

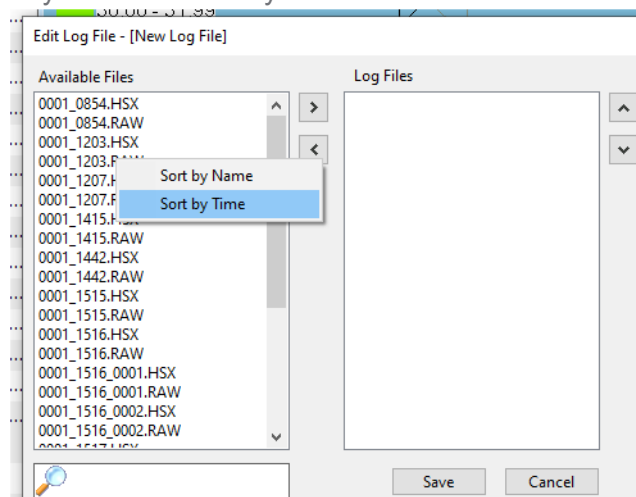


HYPACK 2022 Q3 Release Notes

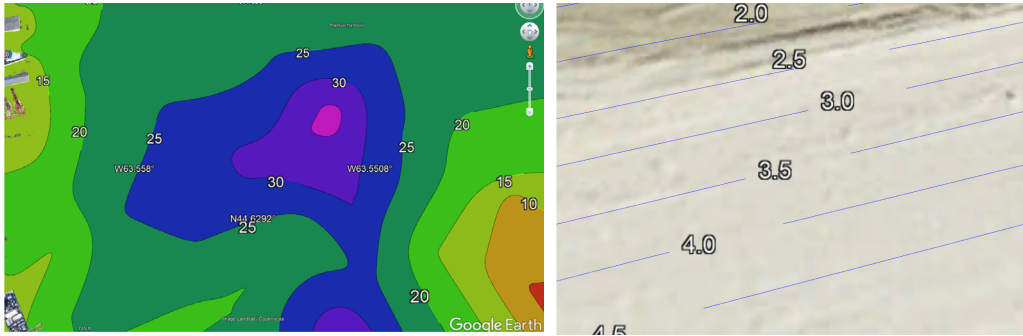
By Caroline Liu

HYPACK INTERFACE (SHELL)

- HYPACK Live Chat has been removed from the Help menu. If you need to contact HYPACK support, please call us at 1 (860) 635-1500.
- **BAG Files are now displayed in HYPACK Shell.** To open a BAG file, from the Project Items tree view, go to Project Files folder -> Background Files. Color table overrides for BAG files are also supported.
2D GDI, 2D Mix, and 3D BAG files are supported.
The Bathymetric Attribute Grid (BAG) file type is the standard for the National Ocean Service (NOS) hydrographic data files. BAG files contain XML metadata and two Layers in a matrix format—one of elevation and another uncertainty. Also contained is a list of post file creation edits to the data.
- In the Edit Log File window, users can sort available data files by file name or date of creation. From the Shell, in the Project Items list right click on the LOG file you'd like to edit, then click Edit Log File. Within the Edit Log File window, right click the Available Files list and select Sort by Name or Sort by Time.



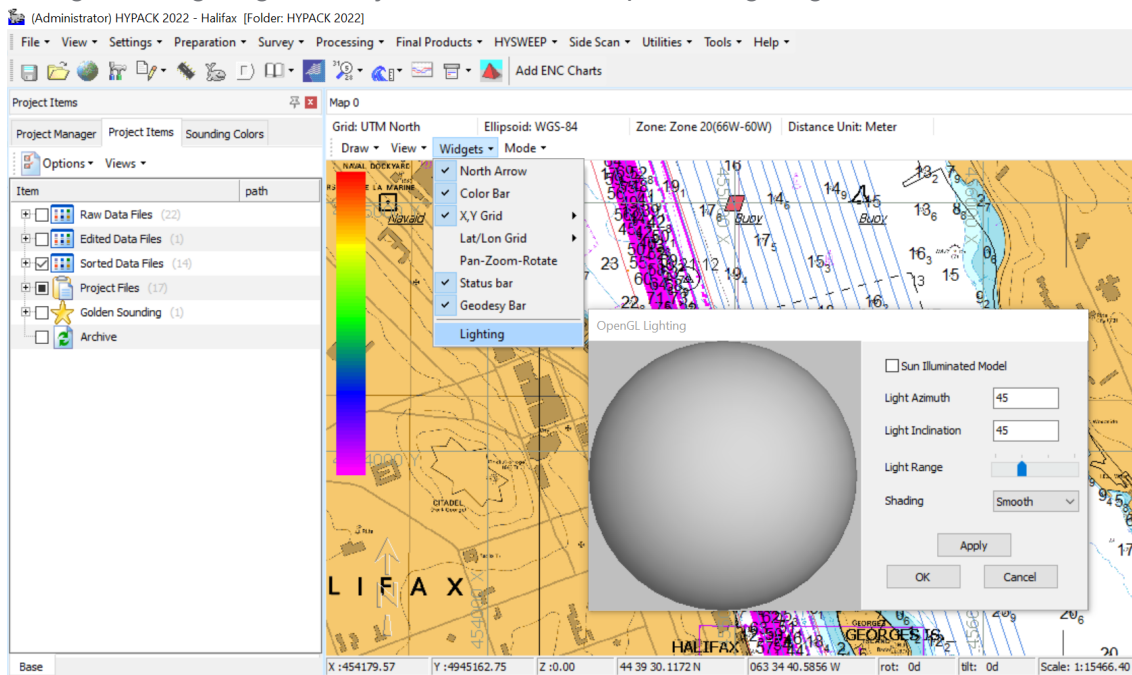
- When exporting DXF contour files to KMZ, contour labels and line data are also exported and viewable within Google Earth.



To export a DXF file to KMZ, from the Shell go to the Project Items tree view. Make sure the DXF file you want to export is checked/enabled. Right click in the Project Items tree view and click Export to Google Earth. In the Export Items list, make sure the DXF File is checked. Click [Export], name your KMZ file, then click [Save].

You can share and open your KMZ file in Google Earth, which will overlay the contour on its recorded location on the map.

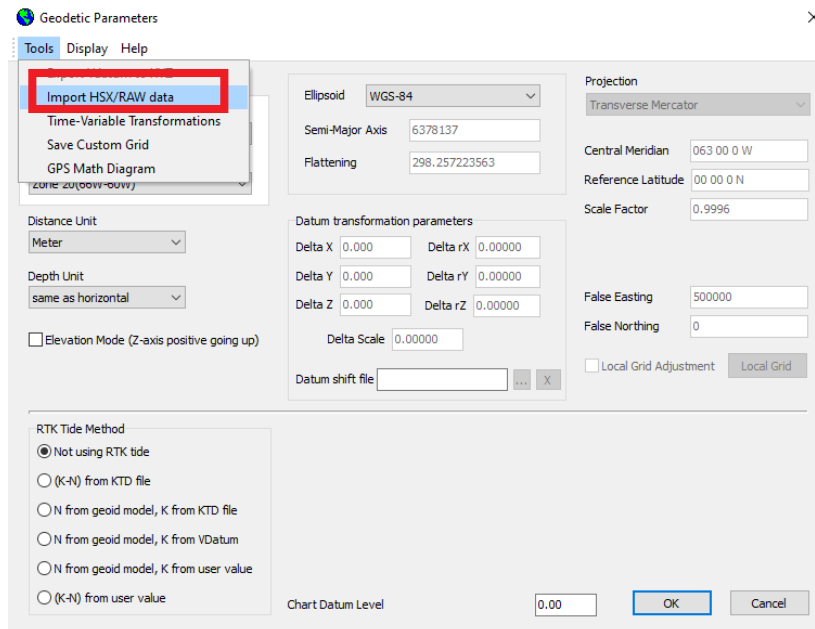
- **Added the Lighting option submenu to the Shell, where adjustments apply to matrix files.** These options are similar to the Survey lighting options for Matrix files. Open Widgets -> Lighting, and adjust values in the OpenGL Lighting window.



PREPARATION

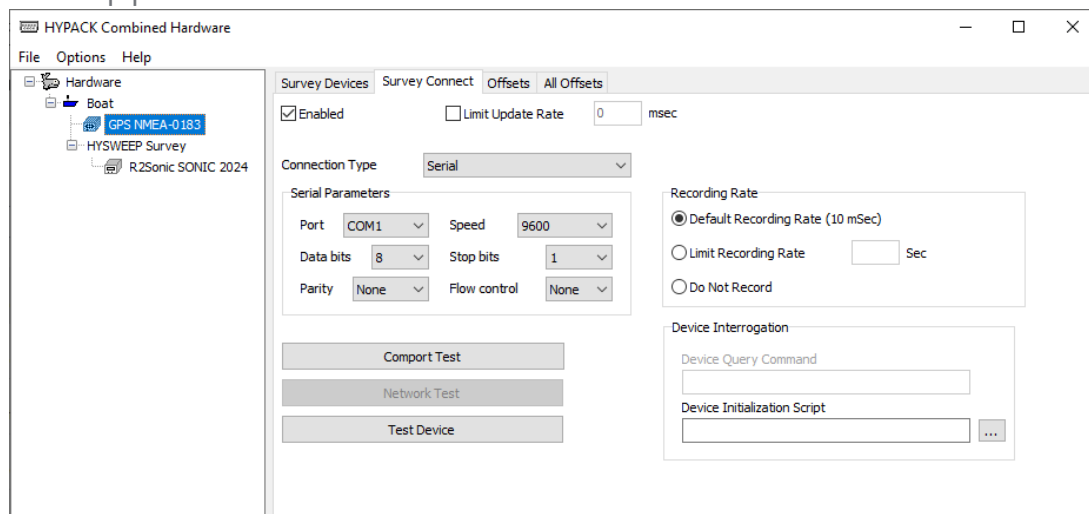
GEODESY

- **Geodesy Settings can now be loaded from HSX or RAW file headers.** To do this, from the Shell click Preparation -> Geodetic Parameters to open the Geodetic Parameters window. Then, click Tools -> Import HSX/Raw Data and select the *.raw or *.hsx file with geodesy settings you want to use. HYPACK will notify you if the file does not contain geodetic data.



HARDWARE

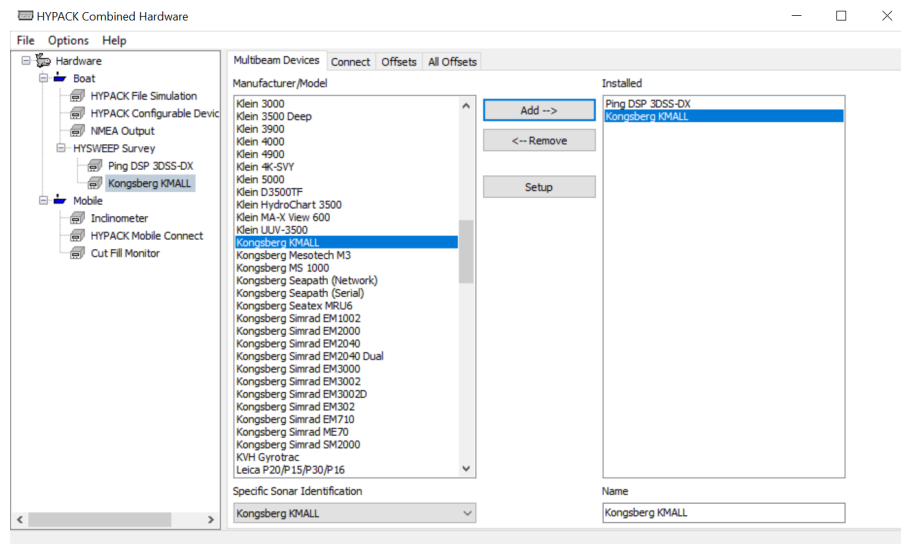
- In HYPACK Combined Hardware, the Device Connection window has been integrated in the Survey Connect tab. Previously, you had to click the [...] button to open the Device Connection parameters in a separate window. Our updated Survey Connect tab simplifies the setup process.



HYSWEEP® DRIVERS

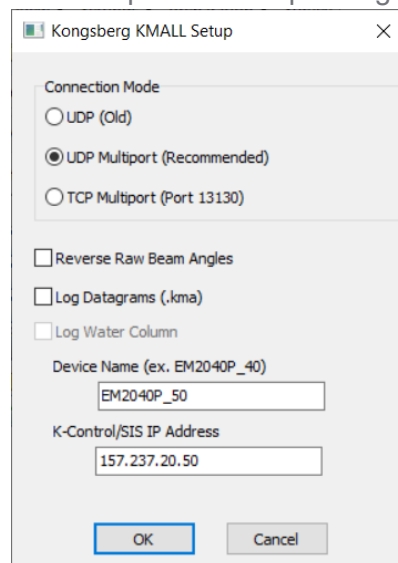
- **The Picotech PicoMBES driver has been updated.** Some things to note:
 - > The network setup has been simplified by hard coding driver receive (sonar data) so it is fixed at 10.0.100.70:13000, and driver send (settings to sonar) is fixed at 10.0.100.120:9000.
 - > The minimum ping rate limit is 2 Hz.

- **Kongsberg EM sonars that output KMALL datagrams now use the Kongsberg KMALL device driver in HYSWEEP Hardware Setup.** KMALL datagrams include SIS 5 data or data directly from the stand alone K-Controller. You will need to use the Kongsberg KMALL device driver for EM2040, EM712, and EM304 systems.



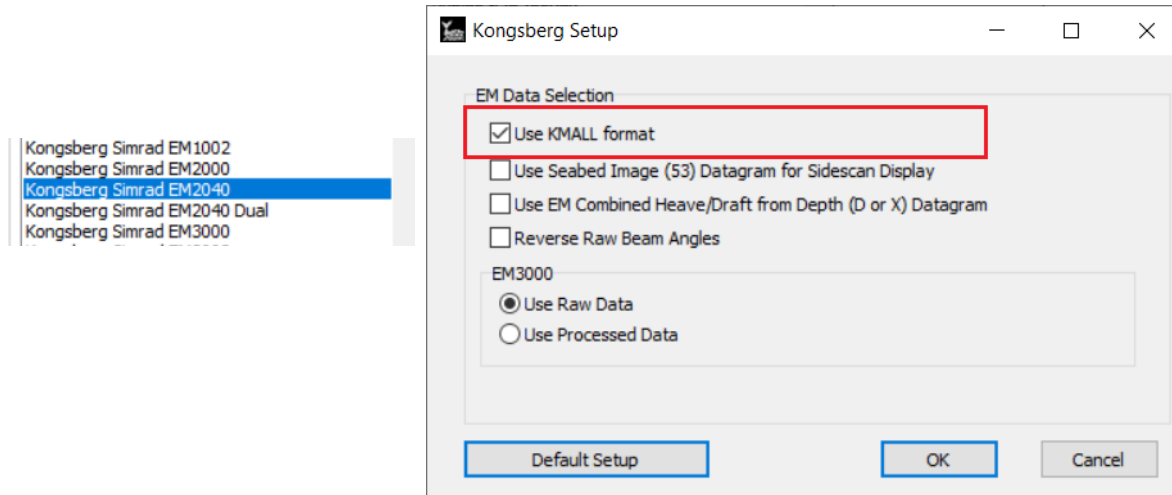
The new procedure is:

From the Shell, click Preparation -> Hardware Setup. In the HYPACK Combined Hardware window, click Hardware in the left tree view and check the Include box under HYSWEEP Survey. This adds HYSWEEP Survey to the devices in the left tree view. Click HYSWEEP Survey, then click and [Add -->] the Kongsberg KMALL device. Double click Kongsberg KMALL to open the setup dialog.



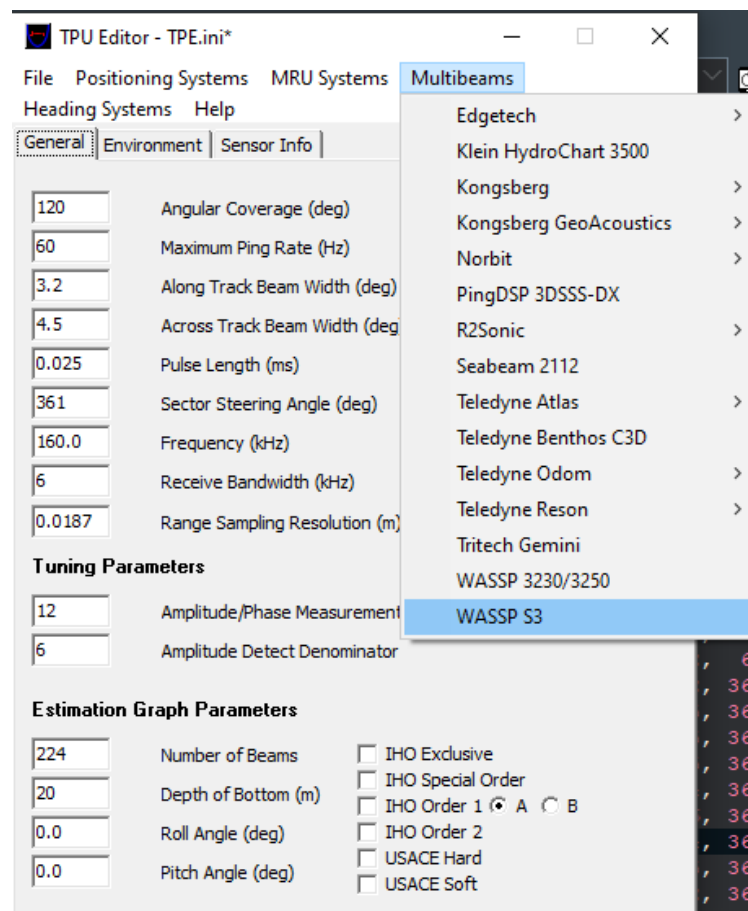
Prior to the HYPACK 2022 Q3 update, HYSWEEP Hardware setup for the Kongsberg EM 2040 sonar required users select the Kongsberg Simrad EM2040 device driver and check

the Use KMALL Format box in the Kongsberg Setup window. Starting with the HYPACK 2022 Q3 update, this option is no longer valid and the KMALL checkbox has been removed.



TPU EDITOR

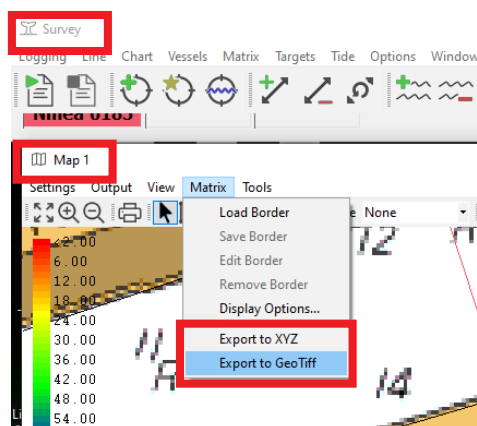
- The WASSP S3 Sonar has been added to the list of multibeam sonars in the TPU editor. Parameters based on published specifications of the WASSP S3 have been included in the General tab.



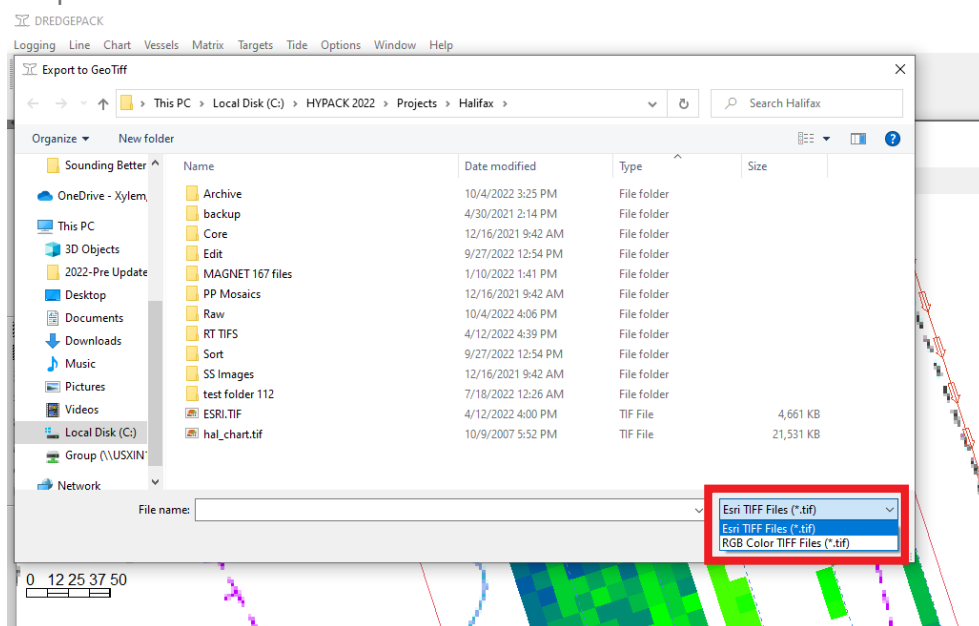
DATA ACQUISITION

SURVEY

- Added the options to export a matrix as an XYZ or GeoTIFF (Esri or RGB style) from HYPACK[®] SURVEY. While running HYPACK[®] SURVEY, these options will export the Survey matrix. To export the matrix from HYPACK[®] SURVEY, from the Map window click the Matrix menu, select either Export to XYZ or Export to GeoTIFF, and a save window appears.

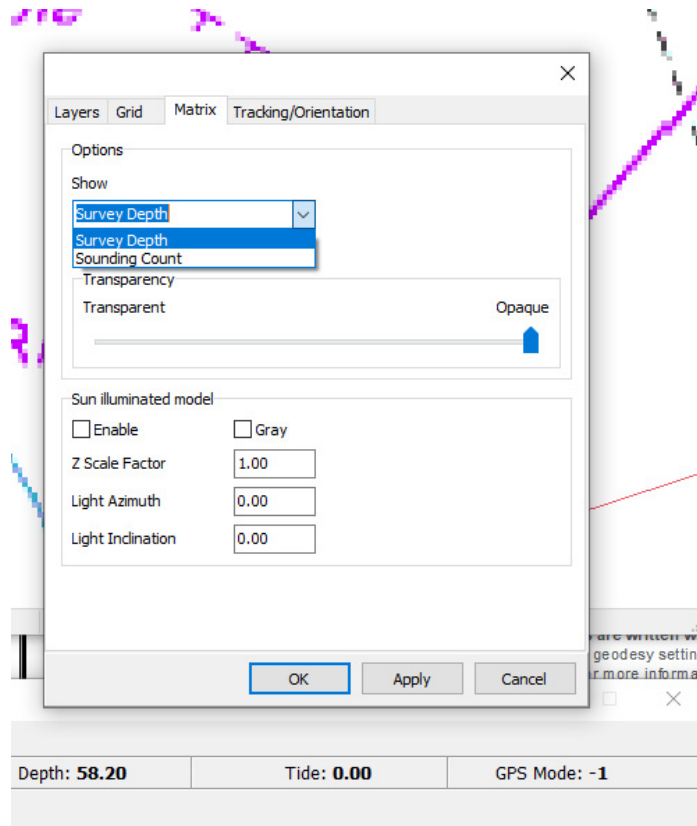


With the Export to GeoTIFF option, you can select between an Esri style or RGB style TIFF output.



Within HYPACK[®] SURVEY, make sure your matrix view is currently set to Survey Depth.

From the Map window click Settings -> Tracking/Orientation, click the Matrix tab, then from the Show dropdown select the Survey Depth option and click [OK].



- Starting with the HYPACK 2022 Q3 update, RAW files are written with geodesy data in the heading. This new update allows users to import geodesy settings into Geodetic Parameters from RAW files. See the Geodesy section for more information.

DRIVER UPDATES

- GenDevAll.dll - Added the Correction offset column, which displays the fixed correction applied to each row. View the Survey Driver window by opening HYPACK®

and clicking Preparation -> Hardware Setup and add gendevall.dll to your Hardware list. Double click the added HYPACK Configurable Device Driver.

Survey Driver

Message Term: ☒ CR ☐ LF ☐ CR/LF ☐ Other

Pos:

1234567890123456789012345678901234567890

1234567890123456789012345678901234567890

<< 1 2 3 4 >>

	First Char	Last Char	Multiplier	Event Char	Correction	Result
Depth 1	5	9	0.00	0	0.00	56789.00
Depth 2	0	0	0.00		0.00	0.00
X	0	0	0.00		0.00	0.00
Y	0	0	0.00		0.00	0.00
Lat (D)	0	0	0.00		0.00	0.00
Lat (M)	0	0	0.00		0.00	0.00
Long (D)	0	0	0.00		0.00	0.00
Long (M)	0	0	0.00		0.00	0.00
Tide	0	0	0.00		0.00	0.00
Heading	0	0	0.00		0.00	0.00
Heave	0	0	0.00		0.00	0.00
Pitch	0	0	0.00		0.00	0.00
Roll	0	0	0.00		0.00	0.00

☐ Position Filter

Min. Easting: 0.00 Min. Northing: 0.00

Max. Easting: 0.00 Max. Northing: 0.00

Get Next Line

Apply & Test

OK Cancel

- **NMEA.dll - Added new check box to allow parsing of XDR NMEA sentences in the NMEA Input/Output Driver Setup window.** High frequency and low frequency depths are parsed and displayed in the Data Display window of survey. They are also logged in the RAW file as EC2 (dual frequency) depth records. You can select this option by going to Preparation -> Hardware Setup, add nmea.dll, then double click the driver to bring up the setup window.

NMEA Input/Output Driver Setup

Sentences To Use

Depth: ☐ DPT ☐ DBT ☐ DSC ☒ XDR

Misc.: ☐ PAT ☐ *TGT ☐ *LIN ☐ PSER,ATT ☐ PTNLR,ATT ☐ PASHR ☐ TLL

Heading: ☐ MTG ☐ HDT ☐ HDM ☐ HDG

☐ Ignore checksum ☐ Line Az as HDG

Sentences to Generate

☐ GLL 4 GLL Output Decimal Places

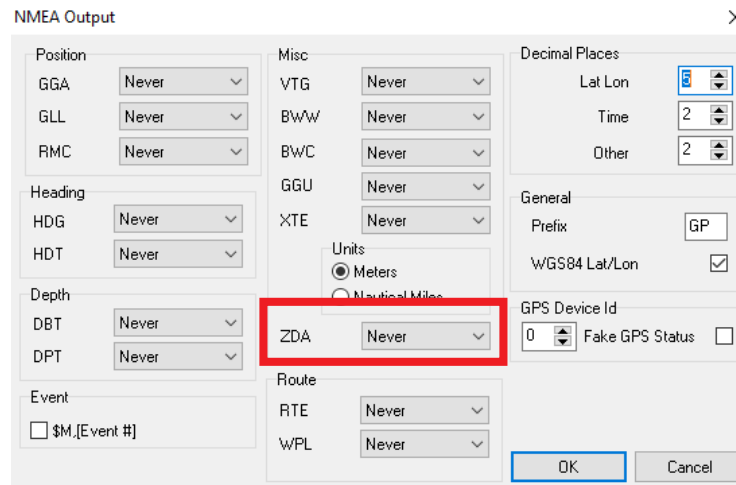
☐ GGA ☐ *LIN ☐ XYZ ☐ RMC ☐ VTG ☐ APB ☐ BWW ☐ *TGT ☐ BWC ☐ DMG

☐ XTE (Nautical Miles) ☐ XTE (in Survey Units) XTE Factor: 0.00 ☐ Output to Hundredth Decimal

Help... OK Cancel

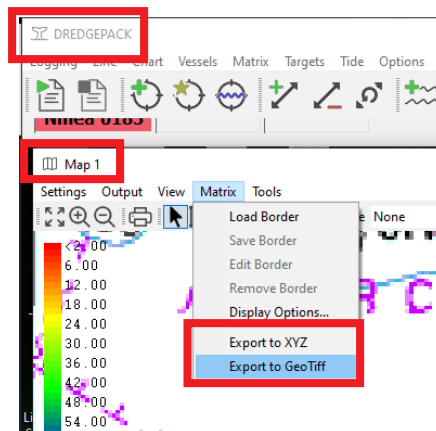
Note that the default depth values are output in meters, therefore we convert this data to feet when using a foot grid in Geodesy.

- **NMEAOutput.dll - Added the option to output ZDA data.** Choose from the following four output conditions: Never, Always, While Logging, and On Event Only. View the NMEA Output window by opening HYPACK® and clicking Preparation -> Hardware Setup and add NMEAOutput.dll to your Hardware list. Double click the added NMEA Output device in the Hardware tree view.



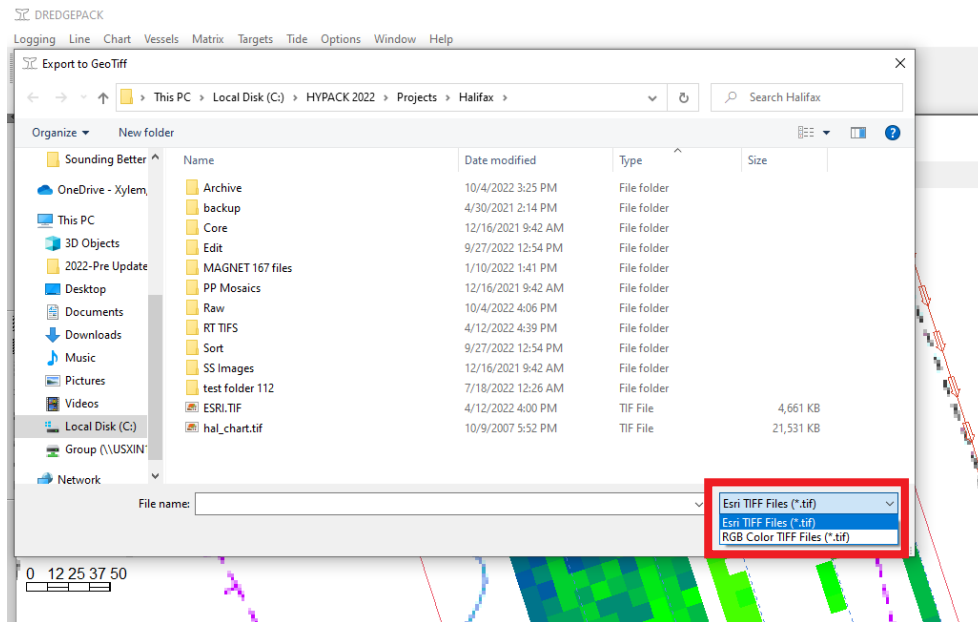
DREDGEPACK

- **Added the options to export a matrix as an XYZ or GeoTIFF (Esri or RGB style) from DREDGEPACK®.** While running DREDGEPACK®, these options will export the dredge matrix. To export the matrix from DREDGEPACK®, from the Map window click the Matrix menu, select either Export to XYZ or Export to GeoTIFF, and a save window appears.

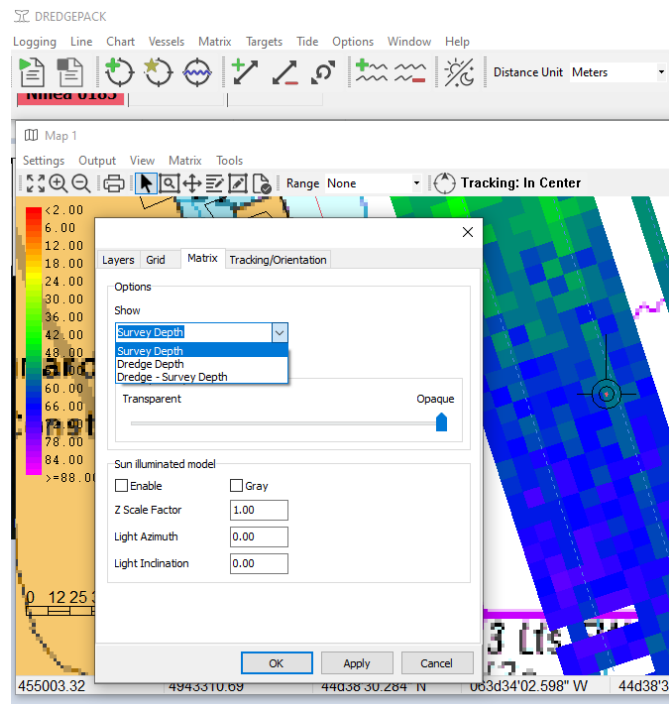


With the Export to GeoTIFF option, you can select between an Esri style or RGB style

TIFF output.

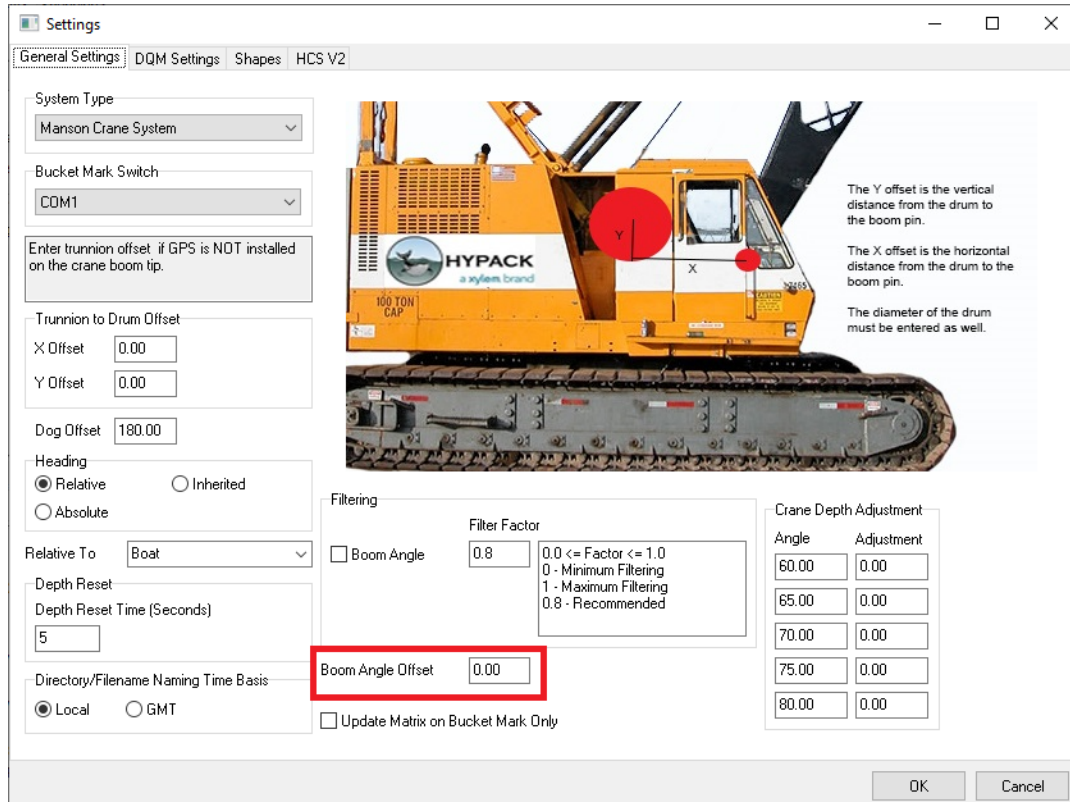


Within DREDGEPAK®, your selection will export the currently selected matrix view (Dredge, Survey, Survey-Dredge). To check or change which matrix view is currently displayed, from the Map window click Settings -> Tracking/Orientation, click the Matrix tab, then from the Show dropdown select your depth display option and click [OK].



DRIVER UPDATES

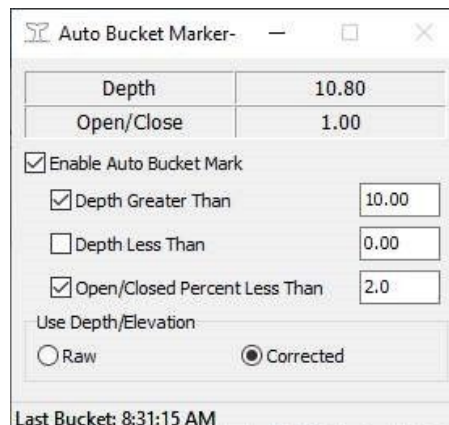
- **DQM_Mechanical.dll - Added Boom Angle Offset to the Settings window.** For cranes with an irregular boom, users can now specify the value of the Boom Angle Offset, which is added to the measured boom angle.



- **New Driver: AutoBucketMark.dll. - Users can auto-mark buckets based on depth and bucket open/close percentage.** This is only known to work with DQM_Mechanical.dll.

To set this up, make sure the Output functionality is checked in Hardware Setup.

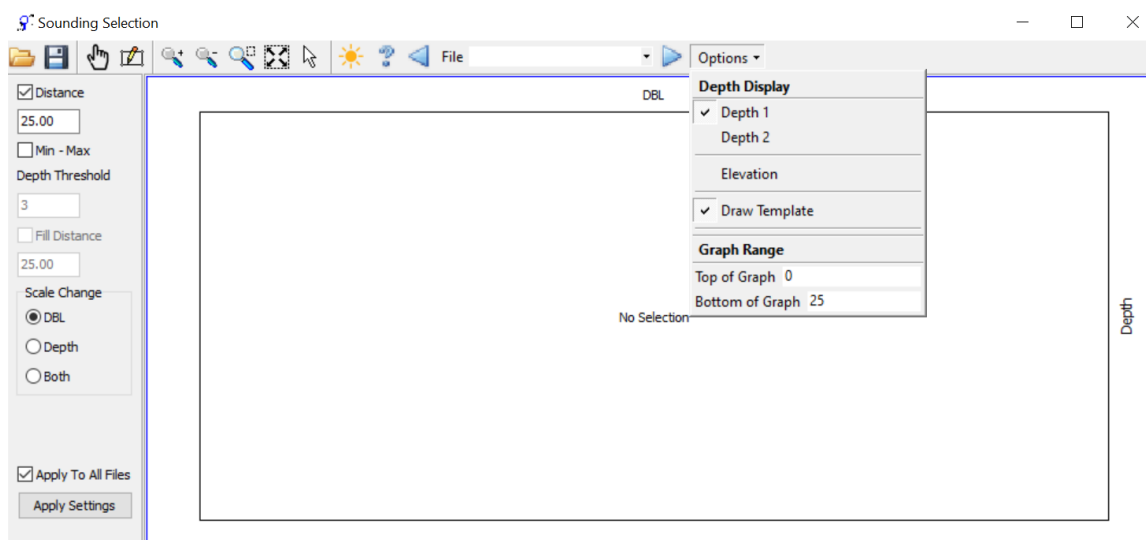
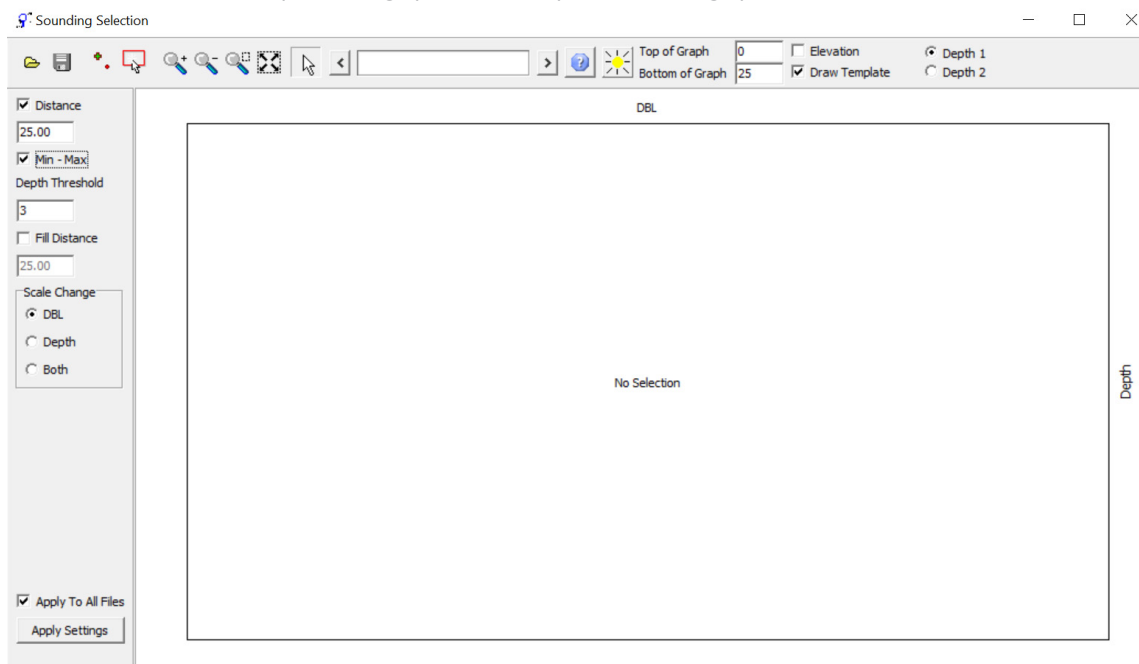
From the runtime window you can enable/disable the Auto Bucket Mark mode. The options are: Depth Greater Than, Depth Less Than, and Open/Closed Percentage Less Than. You can also choose if you want to use the raw or corrected depth for comparing to the depth options.



SINGLE BEAM PROCESSING

SB SELECTION

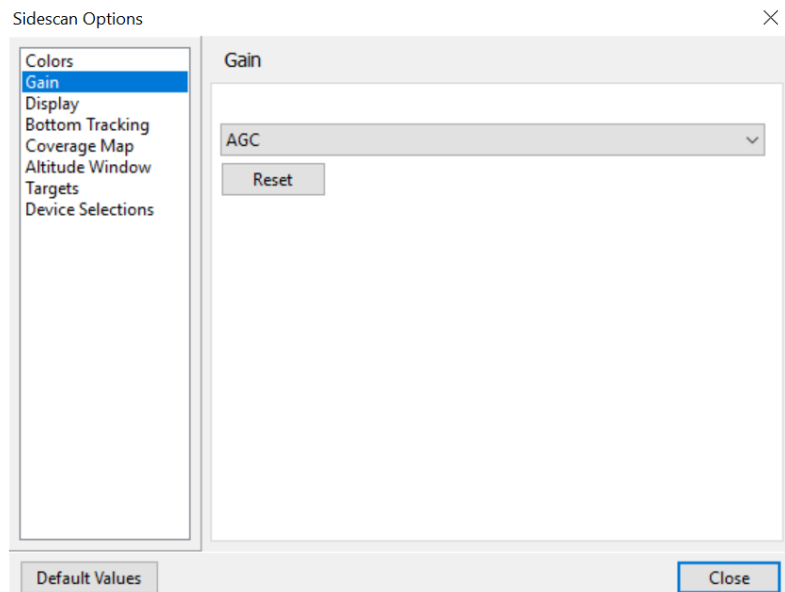
- The SB Selection program is now updated with modern icons and forms. See below to compare the old (top image) and new (bottom image) interfaces.



SIDE SCAN SURVEY

- Added the new **AGC (Angle Gain Correction)** gain option to Side Scan Survey. In Side Scan Survey, go to View -> Options -> Gain and select AGC from the dropdown. AGC calculations use a rolling average of your side scan data, from the start of your survey. The "Reset" button resets the AGC calculation's rolling average. Adjust sliders in

the main Sidescan Survey window to get a good image. Note that in the main Sidescan Survey window, Toggle TVG Mode icon will read “Auto2” when AGC is selected.



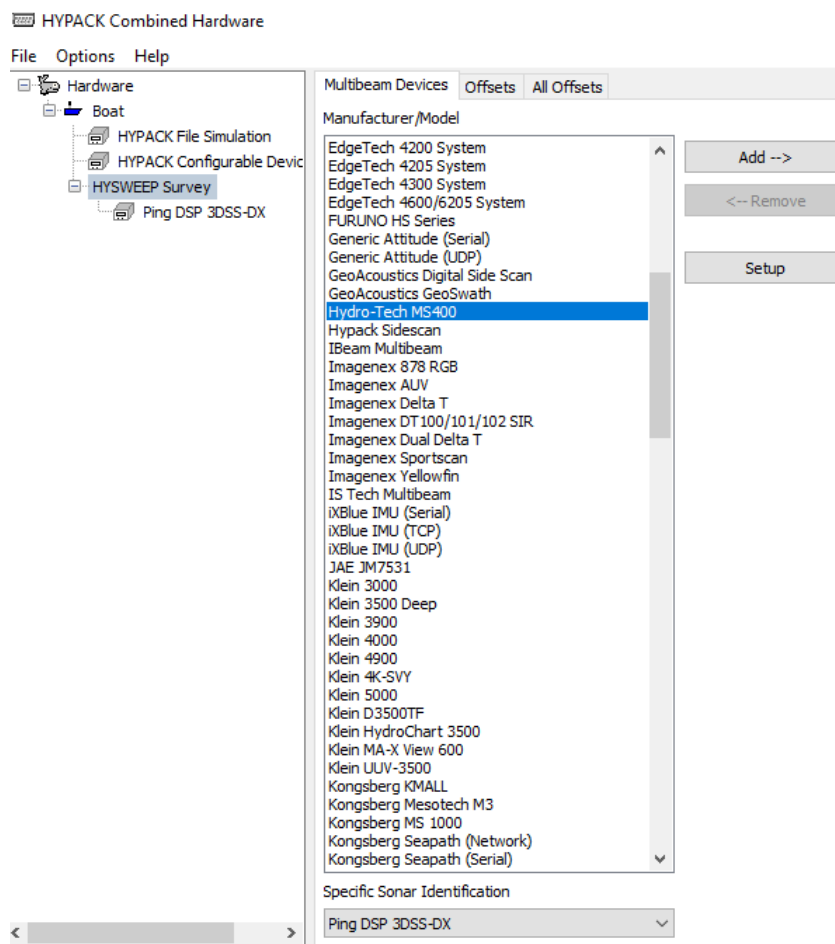
HYSWEEP® SURVEY

DRIVER UPDATES

- **Added the Hydro-Tech MS400 multibeam driver.** To use this driver, open HYPACK® and click Preparation -> Hardware Setup to open the HYPACK Combined Hardware window. While Hardware is selected in the left tree view, from the System tab click the Include box under HYSWEEP Survey. HYSWEEP Survey will be added to the left tree view, and you can select the Hydro-Tech MS400 from the list in the Multibeam Devices tab.

A few other things to note for the MS400. The Hydro-Tech MS400 sends R2Sonic format

datagrams for Bathymetry and TruePix, and our driver decodes the TruePix as a digital side scan. Regarding connections for the Hydro-Tech MS400, use the UDP network interface and port 8005 for sonar data. Use the HYPACK® and HYSWEEP® drivers for Applanix POS MV to receive position and motion data with port 5602.



POST-PROCESSING

64-BIT SINGLE BEAM EDITOR (SBMAX64)

- We've added the **Remove Duplicate POS Records** check box, which allows user to remove duplicate consecutive POS records. Sometimes a GPS outputs the same POS value to HYPACK across multiple consecutive timestamps. This option only retains the first POS record.

The screenshot shows the 'Device Offsets' dialog box with the following settings:

- Navigation:** SPS-855. Starboard: 0.00, Vertical: -2.38, Forward: 0.00, Latency: 0.000. **☒ Remove Duplicate POS Records** (highlighted with a red rectangle).
- MRU:** Not Using MRU. Starboard, Forward, and Vertical fields are empty. Pitch, Roll, and Latency fields are empty. A 'Special Cases...' button is present.
- Heading:** No Heading Device. Yaw and Latency fields are empty.
- Tide:** SPS-855. ☒ RTK Tides. Starboard: 0.00, Vertical: -2.38, Forward: 0.00, Latency: 0.000.
- Sonar:** CV100. Starboard: 0.00, Yaw: 0.00, Forward: 0.00, Pitch: 0.00, Vertical: 0.00, Roll: 0.00, Latency: 0.000. A 'Multiple Transducers...' button is present.

Buttons: OK, Cancel.

To select this option, open SBMAX64, and select and files you want to process from the Catalog window. The Read Parameters window will appear, and in the Devices tab, click [Edit] which opens the Device Offsets window. You can check or uncheck the Remove Duplicate POS Records and click [OK].

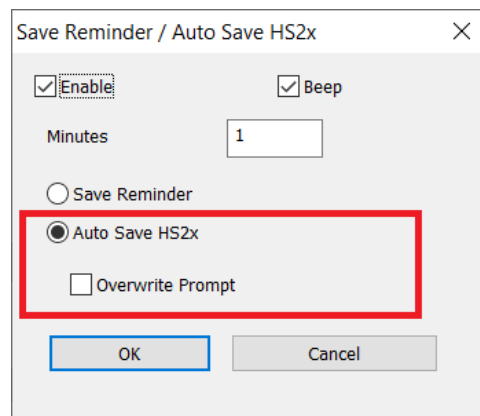
64-BIT HYSWEEP[®] EDITOR (MBMAX64)

- 64-Bit HYSWEEP Editor now supports reading and editing Kongsberg KMALL bathymetry and side scan data.
- **Auto Save HS2x** has been added to the **Save Reminder** options. When properly set up, the 64-bit HYSWEEP[®] EDITOR automatically saves or prompts users to save any changes made during Stage 2 editing to the HS2x file(s).

To set up Auto Save:

1. In the 64-bit HYSWEEP[®] EDITOR (MBMAX64) you must start Stage 2 editing, then click File -> Save Survey -> [Save Reminder/Auto Save HS2x...] to open the Save

Reminder/Auto Save HS2x window.



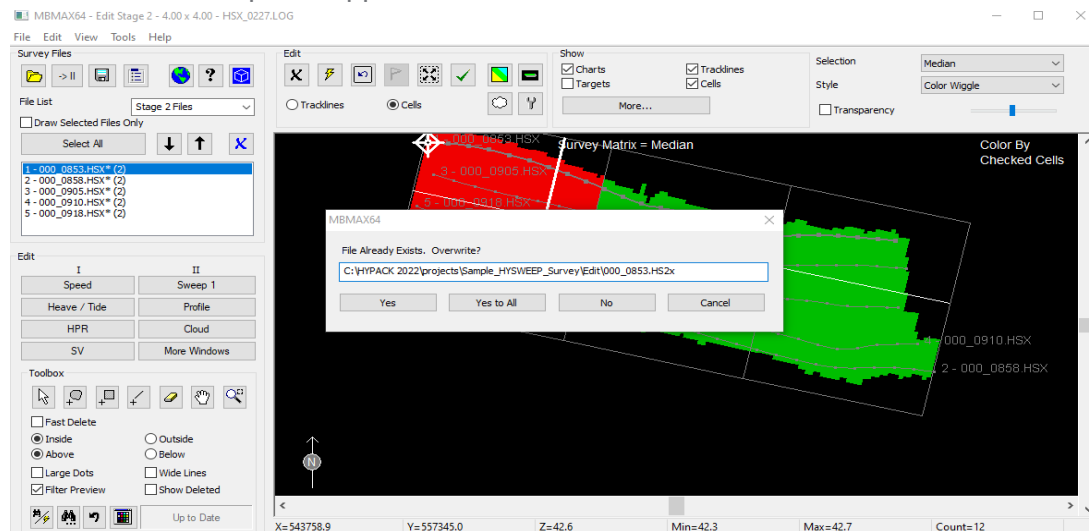
2. Check the box next to Enable.

3. If you want an auditory alarm to sound when your file is auto-saved, check the box next to Beep. While this is checked, the Windows Background noise will occur at the designated time interval to remind you it is auto-saving.

4. In the Minutes box, enter the time interval at which you want your files to be autosaved or be reminded to save them. This value must be an integer of 1 or greater.

5. Click the Auto Save HS2x button. Auto Save HS2x automatically saves changes you have made to the corresponding HS2x files after the user-defined time interval has elapsed after the first edit.

If you want to manually choose which HS2x files to save, check the Overwrite Prompt box. While Overwrite Prompt is checked, a prompt window appears at the designated time interval after the first change is made to ask if you want to save your edits by overwriting the HS2x file(s). For example, if you designate an Auto Save time of 1 minute, if you open Stage 2 editing at 2:00 PM, grab some coffee and begin editing at 2:05 PM, an Overwrite Prompt will appear at 2:06 PM.



The Overwrite Prompt window displays the HS2x file name, and offers several save options:

- > [Yes] saves the changes to the displayed HS2x file. If you save using this method, the window will cycle through each file listed on the left, allowing you use [Yes] or [No] to save or ignore changes made.
- > [Yes to All] batch saves the changes made to all HS2x files that are listed on the left.

- > [No] does not save changes made to the HS2x file whose name is displayed in the window. If you save using this method, the window will cycle through each file listed on the left, allowing you use [Yes] or [No] to save or ignore changes made.
- > [Cancel] does not save changes made to all HS2x files listed on the left.

If [No] or [Cancel] are selected, users will be repeatedly prompted to save at every user-defined time interval, even if no changes are made, until the changes are saved.

If no changes are made within the editor, the prompt will not appear. The overwrite prompt will appear or auto save will occur X minutes after the first change is made.

- **Added a new option to filter matrix cells based on the minimum number of soundings per cell.** For example, if the minimum number of soundings per cell is set to three and a cell contains only two soundings, both soundings will be filtered out. To filter a matrix by setting the minimum number of soundings per cell, click Edit -> Search and Filter Options. Check the box next to Minimum Number of Soundings Per Cell, then enter the number in the box below. Click [Update Filter Preview] to apply the new rule to the matrix.

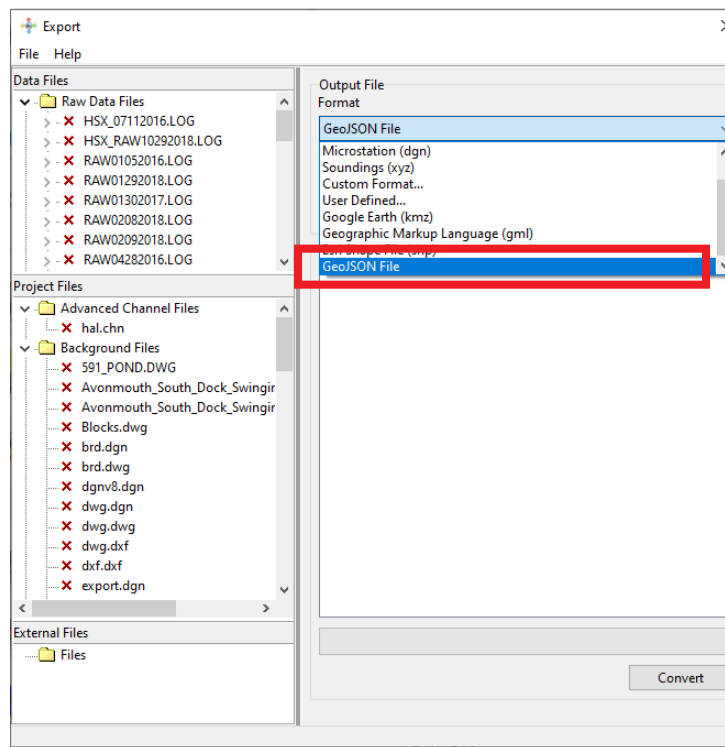
The screenshot shows the 'Search and Filter Options' dialog box with the 'Matrix' tab selected. The 'Selection' dropdown is set to 'Median'. The 'Search and Filter Above' and 'Search and Filter Below' sections are both set to 'Set Limit' with a value of '2.0' Meters. The 'Minimum Number of Soundings Per Cell' checkbox is checked and highlighted with a red box, with the value '3' entered in the adjacent text box. The 'Mode Threshold' is also set to '3'. The 'Update Filter Preview' button is at the bottom.

FINAL PRODUCTS

EXPORT

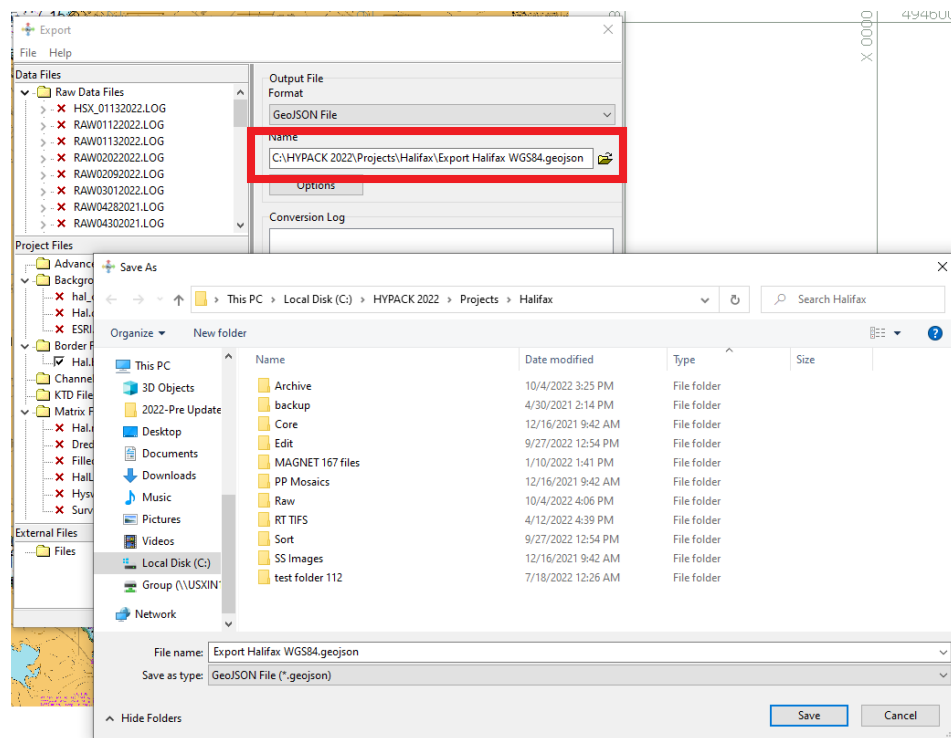
- Added GeoJSON to the list of export options within the Export program. The following file types can currently be converted to a GeoJSON:
 - > ALL (RAW) files (tracks and soundings)
 - > BRD/Border files
 - > HS2 (tracks only)
 - > HS2x files (tracks and soundings)
 - > LNW files
 - > SWP (tracks and soundings)
 - > Targets
 - > XYZ files

To use this option, from the HYPACK Shell click Final Products -> Export to open the Export window. Under Output File, click the Format dropdown and select GeoJSON File.

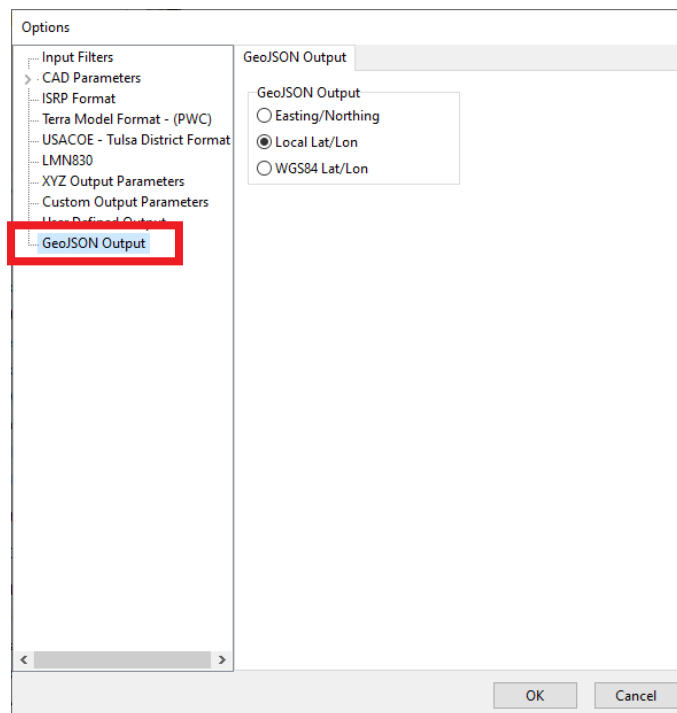


Give your GeoJSON file a name by clicking the Browse icon next to the Name field, navigate

to the folder you want to save to, type in a file name you want to save to, then click [Save]. In this example, <Export Halifax WGS84.geojson> is the file name.

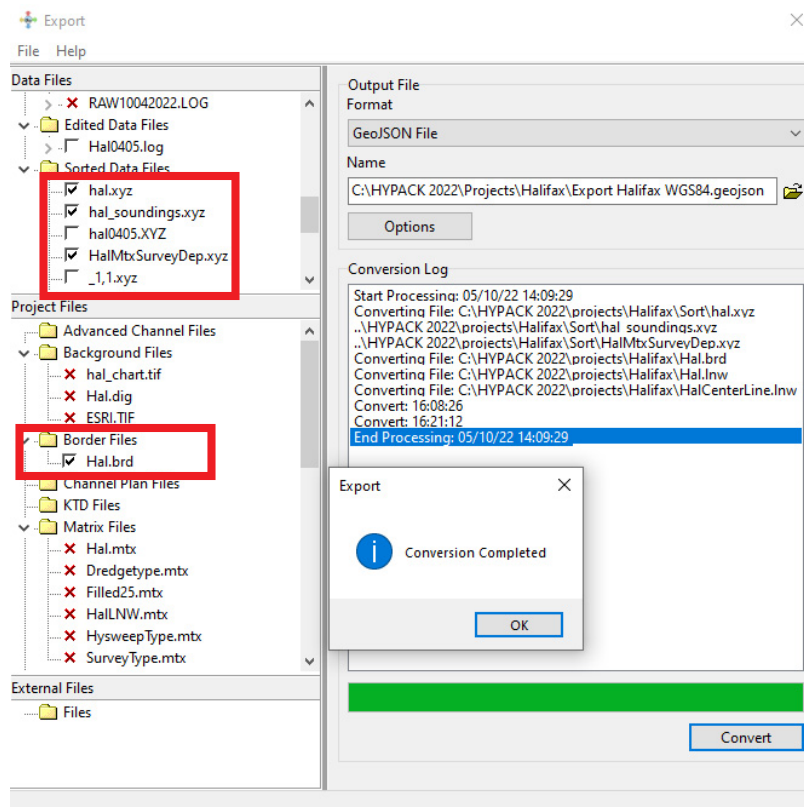


Click [Options], then select GeoJSON Output on the left to bring up the output settings. You can choose to export your data as Easting/Northing (XY), Local Lat/Lon, or WGS84 Lat/Lon. Click [OK] to confirm your desired output settings.



Back in the Export window, select/deselect the Data Files and Project Files you want to convert by checking/unchecking the check box next to each file name. Click [Convert] to

convert all of the selected files within your project to the specified GeoJSON file. The conversion log will list all files converted.



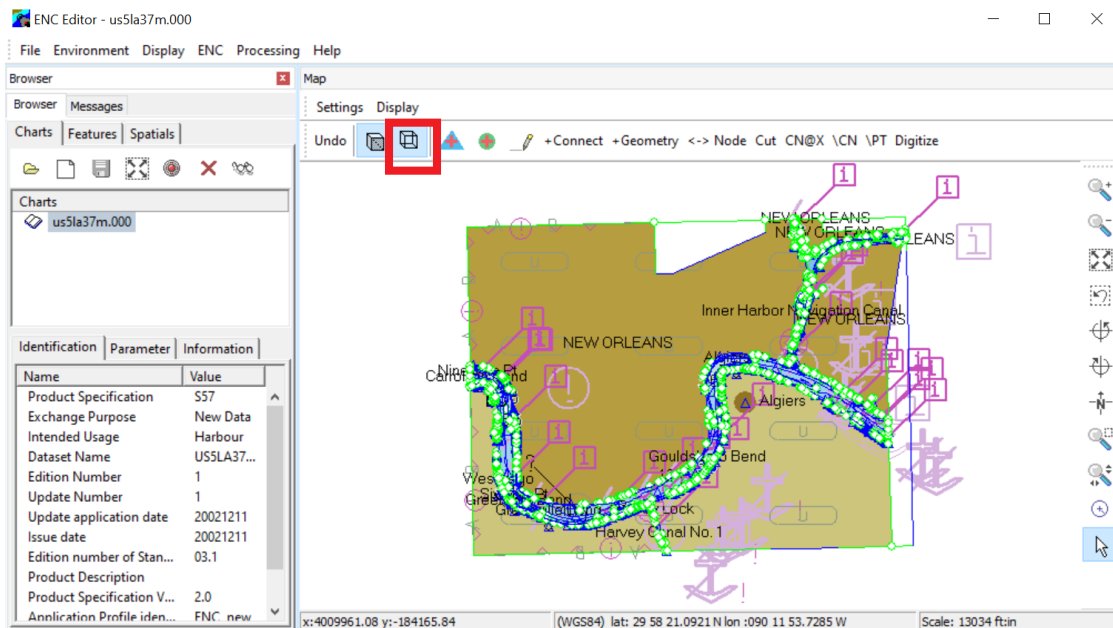
The GeoJSON consecutively lists all the selected converted files and their data. In the below excerpt from the GeoJSON generated in this example, you can see that the data for HalMtxSurveyDep.xyz is followed by Hal.brd.

```
Export Halifax WGS84.geojson - Notepad
File Edit Format View Help
63.57173422659,57.9],[44.6595991118505,-63.5716944116998,58.1],
[44.6595136977544,-63.5716545969277,58.2],[44.6584886373523,-
63.5711768279849,55.7],[44.6576344936341,-63.5707787009197,52.3],
[44.6443942562918,-63.5646088540103,69.9],[44.6443088393926,-
63.5645690602384,69.9],[44.6442234224776,-63.5645292665844,69.3],
[44.64395503633,-63.5643507443077,62.2]],"properties":
{"name":"HalMtxSurveyDep.xyz"},"type":"Feature","geometry":
{"type":"Polygon","coordinates":[[[44.6518557494048,-
63.5723197989354],[44.6403972244119,-63.5667026913956],
[44.6403471630022,-63.5652145647408],[44.6403545159534,-
63.5637268705144],[44.6404767152188,-63.5622404111729],
[44.6409420333469,-63.5610547059389],[44.6419804865649,-
63.5600976839832],[44.6437077653735,-63.5592216435872],
[44.6447462931418,-63.5582645446559],[44.6458995891511,-
63.5573085106556],[44.6470517902106,-63.5565755118591],
[44.6482044379697,-63.5557682100183],[44.6544508563281,-
63.550500756055],[44.6518557494048,-63.5723197989354]]]},"properties":
{"name":"Hal.brd"},"type":"Feature","geometry":
{"type":"MultiPoint","coordinates":[[44.6473079650852,-
63.562901500303,0]]},"properties":{"name":"Hal.brd"}},
{"type":"Feature","geometry":{"type":"LineString","coordinates":
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```

ENC EDITOR

- The Display Geometry option now defaults to ON when the ENC Editor is initialized, so points and chains remain displayed on the chart after they are created.

Previously, Display Geometry was OFF by default. This led to some confusion where chains and points would not be displayed after creation, however users had to click ON the Display Geometry option to view these objects. Now, to hide these points and chains, just click Display Geometry to toggle it OFF.



- The ENC Editor has also been updated with modern icons and forms (see above image).