Best Practices Handbook for the Collection and Use of Solar Resource Data for Solar Energy Applications: Third Edition

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- 10 chapters, 39 authors, 13 countries

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Introduction to Chapters

- **Chapter 1: *Why Solar Resource Data Are Important to Solar Power:*** provides a short summary of what is contained in each of the chapters.
- **Chapter 2: *Overview of Solar Radiation Resource:*** explains the basic concepts and terms, which are essential for understanding subsequent chapters.
- **Chapter 3: *Measuring Solar Radiation and Relevant Atmospheric Parameters:*** describes the state of the art in measuring solar radiation and offers methods and protocols to produce a quality assessed dataset.
- **Chapter 4: *Modeling Solar Radiation—Current Practices:*** focuses on modeling solar radiation and provides an understanding of current practices for calculating solar radiation using satellite-based measurements or other inputs.

Introduction to Chapters

- **Chapter 5: *Further Relevant Meteorological Parameters:*** introduces measurement sources and models for obtaining meteorological and solar parameters that are required for improved accuracy in solar modeling.
- **Chapter 6: *Solar Resource Data:*** presents several examples of solar resource data sets both ground measured and derived from satellites.
- **Chapter 7: *Measurement and Model Uncertainty:*** provides an understanding of data quality assessment and how to estimate and interpret uncertainty in both measured and modeled data sets.
- **Chapter 8: *Forecasting Solar Radiation:*** provides a summary of forecasting methods used to predict solar radiation at various timescales.

Introduction to Chapters

- **Chapter 9: *Applying Solar Resource Data to Solar Energy Projects:*** recommends best practices to apply solar datasets in various stages of a solar power project.
- **Chapter 10: *Future Work:*** provides an overview of outstanding issues that will need additional research and may be taken up by IEA PVPS Task 16 in the future.

Handbook Update Highlights

- New instrument classification standards (ISO 9060:2018) in included.
- Updated (spectral) radiation models including fast models.
- New chapter on “Further relevant meteorological parameters” including aerosols, temperature, snow, ultraviolet radiation and surface albedo.
- Updated inventory of available data sources.
- Updated chapter on measurement and modeling uncertainty and new information on automated data quality tests.
- Update to chapter on forecasting including - all-sky imager, use of AI in forecasting & probabilistic forecasting, PV power forecasting and regional upscaling.
- Updated guidelines and examples for applying Solar Resource Data to Solar Energy Projects.

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