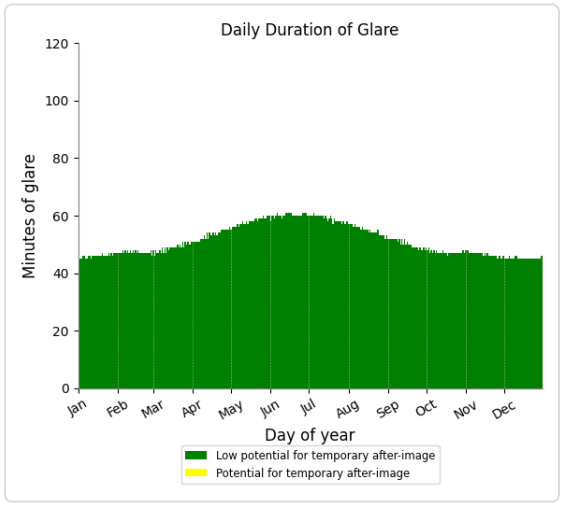


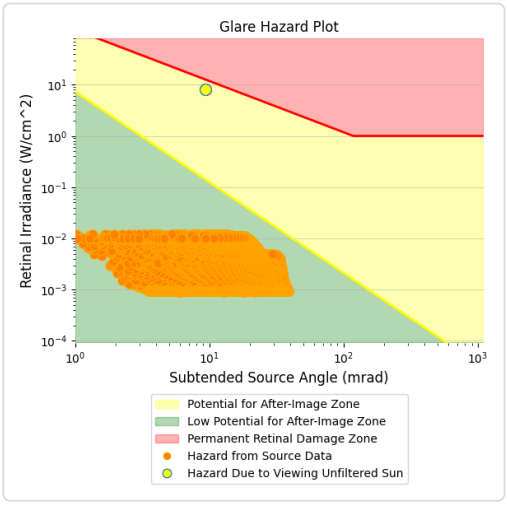
PMB01 and Route: Flight path F

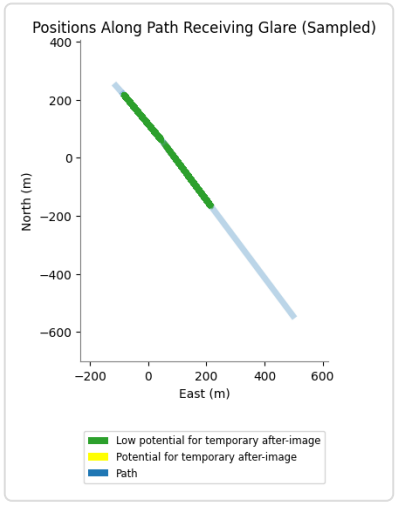
Yellow glare: none

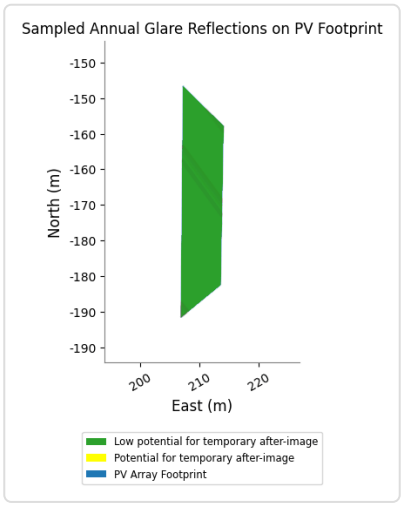
Green glare: 18,760 min.







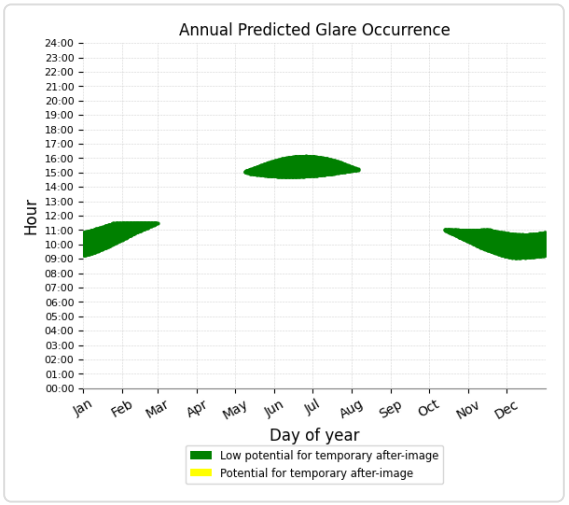


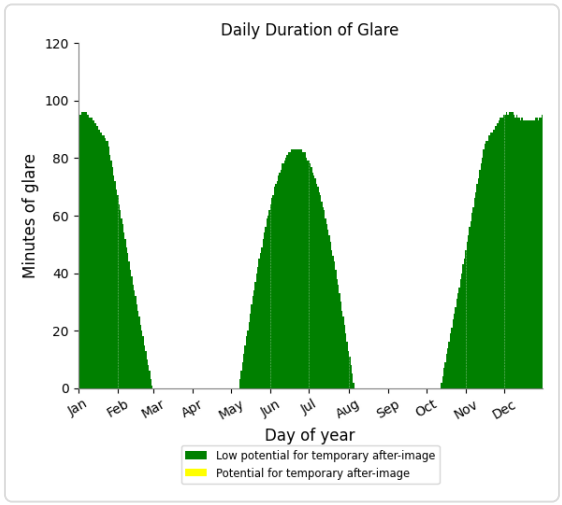


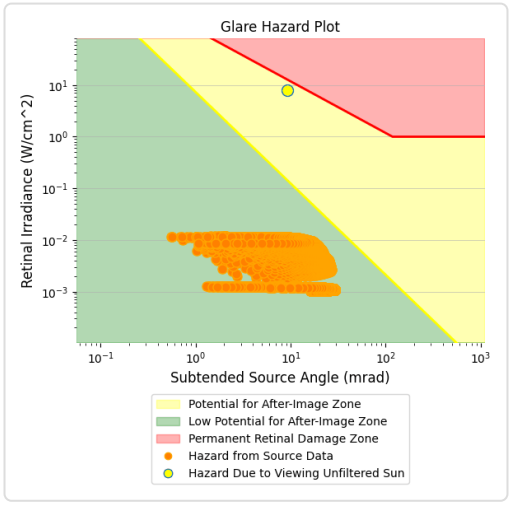
PMB01 and Route: Flight path G

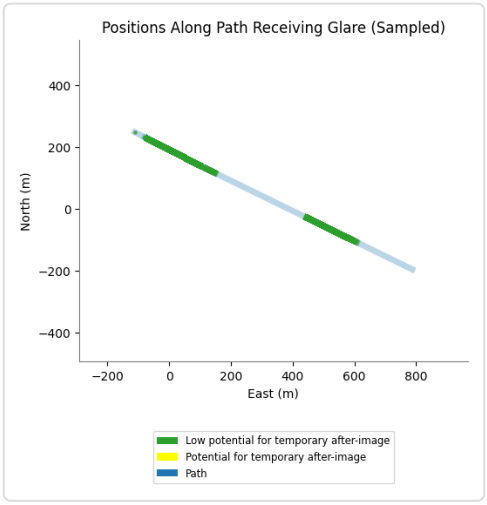
Yellow glare: none

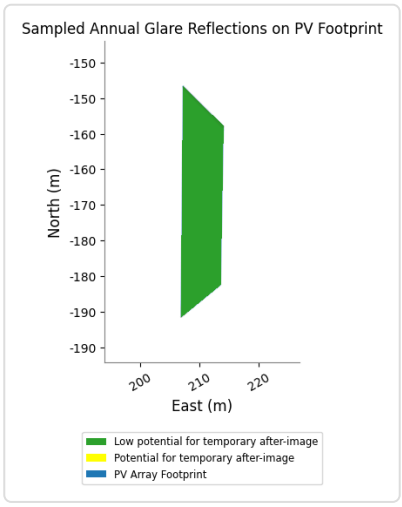
Green glare: 14,221 min.







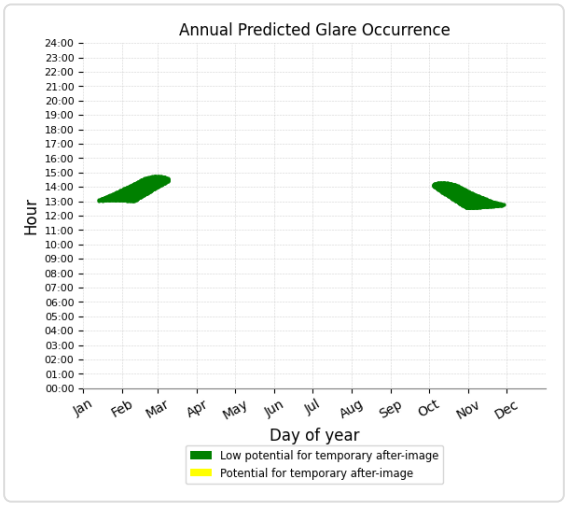


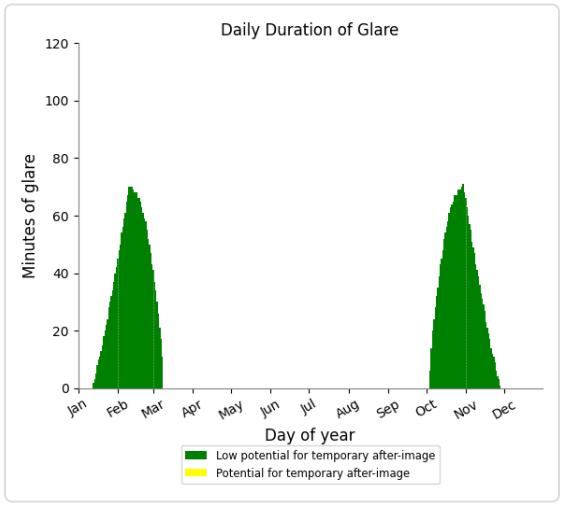


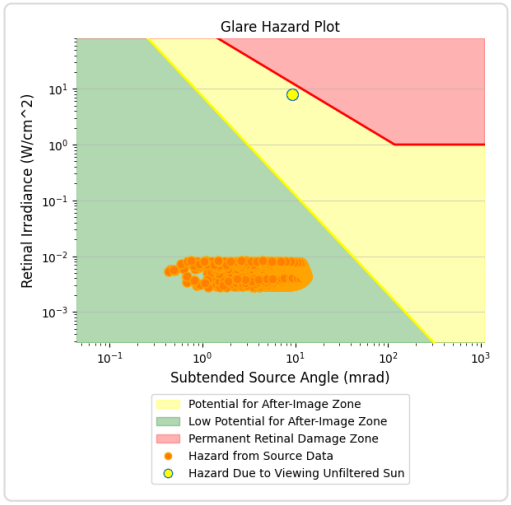
PMB01 and Route: Flight path H

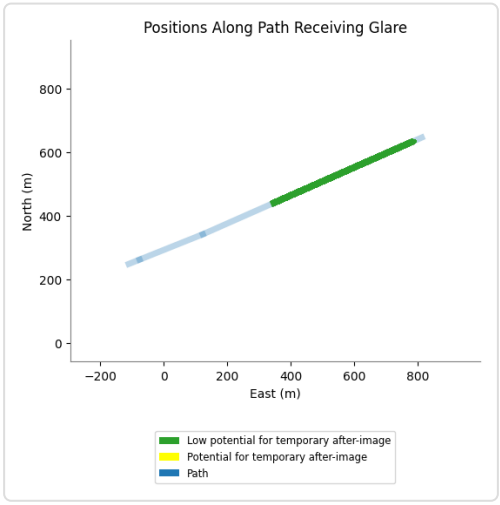
Yellow glare: none

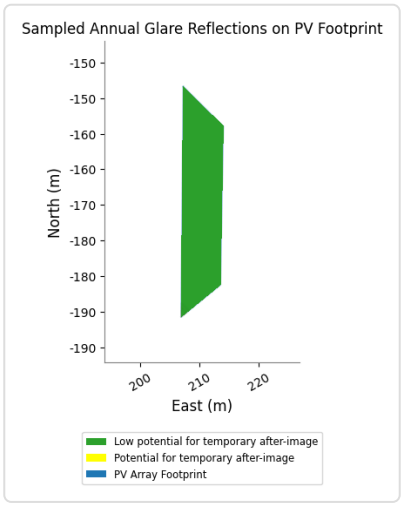
Green glare: 4,575 min.











PV: PMB02 low potential for temporary after-image

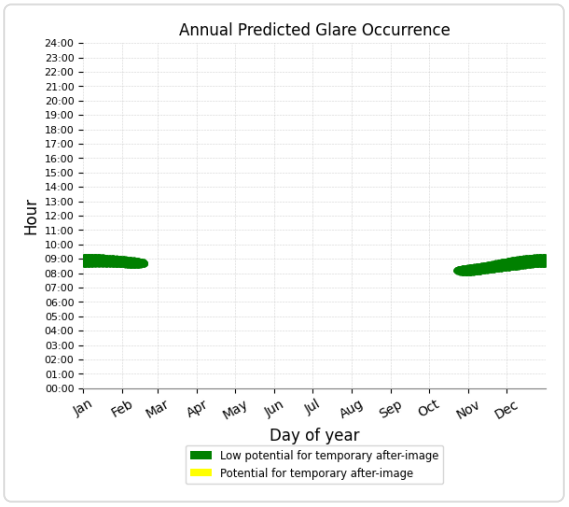
Receptor results ordered by category of glare

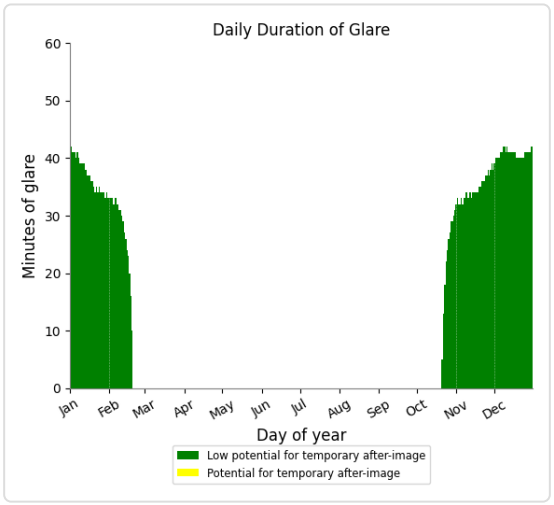
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	4,234	70.6	0	0.0
Flight path B	6,932	115.5	0	0.0
Flight path C	5,241	87.3	0	0.0
Flight path D	17,302	288.4	0	0.0
Flight path E	4,852	80.9	0	0.0
Flight path F	20,896	348.3	0	0.0
Flight path G	20,166	336.1	0	0.0
Flight path H	6,516	108.6	0	0.0

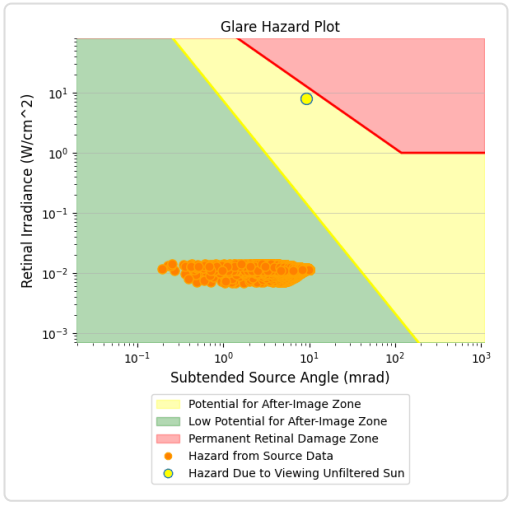
PMB02 and Route: Flight path A

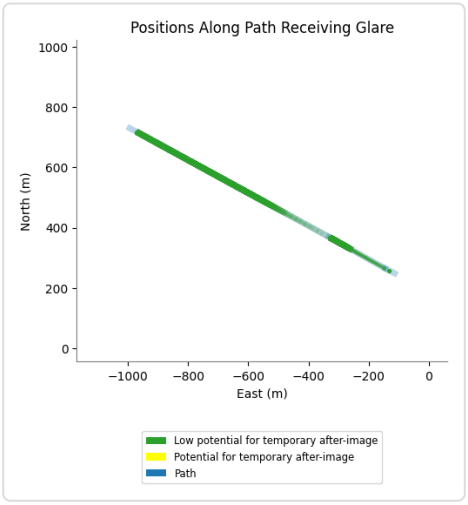
Yellow glare: none

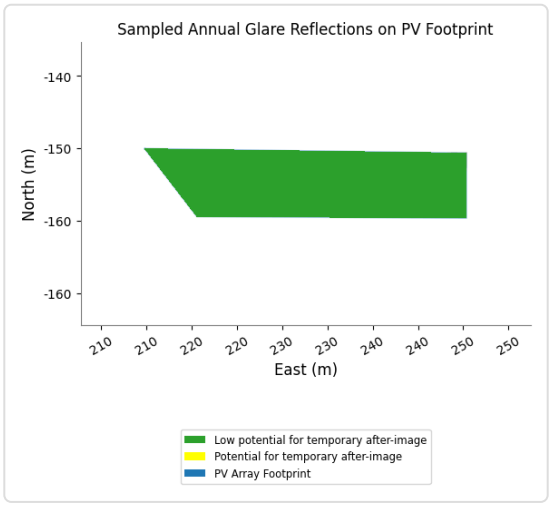
Green glare: 4,234 min.







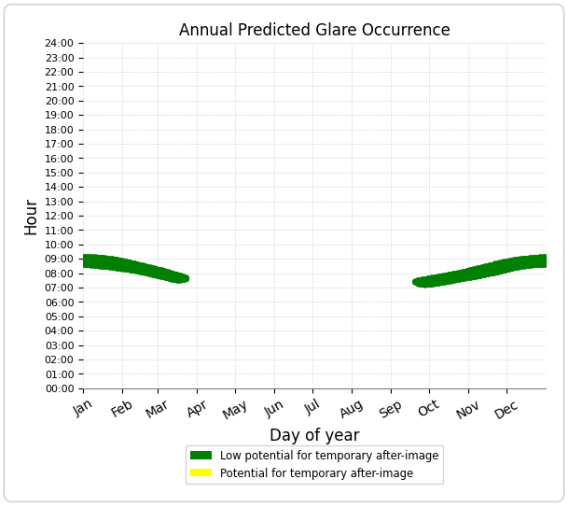


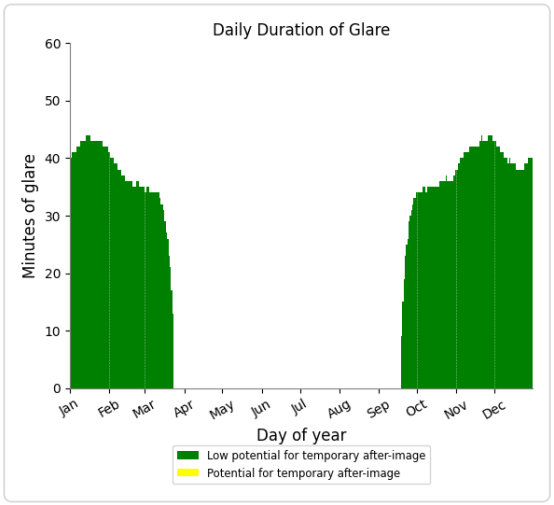


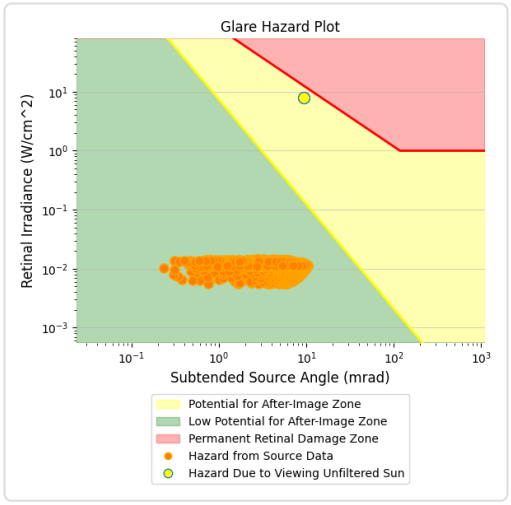
PMB02 and Route: Flight path B

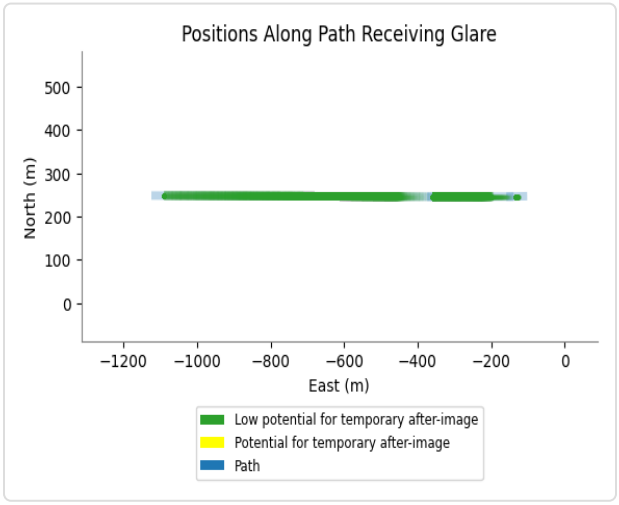
Yellow glare: none

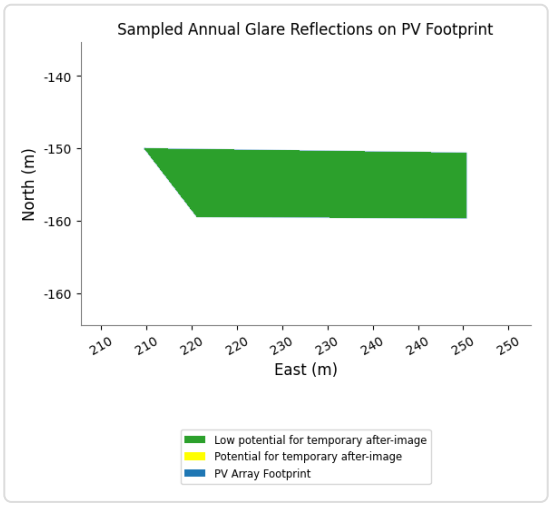
Green glare: 6,932 min.







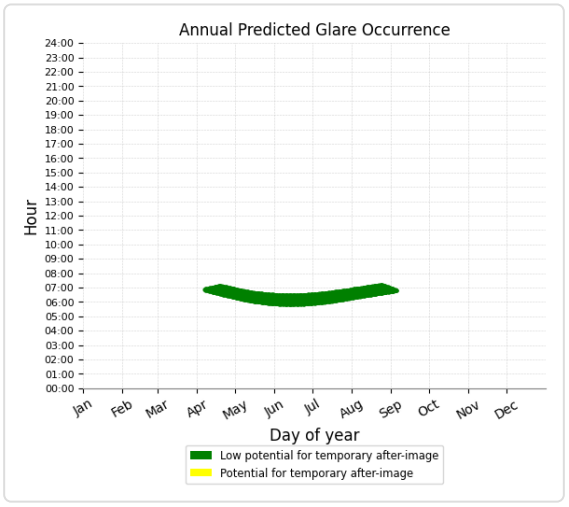


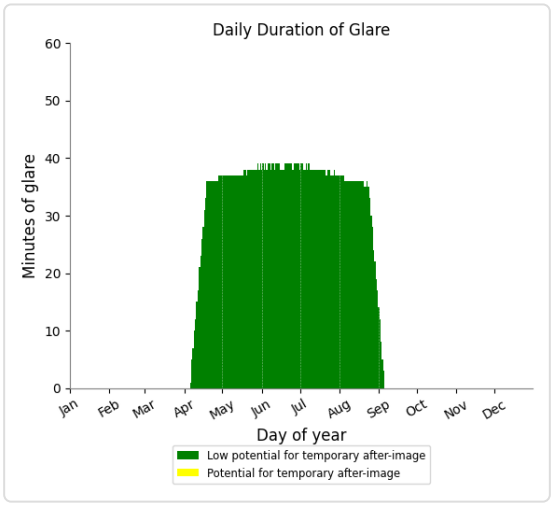


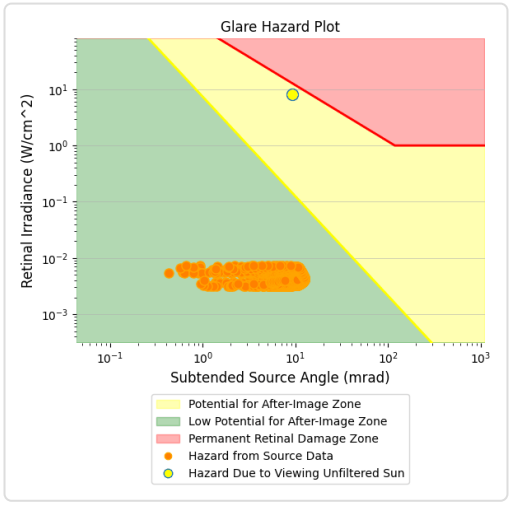
PMB02 and Route: Flight path C

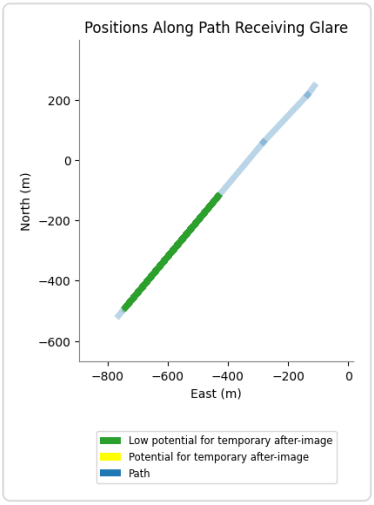
Yellow glare: none

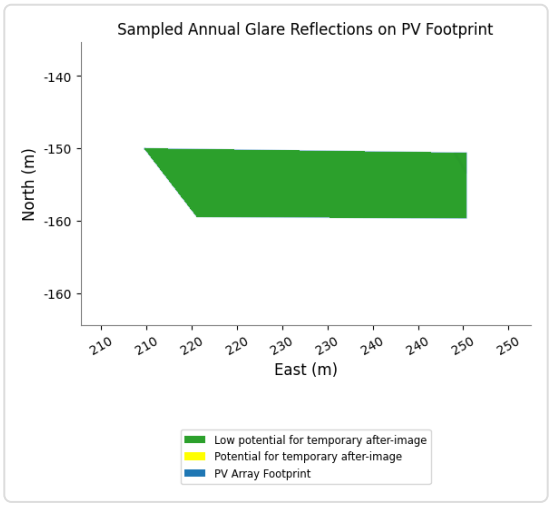
Green glare: 5,241 min.







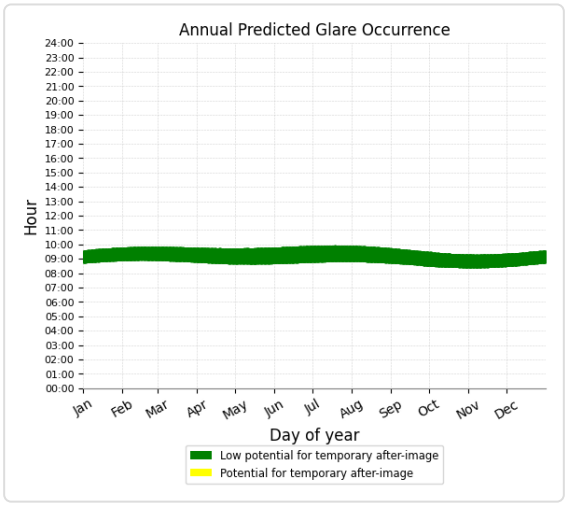


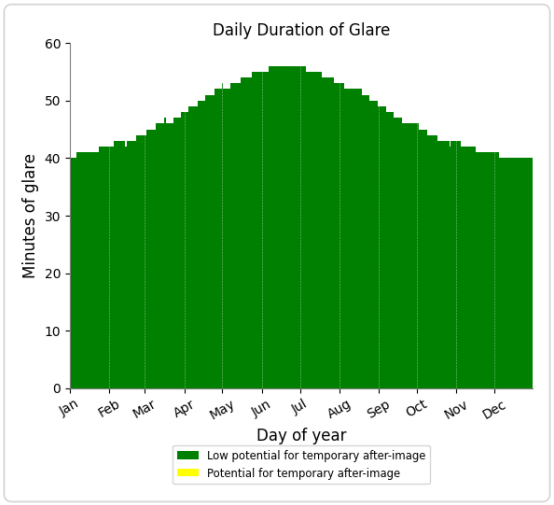


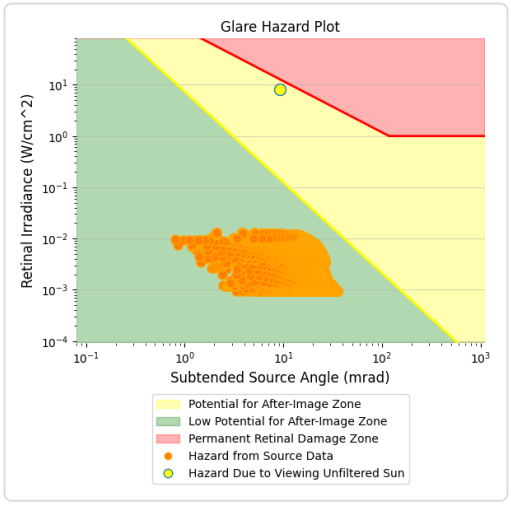
PMB02 and Route: Flight path D

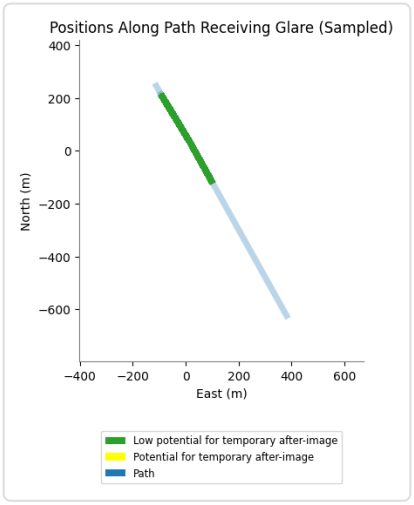
Yellow glare: none

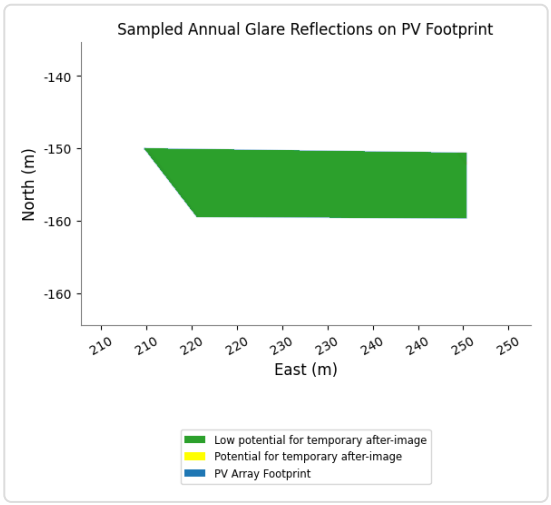
Green glare: 17,302 min.







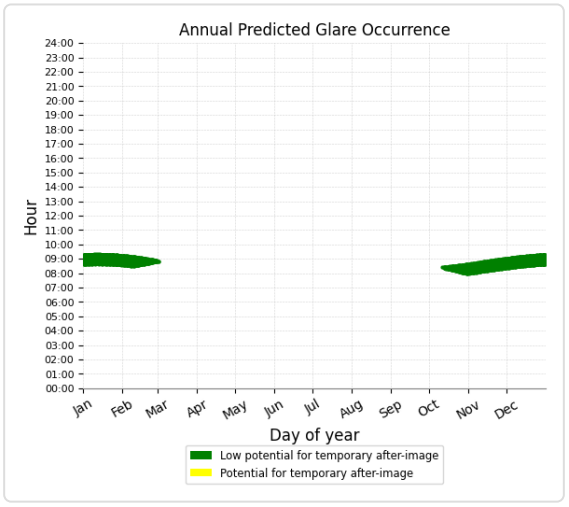


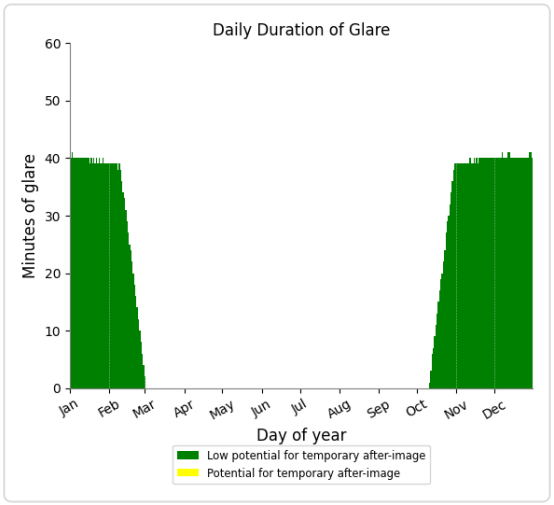


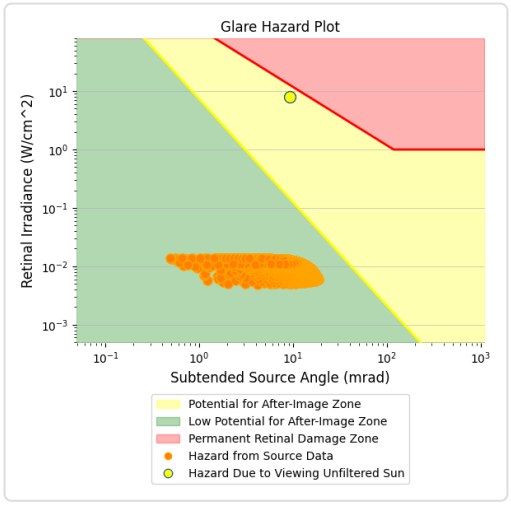
PMB02 and Route: Flight path E

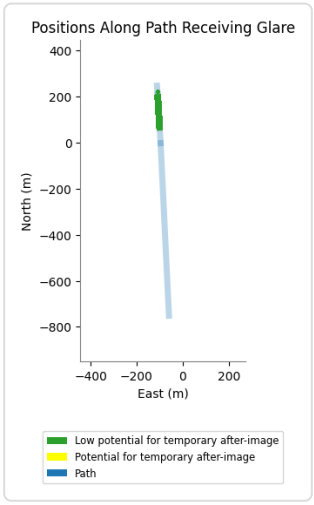
Yellow glare: none

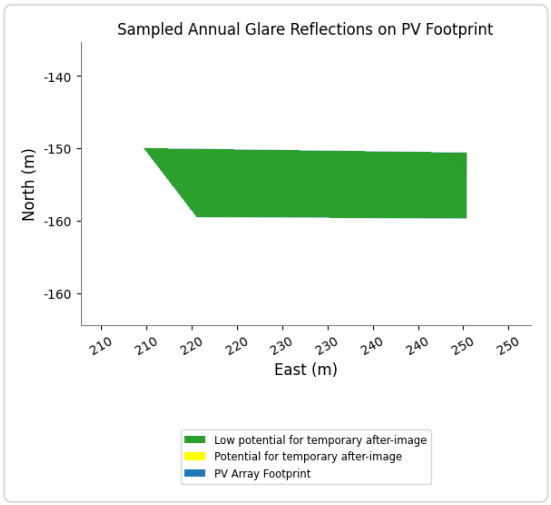
Green glare: 4,852 min.







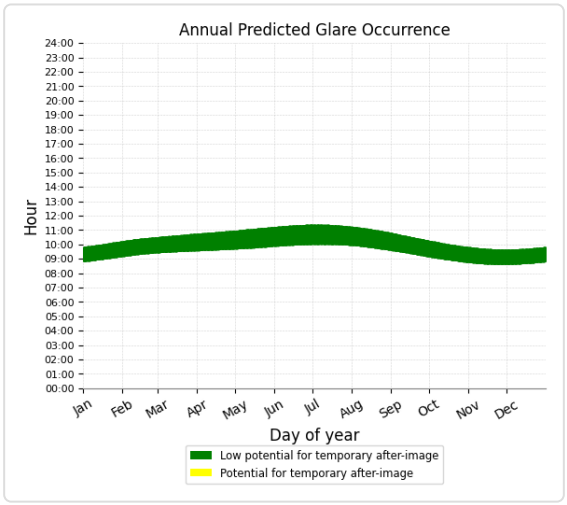


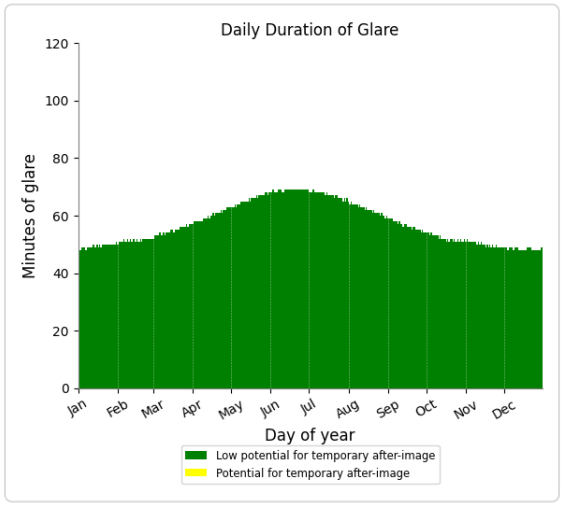


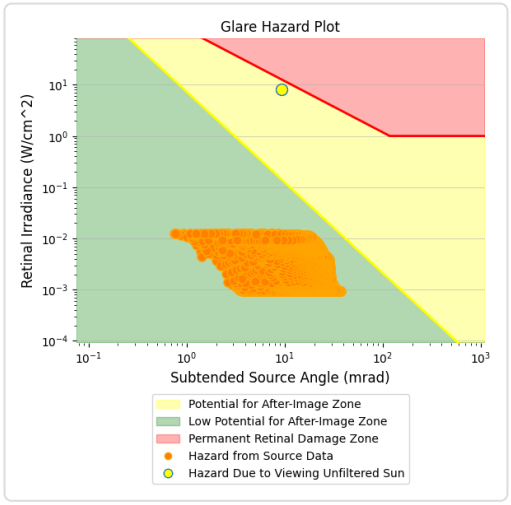
PMB02 and Route: Flight path F

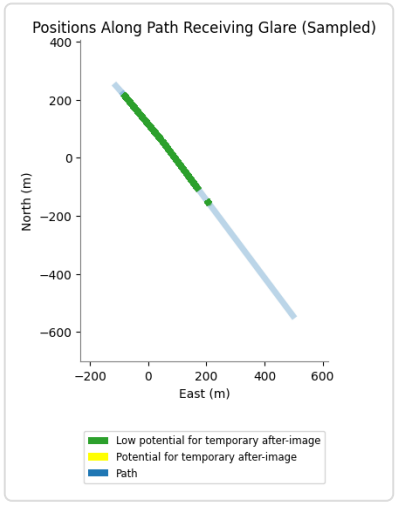
Yellow glare: none

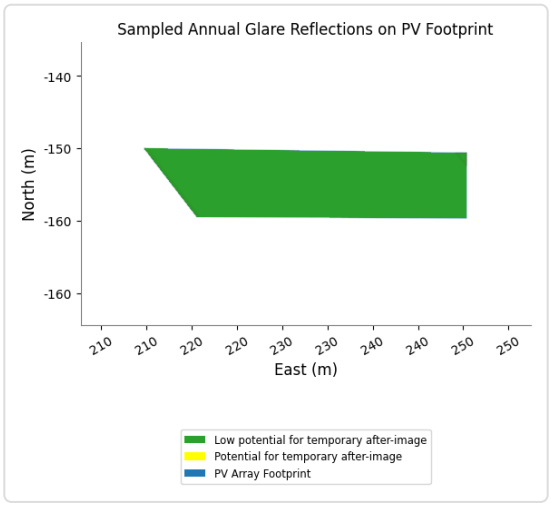
Green glare: 20,896 min.







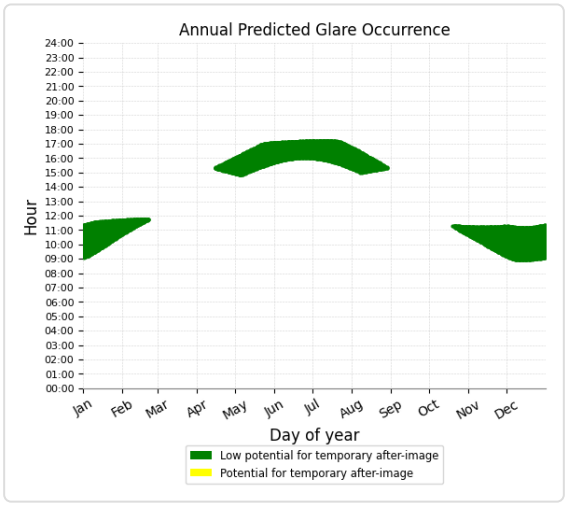


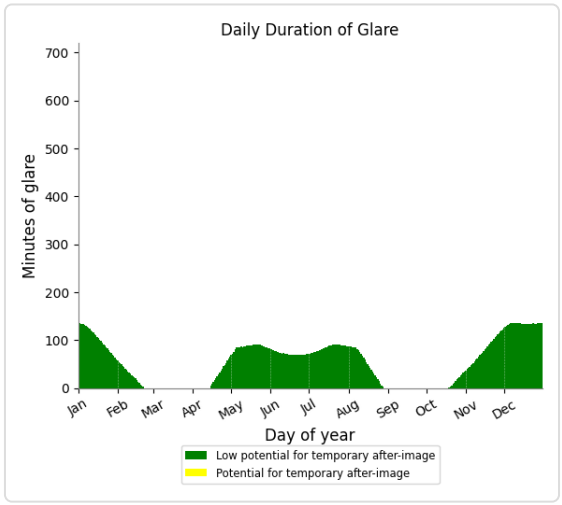


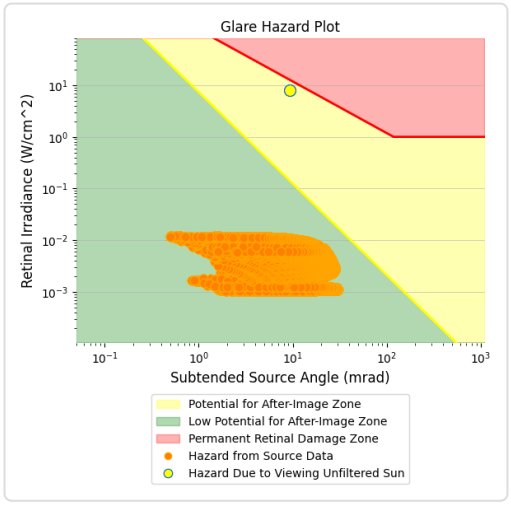
PMB02 and Route: Flight path G

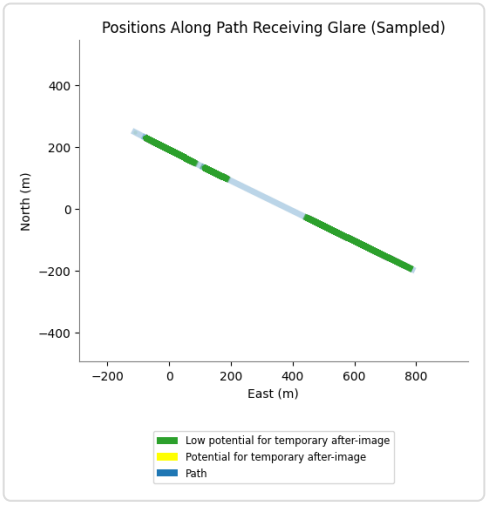
Yellow glare: none

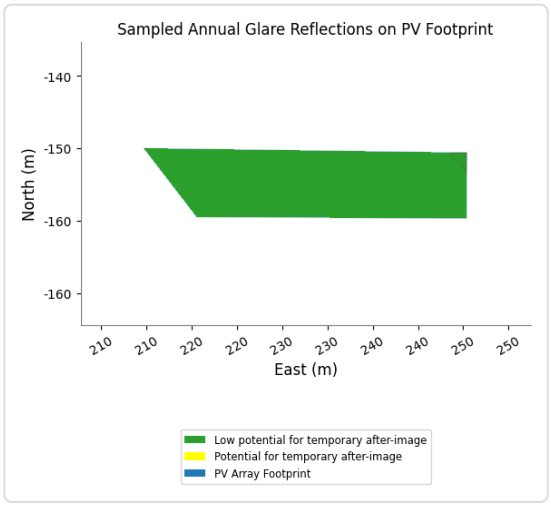
Green glare: 20,166 min.







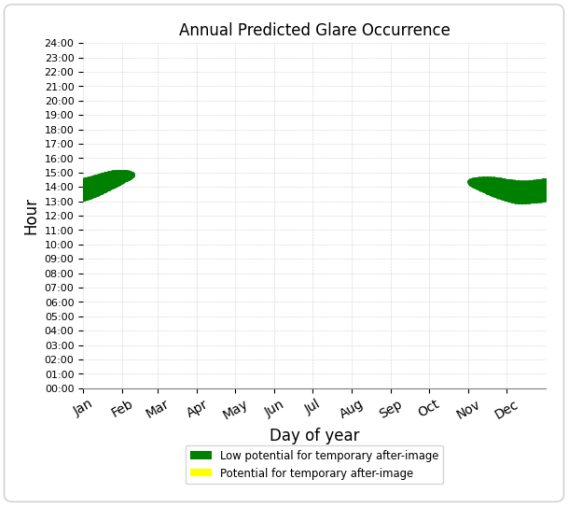


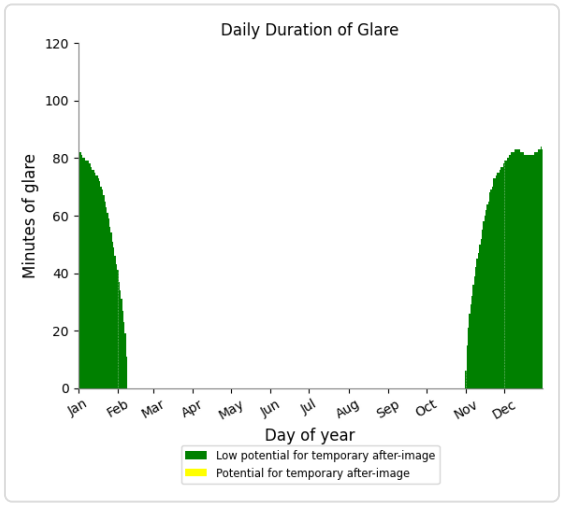


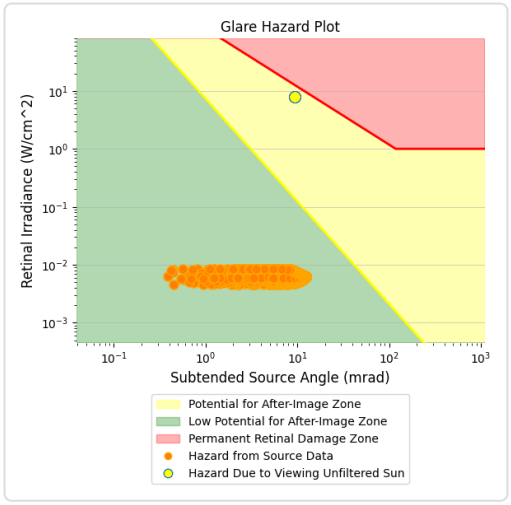
PMB02 and Route: Flight path H

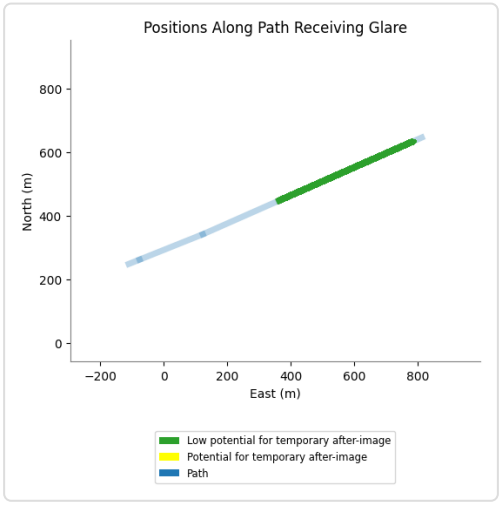
Yellow glare: none

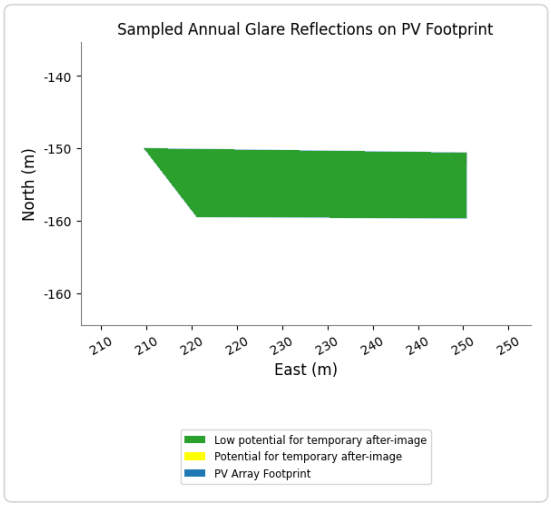
Green glare: 6,516 min.











PV: PMB03 low potential for temporary after-image

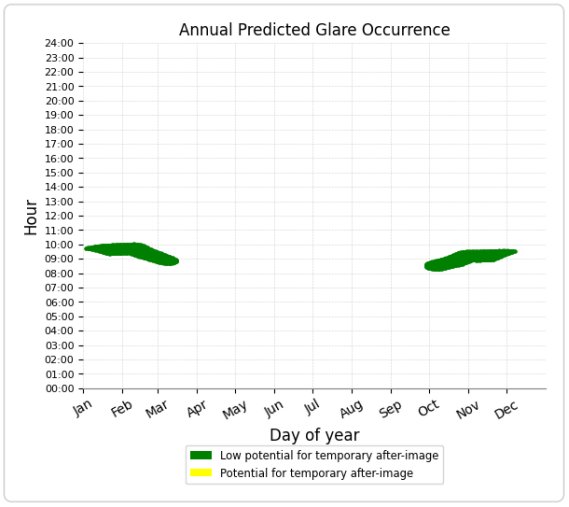
Receptor results ordered by category of glare

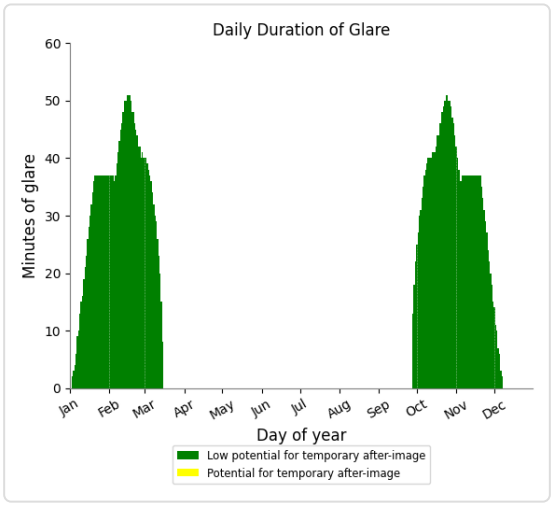
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	4,805	80.1	0	0.0
Flight path B	5,982	99.7	0	0.0
Flight path C	5,836	97.3	0	0.0
Flight path D	14,426	240.4	0	0.0
Flight path E	5,570	92.8	0	0.0
Flight path F	15,847	264.1	0	0.0
Flight path G	14,229	237.2	0	0.0
Flight path H	3,542	59.0	0	0.0

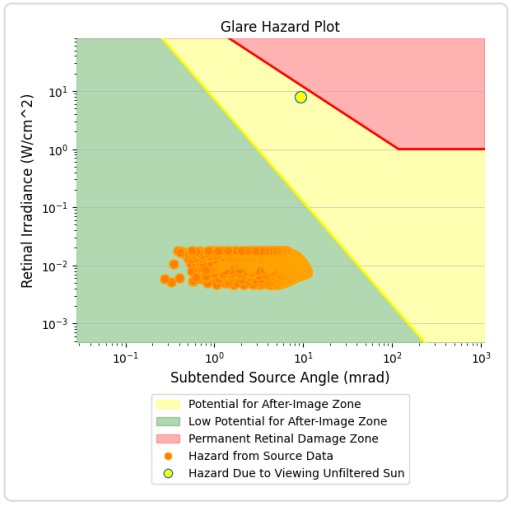
PMB03 and Route: Flight path A

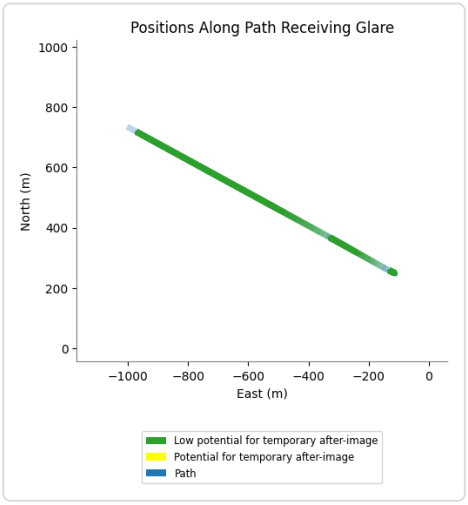
Yellow glare: none

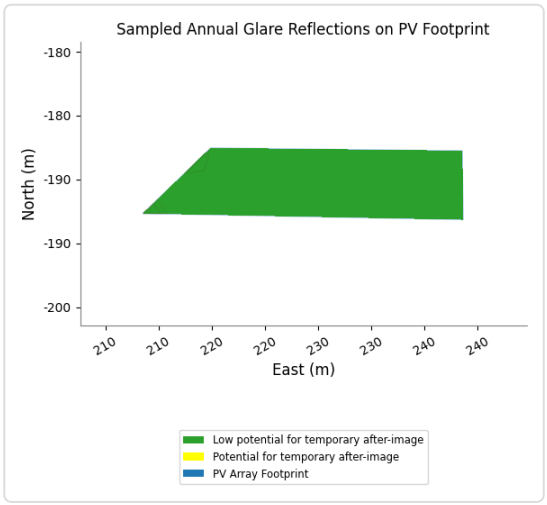
Green glare: 4,805 min.







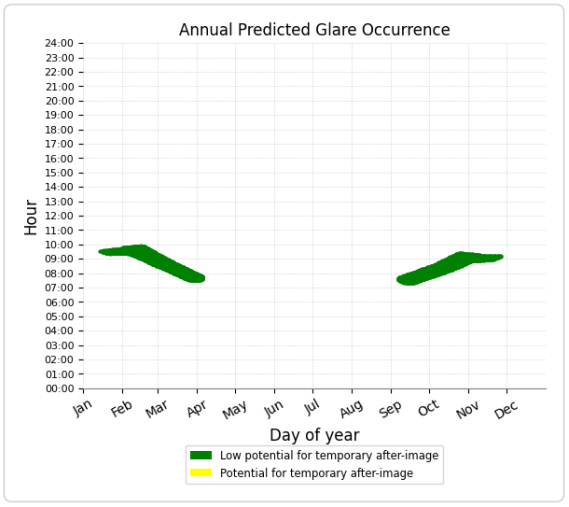


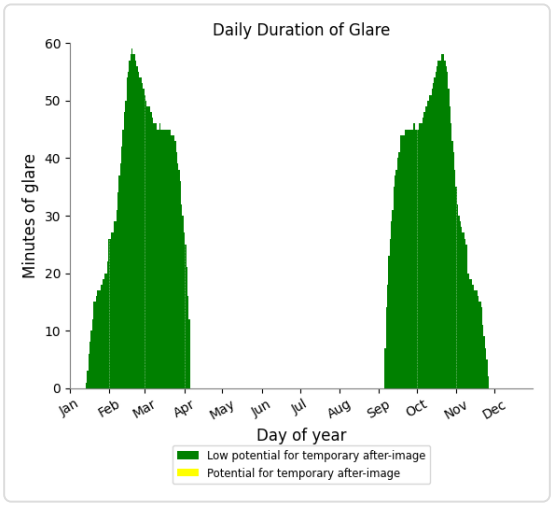


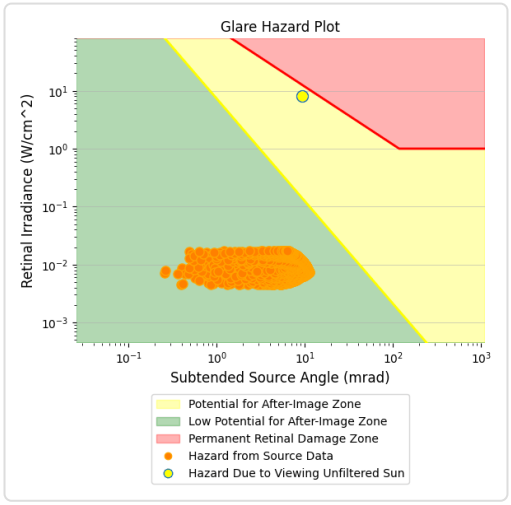
PMB03 and Route: Flight path B

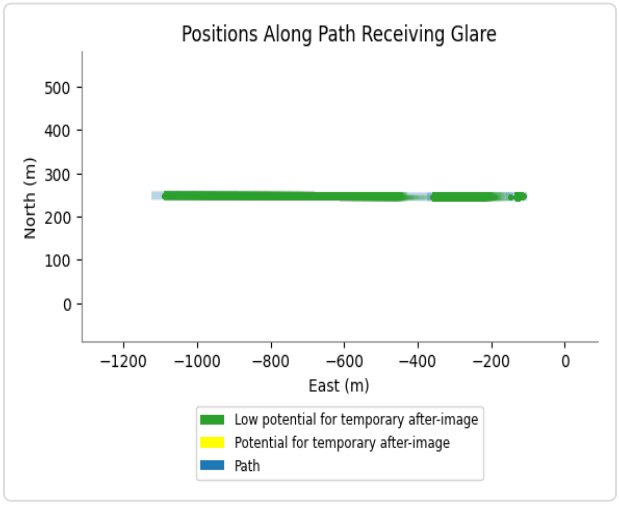
Yellow glare: none

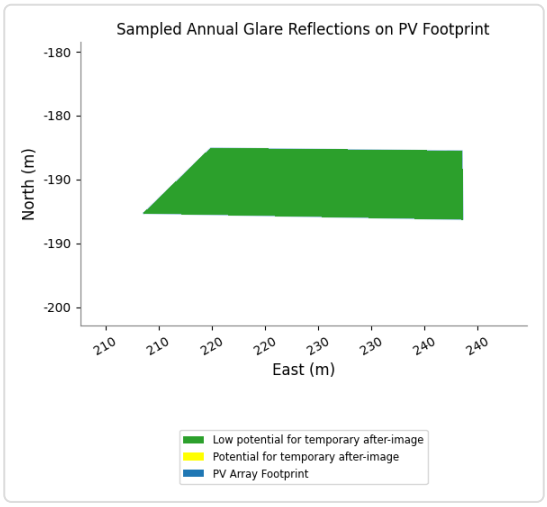
Green glare: 5,982 min.







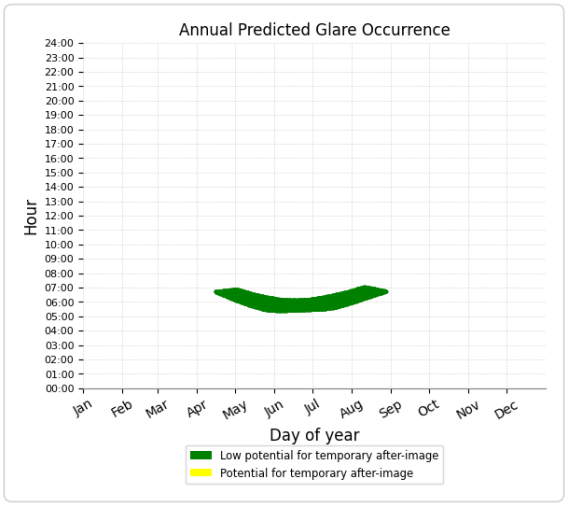


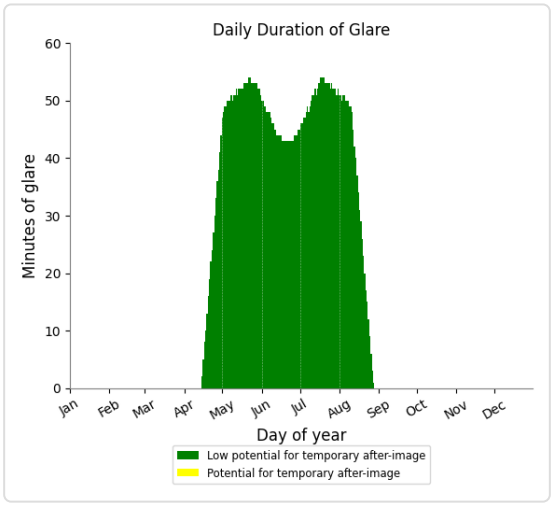


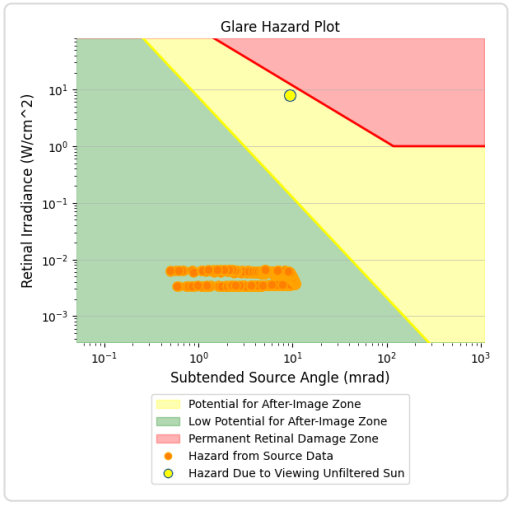
PMB03 and Route: Flight path C

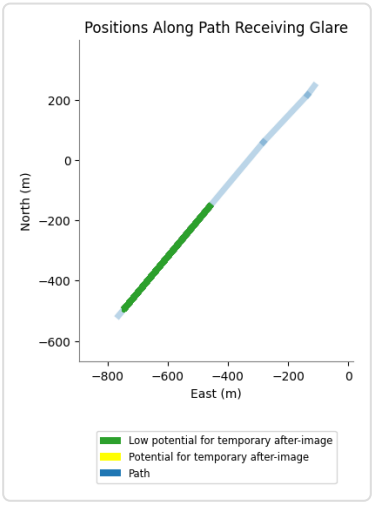
Yellow glare: none

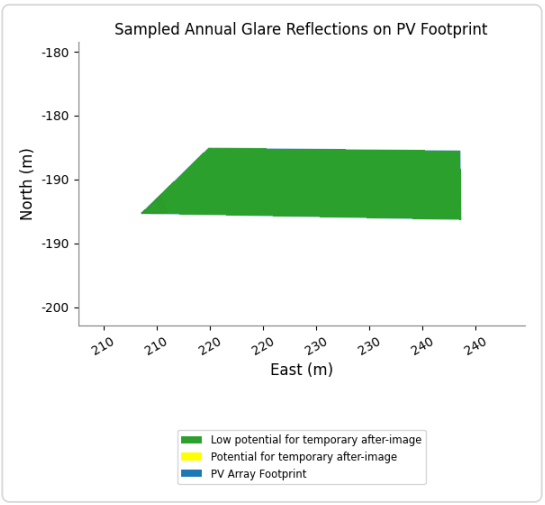
Green glare: 5,836 min.







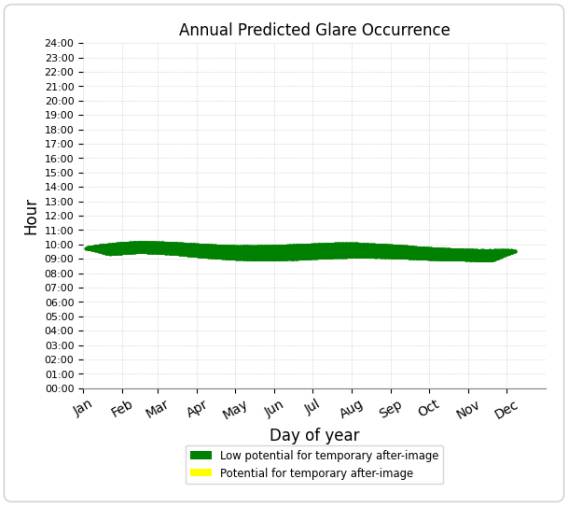


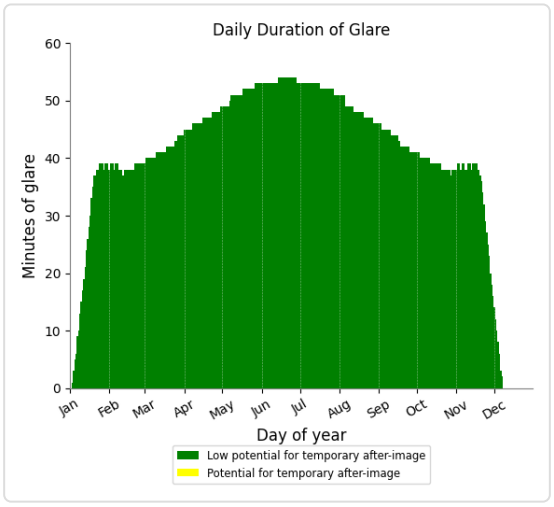


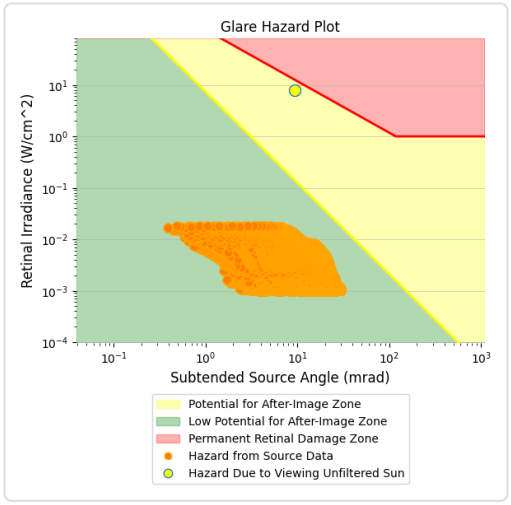
PMB03 and Route: Flight path D

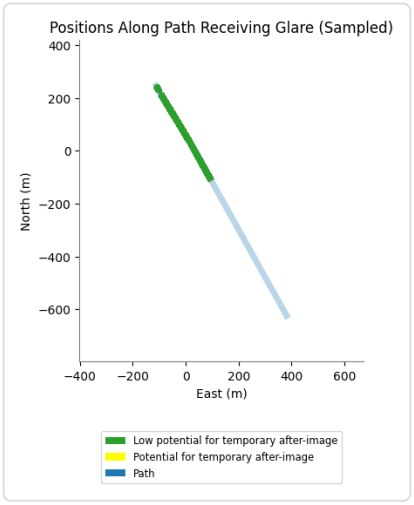
Yellow glare: none

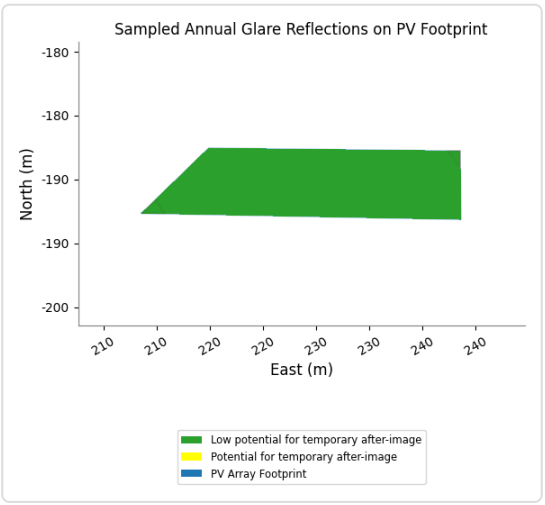
Green glare: 14,426 min.







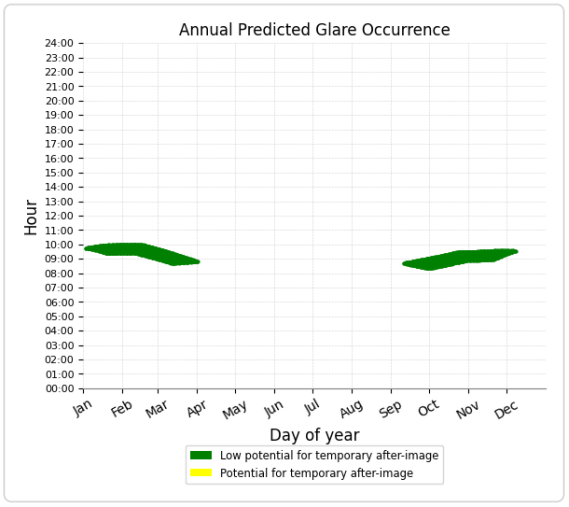


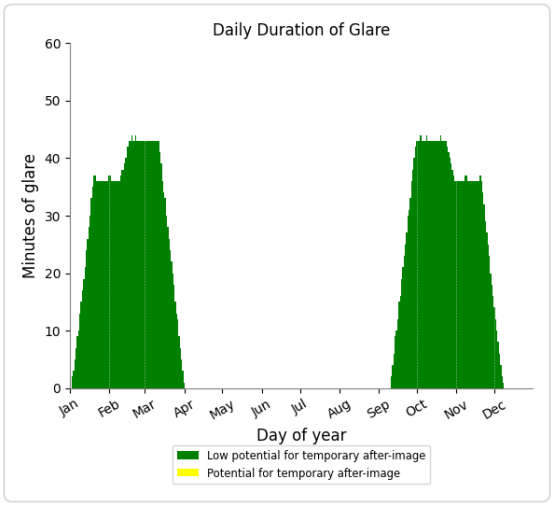


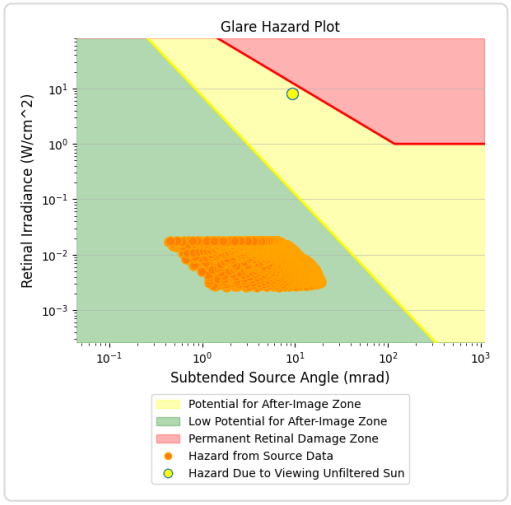
PMB03 and Route: Flight path E

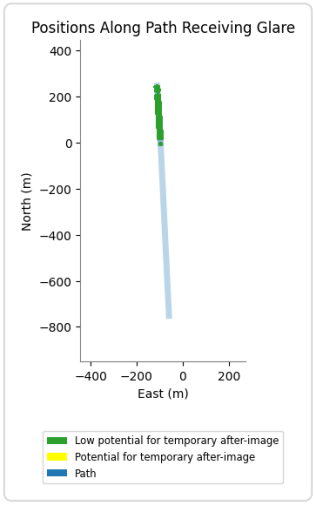
Yellow glare: none

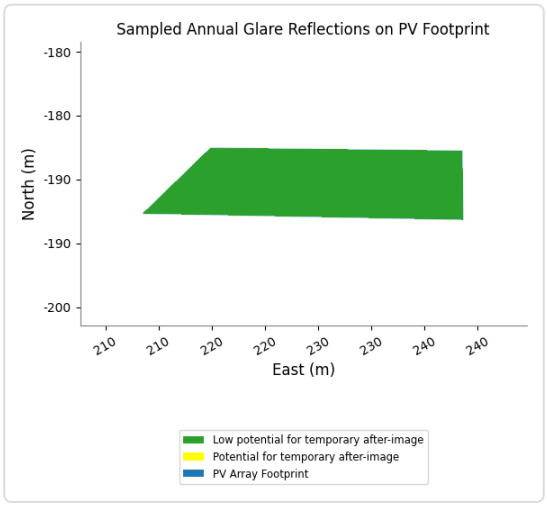
Green glare: 5,570 min.







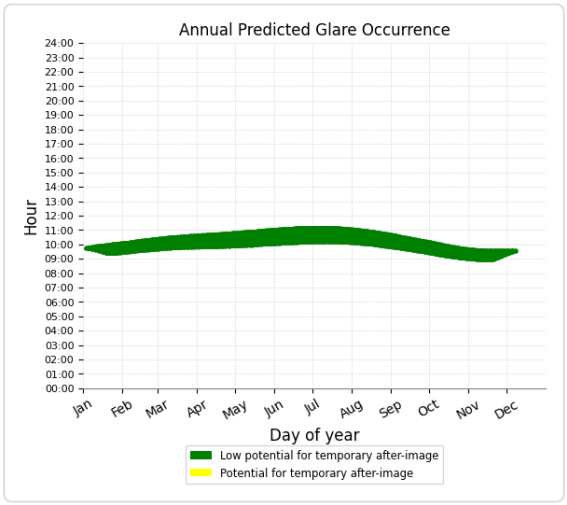


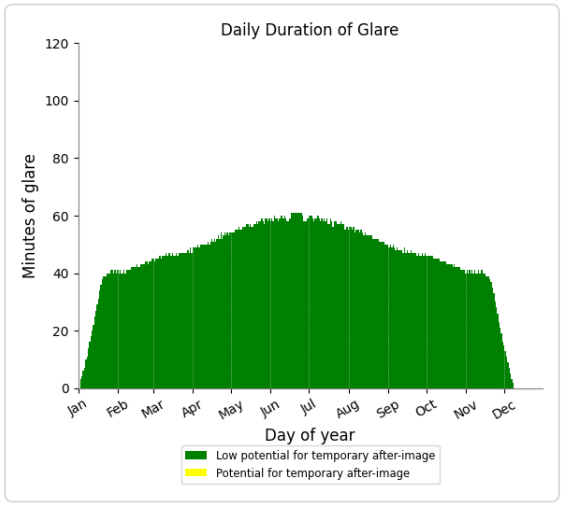


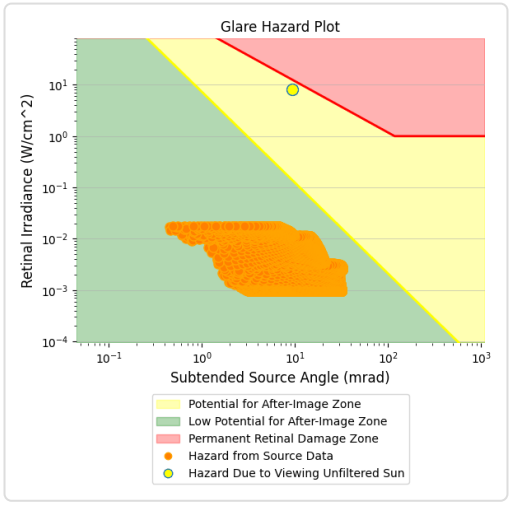
PMB03 and Route: Flight path F

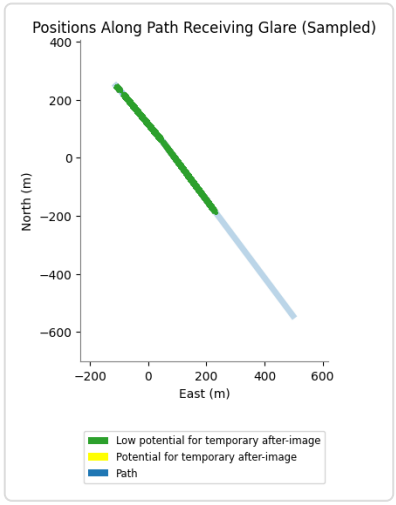
Yellow glare: none

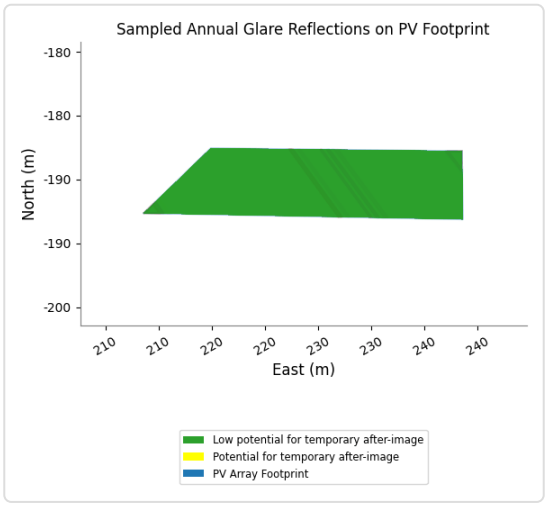
Green glare: 15,847 min.







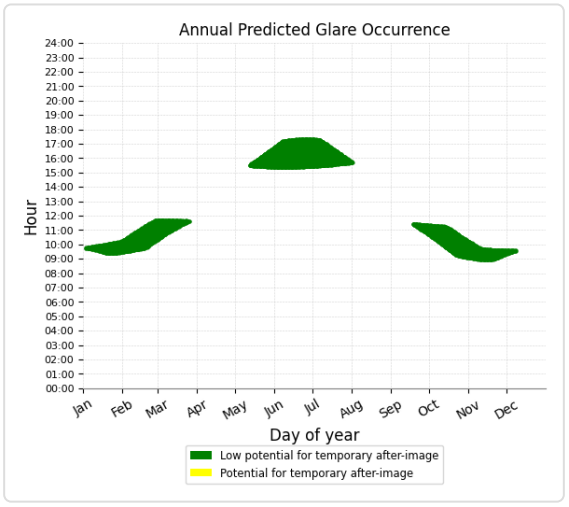


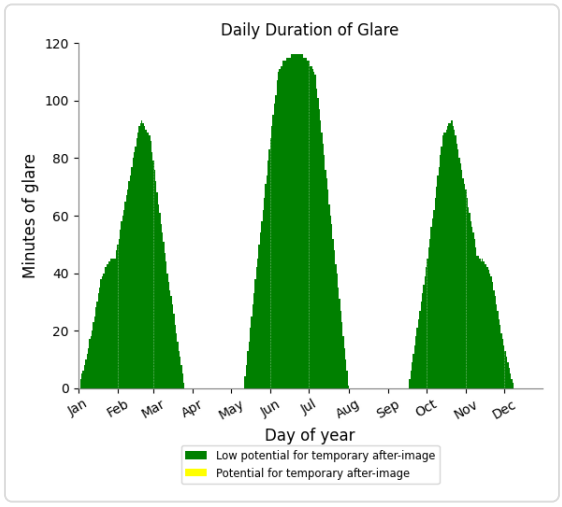


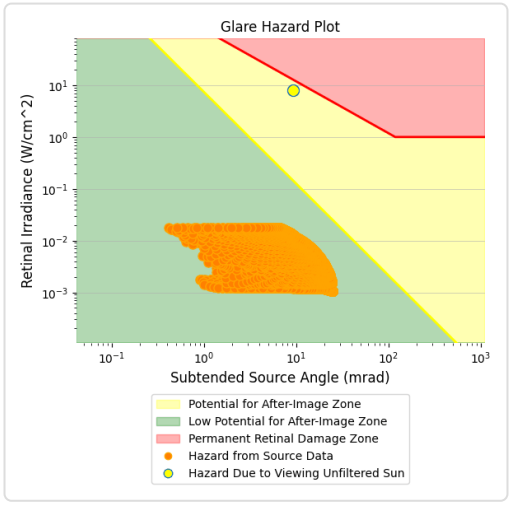
PMB03 and Route: Flight path G

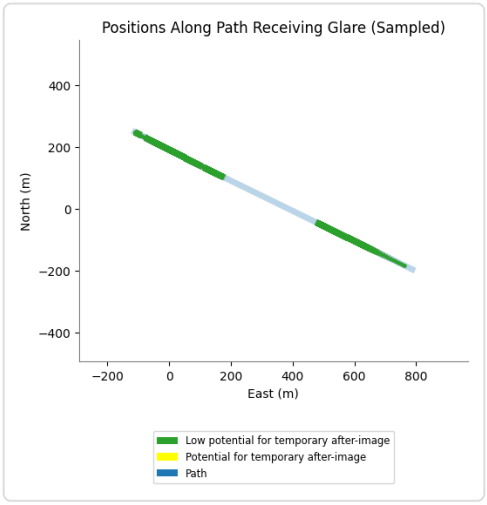
Yellow glare: none

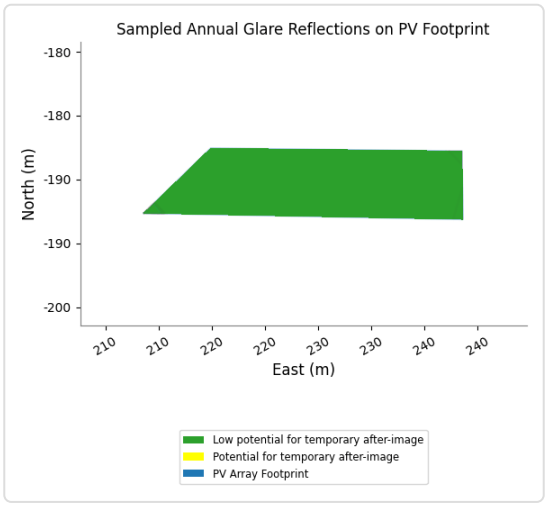
Green glare: 14,229 min.







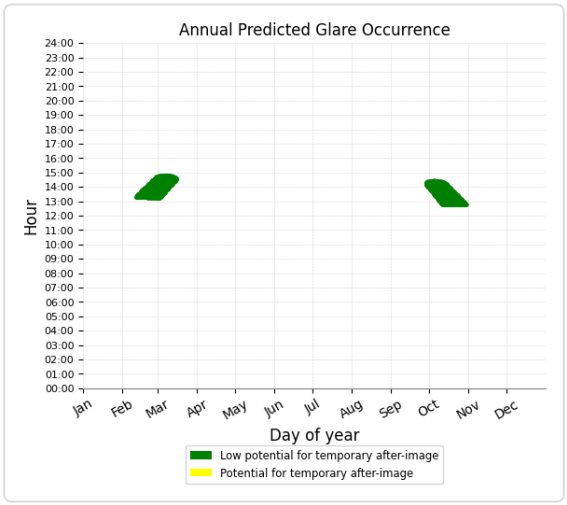


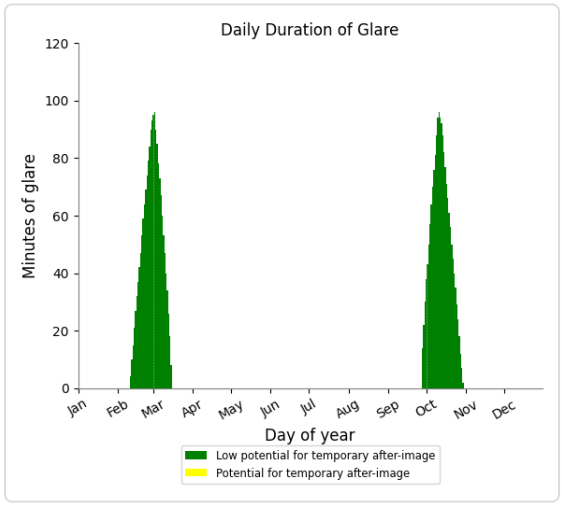


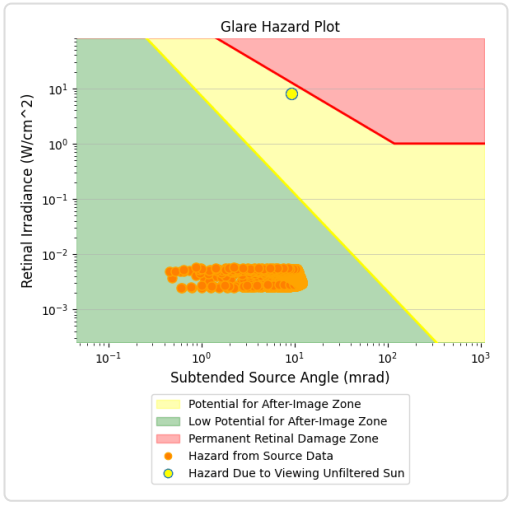
PMB03 and Route: Flight path H

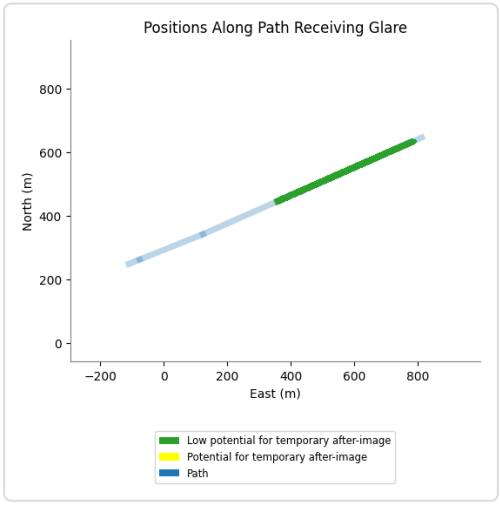
Yellow glare: none

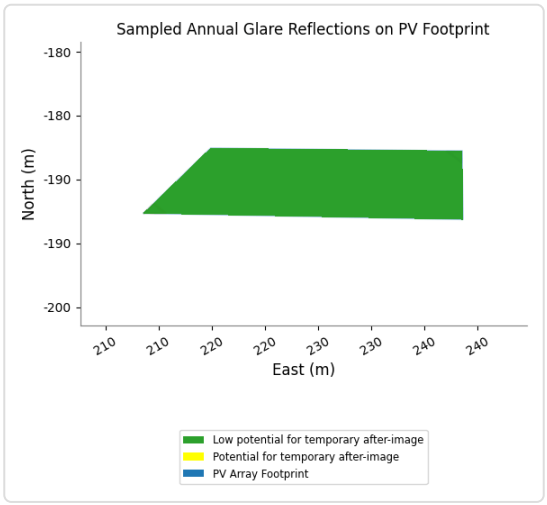
Green glare: 3,542 min.











PV: PMB04 low potential for temporary after-image

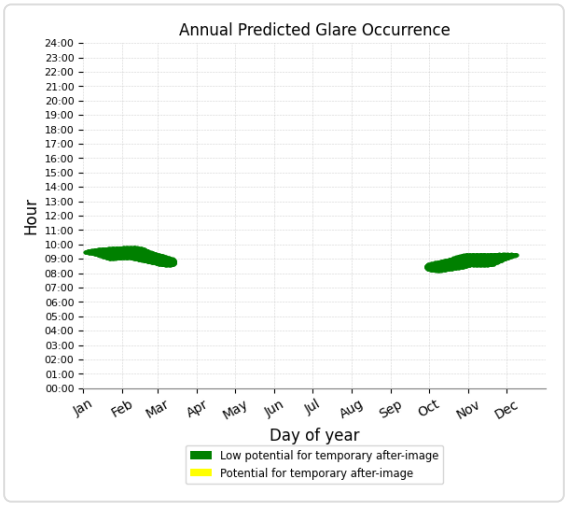
Receptor results ordered by category of glare

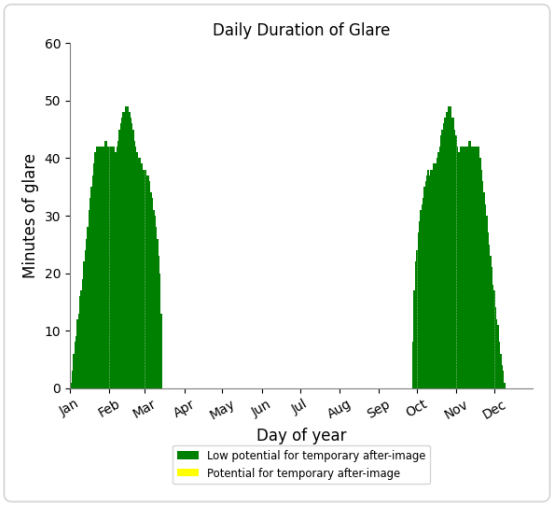
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	4,978	83.0	0	0.0
Flight path B	6,965	116.1	0	0.0
Flight path C	5,793	96.5	0	0.0
Flight path D	16,979	283.0	0	0.0
Flight path E	5,325	88.8	0	0.0
Flight path F	18,729	312.1	0	0.0
Flight path G	14,599	243.3	0	0.0
Flight path H	3,349	55.8	0	0.0

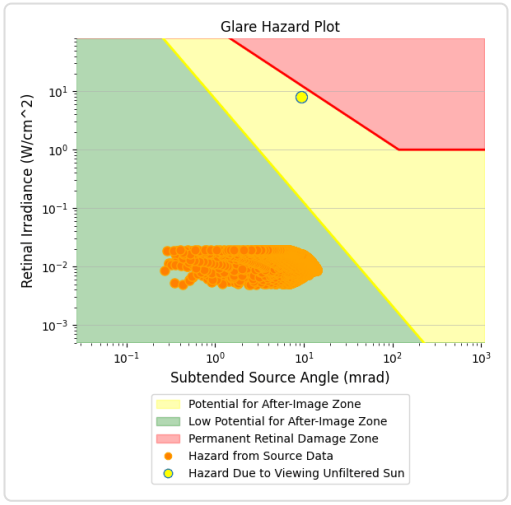
PMB04 and Route: Flight path A

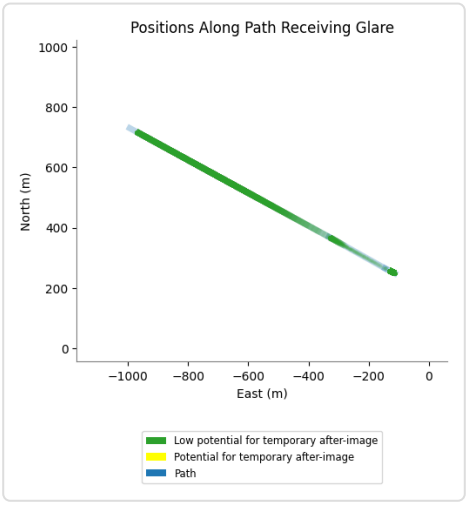
Yellow glare: none

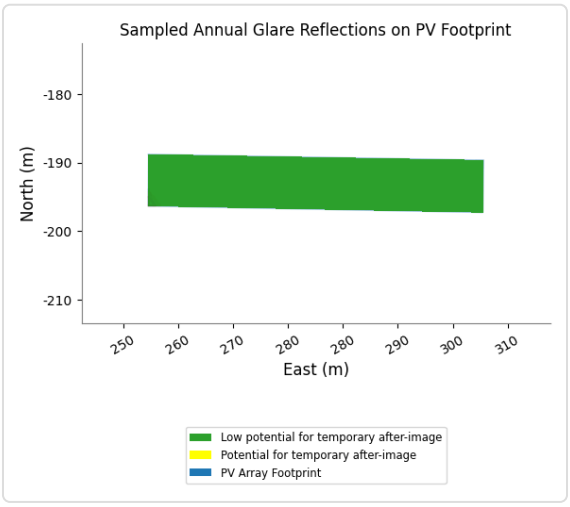
Green glare: 4,978 min.







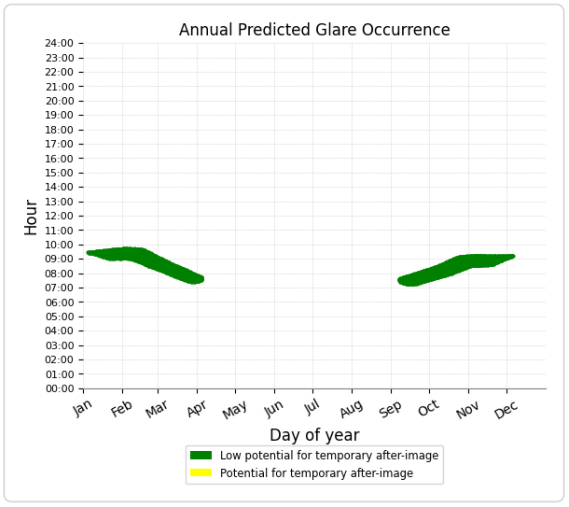


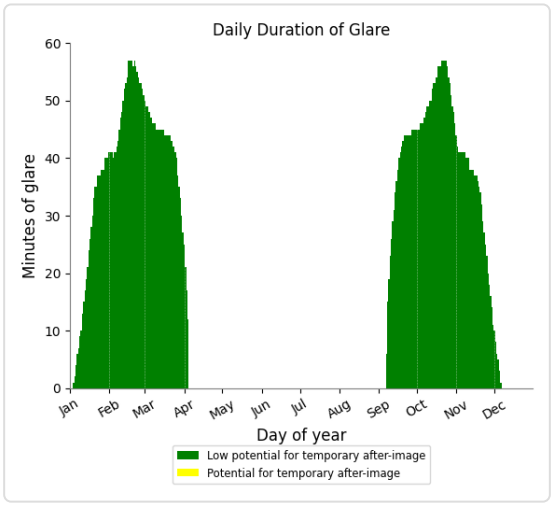


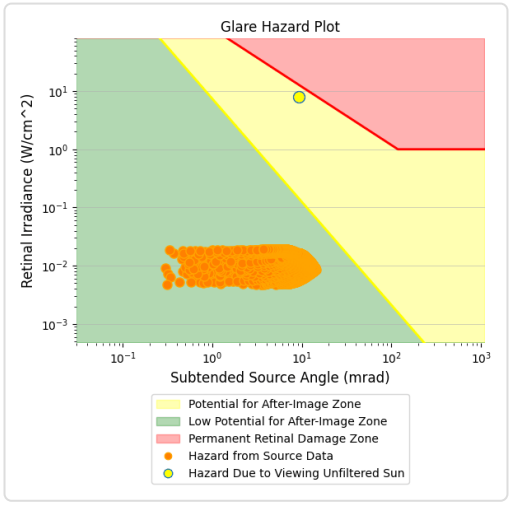
PMB04 and Route: Flight path B

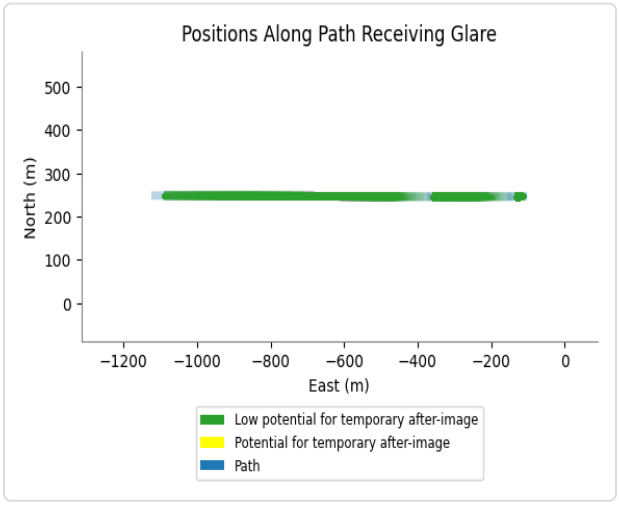
Yellow glare: none

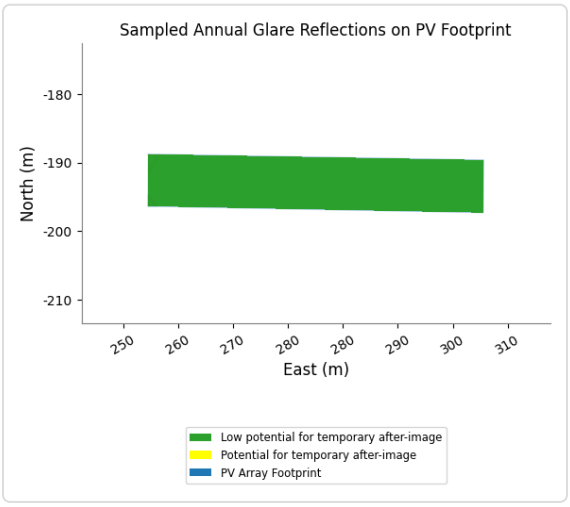
Green glare: 6,965 min.







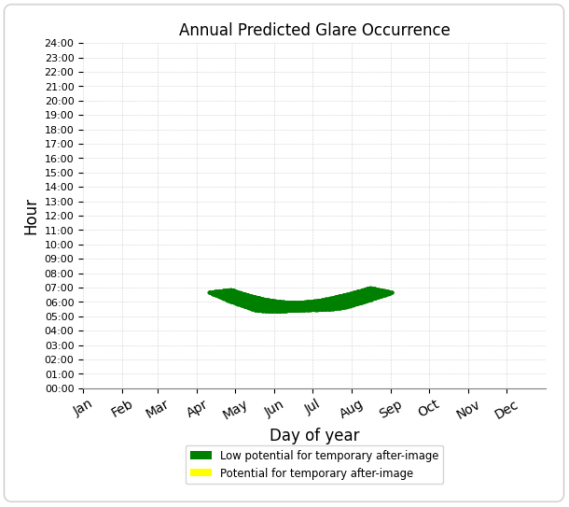


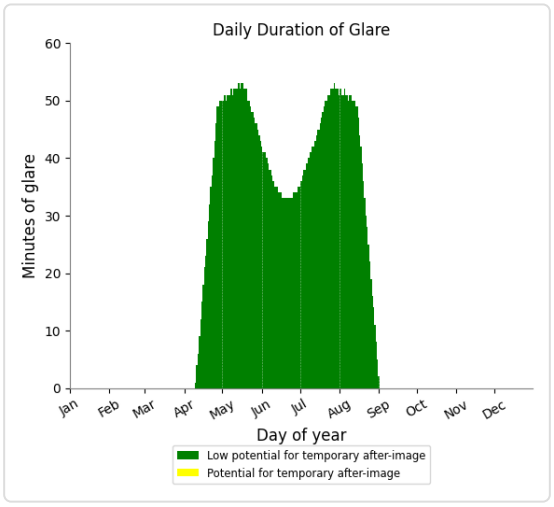


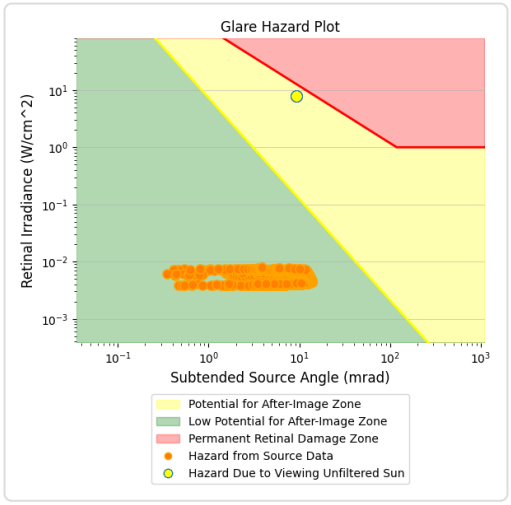
PMB04 and Route: Flight path C

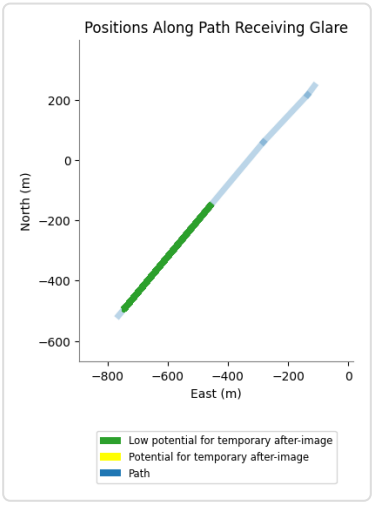
Yellow glare: none

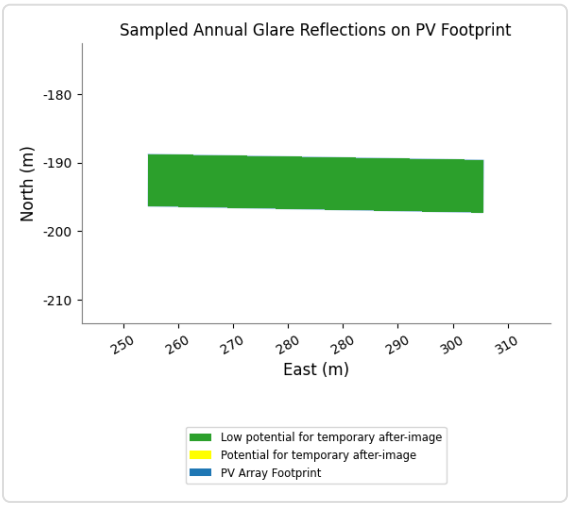
Green glare: 5,793 min.







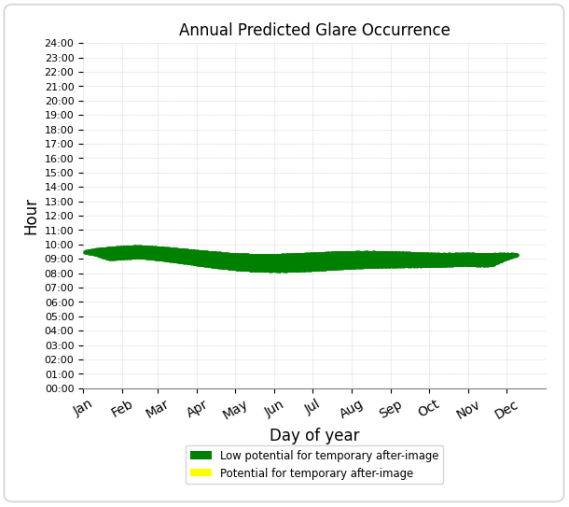


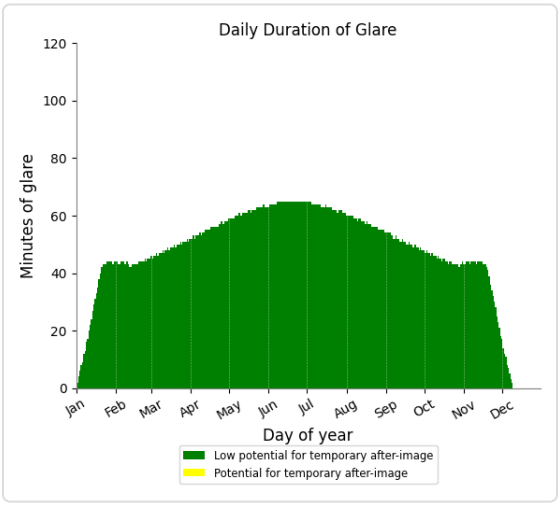


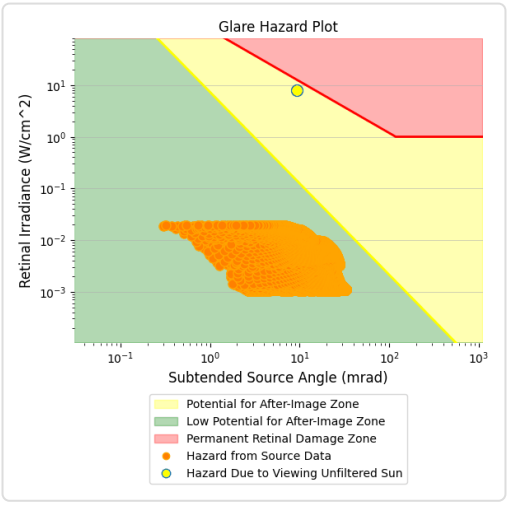
PMB04 and Route: Flight path D

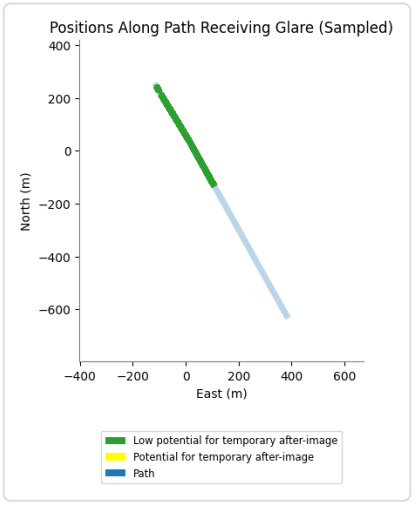
Yellow glare: none

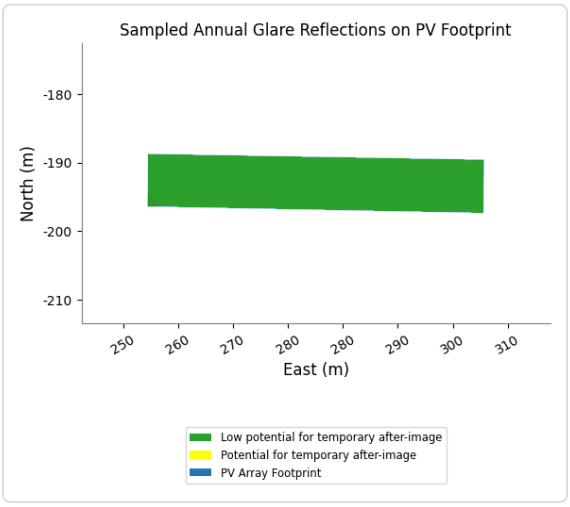
Green glare: 16,979 min.







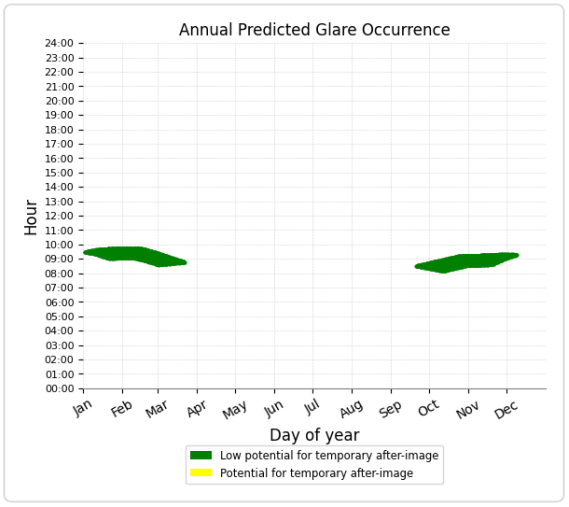


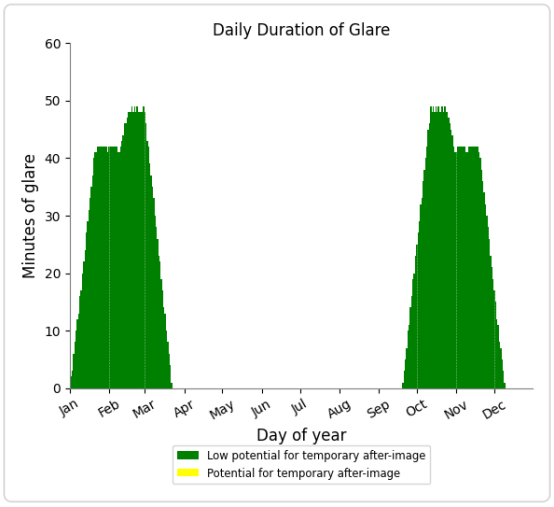


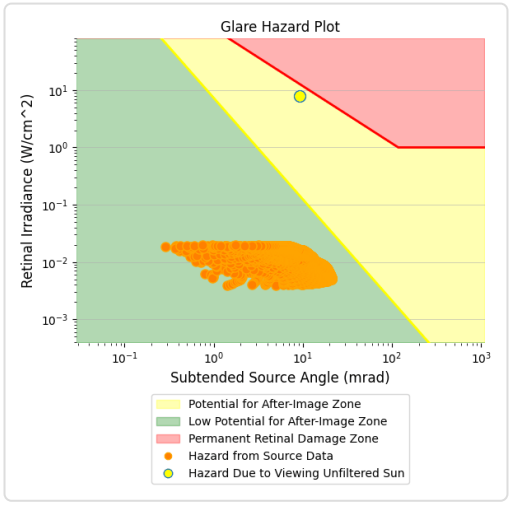
PMB04 and Route: Flight path E

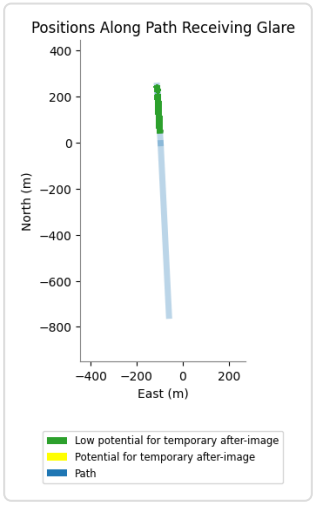
Yellow glare: none

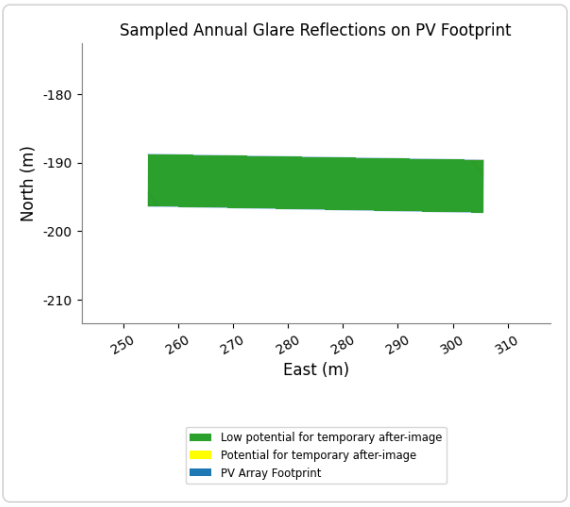
Green glare: 5,325 min.







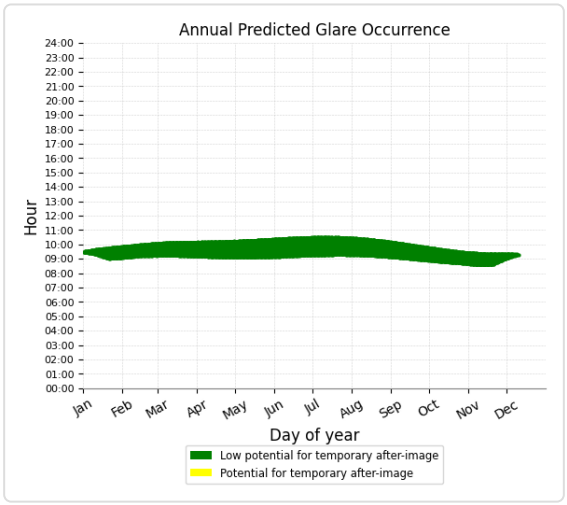


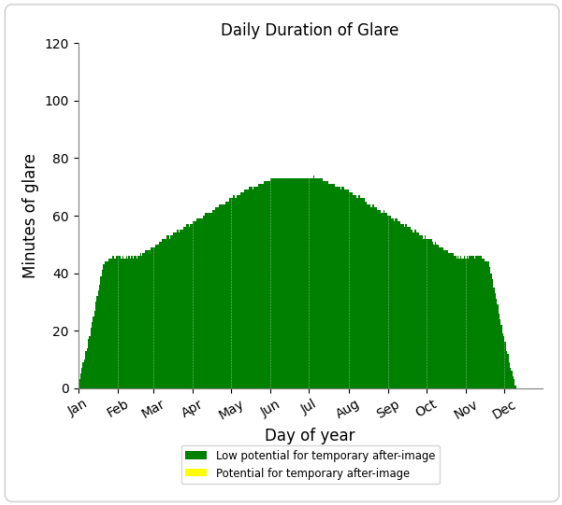


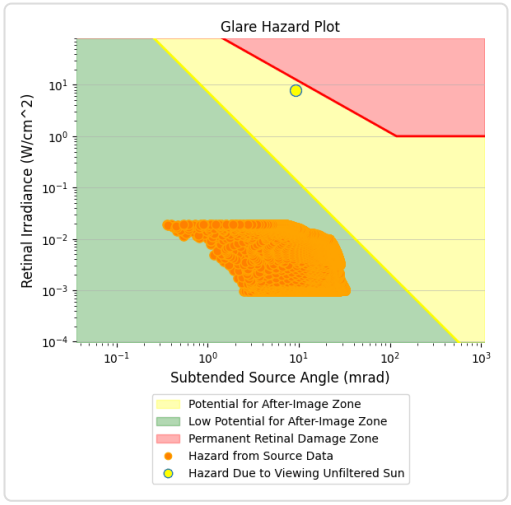
PMB04 and Route: Flight path F

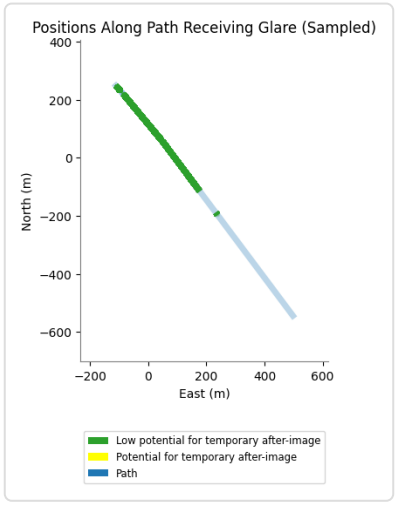
Yellow glare: none

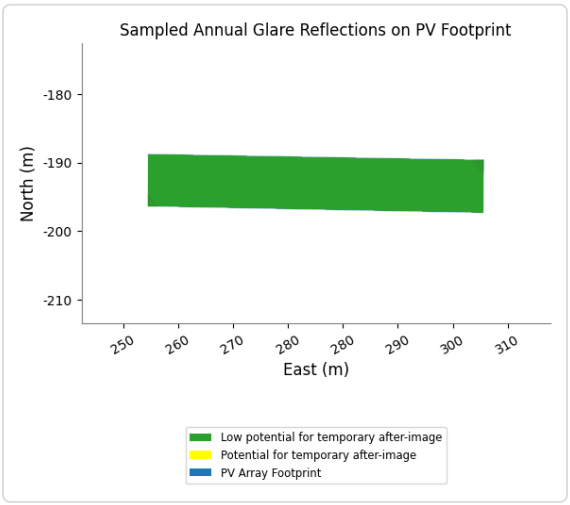
Green glare: 18,729 min.







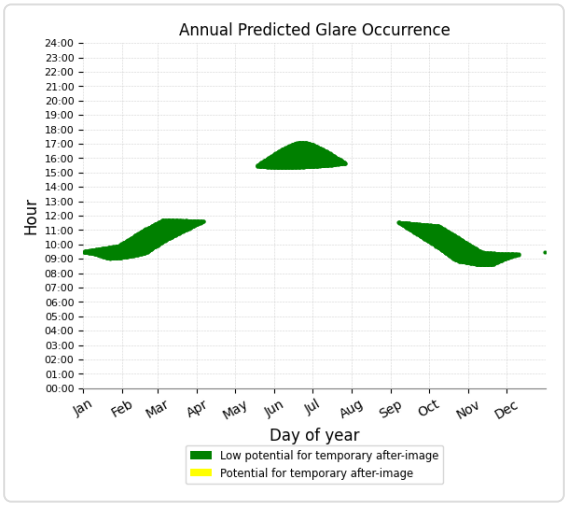


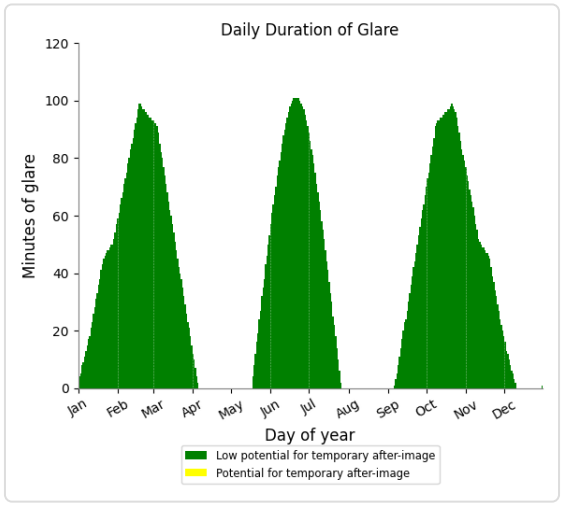


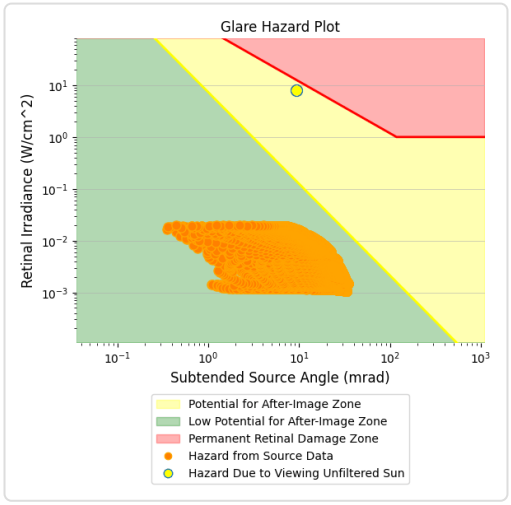
PMB04 and Route: Flight path G

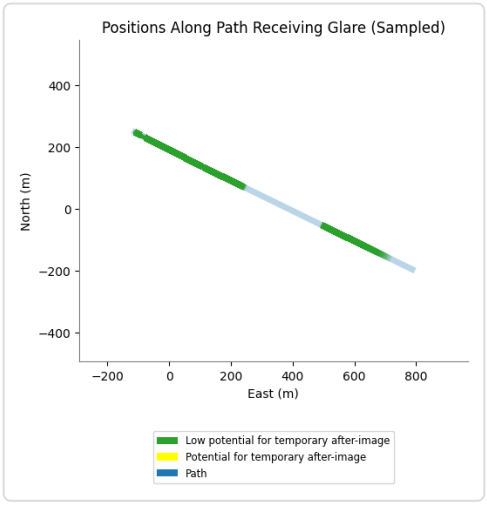
Yellow glare: none

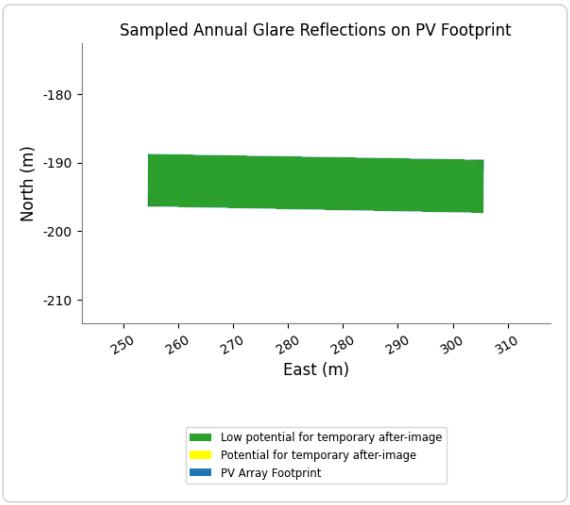
Green glare: 14,599 min.







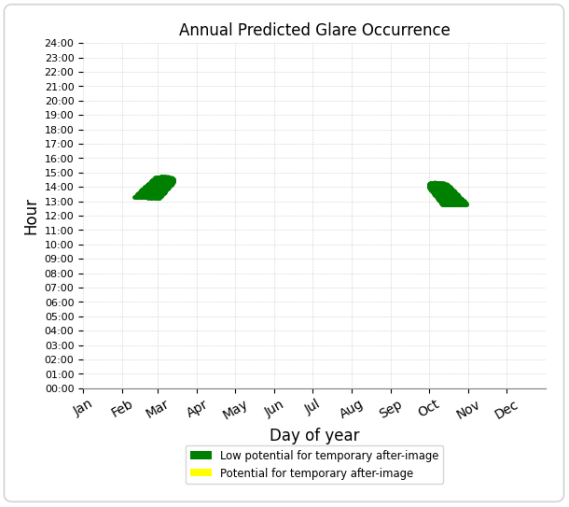


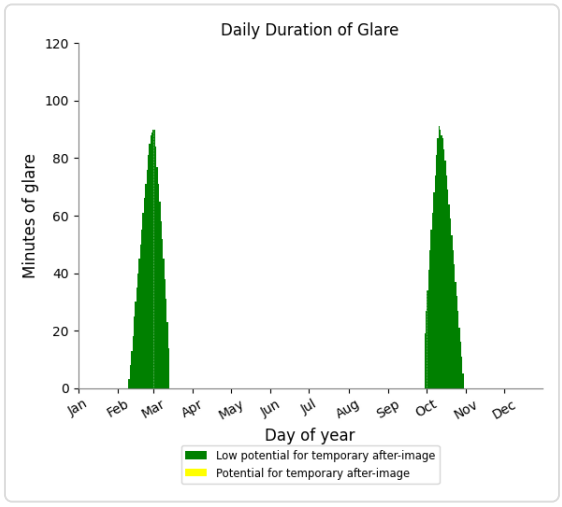


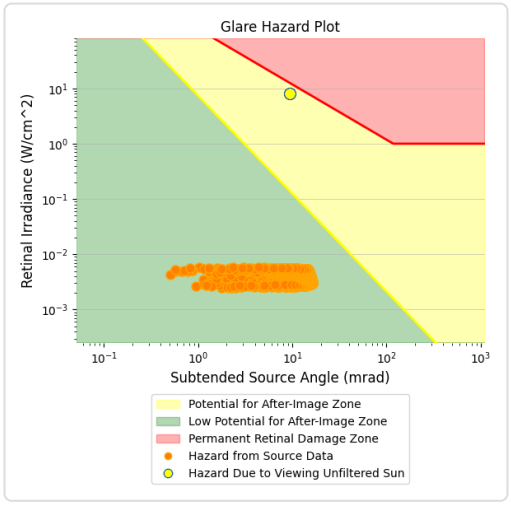
PMB04 and Route: Flight path H

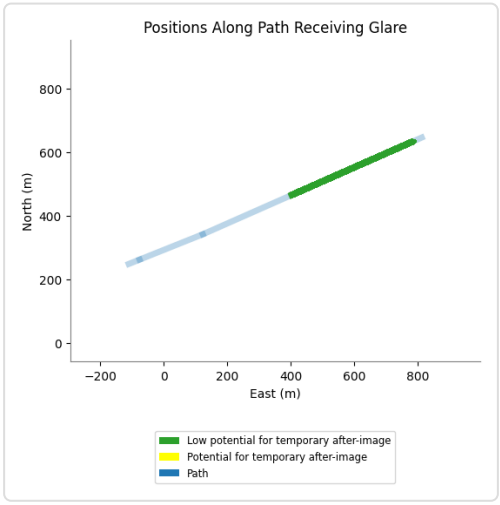
Yellow glare: none

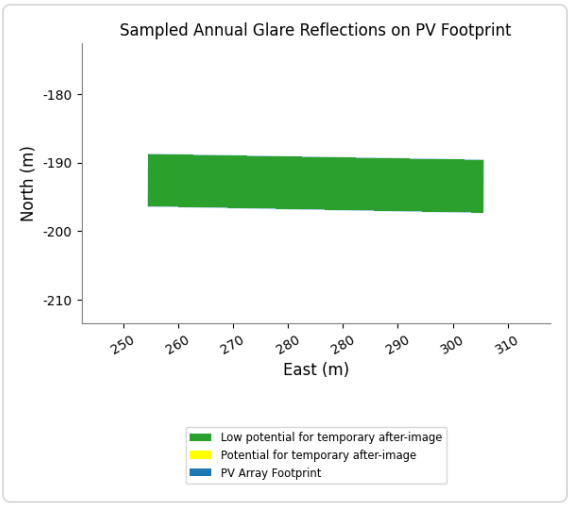
Green glare: 3,349 min.











PV: PMB05 low potential for temporary after-image

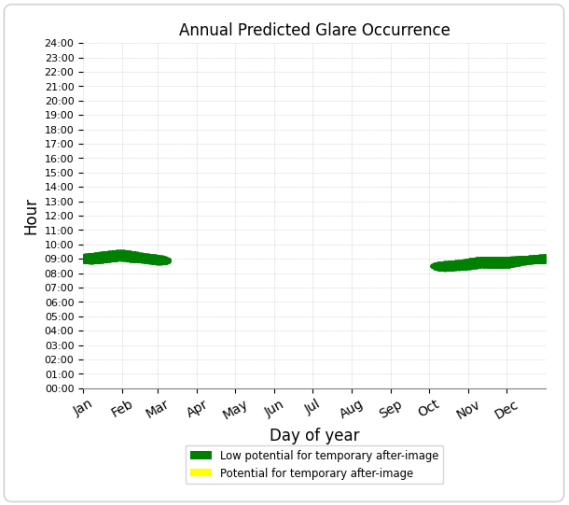
Receptor results ordered by category of glare

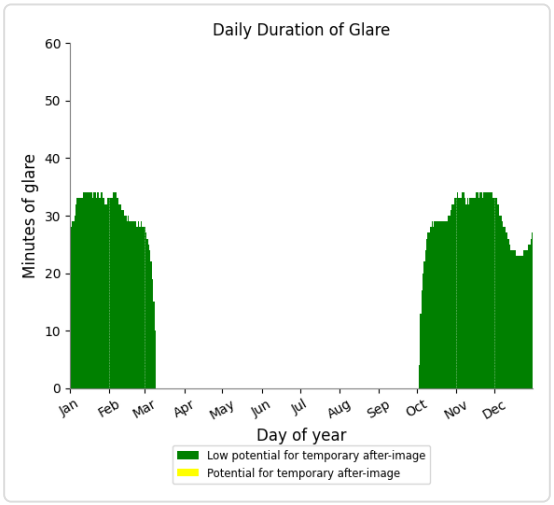
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	4,649	77.5	0	0.0
Flight path B	6,775	112.9	0	0.0
Flight path C	4,068	67.8	0	0.0
Flight path D	11,792	196.5	0	0.0
Flight path E	4,370	72.8	0	0.0
Flight path F	13,160	219.3	0	0.0
Flight path G	19,412	323.5	0	0.0
Flight path H	6,487	108.1	0	0.0

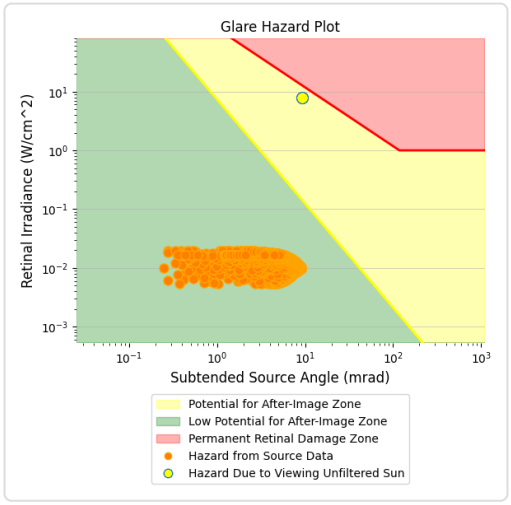
PMB05 and Route: Flight path A

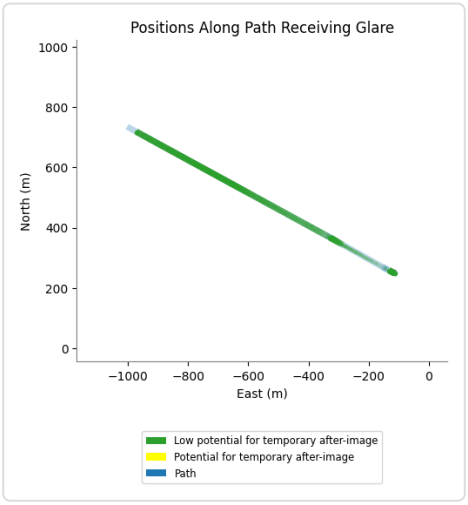
Yellow glare: none

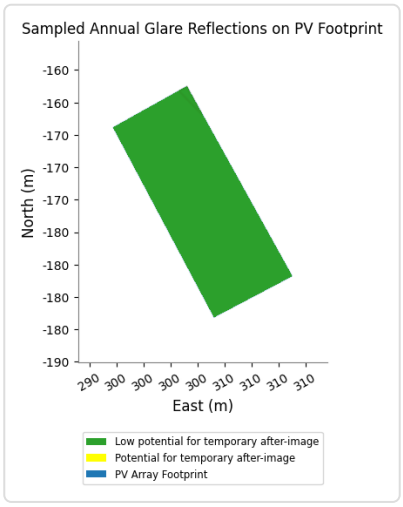
Green glare: 4,649 min.







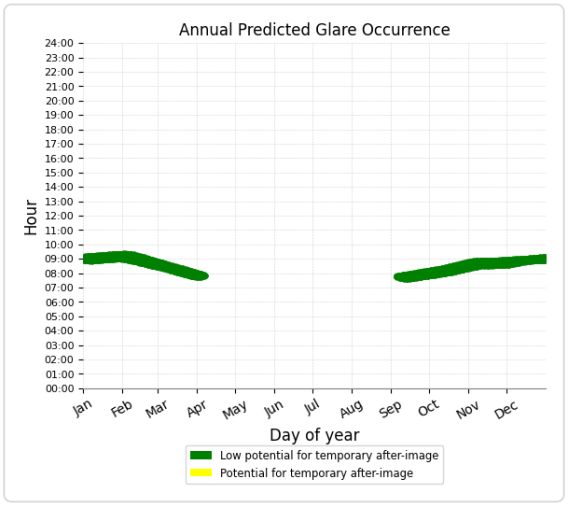


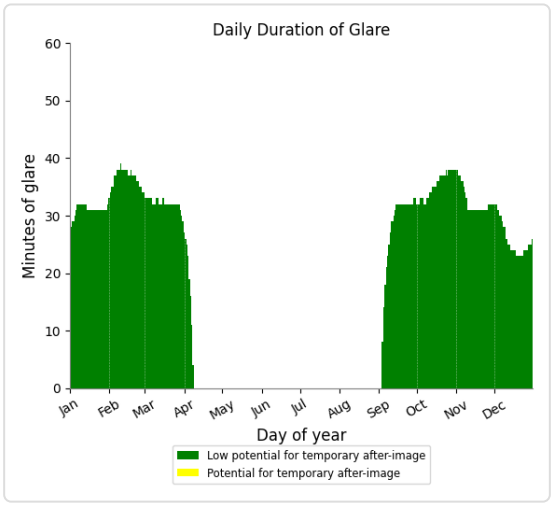


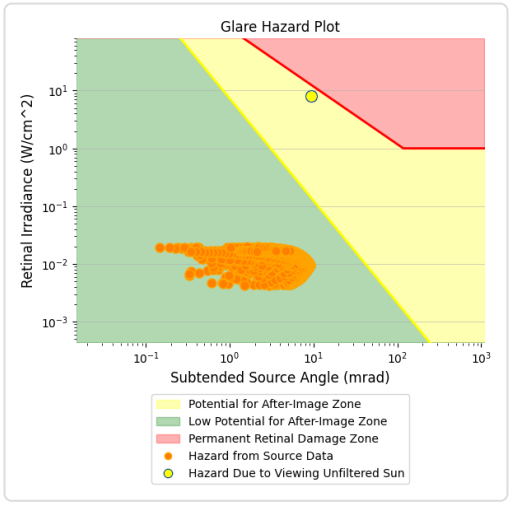
PMB05 and Route: Flight path B

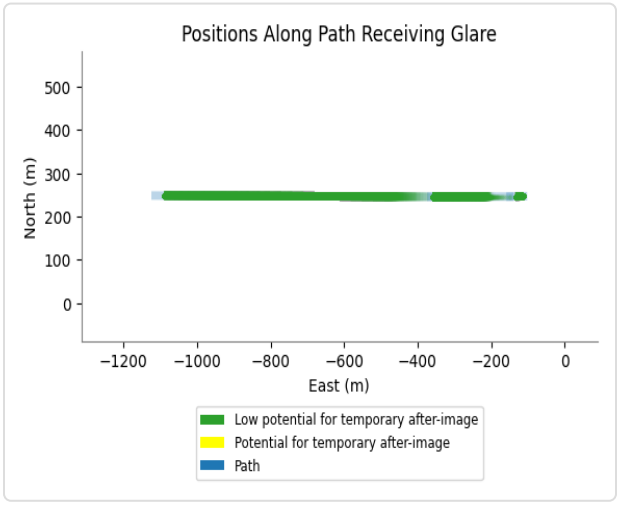
Yellow glare: none

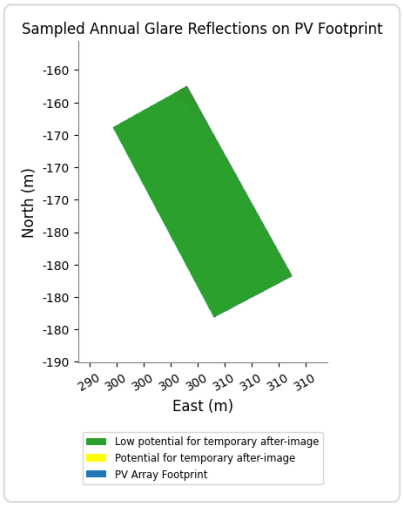
Green glare: 6,775 min.







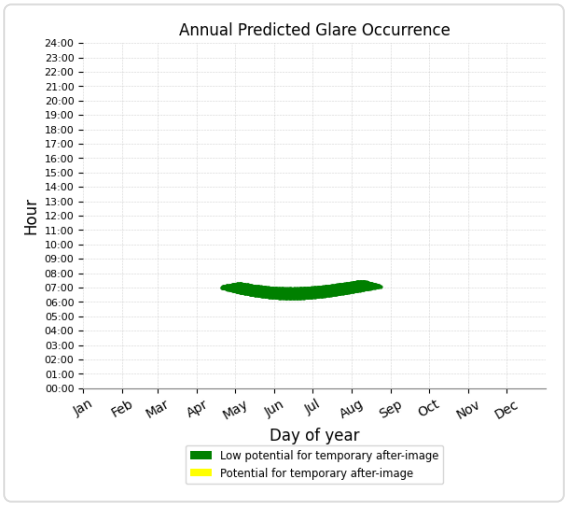


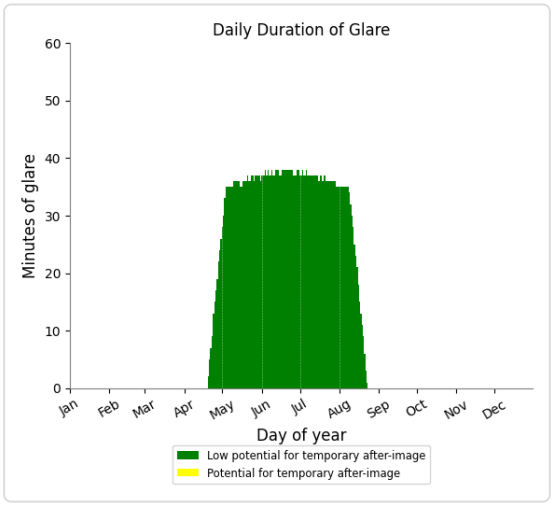


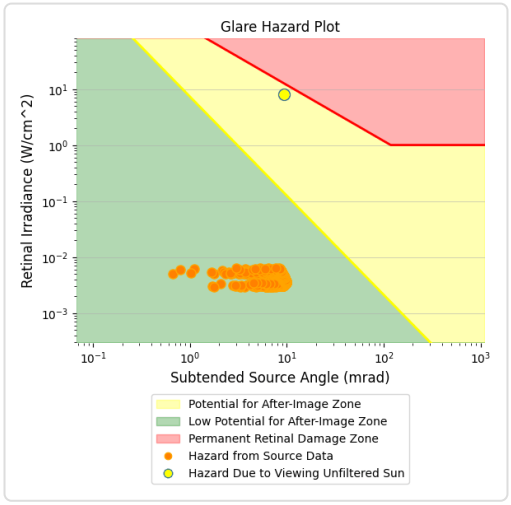
PMB05 and Route: Flight path C

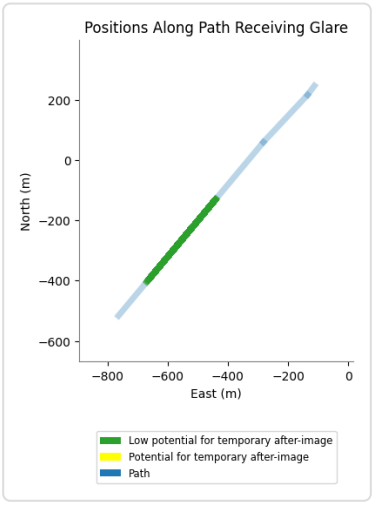
Yellow glare: none

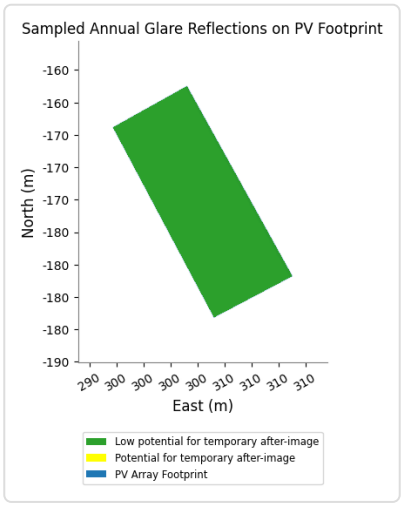
Green glare: 4,068 min.







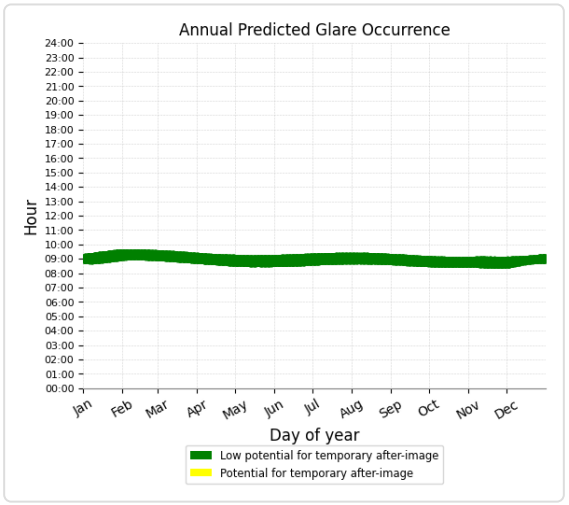


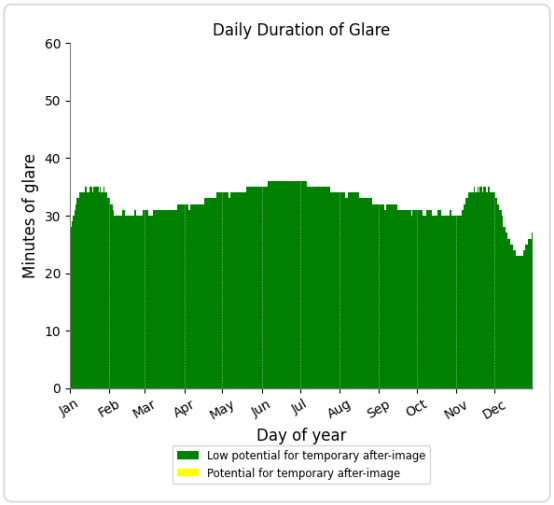


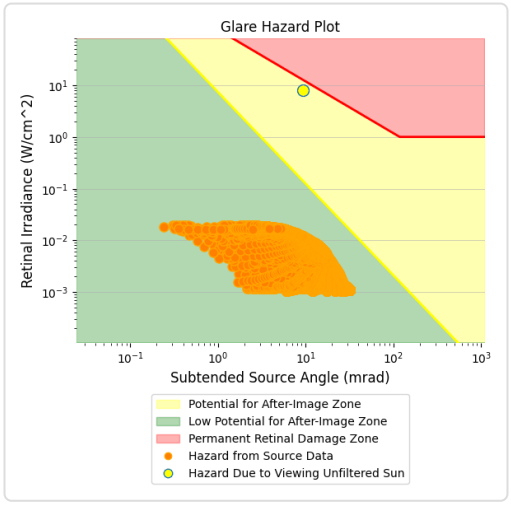
PMB05 and Route: Flight path D

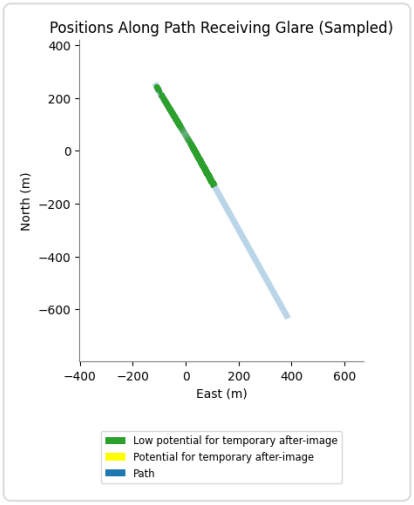
Yellow glare: none

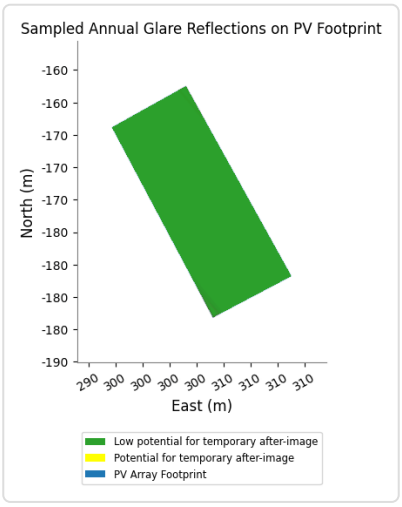
Green glare: 11,792 min.







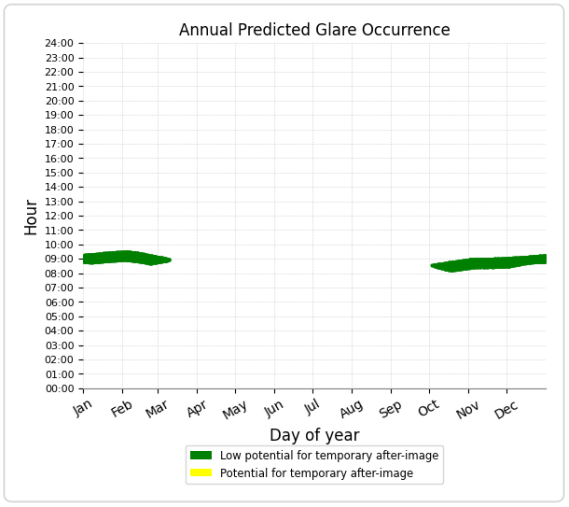


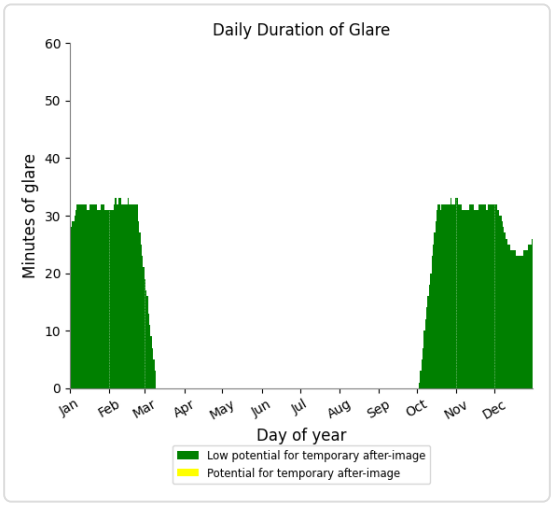


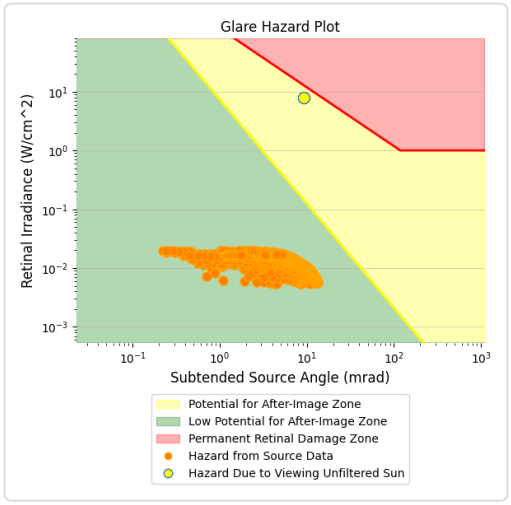
PMB05 and Route: Flight path E

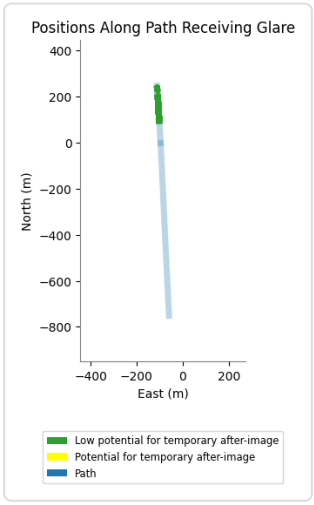
Yellow glare: none

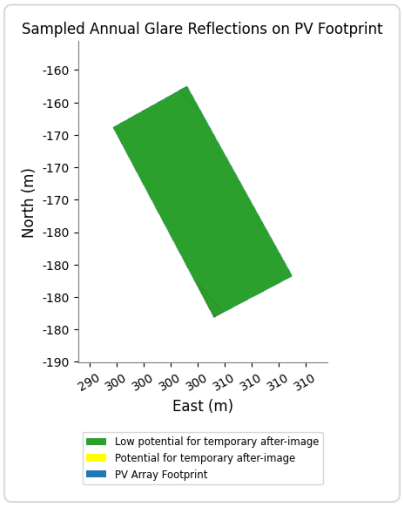
Green glare: 4,370 min.







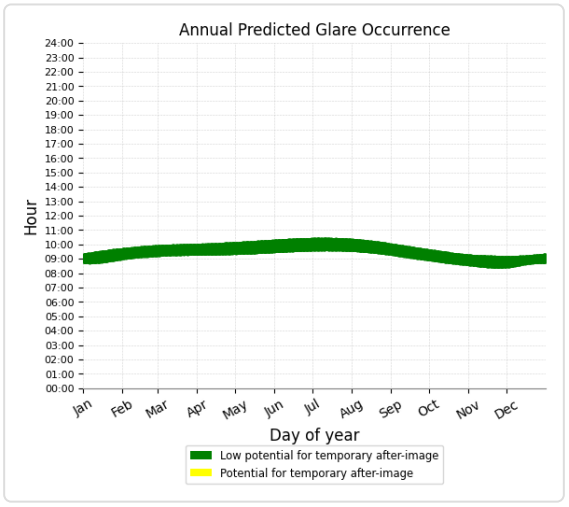


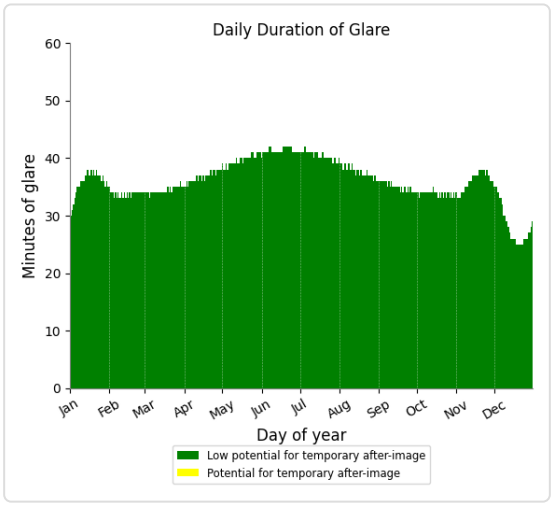


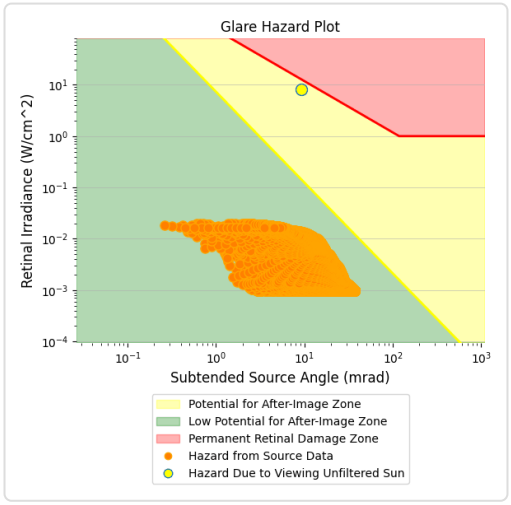
PMB05 and Route: Flight path F

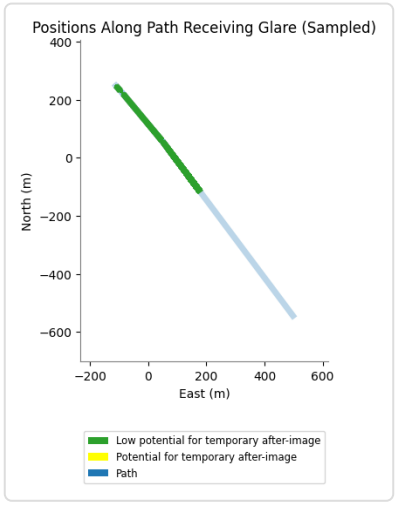
Yellow glare: none

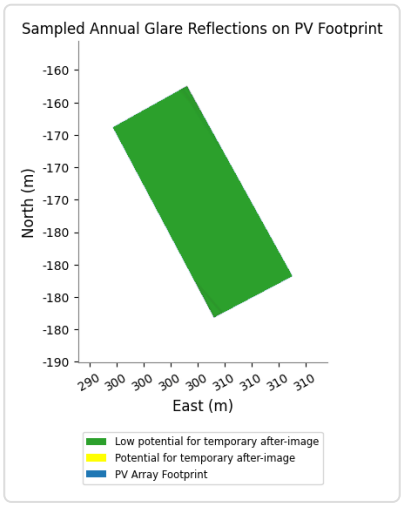
Green glare: 13,160 min.







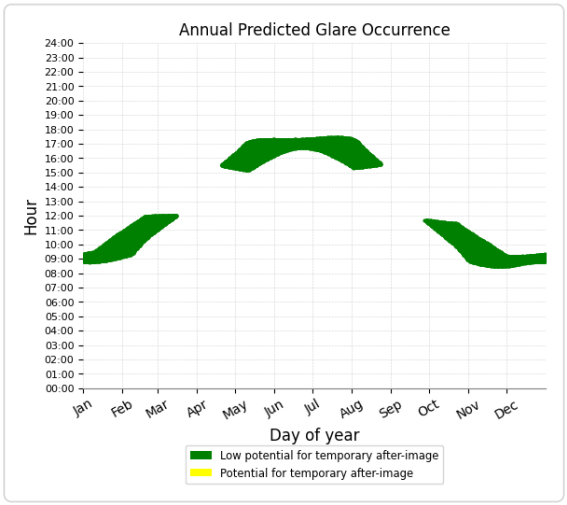


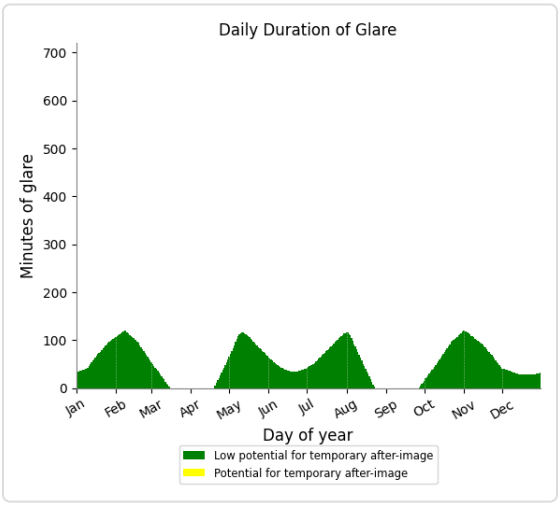


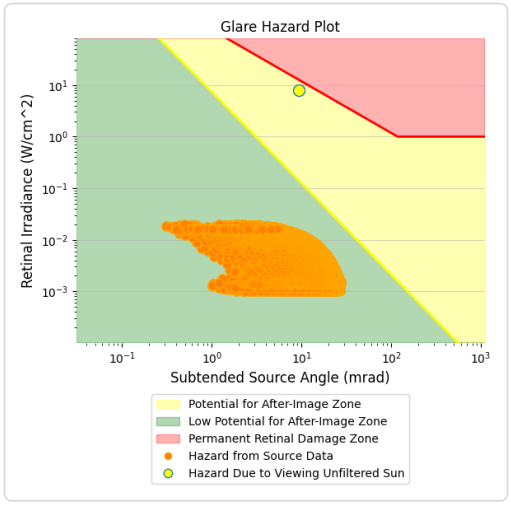
PMB05 and Route: Flight path G

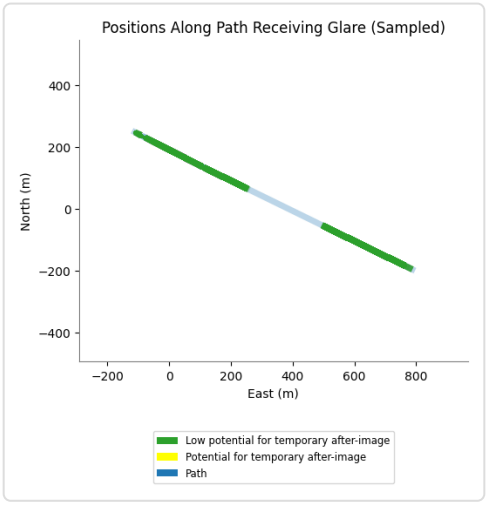
Yellow glare: none

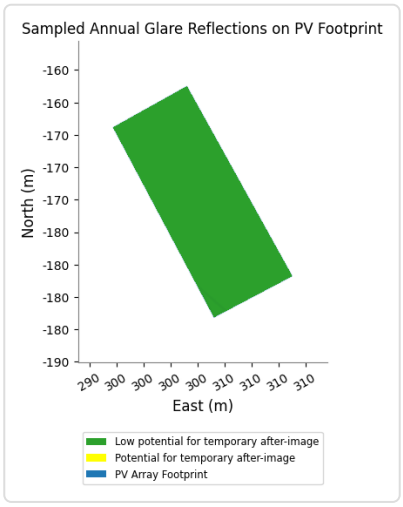
Green glare: 19,412 min.







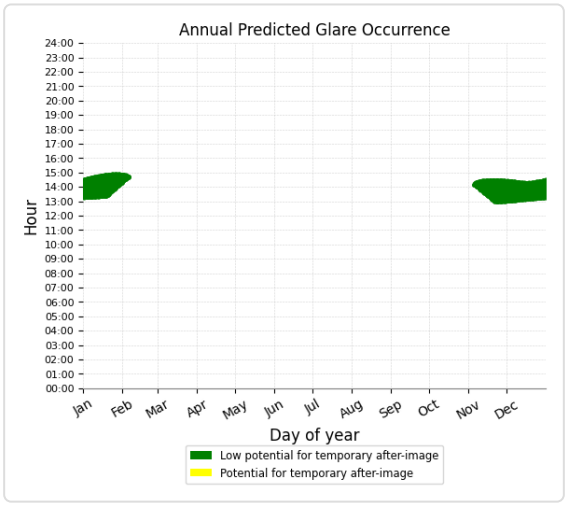


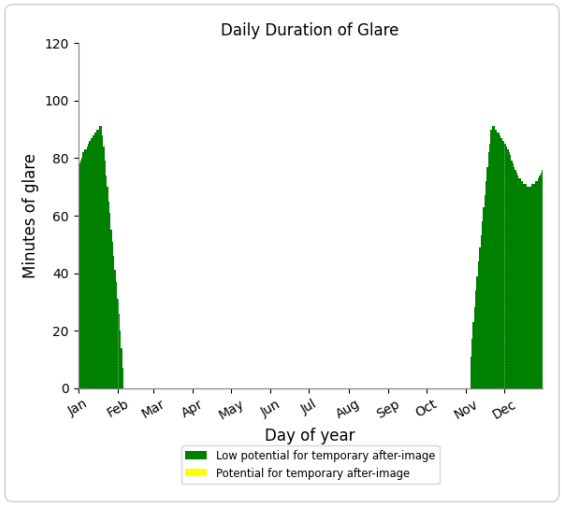


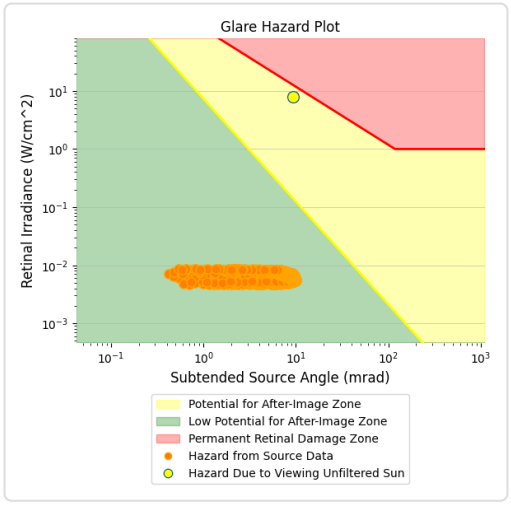
PMB05 and Route: Flight path H

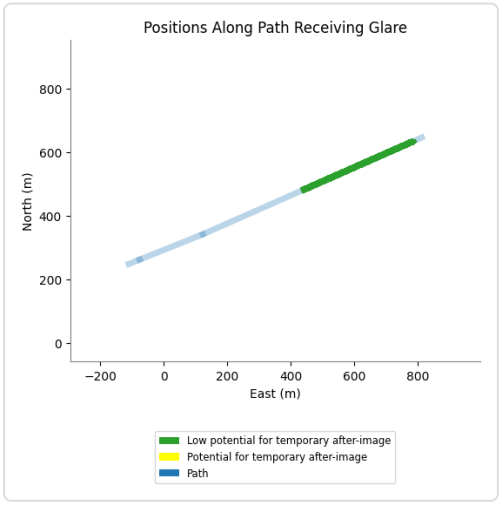
Yellow glare: none

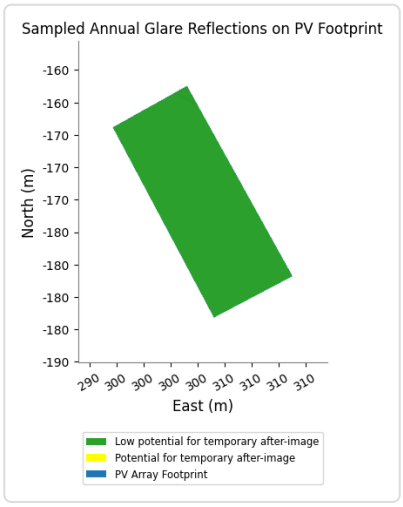
Green glare: 6,487 min.











Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

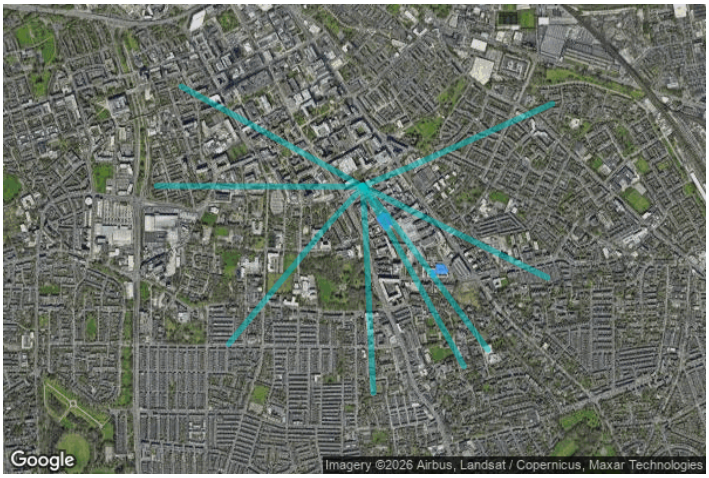
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FORGESOLAR GLARE ANALYSIS

Project: **MRI PV**
Site configuration: **MRI01**

Created 03 Feb, 2026
Updated 06 Feb, 2026
Time-step 1 minute
Timezone offset UTC0
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 500 kW to 1 MW
(1,000 kW / 32,400 m^2 limit)
Site ID 170340.28313

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



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
PCB04	10.0	226.0	137,326	2,288.8	0	0.0	-
PCB05	10.0	246.0	121,754	2,029.2	1,399	23.3	-
PCB06	10.0	233.0	84,393	1,406.5	0	0.0	-
PMB06	4.0	180.0	83,785	1,396.4	0	0.0	-
PMB07	4.0	241.0	70,544	1,175.7	0	0.0	-
PMB08	4.0	180.0	73,252	1,220.9	0	0.0	-
PMB09	4.0	90.0	60,409	1,006.8	0	0.0	6,274.0
PMB10	4.0	90.0	62,162	1,036.0	0	0.0	-
PMB11	4.0	270.0	65,703	1,095.0	0	0.0	-

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
Flight path A	50,291	838.2	75	1.2
Flight path B	64,392	1,073.2	24	0.4
Flight path C	32,842	547.4	0	0.0
Flight path D	158,647	2,644.1	349	5.8
Flight path E	62,598	1,043.3	278	4.6
Flight path F	169,000	2,816.7	352	5.9
Flight path G	173,673	2,894.6	321	5.3
Flight path H	47,885	798.1	0	0.0

Component Data

PV Arrays

Name: PCB04
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 226.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.461830	-2.227381	43.27	8.30	51.58
2	53.462016	-2.227080	43.37	8.30	51.68
3	53.461974	-2.227003	43.13	8.30	51.44
4	53.461786	-2.227312	43.07	8.30	51.37

Name: PCB05
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 246.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



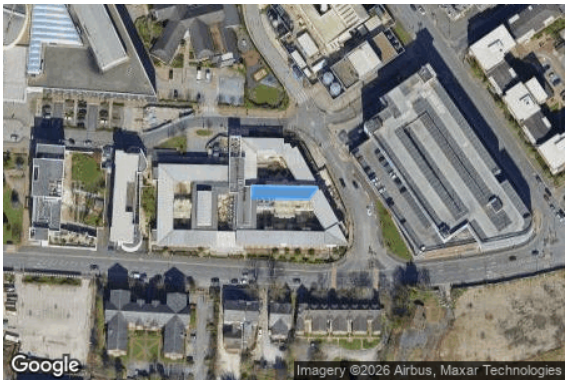
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.461938	-2.226976	43.00	8.30	51.31
2	53.461985	-2.226793	42.96	8.30	51.26
3	53.461611	-2.226501	41.71	8.30	50.02
4	53.461562	-2.226688	41.26	8.30	49.57

Name: PCB06
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 233.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.461762	-2.227325	43.02	8.30	51.33
2	53.461792	-2.227255	42.98	8.30	51.28
3	53.461443	-2.226807	41.19	8.30	49.49
4	53.461410	-2.226882	41.41	8.30	49.72

Name: PMB06
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.459551	-2.222967	43.06	11.40	54.46
2	53.459546	-2.222425	43.44	11.40	54.84
3	53.459494	-2.222492	43.28	11.40	54.68
4	53.459498	-2.222969	43.02	11.40	54.42

Name: PMB07
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 241.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.459707	-2.222691	43.34	7.50	50.84
2	53.459741	-2.222588	43.46	7.50	50.96
3	53.459595	-2.222455	43.43	7.50	50.93
4	53.459565	-2.222557	43.27	7.50	50.77

Name: PMB08
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.459790	-2.223026	43.22	7.50	50.72
2	53.459743	-2.222956	43.23	7.50	50.73
3	53.459741	-2.222711	43.37	7.50	50.87
4	53.459785	-2.222709	43.44	7.50	50.94

Name: PMB09
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 90.0°
Rated power: 4.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.459749	-2.223012	43.20	7.50	50.70
2	53.459712	-2.222937	43.21	7.50	50.71
3	53.459563	-2.222940	43.08	7.50	50.58
4	53.459565	-2.223020	43.06	7.50	50.56

Name: PMB10
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 90.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.459516	-2.223367	43.03	12.40	55.43
2	53.459515	-2.223321	43.00	12.40	55.40
3	53.459360	-2.223322	43.16	12.40	55.56
4	53.459361	-2.223374	43.20	12.40	55.60

Name: PMB11
Axis tracking: Fixed (no rotation)
Tilt: 4.0°
Orientation: 270.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.459518	-2.223434	43.20	12.40	55.60
2	53.459517	-2.223379	43.06	12.40	55.46
3	53.459361	-2.223385	43.25	12.40	55.65
4	53.459361	-2.223439	43.38	12.40	55.78

Route Receptors

Name: Flight path A
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



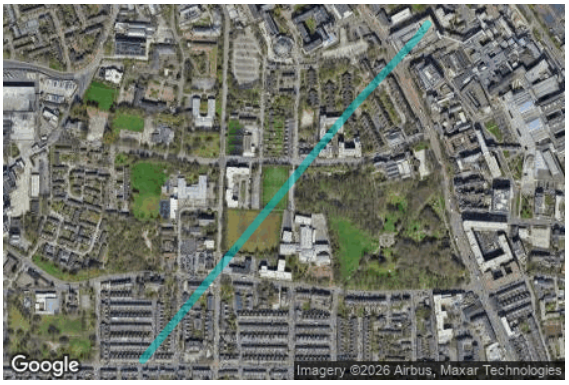
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463249	-2.228587	44.19	25.00	69.19
2	53.463398	-2.229070	44.21	75.00	119.21
3	53.464337	-2.231881	41.66	120.00	161.66
4	53.467581	-2.241838	36.89	325.00	361.89

Name: Flight path B
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



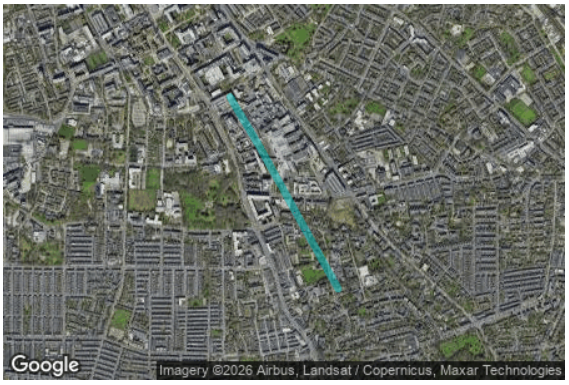
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463238	-2.228560	44.19	25.00	69.19
2	53.463232	-2.229118	43.76	75.00	118.76
3	53.463228	-2.232360	41.95	120.00	161.95
4	53.463254	-2.243647	35.00	325.00	360.00

Name: Flight path C
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



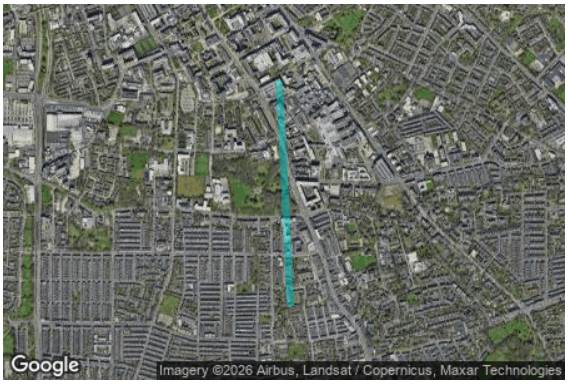
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463234	-2.228574	44.16	25.00	69.16
2	53.462963	-2.228912	43.15	75.00	118.15
3	53.461554	-2.231122	39.73	120.00	159.73
4	53.456380	-2.238364	37.99	325.00	362.99

Name: Flight path D
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



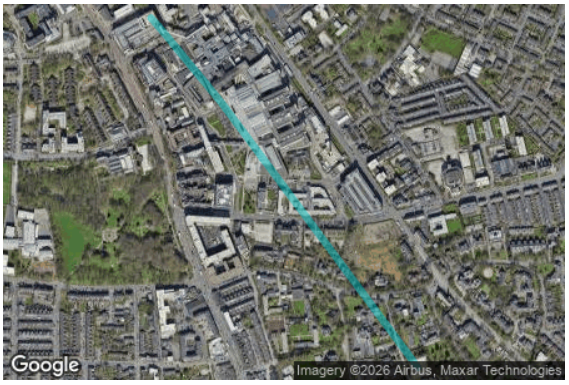
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463234	-2.228556	44.17	25.00	69.17
2	53.462942	-2.228283	43.89	75.00	118.89
3	53.461295	-2.226622	41.59	120.00	161.59
4	53.455412	-2.221135	47.06	325.00	372.06

Name: Flight path E
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



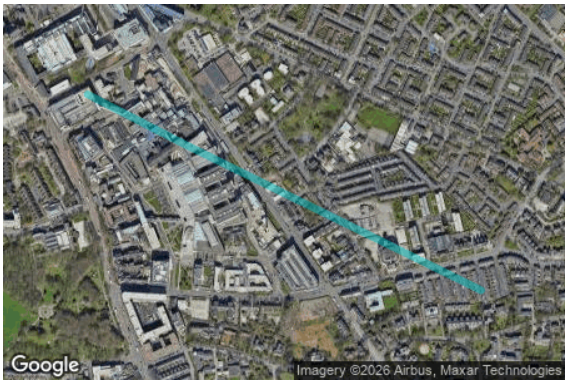
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463234	-2.228555	44.17	25.00	69.17
2	53.462889	-2.228510	43.50	75.00	118.50
3	53.460995	-2.228315	43.22	120.00	163.22
4	53.454265	-2.227768	39.58	325.00	364.58

Name: Flight path F
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



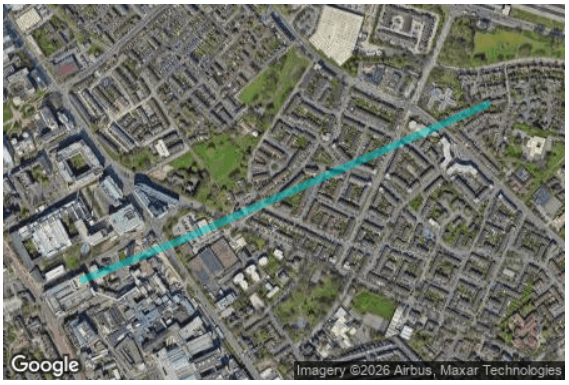
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463254	-2.228549	44.22	25.00	69.22
2	53.462996	-2.228168	44.13	75.00	119.13
3	53.461527	-2.226130	41.97	120.00	161.97
4	53.456126	-2.219378	46.31	325.00	371.31

Name: Flight path G
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463256	-2.228543	44.25	25.00	69.25
2	53.463102	-2.228046	44.28	75.00	119.28
3	53.462230	-2.225188	44.01	120.00	164.01
4	53.459260	-2.215017	48.00	325.00	373.00

Name: Flight path H
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.463257	-2.228536	44.25	25.00	69.25
2	53.463380	-2.228021	44.69	75.00	119.69
3	53.464095	-2.225026	44.16	120.00	164.16
4	53.466829	-2.214651	46.77	325.00	371.77

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
PCB04	10.0	226.0	137,326	2,288.8	0	0.0	-
PCB05	10.0	246.0	121,754	2,029.2	1,399	23.3	-
PCB06	10.0	233.0	84,393	1,406.5	0	0.0	-
PMB06	4.0	180.0	83,785	1,396.4	0	0.0	-
PMB07	4.0	241.0	70,544	1,175.7	0	0.0	-
PMB08	4.0	180.0	73,252	1,220.9	0	0.0	-
PMB09	4.0	90.0	60,409	1,006.8	0	0.0	6,274.0
PMB10	4.0	90.0	62,162	1,036.0	0	0.0	-
PMB11	4.0	270.0	65,703	1,095.0	0	0.0	-

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
Flight path A	50,291	838.2	75	1.2
Flight path B	64,392	1,073.2	24	0.4
Flight path C	32,842	547.4	0	0.0
Flight path D	158,647	2,644.1	349	5.8
Flight path E	62,598	1,043.3	278	4.6
Flight path F	169,000	2,816.7	352	5.9
Flight path G	173,673	2,894.6	321	5.3
Flight path H	47,885	798.1	0	0.0

PV: PCB04 low potential for temporary after-image

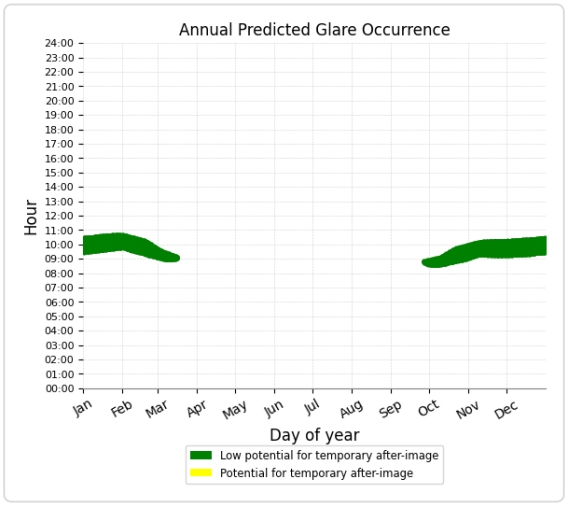
Receptor results ordered by category of glare

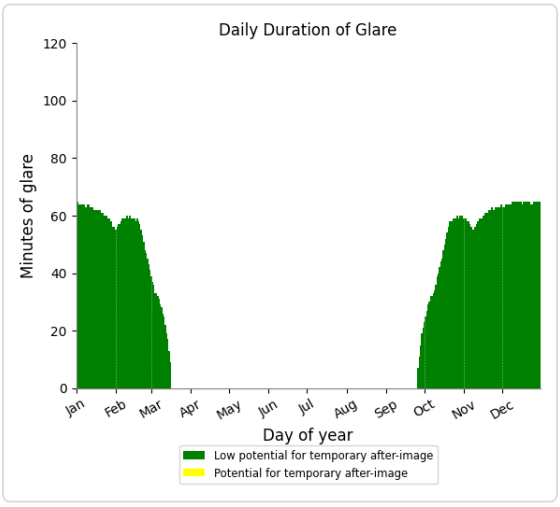
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	9,181	153.0	0	0.0
Flight path B	9,133	152.2	0	0.0
Flight path C	2,928	48.8	0	0.0
Flight path D	36,366	606.1	0	0.0
Flight path E	15,388	256.5	0	0.0
Flight path F	33,852	564.2	0	0.0
Flight path G	27,301	455.0	0	0.0
Flight path H	3,177	53.0	0	0.0

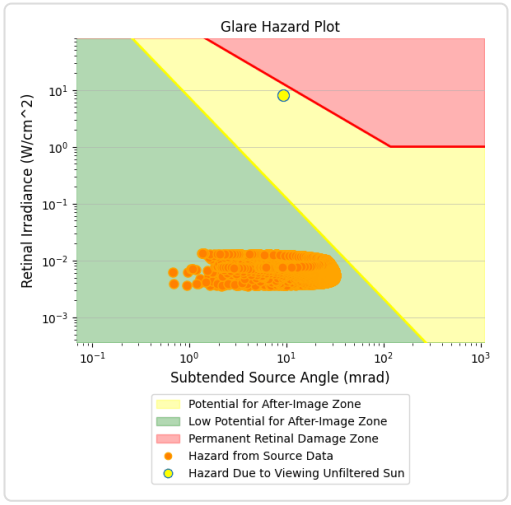
PCB04 and Route: Flight path A

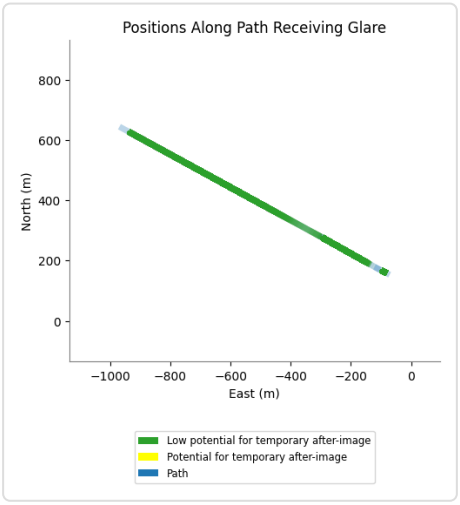
Yellow glare: none

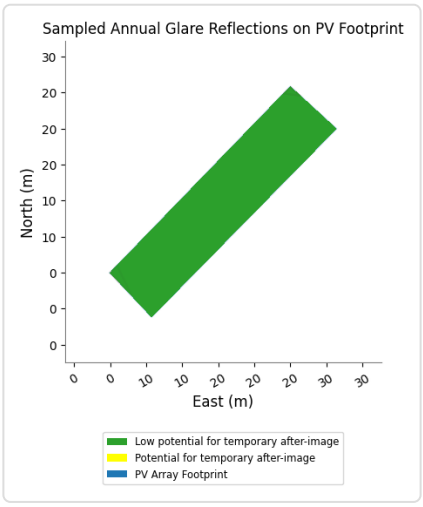
Green glare: 9,181 min.







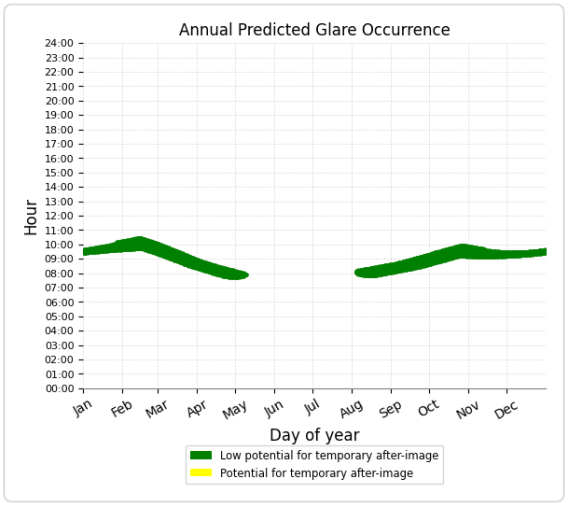


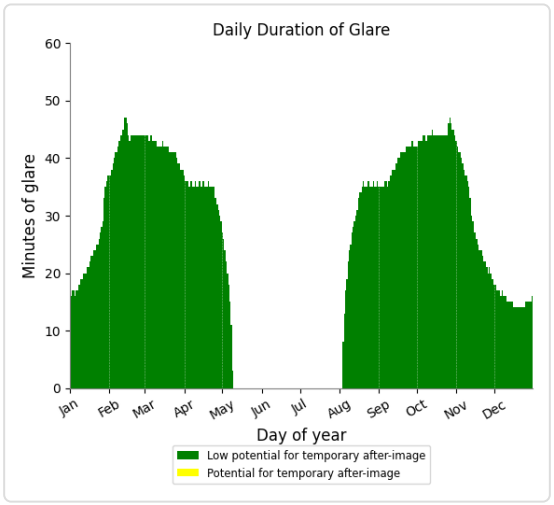


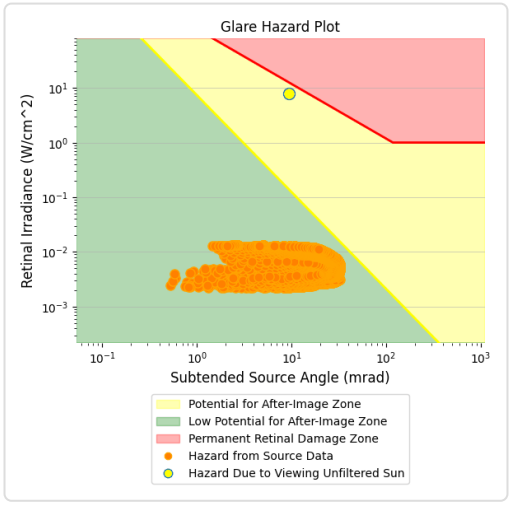
PCB04 and Route: Flight path B

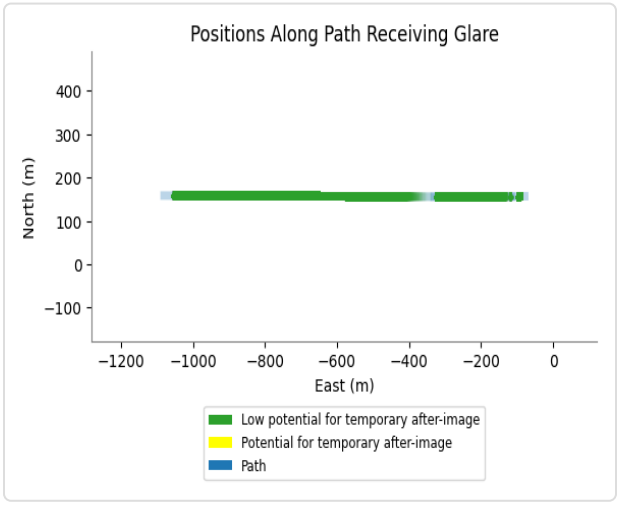
Yellow glare: none

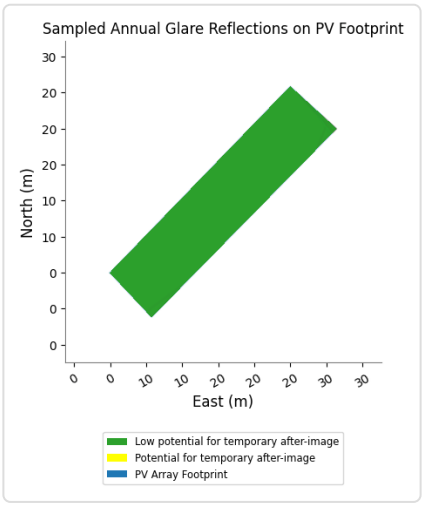
Green glare: 9,133 min.







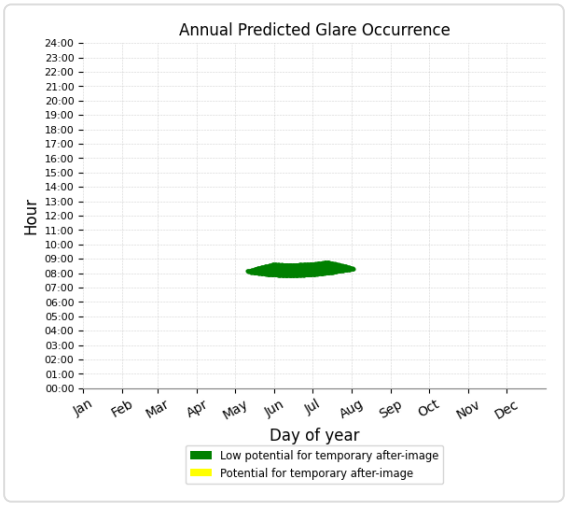


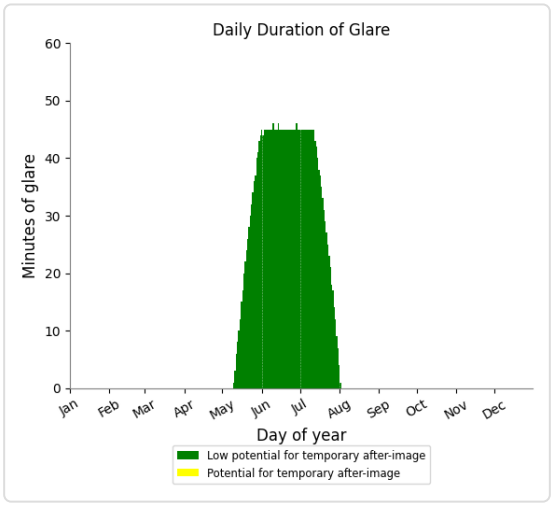


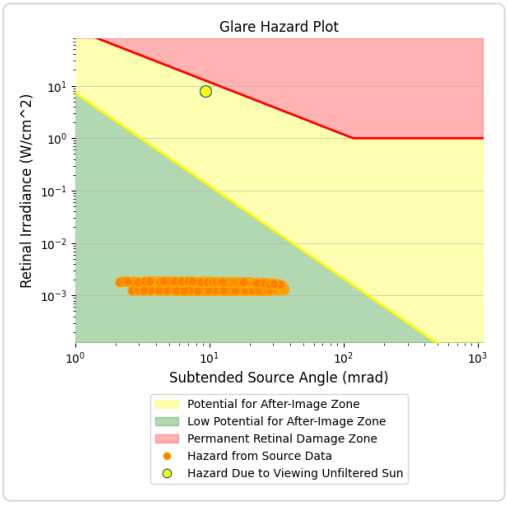
PCB04 and Route: Flight path C

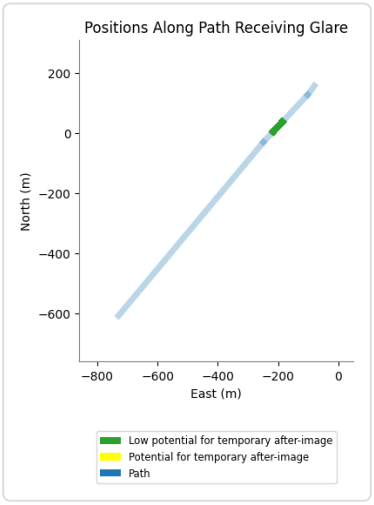
Yellow glare: none

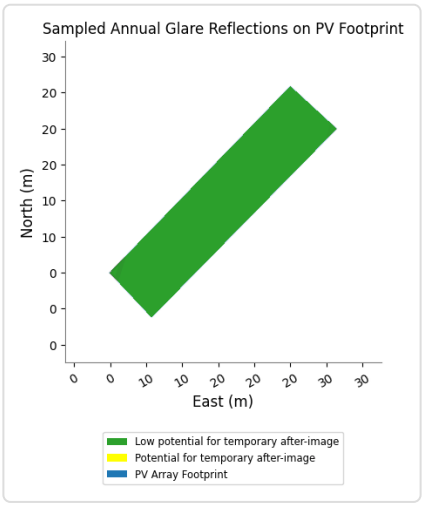
Green glare: 2,928 min.







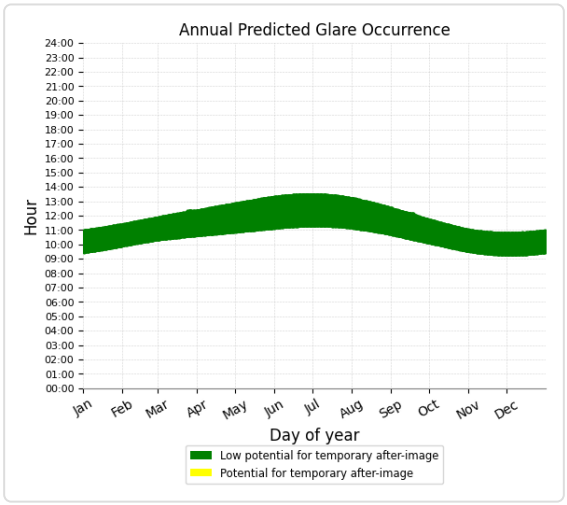


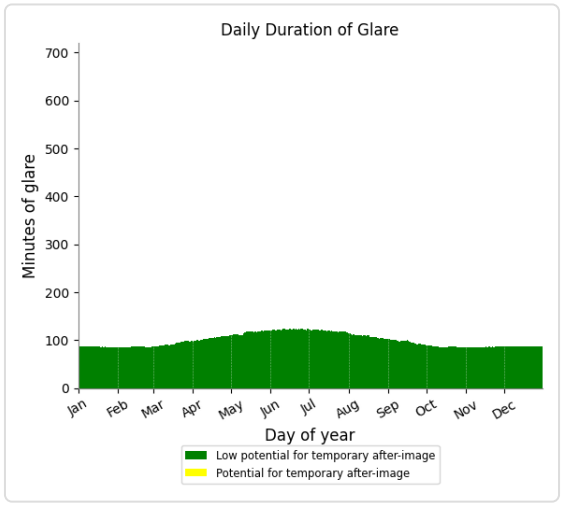


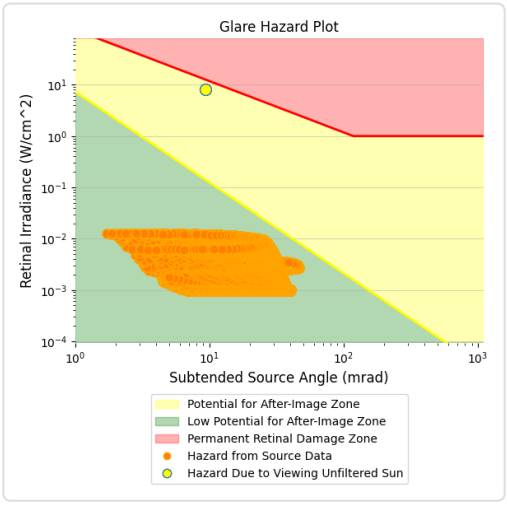
PCB04 and Route: Flight path D

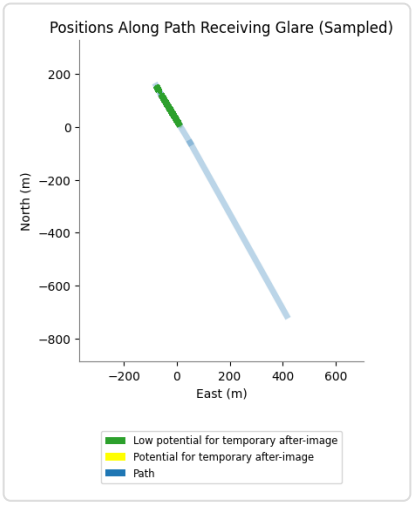
Yellow glare: none

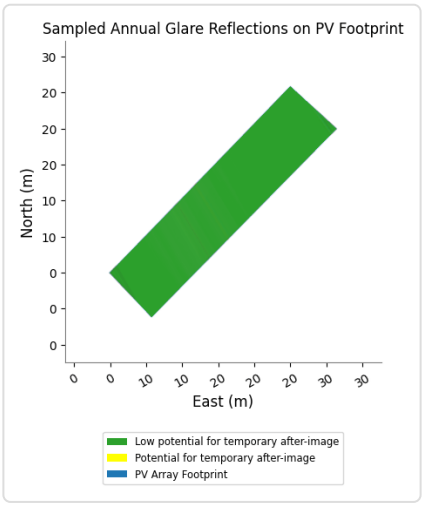
Green glare: 36,366 min.







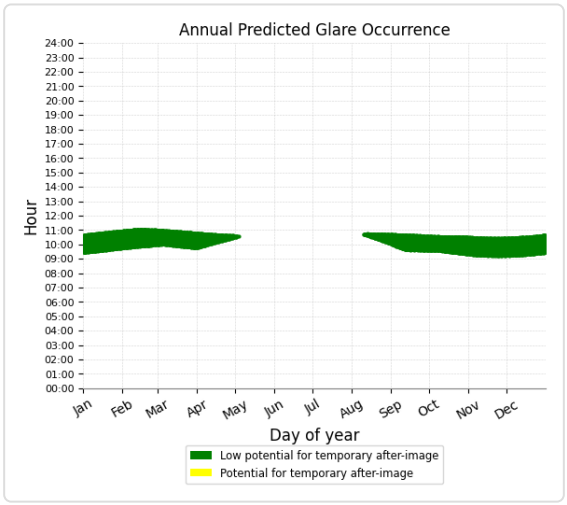


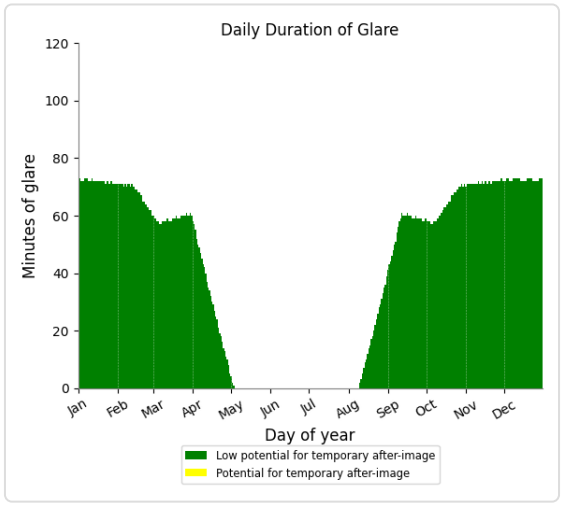


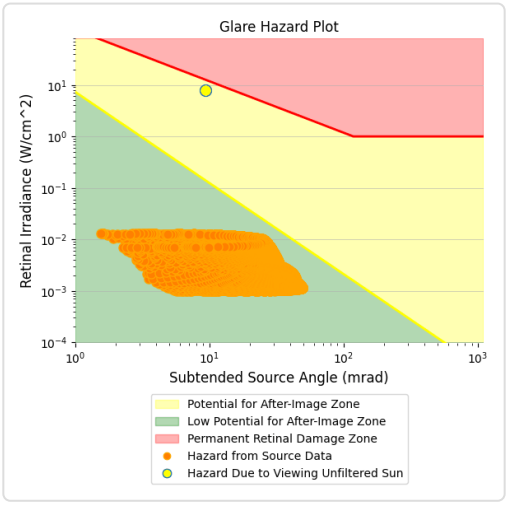
PCB04 and Route: Flight path E

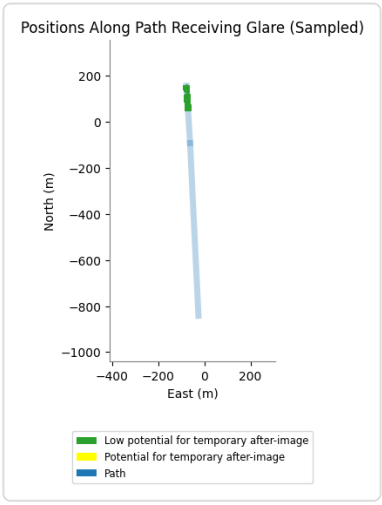
Yellow glare: none

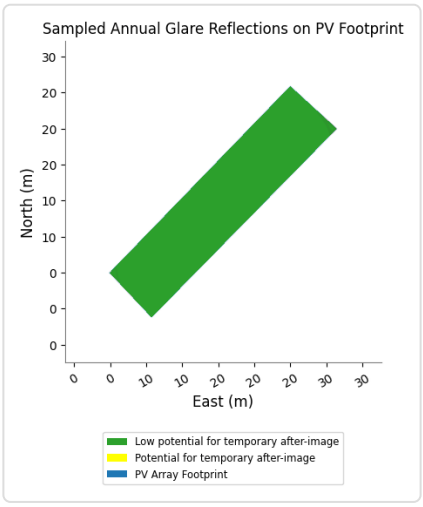
Green glare: 15,388 min.







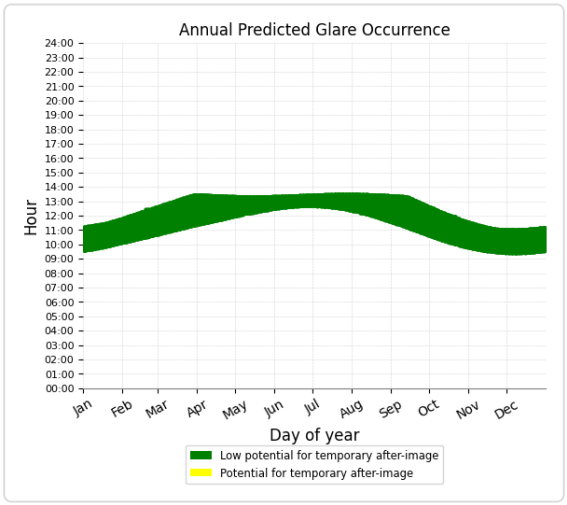


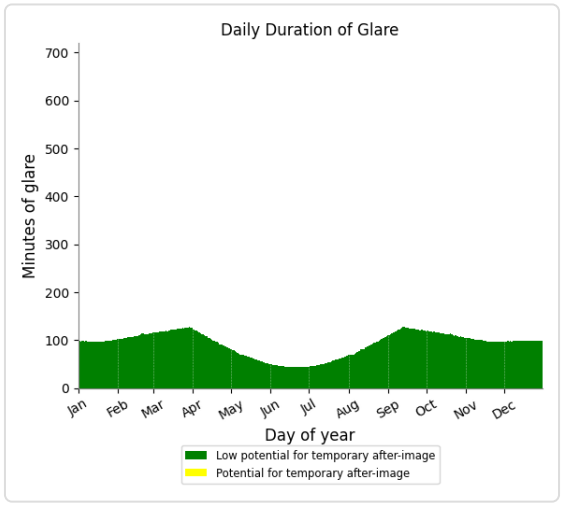


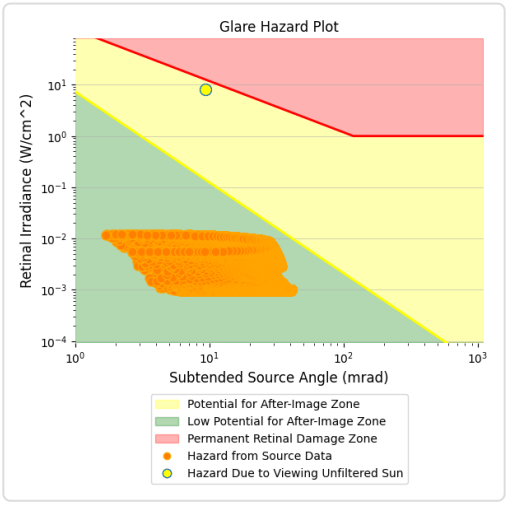
PCB04 and Route: Flight path F

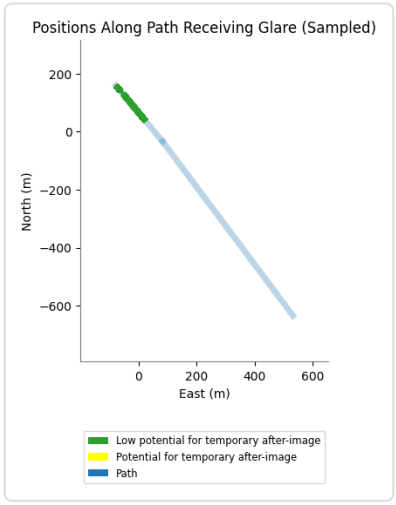
Yellow glare: none

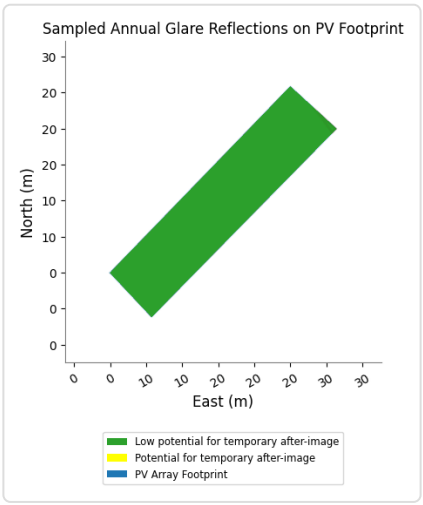
Green glare: 33,852 min.







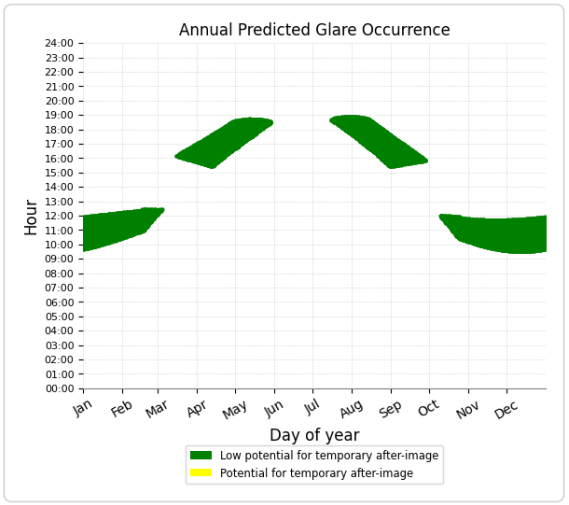


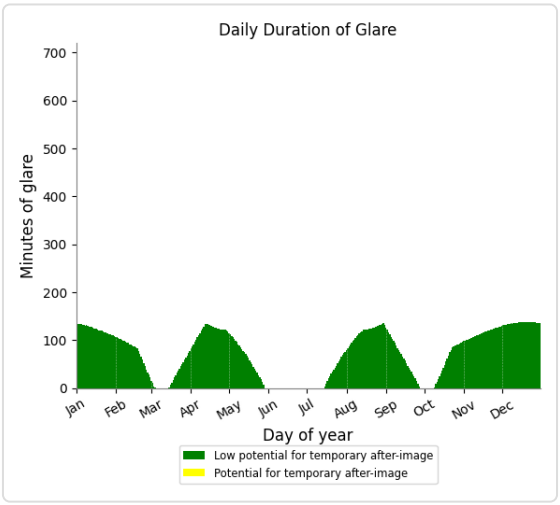


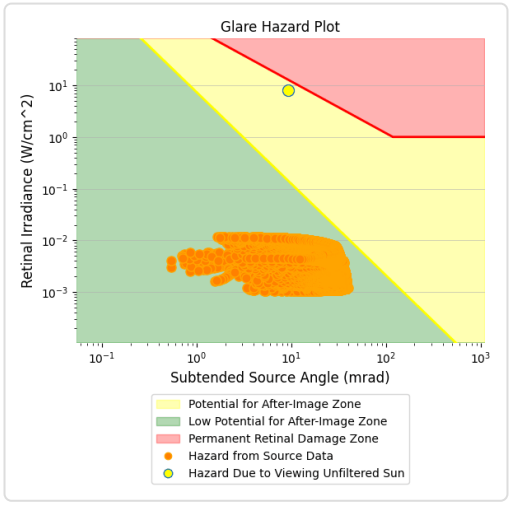
PCB04 and Route: Flight path G

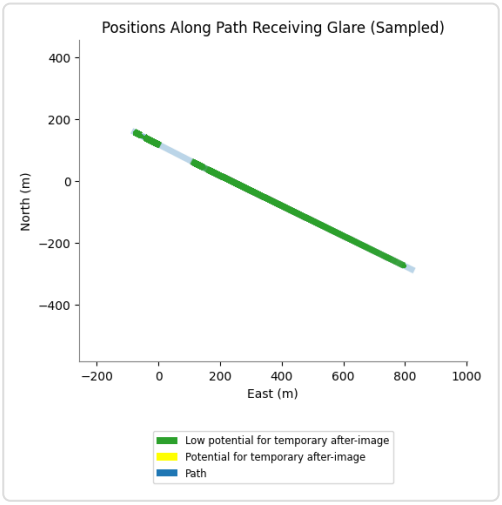
Yellow glare: none

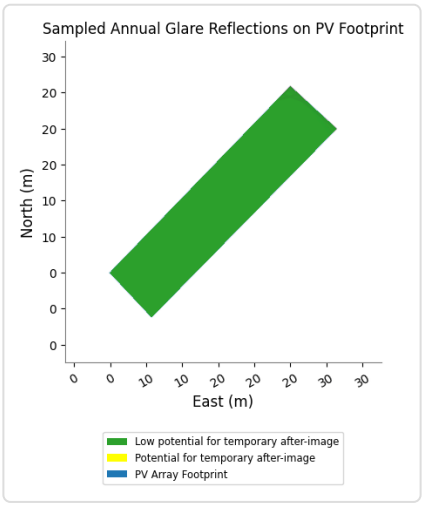
Green glare: 27,301 min.







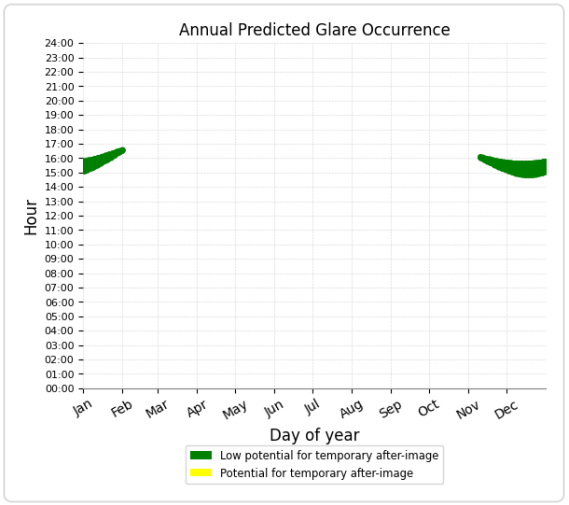


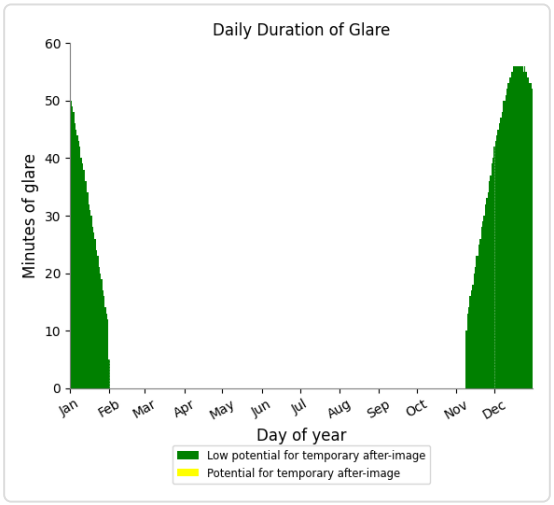


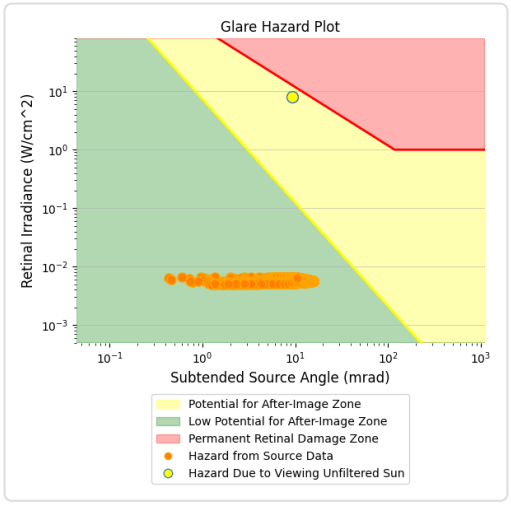
PCB04 and Route: Flight path H

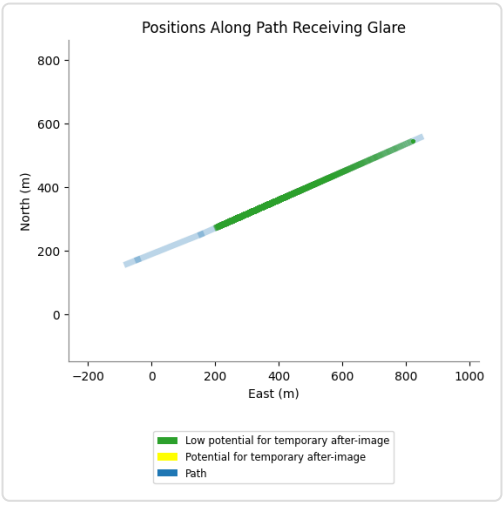
Yellow glare: none

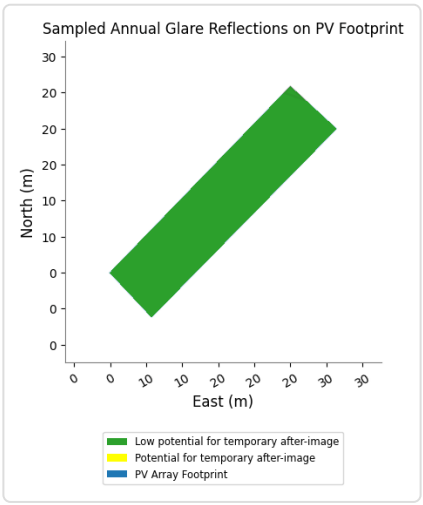
Green glare: 3,177 min.











PV: PCB05 potential temporary after-image

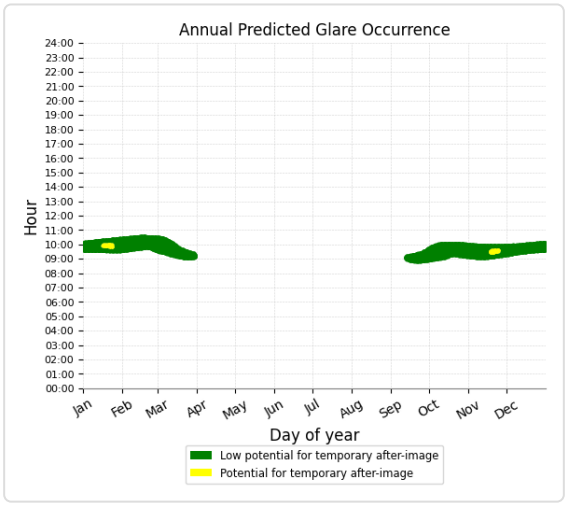
Receptor results ordered by category of glare

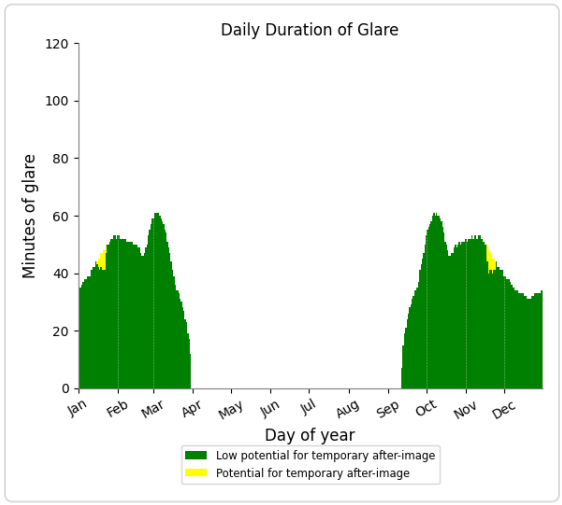
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	8,753	145.9	75	1.2
Flight path B	10,208	170.1	24	0.4
Flight path D	22,986	383.1	349	5.8
Flight path E	10,344	172.4	278	4.6
Flight path F	31,068	517.8	352	5.9
Flight path G	28,391	473.2	321	5.3
Flight path C	982	16.4	0	0.0
Flight path H	9,022	150.4	0	0.0

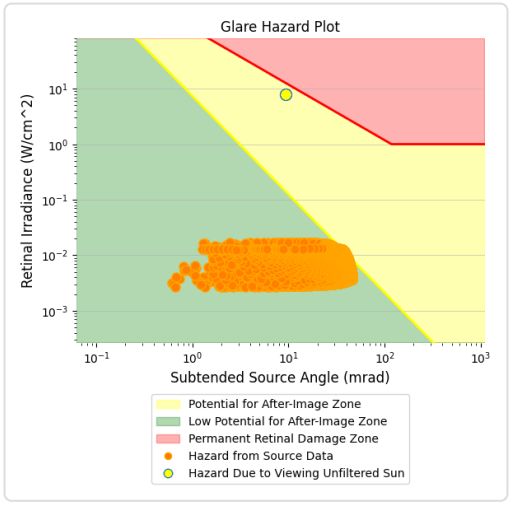
PCB05 and Route: Flight path A

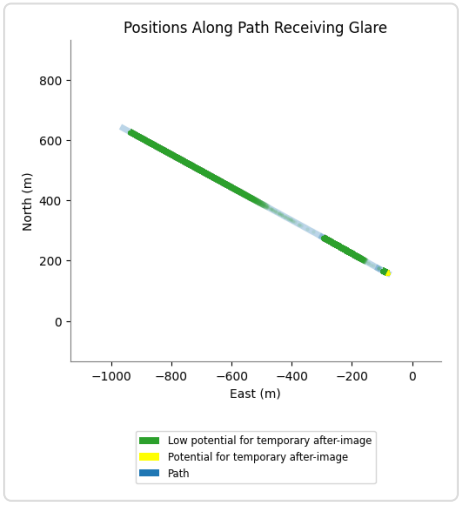
Yellow glare: 75 min.

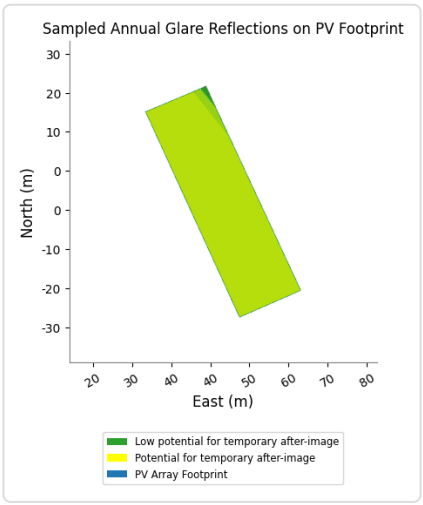
Green glare: 8,753 min.







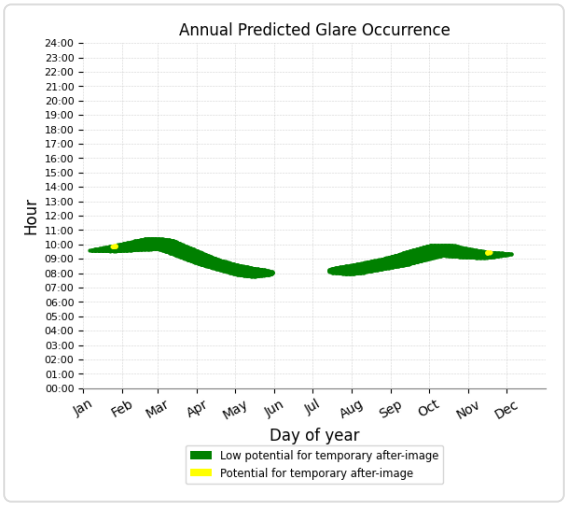


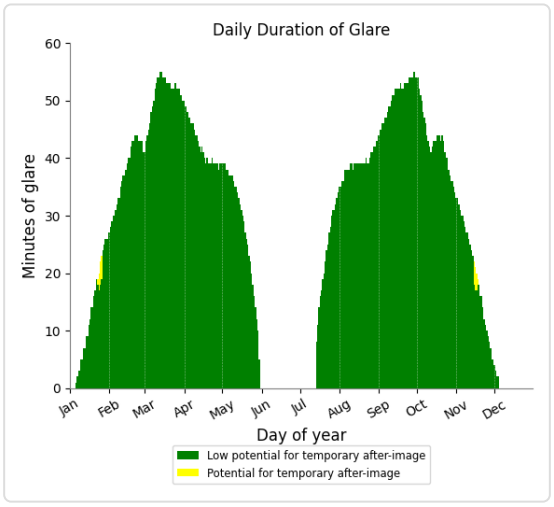


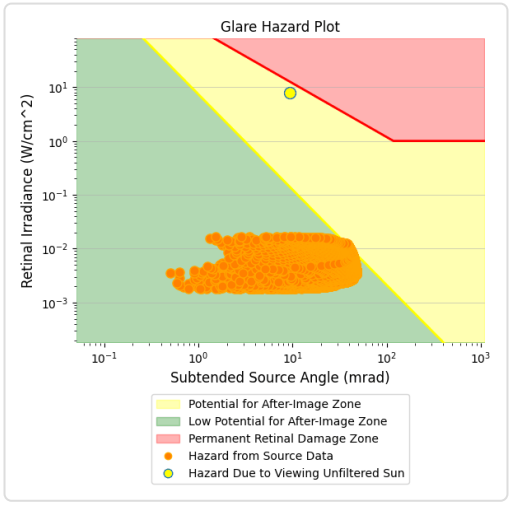
PCB05 and Route: Flight path B

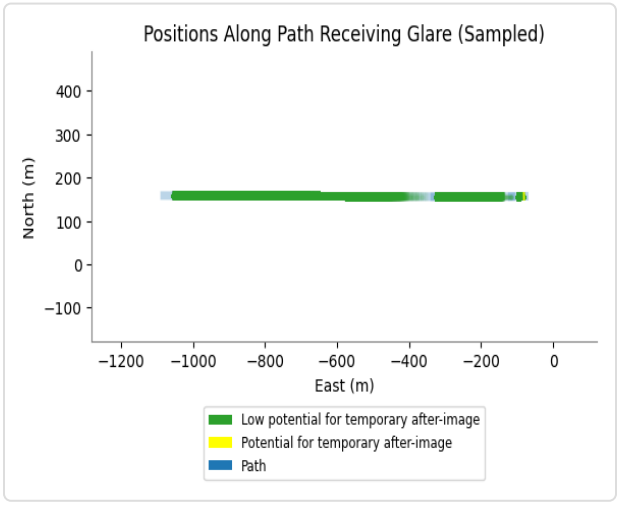
Yellow glare: 24 min.

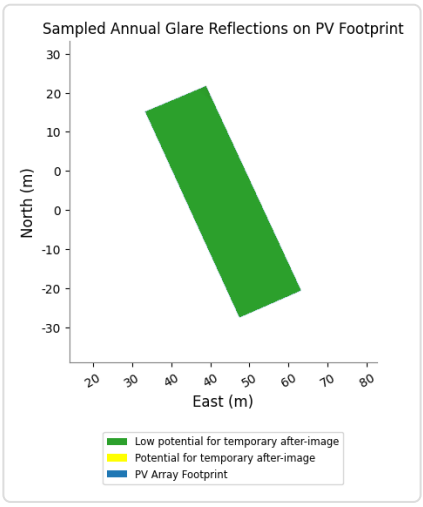
Green glare: 10,208 min.







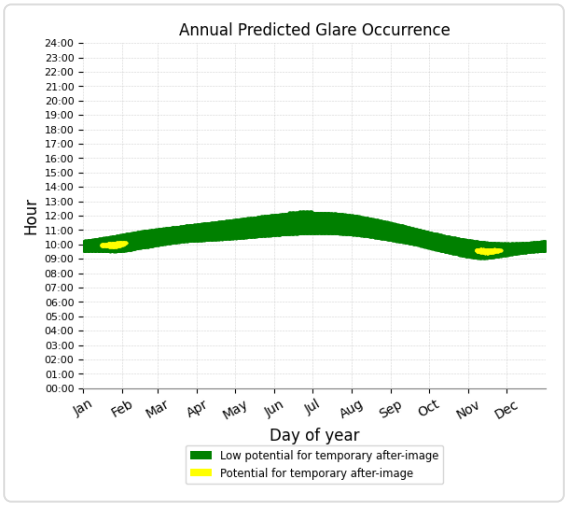


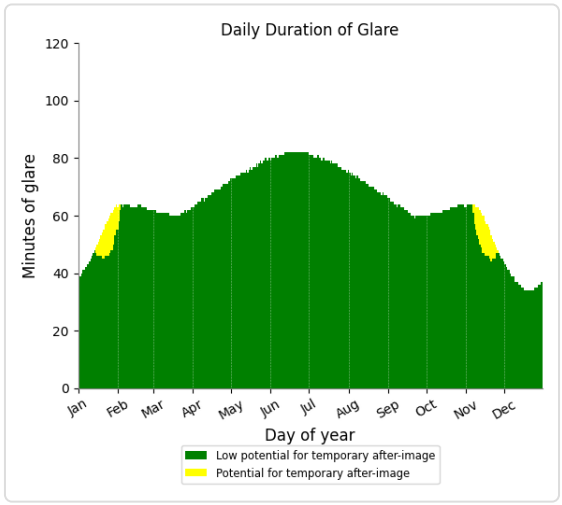


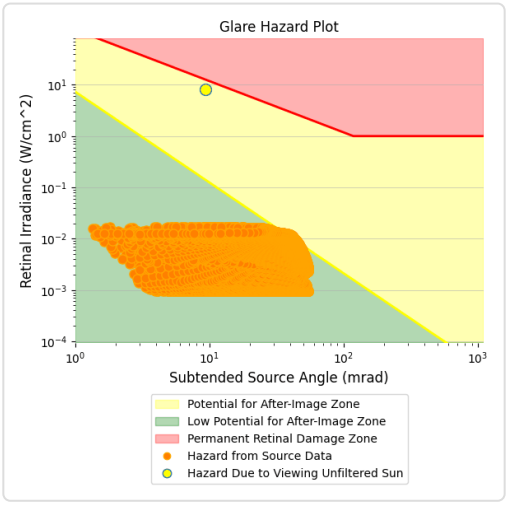
PCB05 and Route: Flight path D

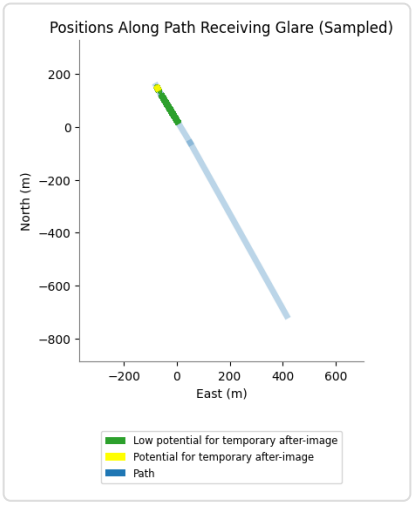
Yellow glare: 349 min.

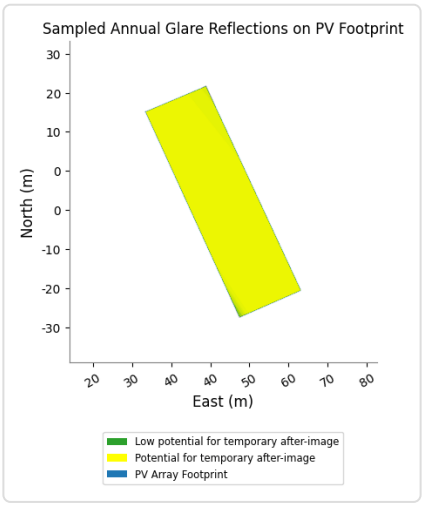
Green glare: 22,986 min.







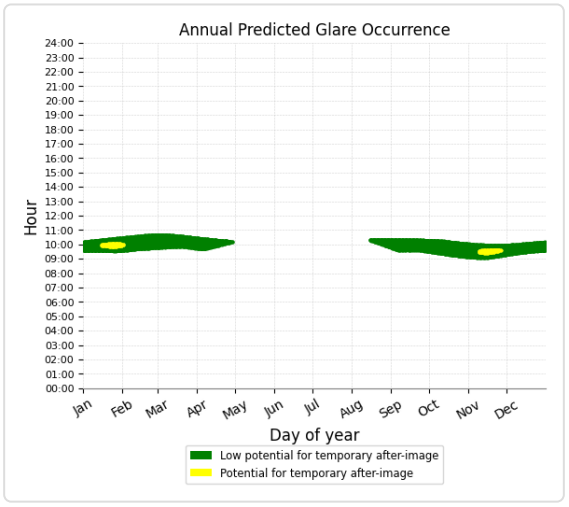


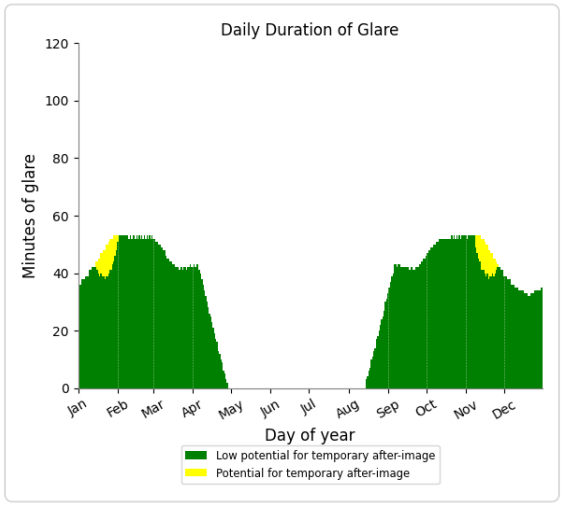


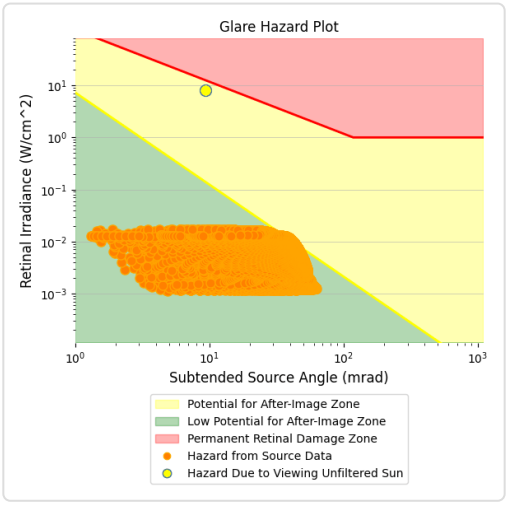
PCB05 and Route: Flight path E

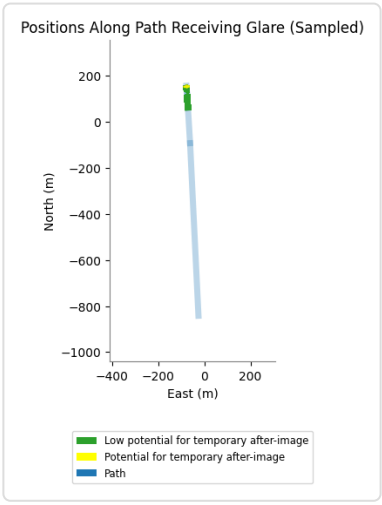
Yellow glare: 278 min.

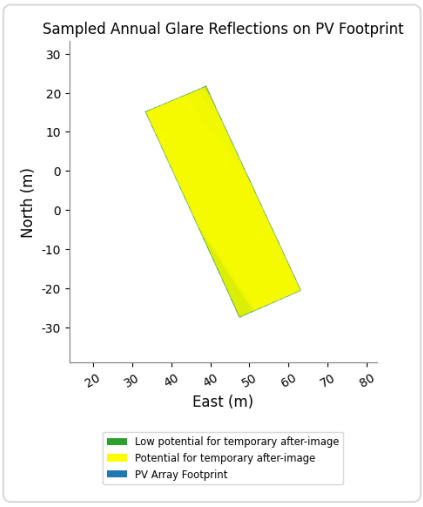
Green glare: 10,344 min.







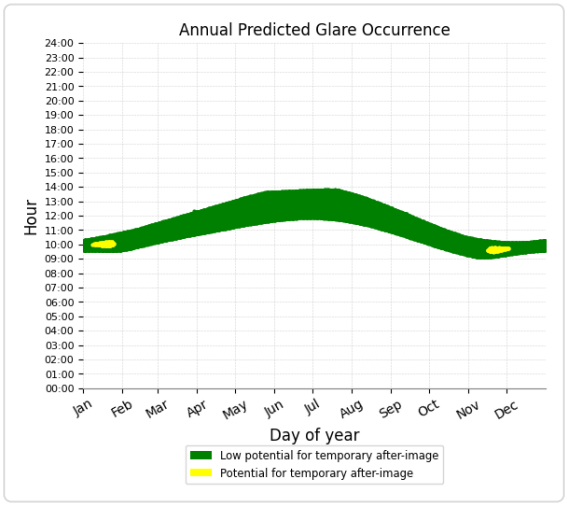


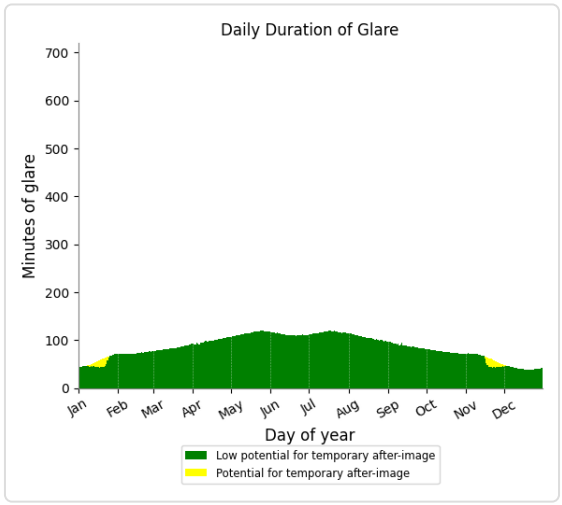


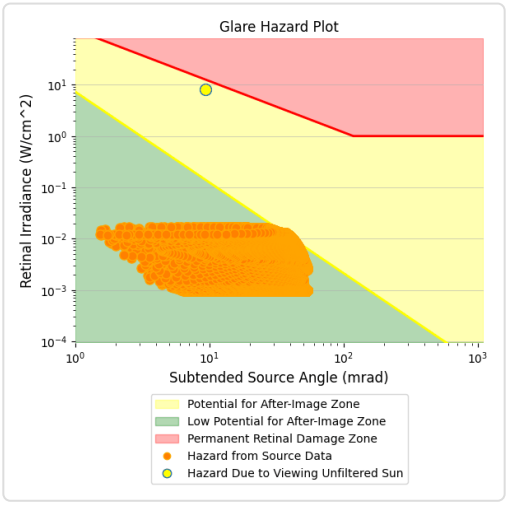
PCB05 and Route: Flight path F

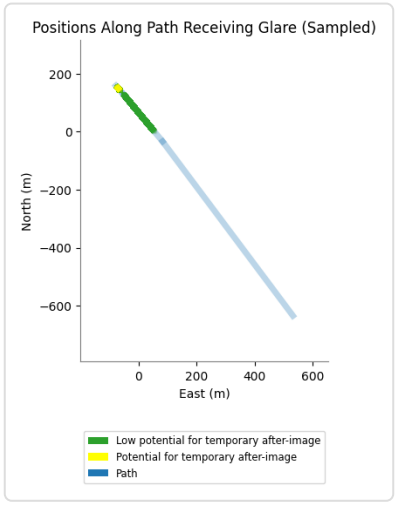
Yellow glare: 352 min.

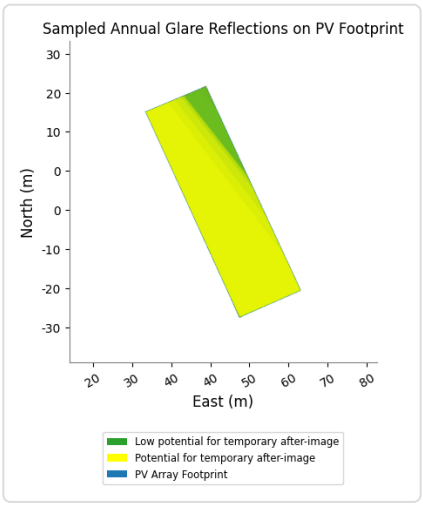
Green glare: 31,068 min.







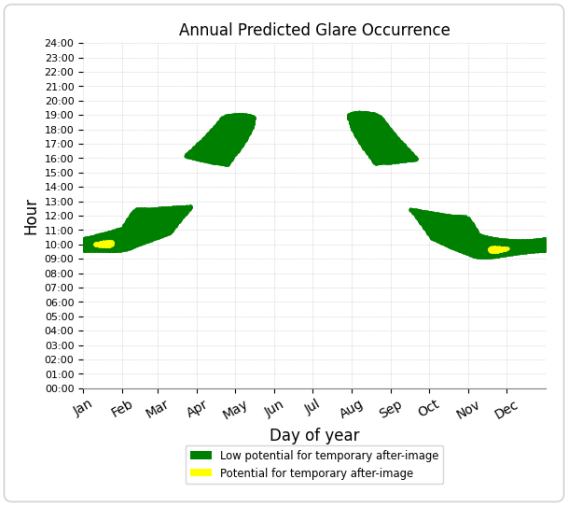


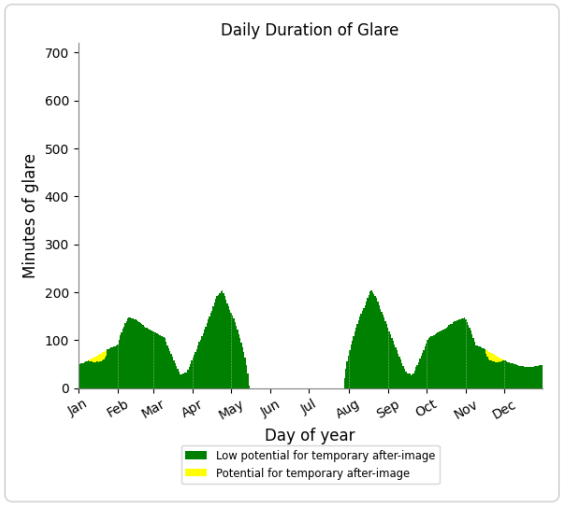


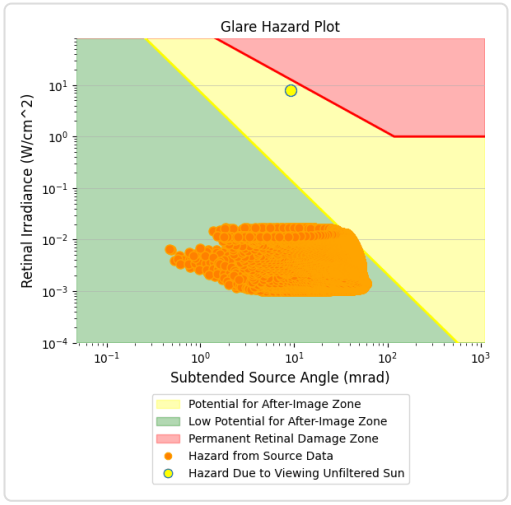
PCB05 and Route: Flight path G

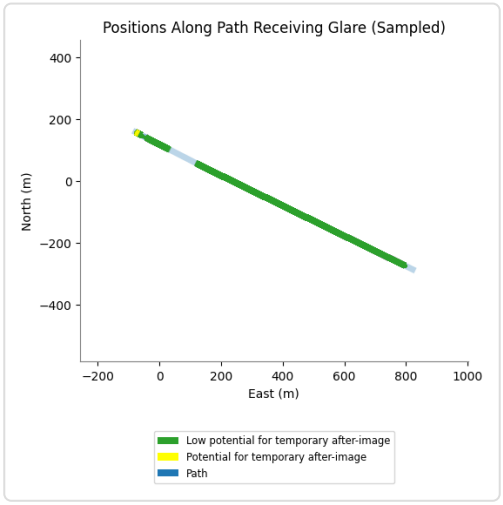
Yellow glare: 321 min.

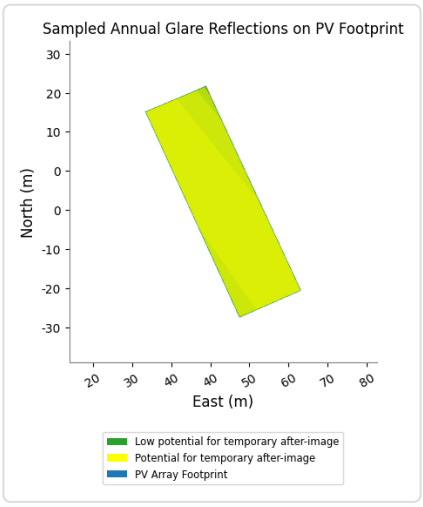
Green glare: 28,391 min.







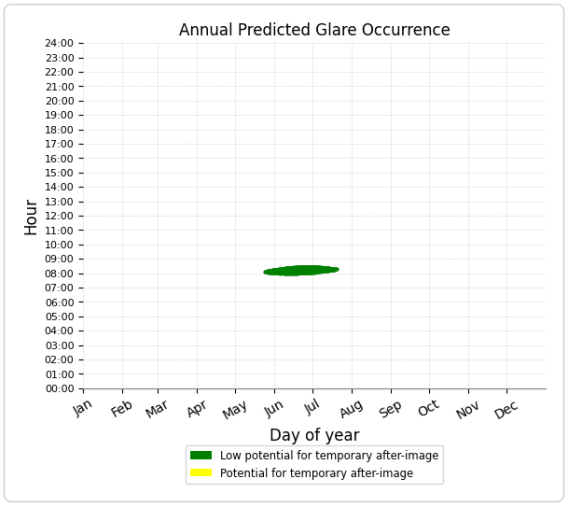


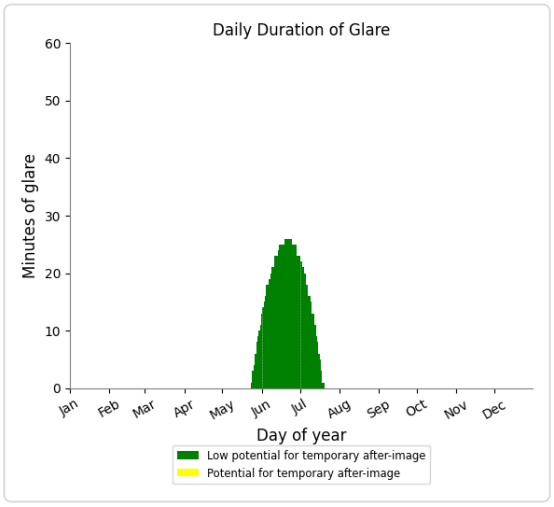


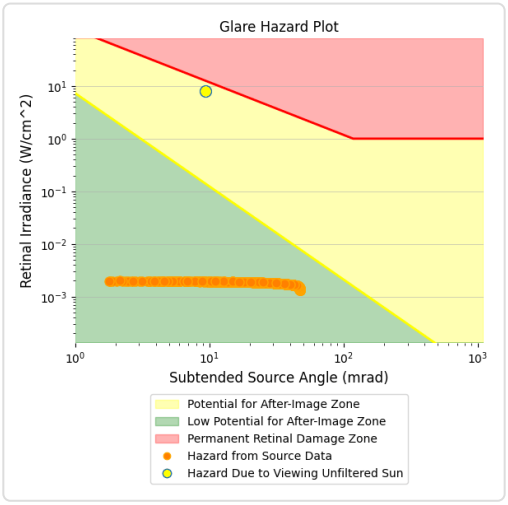
PCB05 and Route: Flight path C

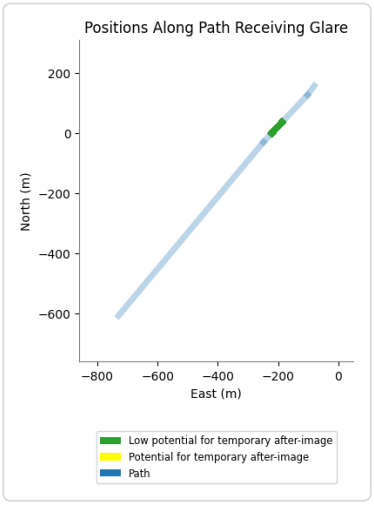
Yellow glare: none

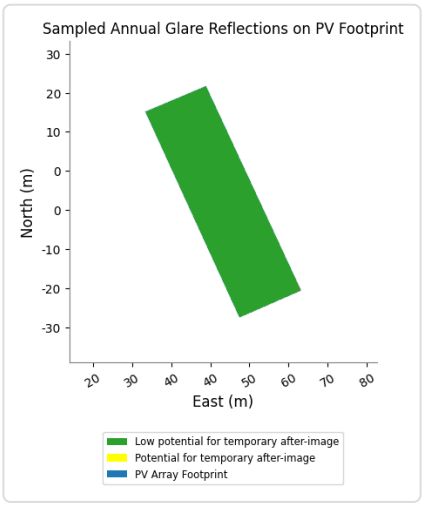
Green glare: 982 min.







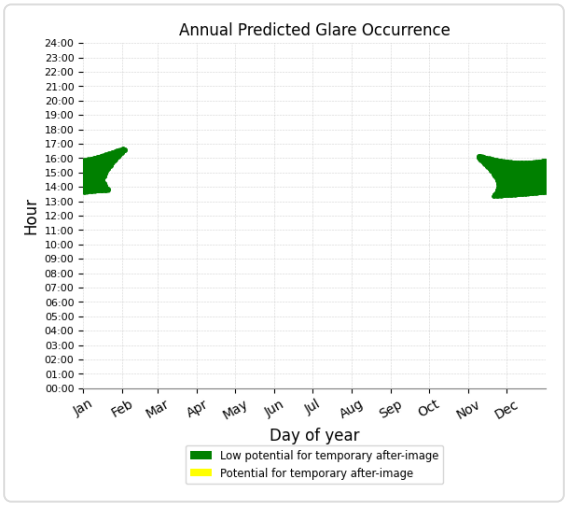


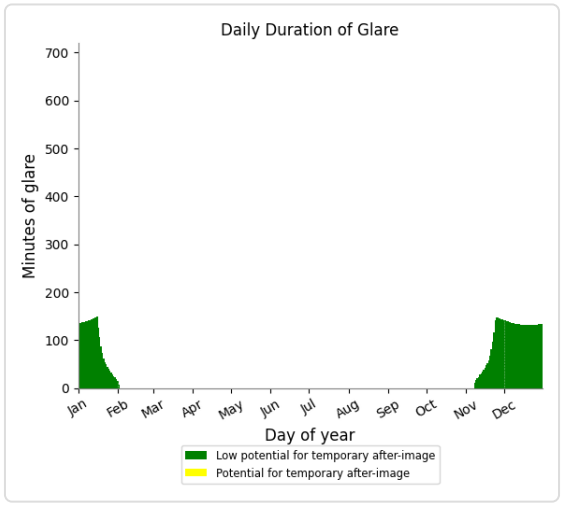


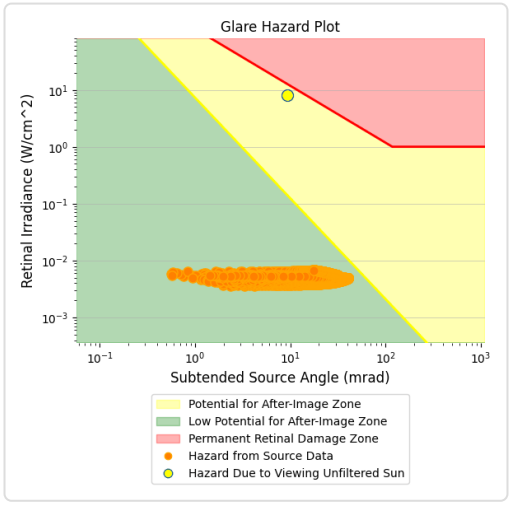
PCB05 and Route: Flight path H

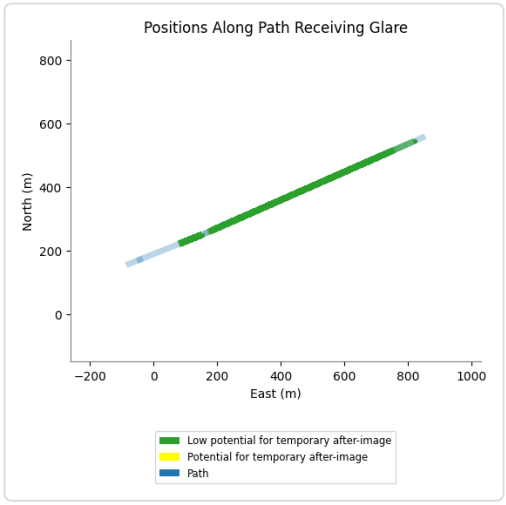
Yellow glare: none

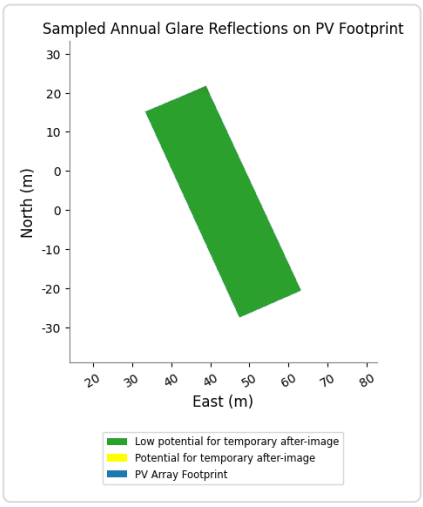
Green glare: 9,022 min.











PV: PCB06 low potential for temporary after-image

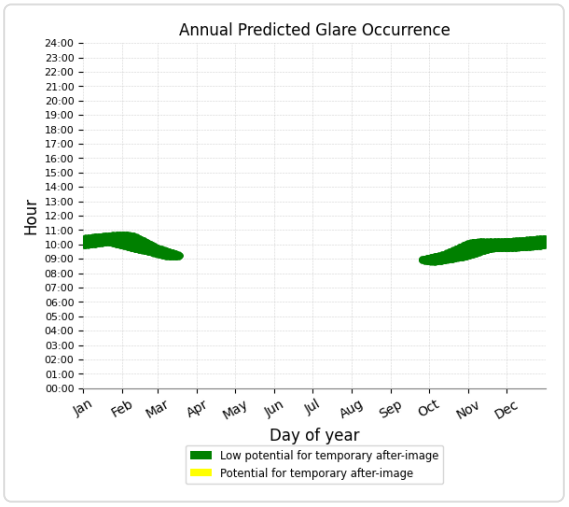
Receptor results ordered by category of glare

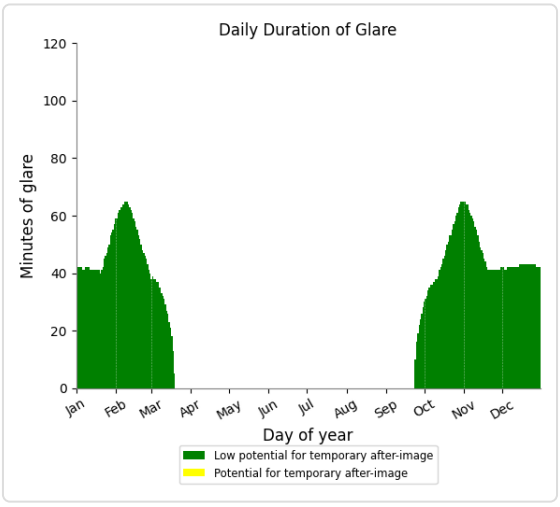
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	7,892	131.5	0	0.0
Flight path B	8,121	135.3	0	0.0
Flight path C	2,673	44.5	0	0.0
Flight path D	21,185	353.1	0	0.0
Flight path E	11,931	198.8	0	0.0
Flight path F	14,868	247.8	0	0.0
Flight path G	15,802	263.4	0	0.0
Flight path H	1,921	32.0	0	0.0

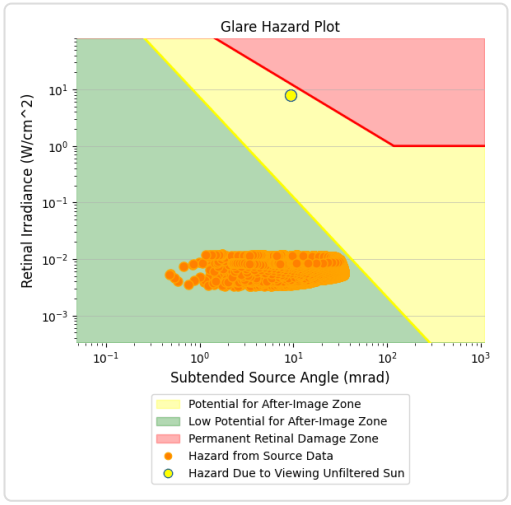
PCB06 and Route: Flight path A

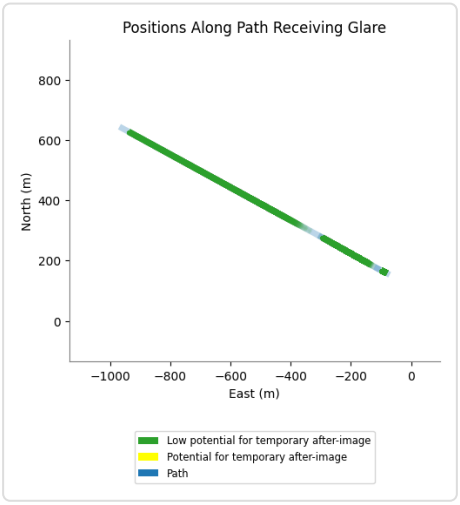
Yellow glare: none

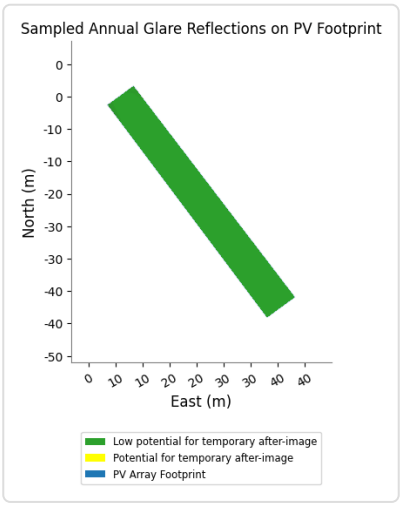
Green glare: 7,892 min.







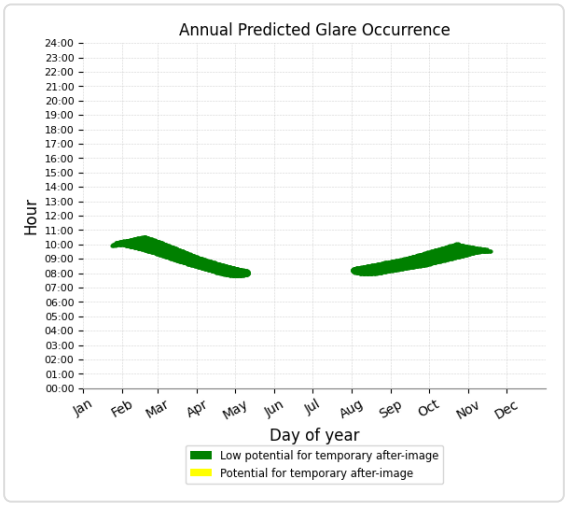


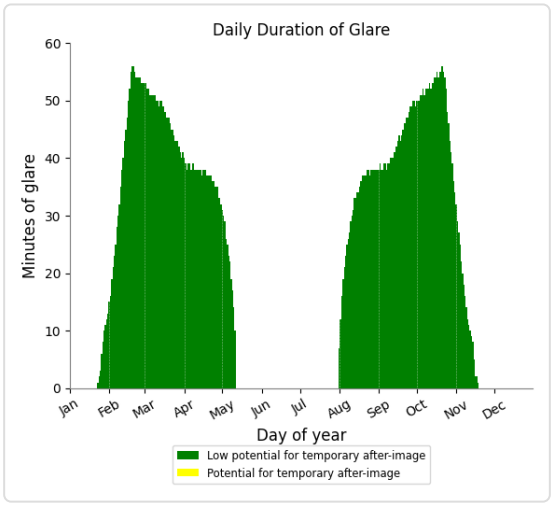


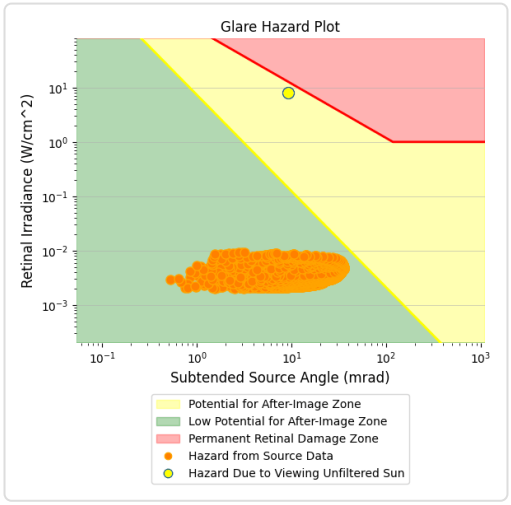
PCB06 and Route: Flight path B

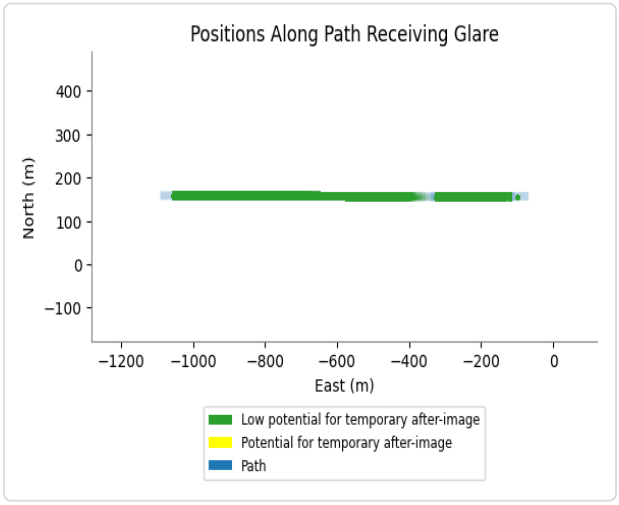
Yellow glare: none

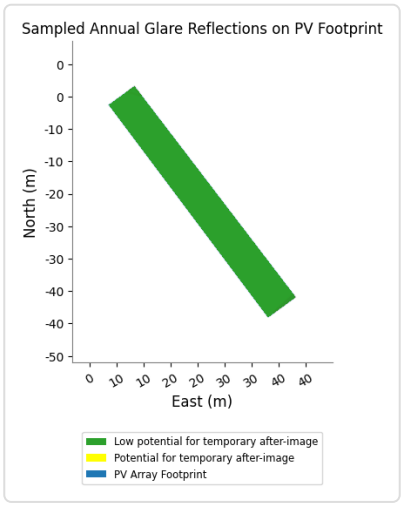
Green glare: 8,121 min.







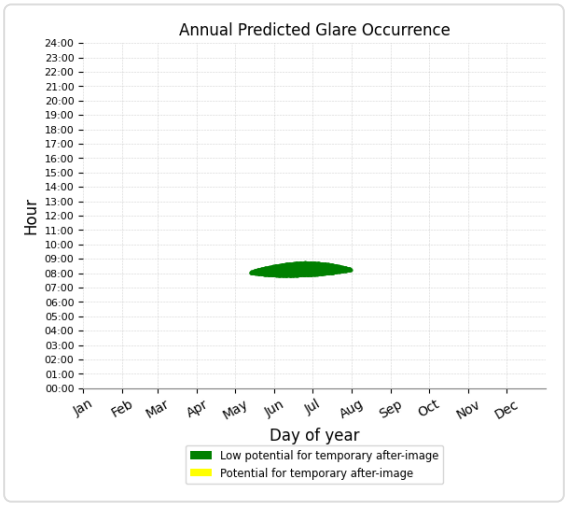


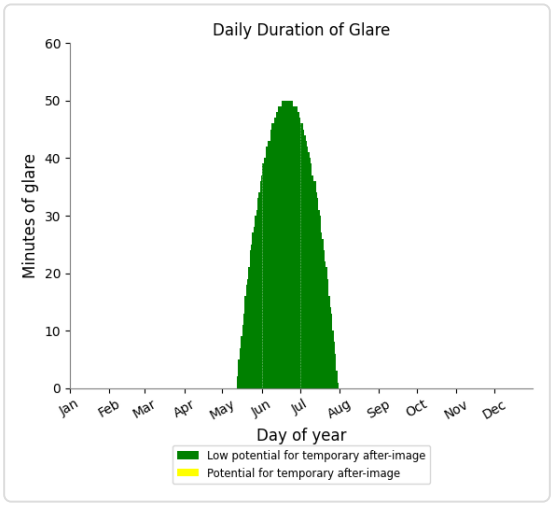


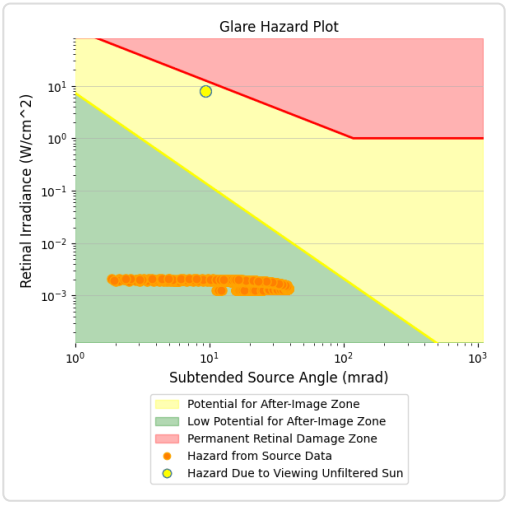
PCB06 and Route: Flight path C

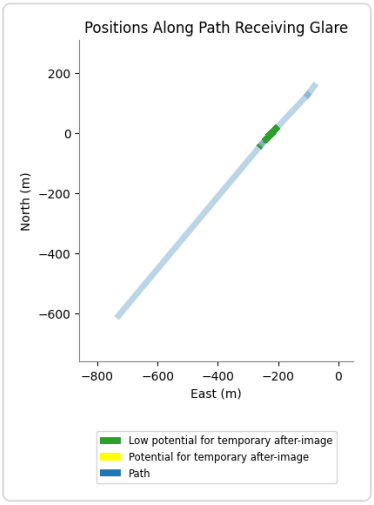
Yellow glare: none

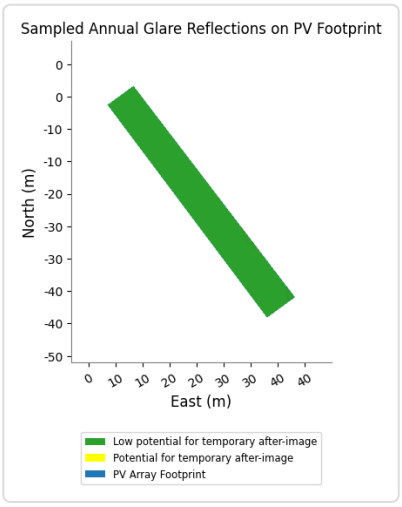
Green glare: 2,673 min.







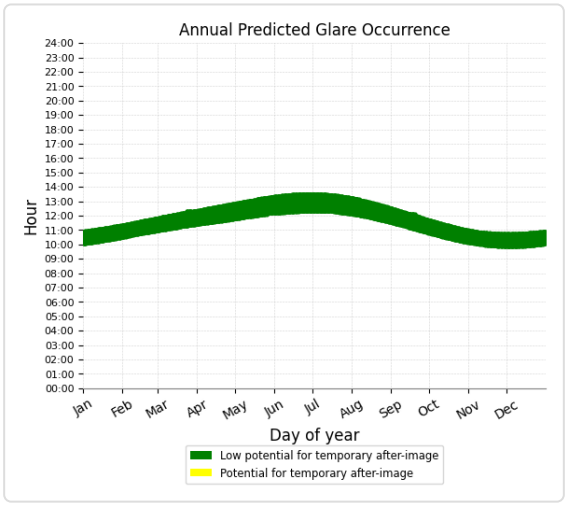


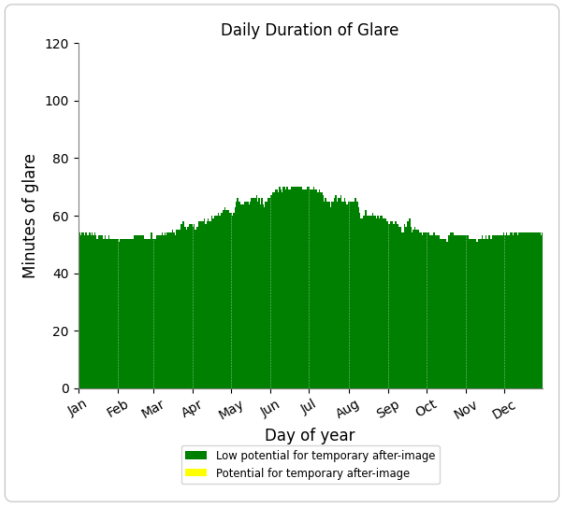


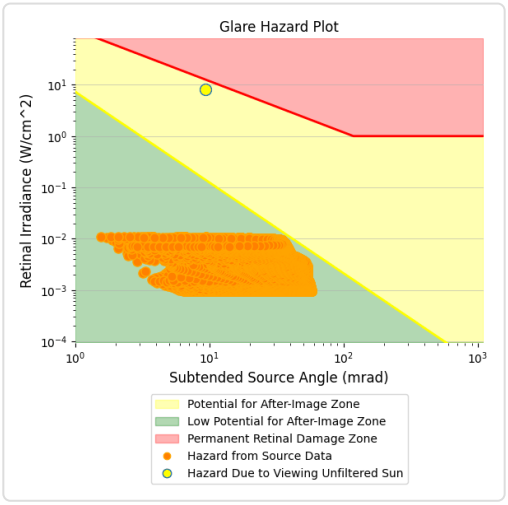
PCB06 and Route: Flight path D

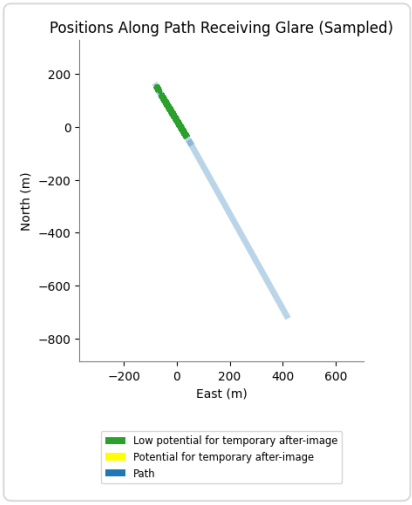
Yellow glare: none

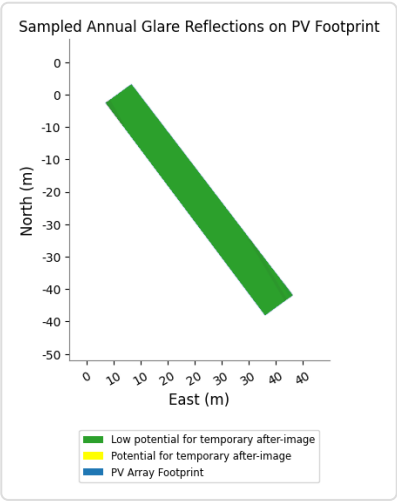
Green glare: 21,185 min.







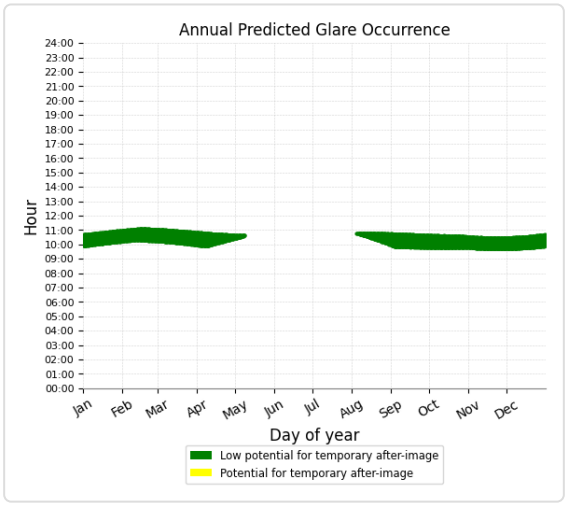


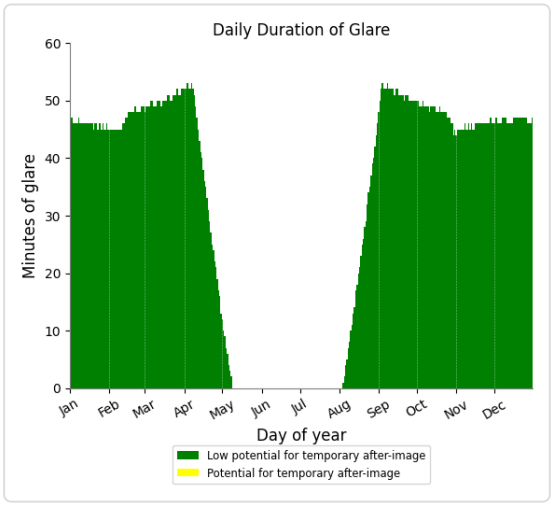


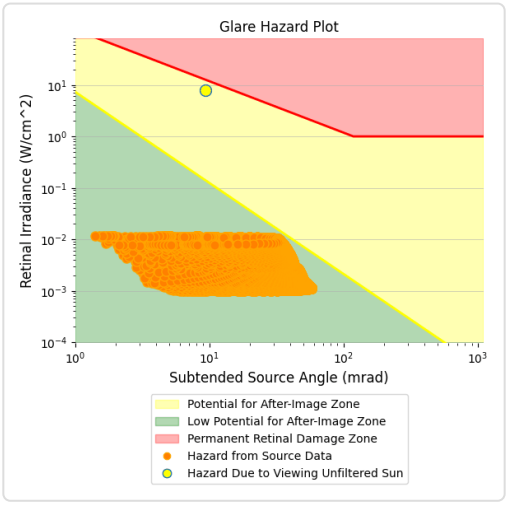
PCB06 and Route: Flight path E

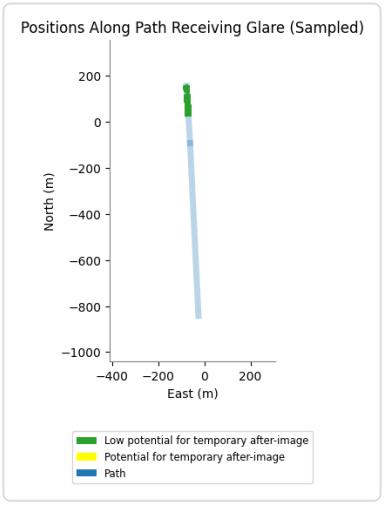
Yellow glare: none

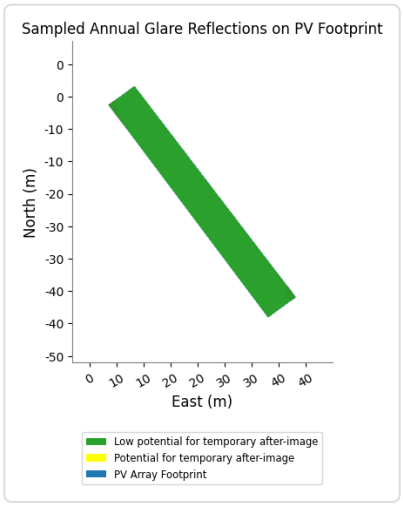
Green glare: 11,931 min.







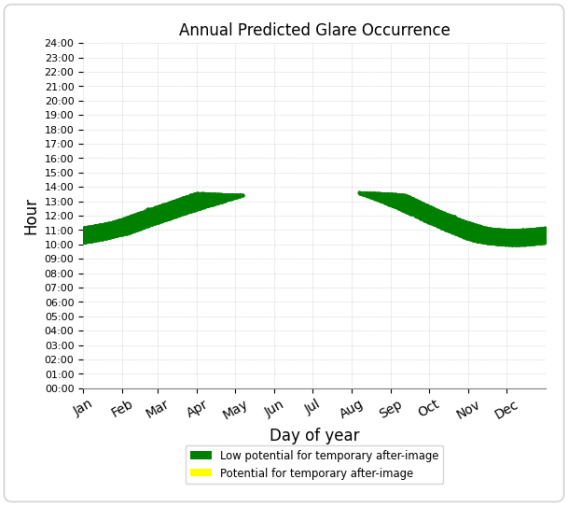


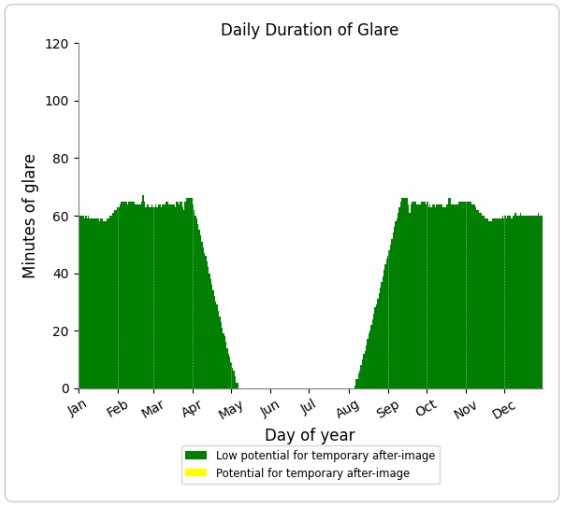


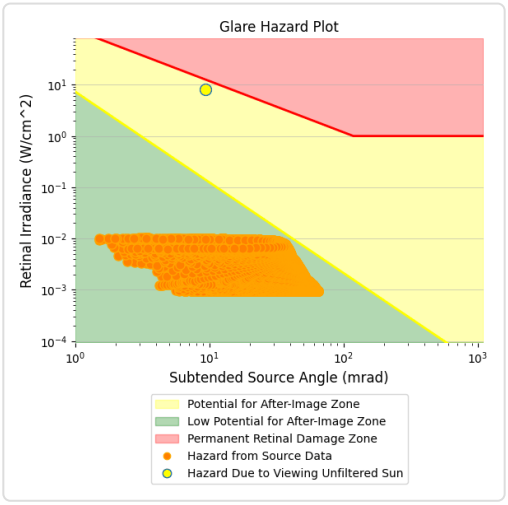
PCB06 and Route: Flight path F

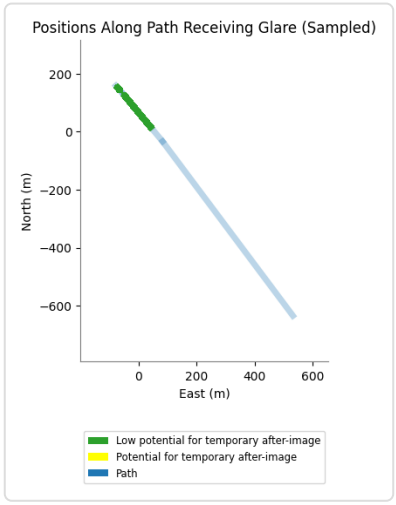
Yellow glare: none

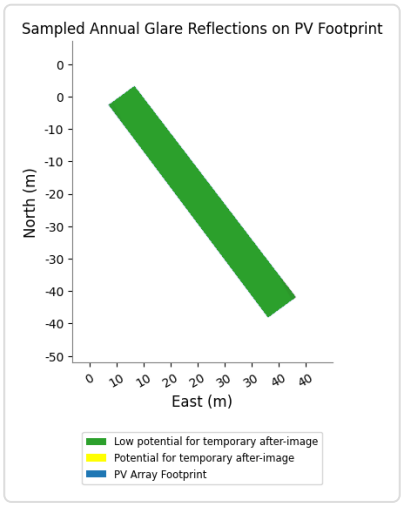
Green glare: 14,868 min.







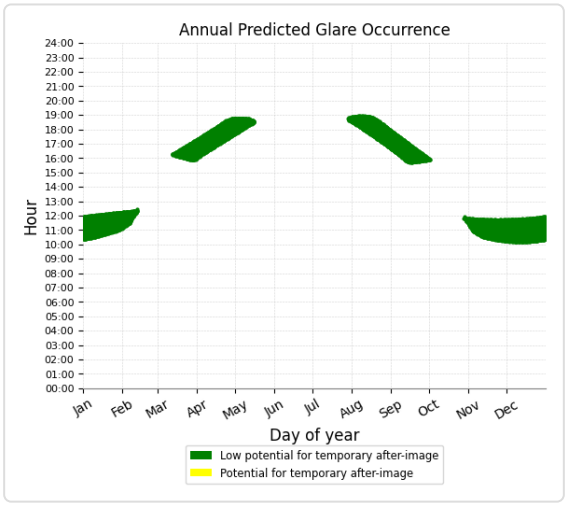


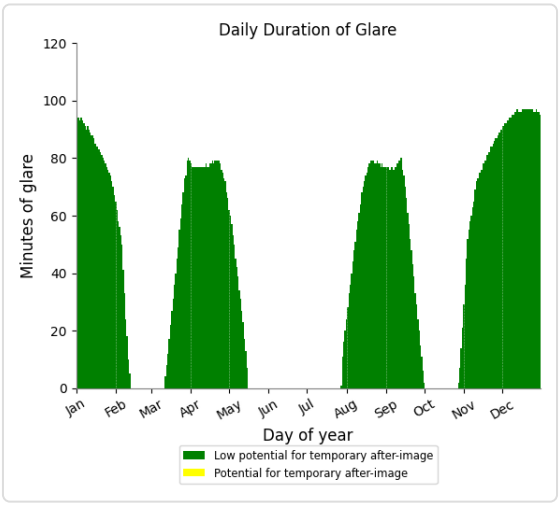


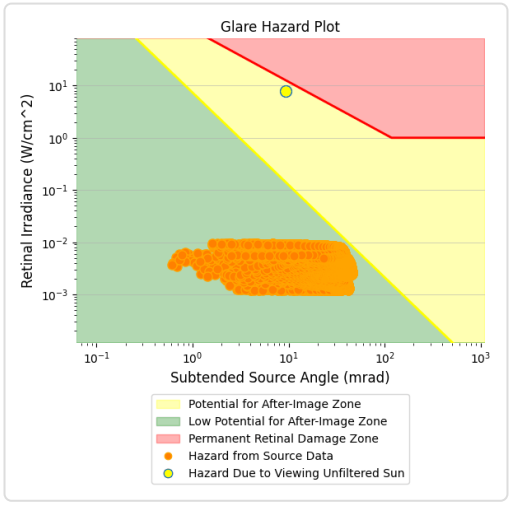
PCB06 and Route: Flight path G

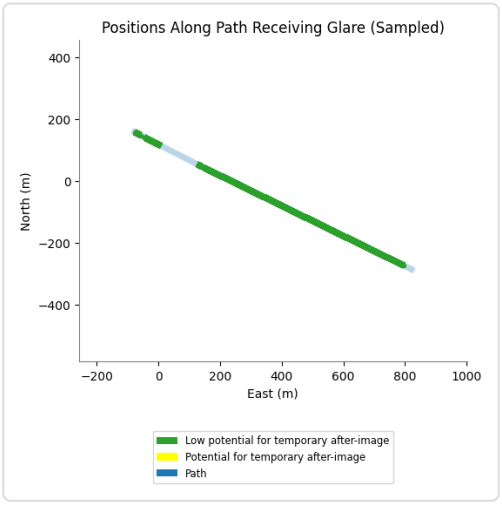
Yellow glare: none

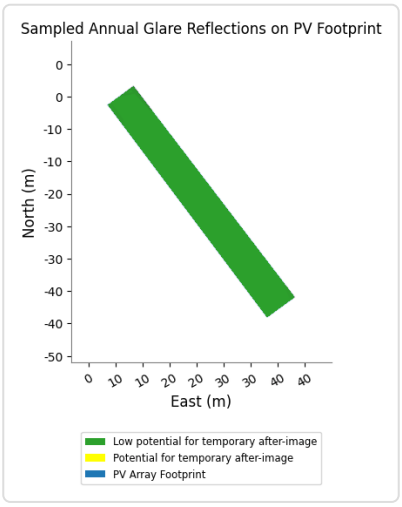
Green glare: 15,802 min.







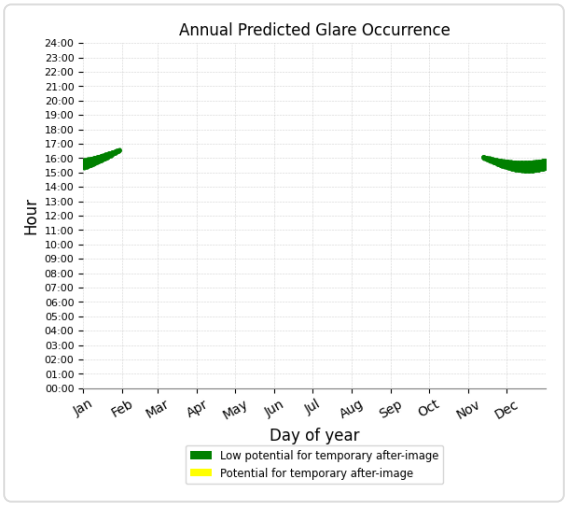


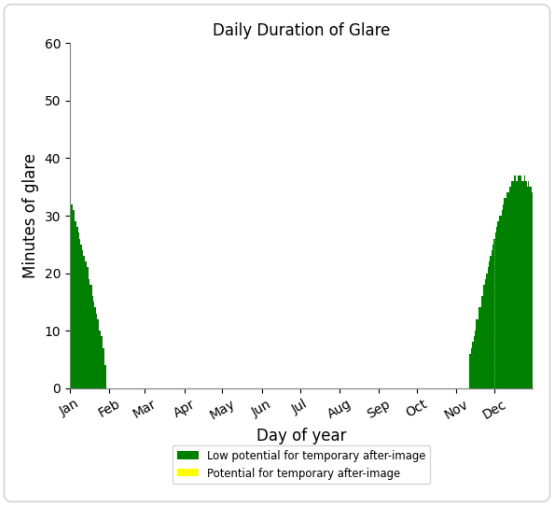


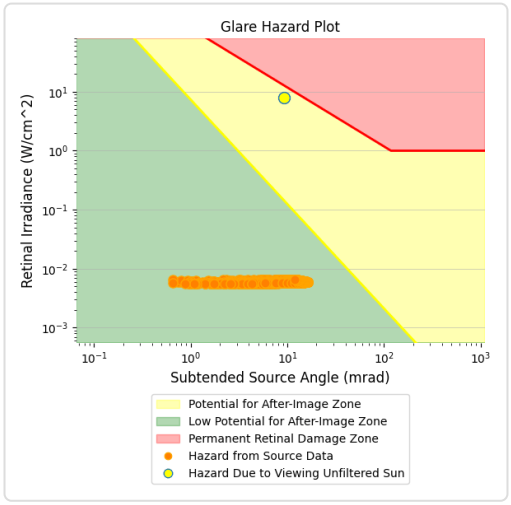
PCB06 and Route: Flight path H

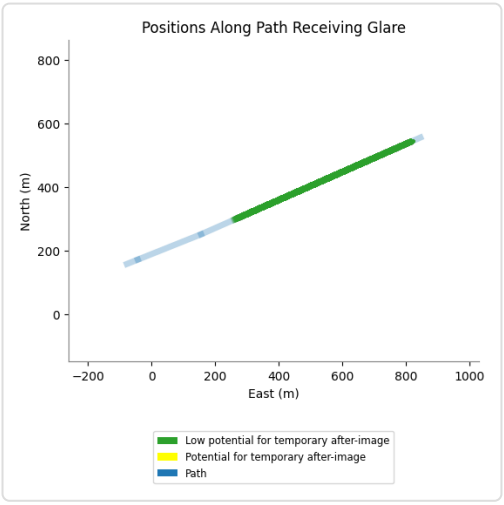
Yellow glare: none

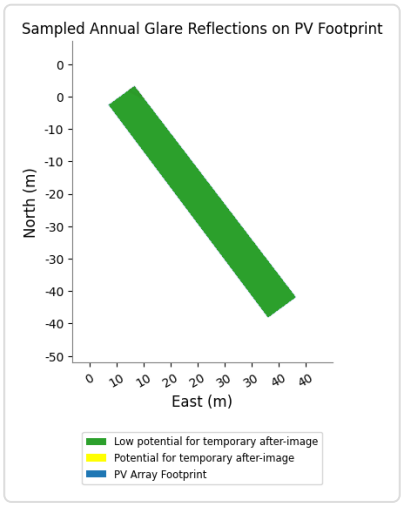
Green glare: 1,921 min.











PV: PMB06 low potential for temporary after-image

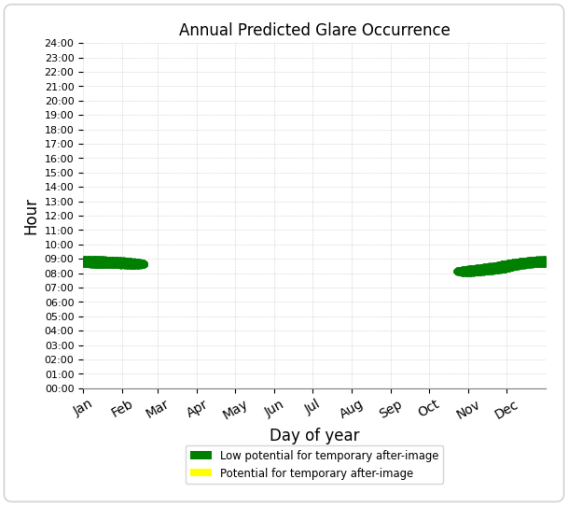
Receptor results ordered by category of glare

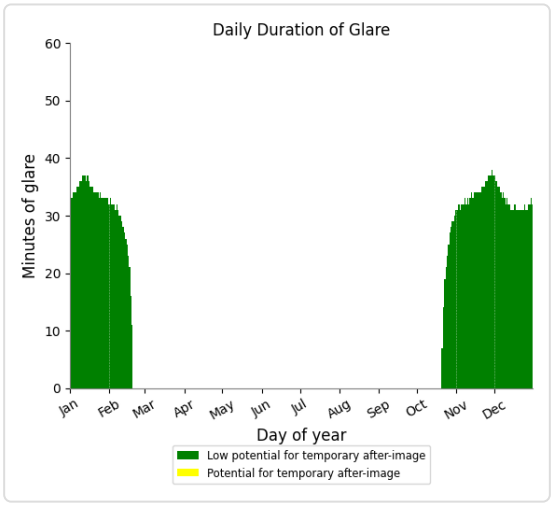
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	3,867	64.5	0	0.0
Flight path B	6,220	103.7	0	0.0
Flight path C	5,282	88.0	0	0.0
Flight path D	16,074	267.9	0	0.0
Flight path E	4,094	68.2	0	0.0
Flight path F	19,755	329.2	0	0.0
Flight path G	22,513	375.2	0	0.0
Flight path H	5,980	99.7	0	0.0

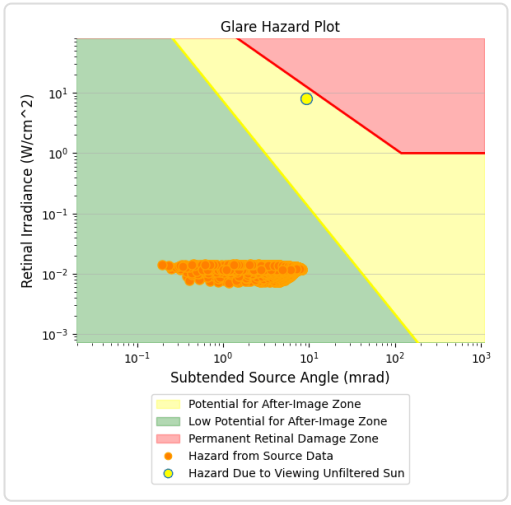
PMB06 and Route: Flight path A

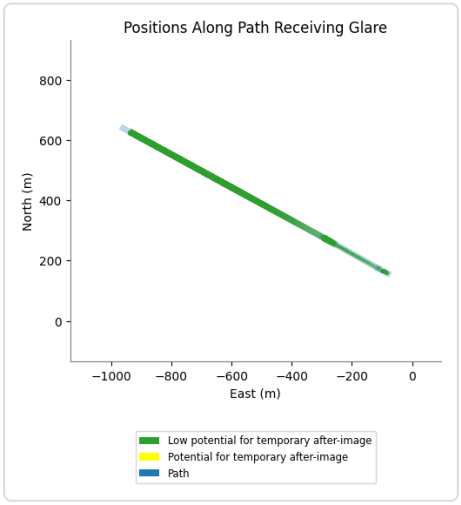
Yellow glare: none

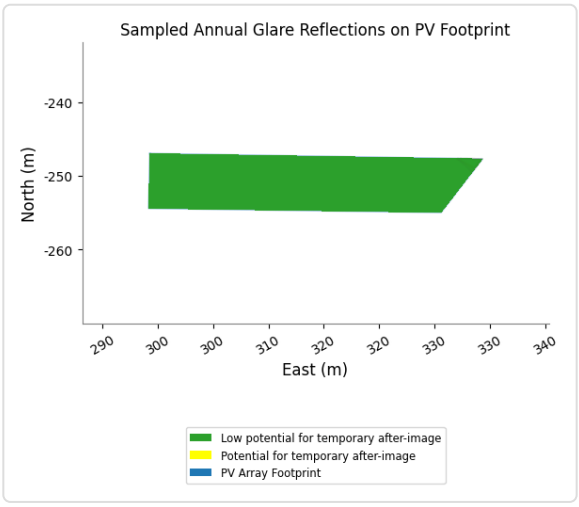
Green glare: 3,867 min.







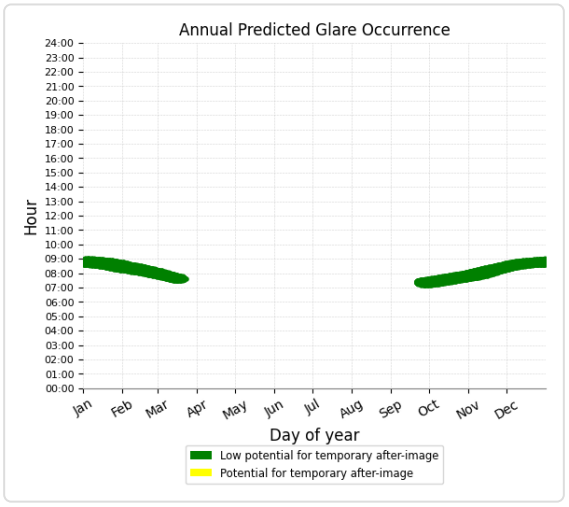


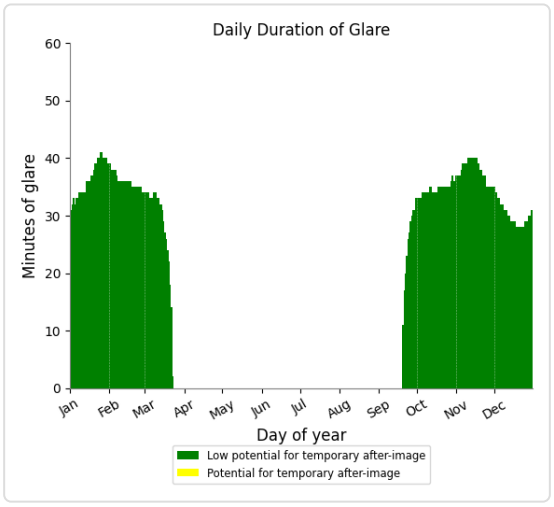


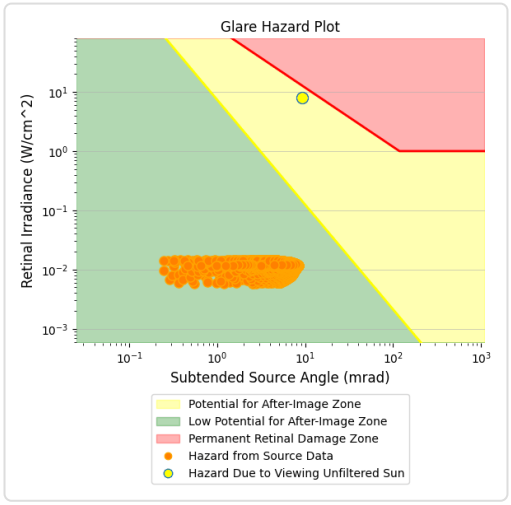
PMB06 and Route: Flight path B

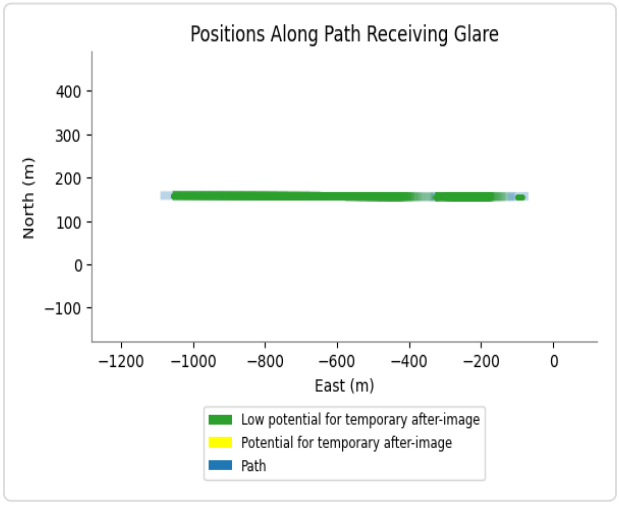
Yellow glare: none

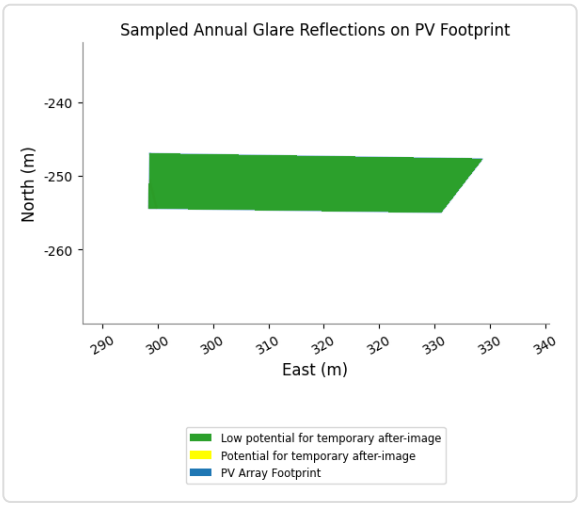
Green glare: 6,220 min.







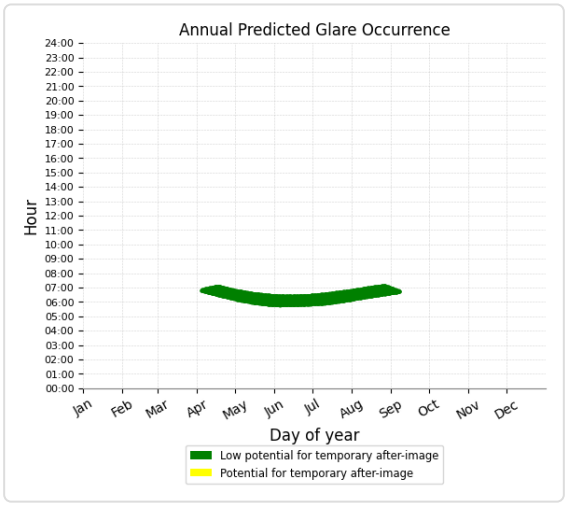


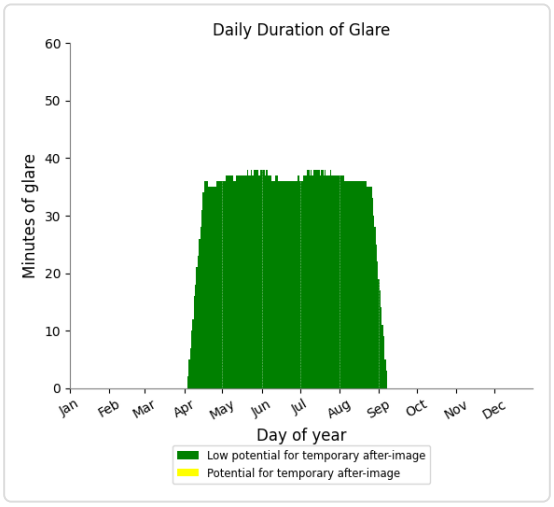


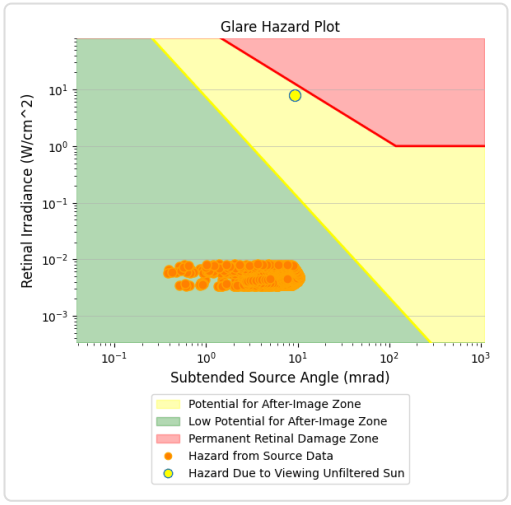
PMB06 and Route: Flight path C

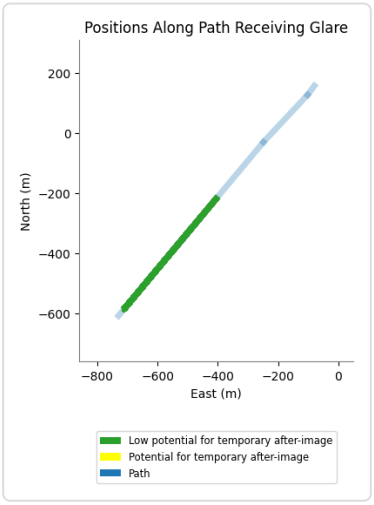
Yellow glare: none

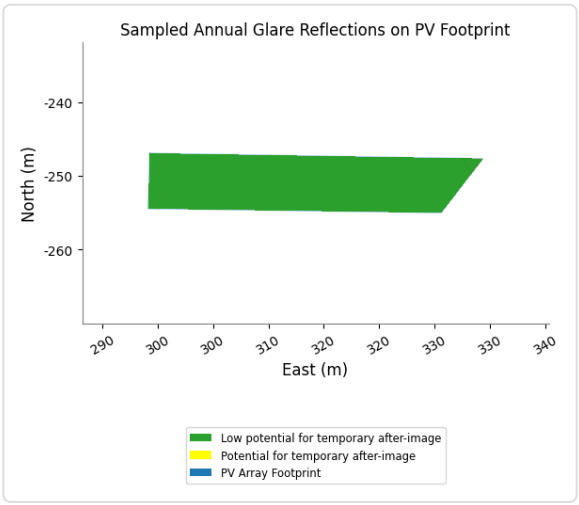
Green glare: 5,282 min.







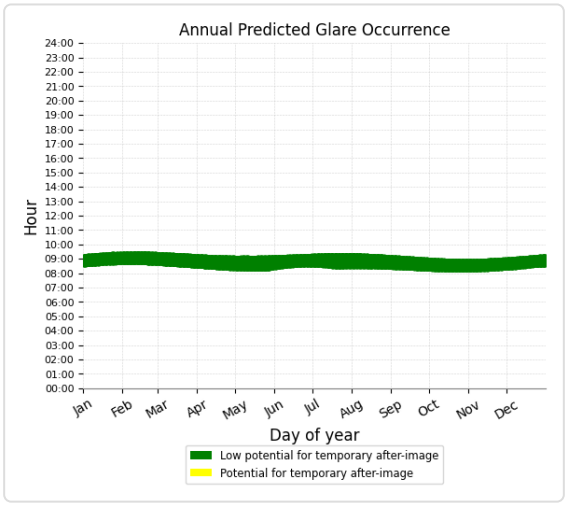


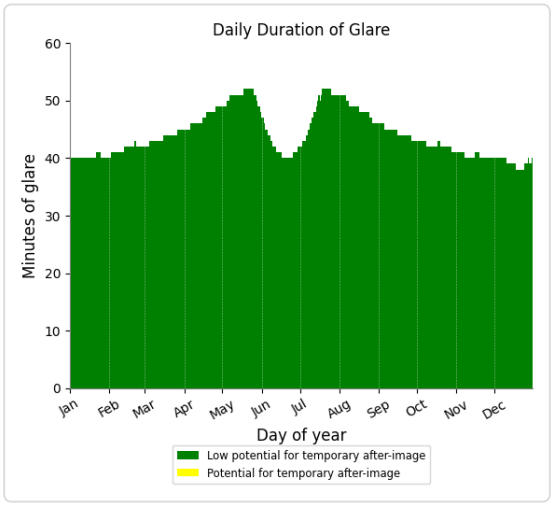


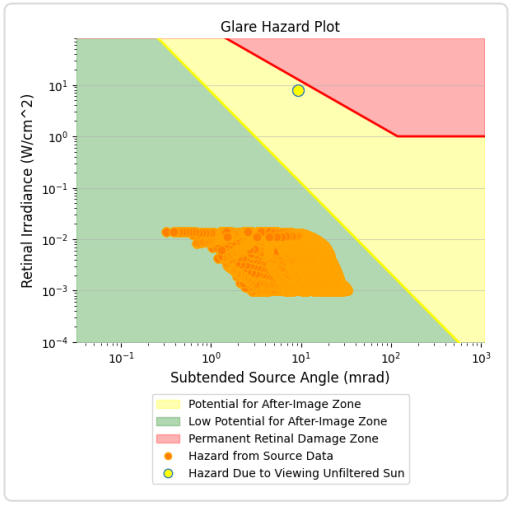
PMB06 and Route: Flight path D

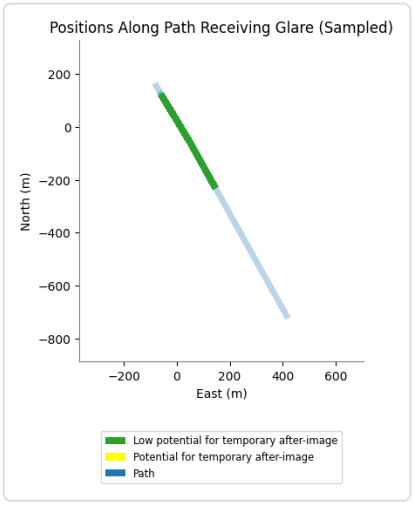
Yellow glare: none

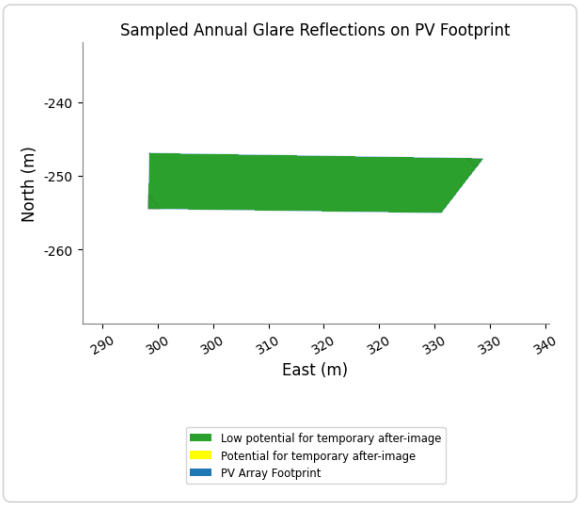
Green glare: 16,074 min.







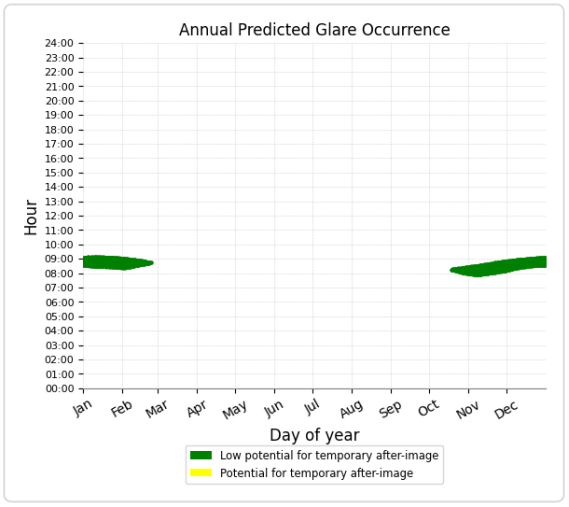


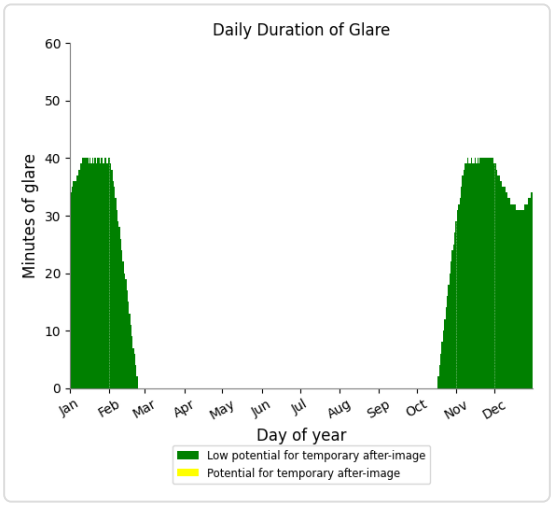


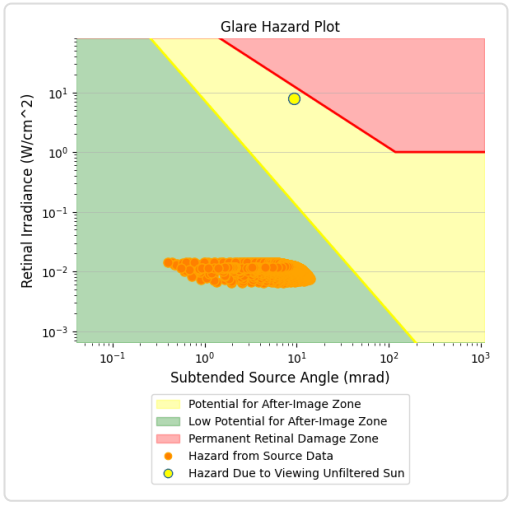
PMB06 and Route: Flight path E

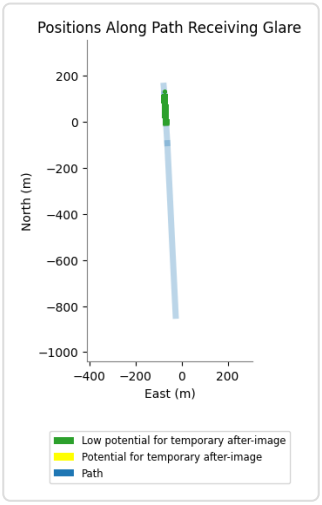
Yellow glare: none

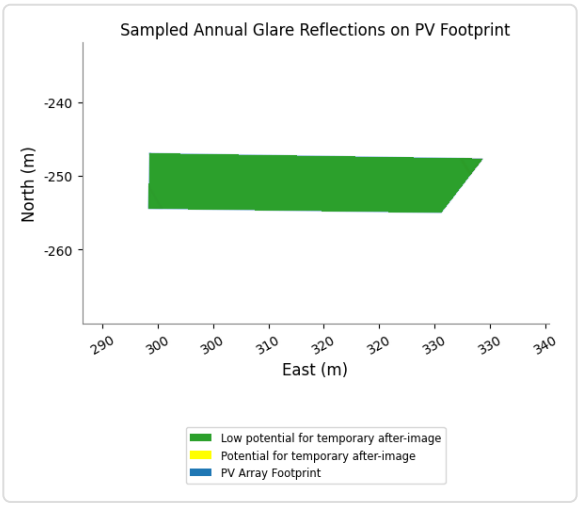
Green glare: 4,094 min.







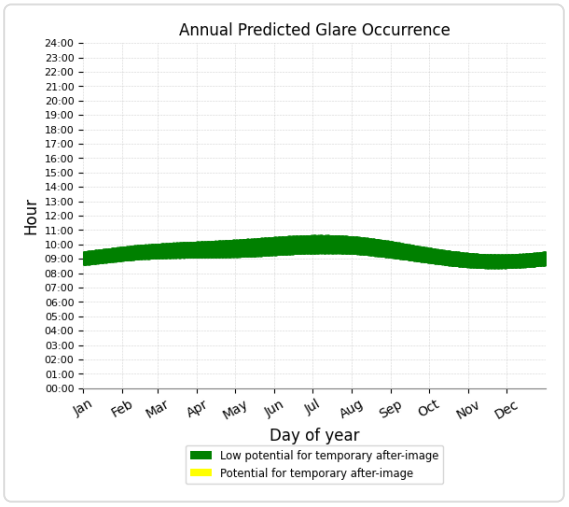


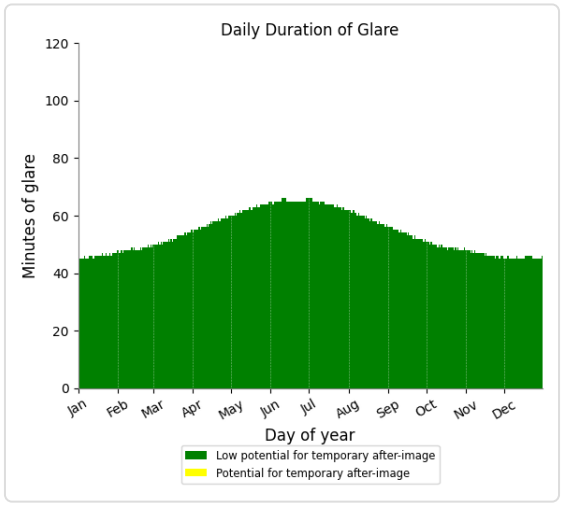


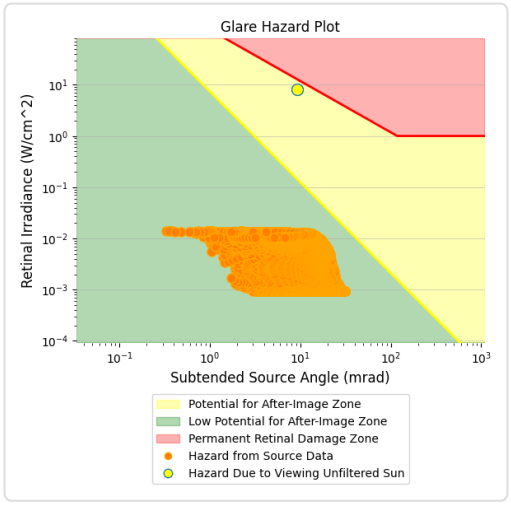
PMB06 and Route: Flight path F

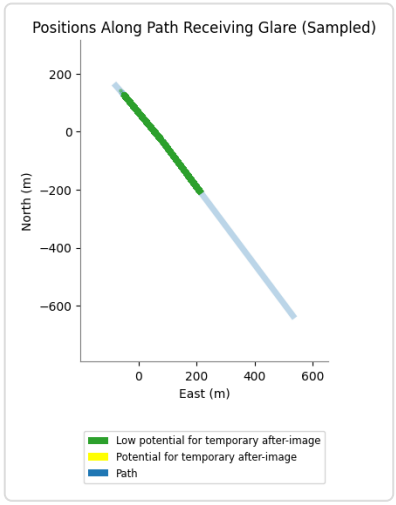
Yellow glare: none

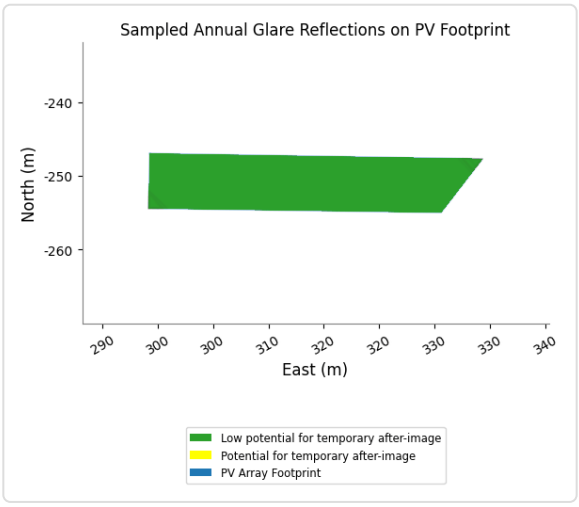
Green glare: 19,755 min.







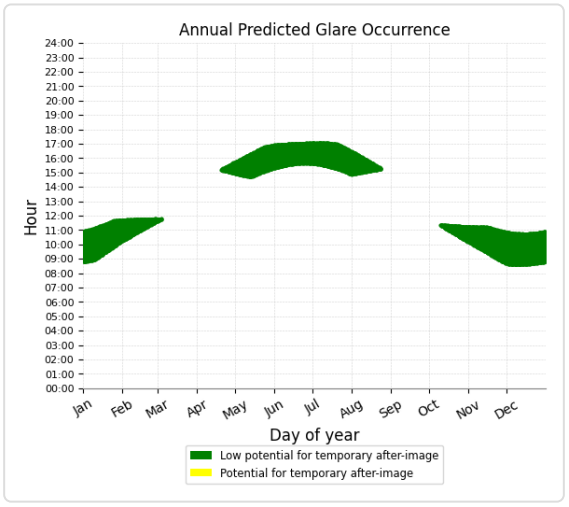


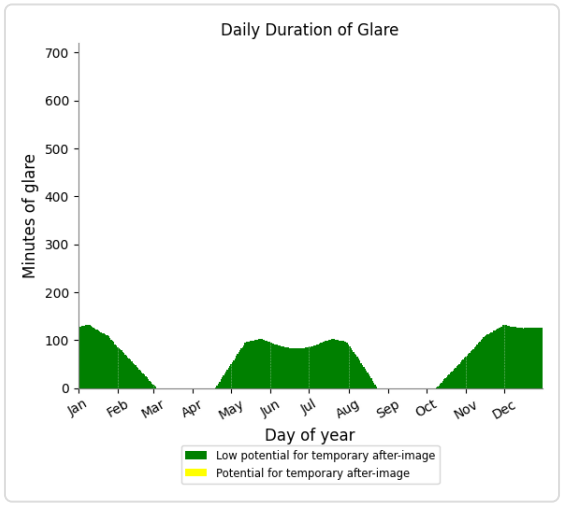


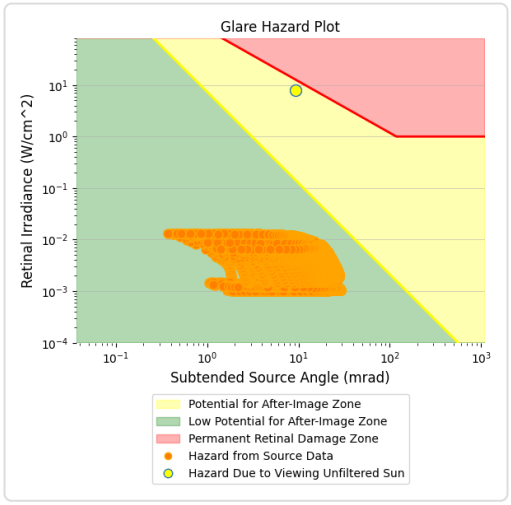
PMB06 and Route: Flight path G

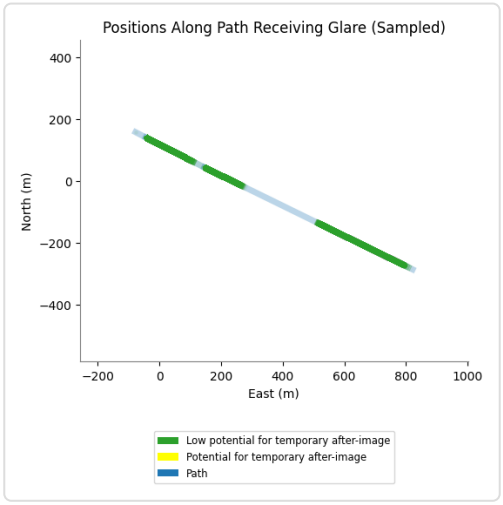
Yellow glare: none

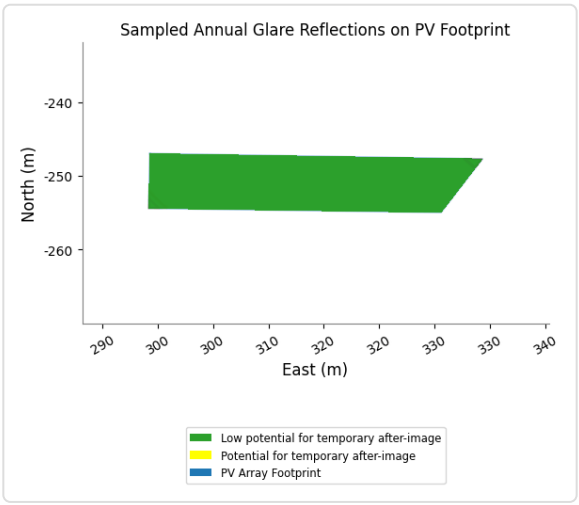
Green glare: 22,513 min.







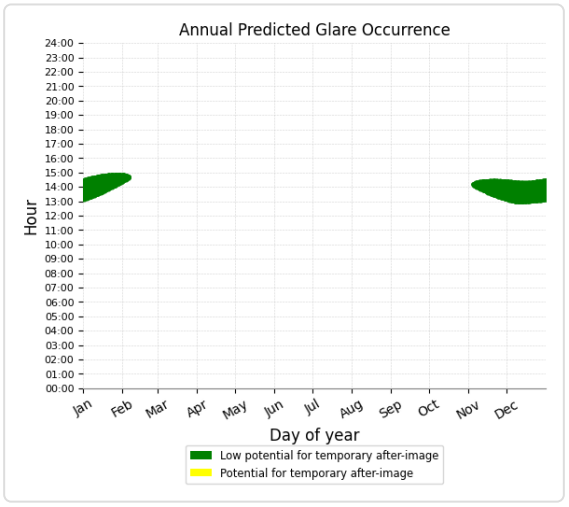


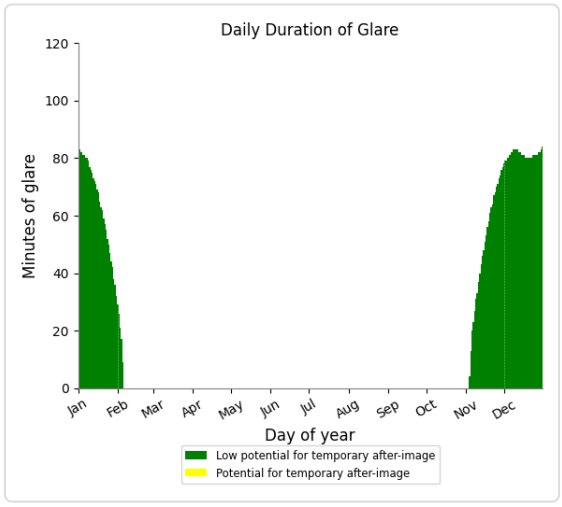


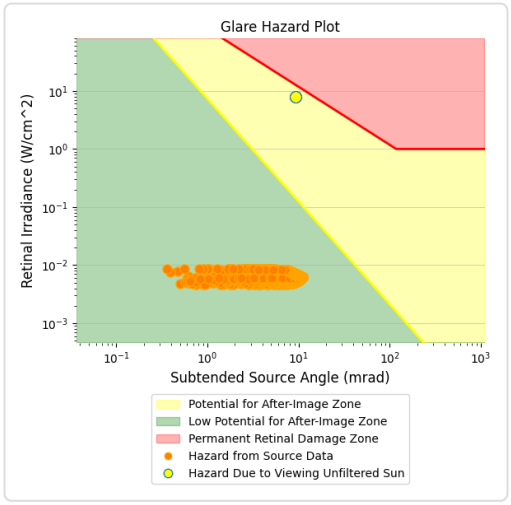
PMB06 and Route: Flight path H

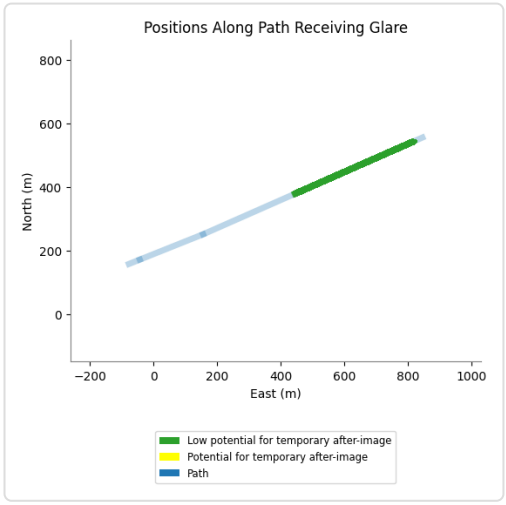
Yellow glare: none

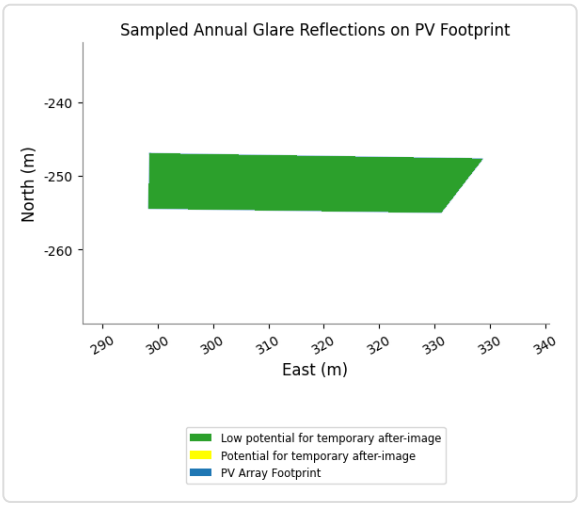
Green glare: 5,980 min.











PV: PMB07 low potential for temporary after-image

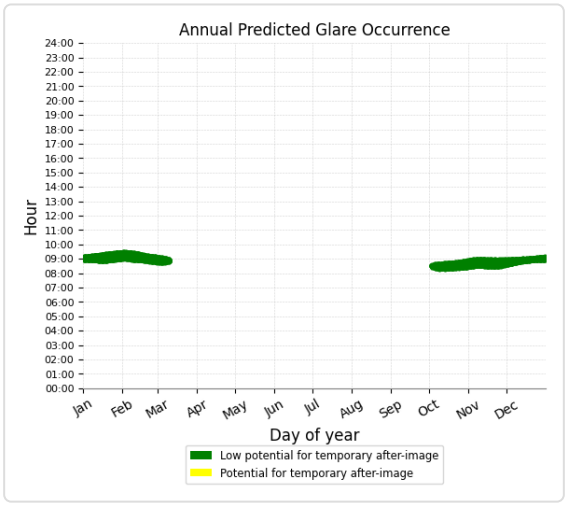
Receptor results ordered by category of glare

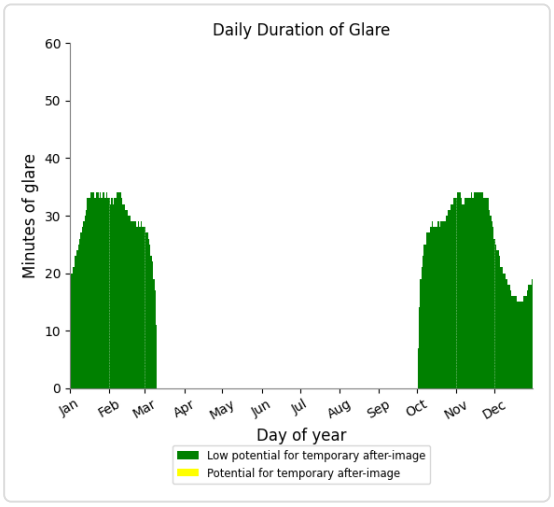
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	4,374	72.9	0	0.0
Flight path B	6,565	109.4	0	0.0
Flight path C	4,042	67.4	0	0.0
Flight path D	11,423	190.4	0	0.0
Flight path E	4,106	68.4	0	0.0
Flight path F	12,638	210.6	0	0.0
Flight path G	20,567	342.8	0	0.0
Flight path H	6,829	113.8	0	0.0

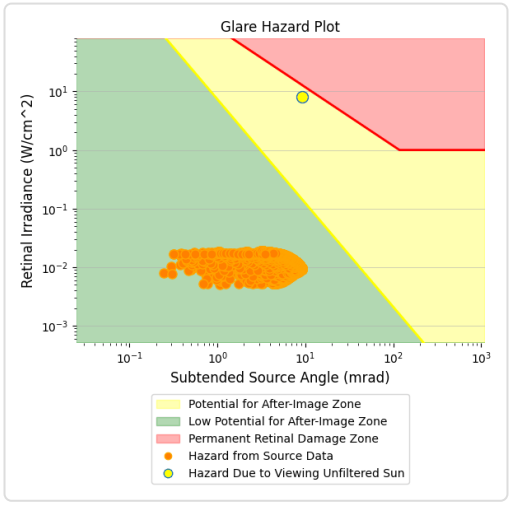
PMB07 and Route: Flight path A

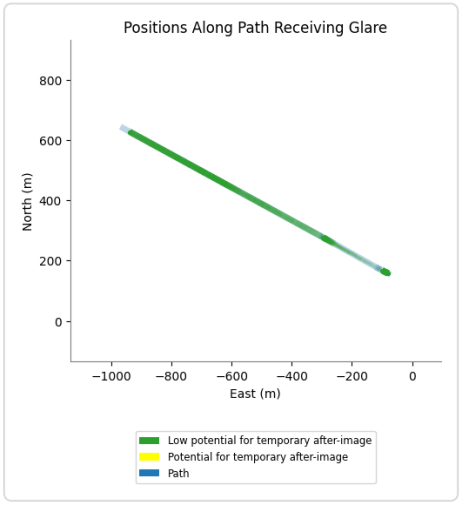
Yellow glare: none

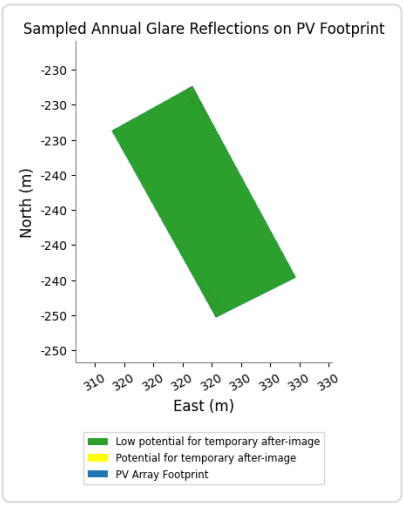
Green glare: 4,374 min.







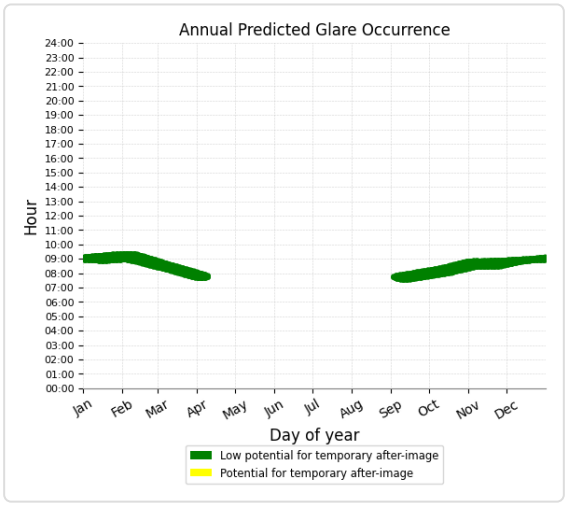


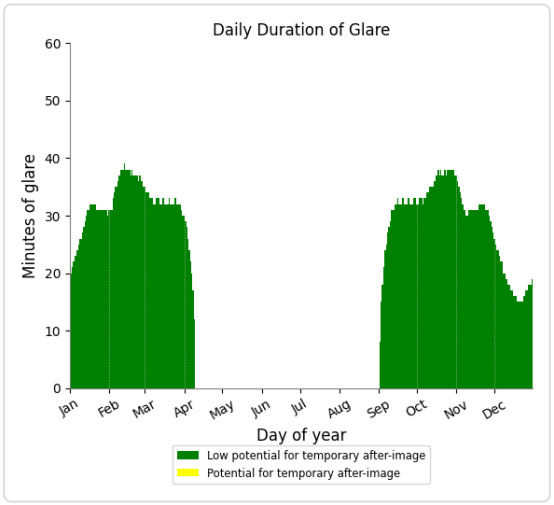


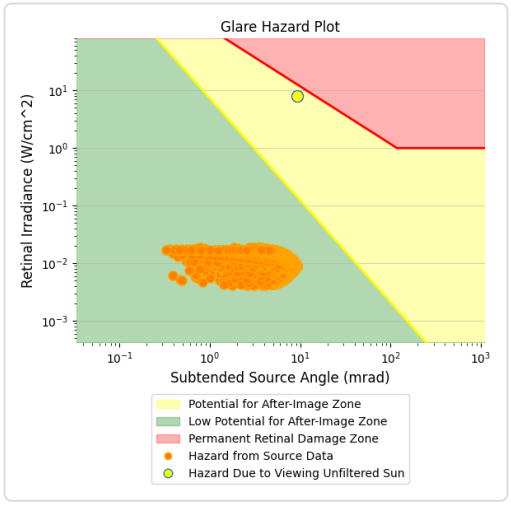
PMB07 and Route: Flight path B

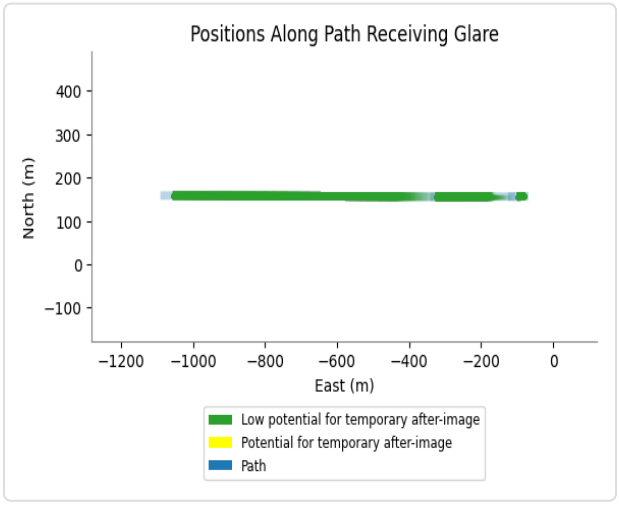
Yellow glare: none

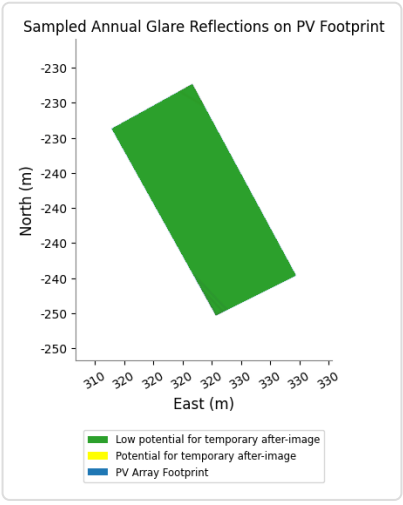
Green glare: 6,565 min.







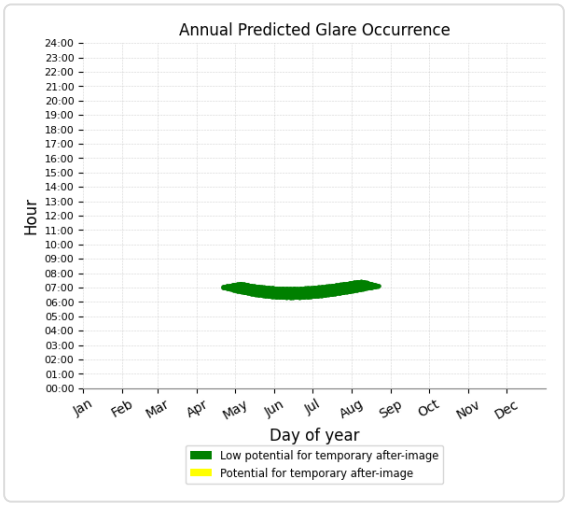


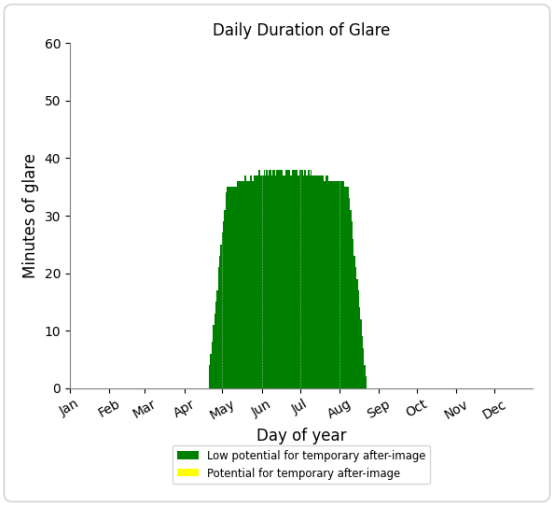


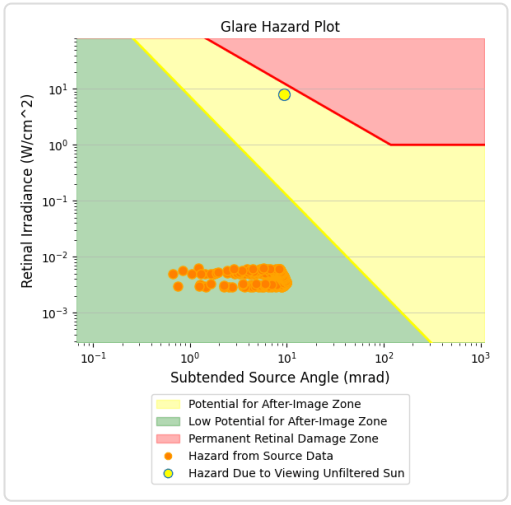
PMB07 and Route: Flight path C

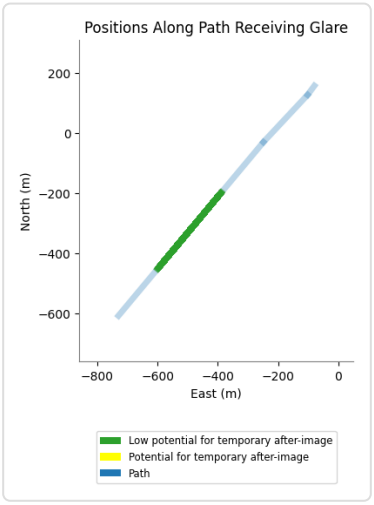
Yellow glare: none

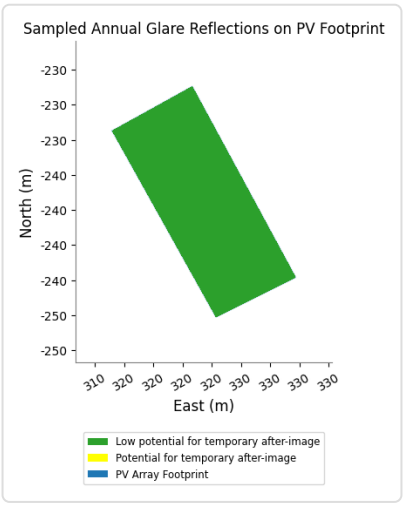
Green glare: 4,042 min.







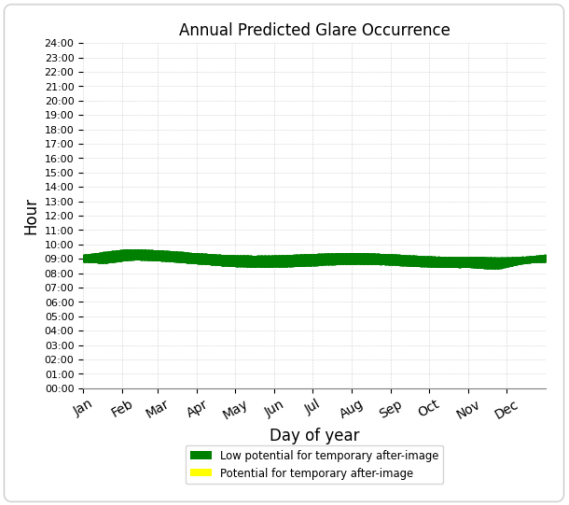


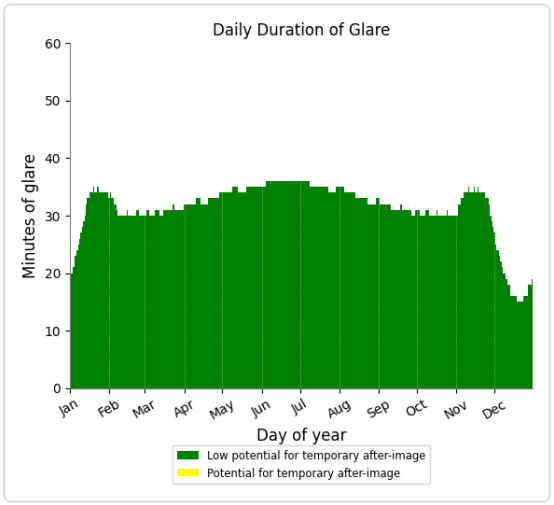


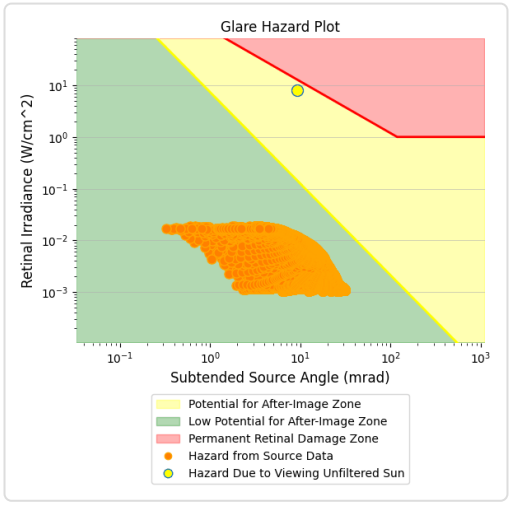
PMB07 and Route: Flight path D

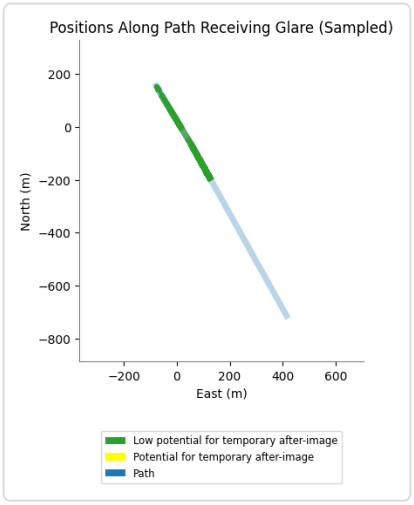
Yellow glare: none

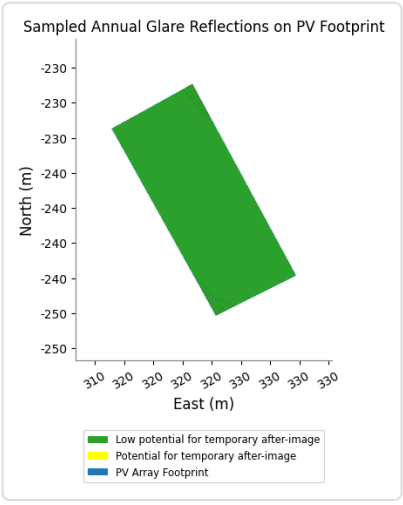
Green glare: 11,423 min.







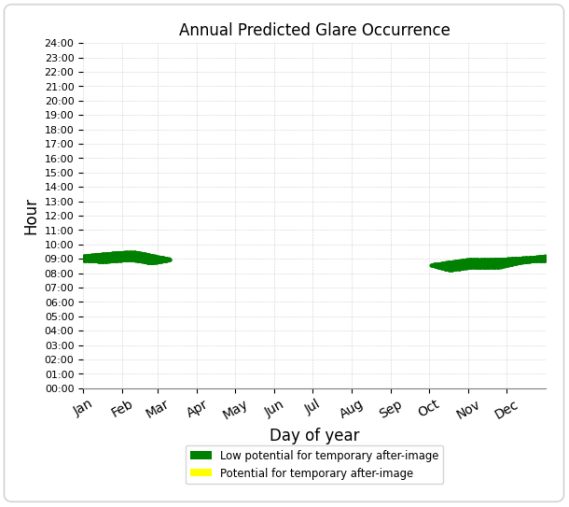


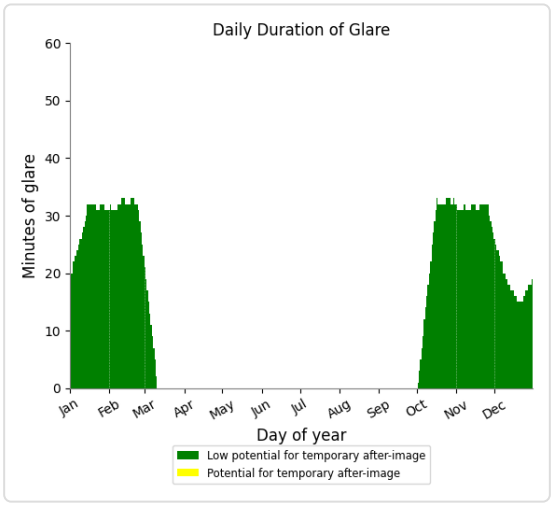


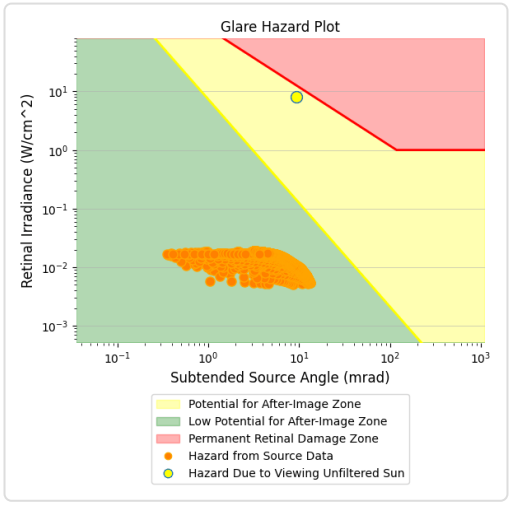
PMB07 and Route: Flight path E

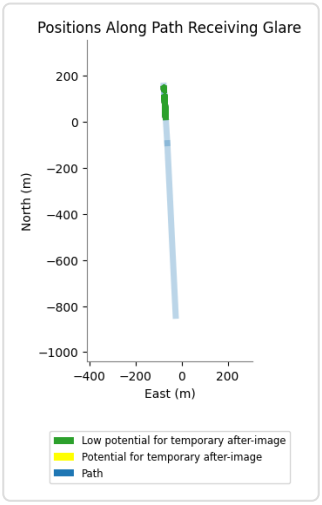
Yellow glare: none

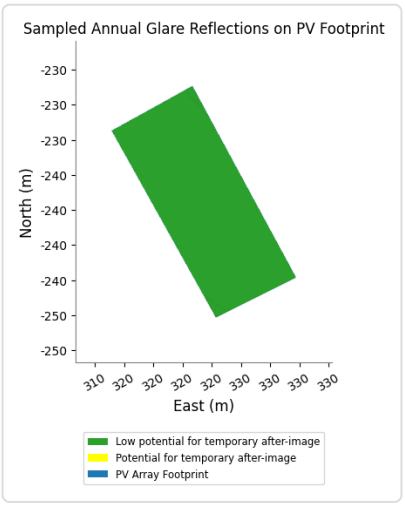
Green glare: 4,106 min.







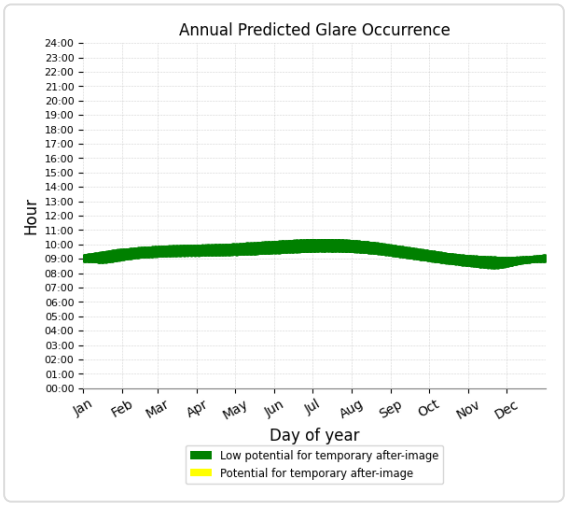


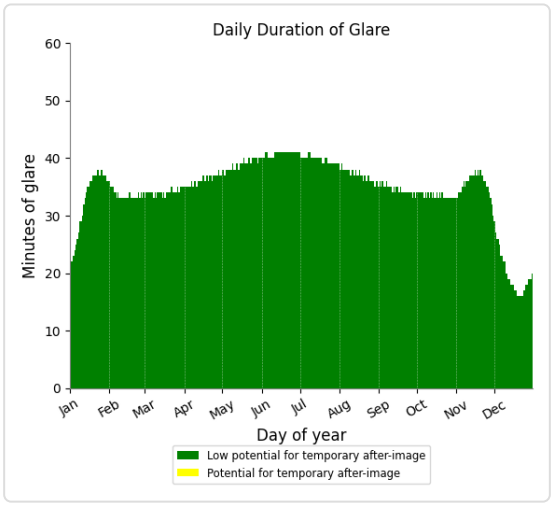


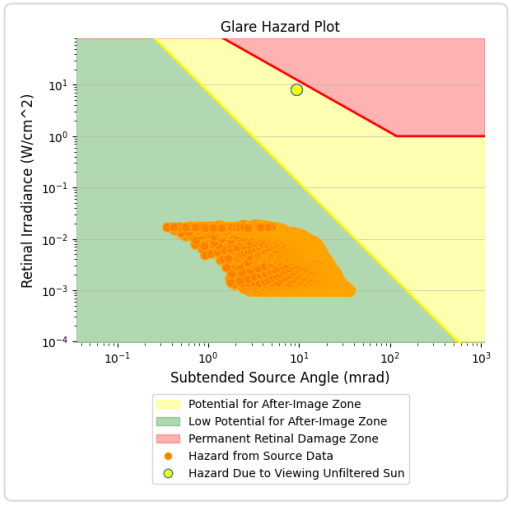
PMB07 and Route: Flight path F

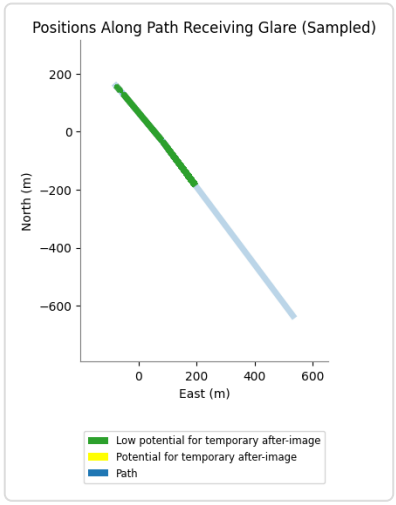
Yellow glare: none

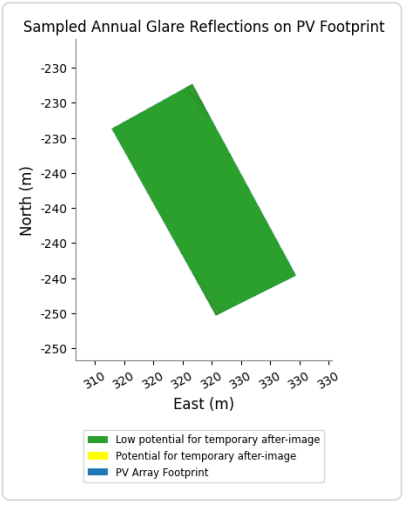
Green glare: 12,638 min.







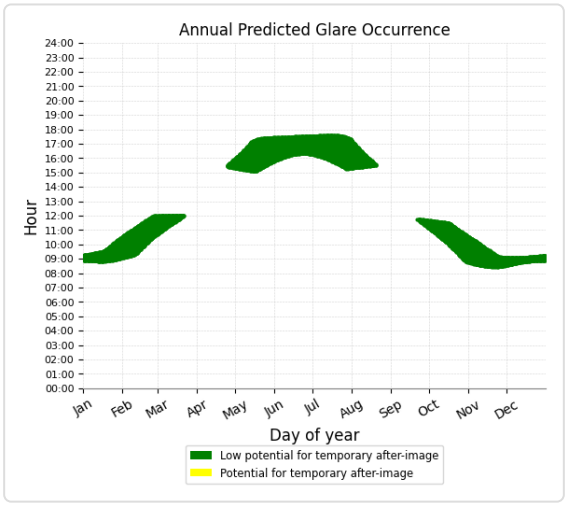


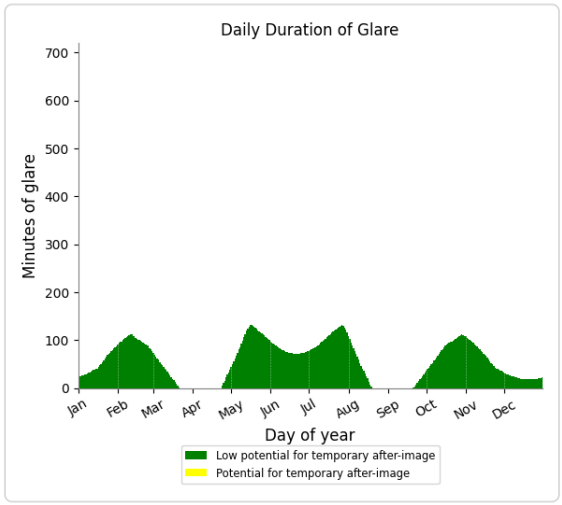


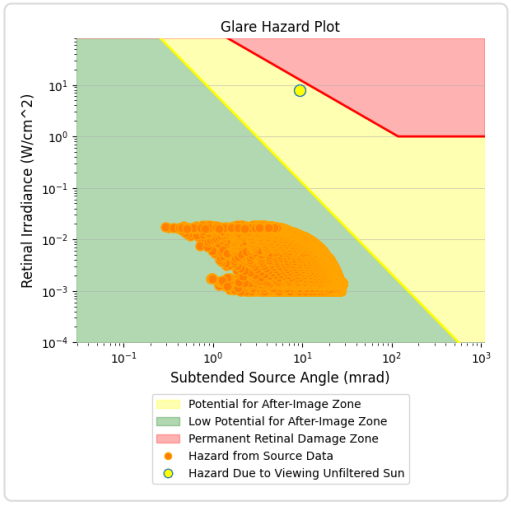
PMB07 and Route: Flight path G

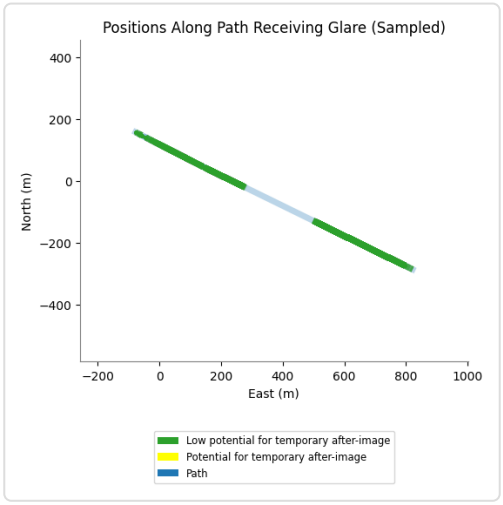
Yellow glare: none

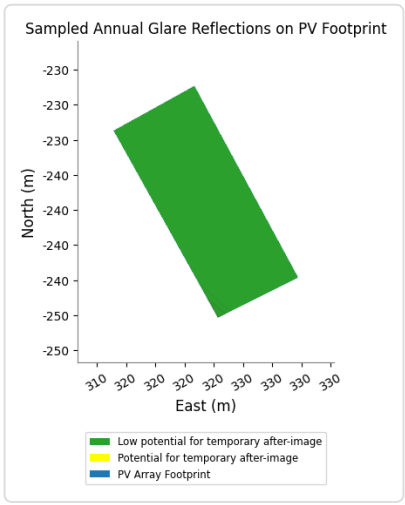
Green glare: 20,567 min.







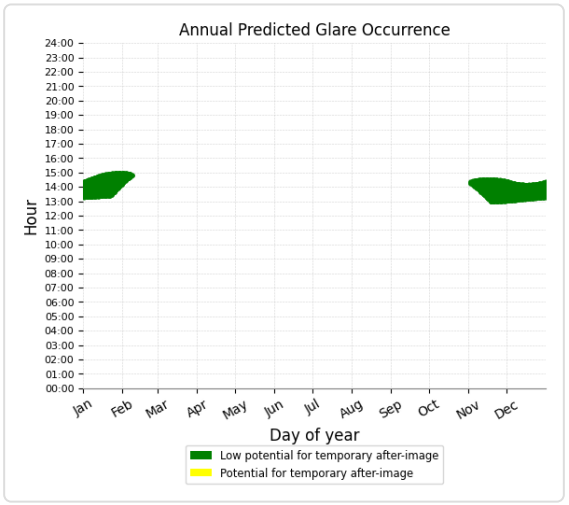


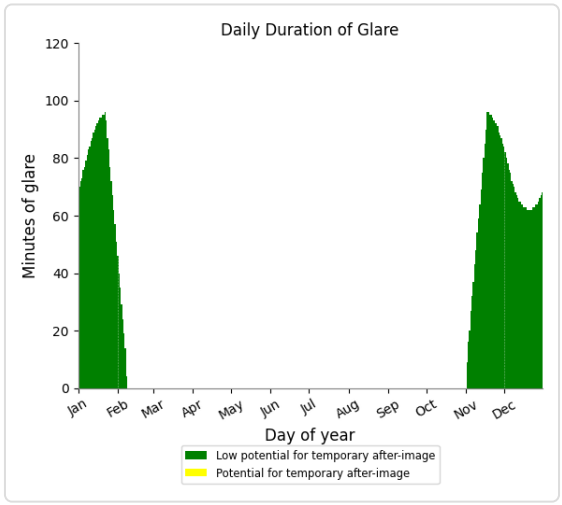


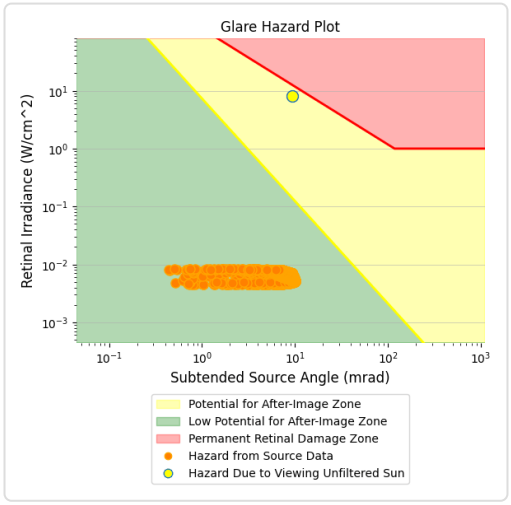
PMB07 and Route: Flight path H

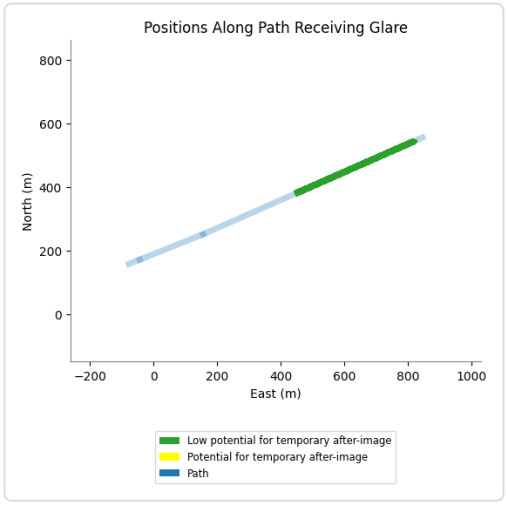
Yellow glare: none

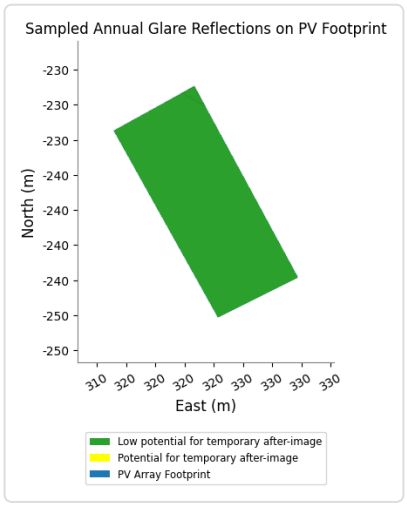
Green glare: 6,829 min.











PV: PMB08 low potential for temporary after-image

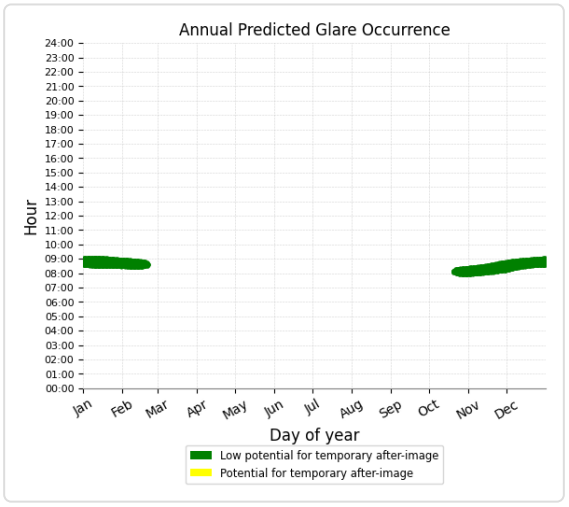
Receptor results ordered by category of glare

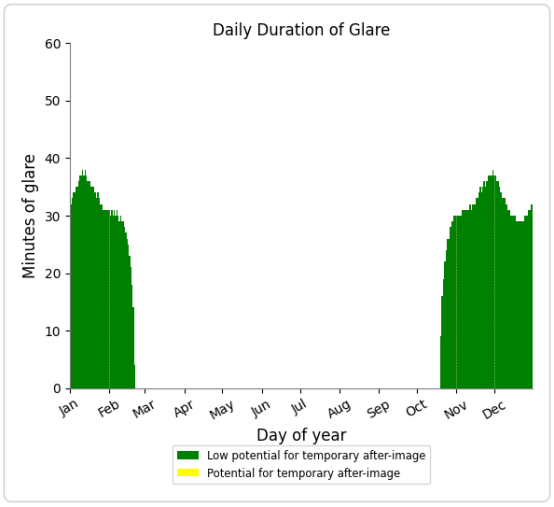
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	3,867	64.5	0	0.0
Flight path B	6,201	103.3	0	0.0
Flight path C	5,124	85.4	0	0.0
Flight path D	12,582	209.7	0	0.0
Flight path E	3,632	60.5	0	0.0
Flight path F	14,760	246.0	0	0.0
Flight path G	20,844	347.4	0	0.0
Flight path H	6,242	104.0	0	0.0

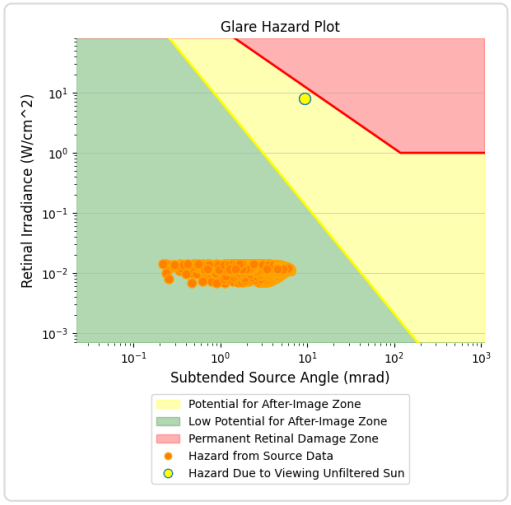
PMB08 and Route: Flight path A

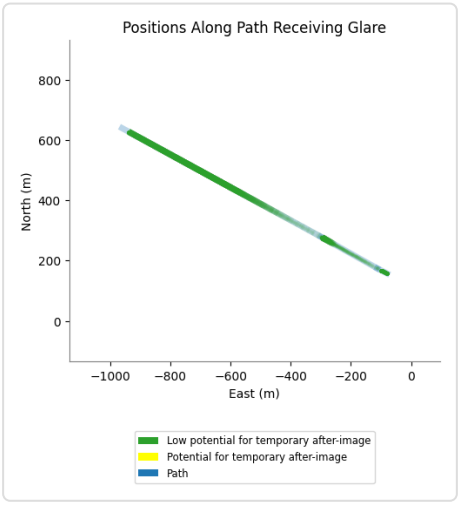
Yellow glare: none

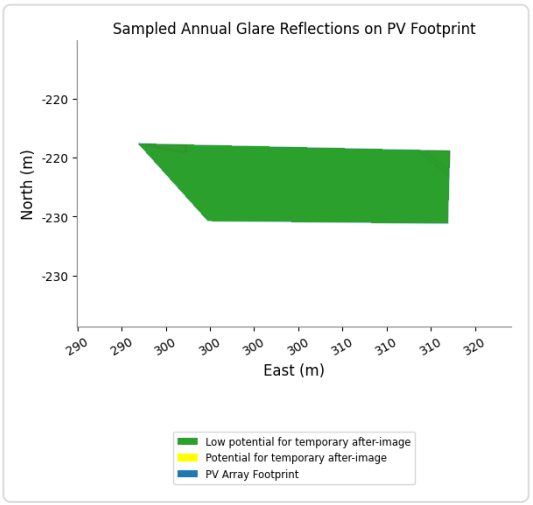
Green glare: 3,867 min.







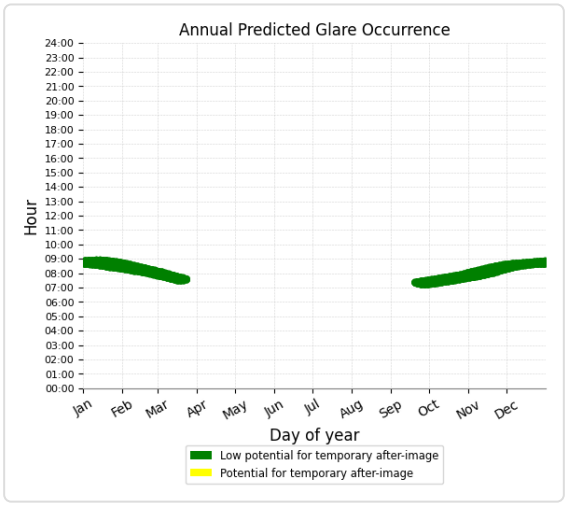


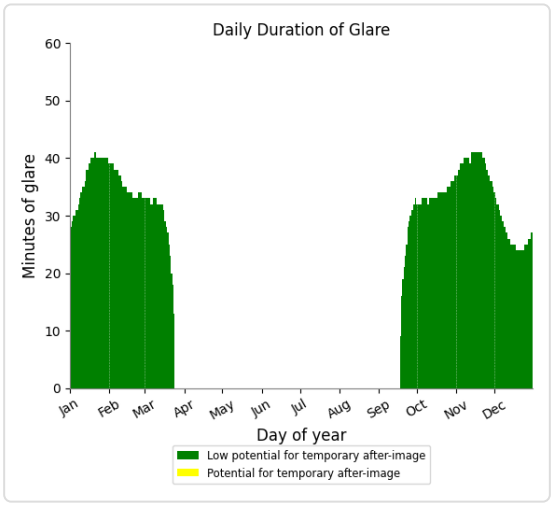


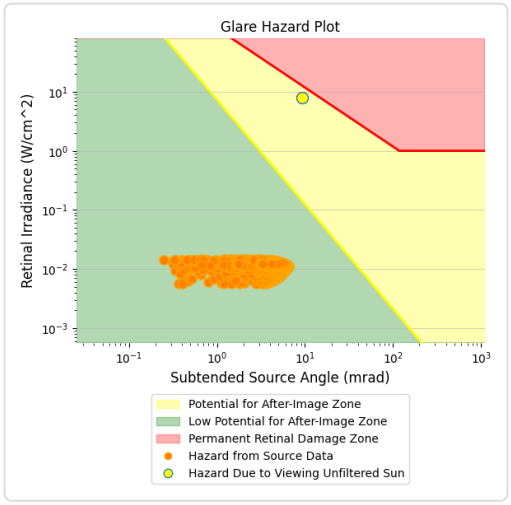
PMB08 and Route: Flight path B

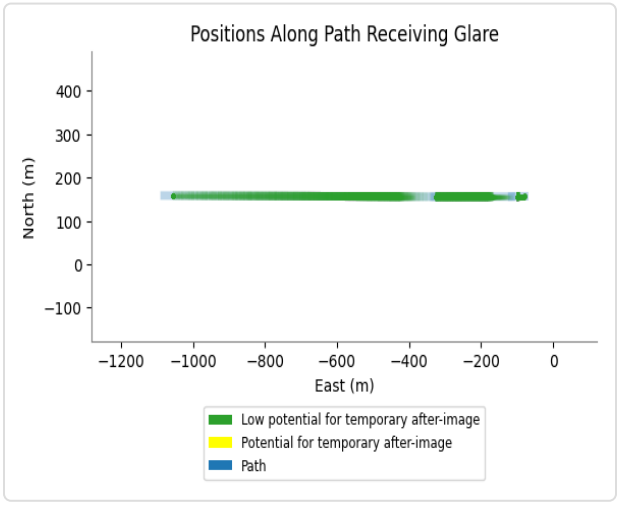
Yellow glare: none

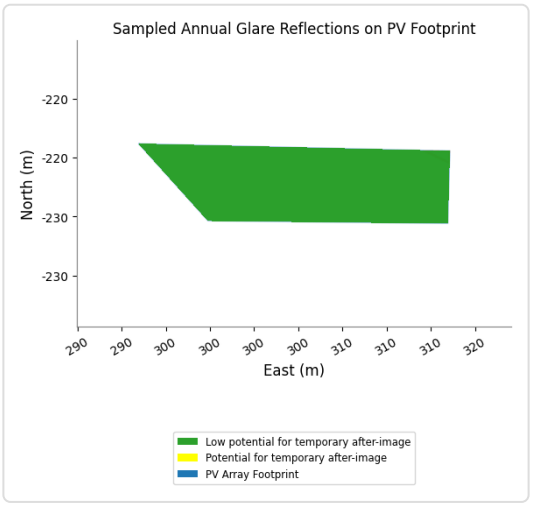
Green glare: 6,201 min.







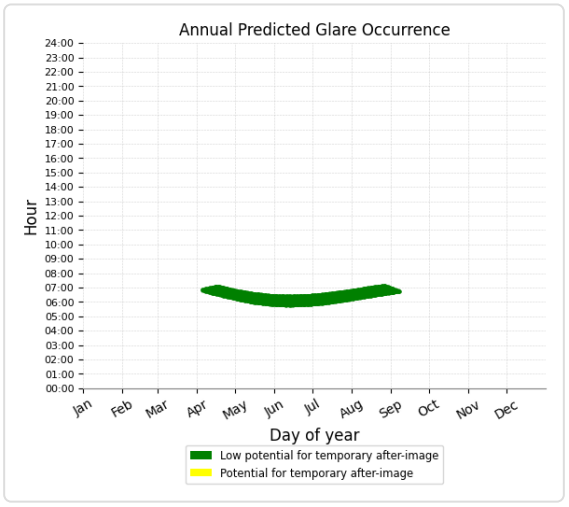


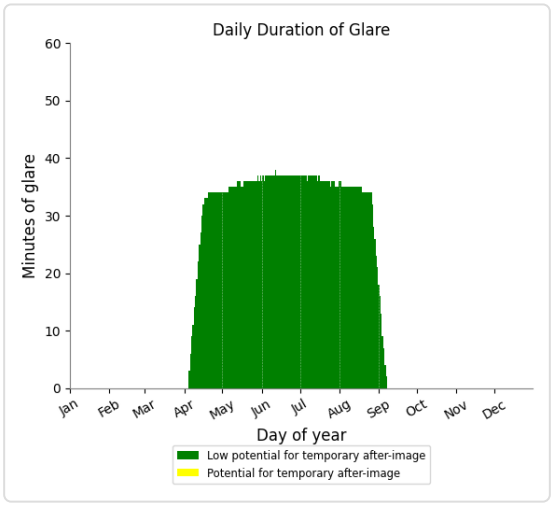


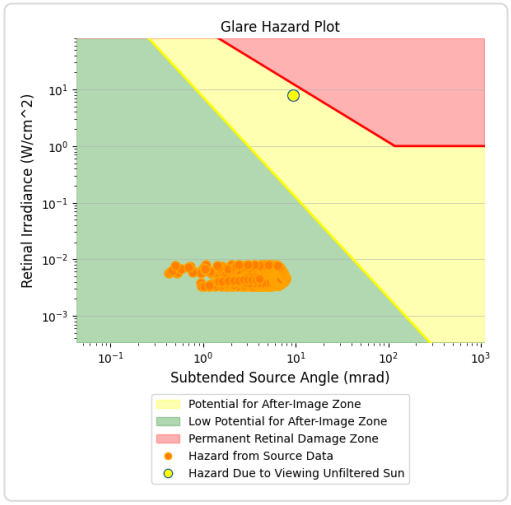
PMB08 and Route: Flight path C

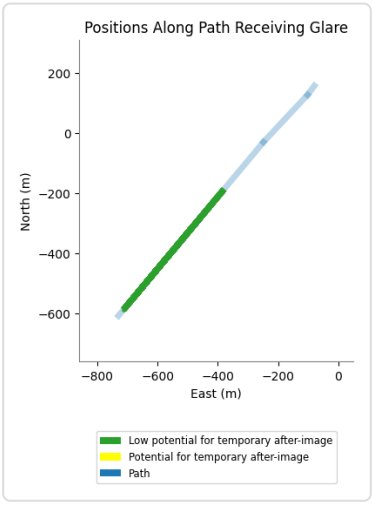
Yellow glare: none

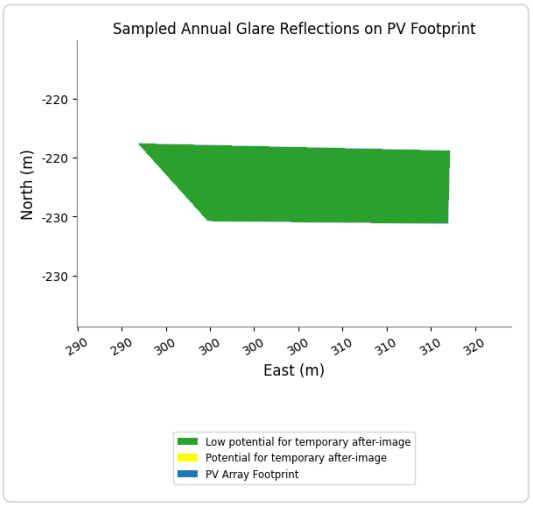
Green glare: 5,124 min.







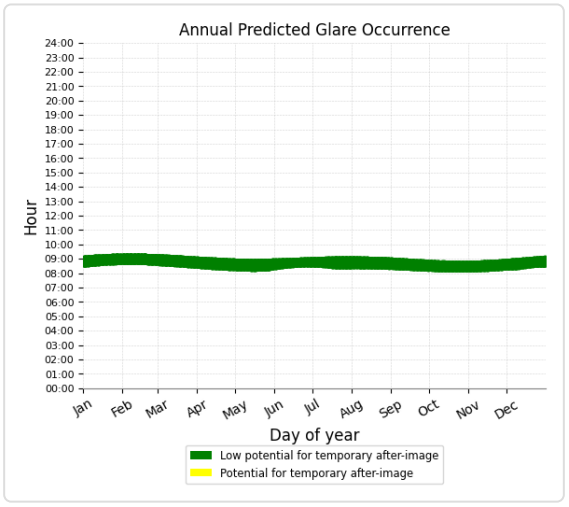


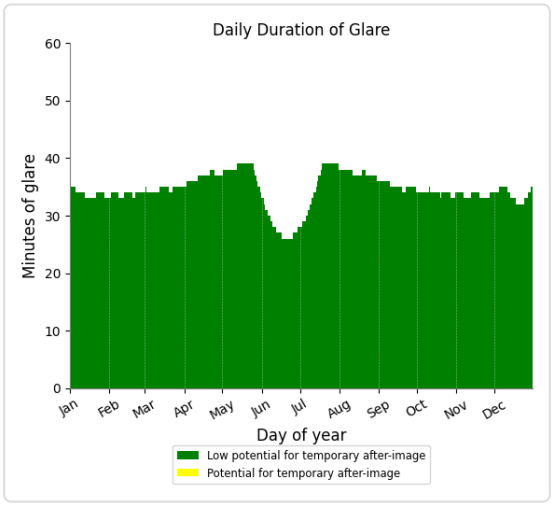


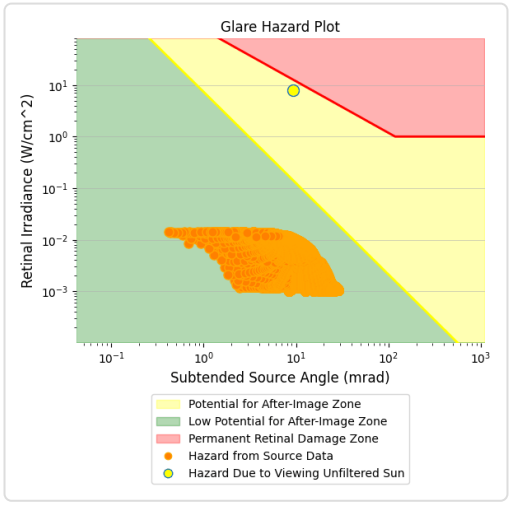
PMB08 and Route: Flight path D

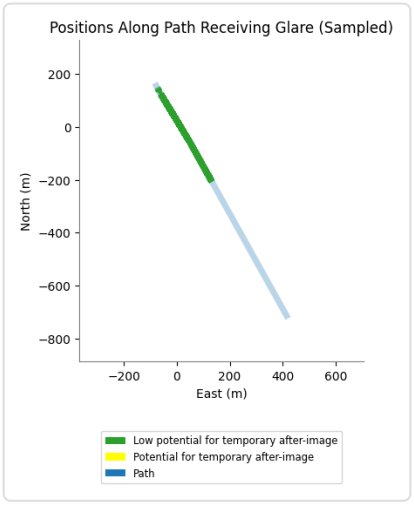
Yellow glare: none

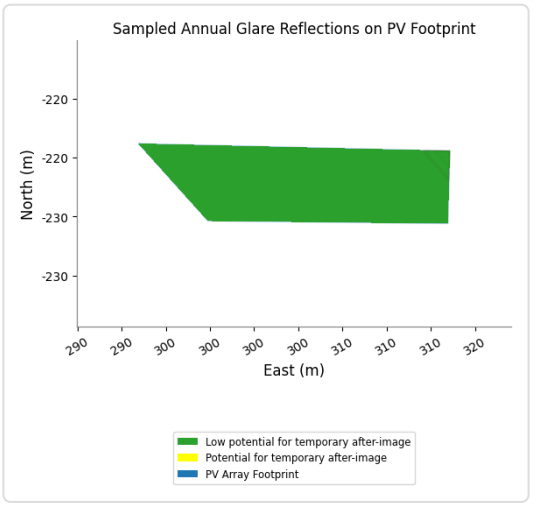
Green glare: 12,582 min.







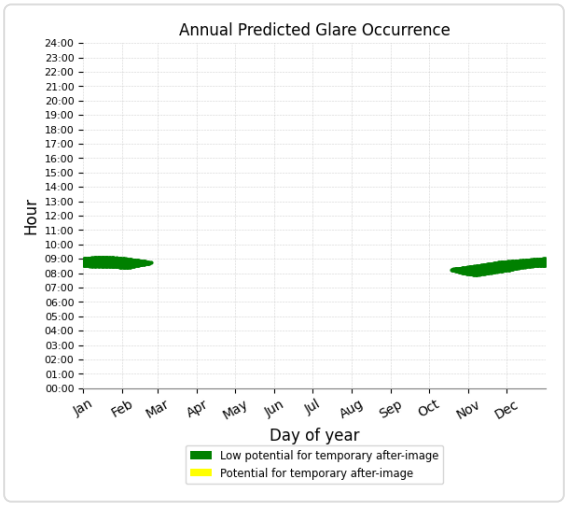


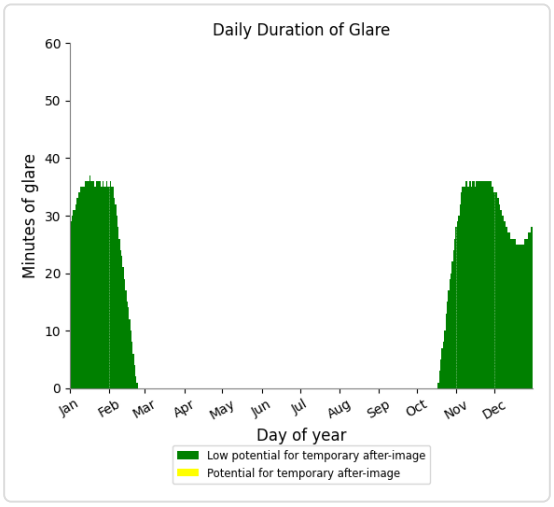


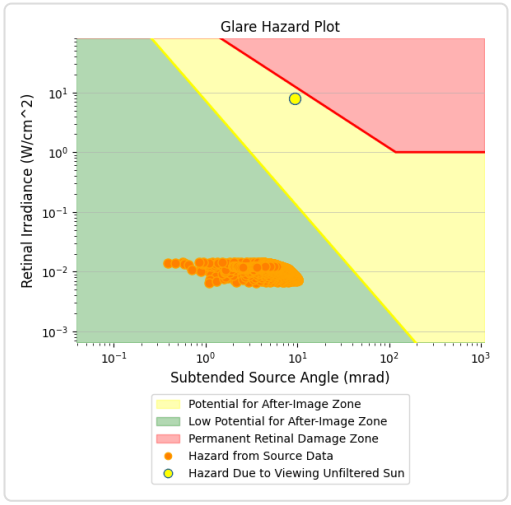
PMB08 and Route: Flight path E

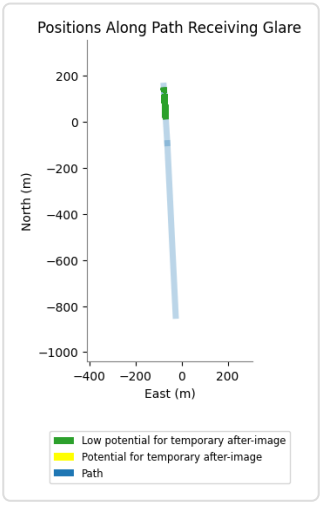
Yellow glare: none

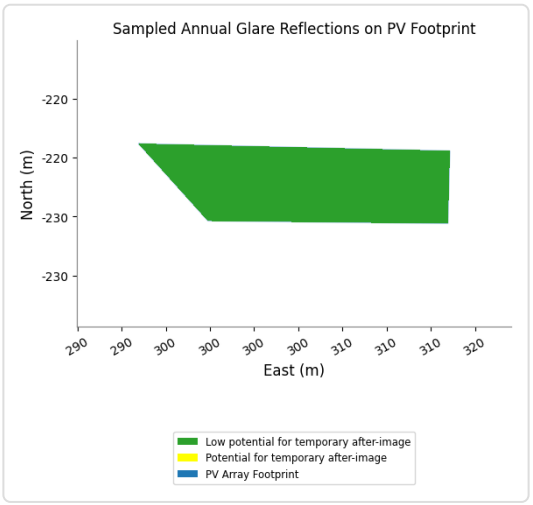
Green glare: 3,632 min.







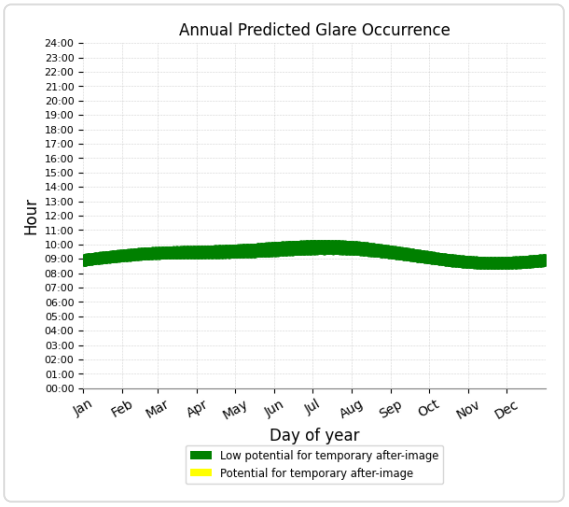


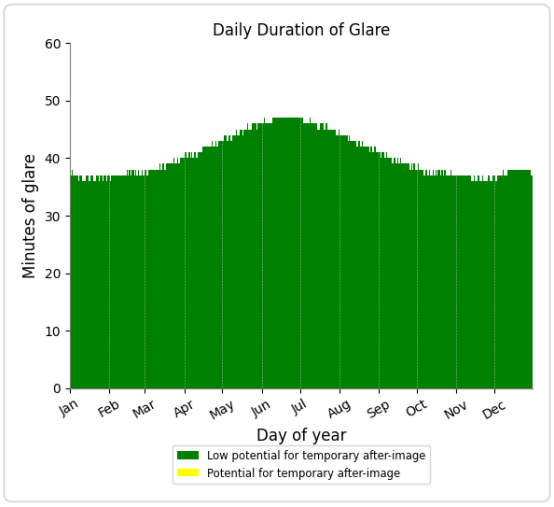


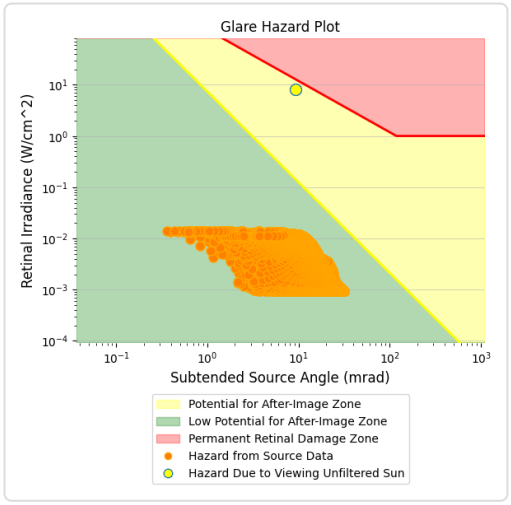
PMB08 and Route: Flight path F

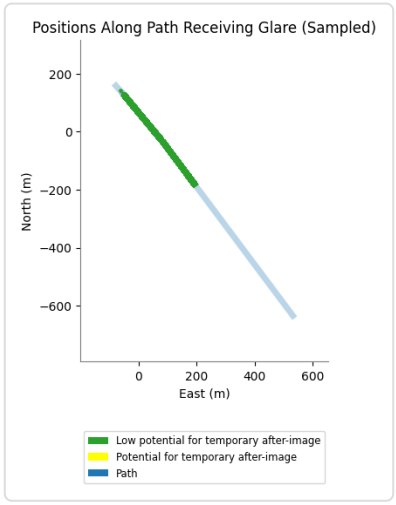
Yellow glare: none

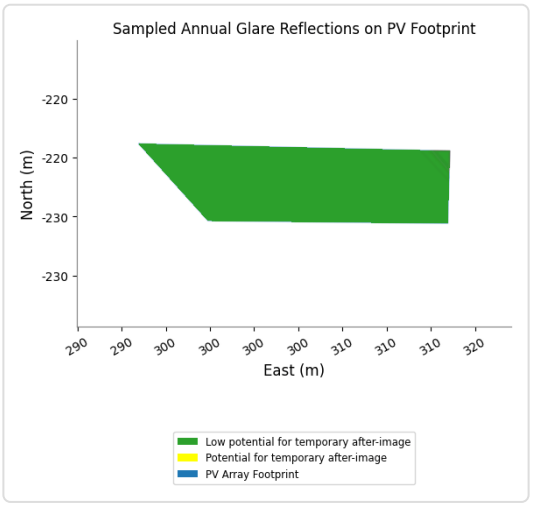
Green glare: 14,760 min.







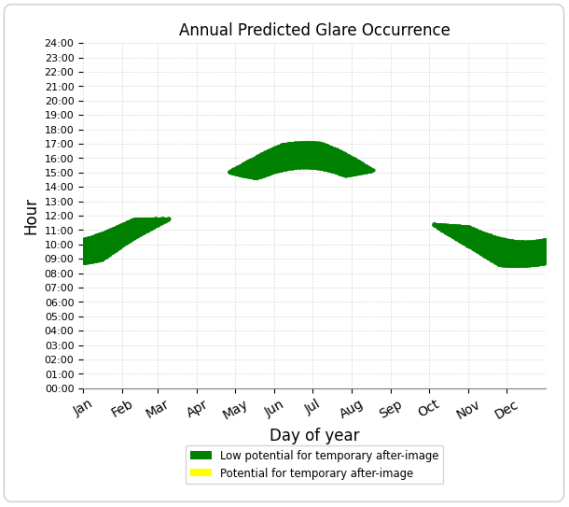


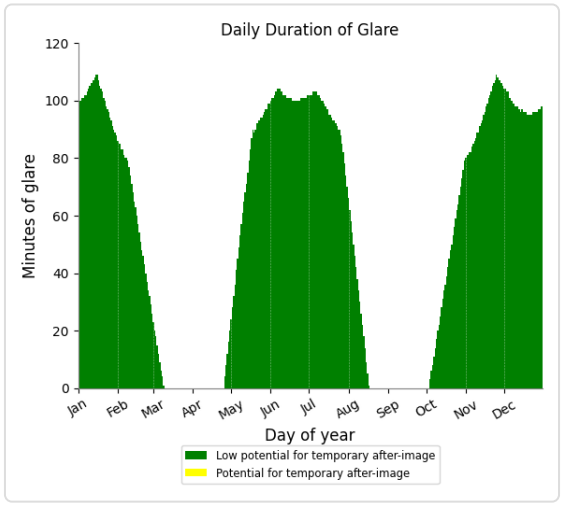


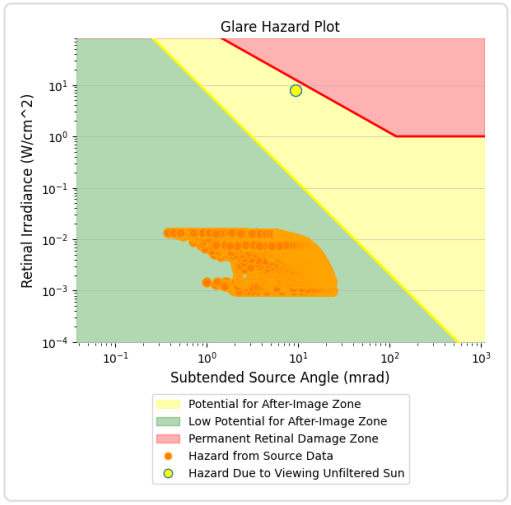
PMB08 and Route: Flight path G

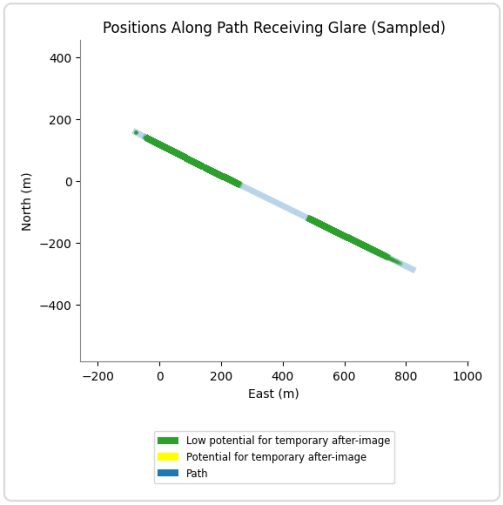
Yellow glare: none

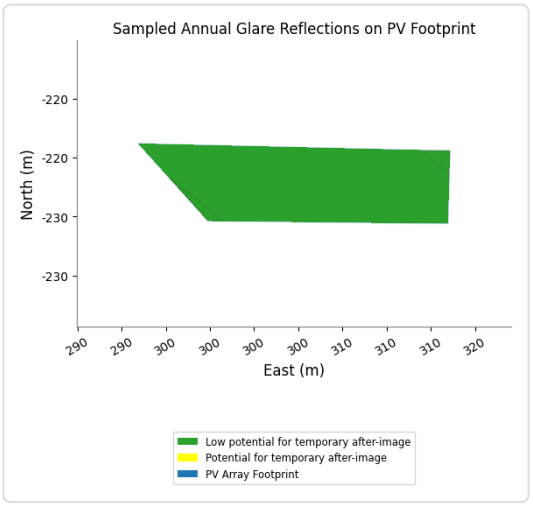
Green glare: 20,844 min.







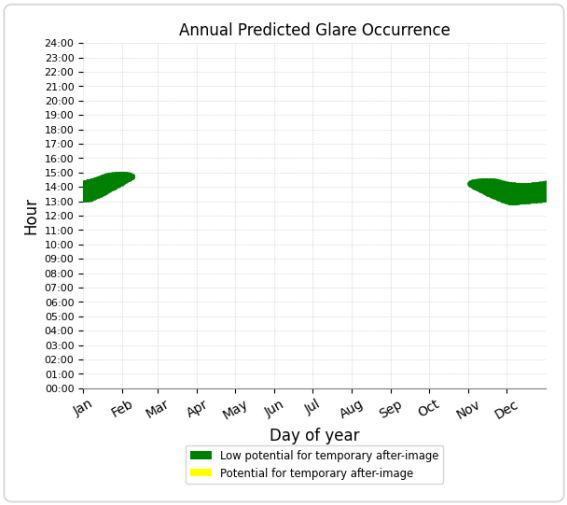


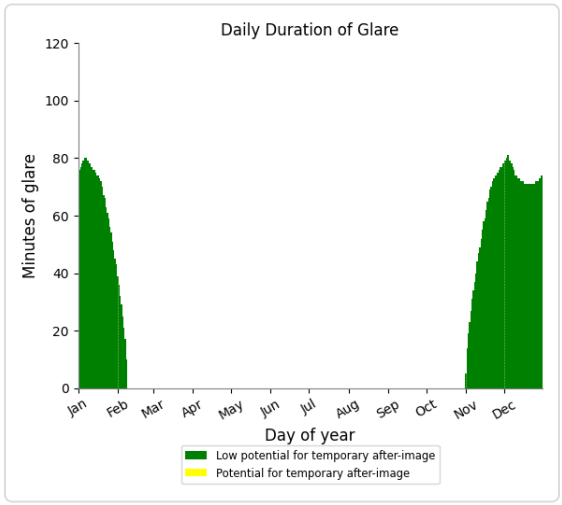


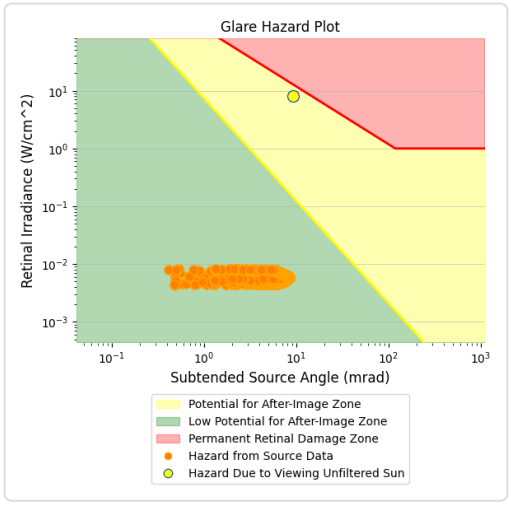
PMB08 and Route: Flight path H

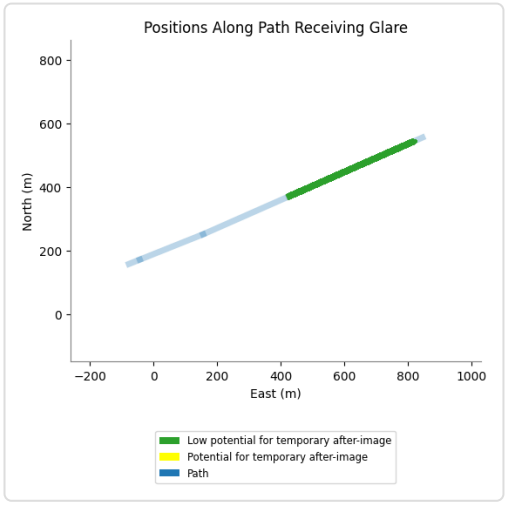
Yellow glare: none

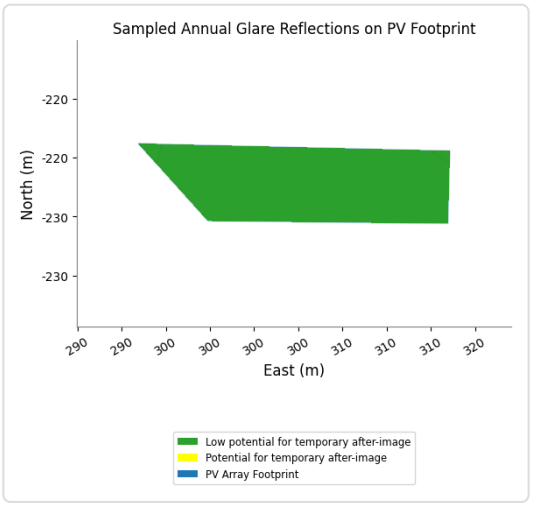
Green glare: 6,242 min.











PV: PMB09 low potential for temporary after-image

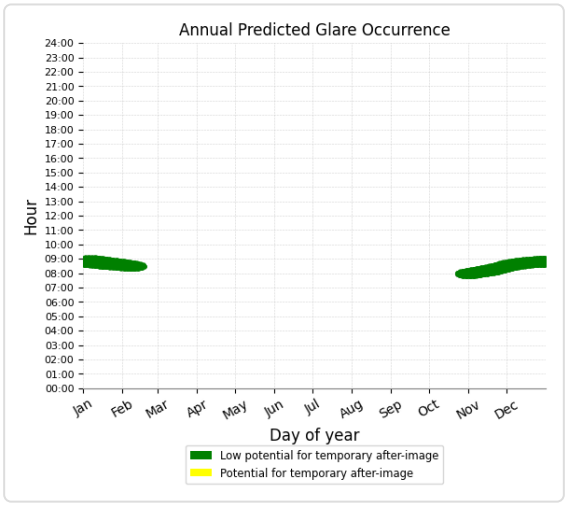
Receptor results ordered by category of glare

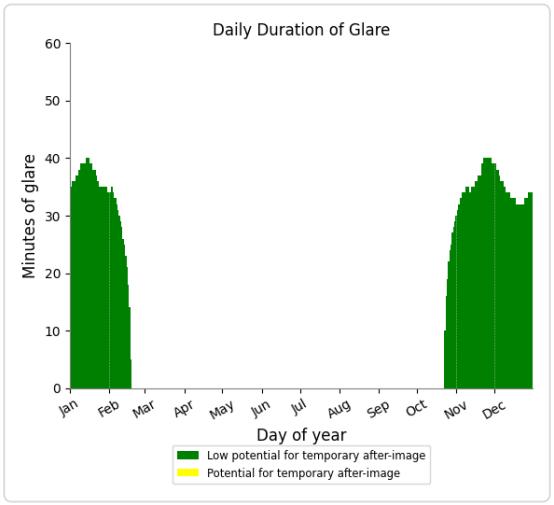
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	3,978	66.3	0	0.0
Flight path B	5,905	98.4	0	0.0
Flight path C	4,148	69.1	0	0.0
Flight path D	13,156	219.3	0	0.0
Flight path E	3,969	66.2	0	0.0
Flight path F	14,136	235.6	0	0.0
Flight path G	11,237	187.3	0	0.0
Flight path H	3,880	64.7	0	0.0

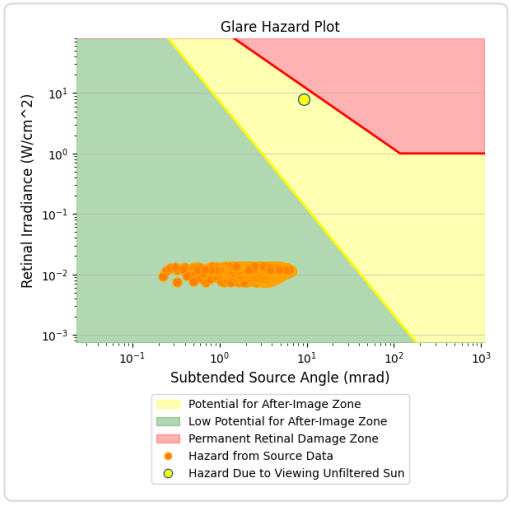
PMB09 and Route: Flight path A

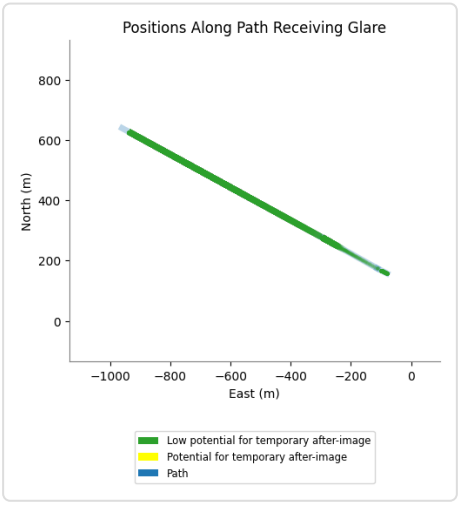
Yellow glare: none

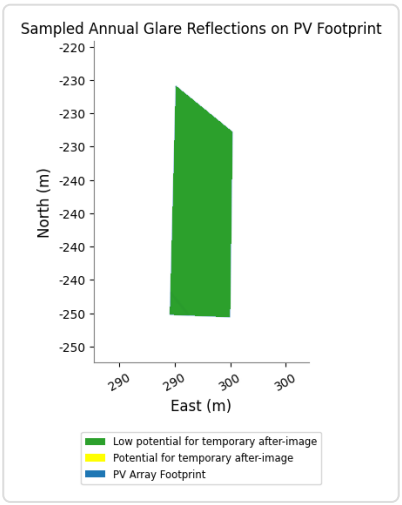
Green glare: 3,978 min.







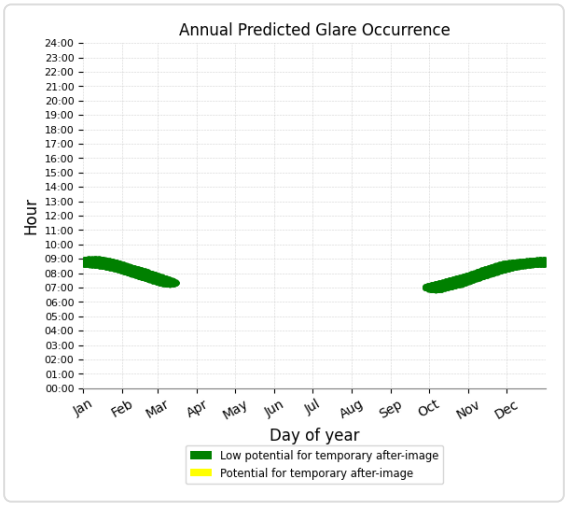


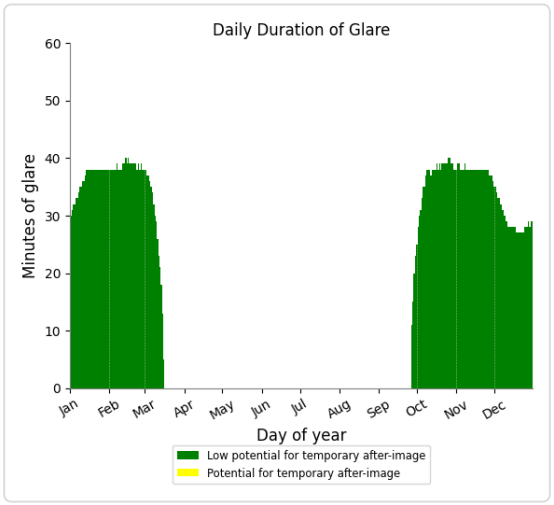


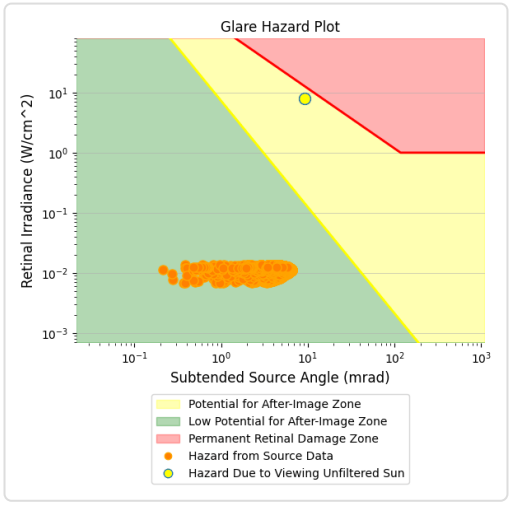
PMB09 and Route: Flight path B

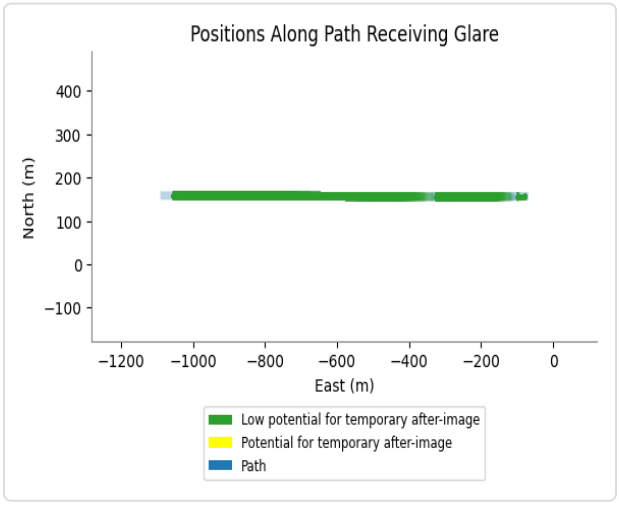
Yellow glare: none

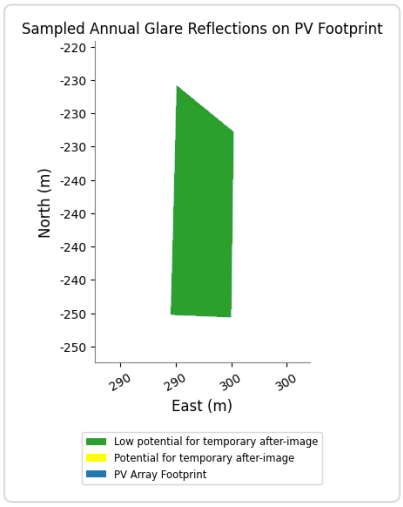
Green glare: 5,905 min.







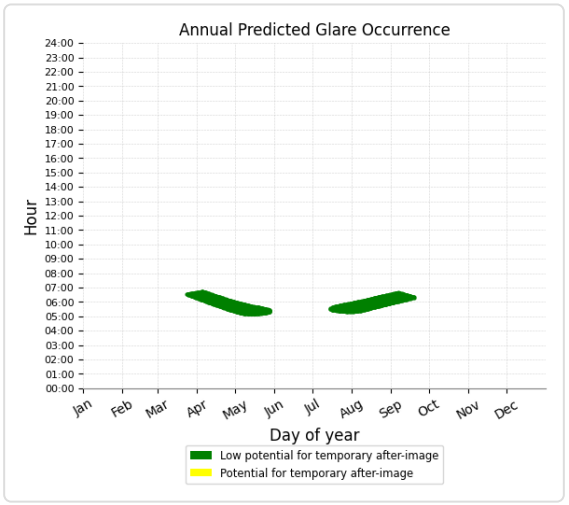


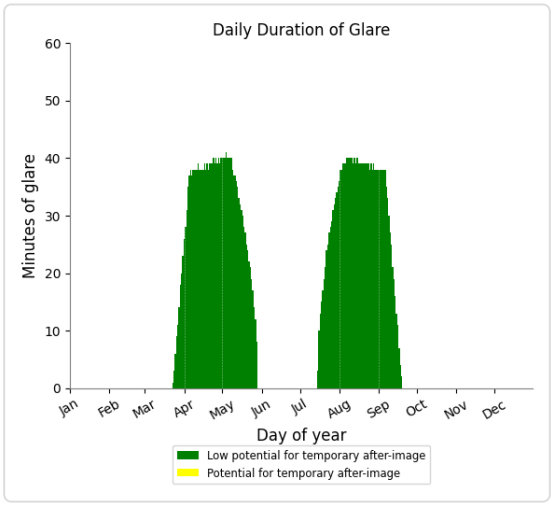


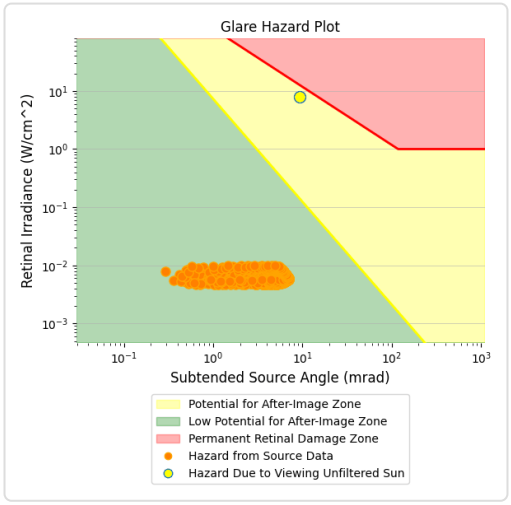
PMB09 and Route: Flight path C

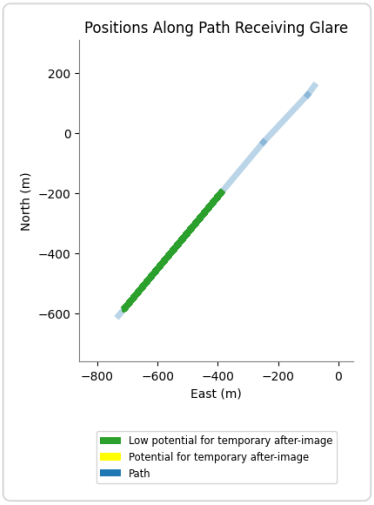
Yellow glare: none

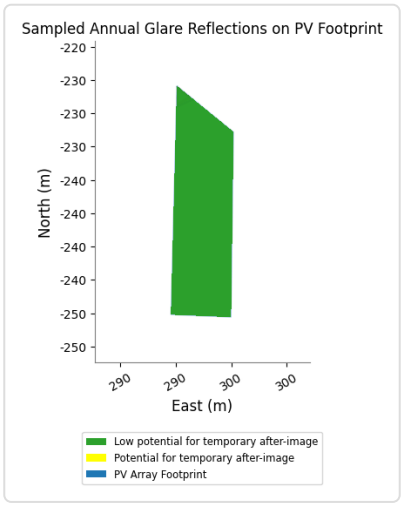
Green glare: 4,148 min.







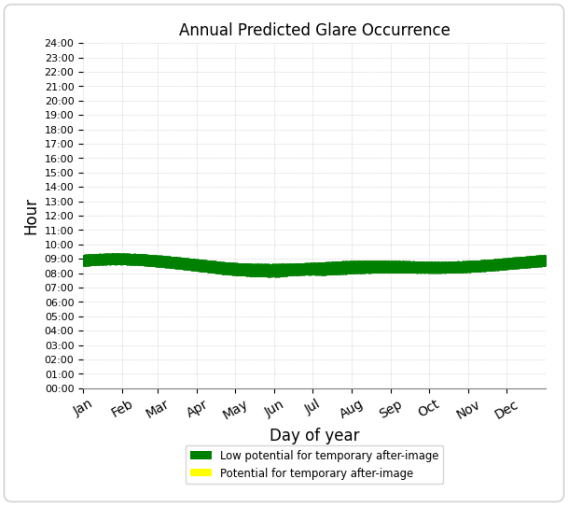


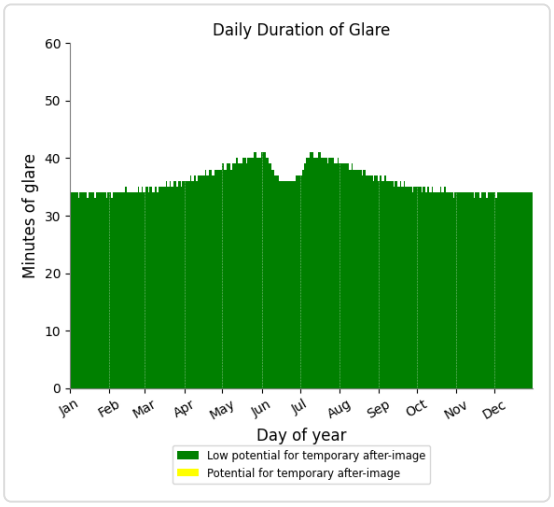


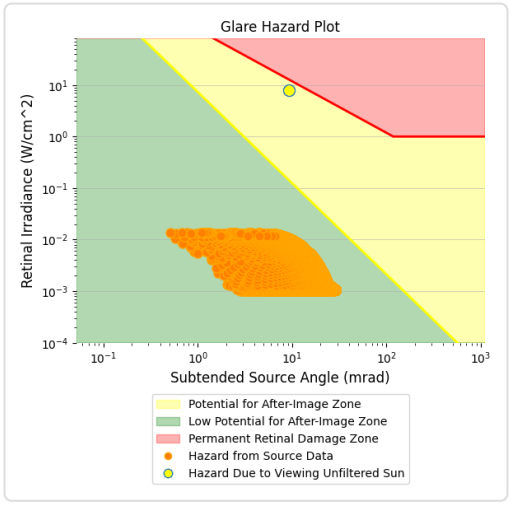
PMB09 and Route: Flight path D

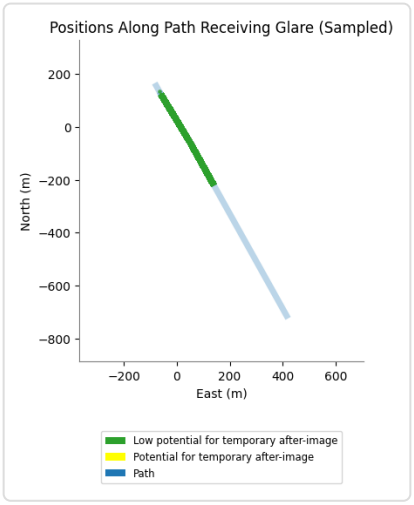
Yellow glare: none

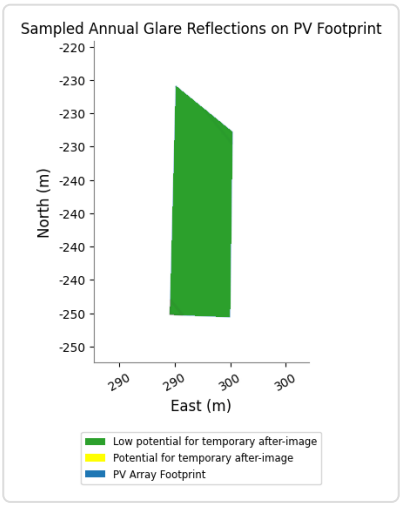
Green glare: 13,156 min.







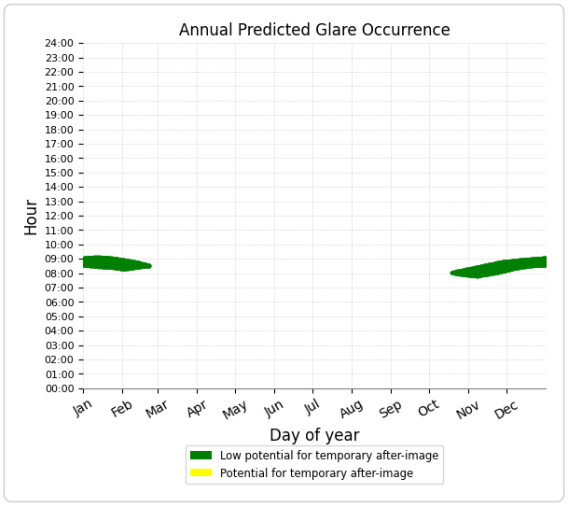


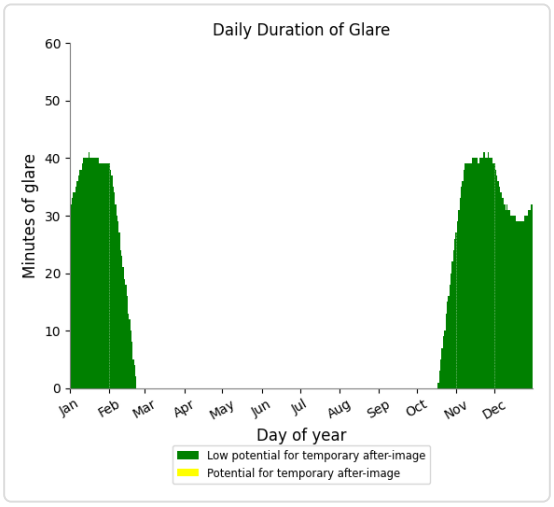


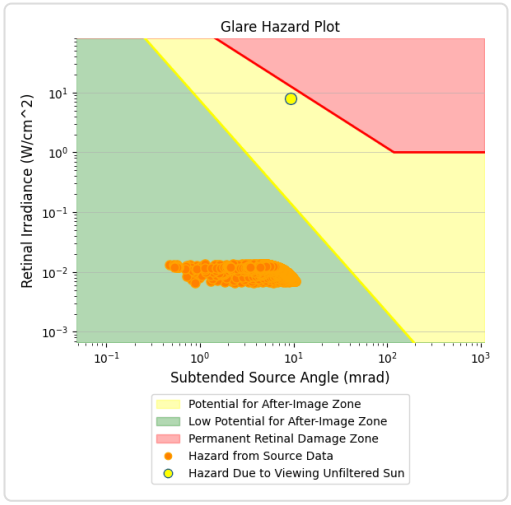
PMB09 and Route: Flight path E

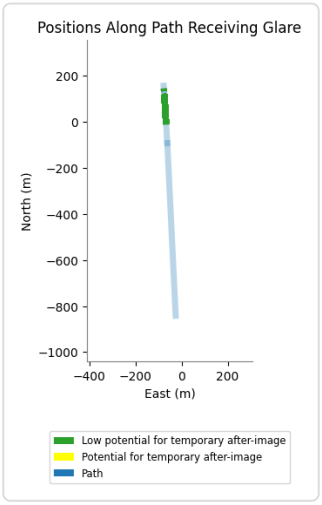
Yellow glare: none

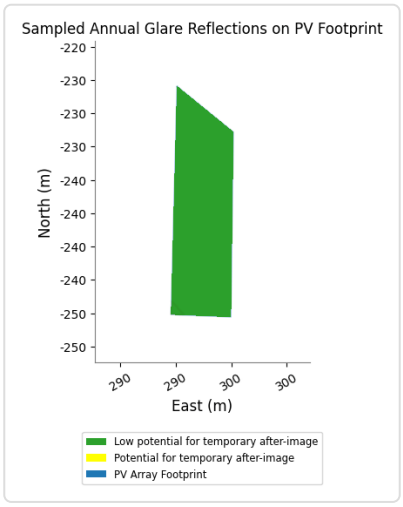
Green glare: 3,969 min.







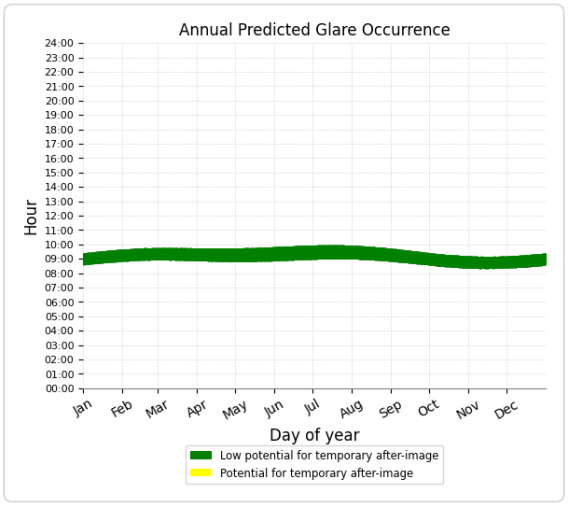


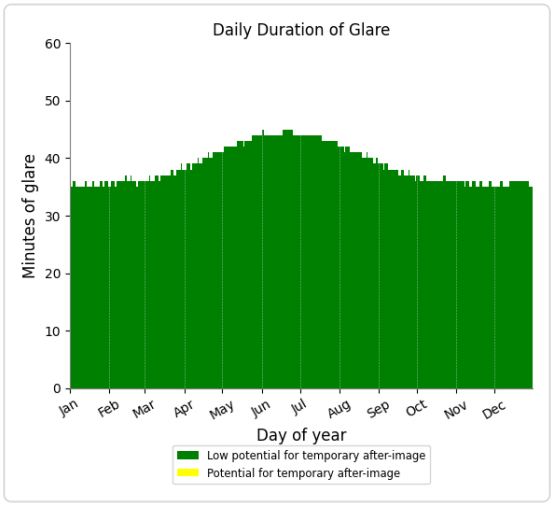


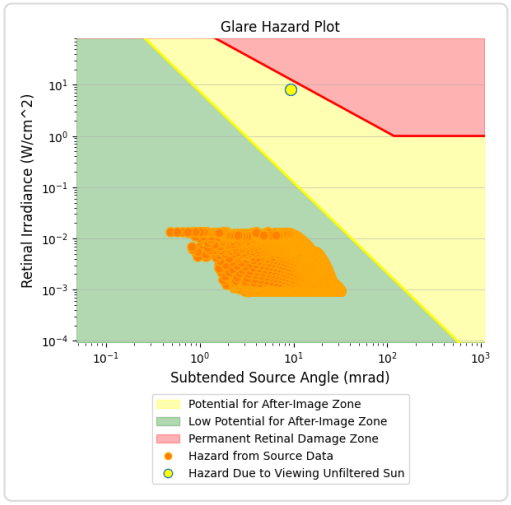
PMB09 and Route: Flight path F

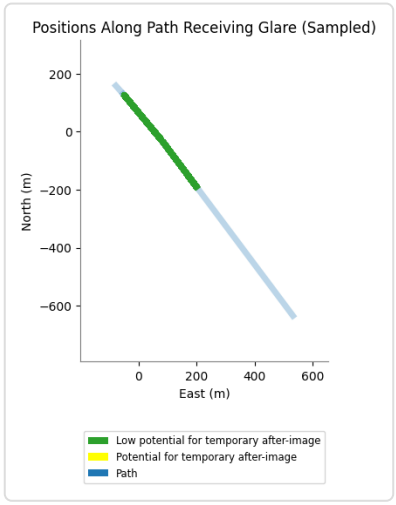
Yellow glare: none

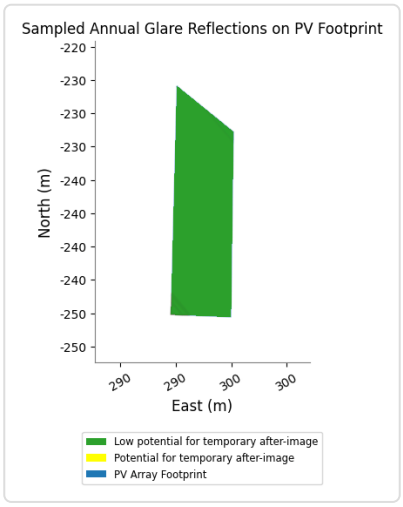
Green glare: 14,136 min.







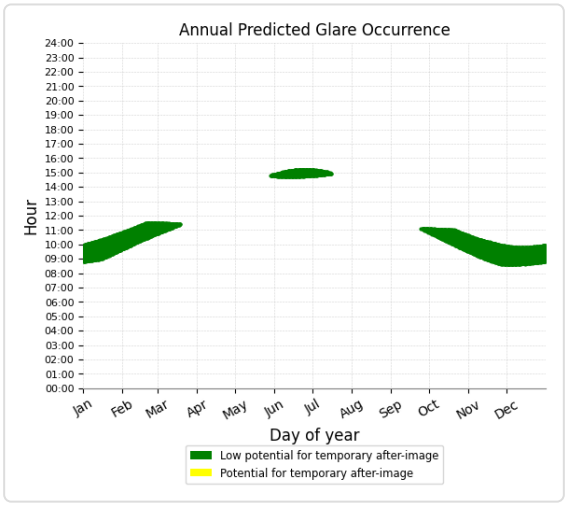


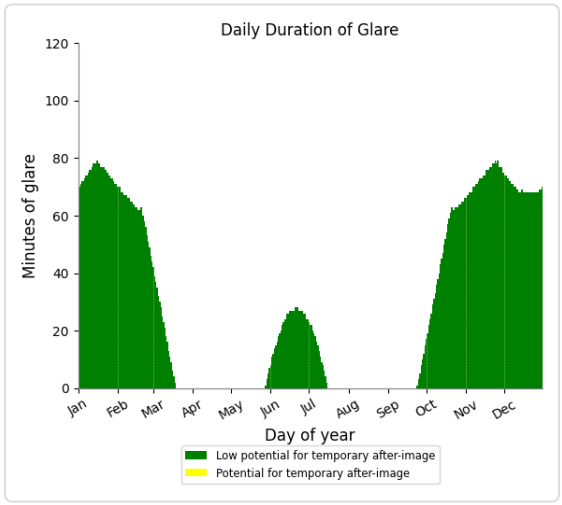


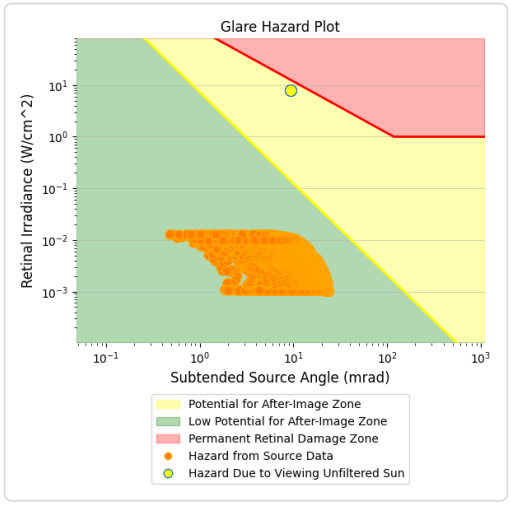
PMB09 and Route: Flight path G

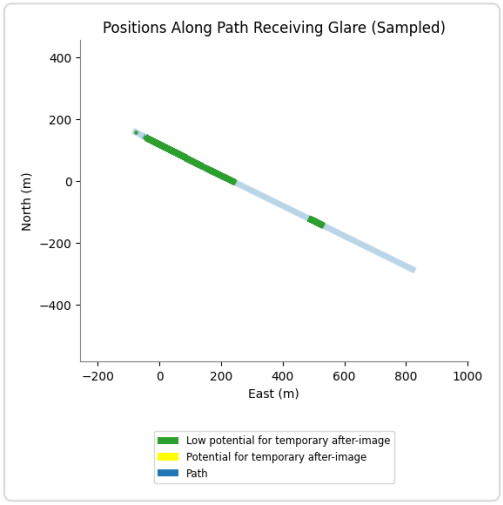
Yellow glare: none

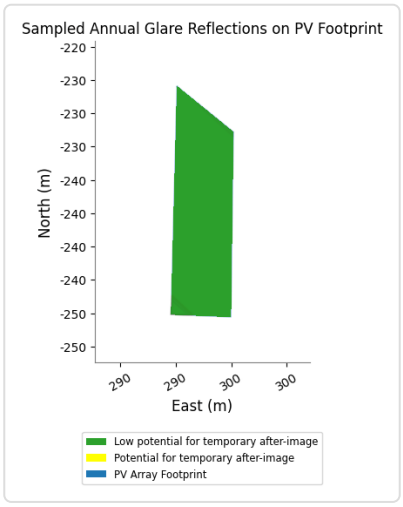
Green glare: 11,237 min.







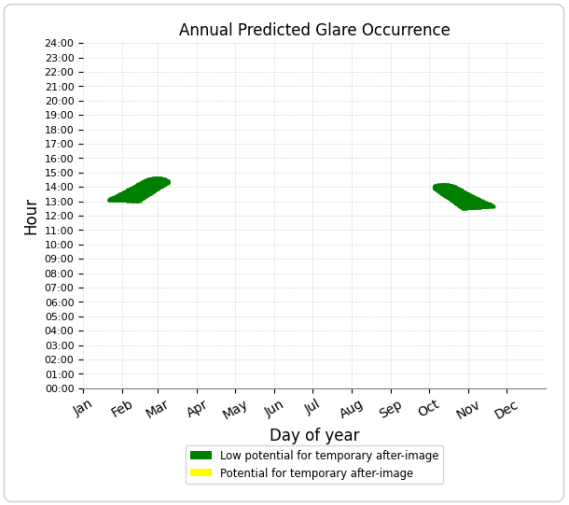


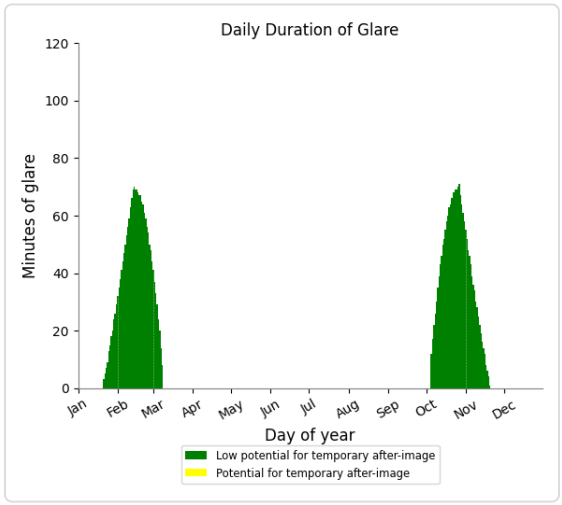


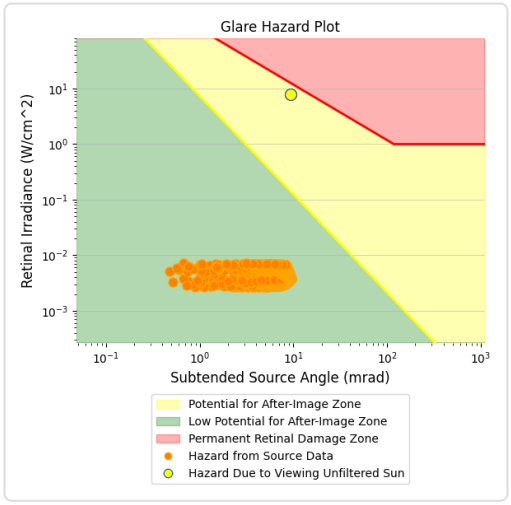
PMB09 and Route: Flight path H

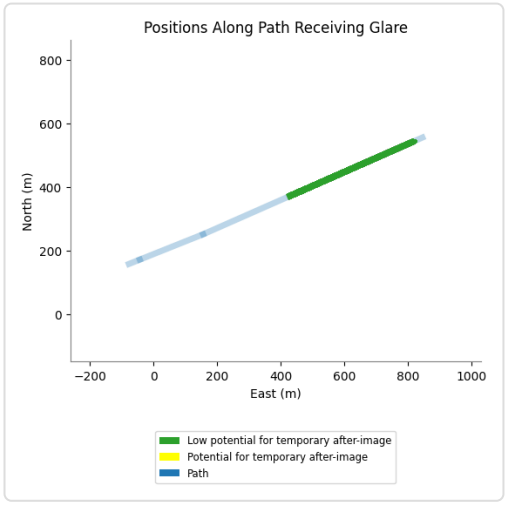
Yellow glare: none

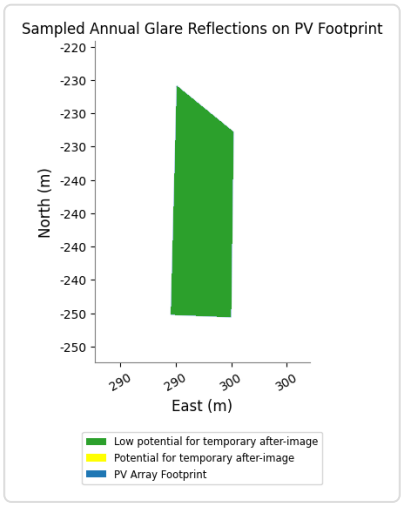
Green glare: 3,880 min.











PV: PMB10 low potential for temporary after-image

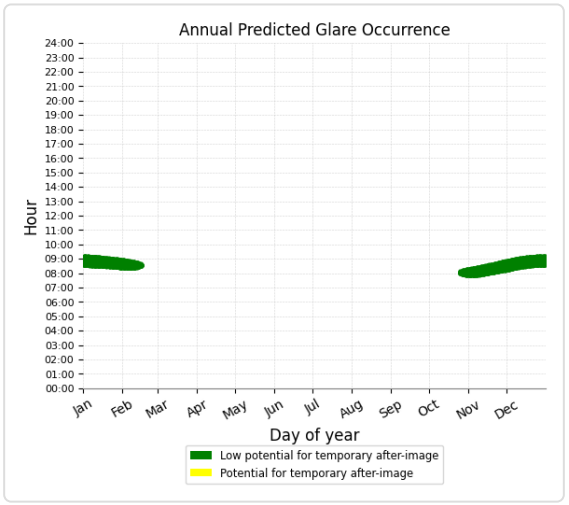
Receptor results ordered by category of glare

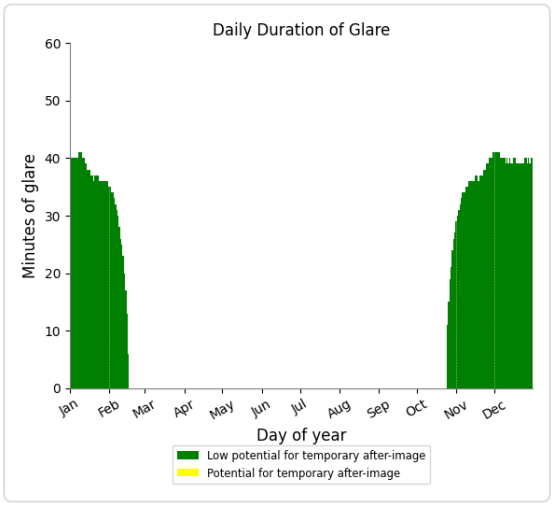
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	4,060	67.7	0	0.0
Flight path B	6,116	101.9	0	0.0
Flight path C	3,912	65.2	0	0.0
Flight path D	13,071	217.8	0	0.0
Flight path E	4,549	75.8	0	0.0
Flight path F	14,038	234.0	0	0.0
Flight path G	12,269	204.5	0	0.0
Flight path H	4,147	69.1	0	0.0

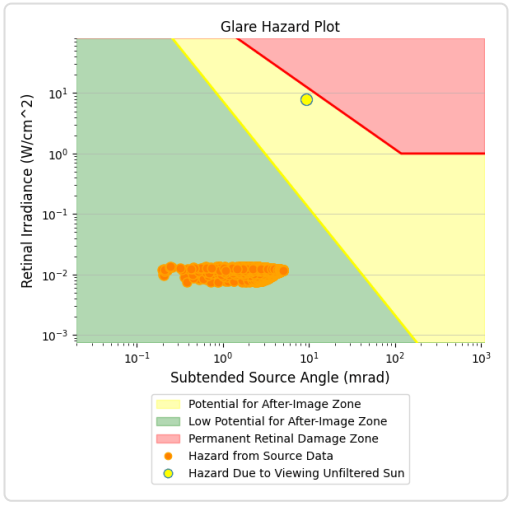
PMB10 and Route: Flight path A

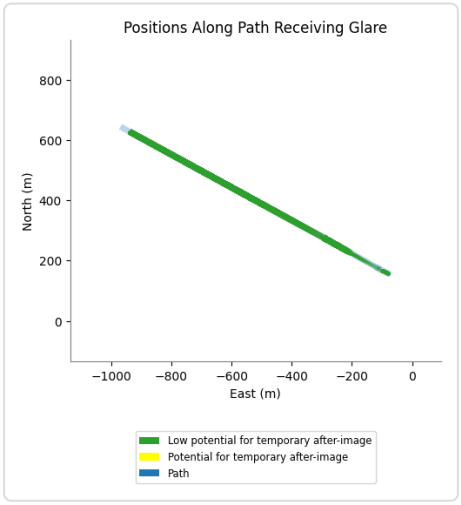
Yellow glare: none

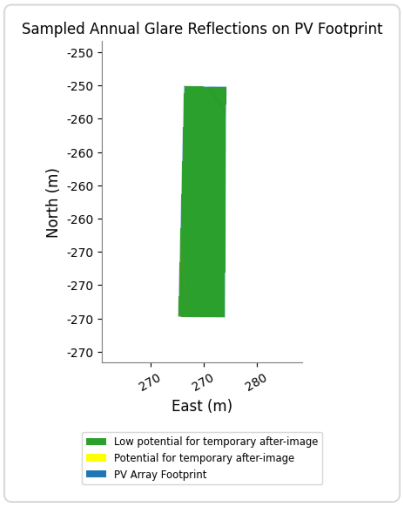
Green glare: 4,060 min.







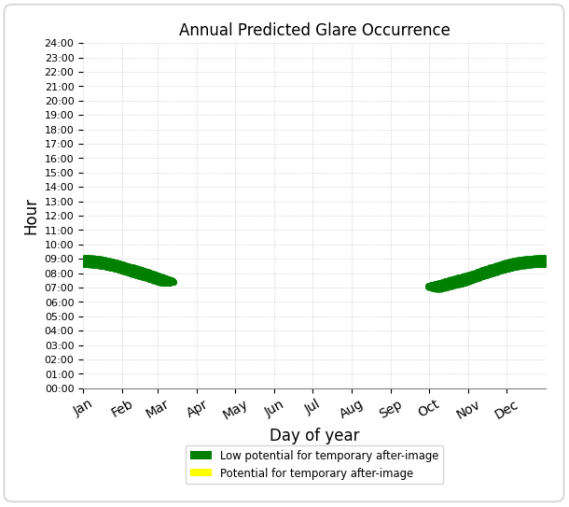


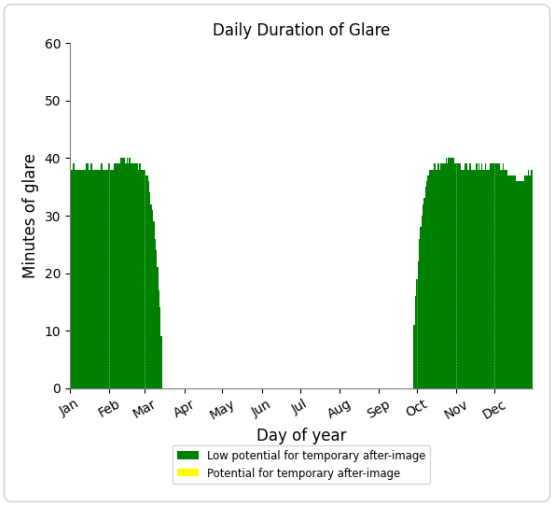


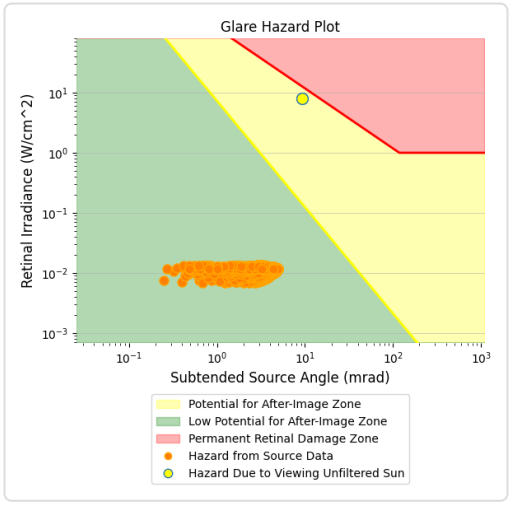
PMB10 and Route: Flight path B

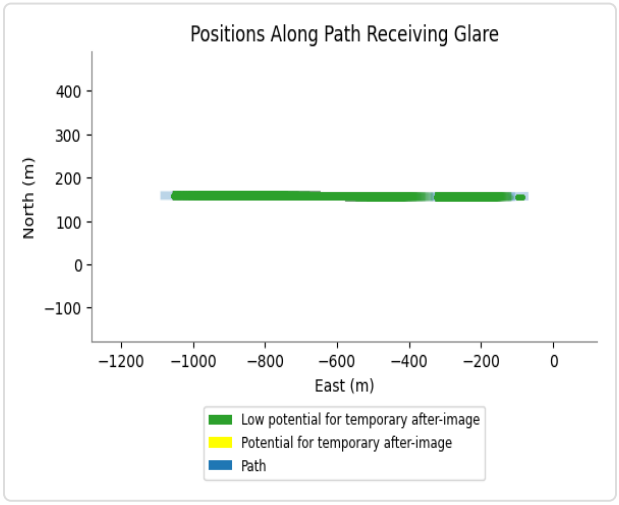
Yellow glare: none

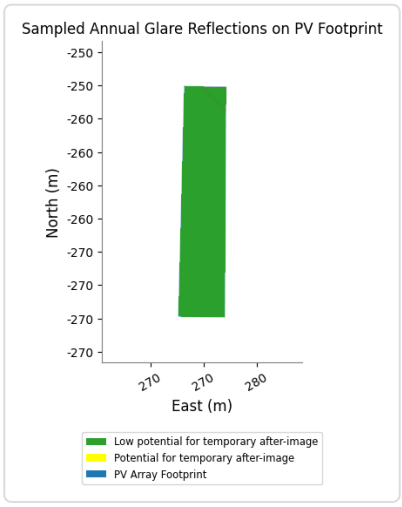
Green glare: 6,116 min.







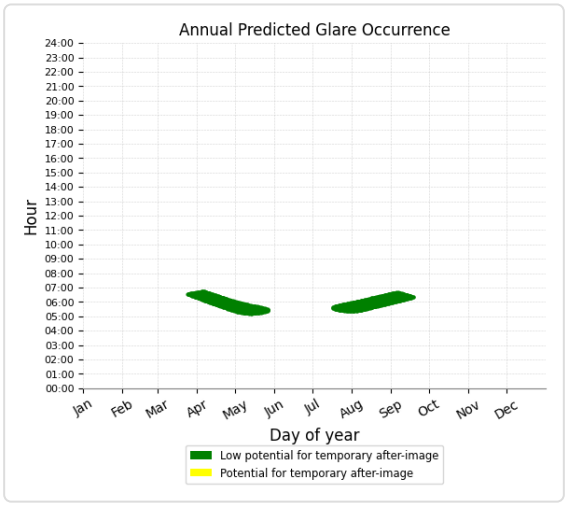


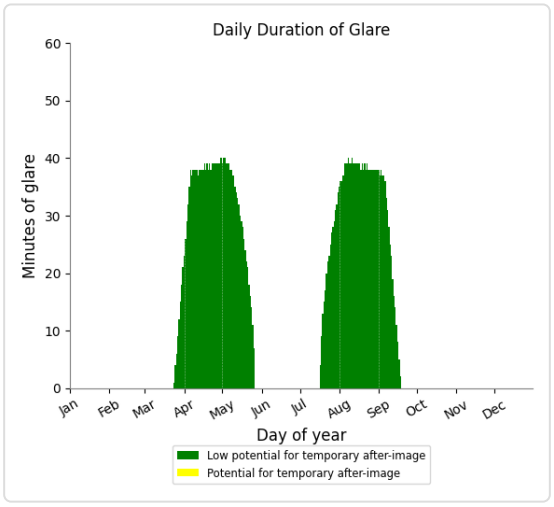


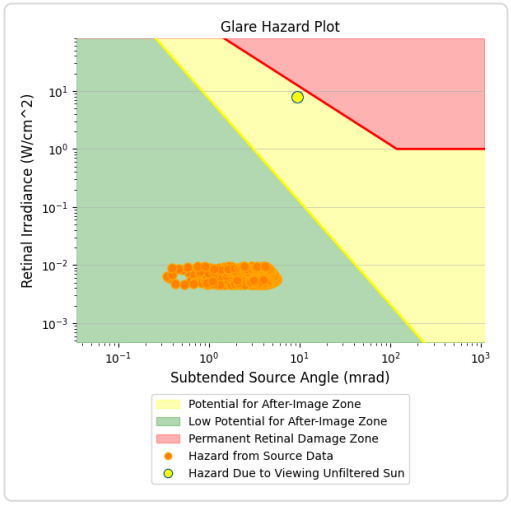
PMB10 and Route: Flight path C

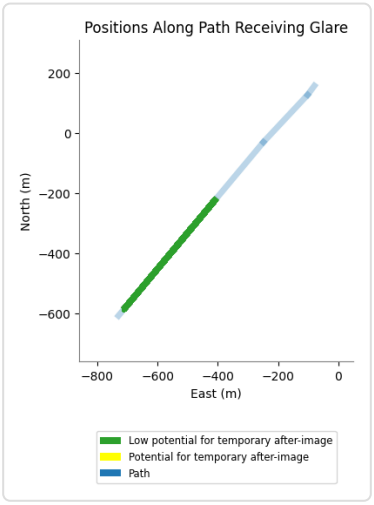
Yellow glare: none

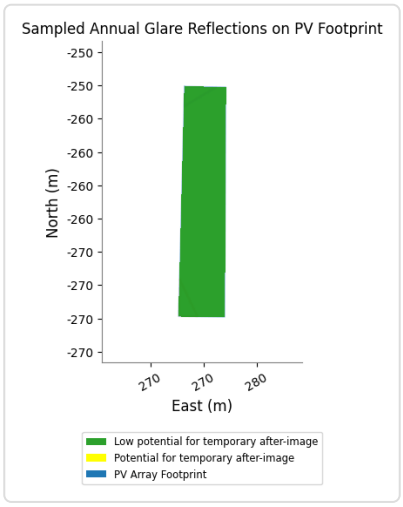
Green glare: 3,912 min.







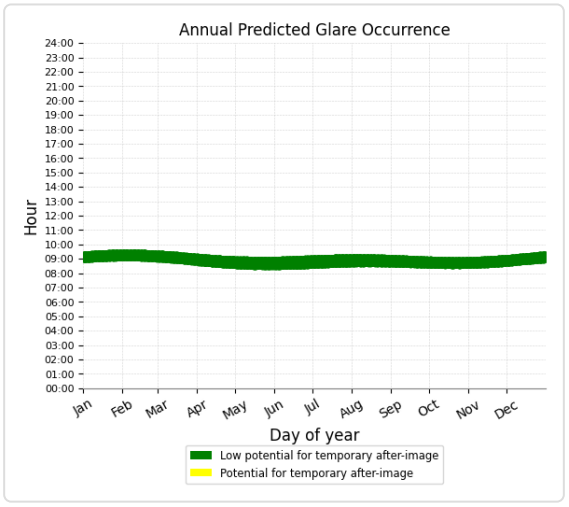


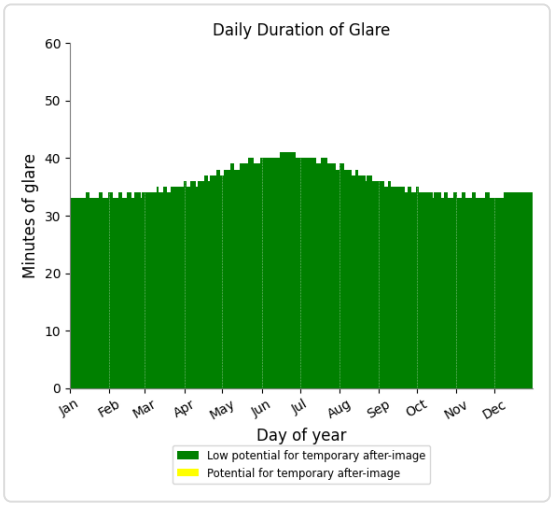


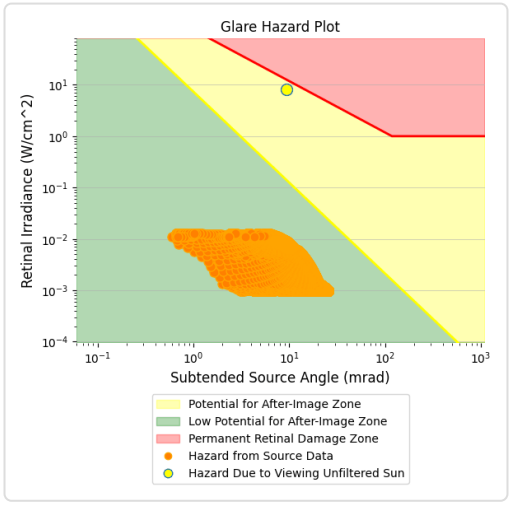
PMB10 and Route: Flight path D

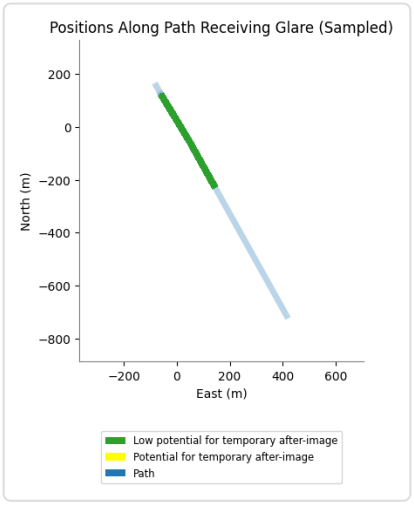
Yellow glare: none

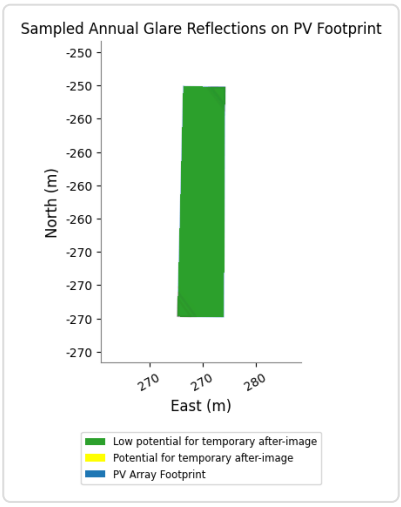
Green glare: 13,071 min.







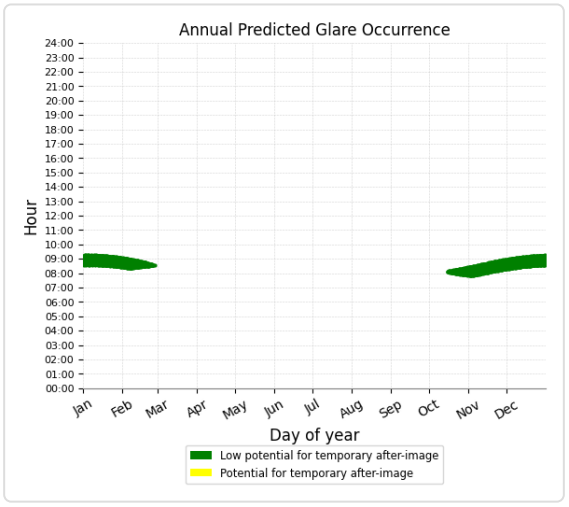


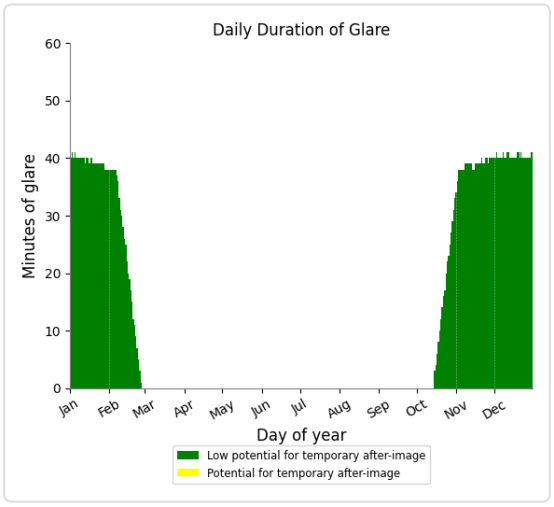


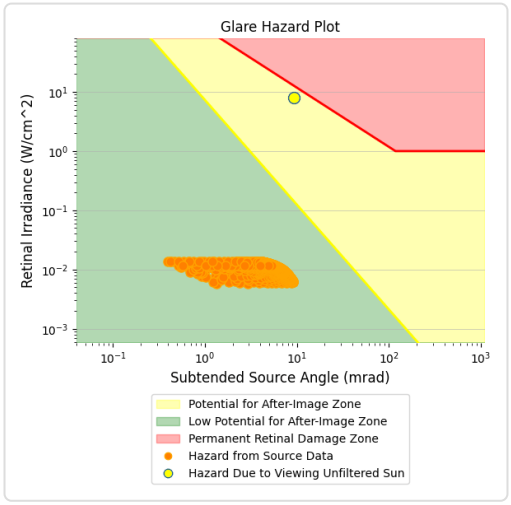
PMB10 and Route: Flight path E

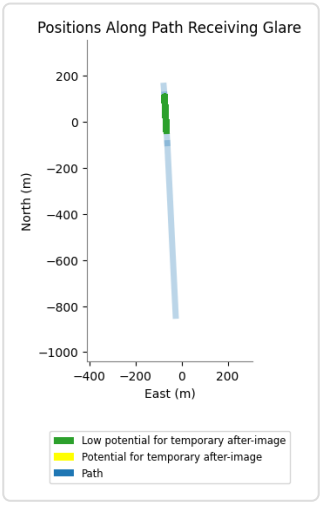
Yellow glare: none

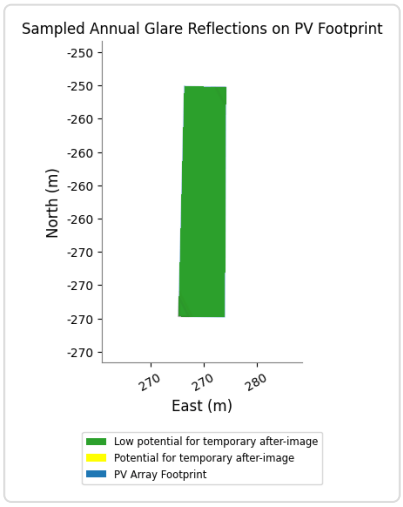
Green glare: 4,549 min.







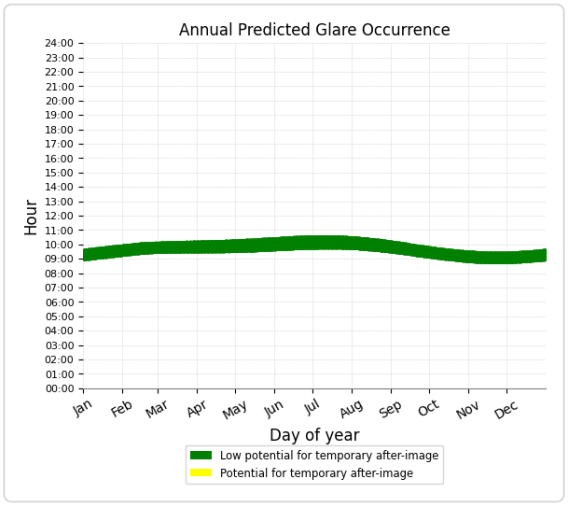


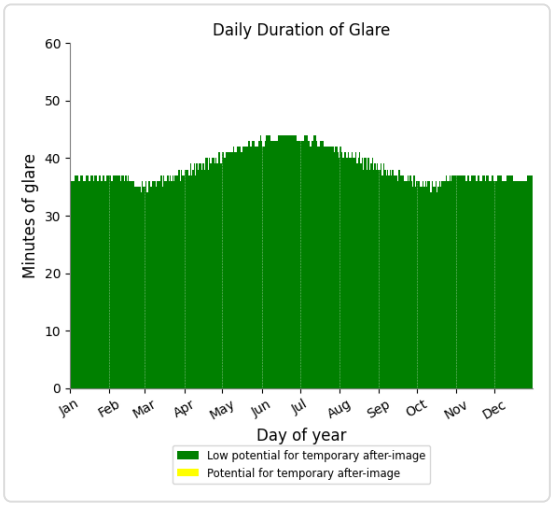


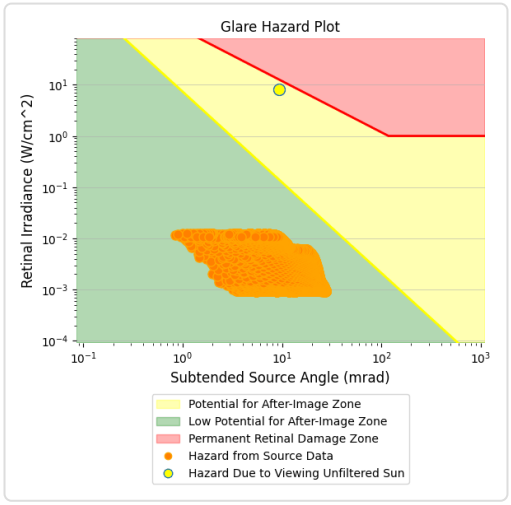
PMB10 and Route: Flight path F

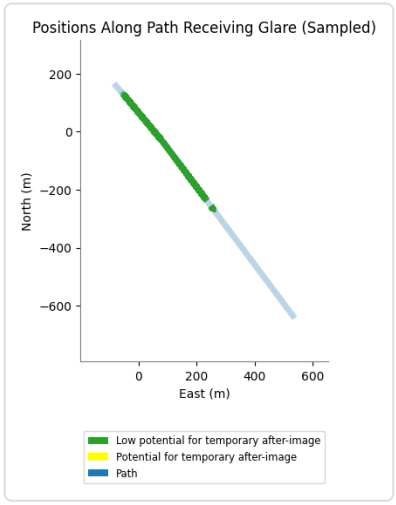
Yellow glare: none

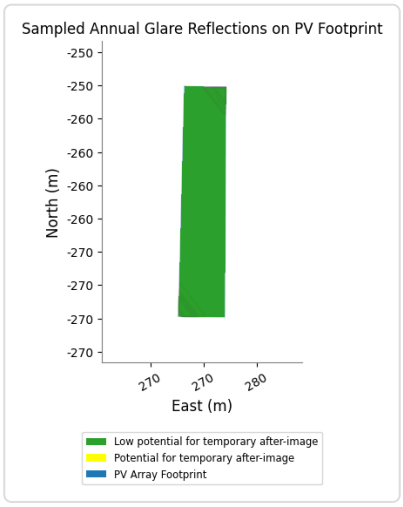
Green glare: 14,038 min.







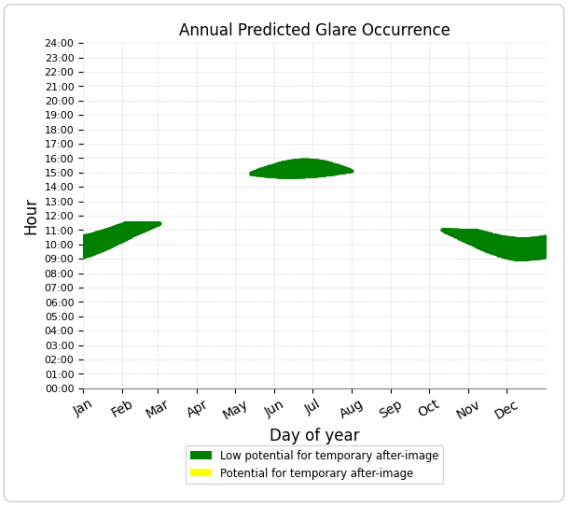


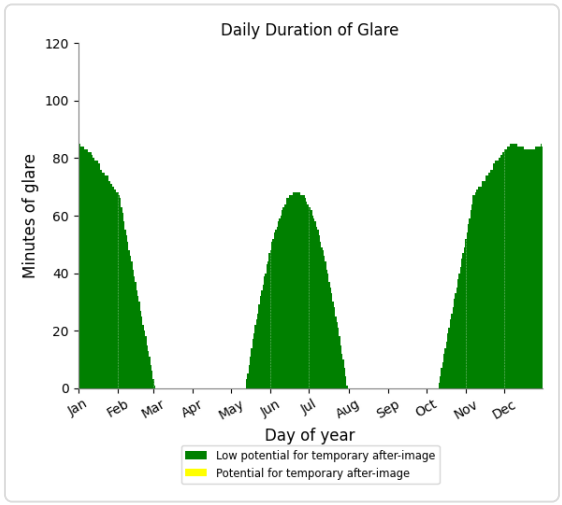


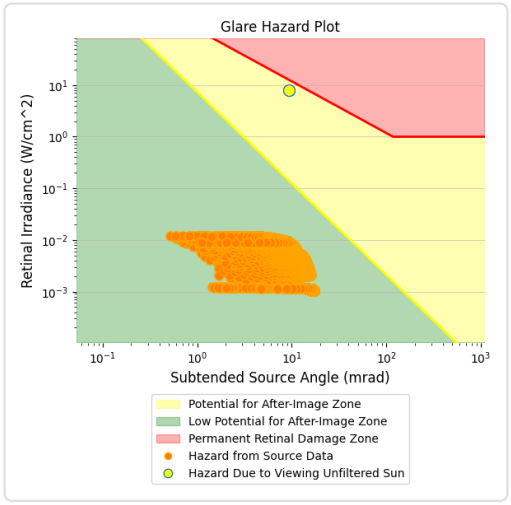
PMB10 and Route: Flight path G

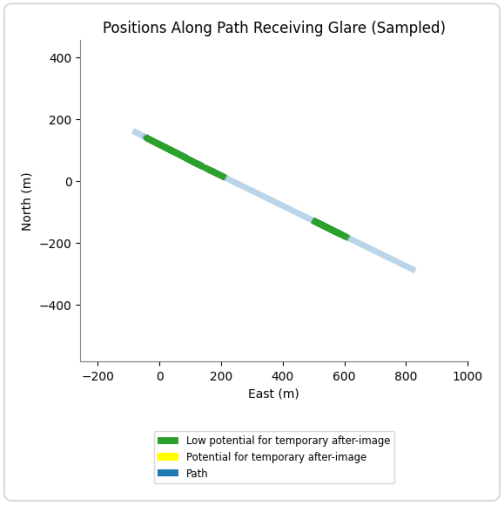
Yellow glare: none

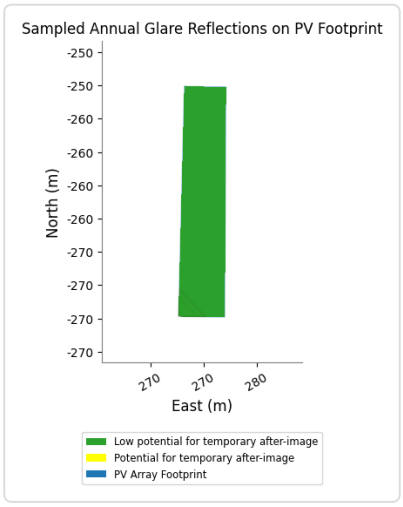
Green glare: 12,269 min.







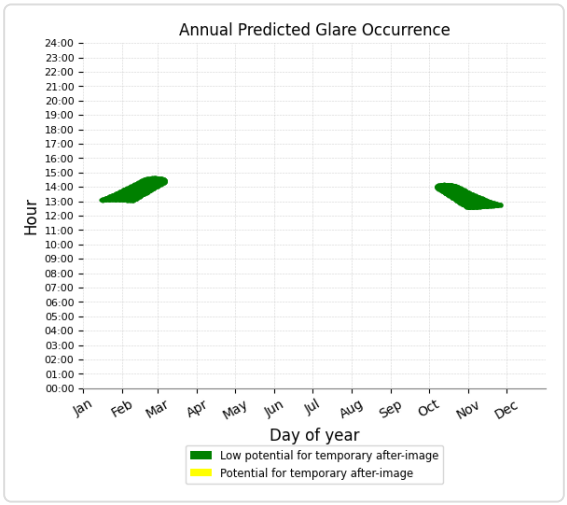


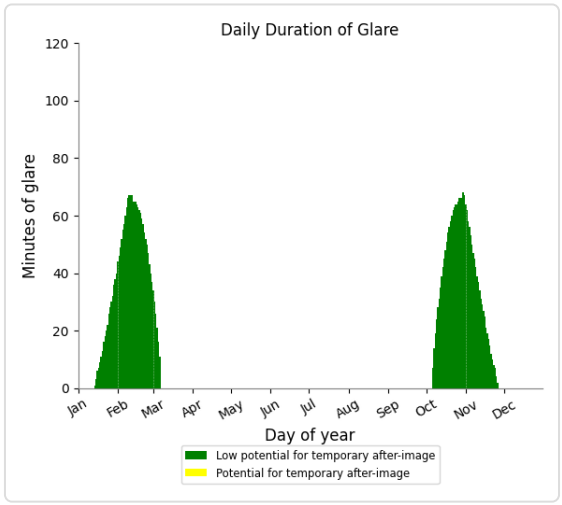


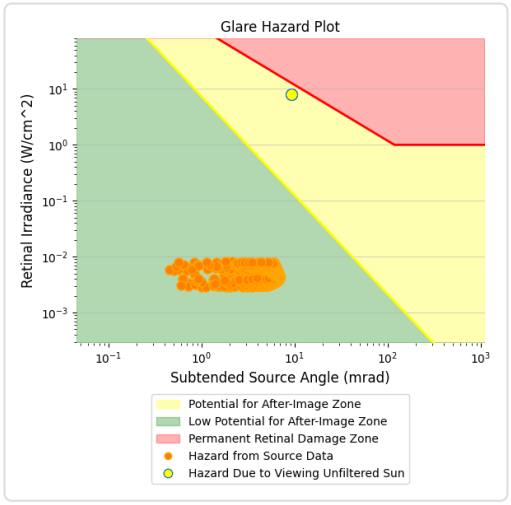
PMB10 and Route: Flight path H

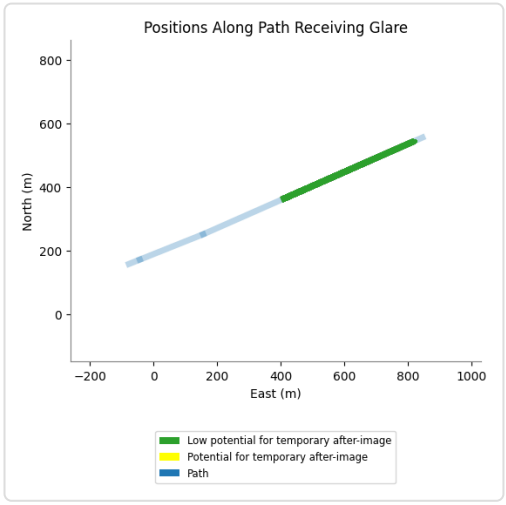
Yellow glare: none

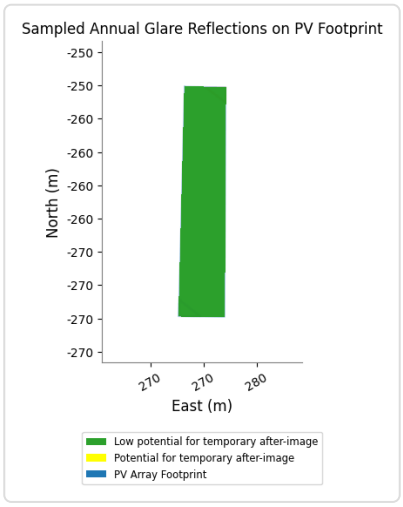
Green glare: 4,147 min.











PV: PMB11 low potential for temporary after-image

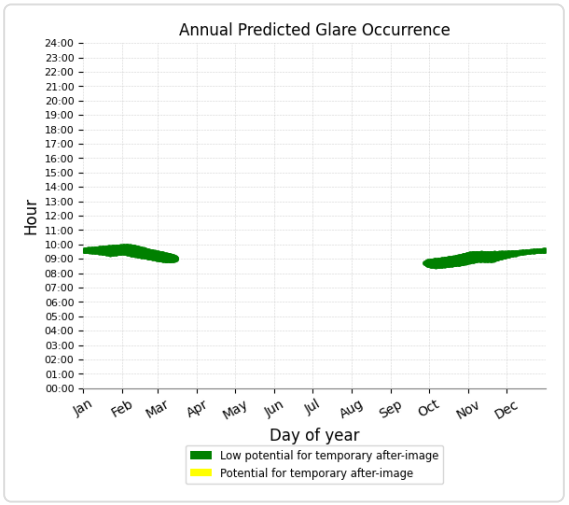
Receptor results ordered by category of glare

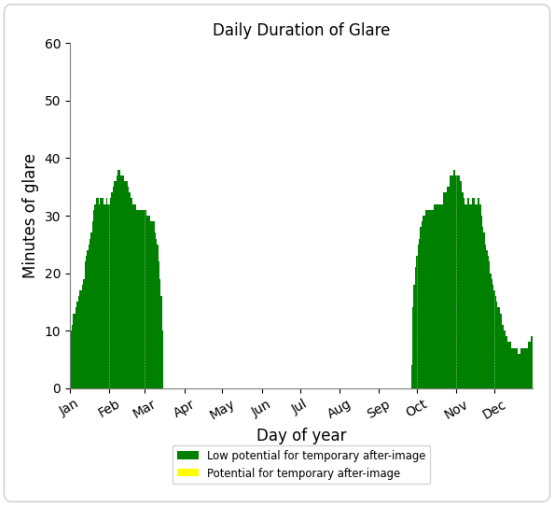
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Flight path A	4,319	72.0	0	0.0
Flight path B	5,923	98.7	0	0.0
Flight path C	3,751	62.5	0	0.0
Flight path D	11,804	196.7	0	0.0
Flight path E	4,585	76.4	0	0.0
Flight path F	13,885	231.4	0	0.0
Flight path G	14,749	245.8	0	0.0
Flight path H	6,687	111.5	0	0.0

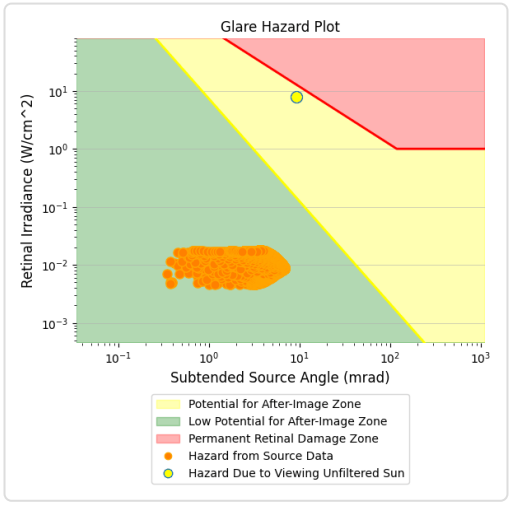
PMB11 and Route: Flight path A

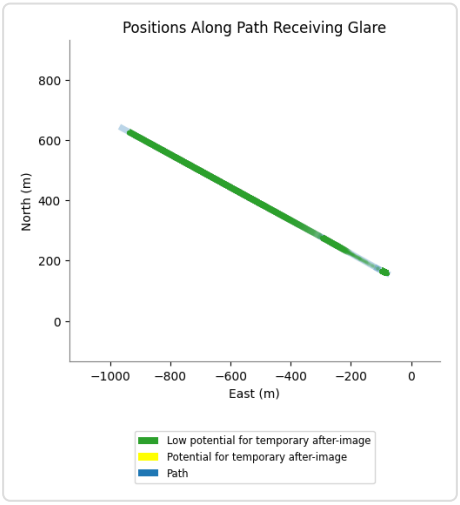
Yellow glare: none

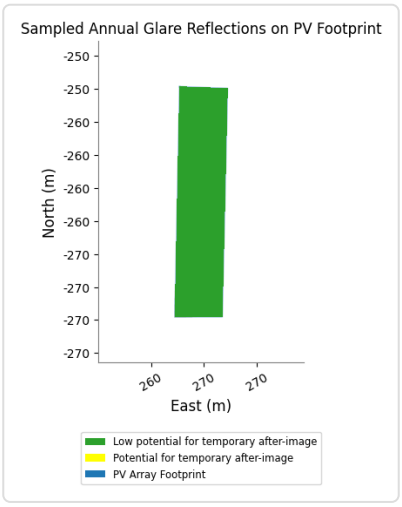
Green glare: 4,319 min.







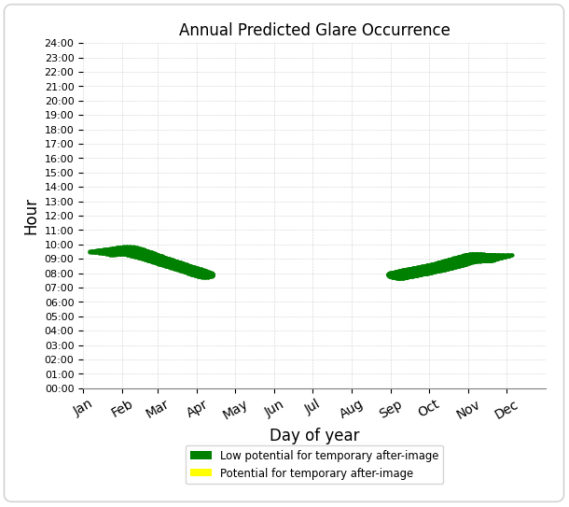


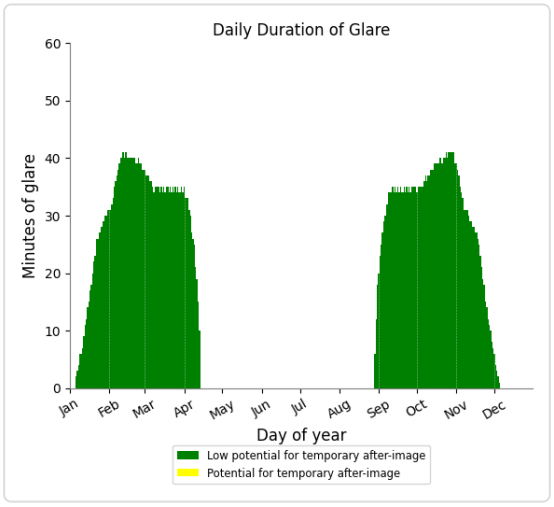


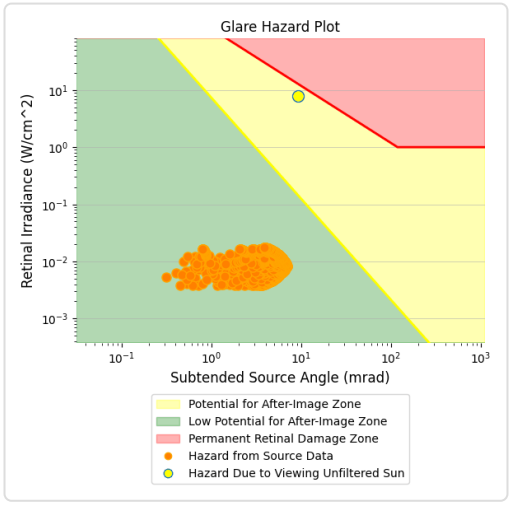
PMB11 and Route: Flight path B

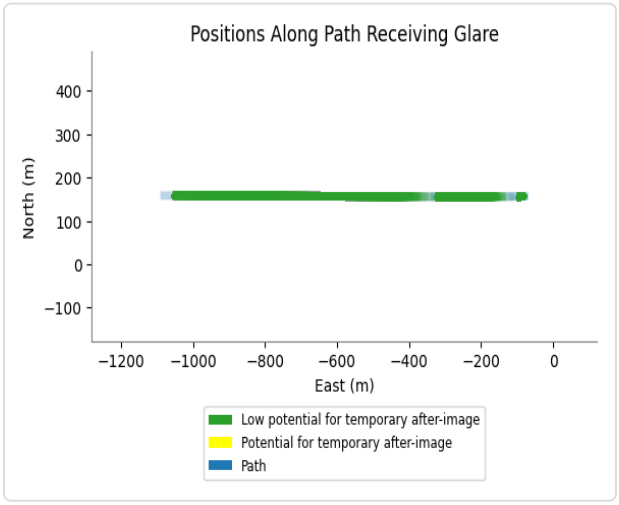
Yellow glare: none

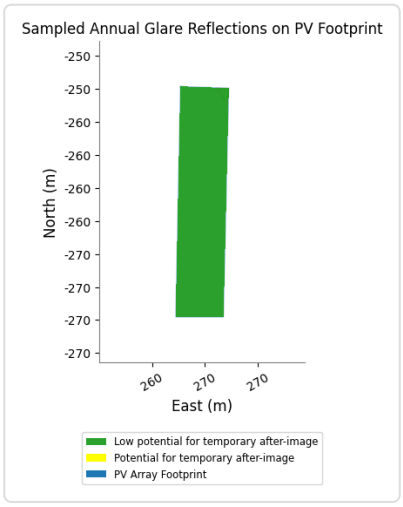
Green glare: 5,923 min.







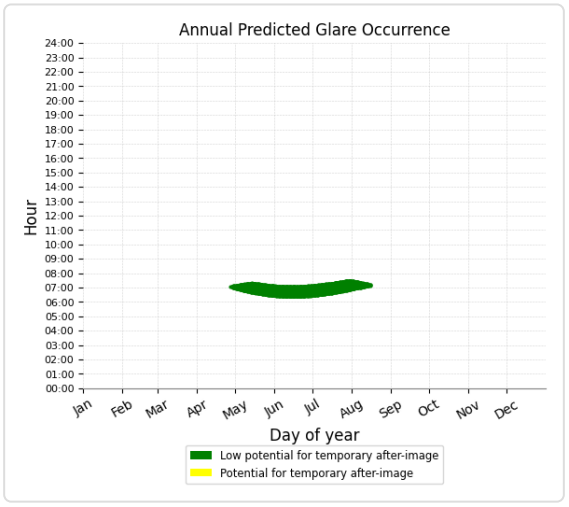


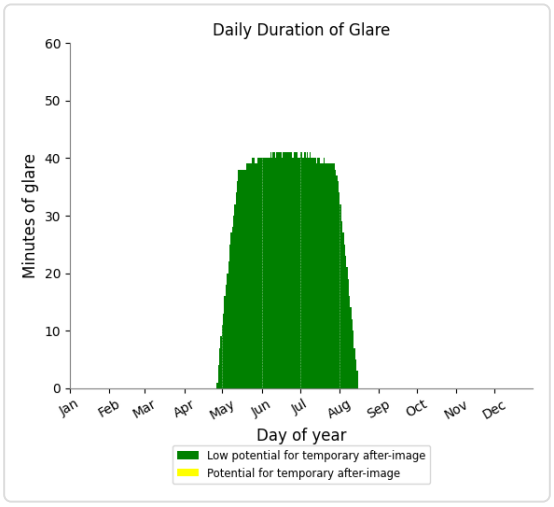


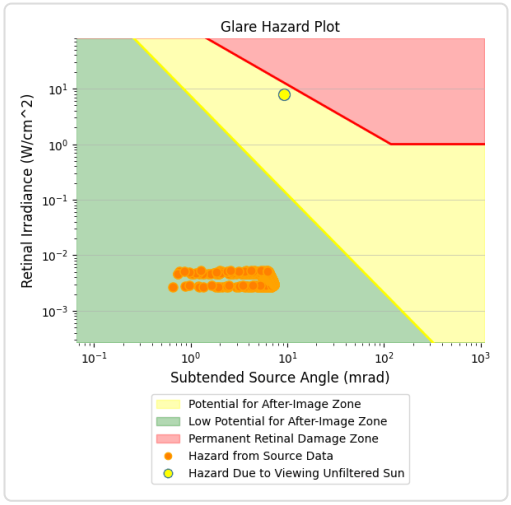
PMB11 and Route: Flight path C

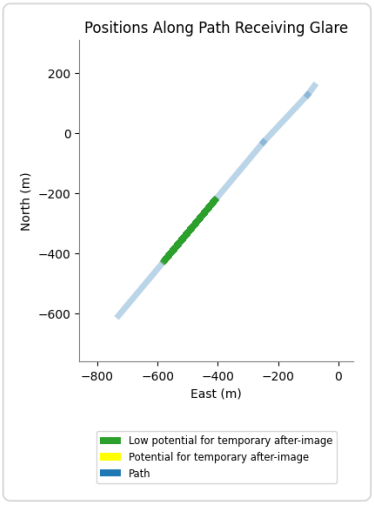
Yellow glare: none

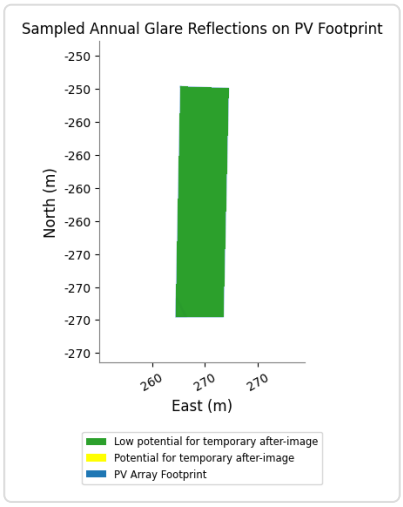
Green glare: 3,751 min.







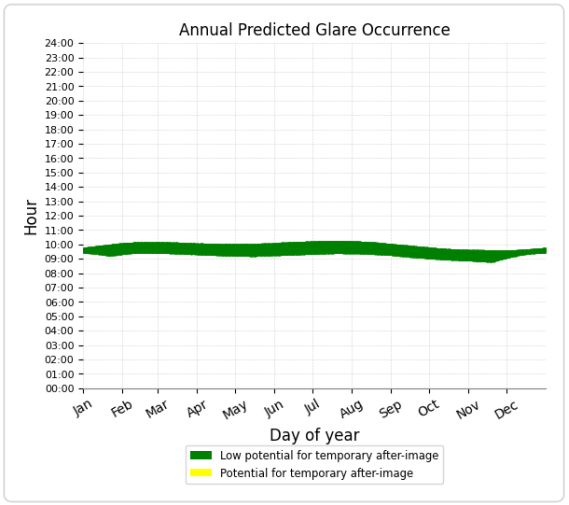


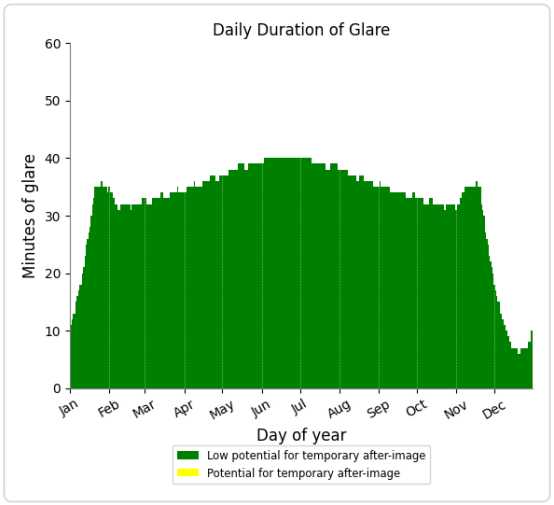


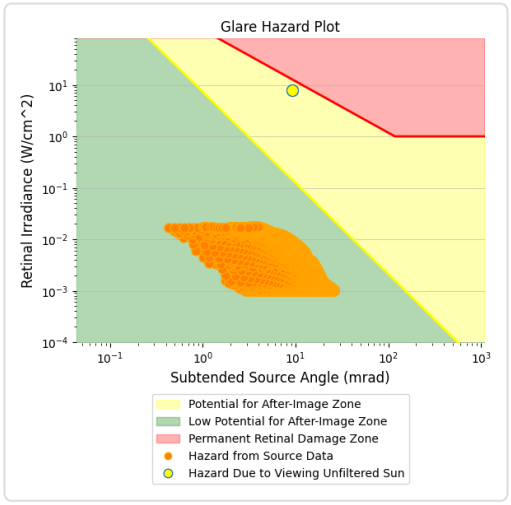
PMB11 and Route: Flight path D

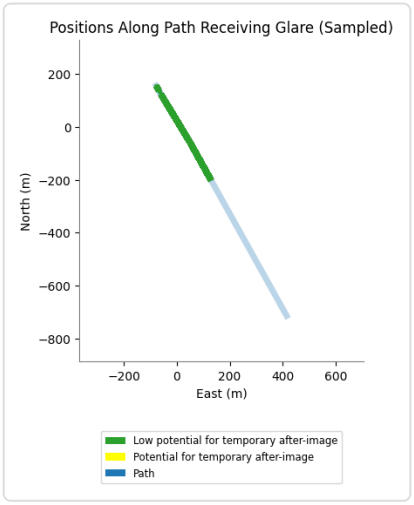
Yellow glare: none

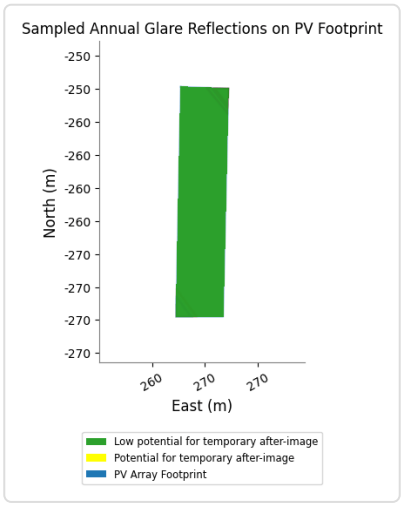
Green glare: 11,804 min.







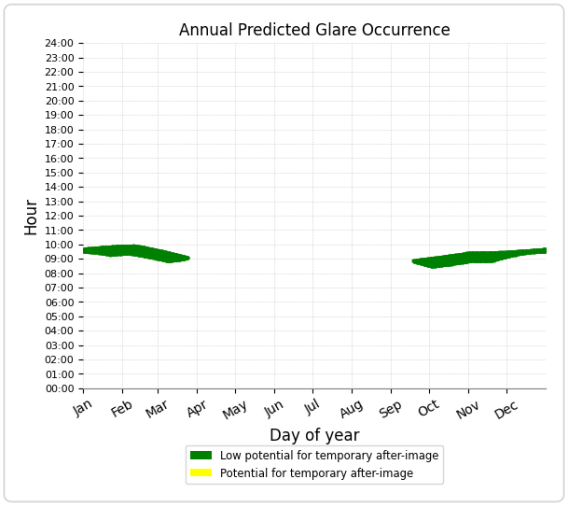


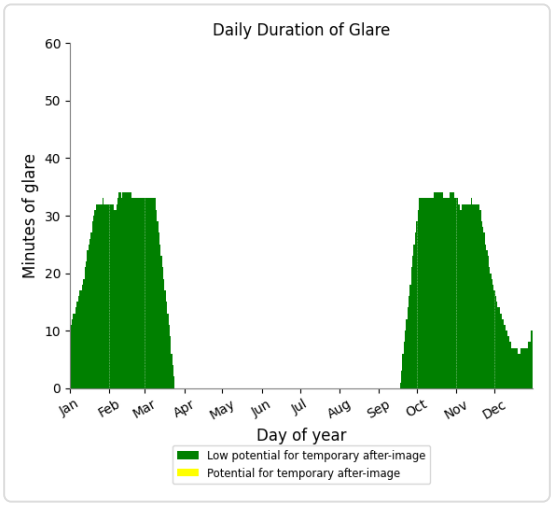


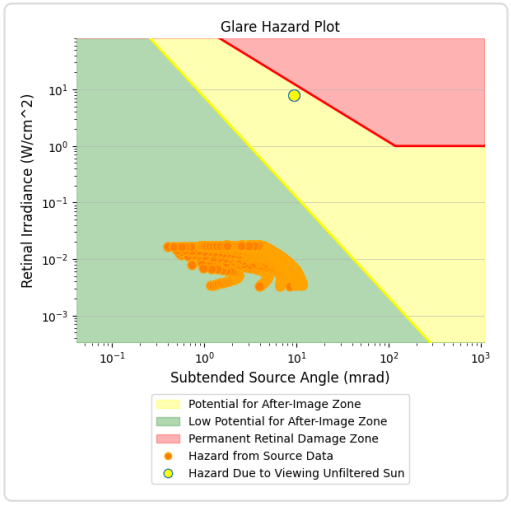
PMB11 and Route: Flight path E

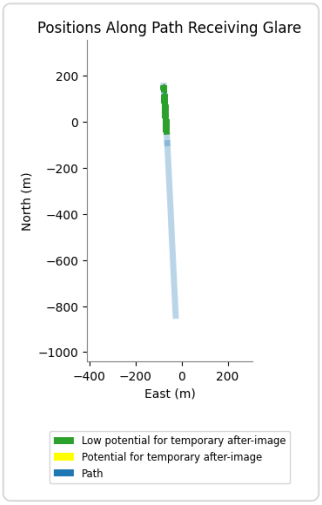
Yellow glare: none

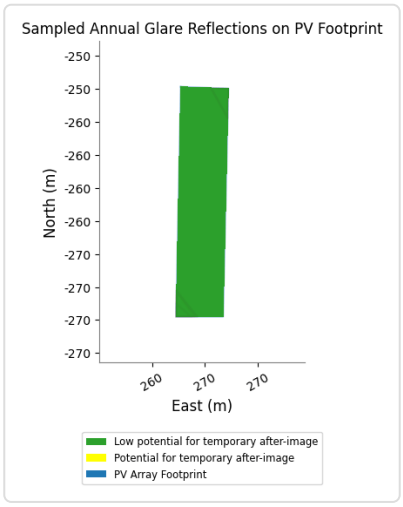
Green glare: 4,585 min.







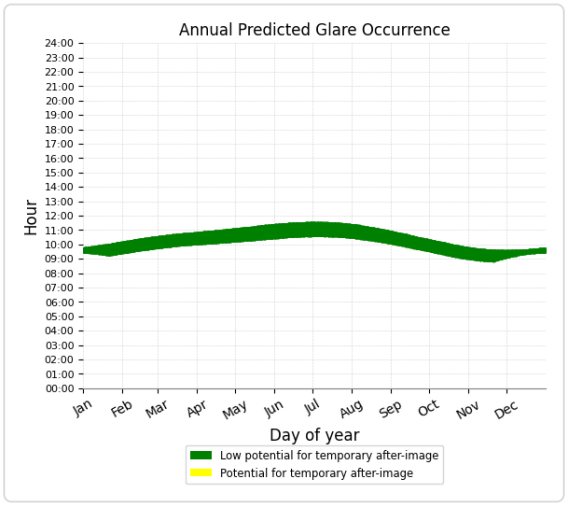


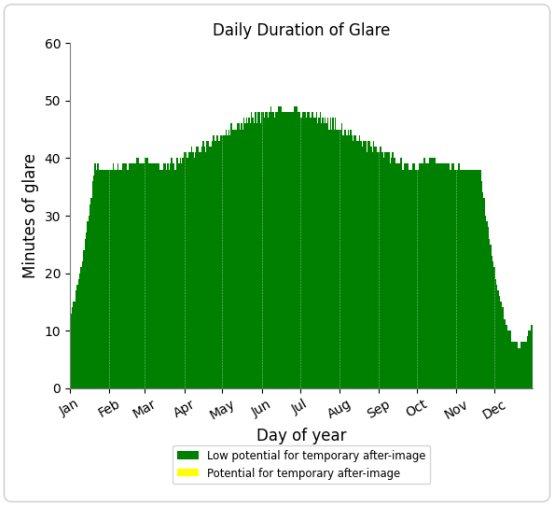


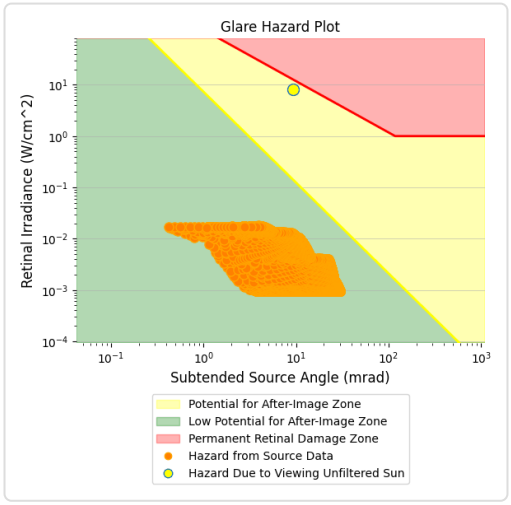
PMB11 and Route: Flight path F

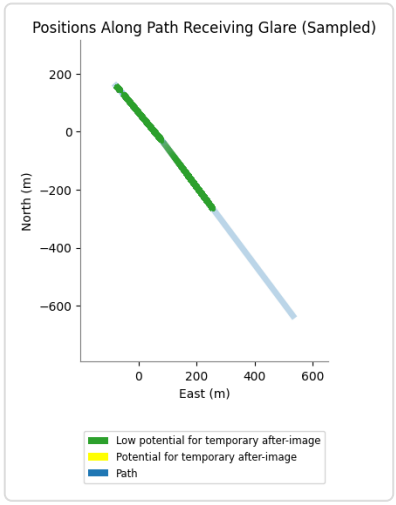
Yellow glare: none

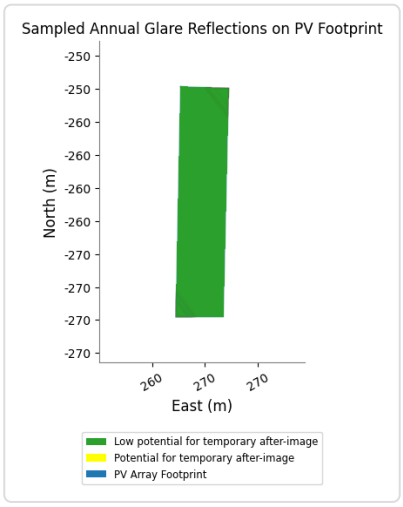
Green glare: 13,885 min.







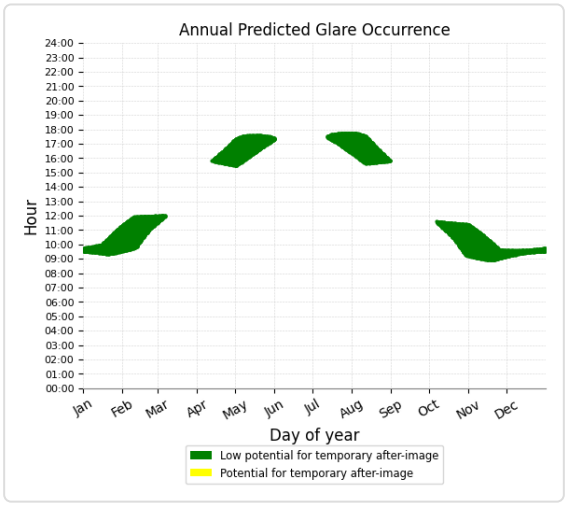


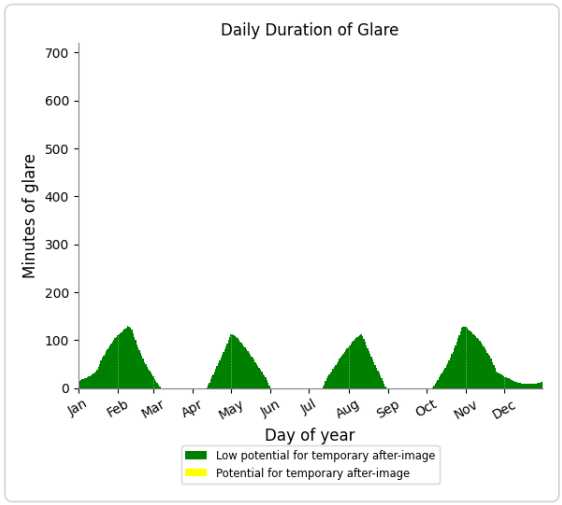


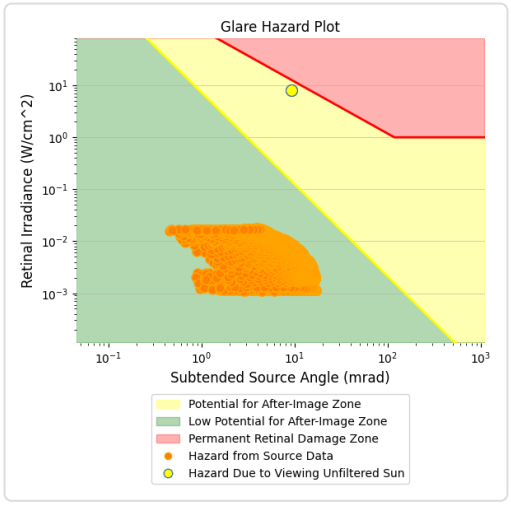
PMB11 and Route: Flight path G

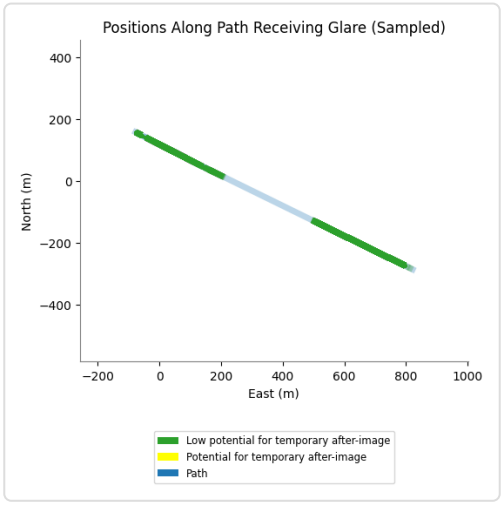
Yellow glare: none

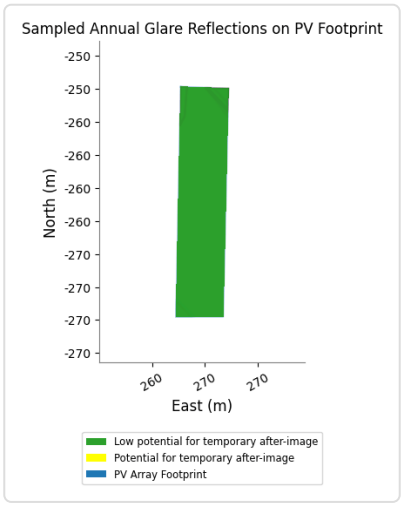
Green glare: 14,749 min.







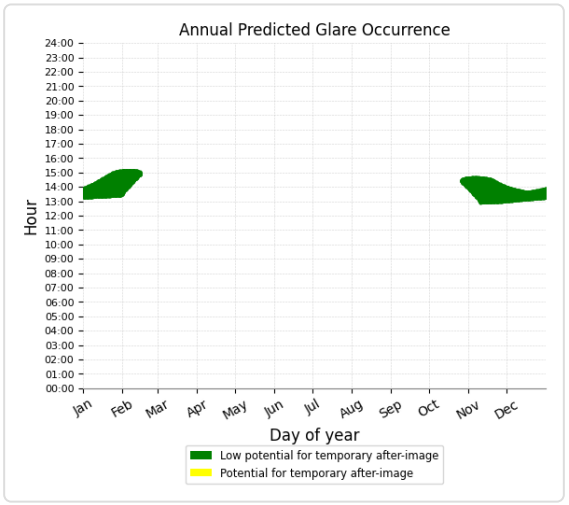


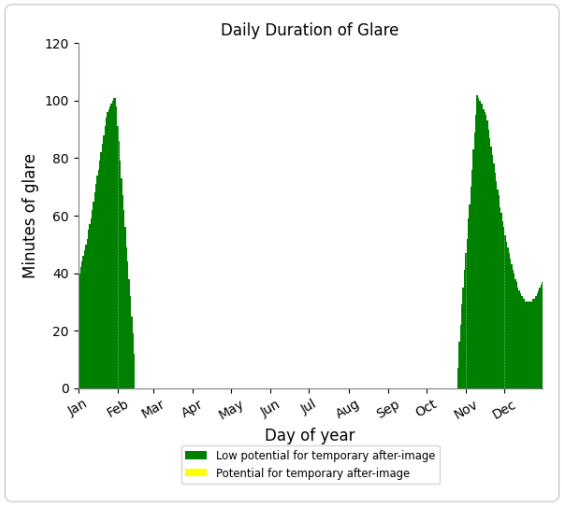


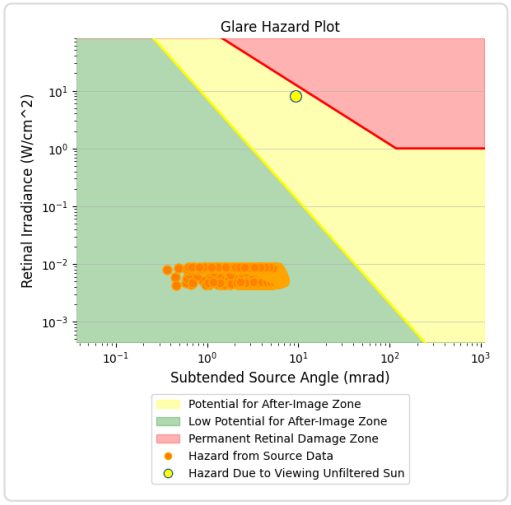
PMB11 and Route: Flight path H

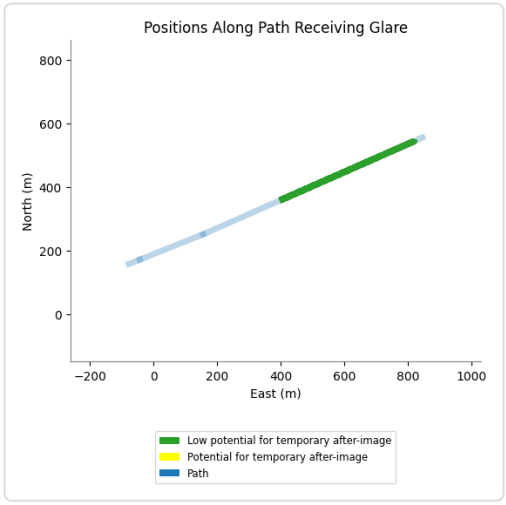
Yellow glare: none

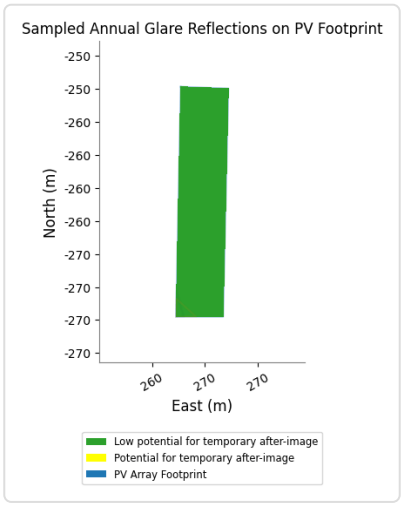
Green glare: 6,687 min.











Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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