



# HYPACK 2024 Q3 Release Notes

By Caroline Liu

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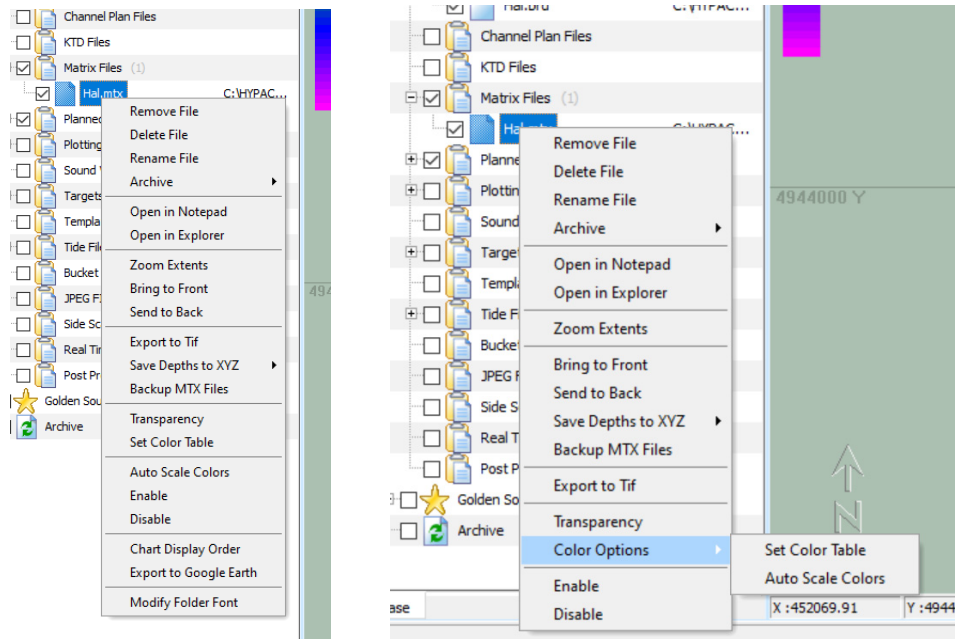
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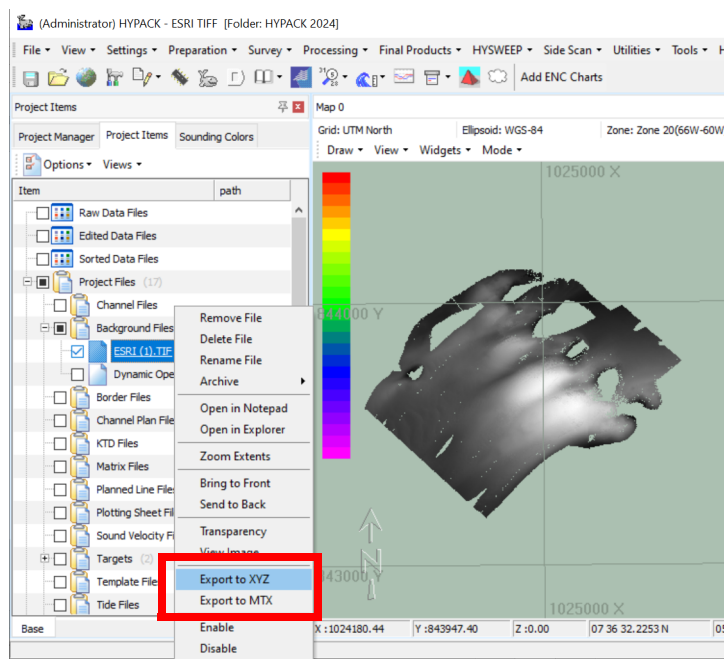
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## HYPACK SHELL

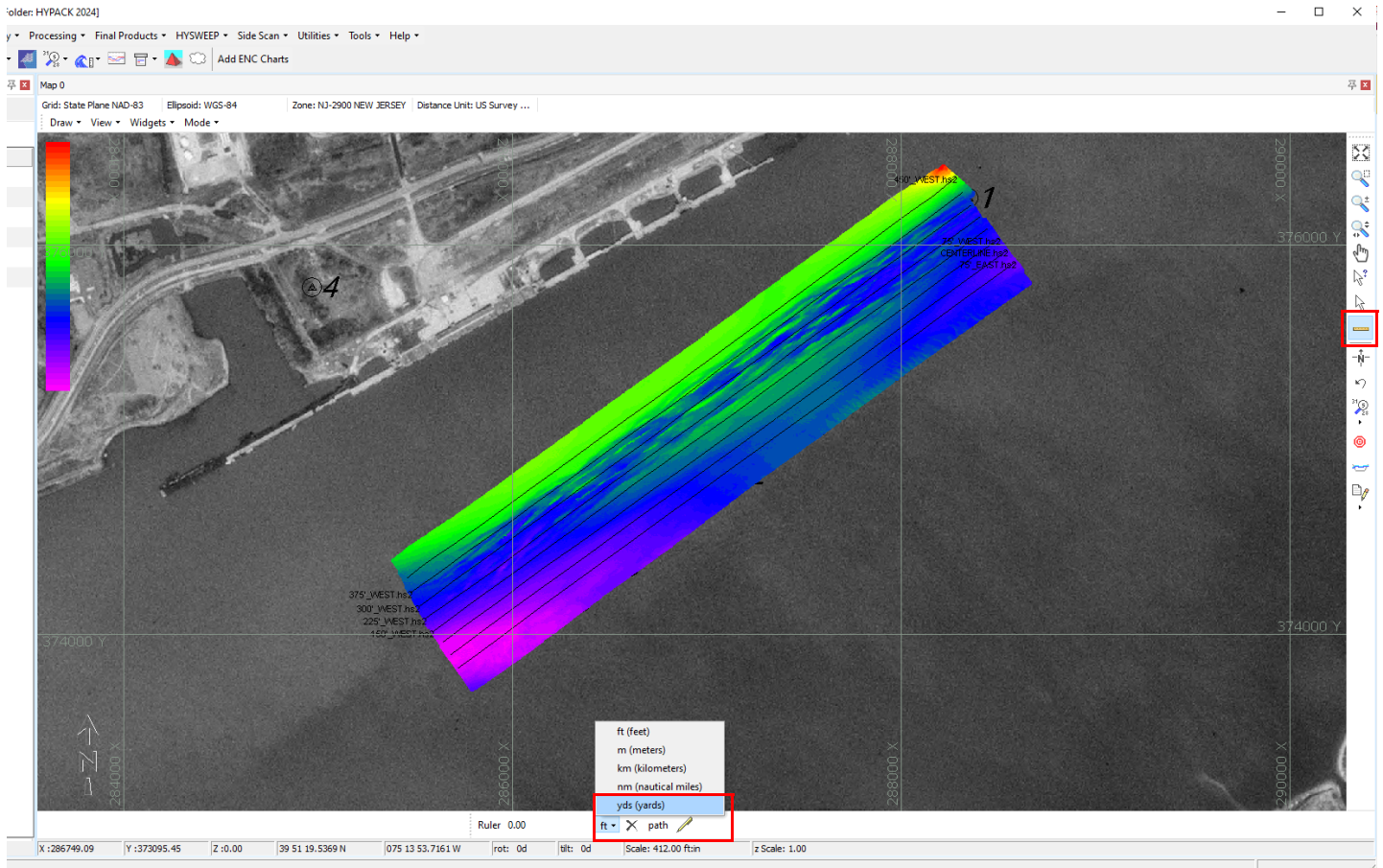
- In the Project Items list, the right-click menu options have been reorganized to group related items. Some items were also moved to the Options menu drop down to reduce the volume of options in right-click pop up menu. The following images are examples of what the right-click menu looks like before (left) and after (right) the update.



- Added the options **Export to XYZ** and **Export to MTX** to the right-click menu for **ESRI TIF** files. Access the menu from Project Items list in the HYPACK Shell.



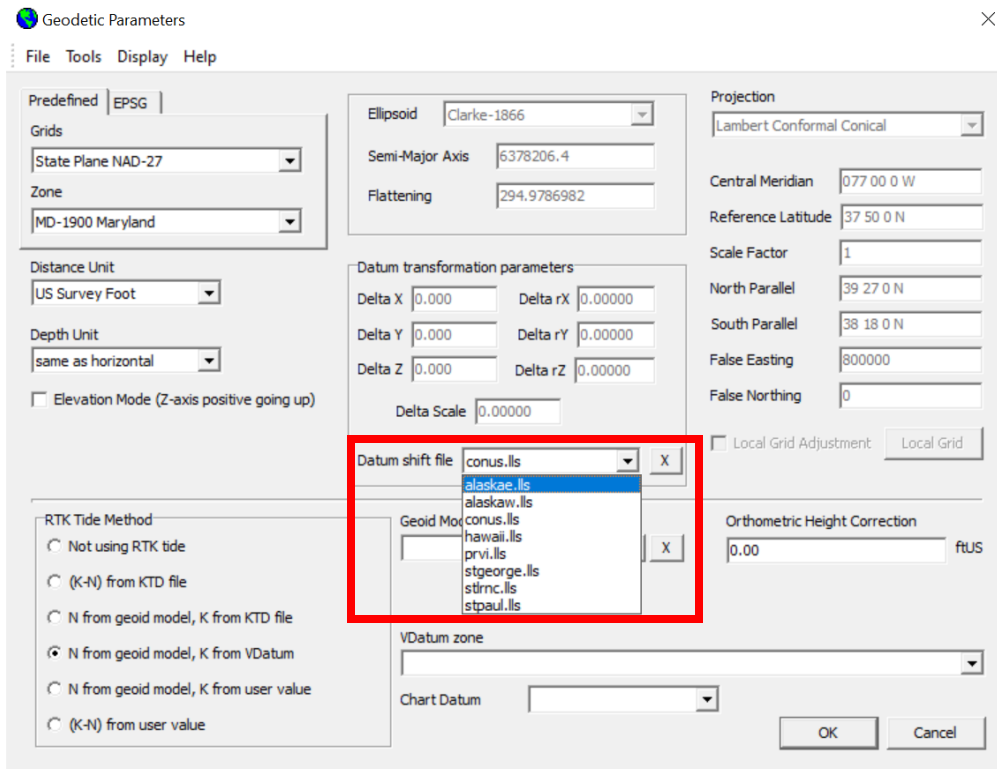
- > If Export to XYZ is selected, the Save As window appears. Give the XYZ file a name and click [Save]. The file is saved to the Sort folder by default.
- > If Export to MTX is selected, the Save As window appears. Give the MTX file a name and click [Save]. The file is saved to the project folder by default.
- **Added yards to the list of selectable units in the units drop down of the Measure Tool.**  
To use this new feature, in the HYPACK Shell, click the Measure tool on the right toolbar. The distance and azimuth toolbar appears at the bottom of the Map window. Click the units drop down and select yards.



## PREPARATION

### GEODETIC PARAMETERS

- The Datum Shift File field in the Geodetic Parameters dialog has been changed to a dropdown list that contains only valid datum shift files (\*.lls and \*.gsb).



## HARDWARE

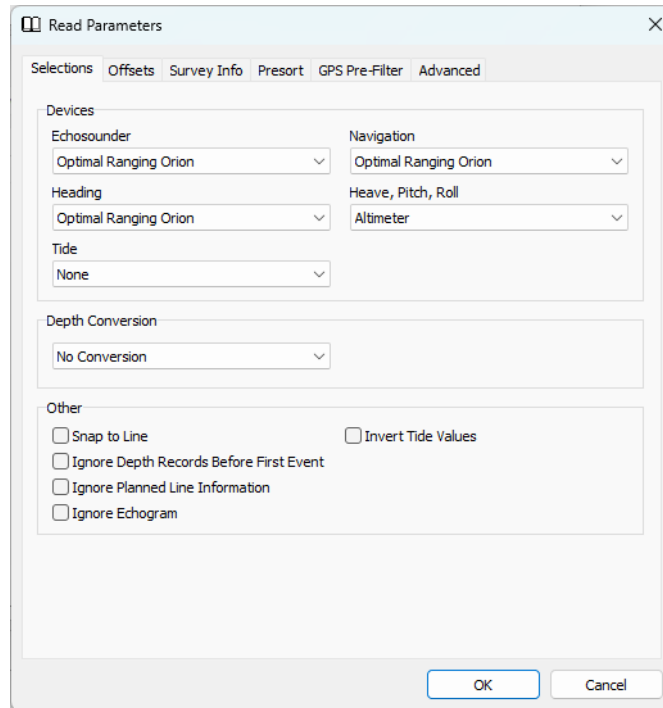
### SURVEY DEVICE DRIVER UPDATES

- **New Driver: Optimal Ranging Orion (Orion2.dll)**

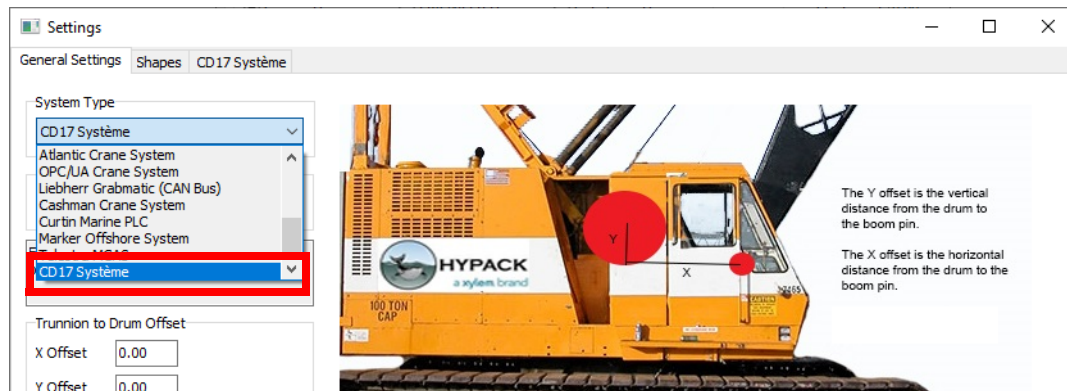
This driver is largely identical to the Orion.dll driver and was created for a specific use case that may not be relevant to all users. This driver uses the Orion ROV's position, depth, and heading to calculate the position and depth of burial of a target cable. The measured depth can then be corrected in SBMAX using altitude data from an altimeter. The following is a list of where the drivers differ:

  - > The Orion2 driver additionally reports position, depth, and heading. This driver uses the USBL position and depth as a starting point, then uses the current offset from the device to obtain its position and depth. The heading can be configured to come from the Orion device itself or from the USBL.
  - > To work properly, this driver requires an altimeter and must be on its own mobile with a gendevparse.dll driver reading heave from the altimeter. The Orion2 driver should be set relative to another ROV mobile which handles the position of the device itself.

- > The heave and depth data should be used in SBMAX to calculate the depth of burial of a target cable.
- > The following setup parameters allow the data to be easily read by SBMAX:



- **DQM Mechanical Driver (DQM\_Mechanical.dll)**  
**Added CD17 Syst me to the DQM\_Mechanical driver, which acts as a ModBus master to obtain crane slew, boom angle, and wire length from the sheave. Select this option if you have a ModBus-connected PLC crane. Note that the modbus.dll needs to be added to the HYPACK 2024 root directory to support the ModBus connection.**

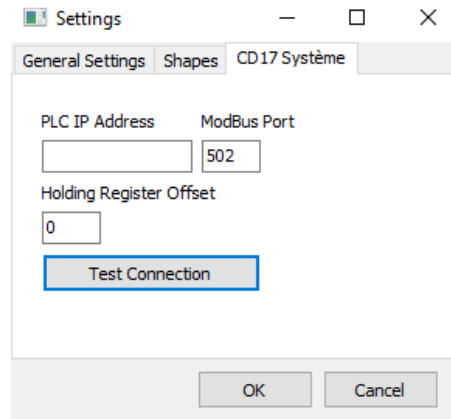


To use this feature:

- 1) From the HYPACK Shell, click Preparation -> Hardware Setup to open the HYPACK Combined Hardware window.
- 2) Add the DQM Mechanical Driver, and double click it to open the Settings window.
- 3) Under the System Type drop down menu, select CD17 Syst me. The CD17 Syst me tab appears.

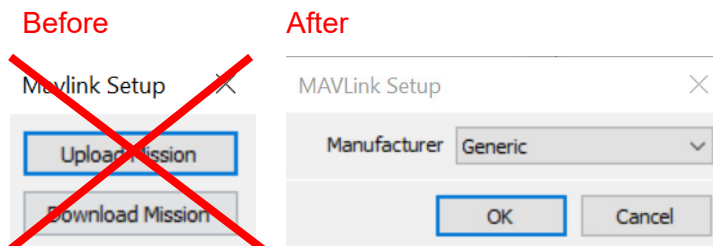
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4) Under the CD17 Système tab, fill out the IP address of the PLC crane, the ModBus port number, and the holding register offset.



- **MAVLink (mavlink.dll)**

The MAVLink driver setup window has been completely reworked - The Upload Mission and Download Mission buttons have been replaced with a dropdown to select the manufacturer. The current manufacturer options are Generic and Seafloor USV.



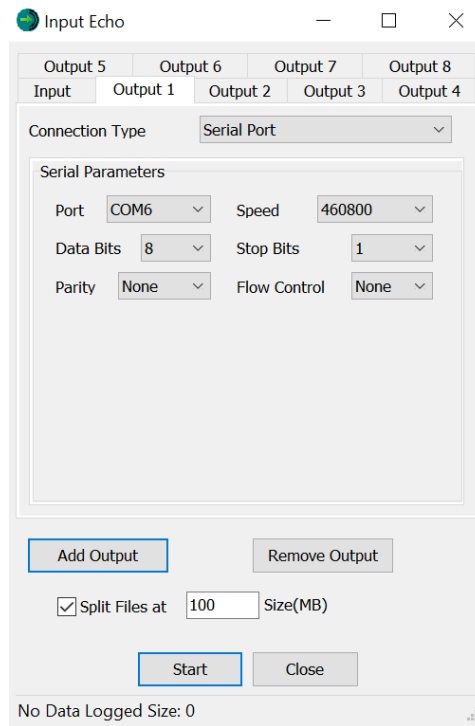
This change was made because both Upload and Download Mission buttons are now redundant, as we upload the current Survey line file to the device when you click the [Start Mission] button in Survey. The Download Mission button could have some utility if you were trying to transfer Survey line plans using your vessel, but there are better ways to do that and limited use cases.

For more information about the MAVLink driver update, check out the article [MAVLINK Autopilot Updates by Daniel Tobin](#), published October 2024.

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## INPUT ECHO

The Input Echo dialog has received multiple updates.



- Users can now add and remove up to eight outputs using the newly added [Add Output] and [Remove Output] buttons.
  - > The supported output connection options are serial port, parallel port, and network port. Additionally, the output data can also be saved to file(s).
  - > If the wrong device is removed, click [Add Output] to add back the most recent deleted device.
- The supported input port types are serial port, parallel port, and network port.
- Parameters change depending on the input or output connection type selected.
- When File is selected as the output connection type, check the Split Files checkbox to split the data into multiple files based on size. This prevents giant files from being created. Additional files will be saved in the format {FileName}\_{number}.extension (Ex: test.tmp, test\_1.tmp, test\_2.tmp, etc.).
- Settings are saved when Input Echo is closed.

## TARGETS

### TARGET EDITOR

- **Klein Spectral AI targets can now be imported in the Target Editor.**

To use this new function:

1. From the HYPACK Shell, click Preparation -> Editors -> Target Editor. The Target Editor window appears.

2. In the Target Editor window, click File -> Import -> Klein Spectral AI. The Import Target File window appears.
3. Select one or multiple Klein Spectral AI target files and click [Open]. Only JSON files can be selected. The associated TIF file will also be imported as well.

Back in the Target Editor, the selected Klein Spectral AI targets will appear in the list of targets on the left. Name and metadata read from the JSON file of the associated target will be displayed on the right, as well as the TIF image.

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## SURVEY

### HYSWEEP SURVEY

- **Added the Dredge Mode option to the Matrix Options window in HYSWEEP Survey.** Enable Dredge Mode if the vessel is stationary (dredge conditions). This fills the real time matrix with values that have applied offsets appropriate to a stationary dredge as opposed to a moving survey boat. Soundings are filtered via signal strength and collinearity to determine and select the highest quality soundings for use in the matrix.

With Dredge Mode enabled, roll, pitch, and non-averaged tide corrections are automatically applied to the matrix values, but not heave. While Dredge Mode is enabled, the Draw Matrix in HYPACK Survey option is permanently enabled as well.

Matrix Options -

Dredge Mode  Invert Depths

Draw Matrix in HYPACK Survey No Matrix Loaded

**Cells**

Length  Calculate

Width  Number of Cells

Approx. Memory (Mb)

**Show**

Minimum Soundings  Maximum Soundings

Sounding Average  Overlap (Max - Min)

Coverage

**Update Matrix**

While logging  Always  Never

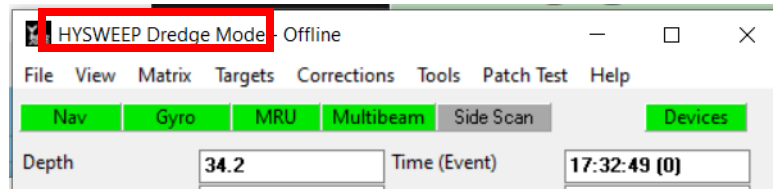
Apply OK Cancel

To use this new option:

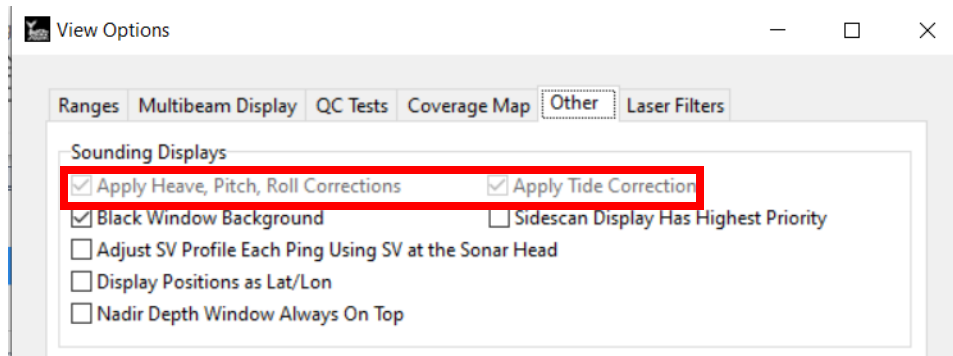
In the HYSWEEP Survey window, click Options to open the Matrix Options window and check Dredge Mode. A couple of things will happen.



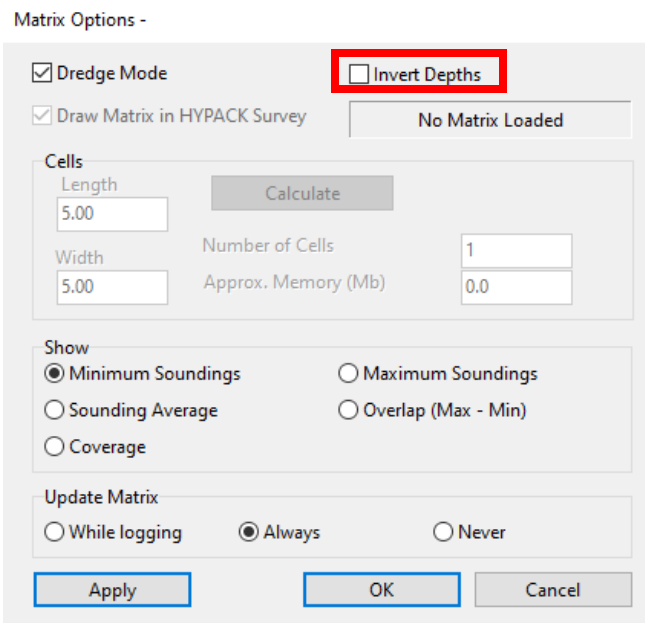
The title bar of "HYSWEEP Survey" will be replaced with "HYSWEEP Dredge Mode".



The View Options window (HYSWEEP View -> Options -> Other tab) will also permanently enable the Apply Heave, Pitch, Roll Corrections and the Apply Tide Correction options while Dredge Mode is selected.

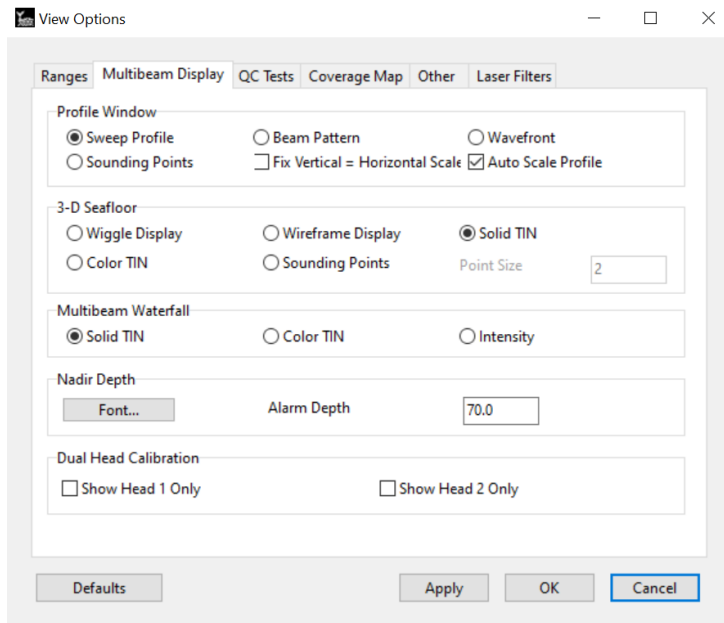


- Added the Invert Depths option to the Matrix Options menu, which inverts the depth values going into the matrix. This is for users who need an elevation matrix/ elevation mode.



- In the View Options dialog, when Auto Scale Profile is checked, the minimum depth value (z-axis) is now automatically updated for the Sweep Profile and the Sounding Points options. Note that the minimum depth value remains locked at zero for the Beam

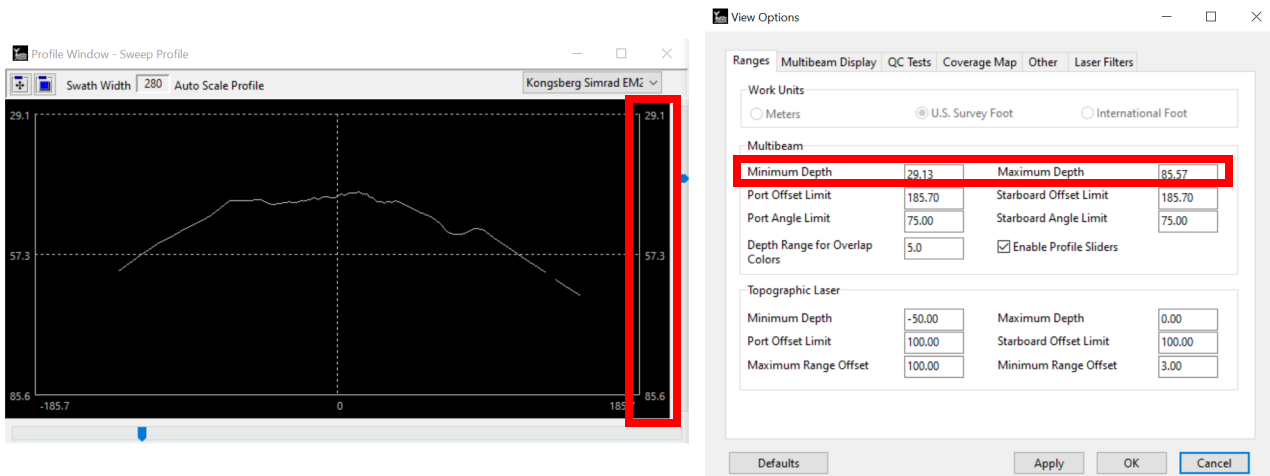
## Pattern and Wavefront options.



To use this feature:

1. In HYSWEEP Survey, click View -> Options. The View Options dialog appears.
2. In the Multibeam Display tab, check Auto Scale Profile, select either Sweep Profile or Sounding Points, and click [Apply].

You will see that the minimum depth value automatically adjusts to a more suitable value in both the Ranges tab of the View Options dialog, as well as the Profile Window.



## POST-PROCESSING

### 64-BIT SINGLE BEAM EDITOR (SBMAX64)

- Added the Hide Deleted checkbox to the Spreadsheet window, which hides deleted soundings when checked. The first image below shows deleted soundings in the

Spreadsheet window while Hide Deleted is unchecked, and the following image shows the spreadsheet with deleted soundings removed after Hide Deleted is checked.

Spreadsheet - Depth

Hide Panel    Fill Column    Fill Selection    Swap Depth 1,2    Export     Hide Deleted

Display Options

- COG
- DBL
- Dop
- Draft Corr
- Epoch
- Event
- GPS Elevation
- GPS Latitude
- GPS Longitude
- GPS Mode
- GPS Time

↓    ↑

- Time
- X
- Y
- Corr. Depth 1
- Raw Depth 1
- Corr. Depth 2
- Raw Depth 2
- DOL
- Tide Corr
- Date
- Heave Corr

	Time	X	Y	Corr. Depth 1	Raw Depth 1	Corr. Depth 2	Raw Depth 2
1	09:22:16.033	*****	*****	*****	*****	*****	*****
2	09:22:16.228	1078959.00	248825.42	40.70	41.50	40.60	41.40
3	09:22:16.489	*****	*****	*****	*****	40.54	41.30
4	09:22:16.620	1078955.20	248828.90	40.64	41.40	40.64	41.40
5	09:22:16.684	*****	*****	*****	*****	*****	*****
6	09:22:16.750	1078953.97	248830.05	40.64	41.40	40.54	41.30
7	09:22:16.944	1078952.13	248831.81	40.77	41.50	40.67	41.40
8	09:22:17.010	1078951.51	248832.40	40.77	41.50	40.67	41.40
9	09:22:17.074	1078950.90	248832.98	40.77	41.50	40.67	41.40
10	09:22:17.139	1078950.30	248833.56	40.74	41.50	40.74	41.50
11	09:22:17.205	1078949.70	248834.14	40.84	41.60	40.94	41.70
12	09:22:17.269	1078949.11	248834.71	40.84	41.60	40.74	41.50
13	09:22:17.334	1078948.52	248835.29	40.84	41.60	40.74	41.50
14	09:22:17.400	1078947.93	248835.87	40.84	41.60	40.74	41.50
15	09:22:17.464	*****	*****	*****	*****	*****	*****
16	09:22:17.529	1078946.77	248837.04	40.80	41.60	40.80	41.60
17	09:22:17.595	1078946.19	248837.62	40.70	41.50	40.70	41.50
18	09:22:17.660	1078945.62	248838.20	40.80	41.60	40.70	41.50
19	09:22:17.724	1078945.05	248838.78	40.90	41.70	40.70	41.50
20	09:22:17.790	1078944.47	248839.37	40.90	41.70	40.70	41.50
21	09:22:17.855	1078943.91	248839.95	40.80	41.60	40.80	41.60

Spreadsheet - Depth

Hide Panel    Fill Column    Fill Selection    Swap Depth 1,2    Export     Hide Deleted

Display Options

- COG
- DBL
- Dop
- Draft Corr
- Epoch
- Event
- GPS Elevation
- GPS Latitude
- GPS Longitude
- GPS Mode
- GPS Time

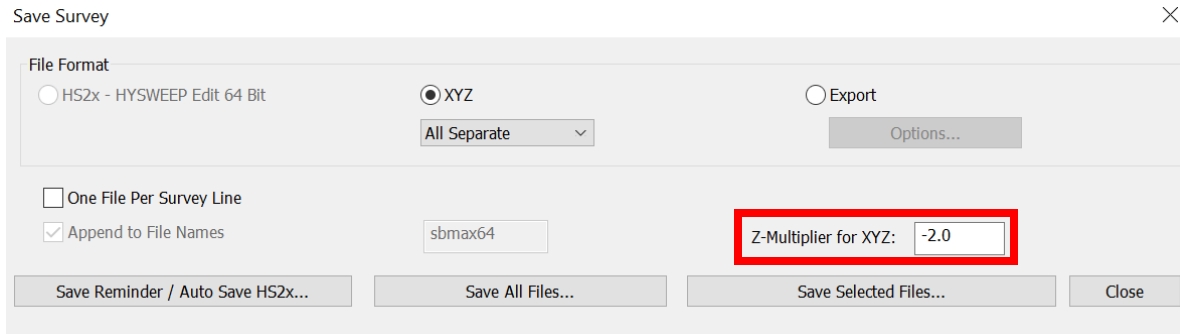
↓    ↑

- Time
- X
- Y
- Corr. Depth 1
- Raw Depth 1
- Corr. Depth 2
- Raw Depth 2
- DOL
- Tide Corr
- Date
- Heave Corr

	Time	X	Y	Corr. Depth 1	Raw Depth 1	Corr. Depth 2	Raw Depth 2
1	09:22:16.228	1078959.00	248825.42	40.70	41.50	40.60	41.40
2	09:22:16.620	1078955.20	248828.90	40.64	41.40	40.64	41.40
3	09:22:16.750	1078953.97	248830.05	40.64	41.40	40.54	41.30
4	09:22:16.944	1078952.13	248831.81	40.77	41.50	40.67	41.40
5	09:22:17.010	1078951.51	248832.40	40.77	41.50	40.67	41.40
6	09:22:17.074	1078950.90	248832.98	40.77	41.50	40.67	41.40
7	09:22:17.139	1078950.30	248833.56	40.74	41.50	40.74	41.50
8	09:22:17.205	1078949.70	248834.14	40.84	41.60	40.94	41.70
9	09:22:17.269	1078949.11	248834.71	40.84	41.60	40.74	41.50
10	09:22:17.334	1078948.52	248835.29	40.84	41.60	40.74	41.50
11	09:22:17.400	1078947.93	248835.87	40.84	41.60	40.74	41.50
12	09:22:17.529	1078946.77	248837.04	40.80	41.60	40.80	41.60
13	09:22:17.595	1078946.19	248837.62	40.70	41.50	40.70	41.50
14	09:22:17.660	1078945.62	248838.20	40.80	41.60	40.70	41.50
15	09:22:17.724	1078945.05	248838.78	40.90	41.70	40.70	41.50
16	09:22:17.790	1078944.47	248839.37	40.90	41.70	40.70	41.50
17	09:22:17.855	1078943.91	248839.95	40.80	41.60	40.80	41.60
18	09:22:17.921	1078943.35	248840.53	40.84	41.60	41.04	41.80
19	09:22:17.985	1078942.78	248841.11	40.84	41.60	40.94	41.70
20	09:22:18.050	1078942.24	248841.69	40.74	41.50	40.74	41.50
21	09:22:18.114	1078941.68	248842.28	40.77	41.50	40.77	41.50

- The tide displayed in Tide Analyzer now matches with the Tide shown in the Heave/Tide/Draft Editor window in SBMAX64. Previously, the tide display was inverted.

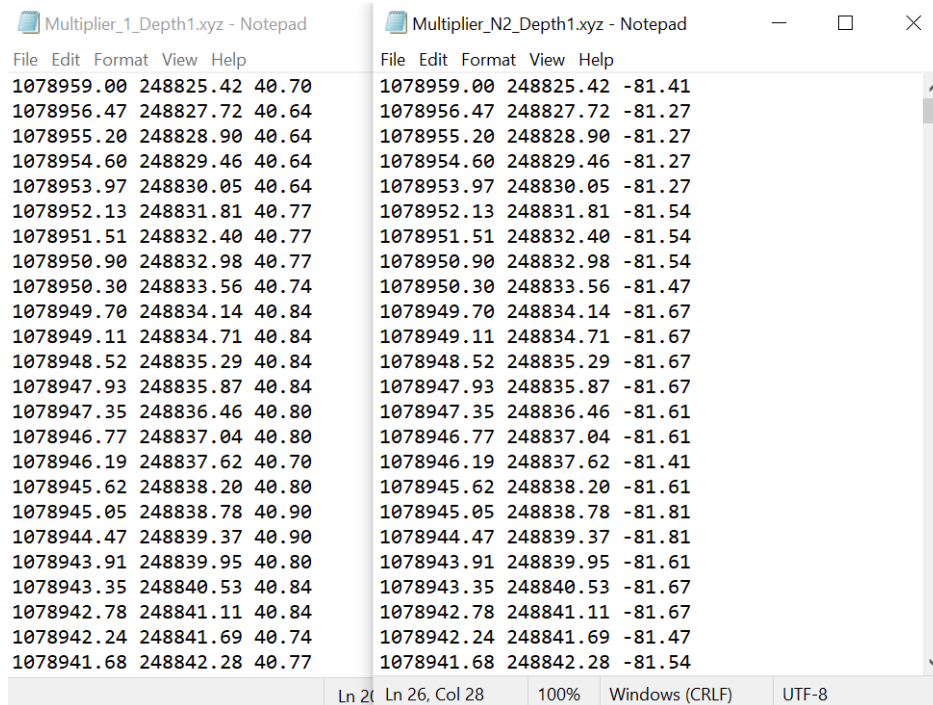
- **Added the field Z-Multiplier for XYZ to the Save Survey window.** Users can now enter a positive or negative value, which will be used as a multiplier with the Z value. For instance, enter -1.0 to invert the Z. The default value is 1.0.



To use this function:

1. In SBMAX64, click File -> Save Survey. The Save Survey window appears.
2. Type the multiplier value in the Z-Multiplier for XYZ field.
3. Select one of the save options, and the Save As window appears. Keep in mind the XYZ files are saved in the project's Sort folder by default.
4. Give the XYZ file a name and click [Save].
5. Open the XYZ file and verify that the Z multiplier has been applied.

The following example images below show the XYZ values without (left) and with (right) the multiplier of -2.0 applied.

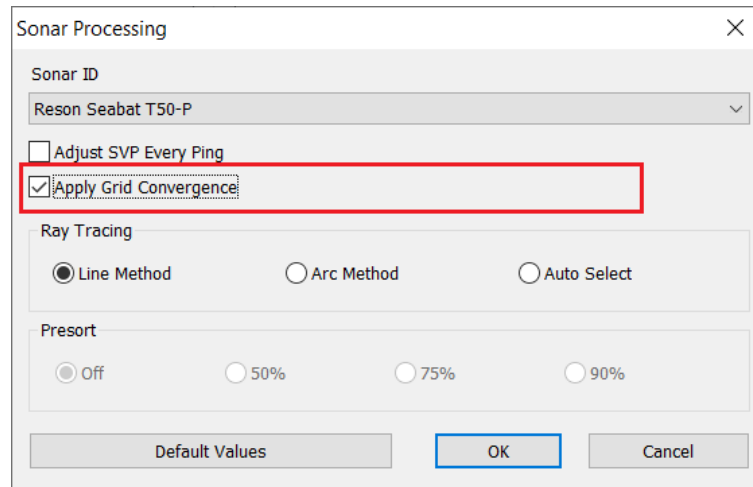


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## 64-BIT HYSWEEP EDITOR (MBMAX64)

- When a project is created using HYPACK's Create New Project option, the Apply Grid Convergence checkbox in Sonar Processing dialog now defaults to checked. Previous default was unchecked.

When a project is created using HYPACK's Copy Existing option, the Apply Grid Convergence checkbox will be checked or unchecked depending on the copy's source project, which is how this option has worked.

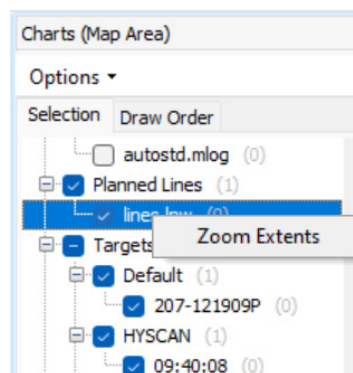


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## FINAL PRODUCTS

### HYPLOT MAX

- Users can now zoom to where individual project files appear on the map area. If a project file in the Charts (Map Area) section on the right is enabled and highlighted in blue, right click on it and select the Zoom Extents option.



- > Any enabled item may be right clicked to reveal the option, but the item highlighted in blue will be focused.
- > This action may only be performed on individual items, not on categories or groups of multiple items. For groups of items, use the Zoom Extents button on the top bar.

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## UTILITIES

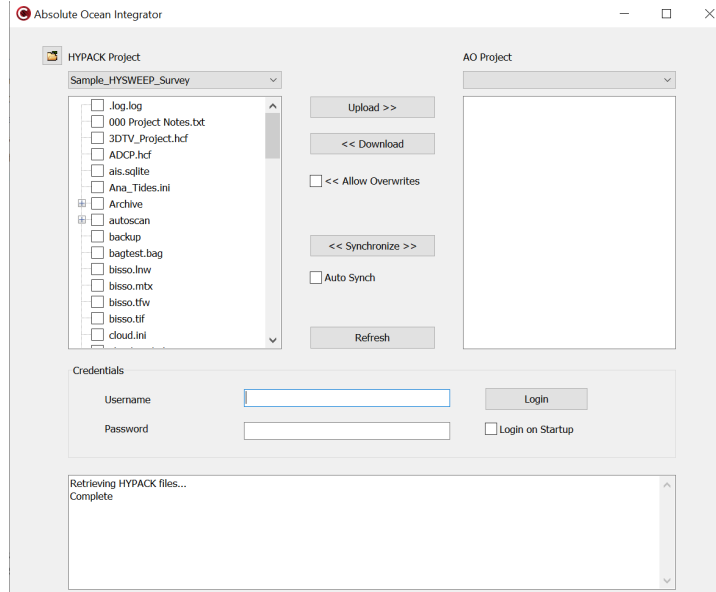
### NEW TOOL: ABSOLUTE OCEAN INTEGRATOR

HYPACK now offers integration with Terradepth's Absolute Ocean (AO) platform, which is a cloud-native platform that allows users to manage, visualize, and collaborate on ocean data. Now, cloud processing is enabled through the AO partnership with HYPACK software.

For full information on this integration, refer to the article [Absolute Ocean Integration with HYPACK® by Jocelyn Kane](#), published October 2024. A case study, workflow Q&A, and workflow brochure on the integration of HYPACK® and Absolute Ocean will also be released this month.

Here is a quick overview:

- To use the new Absolute Ocean integration, open HYPACK®, and from the HYPACK Shell, click Utilities -> File Work -> Absolute Ocean Integrator. The Absolute Ocean Integrator dialog opens.



- The tool displays the HYPACK project folder and file structure on the left, and the right side displays the currently selected AO project and all files within it.
- Within the file structures, each row will have a checkbox to select or deselect the item.
- Click [Upload] to upload all selected HYPACK project files to the selected AO project.
- Click [Download] to download all AO project files to the selected HYPACK project.
- Click [Synchronize] to search for differences in files. Where there is a difference, the newer file will be uploaded or downloaded.
- Check the Auto Synch checkbox to continuously search for new files in your HYPACK project that do not exist on the AO server and upload them, and search for new files on the AO server that do not exist in the HYPACK project and download them.
- Log in to your AO account from the bottom. Check the Login on Startup checkbox to save your login credentials, to automatically log into your AO account when you open the Absolute Ocean Integrator.