

North America 10-year Average Insolation kWh/m²/day

State	City	Latitude	Longitude	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Avg
AL	Birmingham	33° 34' N	86° 45' W	2.29	3.31	4.04	5.14	5.92	5.98	5.81	5.7	4.8	3.93	2.96	2.25	4.34
AK	Anchorage	61° 10' N	150° 1' W	0.21	0.76	1.68	3.12	3.98	4.58	4.25	3.16	1.98	0.98	0.37	0.12	2.09
AR	Little Rock	32° 25' N	94° 44' W	2.36	3.39	4.01	5.32	5.71	6.19	6.15	5.85	5.25	4.17	2.95	2.25	4.46
AZ	Phoenix	33° 26' N	112° 1' W	3.25	4.41	5.17	6.76	7.42	7.7	6.99	6.11	6.02	4.44	3.52	2.75	5.38
CA	Los Angeles	34° N	118° W	3.09	4.25	5.09	6.58	7.29	7.62	7.45	6.72	6.11	4.42	3.43	2.72	5.4
CA	San Francisco	38° 31' N	121° 30' W	2.35	3.33	4.42	5.95	6.84	7.39	7.55	6.51	5.75	3.92	2.65	2.06	4.89
CO	Denver	39° 45' N	104° 52' W	2.25	3.2	4.32	5.61	6.11	6.71	6.5	5.86	5.47	4.01	2.59	1.98	4.55
CT	Hartford	41° 44' N	72° 39' W	1.7	2.43	3.48	4.07	5.14	5.58	5.38	5.04	4.13	2.91	1.81	1.42	3.59
DE	Dover	39° 8' N	75° 28' W	1.85	2.62	3.6	4.33	5.44	5.91	5.64	5.3	4.38	3.23	2.21	1.66	3.84
FL	Miami	25° 48' N	80° 16' W	3.72	4.61	5.42	6.4	6.61	6.29	6.26	6.08	5.47	4.84	3.96	3.46	5.26
GA	Atlanta	33° 39' N	84° 26' W	2.31	3.37	4.08	5.2	6.02	6.01	5.81	5.59	4.76	3.95	2.98	2.33	4.37
HI	Honolulu	21° 20' N	157° 55' W	4.38	5.15	5.99	6.69	7.05	7.48	7.37	7.07	6.51	5.46	4.41	4.01	5.96
IA	Dubuque	42° 24' N	90° 42' W	1.64	2.58	3.34	4.57	5.54	6.06	5.81	5.26	4.33	3.03	1.72	1.35	3.77
ID	Boise	43° 34' N	116° 13' W	1.73	2.72	3.77	5.22	5.9	6.57	7.17	6.12	5.28	3.29	1.74	1.46	4.24
IN	Indianapolis	39° 44' N	86° 17' W	1.67	2.59	3.28	4.67	5.46	6.11	5.79	5.37	4.76	3.33	1.97	1.46	3.87
IL	Chicago	41° 53' N	87° 38' W	1.5	2.45	3.2	4.48	5.56	6.07	5.68	5.27	4.51	3.07	1.69	1.26	3.72
KS	Kansas City	39° 12' N	94° 36' W	2.06	2.89	3.62	4.92	5.58	6.17	6.21	5.59	4.9	3.49	2.2	1.75	4.11
KY	Louisville	38° 11' N	85° 44' W	1.71	2.65	3.32	4.73	5.38	6.08	5.79	5.35	4.8	3.42	2.1	1.56	3.9
LA	New Orleans	29° 37' N	90° 5' W	2.64	3.73	4.67	5.8	6.6	6.15	6.09	5.7	5.13	4.48	3.49	2.68	4.76
MA	Boston	42° 22' N	71° 2' W	1.66	2.5	3.51	4.13	5.11	5.47	5.44	5.05	4.12	2.84	1.74	1.4	3.58
MD	Annapolis	38° 35' N	76° 21' W	1.96	2.8	3.71	4.55	5.54	6.03	5.77	5.34	4.48	3.4	2.37	1.81	3.98
ME	Portland	45° 36' N	122° 36' W	1.38	2.33	3.49	4.57	5.46	6.09	6.64	5.78	4.8	2.79	1.41	1.1	3.82
MI	Detroit	42° 25' N	83° 1' W	1.43	2.33	3.19	4.34	5.44	5.98	5.64	4.99	4.25	2.73	1.52	1.14	3.58
MO	St. Louis	38° 45' N	90° 23' W	2.02	2.82	3.52	4.97	5.56	6.21	6.05	5.63	4.91	3.55	2.21	1.73	4.09
MN	Minneapolis	44° 53' N	93° 13' W	1.6	2.61	3.3	4.55	5.44	5.86	5.77	5.12	4.12	2.9	1.62	1.34	3.68
MS	Jackson	42° 16' N	84° 28' W	1.47	2.41	3.22	4.33	5.46	5.93	5.57	4.99	4.3	2.78	1.55	1.17	3.59
MT	Billings	45° 48' N	108° 32' W	1.55	2.57	3.52	4.82	5.63	6.45	6.39	5.75	4.67	3.19	1.77	1.3	3.96
MT	Great Falls	43° 33' N	96° 42' W	1.3	2.36	3.41	4.84	5.56	6.18	6.44	5.53	4.4	2.9	1.53	1.11	3.79
NC	Charlotte	35° 13' N	80° 56' W	2.22	3.17	3.95	4.98	5.8	6.01	5.76	5.27	4.58	3.75	2.76	2.21	4.2
ND	Fargo	46° 54' N	96° 48' W	1.44	2.39	3.36	4.79	5.62	5.82	5.94	5.14	4.01	2.83	1.59	1.31	3.68
NE	Omaha	41° 18' N	95° 54' W	1.92	2.76	3.45	4.74	5.6	6.14	6.11	5.46	4.74	3.34	2	1.57	3.98
NH	Manchester	42° 56' N	71° 26' W	1.66	2.5	3.51	4.13	5.11	5.47	5.44	5.05	4.12	2.84	1.74	1.4	3.58
NJ	Trenton	40° 13' N	74° 46' W	1.71	2.39	3.43	4.04	5.26	5.67	5.39	5.14	4.18	3	1.98	1.48	3.63
NM	Albuquerque	35° 3' N	106° 37' W	2.92	3.97	4.92	6.3	6.68	6.94	6.66	5.8	5.68	4.18	3.16	2.5	4.97
NV	Las Vegas	36° 18' N	115° 16' W	3.02	4.13	5.05	6.57	7.25	7.69	7.37	6.42	6.08	4.26	3.18	2.6	5.3
NY	New York	41° N	74° W	1.67	2.37	3.41	3.93	5.11	5.48	5.26	5.01	4.05	2.85	1.82	1.4	3.53
OH	Columbus	39° 16' N	85° 54' W	1.64	2.57	3.26	4.63	5.4	6.08	5.73	5.29	4.74	3.29	1.96	1.45	3.83
OK	Tulsa	36° 12' N	95° 54' W	2.33	3.22	3.9	5.25	5.58	6.32	6.4	5.8	5.08	3.8	2.62	2.06	4.36
OR	Portland	45° 32' N	122° 40' W	1.38	2.33	3.49	4.57	5.46	6.09	6.64	5.78	4.8	2.79	1.41	1.1	3.82
PA	Philadelphia	39° 53' N	75° 15' W	1.85	2.62	3.6	4.33	5.44	5.91	5.64	5.3	4.38	3.23	2.21	1.66	3.84
PA	Pittsburgh	40° 27' N	79° 57' W	1.59	2.4	3.26	4.07	5.05	5.53	5.27	4.94	4.05	2.88	1.86	1.41	3.53
RI	Providence	41° 44' N	71° 26' W	1.7	2.46	3.53	4.2	5.17	5.67	5.48	5.08	4.21	2.97	1.8	1.43	3.64
SC	Columbia	38° 58' N	92° 22' W	2.14	2.91	3.62	5.03	5.56	6.22	6.13	5.64	4.95	3.57	2.25	1.82	4.15
SD	Sioux Falls	45° 27' N	98° 25' W	1.72	2.71	3.31	4.65	5.61	6.1	6.04	5.42	4.47	3.2	1.78	1.43	3.87
TN	Nashville	36° 7' N	86° 41' W	1.94	2.9	3.54	4.76	5.57	5.9	5.86	5.62	4.63	3.53	2.45	1.82	4.04
TX	San Antonio	29° 32' N	98° 28' W	2.57	3.7	4.43	5.54	5.94	6.62	6.49	6.28	5.7	4.67	3.43	2.62	4.83
TX	Houston	29° 59' N	95° 22' W	2.47	3.5	4.4	5.59	6.03	6.45	6.36	6.07	5.46	4.61	3.3	2.44	4.72
UT	Salt Lake City	40° 46' N	111° 52' W	2.23	3.15	4.09	5.57	6.26	6.98	6.86	5.98	5.39	3.68	2.29	1.97	4.53
VA	Washington	38° 51' N	77° 2' W	1.95	2.8	3.66	4.46	5.42	5.88	5.63	5.22	4.38	3.36	2.34	1.79	3.9
VT	Montpelier	44° 16' N	72° 35' W	1.58	2.54	3.5	4.05	5	5.24	5.37	4.92	3.79	2.46	1.52	1.28	3.43
WA	Seattle	47° 32' N	122° 18' W	1.14	2.04	3.23	4.26	5.19	5.75	6.27	5.46	4.43	2.5	1.21	0.9	3.53
WI	Milwaukee	42° 57' N	87° 54' W	1.43	2.41	3.29	4.48	5.6	6.09	5.74	5.21	4.34	2.9	1.6	1.2	3.69
WV	Charleston	38° 22' N	81° 36' W	1.75	2.64	3.34	4.26	5.2	5.67	5.49	5.19	4.26	3.19	2.15	1.62	3.73
WY	Casper	42° 55' N	106° 28' W	1.93	2.8	3.79	5.13	5.9	6.68	6.5	5.9	5.13	3.59	2.06	1.65	4.25

Data courtesy of: [NASA - Surface meteorology and Solar Energy Data Set](#)

Africa 10-year Average Insolation kWh/m²/day

Country	State/City	Latitude	Longitude	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Avg
BF	Ouagadougou	12' 24" N	1' 30" E	5.48	6.43	6.56	6.62	6.53	6.16	5.76	5.48	5.87	6.18	5.83	5.35	6.02
CF	Bangui	18' 32" N	120' 36" E	4.13	4.97	5.99	6.61	6.17	5.53	5.73	4.87	5.07	4.55	4.07	3.81	5.12
CM	Yaounde	3' 48" N	11' 30" W	4.94	5.38	5.16	4.68	4.46	4.42	5.17	5.07	5.03	5.4	5.29	4.83	4.98
DJ	djibouti	11' 33" N	43' 09" E	5.6	5.77	6.59	6.81	6.85	6.87	6.46	6.47	6.56	6.77	6.22	5.55	6.37
DZ	alger	36' 50" N	3' E	2.22	2.94	3.87	5	5.88	6.69	7.23	6.48	5.15	3.53	2.43	2.02	4.45
EG	Cairo	29' 35" N	31' 09" E	3.39	4.17	5.24	6.49	7.11	8	7.88	7.4	6.42	5.07	3.86	3.19	5.68
ET	addis abeba	9' 2" N	38' 42" E	5.96	5.8	6.23	6.31	6.11	5.79	5.03	5	5.64	6.31	6.15	5.75	5.84
GH	accra	5' 36" N	0' 12" W	5.65	6.01	5.65	5.33	5	4.49	4.5	4.59	4.67	5.25	5.7	5.55	5.2
GM	gambia	13' 28" N	16' 39" W	5.01	5.93	6.67	6.92	6.72	6.06	5.48	5.09	5.3	5.67	5.36	4.95	5.76
GN	conakry	9' 36" N	13' 36" E	5.81	6.41	6.51	6.22	5.69	5.69	5.09	5.05	5.46	5.87	5.98	5.6	5.78
KE	nairobi	1' 16" S	36' 48" E	6.05	6.24	6.07	5.7	5.42	5.14	4.88	5.09	5.78	6.03	5.48	5.6	5.62
LR	liberia	6' 30" N	9' 30" W	5.43	5.72	5.59	5.31	5.11	4.61	4.25	4.19	4.67	5.13	5.24	5.2	5.03
LY	tarabulus	32' 54" N	13' 11" E	3.1	4.03	5.19	6.48	6.89	7.77	8.11	7.45	6.12	4.58	3.35	2.76	5.48
MA	rabat	32' 32" N	9' 17" W	3.13	3.86	5.09	6.08	6.89	7.31	7.34	6.8	5.69	4.37	3.25	2.82	5.21
ML	bamako	12' 30" N	7' 54" E	5.61	6.35	6.64	6.78	6.42	6.47	5.87	5.65	6.04	6.13	5.85	5.36	6.09
MR	nouakchott	17' 45" N	15' 45" E	5.31	6.21	6.8	7.54	7.57	7.63	7.2	6.9	6.78	6.34	5.49	4.88	6.55
NE	niamey	13' 30" N	2' 12" W	5.42	6.39	6.72	6.79	6.75	6.31	6.07	5.78	6.07	6.16	5.79	5.29	6.12
NG	abuja	9' 12" N	7' 11" E	5.57	6.33	6.22	6.1	5.89	5.47	4.92	4.65	5.12	5.82	5.81	5.42	5.61
SD	al khur-tum	15' 33" N	32' 32" E	5.46	6.19	6.75	7.25	6.85	6.96	6.52	6.35	6.42	6.17	5.66	5.22	6.31
SL	freetown	8' 29" N	13' 14" W	5.19	5.91	6.08	5.47	4.76	4.09	3.6	3.58	4.25	4.84	4.93	4.94	4.8
SN	dakar	14' 38" N	17' 27" W	4.84	5.77	6.56	6.81	6.7	5.7	5.15	5.01	5.13	5.46	5.03	4.63	5.56
SO	muqdisho	2' 02" N	45' 20" E	6.38	6.81	6.71	6.28	5.85	5.45	5.21	5.61	6.15	6.16	6	5.91	6.04
TN	tunis	N	10' 6.8" E	2.29	3.06	4.09	5.47	6.38	7.16	7.57	6.8	5.33	3.65	2.54	2.08	4.7

Data courtesy of: [NASA - Surface meteorology and Solar Energy Data Set](#)

Asia Pacific 10-year Average Insolation kWh/m²/day

Country	City	Latitude	Longitude	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Avg
AE	Abu Dhabi	24' 28" N	54' 22" E	3.92	4.5	5.22	5.87	7.06	7.33	6.9	6.64	6.39	5.53	4.54	3.79	5.64
AU	Adelaide	34" 55" S	138" 36" E	7.2	6.58	5.18	3.85	2.65	2.23	2.48	3.2	4.46	5.69	6.59	6.74	4.74
AU	Brisbane	27" 99" S	153" 8" E	6.93	6.09	5.44	4.34	3.5	3.29	3.52	4.43	5.62	6.18	6.74	6.93	5.25
AU	Hobart	42" 52" S	147" 19" E	5.97	5.33	4.05	2.73	1.79	1.44	1.68	2.41	3.6	4.78	5.92	6.18	3.82
AU	Melbourne	37" 47" S	144" 58" E	6.78	6.22	4.76	3.4	2.29	1.84	2.04	2.79	3.94	5.27	6.28	6.46	4.34
AU	Perth	31" 57" S	115" 52" E	7.7	6.75	5.41	4.16	3.06	2.67	2.89	3.66	4.76	6.09	7.04	7.76	5.16
AU	Sydney	34" S	151" 0" E	6.34	5.68	4.87	3.6	2.74	2.5	2.67	3.53	4.67	5.61	6.32	6.6	4.59
BD	Dhaka	23' 42" N	90' 22" E	4.44	5.08	5.87	6.06	5.5	4.41	4.09	4.37	4.17	4.5	4.37	4.13	4.75
CN	Beijing	39' 55" N	116' 25" E	2.37	2.92	3.58	5.61	4.83	5.68	5.42	4.49	4.25	3.2	2.66	2.04	3.92
CN	Nanjing	32' 03" N	118' 53" E	2.04	2.22	2.65	4.5	3.84	4.47	4.93	4.5	3.67	3.02	2.88	2.08	3.4
CN	Shanghai	31' 10" N	121' 28" E	2.29	2.63	3.07	4.54	4.38	4.59	5.52	5.23	4.03	3.39	2.97	2.38	4.01
CN	Hongkong	22' 18" N	114' 10" E	2.59	2.56	3.06	3.93	4.13	4.74	5.81	4.95	4.68	4.05	3.56	2.93	4.18
ID	Jakarta	6' 11" S	106' 50" E	4.15	4.59	5	4.94	4.88	4.71	5.09	5.46	5.66	5.36	4.76	4.47	5.03
IL	Tel Aviv	32' 05" N	34' 46" E	2.78	3.5	4.73	6.03	6.86	7.87	7.81	7.22	6.19	4.63	3.32	2.62	5.73
IR	Tabriz	38' 48" N	46' 18" E	1.79	2.4	3.37	4.58	5.54	6.71	6.97	6.06	5.2	3.26	2.14	1.56	4.13
IR	Tehran	35' 40" N	51' 26" E	2.23	2.84	3.72	5.12	5.99	7.32	7.2	6.41	5.59	3.9	2.61	2.02	4.58
IR	Mashhad	36' 16" N	59' 34" E	2.22	2.97	3.88	5.21	6.29	7.49	7.41	6.78	5.7	4.13	2.78	2.06	4.74
IR	Bandar" Abbas	27' 15" N	56' 15" E	3.63	4.43	5.14	6.29	7.43	7.96	7.41	6.97	6.58	5.51	4.29	3.37	5.75
IN	New Delhi	28' N	77' E	3.68	4.47	5.5	6.6	7.08	6.55	5.01	4.62	5.11	4.99	4.15	3.42	5.1
IN	Bombay	18' 33" N	72' 32" E	5.22	6.03	6.66	7.05	6.77	4.59	3.54	3.4	4.72	5.39	5.15	4.8	5.28
IN	Bangalore	12' 57" N	77' 37" E	5	5.9	6.44	6.42	6.13	4.76	4.48	4.59	4.98	4.68	4.34	4.4	5.18
IQ	Baghdad	33' 20" N	44' 24" E	2.79	3.64	4.59	5.76	6.83	8.1	7.97	7.29	6.25	4.44	3.04	2.52	5.27
JO	Amman	31' 57" N	35' 57" E	2.93	3.67	4.83	6.04	6.88	7.91	7.86	7.27	6.25	4.71	3.47	2.76	5.8
JP	Tokyo	35' 45" N	139' 38" E	2.31	2.99	3.7	4.9	5.07	4.47	4.88	5.42	3.82	2.98	2.5	2.23	4
KH	Phnom penh	11' 33" N	104' 51" E	5.27	5.78	6.02	5.76	5.09	4.3	4.55	4.07	4.34	4.41	4.88	5.03	4.85
KP	P" yongyang	39' N	125' 18" E	2.5	3.35	4.5	5.17	5.6	5.35	4.51	4.63	4.22	3.51	2.46	2.09	4.2
KR	Seoul	37' 31" N	127' E	2.62	3.4	4.29	5.24	5.63	5.15	4.26	4.55	3.99	3.64	2.6	2.24	4.16
LA	Vientiane	18' 07" N	102' 35" E	4.3	4.94	5.52	5.74	5.11	4.24	4.22	4.19	4.61	4.26	4.21	4.24	4.63
LB	Beirut	33' 54" N	35' 28" E	2.64	3.4	4.63	6.03	6.96	7.9	7.84	7.19	6.13	4.5	3.14	2.44	5.68
MM	Yangon	16' 47" N	96' 09" E	5.4	6.06	6.65	6.69	5.14	3.24	3.3	2.99	4.12	4.51	4.82	5.05	4.65
MN	Ulaanbaatar	47' 55" N	106' 54" E	1.79	2.77	4.24	5.53	6.26	6.15	5.55	4.88	4.17	3	1.82	1.4	4.3
MY	Kuala Lumpur	3' 07" N	101' 42" E	4.54	5.27	5.14	5.05	4.8	4.98	4.91	4.78	4.54	4.51	4.23	4.07	4.7
NZ	Auckland	36" 52" S	174" 45" E	6.37	5.9	4.71	3.43	2.44	2	2.25	2.95	4.13	5.23	6.05	6.56	4.34
NZ	Christchurch	43' 32s	172" 37e	5.9	4.95	3.86	2.75	1.72	1.31	1.47	2.15	3.3	4.34	5.43	5.64	3.57
NZ	Wellington	41" 17" S	174" 47" E	6.27	5.31	4.17	3	1.95	1.54	1.74	2.46	3.66	4.7	5.73	6.01	3.88
OM	Mascat	23' 37" N	58' 37" E	4.34	5	5.85	6.69	7.54	7.56	6.91	6.71	6.55	5.93	4.95	4.23	6.29
PH	Cebu	10' 19" N	123' 54" E	4.53	5.15	5.83	6.25	5.9	4.83	4.76	4.93	4.96	4.75	4.49	4.44	5.07
PH	Manila	14' 37" N	120' 58" E	4.82	5.62	6.42	6.75	6.19	4.96	4.94	4.41	4.86	4.63	4.59	4.5	5.22
SA	Riyadh	24' 39" N	46' 42" E	4.03	4.92	5.56	6.24	7.27	7.99	7.86	7.46	6.83	5.8	4.58	3.82	6.03
SG	Singapore City	1' N	103' E	4.43	5.52	5.05	5.05	4.62	4.66	4.51	4.61	4.49	4.5	3.98	3.93	4.61
TH	Bang Kok	13' 45" N	100' 30" E	4.42	4.65	4.84	5.03	4.75	3.77	4.22	3.46	3.63	3.89	4.16	4.4	4.27
TH	Chiang Mai	18' N	99' E	4.79	5.51	6.11	6.29	5.53	4.44	4.16	4.18	4.5	4.34	4.28	4.48	4.88
TR	Ankara	39' 57" N	32' 53" E	1.77	2.38	3.69	4.54	5.53	6.63	6.99	6.55	5.22	3.24	1.99	1.51	4.17
VN	Hanoi	21' N	105' 54" E	2.52	2.94	3.81	4.34	4.66	4.51	4.62	4.62	4.57	3.64	3.29	3.17	3.89
YE	Aden	12" 50" N	45' 02" E	5.45	5.78	6.52	6.48	6.71	6.72	6.33	6.33	6.41	6.54	5.99	5.39	6.22

Data courtesy of: [NASA - Surface meteorology and Solar Energy Data Set](#)

South America 10-year Average Insolation kWh/m²/day

Country	State/City	Latitude	Longitude	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Avg
Belize	Belize City	17° 30' N	88° 11' W	3.73	4.59	5.45	5.97	5.75	5.19	5.03	5.16	4.82	4.5	3.99	3.54	4.81
Costa Rica	San Jose	09° 59' N	84° 04' W	6.09	6.74	7.23	6.64	5.26	5	4.94	4.84	4.76	4.63	4.63	5.3	5.51
El Salvador	San Salvador	13° 40' N	89° 10' W	5.58	6.23	6.68	6.52	5.95	5.74	6.22	6.18	5.49	5.61	5.42	5.3	5.91
Guatemala	City	14° 37' N	90° 31' W	4.93	5.48	5.9	5.81	5.35	4.91	5.27	5.12	4.59	4.68	4.65	4.62	5.11
Honduras	Tegucigalpa	14° 05' N	87° 14' W	4.26	5.08	5.84	5.99	5.54	5.35	5.34	5.47	5.04	4.43	4.15	3.91	5.03
Mexico	Acapulco	16° 50' N	99° 54' W	5.46	6.3	7.17	7.41	7.06	6.16	6.29	6.2	5.45	5.94	5.56	5.19	6.18
Mexico	Cancun	21° 10' N	86° 50' W	4.16	5.14	6.04	6.86	6.79	6.47	6.63	6.65	5.86	5.19	4.51	3.9	5.68
Mexico	Chihuahua	28° 39' N	106° 05' W	3.41	4.34	5.63	6.43	6.88	6.53	5.69	5.3	5.14	4.65	3.89	3.26	5.1
Mexico	Guadalajara	20° 40' N	103° 40' W	4.24	5.18	6.21	6.71	6.89	6	5.23	5.41	5.14	5.11	4.79	4.13	5.42
Mexico	La Paz	24° 09' N	110° 18' W	3.73	4.67	5.75	6.63	7.16	7.07	6.4	6.06	5.52	4.93	4.11	3.51	5.46
Mexico	Mexico City	19° 26' N	99° 08' W	4.34	5.07	5.89	5.95	5.9	5.03	4.76	4.86	4.57	4.73	4.57	4.29	5
Mexico	Monterrey	25° 40' N	100° 23' W	3.33	4.2	5.4	5.71	6.06	5.89	5.59	5.44	4.76	4.49	3.9	3.23	4.83
Mexico	Oaxaca	17° 04' N	96° 43' W	4.36	4.99	5.74	6.08	5.86	5.01	4.92	4.95	4.43	4.63	4.38	4.08	4.95
Mexico	Puerto Vallarta	20° 39' N	105° 14' W	4.2	5.29	6.39	7.12	7.51	6.96	6.17	5.99	5.32	5.3	4.82	4	5.76
Mexico	Tijuana	32° 32' N	117° 01' W	3.32	4.15	5.23	6.37	6.61	6.43	6.46	6.31	5.4	4.26	3.65	3.08	5.11
Mexico	Veracruz	19° 10' N	96° 07' W	3.55	4.13	4.86	5.35	5.4	5.12	5.15	5.17	4.66	4.45	3.92	3.43	4.6
Nicaragua	Managua	12° 10' N	86° 15' W	5.34	5.89	6.59	6.54	5.83	5.67	5.7	5.69	5.43	5.39	5.15	5.05	5.69
Panama	Panama City	08° 58' N	79° 33' W	5.27	5.92	6.23	5.75	4.78	4.11	4.16	4.15	4.24	3.99	4.23	4.66	4.79
Cuba	Havana	23° 09' N	82° 21' W	4.09	4.97	5.92	7.06	7.15	7.1	6.9	6.86	6.1	5.12	4.26	3.74	5.77
Jamaica	Kingston	17° 58' N	76° 48' W	4.92	5.67	6.45	6.8	6.5	6.82	6.84	6.61	6.23	5.45	4.76	4.58	5.97
Puerto Rico	San Juan	18° 15' N	66° 30' W	4.26	4.9	5.7	6.09	5.89	6.09	6.08	5.78	5.26	4.8	4.36	4.15	5.28
Martinique	Fort de France	14° 37' N	61° 05' W	5.35	5.98	6.59	6.94	6.7	6.42	6.49	6.45	6.03	5.87	5.15	5.15	6.09
Rep.	Santiago	18° 29' N	69° 54' W	3.89	4.46	5.24	5.53	5.52	5.48	5.41	5.13	4.8	4.46	4.03	3.78	4.81
Argentina	Buenos Aires	34° 36' S	58° 23' W	6.44	5.67	4.53	3.53	2.74	2.04	2.31	3.27	4.23	5.12	6.36	6.44	4.39
Argentina	Cordoba	31° 24' S	64° 12' W	7.07	6.3	4.9	3.87	3.01	2.65	2.79	3.63	4.76	5.93	6.63	6.96	4.88
Argentina	Rio Gallegos	51° 37' S	69° 13' W	5.47	4.63	3.32	2.02	1.07	0.71	0.81	1.61	2.87	4.26	5.53	5.79	3.17
Bolivia	La Paz	16° 29' S	68° 08' W	5.3	5.57	5.16	5.01	4.78	4.37	4.51	4.96	5.66	5.98	6.15	5.92	5.28
Bolivia	Santa Cruz	17° 47' S	63° 10' W	4.57	4.9	4.57	3.92	3.44	3.25	3.44	4.01	4.45	5	5.21	5.01	4.31
Bolivia	Sucre	19° 02' S	65° 15' W	1.67	2.29	3.47	4.58	5.59	6.37	6.86	5.97	4.51	2.73	1.77	1.46	3.94
Brazil	Belem	01° 27' S	48° 29' W	4.54	4.34	4.26	4.46	4.75	4.99	5.27	5.5	5.85	5.79	5.52	4.96	5.02
Brazil	Belo Horizonte	19° 55' S	43° 56' W	5.45	5.63	5.34	4.78	4.3	4.09	4.32	4.82	5.05	5.26	5.25	4.98	4.94
Brazil	Brasilia	15° 52' S	47° 56' W	5.21	5.15	5.09	4.99	4.8	4.59	4.86	5.46	5.28	5.23	4.97	4.82	5.04
Brazil	Curitiba	25° 26' S	49° 15' W	5.48	4.88	4.32	3.57	2.95	2.83	2.96	3.47	3.87	4.65	5.44	5.41	4.15
Brazil	Fortaleza	03° 43' S	38° 31' W	5.85	5.44	4.82	4.8	5.11	5.34	5.74	6.34	6.6	6.62	6.5	6.16	5.78
Brazil	Manaus	03° 08' S	60° 01' W	4.15	4.12	4.22	4.34	4.08	4.24	4.55	4.98	5.23	4.93	4.72	4.23	4.48
Brazil	Porto Alegre	30° 02' S	51° 13' W	6.08	5.56	4.54	3.48	2.81	2.27	2.5	3.06	3.89	5.01	5.93	6.5	4.3
Brazil	Recife	08° 05' S	34° 54' W	6.59	6.22	5.95	5.05	4.84	4.61	4.38	5.07	5.78	6.23	6.4	6.48	5.63
Brazil	Rio de Janeiro	22° 54' S	42° 10' W	5.4	5.34	4.87	4.11	3.43	3.35	3.39	3.83	3.77	4.41	4.97	4.98	4.32
Brazil	Salvador	12° 59' S	38° 30' W	5.89	5.79	5.28	4.59	4.09	3.75	3.83	4.26	4.79	5.32	5.38	5.61	4.88
Brazil	Sao Paulo	23° 33' S	46° 39' W	5.44	5.05	4.75	4.21	3.47	3.36	3.54	4.19	4.25	5.09	5.73	5.38	4.54
Chile	Iquique	20° 13' S	70° 10' W	7.42	7.34	6.19	4.7	3.45	2.78	3.04	3.39	4.53	5.37	6.36	7.4	5.16
Chile	Osorno	40° 35' S	73° 14' W	6.78	6.02	4.34	2.93	1.91	1.43	1.69	2.48	3.5	4.95	6.47	6.98	4.12
Chile	Santiago	33° 27' S	70° 42' W	7.55	6.56	5.13	3.83	2.59	2.22	2.38	3.09	4.08	5.64	6.84	7.82	4.81
Chile	Valparaiso	33° 01' S	71° 38' W	7.55	6.56	5.13	3.83	2.59	2.22	2.38	3.09	4.08	5.64	6.84	7.82	4.81
Columbia	Bogota	04° 36' N	74° 05' W	4.5	4.48	4.67	4.46	4.45	4.63	4.71	4.7	4.8	4.28	4.24	4.32	4.52
Columbia	Cali	03° 27' N	76° 30' W	3.63	3.9	4.09	3.89	3.76	3.71	4.05	3.93	3.89	3.52	3.49	3.44	3.78
Columbia	Cartagena	10° 25' N	75° 32' W	5.74	6.18	6.54	6.3	5.62	5.56	5.66	5.72	5.35	4.72	4.9	5.3	5.63
Columbia	Medellin	06° 14' N	75° 34' W	3.95	4.22	4.38	3.95	4.01	4.36	4.67	4.51	4.37	3.82	3.78	3.86	4.16
Ecuador	Guayaquil	02° 13' S	79° 54' W	6.07	6.01	6.31	6.31	5.83	4.88	4.5	4.5	4.95	4.69	5.29	5.93	5.44
Ecuador	Quito	00° 14' S	78° 30' W	3.57	3.56	3.71	3.71	3.73	3.81	3.85	3.88	3.89	3.79	3.85	3.68	3.75
Guiana	Cayenne	04° 56' N	52° 27' W	3.91	4.34	4.55	4.66	4.04	4.25	4.96	5.4	5.81	5.51	4.91	4.29	4.72
Guyana	Georgetown	06° 50' N	58° 12' W	4.12	4.57	4.98	5.09	4.49	4.32	4.65	4.9	5.15	4.88	4.42	4.01	4.63
Peru	Arequipa	16° 25' S	71° 32' W	4.95	5.26	4.88	4.9	4.8	4.53	4.78	5.16	5.7	5.84	5.96	5.54	5.19
Peru	Cusco	13° 30' S	71° 58' W	4.19	4.43	4.23	3.99	3.74	3.56	4.01	4.29	4.55	4.72	4.67	4.5	4.24
Peru	Lima	12° 03' S	77° 02' W	7.27	7.52	7.28	6.28	4.78	3.34	3.17	3.39	4.33	5.11	6.02	6.85	5.44
Paraguay	Asuncion	25° 20' S	57° 31' W	6.1	5.77	4.95	3.84	3.48	2.76	3.09	3.97	4.49	5.26	6.22	6.26	4.69
Suriname	Paramaribo	05° 49' N	55° 09' W	4.13	4.63	5.07	5.08	4.78	4.78	5.12	5.42	5.87	5.61	4.97	4.47	4.99
Venezuela	Caracas	10° 30' N	66° 54' W	5.14	5.82	6.11	5.94	5.76	5.63	5.77	5.77	5.72	5.56	5.01	4.84	5.59
Venezuela	Maracaibo	10° 39' N	71° 36' W	4.71	5.09	5.42	5.22	5.12	5.28	5.49	5.31	5.2	4.68	4.55	4.51	5.05
Venezuela	Valencia	10° 09' N	68° 00' W	5.75	6.68	7.17	7.28	6.48	5.11	5.92	6.26	6.26	6.13	5.76	5.41	6.18

Data courtesy of: [NASA - Surface meteorology and Solar Energy Data Set](#)

Europe 10-year Average Insolation kWh/m²/day

Country	State/City	Latitude	Longitude	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Avg
AT	Vienna	48° 13' N	16° 22' E	1.1	1.81	2.8	3.76	4.76	5.12	5.72	4.98	3.68	2.15	1.28	0.93	3.52
BE	Bruxelles	50° 45' N	4° 30' E	0.74	1.31	2.29	3.68	4.67	4.48	4.82	4.2	2.86	1.73	0.92	0.56	3.02
BG	Sofija	42° 40' N	23° 18' E	1.5	2.04	2.97	4.05	5	5.8	6.29	5.68	4.46	2.75	1.62	1.27	3.99
CY	Limassol	34° 40' N	33° 03' E	2.52	3.26	4.54	6	6.85	7.81	7.8	7.18	6.11	4.43	3.02	2.31	5.61
CR	Zagreb	45° 29' N	15° 35' E	1.3	2	2.94	3.91	5.03	5.37	5.93	5.19	3.94	2.39	1.39	1.09	3.72
DE	Hamburg	53° 33' N	9° 59' E	0.54	1.11	2.09	3.68	4.86	4.47	4.47	3.89	2.59	1.48	0.69	0.4	2.52
DE	Munich	48° 05' N	11° 23' E	1.05	1.8	2.82	3.95	4.84	4.65	5.14	4.46	3.2	2	1.02	0.79	2.98
ES	Madrid	40° 25' N	3° 41' W	1.93	2.75	4.09	4.83	5.85	6.52	7.11	6.3	4.91	3.07	1.97	1.59	4.62
ES	Malaga	36° 42' N	4° 42' W	2.52	3.24	4.51	5.4	6.35	7.09	7.64	6.81	5.39	3.7	2.58	2.14	5.16
ES	Barcelona	41° 24' N	2° 9' E	1.89	2.71	3.97	4.99	5.82	6.56	7.01	6.07	4.72	3.11	2.04	1.7	4.6
ES	Alicante	38° 40' N	0° 30' W	2.23	3.02	4.26	5.39	6.13	6.89	7.34	6.53	5.11	3.45	2.34	1.94	4.94
FX	Lyon	45° 46' N	4° 50' E	1.26	1.97	3.02	4.08	4.97	5.4	6.03	5.23	3.93	2.27	1.43	1.08	3.74
FX	Paris	48° 52' N	2° 20' E	0.89	1.62	2.62	3.95	4.9	4.83	5.35	4.61	3.33	2	1.12	0.72	3.34
FX	Toulouse	43° 37' N	1° 26' E	1.39	2.14	3.19	4.03	4.82	5.16	5.86	5.07	4.09	2.48	1.58	1.25	3.75
GR	Athens	38° N	23° 43' E	2	2.52	3.67	5.21	6.38	7.52	7.61	6.91	5.57	3.5	2.16	1.63	4.56
HU	Budapest	47° 30' N	19° 3' E	1	1.71	2.76	3.9	5.03	5.3	5.62	4.84	3.57	2.24	1.17	0.88	3.17
IE	Dublin	53° 20' N	6° 15' W	0.56	1.07	1.97	3.32	4.4	4.3	4.3	3.4	2.69	1.43	0.77	0.43	2.39
IT	Milan	45° 28' N	9° 12' E	1.27	1.89	2.91	3.65	4.84	5.36	5.97	5.21	3.91	2.4	1.42	1.08	3.33
IT	Rome	41° 53' N	12° 30' E	1.78	2.52	3.71	4.87	5.98	6.84	7.08	6.34	4.83	3.08	1.98	1.56	4.21
NL	Amsterdam	52° 21' N	4° 54' E	0.61	1.21	2.27	3.76	4.88	4.73	4.78	4.13	2.8	1.6	0.78	0.45	2.67
NO	Oslo	59° 56' N	10° 44' E	0.3	0.87	1.68	3.12	4.65	4.84	4.59	3.36	2.22	1.02	0.42	0.19	2.27
RO	Bucharest	44° 26' N	26° 06' E	1.36	1.94	2.91	3.94	5.03	5.6	6.15	5.53	4.15	2.59	1.37	1.1	3.47
PT	Lisboa	38° 42' N	9° 11' W	2.27	2.99	4.3	5.15	6.13	6.46	6.89	6.33	5.11	3.44	2.27	1.84	4.43
PT	Oviedo	43° 21' N	5° 50' W	1.67	2.29	3.44	4.59	5.56	6.32	6.86	5.95	4.51	2.71	1.77	1.46	3.93
UA	Odessa	46° 30' N	30° 46' E	1.08	1.78	2.68	3.87	5.4	5.7	6.39	5.63	3.96	2.45	1.06	0.87	3.41
UK	Edinburgh	55° 55' N	3° 10' W	0.44	0.94	1.86	3.18	4.33	4.34	4.13	3.41	2.43	1.2	0.59	0.32	2.26
UK	London	51° 32' N	0° 5' W	0.67	1.26	2.22	3.48	4.54	4.51	4.74	4.01	2.86	1.65	0.89	0.52	2.61
SZ	Bern	46° 57' N	7° 26' E	1.1	1.77	2.74	3.6	4.7	5.07	5.68	4.95	3.66	2.18	1.26	0.92	3.14
SZ	Lausanne	46° 32' N	6° 39' E	1.1	1.81	2.8	3.76	4.76	5.12	5.72	4.98	3.68	2.15	1.28	0.93	3.17
YU	Beograd	44° 50' N	20° 30' E	1.29	1.89	2.92	3.86	4.88	5.45	6	5.3	4.05	2.5	1.4	1.11	3.39

Data courtesy of: [NASA - Surface meteorology and Solar Energy Data Set](#)