MARS® v2024.0 Release Notes

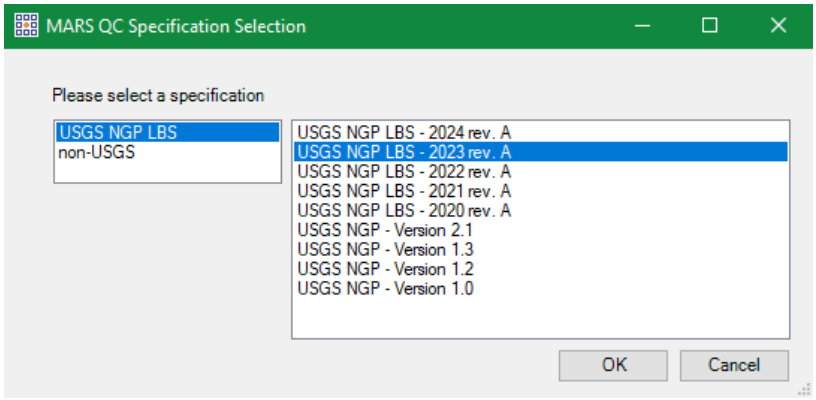
Revised: August 7, 2024 (Builds 8613.01 – 8624.00)

Contents

New Features

QC Module drop-down selection added for USGS 2023 lidar specification

A new option to check LAS data compliance with *USGS Lidar Base Specification 2023 rev. A* (August 2023) has been added to the selection list of the QC Module tool. NOTE that as of the date of this MARS® release, *USGS Lidar Base Specification 2024 rev. A* (January 2024) is the most current lidar specification published by the USGS. That specification is mentioned later in this document.

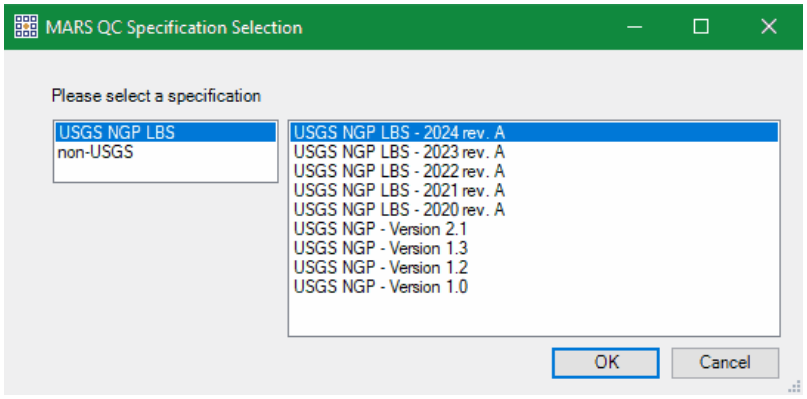


False color rendering option for PDRF 8 LiDAR points that have NIR color values stored

A new rendering option designed specifically for Point Data Record Format (PDRF) 8 data has been added. These points can have Near Infrared (NIR) values stored, and the new option will show the points in a 'false' color scheme. NIR values will be stored and display in the Red band (Band 1), and Red and Green values will move to Bands 2 and 3, respectively. The button for this viewing option – named Color by CIR  – is in the 'Rendering Options' section on the 'View' tab.

QC Module drop-down selection added for USGS 2024 lidar specification

A new option to check LAS data compliance with *USGS Lidar Base Specification 2024 rev. A* (January 2024) has been added to the selection list of the QC Module tool. NOTE that as of the date of this MARS® release, this is the most current lidar specification published by the USGS.



Enhancements

Additional time reporting added to final PDFs for 'USGS NGP LBS – 2022 rev. A' and 'LiDAR Workflow QC - 1 LiDAR Data Checks'

The 'Time Spent On Each Step' pages of the final PDF reports for both the 'USGS NGP LBS – 2022 rev. A' and 'LiDAR Workflow QC - 1 LiDAR Data Checks' have been enhanced to include information for any preparation and/or pre-processing steps.

Changes to test DPH-9.1 in 'USGS NGP LBS – 2022 rev. A' and later versions

Due to ongoing project delivery requirement changes at the USGS, the creation of SSI rasters (Swath Separation Images) at the tile level has been removed from the workflow for test DPH-9.1 of the 'USGS NGP LBS – 2022 rev. A' and later versions of the QC Module. The same tiled separation rasters can be generated using the Export tool if needed.

RGB rendering of points in the Cross-Section/Profile window has been enabled

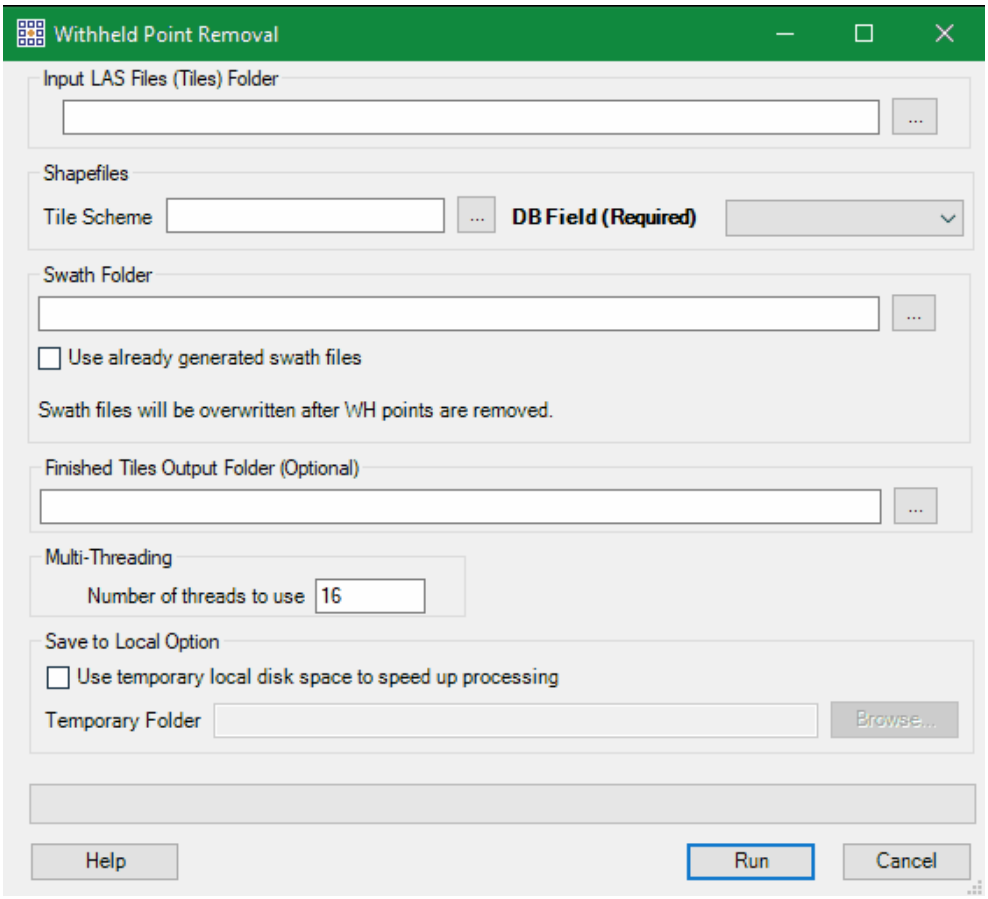
When viewing points in a Cross-Section/Profile window, 'RGB' rendering is now available as a display option when Red/Green/Blue color values are stored at the point level.

Change to the Layout options in the Export tool

The Export tool's 'Layout' tab options have been simplified. 'All Tiles' has been removed from the available options since it was nearly identical to 'All Tiles Using MBR' (Minimum Bounding Rectangle) in function, but not any faster.

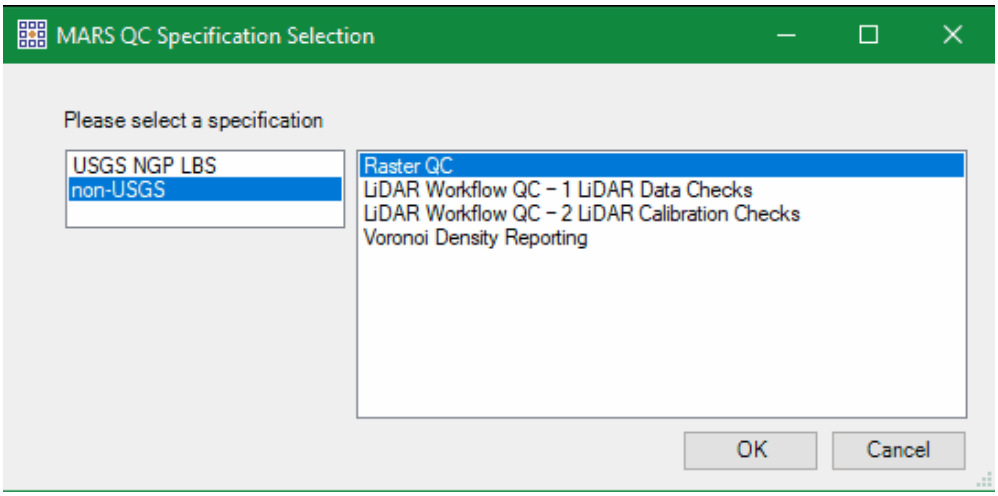
Layout of the 'Withheld Point Removal' tool interface has been modified for clarity, and the functionality has some minor changes

The 'Withheld Point Removal' tool has been modified to improve functionality and to make the interface clearer. See the associated section in the Help Topics under 'Tools and Functions | LAS Tools' for details.



‘Raster QC’ tool re-located to within the QC Module

The separate button for the ‘Raster QC’ tool has been removed, and the tool is now part of the ‘non-USGS’ section of the QC Module (‘QA/QC’ tab). The tool’s functionality remains the same.



Explanatory text added to one of the Export tool’s options

The ‘Export without loading LAS files into Map View’ option now has text stating “Tiled export requires that a corresponding tile layout shapefile be loaded.” This pertains to the ‘LAS’ export type only.

Automatic loading of exported data disabled for ‘LAS’ export type

The option to automatically load exported data has been disabled for the ‘LAS’ export type, to avoid the possibility of duplicate LAS points being loaded in LAS Map View.

Change to required input for the ‘LiDAR Workflow QC - 2 LiDAR Calibration Checks’ tool in the QC Module

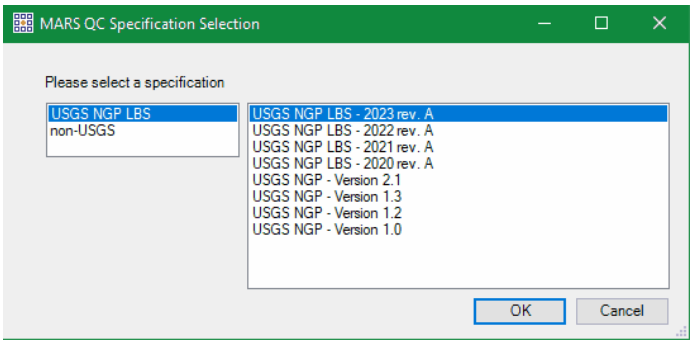
The ‘Required NPS (Nominal Pulse Spacing) in data units’ entry for the ‘LiDAR Workflow QC - 2 LiDAR Calibration Checks’ tool in the QC Module has been changed. The input is now a density value labeled as ‘Required ANPD (Aggregate Nominal Pulse Density in points per square meter.’ Projects using units other than meters will have their values converted internally to generate the correct results.

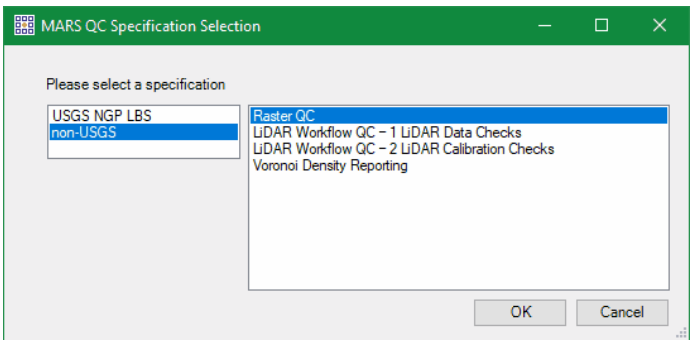
‘Voronoi Density Reporting’ tool test for temporary storage space

After clicking the ‘Run’ button in the ‘Voronoi Density Reporting’ tool to begin processing, a test is now done to determine if there will be adequate space for the temporary local files that are created. This will avoid the possibility of a program crash that may occur up to many hours later if working space runs out. If the test determines that there will not be enough space, an advisory message will appear.

Redesigned QC Module selection interface

The selection interface for the QC Module has been redesigned to separate USGS and non-USGS tools.





Clarification on the use of Withheld Points in the QC Module USGS tools

Beginning with ‘USGS NGP LBS 2022 rev. A’ and continuing through all later versions, points that have the Withheld bit flag set will participate only in tests ‘DPH-12 Use of the LAS Withheld Flag’ and ‘DPH-14 Point Classification.’

Enhanced chart in the final report of the ‘LiDAR Calibration Checks’ QC Module selection

The Z Diff distribution chart at the end of test ‘CC1 Report on Flightline Separation (relative Accuracy) per Project’ (QC Module, non-USGS, LiDAR Workflow QC – 2 LiDAR Calibration Checks) has been replaced by a frequency distribution chart of RMSDz values to better aid in interpretation of the test results.

Creating a ‘NODATA’ sub-folder for point shapefiles is now optional for the ‘Raster QC’ tool

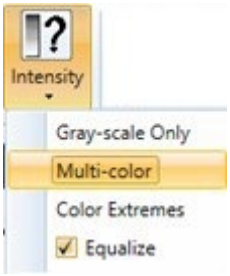
The ‘Raster QC’ tool (QC Module, non-USGS selection list) now allows the creation of a NODATA sub-folder to be optional via checkbox, saving processing time when not needed.

Several changes made to the default settings for the ‘Quick Classifications’ filtering tool

Many of the default ‘Filter Settings’ of the ‘Quick Classifications’ filtering tool (based on LAStools algorithms) have been changed to provide better results with typical datasets. As always, these settings can be manually overridden to accommodate all types of lidar data. The default changes affect both the ‘Ground Filter Options’ and ‘Vegetation and Building Filter Options’ tabs.

Additional Intensity rendering option added

An additional option for Intensity rendering has been added – ‘Multi-color.’ This setting displays Intensity values rendered by a color ramp, with the lowest values in magenta and the highest in white.



Changes made to the ‘Add System ID’ tool interface

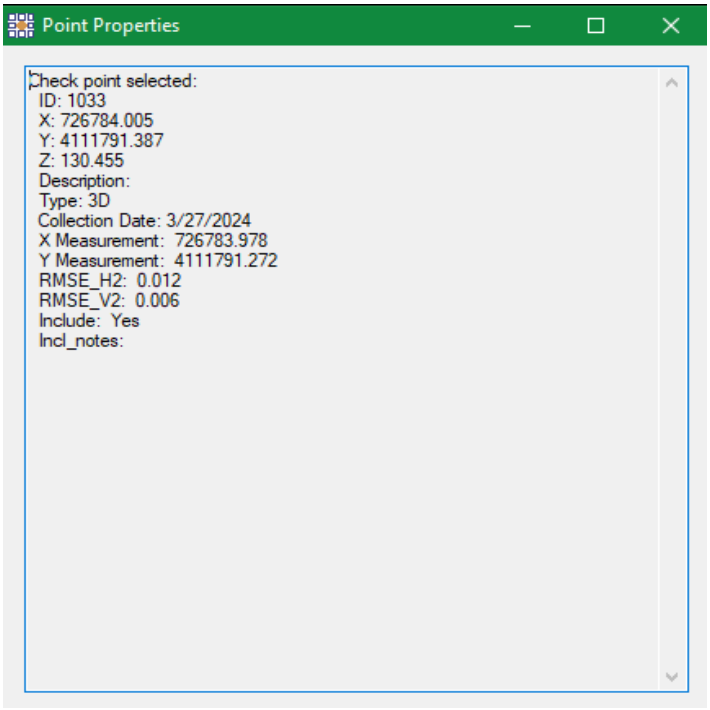
The ‘Add System ID’ tool now opens with a default value of ‘0000’ (four zeroes). This value should be changed to one of the listed identifiers in the ‘Standard System Identifiers – ASPRSorg/LAS Wiki’. Use the link at the bottom of the tool to find the identifier that is appropriate for the file(s) being updated.

Major re-write of the Check Point Report tool to test for Horizontal and Vertical accuracy per the latest ASPRS standards

The Check Point Report tool has been enhanced significantly so that it can now test for both absolute Horizontal and Vertical accuracy and, therefore, 3D accuracy. Statistics, tables, histograms, and screen captures are generated, and reports can be saved. Testing and reporting is done in accordance with the latest ASPRS Positional Accuracy Standards for Digital Geospatial Data, Edition 2, Version2 (2024).

Point Properties pop-up window enhanced for inspection of check points

The Point Properties window that appears when selecting a check point for inspection has been enhanced to include all possible fields in a check point CSV file.



Unnecessary file format conversion tool removed

The ‘Convert Check Points CSV to 3D Shapefile’ tool has been removed due to an updated requirement that check points files must be in either a 13- or 7-column format. Check points files in shapefile format can no longer be loaded for use in the ‘Check Point Report’ tool, nor can they be used as input for any version of the USGS NGP LBS tools in the QC Module. See the ‘Check Point Report’ section in the Help Topics under ‘Quality Control’ for details.

Contact info and links updated for LAStools licensing and information

The contact information and website links have been updated for the ‘Quick Classifications’ tool and the ‘Ground’ filter, both of which are based on algorithms written and maintained by **rapidlasso GmbH**, publisher of the **LAStools** suite.

Bug Fixes

- Bug fixed in test DC4 of the 'LiDAR Data Checks' QC Module drop-down to make the X-axis scale legible even with very high density datasets.
- Bug fixed in Export causing empty output files when fusing 4-band (RGBN) imagery with LAS data to create tile-based PDRF8 LAS files.
- Bug fixed in Export for type 'Flightline Separation – Tiled GeoTIFF' that created incomplete output when using the 'Save to Local Option' with final output to the network.
- Bug fixed in Export for type 'LAS' that failed to produce output when the selected PDRF was '8' and the layout type was either 'Selected Tile(s)' or 'All Tiles using MBR.'
- Bug fixed in Export for type 'LAS' that incorrectly prompted for 'output file name' when the layout type was 'By Collection Scan.'
- Bug fixed in Export for type 'LAS' that caused output naming errors when an optional 'Prefix' was used.
- Bug fixed in the 'Add Spatial Index' tool that prevented the 'Cancel' button from stopping file processing when one thread (single-thread) is used.
- Bug fixed in the 'USGS NGP LBS – 2022 rev. A' selection of the QC Module that caused a crash when a generated LAS swath file contained only Withheld flagged points.
- Bug fixed in both COG GeoTIFF export types that sometimes caused raster cells to be created outside of a supplied clipping boundary.
- Bug fixed in test DPH-11 of the 'USGS NGP LBS – 2022 rev. A' (and later) selection of the QC Module that caused a program crash when no check points were covered by lidar data.

MARS® Technical Support – General Information

- Technical Support Hours: Weekdays from 9:00 AM – 5:30 PM (U.S. Mountain Time Zone)
- Toll-free Telephone: **(800) 544-1714**
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