



ENEA — Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile
Dipartimento Tecnologie Energetiche
Divisione Solare Termico e Termodinamico

Anno tipico riferito alla radiazione solare

Fonte dei dati: immagini satellitari

Gennaio 2018

Pagine di esempio

Tutti i dati sono meramente indicativi



Anno tipico riferito alla radiazione solare

Fonte dei dati: immagini satellitari

Località: Casaccia (RM)

Coordinate geografiche

latitudine 42°03.0' Nord
longitudine 12°18.0' Est da Greenwich
altitudine 150 m s.l.m.

Anni utilizzati: 2006-2017

Significato delle grandezze riferite agli intervalli di un quarto d'ora

GHI	irradianza (media nel quarto d'ora) globale su piano orizzontale
Dif.HI	irradianza (media nel quarto d'ora) diffusa su piano orizzontale
DNI	irradianza (media nel quarto d'ora) diretta normale
DI(N-S)	irradianza (media nel quarto d'ora) diretta su piano con asse Nord-Sud
EHI	irradianza (media nel quarto d'ora) extratmosferica su piano orizzontale
ENI	irradianza (media nel quarto d'ora) extratmosferica normale

piano con asse Nord-Sud

locuzione abbreviata per indicare il piano che ruota intorno ad un asse orizzontale e di direzione azimutale Nord-Sud, in modo che ad ogni istante dell'arco diurno la giacitura individuata dall'asse di rotazione e dalla direzione dei raggi solari sia normale al piano stesso

Da(GMT)
a(GMT) intervallo di un quarto d'ora a cui sono riferiti i valori medi delle grandezze. L'orario è espresso secondo il Tempo medio di Greenwich (GMT)

Osservazione. rispetto all'ora adottata in Italia (Fuso orario dell'Europa Centrale), il GMT differisce:

- di un'ora in meno in inverno (le 12:00 di GMT corrispondono alle 13:00 italiane)
- di due ore in meno nel periodo dell'ora legale estiva (per cui le 12:00 GMT corrispondono alle 14:00 italiane)

CosTz
Time valore (medio nel quarto d'ora) dell'angolo zenitale
numero di secondi in cui il sole è sopra l'orizzonte. Vale:

- 900 per gli intervalli diurni
- 0 per gli intervalli notturni
- un valore intermedio per gli intervalli crepuscolari in cui cade l'alba o il tramonto

Significato delle grandezze orarie

GHI	irradianza (media oraria) globale su piano orizzontale
Dif.HI	irradianza (media oraria) diffusa su piano orizzontale
DNI	irradianza (media oraria) diretta normale
DI(N-S)	irradianza (media oraria) diretta su piano con asse Nord-Sud
EHI	irradianza (media oraria) extratmosferica su piano orizzontale
ENI	irradianza (media oraria) extratmosferica normale

piano con asse Nord-Sud

locuzione abbreviata per indicare il piano che ruota intorno ad un asse orizzontale e di direzione azimutale Nord-Sud, in modo che ad ogni istante dell'arco diurno la giacitura individuata dall'asse di rotazione e dalla direzione dei raggi solari sia normale al piano stesso

Da(GMT)	intervallo orario a cui sono riferiti i valori medi delle grandezze. Le ore
a(GMT)	sono espresse secondo il Tempo medio di Greenwich (GMT)
Ora(GMT)	istante CENTRALE dell' intervallo orario a cui sono riferiti i valori medi delle grandezze L'ora è espressa secondo il Tempo medio di Greenwich (GMT)
CosTz	valore (medio orario) dell'angolo zenitale
Time	numero di secondi in cui il sole è sopra l'orizzonte. Vale: - 3600 per gli intervalli orari diurni - 0 per gli intervalli orari notturni - un valore intermedio per gli intervalli orari crepuscolari in cui cade l'alba o il tramonto

Significato delle grandezze giornaliere

GHI	irradiazione giornaliera globale su piano orizzontale
Dif.HI	irradiazione giornaliera diffusa su piano orizzontale
DNI	irradiazione giornaliera diretta normale
DI(N-S)	irradiazione giornaliera diretta su piano con asse Nord-Sud
EHI	irradiazione giornaliera extratmosferica su piano orizzontale
ENI	irradiazione giornaliera extratmosferica normale

Significato delle grandezze giornaliere medie mensili

GHI	irradiazione giornaliera media mensile globale su piano orizzontale = media mensile dell'irradiazione giornaliera
Dif.HI	irradiazione giornaliera media mensile diffusa su piano orizzontale
DNI	irradiazione giornaliera media mensile diretta normale
DI(N-S)	irradiazione giornaliera media mensile diretta su piano con asse Nord-Sud
EHI	irradiazione giornaliera media mensile extratmosferica su piano orizzontale
ENI	irradiazione giornaliera media mensile extratmosferica normale

Significato delle grandezze annue

GHI	irradiazione (integrale annuo) globale su piano orizzontale
Dif.HI	irradiazione (integrale annuo) diffusa su piano orizzontale
DNI	irradiazione (integrale annuo) diretta normale
DI(N-S)	irradiazione (integrale annuo) diretta su piano con asse Nord-Sud
EHI	irradiazione (integrale annuo) extratmosferica su piano orizzontale
ENI	irradiazione (integrale annuo) extratmosferica normale

Gennaio 2018

Modello di stima per la radiazione: HE08k/39st

Dati con intervalli di un quarto d'ora

4°ora(Nr)	Giorno	Da(GMT)	a(GMT)	GHI [W/m ²]	Dif.HI [W/m ²]	DNI [W/m ²]	DI(N-S) [W/m ²]	EHl [W/m ²]	ENI [W/m ²]	CosTz	Time(s)
1	1-gen	00:00:00	00:15:00	0	0	0	0	0	0	0	0
2	1-gen	00:15:00	00:30:00	0	0	0	0	0	0	0	0
3	1-gen	00:30:00	00:45:00	0	0	0	0	0	0	0	0
4	1-gen	00:45:00	01:00:00	0	0	0	0	0	0	0	0
5	1-gen	01:00:00	01:15:00	0	0	0	0	0	0	0	0

24	1-gen	05:45:00	06:00:00	0	0	0	0	0	0	0	0
25	1-gen	06:00:00	06:15:00	0	0	0	0	0	0	0	0
26	1-gen	06:15:00	06:30:00	0	0	0	0	0	0	0	0
27	1-gen	06:30:00	06:45:00	0	0	0	0	0.12	92.35	0.00135	59
28	1-gen	06:45:00	07:00:00	6	6	1.67	0	32.69	1414.86	0.0231	900
29	1-gen	07:00:00	07:15:00	18.56	18.44	2.44	1.44	89.25	1414.86	0.06308	900
30	1-gen	07:15:00	07:30:00	32.11	31.78	3.22	2.56	143.85	1414.86	0.10167	900
31	1-gen	07:30:00	07:45:00	45.89	45.33	4	3	196.23	1414.86	0.1387	900
32	1-gen	07:45:00	08:00:00	59.56	58.78	4.56	3.22	246.19	1414.86	0.17401	900
33	1-gen	08:00:00	08:15:00	72.89	71.89	5	3.33	293.51	1414.86	0.20745	900
34	1-gen	08:15:00	08:30:00	85.78	84.44	5.44	3.78	337.98	1414.86	0.23888	900
35	1-gen	08:30:00	08:45:00	56.11	56	0.33	0.22	379.41	1414.86	0.26816	900
36	1-gen	08:45:00	09:00:00	55.67	55.56	0.22	0.22	417.63	1414.86	0.29517	900
37	1-gen	09:00:00	09:15:00	285	84.67	626.44	362.11	452.46	1414.86	0.3198	900
38	1-gen	09:15:00	09:30:00	116.78	115.56	3.56	2	483.78	1414.86	0.34193	900
39	1-gen	09:30:00	09:45:00	301	119	503.44	262.33	511.43	1414.86	0.36147	900
40	1-gen	09:45:00	10:00:00	343	94	658.22	325.89	535.3	1414.86	0.37834	900
41	1-gen	10:00:00	10:15:00	327.44	131.11	500.33	236.22	555.29	1414.86	0.39247	900
42	1-gen	10:15:00	10:30:00	379.56	89	719.56	325.67	571.32	1414.86	0.4038	900
43	1-gen	10:30:00	10:45:00	415	83.78	803.44	351.33	583.3	1414.86	0.41227	900
44	1-gen	10:45:00	11:00:00	356.89	131.11	540.33	230.56	591.21	1414.86	0.41786	900
45	1-gen	11:00:00	11:15:00	360.78	130	548.67	231.33	594.99	1414.86	0.42053	900
46	1-gen	11:15:00	11:30:00	182.89	177.44	12.89	5.44	594.63	1414.86	0.42027	900
47	1-gen	11:30:00	11:45:00	156.78	154.44	5.56	2.44	590.13	1414.86	0.4171	900
48	1-gen	11:45:00	12:00:00	84.78	84.67	0.33	0.11	581.52	1414.86	0.41101	900
49	1-gen	12:00:00	12:15:00	94.56	94.33	0.56	0.22	568.84	1414.86	0.40204	900
50	1-gen	12:15:00	12:30:00	53.56	53.56	0.11	0	552.12	1414.86	0.39023	900
51	1-gen	12:30:00	12:45:00	25.89	25.89	0	0	531.45	1414.86	0.37562	900
52	1-gen	12:45:00	13:00:00	97	96.56	1.11	0.67	506.92	1414.86	0.35828	900
53	1-gen	13:00:00	13:15:00	7.89	7.89	0	0	478.63	1414.86	0.33829	900
54	1-gen	13:15:00	13:30:00	8	8	0	0	446.69	1414.86	0.31572	900
55	1-gen	13:30:00	13:45:00	105.89	104.33	5.44	3.33	411.26	1414.86	0.29067	900
56	1-gen	13:45:00	14:00:00	95.89	94.44	5.67	3.56	372.47	1414.86	0.26326	900
57	1-gen	14:00:00	14:15:00	83.56	82.33	5.33	3.56	330.5	1414.86	0.2336	900
58	1-gen	14:15:00	14:30:00	70.67	69.67	5	3.44	285.53	1414.86	0.20181	900
59	1-gen	14:30:00	14:45:00	57.22	56.44	4.44	3.44	237.74	1414.86	0.16803	900
60	1-gen	14:45:00	15:00:00	43.56	43	3.89	3.22	187.35	1414.86	0.13242	900
61	1-gen	15:00:00	15:15:00	29.78	29.44	3.11	2.78	134.57	1414.86	0.09511	900
62	1-gen	15:15:00	15:30:00	16.33	16.22	2.33	1.56	79.62	1414.86	0.05627	900
63	1-gen	15:30:00	15:45:00	4.11	4.11	1.33	0	23.07	1262.76	0.01827	803
64	1-gen	15:45:00	16:00:00	0	0	0	0	0	0	0	0

35012	31-dic	16:45:00	17:00:00	0	0	0	0	0	0	0	0
35013	31-dic	17:00:00	17:15:00	0	0	0	0	0	0	0	0
35014	31-dic	17:15:00	17:30:00	0	0	0	0	0	0	0	0
35015	31-dic	17:30:00	17:45:00	0	0	0	0	0	0	0	0
35016	31-dic	17:45:00	18:00:00	0	0	0	0	0	0	0	0
35017	31-dic	18:00:00	18:15:00	0	0	0	0	0	0	0	0
35018	31-dic	18:15:00	18:30:00	0	0	0	0	0	0	0	0
35019	31-dic	18:30:00	18:45:00	0	0	0	0	0	0	0	0
35020	31-dic	18:45:00	19:00:00	0	0	0	0	0	0	0	0
35021	31-dic	19:00:00	19:15:00	0	0	0	0	0	0	0	0
35022	31-dic	19:15:00	19:30:00	0	0	0	0	0	0	0	0
35023	31-dic	19:30:00	19:45:00	0	0	0	0	0	0	0	0
35024	31-dic	19:45:00	20:00:00	0	0	0	0	0	0	0	0
35025	31-dic	20:00:00	20:15:00	0	0	0	0	0	0	0	0
35026	31-dic	20:15:00	20:30:00	0	0	0	0	0	0	0	0
35027	31-dic	20:30:00	20:45:00	0	0	0	0	0	0	0	0
35028	31-dic	20:45:00	21:00:00	0	0	0	0	0	0	0	0
35029	31-dic	21:00:00	21:15:00	0	0	0	0	0	0	0	0
35030	31-dic	21:15:00	21:30:00	0	0	0	0	0	0	0	0
35031	31-dic	21:30:00	21:45:00	0	0	0	0	0	0	0	0
35032	31-dic	21:45:00	22:00:00	0	0	0	0	0	0	0	0
35033	31-dic	22:00:00	22:15:00	0	0	0	0	0	0	0	0
35034	31-dic	22:15:00	22:30:00	0	0	0	0	0	0	0	0
35035	31-dic	22:30:00	22:45:00	0	0	0	0	0	0	0	0
35036	31-dic	22:45:00	23:00:00	0	0	0	0	0	0	0	0
35037	31-dic	23:00:00	23:15:00	0	0	0	0	0	0	0	0
35038	31-dic	23:15:00	23:30:00	0	0	0	0	0	0	0	0
35039	31-dic	23:30:00	23:45:00	0	0	0	0	0	0	0	0
35040	31-dic	23:45:00	00:00:00	0	0	0	0	0	0	0	0

Dati orari

Ora(Nr)	Giorno	Da(GMT)	a(GMT)	GHI [W/m ²]	Dif.HI [W/m ²]	DNI [W/m ²]	DI(N-S) [W/m ²]	EHI [W/m ²]	ENI [W/m ²]	Costz	Time(s)
1	01-gen	00:00:00	01:00:00	0	0	0	0	0	0	0	0
2	01-gen	01:00:00	02:00:00	0	0	0	0	0	0	0	0
3	01-gen	02:00:00	03:00:00	0	0	0	0	0	0	0	0
4	01-gen	03:00:00	04:00:00	0	0	0	0	0	0	0	0
5	01-gen	04:00:00	05:00:00	0	0	0	0	0	0	0	0
6	01-gen	05:00:00	06:00:00	0	0	0	0	0	0	0	0
7	01-gen	06:00:00	07:00:00	1.5	1.5	0.42	0	8.2	376.8	0.02177	959
8	01-gen	07:00:00	08:00:00	39.03	38.58	3.56	2.56	168.88	1414.86	0.11936	3600
9	01-gen	08:00:00	09:00:00	67.61	66.97	2.75	1.89	357.13	1414.86	0.25241	3600
10	01-gen	09:00:00	10:00:00	261.44	103.31	447.92	238.08	495.74	1414.86	0.35038	3600
11	01-gen	10:00:00	11:00:00	369.72	108.75	640.92	285.94	575.28	1414.86	0.4066	3600
12	01-gen	11:00:00	12:00:00	196.31	136.64	141.86	59.83	590.32	1414.86	0.41723	3600
13	01-gen	12:00:00	13:00:00	67.75	67.58	0.44	0.22	539.83	1414.86	0.38155	3600
14	01-gen	13:00:00	14:00:00	54.42	53.67	2.78	1.72	427.26	1414.86	0.30198	3600
15	01-gen	14:00:00	15:00:00	63.75	62.86	4.67	3.42	260.28	1414.86	0.18396	3600
16	01-gen	15:00:00	16:00:00	12.56	12.44	1.69	1.08	59.31	1023.12	0.05797	2603
17	01-gen	16:00:00	17:00:00	0	0	0	0	0	0	0	0
18	01-gen	17:00:00	18:00:00	0	0	0	0	0	0	0	0
19	01-gen	18:00:00	19:00:00	0	0	0	0	0	0	0	0
20	01-gen	19:00:00	20:00:00	0	0	0	0	0	0	0	0
21	01-gen	20:00:00	21:00:00	0	0	0	0	0	0	0	0
22	01-gen	21:00:00	22:00:00	0	0	0	0	0	0	0	0
23	01-gen	22:00:00	23:00:00	0	0	0	0	0	0	0	0
24	01-gen	23:00:00	00:00:00	0	0	0	0	0	0	0	0
25	02-gen	00:00:00	01:00:00	0	0	0	0	0	0	0	0
26	02-gen	01:00:00	02:00:00	0	0	0	0	0	0	0	0
27	02-gen	02:00:00	03:00:00	0	0	0	0	0	0	0	0
28	02-gen	03:00:00	04:00:00	0	0	0	0	0	0	0	0
29	02-gen	04:00:00	05:00:00	0	0	0	0	0	0	0	0
30	02-gen	05:00:00	06:00:00	0	0	0	0	0	0	0	0
31	02-gen	06:00:00	07:00:00	2.53	2.31	9.36	8.11	8.13	374.88	0.02169	954
32	02-gen	07:00:00	08:00:00	66.22	55.75	81.58	62.42	168.85	1414.88	0.11934	3600
33	02-gen	08:00:00	09:00:00	172.25	108.67	244.61	158.72	357.54	1414.88	0.2527	3600
34	02-gen	09:00:00	10:00:00	287.39	110.64	484.19	250.81	496.65	1414.88	0.35102	3600
35	02-gen	10:00:00	11:00:00	389.94	90.78	735.06	330.64	576.7	1414.88	0.40759	3600
36	02-gen	11:00:00	12:00:00	362.72	120.08	580.86	250.08	592.23	1414.88	0.41857	3600
37	02-gen	12:00:00	13:00:00	306.89	126.47	459.64	218.28	542.2	1414.88	0.38321	3600
38	02-gen	13:00:00	14:00:00	225.14	115.17	354.86	210	430	1414.88	0.30391	3600
39	02-gen	14:00:00	15:00:00	109.58	89.14	107.47	76.72	263.29	1414.88	0.18608	3600
40	02-gen	15:00:00	16:00:00	22.17	19.44	39.75	32.47	61.6	1042.3	0.0591	2652
41	02-gen	16:00:00	17:00:00	0	0	0	0	0	0	0	0
42	02-gen	17:00:00	18:00:00	0	0	0	0	0	0	0	0
43	02-gen	18:00:00	19:00:00	0	0	0	0	0	0	0	0
44	02-gen	19:00:00	20:00:00	0	0	0	0	0	0	0	0
45	02-gen	20:00:00	21:00:00	0	0	0	0	0	0	0	0
46	02-gen	21:00:00	22:00:00	0	0	0	0	0	0	0	0

8718	30-dic	05:00:00	06:00:00	0	0	0	0	0	0	0	0
8719	30-dic	06:00:00	07:00:00	0.58	0.58	0	0	8.47	383.35	0.0221	975
8720	30-dic	07:00:00	08:00:00	15.03	15.03	0.06	0	169.41	1414.76	0.11975	3600
8721	30-dic	08:00:00	09:00:00	34.22	34.22	0.08	0	356.79	1414.76	0.25219	3600
8722	30-dic	09:00:00	10:00:00	36.08	36.08	0.06	0	494.43	1414.76	0.34948	3600
8723	30-dic	10:00:00	11:00:00	42.89	42.89	0.06	0	572.94	1414.76	0.40497	3600
8724	30-dic	11:00:00	12:00:00	96.69	96.42	0.64	0.28	586.97	1414.76	0.41489	3600
8725	30-dic	12:00:00	13:00:00	80.75	80.56	0.47	0.22	535.56	1414.76	0.37855	3600
8726	30-dic	13:00:00	14:00:00	78.17	77.61	1.67	0.97	422.23	1414.76	0.29845	3600
8727	30-dic	14:00:00	15:00:00	23.83	23.83	0.11	0	254.69	1414.76	0.18002	3600
8728	30-dic	15:00:00	16:00:00	4.47	4.47	0	0	55.13	986.92	0.05586	2511
8729	30-dic	16:00:00	17:00:00	0	0	0	0	0	0	0	0
8730	30-dic	17:00:00	18:00:00	0	0	0	0	0	0	0	0
8731	30-dic	18:00:00	19:00:00	0	0	0	0	0	0	0	0
8732	30-dic	19:00:00	20:00:00	0	0	0	0	0	0	0	0
8733	30-dic	20:00:00	21:00:00	0	0	0	0	0	0	0	0
8734	30-dic	21:00:00	22:00:00	0	0	0	0	0	0	0	0
8735	30-dic	22:00:00	23:00:00	0	0	0	0	0	0	0	0
8736	30-dic	23:00:00	00:00:00	0	0	0	0	0	0	0	0
8737	31-dic	00:00:00	01:00:00	0	0	0	0	0	0	0	0
8738	31-dic	01:00:00	02:00:00	0	0	0	0	0	0	0	0
8739	31-dic	02:00:00	03:00:00	0	0	0	0	0	0	0	0
8740	31-dic	03:00:00	04:00:00	0	0	0	0	0	0	0	0
8741	31-dic	04:00:00	05:00:00	0	0	0	0	0	0	0	0
8742	31-dic	05:00:00	06:00:00	0	0	0	0	0	0	0	0
8743	31-dic	06:00:00	07:00:00	2.83	2.47	15	12.89	8.32	379.62	0.02191	966
8744	31-dic	07:00:00	08:00:00	73	55.28	137.64	104.81	169.07	1414.81	0.1195	3600
8745	31-dic	08:00:00	09:00:00	205.42	90.42	428.5	272.31	356.88	1414.81	0.25225	3600
8746	31-dic	09:00:00	10:00:00	284.53	117.42	493.06	271.25	495	1414.81	0.34987	3600
8747	31-dic	10:00:00	11:00:00	347.75	122.36	548.5	239.44	574.03	1414.81	0.40573	3600
8748	31-dic	11:00:00	12:00:00	404.67	101.53	727.58	309.69	588.56	1414.81	0.416	3600
8749	31-dic	12:00:00	13:00:00	355.81	88.86	701.14	341.92	537.62	1414.81	0.37999	3600
8750	31-dic	13:00:00	14:00:00	203.22	120.47	260.06	149.67	424.67	1414.81	0.30016	3600
8751	31-dic	14:00:00	15:00:00	117.47	84	179.44	128.31	257.42	1414.81	0.18194	3600
8752	31-dic	15:00:00	16:00:00	22.5	18.42	62.75	50	57.16	1004.65	0.05689	2556
8753	31-dic	16:00:00	17:00:00	0	0	0	0	0	0	0	0
8754	31-dic	17:00:00	18:00:00	0	0	0	0	0	0	0	0
8755	31-dic	18:00:00	19:00:00	0	0	0	0	0	0	0	0
8756	31-dic	19:00:00	20:00:00	0	0	0	0	0	0	0	0
8757	31-dic	20:00:00	21:00:00	0	0	0	0	0	0	0	0
8758	31-dic	21:00:00	22:00:00	0	0	0	0	0	0	0	0
8759	31-dic	22:00:00	23:00:00	0	0	0	0	0	0	0	0
8760	31-dic	23:00:00	00:00:00	0	0	0	0	0	0	0	0

Dati orari 'centrati' agli istanti hh:00:00

Ora(Nr)	Giorno	Ora(GMT)	GHI [W/m ²]	Dif.HI [W/m ²]	DNI [W/m ²]	DI(N-S) [W/m ²]	EHI [W/m ²]	ENI [W/m ²]	CosTz	Time(s)
1	01-gen	00:00:00	0	0	0	0	0	0	0	0
2	01-gen	01:00:00	0	0	0	0	0	0	0	0
3	01-gen	02:00:00	0	0	0	0	0	0	0	0
4	01-gen	03:00:00	0	0	0	0	0	0	0	0
5	01-gen	04:00:00	0	0	0	0	0	0	0	0
6	01-gen	05:00:00	0	0	0	0	0	0	0	0
7	01-gen	06:00:00	0	0	0	0	0	0	0	0
8	01-gen	07:00:00	14.17	14.06	1.83	1	66.48	1084.23	0.06131	2759
9	01-gen	08:00:00	66.03	65.11	4.75	3.33	268.48	1414.86	0.18976	3600
10	01-gen	09:00:00	128.39	77.94	157.64	91.14	433.32	1414.86	0.30626	3600
11	01-gen	10:00:00	337.75	108.28	595.39	287.53	543.34	1414.86	0.38402	3600
12	01-gen	11:00:00	328.89	130.58	476.33	204.67	591.03	1414.86	0.41773	3600
13	01-gen	12:00:00	97.42	96.75	1.64	0.69	573.15	1414.86	0.4051	3600
14	01-gen	13:00:00	34.69	34.58	0.28	0.17	490.92	1414.86	0.34698	3600
15	01-gen	14:00:00	89	87.69	5.36	3.47	349.94	1414.86	0.24733	3600
16	01-gen	15:00:00	36.72	36.28	3.44	2.75	159.82	1414.86	0.11296	3600
17	01-gen	16:00:00	1.03	1.03	0.33	0	5.77	315.69	0.01827	803
18	01-gen	17:00:00	0	0	0	0	0	0	0	0
19	01-gen	18:00:00	0	0	0	0	0	0	0	0
20	01-gen	19:00:00	0	0	0	0	0	0	0	0
21	01-gen	20:00:00	0	0	0	0	0	0	0	0
22	01-gen	21:00:00	0	0	0	0	0	0	0	0
23	01-gen	22:00:00	0	0	0	0	0	0	0	0
24	01-gen	23:00:00	0	0	0	0	0	0	0	0
25	02-gen	00:00:00	0	0	0	0	0	0	0	0
26	02-gen	01:00:00	0	0	0	0	0	0	0	0
27	02-gen	02:00:00	0	0	0	0	0	0	0	0
28	02-gen	03:00:00	0	0	0	0	0	0	0	0
29	02-gen	04:00:00	0	0	0	0	0	0	0	0
30	02-gen	05:00:00	0	0	0	0	0	0	0	0
31	02-gen	06:00:00	0	0	0	0	0	0	0	0
32	02-gen	07:00:00	24	21	42.03	34.19	66.34	1082.33	0.06129	2754
33	02-gen	08:00:00	112.11	91.06	108.58	77.22	268.66	1414.88	0.18988	3600
34	02-gen	09:00:00	205.47	123.08	279.08	169.81	433.97	1414.88	0.30672	3600
35	02-gen	10:00:00	381.06	84.47	771.17	375.83	544.49	1414.88	0.38483	3600
36	02-gen	11:00:00	360.39	124.81	563.67	242.39	592.7	1414.88	0.4189	3600
37	02-gen	12:00:00	383.06	89.11	722.42	325.14	575.3	1414.88	0.40661	3600
38	02-gen	13:00:00	248.97	145.56	300.83	164.61	493.49	1414.88	0.34878	3600
39	02-gen	14:00:00	164.17	103.86	221.64	140.67	352.83	1414.88	0.24937	3600
40	02-gen	15:00:00	63.64	53.69	79.92	61.17	162.91	1414.88	0.11514	3600
41	02-gen	16:00:00	1.97	1.81	8.06	7.22	6.49	334.86	0.0194	852
42	02-gen	17:00:00	0	0	0	0	0	0	0	0
43	02-gen	18:00:00	0	0	0	0	0	0	0	0
44	02-gen	19:00:00	0	0	0	0	0	0	0	0
45	02-gen	20:00:00	0	0	0	0	0	0	0	0
46	02-gen	21:00:00	0	0	0	0	0	0	0	0
47	02-gen	22:00:00	0	0	0	0	0	0	0	0
48	02-gen	23:00:00	0	0	0	0	0	0	0	0
49	03-gen	00:00:00	0	0	0	0	0	0	0	0
50	03-gen	01:00:00	0	0	0	0	0	0	0	0
51	03-gen	02:00:00	0	0	0	0	0	0	0	0
52	03-gen	03:00:00	0	0	0	0	0	0	0	0
53	03-gen	04:00:00	0	0	0	0	0	0	0	0
54	03-gen	05:00:00	0	0	0	0	0	0	0	0
55	03-gen	06:00:00	0	0	0	0	0	0	0	0
56	03-gen	07:00:00	27.53	21.33	86.33	69.61	66.32	1081.32	0.06133	2751
57	03-gen	08:00:00	128.78	85.17	224.47	160.14	268.99	1414.89	0.19012	3600
58	03-gen	09:00:00	293.81	77.17	702.17	418.17	434.78	1414.89	0.30729	3600
59	03-gen	10:00:00	388.78	84.17	789.17	385.44	545.81	1414.89	0.38576	3600
60	03-gen	11:00:00	421.17	83.5	803.53	345.42	594.53	1414.89	0.42019	3600
61	03-gen	12:00:00	393.33	84.78	755.44	340.69	577.61	1414.89	0.40823	3600
62	03-gen	13:00:00	315.72	89.67	642	346.06	496.2	1414.89	0.3507	3600
63	03-gen	14:00:00	195.97	92	394.53	255.17	355.85	1414.89	0.2515	3600
64	03-gen	15:00:00	74.64	53.39	167.33	128.69	166.13	1414.89	0.11742	3600
65	03-gen	16:00:00	2.58	2.19	18.64	15.83	7.29	354.74	0.02056	903
66	03-gen	17:00:00	0	0	0	0	0	0	0	0
67	03-gen	18:00:00	0	0	0	0	0	0	0	0
68	03-gen	19:00:00	0	0	0	0	0	0	0	0
69	03-gen	20:00:00	0	0	0	0	0	0	0	0
70	03-gen	21:00:00	0	0	0	0	0	0	0	0
71	03-gen	22:00:00	0	0	0	0	0	0	0	0
72	03-gen	23:00:00	0	0	0	0	0	0	0	0
73	04-gen	00:00:00	0	0	0	0	0	0	0	0
74	04-gen	01:00:00	0	0	0	0	0	0	0	0
75	04-gen	02:00:00	0	0	0	0	0	0	0	0
76	04-gen	03:00:00	0	0	0	0	0	0	0	0
77	04-gen	04:00:00	0	0	0	0	0	0	0	0
78	04-gen	05:00:00	0	0	0	0	0	0	0	0
79	04-gen	06:00:00	0	0	0	0	0	0	0	0

ecc.

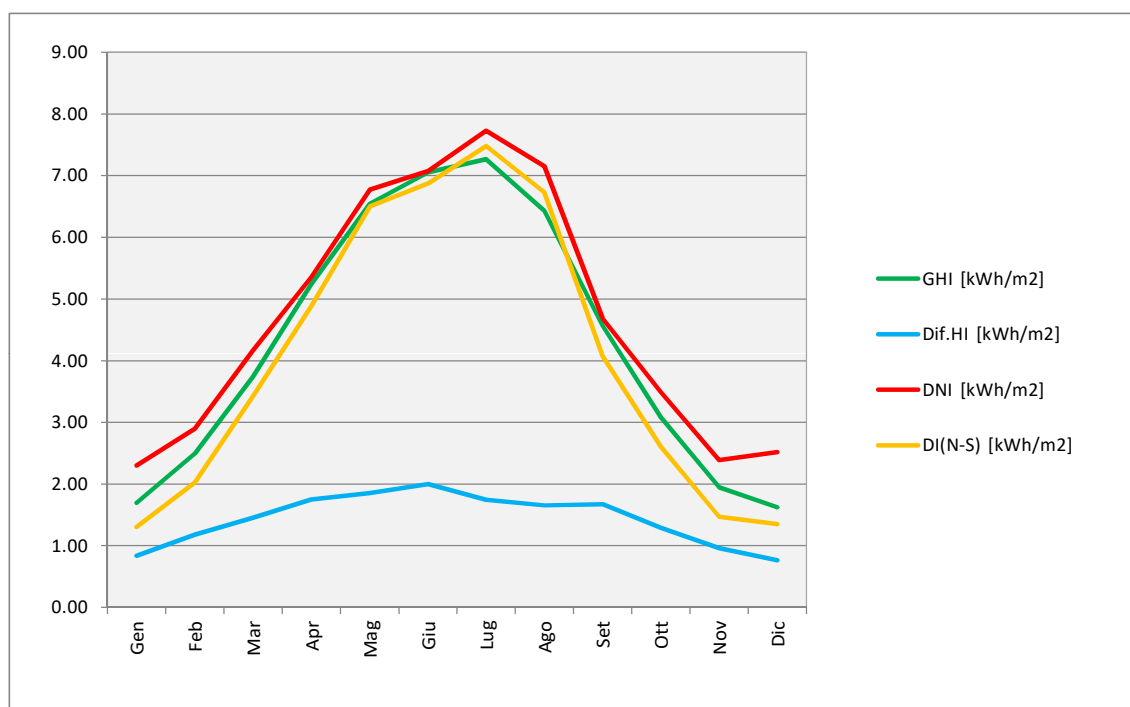
Dati giornalieri

Giorno	GHI [kWh/m ²]	Dif.HI [kWh/m ²]	DNI [kWh/m ²]	DI (N-S)[kWh/m ²]	EHI [kWh/m ²]	ENI [kWh/m ²]	Alba(GMT)	Tramonto(GMT)
01-gen	1.1341	0.6523	1.247	0.5948	3.4822	12.7188	6h 44'	15h 43'
02-gen	1.9448	0.8384	3.0974	1.5982	3.4972	12.7362	6h 44'	15h 44'
03-gen	2.2423	0.6734	4.5836	2.4652	3.5135	12.7552	6h 44'	15h 45'
04-gen	1.0989	0.9097	0.459	0.2034	3.5313	12.7756	6h 44'	15h 46'
05-gen	0.5034	0.5014	0.0054	0.0024	3.5504	12.7975	6h 44'	15h 47'
06-gen	2.0299	0.8566	3.3301	1.7869	3.5709	12.8208	6h 44'	15h 48'
07-gen	1.6753	1.0258	1.7652	0.9194	3.5928	12.8455	6h 44'	15h 49'
08-gen	0.8704	0.8225	0.1332	0.0715	3.6161	12.8716	6h 44'	15h 50'
09-gen	0.8245	0.6574	0.4874	0.2774	3.6408	12.8991	6h 44'	15h 51'
10-gen	1.2907	0.8928	1.0129	0.509	3.6668	12.9278	6h 43'	15h 52'
11-gen	0.5775	0.5733	0.0105	0.0046	3.6941	12.9579	6h 43'	15h 53'
12-gen	2.3961	0.7093	4.7246	2.62	3.7229	12.9893	6h 43'	15h 54'
13-gen	0.8147	0.7817	0.0898	0.0497	3.7529	13.0218	6h 42'	15h 55'
14-gen	2.3943	0.7392	4.5489	2.5286	3.7843	13.0556	6h 42'	15h 56'
15-gen	1.9559	1.0441	2.5198	1.4302	3.8169	13.0906	6h 42'	15h 57'
16-gen	2.5199	0.7003	5.0454	2.8782	3.8509	13.1267	6h 41'	15h 58'
17-gen	0.906	0.8902	0.0414	0.0228	3.8862	13.164	6h 41'	16h 00'
18-gen	1.3443	1.2322	0.2864	0.1561	3.9227	13.2023	6h 40'	16h 01'
19-gen	2.5855	0.7146	5.0777	2.9366	3.9605	13.2417	6h 40'	16h 02'
20-gen	2.3579	0.9096	3.8112	2.1782	3.9996	13.282	6h 39'	16h 03'
21-gen	2.5912	0.7592	4.8691	2.831	4.0398	13.3234	6h 38'	16h 04'
22-gen	2.6613	0.7352	5.1213	3.013	4.0813	13.3658	6h 38'	16h 06'
23-gen	2.6666	0.7451	5.0603	2.988	4.124	13.409	6h 37'	16h 07'
24-gen	2.2235	1.0754	2.9291	1.7123	4.1679	13.4531	6h 36'	16h 08'
25-gen	1.1002	1.0606	0.0953	0.0539	4.213	13.4981	6h 36'	16h 09'
26-gen	0.4889	0.4881	0.0021	0.0011	4.2592	13.5439	6h 35'	16h 11'
27-gen	2.6462	0.8985	4.4644	2.7045	4.3065	13.5905	6h 34'	16h 12'
28-gen	1.4207	0.9983	1.0807	0.6731	4.3549	13.6379	6h 33'	16h 13'
29-gen	2.2115	0.9628	2.9663	1.7451	4.4045	13.686	6h 32'	16h 15'
30-gen	1.3745	1.0816	0.6741	0.3944	4.4551	13.7347	6h 31'	16h 16'
31-gen	1.7755	1.0456	1.7852	1.1051	4.5067	13.7841	6h 30'	16h 17'
01-feb	1.0396	0.8811	0.4236	0.2842	4.5594	13.8342	6h 29'	16h 19'
02-feb	0.6794	0.6781	0.0034	0.0018	4.6131	13.8848	6h 28'	16h 20'
03-feb	1.58	1.364	0.5553	0.3677	4.6678	13.936	6h 27'	16h 21'
04-feb	1.0918	1.0466	0.1225	0.084	4.7234	13.9878	6h 26'	16h 23'
05-feb	1.2448	1.1528	0.2013	0.1209	4.78	14.04	6h 25'	16h 24'
06-feb	2.9931	1.0018	4.7608	3.0906	4.8375	14.0928	6h 24'	16h 25'
07-feb	3.1814	0.8971	5.5419	3.6708	4.8959	14.1459	6h 23'	16h 27'
08-feb	2.8406	1.2357	3.8542	2.5723	4.9551	14.1996	6h 22'	16h 28'
09-feb	2.1544	1.1319	2.2171	1.411	5.0152	14.2536	6h 21'	16h 29'

29-nov	1.1336	0.775	0.928	0.4986	3.7794	12.9993	6h 22'	15h 37'
30-nov	1.5917	0.9568	1.5268	0.7445	3.7486	12.9682	6h 23'	15h 36'
01-dic	0.9979	0.8172	0.5104	0.2914	3.719	12.9384	6h 24'	15h 36'
02-dic	1.4813	0.9141	1.5786	0.8768	3.6907	12.9097	6h 25'	15h 36'
03-dic	1.9793	0.9624	2.9263	1.6431	3.6638	12.8823	6h 26'	15h 35'
04-dic	2.2858	0.7245	4.4953	2.4889	3.6381	12.8561	6h 27'	15h 35'
05-dic	2.234	0.7359	4.3227	2.3796	3.6138	12.8312	6h 28'	15h 35'
06-dic	0.9799	0.8848	0.2826	0.1618	3.5908	12.8077	6h 29'	15h 35'
07-dic	2.1992	0.7434	4.2416	2.3221	3.5692	12.7855	6h 30'	15h 35'
08-dic	0.9249	0.6681	0.6611	0.3256	3.5489	12.7647	6h 31'	15h 34'
09-dic	1.7972	0.9822	2.4198	1.3384	3.53	12.7453	6h 32'	15h 34'
10-dic	2.1921	0.7121	4.3714	2.3726	3.5124	12.7273	6h 33'	15h 34'
11-dic	2.1551	0.717	4.2399	2.2873	3.4963	12.7107	6h 34'	15h 34'
12-dic	2.0471	0.7776	3.7329	2.0025	3.4815	12.6956	6h 35'	15h 34'
13-dic	1.8365	0.7839	2.8866	1.4446	3.4681	12.682	6h 35'	15h 35'
14-dic	1.5665	0.9168	1.9239	1.0426	3.4561	12.6699	6h 36'	15h 35'
15-dic	1.6128	0.8071	2.2659	1.1644	3.4455	12.6594	6h 37'	15h 35'
16-dic	2.0983	0.7256	4.0936	2.1846	3.4363	12.6503	6h 38'	15h 35'
17-dic	2.0786	0.7217	4.0461	2.1555	3.4285	12.6428	6h 38'	15h 35'
18-dic	2.0961	0.706	4.165	2.224	3.4222	12.6368	6h 39'	15h 36'
19-dic	1.9588	0.8171	3.3822	1.788	3.4172	12.6325	6h 40'	15h 36'
20-dic	0.5174	0.5148	0.0092	0.005	3.4137	12.6296	6h 40'	15h 36'
21-dic	2.1843	0.6748	4.5758	2.4503	3.4116	12.6284	6h 41'	15h 37'
22-dic	1.5171	0.9776	1.5899	0.8429	3.4109	12.6288	6h 41'	15h 37'
23-dic	2.1525	0.6768	4.4617	2.388	3.4116	12.6307	6h 42'	15h 38'
24-dic	2.1498	0.6806	4.4393	2.3711	3.4138	12.6342	6h 42'	15h 38'
25-dic	0.8561	0.8016	0.1687	0.0934	3.4173	12.6393	6h 42'	15h 39'
26-dic	0.6799	0.6637	0.0519	0.0295	3.4224	12.646	6h 43'	15h 39'
27-dic	1.4659	0.8808	1.6208	0.8097	3.4288	12.6542	6h 43'	15h 40'
28-dic	1.3392	0.9633	1.028	0.5032	3.4366	12.664	6h 43'	15h 40'
29-dic	0.5453	0.5421	0.0098	0.0049	3.4459	12.6754	6h 44'	15h 41'
30-dic	0.4127	0.4117	0.0031	0.0015	3.4566	12.6883	6h 44'	15h 42'
31-dic	2.0172	0.8012	3.5537	1.8803	3.4687	12.7028	6h 44'	15h 43'

Dati giornalieri medi mensili e annui

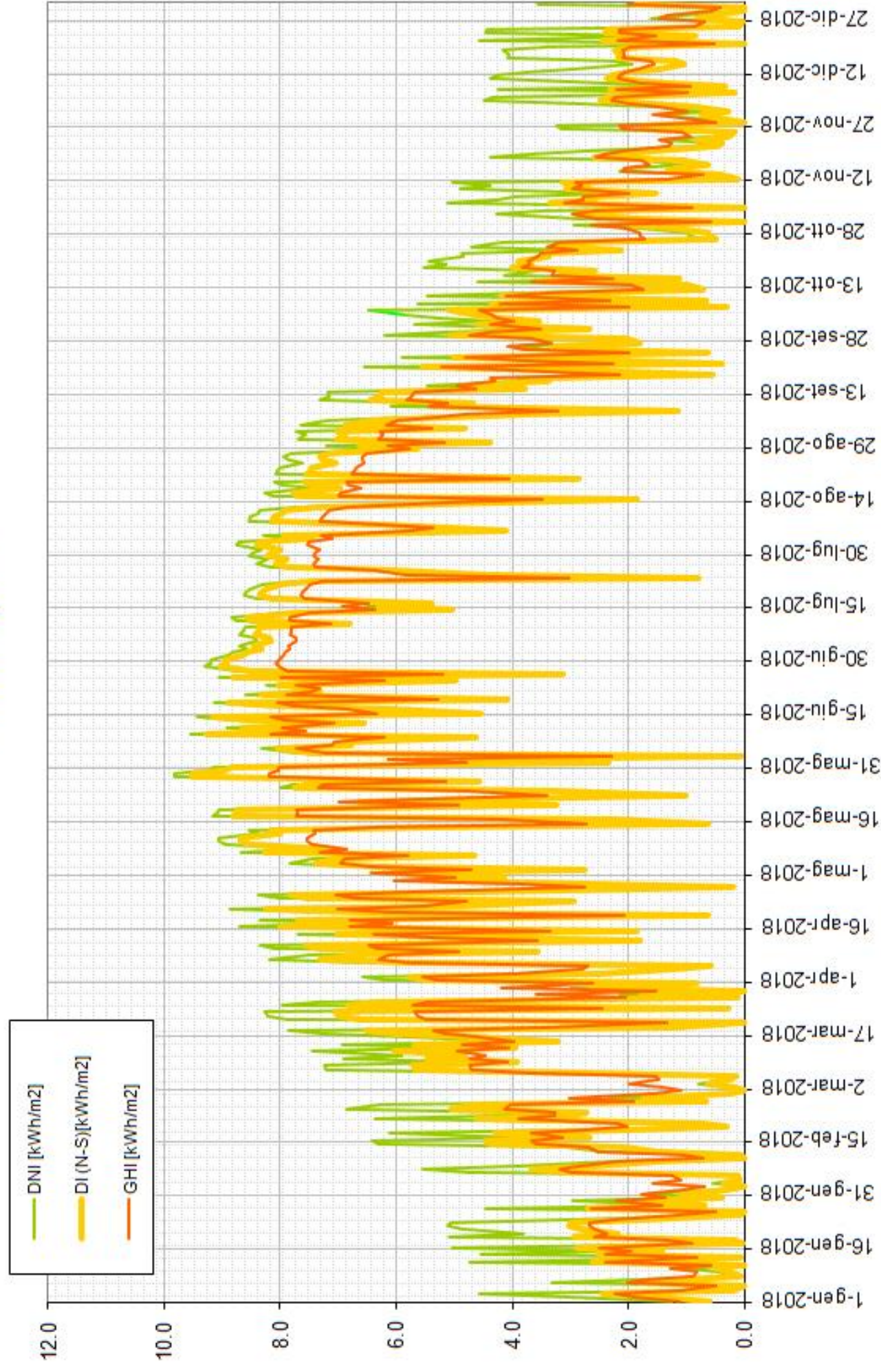
Mese	GHI [kWh/m ²]	Dif.HI [kWh/m ²]	DNI [kWh/m ²]	DI(N-S) [kWh/m ²]	EHI [kWh/m ²]	ENI [kWh/m ²]
Gen	1.70	0.84	2.30	1.31	3.90	13.17
Feb	2.49	1.18	2.90	2.03	5.38	14.56
Mar	3.75	1.45	4.17	3.43	7.44	16.24
Apr	5.24	1.76	5.35	4.89	9.49	17.87
Mag	6.54	1.86	6.77	6.50	10.96	19.21
Giu	7.05	2.00	7.07	6.87	11.59	19.87
Lug	7.26	1.75	7.73	7.47	11.28	19.50
Ago	6.43	1.65	7.15	6.73	10.08	18.28
Set	4.57	1.68	4.69	4.07	8.25	16.73
Ott	3.09	1.29	3.50	2.61	6.15	15.08
Nov	1.95	0.96	2.39	1.47	4.35	13.54
Dic	1.62	0.76	2.52	1.35	3.49	12.71
anno	1576	522	1724	1487	2815	5992



Anno scelto, per ciascun mese, ai fini della composizione dell'anno tipico

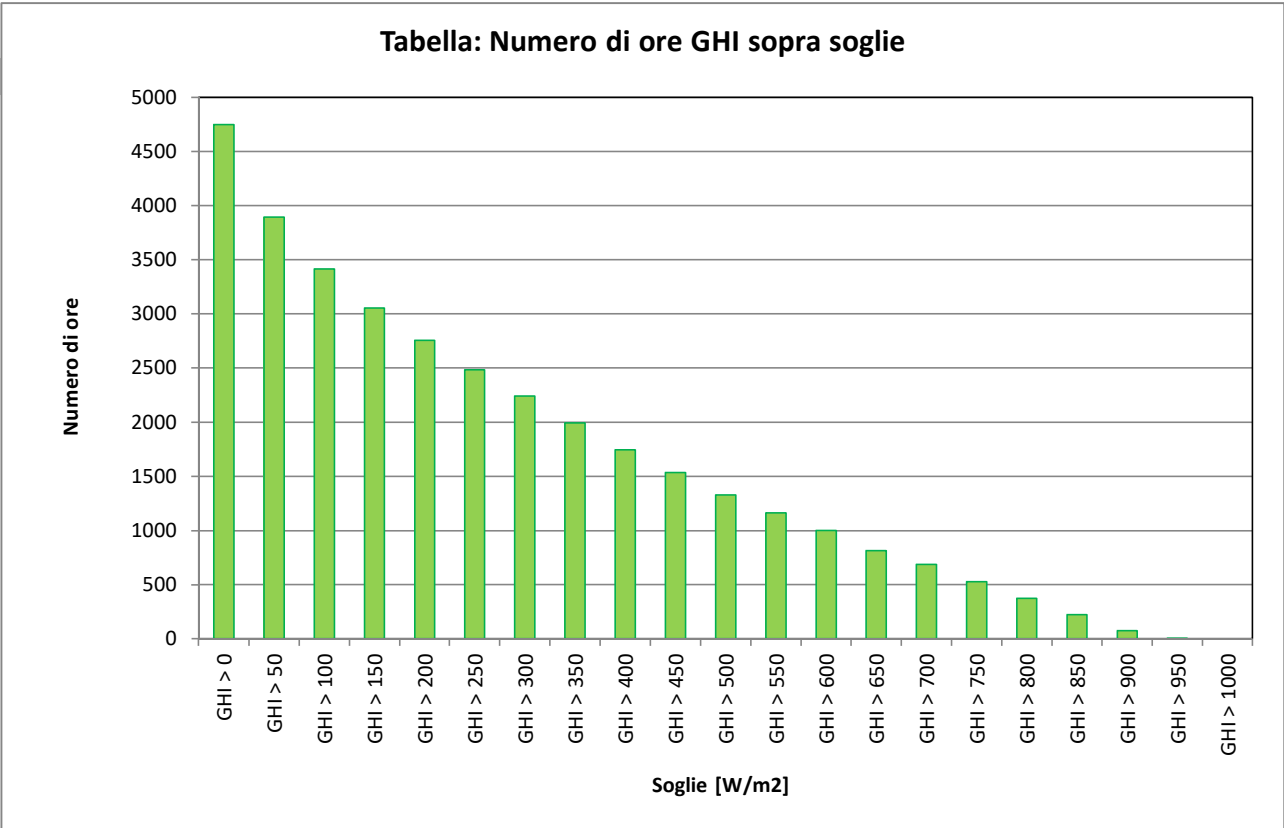
Gen				2010							
Feb								2014			
Mar			2009								
Apr								2014			
Mag									2015		
Giu	2007										
Lug										2016	
Ago				2010							
Set				2010							
Ott						2012					
Nov		2008									
Dic							2013				

Anno tipico



Grandezza: Irradianza globale orizzontale (GHI)
 Tabella: Numero di ore GHI sopra soglie

Soglie [W/m ²]	Gen	Feb	Mar	Apr	Mag	Giu	Lug	Ago	Set	Ott	Nov	Dic	Anno
<i>totale</i>	744	672	744	720	744	720	744	744	720	744	720	744	8760
<i>GHI > 0</i>	323	312	397	420	484	480	486	453	403	371	309	310	4748
<i>GHI > 50</i>	239	244	324	354	417	418	424	391	329	292	234	228	3894
<i>GHI > 100</i>	170	210	284	325	371	377	397	364	302	250	187	176	3413
<i>GHI > 150</i>	144	171	248	293	348	346	361	344	277	224	158	139	3053
<i>GHI > 200</i>	112	141	214	265	322	328	340	324	254	201	133	122	2756
<i>GHI > 250</i>	89	119	193	244	291	307	326	309	237	179	105	84	2483
<i>GHI > 300</i>	69	105	169	223	276	290	299	293	212	157	81	67	2241
<i>GHI > 350</i>	54	82	147	200	257	264	292	273	192	135	60	37	1993
<i>GHI > 400</i>	29	65	134	180	235	254	265	248	175	109	39	12	1745
<i>GHI > 450</i>	10	54	116	172	210	235	251	231	154	83	20	0	1536
<i>GHI > 500</i>	0	30	99	155	198	210	230	211	129	63	4	0	1329
<i>GHI > 550</i>	0	19	79	132	187	202	222	183	107	33	0	0	1164
<i>GHI > 600</i>	0	8	66	119	165	181	195	169	82	17	0	0	1002
<i>GHI > 650</i>	0	0	44	104	141	152	174	143	53	4	0	0	815
<i>GHI > 700</i>	0	0	25	82	129	137	163	117	37	0	0	0	690
<i>GHI > 750</i>	0	0	10	59	110	119	126	90	15	0	0	0	529
<i>GHI > 800</i>	0	0	0	37	84	80	111	61	3	0	0	0	376
<i>GHI > 850</i>	0	0	0	10	57	70	69	19	0	0	0	0	225
<i>GHI > 900</i>	0	0	0	1	22	31	20	0	0	0	0	0	74
<i>GHI > 950</i>	0	0	0	0	3	0	0	0	0	0	0	0	3
<i>GHI > 1000</i>	0	0	0	0	0	0	0	0	0	0	0	0	0

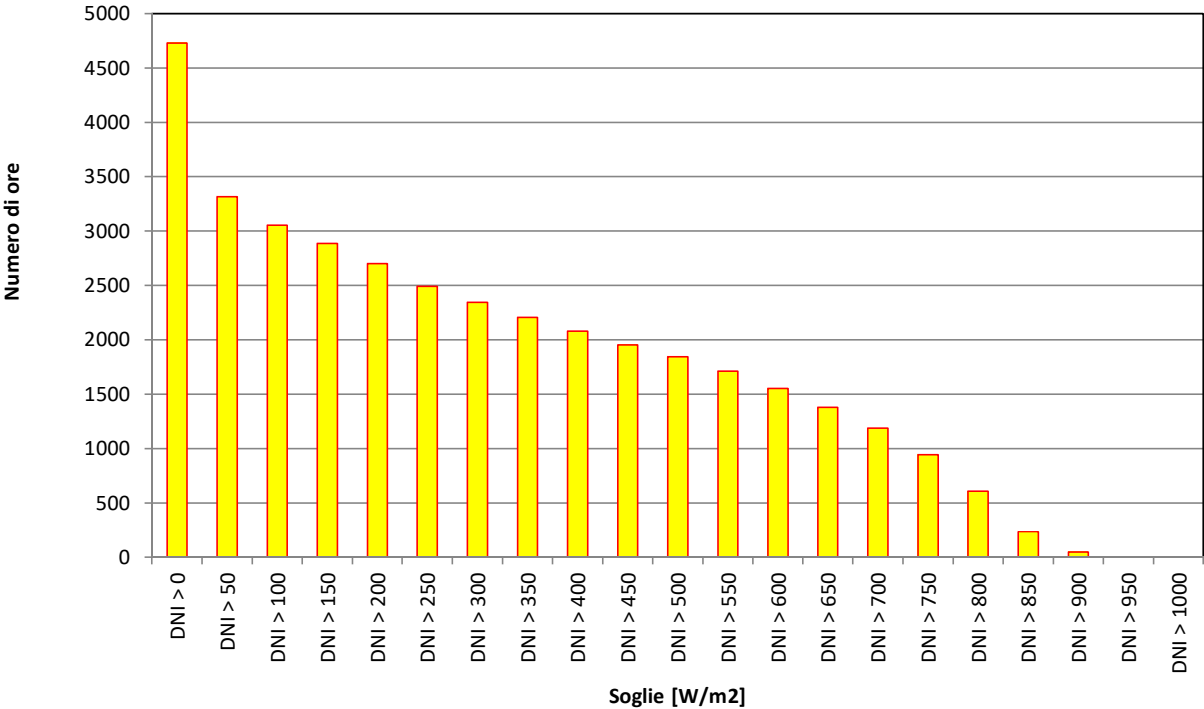


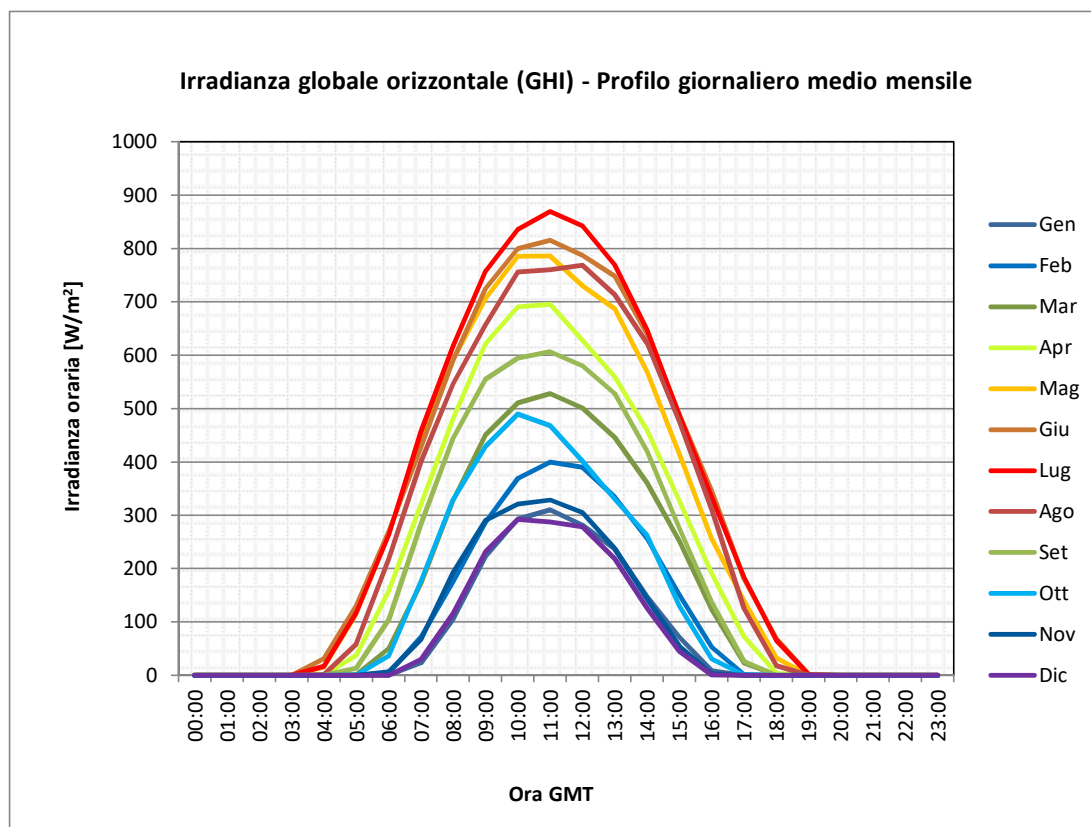
Grandezza: Irradianza diretta normale (DNI)

Tabella: Numero di ore DNI sopra soglie

Soglie [W/m ²]	Gen	Feb	Mar	Apr	Mag	Giu	Lug	Ago	Set	Ott	Nov	Dic	Anno
totale	744	672	744	720	744	720	744	744	720	744	720	744	8760
DNI > 0	318	312	396	420	483	480	486	453	401	368	305	308	4730
DNI > 50	158	181	245	297	371	397	432	384	274	219	170	187	3315
DNI > 100	145	164	218	271	356	363	406	360	259	206	146	160	3054
DNI > 150	128	143	201	253	345	356	386	343	244	193	140	154	2886
DNI > 200	113	131	186	234	327	335	367	332	229	176	131	138	2699
DNI > 250	105	118	166	218	300	308	337	317	216	169	120	118	2492
DNI > 300	99	106	160	204	284	289	322	305	201	156	109	108	2343
DNI > 350	89	94	157	200	265	270	308	293	185	146	95	104	2206
DNI > 400	84	89	146	188	243	255	296	284	174	140	82	97	2078
DNI > 450	78	83	140	180	233	241	281	271	160	126	71	88	1952
DNI > 500	69	76	134	175	220	223	273	262	152	120	64	75	1843
DNI > 550	64	71	125	164	209	208	261	246	139	102	55	67	1711
DNI > 600	54	64	123	153	198	198	224	220	125	92	48	54	1553
DNI > 650	48	55	117	130	175	175	213	191	109	77	42	48	1380
DNI > 700	40	47	105	117	153	150	198	168	84	58	33	34	1187
DNI > 750	29	39	89	101	135	129	153	134	61	43	15	15	943
DNI > 800	15	25	70	80	104	94	94	84	29	11	3	0	609
DNI > 850	0	14	44	55	63	42	9	5	2	0	0	0	234
DNI > 900	0	3	18	21	6	0	0	0	0	0	0	0	48
DNI > 950	0	0	0	0	0	0	0	0	0	0	0	0	0
DNI > 1000	0	0	0	0	0	0	0	0	0	0	0	0	0

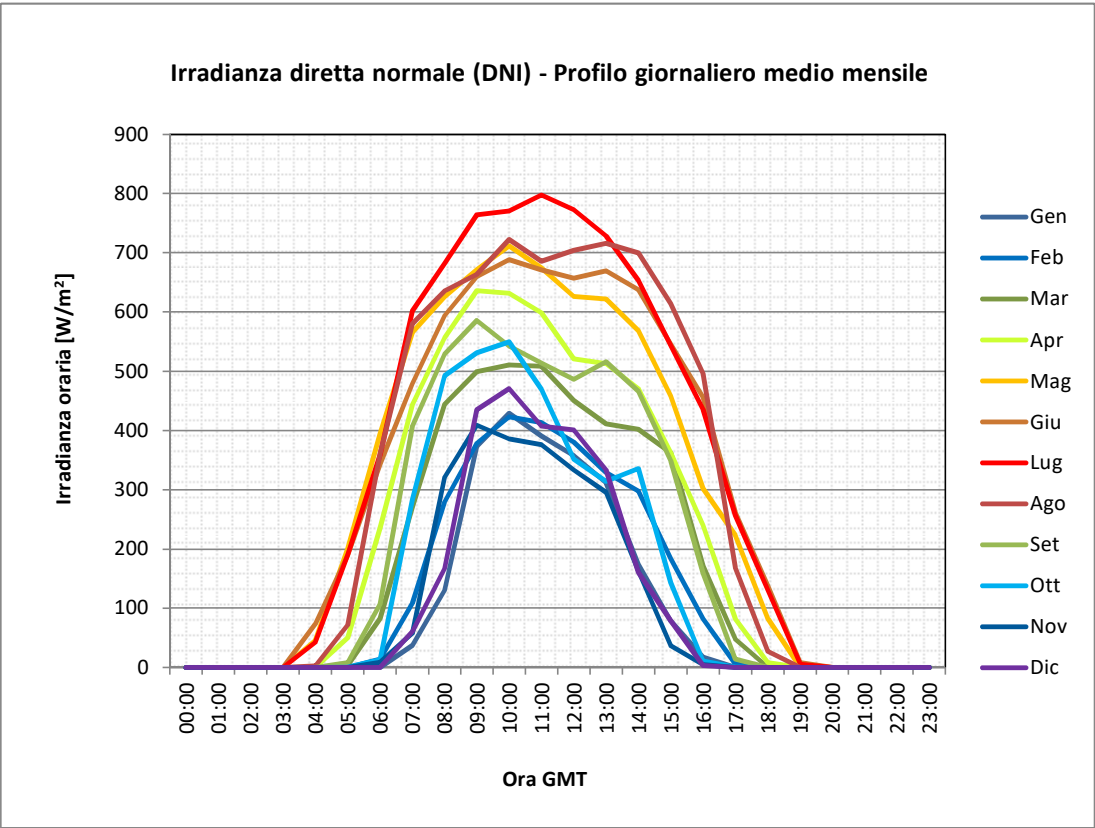
Tabella: Numero di ore DNI sopra soglie



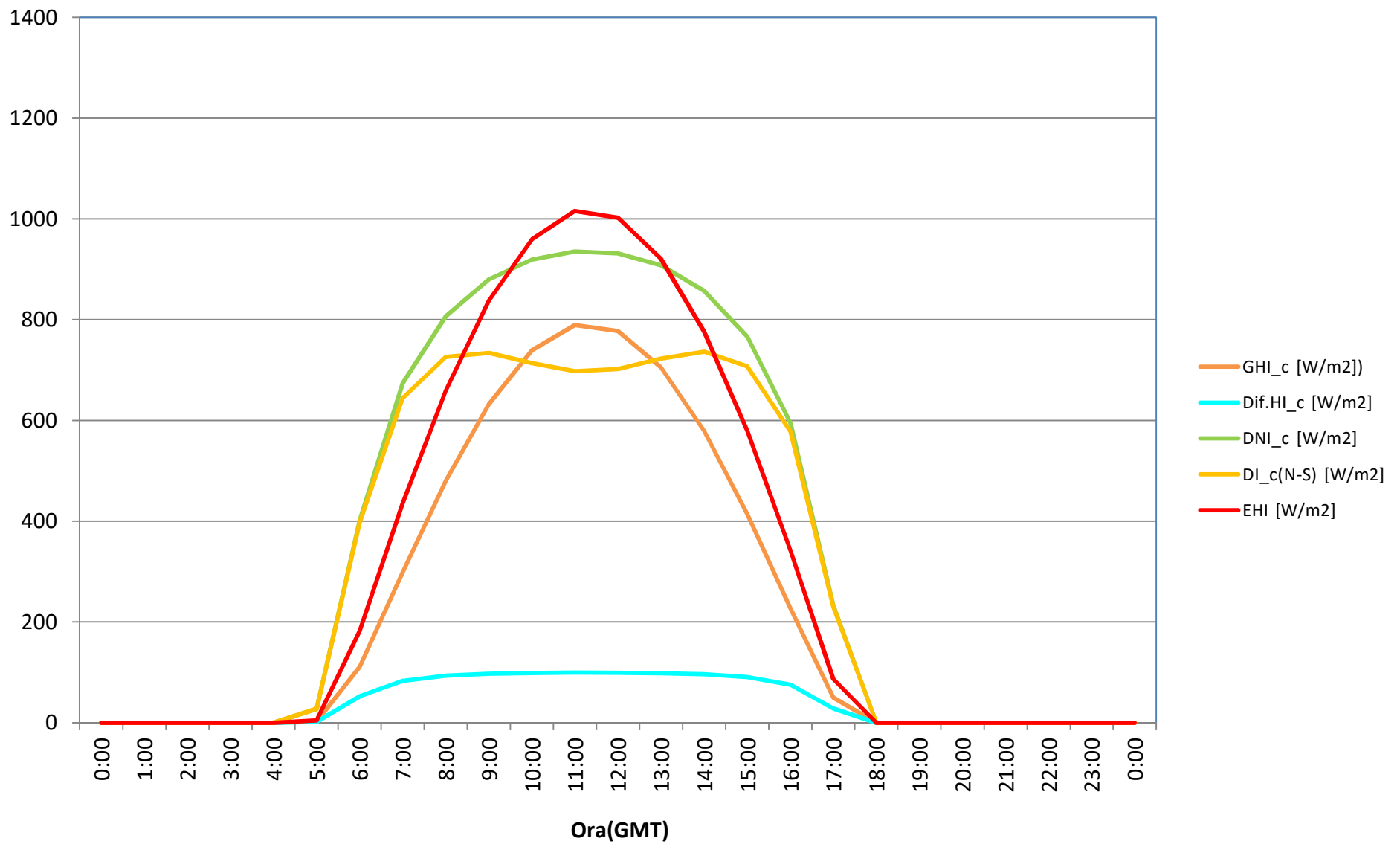
Unità: $[W/m^2]$ 

Irradianza diretta normale (DNI) - Profilo giornaliero medio mensile
Unità: [W/m²]

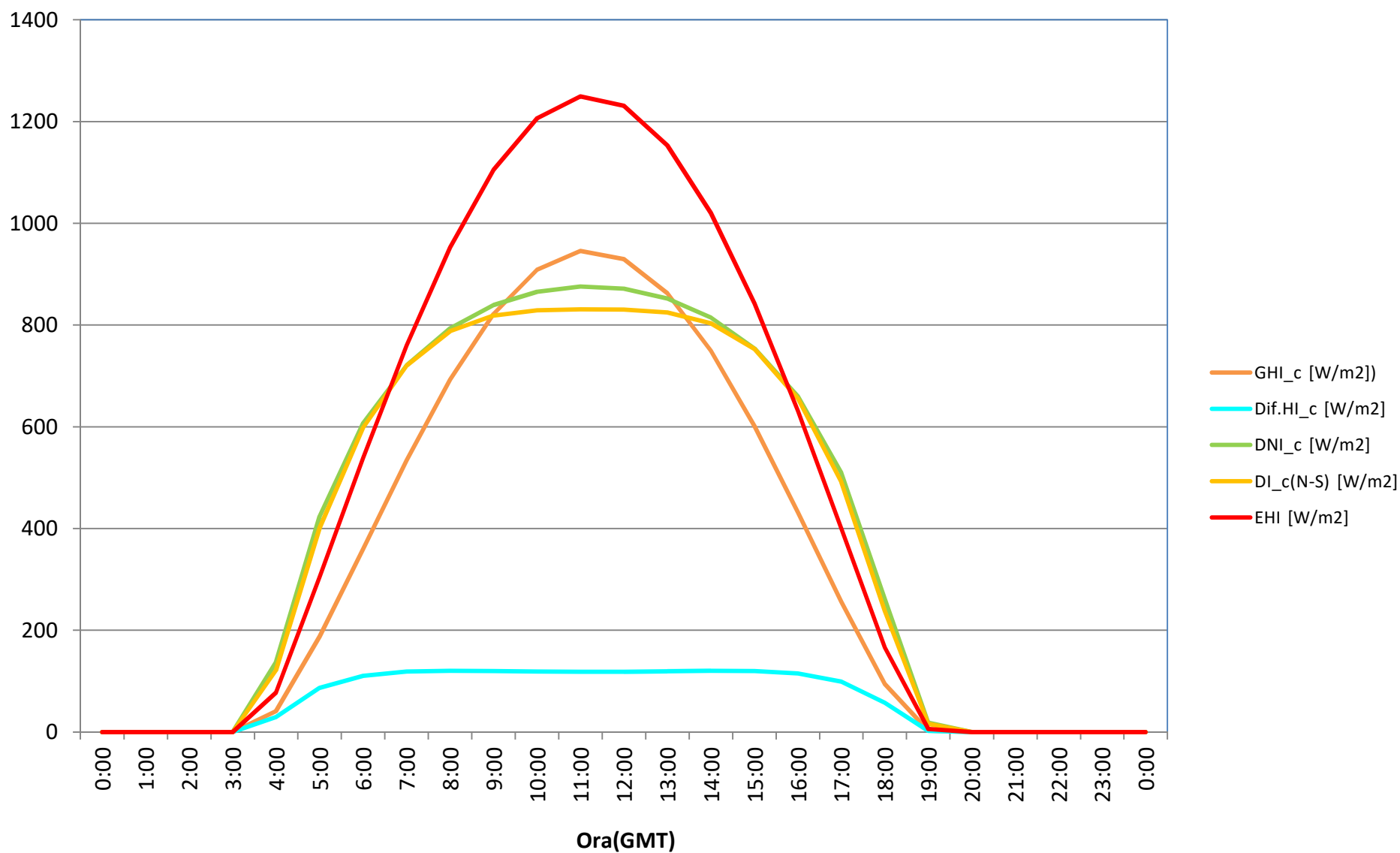
Ora	Gen	Feb	Mar	Apr	Mag	Giu	Lug	Ago	Set	Ott	Nov	Dic
00:00	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0.89	45.79	73.78	42.75	3.07	0	0	0	0
05:00	0	0	4.16	50.27	201.01	189.72	189.65	71.65	8.11	0.55	0	0
06:00	0	14.26	82.67	235.85	394.78	343.84	358.8	361.36	106.81	12.96	8.78	0.21
07:00	37.39	108.33	271.42	443.88	565.47	479.09	601.87	580.33	407.56	283.89	57.7	60.51
08:00	130.19	279.69	444.25	556.67	625.75	593.61	681.56	635.27	529.14	492.12	321.13	166.63
09:00	373.5	378.62	499.55	635.79	671.39	659.48	763.94	663.25	585.62	531.12	409.04	435.03
10:00	428.9	423.43	510.78	631.58	711.43	688.26	770.23	722.13	542.43	549.25	386.19	470.78
11:00	390.81	413.54	508.72	598.46	674.01	670.78	797.06	685.62	514.06	469.51	376.41	407.62
12:00	357.83	380.76	451	521.03	626.21	656.79	772.64	703.99	486.37	352.2	333.41	401.15
13:00	311.78	329.38	411.19	512.77	621.92	669.25	728	715.78	516.17	314.08	295.95	333.7
14:00	174.43	297.84	402.1	470.75	568.36	637.49	652.87	699.53	466.43	335.97	162.49	160.16
15:00	78.64	183.82	362.55	362.93	458.56	545.88	543.33	613.76	349.41	142.96	36.79	78.91
16:00	17.33	82.34	171.34	240.32	302.51	455.92	435.41	496.16	159.28	11.16	5.04	3.3
17:00	0	6.04	47.54	82.4	223.3	261.75	257.04	168.57	13.99	0.4	0	0
18:00	0	0	0	8.23	82.39	137.35	129.67	27.11	0.29	0	0	0
19:00	0	0	0	0	0.07	7.98	5.48	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0



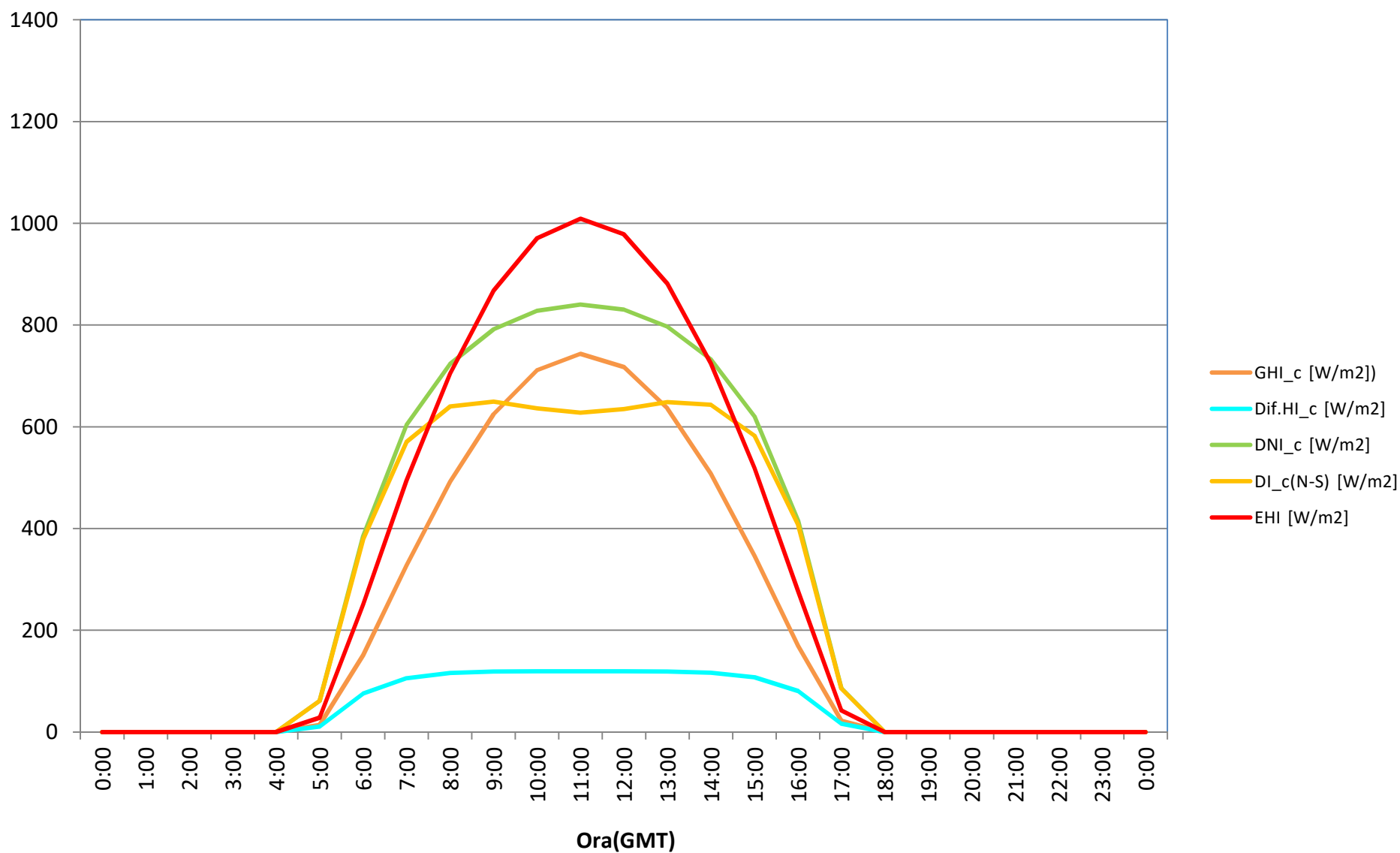
Irradianze al suolo in condizioni di cielo sereno - 21 marzo



Irradianze al suolo in condizioni di cielo sereno - 21 giugno



Irradianze al suolo in condizioni di cielo sereno - 23 settembre



Irradianze al suolo in condizioni di cielo sereno - 21 dicembre

