

Overview of the 3rd Edition of the Best Practices Handbook for the Collection and Use of Solar Resource Data for Solar Energy Applications

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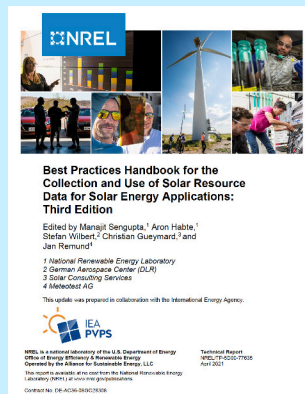
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Abstract

- To help stakeholders stay aware of the latest research in solar resource data, the National Renewable Energy Laboratory (NREL), in collaboration with the International Energy Agency (IEA) Photovoltaic Power Systems Programme (PVPS) Task 16 and the Solar Power and Chemical Energy Systems (SolarPACES) technology programs, published in 2021 the third edition of the *Best Practices Handbook for the Collection and Use of Solar Resource Data for Solar Energy Applications*.
- This update includes 10 chapters and contributions from 41 authors from 14 countries.
- The handbook comprehensively describes the state of the field and serves as a reference document for solar application stakeholders ranging from academia to solar energy professionals.
- The rapid growth of the solar photovoltaic (PV) industry in the size of the installations as well as the penetration levels enhanced the need for accurate solar data for planning and operation. Similarly, during this rapid growth, significant advances were attained in the body of knowledge in the areas of solar resource assessment and forecasting, which are now included in this handbook and highlighted in the poster.
- By helping solar stakeholders understand the nature of solar radiation, its variation around the world, and its evolution over time, this handbook will contribute to making solar energy more predictable and more easily integrated into our energy systems.

About the Handbook

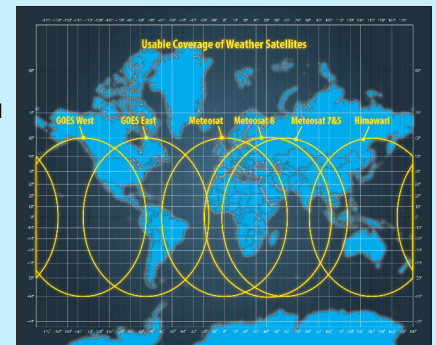
The handbook is a valuable reference for the collection and interpretation of solar resource data for project developers, engineering procurement construction firms, utility companies, system operators, energy suppliers, financial investors, organizations involved in planning and managing solar research programs, and others involved in solar energy systems planning and development.



<https://www.nrel.gov/docs/fy21osti/77635.pdf>

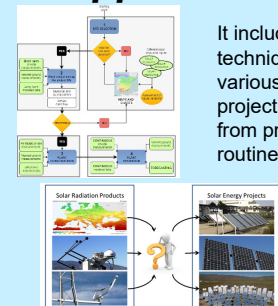
Modeled Solar Resource

The handbook summarizes techniques used to develop estimates of solar resources from weather satellite data and numerical model predictions.



Application

It includes application techniques for the various stages of project development, from prefeasibility to routine operations.



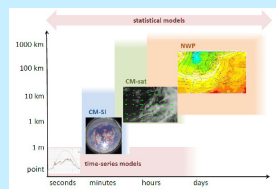
Overview

Solar Resource Measurement



Some chapters lay out the basic information and overview of the best practices for measuring the solar resource, including the need for high-quality and reliable solar resource data and the meteorological variables needed to support the rapidly growing solar energy industry for projects such as the performance analysis of PV.

Forecasting



A forecast is inherently uncertain, and a proper assessment of its associated uncertainty offers the grid operator a more informed decision-making framework.

Fourth Edition of the Handbook: Planned Timeline



- The fourth edition will continue to cover the rapid evolution in the field of solar resource assessment and forecasting for solar energy applications.
- Details about models and methodologies, such as how to develop a TMY and the transposition model, will be included.
- The handbook will include practical applicability for engineers.

Reference

- Sengupta, Manajit, Aron Habte, Stefan Wilbert, Christian Gueymard, and Jan Remund. 2021. *Best Practices Handbook for the Collection and Use of Solar Resource Data for Solar Energy Applications: Third Edition*. Golden, CO: National Renewable Energy Laboratory. NREL/TP-5D00-77635. <https://www.nrel.gov/docs/fy21osti/77635.pdf>.