

Windographer version history

Version 5.1.13 (July 22, 2022)

- Added an updated EPE export option.

Version 5.1.12 (July 14, 2022)

- Improved efficiency of several analysis and export modules.
- Fixed bug causing incorrect query results if sector filter refers to a vane in another dataset.
- Added relative shear parameter restriction to Vertical Extrapolation window.
- Fixed bug in translation of some v4 flag rules (that pertain to quality columns).

Version 5.1.11 (June 29, 2022)

- Fixed bug causing occasional miscalibration of direction data.
- Improved defaulting of date range filter settings.
- Made F1 button bring up the correct help article in analysis windows.
- Improved import logic to read SCADA data files more effectively.

Version 5.1.9 (May 26, 2022)

- Fixed bug causing Append Settings window to reappear repeatedly when requiring 'perfect links'.
- Fixed bug in scaling process in Vertical Extrapolation window.
- Added option to filter list of datasets in Import From Database window.

Version 5.1.8 (May 18, 2022)

- Fixed bug causing LTA window to crash when using MTS algorithm in some cases.
- Added uncertainty test button to the Reconstruct Across Datasets window.

Version 5.1.6 (May 6, 2022)

- Fixed bugs in Correct Tower Shading window Annex S module.
- Added more reporting when user tests database connection.

Version 5.1.5 (May 2, 2022)

- Allowed filtering by time of day and by month range.
- Improved import of raw data files with daily time steps.
- Fixed bugs in the display of reconstruction uncertainty test results.

Version 5.1.4 (Apr 28, 2022)

- Fixed bug preventing database export if dataset properties contained certain Unicode characters.
- Fixed bugs in MCP algorithm performance test module preventing some graphs from appearing.

Version 5.1.3 (Apr 25, 2022)

- Improved reporting of warnings related to reading WIS files.
- Made the adding and removing of favorite flag rules more robust.

Version 5.1.2 (Apr 20, 2022)

- Fix bug in diurnal profile calculation when requiring concurrency across multiple time contexts.

- Improved Dataset History descriptions of dataset configuration changes.
- Fixed bug causing MTS algorithm to crash in some situations.

Version 5.1.1 (Mar 31, 2022)

- Added new workbook summary table.
- Made the adjustments react correctly to dataset ID changes and reversals via undo.
- Small improvements and fixes to the process of importing data from a database.

Version 5.1 (Mar 24, 2022)

- Added user control over the size of the undo buffer to limit windog file size.
- Added buttons to Dataset History window to allow user to trim revisions to shrink file size.
- Improved performance of Configure Dataset and Long Term Adjustments windows.
- Added Save Template and Load Template buttons to Configure Dataset window.
- Added workbook summary graphs to the main window.
- Added user control over which column types display by default in time series graphs.
- Expanded WIS files so that they can specify data column properties and displacement height.
- Added MCP algorithm performance test window.
- Added Test MCP Uncertainty window that measures uncertainty using a bootstrap analysis.
- Added a 'correct tower shading' mode to the Correct Tower Distortion window.
- Added option to filter by maintenance periods in Scatterplot, In Situ, and Tower Distortion windows.
- Added high wind hysteresis modeling to Wind Turbine Output window.
- Added temperature shutdown and derating to Wind Turbine Output window.
- Improved data import logic.
- Fixed bugs in EPE export.
- Added the MCP algorithm performance test window.
- Improved efficiency of LTA Extrapolation tab.
- Solved bugs in LTA window causing inconsistencies versus v4.
- Improved efficiency of LTA window.
- Improved handling of dataset templates.
- Improved efficiency of Configure Dataset window.
- Added summary graphs to the main window.
- Added primary columns to Workbook Explorer's dataset list.
- Fixed bug causing flags to move in time after deletion changes the start of the period of record.

Version 5.0.13 (Feb 7, 2022)

- Improved speed of Export Data window.
- Added ability to open ZPH files.
- Fixed bugs in EPE export.
- Fixed bug in direction calibration logic.
- Fixed bug in LTA window that caused Correlate Direction tab speed filter not to work.
- Fixed bug causing occasional crash in LTA window.

Version 5.0.12 (Dec 15, 2021)

- Added option to export time series files in Windows number format or North American format.
- Fixed bug causing incorrect number formatting if the Windows number format was not the North American standard.
- Allowed the import of Excel files.

- Allowed the import of unprocessed Ammonit Meteo-32 files.

Version 5.0.11 (Dec 2, 2021)

- Fixed bugs in Data Coverage window leading to erroneous results in some modes.
- Fixed bug causing In Situ window to warn of spurious calibration changes.
- Fixed bug preventing the append process from working in some situations.

Version 5.0.10 (Nov 29, 2021)

- Added a menu item to restore factory default toolbar and menu layout.
- Fixed bug causing Daily Statistics table to repeat the first day's stats for every day.

Version 5.0.9 (Nov 23, 2021)

- Fixed bug preventing the adding of new turbines and turbine groups.
- Fixed bug causing Export Data window to disable some date/time controls.
- Fixed bug causing use of incorrect Weibull fit algorithm in some cases.

Version 5.0.8 (Nov 15, 2021)

- Improved speed of the Openwind export process.
- Fixed bug in v5 Openwind export logic causing incorrect air density values in some cases.
- Fixed bug causing invalid WPD values in time steps with missing temperature data.
- Improved import of AQ500 and AQ510 data files.

Version 5.0.4 (Oct 7, 2021)

- Improved identification of time zone during import.
- Improved efficiency of Append Settings window.
- Fixed bug causing unhelpful error message when license is expired.

Version 5.0.3 (Oct 5, 2021)

- Fixed bug causing crash when reading some flag rule XML files.
- Fixed bug causing Tower Distortion window to ignore changes to colocation threshold.
- Added option to remove seasonal bias from histograms.
- Added option in time series graphs to show or hide all columns in a dataset.
- Fixed bug that prevented floating licenses from working.
- Fixed bug causing Flag by Scatter Plot window to respond incorrectly to changes in axes variables.
- Added option to EPE export tab to choose between old and new formats.

Version 5.0.2 (Sep 16, 2021)

- Fixed bug preventing the saving of large windog files.
- Implemented two-step save process if requested in Options window.
- Improved Dataset History descriptions of configuration and calibration changes.
- Improved import logic to accept very short Kintech data files.

Version 5.0.1 (Sep 3, 2021)

- Fixed bugs in Vertical Extrapolation and LTA windows.
- Fixed bug preventing identification of measurement height in Vortex LES files.
- Added XML import and export buttons to the Flag Rule Properties window.
- Fixed bug causing incomplete reading of flag rule XML files.
- Made main window remember its window placement.

Version 5.0 (Aug 17, 2021)

- Added ability for a workbook to contain multiple datasets.
- Allowed display of multiple analysis windows at a time.
- Added option to undo changes to datasets.
- Allowed import of data with timesteps smaller than one second.
- Changed to 64-bit programming to handle more data.
- Added module for in situ comparison of anemometers.

Version 5.0 beta (Aug 16, 2021)

- Converted Optimal Time Offset window.
- Fixed bug causing Save As window to appear when it shouldn't.
- Solved crash when opening Triton data files.
- Made Wind Rose window show filter-by-flag controls and made column list expand to take available space.

Version 5.0 beta (Aug 2, 2021)

- Progress on second (UL) mode of LTA window
- Progress converting Optimal Time Offset module
- Fixed bug in many calculated column windows that prevented proper initialization
- Fixed bug that ruined all solar calculations
- Added displacement height override to Vertical Extrapolation window
- Added import file type for QML files so we can identify their laconically named pressure column
- Small improvement to the logic that guesses the dataset type
- Fixed bug causing Long Term Patterns window to crash.
- Added NetCDF export tab
- Made only parent columns appear in lists of columns-to-flag in Flag Manually, Flag With Scatterplot, and Flag Rule Properties windows.
- Improved Dataset History descriptions.
- Added special naming logic (for UL users only) so that composite WD columns get called 'COMPDir'
- Changed RLD import logic to read battery voltage column as well
- Improved import of Ammonit M40 files
- Improved RLD import logic to use the 'Total Direction Offset' value (if any) even if it comes before the 'Offset' value.

Version 5.0 beta (Jun 25, 2021)

- Improved import of Campbell Scientific data files.
- More improvements to the import of Kintech data files.
- Added Representative Year window.
- Slightly improved error message after File > Open.
- Improvements to append process and discrepancy reporting.
- Allowed the computation of a column sum over a time period, and displayed it in the period stats tables.
- Added shear & speed versus hour display type in Wind Shear Analysis window.
- Added option not to export file header.
- Added Wind Turbine Output window.
- Improved import of Kintech data files.
- Added Representative Year window.

- Modified style of monthly & diurnal profile graphs.

Version 5.0 beta (Mar 26, 2021)

- Added In Situ Comparison window.
- Added Special Adjustments window
- Added Reconstruct Across Datasets window.
- Added database import/export windows.
- Added Combined tab to Export Data window
- Added Wind Turbine Output window
- Added Seasonality Profile window
- Improved Turbulence window
- Improved Long Term Patterns window.
- Improved import logic
- Added multiple dataset shear-by-hour graph and table to Shear Analysis window.
- Improved RWD and RLD import and decryption.
- Fixed bug preventing the Config window from listing the columns associated with a quality column.
- Added shear-by-hour display option to multi-dataset mode of Wind Shear analysis window
- Added to Export Data > Time Series option not to export file header.
- Made Configure Dataset window appear when importing raw data files
- Fixed bug preventing the import logic from reading elevation from v4 exported text file
- Small improvement to the wording of the Initiate Free Trial window
- Modified NRG import logic for direction sensors to use the "Total Direction Offset" if it finds it, replacing the "Offset"
- Made Export Data window open to the most recently used tab
- Fixed bug in scaling of the graph in the Export Image window
- Ensured valid UTF encoding of units strings
- Stopped forcing the user to confirm cancel on flag windows
- Removed save button from Flag Manually window (and warn-on-save checkbox in Tools->Options)
- Improved Dataset History window
- Fixed bugs in Correct Tower Distortion window
- Added new date/time calculated column to contain decimal hour of day.
- Fixed bugs in Cumulative Frequency window

Version 5.0 beta (Mar 12, 2021)

- Added optional min-speed-at-height filter to Wind Shear window.
- Renamed window from 'Fill Gaps' to 'Reconstruct Single Dataset'
- Finished the Inspect and Remove Flags window and increased its speed.
- Fixed bug causing calculated columns to replicate themselves on occasion.
- Improved speed of data file import process.
- Improved dataset nickname logic.
- Added EPE tab to Export Data window.

Version 5.0 beta (Feb 25, 2021)

- A million things.

Version 4.2.21 (Mar 22, 2021)

- Improved scatter plot legend to show regression line equation.

- Updated EPE export tab to reflect latest guidance from the Brazilian EPE.
- Added new module to calculate gap fill uncertainty with k-fold cross validation. (Formerly Enercon only)
- Added option to include flag status in time series export files.
- Improved data import logic.
- Added to Export Data window the option to force North American number format.
- Allowed import of Openwind MM3.2 files.
- Added 70th percentile of TI to turbulence-by-speed table to help support IEC 4th ed.
- Fixed bug in Hottel clear sky radiation model that introduced a half-hour time shift.
- Fixed bug where solar calculations failed to account for the difference between the longitude and the time zone standard meridian.
- Improved Configure Data Set window to rename child columns automatically with parent column.
- Added mean of monthly means table to Tables tab.
- Improved import logic to recognize GHI, DNI, DHI, and battery voltage data columns.
- Added to the Configure Data Set window a button to set time zone from lat/long coordinates.
- Added option to export windog file, optionally with metadata removed or timestep changed.
- Changed the handling of cutoff wind speed in the MCP logic
 - Made cutoff speed apply to both onsite and reference speeds, rather than just reference.
 - Forced omnidirectional below-cutoff regression through the origin.
- Added option to choose columns from which to calculate shear when reconstructing and filling gaps.
- Added Combine Direction Sensors window.

Version 4.2 (May 31, 2019)

- New option to set the time zone in the Configure Data Set window.
- New option to make displacement height vary by direction sector or month.
- Improvements to WindographerMCP
 - New display options on Onsite Data and Long-Term Data tabs.
 - New ability to select subset of data sets for analysis.
 - New ability to define any number of long-term adjustments.
 - New concurrency and filter options.
 - New ability to detect and correct time offsets between data sets.
 - New logic to determine minimum number of data points for regressions.
 - New long-term scaling options including scaling each month separately.
 - Improved control, reporting, and documentation of reconstruction process.
- Improvements to Vertical Extrapolation window
 - Option to restrict the shear parameter range to mean plus/minus X standard deviations.
 - Option to rescale to a desired mean value after extrapolation.
- Improved data import logic.
- Added ERA5 data to Windographer Data Downloader.
- New option to use Larsen & Hansen 'detrending' process on TI columns.
- New Correct Tower Distortion module.
- New data column types for solar irradiance and battery voltage.
- New option to specify multiple RH data columns at different measurement heights.
- Improved Harris1999 Gumbel fit method to make it produce results in a wider range of conditions.
- New option to import and export turbine properties in WTG and OWTG formats.
- Added ability to read from and write to MySQL databases.

- Added Shear tab to Tools > Options window, and made shear evaluation method and shear lookup table type an option the user can set in Tools > Options for speed, speedSD, direction, and temperature extrapolation.

Version 4.1 (January 19, 2018)

- Added new MCP module capable of handling multiple onsite and reference data sets.
- Added handling of boom orientation
 - a. Added boom orientation to Calibration window.
 - b. Added combine-by-boom-orientation to Combine Anemometers window.
 - c. Added by-boom-orientation mode to Flag Tower Shading window.
 - d. Added logic to read boom orientation from RLD and NDF files.
- Added displacement height to the Configure Data Set window.
- Improved speed of Configure Data Set window and added:
 - a. Buttons to copy data columns and convert to static data columns.
 - b. Ability to specify measured TI columns
- Improved Vertical Extrapolation window:
 - a. New more flexible and more realistic method of extrapolating speed SD data.
 - b. Now allows extrapolation from a specific sensor or the line of best fit.
 - c. User can now specify the type of lookup table used for backup when in by-time-step mode.
 - d. Now shows a preview of synthesized data columns.
 - e. Added option to compare extrapolated time series with column in another (or same) data set.
- Added save button to Flag Manually window
- Improvements to Document History window:
 - a. Complete reporting of vertical extrapolation, gap filling, and scaling processes
 - b. Added Reviewers tab
- Made Tower Distortion Analysis window modeless, and added option to subdivide by year or month
- Improved Data Recovery Analysis window
 - a. New option to display data coverage chart of valid or invalid data
 - b. New table showing missing data
 - c. New option to report valid time steps rather than data recovery rate
- Added 'Openwind' Weibull fit algorithm.
- Added the ability to choose a Weibull fit algorithm in Tools > Options.
- Improvements to Combine Anemometers window:
 - a. Now creates combined max column as well as combined SD column
 - b. New option to combine by boom orientation
 - c. New option to use reconstruct-and-average when combining
- Added to Fill Gaps window the option to replace data flagged to exclude.
- Added option to download MERRA-2 data from Windnavigator.
- Improved gap fill process to reconstruct co-located speed sensors first, using regression-by-sector, before doing shear-based reconstruction.
- Improved Wind Shear Analysis window
 - a. Added speed SD shear.
 - b. Added option to calculate from MoMM or simple mean.
- Improved Compare Data Sets window
 - a. Added speed frequency graph
 - b. Added TI-vs-height and TI-vs-speed graphs
- Added Special Adjustments window to perform NRG TI adjustment.

- Added to Tables tab quarterly and daily stats, 'Data Channel Summary', 'Calibration History'
- Added MoMM to Data Columns table and Environmental Summary table.
- Added calculated columns for speed SD shear, dew point, inflow angle, first difference, density-adjusted wind speed, and energy-weighted air density.
- Added option to auto-create a ratio column for co-located speed sensor pairs.
- Added option whether to use ISA to synthesize temp./pres. data for air density calculated column.
- Improvements to data import process:
 - a. Added ability to open RLD files and Fulcrum3D files.
 - b. Added separate control of append overwrite settings for numeric data and flag status
 - c. Improved import of RWD, MM, NSD, and ASOS files.
- Expanded Openwind export options.
- Added Wind Turbine Output window display options, and option to disable density adjustment.
- Improved Representative Year window to encompass multiple data columns.
- Added 'frequency & energy' display option to the Wind Rose tab.
- Improved Apply Scale and Offset window to allow scaling by month, hour of day, or sector.
- Added trend and discontinuity testing to Long Term Analysis window.
- Improved MTS algorithm
 - a. Added option to subdivide by year divisions.
 - b. Added option to window bins on joint probability distribution.
- Updated database interface to revision 6 by adding displacement height and boom orientation.
- Added option to specify different flags for different reconstruction processes.
- Added user preference to use AWST air density assumptions.
- Added ability to specify height of RH column.
- Added randomness to extrapolated turbulence for more realistic representative TI.
- Added option to include solar radiation data when downloading MERRA data from NASA.
- Made all mean direction calculations report vector means.
- Switched to Yamartino method for calculating standard deviation of directional data.

Version 4.0 (May 18, 2015)

- New Calibration window.
- Expanded calculated column capability with many new options.
- Ability to import much larger text files.
- New ability to hide data columns from graphs and drop-down boxes.
- Document History window now displays a complete list of configuration changes.
- New Combine Anemometers window for combining co-located anemometers.
- Easier sharing of favorite flags and flag rules within a team.
- New ability to scale (rather than lengthen) the target data set in MCP module.
- MCP performance test now compares different settings as well as different algorithms.
- MCP performance test now allows multiple iterations to help determine uncertainty.
- Vertical Extrapolation window now includes turbulence, directions, and temperatures.
- New ability to export multiple-height data to Openwind in the form of an MM2 file.
- Improved performance and flexibility of gap fill module.
- Turbulence Analysis window now shows data for all heights at once.
- New Representative Year module for creating 'typical year' of data.
- New Forecast Error Analysis module.
- New concurrency option on Diurnal Pattern tab.
- New ability to open ZPH files from ZephIR.

- New ability to offset direction values in TAB files.
- Improved data import logic.

Version 3.3.14 (June 7, 2017)

- Added menu items for Open Folder and Append Folder.
- Added ability to open multiple files by dragging and dropping a folder into Windographer.
- Added new Append Status window and improved robustness of multi-file append process.
- Added Brazilian EPE export format.
- Improved data import logic.
- Improved processing speed.
- Improved gap fill algorithm.
- Improved flag rules to handle direction ranges spanning true north.
- Improved Mean by Month, Monthly Statistics, and Annual Statistics tables.

Version 3.2 (January 16, 2014)

- Added free download of MERRA data via Windographer Data Downloader beta.
- Added option to scale a TAB file to a particular wind speed.
- Added to MCP window option to divide by up to twelve yearly divisions.
- Added a third stacked time series graph, and added checkboxes to toggle all speed or direction columns.
- Tower Distortion Analysis window now shows differences as well as ratios.
- Made Append window re-appear during the multi-file append process whenever column labels change.
- Improved data import logic.
- Added up/down arrow keys as keyboard shortcuts to zoom in and out on time series graphs.
- Added subtle background colors to indicate data column type in some tables.
- Changed append process to import all data columns, even empty ones.
- Improved the Append window to simplify the mapping of new columns to existing columns.
- Added the ability to specify marker type in graphs (diamond, circle, triangle, X)
- Added shortcut keys to time series graph: +/- for zoom and arrow keys for scroll.
- Added 24 and 36 to the allowable number of direction sector subdivisions in the MCP window.
- Added Monin-Obukhov length column to the Openwind export file (currently just zeroes).
- Added hotkeys to speed flagging in Flag Manually and Flag by Scatter Plot windows.
- Added mouse wheel shortcut for zooming in and out of time series graphs.

Version 3.1 (April 17, 2013)

- Added tabular display to the Flag Manually window.
- Added the ability to test flag rules before executing them.
- Added the Inspect and Remove Flags window.
- Added monthly option and 'stacked bars' wind rose style to Wind Rose tab.
- Added Export Image window.
- Expanded Compare Sites tab of MCP window.
- Added Fix Quantization window.
- Added details pop-up to Document History window.
- Added display options to Wind Turbine Output window.
- Improved TAB file export by reporting mean of time series and of TAB file, and by adding the ability to make the first bin half-sized.
- Added export to export Windfarmer WTI files.

- Added the ability to export to SAM, the Solar Advisor Model.
- Added option to time series export tab to skip empty lines.
- Added to the Delete Data window the ability to delete data points not flagged with specified flags.
- Improved import logic.
- Made all flag windows warn on cancel if it will result in lost changes.
- Changed air density calculations to account for the height of the temperature and pressure sensors
- Updated database interface to version 3
- Changed MIS default independence criterion from 0 to 48 hours, and recommended storm frequency from 100 storms/yr to 20 storms/yr.
- Improved gap fill algorithm to account for correlation between temperature sensors

Version 3.0 (August 27, 2012)

- New improved MCP (measure-correlate-predict) module.
- Added new Compare Data Sets window.
- Added new Extreme Wind Analysis window that implements the Method of Independent Storms.
- Added new Flag by Scatter Plot window.
- Added User-defined calculated data columns.
- New improved Wind Turbine Output window that lets you compete turbines against each other.
- Allowed multiple temperature and pressure sensors at different heights.
- Added new relative humidity data column type.
- Added new modules to analyze wind veer, temperature profile, and long-term trends.
- Added option to filter for a precise date range.
- Improved text file data import
- Added new Wind Speed Ratios window
- Added minimum data coverage requirements for averaging to longer time steps.

Version 2.52 (April 3, 2012)

- Improved and expanded capabilities of MCP window.
- Added Compare Data Sets, Forecast Error Analysis, and Wind Speed Ratios windows.
- Added Ramp Event Analysis window
- Added Wind Turbine Library window and the ability to create groups of turbines.
- Improved Wind Turbine Output, Wind Rose, and Wind Shear Analysis windows.
- Added the 3D colored scatter plot to the Scatter Plot tab.
- Added Openwind export format.
- Changed flag filter logic to exclude unchecked flags, rather than just not including them.
- Improved data import logic.
- Improved the gap fill algorithm to account for correlation between wind direction sensors.
- Added hodograph to, and removed acceleration from, Short Time Intervals window.
- Made shear by time step calculations filter by flag, rather than inheriting flags from speed columns.

Version 2.4.14 (January 8, 2015)

- Added database import/export capability.
- Added to the Histogram tab the option to bin by month or by time of day.
- Added username to Document History window.
- Improved data import logic.

- Improved Tower Distortion Analysis window to handle speed sensors at different heights.
- Added ability to import .wt files into Append Data window via Load Settings button.
- Added 'Wind Speed Statistics for Synthesis' table to Tables tab.
- Improved support for Oracle database integration.
- Added Openwind export format.
- Made database export process export only the newly added, deleted, or modified flags.
- Improved gap fill process to use the highest-availability speed sensor as the anchor sensor.

Version 2.3 (May 18, 2011)

- Improved data import logic.
- Added Append Data window.
- Improved gap fill logic to account for daily and seasonal patterns using windowed CDFs and percentiles.
- Added option for computer-level licensing.
- Changed export files to use the Windows number format.

Version 2.2 (December 8, 2010)

- Added Inflow Angle Analysis window and Data Recovery Analysis window.
- Improved data import logic.

Version 2.1 (August 23, 2010)

- Added ability to open NDF and NSD files.
- Made optional the use of fractional completeness factors in MMM calculation.
- Added option to calculate RMS wind speed SD during downsampling.

Version 2.0 (April 30, 2010)

- New quality control mechanism based on data flagging and filtering by flag status.
- Improved Vertical Extrapolation module.
- New Tower Distortion Analysis and Short Time Interval Analysis modules.
- Improved data import logic.
- Improved WAsP tab file export including option to remove seasonal bias.
- Added new Meteodyn export format.
- Improved downsample logic to properly handle max and SD columns.
- Added ability to import from a SQL database.

Version 1.52 (January 7, 2014)

- Fixed various bugs.

Version 1.4 (February 25, 2009)

- Added the Time Shift window.
- Improved data import logic.
- Improved Turbulence, Wind Shear, and Date/Time Anomalies windows.
- Improved Scatterplot tab, PDF tab, Export Data window, and Extreme Wind Analysis window.

Version 1.3 (September 22, 2008)

- Improved Export Data, Turbulence Analysis, and MCP windows
- Added Reports tab, Frequency Distribution Analysis window, and Compare Data Sets window.

Version 1.2 (May 6, 2008)

- Improved control of append process.
- Added Tables tab.
- Improved analysis windows and export module.

Version 1.1 (March 12, 2007)

- Improved quality control and filtering.
- Improved Wind Shear Analysis window.
- Added the Tower Shading Analysis window and Turbulence Analysis window.

Version 1.0 (September 26, 2005)

- Initial release.