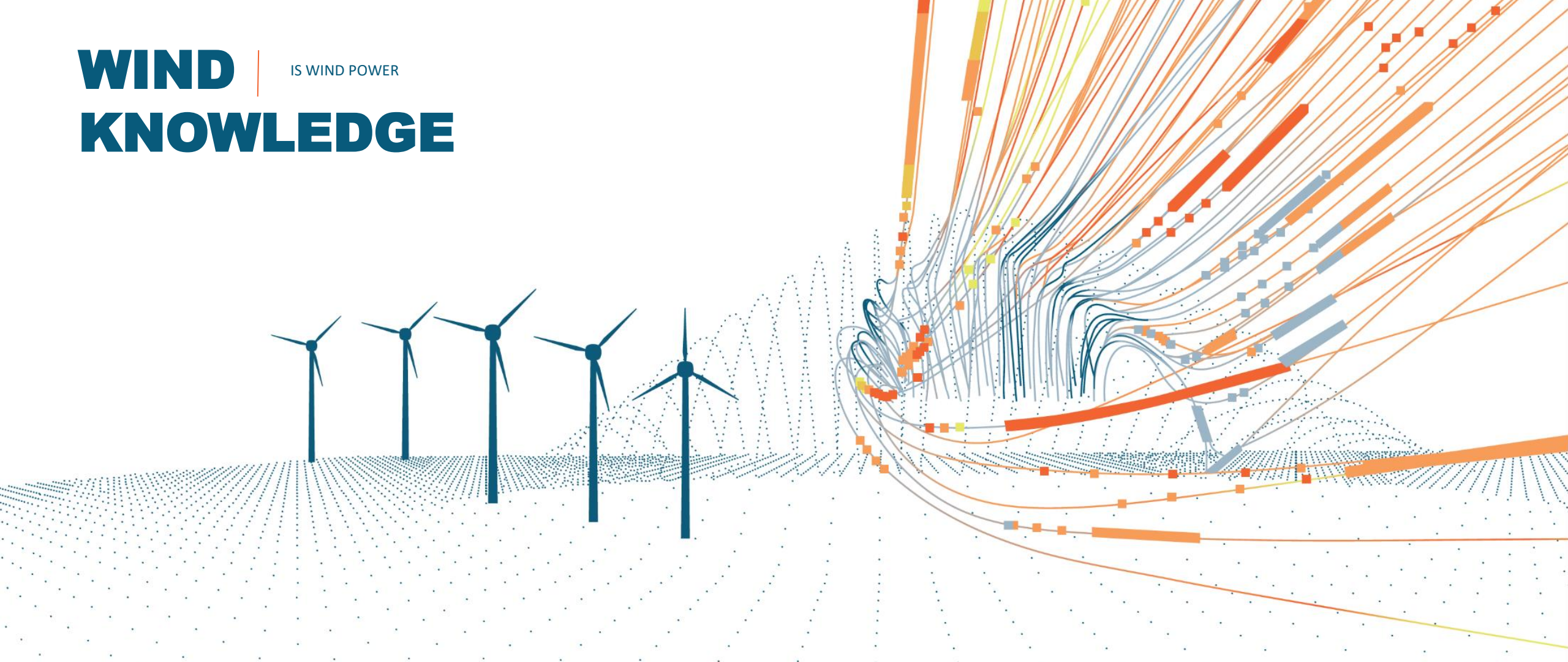


WIND KNOWLEDGE

IS WIND POWER

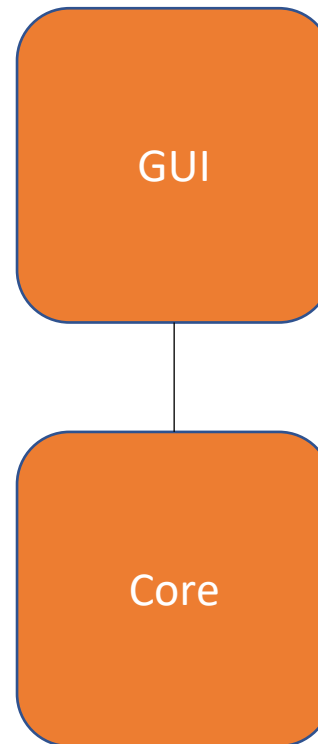


WindSim X

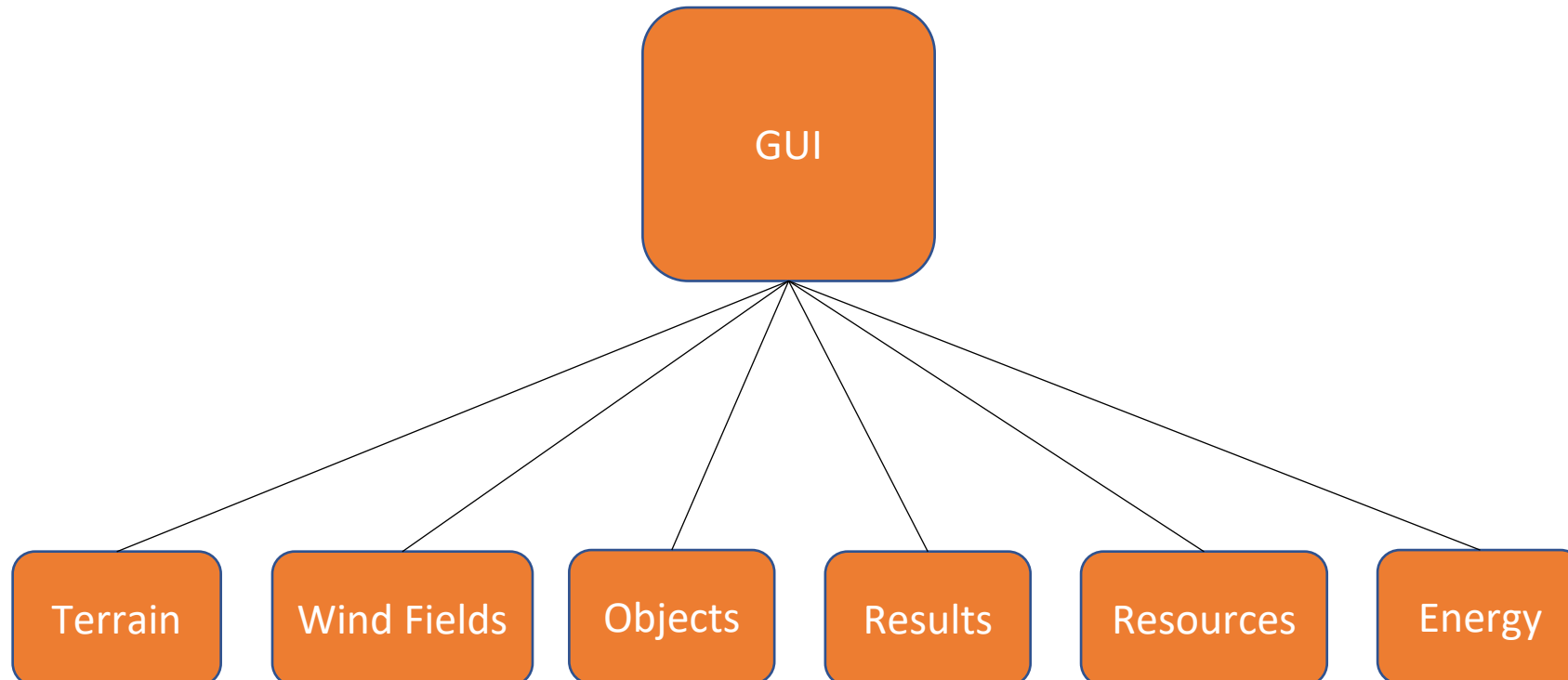
WindSim 15th User Meeting, Online, 23 June 2021

windsim

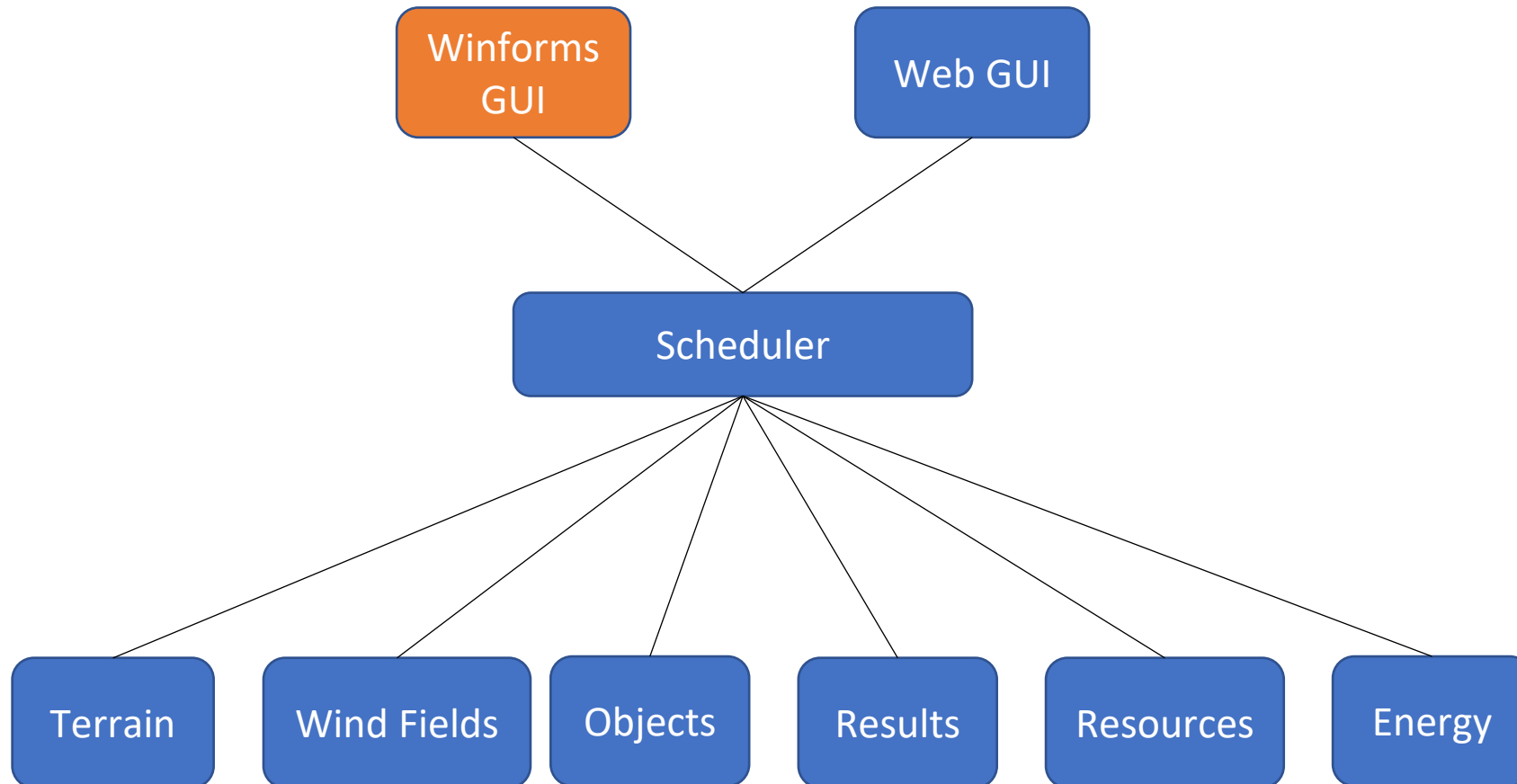
WindSim - Before



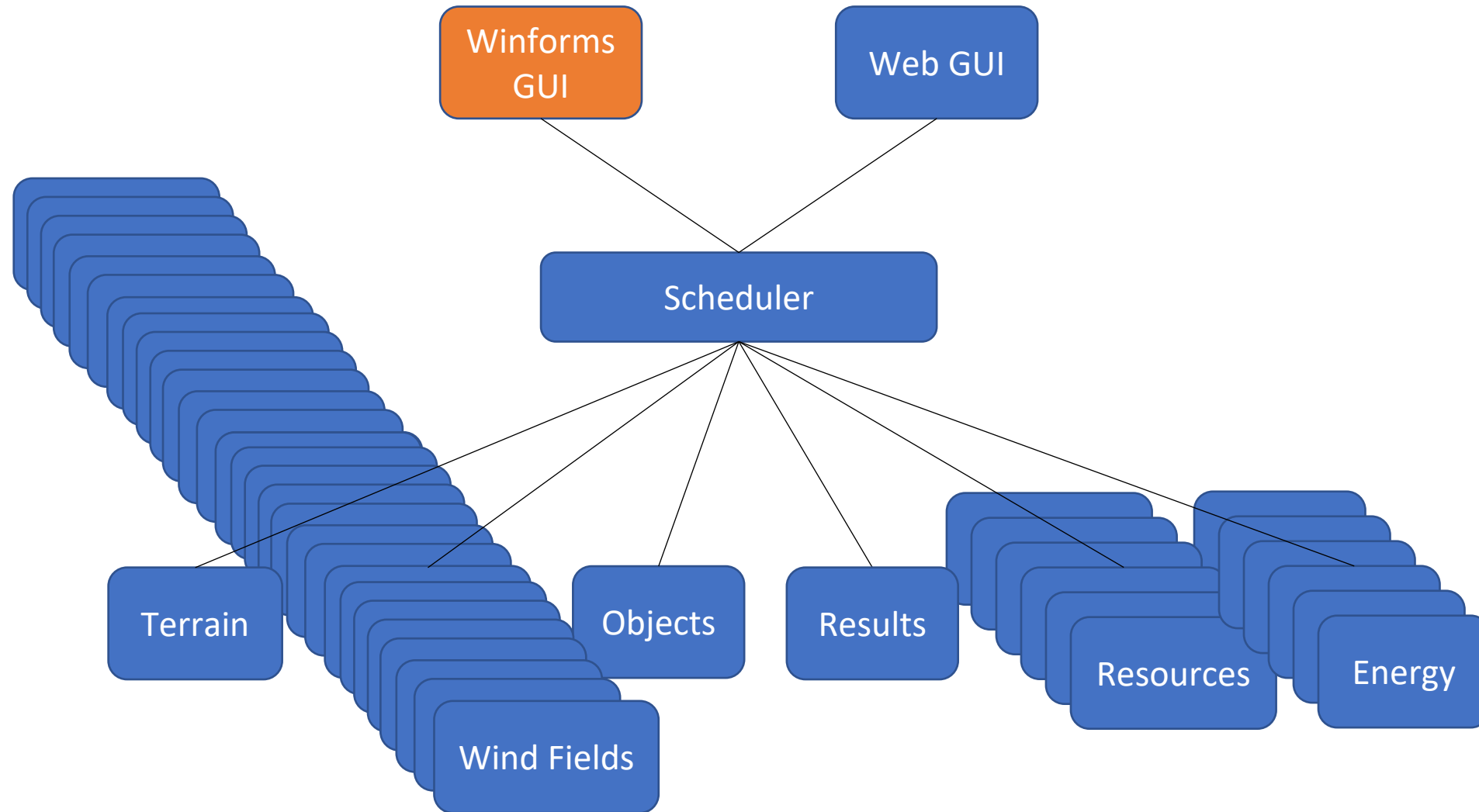
WindSim – Split core



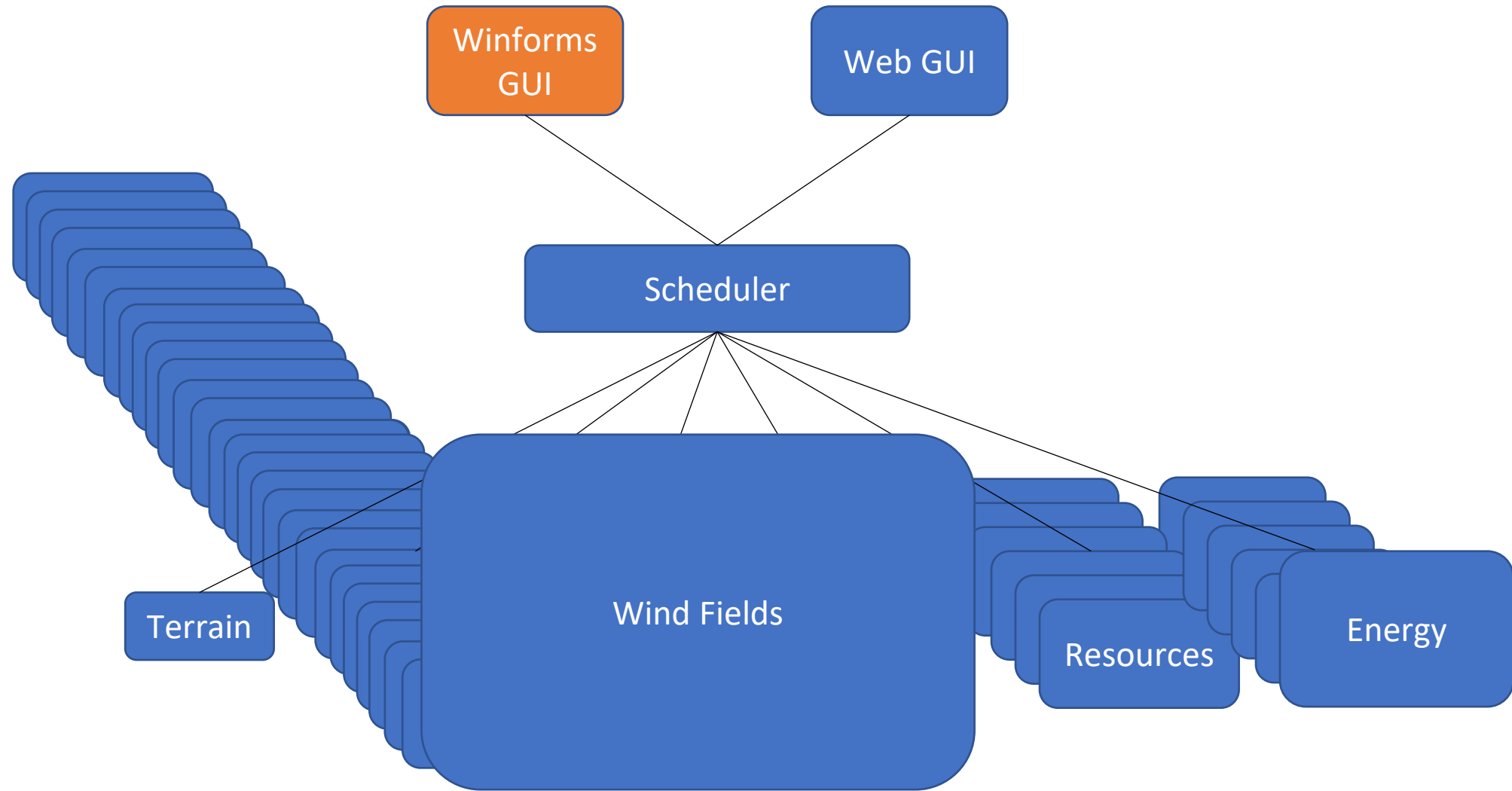
WindSim Cloud



WindSim Cloud



WindSim Cloud



WindSim core modules running in the cloud

- Running the core modules in the Cloud works similarly as running them locally
 - It is the same code
- We upgraded to Phoenix 2020
- We ported the modules from Windows to Unix
- We run them inside of Docker containers
- The Docker containers run on ACI (Azure Container Instances)

- The biggest advantage of running in the Cloud is that we can run WindFields not only on 1 local server, but we can run on many servers.
 - For example, for a normal project we can run 16 Wind Field sectors on 16 servers with 4 cores and 16Gb RAM, which would have required at least a single 64 cores and 256Gb RAM machine
 - Or even larger: 36 parallel sectors on 36 servers with 16 cores and 32Gb RAM, which would have required at least a single 576 cores and 1152Gb RAM machine

- And we can run multiple projects at the same time, so you do not need to wait for the previous project to finish, you can just start a new WindFields simulation

WindSim 11 on VM

- Now we can run WindSim 11 on a Virtual Machine on the Cloud
- But it still has a lot of weaknesses compared to WSX
 - Most modules only need a small server
 - Wind Fields is the longest running and needs a very big (or many small) servers
 - Licensing
 - Running multiple projects in parallel
 - Updating the software
 - Up and downloading large files
 - ++

WindSim X

- Demo



Map



Model



Simulations



Files

Map

ex. Hundhammerfjellet



Center map



Reset map



Lock area

Elevation (online resources)

SRTM (Global)

Roughness (online resources)

ESA CCI (Climate Change Initiative...)

Get preferable datasets

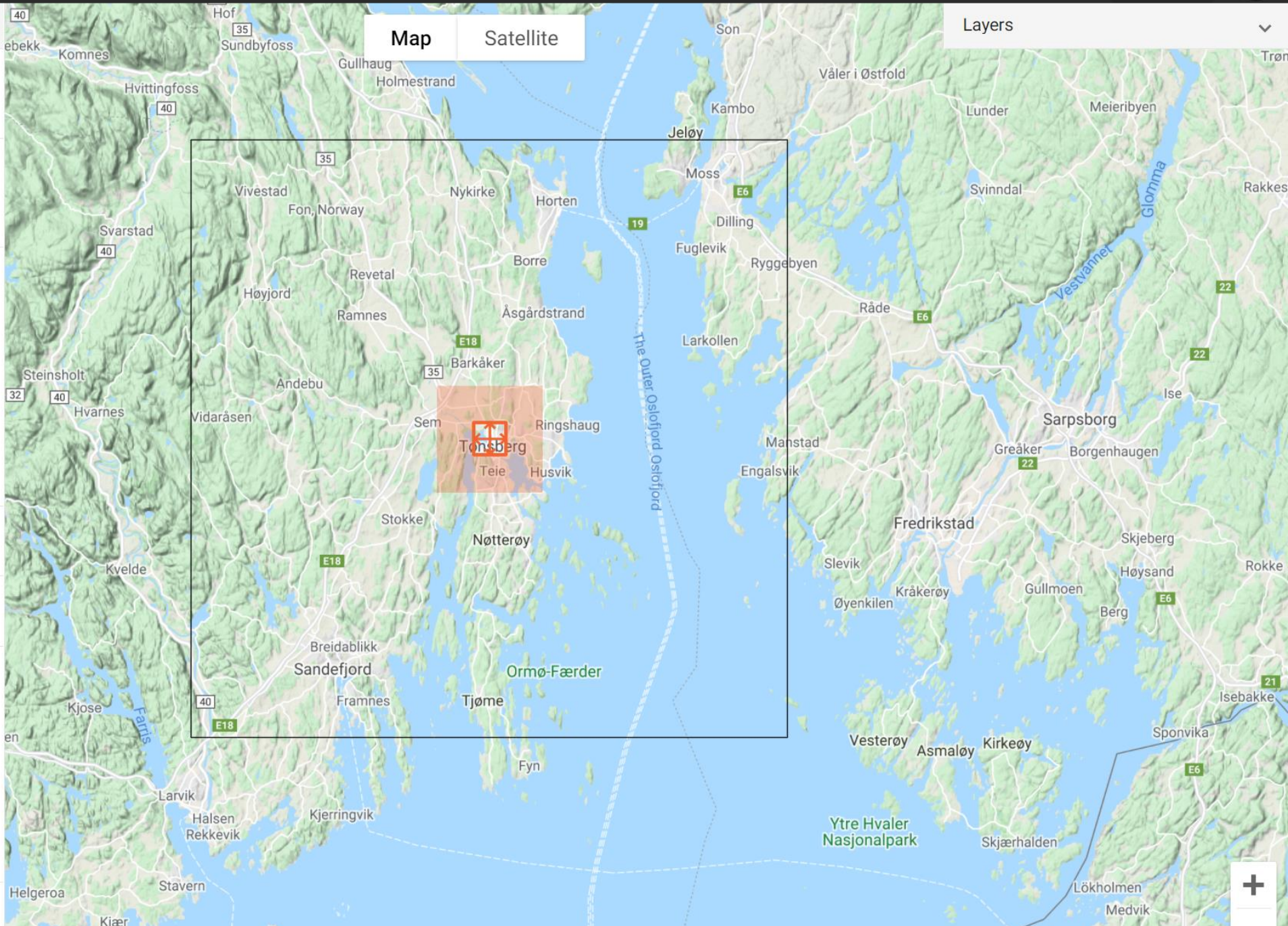
Coordinates

Model area

Map

Satellite

Layers





Map

Adjust model



Model

Numerical model



Set height above terrain

Automatically



Simulations

Maximum number of cells

5000000

Resolution x-dir (calculated) [m]

1.8

Resolution y-dir (calculated) [m]

1.8

Height distribution factor

0.1

Number of cells in Z direction

30



Files

Smoothing type



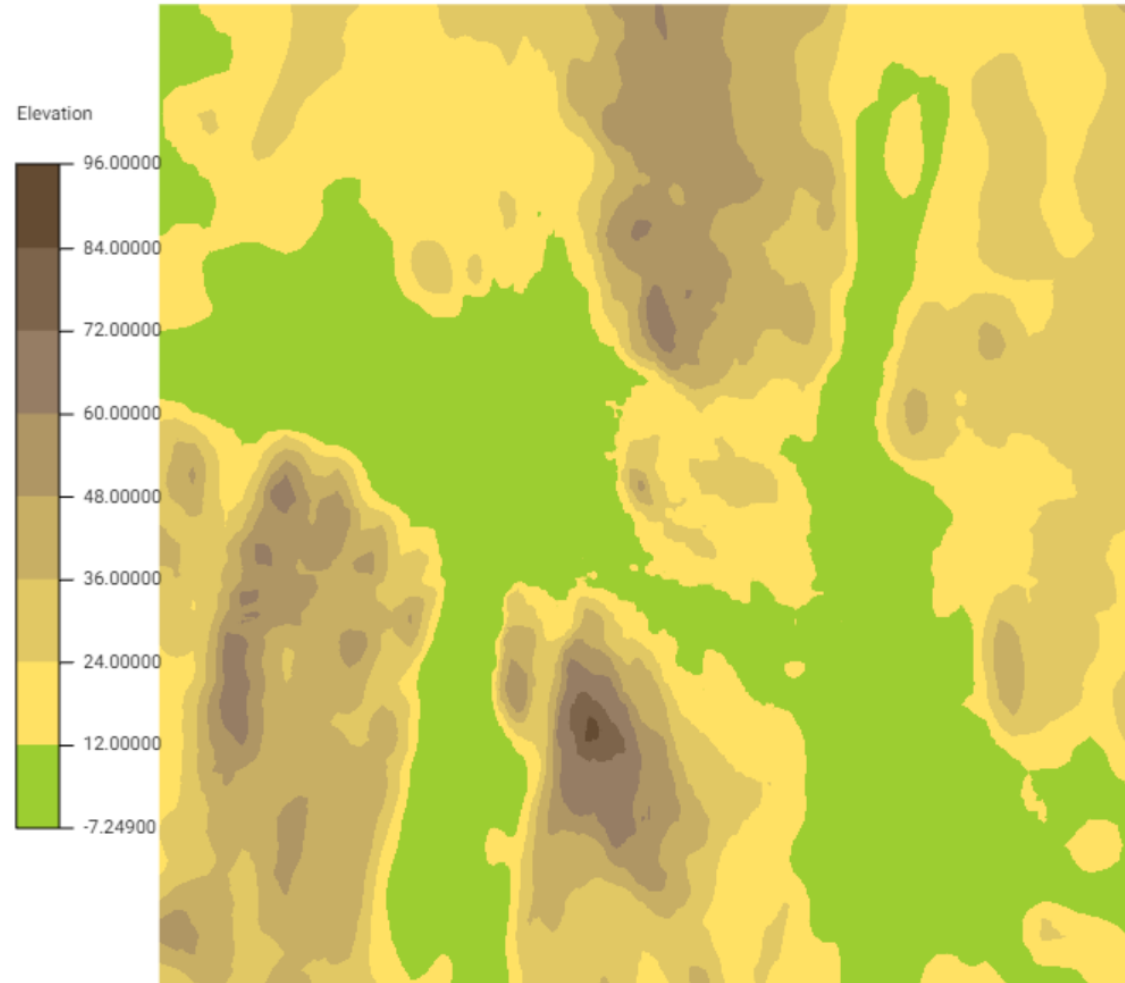
None



Forest



Disregard forest



Layers



Save image

Model terrain layers



- Elevation 100 %
- Roughness 100 %
- Roughness log 100 %
- Inclination 100 %
- Second order derivative 100 %
- Delta elevation 100 %

You can select only two layers simultaneously.

Model data layers



- Grid (xy)
- Grid (z)
- Open area
- Extension .gws



Map



Model



Simulations



Files

Simulations

Boundary and initial conditions

Do nesting

Disregard nesting

Sector input type

Uniform distribution of the sector a...

Number of sectors

4

Sectors for next run

0;90;180;270

Height of boundary layer [m]

500

Speed above boundary layer height [m/s]

10

Use previous run as input

Boundary condition at top

Fixed pressure

Physical models

Calculation parameters



Results

Model

Simulations

No reports generated. Please run simulation first.

Jobs status

Refresh all sectors manually

Sector 0°

In progress Est. 3:37:02 Elapsed 2:40:07

Sector 90°

In progress Est. 3:42:42 Elapsed 2:39:48

Sector 180°

In progress Est. 4:10:03 Elapsed 2:39:13

Sector 270°

Created Est. 4:03:25 Elapsed 2:37:27

Status

Simulations are running...



Map



Model



Simulations



Files

Simulations

Boundary and initial conditions

Do nesting

Disregard nesting

Sector input type

Uniform distribution of the sector a...

Number of sectors

12

Sectors for next run

0;30;60;90;120;150;180;210;240;270;300;330

Height of boundary layer [m]

500

Speed above boundary layer height [m/s]

10

Use previous run as input

Boundary condition at top

Fixed pressure

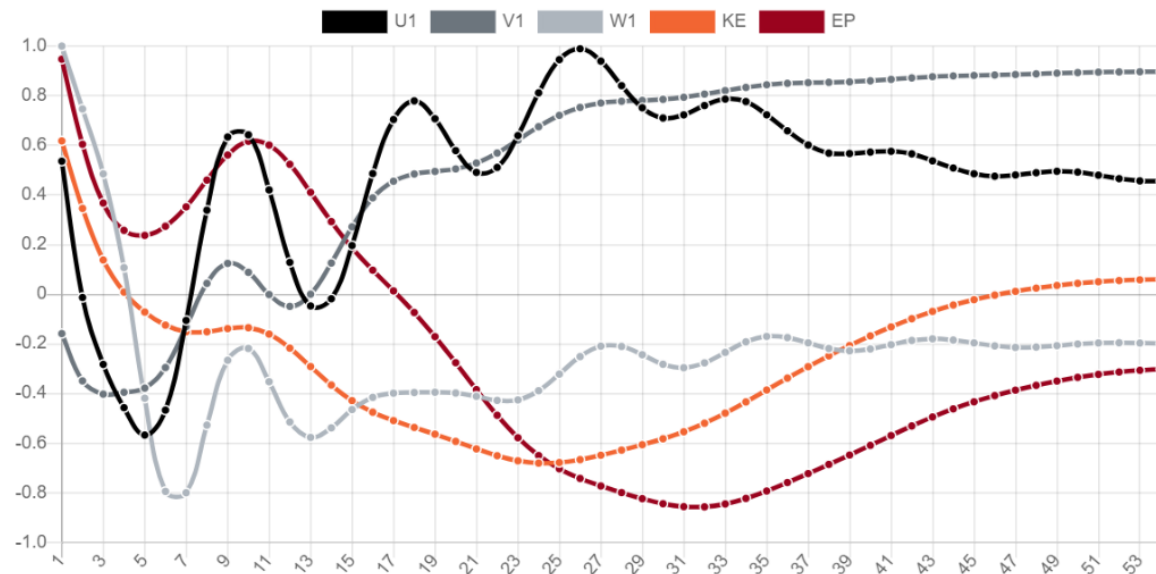
Physical models

Calculation parameters

Select sector

Sector 0

Spot values Sector 0°



Tabular data

Date	Time	Sector	Nesting	Height_BL	Speed_BL	Top_BC	Restart
22.06.21	17:23:04	0	No	500	10	fix pres.	No
22.06.21	17:18:13	30	No	500	10	fix pres.	No

Results

Model

Simulations

Field value

Spot values

Residual values

Residual values log

Jobs status

[Refresh all sectors manually](#)

Sector 0°

Completed Est. 0:00:00 Elapsed 0:00:00

Sector 30°

Completed Est. 0:00:00 Elapsed 0:00:00

Sector 60°

Completed Est. 0:00:00 Elapsed 0:00:00

Sector 90°

Completed Est. 0:00:00 Elapsed 0:00:00

Sector 120°

Completed Est. 0:00:00 Elapsed 0:00:00

WindSim Wind Fields Service

- Demo



[Back to projects](#)

Create new project

Project name

Project input

Please upload WindSim desktop application project. You will be able to start simulations based on uploaded data.

Choose file

No file chosen

Accepted files extensions: .zip

Create project



Pricing

- (* We have not landed on a pricing strategy yet, so it might change)
- Subscription per user for access to the full WindSim X
- Pay for the use of the servers:
 - CPU + RAM costs for running the modules
 - HDD Storage costs for storing the project data
- Advantages
 - No need to buy your own servers
 - No need to maintain your own servers
 - No need to upgrade WindSim
 - Only pay for what you use per second

Thank you



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