Accelerating Offshore Wind.

How to combine Vortex and Youwind platforms for innovative pre-development of offshore wind projects

VORTEX

Youwind
Renewables

01

VORTEX AND YOUWIND LINK

Process introduction

02

VORTEX PRESENTATION

Series, LES

03

YOUWIND PLATFORM INTRO & INTEGRATION

Youwind Model
Pixel & Pixel Park

04

Q&A

Ready for case study:
California

VORTEX Youwind Renewables


01
VORTEX AND YOUWIND LINK
VORTEX
Youwind
Renewables

VORTEX

Most accurate synthetic wind resource data in the market prior to acquire measurements

SERIES LES

BUT, WHAT TO DO WITH THIS VALUABLE DATA??

Youwind Renewables

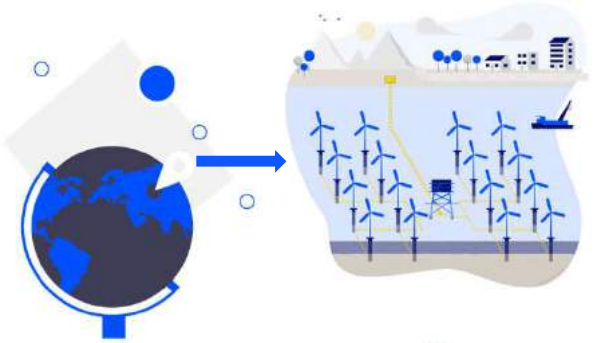
Where is the best location for my wind farm?

Which turbine performs best within my project?

What park capacity provides lowest LCoE?

Floating VS Fixed foundation?

.....

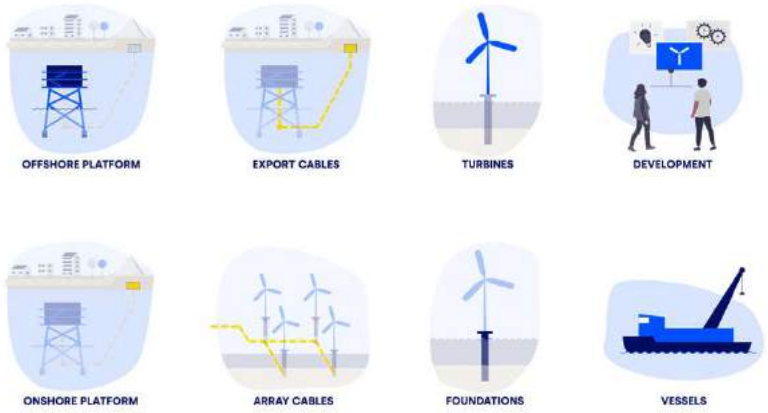


VORTEX Youwind Renewables

Vortex and Youwind process and interface

INTEL LIBRARY AND USER INTERFACE

- Side data (Wind, Waves, Bathymetry,...)
- GIS layers (environmental, technical and human constraints)
- Engineering sub-functions
- CAPEX and O&M Costs of components:



Yield and Layout Optimization

Costs and financial accurate modelling

OUTPUTS FOR ANALYSIS

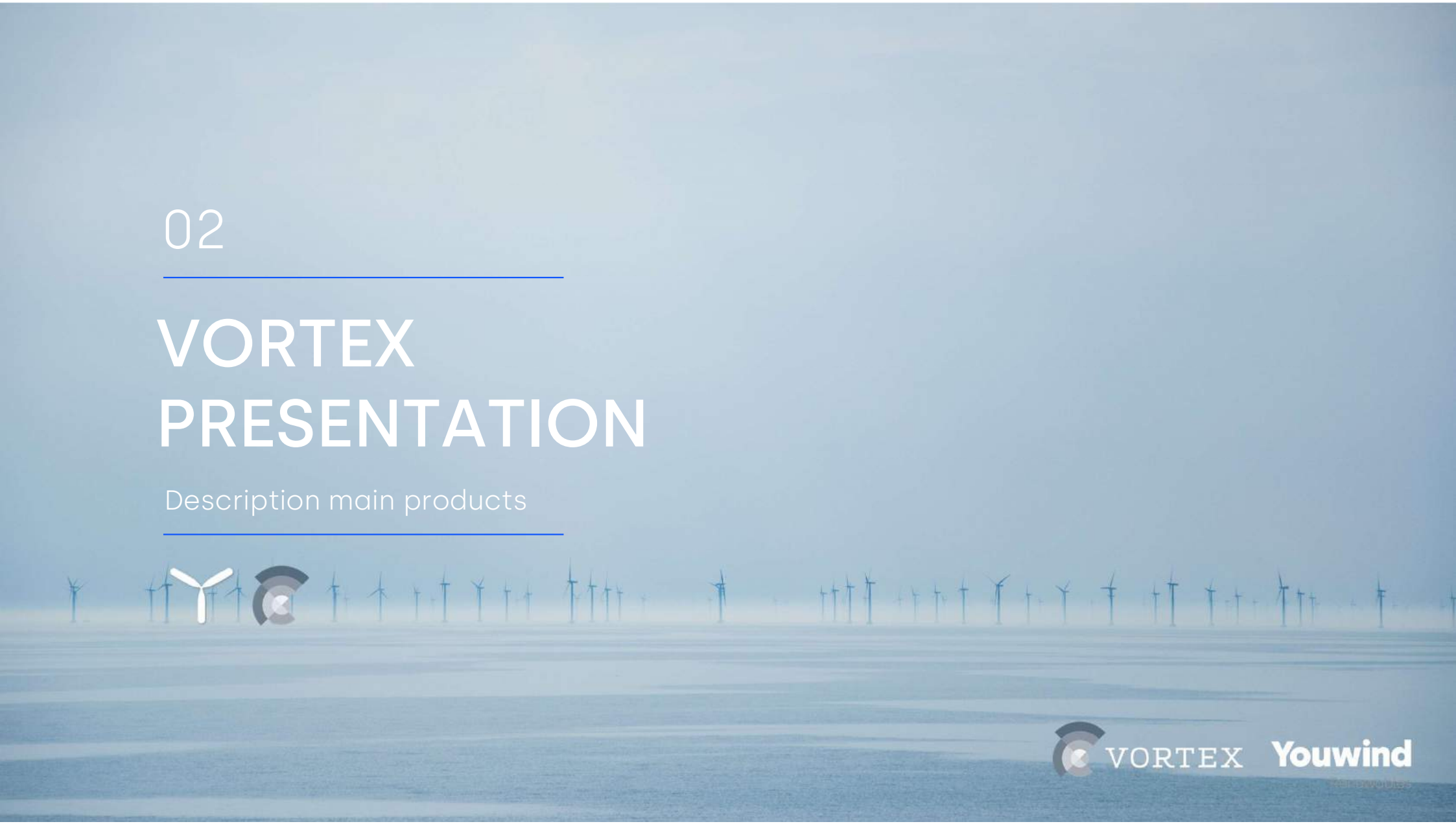
- AEP (P50/P90) with losses (incl. wake modelling) and availabilities
- Optimized Layout
- Turbine Lifetime
- Maps and Visualization (GIS)
- Reporting & Data Export
- Overall costs & Breakdown
- Financial Drivers
- LCOE calculations
- Projects Comparison
- Uncertainties analysis
- Project traceability
- ... and much more!

VORTEX Youwind Renewables

02

VORTEX PRESENTATION

Description main products



VORTEX

What is Vortex ?

- Online atmospheric modeling service

- Addressed to technical Wind & Site departments

- Provide global estimations of wind at places or periods where no measurements are available.

VORTEX Youwind Renewables

Vortex Solutions for all Wind Farm development stages

VORTEX

Youwind
Renewables

Vortex Solutions for Offshore Wind Projects

VORTEX Youwind Renewables

Vortex SERIES

- Long-term time series
- 10 / 20 / 30 / 38 years available
- Hourly time-stamp
- Simulated at 3 km horizontal resolution
- Three reanalysis sources: ERA5, CFSR, MERRA2

VORTEX Youwind Renewables

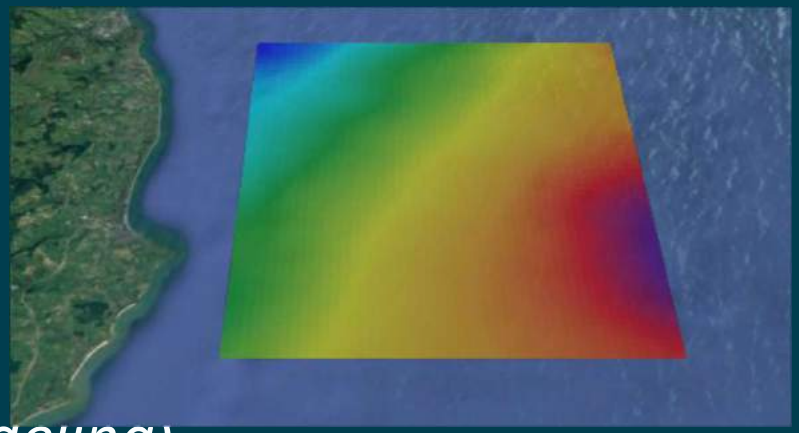
Vortex LES

- One-year time series (specific or long-term)
- 10-minute time-stamp
- Standard deviation and 3 second gust
- Simulated at 100 m horizontal resolution

VORTEX Youwind Renewables

Vortex FARM

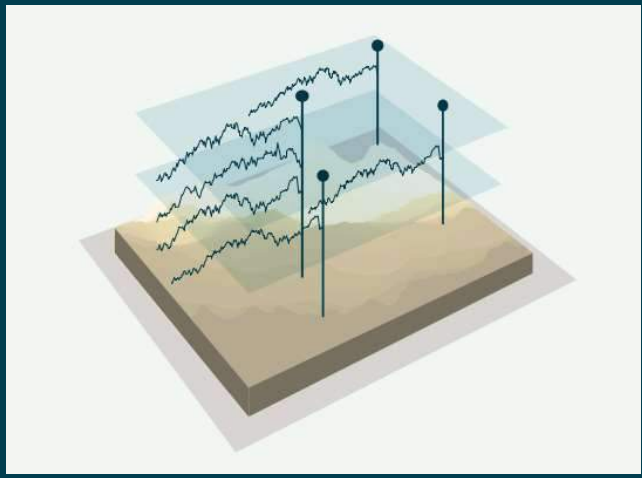
- High-resolution map
- Simulated at 100 m horizontal resolution
- Areas up to 2,000 km²
- WRG file
- Calibration with measurements (*Remodelling*)



VORTEX Youwind Renewables

Vortex BLOCKS

- Simulated at 100 m horizontal resolution. Areas up to 1500 km2.
- One-year 30-minute time-series at each grid point.
- Possible to calibrate with measurements
- Output formats: KML, ESRI grid, WRG files, WRB files, and TXT format
- User-defined WRG & GIS filters, allowing for time selection or variable conditioning filters.



VORTEX

Youwind
Renewables

1. We have **experience** in most of the regions where offshore projects are being developed worldwide.
2. Our standard solutions: **SERIES**, **LES**, **FARM**, **BLOCKS**
3. Different **customized solutions**
4. **Extensively validated**, internally and by third parties.
5. Find different offshore related documents in our *Knowledge Center*.

VORTEX Youwind Renewables


03
YOUWIND PLATFORM
INTRO & INTEGRATION
Youwind
Model
Pixel
by Youwind
PixelPark
OptiWindow
VORTEX
Youwind
Renewables

Accelerating Offshore Wind

Who we are

Youwind Renewables is a SaaS company with its own developed web-based IT-platform to support strategic decision processes when developing or installing offshore wind projects.

VORTEX Youwind Renewables

Our cutting-edge IT systems

Youwind Model

Technical and cost simulations of offshore wind farms.

OptiWindow

Installation and logistics optimization of offshore wind farms.

Pixel by Youwind

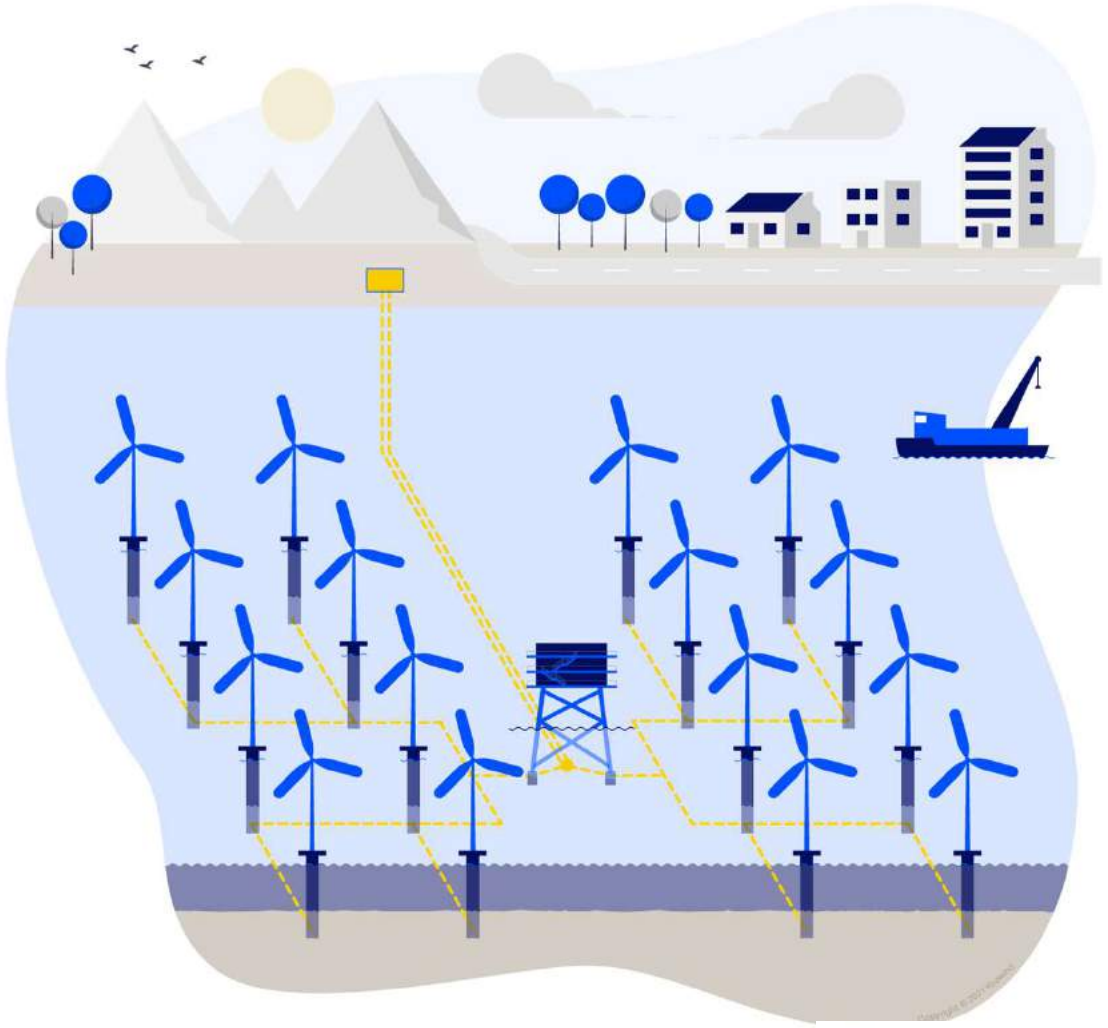
PixelPark

Interactive visualization platform for LCoE/IRR heat mapping plus optimal layout generator with state-of-the-art wake modelling

VORTEX Youwind Renewables

Youwind Model

Technical, cost and financial evaluations of offshore wind farms under development – keep track of production, layout and business case in any project scenario

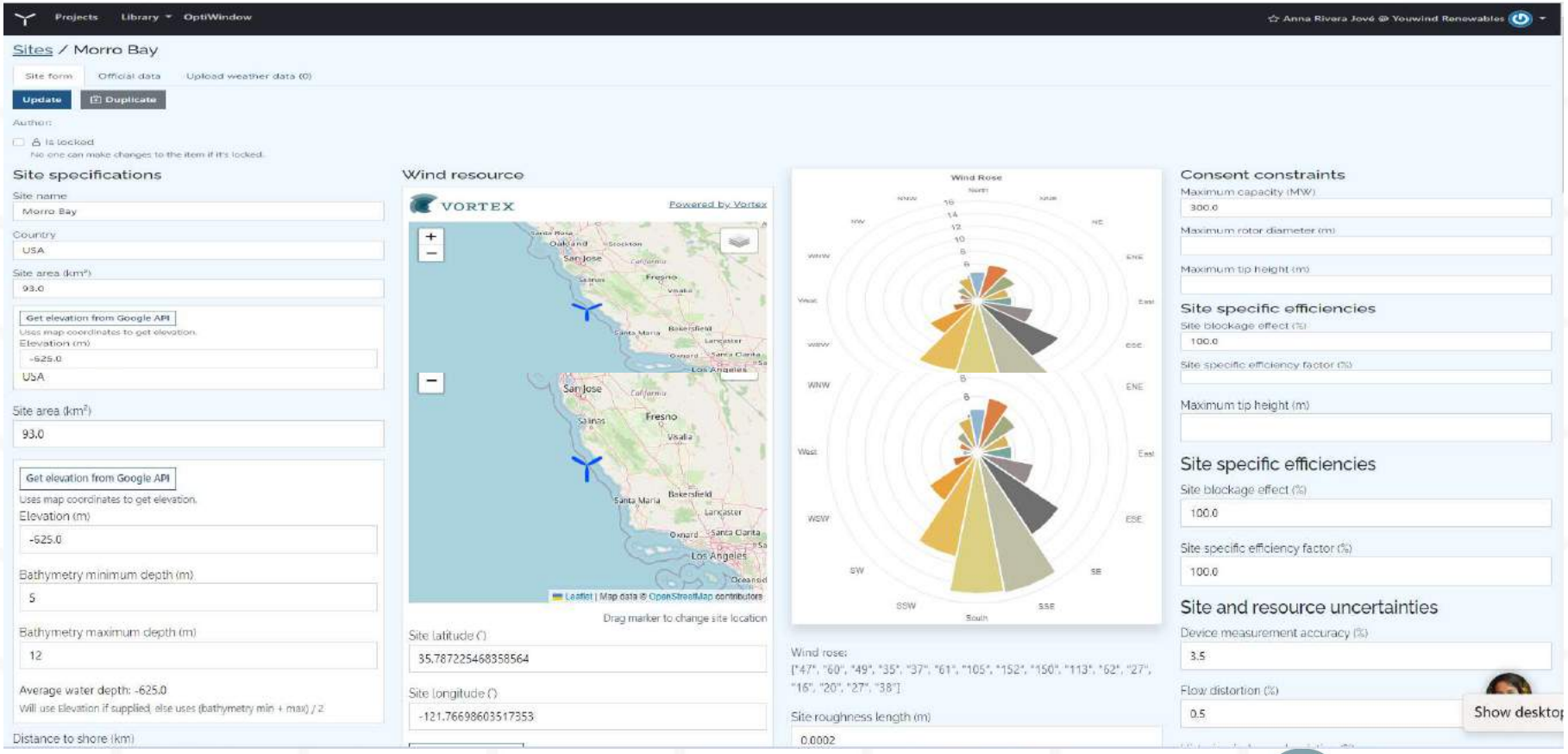


VORTEX Youwind Renewables

Platforms integration

Youwind Model

VORTEX

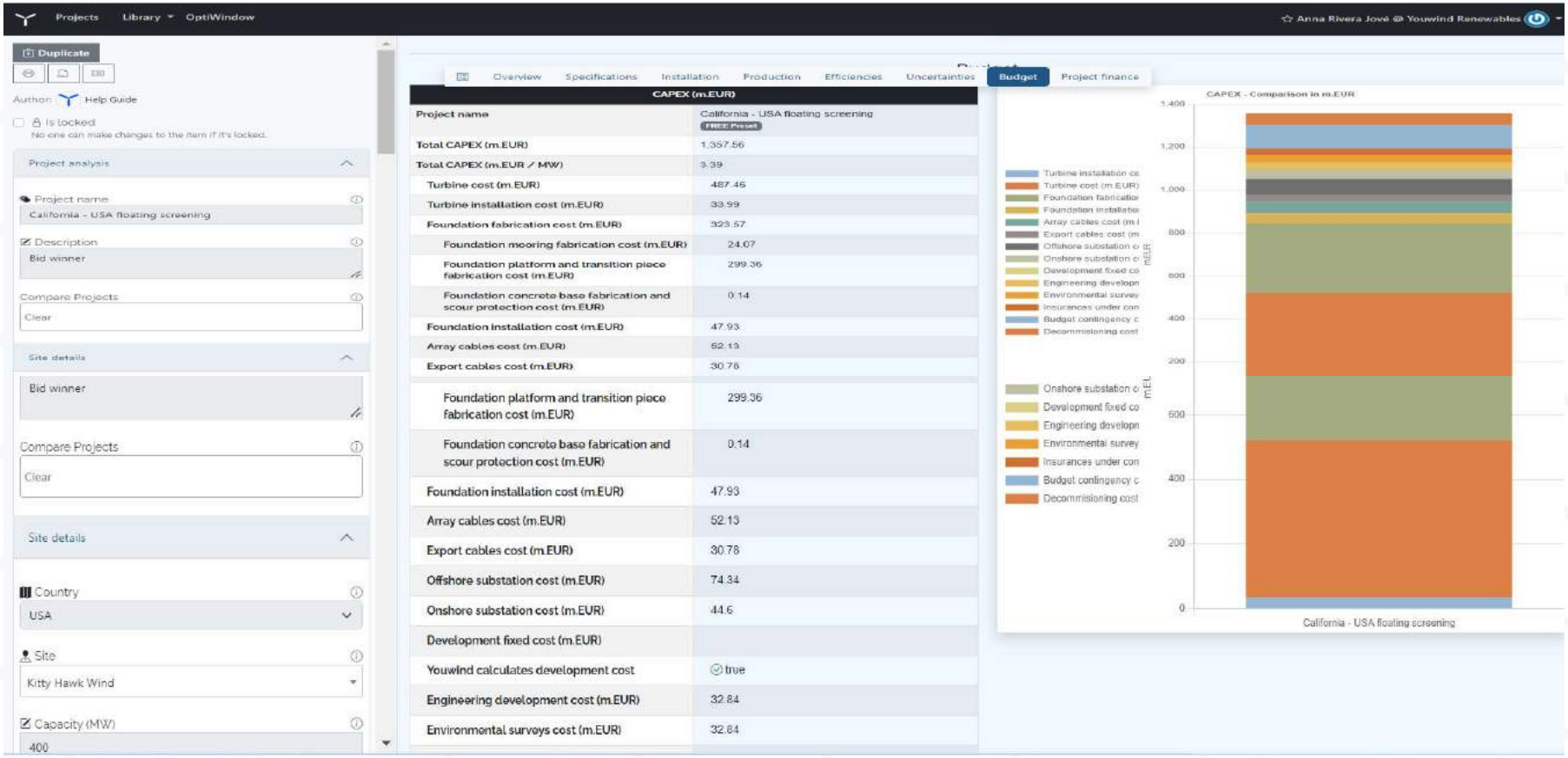


VORTEX Youwind Renewables

Platforms integration

Youwind Model

VORTEX



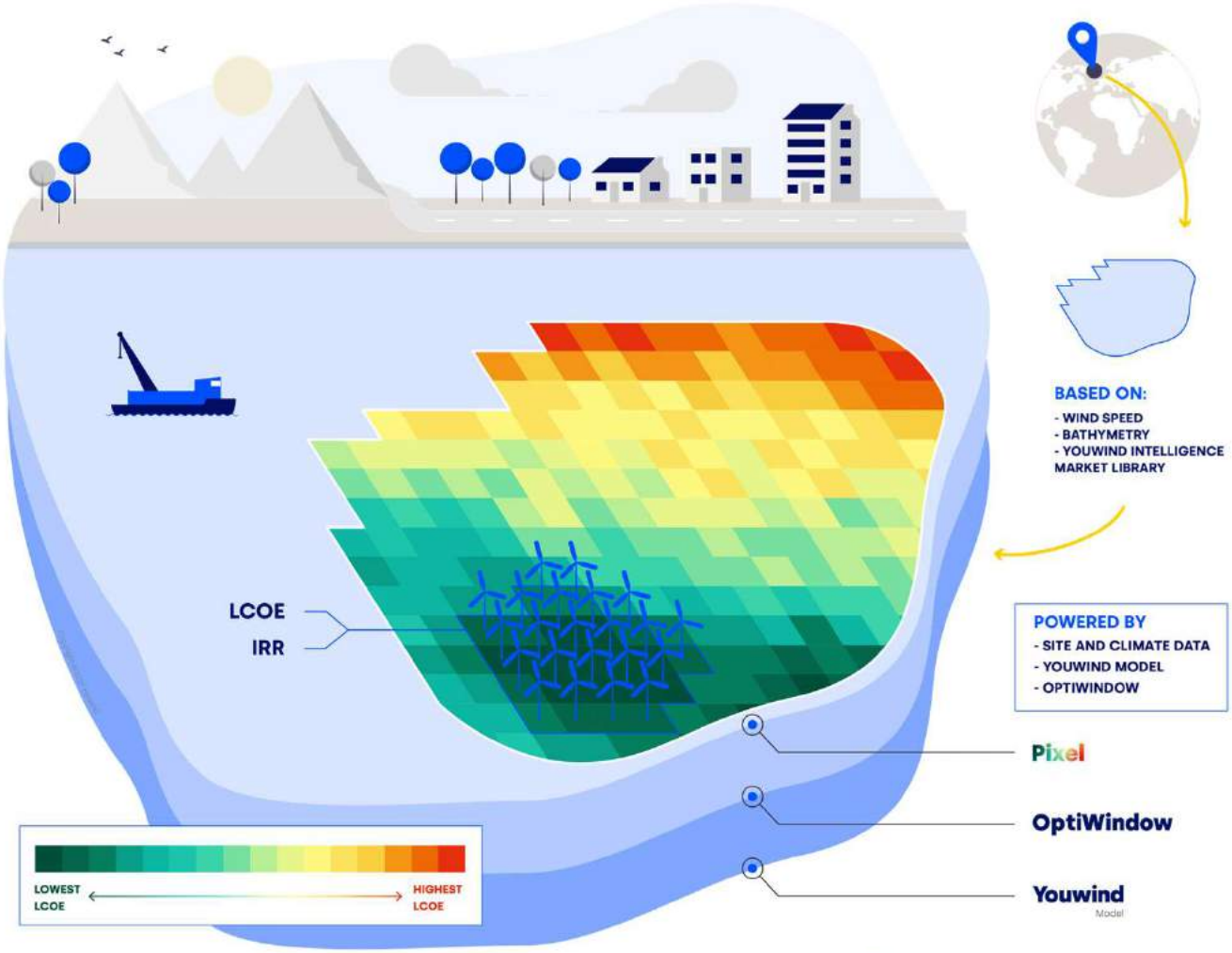
VORTEX Youwind Renewables

Pixel
by Youwind

1. Accelerate earl- stage screening with our interactive visualization platform

2. Linked to perfection with Youwind Model, OptiWindow and external data resources.

3. When starting a new offshore wind project, complex multicriteria challenges arise. Pixel simplifies that.



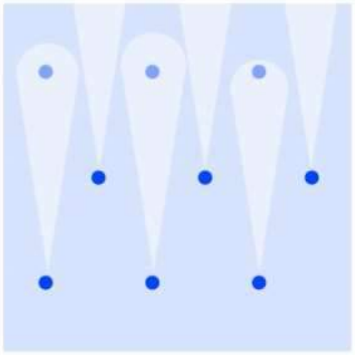
VORTEX Youwind
Renewables

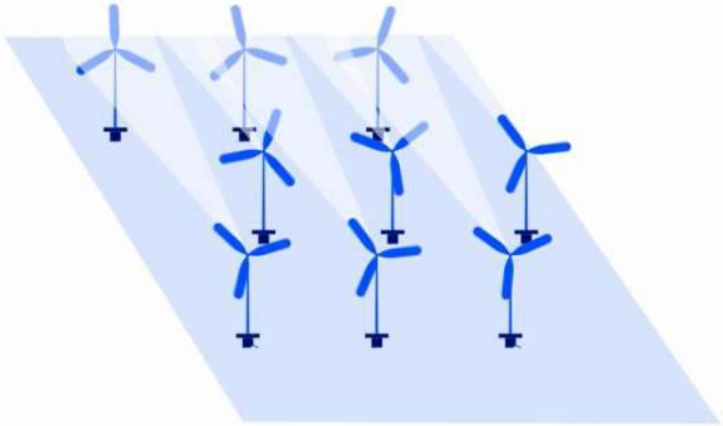
PixelPark in a nutshell

Automatically generate a park layout

Drag-and-drop turbines to optimize further

Integrated with the Youwind Model





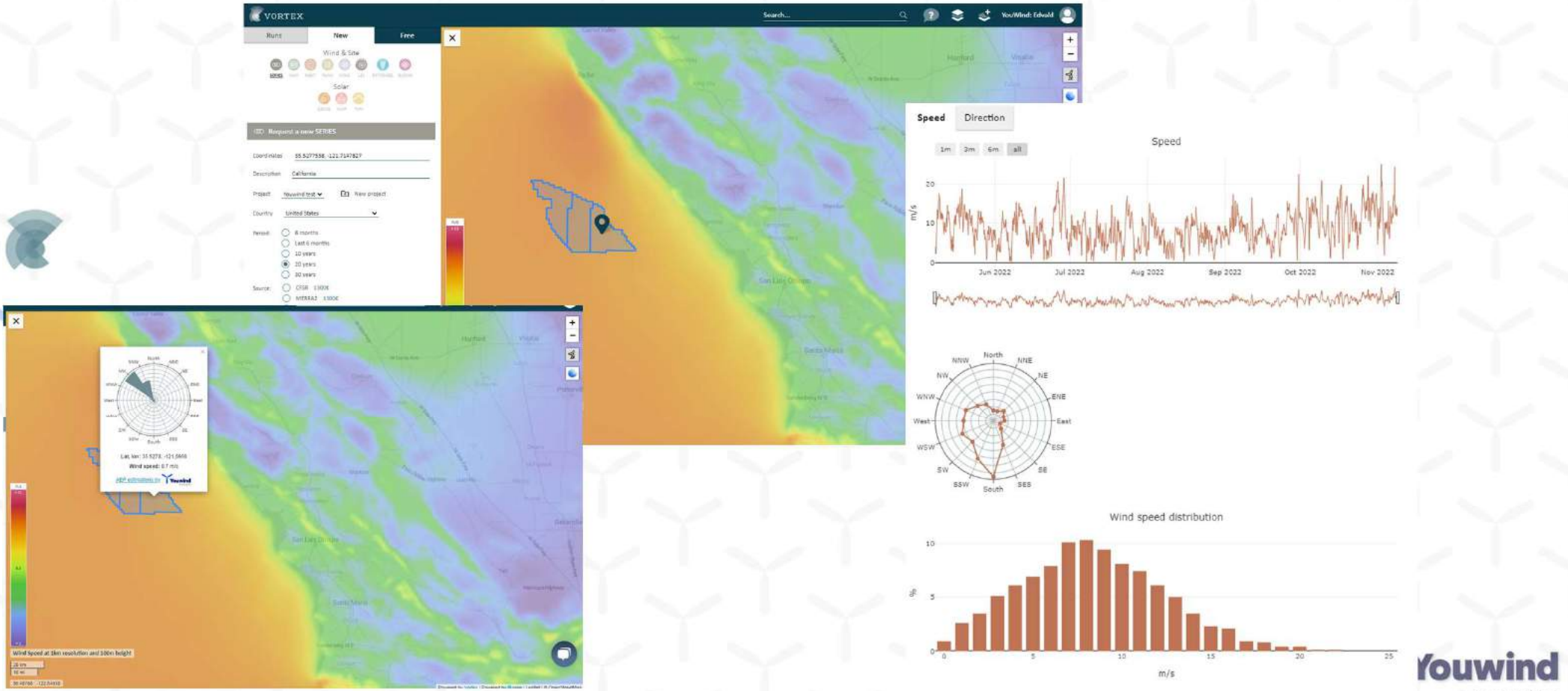
Fully Integration of N.O. Jensen modelling as well as Ørsted open-source TurbOPark wake model

VORTEX Youwind Renewables

Platforms integration

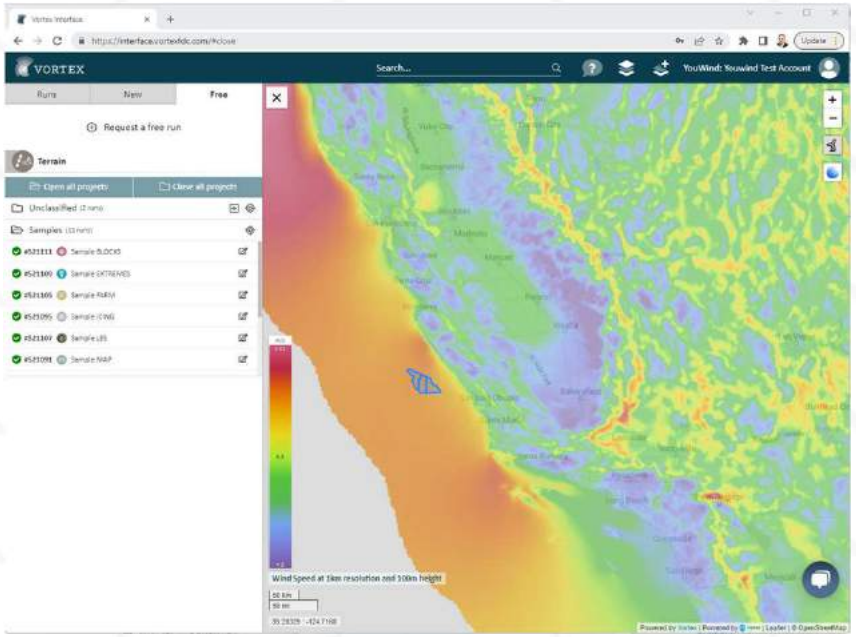
VORTEX

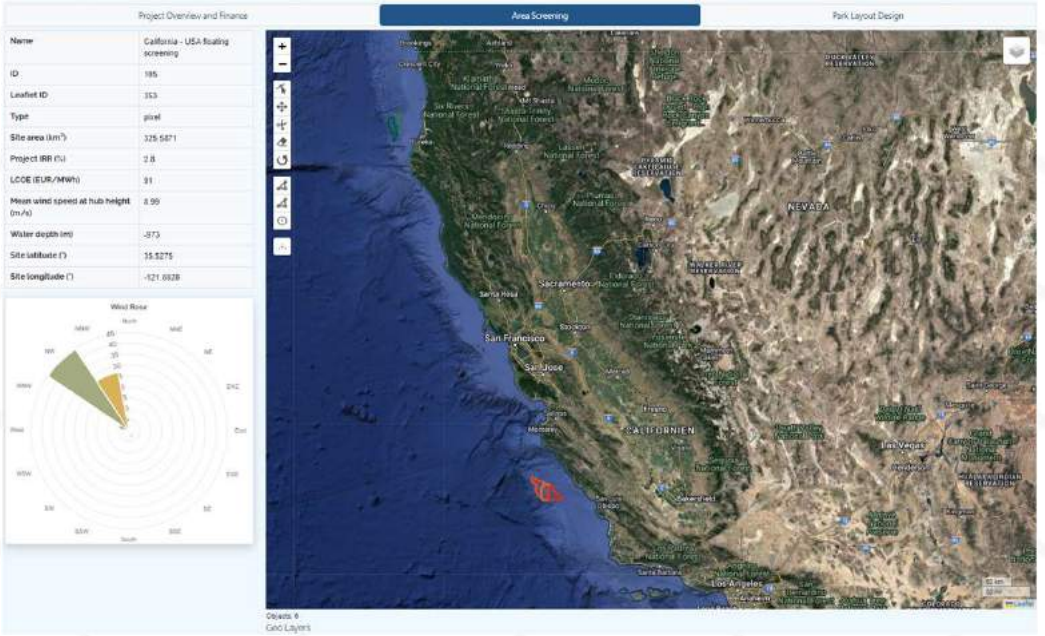
Pixel by Youwind



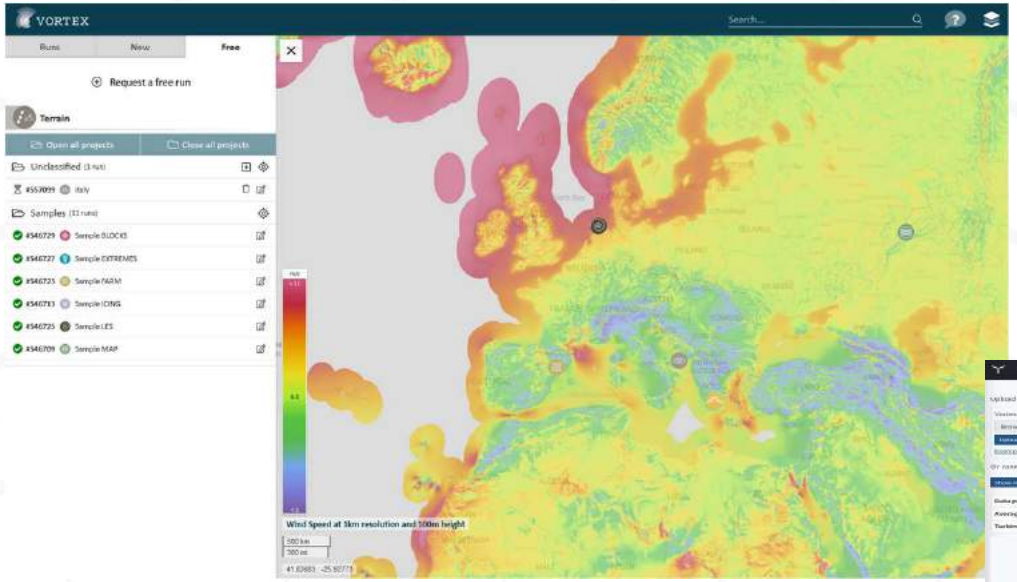
Youwind Renewables

Platforms integration



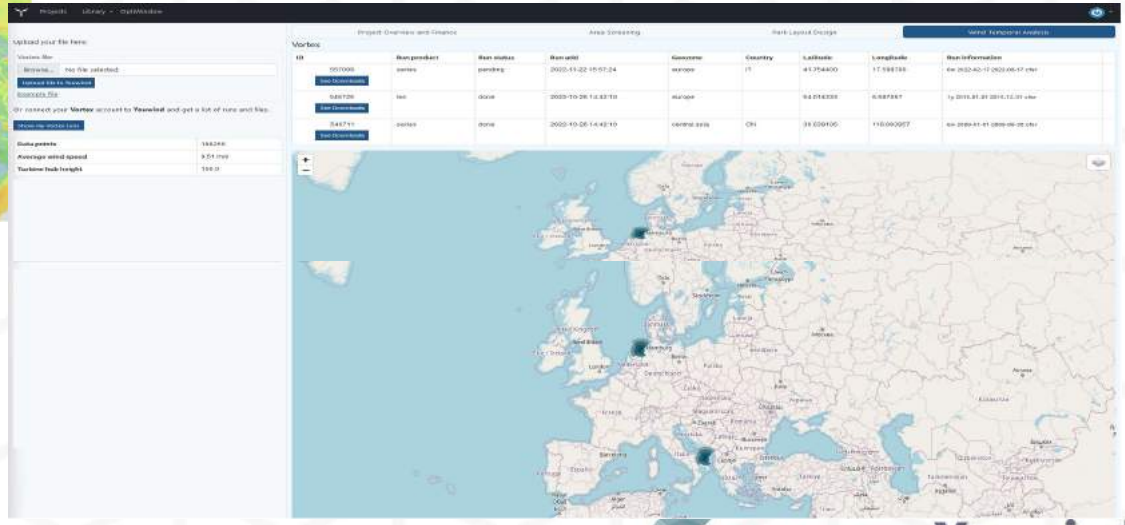


Platforms integration



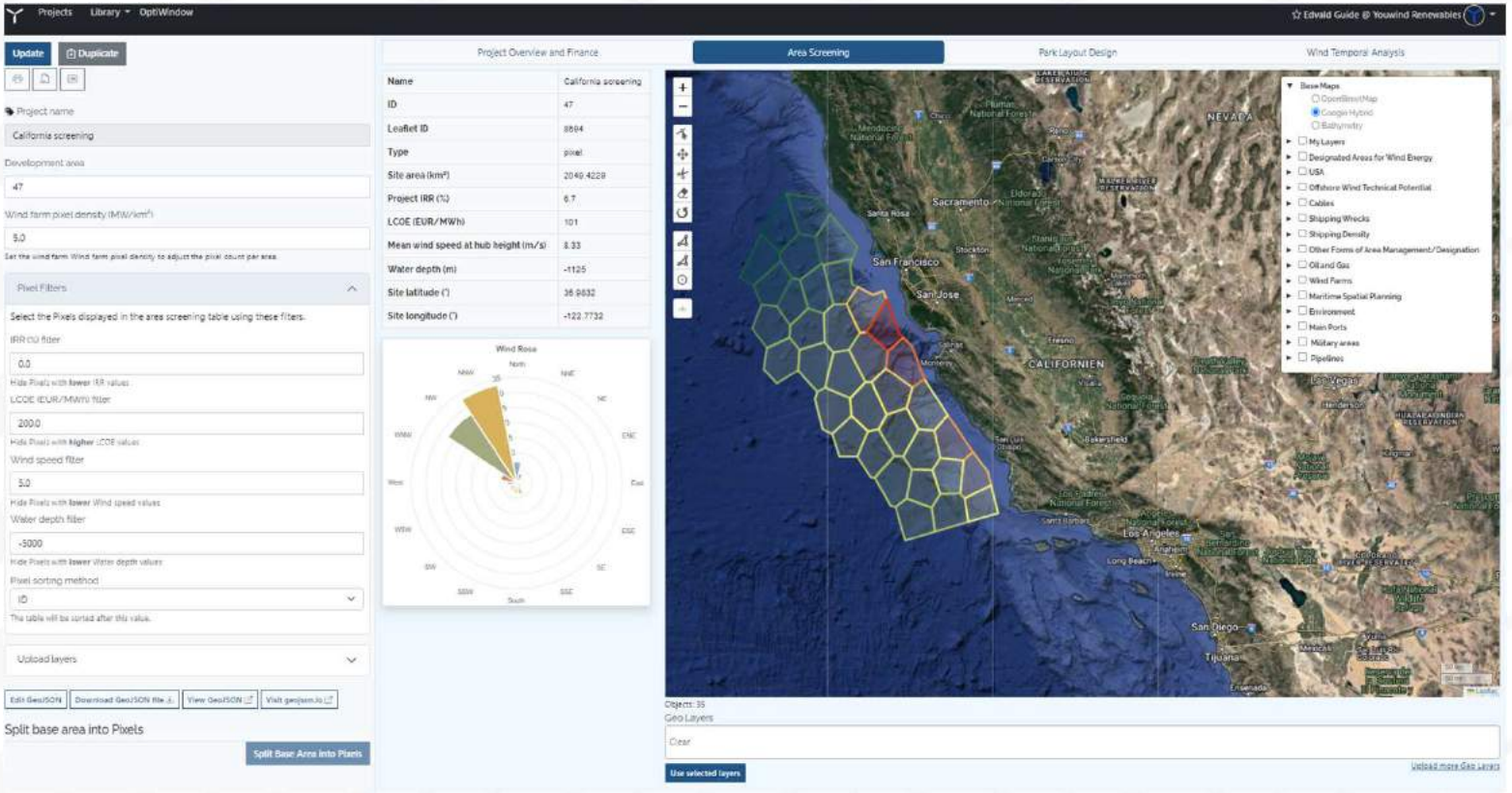
Find the run you have submitted and when finished, you load it to your project for a full AEP result

All your project runs available on the Vortex platform are visible to load into Youwind



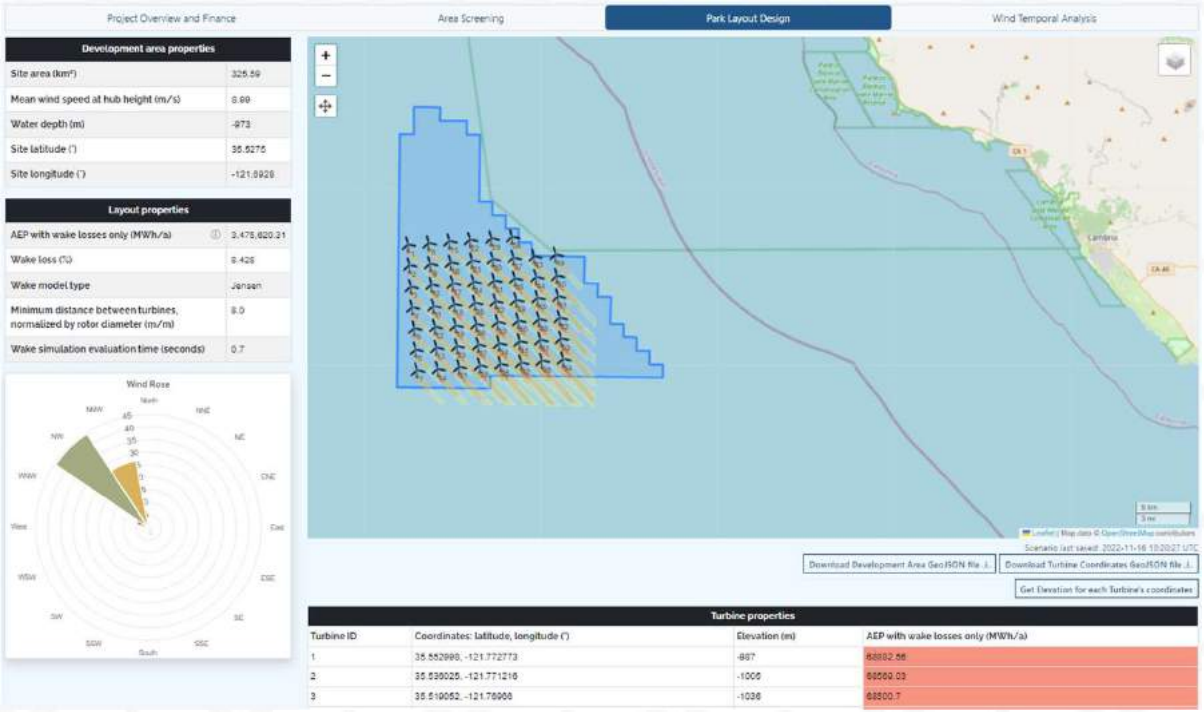
VORTEX Youwind Renewables

Platforms integration



Identify best location for your farm with integrated LCoE heat map

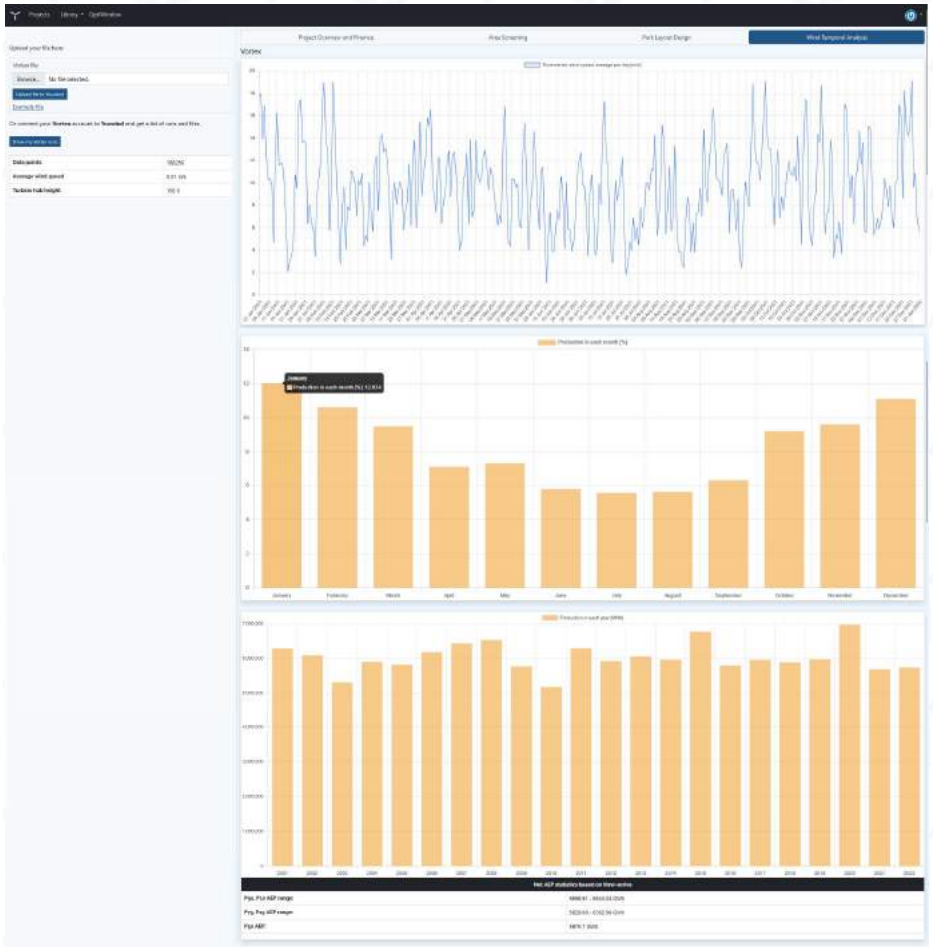
Platforms integration



Park layout design:

- Use the **wind rose** to optimize the wind turbine placement, minimizing wake losses.
- Calculate the yield per turbine.

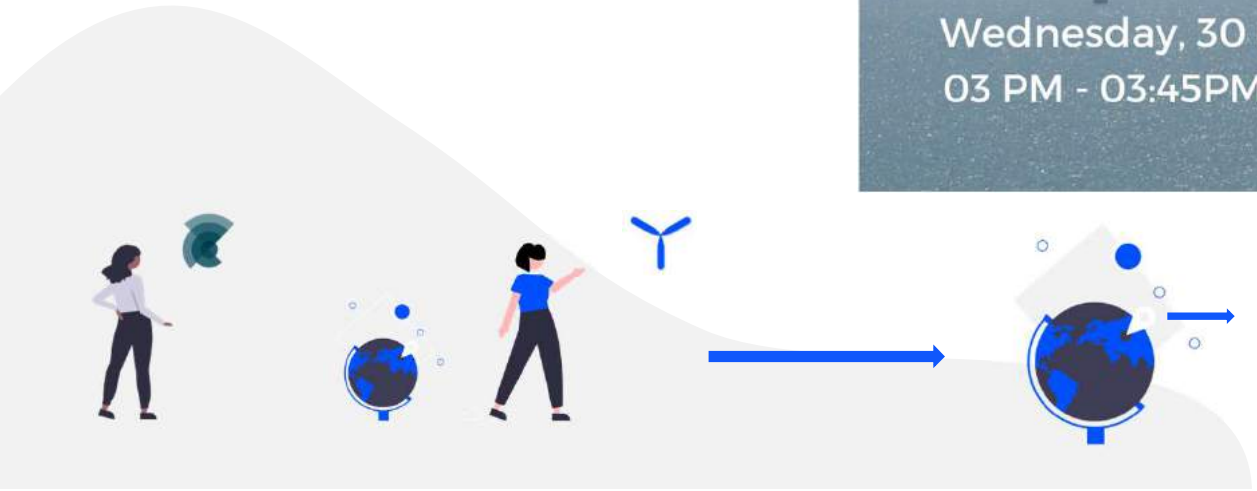
Platforms integration



Similate you wind park with a **wind time series (LES/SERIES)** and calculate:

- Time variation of production, e.g. by year / month.
- The P50/P75/P90 production
- Yearly cash flows

Don't miss our next session next week!



VORTEX Youwind
Renewables

Thanks!

Anna Rivera Jové

Commercial Director

arj@youwindrenewables.com
www.youwindrenewables.com

Pau Casso

Technical Director

pau.casso@vortexfdc.com
www.vortexfdc.com

04

Q&A SESSION

VORTEX

Youwind
Renewables