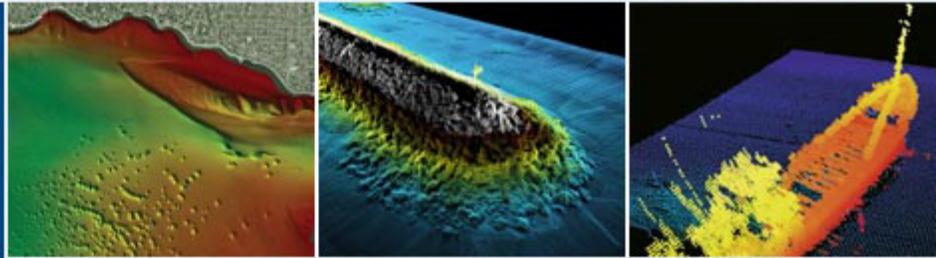


CARIS HIPS and SIPS 10.2.0

# Changes List



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- LOTS Browser
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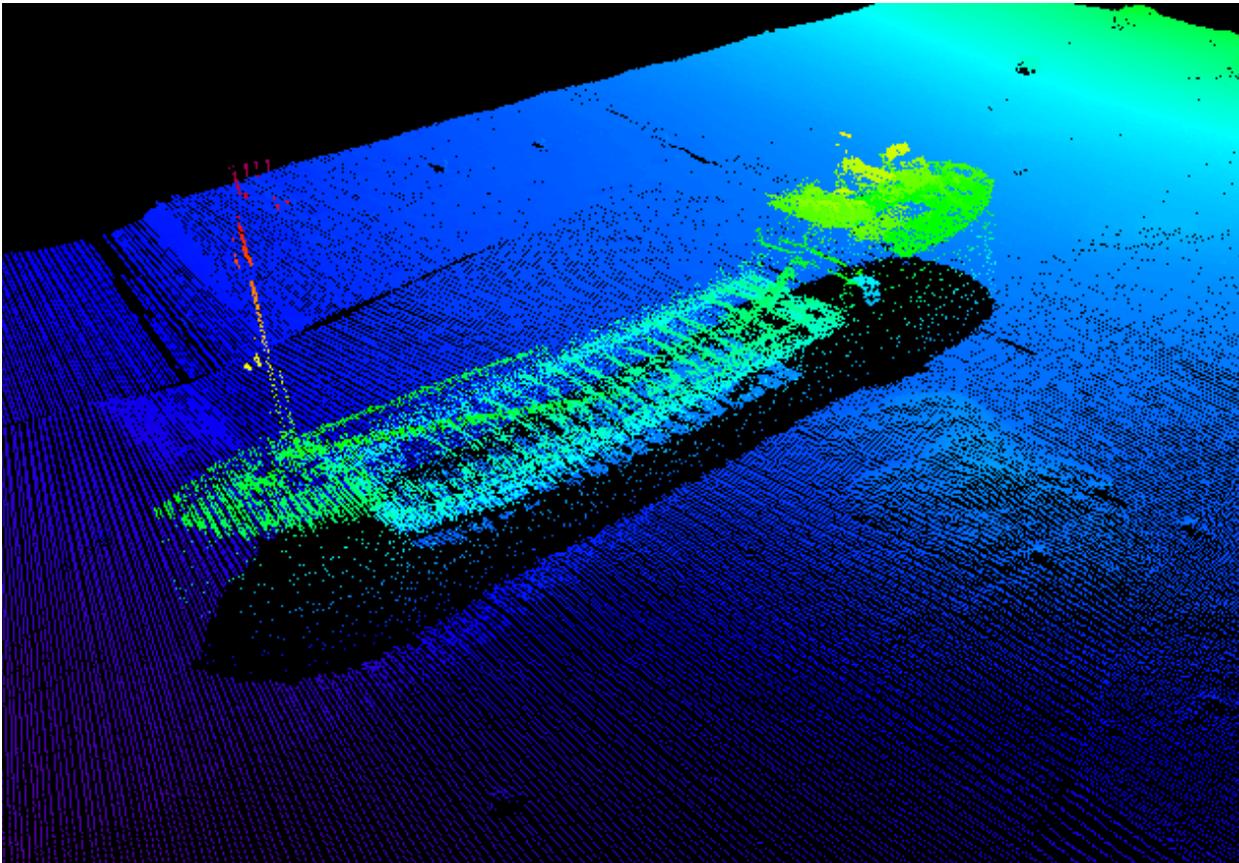


CARIS<sup>1</sup> HIPS<sup>2</sup> and SIPS<sup>3</sup> 10.2.0

## Highlights

### Support for Multiple Detections

- ☑ Multiple-detection data can now be imported to HIPS projects from Teledyne Reson Multi-Detect and Kongsberg Extra Detections. The import of multiple-detection data is an optional step in the processing workflow, quite similar to the existing workflow for Water Column Imagery. Once the main bathymetry processing is complete, multiple-detection data can be imported as Additional Bathymetry, and all correctors applied to the standard bathymetry (including tide selection, sound velocity correction etc) are applied to the imported data. This Additional Bathymetry can then be reviewed, cleaned if necessary and optionally included in any downstream products.



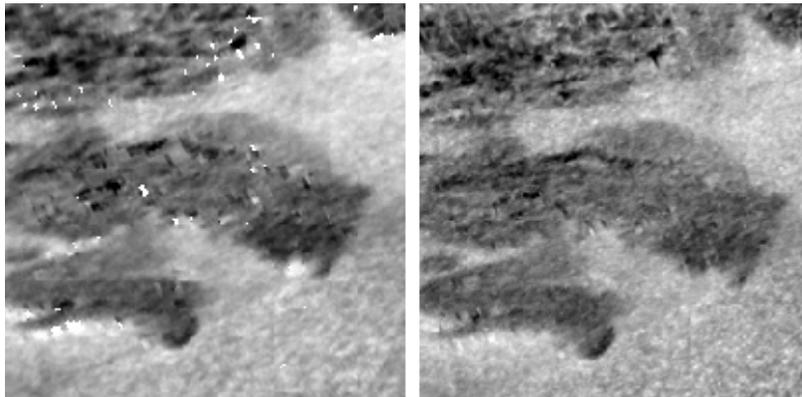
Data Credit: CHS/NAVO, Kongsberg EM2040D

### Support for Time Series Backscatter in SIPS

- ☑ Full Time Series backscatter data can now be processed with SIPS Backscatter for Teledyne Reson and Kongsberg systems. Leveraging the proven backscatter algorithm of the first SIPS Backscatter release in HIPS and SIPS 9.1, the same processing methods are applied to the full

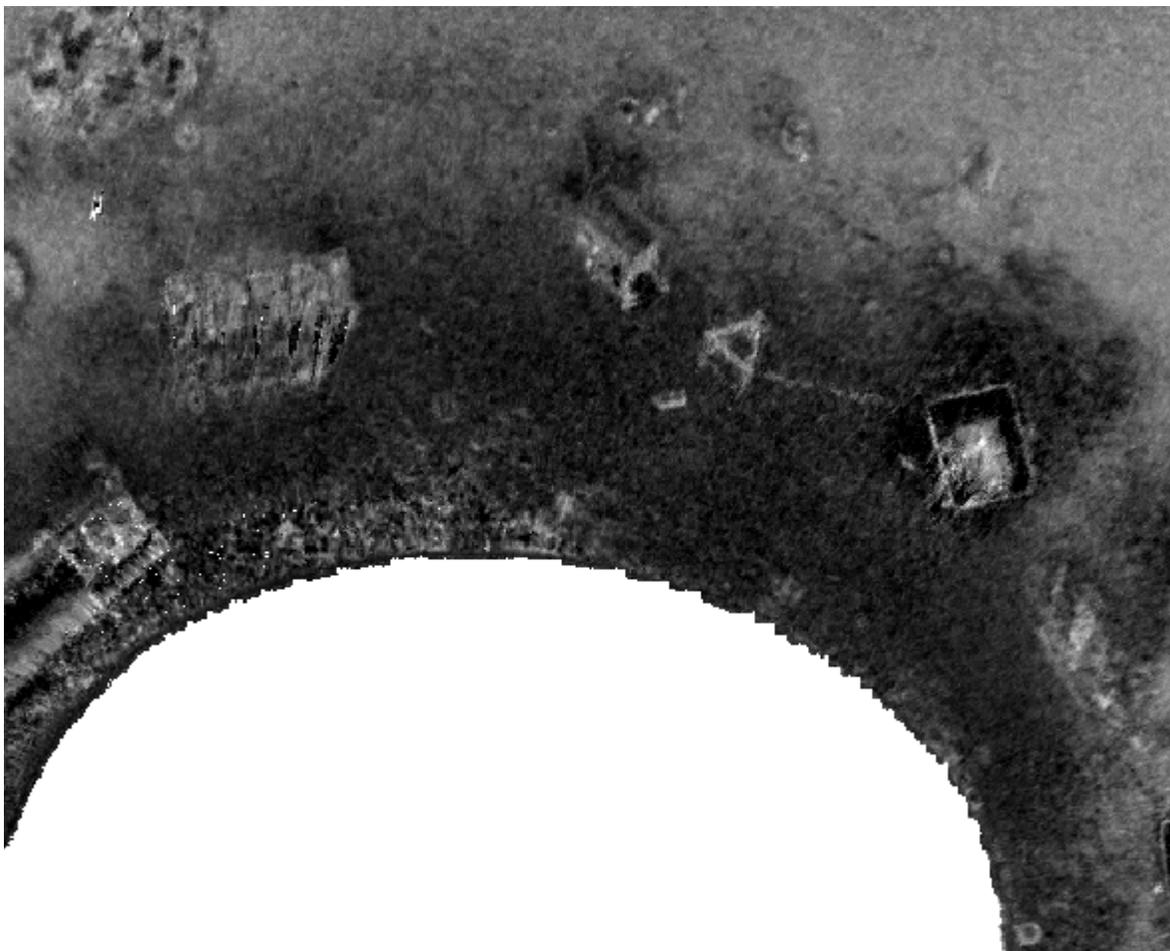
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Time Series data. The workflow to process Time Series data is as seamless as it was before, with a single additional step after standard multibeam bathymetry processing to produce high-quality, fully corrected backscatter mosaics.



Left: Beam Average, Right: Time Series

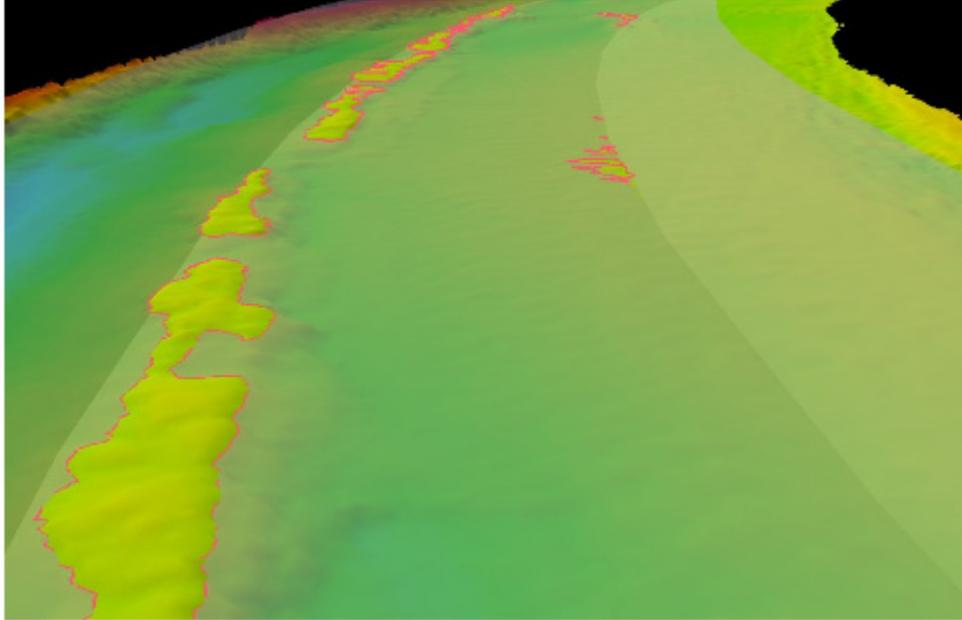
- Normalized backscatter from Teledyne Reson systems is now also supported in SIPS Backscatter, for processing from both Beam Average and Time Series data.



Plymouth Fort, UK, T50P Compensated Backscatter

## Engineering Analysis Module now available in HIPS

The Engineering Analysis Module (EAM), previously available as an optional add-on to CARIS BASE Editor, is now also available as an optional add-on to HIPS. The Engineering Analysis module provides seafloor analysis tools for dredging and other engineering operations, including the creation of channel reference models and volume computations.



Visualizing channel conformance in HIPS

**Note:** An updated license is required to run v10.2 software. Each license is unique and will work with HIPS and SIPS 10.2 as well as earlier versions. Subscribed keys have been automatically updated and are available for download from the OCS.

## Enhancements

Reference	Description
<b>3D View</b>	
	<p>Colouring a coverage based on the values in a status band now displays different values in more distinct colours, to facilitate finding nodes based on status value.</p> <p>The colour legend in the 3D View now displays more meaningful content for string bands and Status bands.</p>
	<p>A new feature layer can now be created while in the 3D view.</p> <p>When creating a New Feature Layer, if any view is open with data in it, the centre of the view is used automatically for the initial extents of the new feature layer. The extents picker is not displayed in the New Feature Layer dialog box in this case.</p> <p><b>Note:</b> the extents of a feature layer are automatically updated to the extents of the features in the file when it is saved.</p>
	<p>It is now possible to make selections in the 3D view, as part of a continued effort to make interacting with the 3D view more central to the application experience. This allows, for example, easily creating features in a HOB file for points in a point cloud that are notable for any number of reasons.</p>
<b>CARIS Batch, Processes</b>	
APP-2613	Some changes were made for how application settings are processed by CARIS Batch. No functional changes are expected in the application.
BDB-15955	Processes that create rasters have been updated to report specific error messages when available, instead of internal errors.
FRM-13791	The <code>AddFeatures</code> process in the CARIS Batch command line tool could create shifted results. This happened because the features were treated as unregistered, due to an internal detail of how the coordinate reference system (CRS) was stored, and could have affected opening GML files in the application, or GML files and Shapefiles through the CARIS Batch command line tool. Now, the CRS information is correctly processed and <code>AddFeatures</code> creates the expected results.
	The restriction of only being able to use <code>AddFeatures</code> in the CARIS Batch command line tool if the input had the same coordinate reference system (CRS) and resolution as the output has been relaxed. Now, CRS transformations happen as needed in <code>AddFeatures</code> .
	It is now possible to use an Onboard service URI as an input for a process in the CARIS Batch command line tool. As an example, <code>CARISBatch --run CopyToCSAR http://127.0.0.1:8080/rest/v1/csar/CUBE1m d:\CopiedFromOnboard.csar</code> .
	When the output format is HOB, the <code>ContourRaster</code> process in the CARIS Batch command line tool now has an option for creating polygons between successive contour lines (e.g. depth areas). These polygons can optionally have attributes populated with the minimum and maximum values of the raster band within the polygon area.
	The <code>CreateSoundingsFromCoverage</code> process has been added to CARIS Batch. This includes many of the options available in the Sounding Selection command in the application.
	It is now possible to specify horizontal and vertical buffers when tiling a raster to allow overlap in tiles.

Reference	Description
	<p>The command to export a coverage as a point cloud is now available as the <code>ExportPoints</code> process in the CARIS Batch command line tool. As a result, this process will produce a CSAR point cloud with lineage information, even when it is run through the application.</p> <p>The dialog box in HIPS has also been updated to be similar to the other process-based dialog boxes and the Export Surface to Point Cloud command and dialog box has been renamed Export Points.</p>
	<p>It is now possible to define the contour generation method for <code>ContourRaster</code> in the CARIS Batch command line tool. This can be used to create contour boundaries that fully cover all populated cells, instead of ending at the location of true position nodes.</p>
	<p>A new option was added to the <code>ContourRaster</code> process in the CARIS Batch command line tool to remove collinear points during contour creation. This can be helpful when using the contours in later processing for feature-based products that prohibit collinear points. Note that in a future version, this option will be removed and collinear points will never be created in these features.</p>
	<p>When exporting a BAG to BAG format using the <code>ExportRaster</code> process in the CARIS Batch command line tool, the BAG metadata from the input is now used for the output. Any metadata values specified in the command line override the default values carried over from the input.</p>
	<p>Some processes, including Finalize Raster, Finalize Variable Resolution Surface, and Create Variable Resolution Surface have a new option for setting the Z-axis convention. If a process model created using a previous version is opened in Process Designer, the new option will be defaulted to the application's current Z-axis convention (positive down) and the setting would need to be updated to match the values (default positive up in Process Designer prior to 10.2).</p>
<b>Convert To HIPS</b>	
	<p>The LAS converter now includes LAZ files in the extension filter when selecting raw files.</p>
	<p>The Teledyne PDS converter has been updated to use the latest API, version 2.0.1.1.</p>
	<p>The conversion of LAS data has been updated to reject WITHHELD flags, to be more consistent with other Teledyne CARIS applications.</p>
	<p>A cable out/layback positioning option for side scan data has been added to Hypack RAW, HSX conversion. The CAB data field will be read from HSX format.</p>
	<p>A new process, File&gt; Import&gt; Auxiliary Data&gt; Multiple Detections, has been added to HIPS for importing Kongsberg Extra Detections and Teledyne Reson Multi-Detect data records as Additional Bathymetry.</p>
<b>Export</b>	
	<p>When BAG files are created, validation is now performed and detailed error messages are provided for any issues with the metadata.</p>
	<p>Exporting to BAG files now always writes out 12 decimal places of precision to prevent scientific notation being used for the values.</p>
	<p>The Party Role setting in the BAG metadata identification information had always been hard-coded to "Originator", regardless of what was entered by the user. The values specified by the user for the Responsible Party settings are now honoured in the output.</p>

Reference	Description
	Error messages from certain processes, such as creating a GeoTIFF, are now properly returned in the error stream instead of the regular output stream. This facilitates writing complicated Python scripts that call a number of CARIS Batch scripts and identify error cases.
	Export > HIPS Data > HIPS to HOB track line settings have been updated to automatically populate the information attribute with the full path of the HIPS line on disk, e.g., Path\<<Project name>\<Vessel name>\<Day>\<Line name>.
<b>Features</b>	
	It is now possible to save feature layers with S-100-based catalogues, such as the SSDM catalogue, without exporting the data to a GML file or similar format. A new CARIS feature-based format with the H2O extension is used for this data. This allows using catalogues with feature acronyms of arbitrary length, multiplicity, and the other rich modelling capability available in S-100.  Feature layers based on S-57 catalogues continue to be saved in HOB format.
	The Vectorize from Raster feature editing command has been renamed Line from Image.
	The names for the types of catalogues in the New Feature Layer dialog box have been updated. Specifically, a VPF prefix has been added for the DNC types. This changes the default type to S-57, with its finer resolution.
<b>Filters</b>	
	It is now possible to create length-based rules in the Rule Wizard to filter lines (open and closed) based on their length. This can be used, for example, to isolate short contour lines.
	Filters in processes would not work if any of the band names contained special characters such as <, >, =, which were interpreted as part of the expression and not the band name. Quotation marks can now be used to ensure the band name is properly parsed when it contains special characters.  This applies to the FilterCoverage, ExportCoverageToASCII and ExtractCoverage processes, and the Filter, Surface To ASCII and Extract filter dialog boxes.
	The Surface Filter has been updated to better handle slopes when CUBE surfaces are used as the source for the filter.
	The Filter Observed Depths button on the HIPS Data Filters toolbar is now disabled when Swath Editor is open. Observed Depths filtering is done in Swath Editor using the Filter Observed Depths button on the Swath Editor toolbar.
<b>Generic Data Parser</b>	
	The option to load Delayed Heave has been added to Generic Data Parser.
<b>GUI</b>	
	If there are any transient coverages open when closing all data or saving a session, there is now a prompt giving an opportunity to save this data.
	The HIPS Module has been renamed HIPS Professional in the Tools > Modules dialog box, and its description has been updated.

Reference	Description
<b>Installation</b>	
	The HIPS and SIPS template folder has been moved to the HIPS and SIPS folder under %ProgramFiles%\CARIS\HIPS and SIPS\10.2\modules.
	The sample depth ranges file for Variable Resolution creation by Ranges has been renamed to "Depth_Ranges.txt".
	The Engineering Analysis module is now available to licensed users within HIPS and SIPS.
<b>Licensing</b>	
	The licensing HASP drivers have been updated to a new version. This addresses some installation issues seen on Windows 10 systems that prevented concurrent installation of different application versions.
<b>Process Designer</b>	
	The existing features processes have been updated to be able to be used in Process Designer. No substantial functional changes are expected, but some error handling has been improved.
	The file list control was updated to be more consistent. Clicking an item selects it, double-clicking an item edits it and clicking the '+' button is the only way to browse for a file.
	<p>The following raster processes from the main application are all now available in both Carisbatch and Process Designer for use with the existing processes:</p> <ul style="list-style-type: none"> <li>• AddFeatures</li> <li>• CalculateCoverageVolume</li> <li>• ChangeFeatureAttributes</li> <li>• ClassifyRasterHolidays</li> <li>• ClipFeatures</li> <li>• ContourRaster</li> <li>• ContourRasterByModel</li> <li>• CopyToCSAR</li> <li>• CreateSoundingsFromCoverage</li> <li>• DifferenceCoverages</li> <li>• EraseFeatures</li> <li>• ExportFeaturesToShapefile</li> <li>• ExportToWKT</li> <li>• ExtractCoverage</li> <li>• ExportCoverageMetadata</li> <li>• ExportCoverageToASCII</li> <li>• ExportPoints</li> <li>• ExtractCoverage</li> <li>• FillRasterHolidays</li> <li>• FilterCoverage</li> <li>• FilterFeatures</li> <li>• AddFeatures</li> <li>• CalculateCoverageVolumes</li> <li>• ShiftElevationBands</li> <li>• VectorizeRaster</li> </ul>
<b>QC Reports</b>	
	The Surface QC Report dialog box has been updated to include User Defined settings.

Reference	Description
<b>Selection</b>	
	The Select by Lasso behaviour has been improved to support continuous drawing of the boundary of the selection area in the 2D, 3D and display windows.
	For improved usability when showing or hiding multiple HIPS track lines, “Show”, “Hide” and “Show only selected” commands have been added to the right-click menus in the Project window and main Display window.
<b>SIPS Mosaics</b>	
	<p>SIPS mosaics are now identified as such through the use of new metadata. As a result, new files created from SIPS mosaics, for example through the Surface &gt; Extract process, retain the metadata and the new files are also now identified as SIPS mosaics in the application.</p> <p>A number of processes, such as Profile, have been updated to support this new format. New SIPS mosaics will not be identified as SIPS mosaics in older software as the older software does not read the relevant metadata.</p>
	Support has been added for time series imagery processing in the SIPS Backscatter processing engine for Teledyne Reson and Kongsberg sonars.
	SIPS Backscatter mosaic creation on data with duplicate records no longer causes a failure in the processing engine. Any line with duplicate records will be skipped and this is reported in an error message. The processing then continues to the next line.
	SIPS Backscatter interpolation has been updated to better locate adjacent samples.
	An issue preventing the creation of SIPS Backscatter mosaics on some Kongsberg EM710 data has been resolved.
	Beam average and time series mosaics from Reson s7k 7058 records (Calibrated Snippets) can be created with the SIPS Backscatter processing engine. If beam average is selected, one value per beam is extracted from the snippets.
	Support has been added for time series imagery processing in the SIPS Backscatter processing engine for Teledyne Reson and Kongsberg sonars.
	The Compute Layer command can now be used to add layers to SIPS Mosaics.
<b>Subset Editor</b>	
	When a reference model is viewed as a reference surface in the 2D view of Subset Editor and it is a horizontal plane, the view will now represent that plane as a line.
<b>Surfaces</b>	
	Compute Layer for surfaces now accepts expressions with conditional operators that allow filtering of the data for populating a computed layer. See user documentation for details of syntax and examples
	The logic used to evaluate expressions is now shared for point clouds and raster surfaces. No functional changes are expected.
	<p>It is now possible to use IF, &gt;=, &lt;=, and NO_DATA when writing expressions, for example when using Filter Coverage or Compute Layer. The keywords like IF are now case insensitive. NO_DATA, however, must always be upper case.</p> <p>Computed bands in CSARs are now created dynamically using the filtering logic, which in-house testing shows provides a performance improvement.</p>

Reference	Description
	When copying from a raster surface with non-standard x-axis convention, the resulting CSAR file was not as expected. This was seen with certain CIT files; if using an unregistered coordinate reference system (CRS), the resulting CSAR was horizontally flipped, and if using a projected CRS, planar offset and normal properties were set. Now, the x-axis values are handled as expected.
	It is no longer possible to set the coordinate reference system (CRS) of an open coverage as Undefined. Coverages must have a CRS defined; engineering datum can be used for CRS that are not georeferenced.
	Each layer / band in a surface or coverage is now identified by its type of data. This fixes displaying elevation bands in 3D when the coverage also contains a colour band.
	The Compute Layer command is now available in the context menu for the parent of a surface in the Layers window. As well, the Remove Layer command can now be used for any computed layer or band in a SIPS mosaic.
	Variable Resolution surfaces can now be displayed as reference surfaces in Subset Editor.
	If any surface sources are outdated, it is no longer possible to create, recompute or add to the surface containing those sources. A message will be output in the output window and the process will end.
	The dialog boxes used to create New Regular Gridded surfaces and New SIPS Mosaics have been updated to be easier to use. All options that have default settings have been hidden using progressive disclosure controls which enable users to easily run the process with fewer options to set.
	CSAR point cloud status bands are now identified as “Flag Set” type instead of “Scalar” in the Band Type property field. No functional effects are expected as a result. This was done to more clearly support mapping multiple flags into the single band value.
	Activating the CHGF function in the Variable Resolution Cube Properties improves hypothesis generation over slopes and steep features, providing better depth estimates under these conditions.
	The vectorize raster process could fail with specific data, particularly when very small polygons were created based on a single row or column of nodes. The algorithm has been updated to complete successfully in these cases. The process could populate the wrong attribute value. This has been fixed.
	The performance of the CARIS Density and Ranges resolution estimation methods has been considerably improved.
	When mapping by value, the Vectorize Raster process has been expanded to allow mapping individual components of a parametrized string table band, such as Contributor, to attributes in a newly created feature. It is possible to map the same component, or the entire value, to multiple attributes.
<b>Miscellaneous</b>	
	Attempting to copy empty geometries to formats such as Shapefile used to fail with an error about an unsupported interpolation type. The geometries are now copied as empty geometries, when appropriate.
	The plugin for connecting to data from a CARIS Onboard service has been adjusted. No functional changes are expected.
	The NARD datum has been added to the datummapping.xml file to improve support for BSB datasets that have coordinate reference systems based on that datum.

Reference	Description
	Memory is now cleared more consistently when retrieving the proxy to open a provided URL.
	When a Geodetic Datum Code is not found in the KNQ record of a BSB image file, version 3.0 or later, the application now attempts to read the Geodetic Datum Name from the KNP record. If the Geodetic Datum Name is used, a warning message is now displayed. If no Geodetic Datum Code or Geodetic Datum Name is found, an error message is now displayed.
	<p>A new entry was added to the Bathy DataBase catalogue for isolines at a constant value. The new entry is named Isoline (<i>isolne</i>) and has a corresponding attribute named Isoline Value (<i>isoval</i>).</p> <p>This can be used, for example, to perform contouring on a SIPS mosaic and produce lines in a HOB file. A DEPCNT cannot be used in that context as those are defined to have values in metres, and SIPS mosaic intensity values are in decibels.</p>
	Coordinate reference systems (CRS) that did not contain a WKT prefix were not being interpreted correctly, resulting in an error message being displayed in the CRS registry about an identifier not being found for a bound CRS. Now CRS that come from other sources that reference PROJCS, GEOGCS, or COMPD_CS are handled properly.
	Several dialog boxes including the Export Raster dialog box have been updated to include helpful text when there are no appropriate bands available to be selected.

# Maintenance

Reference	Description
<b>.hips File</b>	
	Feature mapping during Import Selected Objects from a *.hips file has been fixed.
<b>3D View</b>	
	Properties for certain vector formats, such as DWG, and reference models, would still display the 2D properties when the 3D view was activated. The properties are now cleared when the 3D view is activated, and the appropriate properties are displayed when a source is selected.
	Clicking the middle mouse button in the 3D view could cause the camera to zoom out. The minimum scale has been adjusted to prevent this automatic zoom out from occurring.
<b>Additional Bathymetry</b>	
	Regenerate Additional Bathymetry no longer fails if Tide was not loaded.
	Additional Bathymetry point cloud properties are now fully displaying platform name, minimum and maximum times.
	The surface creation progress bar has been updated to work correctly when adding additional bathymetry to a surface.
	Status bands for Designated, Rejected, Accepted, Outstanding, Examined soundings have been updated to display each state as a different colour in the 2D view.
	Additional bathymetry data can now be displayed in Subset Editor without other data being enabled.
	Additional Bathymetry now remains visible in the Subset Editor if the HIPS project is moved to a different location.
	Regenerating the critical soundings layer now includes designated soundings in the additional bathymetry layer as well.
	Additional bathymetry will now display in Subset Editor even if the view projection is different than the one used by the Additional bathymetry layer.
	Subset editor 3D view no longer jumps back to overview after creating additional bathymetry.
	Using the Add selection to Additional Bathymetry command no longer outdates a surface when the "Include additional bathymetry" option was not used during the surface's creation.
	Adding Additional Bathymetry to a surface now correctly applies outdated or updated status to the surface, depending on the Automatic Surface Update setting. When Automatic Surface Update is off, saving edits in Subset Editor no longer reports warning messages that the surfaces are out-of-date and require recompute.
<b>Beam Pattern</b>	
	Creating a SIPS Backscatter Beam Pattern has been fixed to run when using a surface as a DTM source.

Reference	Description
<b>CARIS Batch, Processes</b>	
	Running the <code>CreateSIPSBeamPattern</code> command in <code>carisbatch</code> no longer fails.
	The <code>AddFeatures</code> process in the CARIS Batch command line tool has been updated to ensure redundant edges are not added.
	The way that the CARIS Batch command line tool initializes support files has been changed. No functional differences are expected.
	The error message when attempting to create a coordinate reference system from an unsupported projection has been improved. This is seen, for example, when using the <code>ExtractCoverage</code> process with a KAP raster.
	A specific error message is now displayed when attempting to filter a raster based on values in a colour band.
	The finalize raster process still produced a raster surface even if an error was reported. Now, the incomplete CSAR file is automatically removed when an error occurs.
	The <code>Classify Raster Holidays</code> process now runs correctly with mosaics in CARIS Batch.
	When DXF files were created in the application, the measurement units were always created as "English - Inches". RXL files were created with the correct units so the resulting DXF files were opened correctly in CARIS applications. The measurement units in the DXF file are now set correctly, provided DXF has support for the appropriate unit; otherwise, the units are defaulted to metres.
	Creating contours in a HOB file through the CARIS Batch command line tool was incorrectly setting the isolation type value as the contour depth. The correct depth is now populated for the contour line objects.
	The <code>FillRasterHolidays</code> process in the CARIS Batch command line tool now gives an informative error message if the input is not a raster.
	Raster surfaces that have been interpolated cannot be finalized. The error message for the <code>FinalizeRaster</code> process in the CARIS Batch command line tool has been improved for this situation.
<b>Catalogue Editor</b>	
	Adding values to an enumerated list in the HIPS Catalogue Editor, or making other changes to the list values, is now saved appropriately and allows for these HIPS Projects to be opened.
<b>Compute GPS Tide</b>	
	The Realtime option for Water Line in Compute GPS Tide is now being applied correctly.
	Computing HIPS GPS Tide using certain separation model file types no longer fails.
<b>Contacts</b>	
	Contact image names are now updated to match the contact ID, which will allow the contact images to show in the Image Preview window.

Reference	Description
<b>Convert to HIPS</b>	
	<p>Sound Velocity Profiles stored in Kongsberg ALL files are now being treated differently during conversion to HIPS:</p> <ul style="list-style-type: none"> <li>• A Sound Velocity Correction entry is made in the stored line log file for each unique SV change from acquisition. The time stamp of each entry corresponds to the time it was applied.</li> <li>• The SVP file created in each line folder will store all unique SV entries. The time stamp of the stored profiles is the original cast time</li> </ul>
	Referencing Kongsberg *.all data directly is now working when the Position datagram is EM90 type. Also, the EM100SVP datagram is now supported.
	Conversion of specific GSF data no longer causes the application to fail.
	The Hypack RAW, HSX converter no longer shows HS2 in files of type selection.
	JSF Bathymetry that is missing data from the port channel will now convert with the correct time stamps.
	Selecting Project, Vessel and Day from the File selection type field at step 3 of the Conversion Wizard is now correctly creating the PVDL structure on conversion.
	When converting Kongsberg ALL, using "Reference *.all data directly", into an existing HIPS project that has a different datum/ellipsoid than does the HIPS Vessel File, (for example, has WGS 84 vs. NAD 27), the navigation data used for display in HIPS and SIPS is now properly transformed.
	Side scan from EIVA SBD is now supported during conversion.
<b>Documentation</b>	
	CARIS Batch documentation for HIPS and SIPS Processes and Variable Resolution processes is now showing properly online.
<b>Export</b>	
	When exporting the view to a GeoTIFF, if the Tools > Options coordinate units were set to something other than metres, the resulting GeoTIFF had incorrect coordinate values. The export GeoTIFF functionality has been replaced and now works correctly with various coordinate units.
	When exporting a selection from a feature layer or HOB to 000, the coordinates could be slightly different. This was noticed most often when using a feature layer with VPF DNC coastal resolution. More accuracy is now maintained when calculating the coordinate multiplication factor, and the shift no longer occurs.
	When exporting a raster to GeoTIFF, the result is now tiled, with pyramid levels that display more detail at finer resolutions.
	Using the Export Raster process to convert an image with transparency to JPEG produced a file that displayed incorrectly as the colour information was incorrectly identified as CMYK. The image is now created with the correct RGB colour information. Note that transparency is dropped and all pixels are displayed based on the remaining colour information. If no colour is set for a given pixel, the result is black pixels.
	HIPS to HOB export was failing to export Navigation retrieved via direct read from a raw file. This has been fixed.

Reference	Description
<b>Feature Editing</b>	
	Certain area features could disappear when using a feature to cut other features, with the Edit > Features > Cut or Edit >Features > Cut and Remove commands. This happened when the resulting geometry included a near collapse. The entire source geometry was skipped as a result. The precision of geometry calculations has been improved for these commands, and the area features are now cut as expected.
	When clipping features with the Copy to Clip Layer command, features that cannot be clipped to a specified geometry are now reported in the Output window.
	The vectorize raster process could fail with specific data, particularly when very small polygons were created based on a single row or column of nodes. The algorithm has been updated to complete successfully in these cases. The process could populate the wrong attribute value. This has been fixed.
	Error messages have been improved for cases when the application cannot open a file containing feature object data.
<b>Filters</b>	
	HIPS Data Filters > Surface/Polygon (Filter Type:Polygon only) functionality has been updated to use the Keep Up to Date flag on each surface affected by the filter when Automatic Surface Update from Tools > Options is on. The affected surfaces will be updated after filtering is complete.
<b>Finalize</b>	
	The finalize raster process was failing with an error message about the dimensions if a subset of the source did not contain any information to copy to the output raster surface. The finalize process now skips over those subsets and writes out the remaining information to the output raster surface.
	The uncertainty band was not being displayed for raster surfaces created by the Finalize Raster process when the view was zoomed out. New raster surfaces created by Finalize now have uncertainty values when zoomed out.
	Finalize speed has been increased significantly when applying Designated soundings.
<b>First Run</b>	
	The module state dialog box (Tools > Options > Modules) was being shown on first run of the application for each user. Now this behaviour can be overridden by having a valid <code>moduleState.xml</code> file in the ProgramData folder. This allows easier setup for systems used by multiple users. User-specific choices for the active modules for each user can be adjusted by updating Tools > Options > Modules after starting the application.
<b>Generic Data Parser</b>	
	Generic Data Parser is now converting Hydro SB (Single beam) data with the correct internal setting, which allows merge to work properly for that data type.
	Generic data parser processing can now be successfully run using the Run Process Designer Model command from the Tools menu in HIPS.
<b>GUI</b>	
	If the console window is turned on for the application, and it is active, pressing CTRL+C would cause the application to close. CTRL+C now has no effect when the console window is active.

Reference	Description
	Changing display properties for features while the view was being refreshed could cause the application to fail. Changing the display properties now cancels any ongoing view draw operation.
	Grouping of variable resolution surfaces in the Layers window is not supported and now prompts with an informative message instead of an error.
	Projects are now listed in alphabetical order, regardless of capitalization, in dialog boxes where the project tree is displayed.
	SIPS menu items are no longer visible when the SIPS module is turned off.
<b>HIPS Utilities</b>	
	The Refract command line utility is now working correctly.
	The <code>CreateSurface</code> utility has been removed from HIPS since the <code>CreateHIPSGrid</code> functionality is available in <code>carisbatch</code> .
<b>Import Auxiliary Data</b>	
	TerraPos navigation data containing large time gaps is no longer shifted in time on import.
	Importing Delayed Heave using Import > Auxiliary Data > Applanix POS MV now loads properly on a line with large time jumps (1/2 day or more) and skips the records (outputs messages) so that the subsequent good data can be imported.
<b>Line Report</b>	
	In a Detailed Line Query report, the Delayed Heave File field now correctly shows the file name and path for the selected line.
	Line Report is now properly displaying the loaded SBET file.
<b>Merge</b>	
	Remote heave is now applied in Merge for Kongsberg data, when offsets are in the Heave section of the vessel file.
<b>Navigation Editor</b>	
	Running Set Navigation Source will now show a processing dialog box when in Navigation Editor.
<b>Options</b>	
	The Time Buffer can now be set to 0 (zero) in the Tools > Options dialog box.
<b>Process Model</b>	
	An issue with running multiple lines through a process model file has been resolved.
HIPS-15966	Running a process designer model file in HIPS, that contains a Create HIPS Grid referencing an invalid CRS or extents, no longer causes the application to fail.
<b>Processes</b>	
	The Process > Apply Smoothing command has been removed from HIPS and SIPS since the input file is not available for 10.0 versions and higher.

Reference	Description
<b>Profiles</b>	
	Transient Profile layers are no longer saved to session files as they are not re-created when the session is reopened.
	Profile creation on an Intensity layer of a SIPS Mosaic has been fixed.
<b>Sessions</b>	
	When a session file is opened, the coordinate reference system of the view now respects the position units specified in Tools > Options.
<b>SIPS Mosaic</b>	
	Memory issues when creating a GeoCoder mosaic have been resolved.
	Artifacts are no longer introduced to Kraken data during SIPS Side Scan Mosaic processing.
	Mosaic creation using SIPS Backscatter no longer fails for data with missing pings.
	When saving a mosaic after editing the Brightness/Contrast, there are no longer error messages in the Output window.
<b>Sound Velocity Correction</b>	
	Applying Sound Velocity Correction to Elac data no longer causes a vertical shift at nadir.
<b>Sounding Selection</b>	
	Performing mapping during sounding selection did not correctly map over SORDAT or other date fields in CSAR bands. This was caused when the SORDAT was stored as a string in the CSAR band because mapping was only happening for bands stored in a date format. Now, data stored in string bands can also be mapped to date fields, but this simply copies the value over without performing validation of the content.
<b>Subset Editor</b>	
	Improvements have been made to the speed for loading/unloading huge projects in Subset Editor.
	Reference surfaces now load correctly in Subset Editor when the project has a different coordinate reference system than the reference surface.
	When using the Surface Filter with settings that would reject all soundings (for example, by using a Static Value of 0.0m), some soundings were not being rejected. This has been fixed.
	Selecting Cancel instead of Save when exiting Subset Editor was causing the application to fail. This has been fixed.
<b>Surfaces</b>	
	Creating a new gridded surface using CUBE no longer fails when multiple HIPS and SIPS projects are the source.
	Automatic Surface Update no longer gives warnings for difference surfaces open in HIPS. A difference surface can never be kept up to date.
	Grouping multiple surfaces together could cause the application to fail if the properties did not have minimum/maximum values for a layer. The application now avoids updating undefined properties and the grouping completes as expected.

Reference	Description
	<p>Transparency properties, such as for surfaces, could be set when either a 2D or 3D view was active, but the values displayed would be reversed when switching from 2D to 3D. For example, a 20% transparency set in the properties when a 2D view was active would be displayed as a 80% transparency in the properties when the layer was active in 3D, although it was actually applied as 20% transparency. Transparency values are now correctly copied from 2D to 3D, and the transparency percentage displayed in 3D is the value that is applied.</p>
	<p>Variable Resolution Surfaces no longer show a 'Status' band in the list of layers for display.</p>
	<p>The Vertical Shift dialog box has been updated to use a generic dialog box that exposes all of the process options. The user interface will be more consistent with other updated dialog boxes, but no functional differences are expected.</p>
	<p>When contouring a true position raster, selecting the "Grid" contour generation method still produced true position-based contours and boundaries. This has been fixed so that the contour generation method is respected when contouring a true position gridded surface.</p>
	<p>When performing a vertical shift of a point cloud, the shift source and data were assumed to be in the same coordinate reference system (CRS) for an extents calculation. This could result in an error message about not finding the band. The extents are now correctly transformed to the CRS of the point cloud, and the shift completes successfully.</p>
	<p>Create HIPS Grid with Shoalest Depth True Position no longer generates infinite values for the Position_TPU and Depth_TPU when TPU does not exist in the HIPS data.</p>
	<p>Linear artifacts are no longer introduced during the creation of uncertainty surfaces.</p>
<p><b>Variable Resolution</b></p>	
	<p>It is now possible to create variable resolution surfaces when the source file name contains the special characters '[' and ']'. </p>
	<p>Variable Resolution surfaces are now honouring the Suppressed flag.</p>
	<p>A rejected status flag set on Additional Bathymetry data is now honoured when used in Variable Resolution surfaces.</p>
	<p>The display name for the source coverage in the New Variable Resolution Surface dialog box now shows spaces instead of the encoded value of %20.</p>
<p><b>Vessel Editor</b></p>	
	<p>Manually entering a value for the Julian day in Step 1 of the Vessel Editor wizard now correctly sets the date in the calendar control.</p>
<p><b>Water Column Imaging</b></p>	
	<p>The data search for raw WCI is now functioning correctly in Swath and Subset Editors for Kongsberg *.all files with accompanying *.wcd files,</p>

