



Release Notes

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Digital Surf Software Updates

www.digitalsurf.com/support/software-updates/

Digital Surf FAQ

www.digitalsurf.com/support/faq/

Digital Surf Support solutions

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What's new

2D parameters in the Advanced Contour study	All profile parameters available in the Parameters table study can now also be calculated in the Residue dialog box in the Advanced contour study.
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Bug corrections (A and B type)

	Type	Bug Description
MNT-4971	A	The "Section length" parameters in the ISO-21920-2 standard (Rp, Rpt, Rv, Rvt, Rz, Rzx) on Profile studiabes are not calculated according to the definition of peaks and pits.
MNT-5326	A	The "Calculate Derivatives" operator on Hyperspectral image studiabes gives inconsistent results when recalling it in the workflow and validating the dialog box without modification.
MNT-5342	A	Peak parameters according to ISO-21920-2 on the Primary profile (Pp, Ppt, Pv, Pvt, Pz, Pzx) on Profile studiabes were not calculated on section lengths (Evaluation length/5).
MNT-5548	A	The result of the ISO 21920 Pal, Ral, Wal parameters calculation on Profile studiabes is erroneous.
MNT-5624	A	The Extracted area outline is neither visible nor modifiable in the Extract area operator on Image and Series of images studiabes when substituting the studiabe or applying a template on the document if the outline touches the edge in the original operation.
MNT-5688	A	The Weighted by area display of the Histogram study on multiple "Particle analysis" results is incorrect.
MNT-5700	A	Image files in EMC format are not displayed at the correct scale.
MNT-5760	A	The extracted area outline is neither visible nor modifiable in the Extract area operator on Surface studiabes when recalling the "Extract area" operator if the outline touches the edge in the original operation.
MNT-5849	A	Applying the "Filter the spectrum" operator on Surface and Multi-channel image studiabes generates an empty (black) study if only one of the two studies (Filtered surface, Residue of filtering) is selected in the dialog box of the operator.
MNT-5921	A	Points of the selected outline in operators including Extract area on Surface studiabes may be outside the range of the studiabe on a second screen with a different resolution. The outlines disappear when recalling the operator.
MNT-4409	B	The weight of the surface area is not taken into account in the Histogram study when the normal curve generated from the Particles analysis study on Surface or Image studiabes is displayed and when the "weighted by area" mode is selected.
MNT-4582	B	The results of applying the "Remove outliers" operator are different in the "Pseudo-Color View" to that of the "Grid View" study when factory settings are applied for Surface + image studiabes.

MNT-4681	B	Moving the separator between the Results table and the image in the "Particle analysis", "Manuel measurement", "Thickness analysis" and "Wear or deposit analysis" studies on Surface studiabes does not work properly if a high-resolution screen is used.
MNT-4918	B	The display resolution of the generated Dynamic image studiabile of a Colocalization study is incorrect when zooming simultaneously on the True color view study and the Colocalization study.
MNT-5285	B	The "Detect structures" operator on a Surface studiabile does not correctly detect elements when substituting the studiabile.
MNT-5389	B	Scaling correction parameters set in the Lateral calibration study (unit cell detection) on Surface studiabes are incorrectly applied to the surface in the "Apply lateral corrections" operator.
MNT-5428	B	It is not possible to display/hide the Color scale or to change the palette in the Particle analysis study on Surface studiabes.
MNT-5460	B	The "Shift profiles" operator on Series of profiles studiabes does not give the best result if there is a large overlap over the selected zone.
MNT-5483	B	Visualization settings for a class are not saved in the Particle analysis study on Image studiabes when saving and reopening a document or substituting the studiabile if the 'SEM-BSE'-segmentation method is selected.
MNT-5498	B	Changes of the coordinates in the "Edit a built point on the profile" dialog box in the Advanced contour analysis study on Profile studiabes are not taken into account after validation of the dialog box
MNT-5551	B	The names of the Statistical parameters Decile 1 to Decile 9 in the "Select parameters" dialog box of the studies are incorrect.
MNT-5641	B	The « Quick pre-processing operators » are not applied with their good settings when applied from the « Quick pre-processing operators » button of the studies' ribbons. Applies to Surface, Serie of surface, Surface + Image, Multi-channel image, Image, Profile, Series of profiles studiabes.
MNT-5647	B	The residue inset is not stably positioned in the Advanced contour study on Profile studiabes when substituting the studiabile or reloading a document. Particularly visible after using an alignment and/or the use of a non-orthonormal display.
MNT-5656	B	All curves composing the series are not displayed in the Normalized view study on Spectrum curve studiabes if the "All curves" button has been deselected in the Spectrum curve analysis study.
MNT-5745	B	The results of the Level operator might alter when loading a document created in V8 if a Structure exclusion function is used and the dialog box is validated after recalling the operator. Applies to Surface, Surface + image and Multi-channel image type studiabes.
MNT-5755	B	The Z-offset of the roughness profile is always set to zero instead of at its calculated value.
MNT-5757	B	The profile length can be modified by the Resample operator on Profile studiabes if the profile is substituted and a document created in an old version is in use.
MNT-5759	B	The software may crash during startup if a network dongle license is detected in some particular cases.
MNT-5776	B	The filter of the "Export results" is not correctly taken into account when only some of the results of a series or statistical results are selected. Applies both to a filtering in the Result manager and via the Export results button in the Results tab.
MNT-5784	B	Addons studies or operators applied on Multi-channel image studiabes do not work.
MNT-5790	B	The "Number of values" parameter of the Box plot study in statistical documents is always equal to 0.
MNT-5817	B	A Profile in .RTF file format cannot be loaded if the length of the x axis of the profile is not declared.
MNT-5839	B	The Scaling correction coefficients (Cx, Xy, dx/dy) in the "Reference values" for unit cell" dialog box of the "Lateral calibration" study on Surface studiabes are displayed with a metric unit (instead of being unitless).
MNT-5848	B	Hyperspectral image studiabes in .SPD file format are incorrectly loaded if they contain more than one signal.
MNT-	B	The column headers of the Statistical summary studies on Series of profiles studiabes are erroneous.

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MNT-5857	B	Filtered results parameter selection is lost when opening the "Observed Results" dialog box of the Control Chart study on multiple Particle analysis results.
MNT-5872	B	The selected vertical axis parameter is incorrect when opening the "Observed Results" dialog box of the Scatter plot study on multiple populations.
MNT-5930	B	Parameters are not recalculated in the Particle analysis study for Surface, Surface + Image, Multi-channel image type studiabes when changing the calculation layer.
MNT-5957	B	The result of the Extract area operator on Surface studiabes is entirely non-measured when substituting the studiabe if the outline of the extraction touches the edge in the original operation and the size of the substituted study is smaller.

What's new

Updated Reference Guide	The Reference Guide has been updated with the descriptions of the main new features and improvements. It is available in English, German, French, and Japanese.
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Bug corrections (A and B type)

	Type	Bug Description
MNT-4997	A	The display of the menu is incorrect if a high-resolution screen and enlargement is used.
MNT-5211	A	The "Create circle (in contact with 2 elements)" option in the Advanced contour analysis study on Profile studiabes does not work.
MNT-5217	A	A crash can occur in the Thickness analysis study on Profiles when duplicating the study and then removing the source study.
MNT-5220	A	The sign for the "Shift in Y" parameter generated by the Align for thickness operator on surface studiabes is incorrect in the Results manager when the "Shift the second layer manually" option of the Alignment in X/Y section in the "Align to create a thickness layers pair" operator dialog box is used.
MNT-5241	A	Multilayer surface or Multichannel image studiabes in some products (that do not handle Multilayer surface or Multichannel images) cannot be opened as surfaces extracted from them when opened by double-clicking on the .sur files in the Windows explorer.
MNT-5259	A	The Thickness analysis and Wear or deposit analysis studies on Surface studiabes give erroneous results when applying the By rotation option in the Level operator.
MNT-5308	A	A crash can occur in the Parameters table study on Shell studiabes if this study has user-defined default settings.
MNT-5315	A	A crash can occur in the Calculate derivatives operator on Spectrum studiabes when substituting the studiable or recalling the operator.
MNT-5359	A	A crash can occur when substituting a multiple-signal Hyperspectral image studiable.
MNT-5446	A	The Polynomial option in the "Correct the base line" operator on Hyperspectral image studiabes does not work if there are non-measured points.
MNT-4083	B	The Dimension block and Axes system of 3D View studies are not exported when applying the Export as image function or saving in PDF format. The legend setting is also ignored on Multi-channel cube studiabes.
MNT-5006	B	The result of the "Extract projected surface" operator on Shell studiabes may contain holes when the "Use automatic leveling" option is checked in the operator dialog box.
MNT-5089	B	The new name of a renamed studiable in the workflow is not properly taken into account during substitution or loading a document.

MNT-5126	B	The "Apply palette to all channels" does not work correctly in the Grid view study on Multi-channel image studiabiles.
MNT-5129	B	The color scale for surfaces is not visible in a Multi-channel image studiable when an image is selected in the Grid view study.
MNT-5157	B	The position of the object in the 3D view study is not remembered when reopening a document created in a previous version. Applies to all the types of studiabiles that can show the study.
MNT-5174	B	Moving the selection of the extracted area on the source studiable may give an incorrect result on surface studiabiles if the selection area touches the edges of the studiable and the Show area on source option is activated.
MNT-5175	B	The substitution of Profile studiabiles in the Thickness analysis study and the "Wear or deposit analysis" study does not work if the two selected profiles have incompatible X axes.
MNT-5181	B	The result of the Correct the shell operator may be incorrect in a particular case.
MNT-5185	B	The results of the "Align to create a thickness layers pair" operator applied on Surface studiabiles with non-measured points are unstable if the second layer is corrected using a refractive index.
MNT-5187	B	The image is not always refreshed when applying the "Optimize color scale" option of the "Image enhancement" button on Surface, Series of surfaces and Multi-channel image studiabiles.
MNT-5193	B	The force curve in Force/Separation mode in the Force curve analysis study is incorrectly displayed for .nid format files.
MNT-5201	B	The altitude of a profile leveled using the By subtraction option of the Level operator in the Thickness analysis et Wear and Deposit analysis studies is incorrect.
MNT-5222	B	The link to the Reference Guide section is not present in the "Topo - Thickness analysis" and "Topo - Wear analysis" templates documents.
MNT-5223	B	The maximum Adhesion point in the Force curve analysis study on Force curves studiabiles is incorrectly detected.
MNT-5226	B	The horizontal scroll bar does not appear in the statistical documents.
MNT-5244	B	The palette of a studiable saved in a previous version is incorrect when reloading it in version 9.2.0 and selecting the "Use the palette of the studiable" option.
MNT-5249	B	The X, Y values in Thickness analysis and Wear and Deposition analysis studies on surfaces are not updated immediately.
MNT-5252	B	The kurtosis parameter value for Thickness in the table of results in Thickness analysis and Wear and Deposit analysis studies on Profile studiabiles is incorrect.
MNT-5253	B	Lines are sometimes missing in the table of results in the Thickness analysis and Wear and Deposit analysis studies on Profile studiabiles when only one limit is defined (lower or upper).
MNT-5262	B	The Thickness limits in the Thickness analysis and Wear and deposit analysis studies on Profile studiabiles are not correctly displayed after an Undo action.
MNT-5289	B	The cursor limitations for setting the Bearing ratio in the Histogram and Abbott curve study on Surface studiabiles are incorrectly defined.
MNT-5306	B	The update of the active signal in the studies on Spectrum, IV curve, IV spectroscopy image and Hyperspectral image studiabiles is incorrect after recalling the "Calculate derivatives" operator.
MNT-5314	B	The signals in the studies on Spectrum, IV curve, IV spectroscopy image and Hyperspectral image studiabiles are not all selected in the "Calculate derivatives" operator when substituting.
MNT-5318	B	The Axis Settings dialog box for Histogram studies on Statistical Results does not open.
MNT-5321	B	The result of the "Calculate derivatives" operator on Spectrum curve studiabiles is not updated when being recalled in some cases.
MNT-5324	B	The gamma correction is applied twice if the correction is used on a specific surface and the modified surface is added to a Multi-channel image or a Multilayer studiable before a gamma correction is applied on the newly created studiable.

MNT-5334	B	The Results table in the "Lateral Calibration" study is not positioned as defined in the settings applicable to the study.
MNT-5335	B	The names for the Segment and for the Cursors are not homogenous in the Table of results in Thickness analysis and Wear or deposit analysis studies on Profile studiabes.
MNT-5337	B	The Suggest button in the "3D reconstruction using four quadrant images" operator dialog box on image studiabes does not detect the disposition of the detectors.
MNT-5355	B	The update of the tolerance limits for thickness in the Thickness analysis study on surface studiabes is incorrect in 3D View rendering.
MNT-5431	B	The results related to thickness limits in the parameters table of the Thickness Analysis study are incorrect when only one limit is used for the surfaces.
MNT-5433	B	The value of the Area result in the lateral calibration study is incorrect if x and y axis units are different.
MNT-5435	B	The thickness layer on Surface studiabes is not correctly updated if the tolerance limits for thickness are changed from upper/lower on Wear or Deposit analysis or before/after on Thickness analysis studies.
MNT-5451	B	The Tab key in the Advanced contour analysis study does not allow to switch between several overlaid elements.
MNT-5467	B	The residue disappears in the Advanced Contour analysis study on Profile studiabes when the cutoff used for parameter calculation is too high relative to the evaluation length.
MNT-5469	B	The Z-range of the reconstruction in cross mode in the "3D reconstruction using four quadrant images" operator is erroneous.
MNT-5480	B	The Parameters tab of the Select parameters dialog box in the Force curve analysis study is not visible if parameters are added to the indentation model and the document is reloaded.
MNT-5482	B	The results studiabes of the "Bandpass-filter bank operator" on Profile studiabes are empty when substituting the studiabe.

What's new

	Especially useful for profilometry:
	Thickness analysis
	Alignment of before/after topographies, or of upper/lower layers
New operator: "Align to create a thickness layers pair"	<p>The New "Align to create a Thickness layers pair" operator has been designed to shift and rotate one topography layer, in order to align it with the other layer in the pair.</p> <p>It places them correctly for Thickness analysis, or Wear or deposit analysis, using manual or semi-automatic tools.</p> <p>The two topography layers can come from the same or from different studiabes (Surface, Series of surfaces, Surface + Image, Multi-channel image). The layers are generated as two surfaces, a Series of surfaces or a Multi-channel image studiable. The generated study in the document is a Thickness analysis study, or a Wear or deposit analysis study.</p>
	Thickness study on Surfaces
New study on surfaces: Thickness analysis (also named Wear or deposit analysis)	<p>The Thickness analysis study (also called Wear or deposit analysis) allows the user to visualize two interfaces and their thickness, and to calculate thickness and volume parameters, and also the percentage of conformity.</p> <p>The same study is available via two buttons of the ribbon, with different factory settings: the Wear or deposit study shows by default layer 1 and 2 with common Z-scale settings and palette, and with the real distance between layers in the 3D view. The Thickness study shows by default layer 1 and 2 with independent Z-scale settings and palette, and with arbitrary distance between layers in the 3D view. The two topography layers can come from the same or from different studiabes (Surface, Surface + image, Series of surfaces, Multi-channel image).</p>
3D view in Thickness analysis	The two layers can be jointly displayed in 3D in the Thickness analysis study (or Wear or deposit analysis) on surfaces.
Localized tools for Thickness analysis	The user can draw areal or linear zones over which to calculate parameters in the Thickness analysis study (or Wear or deposit analysis) on surfaces.
Upper and Lower limits in Thickness analysis	The user can set Upper and Lower thickness limits in the Thickness analysis study (or Wear or deposit analysis) on surface. The out-of-limits points can be visualized as a color overlay on a layer.
Maximum and Minimum in Thickness analysis	The user can display cursors on the image at the location of the maximum thickness and the minimum thickness.
Leveling in Thickness analysis	It is possible to level both layers jointly as a single object in the Thickness analysis study (or Wear or deposit analysis) on surfaces.
Designation of source layers in Thickness analysis	The user can easily change one or two compatible layers using a button of the ribbon. The user can choose either 2 topography layers among one or two studiabes, deemed to be the 2 sides of a membrane or the 2 states before/after wear or deposit on the same sample, or a single layer, deemed to represent a thickness. The layers ('Upper'/'Lower' or 'Before'/'After') can be swapped.
Generate Thickness in Thickness analysis	The study can generate the calculated thickness as a studiable.

Thickness study on Profiles	
New study on Profiles: Thickness analysis (and Wear or deposit analysis)	The Thickness analysis study on Profiles (also called Wear or deposit analysis) allows the user to visualize two interface profiles and their thickness, and to calculate thickness and enclosed area parameters, and also the percentage of conformity. The same study is available via two buttons in the ribbon, with different factory settings: The Wear or deposit analysis shows layer 1 and 2 with common Z-scale, and with the real distance between layers in the visualization. The Thickness analysis shows layer 1 and 2 displayed in two separate zones independent of each other. The XZ viewing ratio is common to both layers, and the distance between layers is arbitrary. The two topography layers can come from the same or from different studiabes (Profile, Series of profiles, Multi-channel profile).
Localized tools for Thickness analysis on Profiles	The user can define linear zones or points over which to calculate parameters in the Thickness analysis study (or Wear or deposit analysis) on Profiles.
Upper and Lower limits in Thickness analysis on Profiles	The user can set Upper and Lower thickness limits in the Thickness analysis study (or Wear or deposit analysis) on Profiles. The out-of-limits points can be visualized as a color overlay on Profiles.
Maximum and Minimum in Thickness analysis	The user can display cursors on the Profiles at the location of the maximum thickness and the minimum thickness.
Leveling in Thickness analysis	It is possible to level both layers jointly as a single object in the Thickness analysis study (or Wear or deposit analysis) on Profiles.
Designation of source layers in Thickness analysis	The user can easily change one or two compatible layers using a button of the ribbon. The user can choose 2 topography profile layers among one or two studiabes, deemed to be the 2 sides of a membrane or the 2 states before/after wear or deposit on the same sample. The layers ('Upper'/'Lower' or 'Before'/'After') can be swapped.
Generate Thickness in Thickness analysis	The study can generate the calculated thickness profile as a studiabe.
Point cloud and Shell	
Deviations used in Parameters table on Shell	The Parameters table study on Shell studiabes now allows the use of deviation values stored in the studiabe.
Warning in Parameters table on Shell	A warning is now displayed when a filter operator and/or a shape fitting operator already exists in the workflow.
Automatic configurations in the "Mesh the point cloud" operator	The "Mesh point cloud" operator now simplifies the use of the dialog by adding automatic configuration modes for the meshing. The improved algorithm also offers better visualization and faster calculation.
Improved optimize operation in the Remesh operator on Shell	The Optimize option of the Remesh operator has been improved and now allows better management of flat areas. In addition, it is now possible to choose the strength of the optimization, and the split edge option makes it possible to locally increase the resolution of the mesh in the zones of greater curvature. Finally, it is now possible to display the edges in the preview, allowing the user to visualize the change on the mesh (also present in the "Correct the shell" operator).
Subdivide method in the Remesh operator on Shell	A Subdivide method has been added in the Remesh operator to increase the resolution of the mesh (increases the number of points and facets).
New "Fit a geometric form" operator on Shell	The new "Fit a geometric form" operator allows the user to fit a geometric form on a Shell. The fit can be performed on a plane, a cylinder, or a sphere, using the Total Least squares method. This allows the user to visualize the resulting Shell with colors corresponding to deviations from this form. The Fit form operator is also available on Point clouds.
Automatic leveling in the "Extract projected surface" operator from Shell or Point cloud	An "Automatic leveling" option in the "Extract projected surface" operator on Shell and Point cloud studiabes allows the user to automatically align the studiabe (least squares plane) along the main axes to avoid losses on the leveling of the surface.
Extraction of a Surface + image from colored Shell	A "Generate a surface + image" option in the "Extract projected surface" operator on Shell studiabes now allows the user to generate a Surface + image studiabe when the shell contains color information and thus access Surface + image functions.
New Convert into Shell operator from Surface	The "Convert into shell" operator on Surface studiabes allows the user to transform a surface according to a chosen triangulation into a Shell studiabe and thus access shell functions (ie. curvature calculation).
New Convert into Cloud operator from Shell	The "Convert into point cloud" operator on Shell studiabes allows the user to transform a Shell into a Point cloud studiabe.

"Mean-curvature-flow" filter on Shell	The user can now smooth the mesh in the Metrological filter operator using the new "Mean curvature-flow" filter which is a smoothing method based on mean curvature flux.
	Contour study
	Robust adjustment of elements in the Contour study
Robust fitting of elements in the Contour study	A Robust method is now available for elements fitted on profiles in the Contour study on Profile studiabiles. It excludes outliers and local deviations from the calculation, allowing the user to automatically fit a segment, arc, circle or ellipse, even if they show defects or irregularities.
Creation of circle with fixed radius in the Contour study	It is now possible to set a defined radius value for a Circle element. This applies a Least squares fit with a circle with a constrained radius.
Button to display element settings in the Contour study	The dialog used to change the settings of an element (offset points, multiple built points, circle, segment...) can now be opened not only by a double-click on the element but also by using the Settings dialog button. This button is available in the element mini-toolbar, in the object ribbon and in the contextual menu of the Object list panel. The dialog used for editing the LS fitting properties of an element is also accessible by clicking on a multi-selection of elements.
	Other profilometry features
	New Bandpass-filter bank operator
New Bandpass-filter bank operator on Surface and Profile	The Bandpass-filter bank operator performs multiple bandpass filters with increasing cut-offs from smallest to largest. This allows the user to characterize the sample at different wavelengths, to possibly relate them to different functionalities. It generates a Series of surfaces (respectively profiles) or individual Surfaces (respectively individual profiles).
	Statistical parameters in Step height study on Profile
Statistical parameters in Step height study on Profile	The statistical parameters are now displayed in the Step height study on Profile studiabiles as soon as there are several steps.
	Useful for all instruments:
	Substitution of multiple studiabiles
Substitution of multiple studiabiles	It is now possible to substitute several root studiabiles at once. This is particularly useful for automation in documents in which an operator (or a study) is applied on several studiabiles (surface subtraction, SEM image reconstructions...), or when several studiabiles are contained in a single file (ie. spectral images + mean spectra). Studiabiles can be loaded into a "storage bin" then used for substitution by drag and drop.
	Statistics by class in Particle analysis study
Statistics by class in Particle analysis study	The user can now display statistics by class directly in the Particle analysis study, in a Results by class table. For example, it is possible to display the percentage of coverage of each class, or the mean height of only the largest particles.
	Colocalization
	Improved usability of Colocalization
Axis settings in Colocalization study	The Z-axis settings dialog is now available when an overlay or a background study is selected in the Colocalization study. It is now possible to choose absolute or relative coordinates for the X and Y axes for background studiabiles of the Colocalization study.

Better studiable selection in Colocalization study	The use of thumbnails has been improved to allow the user to select the studiables of the colocalization study more easily.
Better auto-scale in Colocalization study	The Auto-scale content function of the colocalization study now takes into account all the overlays even if they are outside of the background zone.
	Automation enhancement in Colocalization
Interface for overlay positioning in Colocalization	The user can now clearly see in the Positioning list, which method is selected for overlay positioning in the Colocalization study: Manual positioning, Use points, Use absolute values of axes or Auto-localize.
Better XY size management in Colocalization	When a modification is made to the size of a source studiable used in the colocalization (by substitution, template or operator recall) the original size of the viewed studiable is better conserved.
	Multi-channel image and Grid view
	Grid view enhancement
Choice of displayed layer in Grid view	The user can now choose which layers to display in the Grid view study on Multi-channel images. The selection is performed using checkboxes on thumbnails.
Synchronized zoom in Grid view	The user can now zoom in when using Grid view; the frame will show the same region of interest at the same time for all layers. This applies to Multi-channel images, Surface + image, Series of surfaces and Series of images.
Z-axis settings in Grid view for Multi-channel images	The Z-axis settings are available in the Grid view study on Multi-channel images.
Presentation functions in Grid view	The Grid view study now offers all the functions of the Pseudo-color view study, to provide better information and visualization (show axes, grid or graphical scale, Basic rendering, color scale for Z-axis...). This applies to Multi-channel images, Surface + image, Series of surfaces and Series of images studiables.
	Thumbnail action modified on Multi-channel images
Thumbnail action modified in composite rendering and comparison slider of studies	When clicking on a thumbnail, the black downward arrow now indicates the currently displayed layer, but does not add the layer to the visualization as previously. (To add the layer it is necessary to check the checkboxes at the top right of the thumbnails). This applies to the comparison slider on Multi-channel images, to the composite rendering of Pseudo-color and 3D studies on Multi-channel images, and to the Multi-channel view on Multi-channel profiles.
	Especially useful for SPM and Spectroscopy users:
New Adjust Z-offset operator on Surfaces	The Adjust Z-offset operator allows the user to shift all absolute Z-values by a constant. This allows the setting of the Z-axis reference at a user-defined height. This reference can be defined using different methods (included/excluded zones, Mean plane or bearing height...) thus allowing the user to calculate heights from a reference, and to improve the comparison between 2 studies (ex: Particle analysis). It can be applied on Surface studiables, or channels from Surface + image, Series of surfaces and Multichannel image studiables.
Z-origin change in Threshold	The "Set minimum value to 0" option added in the Threshold operator allows the user to shift all the Z-values so that the minimum value is zero. It applies to the Threshold operator on Multichannel image, Surface, Surface + image and Profile studiables.
New "Calculate derivatives" operator on IV curves and Spectra	The "Calculate derivatives" operator on IV curves and Spectra calculates the first and second derivatives. The user can quickly view the newly calculated signals in the Result view. The generated derivative signals or initial and derivative signals can be exported as studiables.

	General features and GUI:
	General features
Viewing and processing large datasets: faster speed	The display and calculation time on large datasets has been greatly improved. This increase in data processing speed allows the user to work on documents containing large datasets much more easily.
Cartography visualization for big datasets	All points are now visualized in cartography display of big datasets, and the pixel size when zooming is now the point size even for big data sets. The limitation at 3Mixels (formerly in place for performance reasons) has been removed. (It applies to Surface, Surface + image, Multi-channel image, Series of surfaces, Image, Series of images, Force-Volume, Hyperspectral image, IV spectroscopy image).
Reloading deprecated force curves in old documents	The deprecated (non-parametric) Force curve, Series of force curves and Force volume studiabes are not available anymore. Customers are invited to save their studiabes to continue to work with studiabes contained in old documents. When opening a document containing one of these studiabes, the studies are displayed with a padlock and the studies can no longer be opened, operators cannot be recalled and substitution is not possible.
	Reference Guide
Updated Reference Guide	The Reference Guide will be updated with the descriptions of the new features and improvements in the upcoming Service Packs. It is available in English, German, French, and Japanese.
Translations of user interface texts	Texts visible in the user interface related to new features have been translated into all available languages.

Bug corrections (A and B type)

	Type	Bug Description
MNT-4904	A	A freeze of the application may be observed after showing a dialog with a 3D display and then calling a 3D view of any study on systems using Intel graphic chipsets when the "Rendering options" of the 3D preferences is set to "Open GL" in the Global preferences dialog box.
MNT-4959	A	The calculated parameters in the Parameters table on Shell studiabes may be erroneous when the "Geometric reference form" option is selected.
MNT-5067	A	The result of the Minimum Zone (MZ) Leveling method on Profile studiabes may be erroneous if the line segment between the first and the last points do not intersect the profile.
MNT-5156	A	The "Shapes" parameters in the Results table in the "Manual measurements" study on Image studiabes are not calculated.
MNT-1817	B	Individual Step height results in the "Step height" study on Profile studiabes are displayed twice in the Results manager when the study is created.
MNT-3479	B	The "Unit system" options in the Global preferences of the software are not taken into account in the 3D view study on Shell studiabes.
MNT-3504	B	The Spacing unit of the "Surface size" section in the "Extract surface" operator dialog box on Shell and Point cloud studiabes does not follow the unit preferences defined in the General preferences of the software.
MNT-3509	B	The Imperial units option in the Global preferences of the software is not taken into account in parameter calculations on Point cloud studiabes.

MNT-4258	B	The displayed slice is incorrect when substituting a Force volume, IV spectroscopy image studiable with a studiable that has fewer slices. The Undo/Redo function does not work correctly either.
MNT-4268	B	The result of the Extract area operator on Point cloud studiabiles may contain erroneous points.
MNT-4453	B	The layer insertion options "Insert After / Insert Before" in the "Add Overlay Image" dialog of the Colocation study are not taken into account.
MNT-4488	B	The color is not present in the Shell studiable generated by applying the "Extract area" operator on a colored Shell studiable.
MNT-4624	B	The optimized unit for the Young's modulus displayed in the Results table in the Force curve analysis study on Series of force curves or Force volume studiabiles is not determined according to the average value of all Young's modulus in the series.
MNT-4635	B	The Rotation button in the ribbon is grayed out in the Colocalization study if the angle of the rotation is changed. The Undo action is not applicable, and the Undo / Redo behaviors are not identical when using the keyboard or the arrows.
MNT-4669	B	The OK button in the "Extract surface" operator dialog box on Shell and Point cloud studiabiles is not grayed out when no results can be generated.
MNT-4717	B	The window for entering the email verification code (sent following a request for an extension of SMP, Free Trial or contact request about the license) closes when the code is entered and the Enter key is pressed.
MNT-4903	B	The display of the 3D view source in the "Extract parametric profile" operator dialog box on Shell studiabiles is incorrect when recalling the operator.
MNT-4925	B	Studies limiting certain Z axis options may not limit them if created from studies that do not limit them.
MNT-4936	B	The 3D view study displayed from the "Summary of current operator" study on Surface studiabiles is displayed in 2D.
MNT-4941	B	The "Subtract the mean" option in the "Level line by line" operator dialog box on Surface studiabiles is not automatically applied when the "LS polynomial" method of correction is selected.
MNT-4956	B	Remesh operator calculations on Shell studiabiles do not stop if the Decimate option is selected and a very low number of target vertices is given.
MNT-4966	B	The calculation of the deviations in the Parameters table study on Shell studiabiles can be improved when the Geometric reference option is checked and the "Least squares cylinder" is selected in the F-operation selection box in the Parameters table dialog box.
MNT-4973	B	The intersection between a bisector line and the profile in the contour study on Profile studiabiles cannot be computed anymore.
MNT-4983	B	Variables with non-metric units can no longer be defined using the "Add a numerical variable" button in the Results ribbon.
MNT-5036	B	The cursor in the Colorized bands study on IV spectroscopy image studiabiles does not work correctly when zooming in on the study.
MNT-5114	B	The pairs of bars in the Distance measurement study on Profiles studiabiles is not displayed anymore after it has been moved when an Undo/Redo action is performed.

Bug corrections (A and B type)

	Type	Bug Description
MNT-4742	A	Displayed values on Surface studiabes may be erroneous when the significant digits option "Remove trailing zeros (sequence of zeros without signification to the right of the decimal point)" in the General preferences dialog box is checked.
MNT-4855	A	Some studies on Surface studiabes (Furrows, Photo simulation, Contour lines), Series of surfaces studiabes (Grid view, Pseudo-color view) or Multi-channel studiabes (Pseudo-color view) may cause the application to crash after redoing specific actions.
MNT-4826	B	The result of the "Level line by line" operator application on Surface studiabes is incorrect if the "Subtract the polynomial" option is checked.
MNT-4891	B	The Comparison slider of the Pseudo-color view study is not displayed if a Surface + image studiable containing a slider comparison is saved and then reloaded.
MNT-4894	B	The colors of the images are not transmitted in the Particle analysis study on Multi-channel image studiabes if the "Dominant channel" method is selected.
MNT-4905	B	The application of the size of the study setting is incorrect if this has been modified in the users settings.

What's new

Build study as a parent of an Addon study	It is now possible to define a study as the parent of an addon study. This one is placed under the parent study in the workflow. The addon study is updated when modifying the parent study.
Averages weighted by the area (or the volume) in Particles analysis study	The user can now calculate and display four new statistical values in the Particle analysis study allowing averages to be weighted by the area or the volume on the calculated parameters: Area-weighted mean, Volume-weighted mean, Area-weighted standard deviation and Volume-weighted standard deviation.
New Force curve Minidocs	Mountains® now offers the user three new Force curve Minidocs: Single Force curve pre-processing, Series of force curves pre-processing and Force volume pre-processing updated with the last force curve functions of the v9.1.

Bug corrections (A and B type)

	Type	Bug Description
MNT-4638	A	The software may crash in the stereoscopic reconstruction operator dialog box on Image studiabiles when the "Edit size of the source image" option is activated and the selected area is moved in and out of the frame and validated, then the Suggest size for windows option is clicked.
MNT-4808	A	The software may crash when closing a document containing a Particle analysis study if the Cancel button is clicked in the Save document dialog box.
MNT-4818	A	The software may crash if a right click is done when two studiabiles of different types are selected in the workflow.
MNT-4823	A	The software may crash in the stereoscopic reconstruction operator dialog box on Image studiabiles when the "Edit size of the source image" option is activated and a very small area is defined for scaling the image. The crash may also occur after this initial stage if the Suggest size for windows option is clicked.
MNT-4871	A	The Rzx parameter in the Parameters table study for Profile studiabiles is not calculated on the selected number of section lengths.
MNT-2683	B	The frame number of a Parameters table study is not displayed in the Observed results selection when creating a statistical document on a population of documents containing one or more Parameters table studies.
MNT-4503	B	The "Minimum Zone Line" term displayed in the ISO 12781 dialog of the Parameters table on surfaces for the F-operator and in the Reference Guide is incorrect. The "LS-circle" term displayed in the F-operator selection box in the Parameters table dialog box on profiles and in the Reference Guide is incorrect.
MNT-4649	B	The 3D view of the Colocalization study does not open with the Photo rendering.

MNT-4652	B	The configuration of the X/Y-origin option in the General preferences of the software is not taken into account in the display of Y offsets in the list of available studies in the Stitching operator dialog box for Surface studiabiles.
MNT-4662	B	The background channel's name is not displayed in the pseudo-color view study generated by the "Generate whole content" button application in the Colocalization study, if the background is a Surface + image studiabile.
MNT-4671	B	The visualization of the 3D view study generated by pressing the [Generate 3D view] button in the Colocalization menu on a Surface + image studiabile is incorrect.
MNT-4673	B	An error message is missing in the Lead analysis Minidoc on Surface studiabiles when the analyzed surface is not compatible.
MNT-4690	B	Undo/Redo function doesn't work correctly on the dynamic images on Force volume studiabiles.
MNT-4733	B	The ASCII file loading as a "Surface: (X,Y,Z) coordinates" may be incorrect in some rare cases.
MNT-4755	B	Documents created in a version prior to V7.2.7481 and containing an extract area operator with an extracted area next to the right or bottom border cannot be loaded correctly.

What's new

Colocalization on Surface + image	The colocalization study is now available on Surface + image studiables used as overlay or background.
Add-on operator in the workflow	It is now possible to insert an add-on operator in the workflow which provides a single studiable of the same type.

Bug corrections (A and B type)

	Type	Bug Description
MNT-4519	A	The extraction line of a profile doesn't follow the mouse movement in the Extract profile operator dialog on Surface studiables in the West -East direction.
MNT-4590	A	The software may crash when selecting the "Through the highest point" or "Through the lowest point" positioning option in the Extract profile operator dialog box on Surface studiables if the selection is moved.
MNT-4621	A	A crash can occur when calling the Summary of current operator study on a Force volume studiable if the studiable has more than 2 signals.
MNT-4100	B	A crash or freeze of the application may be observed when closing it using the COM IDongleTools interface.
MNT-4465	B	Incorrect management of the topographic data in .mapx format.
MNT-4471	B	The Extract area operator is not correctly translated in Japanese.
MNT-4510	B	Leaving a full screen view of a study returns the view to the first page of the document, even when this is not where the study is placed.
MNT-4529	B	Previews in operator dialog boxes on Spectrum studiables are empty when using data in AXZ file format.
MNT-4531	B	Zooming in on Spectrum curve studiables may change the axes values in some particular cases.
MNT-4563	B	The selection in operator preview dialogs can have unwanted behaviour on Surface, Surface + image, Image, Multi-channel image and Force volume studiables when the selection touches opposing edges in the preview.
MNT-4577	B	It is not possible to hide the selection of the Extract areas or Extract profile in the 3D View study on Surface or Surface + image studiables.
MNT-4584	B	The cursor does not follow the pixel it is positioned on on IV spectroscopy image studiables when zooming in on the image in the Colorized bands view.

Bug corrections (A and B type)

	Type	Bug Description
MNT-4020	A	A crash can occur when applying the "Detect structures" operator on large studiabes.
MNT-482	B	The deletion of residues and deviations in the Contour study on Profiles and Parametric profiles that are used to create studiabes in the workflow does not have the expected effect.
MNT-676	B	The studiabe resulting from the Patch operator application on Surface studiabes is not updated when undoing the loading of the studiabes added when the option "Always use all compatible studiabes (loaded from disk) available in the document" is active.
MNT-3086	B	The data in the "Information" section (number of particles, coverage and density) of the Particle analysis study on Surface studiabes is not exported to the CSV file.
MNT-4078	B	The channel legends are not correctly displayed on Multi-channel image studiabes in a specific case.
MNT-4256	B	The Step height calculations study on Profile studiabes does not work if the styles from the Step height calculations study on a Surface studiabe are copied and pasted.
MNT-4259	B	The "Area of a hole or a peak" study on Profile studiabes does not work if the styles from a "Volume of a hole or a peak" study on a Surface studiabe are copied and pasted.
MNT-4261	B	An error message is displayed when pasting styles from the Pseudo-color view on a Multi-channel image study displayed using the "Comparison slider" to the Pseudo-color view on a Series of surfaces studiabe.
MNT-4271	B	The application of the "Scale the multi-channel image" operator application on a Multi-channel image studiabe does not position the layers correctly.
MNT-4274	B	The management of the Undo / Redo functions for the studiabe color of the overlay in the Colocalization study on Surface studiabes is incorrect.
MNT-4280	B	The display of the code verification dialog is incorrect when requesting a license extension in German language.
MNT-4295	B	The PLo/RLo/WIo parameters in the Parameters table study on Profile studiabes are not expressed in length units.
MNT-4301	B	The intensity layer of a Surface+image studiabe is incorrectly leveled when applying the Level operator using the By rotation option if there are non-measured points present on the topography layer.
MNT-4302	B	The Particle analysis study may expand to several pages when adding a classification.
MNT-4307	B	It is not possible to apply the level operator on a Series of surfaces studiabe if there are non-measured points present on a layer.
MNT-4309	B	The Sort curves operator on Spectrum studiabes doesn't work if there are less than 4 curves to sort.
MNT-4310	B	Some ASCII files may cause the application to freeze when they are incorrectly read as parametric profiles.
MNT-4323	B	An incorrect error message can be displayed for the input of the X, Y spacing values for the points in the Extract surface operator on Shell studiabes.
MNT-4341	B	The loading action preference "Load as a single studiabe (series, cube...)" in the Global Preferences dialog box is not taken into account for Spectrum studiabes.

MNT-4345	B	Spectrum curve studiabiles in SPC format are incorrectly loaded.
MNT-4346	B	The x scale of the "Pseudo color view" study of the extracted surface generated by the application of the Extract surface operator on a Shell studiable is hidden.
MNT-4347	B	The scale of the X axis on a surface created by using the Extract surface on a shell studiable is not the same as the scale of the shell it was extracted from.
MNT-4350	B	The histogram on the elements of the classification in the Particle analysis with Dominant Channel is not saved correctly.
MNT-4368	B	Documents saved in V7 containing the now obsolete studies Volume of islands or Motifs, both of which are correctly updated to the new Particles analysis study, cannot be used as templates.
MNT-4396	B	The X Axis of a shell or cloud studiable is not displayed at the correct size in the 3D view study.
MNT-4413	B	Bad display of texts in the license dialog window for requesting license updates in a specific case.

What's new

	General features:
	Customized region of interest and enhanced lighting
Customized region of interest extraction	<p>It is possible to extract multiple areas of different shapes with the Extract area operator. This allows the user to customize regions of interest better adapted to the sample.</p> <p>Rectangular, circular and custom outlines can be combined and modified to define either the area to be extracted, or the areas to be discarded from the extraction.</p> <p>This feature is available for Multi-channel image, Surface, Series of surfaces, Image, Series of image, Surface + Image, Force volume, Hyperspectral image, IV spectroscopy image studiabiles</p>
New lighting for 3D views	The user can now illuminate above and below the XY plane in the 3D view studies, using the new All-around lighting configuration. This makes the object more visible when viewed from beneath, especially when the object is rotated.
	Study styles transmission for palette, axis settings and visualization settings
Transmission of study styles to new studies	<p>The Palettes, colors and axis settings are now passed on through the creation of study frames in the document: when creating a new study, if another original study is selected, the style of this original study is passed on to the new created study.</p> <p>The transmitted settings are all those without effect on the numerical result (except axis settings).</p> <p>The user can still choose not to transmit the style and to apply previously saved custom settings, by using the arrow beside the study button.</p>
Copy of the style of a study	The user can now copy the style of a study to another study (or to several selected studies), using Copy, then [Paste study style] in the [Edit] tab.
Style of a study applied to the document	The user can apply the style of a study to all the studies of the document using a new option in the [Save/apply settings] button of the studies ribbon.
Operator's dialog with the palette of the study	The operator's dialog now displays the source study's palette: when applying an operator, the dialog previews now use the palette displayed in the selected study if a study was selected. If not, the dialog uses the studiable color if any, and lastly the default palette.
	Color or Monochrome palette stored in the studiable
Color and monochrome palette stored in the studiable	<p>It is now possible to define colors stored in the studiable. This color will be used to display pseudo-color views with monochrome palette, colored profiles or colored segmented grains in a cube.</p> <p>This is particularly useful for a set of spectral images stored in a Multi-channel studiable, where the color represents the chemical element.</p> <p>The color is one of the attributes of the studiable. The user can change the studiable's color via a new button in the study, or from the Studiable menu, or by right clicking on the studiable in the workflow panel. The color will be applied to all the studies on this studiable but also to all the new studiabiles generated by operators on this studiable.</p> <p>This feature can be used on Multi-channel image, Surface, Multi-channel profile, Profile, and Multi-channel cube studiabiles.</p>

Display of the studies using the color of the studiable or of the study	The user can choose to display the study either using the color (or monochrome palette) of the studiable, or with a color only used locally by this study. This allows full flexibility in the display. This applies to the monochrome palettes of Surface and Multi-channel image studiabes, and to the color of Profiles, Multi-channel profiles and segmented grains in a cube.
Transmission of color (or monochrome palette) by operators	The color (or monochrome palette) stored in a studiable is transmitted through the operator and stored in the studiable generated by the operator. This applies to the monochrome palette of Surface and Multi-channel image studiabes, and to the color of Profiles, Multi-channel profiles and segmented grains in a cube.
	Legends with channel color and short names for Multi-channel images and Multi-channel cubes
Color and monochrome palette stored in the studiable	It is now possible to define a short name stored in the studiable. This short name will be used to display a Legend in Multi-channel image studies or in studies of cubes using colored segmented grains. The short name, like the channel long name, is one of the attributes of the studiable. The user can change the long and the short names of the channel in the Studiable menu, or by right clicking on the studiable in the workflow panel. The short or long name will be applied to all the studies conducted on this studiable but also for all the studiabes generated by operators on this studiable. The short name can be used in Multi-channel image, Surface, Multi-channel profile, Profile, and Multi-channel cube studiabes.
Display of the studies using the color of the studiable or of the study	The user can now display the legend of each channel or component of the Multi-channel image or Multi-channel cube. The legend is displayed with small colored squares using short names, or above the view with a transparent effect using long names.
	Other
Segmentation methods renamed	The Multiple threshold segmentation (SEM-BSE) method has been renamed 'SEM-BSE'-segmentation. The Object-oriented segmentation (SEM-SE) method has been renamed 'SEM-SE'-segmentation The Segmentation by dominant channel method has been renamed Dominant channel.
Windows 11 compatibility	Mountains v9.1 is fully compatible with Windows 11 for updates on or after October 5th, 2021.
	Point clouds and Shells
	Point cloud
Point cloud renamed	The Cloud studiable has been renamed Point cloud.
New Rotate operator on Point cloud	It is now possible to rotate a Point cloud studiable using the new Rotate operator. Rotation can be driven manually by specifying the angles around the XYZ axes or by automatically aligning the point cloud main axes to the XY plane.
Cloud mesh optimization	The meshing of a point cloud is now optimized in the Mesh the point cloud operator on Point cloud studiabes. The quality of the mesh is improved (more homogeneous mesh, less holes, management of redundant points) and the result is displayed faster.
Better details detection on Point cloud meshing	A pre-processing option ("Apply on smooth cloud") allows the generation of better details of the shell in the Mesh the point cloud operator on Point cloud studiabes
	Shell
New Rotate operator on Shell	It is now possible to rotate a Shell using the new Rotate operator. Rotation can be driven manually, by specifying the angles around the XYZ axes or by automatically aligning the main axes of the point cloud formed by the shell to the XY plane.
Shell triangle size optimizationn	The new "Optimize" option in the Remesh operator on Shell studiabes allows the user to obtain more triangles in areas with complex form.

Shell triangle size homogenization	The new "Regularize" option of the Remesh operator on Shell studiabiles allows the user to homogenize the triangle size of the mesh using a defined edge length.
Faster calculation and better edge management in Remesh on Shell	The speed of the calculation of the Decimation option in the Remesh operator on Shell studiabiles is increased. The result now provides more precise edge management.
Visualisation of deviations used by parameters on Shell	In the Parameters study on shells, it is now possible to generate the deviations used for the calculation of the surface texture parameters. The deviations are embedded in the Shell that can be generated by the study, and can be visualized as a 3D attribute. It is very useful to visualise the effect of the choice of the reference in the Selection of parameters dialog.
	Multi-channel cube (FIB-SEM and spectral tomography)
	Multi-channel cube: loading high resolution images
Lower resolution of multi-channel cube from a set of images	The user can now reduce the resolution of a Multi-channel cube during its creation by loading a set of image files stored in a directory. This allows users to load bigger cubes at a lower resolution compatible with the PC/software abilities (16MVoxels is the maximum recommended size in version 9.1).
Assigning a color to each chemical element	The information in the "Color or Monochrome palette stored in the studiable" and "Legends with channel color and short names for Multi-channel images and Multi-channel cubes" paragraphs applies to Multi-channel cubes allowing you to assign a color to each chemical element.
Improved rendering on Multi-channel cube	The rendering of the study of the 3D view on studiable multichannel cubes is improved by the automatic activation of smoothing so that the edges are no longer sharp. A new [Show sharp edges] button has been added.
	Spectral imaging
	Image group loading in Multi-channel image
Grouped image loading to Multi-channel image	It is now possible to load a group of images containing chemical data as a Multi-channel image studiable.
Assigning a color to each chemical element	The information in the "Color or Monochrome palette stored in the studiable" and "Legends with channel color and short names for Multi-channel images and Multi-channel cubes" paragraphs applies to Spectral imaging allowing you to assign a color to each chemical element in a Multi-channel image studiable.
	Force-curves
	Custom Extracted area on Force-Volume
Customized region of interest extraction on force-volume	It is possible to extract multiple areas of different shapes in the Extract area operator on Force volume studiabiles. This allows the user to customize regions of interest better adapted to the sample. Rectangular, circular and custom outlines can be combined and modified to define either the area to be extracted, or the areas to be discarded from the extraction
	New Sort force curves operators
New Sort force curves operator	The user can keep only valid curves or curves of interest according to their shape using the new Sort force curves operator. The user can use one or more rectangular selection areas: curves which pass inside these areas are selected and can then be kept or discarded from the studiable. This operator is available on Series of force curves and Force volume studiabiles.
New Sort by a parameter operator	It is now possible to sort force curves according to a parameter (Young modulus, energies...) with the new Sort by a parameter operator. This allows the user to isolate the different materials composing a sample. The result studiable can be reused and serve as a basis for a second sorting or analysis. Thus, several successive filters can be applied to achieve the desired result. This operator is available on Series of force curves and Force volume studiabiles.

	Force volume visualization improvements
Approach and Retract thumbnails in Force volume view	Approach and retract curves are now displayed as separate thumbnails to allow the visualization of the force of all points having the same distance in the Force volume view study. The user can change the physical quantity (Force, deflexion in nm, or in V) if the constants are known.
Visualization of each force curve in Force volume view	It is now possible to select any point of the image in the Force volume view study and visualize the corresponding curve below using a cursor. The coordinates of the curve, as well that its number, are displayed.
	Calculation of Energy parameters in force-curves
New parameters of calculated energy	It is possible to calculate several energies (Dissipated energy, Adhesion energy...) on the Force - Separation graph in the Force curve analysis study. The values can be displayed, and the corresponding zone drawn in color on the graph. Available on Force curve, Series of force curves and Force volume studiabes
	Fitting range in Force-curve indentation analysis
Fitting range in Indentation analysis	Indentation analysis is enhanced by allowing the user to define the fitting range on the separation axis in the Force curve analysis study. The calculation range used for the fitting of the indentation model can be displayed (in color) on the Force - Separation graph. Available on Force curves, Series of force curves and Force-volume studiabes
	Non-measured curves in Force volume
Non-measured curves on Force volume	The software is now able to handle Force volume studiabes containing points without force-curves (Non-measured force-curves). Non-measured force-curves can be created by the Extract area operator, or by one of the Sort operators.
Visualization of non-measured points	The non-measured force-curves are displayed similarly to the non-measured points of a surface, in the flattened view or slice view in studies, operator previews, dialogs and studiabe previews of Force volume studiabes.
Visualization of non-measured force-curves	The non-measured force-curves are skipped when changing the displayed curve in graphs. However the user can prefer to display an empty graph with a message in studies, operator and dialog previews of Force volume studiabe.
	Enhanced base-line detection
New methods for base-line detection	Two new base-line detection methods have been added in the Correct the base-line operator: Remove form and Manual. The Remove form is an alternative method to the Filter detection method. The Manual method allows the user to define the baseline points (same value for all curves) on the Distance axis. Available on Force curves, Series of force curves and Force volume studiabe.
Base-line visualization in Force curve graphs	The force-curves base-lines (if defined) can now be displayed as horizontal bars in the Force curve analysis study, and in operator and dialog previews. Available on Force curves, Series of force curves and Force-volume studiabes.
	Ergonomics
Export and import force curves in text format	It is now possible to export and import in text format the current force curve on Force curve, Series of force curves and Force volume studiabes.
Display of all force curves and envelope in graphs	The user can now display all the curves together in the operator views and dialog views on Force curve, Series of force curves and Force volume studiabes. The current curve is displayed in color. The Upper and Lower envelope curves can also be displayed, in black.
Axis legends on all force curves graphs	The axis legends are now displayed on all force curve graphs on Force curve, Series of force curves and Force volume studiabes. They show the physical quantity represented by each axis.
Better ergonomoy for force curve physical quantities	The Z-axis column is now displayed on the left of the X-Axis in the [Physical quantity] button of the Force curve analysis and Force volume view study top ribbon.
Force curve operators order	The order of the operators on Force curves, Series of force curves and Force volume studiabes now corresponds the most-current process order.

Force-curve constant renaming	Spring constant is renamed Cantilever spring constant; Sensitivity is renamed Photodiode sensitivity and the category "Individual cursors" is renamed "Individual cursors values" on Force curve, Series of force curves and Force volume studiabiles.
Addition of "Obsolete" to the type of studiable for Force Curve, Series of force curve and Force Volume in old formats	The Force curve, Series of force curves and Force volume studiabiles in an old non-parametric format are renamed Force curve (Obsolete), Series of force curves (Obsolete) and Force volume (Obsolete). They are thus displayed in the workflow as having an obsolete type allowing them to be identified.
Redesigned icons	The "Analyze indentation" and "Detect unfolding events" button icons have been redesigned in the Force curve analysis study top ribbon.
	License management
Clearer user license information	User license information is now clearer in the "Information about current licence" dialog. The user can now check two boxes to set the license as the default license, or request a search for a network license at next software start-up
	Reference Guide
Updated Reference Guide	The Reference Guide contains the description of some of the new features and improvements. It is available in English, German, French, and Japanese.
Interface translations	Interface texts related to new features have been translated in all languages

Note:

The MountainsCommandDiagnostic.log (log file for the results of a Mountains.log command file) is now only found in the directory specified by the user. By default, this is the TEMP directory, but should this have been modified, any scripts calling Mountains.log files will need to be updated.

Bug corrections (A and B type)

	Type	Bug Description
MNT-3221	A	The software may crash when applying the Add/remove spectrum curves operator on a Spectrum curve studiable containing a great number of spectra (more than 3500) if selecting all the spectra.
MNT-3596	A	The software may crash when requesting an extension of the trial period while entering the verification code sent by email if the [Cancel] button is clicked.
MNT-3728	A	The application of the Remesh operator on a corrected Shell studiable can cause a crash in a specific case when selecting the Decimate option in the operator's dialog box.
MNT-4219	A	The software may crash when applying a Parameters table study including Filtered shell reference option on shell studiabiles if the Correct the shell operator has not been applied.
MNT-4283	A	Mountains may crash when creating a Date illustration if the user has applied his own default settings to illustration studies.
MNT-1999	B	The workflow does not update following a drag & drop of Surface or Profile studiabiles on a study that has several parents.
MNT-2158	B	Modifications to the exclusion zone on Profile studiabiles in the Summary of current operator study, after the application of the Subtract profiles operator, are not managed when applying the Undo / Redo button.

MNT-2439	B	The management of the Undo / Redo functions for the addition of profiles in the Contour analysis study is incorrect.
MNT-3035	B	The display of the graduations in the 3D view study on IV Spectroscopy image and Hyperspectral image studiabes is not correctly refreshed when changing the working language in the Global Preferences dialog box.
MNT-3459	B	The height of the Form removed study generated by the application of the Remove form operator on surface studiabes can be incorrect if the surface has minimal form.
MNT-3477	B	The display of the graduations is incorrect in the 3D view study on Shell and Point cloud studiabes when loading a saved document.
MNT-3614	B	Custom palettes of the Multi-channel image studiabe are not selected by default for each overlay layer in the colocalization study.
MNT-3625	B	Clicking on the "Summary of the current operator" study has no effect when applying it on a studiabe generated by the application of the Mesh the point cloud operator on a Point cloud studiabe.
MNT-3661	B	The contour points of the extraction zone are not measured when applying the "Extract area" operator on Surface, Series of surface, Multi-channel image and Force volume studiabes if the "Keep the parent size (do not crop but use non-measured points)" option in the operator's dialog box is selected.
MNT-3669	B	The Distance measurement study on Profile studiabes is not updated in real time during the individual movement of the cursors.
MNT-3716	B	The error message displayed in the window when entering an activation code that no longer has any valid activations available does not help the user to understand the origin of the problem.
MNT-3747	B	The message displayed in the error window when entering an activation code on a virtual machine (VM) does not indicate that the installation of a software based license on VM's is not supported.
MNT-3860	B	The Parameters table study with Robust Gaussian filter from a document saved with Mountains v7 is loaded using the second order Robust Gaussian filter instead of the original zero order.
MNT-3921	B	The OK button in the dialog box of the Parameters table on Shell studiabes is grayed out when reopening it. The filter option is set to the "Gaussian-like" default filter and the cut-off value is set to zero.
MNT-3990	B	The 'SEM-SE'-segmentation option is missing in the top ribbon of the Particle analysis study when working on Multi-channel image studiabes containing images.
MNT-4039	B	The Z-resolution of the polynomial form generated by the Remove form operator is limited to the resolution of the source studiabe.
MNT-4075	B	The height of one of the Profile studiabes can be erroneous in the Subtract profiles operator if the range of the profiles is very high in certain particular conditions.
MNT-4110	B	The OK button in the Extract slice operator dialog box applied on Force volume and IV curve studiabes is not grayed out when recalling the operator after a substitution when the result is non-measured. The extracted region of interest is lost.
MNT-4113	B	The result of the Extract profile operator on a Multi-channel image studiabe can give empty layers in certain rare cases.
MNT-4169	B	An automatic exclusion of some data points is automatically applied erroneously in the stitching operator on Surface, Image and Multi-channel images studiabes when the line by line leveling pre-processing option is checked and the "on the full lines" option is selected in the operator dialog box.
MNT-4190	B	The outline of the extracted area in the Source view in the "Extract projected surface" operator on Shell and Cloud studiabes is invisible.
MNT-4191	B	The effects of the Enable depth selection option in the Extract projected surface operator on Shell and Point cloud studiabes is invisible.

What's new

Reading of force curves in obsolete formats	The user is now informed of how to take advantage of the latest functions available when loading a document containing force curves in an obsolete format.
Obsolete force curve studiable name	The Force curve studiables in an obsolete format (used with versions prior to version 8.0.8930) are renamed with obsolete mention. This allows the user to identify them (using the Identify card) in order to save and reload them. This applies to Force curve, Series of force curves, Force volume studiables. It is still possible to use the document as it is but the user will not benefit from the new functions.
Reminder for expiring Software maintenance plan (SMP)	The user can now select a reminder option (2 weeks, 4 weeks, 6 weeks and Never) when the Software maintenance plan (SMP) of his Mountains® software is about to expire. He can thus anticipate its renewal to benefit from the latest version of the software, extended support for applications, free replacement of a damaged USB protection key, etc.

Bug corrections (A and B type)

	Type	Bug Description
MNT-3871	A	The Results manager panel can flash and block the use of the software on Force curve analysis studies on Force volume studiables when the horizontal scroll bar should be shown in the Results manager and the Black color theme is applied to the application.
MNT-3998	A	The preview and the result of the form alone study created by the Remove form operator on Surface studiables are wrong when the "Apply non-measured points to the Form alone" option is selected in the operator dialog box.
MNT-4084	A	The result of the form removal calculated in the dialog box of the Remove form operator on Profile studiables is wrong if the profile contains non-measured points.
MNT-3923	B	The calculation of the deviations in the Parameters table on Shell studiables is erroneous when the Geometric reference and Least squares cylinder options are checked in the dialog box.
MNT-3924	B	The deviations used in the Parameters table study on shell studiables are different from those calculated by the Metrological filter operator.
MNT-4089	B	Wt profile parameter of the ASME B46.1 standard is wrongly considered as not available.

What's new

Preselection of layers in Comparison slider views	The default Comparison slider view in Pseudo-color view studies now has 2 layers preselected. This encourages the user to select the layers for comparison. This slider is available for Surface+image and Multi-channel image studiabiles.
Shortcuts to move measurement bars	The movement of the measurement bars in the "Distance measurement" and "Step height" study on Profile and Series of profiles studiabiles is now done using modified keyboard shortcuts (combination [Shift + arrow] or [Ctrl + arrow] and combination [Shift + Ctrl + arrow]).
Loading of Cloud in PLY format	It is now possible to import Cloud studiabiles in PLY format.
Export of Shell in color in PLY format	It is now possible to export Shell studiabiles in color in PLY format.
Commands diagnostic	The user can now find the Volcanyon.log file renamed MountainsCommandDiagnostic.log in the same folder as the Volcanyon command file. The MountainsCommandDiagnostic.log contains information about the execution of commands.
Information about major version	The information displayed when searching for updates now informs the user if a new major version is available.

Bug corrections (A and B type)

	Type	Bug Description
MNT-2428	A	Applying the "Tip deconvolution" operator on a Surface studiabile may give erroneous results if the surface contains non-measured points.
MNT-3662	A	The software may crash in the "Convert into surface using palette" operator on Image studiabiles.
MNT-3675	A	Documents containing duplicated Addon studies cannot be re-read.
MNT-3705	A	The software may crash during a multi-selection of "Force curve analysis" studies if one of the studies selected does not have the requested signal.
MNT-3708	A	The calibration of the "3D reconstruction using four quadrant images" operator may give erroneous results.
MNT-3733	A	It is not possible to calculate the Wsa parameter of the SEP1941 standard.
MNT-3472	B	The "Point cloud rendering" settings (Color and Cloud point size) in the 3D view study on Cloud studiabiles are not saved.
MNT-3502	B	Applying the "Extract projected surface" operator on a Cloud studiabile gives an erroneous result after a studiabile substitution.
MNT-3519	B	The Segmentation options are not taken into account in the Particles analysis study when the "Object-oriented segmentation method (SEM-SE)" is selected, or in the Image colorization study, if the "Apply in real time" option is checked and then unchecked before validation of the dialog box.

MNT-3520	B	The "No exclusion" position of the Exclude area slider in the "Segmentation options" dialog box does not work in the Particle Analysis study on Image studiabiles when selecting the "Object-oriented segmentation (SEM-SE)" method in the top ribbon.
MNT-3525	B	It is not possible to use the "Average the profile" option in the Extract profile operator on Multi-channel image studiabiles when the channels selected for the creation of the Multichannel profile studiabile have different resolutions.
MNT-3531	B	The checkbox for selecting all channels in the "Settings for range thresholds" dialog box does not memorize its setting in the Particle analysis study on Multi-channel image studiabiles when selecting the "Segmentation by the dominant channel" method in the top ribbon.
MNT-3568	B	The "No exclusion" position of the Exclude area slider in the "Segmentation options" dialog box does not work in the Image colorization study on image studiabiles.
MNT-3577	B	The Histogram study on Surface studiabiles can sometimes be created empty, depending on the previous settings defined.
MNT-3581	B	The preview and the result of the "Extract projected surface" operator on Cloud studiabiles are not recalculated when the "Activate depth selection" and "Hide cut part" options are selected in the operator dialog box.
MNT-3583	B	The color palette of the background in the Colocalization study on Multi-channel image studiabiles is erroneous when loading a document containing a colocalization study if the "Apply palette to all channels" option of the [Palette] button is selected for the overlay when adjusting the transparency of the overlay using the [Transparency] button.
MNT-3585	B	The "3D curvature configuration" from the 3D attributes button on Shell studiabiles is not reset to zero if the "Apply in real time" option is checked and then unchecked and the "Cancel" button of the dialog box pressed.
MNT-3593	B	It is not possible to change the Range names in the "Settings for range thresholds" dialog box when selecting the "Multiple threshold segmentation (SEM-BSE)" method in the ribbon of the Particle analysis study for Image studiabiles. The same problem is observed with Multi-channel cube studiabiles.
MNT-3601	B	The "Page up", "Page down", "Home" and "End" keys, as well as the corresponding "Page up", "Page down" icons in the status bar, do not allow navigation between pages of the document.
MNT-3605	B	Applying the Tip deconvolution operator on a Surface studiabile may give different results from one application to another when defining the same settings.
MNT-3609	B	The studiabile's display proportions are not correct in the "Spatial filter" operator dialog box when applying the operator on a Multi-channel image studiabile (even if the size normalization option "Respect the aspect ratio and normalize according to the real size of the studiabile" in the Global preferences dialog box is checked).
MNT-3624	B	The Minimum height parameter cannot be selected in the "Select parameters" dialog box in the ribbon of the Step height study for Profile studiabiles if the Manual mode is selected.
MNT-3637	B	The software may crash when selecting the "Generate as dynamic image" option of the [Export as image] button in the ribbon of the Pseudo-color view study for a Multi-channel image studiabile if a Comparison slider has been added to the study.
MNT-3668	B	"Undo / Redo" function doesn't work correctly on the "Map local properties" operator on Surface and Surface+image studiabiles.
MNT-3715	B	The profile generated by applying the "Extract profile" operator in the Oblique direction on a Multi-channel image studiabile is "Null studiabile" if the starting point of the extraction is set on the bottom edge and the current point at the upper right corner.
MNT-3731	B	Angle calculations on Profile studiabiles can be erroneous when applying the Extract profile operator if there is a space before or after the units of the axes of the studiabiles.
MNT-3732	B	It is not possible to remove the first and the last point in the Profile curve and Contour analysis study on Profile studiabiles when applying the Retouch operator in "Retouch only non-measured point" mode.
MNT-3764	B	The management of non-measured points in the Parameters table study on the ISO 12781 standard on Surface studiabiles is erroneous if the surface is leveled and not filtered.
MNT-3851	B	The X,Y absolute coordinates are not correctly displayed in the Force volume view study on Force volume studiabiles when applying the Extract area operator on a studiabile defined with absolute coordinates.

What's new

	Contour analysis study: intersection points, multiple intersection points
New Intersection point: between arc of ellipse, circle, arc of a circle and profile	It is now possible to create an intersection point between an arc of ellipse, a circle, or an arc of a circle and the profile in addition to the segment in the Contour analysis study on Profile and Parametric profile studiabiles. A dialog box now allows the user to choose an intersection criterion. The Create Profile Point menu has been reorganized into 3 columns for better visibility.
New option: multiple intersection points with profiles.	It is now possible to create multiple intersection points between an element (segment, arc of ellipse, circle, arc of circle) and the profile in the Contour analysis study on Profile and Parametric profile studiabiles while choosing an intersection criterion.
	Particle analysis study: new segmentation methods
New Segmentation by the Dominant Channel in Particle analysis study	A new "Segmentation by the Dominant Channel" method in the Particle analysis study has been added for Multi-channel image studiabiles. It allows the definition of particles of a predominant material at each point on the different channels (chemical maps) of the Multi-channel image.
New Object-oriented segmentation (SEM-SE) in Particle analysis study	A new "Object-oriented segmentation (SEM-SE)" method has been added in the Particle analysis study. This method is useful for SE images from SEM instruments. It can be applied on images and improves particle detection using segmentation tools already present in the Image colorization study.
	Cloud: Mesh operator
New "Mesh the point cloud" operator	The new "Mesh the point cloud" operator on Cloud studiabiles allows the reconstruction of the shell surface.
	Parameters table on Cloud and Shell: new parameters
New basic parameters on Cloud and Shell studiabiles	A new set of parameters on Cloud and Shell studiabiles has been added. Basic parameters (center position, standard deviation in X,Y,Z) can be calculated.
Surface texture parameters on low-pass filter Shell	Calculations of height, volume and hybrid parameters are now available from a filtered shell reference (Gaussian-like or bilateral filter) in the Parameter study on a Shell studiabile.
	Other features
Multi-Channel Image creation from several MCIs	The Add/remove channel image operator is now available to create a Multichannel image studiabile from several Multi-channel images studiabiles.
Improved handling of loading many studiabiles	Mountains has changed its behavior when loading multiple studiabiles: if more than 25 files are loaded, default studies are not created anymore in the documents. Instead, studiabiles are simply loaded into the workflow to decrease loading time and simplify the document. It is then possible to create a Series, or to apply operators or studies in batch.
Saving and exporting format OBJ and PLY added for Surface and Surface + image	It is now possible to save or export Surface and Surface + image studiabiles in OBJ et PLY formats.
German, French, and Japanese Reference Guide	The online "Reference guide", accessible when pressing F1, is now available in German, French, and Japanese languages.

Bug corrections (A and B type)

	Type	Bug Description
MNT-3253	A	The Volume parameters study on a Surface studiable is not updated after a studiable substitution. The software may then crash when closing the dialog box of the [Axis settings] button in the top ribbon if called on the Volume parameters study.
MNT-3411	A	The calculation of profile and surface parameters may be erroneous if the 1/2 cut-off from each side option is selected and the profile contains non-measured points.
MNT-3444	A	The software may crash when activating the [Search for update] button in the Help tab if a document is open and if there is no internet connection.
MNT-3448	A	A crash may occur when saving a Multi-channel cube studiable in the File Explorer.
MNT-3478	A	The software may crash when selecting grains and rendering changing on a Multi-channel cube studiable.
MNT-3488	A	The software may crash when applying the Parameter table on a Shell studiable if the "Geometric reference" parameters are checked and if the option "Least squares sphere", "Least squares cylinder" or "Least squares cylindroid" is selected for "F operation".
MNT-2165	B	The positions of the exclusion zones in the Summary of current operator study are not correctly managed for the Subtract profiles operator.
MNT-3071	B	The vertical axis is not updated in the Volume parameters study on Surface studiabes when applying a filter and defining a cut-off to remove.
MNT-3141	B	The software may close when launching the software for the first time on a machine with no protection key and pressing "Enter" after entering an activation code.
MNT-3229	B	The Parameters table on Shells studiabes may occasionally display Nan (Not A Number) values.
MNT-3230	B	The Parameters table on Shells studiabes may occasionally display **** values.
MNT-3246	B	The Relative/Absolute option of the Z Axis settings in the General Preferences of the software on Multi-channel image studiabes is not taken into account in the Particles analysis study.
MNT-3247	B	The value of the Frequency (in points) parameter in the Histogram study on Multi-channel image studiabes is incorrectly calculated if the selected layer is changed.
MNT-3258	B	Editable fields in the Extract area operator dialog box do not affect the position of the dotted lines as shown in the preview of the area to be extracted if the rectangle shape is selected. Affects Surface, Series of surfaces, Multi-channel image, Multi-channel cube, Image, Series of images, Surface + image and Hyperspectral image studiabes.
MNT-3270	B	The ratio values of the Z-axis are modified when recalling the Edit axes operator or when reloading the document after an Undo / Redo action on a Multi-channel image studiable and then saving the document.
MNT-3273	B	Non-measured points and black images are created on Multi-channel image studiabes after a studiable substitution if the units of the channels are not of the same family or when Undoing an action after a substitution of this type. The operator is not applied on all channels and a warning appears in the workflow.
MNT-3274		Unmeasured points and black images are displayed at the substitution of a Multi-channel image studiable on which the "Edit axes" operator is applied if all the channels are not of the same family for the X and Y axes.
MNT-3304	B	The identity of a Range can be duplicated in the Particles analysis study on Multi-channel image studiabes if the Multiple threshold option is selected and ranges are added and deleted several times.
MNT-3308	B	The value of the "Equivalent diameter of grains volume standard deviation" parameter in the 'Multi-channel cube' analysis on a Multi-channel cube studiable is incorrect.
MNT-3309	B	The Chinese translation for "Contour analysis" is wrong.

MNT-3310	B	The Parameters table study is not calculated on a Multi-channel image studiable if the first channel is an image.
MNT-3319	B	The Parameters table is not updated on Multi-channel image studiabes after a studiable substitution if the first channel is an image.
MNT-3330	B	Saved settings are not applied in the Particle analysis study on Image or Multi-channel Image studiabes if the "Multiple threshold" option has been selected in the top ribbon.
MNT-3341	B	Classification of particles is not created in the Particles analysis study on Multi-channel image studiabes when the dialog box is first opened if the Multiple threshold option is selected in the top ribbon.
MNT-3348	B	The Z offset of the result of the '3D reconstruction using multifocus images' operator on a Series of a Series of Images studiable is wrong.
MNT-3351	B	The T-axis of the series option on Series of images studiabes is not correctly taken into account when applying the Multifocus reconstruction operator.
MNT-3364	B	A part of the image is always considered as transparent (not only the black parts) on a Multi-channel image studiable containing image (RGB) channels when using the composite rendering.
MNT-3386	B	The "Source" curve returns to the first position in the Correct the base-line operator dialog box on a Series of force curves studiable when scrolling the curves if changing Z-correction (deflection) for a curve. The correction is then not taken into account.
MNT-3397	B	It is not possible to extract an average profile when applying the Extract profile operator on a Multi-channel image studiable if it contains an image layer having different dimensions to those of the surface layers.
MNT-3398	B	The Force "Adhesion" or "Snap-in" values may be inverted in Force curve analysis studies when activating the WLC model for analysis and then deactivating it.
MNT-3414	B	Operators can be locked in the workflow if an operator is applied twice, and all frames are subsequently deleted in the document then in the workflow followed by an Undo action.
MNT-3418	B	Saving the channels of a Multi-channel image studiable in several files may not work in some specific cases.
MNT-3481	B	The settings in the Extract slice operator dialog box applied on Multi-channel cube studiabes are different from one application to another.
MNT-3484	B	The Point cloud rendering option in the top ribbon of the 3D view study on Cloud studiabes do not change the rendering.
MNT-3489	B	The automatic mode in the Axis settings dialog box in the Force curve analysis study is incorrect in certain cases.
MNT-3490	B	The Size normalization option in the Axis settings dialog box is not taken into account in the "Extract area" or "Extract profile" operators dialog box on a Multi-channel image studiable.
MNT-3493	B	Built points and elements created on them may not be displayed in the Contour analysis study in current versions if the document containing them was created in version 6 in some rare cases.
MNT-3500	B	The units are not correctly managed in the agregation of results from several studies if the results are displayed in different units in the studies.

What's new

	ISO-21920
Default ISO 21920 in parameters study	ISO 21920 parameters are now set as default 2D parameters in Parameters table study on profile and series of profiles (ISO 21920 - Roughness (S-L) Height parameters: Rq, Rsk, Rku, Rz, Ra).
	Cloud studiable
Example studiabes: Cloud studiable	A new Cloud studiable has been added to the available example studiabes.
	Force curves style and visibility
Force curves: separate buttons for style and visibility	There are now separate buttons in the 'Force curve' analysis ribbon for the style and the visibility of each phase in the Force curve studies.

Bug corrections (A and B type)

	Type	Bug Description
MNT-370	A	The software may crash after loading a document containing a duplicated ActiveX addon.
MNT-2470	A	Mountains may crash when loading a very large series of spectra.
MNT-3075	A	A crash can occur in a Step height study on a Profile or a Series of profiles studiabes if the "ISO 5436-1 A2 method" is chosen and if the profile contains only a few points.
MNT-3103	A	The result of the "Remove multi-plane form operator" on a Surface + image studiable is erroneous.
MNT-3120	A	Network licences are not correctly detected in version 9 if the license is originally for V8, even if the Software Maintenance Plan (SMP) is active.
MNT-3126	A	The non-measured points on Profile studiabes are not taken into account in the Parameters table study when the F-operator is configured to minimum zone leveling.
MNT-3152	A	The software may crash when double-clicking in the Box Plot or Scatter plot study from a Particle analysis study with classification.
MNT-3176	A	A crash can occur when opening the Curve style dialog box on a Force curve studiable if clicking on an empty item in the Data group.
MNT-3177	A	The calculation studiable in a Parameters table study on Profile studiabes can be generated twice if the factory settings are applied after generation. Deleting the associated Parameters table study can cause the software to crash.
MNT-3188	A	Volume parameters calculated in the "Volume parameters" study on Surface studiabes are erroneous when the studiabes are filtered.
MNT-3205	A	The software may crash when applying a template on several Multi-channel image studiabes if the template was created in v8.

MNT-3209	A	The software may crash when the document is substituted if a non-compatible studiable is selected and the action is canceled when the error message is displayed.
MNT-3225	A	A crash may occur in the Parameters table study on Shell studiables, which depends on the type of form removal in use when the Height parameters are selected.
MNT-3231	A	The software may crash when loading a file in PLY format.
MNT-3019	B	The Length of the profile extracted by applying the Extract profile operator on a Multilayer surface studiable is incorrect.
MNT-3060	B	The Z-axis settings options "Setting by type of channel" and "Setting by Channel" on Multi-channel image studiables are not set to the correct default value in the Particles analysis study.
MNT-3063	B	The "Comparison slider" rendering mode on a Multi-channel image studiable generated by the application of the [Generate whole content] button in the Colocalization study is incorrect when the layers of the studiable do not have the same dimensions (resolution, size, offsets).
MNT-3067	B	The Z offset of a channel in a Multi-channel image studiable may be lost when saving in SUR format.
MNT-3078	B	The Results table created by the Result calculator is sometimes hidden until a new page is added to the document if the pages in the document are almost completely full.
MNT-3080	B	The result of the Stitching operator is different in V9 if a document containing this operator on a Multilayer surface studiable is created in V8.
MNT-3081	B	The loading of a document created in version 8 containing the Edit axis operator applied to a Multilayer surface studiable is incorrect.
MNT-3102	B	The preview in the dialog box of the "Apply lateral corrections" operator applied to a Multi-channel image studiable does not match the operator's result displayed in the workflow.
MNT-3104	B	The dialog box of the Remove multi-plane form operator applied to a Multi-channel image studiable can not be validated if a non-topographic channel is selected.
MNT-3131	B	Non-measured points are not filled in on Multi-channel image studiables if the "Show the operator dialog" option is selected as the loading action in the General preferences of the software and then a studiable containing non-measured points is loaded with the management set to fill the points.
MNT-3154	B	The display of the graph in the Volume parameters study is not modified if "Imposed range" option is chosen for vertical axis (Z) in the Axis settings dialog box and if absolute coordinates are used.
MNT-3168-	B	The X-offset of the profiles extracted in a south-north direction could be wrong depending on the unit of the X-axis.
MNT-3174	B	The application of the Mirror operator on Multi-channel images studiables may change the axes units defined in the General preferences of the software.
MNT-3189	B	The choice to deselect the Use X/Y offsets option in the Add/remove channels operator dialog box on Multi-channel image studiables is lost when applying the Undo / Redo button.
MNT-3196	B	Excluded frequencies in the Filter spectrum operator are incorrect on Profile studiables.
MNT-3207	B	The result of the "Correct the shell" operator is erroneous if one of the Smoothing options is selected in the dialog box and the document is reloaded.
MNT-3208	B	The Z-offset between surfaces in the Stitching operator on Surface studiables is not correctly taken into account.
MNT-3215	B	Some icons are missing in the ribbons if Mountains is used as ActiveX from an executable file which is not stored in the same folder as Mountains and the color theme is not the default one.
MNT-3219	B	The "Extract slices" operator on IV curves studiables is not available in the top ribbon.
MNT-3224	B	In products that contain chemical cubes but not series of images, it is not possible to load chemical cubes from a multiple selection of images.
MNT-3226	B	The Young's modulus is not calculated on Force curve studiables if the Conical or Pyramidal models are chosen in the Indentation configuration dialog box.

What's new

	Useful for all users:
	Histogram and Abbott curves study enhancements
New [Histogram] button	A new [Histogram] button has been added beside the [Abbott curve] button in the Studies ribbon. The two buttons display the same Histogram/Abbott curve study but give direct access to different settings. The [Histogram] displays vertical bins, an automatic number of bins and a unit in number of points for the 'Frequency' axis (default settings). The [Histogram] button is available for Profile, Series of profiles, Surface, Series of surfaces, Surface + image and Multichannel image studiabiles.
Interactive mode for Multi-channel image in Histogram/Abbott curve study	The Interactive mode for Histogram/Abbott curves is now available on Multi-channel image studiabiles in Histogram/Abbott curve study.
Automatic detection of the 2 main peaks in Histogram/Abbott curve study	A new Two peaks detection method has been added, to automatically place the cursors on the histogram's 2 highest peaks, in the interactive mode of Histogram/Abbott curve study.
Number of points unit in Histogram/Abbott curve study	You can now choose Number of points as the frequency axis unit (instead of %) on histograms of Histogram/Abbott curve study.
Zoom on Histogram/Abbott curve study	You can zoom with the mouse wheel (or with a selection rectangle) in the Histogram/Abbott curve study.
New parameters in Histogram/Abbott curve study	New parameters are shown in the list of parameters below the histogram: Frequency in number of points, Frequency in %, and Number of points between cursors. Some parameters have been renamed. These are displayed by groups and in columns for a better visualization.
Automatic bin number in Histogram/Abbott curve study	You can choose the automatic mode to define the number of bins in the histogram of Histogram/Abbott curve study. The automatic mode calculates the number of bins as the square root of the number of points of the studiabile.
Rounded graduation figures in Histogram/Abbott curve study	Graduation on the Z values axis now displays rounded figures, in Histogram/Abbott curve study.
Continuous density curve improved in Histogram/Abbott curve study	The visualization of bins in Continuous density curve mode (which depends on the number of bins displayed on the screen) has been improved in Histogram/Abbott curve study.
Increased maximum bins in Histogram/Abbott curve study	The maximum number of displayed bins is increased to 10 000 in Histogram/Abbott curve study.
Axis names in Histogram/Abbott curve study	Axis names are added (Frequency for Histogram, and Bearing ratio for Abbott curve) in Histogram/Abbott curve study.
Ergonomics of interactive mode in Histogram/Abbott curve study	The ergonomics of the interactive mode have been improved for Histogram/Abbott curve study. The cursor points are displayed on the Abbott curve, and an arrow has been added on the histogram bin where the cursor is located.
Added columns in text file Export in Histogram/Abbott curve study	When the user exports the histogram of the Histogram/Abbott curve study in text format, the titles of the columns correspond to the data: Heights, Frequency or Number of points (%). The button to export the histogram in the Histogram/Abbott curve study has been renamed [Export histogram].

	New Result calculator
New Result calculator	<p>It is now possible to perform mathematical operations on numerical result values (eg Sa / Sz). A new [Result calculator] button has been added in the Results ribbon, and the result is displayed in the document in a Table of results.</p> <p>The Result calculator is visualized in the Result manager panel and can be recalled from the Table of results or from the Results manager.</p> <p>Conditional functions can be used in the formulae.</p> <p>The Results calculator can also be used to customize the name of a parameter.</p>
	Improved automatic structure exclusion in leveling
Fine tuning of automatic structure exclusion in Level and form removal operators	<p>Structure detection has been improved in the Level, and Remove form operators.</p> <p>Two sliders (Above, Below) have been added to increase or decrease the value of the automatically calculated thresholds (thus increasing or decreasing the number of points excluded from the plane or form calculation). A reset button allows the automatic threshold values to be reset.</p>
Structure exclusion using histogram or references, in Level and Form removal operators	<p>The structure detection threshold can be fine-tuned using the histogram (frequency distribution), in the Level and Remove form operators.</p> <p>The user can open an interactive sub-dialog that allows them to adjust the exclusion thresholds by moving a bar on the histogram.</p> <p>In this sub-dialog, a new drop-down list offers a choice of reference heights for calculations (Mean plane, Absolute, Bearing height, Lowest point, Highest point). The threshold values are then defined in numerical values for automation.</p>
Real-time preview of Structure exclusion mask in Level and Form removal operators	The user can visualize the preview of the structure exclusion mask in real time in the Level and Remove form operators.
Operators concerned by exclusion improvements	All the improvements listed above on structure exclusion, are included in the Level (Least squares), Level line by line and Remove form operators on Surface, Series of surfaces, Surface-image, and Multichannel image studiabiles.
	Global statistical analysis and automation
Statistics on documents	All products that host the multi-document interface, now allow you to create statistical documents. You can identify correlations by the calculation of many statistical parameters, and the display of Control chart, Scatter plot, Histogram, Box plots on numerical results coming from several analysis documents.
Generalised automation tools	The ability to use Tolerance limits, use Minidocs, Apply a template on a folder, and Aggregate results coming from different series of results (Series of profiles or particles) is now available on all Mountains products.
Quick operators	All Mountains products now include quick pre-processing, quick extraction and quick assembly operators.
Quick assembly	It is now possible in one click to assemble several studiabiles as a series, and apply an operator (or a study) from a Multi-selection. A Quick assembly group is available in the Operators (and in the Studies) ribbon.
	New Comparison slider
Comparison slider for Surface+image and Multi-channel images	A new [Comparison slider] button is available for Surface+image and Multi-channel images. It allows the user to view several layers at the same time on portions of the display. The user can display the selected layers with a vertical, or a horizontal movable slider. Palettes are displayed beside the visualization. This slider is included in the Pseudo-color study on Surface+image and Multi-channel image studiabiles.
	Miscellaneous improvements for surface texture analysis
New Volume parameter study on profiles	The Volume parameter study is now available for Profile studiabiles.
Filter settings in Volume parameter study	Filter settings can be defined in the Volume parameter study for profile and surface studiabiles.

New parameters for volume calculated on profiles (ISO 21920-2)	Functional parameters for volumes calculated on profiles according to ISO 21920-2 have been added. These include Pvmp, Pvmc, Pvvv, Pvvv and Rvmp, Rvmc, Rvvv, Rvvv. The addition of these parameters completes the compatibility of the software with the update of ISO 25178-2 to the 2021 revision already starts in v8.2.9468.
Sdr method for multiscale analysis	A new method based on the Sdr parameter has been added in the Scale sensitive fractal analysis study on surface, Surface-image and Multilayer studiabiles. It provides faster results while having fewer defects at small scales.
Default settings modified in 3D view study	Some default settings for the 3D view study have been changed to improve visualization. The option for Gloss rendering is defined to Shiny (instead of Soft). The zoom factor is increased slightly to reduce the empty space around. The Optimize setting of Height amplification gives a flatter surface.
	Especially useful for correlative analysis:
	New Multi-channel image studiable
New type of studiable: Multi-channel image	The Multi-channel image studiable replaces and enhances the Multilayer surface studiable. It allows inclusion of images of any type in true color, in addition to other channels (topography, phase, deflection...), to form a single studiable for simultaneous manipulation and analysis. It gathers, in one studiable, channels with different XY offsets and resolutions. All the operators and studies for the now-obsolete Multilayer surface studiabiles have been adapted to the new Multi-channel image studiable. This includes the re-reading and conversion of existing documents and the opening of all compatible file formats. The user will have to open and save the old Templates and Minidocs on Multilayer in order to use them on Multi-channel.
	Especially useful for SEM users:
	Segmentation from gray level in Particles
New Multiple threshold detection in Particle analysis study	A new "Multiple threshold detection" segmentation method has been added in the Particle analysis study. This method is useful for chemical analysis of BSE images from SEM instruments. It can be applied on gray scale images or channels with non-metric units. It detects particles by defining ranges over grey level values and creates a new "Material number" parameter that can be used for the classification.
	Post-treatments in Stereoscopic reconstruction
Level option in Stereoscopic reconstruction operator	A new Level option (post treatment operation by subtraction of mean plane) has been added in the Stereoscopic reconstruction operator dialog box. This is useful on flat surfaces with a slope to ease the fine tuning of the other reconstruction settings.
Relief inversion in Stereoscopic reconstruction operator	The new Invert relief option, added in the Stereoscopic reconstruction operator, allows you to mirror the Z data. Inverting the order of the images in the pair then inverting back the heights will give equivalent results but however changes the main angle of view (i.e. the image of the pair on which the calculated heights are mapped); this possibility is e.g. useful to associate EDX maps afterwards on the topography, at the correct vision angle, to avoid a shift between topography and chemical maps.
	Especially useful for SPM users:
	Indentation models
Improved calculations on indentation models	The detection of the I0 point for the DMT model has been improved and the fitting quality between the model and the real data optimized.

	Coefficient of determination on force-curve indentation
R ² coefficient in Force curve indentation	The coefficient of determination R ² has been added in the indentation parameters of force curves, in order to estimate the quality of the curve, or of the fitting.
	3D view of data cubes
New 3D view study for I-V spectroscopy image	You can now display a “3D view of the I-V spectroscopy image” study on the Hyperspectral image studiabiles. It allows to slice through the data cube along its different axis (X, Y and ramp axis).
	Especially useful for Spectroscopy users:
	New spectral instrument family
New Digital Surf products for the Spectral instrument family	Mountains® now offers three new products for the spectral instrument family: Mountains Spectral Correlate, Expert and Premium. The user can try them with a Free trial licence or an OEM demonstration licence, using the "Product Version Configuration" dialog. The spectral products complement the range, in addition to Profilometry (2D), Surface Topography (3D), Scanning Electron Microscopy and Scanning Probe Microscopy Products.
	Composite renderings
Composite renderings for Multi-channel images	The user can define new composite renderings on Multi-channel image studiabiles, in order to visualize several chemical maps, or to add a transparency effect. A new [Composite rendering] button is available in the ribbon of the Pseudo-color view, 3D view and Colocalization studies. This new rendering option allows the user to choose the channels used in the composition. A dialog defines how to mix the color: Mixed (color addition per pixel), Unmixed (main color of each channel per pixel) or Saturated (main saturated color of each channel per pixel). Low values can be suppressed by a configurable threshold. It is also possible to visualize one of the channels as a background with transparency effect. The changes are viewed in real time.
	3D view study on Hyperspectral images
New 3D view study for hyperspectral images	You can now display a “3D view of a hyperspectral image” study on Hyperspectral image studiabiles. This allows you to see inside and slice through the hyperspectral cube along its different axes (X, Y and spectral axis).
	Especially useful for Clouds or Shell (freeform surfaces) users:
	Shell
New Metrological filter operator on Shells	The new Metrological filter operator on Shells calculates a reference shell by low-pass filtration (equivalent to waviness) and from it, calculates deviations between the shell and the reference (equivalent to roughness). For each point, roughness values are stored in the studiable as a complementary information called Deviation. The operator can generate the original source Shell completed with deviation values (roughness), and the filtered shell (Waviness) completed with deviation values (roughness). Available filters are: Gaussian-like filter and Bilateral filter. The user can choose the cut-off value that separates long and short wavelengths. This operator can only be used if the “Correct the shell” operator has been previously applied in the workflow for this studiable.

Roughness (deviation) values in color on Shells	<p>The deviation (roughness values) can be displayed as color in the 3D view study on Shells. This allows you to visualize the roughness either on the original shell, or on the filtered shell generated by the Metrological filter operator.</p> <p>A color scale can be displayed, the color palette can be modified, and image enhancements can be applied.</p> <p>This deviation display is only available if the "Metrological filter" operator has been previously applied in the workflow for this studiable.</p>
Surface texture parameters on Shells	<p>Surface texture parameters on Shells can now be calculated in the Parameters table study. The parameters can be calculated from deviations, either from a nominal form if your shell is very close to this nominal form (plane, sphere, cylinder, cylindroid), or from the waviness component with an included adjustable filtering.</p> <p>Height parameters (Sa, Sq, Ssk, Sku, Sp, Sv, Sz) can be selected.</p> <p>Hybrid parameters (Sdq, Sdr, Sdrp, Srf), Fonctionnal parameters (Smr) and Volume parameters (Vmp, Vmc, Vvc, Vvv) are available only on a nominal form for the moment.</p>
Curvature values in color on Shells	<p>The curvature (local curvature radius) can be calculated and displayed as color in the 3D view study on Shells. Several curvature calculation methods and settings are available in a configuration dialog. The color scale can be displayed, color palette can be modified, and image enhancements can be applied.</p> <p>This curvature display can only be used if the "Correct the shell" operator has been previously applied in the workflow for this studiable.</p>
New Correct the shell operator	<p>The new "Correct the shell" operator detects and corrects non-conformities of a Shell studiable. The user can choose also to smooth the rendering stored in the studiable: with smoothing, each triangle is displayed with a gradient color (instead of uniform color).</p>
New Remeshing operator on Shells	<p>The new Remeshing operator allows you to optimize the localisation of triangles in the mesh. It reduces calculation times thereafter. The user can determine a number of points to reach. This operator can also be used to obtain a shell with a lower resolution. This Remeshing operator can only be used if the "Correct the shell" operator has been previously applied in the studiable workflow.</p>
New Extract area operator on Shells	<p>The "Extract area" operator allows you to extract an area of interest contained in a rectangular box from a Shell studiable. It generates the extracted sub-part of a shell as a Shell studiable.</p>
	New Cloud studiable
"Cloud": New type of studiable	<p>You can load 3D point clouds into the software as "Cloud"-type studiabes from an ASCII file (X,Y,Z), an ASCII file with color information (X,Y,Z, R,G,B) or an ASCII file with intensity (x, y, z, I).</p>
New 3D View study on Clouds	<p>Cloud studiabes are displayed in an interactive 3D view study. User can choose the color and size of the dots. Usual 3D view settings are available (Light intensity, brightness and configuration, Display of axis, dimension block, axis system, predefined views, animations, image export...)</p>
New Surface extraction operator from Clouds	<p>The "Extract projected surface" operator on Cloud studiabes allows the user to transform a point cloud according to the desired orientation, into a continuous surface studiable type.</p>

	Especially useful for Tomography (FIB-SEM, Spectroscopy) users:
	New Multi-channel cube studiable
New Multi-channel cube studiable type	<p>You can now load a cube of voxels into the software as a “Multi-channel cube” type studiable. This enables the analysis of chemical composition tomography.</p> <p>Multi-channel cubes are used to analyse in full 3D the volumic abundance of several chemical elements mixed, for example coming from FIB-SEM or Raman analysis. Each voxel of the cube stores several numbers (one number per channel) corresponding to the chemical abundance of several chemical components.</p> <p>As a start for this version, Mountains® will limit the resolution of cubes to 16 megavoxels.</p> <p>In the case of SEM-oriented products, in order to handle cubes originating from FIB-SEM tomography in BSE mode, this studiable also allows using a single channel. In this case, each voxel is a single number representing a gray level.</p>
	New 3D view of a cube study
New 3D view study for Multi-channel cubes	<p>The default study for Multi-channel cube is the 3D view study. Three types of representation can be displayed and combined: Plane, Block and Segmented grains.</p> <p>The colors can be defined by:</p> <ul style="list-style-type: none"> - a mixed color mode: mixed contribution all chemical channels, each as a color. - or a segmented mode: for each voxel, only the most abundant material is considered, which forms homogeneous grains of uniform color. <ul style="list-style-type: none"> - A Plane is a section of the cube perpendicular to an axis, movable to any position. You can also display the background, which is composed of the three planes at the bottom of the cube. All these planes are always in mixed color mode. - A Block is a rectangular box, that can be shortened or drilled from inside along any XYZ direction. Blocks can be displayed in segmented or in mixed color modes. - Segmented grains are grains in full 3D, representing a single dominant material in a single color. <p>You can launch many customised animations to visualize successive positions of the planes or of the Block edges, or successive channels of the segmented grains.</p> <p>A segmentation button of the ribbon allows to define a significancy low threshold for each channel. In the case of BSE (gray level, single channel), segmentation is done by multiple thresholds, which define several channels.</p> <p>Segmented grains can be smoothed to avoid the actual voxels being visible as tiny cubes. Usual 3D view settings, animations and exports are available.</p> <p>If the 3D view contains segmented grains, or a block with segmented grains, it can generate a dynamic colored Shell studiable.</p>
	New Multi-channel cube analysis study
New Multi-channel cube analysis study	The Multi-channel cube analysis study gives information about grain counts and grain volumes, for each of the channels and as a proportion of the total.

	Multi-channel cube: new Extract slice operator
New Extract slice operator on Multi-channel cubes	The Extract slice operator generates a Multi-channel image (containing the same number of channels) by extracting a slice along the X, Y or Z axis. It can also generate an image (similar to plane in color mix of the 3D view described above), or one of the channels as an image in gray level.
	General features and GUI:
	Dark default color theme
Added color themes	Mountains® 9 introduces a new contemporary "Black" screen theme. A new orange theme is also available beside the classical version 8 gray theme, together with white and blue.
	Updated icons design
Modernized icon design	Icons have been redesigned in the new style of the software.
	Improved workflow visibility
Collapsing and extending a workflow branch	It is now possible to collapse (and expand) the content of the workflow that follows an operator or a studiable, in order to simplify the visualization of a complex workflow.
Search zone in workflow	A search zone allows you to quickly find a Studiable, operator or study in the workflow, using a portion of its name.
Highlight selections in Workflow	The workflow displays new colors for a highlighted selection: blue for studiables, green for studies, and orange for operators. The studiable numbers are now displayed on the left for better studiable identification.
Simplified icons for operators and studies in workflow	The default icons for operators (respectively studies) of the workflow, now simply represent an orange gear (respectively green calliper). The ['Preview' icons] button switches to the display of the icon representing the displayed operator (respectively study).
Multiple selection of results:	It is now possible to select several numerical results in the Results manager, in order to add them in one right-click in the same Table of results, or in a Result calculator formulae. It is also possible to copy several results in order to paste them in another application, and to delete several results from the studies.
	Widespread advanced Plug-ins
Generalised Plug-ins	The possibility to use customized addon plug-ins is now included in all Mountains products.
Improved Plug-ins:	Addon plug-in tools (cutomised Operators and Studies) can now be applied on several source studiables, and on results contained in the Results manager.
	Updated Welcome and About dialogs
Clearer Welcome dialog	The Welcome dialog page has been partly reorganized to highlight the basic resources, and add a link to "What's new in V9.0?"
Modernized About dialog	The About dialog has been modernized.
	New help links in operators
Added Help access	A new [?] button now appears in the title bar of most dialog boxes, to open the corresponding page of the reference guide. The information in the dialogs (in purple) is now replaced by an [i] image and an information tooltip in some dialog boxes.
	Completed and updated Index, Templates, Tutorials and example studiables
Updated Templates and Tutorials	Templates, Tutorials and Index documents have been relooked, reorganized and completed to illustrate new features. Example studiables have been added.

Renamed studiables	
Multi-channel profile renamed	The Multilayer profile studiable has been renamed Multi-channel profile.
Spectral studiables renamed	The Hyperspectral cube studiable has been renamed Hyperspectral image. The CITS spectrum studiable has been renamed I-V curve. The CITS cube studiable has been renamed I-V spectroscopy image.
Reference guide	
Updated English Reference Guide	An updated "Reference guide" is available in English. Some information about new features may still be missing. It will be completed in an upcoming Service Pack. The "Reference guide" in German, French, and Japanese will be made available in the next Service Pack.
Operating system	
Only 64-bit Windows 10 OS is supported	The technical specifications for Mountains version 9 can be found here : https://www.digitalsurf.com/support/technical-specifications/

Bug corrections (A and B type)

	Type	Bug Description
MNT-2379	A	A crash can occur when applying the High-pass /Low-pass filter operator on a very large image if the Robust Gaussian filter is selected.
MNT-2564	A	A crash can occur when applying the Robust gaussian filter on a very large studiable.
MNT-2726	A	The software may crash when saving a large studiable in 3MF format.
MNT-2953	A	Mountains may crash when saving a spectrum studiable in .txt format if one spectrum per column is selected.
MNT-2972	A	It is not possible to apply the Level operator using the By rotation option on a Surface+image studiable if there are non-measured points present.
MNT-854	B	The inclusion and exclusion of spectrum curves in the Sort spectra operator on Hyperspectral image studiables are always active when removing a result from the operator in the workflow and recalling the operator.
MNT-1846	B	The choice of detection and calculation layers is not saved in the settings in the Particle analysis study.
MNT-1986	B	Saving studiables is no longer required when dragging and dropping studiables from the workflow into the studiable explorer.
MNT-2441	B	The result of the Generate as dynamic studiable is not created in the workflow if a residue or a deviation is selected for this feature in the Advanced contour study.
MNT-2517	B	The text 'Activation code' is not translated in the license activation dialog when installing the software.
MNT-2619	B	Multiple built points of the Contour analysis study sometimes disappear after a studiable substitution.
MNT-2625	B	The automatic mode for the positioning of all the cursors in a Force curve analysis study is deselected if a cursor is moved.
MNT-2838	B	The automatic structure exclusion calculation in the Level operator is incorrect on Surface, Surface+image studiable if the studiable contains non measures points.
MNT-2852	B	The Parametric profile studiable generated by the "Extract profile parameter" on a Shell studiable may be erroneous.

MNT-2982	B	The [Cancel] button in the Image Enhancement dialog box for Image studiabes doesn't work.
MNT-3005	B	The "Bring the profile next to the DXF" option when importing a DXF file in the Contour analysis study doesn't work.
MNT-3040	B	Memory usage is abnormally large in the 3D View of the Distance measurement study in the SPM - Basic analysis tutorial document.
MNT-3044	B	The Parameters table study on a surface studiabile can not be calculated if this surface was generated by the Mathematical Function operator using previously calculated parameters.