

SolarTech Power Solutions

Solar Meteorological Observation Site



Overview

How can we predict solar radiation based on meteorological data?

However, due to the different completeness of data in different regions, the empirical model cannot meet the needs of solar radiation prediction. Therefore, the commonly used method of predicting solar radiation is based on the analysis of meteorological stations data.

What are the meteorological data based on satellite data?

The meteorological data include global solar radiation (R_{ss}), relative humidity (RH_s), maximum temperature (T_{max_s}), minimum temperature (T_{min_s}), precipitation (P_s), and ozone concentration (O_3s). The details of satellite data for the selected sites are shown in Table 1. 3.

What is an on-site meteorological station?

On-site Meteorological (MET) Stations at a PV-Solar site, provide quality meteorological data that can help measure the amount of solar radiation as it reaches the surface of the PV modules. This helps to analyze and measure what part of solar radiation is converted into electricity for a given module configuration.

Do satellite data and ground meteorological station data improve solar radiation simulation accuracy?

The results showed that: (1) When a combination of ground meteorological station data and satellite data was used, the model had higher simulation accuracy for solar radiation than when single-source data was used as input.

How accurate is solar radiation prediction based on ground meteorological stations?

Although the prediction accuracy of the model based on ground meteorological stations data is very good in terms of numerical relationship, there are still many areas in mainland China that lack meteorological stations

but have great demand for solar radiation measurement.

How are statistical metrics of solar radiation simulated?

Boxplot of statistical metrics of solar radiation simulated by four models under different input combinations based on the combination of meteorological stations data and satellite data. Fig. 8. Taylor diagram of daily solar radiation simulation by the SVM model during the test period under various input combinations.

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