

Harnessing the power of Destination Earth: Anticipating solar energy risks using Europe's massive Digital Twin



Destination Earth

Funded by
the European Union



Implemented by



Reuniwatt: a leader in renewables forecasting



— Reuniwatt —



“
ACCOMPANYING OUR
CLIENTS TOWARDS A
BETTER MANAGEMENT
OF THE WEATHER-
SENSITIVITY OF THEIR
ASSETS THANKS TO
STATE-OF-THE-ART
WEATHER FORECASTING
TECHNIQUES.

Founded
2009

Serving
3
markets: Renewable energies,
Atmospheric science,
Defence & Space

> 300 projects in
45
countries

Strong R&D investments
450,000
hours, > 100 publications,
7 patents

Destination Earth and Climate Change



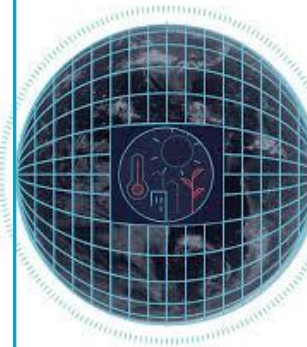
Climate change
mitigation

**Reduce CO₂
through the
transformation of
the energy system.**



Destination Earth

**helps to overcome both
challenges**



Climate change
adaptation

**Prepare for the threats
of climate change
driven by increasing
weather extremes.**



EO4ER Stakeholder and Challenges



Main Stakeholders

Prosumers



Network operators



PV power plants

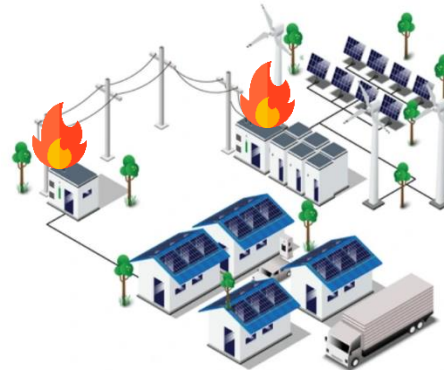


Challenges

Demand mismatch



Secure grid operation

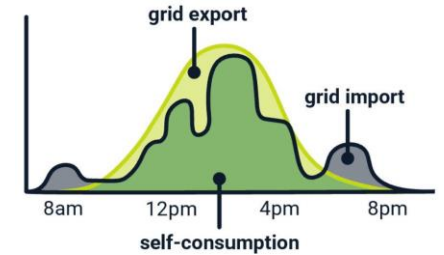


Climate risks



Needs

Optimise self-consumption



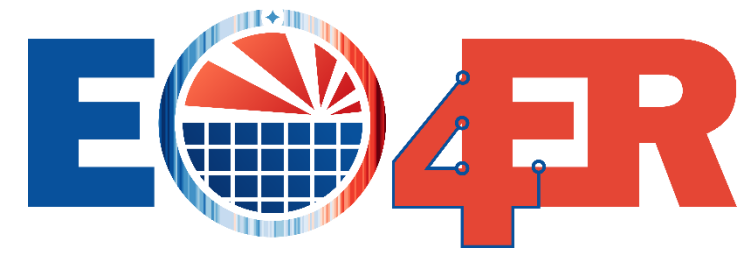
Grid resilience



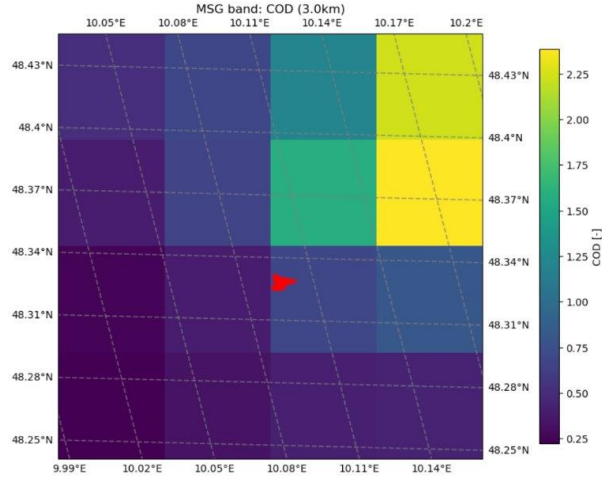
Sound investment



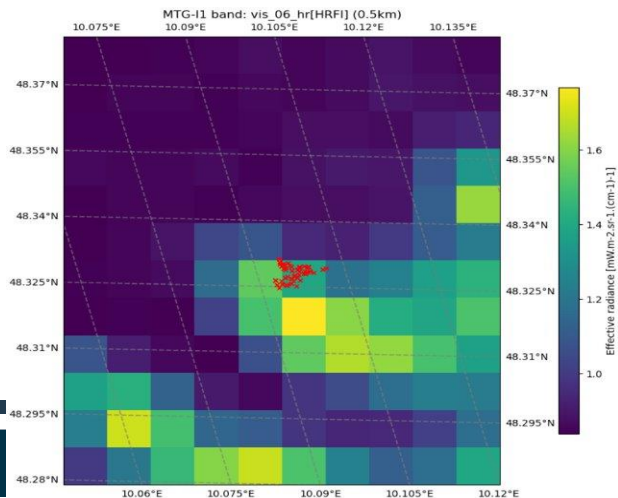
Active Operation for the LV Network



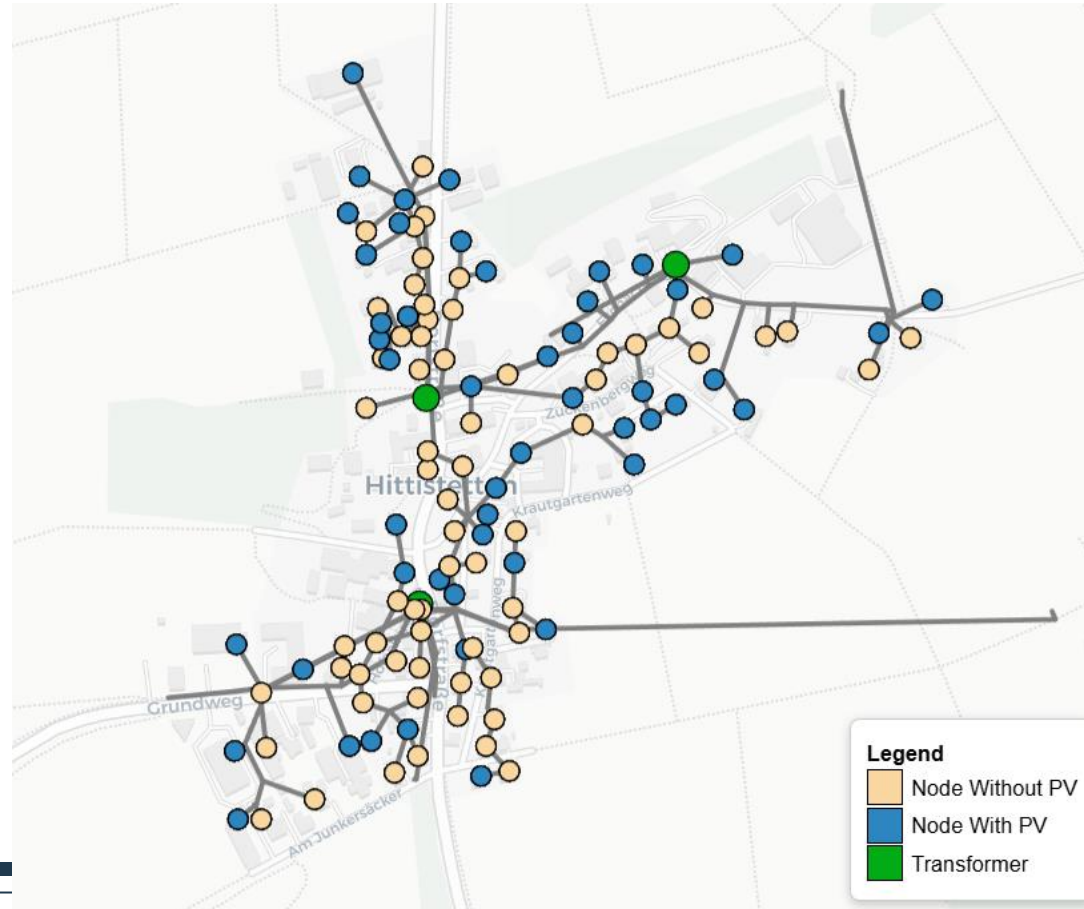
Meteosat Second Generation



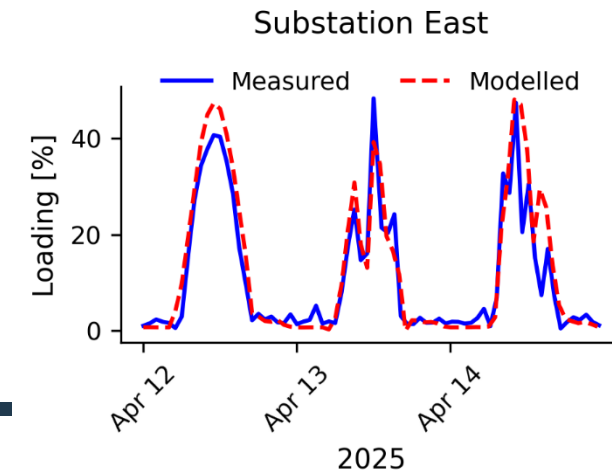
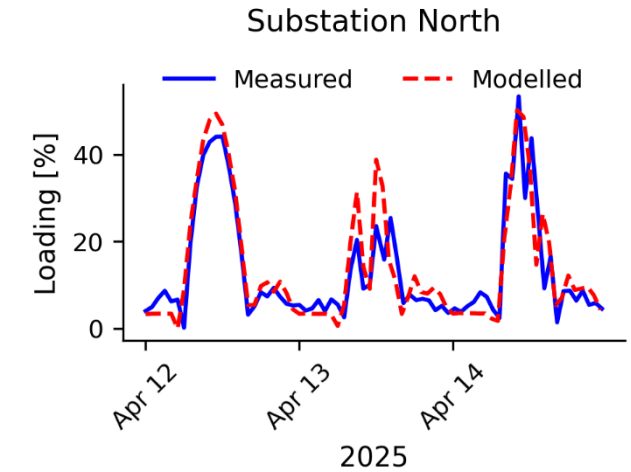
Meteosat Third Generation



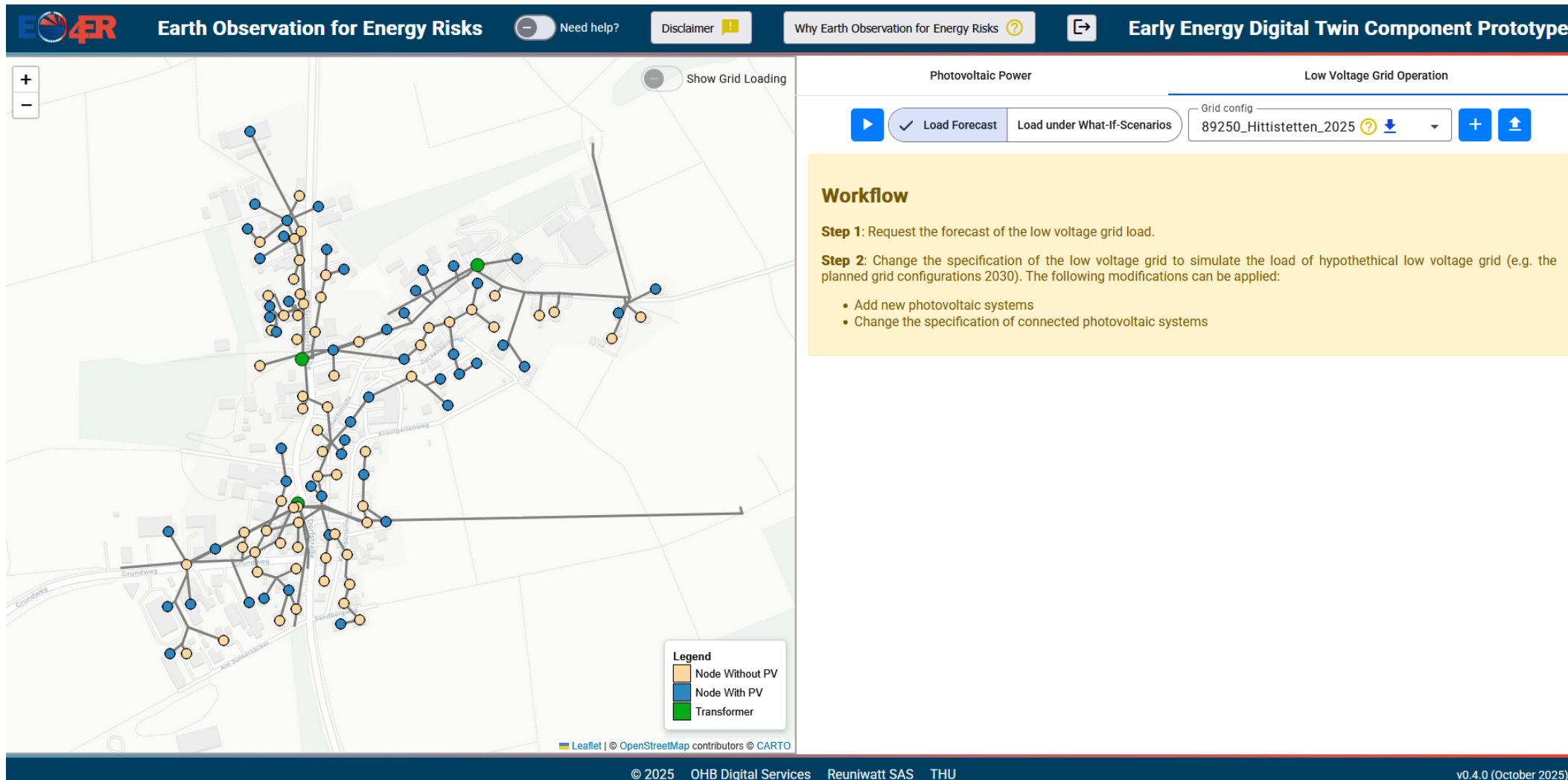
High PV penetration test area Hittistetten



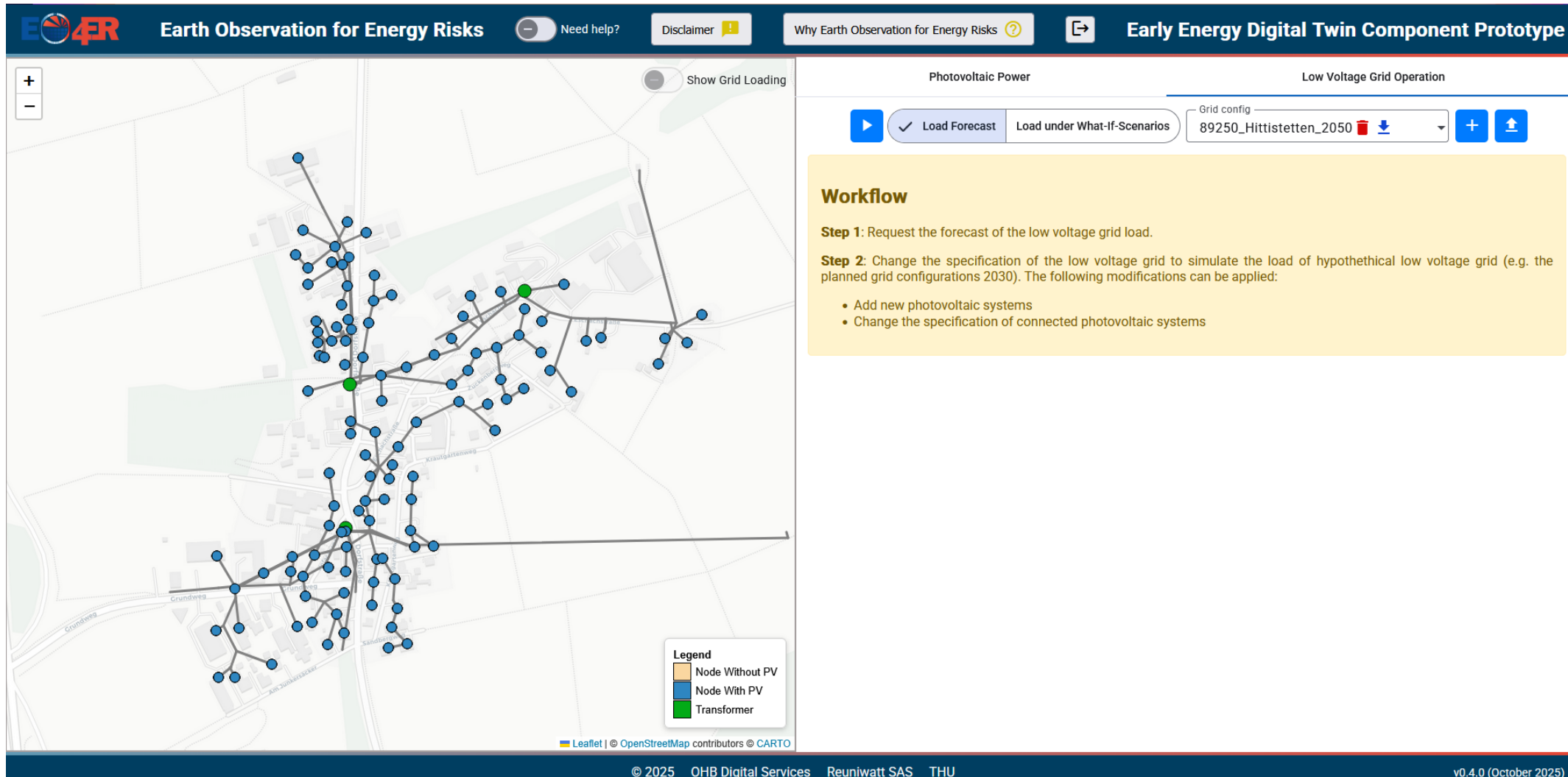
Transformer Load Forecast



<https://eo4er.energydtc.ohb-ds.de/>



<https://eo4er.energydtc.ohb-ds.de/>



Weather Extremes in Power Systems



Wind extremes



Damage of poles

Temperature extremes



Overheating of cables/
transformer efficiency loss

Snow and Ice extremes



Lack of generation

Precipitation extremes



Electronics damages

Weather Extremes in Power Systems



PV Companies: Optimise system design, maintenance and financial planning.

Investors: Assess long-term profitability and project viability.

Banks: Evaluate credit risk and ensure reliable loan repayment.

Grid operators / Local authorities: Anticipate long-term grid planning



With Extreme Conditions: Understand worst-case and best-case PV scenarios



<https://eo4er.energydtc.ohb-ds.de/>



 **Earth Observation for Energy Risks** Need help? Disclaimer Why Earth Observation for Energy Risks Early Energy Digital Twin Component Prototype

Photovoltaic Power

Low Voltage Grid Operation

Forecast

Yearly Production under Climate Scenarios

Production under What-If-Scenarios

Uncertainty level-0

Workflow

Step 1: Place a Photovoltaic System on the map.

Step 2: Once placed, a pop-up appears allowing to configure the specification of the photovoltaic system.

Step 3: Request power production forecast.

Step 4: Replace or change the specification of the photovoltaic system to simulate the power production of hypothetical photovoltaic systems.

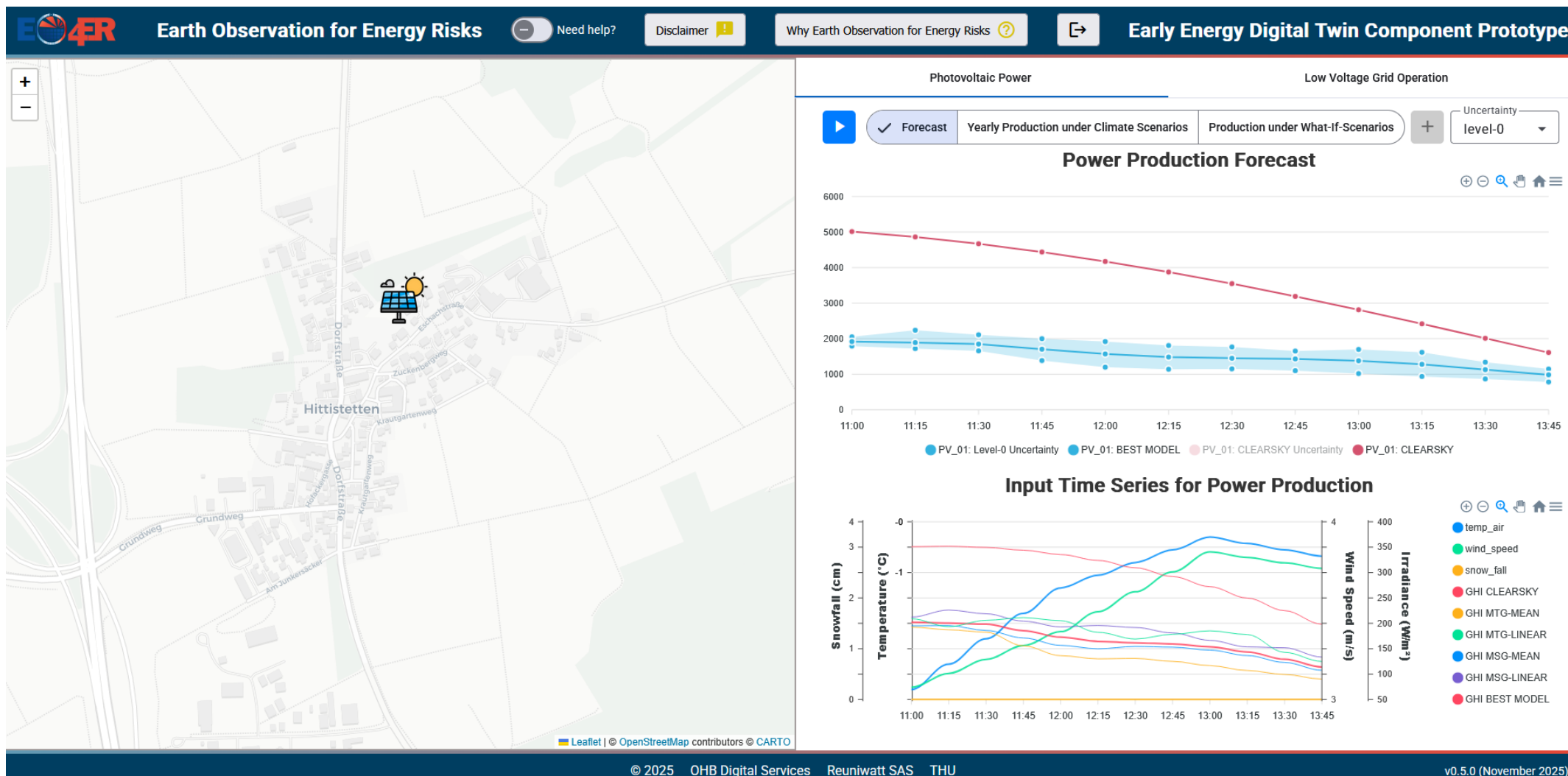
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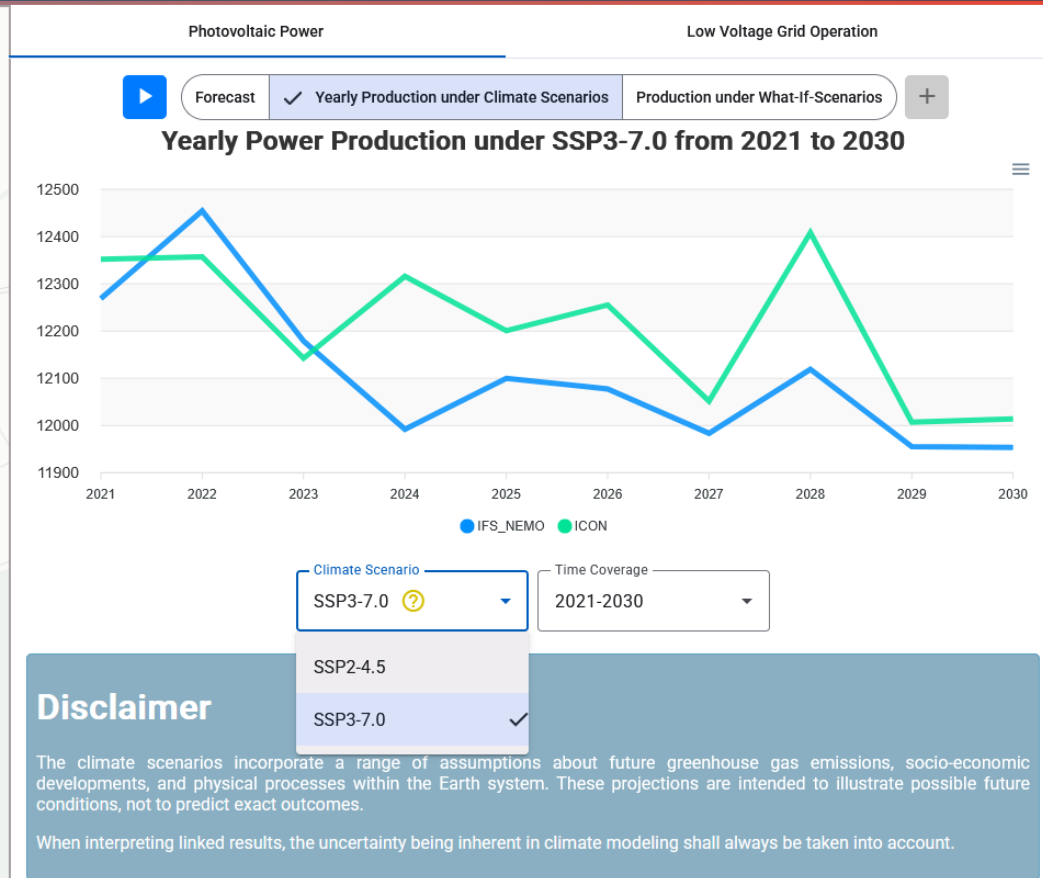
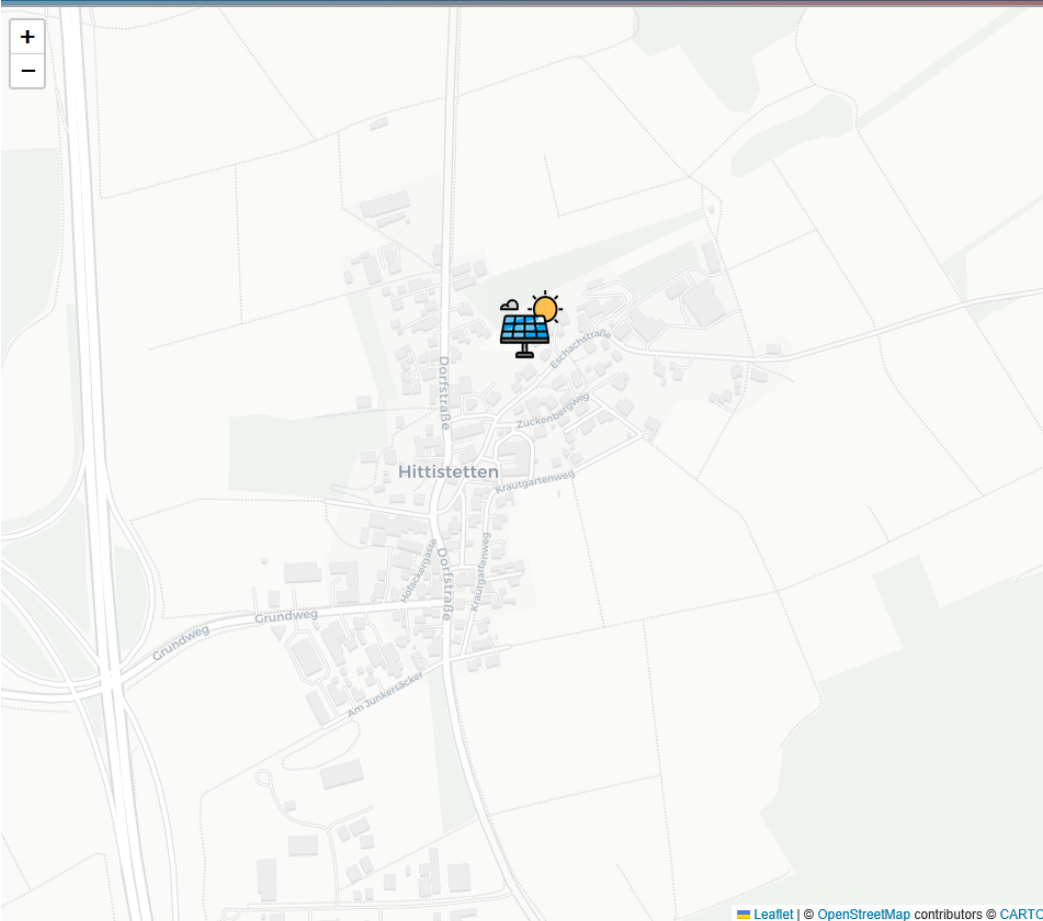
v0.5.0 (November 2025)

The logo for EO4R features a stylized globe in the center, composed of a grid of blue and white squares. The globe is flanked by the letters 'E' and 'R' in a bold, blue, sans-serif font. The number '4' is positioned between the 'E' and 'R', rendered in a red, stylized font with blue outlines and small blue circles at its vertices.

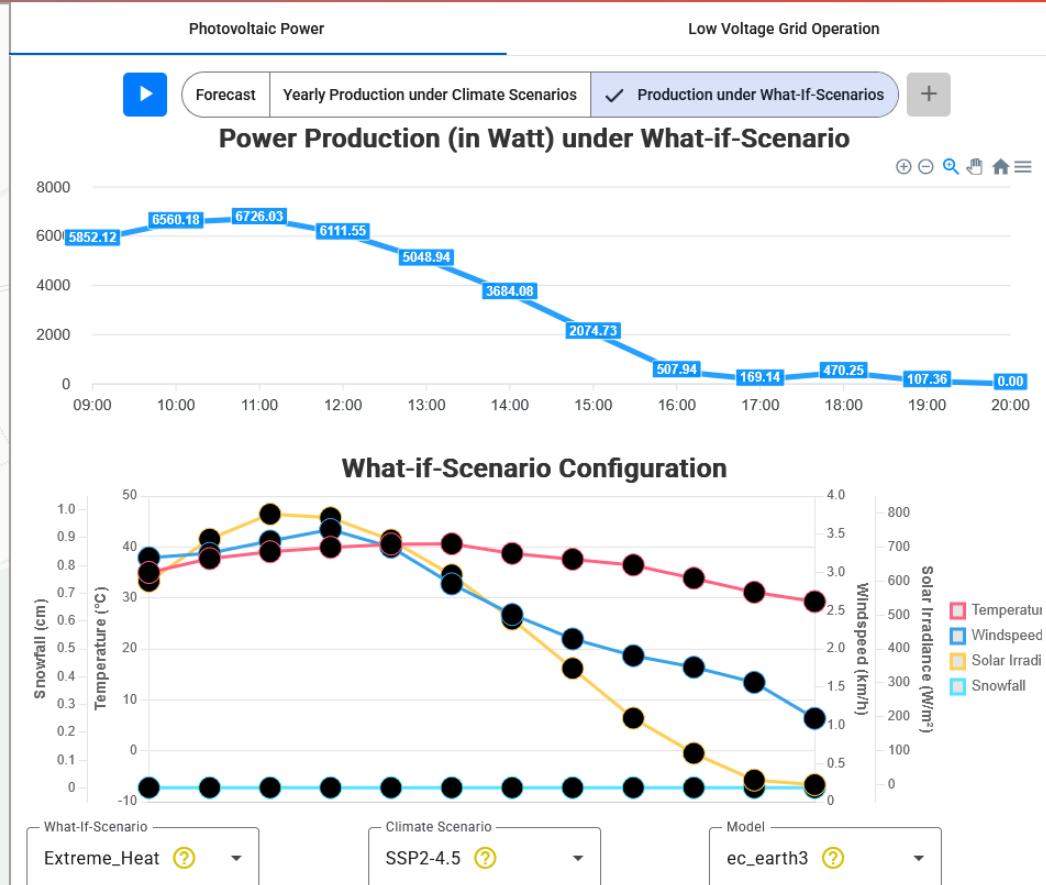
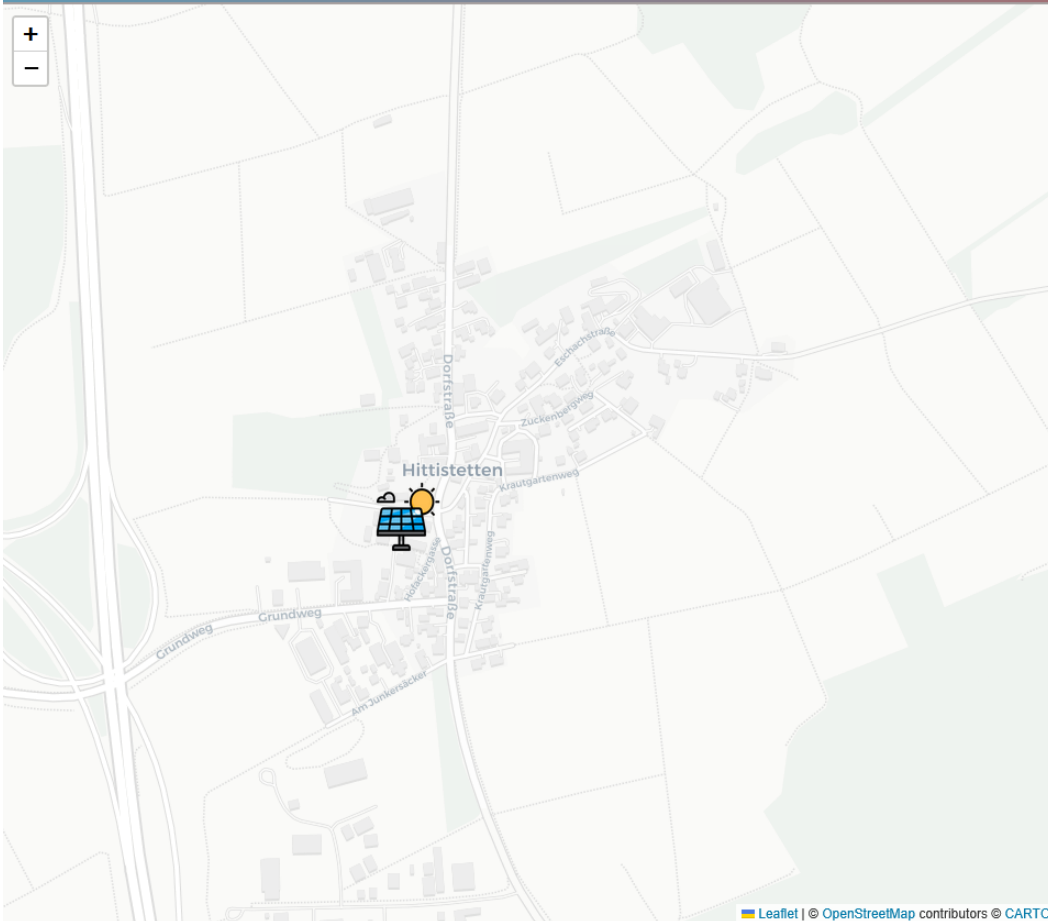
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Excellence in forecasting

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