RELEASE NOTE
WAPP SOFTWARE

Version 23.a*

This release includes 22.a

Commercial_Release_Note-WAPP Software 23a.docx

Table of Contents

1 Introduction

This updated version includes the module **Volume Wind**, which is a powerful reconstruction and visualisation tool of the horizontal wind speed direction and intensity in a defined volume. This includes a visualisation tool to convert data and display them into QGIS, an open-source software for geospatial data.

Make the most of your wind data with Volume Wind!

2 Major improvements

2.1 Volume Wind [Paid option]

You can now subscribe to the Volume Wind module!

To further expand WindCube Scan capabilities by mapping the wind field in volumetric space, we have developed a powerful software algorithm to reconstruct the full direction/intensity of wind from radial data. This algorithm is based on two hypotheses: a local homogeneity of wind, and a vertical wind speed negligible.

The Volume Wind post-processing algorithm converts raw radial velocity measurements from WindCube Scan to Horizontal wind vectors for all locations of a regular grid in three-dimensional space (voxels). The user can choose a voxel size, corresponding to a spatial averaging and resolution. It works with PPI and Volume scans.
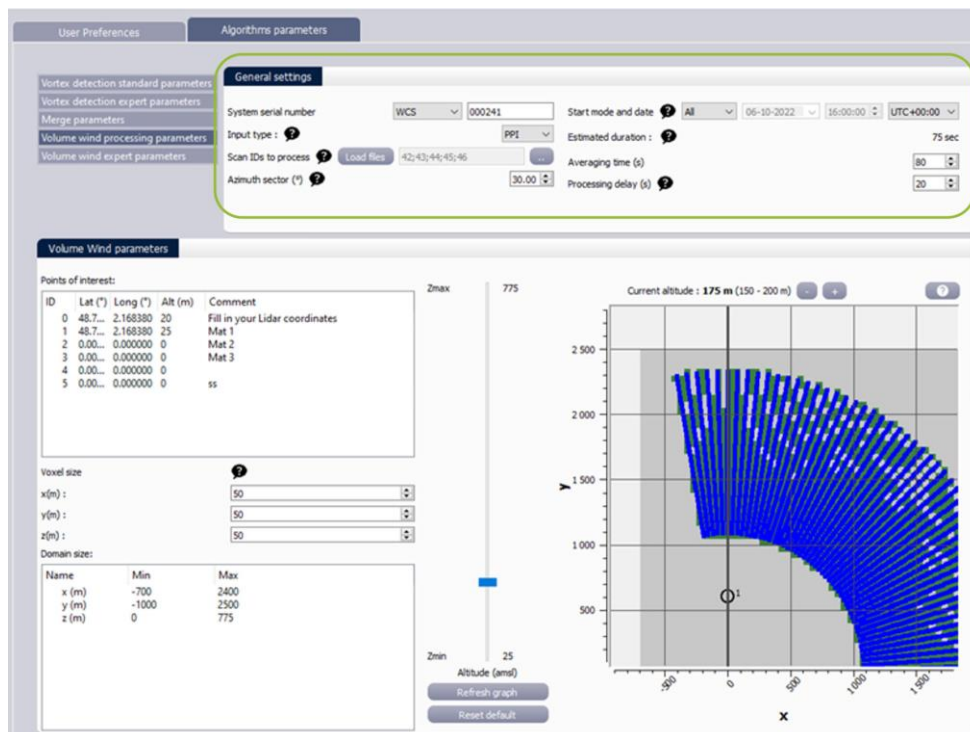

The user has access to key parameters for the algorithm settings:

- Averaging time for data
- Voxel size
- Domain area

- Azimuth sector (azimuth area used for reconstruction)
- Advanced algorithm parameters

After the process, the user retrieves NetCDF files containing, among other things, information about wind orientation and direction (in Cartesian plan and also in polar coordinates). Indicators for reconstruction quality are also available.
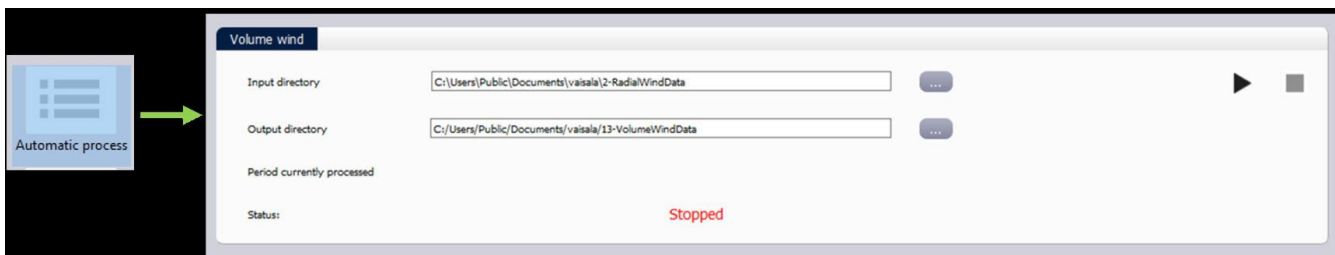

2.2 Volume Wind Visualization [Paid option]

Complementary to Volume Wind process, Volume Wind Visualization tool is designed to analyze the results of Volume Wind wind field reconstruction and integrate them into the opensource software QGIS. QGIS is a free and open-source application that supports viewing, editing, printing, and analysis of geospatial data. Horizontal Wind Speed, Radial Reprojection Deviation, and spatial information can be displayed on a map layer in QGIS.

Please download QGIS here: https://www.qgis.org/fr/site/forusers/download.html
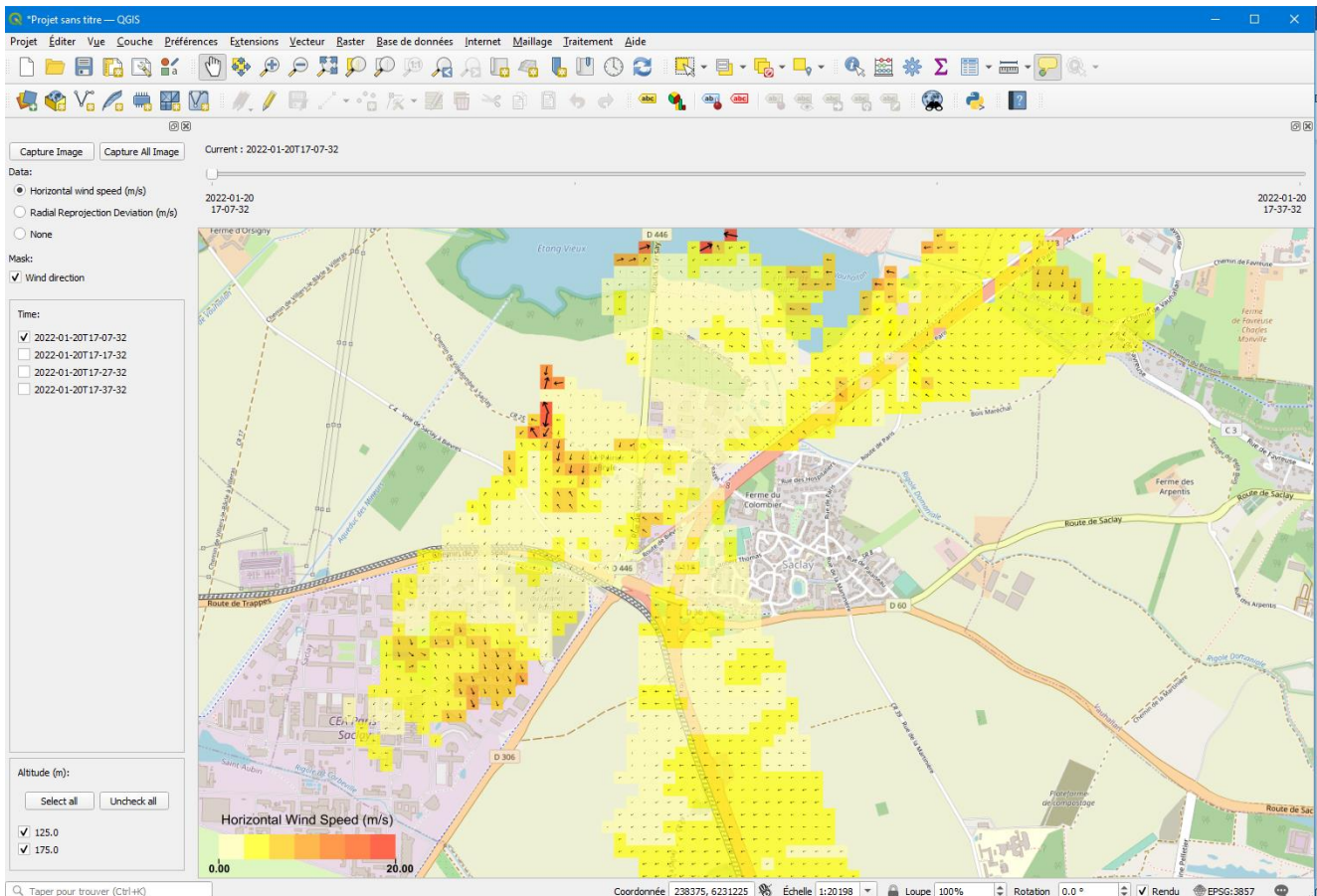
After Volume Wind Visualisation post-processing, the horizontal wind speed is represented by arrows and colors into QGIS. The arrows show the wind direction, and their size and thickness are proportional to wind speed. The colors range from yellow to red also indicates wind intensity.
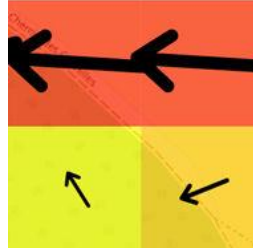
In QGIS, user can:

- Display Horizontal Wind Speed
- Display Wind direction and intensity (with arrows proportional to wind intensity)
- Display Radial Reprojection Deviation (quality indicator)
- Select and display timestamp of interest
- Select and display altitude(s) of interest
- Export images
- Use all QGIS functionalities
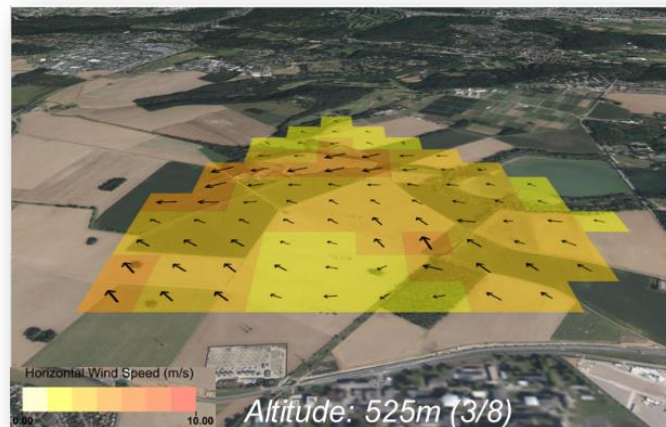
This gives you a full picture of how the wind changes over space and time, in both speed and direction.

The integration of data into QGIS is an opportunity to get a better understanding of the wind thanks to the multitude of tools and possibilities for geospatial data.
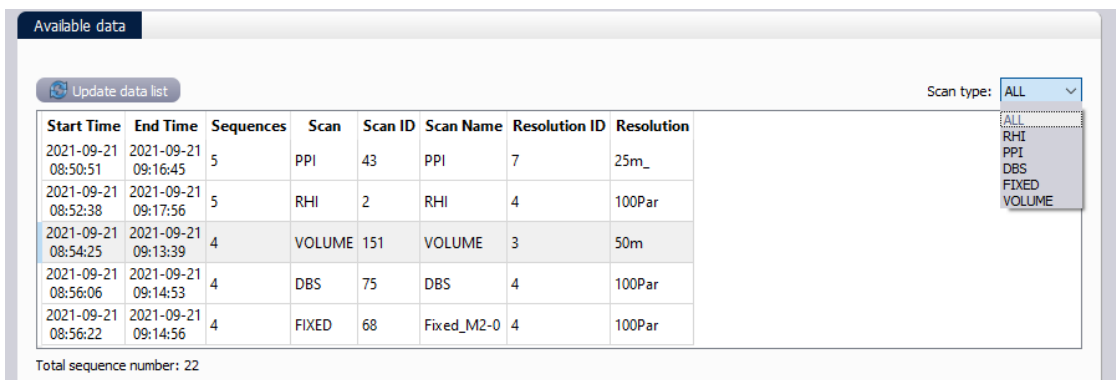
2.3 License manager

The license manager is updated to allow to activate Volume Wind option. Volume Wind option is visible in WAPP Options:
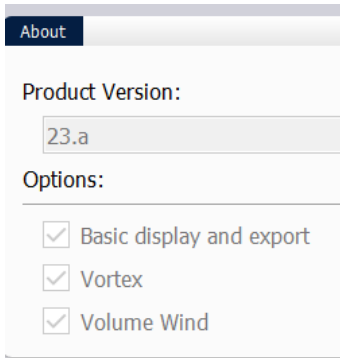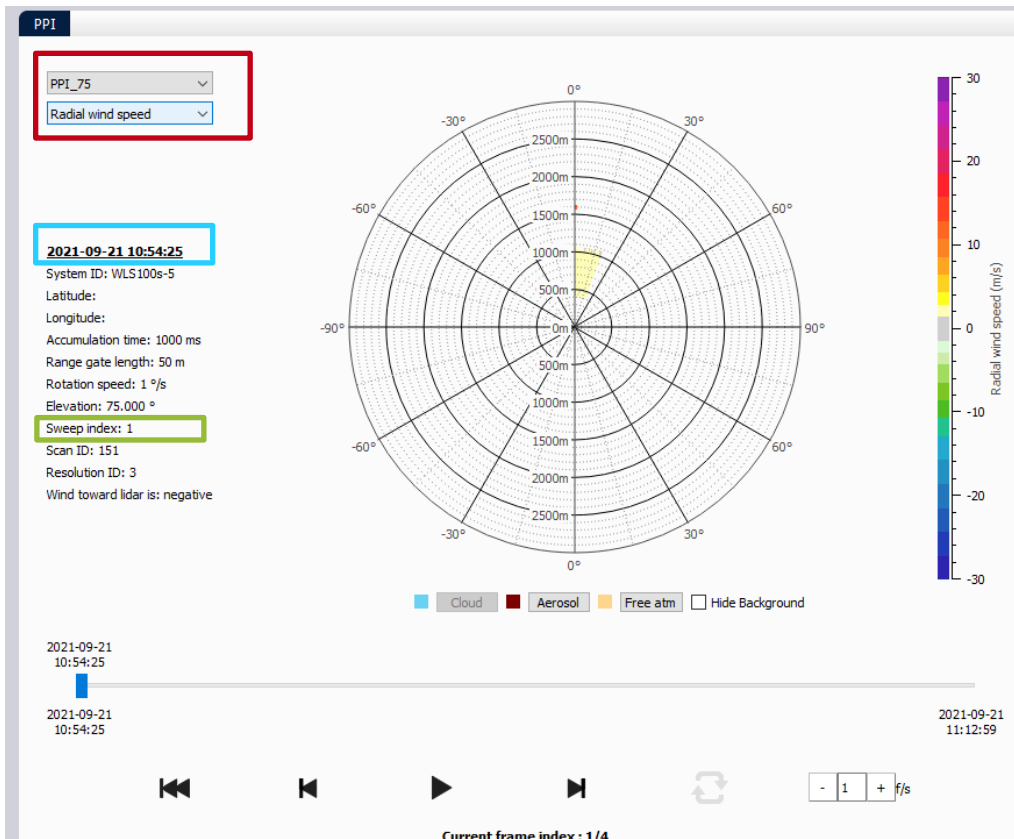
2.4 Volume Scan display

The user can now visualize sweeps from a Volume scan.

When the Volume is selected, all PPI included inside the volume are loaded and can be displayed:

The user can select a PPI to display from a drop-down list (enclosed in red). The selected PPI will remain the same in reading mode (with variations across time) unless the user changes it. If a loaded volume does not have a PPI, there will be no display or background options for that PPI:
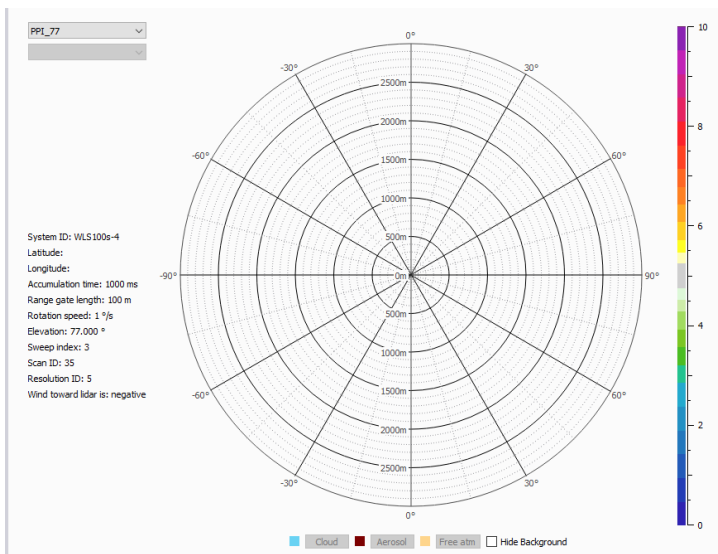
The Timestamp in caption (enclosed in blue) matches the PPI displayed. The timestamp on the timeline corresponds to the Volume Scan.

The sweep index is shown in the caption (enclosed in green).

3 Important bug fixes

None

4 Low level optimizations, bug corrections and stability improvements

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5 Change in data access and format

New repertories are created to deal with Volume Wind output. In C:\Users\Public\Documents\vaisala:

Name	Date modified	Type
1-SpectrumData	2023-01-25 13:41	File folder
2-RadialWindData	2023-02-02 14:16	File folder
3-VortexData	2023-01-25 13:41	File folder
4-ProcessedSpectrumData	2023-01-25 13:41	File folder
5-ProcessedRadialWindData	2023-01-25 13:41	File folder
6-UnprocessedSpectrumData	2023-01-25 13:41	File folder
7-UnprocessedRadialWindData	2023-02-02 14:16	File folder
8-AircraftData	2023-01-25 13:41	File folder
9-RadialWindDataForMerge	2023-01-25 13:41	File folder
10-MergedVortexData	2023-01-25 13:41	File folder
11-ArchivedVortexData	2023-01-25 13:41	File folder
12-WindAndAerosolsData	2023-11-20 15:01	File folder
13-VolumeWindData	2023-01-25 13:41	File folder
14-ProcessedVolumeWindData	2023-11-07 16:49	File folder
15-UnprocessedVolumeWindData	2023-11-07 16:49	File folder
16-VolumeWindVisualisationData	2023-11-07 16:53	File folder
Wind and Aerosol Post Processing Softw...	2023-11-14 14:39	File folder

Configuration file processVolumeWindConfiguration.ini is created by default in: C:\Users\Public\Documents\vaisala\Wind and Aerosol Post Processing Software\Configuration

Processing log can be found here:

C:\Users\Public\Documents\vaisala\Wind and Aerosol Post Processing Software\LOG\VolumeWind

With Volume scan introduction, NetCDF design has been unified to have a unique design for all scans. WAPP allows reading both old and new scans.

6 Change in conventions

None

7 Software limits and regressions

None.

8 Software compatibility

This version of WAPP is necessary for users of WindForge with a version from 23b onwards.

9 Upgrade procedure

This upgrade can be done remotely with the least effort on your part. However, remote access to your computer will be required and our team will do the upgrade for you. Please contact our technical support service (helpdesk@vaisala.com) to confirm that your unit is eligible and organize your upgrade.

If you are interested in the Volume Wind module, please contact your sales representative.