

## Spectral Adjustment in HelioScope

"Spectral Adjustment" is an adjustment to effective irradiance based on the precipitable water in the atmosphere. When activated, it is applied to CdTe modules simulated with weather sources that contain data related to precipitable water or humidity.

Spectral Adjustment is calculated on an hourly basis, the impact of which is reported as "Adjusted Global Horizontal Irradiance" in the Report (between GHI and POA in the Annual Production table), as well as in the CSV hourly export.

Annual Production			
	Description	Output	% Delta
Irradiance (kWh/m <sup>2</sup> )	Annual Global Horizontal Irradiance	1,389.0	
	Adjusted Global Horizontal Irradiance	1,412.0	1.7%
	POA Irradiance	1,570.2	11.2%
	Shaded Irradiance	1,556.3	-0.9%
	Irradiance after Reflection	1,504.7	-3.3%
	Irradiance after Soiling	1,459.6	-3.0%
	<b>Total Collector Irradiance</b>	<b>1,459.6</b>	<b>0.0%</b>
Energy (kWh)	Nameplate	10,737.1	
	Output at Irradiance Levels	9,852.1	-8.2%
	Output at Cell Temperature Derate	9,741.6	-1.1%
	Output After Mismatch	9,591.7	-1.5%
	Optimal DC Output	9,588.8	0.0%
	Constrained DC Output	9,551.9	-0.4%
	Inverter Output	9,047.7	-5.3%
	<b>Energy to Grid</b>	<b>8,866.7</b>	<b>-2.0%</b>
Temperature Metrics			
	Avg. Operating Ambient Temp	11.3 °C	
	Avg. Operating Cell Temp	18.7 °C	
Simulation Metrics			
	Operating Hours	4694	
	Solved Hours	4694	

The Report indicates which Spectral Adjustment model was used in the Condition Set Summary, in the "Spectral Adjustment Model" field.

Condition Set				
Description	Condition Set 7			
Weather Dataset	TMY, 10km grid (43.15,-77.55), NREL (prospector) (download)			
Solar Angle Location	Meteo Lat/Lng			
Transposition Model	Perez Model			
Temperature Model	Sandia Model			
Spectral Adjustment Model	First Solar Spectral Adjustment by Dew Point Temperature			
Temperature Model Parameters	Rack type	a	b	Temperature Delta
	Fixed Tilt	-3.56	-0.075	3°C
	Flush Mount	-2.81	-0.0455	0°C
Soiling (%)	J	F	M	A
	M	J	J	A
	S	O	N	D
	3	3	3	3
	3	3	3	3
Irradiance Variance	5%			
Cell Temperature Spread	4° C			
Module Binning Range	-2.5% to 2.5%			
AC System Derate	2.00%			

This adjustment will tend to increase the effective irradiance in areas with greater precipitable water, and reduce the effective irradiance in areas with lower precipitable water.

For further information, please contact [support@plantpredict.com](mailto:support@plantpredict.com).