Quick Start Guide

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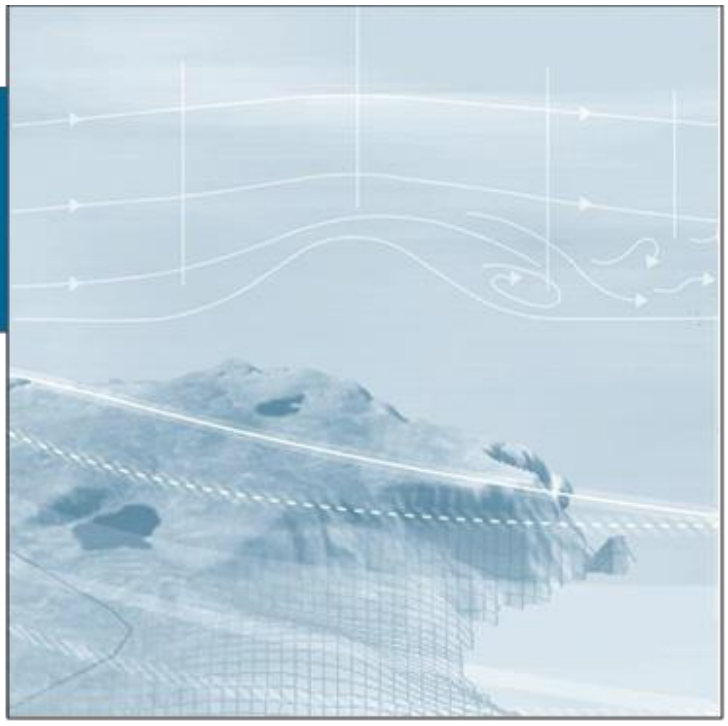

WindSim | Quick Start Guide
Remote Sensing Correction Tool

15th Edition | July 2025

WindSim Desktop

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Remote Sensing Correction Tool

The Remote Sensing Correction Tool generates correction factors that can be applied to the LIDAR measurements. The method is using the vertical wind speed variation calculated by WindSim to correct the LIDAR measurements. LIDAR systems use the assumption of a homogeneous wind field for converting the measured radial wind speed into horizontal wind speed. In complex terrain this assumption is not valid, and a correction is necessary.

Attention! For **Zephir (ZX)** devices the number of wind directions in the wind-fields module **must** be **36** sectors. For other devices 12 sectors or more is fine.

The Terrain module used for the Remote Sensing Correction Tool should be built according to the following section.

Setup

Vertical resolution

The vertical resolution should be around 10m up to the highest measurement height of the LIDAR. This might be achieved by using a refinement file and using more than one height distribution factor in the vertical. See how to edit the vertical grid in our "How to…" article.

Horizontal resolution

The horizontal resolution should be in the range of 10 m. The horizontal model area extension is recommended to be around 8x8km. For the Remote Sensing Correction, the refinement area needs to cover a minimum of an area of 400x400m around the device location. To simplify the horizontal gridding process, feel free to download our "Gridding Tool" to plot in the device coordinates and easily design the horizontal grid extensions.

Terrain Smoothing Limit

The simulation should be run without smoothing to guarantee that the vertical wind speeds are simulated in the right way.

Orthogonalization of the Grid

This option should not be used to make the extraction of the results possible.

Forests

Can be used as an option.

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Wind-Fields

In the wind field settings, the number of wind directions **must** be **36** if you are running a project for a **Zephir/ZX LiDAR**. For other devices 12 or more sectors work fine.

The **"Height of reduced wind data base"** should be set to a number +100m above the highest measured height of the LiDAR. E.g. measured height 300m, put 400m.

Objects-module

Place an object in the position of the LiDAR/SODAR device and run the module before running the Remote Sensing Correction Tool.

The Remote Sensing Correction Tool can be started from the Tools menu in WindSim.

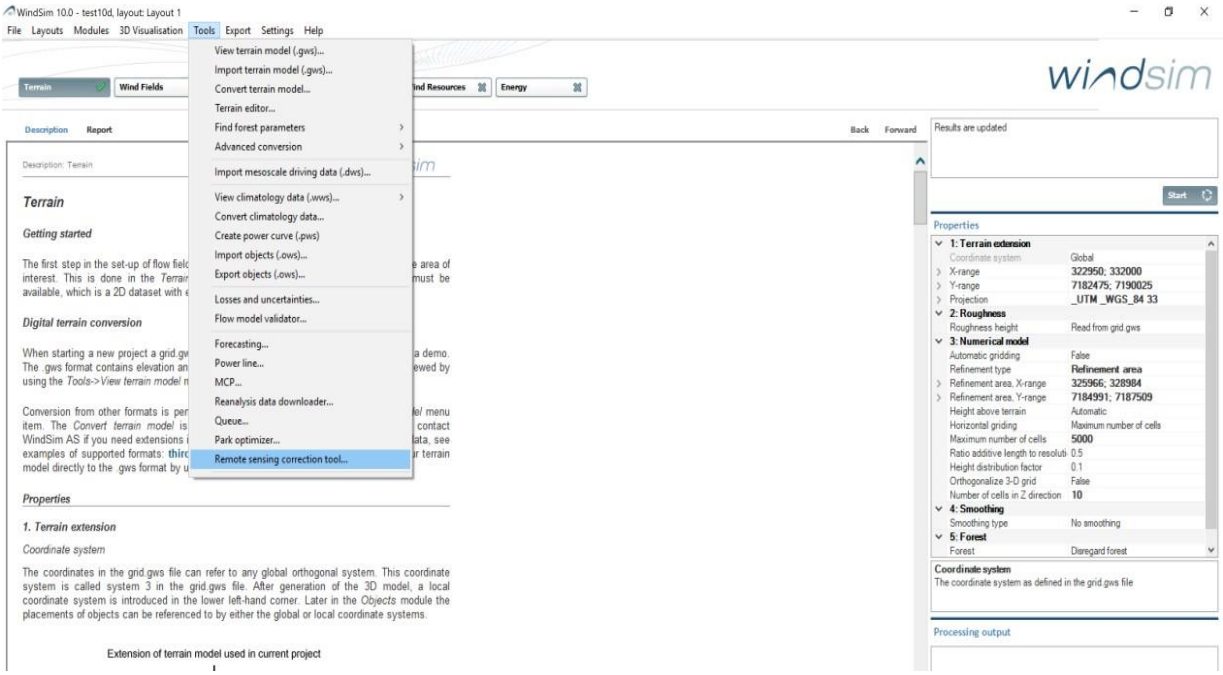

Figure 1: Opening of the Remote Sensing Correction Tool.

A dialogue will pop up where the specifications of the LIDAR must be set.

Lidar Specifications

Data files

Non-active functionality. It is not possible to correct the measurement data in the tool. The tool will generate the correction factor table, the factors must be applied manually or in a wind data tool such as Windographer (Feature: *Apply Scale & Offset*).

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Angles

The scan angle and the direction offset angle are given in the header information of the .sta file. Direction Offset does **not apply** for **Zephir/ZX** LIDAR.

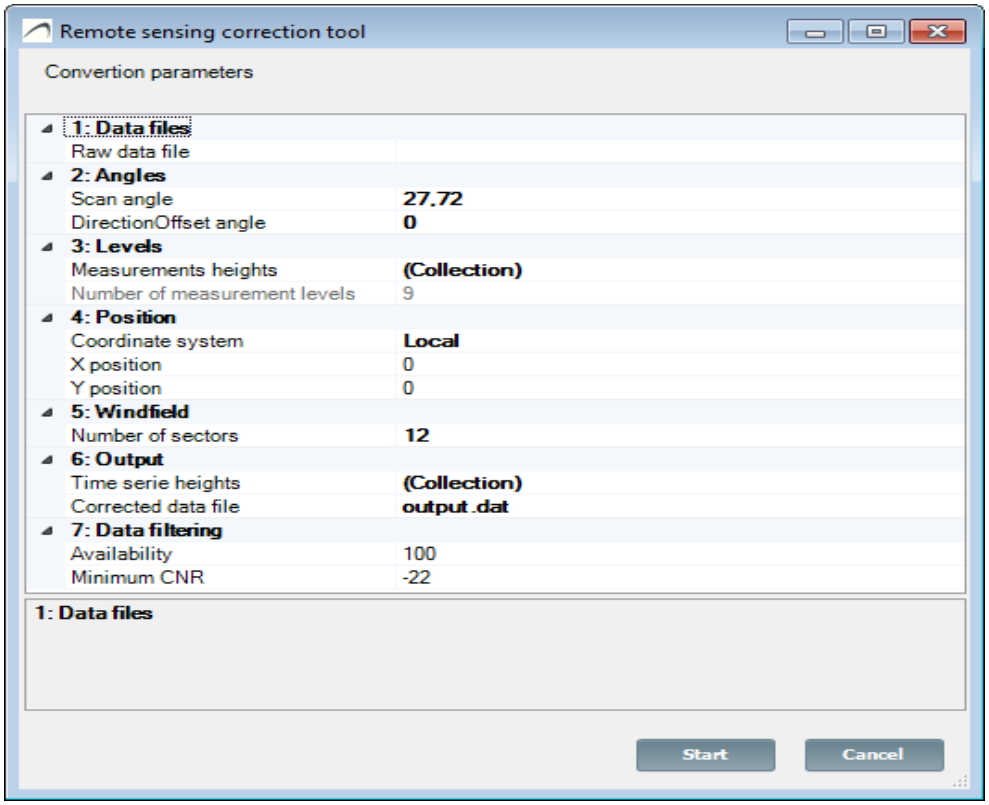

Figure 2: LIDAR specifications

Levels

The measurement heights must be given here. They can be found under "Altitudes" in the header of the LIDAR files. All heights must be specified.

Position

The position of the LIDAR can be given in either global or local coordinates and must match the object representation of the device in the Objects-module.

Wind Field

The number specifies which sectors are used for the LIDAR correction. The sectors are calculated by the following formula: INT(360/number). You need to make sure that these sectors have been run successfully in the WindSim project otherwise the correction will fail. In case of difficult terrain, it is advantageous to use more than the standard 12 sectors.

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Output

Non-active functionality. The result file (correction factor table) can be found under the climatology folder of the project which is used for the correction.

Data Filtering

Non-active functionality.

Click “Start” when the device information has been filled, select your device and the correction factors will be generated and stored in the WindSim project folder “*WindSimProject*\climatology” as “correction_device.txt”.

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