MARS® v2023.1 Release Notes

Revised: October 3, 2023 (Builds 8602.01 – 8613.00)

Contents

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New Features

Tile Origin Rounding tool (Production license only)

A new tool – 'Tile Origin Rounding' – can be found on the 'Tools' tab under the Format Conversion drop-down. The tool rounds off the origin coordinate values for one or more GeoTIFF rasters. This can reduce edge-matching errors and/or mis-matches between rasters and tile boundaries. The tool is available only with Production licenses.
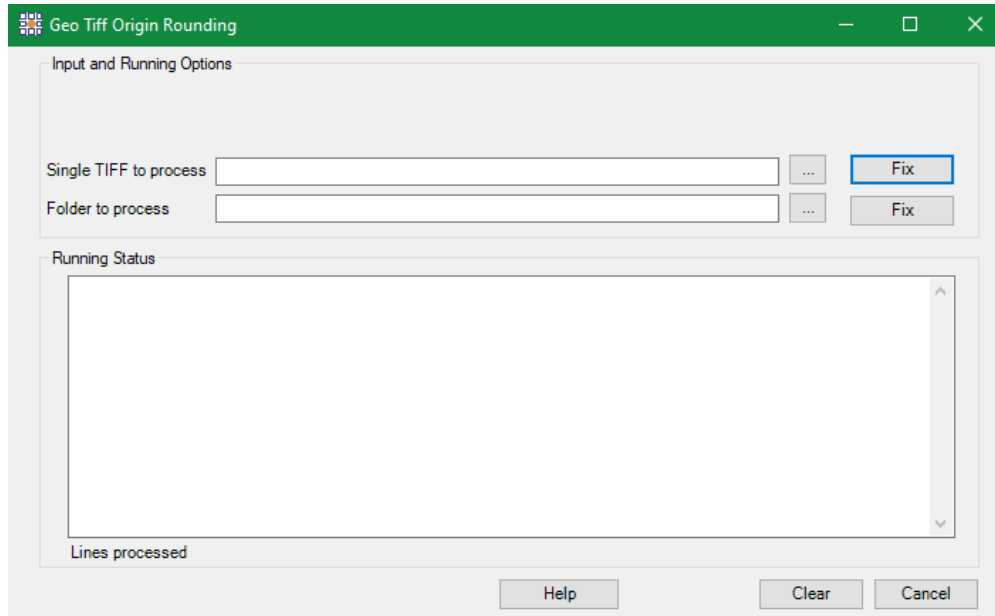
Enhancements

Changes and enhancements for the 'Raster QC' tool

The 'Raster QC' tool has been enhanced to include a new point shapefile – per tile- indicating where any non-flat water body breakline vertices were discovered during the QC process. This is related to the DEM dataset when optional breaklines are included in the analysis. Additionally, the raster elevation values are automatically corrected when possible and the corrected rasters are stored in a new sub-folder named 'Raster_QC_tool_corrections' in the path of the original input DEM rasters.

Also, for the tile-based output shapefiles of all three input datasets, a new Boolean attribute named 'NODATA_YN' has been added to indicate the presence of one or more NODATA points in the tiles where the value is 'Y' (Yes, or true).

Lastly, stability and performance have been improved for situations where the DPA (Defined Project Area) boundary shapefile contains one or more out-areas (holes).

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Non-relevant controls hidden on many Export types

On all Export type interfaces except 'PLS-CADD Code – ASCII,' 'Shapefile,' and 'Text – ASCII,' the 'Record Format' section has been removed from the 'Layout' tab to avoid any confusion. This section does not apply to the other Export types.

Additionally, significant improvements and clean-up have been done to the 'Grid' tab so that non-relevant sections are removed or disabled. This provides a simpler experience when making export parameter settings.

Lastly, pop-up warnings and informational messages have been improved for clarity (and in some cases correctness) when there is a mis-match between a selected export type and the absence of a loaded tile layout shapefile.

Clarifications made to SSI naming and storage in the QC Module

When using the 'USGS NGP LBS – 2022 rev. A' version of the QC Module, the naming and storage of Swath Separation Images (SSI) in test DPH-9.1 has been improved to include sub-folders for discrete Defined Project Area (DPA) polygons. This means that the naming of mosaics, float grids, and JPEG/JPEG2000 files will now include a reference to the DPA polygon (Area1, Area2, etc.) they are part of, or they will be stored in named sub-folders. The final PDF reports will reference multiple DPA boundaries if present.

Improvement to breakline saving options

When the 'Save Breaklines to Shapefile(s)' button is used and two or more regular (not reference) breaklines files are loaded in the Table of Contents, a prompt will appear asking if all breaklines should be saved into a single shapefile. Clicking '**No**' will close the prompt and do nothing. Any breaklines other than the set being edited can then be removed before clicking the 'Save Breaklines to Shapefile(s)' button again. If **'Yes'** is clicked, the 'Save Breaklines' dialog will open for a path and name to be selected.

New default raster type for 'USGS NGP LBS – 2022 rev. A' test DPH-9.1

Test DPH-9.1 in the 'USGS NGP LBS – 2022 rev. A' drop-down of the QC Module now uses the TIN method of raster creation as the default for the Swath Separation Images. This improves the accuracy of the rasters but can add to the processing time. In addition, a text box showing the raster cell size multiple has been added – this value is based on the 'Quality Level' (e.g., 'QL1,' 'QL2,' etc.) selected on the Input Tab. Note that all other versions of the 'USGS NGP LBS' still use the 'Grid' method as the default.

Warning prompt appears when the input of 'Convert Check Points CSV to 3D Shapefile' is incomplete

When the 'Convert Check Points CSV to 3D Shapefile' tool is used with an incomplete input CSV file (i.e., one or more required columns is missing), a warning prompt appears:
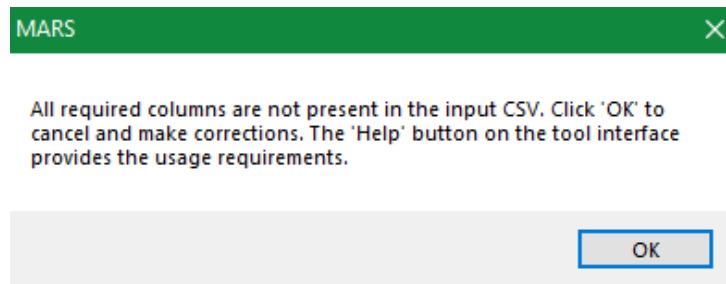
No output will be produced until corrections are made and the tool is re-run. A 'Help' button has been added to the tool's interface to link to the Help Topic where formatting requirements can be reviewed.

Several changes made to various Export types to simplify the interfaces and improve usability

The following changes have been made to the Export tool interfaces:

1. On the 'Layout' tab of all export types, the 'Clipping' control has been disabled when the Export is initiated with the 'Export Area' button. The user-defined drag-box for 'Export Area' already provides an extent limit for the export.
2. For the 'Grid – Esri ASCII Grid' export type, the 'Automatically load the product file(s) into the MARS map window upon completion' option on the 'Options' tab has been disabled. MARS$^®$ does not support the loading of this *.asc file type.
3. For the 'Grid – LAS' export type, the output is now hardcoded as Point Data Record Format (PDRF) 6 and the 'LAS Options' controls have been removed from the 'Output' tab. PDRFs of 7 or higher are not needed for the synthetic output of this export type.

'Majority Classes' option in 'Add Spatial Index' is now functional when using Multi-Threading

When using Multi-Threading (i.e., any value greater the '1') in the 'Add Spatial Index' tool, the option to 'Use optimized indexing when one or more majority classes (like ground) are not displayed' is now honored in the LAS file results.

Change to raster creation options for 'Flightline Separation – Tiled GeoTIFF' export type

A new Grid Type (selected by default) has been added to the existing TIN and Grid options for the output raster(s). The option is named 'Hybrid' and is a combination of TIN for ground classed points and Grid for non-ground classed points. This creates a more accurate representation of flightline (swath) separation with only a small increase in the processing time compared to the Grid-only option. Like the existing TIN and Grid types, the Hybrid raster uses a background intensity layer to help identify features.

Additions to and cleanup of attribute tables in tools that create point cloud statistics

Three tools that create point cloud statistics have been enhanced to include Withheld bit-flagged point counts by tile (or swath) and Class. The tools are: 'Create Tile Scheme' and 'Collection Scan Polygon Generator,' both on the 'Vector Creation' tab, and 'Populate Statistics on Tile Scheme' on the 'Analysis' tab. The new fields will be named 'ClassWH*<nnn>*' (where *<nnn>* is the class number) and will appear in the table immediately after the regular Class point count fields.

In addition, any fields in the tables generated by these three tools where the point count is '0' (zero) for <u>all</u> records will be omitted to make analysis easier.

Bug Fixes

- Bug fixed in QC Module 'USGS NGP LBS – 2022 rev. A' causing incomplete output for test DPH-9.1 when tile sizes approach 3.9 GB.
- Bug fixed when exporting with the 'By Collection Scan' layout that caused incorrect and confusing progress bar movement and estimated time to complete information.
- Bug fixed in the 'Raster QC' tool that created false non-flat errors for islands within water polygon breaklines.
- Bug fixed when creating 2D vector features (all geometries) that caused them to 'disappear' when the display was zoomed in to beyond a certain extent.
- Bug fixed in 'LAS' export type that caused a failure to automatically load the results into the display window when that option was checked on.
- Bug fixed in the 'Voronoi Density Reporting' tool of the QC Module that caused occasional program hangs.
- Bug fixed when using the 'Flightline Separation – Tiled GeoTIFF' export type that caused a clipping boundary to not be honored.
- Bug fixed when data requiring up-conversion to the LAS v1.4 spec was being processed in the 'LiDAR Data Checks' tool of the QC Module.
- Bug fixed causing a corrupt file when using the 'Majority Classes' option in the 'Add Spatial Index' tool.
- Bug fixed that ignored settings in the intensity background transparency control for the 'Flightline Separation – Tiled GeoTIFF' export type.
- Bug fixed in the 'Inspect' tool in a Cross-Section window that was incorrectly reporting on Withheld points even when they were not displayed.
- Bug fixed when multiple iterations of the 'LiDAR Data Checks' QC Module tool are run in the same MARS® session, ensuring correct reporting on the 'Time Spent On Each Step' page of the final report PDF.