The Sun as a Resource

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The Sun as a Resource

1. Strength of the sun

2. Orientation of the sun

3. Shading

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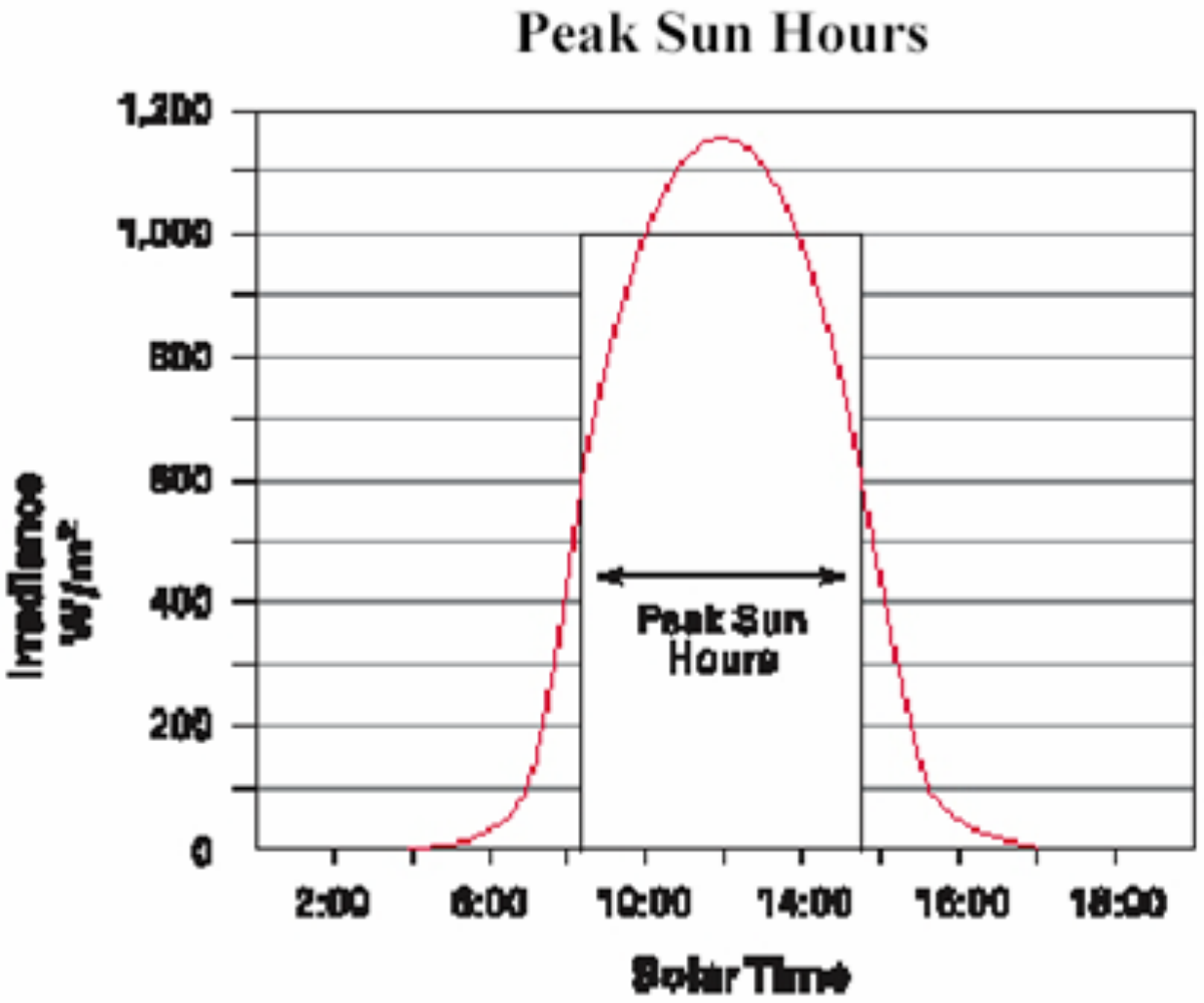
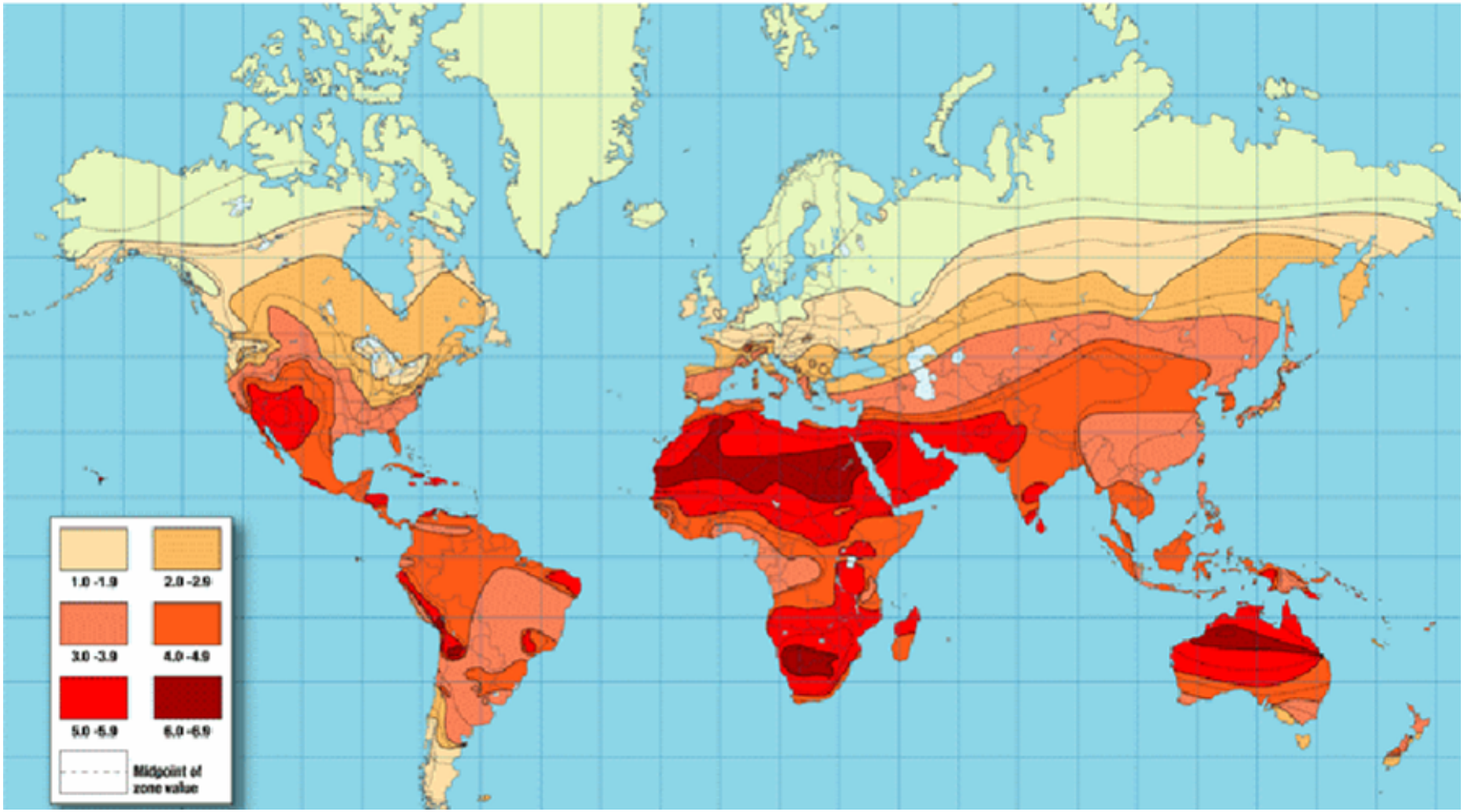


Figure 5. Diagram of Peak Sun Hours (PSH).



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Regional Maps

http://www.solar4power.com/solar-power-global-maps.html

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Shading

- You have to look at issues with shading the panel
- By shading only a small percentage of the panel you can reduce your power output to almost nothing
- The cell panels are wired in series so if you cover one part lose the entire power of the string of cells

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Sun as a Resource

- 1. Strength of the sun – get good accurate data, know the longitude and latitude of an area

- 2. Orientation of the sun – Analyze the sun data and optimize your orientation of the panel

- 3. Shading - If you mount your sun in the shade don't bother with steps 1 & 2 because the panel won't work

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Data from NASA Website

SSE Homepage | Questions? | Find A Different Location | Accuracy | Methodology | Parameters (Units & Definition)

NASA Surface meteorology and Solar Energy - Available Tables

At Latitude 18.917 and Longitude -71.967

Geometry Information — Average elevation: 309 meters

Northern boundary 19

Western boundary -72 | Center Latitude 18.5 Longitude -71.5 | Eastern boundary -71

Southern boundary 18

Parameters for Sizing and Pointing of Solar Panels and for Solar Thermal Applications:

Monthly Averaged Insolation Incident On A Horizontal Surface (kWh/m²/day)

Lat 18.917 Lon -71.967	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average
10-year Average	4.13	4.62	5.11	5.29	5.34	5.74	5.84	5.59	5.19	4.57	4.16	4.04	4.96

Parameters for Tilted Solar Panels:

Monthly Averaged Radiation Incident On An Equator-Pointed Tilted Surface / RETScreen Method (kWh/m²/day)

Lat 18.917 Lon -71.967	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average
SSE HRZ	4.13	4.62	5.11	5.29	5.34	5.74	5.84	5.59	5.19	4.57	4.16	4.04	4.96
K	0.53	0.53	0.52	0.50	0.49	0.53	0.54	0.53	0.52	0.50	0.52	0.54	0.52
Erbs DIF	1.62	1.83	2.07	2.25	2.31	2.29	2.27	2.23	2.12	1.92	1.69	1.55	2.01
RET DNR	4.50	4.44	4.32	3.99	4.03	4.82	5.01	4.35	4.21	4.03	4.28	4.65	4.39
Tilt 0	4.10	4.58	5.05	5.20	5.26	5.71	5.81	5.48	5.12	4.53	4.13	4.01	4.91
Tilt 3	4.23	4.68	5.11	5.21	5.24	5.75	5.84	5.47	5.16	4.61	4.24	4.15	4.97
Tilt 18	4.74	5.04	5.25	5.12	4.98	5.75	5.81	5.31	5.21	4.87	4.70	4.73	5.13
Tilt 33	5.02	5.15	5.14	4.80	4.49	5.48	5.51	4.89	5.01	4.90	4.92	5.06	5.03
Tilt 90	3.77	3.37	2.75	1.99	1.67	2.48	2.38	1.82	2.42	3.02	3.56	3.94	2.76
OPT	5.06	5.15	5.25	5.21	5.26	5.78	5.86	5.48	5.22	4.91	4.94	5.14	5.27
OPT ANG	42.0	32.0	19.0	5.00	0.00	11.0	9.00	1.00	14.0	27.0	39.0	44.0	20.1

NOTE: *Diffuse radiation, direct normal radiation and tilted surface radiation are not calculated when the clearness index (K) is below 0.3 or above 0.8.*

Go to http://eosweb.larc.nasa.gov/cgi-bin/sse/

grid.cgi

You input longitude and latitude tell it what data you want back.

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