

# HIPS and SIPS 12.0

This section describes all changes made to the application in the 12.0 series of releases.

## 12.0.0

September 2023

### General Notices

☑ Network licensing support was updated and requires a new License Manager, version 7.1.13 or later, to be installed on the license server. This installation is available through the regular Entitlement Management System for Teledyne Geospatial software.

☑ For full details on all changes in HIPS and SIPS version 12.0.0 please reference the detailed changes list. Below are the important notes to be aware of.

The HIPS and SIPS vessel file format and editor has been updated in this release.

- A new vessel file format (.vessel) is now in use.
- A new vessel editor has been built to provide an easier workflow for setting up a variety of different vessel files.
- The new vessel files cannot be used in earlier versions of HIPS and SIPS.
- Old vessel files (HVF) can be used to process data, but must be upgraded if they need to be edited.

As HIPS and SIPS 12 is a new series of versions, a new license is required.

- HIPS and SIPS 11 licenses cannot be used with the new version.
- HIPS and SIPS 12 licenses are backwards compatible and can be used with HIPS and SIPS 11.

With the release of the new HIPS and SIPS 12 series, focus for new feature development will be put on the new series.

- Support for HIPS and SIPS 10.4 will cease at the end of November 2023.
- Support for HIPS and SIPS 11.4 will continue to allow flexibility in transitioning to version 12.0.

☑ The EULA has been updated from version 2.1 to version 3.0.

☑ Support for Python 3.7 has been removed.

☑ Multispectral support has been renamed Multiple Frequency and has been expanded to support data from Kongsberg, Teledyne RESON and NORBIT, but still includes R2Sonic data.

☑ In the Georeference Bathymetry process, the sound velocity correction setting for data set up as a split unit system (Transmitter and Receiver set up separately in the vessel configuration), stored in Teledyne S7K 7027/7047 records (Teledyne S7k, Triton XTF, EIVA SBD), has been updated to now use the angular offsets from each unit and not just the Transmitter.

☑ Support has been removed for process models with the destination port of the Add Features process functioning as a destination port. The newer definition of the destination port functioning as an update port is still supported.

☑ The Dissolve Area Features process has been removed. Existing process models or scripts may need to be updated.

☑ A number of options have been removed from the Export Coverage to ASCII process. Existing process models or scripts may need to be updated.

☑ A number of options have been removed from the Export HIPS to ASCII process. Existing process models or scripts may need to be updated.

## Enhancements

### Common Desktop Application

#### CARIS Batch

- Process models can now be run in CARIS Batch.  
(CSR-56515, CSR-50172, CSR-43650)

#### Catalogue Editor

- Catalogue Editor now has an option to create a new S-100 catalogue. As part of creating the catalogue, a new catalogue control file can be automatically created, or the new catalogue can be automatically added to an existing catalogue control file. Catalogues can be created in S-100 Edition 4 or 5 and are validated against the S-100 schemas. Existing catalogues can also be edited and validated.  
(CSR-55798, CSR-48951)
- Catalogue Editor now has a new Open > From File option to open catalogues from a user-specified catalogue control file.  
It may be necessary to run the Reset Layout command in Catalogue Editor to see this change.  
(CSR-55798, CSR-48951)
- It is now possible to open and edit catalogues in JSON format.

#### Change Selection

- The Edit > Change > Selection > Spatial tab option to Change Attribute Values was updated to support complex spatial attributes.

#### Coordinate Reference System

- An ellipsoid height vertical coordinate reference system (CRS) was added to be able to model 2D projected data that have ellipsoid heights as the vertical reference. 3D geographic CRS are still supported.
- Vertical transformations associated with vertical coordinate reference systems (CRS) are now applied everywhere a coordinate transformation is done, in addition to the horizontal CRS changes that were previously applied.  
(CSR-6487, CSR-45002)

#### Coverages

- Z-values displayed for coverages in the Selection and Attributes windows can now optionally be displayed in the tooltip using the Tooltip Bands property. Like X- and Y-values in the Selection window, these Z-values are transformed to the coordinate reference system of the view.

#### Customized QC Validation

- A new filter function, GeometryHasEdge, has been added to enable filtering for features containing Geodesics, Loxodromes or Arcs. This filter can be used in Validation files.  
(CSR-57493, CSR-57381, CSR-56102)

#### Data Connections

- Features in a feature service, such as a BDB Server 6 database, are now displayed as bounding boxes when the scale is coarser than 1:1,000,000. This is expected to be exposed through a display property in a future

version.

- Connections to CARIS Cloud now allow displaying any raster image layers that are configured for the service.
- Connections to a Tile Map Service (TMS) now support \${-y} for tile sets with a bottom-left origin. Connections to TMS now use the CARIS authorization service when connecting to a CARIS tile service
- The Web Map Service connection capability was updated to have a single application layer for all available service layers. This can significantly improve performance when the service has many layers. The service layers included in the application layer can be configured through the layer filter property.
- A new Open Connection option is available for ESRI Tile Services.
- A new Open Connection option is available for ESRI Map Services.
- Support was added for connections to Bathymetry Data Services in CARIS Cloud. In this initial implementation, only feature data is accessible.

## Features

- A new Object Browser window is available that can be used to easily visualize and interact with feature relationships, particularly hierarchical relationships.

It is expected the Relations window will be removed in a future version.

## Mapping

- A new filter function, GeometryHasEdge, has been added to enable filtering for features containing Geodesics, Loxodromes or Arcs. This filter can be used in Mapping files, for example in Import Selected Objects.  
(CSR-57493, CSR-57381, CSR-56102)
- A new mapping function, ConvertToSimpleEdge, has been added to enable the conversion of Geodesics, Loxodromes or Arcs to standard edges.  
(CSR-57381, CSR-56377, CSR-56102)

## Miscellaneous

- The EULA has been updated to version 3.0.  
The changes between 2.1 and 2.2 are the removal of the previous section 8, renumbering the remaining sections, and changing the company name from Teledyne CARIS to Teledyne Geospatial.  
The changes between 2.2 and 3.0 are the removal of section 4.1 as that was a duplicate of 1.1.1, renumbering of the remaining section 4 clauses, the addition of section 4.12, and the addition of section 5.2.  
While these are the only notable changes, it is recommended to review the entirety of the EULA, which is included in C:\Program Files\CARIS\<application>\<version>\caris\_eula.rtf , as well as on <https://www.teledynecaris.com/en/company/terms-and-conditions>, specifically the link for CARIS Software End User License Agreement (version 3.0).
- As HIPS and SIPS 12 is a new series of versions, a new license is required, and HIPS and SIPS 11 licenses cannot be used.  
HIPS and SIPS 12 licenses are backwards compatible and HIPS and SIPS 11 can be used with a HIPS and SIPS 12 license.
- As Onboard 4 is a new series of versions, a new license is required, and Onboard360 Process 3 licenses cannot be used.  
Onboard 4 licenses are backwards compatible and Onboard360 Process 3 can be used with an Onboard 4 license.
- When using a local license, the license is now locked to information about the machine CPU and disk ID, rather than an Ethernet or Mac address. This improves license persistence in a variety of situations, such as changing Wi-Fi connections.

## Process Designer

- Custom processes can now be written in Python and used in process models.  
(CSR-56515, CSR-56064, CSR-50567, CSR-49617, CSR-45631, CSR-38274)

## Processes

- The Change Feature Attributes process now supports S-101 and H2O inputs and H2O outputs.

## Properties

- The Colour By property now supports colouring based on the Z-values of the datasets. The Z-values are the Z-values in the coordinate reference system of the view, which might be shifted or otherwise adjusted from the values in the band.

## Python

- The Python 3.9, 3.10 or 3.11 modules have been added to enable the use of the Feature Plugin functionality now available in Tools > Options and the new custom process creation now available in Process Designer.

## HIPS

### Coverages

- The Create HIPS Grid process has been updated with a new CUBE v2.0 Gridding Method. This is the same CUBE algorithm as used in the Populate VR Surface process.  
(CSR-55623, CSR-53940)

### Filters

- The Filter Observed Depths process has been updated to allow filtering the bathymetry (Reject by Swath) by the Intensity (amplitude) values stored with the imported bathymetry.

### Georeference Bathymetry

- The Total Propagated Uncertainty option in the Georeference Bathymetry process has a new setting that allows the user to choose an uncertainty band from the datum file used for the Compute GPS Vertical Adjustment setting. If this is set, it will override the GPS Sounding Datum TPU setting in the process.  
(CSR-57188)

### Miscellaneous

- Updates were made for reading HIPS files, improving performance when opening large datasets (many thousands of track lines). The same optimizations were also applied to processing for Georeference Bathymetry and gridding/mosaicing. Systems not using SSDs or across network storage will see the most improvement.

### Processes

- Processing HIPS data has been updated to change how the code updates/creates some background files used in mosaicing. This does not affect mosaicing functionality.

### Subset Editor

- The Subset Editor Control window has been updated to have a new Display Filter node under HIPS Data in the Data tree. All display filter specific items in the Control window have been moved to this new node. Selecting the node populates the Properties list with any filter that can be applied to the data in the current subset.  
Additionally, the following updates have been made for the Colour By properties for the display filters:
  1. The Transducer setting has been updated to use the transducer head bit setting in the ObservedDepths to give a more robust method for colouring each transducer head.
  2. The Detection Type setting has been updated to show a new list of colours.
- Some performance improvements were made for reading/writing from/to HIPS files in Subset Editor.

### User Interface

- In Tools > Options, the Save options for the HIPS and SIPS Editors have been moved to a new 'HIPS and SIPS Editors' category under 'General'.

## HIPS, SIPS

### Formats,Coverages

- Multispectral support has been renamed Multiple Frequency and has been expanded to support data from Kongsberg, Teledyne RESON and NORBIT, but still includes R2Sonic data.  
The import for each format will determine automatically if the data contains Multiple Frequency data and set a flag in each track line to indicate if they contain the data.

If they contain the data, the following updates will apply:

- Swath Editor can now query a Frequency attribute on each sounding, indicating what frequency the data was acquired with.
- Subset Editor shows the same attribute as Swath Editor, but it is also possible to Colour By the frequency and set a Display Filter to show the data according to the values per sounding.
- Create HIPS Grid process now has a new Compute Band setting for Multiple Frequencies, where each band created will only contain data for the frequency in the band name. The band will need to be added manually from the Project window under the Bands for the coverage.
- Create SIPS Mosaic using the SIPS Backscatter engines will still create specific mosaics using the Multiple Frequency data, but now will only create bands for each frequency and, when displayed, will automatically apply the colour by channel, where each of the first 3 frequencies are added as Red, Green and Blue, respectively. The user can manually change the channel to another frequency or change the Colour By setting to only display one frequency. Each frequency can be manually added as layers from the Project window from Bands under the coverage.

## Vessels

- The HIPS Vessel File (\*.hvf, version 2) format has been upgraded to a new vessel configuration file (\*.vessel, version 3) containing all necessary information for the vessel file and no longer requires use of HIPS data for processing. When a dual sonar system requires Transmitter and Receiver offsets, older vessel files stored Receiver information, but obtained the Transmitter information from the Installationparameter.xml files in each track line. The new vessel format now stores all of the Transmitter and Receiver offsets for processing.

Vessel files are now either SVC Enabled = true, to allow processing Sound Velocity Correction in HIPS and SIPS, or SVC Enabled = false, to use the existing SVC in the raw data from the acquisition system. The new vessel wizard will allow the user to set this on creation of the new vessel file. Upgraded vessels will support SVC Enabled = true when there is an SVP section in the vessel file. If there was only a Transducer section(s), it will be SVC Enabled = false. Using the vessel file in the wrong context will display messages explaining the situation and what needs to be done to resolve the issue.

HIPS and SIPS Subset Calibration has been updated to apply an on-the-fly SVC with the traditional merge, when the vessel is SVC Enabled = true, such that the values created are best suited to be applied in SVC in Georeference Bathymetry. If the vessel is SVC Enabled = false, only the traditional on-the-fly merge will be applied and the calibration values will only be applied in the merge within Georeference Bathymetry.

If the existing .hvf file in the HIPS data being processed in HIPS and SIPS does not need to be edited, the older file can continue to be used, but if changes are required, the file must be edited in the Vessel Editor.

In order to properly edit these files, the Vessel Editor has been updated to access/edit all of this information. If an older version of the file is opened in the editor, an upgrade will be required. During the upgrade, all necessary information from the old file will be read and a HIPS file will be requested to get the Transmitter offsets. The upgrade will always create a new .vessel file with the same name as the .hvf file in the same location and replace the .hvf in the HIPS file that was used for the upgrade. Multiple vessel files can be opened in the editor at the same time.

Existing Sweep vessels can still be used in processing of HIPS data, but the Vessel Editor for HIPS and SIPS does not support editing these files or upgrading to the new version.

## SIPS

### Mosaic

- The ability to display chunks of the mosaic as the processing is progressing is now available through the Tools > Options > General > Automatic Display during Processing. This will possibly slow the processing, but allow visualization of the mosaic as processing occurs.

# Maintenance

## Common Desktop Application

### 2D View

- The delay between refreshing the view has been decreased to give faster feedback when displaying many features in the view. The view is no longer unnecessarily refreshed after drawing the first feature when other features are also being drawn.
- The Display window is no longer cleared if the draw is cancelled while the view is being refreshed.
- Changes were made to more consistently display data in the 2D view when the view extents are changed multiple times in quick succession (e.g. panning, zooming).

## Catalogue Editor

- Attributes could not be added to an existing feature if attributes had previously been added to a new feature. This has been fixed and attributes can now be added to an existing feature.
- The existing option to open catalogues from the Tools > Options setting for Catalogue Control has been renamed to Open > Catalogue.  
It may be necessary to run the Reset Layout command in Catalogue Editor to see this change.  
(CSR-55798, CSR-48951)
- When saving changes to a JSON catalogue, any unused attributes are now saved so they are available to be set on objects in the future.
- Catalogue Editor has been updated to correctly read nested complex attributes from JSON files. In practice, only BDB Server 6 is currently using JSON for its catalogues.  
(CSR-54572)
- Catalogue Editor now checks JSON catalogues to ensure no complex attributes contain a reference to the same attribute as a child. Circular references are not supported.
- The special keyword Unknown is no longer shown as an option for JSON catalogues, such as BDB Server 6 catalogues, as it has never been supported in JSON catalogues. Note that any values previously set as Unknown will still be present as Unknown.
- The Save As button was renamed to Export as it creates a new copy of the catalogue with the new name instead of renaming the original catalogue.

## Catalogues

- The Multiple Frequencies attribute (mulfqy) was added to the HIPS and SIPS catalogue shipped with the application.

## Change Selection

- More fields in the Change Selection function now save and restore the last used values each time the function is launched. This includes, for example, the shift attributes.
- When running Edit > Change > Selection "Change Attribute Value" on the Basic and/or Spatial tabs, setting attributes to Undefined or Unknown will now write those values as strings. This allows the new values to be retained when re-opening the command; Undefined values are still set to "Undefined" and Unknown values are still set to "Unknown".
- In Edit > Change > Selection, the Change Attribute Value option in the Spatial tab has been updated to match the Change Feature Attributes option. Some benefits of this change are that more than 1 spatial attribute can now be modified at the same time and a context menu was added with options to Delete a specified value or to set it to Undefined or Unknown.
- In the Basic tab of the Edit > Change > Selection dialog box, the vertical scroll bar for Change Attribute Value no longer covers other buttons used to change attribute values when there are more than three attributes.

## Coordinate Reference System

- The vertical coordinate reference system (CRS) is now shown as expected in the CRS dialog boxes when viewing an existing CRS.
- Sounding values are now displayed based on the vertical transformation for the coordinate reference system of the view.  
(CSR-56449)
- The way vertical coordinate reference system (CRS) information is displayed in the application has been changed. Certain CRS include both horizontal and vertical reference information, so having two separate controls in the properties was inappropriate for these CRS. Now, a single CRS property is used. When using the Select CRS dialog box, if the selected CRS only defines horizontal referencing, an additional vertical field is available at the bottom of the dialog box. These CRS are then shown, e.g. in the Status bar, as a compound CRS with both the horizontal and vertical components. If the selected CRS already has vertical referencing, no separate vertical field is shown in the Select CRS dialog box.  
Note: The CRS properties of HIPS files selected in the Project window have not been updated at this time.  
(CSR-50475)
- The internal support for ETRS89 to CD Norway depth transformation was updated from version (1) to (2) and now requires ChartDatum\_above\_Ellipsoid\_EUREF89\_v2021b.bin grid shift files to be available. The relevant entries in the boundcrs.dat support file still need to be uncommented to use this coordinate reference system.  
(CSR-6487, CSR-45002)

- ▣ The internal support for ETRS89 to MSL height transformation was added and requires DTU21MSS\_1min.mss.nc grid shift files to be available. The relevant entries in the boundcrs.dat support file need to be uncommented to use this coordinate reference system.  
(CSR-6487, CSR-45002)

## Coverages

- ▣ Additional error handling was added for processing coverage data. No functional changes are expected.  
(CSR-57581)
- ▣ Expressions for filters of coverage data that use the tan function to calculate tangent values now return NaN (not a number) values for angles that are very close to, but not exactly equal to, 90 and 270 degrees, as well as any multiple of 360 degrees from those values.
- ▣ Band values of NaN (not a number) are now treated as no data values. The no data value specified for the file is still respected as a no data value.  
(CSR-57166)
- ▣ Changes to the vertical coordinate reference system of a point cloud are now saved.

## Data Connections

- ▣ An informative error message is now displayed if the ORACLE\_HOME registry entry is missing when making a connection to an Oracle database.
- ▣ Initial changes have been made to improve the performance of PostgreSQL connections when using save points. No functional changes are expected at this time.
- ▣ Additional error information is now displayed for issues encountered by the libcurl third-party library.
- ▣ Error handling was improved for PostgreSQL connections.
- ▣ Error handling with PostgreSQL connections was updated to clear newly added save points once they are no longer needed.
- ▣ An informative error message is displayed as needed if the SOFTWARE\ORACLE registry entry is missing.
- ▣ Minor changes were made to the behaviour of SQL Select statements for database connections, but no functional changes are expected.
- ▣ Error handling with PostgreSQL connections was updated to stop errors from rolling back all changes. Save points were added to limit what is rolled back.
- ▣ Coverage data in a BDB Server 6.x database now uses the display name more consistently internally. No functional changes are expected.
- ▣ Changes were made to better support NULL values in PostgreSQL databases. No functional changes are expected.
- ▣ Support was added for escaped strings in SQL for PostgreSQL connections, such that SQL containing text such as "select \" is now parsed correctly.
- ▣ Initial changes were made to support variable resolution surfaces stored in a BDB Server 6 database. As of BDB Server 6.0.4, variable resolution surfaces are not fully supported in BDB Server 6, but this support is expected to be added in a future version.
- ▣ Support was added for reading point cloud data from BDB Server 6.x databases.
- ▣ The performance of queries was improved by only transmitting the information required by the query.  
(CSR-56039)
- ▣ Support was added for Z-values in point clouds open from a BDB Server 6 database. Specifically, the points now display properly in the 3D view, and selecting the points now also shows the elevation information.
- ▣ Connections to BDB Server now support database-specific credentials, in addition to the previously supported global credentials. Database-specific credentials are only supported in BDB Server 6.0.5 and later versions.
- ▣ The performance of reading JSON was improved. This improves the performance of reading features from a BDB Server 6 database.
- ▣ When reading feature data from BDB Server 6 databases, the features are now transferred as JSON, now that the performance for JSON was improved.
- ▣ A number of performance improvements were made for BDB Server 6 database connections, particularly when making a selection. Some of the changes would also improve the performance for other types of data as well.  
Note that an updated BDB Server 6 deployment, of version 6.0.3 or later, is required to get all of the performance improvements, as this includes changes to how the client and server exchange feature



information.

- ❑ More informative error messages are displayed for HTTP response code errors when the server returns more information.
- ❑ Connecting to a BDB Server 6.x database with one set of credentials after previously logging in with a different set of credentials now consistently uses the current credentials.
- ❑ Relationships can now be seen for features in a BDB Server 6.x database.
- ❑ Support was added for querying deleted features in a BDB Server 6.x database.
- ❑ Displaying coverage data for point clouds in a BDB Server 6 database now only shows a subset of the points. This significantly improves the performance of displaying the data, and is now consistent with displaying local point clouds.
- ❑ Data from a BDB Server 6 database is now displayed correctly when the view is in a different coordinate reference system.
- ❑ In the Open Connection dialog box, the connection format for services in CARIS Cloud has been renamed.
- ❑ In the Open Connection dialog box, when options are selected for a CARIS Cloud connection, an error message is now displayed when clicking the Next button if the user credentials (name and password) cannot be authenticated.
- ❑ An informative message is now displayed when trying to open a coverage associated with a feature when the feature has no associated coverage. This impacts features in BDB Server 6 databases and features in a Bathymetry Data Service in CARIS Cloud.
- ❑ The performance of connecting to a PostgreSQL database containing multiple tables has been improved.
- ❑ Changes were made to the BDB Server 6 connection as part of changes to support new Bathymetry Data Service connections to CARIS Cloud. No functional changes are expected for the BDB Server 6 connection.
- ❑ Opening coverage data from a BDB Server 6 database now works when the coverage has a coordinate reference system including a vertical transformation component.  
(CSR-55682)
- ❑ Error messages displayed when attempting to use a BDB Server 6 connection with a invalid URI no longer display the password for the connection.

## Features

- ❑ An erroneous data shift, which occurred when saving to an H2O file while using a projected CRS in the display, has been resolved.  
(CSR-57589)
- ❑ The Change Selection dialog box was made more general so it can be used for BDB Server 6 database features. No functional changes are expected.
- ❑ Repairing overshoots using the Repair button in the Edit > Edges > Remove Overshoots command was fixed.  
(CSR-55807, CSR-51345)
- ❑ Reporting overshoots using the Report button in the Edit > Edges > Remove Overshoots command now gives additional information.  
(CSR-55807, CSR-51345)
- ❑ Additional information is now displayed in the Output window when using the Tools > Reports > Check Geometry command for Overshoots.  
(CSR-55807, CSR-51345)
- ❑ Missing connected nodes no longer prevent saving changes to features. This happened when some but not all the features sharing edges were deleted.  
(CSR-46650)

## Formats

- ❑ Performance improvements were made for reading GeoJSON geometries. This improves processing times when, for example, loading database objects and displaying feature service connections.
- ❑ S-102 files can now be opened if the vertical datum has an unknown value. An informative error message is reported in this case.
- ❑ S-102 files with the vertical datum stored as an integer are now supported. S-102 files with the vertical datum stored as an enumerated value are still supported.



- ▣ Additional S-102 vertical datum enumerated values are now interpreted by the application. Specifically, values 31-41 and 43-49 in the IHO GI Registry Vertical Datum are now supported.

## Layers

- ▣ The Classification option in the Layers window is now disabled if the layers do not contain data that can be filtered. This affects formats such as Web Map Services.
- ▣ When creating layers for each feature type, the name of the feature type is now used for the name of the layer instead of the numeric code.

## Miscellaneous

- ▣ The third-party library for sqlite has been updated to version 3.43. This fixes reading some coverage data with Python 3.11.
- ▣ Internal changes were made to support newer programming standards. No functional changes are expected.
- ▣ The date-time format YYYY-MM-DDTHH:MM:SS is now considered to be the equivalent of YYYY-MM-DDTHH:MM:SSZ.  
(CSR-55018)
- ▣ Changes were made to improve the performance of handling many items. This was a very general change.  
One specific impact is that the performance has been improved for displaying vector features, particularly for vector features from third-party formats such as shapefile or database connections (e.g. PostgreSQL, Oracle).
- ▣ For licenses that do not expire, N/A is now shown as the expiry date.
- ▣ Trial licenses are now removed from the list of licenses when they are no longer applicable, such as when a replacement license is activated.

## Options

- ▣ The Feature Plugin extension points were updated so they can be different per dataset. No functional changes are expected with the default use of the Feature Plugin option.

## Processes

- ▣ The deprecated options in the Export Coverage to ASCII process have been removed. Specifically, the Include Band, Coordinate Format, Coordinate Precision, and Unit options have been removed. The previously added Include option now allows a broader set of capability.
- ▣ The Dissolve Area Features process has been removed. The previously added Dissolve Features process can be used for areas as well as lines.
- ▣ The Change Feature Attributes process no longer requires the feature catalogue to be specified unless the input is a HOB. The feature catalogue of the input is used automatically otherwise.
- ▣ The Change Feature Attributes process now displays a message if the coordinate reference systems of the input and output are not the same.
- ▣ The Change Feature Attributes process was updated to better support HPD inputs. No functional changes are expected in this application.
- ▣ The Update port in the Add Features process is now mandatory when used in a process model.
- ▣ Support has been removed for process models with the destination port of the Add Features process functioning as a destination port. The newer definition of the destination port functioning as an update port is still supported.

## Python

- ▣ The wkt\_csys returned for coverages now includes extension information, including vertical coordinate reference system information.  
(CSR-56421)
- ▣ Support for Python 3.7 has been removed due to the end-of-life date of 2023-06-27. Python 3.9, 3.10 and 3.11 are supported.

## Selection

- ▣ Heterogenous aggregates, such as a single geometry with both areas and lines, are now supported in the Select by Geometry Comparison command.

## System Files

- ❑ Older, deprecated versions of S-121 and S-411 have been removed from the application.

## Tools

- ❑ Unicode characters are now supported for process model filenames.  
(CSR-53545)
- ❑ Unicode characters in process model titles are now supported for process log filenames.  
(CSR-53545)

## User Interface

- ❑ The icon for the Interactive Edit command is no longer refreshed unnecessarily.
- ❑ The order of modules in the Modules dialog box has been updated. The main application modules are now at the top of the list.

## HIPS

### Coverages

- ❑ An issue with case sensitivity in file paths that would cause some processing to fail has been fixed.

### Export

- ❑ The date attributes (Date (YYYY-DDD), Year, Day, Time, etc.) were not working with the Data Binning setting in the Export HIPS to ASCII process. This has been fixed.  
(CSR-57470)

### Georeference Bathymetry

- ❑ The Georeference Bathymetry process was occasionally failing when processing data over a network. Changes were made to do more robust checking for a background file being used in the process so that it no longer fails, and removes and recreates the file when necessary.  
(CSR-57532, CSR-57436, CSR-57301, CSR-51859)
- ❑ When a vessel file is missing, the "from data" vessel stored as part of each track line is automatically used to allow processing to continue, but now a more informative message is shown when this happens, and indicates how to fix the issue.

### HIPS Corrections, 2D View

- ❑ The 2D View was not refreshing properly after deleting corrections selected from the Corrections layer. This has been fixed.

### Import

- ❑ The Import To HIPS process for Triton XTF format was not setting the designation indicating the data was dual Teledyne RESON S7K 7027 properly. This has been fixed.
- ❑ In the Georeference Bathymetry process, the sound velocity correction setting for data set up as a split unit system (Transmitter and Receiver set up separately in the vessel configuration), stored in Teledyne S7K 7027/7047 records (Teledyne S7k, Triton XTF, EIVA SBD), has been updated to now use the angular offsets from each unit and not just the Transmitter.
- ❑ The Import To HIPS process for Kongsberg KMALL format was not handling dual swath pings with the exact same timestamp. The process has been updated and now all pings are imported properly.  
(CSR-57584)
- ❑ The Import To HIPS process for Kraken TIL format was updated to run more consistently. No functional changes are expected.

### Processes

- ❑ The original depth is now included when designated soundings are copied, which fixes processes such as Extract Coverage and Filter Coverage when the coverage has 2D positions, such as coverages in a BDB Server 6 database.

- ▣ The Extract Coverage process was updated to work with coverages stored in a BDB Server 6 database that have only a single designated sounding or multiple designated soundings with the same X coordinate or the same Y coordinate.
- ▣ The Extract Coverage process was updated to work with variable resolution surfaces stored in a BDB Server 6 database.
- ▣ The deprecated options in the Export HIPS to ASCII process have been removed. Specifically, the Include Band, Coordinate Format, Coordinate Precision, and Unit options have been removed. The previously added Include option now allows a broader set of capability.
- ▣ The Generalize Raster process now does the generalization in the coordinate reference system (CRS) of the raster surface when the raster has a non-horizontal CRS. This affects, for example, raster surfaces representing vertical walls with a vertical CRS.  
(CSR-6487, CSR-45002)

### **Selection**

- ▣ Selection was updated to work with coverages stored in a BDB Server 6 database that have only a single designated sounding or multiple designated soundings with the same X coordinate or the same Y coordinate.

### **Subset Editor**

- ▣ Calibration in Subset Editor was failing if a new subset was created after enabling Calibration mode. This has been fixed.

### **Subset Editor,Calibration**

- ▣ Opening Subset Calibration mode with data using the from data vessel configuration will now prompt the user to create a new HIPS vessel file to store the Calibration offsets.

### **Subset Editor,HIPS Corrections**

- ▣ The 2D view in HIPS and SIPS was not refreshing after corrections were added and Subset Editor was closed. This has been fixed and the corrections now display once Corrections mode has been stopped and Subset Editor is closed.