



+33 (0)9 70 75 34 16 contact@steady-sun.com www.steady-sun.com



# **Solar forecasts** and live data



#### **ABOUT**

SteadySat provides advanced solar irradiance and production forecasts up to 6 hours ahead. This product combines real-time satellite imagery with in-situ observations processing, weather forecast, physical models and artificial intelligence.

Cloud properties and evolution are monitored and predicted in real-time, improving the accuracy of solar forecasts for the next few hours and anticipating the risks of variability.

# **KEY BENEFITS**



WORLDWIDE COVERAGE

Real-time process of images coming from five geostationary meteorological satellites



TAILORED OUTPUTS

In terms of parameters, update frequency, granularity and delivery settings



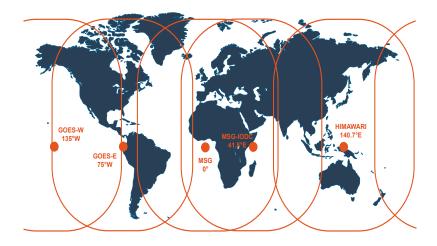
### ACCURACY IMPROVEMENT

Frequently updated information of current and upcoming weather situations. Local weather effects are more accurately predicted at specific locations with nowcasting. SteadySat perfectly complements SteadyMet with precise intraday forecasts thanks to high-resolution remote sensing observations.

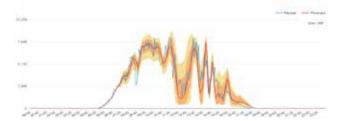
# **SOLUTIONS**

- · Plant operations
- · Grid management
- · Renewable energy trading
- · Portfolio managements
- · Smart grids and smart cities

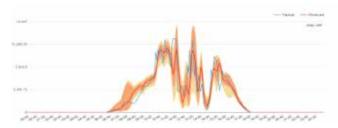
# SATELLITE COVERAGE



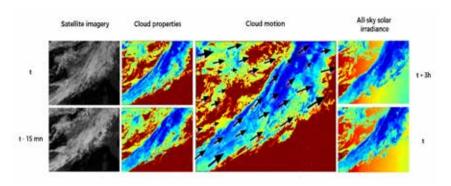
#### Intraday power forecast for a 12MWp PV plant (Germany)



#### Intraday power forecast for a 17MWp PV plant (Australia)



#### Satellite-based GHI forecast above Western Europe



#### **FEATURES**

#### 6 hours

Max time horizon

#### 5 - 15 min

Update frequency

#### 1 min

Forecast time-step

Power, GHI, DNI, DHI, GTI, temperature, wind

Available parameters

Site, Portfolio, City, Region or Country

Geographical coverage

PV, Trackers, Bifacial, CSP Technology

API, SFTP, etc.

Data delivery

P10, P20, ..., P80, P90

Confidence levels

## **METHODOLOGY**



#### DATA ACQUISITION

- > From 5 geostationary satellites
- > Different channels providing information on the atmosphere, clouds and aerosols
- > Every 5 to 15 minutes

## **MODELING**

- > Cloud detection, classification and motion prediction
- > Accurate estimation of clear sky conditions using real-time aerosols prediction
- > Calculation of direct and diffuse irradiance components in cloudy conditions
- > PV modeling based on physical models and plant features
- > High-resolution topographical corrections (down to 90m)
- > Probabilistic forecasting using physical and statistical approaches

#### **OPTIMIZATION**

- > Based on historical and/or realtime on-site measurements
- > Continuous accuracy improvements using state-of-theart machine learning techniques
- > To take into account local weather phenomena and power plants' behavior

#### DELIVERY

- > Flexible sending (API, SFTP, etc.)
- > Customized format (csv, txt, etc.)
- > Dedicated and secured Steadysun's web interfaces (visualization, data analytics and warnings)
- > Forecast performance monitoring





