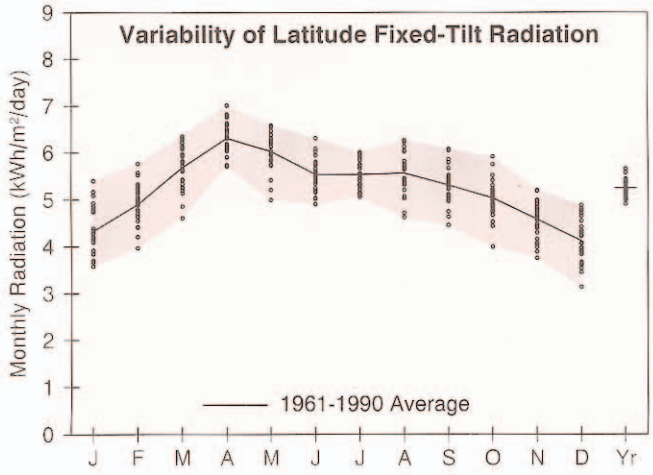
Daytona Beach, FL

WBAN NO. 12834

LATITUDE: 29.18° N
LONGITUDE: 81.05° W
ELEVATION: 12 meters
MEAN PRESSURE: 1017 millibars

STATION TYPE: Primary



Solar Radiation for Flat-Plate Collectors Facing South at a Fixed Tilt (kWh/m²/day), Uncertainty ±9%

Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	3.1	3.9	5.0	6.2	6.4	6.1	6.0	5.7	4.9	4.2	3.4	2.9	4.8
	Min/Max	2.7/3.7	3.2/4.4	4.2/5.5	5.6/6.8	5.3/7.0	5.4/7.0	5.5/6.6	4.8/6.3	4.3/5.5	3.5/4.8	2.9/3.7	2.4/3.3	4.6/5.1
Latitude -15	Average	3.8	4.5	5.5	6.4	6.4	6.0	5.9	5.8	5.2	4.7	4.1	3.6	5.2
	Min/Max	3.2/4.6	3.7/5.2	4.5/6.1	5.8/7.1	5.3/7.0	5.3/6.8	5.4/6.4	4.8/6.5	4.5/6.0	3.8/5.5	3.4/4.6	2.8/4.1	4.8/5.5
Latitude	Average	4.3	4.9	5.7	6.3	6.0	5.5	5.5	5.6	5.3	5.0	4.6	4.1	5.2
	Min/Max	3.6/5.4	4.0/5.8	4.6/6.3	5.7/7.0	5.0/6.6	4.9/6.3	5.1/6.0	4.6/6.3	4.5/6.1	4.0/5.9	3.8/5.2	3.1/4.9	4.9/5.7
Latitude +15	Average	4.6	5.1	5.6	5.9	5.4	4.8	4.9	5.1	5.1	5.1	4.8	4.4	5.1
	Min/Max	3.8/5.8	4.1/6.0	4.5/6.3	5.3/6.5	4.5/5.8	4.3/5.5	4.5/5.3	4.2/5.7	4.3/5.9	4.0/6.0	3.9/5.6	3.3/5.3	4.7/5.5
90	Average	3.9	3.8	3.6	2.9	2.1	1.8	1.9	2.4	3.0	3.6	4.0	3.9	3.1
	Min/Max	3.1/5.1	3.1/4.7	2.9/4.0	2.7/3.1	2.0/2.2	1.6/1.9	1.8/2.0	2.0/2.6	2.5/3.4	2.7/4.3	3.1/4.7	2.8/4.7	2.8/3.3

Solar Radiation for 1-Axis Tracking Flat-Plate Collectors with a North-South Axis (kWh/m²/day), Uncertainty ±9%

Axis Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	4.3	5.2	6.6	8.1	8.2	7.5	7.4	7.1	6.2	5.5	4.6	3.9	6.2
	Min/Max	3.5/5.4	4.2/6.2	5.2/7.6	7.1/9.5	6.3/9.2	6.5/8.9	6.6/8.3	5.8/8.3	5.0/7.3	4.2/6.6	3.8/5.3	3.0/4.7	5.7/6.8
Latitude -15	Average	4.8	5.7	7.0	8.3	8.2	7.4	7.4	7.2	6.5	5.9	5.1	4.4	6.5
	Min/Max	3.8/6.1	4.6/6.8	5.5/8.0	7.3/9.7	6.3/9.2	6.4/8.8	6.5/8.2	5.9/8.4	5.2/7.6	4.5/7.1	4.1/5.9	3.3/5.4	6.0/7.1
Latitude	Average	5.2	6.0	7.2	8.3	7.9	7.1	7.1	7.0	6.5	6.1	5.5	4.9	6.6
	Min/Max	4.1/6.7	4.8/7.3	5.6/8.3	7.2/9.7	6.1/8.9	6.1/8.4	6.2/7.9	5.8/8.3	5.2/7.7	4.6/7.4	4.4/6.4	3.6/5.9	6.0/7.2
Latitude +15	Average	5.4	6.1	7.1	8.0	7.4	6.6	6.6	6.7	6.4	6.2	5.7	5.1	6.4
	Min/Max	4.3/7.0	4.9/7.4	5.5/8.2	6.9/9.3	5.7/8.4	5.7/7.8	5.8/7.4	5.5/7.9	5.0/7.5	4.6/7.5	4.5/6.7	3.7/6.3	5.9/7.1

Solar Radiation for 2-Axis Tracking Flat-Plate Collectors (kWh/m²/day), Uncertainty ±9%

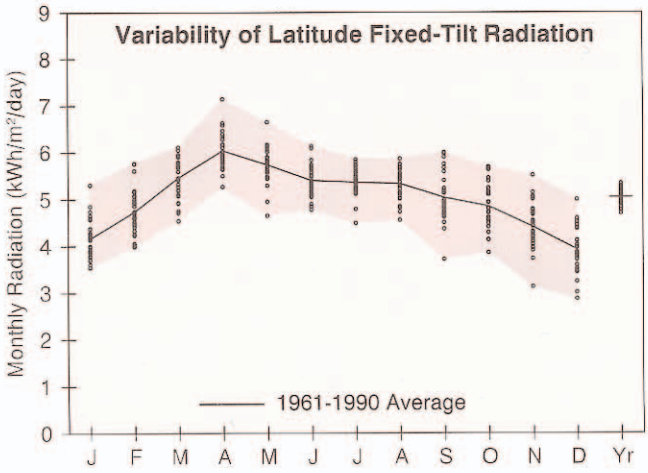
Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
2-Axis	Average	5.5	6.1	7.2	8.4	8.2	7.5	7.5	7.2	6.5	6.2	5.7	5.2	6.8
	Min/Max	4.3/7.1	4.9/7.5	5.6/8.3	7.3/9.8	6.3/9.3	6.5/9.0	6.6/8.4	5.9/8.4	5.2/7.7	4.6/7.5	4.5/6.8	3.7/6.4	6.2/7.5

Direct Beam Solar Radiation for Concentrating Collectors (kWh/m²/day), Uncertainty ±8%

Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
1-Axis, E-W Horiz Axis	Average	3.1	3.3	3.6	4.2	3.9	3.3	3.3	3.1	2.8	3.1	3.2	3.0	3.3
	Min/Max	2.1/4.5	2.4/4.4	2.4/4.6	3.3/5.5	2.2/4.8	2.4/4.6	2.4/4.2	2.1/4.0	1.7/3.6	1.8/4.1	2.2/4.1	1.8/4.1	2.9/3.9
1-Axis, N-S Horiz Axis	Average	2.7	3.4	4.4	5.5	5.1	4.3	4.2	4.0	3.5	3.3	3.0	2.5	3.8
	Min/Max	1.9/4.0	2.5/4.5	2.9/5.6	4.3/7.3	2.9/6.3	3.1/5.8	3.2/5.3	2.8/5.3	2.1/4.6	2.0/4.5	2.0/3.8	1.5/3.5	3.3/4.5
1-Axis, N-S Tilt=Latitude	Average	3.5	4.1	4.8	5.6	4.9	4.0	4.0	4.0	3.7	3.9	3.7	3.3	4.1
	Min/Max	2.4/5.1	3.0/5.4	3.2/6.1	4.4/7.4	2.8/6.0	2.9/5.4	3.0/5.0	2.8/5.3	2.2/4.8	2.3/5.2	2.5/4.7	1.9/4.6	3.5/4.8
2-Axis	Average	3.7	4.2	4.8	5.7	5.2	4.3	4.3	4.1	3.8	3.9	3.9	3.6	4.3
	Min/Max	2.6/5.4	3.0/5.6	3.2/6.1	4.4/7.6	2.9/6.4	3.1/5.9	3.2/5.3	2.9/5.4	2.2/4.8	2.3/5.3	2.7/5.0	2.1/4.9	3.7/5.0

Average Climatic Conditions

Element	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Temperature (°C)	14.2	15.0	17.9	20.7	23.7	26.3	27.3	27.2	26.3	23.0	18.8	15.6	21.3
Daily Minimum Temp	8.3	9.1	12.2	14.8	18.3	21.6	22.5	22.7	22.2	18.4	13.5	9.8	16.1
Daily Maximum Temp	20.0	20.8	23.8	26.7	29.2	31.1	32.1	31.7	30.4	27.5	24.2	21.3	26.6
Record Minimum Temp	-9.4	-4.4	-3.3	1.7	6.7	11.1	15.6	18.3	11.1	5.0	-2.8	-7.2	-9.4
Record Maximum Temp	30.6	31.7	32.8	35.6	37.8	38.9	38.9	37.8	37.2	35.0	31.7	31.1	38.9
HDD, Base 18.3°C	157	114	62	12	0	0	0	0	0	0	46	115	505
CDD, Base 18.3°C	28	21	50	83	167	240	279	276	240	147	61	31	1622
Relative Humidity (%)	75	72	71	69	72	77	78	80	79	75	76	76	75
Wind Speed (m/s)	3.8	4.1	4.2	4.1	3.8	3.4	3.2	3.0	3.5	4.0	3.7	3.6	3.7



Jacksonville, FL

WBAN NO. 13889

LATITUDE: 30.50° N
LONGITUDE: 81.70° W
ELEVATION: 9 meters
MEAN PRESSURE: 1017 millibars

STATION TYPE: Secondary

Solar Radiation for Flat-Plate Collectors Facing South at a Fixed Tilt (kWh/m²/day), Uncertainty ±9%

Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	2.9	3.7	4.7	5.9	6.1	6.0	5.8	5.4	4.6	4.0	3.2	2.7	4.6
	Min/Max	2.6/3.5	3.2/4.3	4.0/5.2	5.1/6.9	5.0/7.1	5.3/6.8	4.9/6.4	4.7/5.9	3.6/5.4	3.3/4.5	2.5/3.8	2.2/3.2	4.4/4.8
Latitude -15	Average	3.6	4.3	5.2	6.1	6.1	5.8	5.7	5.5	5.0	4.5	3.9	3.4	4.9
	Min/Max	3.2/4.5	3.7/5.2	4.4/5.8	5.3/7.2	4.9/7.1	5.1/6.7	4.8/6.3	4.7/6.1	3.7/5.9	3.7/5.3	2.9/4.8	2.6/4.2	4.7/5.2
Latitude	Average	4.2	4.7	5.5	6.0	5.7	5.4	5.4	5.3	5.0	4.9	4.4	3.9	5.0
	Min/Max	3.5/5.3	4.0/5.8	4.5/6.1	5.3/7.1	4.7/6.7	4.8/6.1	4.5/5.8	4.6/5.9	3.7/6.0	3.9/5.7	3.1/5.5	2.9/5.0	4.7/5.3
Latitude +15	Average	4.4	4.9	5.4	5.6	5.1	4.7	4.7	4.9	4.8	4.9	4.7	4.2	4.9
	Min/Max	3.7/5.8	4.1/6.0	4.4/6.1	4.9/6.7	4.2/5.9	4.2/5.3	4.0/5.1	4.2/5.4	3.5/5.8	3.8/5.8	3.2/5.9	3.0/5.5	4.5/5.2
90	Average	3.8	3.8	3.5	2.9	2.1	1.8	1.9	2.3	2.9	3.6	3.9	3.7	3.0
	Min/Max	3.1/5.0	3.1/4.7	2.9/4.0	2.6/3.3	2.0/2.3	1.8/1.9	1.8/2.0	2.1/2.5	2.1/3.5	2.7/4.2	2.6/5.0	2.5/4.9	2.7/3.2

Solar Radiation for 1-Axis Tracking Flat-Plate Collectors with a North-South Axis (kWh/m²/day), Uncertainty ±9%

Axis Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	4.0	5.0	6.3	7.8	7.8	7.4	7.2	6.8	5.9	5.3	4.4	3.7	6.0
	Min/Max	3.3/5.2	4.1/6.2	5.2/7.3	6.5/9.6	5.8/9.5	6.2/8.9	5.9/8.2	5.5/7.7	4.2/7.4	4.1/6.3	3.0/5.5	2.7/4.7	5.5/6.4
Latitude -15	Average	4.6	5.5	6.7	8.0	7.8	7.3	7.2	6.9	6.2	5.7	4.9	4.2	6.3
	Min/Max	3.8/6.0	4.5/6.9	5.4/7.8	6.7/9.9	5.8/9.5	6.1/8.8	5.8/8.1	5.6/7.8	4.3/7.8	4.3/6.8	3.3/6.3	3.0/5.5	5.8/6.7
Latitude	Average	5.0	5.8	6.9	8.0	7.6	7.0	6.9	6.8	6.2	6.0	5.3	4.6	6.3
	Min/Max	4.1/6.6	4.7/7.3	5.5/8.0	6.6/9.8	5.6/9.2	5.9/8.5	5.6/7.8	5.5/7.7	4.3/7.9	4.5/7.2	3.5/6.8	3.2/6.1	5.8/6.8
Latitude +15	Average	5.2	5.9	6.8	7.6	7.1	6.5	6.5	6.4	6.1	6.0	5.5	4.9	6.2
	Min/Max	4.2/6.9	4.8/7.5	5.5/8.0	6.4/9.4	5.2/8.7	5.5/7.9	5.3/7.3	5.2/7.3	4.2/7.7	4.4/7.3	3.6/7.1	3.3/6.4	5.7/6.6

Solar Radiation for 2-Axis Tracking Flat-Plate Collectors (kWh/m²/day), Uncertainty ±9%

Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
2-Axis	Average	5.2	5.9	6.9	8.0	7.9	7.5	7.3	6.9	6.3	6.0	5.5	4.9	6.5
	Min/Max	4.3/7.0	4.8/7.5	5.6/8.1	6.7/9.9	5.8/9.6	6.3/9.0	5.9/8.3	5.6/7.9	4.3/7.9	4.5/7.3	3.6/7.2	3.4/6.6	6.0/7.0

Direct Beam Solar Radiation for Concentrating Collectors (kWh/m²/day), Uncertainty ±8%

Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
1-Axis, E-W Horiz Axis	Average	3.1	3.2	3.5	4.0	3.7	3.3	3.2	3.0	2.7	3.0	3.1	2.9	3.2
	Min/Max	2.2/4.5	2.3/4.5	2.5/4.4	3.0/5.5	2.0/5.0	2.3/4.5	2.1/4.1	1.9/3.7	1.4/3.8	1.8/4.0	1.5/4.5	1.5/4.4	2.8/3.6
1-Axis, N-S Horiz Axis	Average	2.6	3.3	4.2	5.3	4.9	4.3	4.2	3.9	3.4	3.3	2.8	2.4	3.7
	Min/Max	1.8/3.9	2.3/4.7	3.0/5.4	3.9/7.3	2.6/6.7	3.0/5.9	2.8/5.3	2.5/4.9	1.8/5.0	2.0/4.4	1.4/4.1	1.3/3.6	3.2/4.1
1-Axis, N-S Tilt=Latitude	Average	3.4	4.0	4.7	5.4	4.7	4.0	3.9	3.8	3.6	3.8	3.6	3.2	4.0
	Min/Max	2.4/5.1	2.8/5.6	3.3/6.0	4.0/7.5	2.5/6.4	2.7/5.4	2.7/5.0	2.5/4.9	1.9/5.3	2.3/5.1	1.8/5.2	1.7/4.8	3.4/4.4
2-Axis	Average	3.7	4.1	4.7	5.4	5.0	4.4	4.2	4.0	3.6	3.9	3.8	3.4	4.2
	Min/Max	2.6/5.5	2.9/5.8	3.3/6.0	4.0/7.6	2.7/6.8	3.0/5.9	2.9/5.3	2.5/5.0	1.9/5.3	2.3/5.2	1.9/5.4	1.8/5.2	3.6/4.6

Average Climatic Conditions

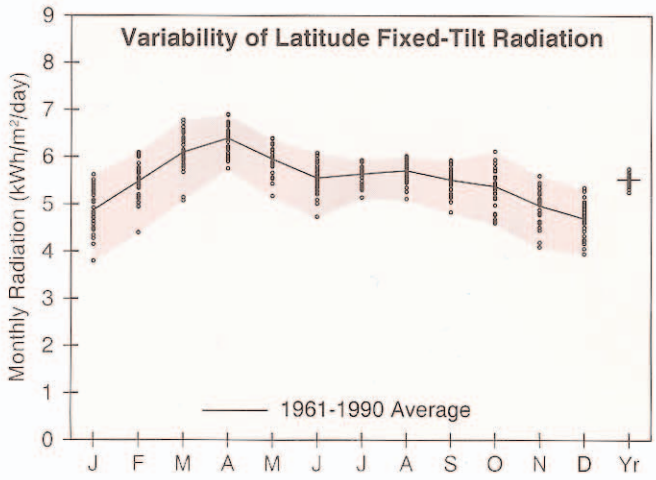
Element	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Temperature (°C)	11.3	12.9	16.2	19.4	23.0	26.2	27.6	27.3	25.6	21.0	16.6	12.8	20.0
Daily Minimum Temp	4.7	6.3	9.6	12.7	16.7	20.6	22.2	22.1	20.6	15.2	10.1	6.3	13.9
Daily Maximum Temp	17.9	19.4	22.8	26.2	29.3	31.8	33.0	32.6	30.7	26.8	23.1	19.3	26.1
Record Minimum Temp	-13.9	-7.2	-5.0	1.1	7.2	8.3	16.1	17.2	8.9	2.2	-6.1	-11.7	-13.9
Record Maximum Temp	29.4	31.1	32.8	35.0	37.8	39.4	40.6	38.9	37.8	35.6	31.1	28.9	40.6
HDD, Base 18.3°C	234	164	94	21	0	0	0	0	0	17	83	184	797
CDD, Base 18.3°C	17	12	27	54	144	235	286	279	218	99	31	14	1417
Relative Humidity (%)	75	72	71	69	73	77	78	80	81	79	78	77	76
Wind Speed (m/s)	3.6	3.9	3.9	3.7	3.4	3.2	3.0	2.8	3.1	3.4	3.3	3.3	3.4

Key West, FL

WBAN NO. 12836

LATITUDE: 24.55° N
LONGITUDE: 81.75° W
ELEVATION: 1 meters
MEAN PRESSURE: 1016 millibars

STATION TYPE: Secondary



Solar Radiation for Flat-Plate Collectors Facing South at a Fixed Tilt (kWh/m²/day), Uncertainty ±9%

Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	3.7	4.4	5.5	6.3	6.3	6.1	6.1	5.8	5.2	4.6	3.8	3.4	5.1
	Min/Max	3.0/4.1	3.7/4.9	4.6/6.0	5.7/6.9	5.5/6.8	5.2/6.7	5.6/6.4	5.2/6.2	4.6/5.5	4.0/5.1	3.3/4.3	3.0/3.8	4.9/5.3
Latitude -15	Average	4.2	4.9	5.8	6.5	6.3	6.0	6.0	5.9	5.4	5.0	4.4	4.0	5.4
	Min/Max	3.4/4.8	4.0/5.4	4.9/6.4	5.8/7.0	5.4/6.8	5.1/6.6	5.5/6.3	5.3/6.2	4.8/5.8	4.3/5.6	3.7/4.9	3.4/4.5	5.1/5.6
Latitude	Average	4.9	5.5	6.1	6.4	6.0	5.5	5.6	5.7	5.5	5.4	5.0	4.7	5.5
	Min/Max	3.8/5.6	4.4/6.1	5.1/6.8	5.8/6.9	5.2/6.4	4.7/6.1	5.1/5.9	5.1/6.0	4.8/5.9	4.6/6.1	4.1/5.6	4.0/5.3	5.2/5.8
Latitude +15	Average	5.3	5.7	6.0	6.0	5.3	4.8	5.0	5.2	5.3	5.5	5.3	5.1	5.4
	Min/Max	4.0/6.1	4.5/6.4	5.0/6.7	5.4/6.4	4.6/5.7	4.2/5.3	4.6/5.2	4.7/5.5	4.6/5.7	4.6/6.3	4.3/6.0	4.2/5.9	5.1/5.6
90	Average	4.3	4.2	3.5	2.5	1.7	1.5	1.6	2.1	2.8	3.7	4.2	4.3	3.0
	Min/Max	3.2/5.2	3.3/4.7	2.9/3.9	2.3/2.6	1.7/1.8	1.5/1.6	1.5/1.7	1.9/2.1	2.4/3.0	3.0/4.3	3.3/4.8	3.5/5.1	2.8/3.2

Solar Radiation for 1-Axis Tracking Flat-Plate Collectors with a North-South Axis (kWh/m²/day), Uncertainty ±9%

Axis Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	5.1	6.1	7.4	8.4	8.1	7.5	7.5	7.3	6.6	6.0	5.2	4.8	6.7
	Min/Max	3.8/6.0	4.7/7.0	5.8/8.6	7.4/9.6	6.6/8.9	6.1/8.6	6.8/8.1	6.4/7.8	5.6/7.2	5.0/7.1	4.2/6.0	4.0/5.6	6.2/7.0
Latitude -15	Average	5.5	6.5	7.7	8.5	8.1	7.5	7.5	7.3	6.7	6.3	5.6	5.2	6.9
	Min/Max	4.1/6.5	4.9/7.4	6.0/8.9	7.5/9.7	6.6/8.8	6.0/8.5	6.7/8.1	6.4/7.9	5.7/7.4	5.2/7.4	4.5/6.4	4.3/6.1	6.4/7.2
Latitude	Average	6.0	6.9	7.9	8.5	7.8	7.1	7.2	7.2	6.8	6.6	6.1	5.7	7.0
	Min/Max	4.4/7.2	5.2/7.9	6.2/9.1	7.4/9.6	6.4/8.6	5.8/8.1	6.4/7.8	6.3/7.7	5.8/7.5	5.4/7.8	4.8/7.0	4.7/6.7	6.5/7.4
Latitude +15	Average	6.3	7.1	7.8	8.2	7.3	6.6	6.7	6.8	6.6	6.7	6.3	6.0	6.9
	Min/Max	4.6/7.6	5.3/8.1	6.1/9.1	7.1/9.3	6.0/8.0	5.4/7.5	6.0/7.2	6.0/7.3	5.6/7.3	5.4/7.9	5.0/7.3	4.9/7.1	6.4/7.3

Solar Radiation for 2-Axis Tracking Flat-Plate Collectors (kWh/m²/day), Uncertainty ±9%

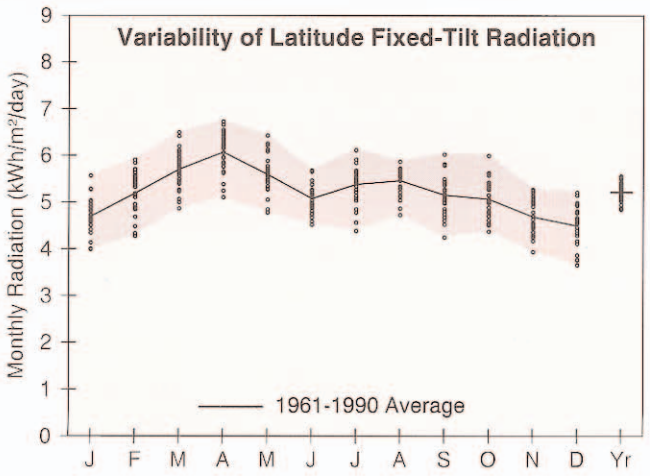
Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
2-Axis	Average	6.4	7.1	7.9	8.6	8.1	7.6	7.6	7.3	6.8	6.7	6.4	6.2	7.2
	Min/Max	4.6/7.7	5.3/8.1	6.2/9.1	7.5/9.7	6.6/8.9	6.1/8.6	6.8/8.2	6.5/7.9	5.8/7.5	5.5/7.9	5.0/7.3	5.0/7.3	6.7/7.6

Direct Beam Solar Radiation for Concentrating Collectors (kWh/m²/day), Uncertainty ±8%

Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
1-Axis, E-W Horiz Axis	Average	3.8	4.1	4.3	4.5	4.1	3.6	3.5	3.4	3.1	3.5	3.6	3.7	3.8
	Min/Max	2.3/4.9	2.7/5.1	2.9/5.3	3.6/5.5	2.8/4.7	2.5/4.5	2.9/4.0	2.8/3.9	2.4/3.7	2.4/4.5	2.5/4.5	2.6/4.7	3.3/4.1
1-Axis, N-S Horiz Axis	Average	3.6	4.4	5.3	6.0	5.3	4.5	4.5	4.3	3.9	3.9	3.5	3.3	4.4
	Min/Max	2.1/4.6	2.8/5.6	3.5/6.7	4.7/7.5	3.6/6.2	3.1/5.7	3.6/5.1	3.6/5.0	3.0/4.7	2.8/5.1	2.4/4.4	2.3/4.3	3.8/4.8
1-Axis, N-S Tilt=Latitude	Average	4.3	5.0	5.7	6.0	5.0	4.2	4.2	4.3	4.1	4.4	4.2	4.1	4.6
	Min/Max	2.6/5.6	3.2/6.3	3.8/7.2	4.7/7.5	3.5/5.9	2.9/5.3	3.4/4.8	3.5/4.9	3.1/4.9	3.1/5.7	2.9/5.2	2.9/5.2	4.0/5.1
2-Axis	Average	4.6	5.2	5.7	6.1	5.3	4.6	4.5	4.4	4.1	4.4	4.4	4.4	4.8
	Min/Max	2.8/6.0	3.3/6.5	3.8/7.2	4.8/7.6	3.7/6.3	3.1/5.8	3.7/5.2	3.6/5.0	3.2/4.9	3.1/5.8	3.0/5.5	3.1/5.7	4.2/5.3

Average Climatic Conditions

Element	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Temperature (°C)	21.1	21.4	23.2	25.0	27.0	28.4	29.1	29.1	28.5	26.7	24.2	21.9	25.4
Daily Minimum Temp	18.3	18.7	20.6	22.3	24.5	25.8	26.4	26.3	25.8	24.2	21.8	19.3	22.8
Daily Maximum Temp	23.8	24.1	25.9	27.6	29.5	30.9	31.7	31.8	31.1	29.1	26.7	24.5	28.1
Record Minimum Temp	5.0	7.8	8.3	8.9	18.3	20.0	20.6	20.0	20.6	15.6	9.4	6.7	5.0
Record Maximum Temp	30.0	29.4	30.6	32.2	32.8	34.4	35.0	35.0	34.4	33.9	31.7	30.0	35.0
HDD, Base 18.3°C	24	17	4	0	0	0	0	0	0	0	0	11	56
CDD, Base 18.3°C	109	102	155	200	269	302	334	332	305	258	177	123	2666
Relative Humidity (%)	76	74	73	70	72	74	72	73	75	75	76	76	74
Wind Speed (m/s)	5.2	5.4	5.5	5.3	4.8	4.5	4.3	4.1	4.3	5.2	5.5	5.3	5.0



Miami, FL

WBAN NO. 12839

LATITUDE: 25.80° N
LONGITUDE: 80.27° W
ELEVATION: 2 meters
MEAN PRESSURE: 1017 millibars

STATION TYPE: Primary

Solar Radiation for Flat-Plate Collectors Facing South at a Fixed Tilt (kWh/m²/day), Uncertainty ±9%

Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	3.5	4.2	5.2	6.0	6.0	5.6	5.8	5.6	4.9	4.4	3.7	3.3	4.8
	Min/Max	3.1/4.0	3.6/4.7	4.5/5.8	5.1/6.7	5.1/6.9	4.9/6.3	4.7/6.7	4.9/6.0	4.1/5.7	3.9/4.9	3.2/4.0	2.8/3.7	4.5/5.1
Latitude -15	Average	4.1	4.7	5.5	6.2	5.9	5.5	5.7	5.6	5.1	4.7	4.2	3.9	5.1
	Min/Max	3.5/4.8	4.0/5.3	4.7/6.2	5.2/6.8	5.0/6.8	4.8/6.1	4.7/6.5	4.9/6.1	4.2/5.9	4.2/5.5	3.6/4.6	3.2/4.4	4.8/5.4
Latitude	Average	4.7	5.2	5.7	6.1	5.6	5.1	5.4	5.5	5.1	5.1	4.7	4.5	5.2
	Min/Max	4.0/5.6	4.3/5.9	4.9/6.5	5.1/6.7	4.8/6.4	4.5/5.7	4.4/6.1	4.7/5.9	4.2/6.0	4.4/6.0	3.9/5.3	3.7/5.2	4.8/5.5
Latitude +15	Average	5.0	5.4	5.6	5.7	5.0	4.5	4.8	5.0	4.9	5.1	4.9	4.9	5.1
	Min/Max	4.2/6.0	4.4/6.2	4.8/6.4	4.8/6.3	4.3/5.7	4.0/5.0	3.9/5.4	4.3/5.4	4.1/5.8	4.4/6.1	4.1/5.6	3.9/5.7	4.7/5.4
90	Average	4.1	3.9	3.4	2.6	1.9	1.6	1.7	2.1	2.7	3.5	3.9	4.1	3.0
	Min/Max	3.4/5.1	3.1/4.6	2.9/3.9	2.3/2.8	1.6/2.0	1.5/1.8	1.6/2.0	2.0/2.2	2.3/3.1	3.0/4.2	3.2/4.5	3.2/4.9	2.7/3.1

Solar Radiation for 1-Axis Tracking Flat-Plate Collectors with a North-South Axis (kWh/m²/day), Uncertainty ±9%

Axis Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	4.8	5.7	6.8	7.8	7.4	6.7	7.0	6.8	6.0	5.6	4.8	4.5	6.2
	Min/Max	4.0/5.8	4.5/6.7	5.6/7.8	6.5/9.1	6.1/8.9	5.6/7.7	5.3/8.2	5.8/7.5	4.7/7.1	4.7/6.8	4.0/5.5	3.6/5.3	5.6/6.7
Latitude -15	Average	5.2	6.1	7.0	7.9	7.4	6.6	7.0	6.9	6.2	5.9	5.2	4.9	6.4
	Min/Max	4.3/6.3	4.8/7.1	5.8/8.2	6.6/9.2	6.1/8.9	5.5/7.6	5.3/8.2	5.8/7.6	4.8/7.3	4.9/7.2	4.3/6.0	3.9/5.8	5.8/6.9
Latitude	Average	5.7	6.4	7.2	7.8	7.2	6.3	6.7	6.7	6.2	6.1	5.6	5.4	6.5
	Min/Max	4.6/6.9	5.0/7.6	5.9/8.4	6.5/9.2	5.9/8.6	5.3/7.3	5.1/7.9	5.7/7.4	4.8/7.4	5.1/7.6	4.6/6.5	4.2/6.4	5.8/7.0
Latitude +15	Average	5.9	6.5	7.1	7.5	6.7	5.9	6.3	6.4	6.1	6.2	5.8	5.7	6.3
	Min/Max	4.8/7.3	5.0/7.8	5.9/8.3	6.3/8.8	5.5/8.1	4.9/6.8	4.8/7.3	5.4/7.1	4.7/7.3	5.1/7.7	4.7/6.7	4.4/6.8	5.7/6.9

Solar Radiation for 2-Axis Tracking Flat-Plate Collectors (kWh/m²/day), Uncertainty ±9%

Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
2-Axis	Average	6.0	6.6	7.2	7.9	7.4	6.7	7.1	6.9	6.2	6.2	5.9	5.8	6.7
	Min/Max	4.8/7.4	5.1/7.8	6.0/8.4	6.6/9.3	6.1/8.9	5.6/7.8	5.4/8.3	5.8/7.6	4.8/7.4	5.1/7.7	4.7/6.8	4.5/6.9	6.0/7.2

Direct Beam Solar Radiation for Concentrating Collectors (kWh/m²/day), Uncertainty ±8%

Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
1-Axis, E-W Horiz Axis	Average	3.3	3.4	3.4	3.7	3.2	2.7	2.9	2.8	2.5	2.8	3.1	3.2	3.1
	Min/Max	2.3/4.6	2.1/4.3	2.5/4.4	2.6/4.7	2.2/4.5	1.8/3.4	1.2/3.8	1.8/3.3	1.5/3.5	1.9/4.0	2.1/3.8	2.0/4.4	2.4/3.6
1-Axis, N-S Horiz Axis	Average	3.1	3.7	4.3	4.9	4.2	3.4	3.7	3.6	3.2	3.2	2.9	2.8	3.6
	Min/Max	2.0/4.3	2.2/4.8	3.1/5.6	3.5/6.5	2.8/5.9	2.2/4.3	1.6/4.9	2.4/4.3	1.9/4.4	2.1/4.6	2.0/3.7	1.7/3.8	2.8/4.2
1-Axis, N-S Tilt=Latitude	Average	3.8	4.3	4.6	4.9	4.0	3.2	3.5	3.5	3.3	3.6	3.5	3.6	3.8
	Min/Max	2.5/5.3	2.6/5.5	3.3/6.0	3.5/6.5	2.7/5.7	2.1/4.0	1.5/4.6	2.3/4.3	1.9/4.6	2.3/5.2	2.4/4.4	2.1/4.8	3.0/4.4
2-Axis	Average	4.1	4.4	4.6	5.0	4.3	3.4	3.7	3.6	3.3	3.7	3.7	3.9	4.0
	Min/Max	2.7/5.6	2.6/5.7	3.3/6.0	3.5/6.6	2.8/6.0	2.2/4.3	1.6/4.9	2.4/4.4	2.0/4.6	2.4/5.2	2.5/4.7	2.3/5.2	3.1/4.6

Average Climatic Conditions

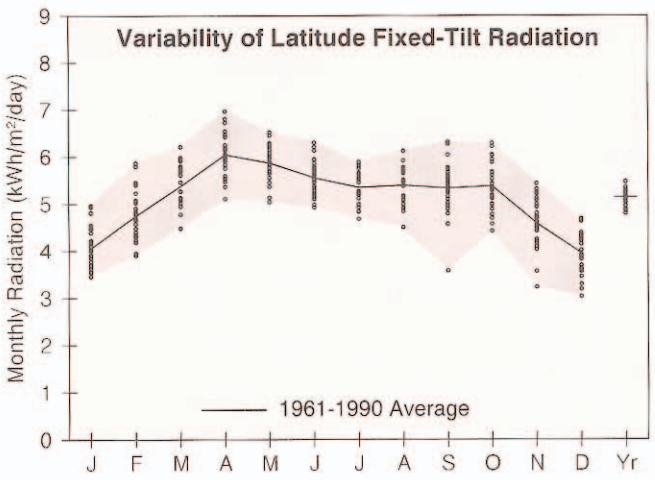
Element	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Temperature (°C)	19.6	20.3	22.1	24.0	25.9	27.4	28.1	28.2	27.7	25.7	23.1	20.6	24.4
Daily Minimum Temp	15.1	15.8	17.9	19.9	22.3	23.9	24.6	24.8	24.4	22.3	19.3	16.4	20.6
Daily Maximum Temp	24.0	24.7	26.2	28.0	29.6	30.9	31.7	31.7	31.0	29.2	26.9	24.8	28.2
Record Minimum Temp	-1.1	0.0	0.0	7.8	11.7	15.6	20.6	20.0	20.0	10.6	3.9	-1.1	-1.1
Record Maximum Temp	31.1	31.7	33.3	35.6	35.0	36.7	36.7	36.7	36.1	35.0	31.7	30.6	36.7
HDD, Base 18.3°C	49	28	8	0	0	0	0	0	0	0	3	23	111
CDD, Base 18.3°C	87	83	123	170	236	273	303	307	282	229	147	93	2332
Relative Humidity (%)	73	71	69	67	72	76	75	76	78	75	74	72	73
Wind Speed (m/s)	4.3	4.7	4.9	4.8	4.4	3.8	3.7	3.7	3.8	4.4	4.5	4.3	4.2

Tallahassee, FL

WBAN NO. 93805

LATITUDE: 30.38° N
LONGITUDE: 84.37° W
ELEVATION: 21 meters
MEAN PRESSURE: 1016 millibars

STATION TYPE: Primary



Solar Radiation for Flat-Plate Collectors Facing South at a Fixed Tilt (kWh/m²/day), Uncertainty ±9%

Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	2.9	3.7	4.7	5.9	6.3	6.1	5.8	5.5	4.9	4.3	3.3	2.7	4.7
	Min/Max	2.5/3.4	3.1/4.4	4.0/5.3	5.1/6.7	5.5/6.9	5.4/7.0	5.2/6.4	4.6/6.2	3.5/5.7	3.7/5.0	2.6/3.8	2.3/3.1	4.4/5.0
Latitude -15	Average	3.6	4.3	5.2	6.1	6.2	6.0	5.7	5.6	5.3	5.0	4.1	3.4	5.0
	Min/Max	3.1/4.3	3.6/5.3	4.3/5.9	5.2/7.1	5.3/6.9	5.3/6.8	5.0/6.3	4.7/6.3	3.6/6.2	4.2/5.8	3.0/4.7	2.7/4.0	4.7/5.4
Latitude	Average	4.0	4.7	5.4	6.0	5.9	5.6	5.4	5.4	5.3	5.4	4.6	4.0	5.1
	Min/Max	3.5/5.0	3.9/5.9	4.5/6.2	5.1/7.0	5.0/6.5	4.9/6.3	4.7/5.9	4.5/6.1	3.6/6.3	4.4/6.3	3.2/5.4	3.0/4.7	4.8/5.5
Latitude +15	Average	4.3	4.9	5.3	5.6	5.2	4.9	4.7	4.9	5.1	5.5	4.8	4.2	5.0
	Min/Max	3.6/5.3	4.0/6.1	4.3/6.1	4.7/6.5	4.5/5.8	4.3/5.5	4.2/5.2	4.1/5.6	3.4/6.1	4.4/6.4	3.3/5.8	3.2/5.1	4.6/5.3
90	Average	3.6	3.7	3.4	2.9	2.2	1.9	2.0	2.4	3.1	4.0	4.0	3.7	3.1
	Min/Max	3.0/4.7	3.1/4.8	2.8/4.0	2.5/3.2	1.9/2.4	1.7/2.0	1.8/2.1	2.1/2.5	2.0/3.6	3.2/4.7	2.6/4.9	2.7/4.5	2.9/3.3

Solar Radiation for 1-Axis Tracking Flat-Plate Collectors with a North-South Axis (kWh/m²/day), Uncertainty ±9%

Axis Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	3.9	5.0	6.2	7.7	7.9	7.5	7.1	6.8	6.2	5.9	4.5	3.7	6.0
	Min/Max	3.3/4.9	4.0/6.3	5.0/7.2	6.3/9.2	6.4/9.0	6.5/8.9	6.0/8.1	5.5/8.1	4.1/7.7	4.7/7.0	3.1/5.4	2.9/4.4	5.6/6.6
Latitude -15	Average	4.4	5.5	6.6	7.9	7.9	7.4	7.1	6.9	6.5	6.4	5.1	4.2	6.3
	Min/Max	3.7/5.6	4.4/6.9	5.3/7.7	6.4/9.5	6.4/9.0	6.5/8.8	6.0/8.1	5.6/8.2	4.2/8.0	5.1/7.7	3.4/6.2	3.2/5.1	5.8/6.9
Latitude	Average	4.8	5.8	6.7	7.8	7.7	7.1	6.8	6.8	6.6	6.7	5.5	4.6	6.4
	Min/Max	4.0/6.1	4.7/7.3	5.3/7.9	6.3/9.4	6.2/8.7	6.2/8.4	5.7/7.8	5.4/8.0	4.2/8.1	5.3/8.0	3.6/6.7	3.4/5.6	5.9/7.0
Latitude +15	Average	5.0	5.9	6.6	7.5	7.2	6.6	6.3	6.4	6.4	6.7	5.7	4.9	6.3
	Min/Max	4.1/6.4	4.7/7.5	5.2/7.8	6.1/9.1	5.8/8.2	5.8/7.8	5.3/7.3	5.2/7.7	4.1/7.9	5.3/8.1	3.7/7.0	3.5/5.9	5.8/6.8

Solar Radiation for 2-Axis Tracking Flat-Plate Collectors (kWh/m²/day), Uncertainty ±9%

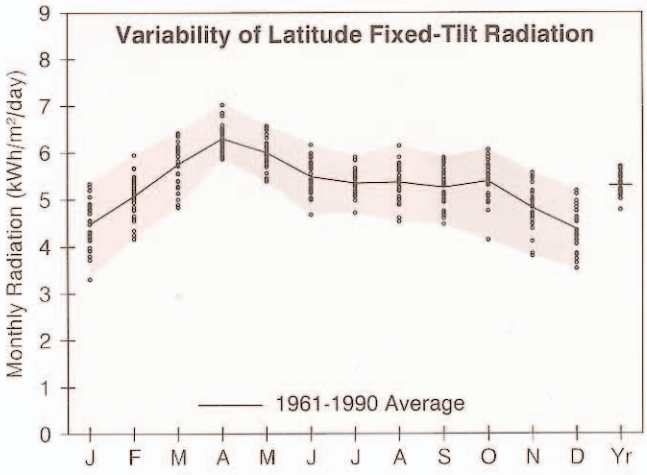
Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
2-Axis	Average	5.1	5.9	6.7	7.9	8.0	7.6	7.2	6.9	6.6	6.7	5.7	5.0	6.6
	Min/Max	4.1/6.5	4.8/7.5	5.3/7.9	6.4/9.5	6.5/9.1	6.6/9.0	6.1/8.2	5.6/8.2	4.2/8.1	5.3/8.1	3.7/7.0	3.6/6.1	6.1/7.2

Direct Beam Solar Radiation for Concentrating Collectors (kWh/m²/day), Uncertainty ±8%

Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
1-Axis, E-W Horiz Axis	Average	2.9	3.2	3.3	3.8	3.7	3.3	2.9	2.8	2.9	3.5	3.3	2.9	3.2
	Min/Max	2.0/4.1	2.3/4.6	2.0/4.2	2.8/5.2	2.4/4.5	2.4/4.4	2.0/3.8	1.9/4.0	1.5/4.1	2.3/4.8	1.6/4.4	1.7/3.8	2.8/3.7
1-Axis, N-S Horiz Axis	Average	2.5	3.2	4.0	5.0	4.8	4.2	3.8	3.7	3.6	3.9	3.0	2.4	3.7
	Min/Max	1.7/3.5	2.3/4.8	2.5/5.0	3.7/6.9	3.1/5.8	3.2/5.7	2.6/5.0	2.5/5.2	1.9/5.2	2.5/5.3	1.5/4.0	1.4/3.1	3.3/4.3
1-Axis, N-S Tilt=Latitude	Average	3.2	3.9	4.4	5.1	4.6	3.9	3.6	3.7	3.8	4.5	3.8	3.1	4.0
	Min/Max	2.2/4.6	2.8/5.8	2.8/5.6	3.7/7.0	2.9/5.6	2.9/5.3	2.4/4.7	2.5/5.1	2.0/5.5	3.0/6.1	1.9/5.1	1.9/4.2	3.5/4.7
2-Axis	Average	3.5	4.0	4.4	5.2	4.9	4.3	3.8	3.8	3.8	4.6	4.0	3.4	4.1
	Min/Max	2.3/4.9	2.9/5.9	2.8/5.6	3.8/7.1	3.1/5.9	3.2/5.7	2.6/5.0	2.5/5.3	2.0/5.5	3.0/6.2	1.9/5.4	2.0/4.5	3.7/4.9

Average Climatic Conditions

Element	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Temperature (°C)	10.3	11.8	15.7	19.1	23.1	26.4	27.4	27.4	25.7	20.4	15.4	11.8	19.6
Daily Minimum Temp	3.4	4.5	8.2	11.2	16.0	20.3	21.7	21.9	20.0	13.3	7.9	4.6	12.8
Daily Maximum Temp	17.2	19.1	23.1	26.9	30.2	32.7	32.9	32.8	31.4	27.5	22.8	18.8	26.3
Record Minimum Temp	-14.4	-10.0	-6.7	-1.7	1.1	7.8	13.9	15.6	4.4	-1.1	-10.6	-12.2	-14.4
Record Maximum Temp	27.8	29.4	32.2	35.0	36.7	39.4	39.4	38.9	37.2	34.4	31.1	28.9	39.4
HDD, Base 18.3°C	262	191	106	33	0	0	0	0	0	27	113	216	947
CDD, Base 18.3°C	12	7	23	54	148	243	281	281	222	91	24	13	1399
Relative Humidity (%)	75	72	72	70	72	76	80	81	78	74	76	76	75
Wind Speed (m/s)	3.0	3.3	3.4	3.2	2.9	2.5	2.3	2.3	2.7	2.9	2.8	2.9	2.8



Tampa, FL

WBAN NO. 12842

LATITUDE: 27.97° N
LONGITUDE: 82.53° W
ELEVATION: 3 meters
MEAN PRESSURE: 1018 millibars

STATION TYPE: Secondary

Solar Radiation for Flat-Plate Collectors Facing South at a Fixed Tilt (kWh/m²/day), Uncertainty ±9%

Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	3.2	4.0	5.1	6.2	6.4	6.1	5.8	5.5	4.9	4.4	3.6	3.1	4.9
	Min/Max	2.6/3.7	3.4/4.5	4.3/5.6	5.8/6.8	5.7/7.1	5.1/6.9	5.1/6.4	4.6/6.3	4.3/5.4	3.6/4.9	3.0/4.0	2.7/3.5	4.5/5.2
Latitude -15	Average	3.9	4.6	5.5	6.4	6.4	5.9	5.7	5.5	5.2	5.0	4.2	3.8	5.2
	Min/Max	3.0/4.6	3.8/5.3	4.7/6.1	5.9/7.1	5.7/7.0	5.0/6.7	5.0/6.3	4.7/6.3	4.5/5.8	4.0/5.6	3.4/4.8	3.1/4.4	4.7/5.5
Latitude	Average	4.5	5.1	5.8	6.3	6.0	5.5	5.3	5.4	5.2	5.4	4.8	4.4	5.3
	Min/Max	3.3/5.3	4.2/5.9	4.8/6.4	5.9/7.0	5.4/6.6	4.7/6.2	4.7/5.9	4.5/6.2	4.5/5.9	4.1/6.1	3.8/5.6	3.5/5.2	4.8/5.7
Latitude +15	Average	4.8	5.3	5.7	5.9	5.3	4.8	4.7	4.9	5.0	5.5	5.1	4.7	5.1
	Min/Max	3.5/5.8	4.3/6.2	4.7/6.4	5.4/6.5	4.8/5.8	4.1/5.3	4.2/5.2	4.2/5.6	4.3/5.7	4.1/6.2	4.0/6.0	3.7/5.7	4.6/5.5
90	Average	4.0	4.0	3.5	2.8	2.0	1.7	1.8	2.2	2.9	3.9	4.2	4.1	3.1
	Min/Max	2.8/5.0	3.2/4.8	3.0/4.0	2.6/3.0	1.9/2.1	1.6/1.8	1.7/1.9	2.0/2.4	2.4/3.2	2.8/4.4	3.1/5.0	3.1/5.0	2.7/3.3

Solar Radiation for 1-Axis Tracking Flat-Plate Collectors with a North-South Axis (kWh/m²/day), Uncertainty ±9%

Axis Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	4.5	5.5	6.8	8.3	8.3	7.5	7.1	6.8	6.2	6.0	4.9	4.2	6.3
	Min/Max	3.3/5.4	4.3/6.6	5.5/7.9	7.5/9.4	7.1/9.4	6.0/8.8	6.0/8.1	5.6/8.1	5.2/7.2	4.4/6.8	3.9/5.8	3.3/5.2	5.6/6.9
Latitude -15	Average	5.0	5.9	7.2	8.4	8.2	7.4	7.1	6.9	6.5	6.4	5.4	4.8	6.6
	Min/Max	3.5/6.0	4.6/7.1	5.8/8.3	7.7/9.6	7.1/9.3	5.9/8.7	6.0/8.0	5.7/8.2	5.3/7.5	4.7/7.3	4.2/6.4	3.7/5.8	5.8/7.2
Latitude	Average	5.4	6.3	7.3	8.4	8.0	7.1	6.8	6.8	6.5	6.7	5.9	5.2	6.7
	Min/Max	3.8/6.6	4.9/7.6	5.9/8.5	7.6/9.6	6.9/9.1	5.7/8.4	5.7/7.7	5.6/8.0	5.3/7.6	4.8/7.7	4.5/6.9	4.0/6.4	5.9/7.3
Latitude +15	Average	5.6	6.4	7.3	8.1	7.5	6.6	6.3	6.4	6.4	6.8	6.1	5.5	6.6
	Min/Max	3.9/7.0	4.9/7.8	5.8/8.5	7.3/9.2	6.4/8.5	5.3/7.8	5.3/7.2	5.3/7.6	5.2/7.4	4.8/7.8	4.6/7.3	4.2/6.8	5.8/7.2

Solar Radiation for 2-Axis Tracking Flat-Plate Collectors (kWh/m²/day), Uncertainty ±9%

Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
2-Axis	Average	5.7	6.4	7.4	8.5	8.3	7.6	7.2	6.9	6.5	6.8	6.1	5.6	6.9
	Min/Max	3.9/7.1	5.0/7.8	5.9/8.5	7.7/9.7	7.2/9.4	6.0/8.9	6.0/8.1	5.7/8.2	5.4/7.6	4.9/7.8	4.6/7.3	4.3/7.0	6.1/7.6

Direct Beam Solar Radiation for Concentrating Collectors (kWh/m²/day), Uncertainty ±8%

Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
1-Axis, E-W Horiz Axis	Average	3.3	3.6	3.8	4.3	4.1	3.4	3.1	3.0	2.9	3.5	3.5	3.4	3.5
	Min/Max	1.9/4.6	2.4/4.8	2.6/4.8	3.5/5.3	3.1/5.0	2.2/4.6	2.3/3.9	2.0/4.0	2.0/3.7	2.0/4.4	2.3/4.6	2.2/4.5	2.8/4.1
1-Axis, N-S Horiz Axis	Average	3.0	3.7	4.7	5.7	5.4	4.4	4.0	3.9	3.6	3.9	3.3	2.9	4.0
	Min/Max	1.6/4.1	2.4/5.1	3.2/5.9	4.7/7.1	4.1/6.7	2.8/5.9	3.0/5.0	2.7/5.3	2.5/4.8	2.3/4.9	2.2/4.3	1.8/3.9	3.2/4.7
1-Axis, N-S Tilt=Latitude	Average	3.8	4.4	5.1	5.8	5.1	4.1	3.8	3.8	3.8	4.5	4.1	3.7	4.3
	Min/Max	2.1/5.2	2.8/6.0	3.5/6.5	4.8/7.2	3.9/6.3	2.6/5.5	2.8/4.7	2.7/5.2	2.7/5.0	2.6/5.6	2.8/5.3	2.3/5.0	3.4/5.1
2-Axis	Average	4.0	4.5	5.1	5.9	5.4	4.5	4.0	3.9	3.8	4.5	4.3	4.0	4.5
	Min/Max	2.2/5.5	2.9/6.2	3.5/6.5	4.8/7.3	4.1/6.7	2.8/6.0	3.0/5.1	2.7/5.4	2.7/5.0	2.6/5.7	2.9/5.6	2.5/5.4	3.6/5.3

Average Climatic Conditions

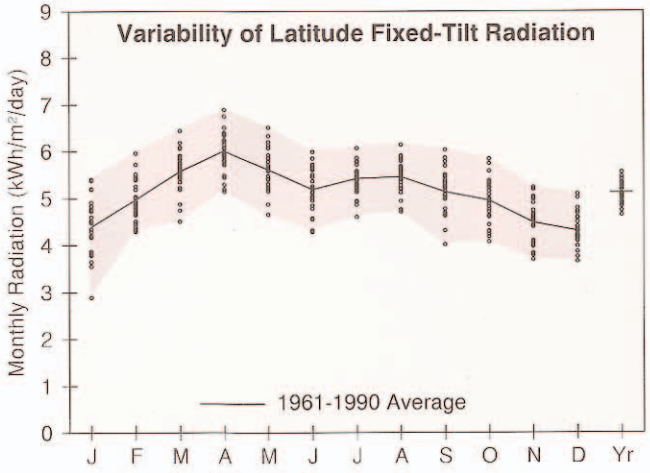
Element	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Temperature (°C)	15.5	16.4	19.1	21.8	25.1	27.2	27.8	27.8	27.2	23.8	19.8	16.8	22.4
Daily Minimum Temp	10.0	10.9	13.6	16.0	19.7	22.7	23.6	23.6	22.7	18.4	14.0	11.3	17.2
Daily Maximum Temp	21.0	21.9	24.8	27.6	30.7	31.9	32.3	32.3	31.7	29.1	25.4	22.3	27.6
Record Minimum Temp	-6.1	-4.4	-1.7	4.4	9.4	11.7	17.2	19.4	13.9	4.4	-5.0	-7.8	-7.8
Record Maximum Temp	30.0	31.1	32.8	33.9	36.7	37.2	36.1	36.7	35.6	34.4	32.2	30.0	37.2
HDD, Base 18.3°C	130	89	47	4	0	0	0	0	0	0	39	95	403
CDD, Base 18.3°C	42	34	71	107	210	267	294	294	267	171	82	47	1887
Relative Humidity (%)	75	73	72	69	70	74	77	78	77	74	75	75	74
Wind Speed (m/s)	3.9	4.1	4.2	4.1	3.9	3.6	3.3	3.1	3.4	3.8	3.8	3.8	3.8

West Palm Beach, FL

WBAN NO. 12844

LATITUDE: 26.68° N
LONGITUDE: 80.10° W
ELEVATION: 6 meters
MEAN PRESSURE: 1017 millibars

STATION TYPE: Secondary



Solar Radiation for Flat-Plate Collectors Facing South at a Fixed Tilt (kWh/m²/day), Uncertainty ±9%

Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	3.3	4.0	5.0	5.9	6.0	5.7	5.9	5.6	4.8	4.2	3.4	3.1	4.7
	Min/Max	2.4/3.8	3.5/4.6	4.1/5.7	5.1/6.8	4.9/7.0	4.7/6.6	5.0/6.6	4.8/6.3	3.9/5.6	3.6/4.8	3.0/3.9	2.8/3.5	4.4/5.1
Latitude -15	Average	3.8	4.5	5.3	6.1	5.9	5.6	5.8	5.6	5.1	4.6	4.0	3.7	5.0
	Min/Max	2.7/4.6	4.0/5.3	4.4/6.1	5.2/7.0	4.9/6.9	4.6/6.5	4.9/6.5	4.9/6.3	4.0/5.9	3.9/5.4	3.3/4.6	3.2/4.3	4.6/5.4
Latitude	Average	4.4	5.0	5.6	6.0	5.6	5.2	5.4	5.4	5.1	4.9	4.5	4.3	5.1
	Min/Max	2.9/5.4	4.3/6.0	4.5/6.4	5.1/6.9	4.7/6.5	4.3/6.0	4.6/6.1	4.7/6.1	4.0/6.0	4.1/5.8	3.7/5.2	3.7/5.1	4.6/5.6
Latitude +15	Average	4.7	5.1	5.5	5.6	5.0	4.5	4.8	5.0	4.9	5.0	4.7	4.7	5.0
	Min/Max	3.0/5.9	4.4/6.2	4.4/6.4	4.8/6.4	4.2/5.8	3.8/5.2	4.1/5.3	4.3/5.6	3.8/5.8	4.1/6.0	3.8/5.6	3.9/5.6	4.5/5.4
90	Average	3.9	3.8	3.4	2.6	1.9	1.6	1.7	2.2	2.7	3.5	3.8	4.0	2.9
	Min/Max	2.3/5.0	3.2/4.7	2.7/3.9	2.3/2.8	1.7/2.0	1.6/1.7	1.6/1.8	2.0/2.3	2.2/3.2	2.8/4.2	3.0/4.5	3.3/4.9	2.6/3.2

Solar Radiation for 1-Axis Tracking Flat-Plate Collectors with a North-South Axis (kWh/m²/day), Uncertainty ±9%

Axis Tilt (°)		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	Average	4.5	5.5	6.6	7.8	7.5	6.9	7.2	6.9	6.0	5.4	4.6	4.3	6.1
	Min/Max	2.9/5.6	4.5/6.7	5.1/7.8	6.5/9.3	5.8/9.1	5.2/8.4	5.7/8.4	5.8/8.1	4.6/7.3	4.3/6.6	3.7/5.4	3.5/5.1	5.4/6.7
Latitude -15	Average	4.9	5.8	6.9	7.9	7.5	6.8	7.2	7.0	6.2	5.8	5.0	4.7	6.3
	Min/Max	3.0/6.2	4.8/7.2	5.3/8.2	6.6/9.5	5.8/9.1	5.2/8.3	5.7/8.4	5.8/8.2	4.7/7.5	4.6/7.0	4.0/6.0	3.9/5.7	5.6/6.9
Latitude	Average	5.3	6.2	7.1	7.9	7.3	6.6	6.9	6.8	6.3	6.0	5.4	5.2	6.4
	Min/Max	3.2/6.8	5.1/7.7	5.3/8.4	6.5/9.4	5.6/8.8	5.0/7.9	5.5/8.1	5.7/8.1	4.7/7.6	4.7/7.4	4.3/6.5	4.2/6.3	5.6/7.1
Latitude +15	Average	5.6	6.3	7.0	7.6	6.9	6.1	6.4	6.5	6.1	6.1	5.6	5.4	6.3
	Min/Max	3.3/7.1	5.2/7.8	5.3/8.4	6.3/9.1	5.3/8.3	4.6/7.4	5.1/7.5	5.4/7.7	4.6/7.4	4.7/7.5	4.4/6.7	4.4/6.7	5.5/6.9

Solar Radiation for 2-Axis Tracking Flat-Plate Collectors (kWh/m²/day), Uncertainty ±9%

Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
2-Axis	Average	5.6	6.3	7.1	8.0	7.6	7.0	7.3	7.0	6.3	6.1	5.6	5.5	6.6
	Min/Max	3.3/7.2	5.2/7.9	5.4/8.4	6.6/9.5	5.9/9.2	5.3/8.5	5.8/8.5	5.8/8.2	4.7/7.6	4.8/7.5	4.4/6.8	4.5/6.8	5.8/7.3

Direct Beam Solar Radiation for Concentrating Collectors (kWh/m²/day), Uncertainty ±8%

Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
1-Axis, E-W Horiz Axis	Average	3.1	3.3	3.5	3.8	3.5	3.0	3.2	3.0	2.7	2.9	3.0	3.2	3.2
	Min/Max	1.3/4.6	2.4/4.6	2.1/4.7	2.7/5.2	2.1/4.8	1.5/4.1	1.9/4.2	2.0/4.0	1.6/3.8	2.0/4.0	2.0/4.0	2.3/4.3	2.6/3.7
1-Axis, N-S Horiz Axis	Average	2.9	3.6	4.3	5.1	4.6	3.8	4.0	3.9	3.4	3.2	2.9	2.7	3.7
	Min/Max	1.2/4.2	2.5/4.9	2.6/5.8	3.6/7.0	2.8/6.3	1.9/5.2	2.5/5.4	2.6/5.2	2.1/4.7	2.2/4.5	1.9/3.8	2.0/3.7	3.0/4.4
1-Axis, N-S Tilt=Latitude	Average	3.6	4.2	4.7	5.2	4.4	3.5	3.8	3.8	3.5	3.7	3.5	3.5	3.9
	Min/Max	1.4/5.2	2.9/5.7	2.8/6.3	3.6/7.0	2.6/6.0	1.8/4.8	2.3/5.0	2.6/5.2	2.2/4.9	2.5/5.1	2.3/4.7	2.5/4.7	3.2/4.6
2-Axis	Average	3.8	4.3	4.7	5.2	4.6	3.8	4.1	3.9	3.5	3.7	3.7	3.8	4.1
	Min/Max	1.5/5.6	3.0/5.9	2.8/6.3	3.7/7.1	2.8/6.3	2.0/5.3	2.5/5.4	2.7/5.3	2.2/5.0	2.5/5.1	2.5/4.9	2.7/5.1	3.3/4.8

Average Climatic Conditions

Element	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Temperature (°C)	18.4	19.0	21.1	23.0	25.3	27.0	27.9	28.1	27.6	25.4	22.4	19.7	23.7
Daily Minimum Temp	13.2	13.6	16.2	18.2	20.9	22.8	23.6	23.9	23.7	21.5	18.1	14.8	19.2
Daily Maximum Temp	23.6	24.4	26.0	27.8	29.8	31.2	32.2	32.2	31.4	29.4	26.7	24.4	28.3
Record Minimum Temp	-2.8	0.0	-1.1	6.1	11.7	16.1	18.9	18.3	18.9	7.8	2.2	-2.2	-2.8
Record Maximum Temp	31.7	32.2	34.4	37.2	35.6	36.7	38.3	36.7	36.1	35.0	32.8	32.2	38.3
HDD, Base 18.3°C	68	47	15	0	0	0	0	0	0	0	8	41	179
CDD, Base 18.3°C	69	66	101	140	217	260	296	302	277	221	130	83	2162
Relative Humidity (%)	73	72	70	67	71	77	77	76	77	74	73	73	73
Wind Speed (m/s)	4.6	4.8	5.1	4.9	4.6	3.9	3.7	3.7	3.9	4.8	4.8	4.6	4.4