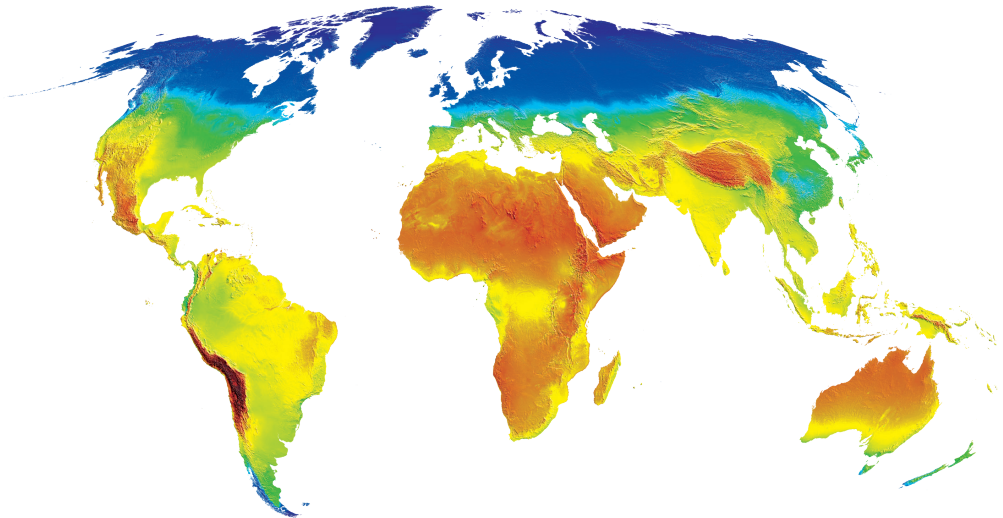


Solar Energy Assessment & Forecasting



Experts in weather, climate, and renewable energy risk, Vaisala 3TIER® Services enable profitable decisions so our clients can act with confidence across the development, financial, and operational spectrums.

Project Feasibility

Project Prospecting & Assessment

The “fuel” of a solar project is the most critical factor driving its commercial success or failure. Where is irradiance strongest? How much year-to-year power variability is expected? What are the exceedance values at the site? How much energy will I produce on average? Without answers to these questions, it is impossible to assess a project’s feasibility or manage your exposure to risk. We give you the context necessary to make smart development decisions for any project location around the world.

Energy Marketing

Forecasting for Energy Scheduling & Trading

Every day more solar power comes onto the grid, making integration and energy trading an ever-greater challenge. 3TIER Services helps you make quick, risk-based decisions that impact energy production, operational costs, and ultimately profitability by putting the most accurate forecast information at your fingertips.

Asset Management

Power Performance Reconciliation & Reforecasting

We help developers, utilities, and financiers make informed decisions in a challenging energy market. Evaluating existing assets to understand the root cause of under or over performance helps you make timely decisions on maintenance, additional development, or purchase decisions. Our advanced solar deviation analysis combines science and information technology to help mitigate risk and build better economic value.



Solar Energy Project Feasibility

Prospecting & Resource Assessment

Risk Mitigation Process

We provide a full suite of services to help you manage the risk of solar resource variability throughout project development.

Prospecting	Site Identification & Feasibility	Due Diligence & Financing
Identify the best areas for closer evaluation using quick and low cost data.	Examine and prioritize promising sites and estimate long-term power availability.	Maximize certainty in a project's long-term performance to secure financing.
Tools: <ul style="list-style-type: none">• 3 km resolution mean data with global availability• Online resource maps and tools• GIS data layers• API data services	Tools: <ul style="list-style-type: none">• 15+ years of hourly solar and weather data• Probability of exceedance tables• Maximum capacity site analysis• Preliminary net energy estimates	Tools: <ul style="list-style-type: none">• Bankable solar resource data• On-site measurements integrated into analysis• Energy production estimates with rigorous performance uncertainty analysis• 3rd party reviews for the due diligence process

Quickly Explore Solar Resources Around the World

Save time and money by targeting the best locations for solar energy projects and infrastructure. We let you quickly explore any location around the world directly from your computer. Now you can avoid problem sites and separate successful projects from marginal ones earlier in the process. Our on-demand, initial solar resource assessments are based on a consistent, global dataset so you can compare sites with confidence.

The First and Only Advanced Solar Dataset with Global Coverage

- Based on over a decade of satellite data with continual updates
- Validated against 150+ ground stations worldwide
- Multiple delivery formats, including full time series, TMY, and ATMY formats
- 15+ years of hourly GHI, DNI, and DIF at ~3 km resolution

Maximize Accuracy With State-of-the-Art Science

Direct measurements are the best way to record actual solar conditions and unique, localized effects at a site. However, it takes 5+ years to capture climatic variability, which can make or break a project financially, and few measurement campaigns have records extending that far back in time. To mitigate this risk, we use on-site measurements to correct our long-term satellite data with advanced statistical techniques. The result is significantly reduced uncertainty about future project performance and the long-term bankable production estimates required to secure project financing.

A Trusted Name in Solar

We have completed solar resource assessment for over \$5.5 billion dollars in solar investment, including several of the largest utility-scale projects currently in development and in production around the world. We have performed project feasibility studies on all 6 continents and in very challenging climates. Our experienced staff can be leveraged in the initial energy assessment by the developer or can be used by financing parties to perform a third party review of an existing assessment.



Solar Energy Asset Management

Power Performance Reconciliation & Reforecasting

Primary Uses

- Reconciling solar project power performance
- Restructuring long-term PPAs and financial agreements
- Performing financial and portfolio analysis
- Optimizing operations and integration

Portfolio Management

3TIER Services put recent solar performance in context so you understand the risks and implications of variability at potential or existing projects across broad production areas. We enable you to optimize and diversify your portfolio of assets and make sure projects are operating at optimum levels.

Our advanced satellite techniques model weather patterns and climate anomalies that impact energy output. Our regularly updated, solar dataset also includes over 15 years of hourly solar values, which can easily be integrated into your own internal processes through API data services.

Project Forensic Studies

Recognizing and resolving underperformance issues as early as possible helps maximize energy production, optimize operations, and proactively restructure financial or capacity obligations. When performance guarantees are not met and a project is in danger of default, we can perform a full forensic evaluation of the project. This helps isolate issues related to weather variability so you can identify the systemic cause of underperformance.



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