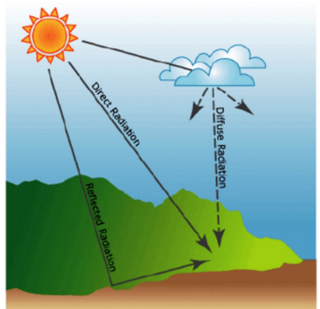
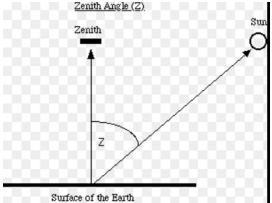


Solar

18 April 2023 19:58

Link : https://machinehack.com/hackathons/forecasting_solar_energy_efficiency_engage_in_the_challenge_and_win/overview

Attributes	Units	Info	
Timestamp	Date and time of measurement		
Temperature	Degrees Celsius (°C)		
Dew Point	Degrees Celsius (°C)	<p>The dew point is the temperature the air needs to be cooled to (at constant pressure) in order to achieve a relative humidity (RH) of 100%. At this point the air cannot hold more water in the gas form.</p> <p>if you want a real judge of just how "dry" or "humid" it will feel outside, look at the dew point instead of the RH. The higher the dew point, the muggier it will feel.</p> <p>From <https://www.weather.gov/ars/why_dewpoint_vs_humidity></p>	https://www.hindawi.com/journals/ijp/2019/8369231/
Surface Albedo	Decimal fraction between 0 and 1	<p>The surface albedo quantifies the fraction of the sunlight reflected by the surface of the Earth.</p> <p>From <https://land.copernicus.eu/global/products/sa></p>	
Pressure	Hectopascals (hPa)		https://www.e-education.psu.edu/earth540/content/c4_p1.html
Wind Direction	Degrees (°)	<p>The wind cools solar panels. Though it won't make or break your solar panel production overall, it does make a difference. Solar panels cooled by 1 degree Celsius are 0.05 percent more efficient. This percentage adds up over time.</p> <p>From <https://www.solar.com/learn/how-do-wind-and-humidity-affect-solar-panel-efficiency/></p>	https://ae-solar.com/wind-effect-on-solar-panels/#:~:text=Consequently%2C%20southerly%20winds%20will%20increase,is%20exposed%20to%20southerly%20winds.
Wind Speed	Meters per second (m/s)	<p>Solar panels from manufacturers are rigorously tested to ensure they are engineered to withstand wind forces that push down on the panel from above and push up from the gap underneath the panel.</p> <p>From <https://ae-solar.com/wind-effect-on-solar-panels/></p>	
Clearsky DHI	Watts per square meter (W/m²)	diffuse horizontal irradiance (or DIF)	https://www.e-education.psu.edu/eme810/node/544
Clearsky DNI	Watts per square meter (W/m²)	<p>direct normal irradiance (DNI)</p> <p>DNI is the amount of solar radiation received per unit area by a surface that is held perpendicular (normal) to the rays that come in a straight line from the direction of the sun at its current position in the sky.</p> <p>DNI = 1600–2000 kWh/(m²·a) is a good range.</p> <p>From <https://www.google.com/search?q=clear+sky+DHI&rlz=1C1UEAD_enIN955IN955&oq=clear+sky+DHI&aqs=chrome..69l57j0l10i512j0l10i22i30i625j0i390i650i5.8992j0j7&sourceid=chrome&ie=UTF-8></p>	
Clearsky GHI	Watts per square meter (W/m²)	<p>global horizontal irradiance (GHI)</p> <p>GHI and DIF are referred to a surface horizontal to the ground, while DNI is referred to a surface perpendicular to the Sun. Higher values of DIF/GHI ratio represent a higher occurrence of clouds, higher atmospheric pollution or higher water vapor content.</p> <p>From <https://globalsolaratlas.info/support/faq></p>	https://globalsolaratlas.info/support/faq https://www.yellowhaze.in/solar-irradiance/
Fill Flag	Binary (0 or 1) indicating if data was missing or not		
Ozone	Dobson Units (DU)	<p>Over the Earth's surface, the ozone layer's average thickness is about 300 Dobson Units or a layer that is 3 millimeters thick.</p> <p>From <https://ozonewatch.gsfc.nasa.gov/facts/dobson_SH.html></p>	
Cloud Type	Classification scheme (0-9) indicating cloud cover type		
Solar Zenith Angle	Degrees (°)	<p>For every 5° increase in tilt angle, solar cell temperature decreases by 3.62°C at indoor and by 2.70°C at outdoor.</p> <p>From <https://www.sciencedirect.com/science/article/pii/S2666123321000179></p>	
Precipitable Water	Millimeters (mm)		
Relative Humidity	Percentage (%)	<p>Humidity can slow efficiency in two ways.</p> <ol style="list-style-type: none"> 1. Tiny water droplets, or water vapor, can collect on solar panels (like beads of sweat) and reflect or refract sunlight away from solar cells. This reduces the amount of sunlight hitting them and producing electricity. 2. Consistent hot, humid weather can degrade the solar panels themselves over their lifetime. This is true for both crystalline silicon cells and thin film modules, but cadmium telluride (thin film) solar cells perform about 5 percent better in tropical climates. <p>From <https://www.solar.com/learn/how-do-wind-and-humidity-affect-solar-panel-efficiency/></p>	