Quick Start Guide

WindSim 12

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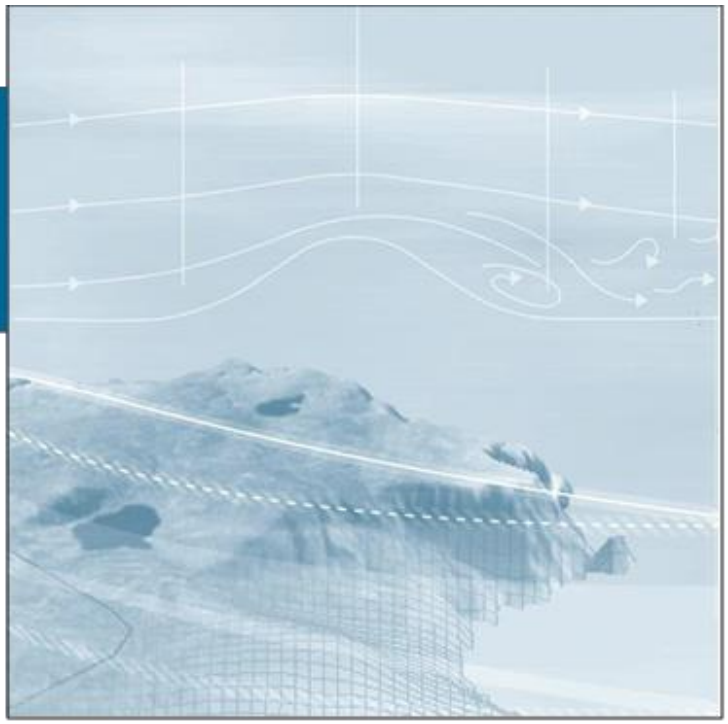


WindSim | Quick Start Guide

15th Edition | July 2025

WindSim 12

Contents

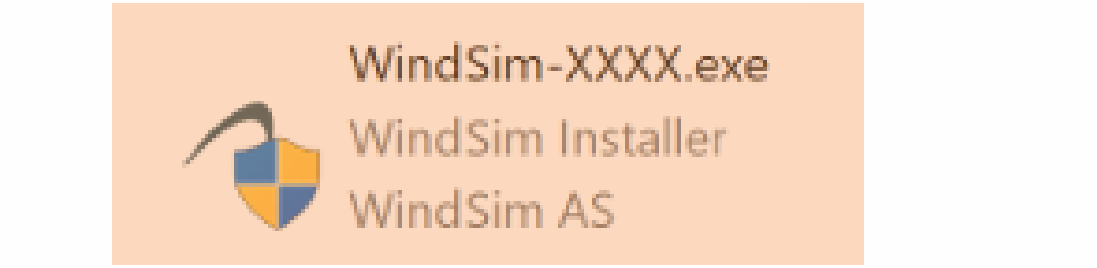
Installation

Download WindSim EV or the commercial version from Download (windsim.com) and run the installation file. Before installation read the instructions on the download page concerning minimum PC requirements and concerning which software that needs to be pre-installed on your computer.

Guidance on the installation process and in particular the license access for the commercial version is described in the following:

1. Download and Run the Installer

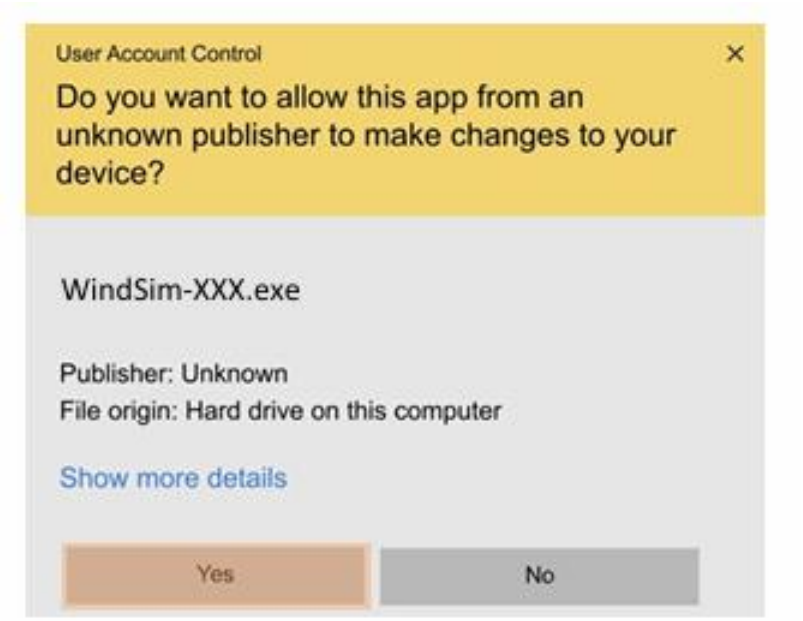
- Download the installation file from: https://windsim.com/downloads/latest-version/
- Double-click on the downloaded installation file, which will have the following icon and name, where “XXXX” represents the version number (e.g., WindSim-XXXX.exe).



2. User Account Control Prompt

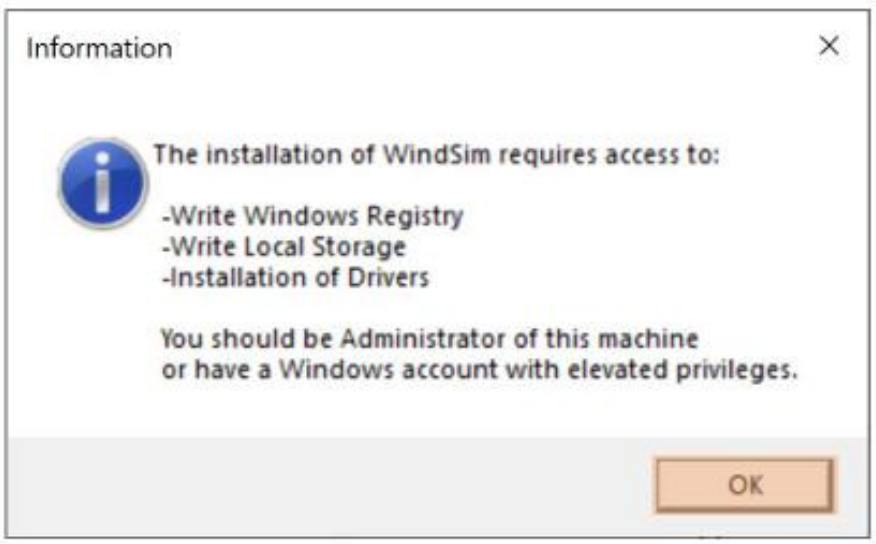
- You will see the following prompt from the "User Account Control":
    - *“Do you want to allow this app from an unknown publisher to make changes to your device?”*

Click "Yes" to proceed with the installation.



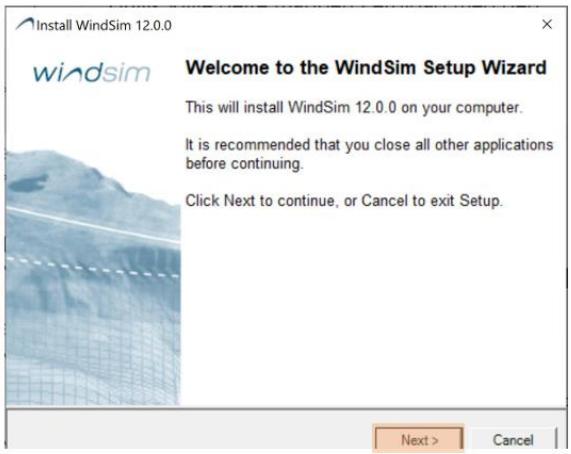
3. Administrative Privileges

- Please note that the installation of WindSim requires elevated or administrator privileges to proceed.



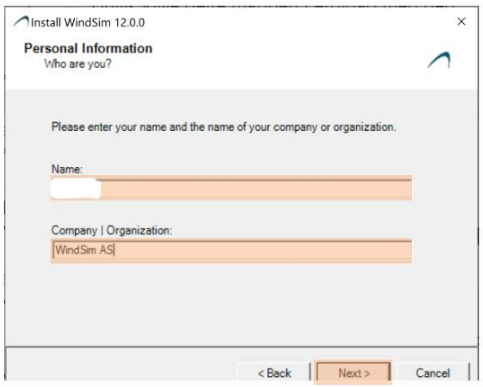
4. Start Setup Wizard

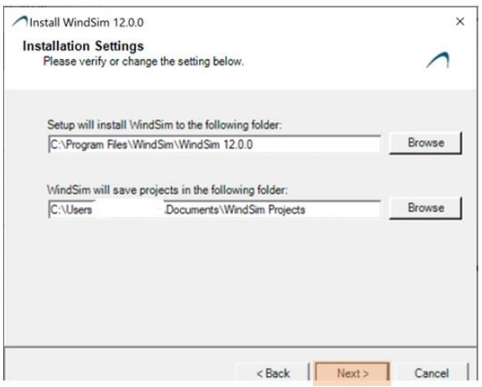
- Launch the setup wizard and accept the End-User License Agreement (EULA) to continue the installation.



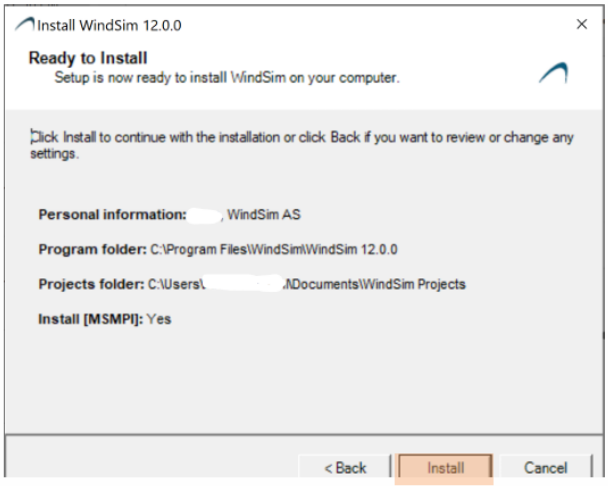
5. Enter Information and Set Installation Paths

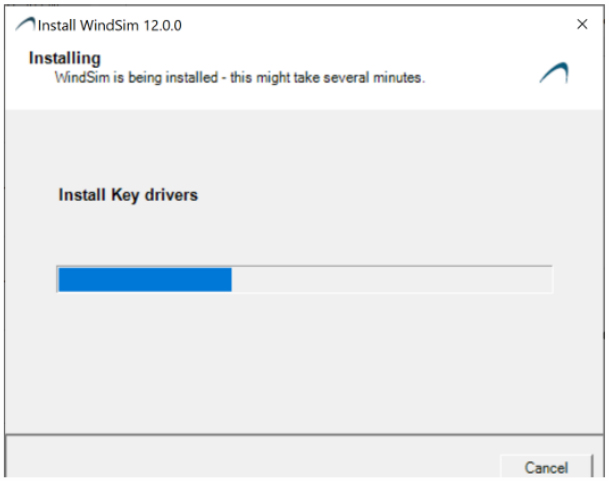
- You will be prompted to enter your Name and Company information. This information will be displayed in the header of all reports generated by WindSim.
- Choose the installation folders for WindSim and the default location where WindSim projects will be stored.





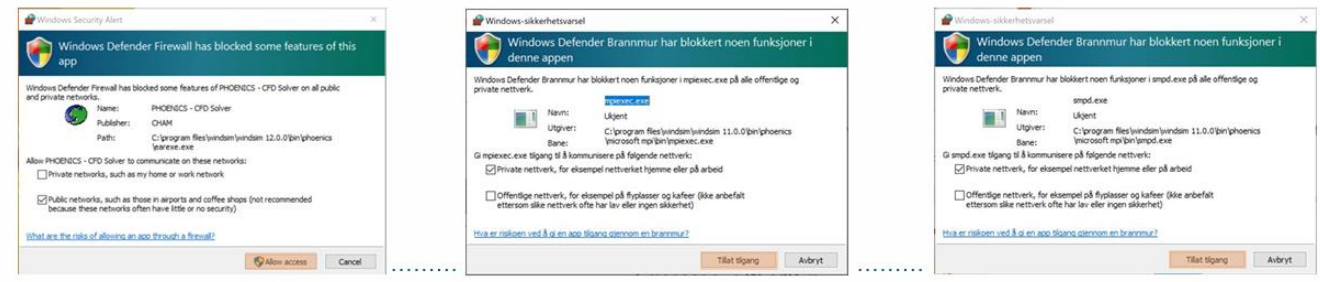
6. Installation





7. Firewall Warning

- During installation or when running WindSim for the first time, Microsoft Defender Firewall might block some executable files.
    - Path: *C:\Program Files\WindSim\WindSim XXX.*
    - You must click “Allow Access” to ensure the executables run properly.

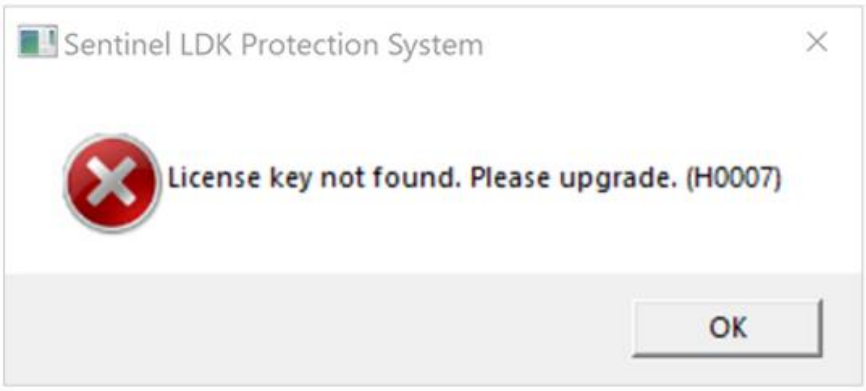


8. Installation Complete

- The installation is completed successfully. Next, you need to configure your software license.

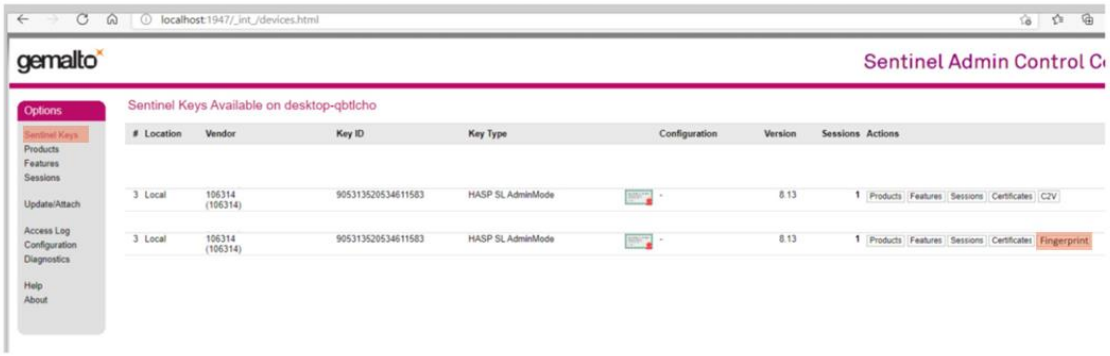
9. License Access in WindSim 12

- In previous versions of WindSim, a USB hardware key was used for software protection. In WindSim 12, a software key is utilized.
- When you launch the program, you will be prompted with the following message to initiate the licensing process.



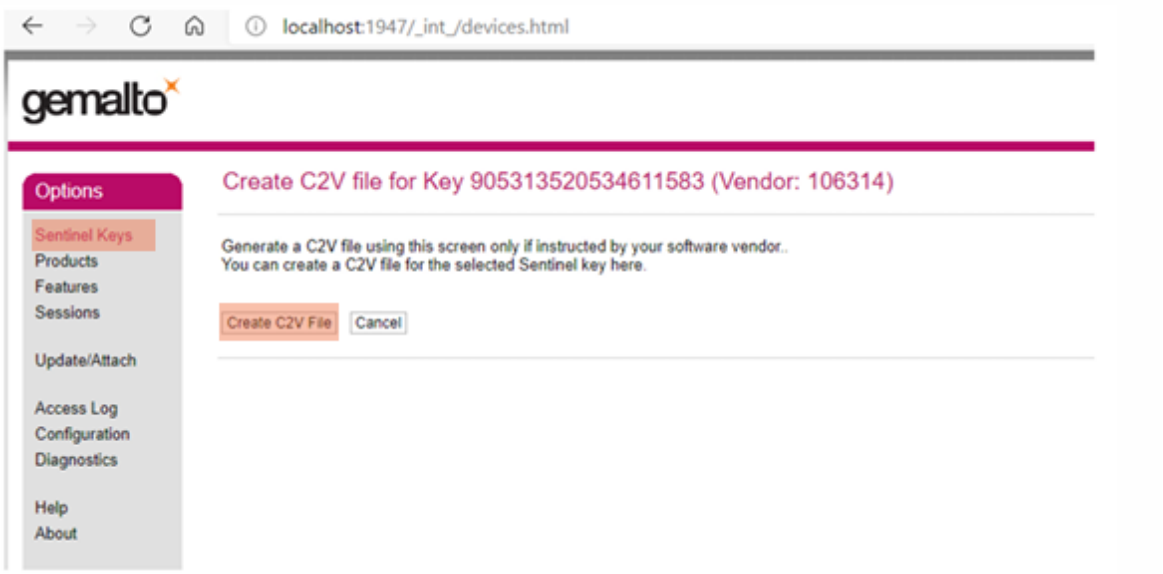
10. Create C2V File

- To create the necessary C2V file, open your web browser and go to http://localhost:1947/*int*/devices.html.
    - Alternatively, once WindSim is running, you can update the license information directly in WindSim under *Settings -> Show Key*.
    - The exchange of license data is done through files. The first file created is called “Fingerprint” (subsequent files are called C2V).
    - Click on “Fingerprint” to create the file.



11. Send C2V File

- After generating the C2V file, click on “Create C2V File,” and the file will be downloaded.
- Send this file (named *XXX.C2V*) to *info@windsim.com*.



12. Receive and Apply V2C File

- We will respond by sending you a V2C license code file.

To apply the V2C file, go to the same page (http://localhost:1947/_int_/devices.html), click on “Choose File,” select the V2C file, and then click "Apply File" to complete the licensing process

WindSim is by default installed on **C:\Program Files\WindSim,** while the project folder where WindSim projects are saved is located in the folder **C:\Users\User_name\Documents\WindSim Project**. You may change these default settings during the installation. After installation while running WindSim, projects could be saved at arbitrary locations.

Once WindSim is installed it can be run from the shortcut added on the desktop or from the list of programs in the Start Menu of Windows.

Explanation of Controls & Nomenclature

The program consists of the following components:

- Title bar
- Menu bar
- Module selector, with inherent progress monitoring
- Information pages, displaying descriptions, reports and 3D models

Start and Task list

- Properties with brief descriptions
- Processing output
- Progress monitoring

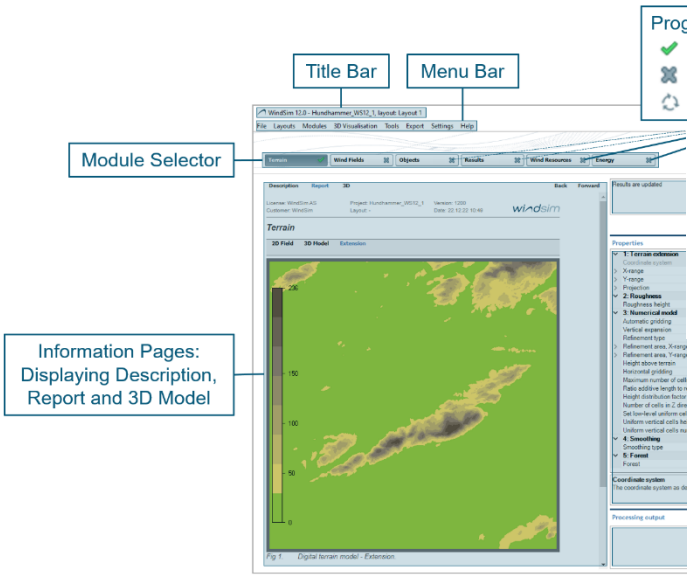


Figure 1 – WindSim Controls & Nomenclature

Title Bar

The title bar consists of the following items:

- The WindSim icon logo
- Name of the program with including version number
- Name of the current project
- Name of the current layout

Figure 2 - Title bar.

Menu Bar

The menu bar consists of the following items:

- File
- Layouts
- Modules
- 3D Visualization
- Tools
- Export
- Settings
- Help

Figure 3 - Menu bar.

File

Under the File drop-down menu, you will find all the controls needed for File management:

- New
    - Project… — Create a new project
    - Express project… — Swap to WindSim Express
    - Project copy… — Create a new copy of the current project
    - Layout copy… — Create a new copy of the layout(1) for the current project
- Open
    - Project… — Open a project
    - Layout — Open a layout(1) belonging to the current project
- Recent Projects — List of the recently used projects
- Remove

  - Project — Remove the current project
  - Layout — Remove the current layout belonging to the current project
- Print… — Print the currently displayed page
- Print preview… — Preview the currently displayed page before printing
- Save — Save the current project
- Revert to saved — Reset the properties to the state before last module execution
- Open project folder — Opens location of the project folder
- Open report folder — Opens location of the report folder
- Open program folder — Opens location of the program folder
- Properties — Open a window with summarized main information on the current project
- Exit — Exit WindSim

(1) Layout: when a project has more than one layout, the Terrain and Wind Fields will remain the same. Layout copy enables you to test different wind farm configurations using the same Terrain and Wind Fields data.

Layouts

Under the Layouts drop-down menu, the following commands are available:

- Create copy… — Create a new layout as a copy of the current one
- List of loaded layouts — tick off the layout you want to activate
- Terrain texture file
  - Open… — Load a .bmp or .rgb texture file to paste over the terrain
  - List of loaded textures — Tick off the texture file you want to activate

Modules

Under the Modules drop-down menu, the user can choose which module to run. The functionality of each module is described in more depth later in this document. The present drop-down menu is equivalent to the Module Selector:

- Terrain

- Wind Fields
- Objects
- Results
- Wind Resources
- Energy

3D Visualization

In this module the user can select several 3D Visualization items:

- Generate 3D wind visualization file (.vtf)… Generate a wind visualization file
- Open 3D wind visualization file (.vtf)… Open an existing wind visualization file
- Download 3D samples … Download .vtf files from the WindSim website.
- Download sky textures … Download sky background examples from the WindSim website.

The .vtf files can be opened with GLview PRO the application for post-processing provided with the full installation of WindSim.

Tools

- View terrain model (*.gws)… View the terrain model in a text editor
- Import terrain model (*.gws)… Import a terrain model to WindSim
- Convert terrain model… Convert terrain data from .map format to the WindSim format .gws
- Terrain Editor… Launch the Terrain Editor application
- Find forest parameters Launch Excel sheets for the calculation of forest parameters
- Advanced conversion :
    - Convert terrain model (CMD) Convert terrain data from other formats to the WindSim terrain format, *.gws
    - Convert climatology data (CMD) Convert climatology data from other formats to the WindSim format .wws
- Meso-Microscale Coupling Console… Import results from a meteorological model
- View climatology data (*.wws)… View the climatology file in a text editor
- Convert climatology data… Convert climatology data from the .tab format to the WindSim format .wws

• Create power curve (*.pws)…	Create the power curve file of the considered wind turbines if they are not present in the WindSim database
• Import objects (*.ows)…	Import objects into WindSim from an *.ows file
• Export object (*.ows)…	Export objects in the current layout to an .ows file
• Losses and Uncertainties...	Calculation of losses and uncertainties
• Flow Model Validator…	Validation of simulated vertical profiles against measured profiles
• MCP…	Launches the plugin to do MCP (Measure-Corelate-Predict)
• Reanalysis Data Downloader…	Launches the plug-in to download MERRA mesoscale date
• Queue…	Launches the plug-in to define a queue of wind field simulations
• Park Optimizer …	Launch the Add-on Module WS Park Optimizer
• Remote Sensing Correction Tool...	Launch the Add-on Module WS Remote Sensing Correction Tool, used to correct LIDAR data based on WindSim results

Export

• Export climatology data (*.tab)…	Export a climatology file to the .tab format
• Export object (*.ows)…	Export objects in the current layout to an .ows file
• Export to Google Earth(.kml)…	Export report maps to Google Earth
• Create Word report...	Generate a report of your project in .doc format
• Export HTML report...	Generate a report of your project in HTML format
• Export vertical profiles…	Extract vertical profiles of chosen scalar at turbine and/or climatology positions
• Export WindPRO flowres file…	Exports the results from the *Wind Fields module* to a WindPRO readable format

- Export Openwind WRB file… — Exports the results from the *Wind Fields module* to a Openwind readable format
- Export Lookup Tables — Creates tables for wind power forecasts

Settings

In the Settings section you will find:

- Show key… — Open the Sentinel Admin Control Center
- Advanced Settings… — Choose the output file type asci or binary
- Change language — Change the current language
- Limits… — Click to see the computational limits of WindSim models

Help

In the Help section you will find:

- About WindSim… — Version and License information
- Release Notes — Links to web-based version of the Release Notes RSS-enabled
- Manuals — Access to the manuals: Getting Started, MCP, Reanalysis data downloader

Module Selector

The Module Selector consists of the following modules:

- Terrain
- Wind Fields
- Objects
- Results
- Wind Resources
- Energy

Figure 4 - Module selector with the Terrain module activated.

Click on a module button to activate it.

Your progress with WindSim's modular approach is always visible. Once selected, a Module button can have one of three states:

- Modules with a green check have been run successfully.

- Modules highlighted with animated circular arrows are running.
- Modules with a grey cross have not been run or needs to be updated.

NOTE: There are important dependencies among the modules.

You must first run the *Terrain module* in order to establish the computational model to successively generate the wind database. When the *Terrain module* has a green check, you can run the next module, the *Wind Fields module*.

In the *Wind Fields module* the wind database is generated. This database contains detailed information about the wind field in the computational model established in the *Terrain module*. If the user now goes back to the *Terrain module* and change any of the parameters, the *Terrain module* will become red. It needs to be re-run to be updated, and the same procedure must be done with the *Wind Fields module*. It does no longer contain a wind database that is compatible with the terrain model the user re-defined in the *Terrain module*. Once the user has calculated the terrain model and the wind database the *Terrain* and *Wind Fields modules* will have green checks, then you may start working with the other modules.

The *Objects module* will place and process climatology data and place wind turbines. They are commonly called “objects”. Both climatology and wind turbine objects must be specified in the *Objects module* in order to process all the remaining modules.

The wind data are visualized in the *Results module*. Both the *Terrain* and *Wind Field modules* must be correctly run before you can run *Results*.

The wind measurements contained in the climatology files are used to weight the wind database. This is done in order to get realistic data about how the wind is influenced by the terrain in the *Wind Resources module*.

The wind turbine’s locations and power curves loaded in the *Objects module* are combined with wind measurements in the *Energy module*, to compute a complete estimation of the energy production.

The best way to get a good feel for these dependencies is to start working with WindSim.

Please refer to the tutorial project Hundhammerfjellet described later in this document for further guidance.

Information Pages

There are *Description* and *Report* pages in all WindSim modules, and in most modules results can be displayed in a 3D model. By clicking on either of the links you are able to toggle between the corresponding pages. The active link is coloured blue. In the *Objects module* there is one additional link to activate the *Park layout*. Whenever the information pages contain sub-pages the toggles *Back* and *Forward* are used for browsing.

Figure 5 - Information pages.

Description Pages

The description pages describe the purpose of a module. It explains which consideration you need to make in order to successfully run the module. The Description pages also give a detailed explanation of the Properties, which is the module input. The *Description page header* displays the module name, the WindSim version number, and the date when the pages were last updated.

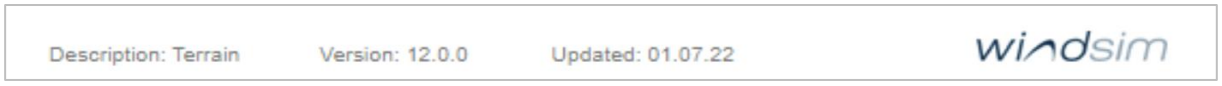


Figure 6 - Description page header.

Report Pages

The report pages contain the results from the corresponding module. The *Report page header* contains information about the project. There is information about the License, Customer, Project, Layout, WindSim version number, and a timestamp when the report was generated.

Figure 7 - Report page header.

3D

The report pages contain figures of various datasets, in the module *Terrain* elevation and roughness can be displayed, in the module *Results* multiple datasets of various flow variables can be displayed. By pressing the button *3D* the corresponding dataset displayed

in the report page will be opened in the 3D viewer GLview. If there is no available dataset on a given report page, then pressing the button *3D* have no effect.

Start and Task list

Each module is run by clicking on the Start button. The Task List appears above it is showing if the module is ready to be started or if a previous dependent module has to be started first.

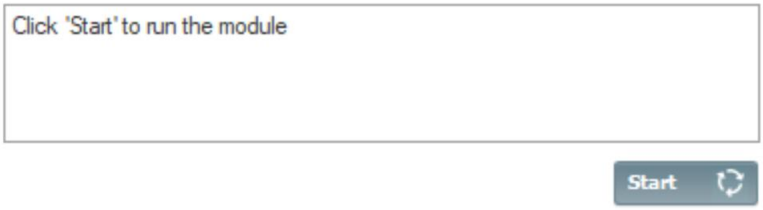


Figure 8 - Start button and Task list.

Properties

In the *Properties panel* located on the right-hand side of the screen, all the settings for a given project are specified. Each module has its own set of properties. Explanations of the properties are found on the *Description pages*. You can click on the property to insert and type the desired values. You can also use the arrow keys to move up and down through a list of options provided to make a selection. Whenever you need to specify more than one value for a property, the semicolons syntax is used to separate the values. Press the *Enter key* when ready to enter a new value or click somewhere outside the current input field in order to set a new value.

The frame below the *Properties panel* shortcut information about the selected property is given.

NOTE: More detailed information about each property is found in the *Description page* of the current module.

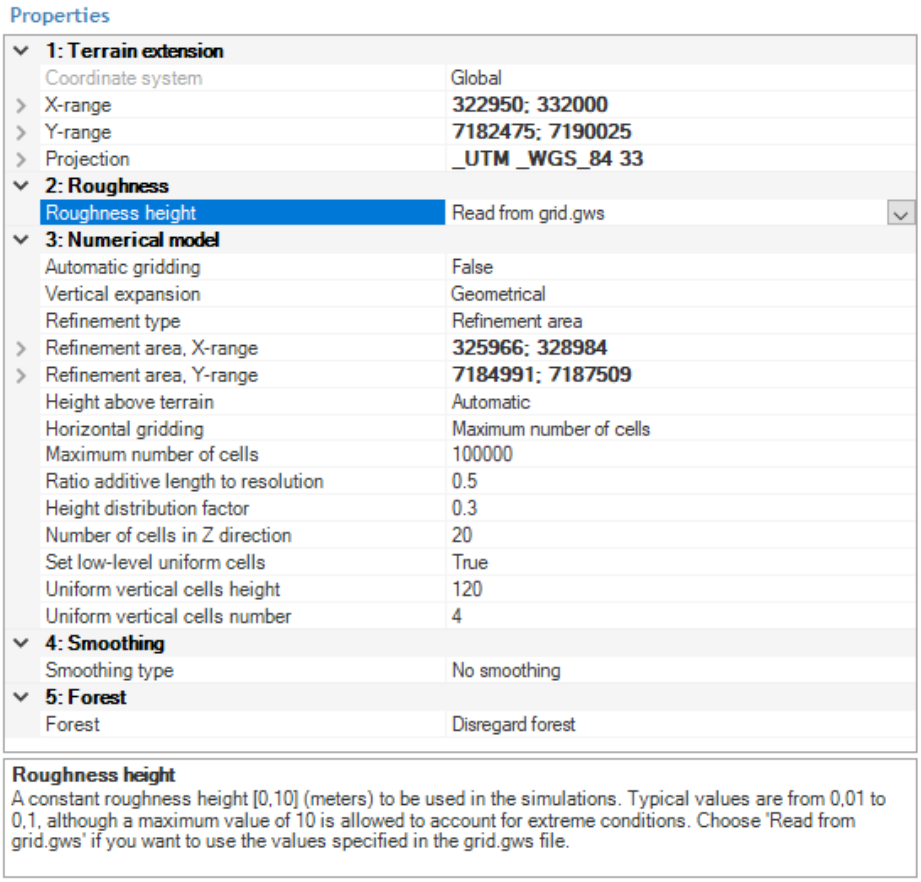


Figure 9 - Properties for the Terrain module including property information of the selected property (roughness height) in the lower frame.

Processing Output

In this frame you will see the output result concerning the module which is currently running or just finished. This result may contain information describing if the module has been run correctly. Otherwise, it will display errors, warnings, or additional information.

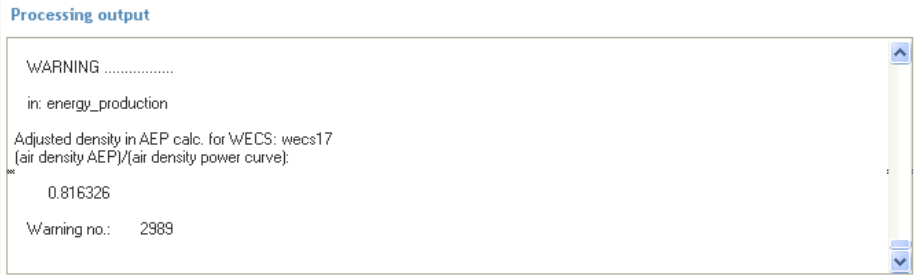


Figure 10 - Processing output frame.

Module - Progress

Figure 11 – The WindSim Module Selector displays your progress through the modules.

Your progress with WindSim's modular approach is always visible. Once selected, a Module button can have one of three states:

- Modules with a green check have been run successfully.
- Modules highlighted with animated circular arrows are running.
- Modules with a grey cross have not been run or needs to be updated.

For further information regarding the usage of the WindSim modules and functionalities see the *WindSim User Handbook*.