Date	Version	History

25.06.2024	2024.1
	WS89
		New Features
		• Significantly improved performance for loading models from database.
		• New TEM importer including support for new datatypes HeliTEM, SPECTREM, XCITE, XTEM and tTEM stb.
		• TEM import: Create new processings based on time or distance. Additional possibilities to create processings based on lines or on number of soundings.
		• SkyTEM SCI: Allow mixing of formats SkyTEM skb and SkyTEM xyz.
		• Views: Possibility to undock sounding plots (data and model) from the Views form.
		• Views: Possibility to hide all but one axis, when axes are synchronized.
		• Views: Possibility to synchronize colorscales on Model views.
		• Views: New option to display data fit for all individual gates for each sounding along a model section.
		• Views: Export charts in different sizes and scales to control how a chart is exported for use in reports and PDFs.
		  ○ Control how to export charts to a bitmap image.
		  ○ Choose to print charts as displayed or define a fixed scale with a DPI.
		  ○ Bitmap width and height are calculated for display.
		• Views: For TEM data, default hiding of gates which have been discarded on import (.gex file).
		• Views: Possibility to save settings as default that will be automatically applied to new Views of this type.
		• Views: Change units on sounding plot.
		• Views: Chart right click option to see inversion statistics.
		• For TEM and FDEM data processing nodes it is now visible in the node info box if a DEM has been applied.
		• Show EPSG for nodes in node info box.
		• Sections: Possibility to add external 3D grids.
		• Export models to Leapfrog Borehole format: Export also IP parameters, DOI information, and residual.
		• TEM inversion: Increased accuracy for wave form in .tem files.
		• Tempest data export: Receiver tilt and horizontal/vertical separations added to exported file.
		• tTEM skb import: Sign change option is reintroduced.
		• When using cloud for inversions, display a label on the inversion form.
		• SCI apriori from grid: Possibility to use Geosoft grid format.
		• SCI apriori from GIS: Possibillity to use shape file/polygon for selection.
		• Improved UI for polygon selection for SCI inversion.

- GCM/HEM: Use default line number 1 if no line number exists in data.
- After inversion, save file with info about timings and residual for all iterations in LCI folder in workspace.
- F1 help moved to new Wiki site.

Corrected bugs

- TEM data import from Geosoft gdb: Make sure data is sorted on timestamp, if date and time are imported.
- tTEM import: In some cases, too much GPS data would be discarded on import.
- TEM processing: Loading a settings file would result in settings appearing twice on the processing form.
- Find Nearest from GIS didn't work properly for TEM data processed in distance.
- Sections: Blinding with DOI was not done correctly if DOI was more shallow than last layer boundary.
- Sections: Several bugfixes for working with geosurfaces with multiple sections, or when deleting points.
- Create image from grid: Manually entering coordinates for area selection in combination with interpolate could cause the image to be misplaced on GIS.
- LCI using sections: When connecting sections, never allow apriori STD to be more free than defined when settings up inversion.
- Bugfixes in Views and Sections for model selections containing models with varying number of layers.
- General Model Import: Do not allow EPSGs which are not in projected meter.
- Several minor bugfixes in Tempest inversion setup.
- GCM/HEM import: Do not allow uniform standard deviation to be 0.
- Gridding: Bugfixes and performance improvements.
- GCM: Processing option 'Remove negatives' was not applied to in-phase data.
- GCM/HEM SCI did not work across datasets.
- GCM/HEM: Inversion is not allowed for soundings where only in-phase data is in use.
- 3D viewer: Color of 1D models and boreholes shown as lines now fades when changing the "Transparency" setting.
- Edit Display on renamed point theme nodes didn't work.
- Lithological log import: Better error message if layer description contains illegal characters.
- Import of ERT data from ABEM Terrameter would fail if the project database contained empty tasks.
- Views: When changing units on line plots, the unit label wasn't updated.
- Views: Line plot was not shown correctly for layers deeper than 1000 m.

- Views: Interpolated models were not shown correctly for very shallow models.
- Views: Nodes were not ordered alphabetically.
- Older theme nodes couldn't be renamed.
- For renamed Model Selection nodes, loaded/unloaded status wasn't showed correctly in the node tree.
- Enable multi-delete option for SPIA TEM nodes.
- Loupe TEM: Bugfixes for data import.
- Add topography is now working for Model Selections across several databases.
- Update System Setup: View geometry would display wrong filters if gaussian filters were used.
- Improved cloud setup for larger inversions.
- Import models from Gerda (Danish users only): Downloaded model would in some case show an error when opened in Workbench.
- Inversion of SPIATEM data from Gerda (Danish users only): Some older data contains corrupted standard deviations on data. In that case, use a standard deviation of 5%.

14.12.2023 6.9.0.0 WS88

New Features

- 3D viewer: DOI Transparency and Type dropdowns can now be used for display of 1D models, instead of using hardcoded DOI.
- Support for load and save to external colormap formats:
  - Geosoft TBL format
  - ER Mapper LUT format
  - ArcGIS/Surfer CLR format
- Support for import of Geosoft 2D grids and 3D voxels.
- Export of 2D and 3D grids to Oasis Montaj and Leapfrog.
- New theme for TEM IP data: Auto create theme to categorize TEM data with IP effects into 6 categories for display on the GIS interface:
  - All data in is negative
  - Sign change positive → negative detected
  - Sign change positive → negative → positive detected
  - Double sign change positive → negative → positive → negative detected.
  - Sign change negative → positive detected.
  - All data is positive
- New processing filters for TEM data:
  - Min/max current
  - Min/max speed
  - Min/max pitch
  - Min/max roll
  - Max noise level

- Possibility to change font size for axis labels, axis titles, and chart titles.
- Improvements to the data processing selection tools for processing and sounding display:
    - The new Interval tool selects all data within an interval, and does so across multiple data plots if they are visible and synced.
    - Holding shift and then selecting (with either rectangle or interval selection) shows selected positions on the sounding plot. It no longer also selects the data - instead it uses a shadow to indicate the selected positions.
    - It now also works on models. When sync is enabled it will also show the soundings of the data that contributed to those models and they can then be edited directly.
    - Holding both shift and ctrl and then selecting is now used to add more to the sounding plot, thus it is now possible to show two individual soundings without showing all the soundings in-between.
- Possibility to manually import a finished cloud inversion, if import has failed.
- Views: For any active plot, the corresponding settings are highlighted in the settings list.
- Polygon on GIS: When creating a new polygon, automatically add a label on GIS with the polygon name.
- Show Inversion Result: Show lateral constraints on start modes for IP inversions.
- General Model Import: Support for import of DOI for IP parameters.
- Model Selection: Possibility to distinguish models on model type (IP/layer parameters).
- tTEM xyz processing: New default settings.

Corrected bugs

- tTEM inversions could not be added directly to sections.
- GCM/HEM SCI: Area could not be selected via polygon.
- In some cases, large inversions (~200,000 models) could not be imported correctly.
- HEM inversion: In some cases, inversion of soundings containing channels with a datavalue of exactly zero could not be imported correctly.
- AEM processing: When reprocessing, the relocation of GPS in x-direction would not be applied if settings were loaded from file.
- AEM import: Using a .ge2 format geometry file did not work.
- Processing a small interval of very closely spaced TEM data could in some cases result in an error.

- Trying to 2D grid an empty Model Selection node would result in an error instead of a useful message.
- 2D grid properties: Some properties were not saved correctly.
- Import of ABEM Terrameter database: Skip empty tasks instead of throwing an error.
- ERT Show Inversion Result: Fixed triangulation error for coinciding points.
- General model import: Allow mismatch between EPSG on user interface and settings file – show a warning instead of an error.
- Model export: In the header, 'Inversion data space' would for some model types be empty if the inversion was linear.
- Sections: User added title would be remembered across workspaces.
- Sections - Show Data for inversions: Multiple models did not open in the same window, and the numbering/names of the individual models was not correct.
- 3D viewer: In some cases, it was not possible to add .tiff images to 3D viewer.
- Reapply geometry: Changes to system response when applying new geometry wasn't effective immediately.
- Automatic logarithmic colorscales on themes did not work properly if values were smaller than 1.
- Views: Loaded settings would in some cases not respect 'visible' setting on Aux plot.
- Views: Current was not shown correctly in Aux plot for dual moment data processed in distance.
- Views: Improved handling of titles when loading settings.
- Views: DateTime axes could not be inverted.
- Views: Only export visible plots to image.
- Show Properties for Tempest inversions did not display the correct Additional parameters used for the inversion.

06.07.2023 6.8.0.0 WS88

New Features

- Licensing through Seequent ID.
- New image viewer: View all your depth/elevation slices, or other GIS model themes in a new viewer in 2x2, 3x3 or 3x4 grids.
- New SCI a-priori option: A-priori from Model Selections.
- HSM: Calculate silhouette index from clusters.
- Model Quality, TEM inversions: Display actual gate number instead of counter when creating Data themes.
- AEM: Data theme showing raw vs average data locations.
- Model Export: Support for Leapfrog borehole format.
- Possibility to save a geometry file from View Geometry.
- Views: Synchronization tool for disabling data across channels.
- Views: Possibility to hide menu/toolbar.

- Views: New keyboard shortcuts to move to next Line or Buffer interval.
- Views: For Data/Model views, default buffer position is where the first model is.
- Views: Showing model positions on GIS can now be turned off from the user interface.
- Views: Show data scope in buffer window.
- Inversion: Increased coordinate precision.
- Inversion: Decoupling of coordinates for cloud inversion.
- 3D gridding: Select resistivity, conductivity and/or IP parameters for gridding.
- 3D viewer: Possibility to show conductivity for 1D models.
- TEM Loupe import: Allow non-existing gate open/close times.
- New TEM processing filter: Tilt correction of dB/dt data (before, this was always done).
- TEM inversion: Improved error message if waveform is not valid.
- TEM inversion: Choose interval for inversion in distance, if processing is in distance.
- TEM inversion: Log when data is discarded to due line file.
- Apriori from GIS xyz file: Significant speed-up.
- SkyTEM/tTEM skb import: Skip empty files.

Corrected bugs

- Views: Bugfixes for inversion without DOI.
- Views: Bugfixes for inverting chart axes.
- Views: For GCM/HEM inversions including phase, the label on the y-axis would be wrong for phase data (display problem only).
- Views: For HEM inversions, show Altitude and Altitude A-priori in Model Parameters.
- Views: For TEM data processed in distance, inversions would show the wrong profile distance.
- Views: Bugfixes for soundings axes.
- Views: Improved loading of settings file.
- Views: Improved names in AUX groups.
- Views: Do not revert axes to default every time a new model is selected.
- Load inversion settings: Do not allow mix of model types.
- 3D gridding: For linear node thickness, the grid would be missing the top layer.
- 3D gridding: DEM was missing when showing properties.
- Model selections from multiple databases could not be added to sections.
- 3d gridding: It was not possible to save settings when viewing properties.
- Model Quality for SCI nodes: Don’t display 3D grids in node list.

- Model Quality for SCI nodes: Altitudes were not visible.
- 3D viewer: Display of max elevation in info box was showing max elevation of first layer bottom instead of first layer top.
- 3D viewer: Draping an image on a grid in the resulted in a black image.
- Colorscale editor: Bugfix for editing a colorscale with a very large grid.
- Edit display for bitmap didn't show the colorscale associated with chosen image on Grid tab.
- TEM and ERT: Better error handling when trying to access processing nodes where the corresponding database had been deleted.
- Show Inversion Properties: Inversion type not shown correctly for ERT inversions.
- ERT pole-dipole: Remote electrode would sometimes be placed on the wrong side of the profile.
- ERT pole-dipole: Remote electrode to the left side of the profile combined with UTM coordinates in .dat file (not .ewp file) would result in wrong UTM coordinates.
- Exported Surfer grids can now be opened in Oasis Montaj and Leapfrog.
- AEM xyz import: In some cases a single data point could be lost at the end of lines due to rounding error in automatic line file generation.
- Sections: Edit colorscale did not work for models imported through General Model Import.
- Sections: Creating profile from inversion in reverse data recording order now uses profile distance for data without timestamp.
- SPIATEM LCI export: Inversion node name was missing in file header, and source type was wrong.
- GCM/HEM inversion export: Number of used data poi
- Update geometry: Gate times were in some cases not shown correctly for multiple moment data.
- .las file import: Skip empty lines.
- General Model Import: Bugfix for auto-mapping of files exported from older versions of Workbench.
- General Model Import: Removed restriction of 99 as maximum on ResSTD.
- General Model Import: Unit conversion was wrong if chosen import unit was S/m or mS/m.
- General Model Import: Imported residual could not be shown on Sections.
- Digital Elevation Model: Bugfixes for reading of very large grids.
- Borehole import: Bugfix for import of boreholes from GEUS Jupiter databases.

19.12.2022 6.7.1.0 WS88

Corrected bugs

- License server security update.
- TEM data export: First channel was missing the number of gates column.
- TEM processing: On reprocessing, only overwrite user edited altitudes and topography if GPS shift has changed.
- FEM data export to gdb: Columns were not sorted correctly for data with both quadrature and phase.
- Model export (XYZ by layer) was missing decimals on coordinates.
- Views: In some cases, the last line would not be visible in line number dropdown.
- Views: User edits of altitudes did not work properly for processing in distance.
- Views: Deleting and recreating a View with the same name could in some cases cause an error.

27.09.2022 6.7.0.0 WS88

New Features

- Views: Show TEM data in distance (instead of time) for processings in distance.
- Views: Possibility to use easting/northing as axis labels.
- Views: Synchronize selection between plots.
- Views: New options in right-click menus.
- Views: Synchronized vertical line marker following the mouse.
- Views: New data selection tool – triangle selection for easier disabling of data with lateral expanding noise/couplings over time.
- Views: Auto Center Map tool now also applies to models, making the GIS map center around the mouse location on a model.
- Views: Find Nearest tool now also applies to models. Use the Find Nearest tool on the GIS map to go to the closest located model in Views.
- Views: Possibility to set buffer size and start manually.
- Views: Possibility to have data view open together with data processing form.
- Views: Possibility to show dB/dt data in V/m2.
- Isolines: Create maps layers with isolines for bitmaps.
- Model selection: Support for model selections across several EPSGs.
- SCI: Support for keeping SCI inversions in memory.
- Import: Support for Geosoft gdb format for airborne and groundbased TEM, and GCM/HEM.
- Export: Support for Geosoft gdb format for inversions (all data types), airborne and groundbased TEM data, and GCM/HEM data.
- Export: Export time stamp where available (TEM data and models).

- Export: New option to export TEM data with all moments for a given time stamp as a single line.
- HEM: When adding data node to GIS, an extra layer containing line numbers is added.
- 3D viewer: Keyboard controlling camera movement.
- 3D viewer: Significantly improved performance for adding and removing layers.
- 3D viewer: Added strafe in xy-plane.
- 3D viewer: Added min/max elevation to node information.
- 3D viewer: Possibility to add coordinates including elevation for TEM, GCM, HEM, and sERT data nodes.
- HSM: Added filtering for ACT nodes on cluster setup form.
- HSM: Support for export of clusters to Leapfrog format.
- HSM: Export data from ACT nodes.
- HSM: Include clay fraction uncertainty in export files.
- HSM Edit Data: After ACT run, exclude lithological logs which did not contribute to ACT calculation.
- HSM ACT run: Show current data fit and iteration time during run.
- HSM ACT properties: Show number of iterations and final data fit.
- HSM using uniform translator model (no lithological logs): Blind resistivity models with the selected blinding parameter.
- First Layer a-priori: For tTEM, sERT and GCM LCI inversions, only display first layer a-priori options if first layer info exists in data.
- Add Elevation Model: 'Use entire grid' option added.
- Model Quality: Support for altitude and a-priori altitude as elevation.
- Groundbased TEM: Possibility to import line numbers.
- AEM import to existing dataset: Do not delete existing line number info – instead add only the lines not existing already.
- AarhusInv version 8.30 released with the following bug fixes:
    - Modelling of front gate for source type 73 is changed for tTEM.
    - Fixed inversion crash if data has mixed source types 72 and 73.
    - Fixed inversion crash in new damping scheme.
    - More stable forward response for TEM-IP.
    - Throw an error if source type 73 type is used for TEM-IP inversion, since Laplace transform is not supported for source type 73.

Corrected bugs

- Views: On closing a view without saving, do not reload data unless the same data node is open in another view.
- Views: Never sync from Aux plot to Data plots.

- Views: Calculated speed for AEM xyz was wrong for data closer spaced than 1 second.
- Views: Interpolated bars blinded with DOI did not work correctly if either upper or lower DOI was missing.
- Views: Bugfix for model line plot in conductivity.
- Views: Minor ticks were missing on logarithmic axes.
- Views: Unit could not be changed SPIA TEM LCI sounding plots.
- Views: Map point mover error for model/model view with different EPSGs.
- View: Fixed an issue with topography for interpolated models view.
- 3D viewer: Middle mouse button should not trigger displacement of cut plane, if cut plane is not visible.
- 3D viewer: Scrolling mouse wheel during load would trigger an access violation.
- Sections: When creating Section from external grid, the auto-generated section layer was incorrect.
- New TEM processing: Require left/right was ignored if sounding distance was not used.
- AEM data export: Error if dummy was not numeric.
- AEM Reapply Geometry: Error if Data Quality nodes were present for the chosen dataset node.
- AEM Reapply Geometry: Reapplying geometry could cause error for databases containing both more than one dataset, and system response.
- SPIATEM SCI inversion: Error if all data for all channels was disabled for any stations.
- sERT processing: Deleting raw data had no effect on average data.
- Labels on GIS layers not visible until map update.
- Geosurfaces: Choosing a system color could prevent any profile from being reopened.
- Model Quality for GCM/HEM inversions: Number of data points in use was not counted correctly.
- Model Quality Data Residual was not calculated correctly for inversions done in linear space.
- Show Data (from GIS and sections) for newer model selections did not work.
- LCI inversion: Blocky settings were not saved correctly in registry.
- SCI inversion: UTM coordinates were single precision.
- Create Section from Models: Did not work for SCI inversions which are not SkyTEM data.
- Create Section from Models: Allow creation of sections from lines containing only two models.
- Edit drawing style of external gis layer did not work properly.

- Workspace upgrade: For large workspaces, Workbench could hang with 'program not responding'.
- Workspace upgrade: Save a backup of earlier versions when upgrading a workspace.

17.03.2022 6.6.0.2 WS88

Corrected bugs

- AEM processing: If trapez filters were used with no sounding distance applied, dispersion was not used to calculate average STDs.
- Groundbased TEM could not be inverted using SCI.
- HSM: Translator model grids in 3D viewer were shown with wrong sign for Z values for ACT calculations in depth.
- HSM: Z values for translator model grids in 3D viewer should be interval midpoint, not interval top.
- Loupe import: Don't skip line if elevation doesn't exist.
- Loupe import: Gave range check error if no lines with valid coordinates were found.
- Views: Loading settings with an invisible chart as active gave error.
- Views: Calculation of auto min/max on linear axes was wrong for negative values.
- Views: Fixed 'Duplicated not allowed' error for deleted nodes.
- Views – Model-Model: Create sounding could in some cases give an argument out of range error.
- Views – Model-Model: When adding additional model, unit would not be visible until view was turned off and on again.

24.02.2022 6.6.0.1 WS88

Corrected bugs

- Renamed nodes could not be opened in Views directly from workspace tree.
- Bugfix for user altitudes in Views.

16.02.2022 6.6.0.0 WS88

New Features

- **Views** is a completely new tool replacing the old processing tool for EM data and also the old "Show results" tool for inversion models. With views the user now has more options on how to display data and models for processing and visualization. Views include:
  - Data View: For processing of data. Have up to 4 plots with data + sounding plots and auxiliary plot.
  - Data/Model View: For looking at resistivity models along with data. Data plot and model plots are synched for easy reprocessing of data.
  - Model/Model plot: For visualization of different inversion models. Possible to have up to 4 plots.
  - Auxiliary plot: Possible to have up to 4 plots for visualization of auxillary data.
- Hydro Structural Modelling (HSM) module: New module that contains a 2-step semi-automated workflow to create hydro-stratigraphic clustering models by combining

resistivity information from geophysical data and borehole lithologies. The two steps are Accumulated Clay Thickness (ACT) modelling to create a clay fraction model and a clustering routine to create a zonated model.
- New TEM auto processing tool for all TEM XYZ imports. Redefined auto processing tool with new features such as process data in distance and skip sounding distance setting. Includes existing known filters and description of each setting.
- Export of 3D grid in vtk format.
- Make model selections across several databases.
- SCI Layered from Smooth: Possibility to blind smooth model layers with DOI.
- Never allow deleting of dataset from database when deleting a data node.
- Lithological log pdf report available in English and Danish.
- AEM import: Ignore lines in .lin file containing only spaces.
- AEM import: Sanity checks for waveform and front gate in geometry file.
- AEM System setup: It is now possible to view the current geometry as a .gex file.
- AEM: Increase precision for gate times to support differences smaller than 1e-6.
- AEM: Significant speed-up for Add Elevation Model.
- AEM inversion: Skip soundings with no line number if line numbers have been imported.
- Significant speed-up for saving 3D viewer project.
- General Model Import: Possibility to import depth/thickness STDs.
- tTEM processing: Support for using other GPS processors than GP1.
- ERT inversion export: Include IP in dat file.

Corrected bugs

- Save map as image did not work.
- Do not allow multiple data nodes to point to the same dataset in database (all data types).
- Batch gridding: Fixed ‘value lies outside grid range’ error due to numerical noise.
- Add models to Section: Filter did not work for model selection nodes.
- Sections: Grid as line did not work for external grids.
- Sections: Allow negative UTM coordinates when loading profile points from file.
- Edit colorscale from Section layers: Data for histogram was not correct for IP layers (resistivity was always used).
- Sections Batch processing: When choosing both ‘Synchronize selection’ and ‘Synchronize size and axes’, axes were not synchronized.

- 3D grids on Sections: Did not work if elevation/DOI grids were not in map EPSG.
- 3D gridding did not work if data and map were in different EPSG.
- 3D gridding: Cutting with DEM did not work if DEM was not in map EPSG.
- 2D gridding of model quality point themes were not placed correctly if EPSG was different from map EPSG.
- Inversions and model selections were not placed correctly in 3D viewer if their EPSG was different from map EPSG.
- SCI Layered from Smooth option did not work for system response datasets.
- SCI a-priori from grid did not work if grid was not in map EPSG.
- AEM: Data themes could in some cases prevent creation of SCI nodes.
- AEM GIS layer for line number was not placed correctly if map and data were in different EPSGs.
- AEM Update System Setup: More robustness when applying a geometry file that doesn't match the data.
- Loupe import: Skip empty lines and sounding without coordinates.
- Loupe import: Add ramp off time to gate times.
- Loupe: Topography now correctly adjusted for instrument height.
- Polygon restricted license could in some cases prevent data export.
- Current was not exported correctly for tTEM, Groundbased TEM, MegaTEM and Tempest.
- TEM IP inversions files will now always be written out as Loop Type 72 as required by AarhusInv.
- Bugfix for converting UTM Zone and Datum to EPSG for coordinate system 'RT90 2 5 gon W (epsg:2400)'.
- Bugfix: 50% duty cycle DCIP data was only partially imported when using the ABEM Terrameter LS advanced processing.
- Bugfix: ABEM Terrameter LS advanced processing failed when specifying total IP decay length instead of using the automatic option.
- Invalid sharp inversion parameters in registry could in some cases prevent opening of the inversion form.
- Azure Cloud Cost button didn't work.

15.06.2021

Corrected bugs

- Sections: Bugfix for copying layers from master profile.

11.06.2021 6.5.0.0 WS87

New Features

- Aarhus Workbench is now using the embedded version of Firebird 2.5. The Firebird service is no longer in use and can be uninstalled.

- Support for import of Loupe groundbased towed TEM data.
- Support for import of Tempest data in ppm.
- Support for import of receiver pitch and roll for Tempest data.
- External databases are automatically copied into the workspace to ensure portability.
- A smooth SCI inversion result can now be used to create sounding specific layered starting models using the New Layered option.
- It is again possible to do SCI inversions of legacy SkyTEM data with bias.
- AEM processing: Additional security checks when saving processings to database.
- Batch on sections: Allow images to be created with fixed scale.
- Possibility to add topography to Model Selections from ERT LCI inversions.
- Lithology logs: It is now possible to use rock type identifiers with up to four characters.
- TatukGIS map component updated to avoid issue with some points in a layer not being visible.
- Mag module for HGG tMag data in debug mode.
- HSM (Hydro-Structural Modelling) module for clay-fraction and clustering in debug mode.

Corrected bugs

- AEM processing - Keep Raw Sounding Distance: Error if import file contains dummy altitudes values.
- Error when adding Profile as image to 3D viewer.
- Report could not be opened if the original template file was no longer available.
- Report tool: Map layers would get out of sync if changing page with preview off.
- Report tool: Fixed bug where map layer list in the report tool could turn up empty.
- Report tool: Added check so a PDF report cannot be created if a color scale is not selected.
- Report tool: Fixed error if A3 sized report is printed with "Microsoft print to PDF" function.
- Report tool: Fixed bug where profile dropdown could give error.
- Add DEM to section: Did not work properly if EPSG of DEM was different than EPSG of map.
- Streamed ERT processing: When using Keep Raw option, the quality flags were in some cases not preserved correctly.
- ERT data with electrode distance of less than 25 cm could not be inverted.
- ERT: Import of .dat files with UTM coordinates fails if the file contains less than 50 coordinate points and does not have a coordinate for each electrode.

- Show Inversion Result: Improved visualization of DOI blinding for DOI in the lower layers.
- When applying topography to Model Selection from GCM/HEM/sERT LCI, do not update topography of the data node.
- Allow empty lines in system response .sr2 files.
- Fixed issue where a tiff file is displayed completely black in 3D viewer.
- GroundTEM LCI models could not be imported to database after inversion.
- Trying to create a Model Quality node from an empty inversion would result in Workbench freezing.
- Upload to Gerda (Danish users only): Wrong Ident creation when first layer apriori option was used for smooth models.

03.02.2021 6.4.1.0 WS86

New Features

- New SCI apriori tool: Add apriori from LCI inversions with the same number of layers (resistivity, IP parameters, and altitude).
- System Response is now available for SkyTEM xyz data.
- Data Quality point themes for SPIA TEM data.
- AEM data export: dB/dt unit changed from $V/A*m^2$ to $V/A*m^4$, to have the same dB/dt units on data for exports from processing and inversion nodes.
- QC data and model themes: dB/dt unit changed from $V/A*m^2$ to $V/A*m^4$.
- Now automatically using Windows proxy server settings (if applicable).

Corrected bugs

- Reapplying geometry for AEM/tTEM would in some cases result in an access violation.
- Model Quality did not work for newer 2D ERT inversions.
- HEM altitude would in some cases be lost after update from Show/Edit window.
- GCM/HEM: Error for inversion of more than 10,000 models.
- Choosing certain (system) colors for point themes would cause a range check error when adding layer to GIS.
- Geosurfaces: In some cases a section could not be opened if a geosurface had been cut on the last point.
- ERT import: Bugfix for adding UTM coordinates for more than 1000 electrodes.
- ERT import: Bugfix for topography error in Pole-Dipole import in some special cases.
- ERT processing form could for some datasets not be opened due to a registry error.
- Upload to Gerda (Danish users only): Missing UTM zone and datum for SCI upload.

09.12.2020 6.4.0.0

New Features

WS86

- New tool: Create Data Quality point themes for data nodes to display data and auxiliary values on the GIS.
- SCI apriori from grid: Possibility to remove vertical constraints on resistivity and IP parameters when adding apriori on depth or elevation from bottom.
- Improved performance of ERT processing form for large datasets.
- Keep Model Selections in memory – no reload from database when accessing the same Model Selection repeatedly.
- New color scale tool: Create color scale as a HSI color model. Option to convert to RGB colorscale.
- New shadow tool for bitmaps. Add a shadow to bitmaps by changing altitude, azimuth and ambient light of the shadow.
- tTEM import: Calculation of individual sample factors for hardware channels.
- AEM/tTEM inversion: Improved inversion logs.
- SkyTEM System response inversion: Force inversion in linear space if one or more of the inverted data sets contain system response.
- AEM/tTEM: When adding processing nodes to GIS, an extra layer containing line numbers is added.
- AEM/tTEM: Automatic update of GIS layer if data is reprocessed.
- General model import: Possibility to automap several consecutive columns.
- Export: New XYZ format – each layer for each model has its own line. Used for import in e.g. Leapfrog.
- Export models in feet.
- Geophysical themes for layer parameters: Make themes for several layers at once.
- Register a license without restarting Workbench.
- GCM/HEM processing: Save processing settings from properties.
- GCM sps import: Use GPS fix value to discard bad GPS lines.
- Save last used colorscale for point themes in registry.

Corrected bugs

- Improved first layer apriori (tTEM/GCM/sERT):
  - the vertical constraints on resistivity and IP parameters for first layer is removed when using first layer apriori (both depth and resitivity)
  - when using first layer apriori on depth, the prior constraint on thickness is always removed.
  - when first layer data is missing, the apriori STD is set free.
- IP SCI inversion: Apriori STD on IP parameters was not written correctly to model file

- Tempest inversion: RxTx distance apriori STD value was not written correctly to mo2 file.
- SkyTEM import: Bugfix for import of skb files older than 2013.
- GCM/HEM processing: No average point would be created if the mean filter only included one data point.
- GCM/HEM data export: Would fail if exported immediately after data processing.
- Report tool: Bitmaps would occasionally turn black.
- tTEM: Bugfix for reading unfinished binary data (skb) files.
- tTEM import: Bugfix for importing data to existing data set.
- TEM SCI inversion properties: Keep negatives flag was not showed correctly.
- TEM SCI inversion properties: When saving settings, power law setting was not saved correctly.
- SPIATEM LCI nodes could not be added to 3D viewer.
- Improved logic for opening recent and user folders on colorscale selector.
- Improved handling of legacy lvl color scales.
- GTEM import: Bugfix for identical timestamps.
- GTEM import: Topography was not imported correctly.
- Point mover on GIS map would occasionally disappear on zoom.
- Upload to GERDA (Danish users only): Bugfix for upload of older data (before 2012).

25.08.2020 — 6.3.1.0 WS85

New Features

- License server security update.
- SkyTEM xyz: Support for loop type 73 (segmented loop with inverse Laplace transform).
- General model import: Support for import of data residual and total residual.
- General model import: Support for dummy resistivity in last layers (non-uniform number of layers).
- SPIATEM: LCI inversion for SPIATEM data. Possibility to select the order of TEM data.
- SPIATEM: Possibility to load/unload processing.
- SPIATEM: Possibility to auto disable negative data points during inversion.
- SPIATEM: Possibility to use halfspace start model.
- SCI: Possibility to add a-priori for IP parameters (GIS and grid).

Corrected bugs

- AEM LCI properties: Advanced configuration settings could not be opened.
- AEM SCI did not work with system response.
- tTEM import: Coordinates would not be imported correctly is sps file contained dummy/zero coordinates in the beginning.

- SPIATEM SCI: Selection of subarea did not work, entire are was always inverted.
- sERT processing: STDs from processing were not saved correctly.
- ERT Show inversion result: fixed bug where inversion model would not load due to sync error.
- ERT: Error when adding topography on import for pole-dipole data with negative coordinate for remote electrode.
- Fixed assertion failure when adding surfer grid as external GIS layer.
- Model selections from IP inversions could not be loaded.
- Bugfix for ABEM database importer not being able to load database in some cases.
- Various minor bugfixes for ABEM Terrameter LS Advanced pre-processing.

24.06.2020 | 6.3.0.0 WS85

New Features

The LCI/SCI inversion setup has been updated and now comes with several new features:

- Cloud Inversion for faster inversion of large datasets, using Microsoft Azure Cloud as a pay-per-use service.
- Possibility to run Cole-Cole and Maximum Phase Angle for airborne and towed TEM data in SCI inversions.
- New LCI/SCI option for TEM with negative data: Keep, remove or remove from first negative data point.
- New LCI option to choose a subset of GCM/HEM data for inversion. Choose from profile distance or line number.
- New option to add a priori information for the 1st layer in SCI inversions for towed TEM, GCM and streamed ERT data.
- GCM/HEM: Possibility to invert for Phase for selected channels only.
- Add a half-space inversion to get a better starting model for SCI.
- Change between Smooth/Blocky inversion on copied SCI inversion node.
- New properties on LCI and SCI inversions: Possible to save settings to use for another inversion.

New updated GIS interface for improved stability, including better support for WMS, WMTS and WFS servers:

- New OpenStreetMap servers and Oracle Maps added as default.
- Possibility to add other servers from e.g. United States Geological Surveys, GeoScience Australia, and the Australian Geoscience Information Network.

See our wiki help page for the Workbench web layer tool for more information: http://www.ags-cloud.dk/Wiki/WH_WMSLayers.

The general model importer has been updated and now supports:

- Import of IP parameters
- Import of data standard deviation
- Delimiter option

Other new features:

- 3D gridding: DOI is now always calculated for all layer parameters and can be visualized in the 3D viewer.
- Voxel inversion for airborne and ground based TEM is available in Debug mode.
- GCM/HEM import: option to average data with same GPS coordinates.
- GCM/HEM/streamed ERT: Export of raw data STD.
- SkyTEM import: Support for different sets of gate times for high and low moments.
- ERT/IP: IP data and forward calculations can now be exported for ERT/IP inversions.
- tTEM: Possibility to taper gates on import.

Corrected bugs

- GCM/HEM: It was not possible to invert for Phase.
- Streamed ERT: In some cases, reprocessing of older data would result in an error.
- Streamed ERT: On import, quality flags were not set properly for negative data.
- Colorscale editor: manuelly edited labels did not load when loading color scales.
- Report editor: Fixed map layer list disappearing after update.
- Sections: Interpolated models on sections can now be displayed with total length.
- Data export: Bugfix for workspaces containing more than one map.
- It was not possible to display properties for 3D grids.
- Batch image now adhere to preferences for image formats.
- Batch point themes and batch edit points theme now also work for external nodes.
- Image review was not working.
- Several bugfixes and improvements for import of lithological logs.
- GIS: Info tool was broken.
- Bugfix for applying DEM for ERT after import.
- DEM grids no longer transformed to map EPSG on import.
- Adding interpolated bitmap to section would fail for some model selections created from Res2DInv section grids.
- Upload to GERDA (Danish users only). Automatically remove double OmitGates entry on export of database.

25.03.2020 6.2.1.0 WS84

Corrected bugs

- SkyTEM xyz processing: Do not apply tilt correction to altitudes.
- SkyTEM skb import: Linefile was not applied correctly to newer data (2020 data only).
- tTEM import: Make sure to change sign on latitude if Northing = 'S', and on long if Easting = 'W' (G12 sps format only).
- tTEM import: Some depth sounder points would be lost on import if GPS data was more frequent than depth sounder data.
- AEM/tTEM export: data could not be exported from selected processing nodes.
- ERT processing: Changing the uniform data STD would not be saved for datasets without IP.
- General Model Import: Did not work when Layer Indication was set to 'Layer Thickness'.
- Batch gridding would occasionally use a wrong color scale.
- sERT Show Inversion Result: Last later properties would in some cases be wrong (display issue only).
- Adding Grid as Line to sections did not work if section layer name was different from grid name.
- Adding SCI constraints layer to GIS did not work for new EPSGs.

28.01.2020 6.2.0.0 WS84

New Features

- New Pre-processing tool for ERT/IP data from ABEM Terrameter LS 2:
  - Estimation and removal of harmonic (powerline) background noise
  - Spike removal
  - Drift removal with exponential drift model
  - Gating of recorded IP decays with gaussian window shape

  Read more here: www.ags-cloud.dk/Wiki/WH_DCIP_proc_DataSettings
- 3D gridding: Support for DOI blinding.
- 3D viewer: Support for DOI from 3D grids.
- New General Model import tool for import of models with support for DOI.
- New and faster colorscale editor with new features:
  - User defined number of tics
  - User defined values of tics
  - User defined format of tic values
- SCI: Time for setting up a new SCI node decreased by 80%.
- AEM import: Time for importing AEM decreased by 75%.
- AEM inversion: Inifile with data type dependent inversion settings (expert users only).
- AEM inversion: Automatically disable gates inside the front gate.
- GCM/HEM import: Support for Tie lines.

- GCM/HEM/sERT: 1st layer apriori on data visible on Edit form.
- Possibility to batch edit images.
- Possibility to create and edit images of imported external grids.
- Batch profiles:
  - Speed optimization.
  - New tool: Synchronize selection: show and hide the layers on the selected section if they exist on the master section.
  - Synchronize size and axis replace Synchronize.
  - Synchronize: Include the automatic axis checkbox setup from the master section.
  - Synchronized UTMX and UTMY axis are now based on the length of the axis from the master section.
- New tool: Batch export from Model Quality nodes.
- Show inversion result: Possibility to show data sign.
- Possibility to export data and models to geographic coordinate systems.
- Upload to Gerda (Danish users only): Support for tTEM.

Corrected bugs

- AEM inversion: Show only line numbers existing in the current processing.
- Model Quality themes were not colored correctly in MapInfo mode.
- GCM/HEM: Do not reload processing if already loaded.
- GCM/HEM/sERT add topography: Did not work if data, grid and map were different EPSGs.
- Add elevation model to workspace would crash if grid and map were not in the same EPSG, and subsection was selected.
- SCI on ERT data did not work.
- SCI on sERT data did not work for more than 100 models.
- Geosurfaces: Drawing geosurfaces on profiles did not work properly.
- Geosurfaces: 2d gridding would crash if a profile had not been opened.
- Profiles: Some older profiles would give 'Unsupported parameter type' error when trying to open.
- Point mover sometimes disappeared from GIS when using edit form and sections.
- Bugfix in ERT Gerda export (Danish users only).

06.09.2019 6.1.0.0 WS83

New Features

- Batch export of grids, point themes and bitmaps from inversion results.
- Batch generation of point themes and grid images.
- Batch editing of themes and point themes.

- Batch gridding: Possibility to not add layers to GIS after creation.
- Enabled export of large bitmaps (up to 65536 pixels).
- Add Model Quality themes to existing QC node.
- New functionality for applying extra STD to gates around sign changes for TEM data with IP effects.
- Support for IP parameters in 3D gridding.
- Creating sections from inversions: Merging sublines is now available for all datatypes, and the resulting section node names now have the correct number of digits in line number.
- GCM/HEM/sERT: Possibility to load/unload processings from memory.
- GCM processing: Separate running mean width for first layer resistivity and first layer depth.
- HEM processing: Separate running mean width and polynomial interpolation order for altitude.
- Keyboard shortcuts for GIS changed. See ags-cloud.dk/Wiki/W_KeyboardShortcuts for new shortcuts.

Corrected bugs

- GCM/HEM import: The last column in the column mapper could disappear when showing header lines.
- GCM/HEM inversion would in certain cases fail with 'INF is not a floating point value'.
- GCM/HEM: Update average data from Edit form could in some cases cause loss of 'Remove Negatives' flag, and negative data would reappear.
- GCM/HEM: Update topography would fail if topography grid did not cover the entire data area.
- GCM/HEM export: Powerline was rounded to too few digits.
- SkyTEM skb processing: Relocation of GPS to center of frame would in occasionally be slightly off.
- SkyTEM model export: For export of very large inversions, the channel numbers for high and low moment could be switched for some of the models.
- Possibility to generate a .gex. file from a .ge2 file containing only one moment.
- VTK to Model Selection: Error if VTK EPSG was different from map EPSG.
- Several minor fixes for import from ABEM Terrameter database.
- Borehole import: Error if first character in Rock Type identifier was a number.
- Workbench wouldn't start if it had been closed while minimized.
- Several bugfixes in connection with renaming of Sections.
- Upload workspace to ftp when reporting bugs is working again.

		• Upload to Gerda (Danish users only): Support for SkyTEM minerals datatype.
04.06.2019	6.0.1.0 WS83	**New Features** • .gex import: New optional keyword 'RemoveGatesFrom' in 'Channel' section deletes the rest of the gates for this channel. • .gex import: New optional keyword 'GateFactors' in 'Channel' section followed by comma separated string will add additional individual gate factors. • .gex import: New optional keyword 'GateSTDs' in 'Channel' section followed by comma separated string will add additional individual gate STDs. **Corrected bugs** • VTK grid to Model Selection: Key violation when importing a grid more than once to the same database. • VTK grid to Model Selection: For thin top layers, some points would not be visible. • VTK grid to Model Selection: Improved speed. • GCM/HEM import: Error when importing files containing datalines with dummy values for UTM coordinates. • GCM/HEM reprocessing: When choosing 'Keep Raw Data' on reprocessing, filtering of negative data values was not reset. • AEM SCI: Improved speed for writing tem files when a subarea is selected.
27.05.2019	6.0.0.0 WS83	**New Features** • Aarhus Workbench is released in 64 bit (32 bit not supported anymore). • 3D vtk grids may now be added to sections and used for creation of themes through model selection functionality. • 3D viewer: Support for IP parameters • Support for import of ERT-IP data from ABEM Terrameter database. • AEM processing: Possibility to add extra user defined STD around sign change for system response channels. • AEM inversion: Possibility to select data for inversion based on line number(s). • Considerably improved performance when reading DEM grids. • SkyTEM skb and tTEM import: Default coordinate system on import form is now set to coordinate system of the map. • GIS selection: New function 'Clear All' to remove all selections in all layers. • Create New Processing: If a database node is selected, automatically select it in the database dropdown on the New Processing form. • Import: If a database node is selected, automatically select it in the database dropdown on the import form.

- New node types to distinguish tTEM and xyz groundbased TEM from airborne TEM.
- ERT-IP: Support for import, processing, inversion, and export of integral IP only .dat files.

Corrected bugs

- ERT-IP export: Bugfix for export of full waveform IP data
- ERT-IP inversion: MPA inversion of newly imported data would fail unless the workspace had been closed and reopened between import and inversion.
- AEM xyz processing: Several minor bugfixes for 'Keep Raw Sounding Distance' option.
- Show/edit AEM data: For older workspaces, plotting some values under 'Transmitter' could give a range check error.
- Show/edit AEM data: Processings with less than 10 average data points could cause a range check error.
- AEM inversion: Always invert for pitch if channels containing X data are selected for inversion.
- AEM import: Make sure primary damping factor is positive.
- AEM xyz import: Improved error messages when errors are encountered in alc file.
- Halfspace auto resistivity: Blocky (L1 norm) inversion setting would be overwritten with L2 norm when using halfspace auto resistivity.
- Show Inversion Result: Residual was always shown as logarithmic, even if inversion was run in linear space.
- Minor corrections to format for export of 3D grids to vtk files (Paraview support).
- sERT inversion: 1st layer a-priori was not used correctly.
- sERT export: Water depths and water resistivities were not exported correctly.
- Section layers with interpolated model bars did not have a colorscale.
- GERDA upload: '1d-vertical' identifiers in database were not lowercase, and inversions could not be uploaded.
- GERDA upload: Bugfix for addition of survey info to single site groundbased TEM (SPIA data).
- GERDA upload: Bugfix for upload of renamed ERT inversion nodes.
- GERDA download: Improved performance when loading models downloaded from GERDA.

28.03.2019 5.9.4.0 WS83

Corrected bugs

- AEM processing: When initially processing with GPS device 1 and then reprocessing with GPS device 2, the original processing was not deleted from the database.
- AEM processing: Keep Raw Sounding Distance setting was not stored to properties.

		• AEM processing: For Keep Raw Sounding Distance, do not apply Trapez Min. No Gates filters and min/max Tx Altitude filters. • AEM reprocessing: Keep Raw Sounding Distance setting is only allowed to change if all processors are reprocessed. • AEM reprocessing: Always save to database after reprocessing. • AEM inversion: Auto disabling of negative data was applied after count of number of gates in use.
26.02.2019	5.9.3.0 WS83	**New Features** • Sections: Improved rendering quality of borehole labels. Labels have also been made slightly larger for improved readability. The font size can be changed using edit display. **Corrected bugs** • Sections: Labels on borehole layers were not visible. • Sections: View Data from a selected model would show a line between forward response gates.
19.02.2019	5.9.2.0 WS83	**Corrected bugs** • SCI inversion: Significantly reduced memory usage on writing models to database. • SCI inversion: Bugfix for datasets using system response. • 128 character path limit removed. • ERT: User edits for IP STD were not saved to database and exported to AarhusInv. • ERT import: Topography from surfer grid file did not work. • ERT: Add Topography did not work.
12.02.2019	5.9.1.0 WS83	**Corrected bugs** • AEM processing: Include uniform and user STD when calculating average data value. • AEM processing: Keep Raw Sounding Distance was only visible in Debug mode. • GCM/HEM processing: Noise data could cause very large STDs giving a range check error on Show/Edit form. When processing, impose a max of 99 on average STDs. • GCM/HEM processing: If error bars were invisible on opening the Show/Edit form, chart would not update correctly when turning off data (required Update Edits). • Inversion: Support for sections containing only one model.
05.02.2019	5.9.0.0 WS83	**New Features** • New database structure for streamed ERT data with significantly improved performance for saving and loading data. Note that this database structure cannot be loaded from older versions of Workbench. • AEM processing: Possibility to keep raw sounding distance, i.e. make the processed data a copy of the raw data (when importing pre-processed data). • Aarhus Batch Inversion released. Use several servers/PCs for queuing and inversion jobs.

- New importer for Iris Instrument data. Support for Iris .bin files.
- Nicer tics on logarithmic color scales with small numbers.
- Chart component updated.
- AarhusInv version 8.20 is released. Several memory issues fixed.
- ERT import: Topography may be read from data lines (type 11 only), dat file, topography file, or .ewp file. Topography from data lines is overwritten by any of the other types, each of which can be chosen on import form.
- ERT import: Possibility to import UTM coordinates from dat file.
- GCM/HEM/sERT import: Default EPSGs removed from import templates.
- GCM sps import: Don't load 'From EPSG' from import template even if it exists – it is already correctly set from lat-long coordinates in sps file.
- TTEM: Do not automatically disable negatives in .tem files.
- TTEM: First layer defaults on inversion form updated.
- Show/Edit form: Now by default showing error bars on raw data for GCM and HEM to be able to see negative data (shown by red color on error bars if Show Sign is enabled).
- Show/Edit form – speed: Now showing GPS speed for TTEM and calculated speed for AEM.
- TTEM/FloaTEM: Use median filter when processing water depths.
- Show/Edit form: Improved display of data channels of buffer form for AEM.
- Maximum Phase Angle Inversion enabled for airborne TEM and ERT data.
- Adding external grid to Section: Possibility to use individual color scales for different layer parameters.

Corrected bugs

- SkyTEM/TTEM processing: When CalculateRawDataSTD has been used on data import, never apply stacking STD to average data even if the raw STDs are small.
- HEM import: Importing line numbers as separate lines only worked for space/tab delimiter.
- Geosurfaces: When using the 'Move point' feature, the old point was not removed properly from database and would reappear when reloading the workspace.
- Geosurfaces: Last point on surface was lost on export.
- ERT processing: Processed datapoints would in some cases be slightly offset along profile.
- 3D grid: If Entire Area was unchecked on startup, checking it did not give the entire area, but only previously selected area.
- Show Inversion Result: DOI was not displayed correctly if inside last layer.

		• Show Inversion Result: Significantly improved loading times for IP inversions. • Show Inversion Result HEM: If some data points did not contain altitude, inverted and a-priori altitudes would appear out of sync on Show Inversion Result (display issue only). • Show/edit AEM data: For selected workspaces, plotting some values under 'Transmitter' would give a range check error. • Trying to import an external grid in an EPSG different from map EPSG would give an error. • When selecting an 'Alias' EPSG, the EPSG value would in some cases be wrong and all coordinates transforms would fail. • Occasionally, Workbench would hang when trying to open a workspace. • Copy layers for Section: Did not work for interpolated model bar layers. • Add SCI inversion to section: If the same profile layer name was used on different sections, all subsequent layers would be identical to the first (using the same xyz file on disk). • Export of .dip files was broken. • MergeGerda tool: Did not work for new EPSGs. • Proper error message when SCI nodes cannot be created because data is linearly distributed (SPIA-TEM data). • Proper error message when attempting to make a Model Selection from an Amira SPIA database without EPSG. • TTEM: Add topography no longer requires SkyTEM license.
18.10.2018	5.8.3.0 WS83	**Corrected bugs** • Fix of "Invalid typecast" error appearing in some cases for Show Inversion Result of xyz imported AEM LCI inversions.
03.10.2018	5.8.2.0 WS83	**Corrected bugs** • Sections: Wrong ordering of certain layer types. • ERT data import: Error for addition of topography. • ERT inversion: Inversion error for newly imported data.
24.09.2018	5.8.1.0 WS83	**New Features** • ERT data export: Possibility to export electrode UTM coordinates in .dat file. **Corrected bugs** • 2D ERT and ERT-IP inversions failed for data with offset on electrode positions. • Zoom to layer on opening 3D viewer.
11.09.2018	5.8.0.0 WS83	**New Features** • New Grid import tool. Support for VTK and Surfer grids. Add 2D sheets and profiles to section (e.g. from Res2DInv) and add 2D/3D grids to the 3D Viewer for visualization, comparison and thresholding.

- New generalized export form (all datatypes except ERT). Possibility to transform coordinates on export.
- Possibility to export raw and averaged data for GCM, HEM, sERT, and PACES
- SCI: Possibility to do SCI inversions using L1 norm ('Blocky' mode)
- Sections: Possibility to add full 3D grids.
- Sections: Performance improvements for adding models to section
- AEM import: When importing using the old geometry (.geo) format, a .gex file is automatically created in the same directory
- SkyTEM gex import: If using frontgate, make sure a front gate filter exists
- AEM gex import: NoGates is not required when data contains only one moment
- AEM processing: It is now possible to re-process Altitude without losing manual editing of data
- 2D ERT: now outputting uniformly spaced models, even if some soundings do not contain data
- ERT IP: The possibility of inverting using Integral Chargeability has been implemented for ERT IP data.

Corrected bugs

- Some Model Selections would appear more than once in the list on Add Models to Section form
- AEM/GroundTEM/TTEM processing properties. If Tilt/Altitude had not been processed, the properties for the processing node would anyway show that a processing device had been used
- SCI inversion: If a workspace contained processing nodes of more than one datatype, the default datatype for confile settings would always be set to the datatype of the last processing node in the workspace instead of the actual datatype being inverted
- SCI on SPIA TEM would fail because of a missing section in an inifile
- GCM sps import: In some cases, import would fail if the last line in the datafile was incomplete
- Sections: When adding models as interpolated bars, the DOI fading was in some cases added at the top instead of the bottom of the models
- Sections: When adding models as interpolated bars to a section in conductivity, resistivity would be displayed instead.
- Sections: Functionality for adding DEM grid to pofiles was broken
- Sections: When adding DOI lines, an extra point was sometimes added as the last point, making the DOI line go back and adding a point with value (0,0)

		• Size of labels on borehole layers on sections was not saved properly, and any change in format would return the label to its original size. • Export of SkyTEM xyz data with system response did not work ('Error in GenerateXYZFile'). • Gridding of geological surfaces was broken.
19.06.2018	5.7.1.0 WS82	**Corrected bugs** • SkyTEM import using .gex file: MeaTimeDelay was not added to gate times.
11.06.2018	5.7.0.0 WS82	**New Features** • Support for Cole-Cole and Maximum Phase Angle inversion for airborne TEM data (test-phase) • DOI for all IP parameters are supported • Support for all IP parameters in Themes and Model Quality. • Support for all EPSG coordinate reference systems for borehole module. • New 3D gridding option of inversion models for 3D viewer. • AarhusInv version 8.11 is released along with a new Advanced Inversion Settings (confile) editor. • Generally improved performance for workspaces containing a large number of nodes. • Adding external GIS layer: Support for Google Earth (.kml) format. • Sections: Batch saving can now be done using png instead of bmp format, using about 100 times less disk space. • Show and Edit data: Prompt for saving unsaved changes on closing window, instead of postponing the prompt until workbench is closed. • PDF Report Tool: Addition of Show/Hide Preview button. Performance is greatly improved for large data sets when preview is hidden. • TTEM: Support for importing filters as ASCII file during data import. • SkyTEM xyz import: It is now possible to import disabled data (in-use flags). • AEM: Import would fail if database already contained more than 25 data sets. • AEM import: Support for new geometry file format (.gex) for all data types. • GCM import: Support for data with both quadrature and in-phase in ppt. • HEM import: Data file delimiter may now be selected on import. • Standalone tool for merging models in different databases now working for SPIA databases also. • New inversion form for Airborne TEM • Auto function for sharp inversion • Full parallelization for 2D resistivity inversion

- Maximum number of model layers for smooth and sharp inversion increased to 40.
- Table added to inversion form.
- Possibility to show negatives for raw data in sounding plots.
- Histograms support IP parameters.

Corrected bugs

- Add Elevation Model: When adding surfer grids in ASCII format, the entire grid would be read from disk twice.
- PDF Report Tool: Under rare circumstances, copying a page in a loaded report would give an error.
- sERT: Addition of inversion nodes to 3D viewer would cause an error.
- When gridding using kriging, changing to Manual mode in Advanced Variogram Settings did not work properly.
- Sections: 3D grid layers from depth grids could be shown on depth axis sections.
- System response: Bugfix for sr2 files containing more than one time interval.
- AeroTEM: Bugfix for import and use of sounding specific waveforms.
- SSV: Auto Borehole Rating would give an error if the boreholes used were a subset of the boreholes in the Jupiter database.
- Error bars with negative data turned blue.

12.02.2018 5.6.3.0 WS82

New Features

- GCM/HEM processing: There are now 3 options concerning removal of negative data: ‘Before processing’, ‘After processing’, and ‘No’.
- GCM inversion: Phase may now be inverted in debug mode.
- ERT: Support for elevation in .ewp files.
- Streamed ERT: Negative data are skipped on import.
- ‘New SCI’ button is always enabled.
- Show and Edit Data: Possibility to see data sign on data and soundings.

Corrected bugs

- AEM inversions: Inverted altitude was not loaded properly.
- Groundbased TEM: Inversion form could not be opened.
- VTEM/AeroTEM: SCI inversions using Shift could not be imported to database.
- GCM/HEM: Points disabled by processing were visible on Sounding Plot from Show and Edit Data.
- GCM/HEM: Older processings could not be loaded.
- GCM import: No restrictions on number of tabs/spaces in data file when <Space/tab> is used as delimiter.
- Streamed ERT: If dummy data were present for first layer depths in import file, processing could not be loaded.

		• Streamed ERT: Data could not be saved from 'Show and Edit' form if 'Keep raw data' option had been used in processing. • Iris Syscal import: Data with less than 20 IP windows could not be imported. • ERT Show Inversion Result: In some cases, triangulation would fail because of coincident points. • Sections: 3D grids in elevation did not have correct topography when added to Sections. • Sections: Adding images to Sections didn't work properly. • Sections: Improved the sorting on Create Profiles from Models for min/max x/y, so that it also creates continuous profiles for lines made from sublines (AEM inversions only). • SCI inversions: Deleting an SCI inversion and recreating it with the same name could cause 'No connection to DBQ' error when creating Model Selections from it.
27.12.2017	5.6.2.0 WS82	**Corrected bugs** • Bugfix in creation of new GCM SCI inversion node.
22.12.2017	5.6.1.0 WS82	**Corrected bugs** • AEM data could not be processed using only one altitude processor. • ERT import: Write EPSG to database. • ERT import: Proper error message for illegal subarray types.
19.12.2017	5.6.0.0 WS82	**New Features** • Support for all EPSG coordinate reference systems (in meters). • New 3D viewer for visualization of data and inversion results. • Support for SCI inversion of SPIA TEM data. • GCM: Possibility to import water depth and resistivity, and using these as first layer a-priori information in LCI inversions. • GCM: Import in sps format. • GCM/HEM import log: Show number of imported data points. • sERT: User defined delimiter in data files on import. • LCI: Possibility to set max. number of allowed iterations for inversion. • Several minor improvements to geophysical logs module. • Sections: Possibility to show DOI when using interpolated bars. • Sections: Synchronizing during batch processing now also synchronizes bottom axis type. • Groundbased TEM: Disable all negative data in .tem files for inversion. • AEM: If helicopter GPS speed has been imported, show this in Edit Data form instead of calculated speed.

Corrected bugs

- Bugfix in standalone tool for merging exported SCI databases.
- Sections: Fixed a bug that could in some cases cause an error in triangulation when adding 3D layers.
- Sections: Creating a section from an inversion/model selection worked for SkyTEM, but not for other airborne TEM data types.
- Sections: Section windows could not be minimized.
- 2D gridding of geological surfaces did not work.
- Deleting SCI databases in a workspace no longers prevents the workspace from being opened.
- GCM: Models could not be exported if dataset contained more than 10 channels.
- GCM/HEM import: Ignore data lines where coordinates are zero.
- AEM inversion: Do not write .tem files to disk if they do not contain any data in use (caused crash in inversion code).
- AEM inversion: Older workspaces using exponential waveform could not export .tem files.
- AEM: Processing nodes where processing was done using only GPS device 2 could in some cases not be loaded.
- AEM: Moving a dataset node in the tree could prevent inversion of its processing subnodes.
- AEM: Add topography on dataset node would cause 'invalid typecast error' if the dataset contained more than one (unloaded) processing.
- WMS layers: On opening a workspace, do not try to show layers if not connected to internet.
- ERT: Creating a new processing node would cause "Missing EpsgID value" error.
- Opening a workspace would sometimes give an access violation or 'abstract error'.
- Deleting grids and images, and recreating them with the same name resulted in the old images being used instead of the new ones.
- Model Quality nodes could not be created from model selections created from other model selections.
- Upload to GERDA: SCI inversions could not be exported to database for GERDA upload when profile layer with the same name existed (Danish users only).
- Upload to GERDA: Sharp inversions did not get the correct ident (Danish users only).

04.08.2017 5.5.0.0 WS82

New Features

- Sections: Support for adding geophysical (borehole) logs to sections.
- ERT: Support for adding topography to data after import.
- SkyTEM import: Updated import form.

- AEM processing: New filter for data processing (‘Ave STD Filter’) to be used for removing the rest of the gates when encountering processed data with STD above a threshold.
- AEM processing: Update of default processing settings.
- AEM processing: Buffer window did not correctly display ‘holes’ for time intervals with no data.
- AEM Data Shift: Possibility to apply factor/constant for all gates
- AEM: Support for import and visualization of battery voltage on and off times.
- tTEM: Support for import of Rwb files.
- tTEM: Support for processing of data with no altimeter and inclinometer data.
- SCI inversion properties: If area has been chosen by layer polygon, the layer name is shown in inversion properties.
- System Response (.sr2) files: Support for comment (‘//’) in data lines.

Corrected bugs

- GCM/HEM import: Allow empty lines in data files.
- HEM import: Altitudes with dummy values in data files would cause inversion to give an error.
- GCM/HEM processing: When removing negative data, this is now done on processed data after averaging of raw data.
- SkyTEM import: Empty lines in mask file would cause import error.
- SkyTEM processing: Using data from both altimeters could sometimes give an erroneous processed altitude, if altimeters were located on the same side of the frame.
- AEM import: Do not require a front gate for LoopType = 3.
- AEM processing: GPS processing would give an error if GPSPosition2 was defined in geometry file, but data contained no GP2 data.
- AEM processing: If data was initially processed using a Digital Elevation Model (DEM) and subsequently reprocessed without the DEM, the DEM was not removed from the processing settings list – this could cause a database key violation.
- AEM Add Topography: An error would occur if processing was not loaded prior to adding topography to AEM data.
- AEM Add Topography: Elevation for points undefined in grid would in some cases be reset to zero even though 'Leave elevation unchanged for points outside grid' options was selected.
- AEM inversion: Disable gates which are too close to the waveform when writing TEM files for inversion.
- AEM inversion: On ‘Select Data for Inversion’ form, omitted gates are not by default loaded from registry. Load them manually from registry using ‘Last’ button.

- AEM inversion nodes: It is no longer necessary to load the corresponding processing when deleting AEM inversion nodes.
- AEM inversion modes: Do not ask for confirmation for each node when multideleting AEM inversion nodes.
- AEM data export: Earliest gates would sometimes be omitted when exporting raw and average AEM data to xyz file.
- Show Inversion Result: Start Model Constraints was not loaded properly from database (always showed 99).
- Fix rare performance issue when creating Model Quality nodes.
- Themes: Bugfix for Mean Resistivity themes in Elevation.
- Themes: Do not create empty theme nodes.
- Batch Gridding: It would in some cases be attempted to write temporary files to the C:\Windows\System32 folder.
- Fix unchanged coordinate system after using coordinate transformation in General Model Import.
- Fix problem with reading coordinate system from external GIS layers.
- When deleting processing nodes, do not prompt for deleting the entire dataset for external database.
- Trying to export a section layer which was not visible on section form would cause an error.
- Sections: Adding a 3D grid to a section using Depth axis did not work properly.
- Sections: Error when trying to open sections containing older layers (< 2014).
- Sections: Fixed a bug when using coordinates or .prf files for creating profiles more than once.
- Adding SCI apriori from LAS files didn't work.
- MCI model export: Only one segment per position would be exported.
- Upload workspace feature was not working properly.

05.05.2017 5.4.0.0 WS81

New Features

- Import and visualization of borehole logs (LAS format).
- GCM/HEM: Export DOI with inversion results.
- GCM/HEM: Export STD also for dat files.
- GCM/HEM: Possibility to view Properties for a processing node.
- GCM/HEM: Support for systems with up to 20 channels.
- ERT import: For Syscal and GDD data, do not import data points where two electrodes have the same position. Skipped points may be seen in the import log.
- ERT export: Support for exporting pole-dipole data in dat and dip formats.
- Profiles: Possibility to choose interpolated bars when adding an inversion node.

- Profiles: Possibility to choose Depth as axis when adding a Model Selection.
- Export: Possibility to export Model Selection subsets created with Use Selection functionality.
- Model Quality: Support for creation of Model Quality nodes from LCI and processing nodes.
- Model Selection: Support for creating Model Selections from 2D ERT and ERT-IP inversions.
- sERT import: Possibility to add a GPS shift.
- sERT import: Support for import of Elevation.
- sERT import: Support for different data file delimiters.
- sERT import: Support for import of several data files at once.
- Possibility to make a local workspace copy of the database when connecting to an external database.
- Executables are digitally signed and timestamped to aid users and virus-scanners verify their authenticity.
- GIS: Added basic support for layers based on a Web Map Service (WMS layers).
- GIS: Mouse wheel scroll can now be used for zooming in the map.

Corrected bugs

- License: Fixed an issue that prevented some users from connecting to the license server.
- GCM/HEM/sERT: Sounding plot from Show/Edit Processing would under some circumstances not show the correct data.
- GCM/HEM/sERT: Import window could disappear on mouse click outside the import window.
- GCM/HEM/sERT: Import window was not scalable and was too big for a laptop screen.
- ERT: Creating a processing node right after import would sometimes result in a 'Layer could not be created' error message.
- Export: For export of AEM SCI inversions, forward data (_syn file) was not normalized by transmitter area.
- Model Quality functionality from inversion nodes was broken.
- Coincident points error from Delaunay triangulation would cause the workspace tree to freeze.
- Profiles: Adding an interpolated bitmap layer which was not the first profile layer caused a 'Cannot open file' error.
- Running more SCI inversions with system response at the same time caused an error.
- In some cases new workspaces did not get the coordinate system selected by the user.

28.03.2017 5.3.1.0 WS81

Corrected bugs

- SkyTEM: When creating a new processing from data imported before version 5.3, STDs on raw data would be too large.

27.02.2017 5.3.0.0 WS81

New Features

- New tool for creating PDF reports from a Workbench workspace.
- Support for import, processing, and inversion of streamed ERT data.
- ERT/IP: Support for import of Iris Syscal format.
- ERT/IP: Support for import of GDD format.
- GCM: New improved inversion setup.
- Show and Edit Processing (GCM/HEM/AEM): Significantly improved performance when selecting several points for Sounding Plot.
- SkyTEM: Support for calculating STD from raw stacks on import.
- ERT IP Processing: Significantly improved performance when updating charts.
- Sections: Profile Distance column added on export of Profile layer as xyz file.

Corrected bugs

- SCI: Allow zero a-priori STD on altitude for airborne TEM.
- SCI and LCI: A-priori STDs smaller than 0.01 m will be reset to zero.
- SCI: Deleting a top level SCI node would not delete all corresponding files and folders on disk.
- Show Inversion Result (GCM/HEM/AEM): Improved performance of model position explorer – no more blinking and redrawing when selecting models.
- Show Inversion Result (GCM/HEM/AEM): Closing the Model Parameters window would take a long time for large datasets.
- Show Inversion Result (GCM/HEM/AEM): The chosen color scale for the Model Section window is now saved in the registry.
- GCM/HEM processing: Always remove datapoints with value zero, also when keeping negative data.
- AEM topography: A number of points at beginning and end of flight would lose the topography after processing, even though topography was defined for all points in xyz file on import.
- AEM Show Inversion Result: Y-axis unit was incorrect for SCI inversions.
- AEM: SCI inversions did not work with System Response Convolution.
- AEM export: Data units were not correct.

		• SkyTEM import using ge2 file: Definition of current interval would be wrong if the current of the first entries in the PaPC sps file were far from the final current level. • ERT IP Inversion: Under some circumstances the lateral STD on Depth would not be saved. • ERT IP Show Inversion Result: Bugfix for triangulation. • Sections: Choosing 'Cancel' in Axis Properties would in some cases cause the error 'Unsupported Axis Type'. • Sections: Bugfix for adding 3D grids with elevation. • Sections: Deselecting all layers on an open Section would result in an error. • Sections: Bugfix for creating new section from models – data without timestamps was not sorted correctly. • Point Themes: Fixed a memory leak. • Geological Surfaces: Deleting the top Geological Surfaces node would cause an error. • Fixed synchronization error between workspace tree and GIS layer manager when creating new GCM and HEM processings. • When choosing a colorscale on a section, the correct colorscale would not always be picked. • The Chart tab is no longer automatically selected when it is available. • Fixed dependency on legacy files needed to create grid layers on Windows 10.
12.12.2016	5.2.2.0 WS81	**Corrected bugs** • Updated 3rd party component that occasionally caused problems when opening workspaces with ECW-files in the map. • AEM: Occasionally, a device with number -1 would appear in the device list for GPS processing. • LCI and SCI: When viewing properties for an inversion, the inversion settings would be saved to registry and be default for next inversion. • SCI: Changed default values – now calculate DOI by default and do not by default automatically close SCEmbi. • SCI: If license to a data module had expired, the SCI setup form could under some circumstances not be opened. • GCM/HEM processing: If processing is cancelled, do not save settings to registry.
21.11.2016	5.2.1.0 WS81	**Corrected bugs** • AEM: When plotting many soundings simultaneously, sounding plot would sometimes show both current and previously selected soundings. • GCM: Sounding plots would for SCI display a checkbox for imaginary data, even though dataset contained no imaginary data.

- SCI setup: If there were errors in the settings when pressing Finish button, Finish button would be disabled and the entire setup had to be restarted.
- Show Properties was disabled for airborne TEM LCI inversions, if processing had not been loaded.
- Show Properties was disabled for SCI inversions.
- For LCI inversions using sections, inversions were under special circumstances run with an L1 norm minimization for some sections, even though L2 norm ("smooth") was selected. This produced more blocky inversions than anticipated with the L2 norm.
- AEM xyz import: Import would fail if device number 2 was defined in .ge2/.gex file without a device number 1 of the same type.
- AEM/SkyTEM import would crash when trying to write import log, if too many errors were encountered on import.
- SkyTEM import: Support for PaPc SPS files in TX3 format.
- Do not check license when viewing SCI inversion properties.

07.11.2016 5.2.0.0 WS81

New Features

- Support for connection to license server through proxy server.
- SkyTEM: Much faster reading of .ge2 geometry files.
- GCM/HEM: Support for import and visualization of Pitch and Roll.
- GCM/HEM: Improved Column Mapping Editor, including possibility to turn viewing of comment lines on/off.
- GCM/HEM: Mean Sounding Distance added to import log.
- GCM/HEM: Possibility to keep negative data when processing.
- Workspace wizard: Support for adding GIS layers from several other file types (mif, shp, tif, jpg, jp2, ecw).
- The profile x-axis can now be changed to display UTMX or UTMY coordinates instead of Profile Distance.
- Display of unit information added to color scale on map, and update of color scale improved.

Corrected bugs

- More informative message if workspaces cannot be opened because Firebird service is not running.
- HEM: Laser altitudes and inverted altitudes appeared out of sync in Show Inversion Result when 'Keep raw data' had been used in processing (visualization error only).
- HEM: Fixed some erroneous labels on importer.
- GCM/HEM: Mapping of Line Number column was not saved to import template.
- GCM/HEM: After processing with discarded negative data, it was not possible to get the negative data back when re-processing.

		• Tab files could not be added to GIS. • Airborne TEM: Better error handling when trying to invert time intervals with no data. • Add Topography: Checkbox replaced with dropdown to clarify the options when a data point lies outside topography grid. Bugfix for GCM/HEM where topography could not be added if datapoints were found outside topography grid. • ERT: Under special circumstances 2D inversion could not be shown. • ERT: Bugfix for disabling IP. Sometimes the entire curve would be wrongfully toggled off. • ERT: Graphical error when hiding toggled off points on IP Window fixed. • Corrected a bug when opening a Workspace with old version GERDA type list. • ERT: Bugfix for the DC InUse parameter when exporting .dip files.
22.08.2016	5.1.1.0 WS81	**Corrected bugs** • Inversions were run with an L1 norm minimization, even though L2 norm ("smooth") was selected. This produced more blocky inversions than anticipated with the L2 norm.
17.06.2016	5.1.0.0 WS81	**New Features** • Import wizard settings are now added to import log for airborne TEM and groundbased TEM xyz file import. • Added import log for HEM and GCM. • Sparse format used for AarhusInv to speed up inversions. **Corrected bugs** • Fixed a parallelization error for use of the last two CPUs in AarhusInv • Fixed a bug that would under rare circumstances result in the processed GPS points being distorted from the profile for HEM and GCM. • Fixed a bug for conversion of coordinate systems when importing HEM and GCM data. • Fixed an error in writing waveforms in DCP files for 1D and 2D DCIP inversions. • Fixed a rare rounding error for DEM maps. • Fixed a rare AarhusInv error where inversion would stop due to poor convergence. • Fixed a bug in changing colors functionality for borehole databases. • Changed format for layer names for Mean Resistivity themes ('m' used as decimal separator for layers with non-integer depths). • Order Import and Workspace logs alphabetically.
03.06.2016	5.0.5.0 WS81	Corrected bugs • Fixed a bug in creation of bitmaps.

02.06.2016 5.0.4.0 WS81

New Features

- New database structure for GCM and HEM data with significantly improved performance for saving and loading data. Note that opening GCM/HEM workspace will cause a workspace upgrade, meaning that workspaces cannot be opened in previous versions of Aarhus Workbench.
- New importer for GCM and HEM data, including possibility to add an absolute STD for each channel.
- Possibility to add user STD to HEM and GCM data.
- SCI GCM/HEM inversion properties: Show which data (Re/Im) has been used for inversion.
- Display Tx Altitude on HEM edit data form.
- GCM inversion: Do not allow inversion of Phase data.
- If no imaginary data is present, do not display imaginary data options on GCM and HEM Edit data form.
- GCM and HEM: SCI can now be created from the proc node.
- Support for System Response for SkyTEM data.
- Help function replaced by new online wiki help which is linked to Workbench and is called from any window by F1.
- Geological surfaces: Lines can now be broken.
- Geological surfaces: Lines can be exported.
- Parent nodes of Profile and Geological Surfaces can now be deleted.
- XYZ export for SCI inversions now includes a time stamp if it exists (for airborne TEM).
- ERT: Shift A/Q shortcuts: for removing the entire curve IP curve.
- ERT: Improved speed and stability in processing of IP curves
- ERT: Constant phase angle (CPA) inversions for DCIP data implemented
- ERT: Import of In Use Flags and STDs for DCIP data implemented for .dat files
- ERT: Support for L1 inversion (new smooth option).
- ERT: Plot negative data by a red color
- ERT: A checkbox is added for not showing the disabled IP points for both the processing and the results
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Corrected bugs

- Fixed ‘Unknown axis type’ error for displaying soundings curves and model sections for HEM data.
- Several minor bug fixes for HEM and GCM buffer size window.
- Order channels by channel number on GCM and HEM inversion form.
- Under given circumstances, NaN points could be allowed in use in inversion data files for HEM and GCM.

- Save selected channels for inversion to registry for GCM and HEM.
- If no changes have been made, do not redraw GIS layers when closing GCM and HEM Edit data form.
- Hide point mover on GIS when Edit data form is closed (HEM and GCM).
- Do not show Altitude parameters for Groundbased TEM Edit data form.
- Bugfix for loading GCM/HEM processing settings from file.
- Remove GIS point mover indicating model position when closing 'Show Inversion Result' form for GCM/HEM.
- Bugfix for 3D gridding of layers below 1 meter in thickness.
- Fixed 'Unknown device type' error for adding topography to airborne TEM processings.
- Case insensitive file extensions for geometry files for SkyTEM import.
- Fixed a bug in plotting of inverted models for xyz imported SKYTEM data
- Fixed that bug that could in some cases cause a slight distortion of GPS coordinates for airborne TEM.
- Import of TEMPEST data: Set proper wave form type and don't perform any checks on wave form amplitudes.
- ERT: Fixed a bug in using Res2Dinv for inversions.
- ERT: Fixed a bug in opening the processing window directly after import.
- ERT: For inversions the DOI layers are now always 20.
- ERT: Fixed a bug for uploading raw data to GERDA (Danish users only).
- Interpolated bars added as an option for Model Selections on Profiles.
- Changes in shortcuts.
- Fixed a bug in upgrade the Workspace Database.
- SCI: The triangulation is moved to the end of the SCI wizard to minimize waiting time during SCI setup.
- Bug fixed when creating image of DEM after selecting region on GIS.
- Boreholes: Fixed a bug that prevented manually adding new and editing boreholes.

05.04.2016 5.0.3.0 WS81

New Features

- Node renaming features are now available for most node types.
- Export xyz files for GCM and HEM inversions (LCI and SCI).
- Sections re-enabled for LCI inversions.
- Airborne TEM GPS processing: 'Reposition in x-direction' has been changed to 'Move GPS in x-direction from frame center', i.e. we now relocate relative to frame center instead of relative to GPS position.

- View Release History from File tab.
- Show length of a new profile while drawing on the map.
- Added more values to the drop-down list of standard deviations on the chart.
- Changed functionality of Zoom To Layer. A small margin between the layer and the edge of the map is added.

Corrected bugs

- 'Use Selection for' functionality fixed.
- Fixed 'No parameters stored for the ColorScale' bug that could occur when clicking on profiles in newly created workspaces.
- Fixed a problem with file processing that would prevent SCIs from running.
- Fixed a problem that prevented the database from rebuilding after inverting a new SCI node.
- Print out gate open times and gate widths in tem file for SkyTEM xyz format.
- When importing groundbased TEM models, only one model was shown on profiles.
- 'Auto scale resistivities'checkbox for SCI inversions was not set correctly with the value from registry.
- Bug fixed in show inversion result for SkyTEM data imported as xyz-files. This only affected models with no low moment and was only a visualization problem.
- Bugfix for deleting HEM and GCM models.
- Bugfix for 'Add Topography' functionality for airborne TEM.
- File extension is now case insensitive for geometry files.
- Added check for empty fields when reading data from shape files.
- ERT: Sounding distance for 2D inversions is now locked to be the electrode distance.
- ERT: Max resistivity is set to 95000.
- ERT bug fixes on the processing window:
  - 'Electrode Map Symbols'-button is removed.
  - Small fixes on the statistics tab.
  - Max slope on the processing tab now has more options.
  - The Pseudo Section is now automatically updated when the slope filter is applied.
- Fixed hot/down issue for buttons on GIS and Chart tabs.
- Bugfix for export of ERT data to MasterGERDA (relevant to Danish users).
- Solved issue that prevented SCI of GCM and HEM data from being written to database.
- Export model issue caused by invalid registry entry was solved.
- Exporting raw data would fail for workspaces with more than one map.

		• Fixed adding grid layers to map on newly installed OS. The "gdal_translate.exe" was missing a file (MSVCP71.dll).
12.01.2016	5.0.2.0 WS81	**New Features** • New **Workbench Viewer**: Workbench Viewer mode is a free version of Aarhus Workbench only for showing already made themes and profiles. The target with this version is customers to our clients who only need to look at results, either during a project or final results. Contact us to get a free Viewer license. • It is now possible to import GCM data in mS/m and ppt. **Corrected bugs** • Log of error messages after TEM file export for SkyTEM inversions added. • Fixed an error that occurred when putting a SkyTEM LCI node directly on a profile • Fixed a bug that would occur when viewing inversion results from the profile window. • Hints are now also available on disabled buttons. • Minor bug fixes issues on the user interface. • Bug fix in create shape file from a borehole selection where drill depth is undefined for some boreholes. • Fixed an error that occurred when setting VerticalRef of a borehole to 'None'. • Profile distance for GCM was calculated incorrectly during import in case of coordinate system transformation. • Bug fix in adding and editing Borehole database entries. • 3DGrids added as Profile layers will now display the applied color scale. This color scale can also be edited on the profile window.
09.12.2015	5.0.1.0 WS81	**New Features** • Creating Profiles from models can now be done in more directions. • Workspace logs are now present on a tab alongside the workspace explorer. **Corrected bugs** • GCM/HEM: Do not display negative data or data which has been turned off by processing on the Edit Processing form. • DEM: Minor changes in the adding topography window as well as DEM nodes in the Workspace are saved as binary files. • Increased point size for layers based on shape files. • Showing labels could make multi colored layers lose their color in the map. • Tools on GIS ribbon were inactive on newly created maps. • Bug fixed in coordinate transformation when adding a-priori from conductivity logs.

- Bug fixed in multidelete if both parent and children nodes are selected for deletion.
- Fixed license issue which prevented SCI inversions.
- Fixed license issue causing error when trying to unregister machine.
- Edit display is now possible for GCM and HEM data.
- Proper handling of creation of map layer when input contains no valid data points.
- New hints for the file tab.
- Minor graphical changes on the tabs in the main window.
- Bug fixed for workspaces with invalid coordinate systems.
- Bugfix for deleting GCM and HEM processing nodes.

26.11.2015 5.0.0.0 WS81

Aarhus Workbench 5.0 is now available for download at
www.aarhusgeosoftware.dk (International users)
www.hgg.au.dk/download/workbench (Danish users)

Online upgrade from 4.x is not supported.

Hardware dongles no longer supported - you will need a software license code available from
Support@AarhusGeoSoftware.dk (International users)
Support@geo.au.dk (Danish users)

The 5.0 installer runs a required upgrade to Firebird server 2.5.4.

The new major release includes several important changes:

- New intuitive ribbon user interface with significantly improved performance.
- Native GIS format changed from MapInfo to ArcGIS for significantly improved performance and portability.
- Default database engine changed from BDE to IBDAC for significantly improved performance.

Corrected bugs and minor new features:

- Note fields on workspace tree nodes would sometimes be displayed incorrectly.
- New databases could not be deleted before workbench had been closed (IBDAC only).
- The airborne TEM xyz importer no longer gives an error for empty lines.
- Fixed a bug that in rare cases could cause an inversion job to crash.
- Bug fix in opening workspace after auto-creating new profiles with layer.
- Workspace and AEM import log working again.
- Bug fix in adding models to profile when more than 50 inversions are present in the workspace.

		• Importing a DEM node into a workspace now always transforms it to the coordinate system of the map. • Adding topography from a DEM in the workspace will now always use the correct coordinate system.
19.10.2015	4.2.15.1 WS81	**New Features** • Fixed an issue that would prevent the user from moving batches of data, i.e. when upgrading workspaces or creating DBQs.
14.10.2015	4.2.15.0 WS81	**New Features** • Borehole Editor table may be exported as text file. • Major revision of the import module for airborne TEM data (except SkyTEM). **Corrected bugs** • Significantly improved performance for saving processings for HEM and GCM. • Workbench again supports spaces in the map node name. • Creating new surface layers on profiles no longer results in errors and the new surface appears right away. • An error would sometimes appear when moving data between database tables. • Database queries would sometimes return a false record count. • Fixed a bug that was causing problems with color scale in debug mode. • Avoid QR5RunDXE access violation when creating borehole report. • Fixed a range check error when opening Borehole Editor. • Added a correction routine to restore a broken registry key. • Fixed access violation caused by closing the ERT model viewer form. • Fixed an issue that caused a crash if 'Cancel' was selected when adding a name to a new DBQ layer on a profile. • Adding models to profiles directly from the inversion nodes no longer results in an error.
	4.2.14.2 WS80	**Corrected bugs** • Fixed a bug that prevented user from editing color scale
	4.2.14.1 WS80	**Corrected bugs** • Fixed a bug that prevented data from being shown on some forms
20.07.2015	4.2.14.0 WS80	**New features** • First step toward a new GUI: The Workbench Main Menu bar, the Workbench Explorer and the Map is now a single window. Please note that this is the first release in a redesign process towards a more modern user interface. Further changes and enhancements are planned for future releases.

		• Workspaces with databases in Access format (.mdb) can no longer be upgraded. This was done to prevent corruption of workspaces caused by operations on the databases unsupported by the Access format. • SSV: Rating filter added on the borehole editor. • Model exports for GERDA will now also include DOI when LCI nodes are exported. • Significantly improved TEM start model estimation. **Corrected bugs** • SSV: Changed validation of dialog settings. • SCI: Bug fixed in showing properties. • GIS: Fixed bug where synchronisation of layer visibility from map legend to workspace manager failed for some layer types. • GIS: Optimized the "UpdateFilter" routine that maintains and filters information in the GIS legend. • TEM: Fixed bug in export TEM files, where a date comparison could cause export of a channel to fail. • Bug fixed in showing coordinate system from the southern hemisphere when adding/editing borehole database
16.07.2015	4.2.13.0 WS80	**New features** • SSV: Added selection of data points based on a polygon layer. • SSV Statistics changed to SSV Job Summary and run time, data and total residual added to the shown list of values. **Corrected bugs** • Bug in updating map in ERT module which slowed everything down. • Bug fixed in upgrading certain SSV nodes.
14.07.2015	4.2.12.0 WS80	**New features** • SCI: Added selection of data points based on a polygon layer. • 'Error reading Emo File' message in EMBI/SCEMBI now displays the specific error message. • Geological surfaces: - The error bars can now be hidden of by clicking a check box in the profile window. - The 'update' button for uncertainty update is only enabled when something can be updated - The order of the surfaces is changed according to the nodes in the workspace manager • Major revision of the SSV module: - The borehole editor: o On each layer added a top and bottom interval, a clay fraction and a comment field. o A rating is added to each borehole if auto estimate is chosen when using auto clay thickness. This is used

		to estimate uncertainties for the layers of the boreholes. o MLMax and MLMin values can now extend above and below the interval depth - Three themes are added. The calculated and input fraction for borehole clay thick and the clay fraction on Geophysical clay thick. **Corrected bugs** • Fixed an index error for DCIP in the inversion visualization window • SSV: Fixed bug in load of saved wizard settings for parameter "UseMinDepth" • Bug fixed for SSV when manually editing values in the borehole editor, where not all layers are given values from auto clay thickness • Bug fixed for SSV in registry for 'run hidden' and 'delete output files' checkboxes
20.04.2015	4.2.11.0 WS79	**New features** • A new AarhusInv.exe is included in the release: • It is now possible to include more than 99.999 models in an inversion **Corrected bugs** • Fixed an error in adding SKYTEM LCI to profiles. • Fixed an error in exporting FEM data. • Fixed an error that occurred when attempting to export large DBQs • Fixed issues with 'Export Data and Models' in DC/IP • Bug fixed in import ERT if negative Z values were present • Bug fixed for DC/IP inversions • Bug fixed for editing ERT in the sounding window • Bug fixed when running ERT inversion without saving the processing • Fixed errors in Tempest inversion that caused user inputs to be interpreted incorrectly • Fixed an error that occurred when attempting to run an SSV job on a large DBQ • Fixed a synchronization problem for HEM in AarhusInv • Fixed a problem with DBQs that prevented the user from combining nodes from different datasets. This will still not work if the datasets are in different databases
31.03.2015	4.2.10.0 WS79	**Corrected bugs** • Fixed an error that occurred when trying to make a new DBQuery from an inversion node. • DBQueries should now be created with the promised number of models. • Fixed an error that prevented creation of BHQs.
03.03.2015	4.2.9.0 WS79	**Corrected bugs**

- ERT profiles without IP no longer give access violation when edited.
- Fixed a bug in import of Tempest models.

03.02.2015 4.2.8.0 WS79

New features

- Support for differential GPS data for SkyTEM data.
- GCM/HEM processing: Possibility to make the average data a copy of the raw data (to be used for pre-processed data).
- 'Use Sparse Formats' under Preferences ➔ Misc is now functional. Note that this option should be checked (which is default) in order to perform large-scale SCI inversions. Uncheck it if working with ERT.
- Normalized Chargeability is added to the list of possible profile layers that can be created.
- New right click menu item for exporting ground based TEM to new GERDA after adding survey info.
- ERT: Pole-dipole can be imported, processed and inverted.
- ERT: Negative IP data point can now be used for the inversions (The data needs to be reimported to use negative IP data points).
- ERT: The IP filter on the processing form is changed to allow negative IP data points.
- ERT: A checkbox is added for full decay curve deletion from the data profile window.
- Import of SkyTEM data is no longer restricted to 31 points in the geometry file.
- SCEMBI and EMBI had their residual plots expanded to properly view small residuals

Corrected bugs

- The memory consumption of SkyTEM xyz export was brought down significantly; it should now be possible to export large amounts of data
- The memory consumption of SCI inversions was brought down significantly. It should now be possible to invert large amounts of data.
- The memory consumed handling DBQueries was brought down significantly. It should be possible to handle large-scale DBQs now.
- Fixed a bug that caused points on the wrong geosurface profile to be deleted
- Fixed a bug that caused freshly drawn points on a geosurface profile to be placed at wrong indexes
- Fixed a problem that caused stack overflow when trying to invert large LCI nodes
- Fixed a bug that would incorrectly cause the model count to be shown as -1 when creating a new DBQuery.
- Fixed a bug that prevented successful merge of two borehole databases under add/edit borehole.

- Fixed a bug that prevented the user from manually adding boreholes to a Jupiter database
- Fixed a timing issue with SCI temporary file I/O
- Add Topography now working properly for HEM/GCM and PACES.
- Airborne TEM (except SkyTEM): For large datasets, import would sometimes crash with error message 'Time is not increasing'.
- Bug fixed in adding survey info for ground based TEM.
- Optimization of the triangulation procedure for the model display.
- Export of profile layers that originate directly from inversions is now possible.
- ERT: Minor changes on the Inversion setup form.
  ERT: The sound distance is now locked when first inversion is run, even if the processing has not been saved.
- Bugfix in the registry of the coordinate system in 'add/edit borehole…'

Updated AarhusInv to version 6.31

- This version fixed some data specific issues for DCIP data.

28.01.2015 4.2.7.0 WS79

New features

- ERT Module:
  - Inv. Visualization window:
    - The DC Rel. diff plot is replaced with DC residual
    - An IP residual plot has been added
    - The forwarded IP data can be shown. This is synchronized with the processing window and you will be able to see the toggled off IP data.
    - There are now 4 expandable windows for plotting the models and data
    - When showing an inversion with triangulation the DOI blinding is shown on the Model
  - Processing form:
    - Entire IP curves can be deleted by checking the 'Enable/Disable full Decay'-checkbox either on the IP data window or on the pseudo section window when showing IP data
    - The save function has been optimized when saving the processing when IP data is present
    - Filter for IP data can be found on the 'Processing' tab on the processing window
    - The property window for ERT inversions are changed to match the inversion setup window

Corrected bugs

- Fixed bug: After inversion, IP data corresponding to the first DC data point for each model was not imported correctly to the database
- Fixed a bug in the pixel showing inversion with triangulation

		• Show inversion Result from GCM and HEM inversions now display Channel numbers on the x-axis. • Fixed an error that occurred when adding inverted models to a profile • Fixed a bug when using data from an unconnected borehole database • DBQ: Fixed an error in 'Add Topography..' • SCEMBI: Fixed an issue that caused SCEMBI to crash when inverting large models • SCI: Fixed an error in the 'Layered model from smooth results' that prevented the user from selecting a model • Fixed a bug in ERT: After inversion, IP data corresponding to the first DC data point for each model was not imported correctly to the database. • Fixed a bug in inversion setup for ERT where resistivity and depth horizontal constraints would get mixed up.
26.01.2015	4.2.6.0 WS79	**Corrected bugs** • Fixed an error in the Borehole Report function • Fixed error in adding DBQs to profile
03.11.2014	4.2.5.0 WS79	**Corrected bugs** • Fixed a bug that caused errors to be incorrectly displayed as 'Unassigned connection in THGGQuery object' • Fixed a bug that prevented users from exporting PACES data. • Fixed a bug in 'Export Data and Models' that prevented the user from selecting the correct Ident •
25.09.2014	4.2.4.0 WS79	**New features** • While running LCI and SCI inversions it is now be possible to see the progress of the iteration process, including the time of the latest iteration • ERT: Changing the values for all the layers is now possible on the inversion setup form (check box) • The Profile functionality has undergone major reconstruction: - Restructuring of profile window and 'add to profile'-window - New profiles can be created automatically from inversions and DBQs - LCI and SCI inversions can be added directly to profiles without converting to DBQs - IP model parameters can be added as separate nodes to the profile from both DCIP nodes and DBQs (from DCIP inversions) **Corrected bugs** • Fixed an issue that prevented users from creating new SSV processings

		• Fixed a number of smaller bugs in the PACES preprocessing program (PACES.exe) • Fixed an error on ERT/IP import related to non-integer values of Ton and Toff in filter/waveform inifile • Fixed an issue with saving the standard uniform STD for DC and IP data. Default values are changed to 2% for DC and 10% for IP. • Color and blinding properties may now be changed on existing Profile layers
25.09.2014	4.2.3.0 WS78	**Corrected bugs** • Fixed error in DOI line format on profiles • Fixed ERT 2D inversion error • Fixed a bug where you couldn't add user notes to nodes • Fixed an error that prevented creation of themes from DBQueries Fixed a bug in the Batch Gridding module
24.09.2014	4.2.2.0 WS78	**Corrected bugs** • Fixed a bug where you could not create a DBQ node from an SCI inversion.
10.09.2014	4.2.1.0 WS78	**New features** • Survey scale inversion: All inversions are now run in one chunk, and all settings referring to dividing jobs have been removed. • New geometry file format (.ge2) supported for importing SkyTEM data. **Corrected bugs** • Under certain circumstances, omitting gates from inversion under Inversion Setup would delete the wrong gates. • When ERT models were exported, IP data was not included. • ERT inversion visualization: Last layer was not displayed. • ERT: con file can now be edited from inversion setup form. • Removed check for unused dll files causing GStat stackdump error. • Error from importing general models fixed. • Added check for overlapping segments when reading geometry file (SkyTEM import). • Default min/max res in con file changed to 1e-2/1e5. • Display error of Res2DInv inversion results fixed. • Res2DInv: Displayed error message on second and subsequent model imports. Furthermore, the edition form has been removed. • Boreholes can now be added to Jupiter databases downloaded from GEUS.
05.09.2014	4.2.0.0 WS78	**New features** New ERT Module: • CVS changes name to ERT and introduces another node level as for SkyTEM

- New GUI for configuring inversion jobs
- New Inversion Visualization
- Support for AarhusInv 1D DC/IP, 2D DC and 2D DC/IP inversions
- Additions to the processing system:
  - STDs can now be calculated based on a noise model after import (Noise Model section on the Misc. tab)
  - The Inversion visualization form and the processing form are now synchronized for selection and toggling points on/off.
  - Negative and zero valued IP data points are toggled of during import.
  - When changing the profile settings all focus depths are now checked instead of unchecked.

Res2DInv:

- Support for automatic selection of 2D model inversion number

New GCM/ HEM module:

- New processing and visualization system for GCM and HEM.

Updated AarhusInv to version 6.20

Corrected bugs

- The ERT importer now remembers latest used paths and file names
- "View Report" on boreholes from profiles working again.
- Only one ERT processing form can be opened at a time.
- The Map is now centred around the marker, when the mouse cursor is moved along the Pseudo Section on both the Processing and the Inversion Visualization Form.
- Fixed it so that ResApriSTD and a few related vis nodes now also can be made for the last layer of the model.
- The xyz export from DBQ and SCI nodes now uses less memory. The exporter was changed to write out the data in chunks, rather than one big stream.
- Solved issue that rarely caused some cells of SCI launched from the inversion node to crash. The issue could happen when the DOI was calculated with too few points.

04.09.2014 — 4.1.1.769 WS78

Corrected bugs

- Fixed an issue with grid files in the MEP importer.
- Existing GCM and HEM workspaces are now loaded as processed data instead of raw data.

21.05.2014 — 4.1.1.768 WS78

Corrected bugs

- Fixed an issue that would delete any lines from DEM grids on profiles, if another grid was deleted from a DBQ.
- Fixed GCM and HEM issue for SCI inversions.
- Topography can now be added directly to the data nodes for GCM and HEM.

		• MEP: Toggling points on with the toggle tool from the data profile form is now done point-wise instead of whole lines. • MEP: The Curve shift factor is now properly remembered when the form is opened. • MEP: A save-reminder is implemented. • For SCI it is now possible to generate a layered model from a smooth model when not in debug mode. • Profiles: Node reordering is working again. • Fixed issue that caused an error message upon deletion of grids on DBQs.
09.12.2013	4.1.1.767 WS78	**Corrected bugs** • Fixed issue with active bitmap in the Workspace manager when a DBQ was deleted. • Add topography now works for GCM and HEM DBQ nodes. Work is still ongoing for adding topography for GCM and HEM data nodes.
05.12.2013	4.1.1.766 WS78	**Corrected bugs** • Batch gridding and gridding are now working normally again.
25.11.2013	4.1.1.765 WS78	**Corrected bugs** • Fixed an uninitialized variable that could cause SCI inversions to crash during the second run.
19.11.2013	4.1.1.764 WS78	**Corrected bugs** • Fixed a database memory leak problem in SCEMBI.
05.11.2013	4.1.1.763 WS78	**Corrected bugs** • Fixed another rare text formatting issue that caused issues with the manual altitude edits.
04.11.2013	4.1.1.762 WS78	**Corrected bugs** • Fixed text formatting issue that caused issues with the manual altitude edits. • The xyz exports for HEM data is now working again. • The Sync Select Tool on the GIS is now working again.
31.10.2013	4.1.1.761 WS78	**First Delphi XE Workbench release** **New features** • New significantly improved GUI for the ERT data processing system. **Corrected bugs** • A problem with the sounding window 'jumping' has been solved • Two range checks for the SSV model grid have been added: 1) Node distance must be larger than 200 m. This prevents the user from setting up non-meaningful SSV jobs. 2) Total number of node points (X-nodes times Y-nodes) must be < 10000. This prevents the user from setting up very big SSV jobs that will probably result in out-of-memory

		problems. Note: < 10000 nodes can still cause out-of-memory problems depending on the amount of memory in the current PC. • Fixed a rare issue that prevented the edit form from opening as it could end up with a logarithmic axis with negative values • Fixed an issue that under certain circumstances may prevent the creation of the VIS node altdif • Loading an .inv file while creating a new SCI node is now working • Geological Surfaces: Interpolated lines are now displayed as points, thereby showing "holes" in the interpolated surface. • Fixed an issue causing error when importing TEM40 data into an empty Gerda database.
30.10.2013	4.1.1.760 WS77	**Corrected bugs** • Updated version of GStat, resolving stability issues in the batch gridding module • Resolved issue with inversion of MegaTEM data
25.10.2013	4.1.1.759 WS76	**New features** New Visualization Themes implemented: • STD for the Conductivity Layer • a-priori STD for the Layers: Resistivity, Conductivity, Thickness and Depth • Difference between input data and inverted data • Max. relative data residual per data point • Gate no. for max. relative data residual per data point **Corrected bugs** • Issue that caused translation function to become 99 in all its nodes was solved. • Fixed issue causing errors when uploading an open workspace.
04.09.2013	4.1.1.758 WS76	**Corrected bugs** • Fixed issue that prevented making manual altitude corrections • Removed chart tools with obsolete functionality • Fixed issue with deletion of profile nodes • Changed the layout of the multi delete function • Batch Gridding nodes are no longer added to the GIS manager.
14.08.2013	4.1.1.757 WS76	**Corrected bugs** • Fixed issue with long database paths when creating few layered models for SCI
11.07.2013	4.1.1.756 WS76	**New features in geo. surfaces** • New right click menu on the geo. surface list on the profile form. Functionality from former buttons has been moved to this menu.

		○ 'Visible Lines...' --> Points and grids from other profiles can be shown on a profile. ○ 'Line Display Settings...' -> Format of lines can be set. ○ 'Update Current/All grids' -> Updates grids with existing settings. ○ 'Update GIS Points' -> Updates the GIS points. Is shown by ticking on the geo. surface node in the ' 'Workspace Manager' ○ 'Update Color' -> Updates the geo. surface color. This can also be done by clicking on the colored square. ○ 'Delete' -> Deletes the geo. surface. • Uncertainties of already drawn points can be changed by selecting the point and selecting a new Uncertainty number, then press the button 'Update Uncertainties' **Corrected bugs** • Fixed issue with the GIS when creating new workbench projects with certain EPSG coordinates. • Fixed issue with deletion of files when using the "Create Final Report Page(s)" functionality. • Fixed issue with giving new profiles names of previous deleted ones. • Survey info database selection is now also available for MEP export. • Font and color can now be changed in Edit Label. • When Batch Gridding the nodes are added to the GIS manager. • Check on Geometry file during import is now only done on enabled gates.
03.07.2013	4.1.1.755 WS76	**Corrected bugs** • The SKY icon name has been changed to AEM
01.07.2013	4.1.1.754 WS75	**Corrected bugs** • Fixed issue with the start up location of the SCI wizard form. • Now the UTM coordinates of the mouse position is written on the status bar on the profile plot. Tick the status bar visible on the top of the profile plot to use the feature. • Fixed issue that occurred when uploading workspaces with the “Upload Workspace…” functionality.
18.06.2013	4.1.1.753 WS74	**Corrected bugs** • Fixed an issue that prevented setting the PACES processing in-use flags from the data profile form in the inversion explorer properly. • Changed the layout of the sounding curve plot form for PACES data • A check was added to ensure that all gates have a center times above zero also after being time shifted.

		• The "New Combined Theme..." option has been removed from the right click menu on map layer nodes. • Fixed issue with point themes reverting to a single colour when changing the labels. • Re-enabled functionality to enable and disable points on DBQ and borehole maps. • It is now possible to run a SSV job with grids also when the workspace name include spaces.
13.06.2013	4.1.1.752 WS74	**Corrected bugs** • Fixed a synchronization error in toggling PACES data in-use flags from the inversion visualization system • In 'Plot Data' is added a message during click on 'constant/factor, asking for selection of item if no item is selected • In 'Plot Data' is the maximum value for 'buffer size in meters' under 'set buffer pos...' changed to 5000 • The deactive 'Plot Data' now closes the 'Plot Data'-window for Paces data as well • Fixed issue with units in the sounding plot form for SkyTEM data • Changed the layout of the sounding plot form for TEMPEST data • Fixed issue with how the shape of the DC explorer is saved • In inversion settings for TEMPEST data there are new default values for the wing settings • The shortcut in Model Explorer to Model Explorer Settings has been changed from Alt + a to Alt + f
07.06.2013	4.1.1.751 WS74	**Corrected bugs** • Fixed an SCI inversion indexing error introduced in version 4.1.1.745. The issue is non-critical as any inversion affected by the problem is immediately identifiable when inspecting the result • Fixed a bug regarding importing VTEM data for two columns • A bug preventing running SSV jobs has been fixed • Fixed issue with the GIS info tool • Now there is a check for identical label names when importing XYZ files
24.05.2013	4.1.1.750 WS74	**Revision of the SSV module** • The performance has been significantly improved • Bigger jobs can be handled • Blinding the geophysical models with DOI has been implemented • The linking to the GEUS bore report web page has been fixed • SSV jobs can only be run on 64 bit windows platform, due to a new GStat version • The con file is now version 7

		• The model parameter analysis can be turned of in the con file. This reduces the calculation time significantly • Min/max value for Upper and Lower model parameter in con file has been adjusted **New features** • In the TEM importer the column number are now shown in the alc file editor • Now the ALC file editor for airborne TEM data can set gate_ch01_begin and gate_ch01_end • If the A-priori STD is set to 0 for airborne data the altitude is kept fixed during the inversion • It is now possible do delete databases from the Workbench **Corrected bugs** • Now it possible to use colorscales from all 'VIS' nodes in the 'Create Final Report Pages' • Now map symbols for boreholes and models are shown correctly when adding conductivity a-priori on SCI • Now 'New SCI' can only be called from relevant nodes • An issue in the Tempest importer regarding time stamps has been fixed • Fixed issue with altitude normalization that occurred after switching off debug mode • In the general model importer, the X and Y coordinates are now required • Now the previous selected database is remembered in the DBQ wizard • Fixed issue in AarhusInv with memory leak for TEMPEST data
15.05.2013	4.1.1.749 WS74	**Corrected bugs** • Export xyz files from an SCI node is now working properly • Fixed issue with AarhusInv running on Windows XP • When creating a new GERDA or Borehole database, the default location in the workspace folder is now always used. • After adding a new GERDA database the importer is automatically shown.
07.05.2013	4.1.1.748 WS74	**New features** • Now skyTEM inversions can be added to profiles. Use 'Add Data Query(DBQ) from a profile node **Corrected bugs** • Fixed a stability issue writing PACES forward response files from AarhusInv • Now copying profile layers is working again • The unit for average sounding plots has been corrected
11.04.2013	4.1.1.747 WS73	**Corrected bugs** • Fixes issue causing problems when viewing profiles
10.04.2013	4.1.1.746 WS73	**Corrected bugs** • Fixes to em1dinv-configuration files for Tempest data

		• Smoother performance when adding topography grids to data • Enabled copying of the GIS map to the clipboard • Fixed issue with the edit display functionality • Due to better disk-based GIS-performance, memory catching is now disabled by default • Fixed coordinate problem with the DBQuery Wizard • Fixed issue with move up/down on profile nodes • A DOI related bug in the general model importer has been fixed • Updated version of AarhusInv supporting the Intel “Penryn” processor family
04.04.2013	4.1.1.745 WS73	**Corrected bugs** • The point size in the processing system are not back to normal • Fixed issue with error message when closing workspace • The properties on LCI inversion nodes now works again • Issue creating new processings when name of SkyTEM node was not unique • Issue when closing WS with several active PACES processings • A bug preventing running X-data inversing with pitch has been fixed • Fixed issue when using the edit display functionality for point themes • Now boreholes visible status reflects the master, from where the profile layers are copied from, i.e. if their layer is visible on the master, it is visible on the 'copied to' profile as well. • Fixed issue about uploading of databases to the FTP
03.04.2013	4.1.1.744 WS73	**New features** • Beta release of Geosurface module. Official release to be announced soon. **Corrected bugs** • Added performance information to the log file of AarhusInv and resolved a special case problem with the approximate TEM response
14.03.2013	4.1.1.743 WS72	**Corrected bugs** • Fixed save issues on processed PACES data • All bitmaps produced with batchgridding were of a single color • Fixed an error that caused an exception when drawing new profiles
05.03.2013	4.1.1.742 WS72	**Corrected bugs** • Fixed issue in the SKYTEM processing system • Fixed issue related to the update of the inversion kernel
01.03.2013	4.1.1.741 WS72	**New features**

		• Updated version of the inversion kernel (AarhusInv version 6.0): - Memory consumption lowered significantly over previous version. - New approximate TEM response supporting X-component data. - Support for modeling of Gaussian filters found on the latest SkyTEM instrument. - Elevation based resistivity regularization to better accommodate effects of topography. **Corrected bugs** • Fixed user reported issues with the optimized GIS component • Fixed a number of issues as well as optimized the PACES pre-processor.
15.02.2013	4.1.1.740 WS72	**Corrected bugs** • Fixed issue related to profile drawing in the GIS
08.02.2013	4.1.1.739 WS72	**Corrected bugs** • Issues related to moving nodes up/down in the workspace tree. **New feature** • Improvements to the GIS-performance. The redrawing of maps is now faster. • The ‘auto scale’ option for inversions now provides much better starting models for LCI and SCI.
31.01.2013	4.1.1.738 WS72	**Corrected bugs** • Fixed a database related bug in SSV 'auto clay' • Fixed issue with bad data type in batch gridding process
21.01.2013	4.1.1.737 WS72	**Corrected bugs** • Fixed issue with too big STD values on raw SKYTEM data
02.01.2013	4.1.1.736 WS72	**Corrected bugs** • Fixed critical pathing issue that occurred spontaneously when activating SkyTEM processings
17.12.2012	4.1.1.735 WS72	**Corrected bugs** • Implemented load/save of dates of .GDT files in the PACES pre-processing program. • In the SSV auto clay calculation a change has been made when calculating between two grids. If the value from the grid at the borehole position is above the elevation/topography from the boreholedatabase the borehole/interval is set 'not in use', and an autocomment is added. This makes the SSV job run. • Fixed issue during import of data with multiple channels (TEMPEST, SKYTEM XYZ) • Fixed issue with inversion of old PACES data downloaded from GERDA.
12.12.2012	4.1.1.734	**Corrected bugs**

	WS72	• Fixed bug during a processing node action • Fixed issue with the GCM importer in the ppm format
11.12.2012	4.1.1.733 WS72	**Corrected bugs** • Fixed issue with the SCI
21.11.2012	4.1.1.732 WS72	**Corrected bugs** • Fixed issue with the fence gridding in GIS • Fixed bad check for dummy values and thicknesses in the general model importer • Fixed issue with section-selection in inversion explorer • Fixed a number of issues in the CVS-processing module • Removed limit of 8 characters on VIS node names • Fixed bug on the update of the color scale in the color scale wizard • Fixed random bug making the export of an SCI node, correctly inverted, impossible. • In SkyProcessing when plotting GPS data, GPS Altitude has been changed to GPS Elevation (WGS84) and GPS Elevation has been changed to GPS Altitude. **New feature** • Keyboard shortcut for toggling map-centering on/off in SkyTEM processing (Ctrl + C) • It is now possible to change the order of the nodes in the Workspace Manager tree. Use the right click menu or the short cuts Ctrl + and Ctrl – • It is now possible to know the database name of a node by passing the mouse over this node. • The copy to clipboard functionality has been enabled again. • Support for different numbers of layers in the general model importer (models from xyz-files). • To allow for colorscales to handle very small units, a 'scaling factor' has been added to the preferences form. If used, values will be multiplied by this factor before a colorscale is applied. • GIS now supports SID raster layers
16.11.2012	4.1.1.731 WS71	**Corrected bugs** • Fixed issue causing monochrome display of VIS-nodes when 'In-memory'-caching was enabled for the GIS • Log option is now available for Histogram works out in the Colorscale wizard • Fixed bug with Res2DInvViewer and the wrong library files • Bad coordinate settings from the CVES importer have been fixed • Fixed bug on Auto Clay Thickness button, in the borehole editor • Fixed issue related to the display of the wrong/no symbol on the map from processing the system • Fixed small issue related to the manual edit/entry of boreholes

		• Fixed bug with the project name during an export model • Fixed bug with lines number on SkyTEM importer **New feature** • The line numbers for PACES data are now available in the inversion system (LCI and SCI) • Performance improvement in the VTEM, AeroTEM, Tempest and MegaTEM importers • The log report of the import is now displayed in the wizard importer when data have been imported • During export of models, the msc file is not written out anymore. DOI values are now available in the inv.xyz file •
15.11.2012	4.1.1.730 WS71	**Corrected bugs** • Fixed bug on unavailable actions in the main menus • Fixed issue with the 'Display Properties'-button in the SkyTEM processing system.
10.10.2012	4.1.1.729 WS71	**Corrected bugs** • Option “altitude normalization” (beta version) is now only available in debug mode. • The label 'field' for a layer can now be set via right-click in the Layer Manager in the GIS. • Fixed bug on the topography visualization: values are now only elevation and not the difference between elevation and inverted altitude anymore. • Small changes to VIS-nodes in the Workspace Manager. **New feature** • Sync. from the GIS to inversion model position explorer is now in place • Labelling of profiles is now possible using the GIS. Multiple deletes functionality is now available from the right click menu of the map level. All selected nodes will be deleted at the same time
18.09.2012	4.1.1.728 WS71	**Corrected bugs** • Line files now support the line type, under format LineNumber.LineType. Values for line type are from 1 to 9. Line file without this line type are still supported. A default value (1) is then used. • It is now possible to edit the plot display during a theme creation. • Fixed issue with SkyTEM sync. from the GIS..
14.09.2012	4.1.1.727 WS71	**Corrected bugs** • Fixed bug with LCI inversion and "Force continuous models" option : mod files are completely rewritten without issue. • Fixed issue triggered when adding topography to GCM nodes.

		• Fixed the creation of themes and the Windows registry database.
03.09.2012	4.1.1.726 WS71	**Corrected bugs** • Fixed bug making the SCI node creation impossible • Fixed bug on reporting bugs form Cancel button • Fixed bug on unavailable actions in the main menus • Fixed bug during altitude processing with unavailable devices • Fixed small issue related to the map indicator from the profile window
30.08.2012	4.1.1.725 WS71	**Corrected bugs** • Fixed registry bug when setting up an inversion (LCI and SCI) by adding safe checks in the code. • Numerous dataset specific issues resolved in the PACES processing module **New feature** • Support for Jupiter borehole databases in Firebird format: - It is now possible to use Firebird borehole databases - Implemented color scale editor for borehole lithology. Right click on a borehole database and select "Change Colors..." • New bug reporting system. The new system facilitates generating a more comprehensive error report along with automatic Workspace upload to the HGG support server
28.08.2012	4.1.1.724 WS71	**Corrected bugs** • Minor issue with em1dinv configuration file fixed. • The bug with the synthetic files, during the export of models into files has been fixed and the synthetic file contains now the correct values for columns REAL and IMAG. • Fixed minor bug in GIS display of processed PACES data. •
27.08.2012	4.1.1.723 WS71	**Corrected bugs** • The wave form definition (for wave form type 2) is now correctly written (when exporting TEM files for instance) **New feature** • A warning message is now displayed before launching an inversion if the Workbench uses a Trial license file. • PACES processing now available.
16.07.2012	4.0.1.722 WS71	**Corrected bugs** • Export Data : for MEP data, the Datasets Selector Form is not displayed anymore since all datasets must be selected to input survey information. These datasets are automatically selected. For other data types, this form is still displayed and user can select any dataset he wants.

		• A fix has been made on the export models functionality (with creation of files). All frequency columns are now correctly written out. **New feature** The batch gridding function is now available for external files.
05.07.2012	4.0.1.721 WS71	**Corrected bugs** • A mode file reader compatibility problem that could cause an exception when trying to display profiles in version 4.0.1.720 has been fixed. • Issues regarding survey info on CVS data resolved. Client information can now be set independently and an issue in adding information on inversion software has been fixed. • Models Edition for 2d inversions : the ident name has been fixed and now uses the datatype for all data but TEM. For TEM data, the datasubtype is used. • The Note field, stored in the MOEDITION table, can now accept 1024 characters, without any other restriction. • When exporting models, the table MODSW is now correctly filled up. • When exporting data, the inversion software fields, in the survey information form, are not available anymore because they are useless. • The text in the upgrade dialog has been changed to a correct description of the upgrade process • Creation of VIS nodes has been sped up. **New feature** • It is now possible to invert using a shift factor for TEM data
28.06.2012	4.0.1.720 WS71	**Corrected bugs** • Error in configuration file for em1dinv has been fixed.
22.06.2012	4.0.1.719 WS71	**Corrected bugs** • GIS: Zooming on the map using the mouse wheel is now slower, and the zoom behavior for the left/right mouse buttons has been switched. • Import of 2d CVS models has been improved and the MOEDITION datasubtype related bug has been fixed. • The upload to GERDA issue has been fixed. The export behavior has been checked and when exporting 2d models, only one unique edition is created, linking all the selected models together. • All colorscale related problems on a DEM node have been fixed. It is now possible to see the colorscale on the map for bitmaps created from DEM node and all error/warning messages are not displayed anymore. • The bug about opening the wrong workspace, on the Welcome Screen, has been fixed. Now, the opened workspace is really the selected one.

		• Problems with lck file that avoid opening a workspace, even if this one was not used by anybody, have been fixed. **New feature** • A new option is available for the Height System in the dataset settings : EGM-96 World. This is used when importing data.
06.06.2012	4.0.1.718 WS71	**Corrected bugs** • The new field refmodel, used to export tem models, is now available on the SCI export models form. This field is only enabled for SKYTEM, AEROTEM, VTEM, MEGATEM and Tempest data. **New feature** • A new installer for Aarhus Workbench is now available on our web site. (http://www.hgg.geo.au.dk/HGGsoftware/workbench/Workbench_full_4-0-0-700.exe)
31.05.2012	4.0.1.717 WS71	**Corrected bugs** • Some errors in the display of "Plot Settings" parameters have been fixed. • The coil response setting is now only available for SkyTEM data. So some bad checks are avoided when data is not SkyTEM • Some settings issues on the first page of the SCI wizard have been fixed.
25.05.2012	4.0.1.716 WS 71	**Corrected bugs** • Fix on the show inversion results forms. The inverted altitude and CR factors are now displayed again.
21.05.2012	4.0.1.715 WS 71	**Corrected bugs** • A bug about creating bitmaps has been fixed. For some color scales, it was not possible to save the levels into the workspace database because of identical values. • Registry issue with Plot Settings in the Models Section is now fixed. This issue could make the plot of some values impossible because of a bad factor value. • Fixed several MODEL.IDENT string formatting issues, mostly related to data type specific issues. • The TEM Data Import functionality is now working correctly. **New feature** • The resistivity in the layer intersected by the DOI (upper or lower) can now be extracted in 'Visualize data or Inversions'. The Theme is found on the DOI tab.
11.05.2012	4.0.1.713 WS 71	**Corrected bugs** • Added support for millisecond time stamp precision in SPS files • Fix in the export data and models functionality: no more issue when the node names have capital letters

09.05.2012 4.0.1.712 WS 71

New Features

- Now the DOI values are exported in the inv-files.
- A number of new processing settings have been added for airborne TEM data. This is
    - A separate set of trapeze filter width can be specified and applied to data above a given flight height.
    - A new slope filter for average data work from a given time and towards EARLY times. This is to delete early time data which has a non physical behavior. The filter is useful for e.g. VTEM data.

Corrected bugs

- Updated 32 bit version of em1dinv which resolves certain SCI stability issues for large problems. However, we still highly recommend using the 64 bit version whenever possible.
- A few bugs have been fixed in the upgrade procedure for the map, and the procedure has been optimized to run a lot faster.
- A memory leek when creating themes has been eliminated. Always close theme form before gridding, especially if the workspace is large!
- Small issues with transparency and bitmaps have been resolved.
- Resolved model edition related GERDA reporting issue. The GERDA error "ORA-00001: unique constraint (GERDA_OWNER.XAKGER$MODELEDITION_IDENT) " is resolved by performing a new export with this release of the Aarhus Workbench
- Improvement of inversion log stability
- Now the DOI lines on DBQ layers on profiles are initialized correct for new users
- The profile unit is now set correctly for new users
- The inversion is now by standard performed in dbdt as it allows data to be negative at early times correcting for coil response. A check has been added in the filtering procedures so that data are now always checked for negative signs according to the setting for the average sign filter.
- Improvement in error messages during a SkyTEM import.
- Problem with some PACES and MEP 1D inversions fixed ("Field value required" error)
- New format in the MOEDITION.IDENT field: the model reference is now added with following values: refmodeldk01, refmodeldk02, refmodelnone.
  This field can be selected for all TEM data type and is "refmodelnone" for all the other ones. The new format of the IDENT field is: dk.mim.ode.grundvand-faaborg-skytem.skytem2.refmodeldk02.1dsci.smooth.noprior.19layers_primary

		project ident.datasubtype.model reference. model subtype.parameterisation.prior.edition name • Fixed a bug in the CVES importer, so finer topography grids can be used. • A problem when using factor blinding of mean resistivity maps in connection with one layer models has been fixed.
25.04.2012	4.0.1.711 WS 71	**New Features** • The display, e.g. the color scale, can now be changed for a bitmap. **Corrected bugs** • In 'Show inverions result', the Bar & GIS settings form now remembers the last used color scale. • Setting the point size for VIS nodes now works properly. • The visual settings (colors, line styles, etc.) for the drawing layer are now remembered if the workspace is closed and reopened. • The help system for the Workbench now works for Windows 7/Vista systems. • The edition management has been improved for the SCI export and some inconsistency between values and edition ident name have been fixed. ModelSubType, prio fields are now correct. • The Edit color scale for 3D grids is now possible.
20.04.2012	4.0.1.710 WS 71	**Corrected bugs** • A bug regarding exporting SkyTEM models has been fixed. • Now it possible to export a theme shape format.
09.03.2012	4.0.1.709 WS 71	**Corrected bugs** • A bug when creating new profiles has been fixed.
	4.0.1.708 WS 71	**Corrected bugs** • A new license file is included.
01.03.2012	4.0.1.707 WS 71	**New features** • The colour, style and thickness of profile lines on the map can now be edited. Click on the profile node in the workspace manager. **Corrected bugs** • The map position indicator for Profiles etc. will no longer freeze if a new layer is added to the map • A patch has been made in order to allow importing old skytem system data: the number of shots can be read correctly • It is now possible to use any value as dummy value in the General Model Importer, and a different one for each file (models, data and response). The corresponding imported value will be NaN in the database. • It is now possible to use the field "Import Every" on the first page of the General Model Importer in order to skip some

lines from the file to import. If e.g. 3 is selected, then only 1 out of 3 lines are imported.
- Fixed an error in the SkyTEM data importer related to changes in the skb file header format. The issue was introduced in version 4.0.1.706
- Fixed an error in the SCI module that caused depth STDs for models lying on cell borders to become too large for the result model set. This bug was introduced in 3.3.14.365.

01.03.2012 4.0.1.706 WS 70

New features

- The 'Select SkyTEM' tool has been added to the Map window toolbox. It is located in the 'Workbench Functions' group.
- When creating a profile the unit can now be set to resistivity or conductivity. Then all DBQ's and 3D grids added to the profile will be in the selected unit.
- Now the Workspace database version and the Workbench version is stored for every node created. This information can be seen by double clicking at the panel at the bottom of the Workspace manager.
- Now the DOI as a line can be added together with the DBQ as bars on profiles. Both the DOI upper and lower can be added and the line display can be chosen.

Corrected bugs

- The 2d inversion can now manage the edition system, so MODEL and MOEDITION tables are updated after the import in Res2DinvViewer program.
- Check added during the SCI creation : it is not possible anymore to select the coil response inversion for only a part of data sources.
- It is now again possible to change the colorscale on profiles
- Fixed a minor log color scale display issue in the color scale selector.
- Restoring default inversion setting filenames from registry now works correctly.
- Color scale ticks for very small values on log color scales are now displayed correctly.
- The colorscale displayed in the Model Section Settings form is now restored from the registry (if the used colorscale file does not exist anymore).
- 'Zoom to layer' button on Map has been moved to the popup (right click) menu of the Map Layer Manager.
- Scale bar on map is now resizable and has been moved.
- The "add survey info" bugs have been fixed : it is now possible to select several datasets, to select any switch box (for MEP data) and to add the information correctly to the database. The edition entries will be updated without issue.
- The Skytem imported has been fixed and does not import SKYNAVVAL values from other data types (VTEM, AEROTEM, Tempest...) into the GERDA database.

29.02.2012	4.0.1.705
	WS 69
		Corrected bugs
		• In order to import models with the Groundbased TEM models (Danish users only) importer (2968):
		  ○ Choose one or several datasets on the left part of the form with the button "..."
		  ○ Choose one or several emo files on the right part with the other button "..."
		  ○ Select the dataset and the emo file you want and then, the Import button will be available.
		  ○ Before importing, you also need to set the Preferences and the Edition settings with the corresponding buttons
		• The options 'White as transparent' and 'Translucency' does not work when creating bitmaps from grids, or adding already existing bitmap layers to the map. Creating a bitmap from a grid will also result in the warning 'File not found: xxx.bmp', although the bitmap is created succesfully. The issue has been fixed, and the options should now work as before (2966)
		• GIS now flushes the layer memory cache whenever the maximum size of used memory is exceeded. This done automatically, and without displaying warnings to the user. The symbology for cached layers and disk-based layers is now also the same. This will improve overall performance significantly (2963)

27.02.2012	4.0.1.704 WS 69	**New features** • It is now possible to add topography directly when processing nodes. The DEM nodes list is displayed in a drop down, on the Processing Management form. Check the DEM option on and select one DEM node on the list. The corresponding grid file will be read and the topography applied to the node (1777) **Corrected bugs** • GIS now flushes the layer memory cache whenever the maximum size of used memory is exceeded. This done automatically, and without displaying warnings to the user. The symbols for cached layers and disk-based layers are now also the same. This will improve overall performance significantly (2963)
03.02.2012	4.0.1.703 WS 69	**New features** • New version of the GIS component added
01.02.2012	4.0.1.702 WS 69	**New features** • Improved performance, when working with large vector layers, from caching of layers in memory. This can be enabled/disabled under Preferences->GIS. • Speed has been very much increased when loading models for making themes. This is especially significant for large surveys (2953)

- When setting up a SSV between two grids a check for crossing or touching grids has been added (2779)

Corrected bugs and minor changes:

- The point size is now set correctly when using the 'Edit Display' dialog (2947)
- A database rebuild error has been fixed for copying new inversion nodes (2585)

31.01.2012 4.0.1.701 WS 69

New features

- GERDA export for reporting CVES 1D and 2D models to the national Danish master database is now supported (2944)
- When editing the color scale for a DBQ Profile layer, the resistivity is now input into the color scale wizard. Therefore the color scale can be optimized to the data, e.g. min./max. resistivity values (2876)
- DEM can now be used when adding topography (2870)
- Minor changes in the workspace wizard have made it better to use (2802)
- A filter has been added to the 'Add DBQ' to profiles form (2790)
- An unsupported data type error has been fixed (2754)
- Fixed a bug that could prevent making DBQ's of models imported using the general model importer (2753)
- Creating bitmap images has been speeded up (2748)
- The option Close EMBI... is now also available when workbench is not in debug mode for the LCI inversion settings form (2606)
- When exporting time domain Rhoa data to dat/syn xyz files, the data converted to dB/dt and the corresponding STD's are exported as well as extra columns as well (2584)
- When a profile is created a unit is selected (Ohm-m, mS/m or mS/cm). When DBQ as bars and 3D grids are added later on, they will be shown as resistivity or conductivity in the selected unit (1690)
-

Corrected bugs and minor changes:

- A given when adding raster layers to the map that have a different coordinate system than the map has been removed, as the GIS-component projects the layers correctly (2945)
- It was not possible to edit the order of the layers in the layer manager of the GIS, using drag-and-drop. This has been fixed. Drag-and-drop-moving of layers is now possible again (2943)
- Bug fixed to the load the inversion settings, on the LCI inversion settings form (2922)
- It is now possible to write in the field Max Sounding Gap on the LCI inversion settings form (2921)
- A bug in visualizations of data residual has been fixed. (2843)

- Some settings in the Settings Inversion of LCI jobs were not read from a loaded INV file (2813)
- The DOI information from EMO-files is now correctly imported in the ground based TEM importer (DOI tables were empty) (2807)
- Now visualization of data residual is also working for other data than skyTEM, e.g. tem40 (2806)
- When resizing bar on a profile, DOI fading no longer disappears (2743)
- 'Grid as line' on profiles now remember the last line format setting (2712)
- When adding a priori on a selection of points, it is now possible to change all layers at the same time (1872)
- Now it is possible to edit the DOI fading settings on DBQ bars on profiles (1792)
- The time i takes to copy a profile (not shifted) has been reduced (1790)
- Several enhancements to the VIS node creation has been made (1688)

Known issues

- Problems setting model editions for CVES data. This issue will be fixed before the end of January in both the 1D and 2D case.
- Full installation can not find .MSI file. Cancel and restart installation. Please refer to notes on home page.

30.01.2012 4.0.0.700 WS 69

New features

- Completely revised GIS user interface
- New installer
- Firebird server installed in classic mode to support multithreading

Corrected bugs and minor changes:

- When synchronizing profiles, they are now correctly send to top if e.g. hidden by the map (2910).
- New button added on the "Welcome Form", when Workbench is loaded: Open Latest Workspace. This button opens the last used workspace. The shortcut "Enter" can also be used (2874).
- It is possible to make a bitmap of a DEM directly from a DEM node. If one however uses show color scale on that theme one will get the attached error. The theme type is not recognized (2848).
- Fixed issue with forward response not being calculated for all SkyTEM models in an SCI inversion (2825).
- Fixed problems with Scembi error messages being suppressed (2825).
- Issues related to showing the “Select SCI Dataset” form solved (2824).

		• Fixed a bug in the sounding time stamp implementation for SCI inversions of airborne data that caused all times to appear as 0.0 (2817). • Spaces are now allowed in the groundbased TEM importer (and all other importers) (2811). • Groundbased TEM importer setting edition bug fixed: When importing more than one edition to the same database all models in the database got the previous edition name (2805). • Using the importer "Import of data and models (SiTEM/Semdi) caused an error "Unable to read SiTEM data". This has been fixed. Another issue that raised a range check error has also been handled (2798). • Now termination of the bottom layer and DOI blinding is initialized correctly in the 'show inversion result' for new users (2773). • Fixed an issue that could cause an exception when working with logarithmically spaced color scales. (2772). • The bias plots in the inversion explorer systems has been changed to show CRC plots. All references to bias is now referenced in terms of coil response correction (2770). • A SCEMBI issue when using a very large number of CPU's has been fixed (2768). • Fixed display update issue in the inversion dialogs "Omit gates from inversion" (2760). • Manual variogram settings are now working properly (2757). • Fixed an importer edition bug for TEM 40 type systems. (2725). • Fixed a SCEMBI licensing issue (1537). **Known issues** • Problems setting model editions for CVES data. This issue will be fixed before the end of January in both the 1D and 2D case.
17.01.2012	3.3.16.644 WS 69	**Corrected bugs** • A fix has been made for coil correction, lateral STD for SCI to follow same conventions as other STD constraints. 1.05 is now 5% not 500%
12.01.2012	3.3.16.643 WS 69	**Corrected bugs** • Fixed a bug that came when adding “Add Grid as Line..” to • profiles.
14.11.2011	3.3.16.642 WS 69	**Corrected bugs** • Synchronization between profiles failed, a fix for this has been made.
10.10.2011	3.3.16.641 WS 69	**Corrected bugs** • Termination and DOI blinding were initialized in-correct in 'show inversion result' for new users. This has been fixed.
06.10.2011	3.3.16.640 WS 69	**Corrected bugs** • Now Export from a SkyTEM node is working again.

26.09.2011 3.3.15.639 WS 69

Corrected bugs

- An error has been fixed where gates would suddenly be deleted when pressing the update button in the processing window for AEM data.
- Fixed a bug in the selection bars on Model Section showing profiles for SCI – SkyTEM.
- Now Export of .tab and .tif from a bitmap node works again.
- To prevent the color scale editor to freeze when working with very big grids these grid can no be shown in preview and the histogram is not calculated. This only applies for files larger then 10 MB.
- Fixed and access violation when running SCI inversion with HEM and VTEM data and a-priori information.
- Fixed a bug in the AEM (SkyTEM) importer which on some machines would give an access violation when importing data several times to the same dataset.
- Altitude settings in the SCI wizard were not always restored correctly from the database and registry. This has been fixed.

New feature

- DEM grids are available in the "Add Grid as Line" on profiles.
- There is a filter search added to "Profile Settings for Grid as Line".
-

19.09.2011 3.3.14.638 WS 69

Corrected bugs

- Fixed a bug in the selection bars on Model Section showing profiles for SCI – SkyTEM.
- Fixed a bug where SSV -in depth intervals- sometimes did not start from 0m
- The display of numbers for thickness in SCI-setup did not have the same number of decimals for values coming from the registry and for values coming from the “compute” button.
- The display of values in the inversion explorer has been changed.
- If the model position explorer settings is set to fixed, then the first use of the black arrows in the model position explorer now simply selects the first (arrow down) or last (arrow up) fixed scroll buffer possible.
- The average sign filters are now always re-applied when pressing the update button from the processing screen. This prevents situation where dbdt data can be negative because of manual editing’s.

New feature

- 3D grids on profiles now have 'holes' where the mean resistivity maps have 'holes'.
- Import of groundbased TEM data to GERDA is now possible. The changes for CVES and PACES has been made but is not tested.

09.09.2011 3.3.14.636 WS 69

Corrected bugs

- Fixed a bug with DOI in the inversion model explorer. The error "Data type not supported in TinvDataProfileMapper.SetModel1Ds" has been fixed. The error came when the "Model Position Explorer" was selected for SCI.

26.08.2011 3.3.14.635 WS 69

Corrected bugs

- In connection with database compiling with data from the workbench, there could be differences in thicknesses of layers and associated layer thicknesses. This has been corrected.
- Fixed an issue in the print ready wizard that causes an error when re-selecting the GIS window.
- Fonts was not always saved correct in the print ready wizard, this has been fixed.
- Fixed bottom layer check against drill depth when loading boreholes from file.
- It is now possible to set the point symbol on the SSV borehole editor form.
- Fixed an allocation bug in the DOI calculation sometimes causing the program not to calculate DOI.
- A number of issues for SCI inversion settings has been addressed.

New feature

- DOI fading is implemented on the "Show Inversion Result" system. On the "'Model Section Form" select show as Bars. Press "Bar & GIS", then press "Bar Section Setup" on the "Model Display" tab
- The new geo file version 8 now support B field
- Several Bitmaps/3Dgrids/ Interpolated DBQs can be shown at the same time. Please note that the order of the layers shown is important.
- In "Themes slide show" it is now possible to filter on theme types, e.g. elevation, resistivity etc.
- The properties on VIS nodes are now also showing which INV-node it belongs to.
- The visualizations can now be created from a DBQ.
- The pitch values can be visualized if X-data is present.
- A progress bar is shown for DOI during LCI and SCI run. The number of iterations is shown both in the log and on the form for the current progress of the DOI calculation.
- The menu item "New SkyTEM processing" has been renamed to "Airborne TEM Processing".
- A new "Open workspace wizard" has been implemented and this wizard is shown when the Workbench is started.
- There have been implemented general improvements for color scale system.
- A number of improvements for selection management in models explorer form have been made.

- During SCEMBI inversion a new display for DOI progress bar is show.

08.08.2011 3.3.14.634 WS 69

Corrected bugs

- The axis settings were not stored from the print ready wizard to the project file
- SSV themes have now the correct labels on color scales.
- In 'Visualize data and inversions' the previously selected gates and channel/gates are now remembered
- A check has been added so only 24 days of data can be stored in a single SkyTEM processing node.
- Now 3D grid layers on profiles can be copied, after a workspace has been moved.
- The 'new theme' from DOI Themes can be produced for depths as well as elevations. Furthermore the DOI elevation min/max values have been added to the statistics on the histogram.
- Now 3d grid layers on profiles can be copied, after a workspace has been moved.
- A bug in PACES data visualizations has been fixed.

New feature

- The SSV functionality has been updated to support several new functionalities making the flexibility of the SSV-module much larger. The previous version worked on depth intervals only, which is of course still supported. The improvements include:
  - SSV calculation in elevation intervals. Up to 6 intervals can be handled at one time - for instance 10 meter intervals from elevation 0 m to -60 m.
  - Calculation from a user-defined surface (defined by a grid-file) and a set number of meters above or below.
  - Calculation between two surfaces (defined by grid-files).

  The automatic clay-content generator retrieving data from Jupiter has been updated to support these features and the procedures retrieving the Jupiter data has been re-written completely.
- Digital Elevation Models (DEM node) can now be gridded and made to a bitmap.
- The selected points use in 'Add a-priori from GIS' can now be saved in a file and reused.
- The ssv.exe file has been updated in connection with the SSV module revision.
- Bitmaps can be created from a digital elevation model (DEM node)
- Missing data in 3D grid profiles are now shown as blank

08.08.2011 3.3.14.633 WS 69

Corrected bugs

- The different wizards in the Workbench now remember their size and position.

- Several new checks has been added to the importers for all other data types than SkyTEM (e.g. VTEM).
- '/' now accepted as delimiter in the importers for all other data types than SkyTEM (e.g. VTEM).
- The LCI inversion did not work in manual mode, this has been fixed.
- The GPS beat time in the airborne TEM processing system can now be up to 5 sec.
- An error in the new airborne importer calculating time stamps from helicopter speed and distance between points has been corrected. Now the time spacing between adjacent sounding points can only be up to 4 minutes (hardwired to 4 minutes in the importer).
- An error which in some cases prevented reading the TXD line in the SkyTEM SPS files has been corrected.
- In the DBQ wizard (called from map level) it is now possible to filter on elevation values.
- The popup menu on the profile form did not contain formatting of the bottom axis, this has been fixed.

New feature

- The open workspace form has had made minor redesigns.

13.06.2011 3.3.14.631 WS 69

Corrected bugs

- Adding a a-priori between grid on SCI nodes, undefined values in the grids are now handled correctly
- When adding a-priori between a grid on SCI nodes, a problem with coordinate system file has been solved.
- Final report pages: Alignment of legend boxes is now correct. Also fixed some minor design issues.
- Color scale: precision increased in the display of color bars. LVL conversion improved and a bug has been fixed in saving the color scale. The management of the registry saving has also been improved.
- Import data: checks has been added for the data type before launching the import.
- Fixed a bug that could cause dummy values to be written to the altitude fields of exported .syn and .dat files for SCI inversions.
- Model exporter code modified in order to support arbitrarily large surveys.
- Small fixes around *.las file load in Add Apriori from Conductivity Logs.
- Survey info: a database error has been fixed (violation of foreign key rdataset_client)

New feature

- When the Workbench is launched a the user is meet with a new dialog box showing the last used workspaces and a browse link. This box is also shown when the menu file.open is activated.

		• Data residual is now imported through the general model importer when .dat and .syn files are skipped. • Implement properties for grids made on visualizations
07.06.2011	3.3.14.629 WS 67	**Corrected bugs** • A bug where histogram themes made it impossible to batch grid has been fixed. • Fixed a bug that could cause the color scale loader to hang when loading some old .lvl files. • SCI "run inversion when done" – did not work, this has been fixed. • A bug causing a access violation in the function for re-applying geometry information to a SkyTEM dataset node has been fixed. **New feature** • Color scales and point sizes have been added to the visualize data and inversions modules. • It is now possible to add a-priori resistivity values to all layers between two grids from an SCI node. .
12.05.2011	3.3.14.627 WS 67	**Corrected bugs** • The selected point settings e.g. colors in the DBQ wizard are now applied correctly. • A fix has been made so the general data importer now can handle time columns. • Sometimes the 3D grids on profiles did not cover the entire length of the profile. This is now fixed. • Issues concerning the DEM file i xyz format has been handled. • The coordinate system in the coordinate selector was not applied correctly in the general model importer. This has been fixed. • Bias times was not shown correctly under SCI properties (6.39000e-06 became .39000e-06). • Some Inversion nodes could not be found under export of models. A fix for this has been applied. • Now the properties for 3D grids on profile, always shows the used mean resistivity grid. • Numbers of minor ticks on log color bar is now correct. **New feature** • The advanced filtering in the DBQ wizard now supports 1d MCI models. • DOI moved to separate tab in Visualize data and inversions. • The Selected points for 'Add a-priori GIS' can be saved to at file. Next time the 'Add a-priori GIS' is called, and not points are selected, the user can select the same points by loading the file. • All profiles can now be shown/hidden on the GIS map from the main profile node.

		• The time management of the VTEM importer has been improved in order to have a better behaviour between two flight lines. A factor of 1000 times the sounding distance is added between each line if no time is found in the xyz file and if sounding distance is used. If Nominal speed is used, then a factor of 1000 times the average sounding of the previous line is added between two lines. The sounding distance value is not limited from 0.1 and 10 seconds. • The general airborne TEM importer now supports line number in columns, with the prefix L, Line or /Line. • The TEM import user interface have been improved. • When calculating DOI only emo-files are deleted on-the-fly. • Last used Bias Inverson, Factor, Lateral STD, A-priori STD and File in the SCI Setup Wizard was not stored in the registry. They are in the registry now... •
07.04.2011	3.3.13.625 WS 67	**Corrected bugs** • A bug regarding the SCI wizard settings has been fixed. • The option to load boreholes from ASCII file has been fixed and enabled again in Add/Edit Borehole form. Also, the file format has been slightly changed. Ask for example if needed – it's not in the help system yet. • SCI: A temporary file was not written correctly. **New feature** • In gridding a new system to interpolate an image has been implemented making it easier to understand how to select the right settings. This also solves a problem with shifting pixels. • Grid files saved now as binary files for speed and reduced file sizes.
24.03.2011	3.3.13.622	**Corrected bugs** • A check has been added to prevent processing interval to be smaller than 2 months. • A check has been added so GPS relocation is only done when the GPS is moving. • Grid properties issue fixed. • Batch gridding with inverse distance issue fixed • Export data or models issue fixed: All models are now correctly displayed
03.03.2011	3.3.13.620	**New features** • User can know specify the default windows temp folder, used e.g. for temp files during inversion Go to > file\preferences..\workspace • The GPS positions can now be shifted in the flight direction in order to shift the positions to the focus point of the transmitter-receiver coils (which is close to the receiver coil). The shift is given in the GPS processor

- New right click menu facility to insert or remove colors on RGB colors in the colorscale wizard

Corrected bugs

- When defining the processing settings for raw data, it is checked that the trapez filter is set to On. The user can still ignore the warning and use straight averages.
- A check for gate center times between open and close gate has been added to the geometry file reader.
- Adding a tab file which is a "collection" of tab files to a layer did sometimes giving an error preventing the workspace to open. This has been fixed
- When the transmitter altitude is not defined the altitude is set to a user specified default value. The offset between the transmitter and the receiver as specified in the geometry file is now added to the default value
- "Hanging" curves in the SkyTEM processing systems is now avoided by deselecting a sounding points before moving the buffer etc
- Data can now be processed without pitch and roll information, either because there are not such information or the device number is set to None in the processing control window
- When the GPS location is re-located to the receiver coil location for SkyTEM data, a check has been added to ensure that the correction is only done when the GPS position changes by more than 0.01 meter per second
- SCI Wizard: some issues fixed when loading a settings file on the last wizard page
- SCI Wizard: random issue with unique key violation fixed
- SCI Inversion: delete datasets issues between run 1 and run 2 and after the run 2 fixed : all tables are now correctly cleared.
- Batch gridding and gridding: issue with coordinates fixed
- Batch gridding: size of the area can be changed again

17.02.2011 3.3.13.619

Corrected bugs

- Batch gridding: Size of selection is now fixed, the max size of the DB query is set up and the search radius is correctly applied. (No more increasing values).
- SCI Wizard: fix of load settings function and fast settings mode.
- Add a-priori from grid or lines:
    - Added a check for positive values for depth, resistivity, conductivity and STD values.
    - The filter for file selection selects both .grd and .awi files.
    - Add a-priori from GIS: Fixed a bug when modifying values.

		• It was possibly to have the same names for mean resistivity themes, this is now fixed. •
11.02.2011	3.3.13.618	**Corrected bugs** • Merge boreholes with other Jupiter database" in "Add/edit Borehole". Also, improved DB merge performance. •
07.02.2011	3.3.13.617	**Corrected bugs** • Fixed an error deleting an inversion node.
25.01.2011	3.3.13.616	**Corrected bugs** • Export of data to an GERDA upload did not copy the table SKYPROCSEG table. • Upgrade problem of old workspaces solved. • Unsuccessful metadata update (CONSTRAINT FK_ODVDOI does not exist) error fixed..
19.01.2011	3.3.13.615 WS 65	**New features** • Upload to GERDA. Data and models in multiple versions can now be transmitted via a range of new features in WB and changes in the GERDA database. To get this to work effectively, reporting shall be made in two steps: first reported crude and processes data and then transmitted LCI / SCI few and many-layered models. In this version there is only opened up to the reporting of SkyTEM data. • The functionality to extract models and generation of geophysical themes are brand new and supports extraction where there are multiple versions of models at the same probing. It is also possible to create very advanced filters among the models. • Creation of geophysical themes have become far more flexible and intuitive to work with, and there are now also produced a series of new themes and filters of specific resistance ranges. • 3D grids and other improvements. In the previous version of WB, there was a wide range of improvements up function. We now also summed the ability to put depth mapping onto 3D grids, making it a great tool to get a quick overview of the information in the geophysical models and geology. • The applications main form and the workspace manager form are "glued" together. The workspace manager form is always placed to the left below the main form. • In the Inversion explorer form two new buttons has been added: Up and down arrows with the short cuts: ALT+UP and ALT+DOWN. When pressing these buttons the next or previous lines are selected. • In the Workbench.File.Preferences it is now possible to enter the default coordinate system that is to be used in for example the dialog box for adding topography to SkyTEM.

If no information is changed in the preferences the default system is UTM Zone 32N (WGS 84)\p32632 but it can be changed to all of the supported coordinate systems in the Workbench.

Corrected bugs

- A check for data values equal to zero has been added to the HEM importer to preventing floating point errors.
- Fixed a bug, which made the batch gridding hang after it finished (seen on the PC's in the computer room at geo)
- When updating a SSV node with boreholes, DisableML1...DisabelML6 is set to 'No' and 'Lock AC' is set to 'No' for new boreholes.
- Saving a GIS map the file format was correct but the file extension was wrong.
- Temporary files are now written to the correct temp directory in the import of airborne TEM data.
- 3D-grid profile resolution: The resolution of the 3D grid can now be set to normal, fine or extra fine.
- New default for profile label on GIS map, the default style for labels is a black bold font with a yellow halo.
- A bug in adding fence grid profiles has been fixed, so the numbers of East-West and North-South profile lines now are correct.
- Added more intuitive minimum and maximum data value selection for color scales.
- A bug has been fixed in the 'Edit display' on a 'Grid as line' profile layer.
- When making at new workspace the user is prompted for a folder name and all the internal files for this workspace is stored in this folder.
- When loading rock symbols from ASCII file the last layer was not added to the list of selected rock symbols and QL was missing from rock symbols.
- GCM import has been debugged and works now.
- The default coordinate system for external file importer has been changed to WGS 84, zone 32N
- The warning for the number of models selected in the inversion explorer has been raised from 250 to 1000.
- When adding topography from file to SkyTEM the form now remembers the last file name entered.
- Prior to applying a new geometry file for a SkyTEM dataset node any open edit windows are closed
- A geometry file can now be applied also when the database holding the data is not active.
- Soundings with the altitude not defined (NaN) is now always deleted when deleting soundings outside altitude limits directly from the SkyTEM edit window.
- A check for gate centre times between open and close gate has been added to the geometry file reader.

- The helicopter speed is now calculates as a running average over 30 sec.
- A bug has been fixed, when zooming on a 3D grid on a profile.
- When the 'Visualize Data or Inversion' form is open, it is now possible to click on the tree, e.g. showing a color scale.
- New auto centre functionality has been added in the 'Show Inversion Result'. The settings are found in the settings on model section plot form. If a model bar is clicked, the map moves if the model is outside the map.
- The 3D grid form now remember previously used elevation grid.
- Deleting a marked node in the SkyTEM edit form does not delete the related files on disk.
- The gridding did not delete all temporary files after finishing the job (.eas and .log files). These are now properly deleted after successful run.
- The Abort button could in some cases is active after successful run of the data base rebuild. This has been fixed.
- Properties for bitmap nodes again work as intended.
- Software channel group were not initialized when showing properties.
- In the open database dialog box it was possible to select Access databases which are not supported anymore. This option has been removed.
- The geo file can now contain tab character. Workbench will be able to read the file anyway.
- The grid stat form is now showing fewer error messages if the user mistypes characters in the edit fields..
- Minor design changes in the LCI inversion settings form.
- EMBI and SCEMBI: To prevent a “dead lock” situation it is not possible to change the number of CPUs while inversion is paused. Bjarke kommer med tekst ::::::::: One cans however ones again stop the inversion during such a change.
- When adding a DBQ to a profile the Workbench now correctly remembers the last color scale used in such a manner.
- Rebuilding a database from an SCI node gave several errors, this has been fixed.
-

18.01.2011 3.3.12.614

Corrected bugs

- There was a problem when gridding themes, this has been fixed.

13.01.2011 3.3.12.613

Corrected bugs

- SSV: New database driver added, search results are now visible.

Documentation

- Help file updated with new features e.g. SCI

27.09.2010	3.3.12.612	**Corrected bugs** • Inversion: Temporary file is now written in correct temp. directory.
23.09.2010	3.3.11.610	**Corrected bugs** • Application icon re-inserted
20.09.2010	3.3.11.609 WS 61	**Corrected bugs** • The SSV module is now working on all tested servers / computers and the internal database engine problems has now been overcome. Due to a strange behaviour of the Firefox database engine we now only uses stored procedures and not user defined functions (UDF's accessed from the GEUS.DLL). • When loading rock symbols from ASCII file the last layer was not added to the list of selected rock symbols (SSV). • Note for the SSV-module: When using the auto-clay generator to produce automatic clay thicknesses for an interval in which a borehole terminates, the auto-clay will still produce a number. An example: Borehole "A" ends at 24 meters and you are requesting the clay-thickness for the 20-30 meter depth interval. The auto-clay will then give you the amount of clay from 20-24 meter from borehole "A" and use that as the 20-30m interval value. The easiest way to avoid this is to make a BHQ that only contains boreholes that go deeper than the requested intervals. • When updating a SSV node with boreholes, DisableML1...DisabelML6 is set to 'No' and 'Lock AC' is set to 'No' for new boreholes. • The color scale editor has been improved and new color scales can be created using a wizard. • A bug has been fixed in the 'Edit display' on a 'Grid as line' profile layer. • When adding a DBQ to a profile the changes to the color scale attributes smooth and log did not always show correctly on the color scale. This has been fixed. • When creating a new workspace, the user is now prompted for a workspace name in addition to the destination folder. The workspace is then created in a sub-folder with the workspace name within the destination folder. • Saving a GIS map the file format was correct but the file extension was wrong. • Bitmap properties have been re-implemented for Grid settings.

		• When updating a SSV node with boreholes, DisableML1...DisabelML6 is set to 'No' and 'Lock AC' is set to 'No' for new boreholes. The Export functionality, now exports a new file with DOI info (only if DOI is present)
15.09.2010	3.3.10.608 WS 58	**Corrected bugs** • Missing sections error in SCEMBI has been fixed Not any longer writing to C:\Temp
14.09.2010	3.3.9.606 WS 58	**Corrected bugs** • Now the plotting of models with different number of layers on a profile is working. • Added model plot to EMBI • If the buffer zone is shown on the GIS map, when the profile layer is deleted, the buffer zone now disappears from the GIS map. Before it was hanging, and could not be deleted. • Minimum and maximum altitudes are now imposed in the processing system to avoid altitudes going out of range. Recommended interval is [5 .. 80] m • "All tem files with time stamp later then February 22, 2010 are now written out and modelling with gate open/close times. This implies that the gate opening and gate width times are correct in the geo-file" **New Features** • It is now possible to omit a number of gates before inversion of SkyTEM data. The data are not deleted in the processing system, but omitted from the data prepared for inversion. • Now DOI (Depth of Investigation) can be made as elevation in the 'Visualize data and inversions'
14.07.2010	3.3.8.605 WS 58	**Corrected bugs** • SCI: Run two configuration file problem corrected
29.06.2010	3.3.7.604 WS 58	**New Features** • It is now possible to add a bitmap image to a profile. It can e.g. be a seismic bitmap
21.06.2010	3.3.6.603 WS 55	**Corrected bugs** • SCI con files: some parameters have been changed for DOI and forward response con files. • Relative path: relative path are now used for configuration files and inversion. • Batch gridding : combo box selection issue fixed • SCI properties : display of all SCI node properties **New Features** • Now it is possible to add interpolated bars to a profile. Use Add DBQ and select interpolated bars • New functionality on the profile form: Show other profiles from a drop down, or use arrows to switch to the profile above or below in the tree.
17.06.2010	3.3.5.602 WS 55	**Major update release**

New features / improved functionality
In this release we have concentrated our manpower on stability and speedup but new functionality has also been added.

Profiles
The main focus on the profile revision has been speed but you will also find new functionality.

- Dramatically speedup when re-opening profile's
- First time generation of profiles now much faster
- Speedup when plotting models as bars
- Dynamic point on GIS map
- Increased speed when working with grids
- New copy profile without shifting
- Synchronization between axis and form size
- New 3D grid to make a bitmap of grid cuts
- Visualization of DOI on model basis

SCI
The GUI has been adjusted and made improvements to usability after response from users.

- A drop down has been added to EMBI and SCEMBI allowing to change the number of CPU's used.
- Run 2 now uses run 1 as starting model. This speedup the inversion significantly.
- The inversion parameters can be edited in the new con file editor, see below.
- The Bias inversion parameters can now be modified

Con file editor (advanced inversion settings)
Settings controlling the inversion code (em1dinv) can now be adjusted from inversion setup.
Default settings is “build in” and can be selected for different data types (HEM, TEM, CVES etc.).
Some old configuration files are not used anymore and can be deleted from the em1dinv directory:

em1dinv_fast.con
em1dinv_sci_dc_run1.con
em1dinv_sci_dc_run2.con
em1dinv_sci_fem_run1.con
em1dinv_sci_fem_run2.con
em1dinv_sci_tem_doi.con
em1dinv_sci_tem_run1.con
em1dinv_sci_tem_run2.con
em1dinv_standard.con

These files are found in the directory:
Program files\HGG\Workbench\em1dinv

Depth of investigation (DOI)

- User friendly control of DOI settings.

- DOI plotted as elevation instead of depths.

Batch gridding
It is now possible to grid in a batch directly from the DBQ and this new feature can really save time for you.
The user can select a number of themes and select common settings to use for creating bitmaps for the selected themes.

Inverting for BIAS response in TEM data is now possible but it not documented and you should wait using this feature until a future release.

New themes in "visualize data or inversion's"

- Resistivity STD
- Thickness STD
- Depth STD
- flight altitude STD
- Inverted bias STD on tab sheet STD
- Inverted bias on tab sheet System (former Pitch Roll tab sheet)

Corrected bugs

- All setting on the "Model Position Explore Settings" form are now saved in the registration database.
- When exporting as XYZ file, the format of the STD values are changed from 0.xx to 1.xx. Furthermore thickness for all layers have been added.
- Standard constraints for smooth and few layer inversion setup added for SCI-inversions. Auto calculation of log. layer distribution for start model added for SCI-inversions.
- SkyTEM import: In case of more than 1000 errors in one line file the log for this line file is truncated so only 1000 errors is shown. An information line is appended.
- The selected models in the model position explorer form are now plotted correctly on the GIS map, also when there two models at the same position/time.
- Pressing cancel Layer Control forced a GIS redraw.
- Problems with color scale engine has been solved: Negative intervals, settings in engine, interval length.
- Adding topography from a DBQ node failed if the models were imported without data in the general model importer.
- The visualization of 2D inversion models and pseudo sections: The triangulation check box had no effect, this has been corrected.
- Fixed a bug that sometimes occurred when adding topography from Surfer grid files (list index out of bounds).
- The Gstat application could now and then return a stack dump error. This has been corrected.

- HEM and GCM import template were not used in the import. The error has been corrected.
- When updating SSV boreholes from a Jupiter database, a BHQ can be selected in order to limit which boreholes will be used, when running a SSV job.
- The forward responses of the real component of all frequencies of HEM data are "mirrored" with respect to what they should be. This is not just display, but seems to come from the EMO file itself.
- Added model plot to EMBI
- Implemented the Reverse Cuthill-Mckee (RCM) algorithm for re-ordering models in SCI sections. This re-ordering dramatically lowers memory consumption and inversion time for a future release of em1dinv using a sparse solver.
- A problem with the SCI Setup wizard has been corrected. During data source selection only the setting for the first dataset were actually loaded and could be changed. When another dataset were selected the previous dataset was displayed.
- Elevations on grid nodes is now on exactly three digits forcing correct sort order.
- All data files (tem) with time stamp later then February 22, 2010 are now written with begin and close gate times. Subsequent the finite gate width is modelled in the inversion code.

14.06.2010 3.3.4.601

Maintenance Release

Bugfixes

- Update of em1dinv due to a bug affecting the HEM responses

08.06.2010 3.3.3.599

Maintenance Release

Bugfixes

1. Problems with resubmision of SCI inversions has been fixed.
   - EMBI could go idle for very long time resulting in very long execution times.

03.05.2010 3.3.2.598

Maintenance Release

Bugfixes

2. Redefining start models in "Use inversion results as starting models" followed by a resubmit of the models caused an error.

25.03.2010 3.3.1.597

Update Release

New Features

1. The SCI is now controlled via a wizard. A-priori information can be added prior to inversion from conductivity logs, GIS and Workbench interface files.
2. em1Dinv now support DOI – Depth of investigation

09.03.2010 3.2.66.596

Update Release

New Features

1. It is now omitted to activate a processing node of the sounding points just is needed for plotting on the GIS. If the processing layer exists in

		the GIS the layer is just shown. To be able to refresh a layer if e.g. the sounding distance has changed a Refresh function is implemented on the node. The refresh recreates the GIS layer. 2. A function has been added to the SkyTEM edit window allowing to automatically delete raw data soundings if the flight height is above a certain flight height. 3. A functionality has been added to the SkyTEM edit window allowing to delete soundings one a channel if they are deleted on another channel. **Bugfixes** 1. The SCI functionality and GUI has thoughtfully been updated, debugged and tested.
08.03.2010	3.2.63.591	**Maintenance Release** **Bugfixes** 2. New em1dinv executables. An "out of bounds" access violation occurring with TEM-data has been fixed
25.02.2010	3.2.62.590	**Maintenance Release** **Bugfixes** 1. Coordinate system selector now initializes correctly, e.g. when importing SkyTEM data 2. When opening shape files they are now by default converted to WGS84 lat/long. This seems to work in all cases. Netherlands National System added as a coordinate system. 3. em1dinv: An error check has been added so that em1dinv now gives a meaning full error if the time distance between the front gate and the end of the ramp is smaller than 1.e-7 s (0.1 micro sec). 4. An error in the model position explorer window prevented the use for showing inversion results.
05.01.2010	3.2.61.588	**Maintenance Release** **Bugfixes** 1. em1dinv: An error check has been added so that em1dinv now gives a meaning full error if the time distance between the front gate and the end of the ramp is smaller than 1.e-7 s (0.1 microsecond). 2. If you try to do a auto clay calculation for SSV and the GEUS.DLL is missing, an error dialog appears, from where help can be opened. 3. Fixed a bug where manual altitude edits outside the data interval would cause an access violation. 4. Fixed a coordinate transform bug prevented the auto center map functionality to work properly when data and map were different coordinate systems 5. Visualize inversion is now implemented for PACES data Visualize data or inversion can now be called from all relevant nodes in the workbench manager, i.e. the tree 6. The topography is now by default calculated from the difference between the GPS measured altitude and the laser measured altitude. The laser altitude is based on pitch and tilt corrected altitudes averaged over all lasers and located to the center of the frame. The topography is overwritten if a topography grid is added at a later stage in the processing sequence. 7. Fixed a bug, that sometimes made 'Visualize data or inversions' for e.g. altitude not work properly. 8. The altitude measured by the GPS is now read from the SPS file, saved to GERDA and processed using the GPS processor settings.

Furthermore, it is displayed in the SkyTEM edit window under the GPS item. Here it can be shown as either GPS altitude or GPS elevation.

9. Fixed a bug, that sometimes made 'Visualize data or inversions' for e.g. altitude not work properly.
10. It is now possible to run only the processing algorithms on only one SkyTEM channel at a time.
11. A new feature in the SkyTEM processing s system enables the user to rerun the processors and keep the raw data processing.
12. A new functionality has been added enabling the user to easy apply a standard deviation (STD) to SkyTEM raw normalized data. The STD is dependent on the signal level and it is specified as a function of software channel number and gate number.

    The new functionality will be released in the forth coming Workbench service release.
13. Current was not calculated when using narrow averring for SLM and LM.
14. The inversion system can now be loaded directly from a DBQ node. This is extremely useful when used together with the now model importer for evaluation of inversions carried out in third party software like EMFlow.
1. The new color scale editor has been disabled due to compatibility problems.

27.11.2009 3.2.60.587 **Maintenance Release**

Bugfixes

1. The topography is now by default calculated from the difference between the GPS measured altitude and the laser measured altitude. The laser altitude is based on pitch and tilt corrected altitudes averaged over all lasers and located to the center of the frame. The topography is overwritten if a topography grid is added at a later stage in the processing sequence.
2. Fixed a bug, that sometimes made 'Visualize data or inversions' for e.g. altitude not work properly

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18.11.2009 3.2.59.586 **Maintenance Release**

Bugfixes

1. Fixed a bug that would sometimes cause the Workbench to freeze when loading models or indexing a new SCI.
2. A bug where embi reports that the emo file from the inversion program is incomplete, has been fixed. The bug is caused by the new compiler used to compile the inversion program

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03.11.2009 3.2.59.585 **Maintenance Release**

Bugfixes

1. When determine the minimum number of gates for a sounding only in gates which are in use after the average filters are counted. Minimum number of gates per sounding
2. Strange error message, Danish XP (Out of disk space was translated to: Printeren løbet tør for papir)
3. For single layer model, blind last layer is skipped.
4. SkyTEM aps delivers often skb files which have the Moment.ini version set to 1 even though the version should be 2. The importer now wraps this by forcing the version number to 2 if the skb is created in 2009 or later.
5. Several bugs in the implementation of the new 2nd order filters have been fixed. Also new default settings for the Slope Min and Max are added as -0.5 and 0.5, respectively.

6. A check box for x reciever coil present has been added in the add survey info for SkyTEM. Further checks for correct settings have also been added for SkyTEM.
7. Fixed a bug that could cause the error message "Data mapping inconsistency error in TinINITTGModel.InitTGODVFwRes" in Embi when inverting HEM data for selected frequencies only.
8. For SkyTEM data channels measured without front gate a bug has been fixed preventing this information to be used in the inversion.
9. Number of decimals were not correct in mod file
10. Configuration file in updates corrected.
11. TXD lines with undefined values could not be read from SPS files.
12. Old color scale editor can be reached from color scale bar with right click
13. Missing Jupiter97.md# added to installer
14. Color scale related changes:
    - Selector design change + ignore errors in .lvl files
    - LVL write error
    - Always prompt for file name when finish
15. Profiles now use new editor

30.10.2009 3.2.58.584 **Maintenance Release**

Bugfixes

1. SCI – Indexing could not start on some systems.
16. Color scale – colors flipped in map data to color scale.

30.10.2009 3.2.57.583 **Maintenance Release**

Bugfixes

- Worspace template update

12.10.2009 3.2.56.582 **Update Release**

New Features

1. SCI – New module for Spatially Constrained Inversion that produces quasi-3D conductivity modeling of electromagnetic (EM) data using a 1D forward solution.
2. Themes for quality control.
   From the map level 'Visualize Data or Inversions' can be called. For now only the inversion part is implemented. You can create point or grid themes based on SkyTEM or SCI inversion nodes, e.g. Flight altitude, Flight altitude difference, data residual, resistivity, ...
3. Color Scales – A new editor for editing color scales has been developed. New standard color scales has also been added.

Updated

1. Final report pages – The module has been updated / bug fixed according to user input.
2. Production line editor - The Production Line Editor has been totally rewritten and redesigned, making it more stable, and much easier to use.
   The new tree view style gives a perfect overview of the lines and points, and almost all control of the lines is managed by right-clicking the tree view.
2.

07.10.2009 3.1.55.581 **Maintenance Release**

Bugfixes

1. Survey info: PARTY can contain empty records (GEUS error). Now for both Access and Firebird db's.
1. SSV: Removes directory after run job

05.10.2009 3.1.54.580 **Maintenance Release**

Bugfixes
1. Survey info: PARTY can contain empty records (GEUS error)
Not initialized data sets could cause errors when data was shown

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24.06.2009 3.1.53.579 **Update Release**

New Feature
The SSV module has been revisited and many new features has been added:

- Add boreholes to new or existing Jupiter, from GUI or from files
- Merge Jupiter boreholes to SSV node
- Borehole editor has been extended with new features:
  - new fields
  - integration with GIS
  - filtering
- Automatic estimation of clay thickness in the borehole editor
- Revision off the SSV job submitter
- The themes has been expanded extensively

Important note - for SSV only!
The new version is not backward compatible with previous versions of the Workbench.

Update Release
The new em1dinv version has a fast 64bit engine to be used on 64bit version of Windows. Optimizations of the code have made it more than twice as fast as older version.

Bugfixes
1. Labels shown on the GIS for profile layers
2. When adding layers to a profile node the layer can now not be added if it has no models or boreholes in it. In this case an information dialog is shown. If the layers are added from a profile node, no information dialog is shown and the layer is not added.
3. Fixed and error that followed general model import, new dbq and show inversion results. This could have occurred in other situations using com g add methods.
4. An index out of range bug has been fixed with the new second order filters for SkyTEM.
5. Any read errors of skb files are now listed in the Workspace log viewer.
6. Fixed a bug causing an exception when adding a geometry file where one or all of the software channels had no front gate defined.
7. A new setting has been added to the SkyTEM data processing list allowing defining channels as being noise. When a channel is defined as noise the current is set to 1A which makes it possible to display average noise data in the edit form. TEM files for the inversion system can not be written for channels defined as noise.
8. Sign check during import was not shown correctly.
9. GPA altitude is now imported and can be shown in the SkyTEM edit window.
2.

22.06.2009 3.1.52.579 **Update Release**

New Feature
The SSV module has been revisited and many new features has been added:

- Add boreholes to new or existing Jupiter, from GUI or from files

- Merge Jupiter boreholes to SSV node
- Borehole editor has been extended with new features:
  - new fields
  - integration with GIS
  - filtering
- Automatic estimation of clay thickness in the borehole editor
- Revision off the SSV job submitter
- The themes has been expanded extensively

Important note - for SSV only!
The new version is not backward compatible with previous versions of the Workbench.

Update Release
The new em1dinv version has a fast 64bit engine to be used on 64bit version of Windows.

Bugfixes
1. Labels shown on the GIS for profile layers
2. When adding layers to a profile node the layer can now not be added if it has no models or boreholes in it. In this case an information dialog is shown. If the layers are added from a profile node, no information dialog is shown and the layer is not added.
3. Fixed and error that followed general model import, new dbq and show inversion results.
4. This could have occurred in other situations using com g add methods.
5. An index out of range bug has been fixed with the new second order filters for SkyTEM.
6. Any read errors of skb files are now listed in the Workspace log viewer.
7. Fixed a bug causing an exception when adding a geometry file where one or all of the software channels had no frontgate defined.
8. Average noise data. A new setting has been added to the SkyTEM data processing list allowing defining channels as being noise. When a channel is defined as noise the current is set to 1A which makes it possible to display average noise data in the edit form. TEM files for the inversion system can not be written for channels defined as noise.
9. SkyTEM import: Sign check did not work (read Color error)
2.

16.06.2009 3.1.52.578 **Maintenance Release**

Bugfixes
Initialization error in the SkyTEM processing system prevents saving files for the inversion

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16.06.2009 3.1.51.577 **Maintenance Release**

New Feature
Now it is possible to “shade” a bitmap theme. The bitmap theme, e.g. mean resistivity, can be shaded as if it was a landscape seen in sunshine. The sun angle can be set by the user. The shading tool is implemented in “Create Theme”.

General
1. When an exception occurs, a file with settings for the registry database is dumped in the workspace directory. The user is asked to attach the file to the e-mail reporting the bug.
2. The Borehole Database has been extended with new fields and a new table.

Bugfixes

3. The New Workspace dialog has been adjusted, so it doesn't show files, but only folders and shares.
4. A bug sometimes resulting a range check error when "showing inversion result" has been fixed
5. Show Bitmap Themes Form now resizes the bitmap, when form is resized
6. Now the coordinate system selector remembers position on screen and last chosen coordinate system
7. Apriori STD on flight altitude was not written to the model file. Fixed.

SkyTem

8. When keeping the raw processings all selected channels are processed and average user flags are reset.
9. It is now possible to connect to a GERDA database and restore the SkyTEM dataset and processing nodes.

16.04.2009 3.1.50.575 **Maintenance Release**

Bugfixes

1. A new feature in the SkyTEM processing s system enables the user to rerun the processors and keep the raw data processings.
2. Bug fixed, which made it impossible to upgrade workspace.
3. If no license or dongle for SiTEM and Semdi is found, a message is shown, and program can not run
4. Bug regarding log kriging has been fixed.
5. Fixed a bug that would sometimes cause an exception when adding survey information.
6. A range check error sometimes occur, when you try to import new data into a workspace. The bug has been fixed.
7. The translucency setting on the Bitmap Properties form is now remembered, when form is re-opened
8. Form "Copy and Shift Profile" now remebers last position, when re-opened.
1.

01.04.2009 3.1.50.574 **Maintenance Release**

1. License file to em1dinv updated

04.03.2009 3.1.50.571 **Maintenance Release**

Bugfixes

1. A new functionality has been added enabling the user to easy apply a standard deviation (STD) to SkyTEM raw normalized data. The STD is dependent on the signal level and it is specified as a function of software channel number and gate number.
2. A bug that would sometimes cause an exception when saving SkyTEM processing settings has been fixed.
3. The value of "Autoscroll Interval" in "Model Position Explorer Settings" form is now remembered, when form is re-opened.
4. No current was calculated when using narrow averring for SLM and LM. This has been fixed.
5. Progress bar on data import (HEM and GCM) has been improved
6. Data and forward response files can now be exported from HEM inversion nodes.
7. CVES-explorer: Name changed from CVES to DC. DC Explorer now remembers position. Print added to right click menu for the three plot forms.
8. Correct information is now shown, when not connected to the interned.

9. Filter function added to dialog "Zoom to layer" (opened if right clikced on GIS map)
10. Some more fields are added to the tab file created for the HEM dataset node. The field are: LineNumber, LineType, FID, BirdAltitude, Elevation, Dataset and Position
11. Now the setting for Triangulated Interpolation is remembered, and shown when form is re-opened.
12. When the user deactivates a SkyTEM processing node he is asked if he want's to save or not.
13. Fixed a bug that would sometimes cause an exception when upgrading old workspaces(Tgsidm.GetColorscale error message.)
14. The GUI of General Model Importer has been polished
15. Import extra 60 sec. of navigation data where data has been mask out. This gives better alt fit, topo. fit etc.
16. Profile coordinates are now re-calculated on the fly such that they start from 0 when inspecting single lines in the inversion explorer.
17. When resubmitting just a selection only the necessary hem.-files are written
18. When importing SkyTEM data, the Check for, whether a flight line crosses midnight, has been removed.

02.03.2009 3.1.48.570 **Maintenance Release**

Bugfixes
Workspace db version now 44

06.02.2009 3.1.48.569 **Update Release**

General

1. New feature: Create Final Report Pages
   A new feature to make maps ready for print is included in this release. With the new feature you can build a template ready for printing with logos, color-bars, scale-bars, legends etc. In the main window of your canvas you can then put thematic maps or sections, creating PDF's ready for reports and other printed material.

Bugfixes

19. Resolved an inconsistency when joining many inversionsnodes to a single export.
20. Fixed a bug that prevented CVS rhoa in-use flags from being saved when IP data was present but never shown.
21. Fixed a bug that caused the following exception when showing the inversion result from a CVES inversion with single model sections :"The number of datapoints differ from the number of sequences in TpioModel1DCVS.SetSequence".
22. The error message raised when opening a profile plot and there are no boreholes within the projection distance has been removed.

SkyTEM

1. A new functionality has been added enabling the user to easy apply a standard deviation (STD) to SkyTEM raw normalized data. The STD is dependent on the signal level and it is specified as a function of software channel number and gate number.

A bug preventing current to be calculated when using narrow averaging for SLM and LM has been fixed. The current is now written to the tem file in all cases (average and raw).

20.01.2009 3.1.48.568 **Maintenance Release.**

General

1. New feature: Import of general models
   A new feature to import models from any airborne system has been implemented. The importer will take in any column-based files holding information on a layered model. Optional you can supply also the observed data and forward data of the inverted model. Doing this you have access to the data curves and fits via the GIS interface.Optimized Import of models. Both EMBI and import of models now runs significantly faster.
2. The model load queries are now opened in parallel. This improves the load times significantly on multi cpu systems. Updated the database engine for the inversion explorer and the model export system. This removes the present limit of ~60000 models pr. inversion node. **Access databases, however, are no longer supported.**
3. The inversion system can now be loaded directly from an DBQ node. This is extremely useful when used together with the new model importer for evaluation of inversions carried out in third party software like EMFlow.
4. If an exception occurs, the user will be offered to send an email to bugreport. The bug message and version number is automatically included in the mail. Details about the problem should be added before sending the email.
5. In windows where users select directories, one can now navigate with the arrows on the keyboard.

Bug fixes

1. The last line in tem files were in some cases not written. This has been fixed
2. Fixed a bug that would sometimes discard part of the models when resubmitting SkyTEM data with line number information.
3. Altitudes were not written correctly to the tem files when exporting after processing and NOT pressing save or update edits from the processing system. The bug was introduced in the June 2008 release of the workbench. It is fixed now.
4. Fixed a bug that prevented the display forms in the inversion system from updating after changing starting models.
5. Sentinel Key Driver is updated. Wait time is increased in installer wait loop for correct installation on laptops and older computers.
6. Fixing an initialization error that would sometimes throw the following exception when importing PACES data: "An error occurred while writing data to the PAMA table".
2.

19.01.2009 3.1.47.567 **Maintenance Release**

Bug fixes

1. Fixed a +1 STD error in the inversion visualization system. This bug was introduced in version 3.1.46.566.
3. A bug which could cause the wrong processing data to be assigned for the GPS, tilt and altitude processors when first running the processing with all devices and then only with device 2 or 3 has been fixed. The data are now removed from the database before starting the processing.

22.09.2008 3.1.46.566 **Maintenance Release.**

General

1. Fixing an initialization error that would sometimes throw the following exception when importing PACES data: "An error occured while writing data to the PAMA table".

2. The following coordinate systems have been implemented and tested:
3. British National Grid - EPSG=27700
4. Irish Transverse Mercator Grid - EPSG=29900.
5. The Show/Hide menu item for SkyTEM nodes is now working the same way as for all other nodes in the Workspace Manager.
6. To increase the productivity when using the SkyTEM module nodes are now automatically activated when data are e.g. re-processed, plotted or inverted.
7. A check has been made to prevent SPS data with a time stamp before the year 2000 to be imported.

Bug fixes

1. Fixed an access violation introduced in version 3.1.45.565 when exporting tem files.
2. Fixed a bug to prevent NaN to be written to the inversion program when data are inverted with a uniform standard deviation only.
3. Import of selected SkyTEM channels was not working when doing stack division. This has been fixed.
4. Fixed a bug that would sometimes cause a division by zero error when working with HEM datasets with negative data points.
5. Fixed an out of range error when trying to make an interval resistivity theme including 1 layer models.
6. It is now possible to add topography to a DBQ node created directly from a SkyTEM inversion node(s). All the Add Topography menu item appears now in the DBQ node right click menu.

07.08.2008 3.1.45.565 **Maintenance Release.**

1. A bug introduced when fixing a bug in version 3.1.43.563 concerning narrow average filters has been fixed. This only relates to processing nodes created in older versions.
2.

06.08.2008 3.1.44.564 **Maintenance Release.**

General

1. Added support for new coordinate systems.

Bug fixes

2. Changed starting position of the gridding progressbar.
3. Minimum number of datapoints for HEM inversion now counts over data components in-use instead of frequencies.
4. Labels on point themes are now shown as floating point values instead of integers.
5. Added autocenter map functionality to the inversion system for datatypes HEM,GCM, PACES and CVS.
6. Added more information to the GIS info tool for HEM data.
7. Other minor bugs in the inversion system.

07.07.2008 3.1.43.563 **Update Release.**

General

1. A new importer has been implemented for the GCM-module and new modes are added. Data can enter as Real/Quad (ppm), Rhoa/Phase or Quad (ms/m)/Real (ppt)
2. Optimized writing of TEM and CVES/PACES data files.
3. Transmitter current can now be displayed on the SkyTEM processing form.

Bug Fixes

1. Fixed a bug that prevented creation of themes from DBQ's including 1 layer models

2. Post-processing from the 2D CVS inversion system is now correctly synchronized with the processing.
3. In cases where average soundings were created using a very narrow average filter the average sounding position were rejected. In the design of the averaging method is was required that the first gate could be created with a raw gate both to the left and to the right. In case this was not possible no sounding was created. This check has now been removed.
4. Fixed an error that prevented creation of contour profile plots.
5. The SkyTEM processing is now automatically saved in the database after 1st run of the processing.
6. Fixed a bug that could raise the exception message "An unknown error has occured in TcomMapForm.ComViewData. Please report this problem" when trying to inspect a DBQ model from the GIS.
7. Several optimizations in the inversion position explorer. The inversion visualization system is now able to hold a huge amount of models without performance penalty.
8. Fixed a bug that would sometime raise the exception "GSTAT error 1, null" when gridding data.
9. Fixed a bug that could cause large SSV runs to crash.
10. Fixed a scaling error when generating advanced variograms.
11. Fixed a point theme coordinate system transformation error.

01.07.2008 3.1.42.562 **Maintenance Release.**

1. Fixed a problem that prevented upgrading SSV workspaces correctly.
2. When creating a new GERDA the user is no longer prompted to select database type. All new databases are now Firebirds.
3. Optimized the SkyTEM forward data loading query. Optimized fetching of model data from the database.
4. Fixed an error introduced in version 3.1.41.561 which would sometimes add 1 to the displayed STD when inspecting data from profiles or the GIS map.
5. Minor changes to the new HEM importer.

13.06.2008 3.1.41.561 **Maintenance Release**

1. Added topography support to the new HEM importer.
2. Added new and more intuitive import menu.

Other minor HEM related bug fixes.

24.04.2008 3.1.40.560 **Update Release**

General

1. Nodes are now always selected after an operation has been carried out from the Workspace manager.
2. Fixed a bug where resistivities < 0.05 ohm-m would be rounded down to zero during ascii export of LCI models
3. A progress bar has been added when writing the hem and model files to disk before inversion
4. When checking or de-checking a node in the Workspace manager the node and sub nodes are no longer expanded.
5. The paradox file pdxusers.net is no longer located on the c:\ directory but in the users Temp directory.
6. In-loop (co-incident loop) TEM data supported on import
7. Several changes has been made to the IP processing system in order to improve the workflow.

8. The data residual calculated now matches the one calculated in em1dinv. The difference was that the Workbench used log10 and em1dinv uses ln.
9. Fixed a bug that prevented inversion of single model sections in fast mode.
10. Fixed a range check error when using "Filled" view on the model section form in the inversion system
11. The GIS tools now show up correctly when selected from the main menu. Added the pan tool to the map right click menu.
12. Chart tools on the main menu are now synchronized with the pop-up chart tools.
13. Fixed a bug that caused bitmaps to appear rotated with respect to the data when working with multiple local coordinate systems and their transformations involve different rotations.
14. Updated Proj4 definition files. The Gauss-Krüger projection is now handled correctly.
15. Survey info is now added correctly to ground based TEM surveys.
16. MODEL.INTPDATE is now filled when importing RES2DINV results.
17. Several optimizations made in the model1D loader. This speeds up the model 1D load queries, especially for airborne data.

HEM

1. The HEM module now has full support for horizontal dipoles
2. Models can now be exported from HEM inversion nodes.
3. Added support for line number filtering of HEM data in the inversion system.
4. Node names are now shown in the form captions of the inversion system for HEM data.
5. Enabled editing of point display properties of HEM data nodes.
6. Data residuals for HEM are now calculated correctly
7. Added "inverted altitude" as an available display column on the Model Position Explorer form for HEM data.
8. Models are now actually deleted from the database when deleting a HEM inversion node.
9. The FEM inversion settings form now remembers the previous selected frequencies

SkyTEM

1. When calculating the position of a SkyTEM sounding the UTM and elevation positions are now interpolated instead of just picking the nearest UTM and elevation position. This did not cause significant round off errors when the flight speed was low, but the change is necessary with high flight speed.
2. Flip sign functionality added to the Multiply and Shift Gates window.
3. The SkyTEM processing window has been partly redesigned to give the user a better overview
4. It is now possible to hide the data series navigation panel at the SkyTEM processing window. This feature gives more space to show the data curves when doing manual processing.
5. The user can now decide if he wants raw soundings on both left and right side of an average soundings with in the average interval. because of backward compatibility this settings is default ON but should in all new projects be left OFF.
6. A channel description has been added to the Channel list display in the SkyTEM processing window. Furthermore, the window itself has been made re-sizable for better display of the channel descriptions.
7. The processing check box is now automatic enabled when double clicking a software channel in the processing window

		8. A check for data with a value of zero has been added to the procedure which tries to spot capacitive couplings. Zero value is sometimes on very noisy data. 9. An extra check has been added to the SkyTEM Cap Sign filter functionality preventing it to raise an division by zero exception 10. The window used to plot sounding curves in the SkyTEM system now remembers its sizes also without pressing one of the data transform buttons. 11. The Apply New Geometry File functionality has been relocated from the SkyTEM processing node to the dataset node. Also the processing node does no longer has to be active before use. 12. Added X receiver coil for skyTEM survey info. 13. The program has been optimized so it runs more smooth when using the Set Buffer window to change the buffer position. If the buffer size is changed the program still need to recalculate the plot which might take a few seconds if working with large datasets. 14. The SkyTEM edit window has been redesigned with new and more informative buttons 15. A new item in the SkyTEM voltage data processing settings has been added. The item is "Trapez Synchronized location of soundings" or "Trapez Sync. location of sound.". Using this function ensures that sounding locations across software channels have the same location in both time and in coordinates (if they have the same sounding distance). 16. Altitudes are now ALWAYS set the "a-priori altitude if not recorded" value when exporting TEM files for inversion The import counter for SkyTEM data now shows the correct number of steps.
04.04.2008	3.0.39.559	**Maintenance Release** 1. MODEL.IDENT is now correctly formatted when adding survey info. 2. Fixed an out of bounds error when adding survey info. 3. Fixed an out of bounds error in the IP processing system. 4. A number of dialogs has been added to give a better flow when processing SkyTEM data. After creating a SkyTEM dataset node the user is prompted if he also wants to create a processing now right away. After processing the user is also prompted if he wants to show the SkyTEM processing window. 3. It is now checked that SkyTEM data has actually changed and therefore needs to be saved to GERDA when deactivating a SkyTEM processing node. Also, after the automatic processing the user now does not have to wait for the program to save the data. The makes the system much more smooth to use. Finally, the user is not asked to save to GERDA when the editing form is closed.
02.04.2008	3.0.38.558	**Maintenance Release** 1. Fixed a bug related to adding survey info to Access databases. 2. Fixed a bug that would sometimes cause an exception when inverting CVS data with negative data points in the processing. 3. Fixed a profile display bug introduced in version 3.0.37.557. 17.
18.02.2008	3.0.37.557	**Maintenance Release** 4. Updated version of em1dinv. 5. The CVS importers now mark negative data points permanently in use instead of discarding them. 6. CVS processing system updated to allow display of negative data points.

		7. Fixed a bug in the CVS processing system that showed all points in use, even though both raw data and processed data had been imported. 8. Fixed an access violation in the inversion system when working with line numbers larger than 255. 9. Several minor bug fixes in the line number function in the skyTEM importer. 10. Fixed a range check error when resubmitting CVS data. 11. Model export format significantly expanded. 12. A new item in the SkyTEM voltage data processing settings has been added. The item is "Trapez Synchronized location of soundings" or "Trapez Sync. location of sound.". Using this function ensures that sounding locations across software channels have the same location in both time and in coordinates (if they have the same sounding distance). 13. Several changes and bug fixes in the SkyTEM production line editor. 14. A channel description has been added to the Channel list display in the processing window. Furthermore, the window itself has been made re-sizable for better display of the channel descriptions. 15. Section size 300 added to the automatic inversion setup form. 16. Fixed an error when adding grids to profiles. 17. Fixed a bug with the nugget and spherical fit function in the new grid module. 18. Several minor bug fixes in the set survey info system. 19. Several minor bug fixes in the SkyTEM processing system. 5.
08.02.2008	3.0.36.556	**Maintenance Release** 1. Fixed a bug introduced in version 3.0.34.554 which produced the wrong cell sizes for RES2DINV inversions when some electrodes were not actually in use. 2. Fixed a bug that produced an out of memory error when trying to import skyTEM data with line numbers higher than 255. 3. Adding survey info now also affects any 2D models. 4. Added UTM coordinates to data/forward data export files. 5. Fixed a bug that prevented DBQ's from being added to Geoscene3D nodes. 6. Fixed a bug that caused an exception when trying to add a grid to a profile. Fixed default value errors when moving up from 1 model layer on the manual inversion job form.
01.02.2008	3.0.35.555	**Maintenance Release** 1. Disabled masking in the gridding module.
15.01.2008	3.0.34.554	**Maintenance Release** 1. Several bugs fixed in the IP processing/inversion system. Half cell width inversion has also been enabled. 2. Updated version of em1dinv and GERDA templates. 3. Fixed a bug that would cause the Workbench to raise exceptions when losing a wireless connection. 4. Minor changes to the SkyTEM production editor. 5. Other minor bugs fixed. 7.
17.12.2007	3.0.33.553	**Engine Update and GIS component upgrade**

1. The data base server had been updated. The new server is uses multiple processors thereby greatly enhancing database access time
2. A new version of the MapX component has been included. This among other things supports transparent bitmap images
3. The compiler has been updated. The update has given an overall performance increase of a factor of 1.5.

IP Module

The CVES module has been extended so that it now includes a fully integrated IP module, for processing and inversion of datasets containing IP data.

Gridding Module

The gridding module has been totally rewritten making it both more stable and intuitive to use**.**

General Model Importer

A General Model Importer has been implemented. Using this virtually any kind of data that can be written in a column ASCII format can be imported.

SkyTEM Line files

Added SkyTEM line files. When used during import data are masked and line numbers assigned. These are carried through all the way to the inversion system. Line files can also be created with the Aarhus Workbench with the new SkyTEM Production File Editor.

Various enhancements

1. Both automatic and user defined color scales are now available in the RES2DINV viewer
2. Coordinate transformation has been changed to a two step process: Source->Lat/Long->Destination. This two step procedure fixes transformation errors for some coordinate systems, e.g. ED50. The code has also been optimized so coordinate system transformation, even for large datasets, is performed at virtually no penalty
3. All data points is converted to the coordinate system of the map. This has solved numerous problems with different coordinate systems which is well handled by the GIS component.
4. Altitudes can now be plotted on an elevation scale in the 1D-LCI inversion system
5. Added name to the all forms in Res2Dinv and 1-D LCI Inversion
6. A new non-spike filter for has been implemented when forming average SkyTEM soundings
7. The automatic inversion form now remembers individual settings for all data types and smooth/layered mode
8. Default altitudes for missing altitude data is controlled by the user in the inversion setup
9. Added new tab to the Inspect Starting Model form. This new tab displays the actual starting models used for the inversion
10. Added a dialog which prompts the user whether to re-load the models when opening a previously opened inversion node
11. Default appearance of series in the SkyTEM Edit Form has been optimized
12. The CVS importer now checks for integer multiplier/divider relationship between the connector separation and the UTM coordinates. If this is found, the user is prompted whether to apply the correction
13. The Access workspace format is no longer supported. These workspaces are automatically converted to Firebird format.
14. New module licensing system.
15. Numerous enhancements to the HEM inversion system.

Bug Fixes

1. Fixed a bug that occurred when adding survey info for newly created GERDA idents
2. Fixed an error where survey info would not be added to all tables in GERDA
3. Fixed a bug that would sometimes prevent databases from being recognized when opening a workspace
4. Fixed a bug that occurred when plotting the Positions series in the SkyTEM processing system
5. Fixed a bug that prevented first line of ASCII DEM file to be set as header line
6. Fixed a bug that occurred when plotting the Positions series in the SkyTEM processing system
7. Fixed an error when trying to print without having set the resolution
8. Fixed a print settings bug, which could sometimes cause an exception when printing
9. Fixed an error that would occur when the user aborted the creation of a Geoscene3D node
10. Fixed an error in the SkyTEM Edit Form that occurred when using the Select Between Lines tool
11. Fixed an indexing bug in the CVS resubmission system, which would sometimes cause the wrong models to be resubmitted
12. Tilt sign for SkyTEM models corrected in the inversion visualization system
13. Fixed an error that would occur when creating/connecting to databases with Danish characters in the name
14. Fixed an error that would occur when closing the SkyTEM Edit Form with Sounding Plots open
15. Added epsg to inversion nodes for all data types, except SkyTEM where it was added earlier
16. Fixed a bug concerning where the drop down boxes in the SkyTEM processing system would stop working if Default button was pressed
17. Problem with Edit Display for the SkyTEM processing position marker on the GIS MAP is fixed
18. The SkyTEM select GIS tool now works on the first click. A warning is given if other than SkyTEM processing points on the GIS-map are selected with the Select SkyTEM tool

And many more…..

14.12.2007 2.3.32.552 **Bug fixes and enhancements.**

1. A bug causing coordinates to be slightly shifted in the Y-direction when converting a large number of coordinates has been fixed.
2. Added no. data points in use to the statistics form in the CVES processing system.
3. Connecting to a database with Danish characters in the filename caused a database server error. This is no longer permitted.
4. Fixed an indexing bug in the CVES resubmission system, which would sometimes cause the wrong models to be resubmitted.
5. Properties can now be inspected on RES2DINV inversion nodes.
6. A new non-spike filter has been implemented for average SkyTEM soundings. The new filter efficiently removes spikes by first sorting the gates in a stack, then removing the smallest and the largest values and then averaging the rest. The data standard deviation is calculated from the non-spike filtered stack. The number of data to be removed is set in percent. If e.g. 20 % is set, 10% of the data are removed form the low end and 10% from the high end.

Default altitude for SkyTEM data with missing altitude information is now user definable.

07.12.2007 2.3.32.551

Bug fixes

1. Theme maps, data etc. from the Workspace manager are now exported in the coordinate system of the GIS-map.
2. New default axes on the variogram editor for an improved view
3. When using the unfitted filter in the inversion system on skyTEM data, the updated in-use flags are now correctly saved to the processing.
4. Several short cut keyboard-operations have been defined for the SkyTEM module (see help for detailed description)
5. Added epsg to inversionnodes for all datatypes, except skyTEM. For skyTEM it was implemented november 2006.
6. Optimized compiler directives for all bpl's before release.
7. Added exception handling in Embi relating to the data-time stamp
8. The automatic inversion form now remembers individual settings for all datatypes and smooth/layered mode.
9. Documentation of Skb file added in form of file example with descriptions. Not a perfect way of doing it but anything else seems impossible.
10. Import bug on the 3rd tilt-device on SkyTEM data has been fixed
19. Enhanced control of tilt and altitude settings added to the inversion of Airborne data.

05.09.2007 2.3.32.550

New 3D module with GeoScene3D

1. A new module for 3D visualization using the program GeoScene3D has been implemented. Using GeoScene3D together with the Aarhus Workbench allows for 3D views of most themes created within the Aarhus Workbench (e.g. draping of an interval resistivity map to a topographical surface or showing the depth to a good conductor as a 3D image together with the topographical information)

New module for Helicopter EM data (HEM)

1. A new module for inversion HEM data has been implemented. The inversion features full support for both few-layered and smooth 1D inversions. With automatic settings only a few clicks are needed to get to the inversion results. The system will handle even very large surveys due to automatic sub-sectioning of the data.

New visualization tools for inversion results

1. Two new visualization tools have been added to the Inversion Explorer ("Show Inversion Result"); 1) A Data profile plot showing the observed data as errorbars and the datafit as a connected line enabling direct evaluation of the datafit and 2) a model analysis plot showing the parameter analyses as bars for each model. Each parameter (layer resistivities, thicknesses and depths to layers) is represented with a colored bar for easy evaluation of all parameters.
2. A Center Map function has been added to the 1-D LCI inversion evaluation system.

Support for IP data

1. IP data measured with multi-channel equipment are now fully supported. Integral IP as well as full time-decays are read from an extended dat-file in RES2DINV-format. Pseudo-sections of individual time decays are displayed as well as the integral IP value. Advanced processing features are connected to this system.

New PACES inversion module

1. PACES data can now be inverted in the general inversion system. As for HEM data both smooth and few-layered models are supported in both an automatic and manual mode.

Various enhancements

1. A general feature for handling Digital Elevation Models (DEM) has been added. From a large DEM smaller grids can be made directly with the mouse.
2. The GIS-tools and Chart-tools have been moved to the main program menu for easy accessibility.
3. The data to map coordinate transformation have been optimized to work also in very extreme cases.
4. The Auto inversion window now remembers settings differentiated to the data types and to the model type (smooth/layered)
5. The in-use flags on inversions results have been synchronized with the processing which means that changes applied from the inversion system can be saved to the processing.
6. Survey Info is now optional for all data types and the Set Survey Info menu item is renamed to Add Survey Info
7. Import of data is now available from right click menu for GERDA-databases
8. Scaled prints are now available from all charts in the Aarhus Workbench. Charts that involve a length axis can be printed to a selected horizontal scale (e.g. 1:5000) and a connected vertical exaggeration.
9. The minimum height of colorscales have been made smaller.
10. New workspaces can now only be created in Firebird format.

SkyTEM module, enhancements

1. The help system for import of SkyTEM data has been greatly updated
2. More than one tilt device is now supported in the processing system. A few range check errors has been fixed when calculating the average of more than one tilt device.
3. Binary files with errors are read until the error occurs - then the rest of the file is skipped
4. Added the posibility of viewing Helicopter speed and topography series to the skyTEM processing system"

SkyTEM module, bug fixes

1. A bug has been fixed preventing activation of a processing node where where only one tilt or altitude device has been processed.
2. Added descriptive error message when the production file has format errors.
3. Rhoa and dbdt plots now restore it's window size on the screen depending on if the window plots Rhoa or dbdt.
4. A check has been made to make it possible to process and plot data even when there are no altitude data in the dataset
5. A check prevented the processing system to continue when voltage data was not present in the database. The cahck has been removed and e.g. altitude data can now be processed without voltage data.
6. A check preventing from time to always be smaller than to time when creating a new processing was not implemented correct and could prevent the time to pass midnight.
7. Old code used to import tem files just after exporting has been removed as it accidentally could be initiated without the knowledge of the user.
8. Adding topography to SkyTEM datasets caused and error when transforming coordinates because some coordinates could be not defined (NaN). This has been fixed by skipping these coordinates
9. It is now checked that SkyTEM data only can be imported to a Firebird database.
10. If GP rescords are found with no lat long values these lines are skiped. The criteria for skipping a line is that'- -' is found.
11. Fixed an error where an access violation would occur when a workspace with an active SkyTEM processing was closed

12. Fixed an error with the map point symbols in the SkyTEM processing system
13. The select point tool is now default for the SkyTEM edit-window.
14. The Constant factor shift for the edit window is now remembered.
15. Problem with Edit Display for the SkyTEM processing position marker on the GIS MAP is fixed.
16. The SkyTEM select GIS tool now works a the first click. A warning is given if you select other than SkYTEM proceessing points on the GIS-map with the SkyTEM select tool.
17. Fixed an error in the SkyTEM processing system where the raw GPS would suddenly be removed from the map

CVES module, Bugs and enhancements

1. Problems with screen saver related program termination have been solved.
2. Added support for floating point sounding distances.
3. The RES2DINV viewer can now be closed if the inversion job stopped unexpectedly.
4. Section panels in the RES2DINV viewer have been adjusted to fit individual screens
5. Fixed a bug preventing RES2DINV to start in rare cases.
6. Fixed a UTM related indexing error - the correct points are now shown on the map when marking points in the RES2DINV inversion result viewer
7. CVS-import: If a topography file is specified it now overwrites the topography from .dat or .inv file.
8. Added triangulated interpolation (optional) to the pseudo section display options.
9. Processing and inversion of CVES dipole-dipole data now works correctly.
10. Added support for reading of topography from .dat files.
11. An informative exception is raised if the user tries to import non-supported datatypes.
12. Fixed a display bug with the artificial top layer used for triangular interpolation in the RES2DINV viewer. Made triangulated interpolation the default setting for the model form
13. The default positions of the forms in the RES2DINV system have been changed to fit on most screens by default.
14. The heights of the processing windows have been changed to reflect importance.
15. Making a DBQ from CVES models using the normal DBQ functionality now work - no extra models are added.

Various Bug-fixes

1. Changed default vertical constraints to medium for automatic smooth inversion.
2. Bug fix in the automatic inversion settings: Until now lateral depth constraints has been added for smooth inversion and not for layered inversion. This has been reversed so lateral depth constraint are now added for layered inversions and not for smooth inversions.
3. Added support for fast inversion jobs and resubmission to the MT module.
4. Fixed a calculation error in the residuals displayed in the inversion system. (A factor squareroot N).
5. Save chart and open chart functionality is removed from main menu of Workbech MainForm
6. Automatic max sounding gap set to 250 meters for airborne methods, 75 meters for others on the automatic inversion setup.
7. Various bug-fixes relating to the HEM data and model importer have been fixed.
8. Input coordinate system for profile from file has been added

06.07.2007 2.2.32.549

Bug fixes

1. Missing icons are back on the main menu.
2. Minor functional changes in the new CVES importer.
3. The status panel for the Survey Info Browser has been removed.
4. SkyTEM-import: All skb files containing errors are now skipped. All usable data in the file read before the error are kept. Partly corrupt files are typical created if the SkyTEM program is terminated unexpected, preventing the program from closing the skb file.
5. The Set Survey Info has been renamed to Add Survey Info
6. A number of Scratch files was erroneously written to c:\temp preventing import of CVES and SkyTEM data if the directory did not exist. This has been fixed.
7. When importing SkyTEM data it is now checked that the correct version of the geometry file is loaded before that actual import to GERDA is initiated.
11. Import Done message has been added to the HEM-importer

29.06.2007 2.2.32.548

Bug fixes

1. A bug with the lic-file for em1dinv has been fixed.
2. Changed the shortcuts on the auto inversion form.
3. Minor graphical changes to the "Inversion Type" Form.
4. Change in the SkyTEM datafile selection scheme. Previously, the first used sounding was the first before “fromtime” now it is the first after “fromtime”.
8. UTM coordinates are now added correctly to the database when running res2dinv inversion.

12.03.2007 2.2.32.547

New Inversion mode

1. A new automatic inversion mode has been implemented. The automatic inversion mode automatically creates intelligent starting models, section lengths and lateral constraints. Thus, the automatic mode requires a minimum of user interruption.
2. The numerical code running the inversions now supports 64bit architecture. The Aarhus Workbench automatically detects if a 64 bit machine is used.

New CVES data importer

1. A simplified importer for geoelectrical CVES data has been implemented. With the new importer the user only points to a dat or inv-file and selects a coordinate system. UTM-location of the individual electrodes is optional. If that information is not given, the electrodes will placed in an arbitrary coordinate system, to still be able to view them on the map.
2. It is still possible to access the old importer (for Danish users), but a few plot options has been disabled.

General

1. Nodes in the Workspace Manager which has corresponding visible layers on the map is now shown with text in bold.
2. Added sounding up/down and play hotkeys on all relevant forms in the inversion system.
3. When a grid is loaded in the Topography form the corner coordinates are now transformed and shown in the same coordinate system as the data.

SkyTEM

1. It is now possible to add topography to a SkyTEM dataset or processing node. If topography is added to a dataset node all processing nodes under the dataset node are altered. The topography is automatically migrated into the inversion system
2. It is now possible to divide SkyTEM instrument data stacks into smaller raw data stacks. The division is done during data import from binary files to the GERDA database.
3. A bug preventing data processing in datasets where only parts of the data has all software channels present has been fixed.

4. The following changes and enhancements has been made to the inversion system for x-data:
    - Adaptive models has been implemented. Resistivities for x-models are taken from the last z-model if possible.
    1. Lateral constraints on altitudes are implemented. The constraints are scaled similar to the other model parameters.
    2. Constraints on altitudes between x- and z-models are scaled with the x-lateral scaling factor - this means that the altitudes in practice are locked together.
    3. The x-tilt angle is given an a-priori values of 4 deg.

Res2dinv viewer

1. The iteration and log windows on the RES2DINV Viewer now auto-selects its last items
2. Chart tools from right-click menu added to RES2DINV Viewer

Bug fixes

1. Datasets are now automatically loaded when reopening a Map
2. Negative PACES data are now marked not in use in the DB when loaded.
3. Fixed a sounding point to electrode mapping error. This would sometimes give the error message: "Error in TpioModel1DCVS.SetSequences" when trying to open a CVS 1DLCI inversion node.
4. Fixed an error where model sections could not be reopened if the user had changed the color scale without saving this as a file
5. Apriori depth STD is now properly changed on the Redefine Start Model form.
6. Fixed an error where inversions could not be resubmitted due to use of outdated inversion settings
7. Changed default mode on the model section form to bar mode.
8. The CVS Explorer now recalls the previous focus depth selection and left/right sorting setting.
9. Several access violations fixed in the CVS module(Ownership/messaging errors).
10. Fixed an error that prevented TEM soundings to be imported to newly created GERDA projects
11. Profiles are no longer opened automatically when the user cancels adding layers to them
12. Fixed an error where the Chart Tools menu item could not be turned on/off
13. Fixed a bug that prevented .eZ topography files from being imported in the CVS module.
14. Fixes an error where the cancel button did not work when changing color scale on the Model Section
15. The correct maximum z-value is now shown in the Add Topography form.
16. Fixed an I/O exception problem in the RES2DINV viewer.
8. Added new shortcuts to the model position explorer and the model position explorer settings form.

09.03.2007 2.1.31.546

Bug fixes

1. A number of constraints in the database structure has been released in order to be able to define instruments that are not originally in the import database.
2. Access databases can now be used with CVES data.
3. A number of spelling errors and confusing dialogs has been fixed and improved.
4. Key violation from batch inversion program Embi fixed.
5. Warning for missing Processing Person and/or Recording Person during import has been removed. If the fields are not specified, the record is left empty in the database.
6. Fixed some access violations in the CVES importer.

7. Topography data can now be read directly from .dat and .inv files on importing CVES data.
8. The plot forms on the Res2dinv viewer no longer updates when cancel is clicked on the settings forms.
5. The CVS data profile and sounding curve plots are now correctly updated according to the setting of the "show lines" checkbox.

06.02.2007 2.1.31.545

Database upgrade

1. A new and enhanced version of the data management system, the GERDA database has been implemented into the Aarhus Workbench. This version of GERDA is the first official release from the Geological Survey of Denmark and Greenland with the new table definitions for SkyTEM, HEM and MT data. Lots of changes has been made to the database but we should have managed to keep the Workbench backward compatible.

New inversion modes

1. The inversion system has had a “fast mode” inversion added. The fast mode uses the result of a previous section as starting model to reduce the number of iterations.
2. A mode to force continuous models along long sections has been added as well. This mode applies a-priori information from the last model of a section to the first model of the next section to ensure continuity. As a consequence it cannot run in parallel.
3. To support these two new inversion modes we have implemented support for different .con files. Thus, the path to the con-file and em1dinv.exe can no longer be set, they should always be located in the workbench\em1dinv folder.

Bugs and enhancements, General

1. Fixed an error where number of layers would not be initialized when loading an inversion model file.
2. Inversion settings tab-sheet “Inversion” has been updated.
3. The progress bar in EMBI now shows actual progress.
4. Added an error message if a specified database name exceeds 32 characters
5. A “Recent Opened Workspaces” function has been added to the File menu
6. A bug relating to the splitting of long sections has been fixed
7. Fixed several nil pointer errors on the model section form.
8. The list-view on the model position explorer now remembers its selection when updating
9. Fixed a synchronization bug in the inversion system.
10. A bug preventing “Copy Chart” from some plots has been fixed
11. Changed code to improve speed of the scroll and autoplay features on the Model Position Explorer.
12. Fixed an error where the Chart Tools menu item could not be turned on/off

Bugs and enhancements, SkyTEM

1. Added channel specific default processing settings for SkyTEM data.
2. Fixed an error that prohibited SkyTEM processings with processing settings that were not within predefined limits from being opened

Bugs and enhancements, CVES

1. Removed UTM warning dialog when submitting data for res2dinv inversion.
2. Added "import done" dialog to the CVS importer.
3. Fixed a bug that prevented res2dinv resubmission from running.

		4. Removed "Critical Setting" warning dialog when setting the path for RES2DINV. 5. Coincident datapoints are now averaged when written to .dat file and submitted for RES2DINV inversion. 6. The pseudosection form now synchronizes its zoom level with the other forms in the CVS processing system. 17. ACCESS Databases are now supported in the CVS module.
09.01.2007	2.0.30.544	1. Fixed an error in the numerical code em1dinv that caused a malfunction when inverting data. 2. Bug in function to blind last layer is fixed 9. A few windows have been redesigned
21.12.2006	2.0.30.543	13. Added an option to blind last layer when creating Interval resistivity themes 14. Fixed a bug on the Model Section Plot where residual curves would not be moved along with model bars 15. Fixed a bug in the inversion system where invisible data points could be toggled on/off 16. A problem with a "locked table" during data import in Embi has been fixed. Embi now retries to import the data after 5 sec 17. The layout of the Inversion Settings form if now remembered 18. Paths are now remembered when saving and loading files in the inversion module 19. Redesigned the "RES2DINV Inversion Result" form. 20. RES2DINV explorer now closes its subforms when the windows close button is clicked. 21. Added "apply STD filter?" dialog when resubmitting RES2DINV data. 22. Added validation of electrode UTM coordinates in the CVS processing system. 23. Fixed a visual bug on the RES2DINV model section plot form 24. Fixed an error that occurred when importing shp files to directories with non-UK characters in the name 25. Multiple files can now be selected when importing shp files 26. Properties is now available on processing nodes 27. Fixed a bug in the ClayThickness routine 28. Added a Get Time Limits function to the Select Data for Inversion form 29. A pause function has been added to EMBI 30. Process priority can now be changed during inversion with EMBI 7. em1dinv in version 4.31 is released with the update.
17.11.2006	2.0.29.542	**Various bug fix** 1. Coordinate transformation. 2. Lateral focus points are now written out in dcp files 3. Changes in the SkyTEM processing settings. 4. Fixed a bug where soundings curves would not be shown properly in the inversion system. 3.
07.11.2006	2.0.29.541	**Bugs** 1. Fixed a selection bug when using the play feature on the Model Position Explorer. 2. Fixed a bug with the GIS tool icons. 3. STDs are now shown with 3 digits on the "Inspect Start Model Form" in the 1D inversion visualization module. 4. Fixed a bug where the wrong starting model would be used when resubmitting SkyTEM inversion jobs. 31. Fixed a bug relating to the use of smooth colorscales that prevented the user from making bitmaps.
18.10.2006	2.0.29.540	**New Name**

1. With the release of version 2.0 the official name has been changed to the Aarhus Workbench instead of just the Workbench

Updated CVES module

1. The CVES module has undergone thorough testing since the first release. It is now possible to do 2D inversions using an build-in interface for RES2DINV. The inversion results are read back into the workbench when the RES2DINV has finished enabling visualizations directly in the Workbench.

Inversion

1. The inversion job form is now general for all data types.
2. A resubmit option has been added to the “View Inversion Result” window. It is possible to fully or partially resubmit an inversion. When resubmitting changes can be made to the starting model or different constraints can be applied.
3. Data points can now be deleted for a resubmission based on the difference between the observed data and inverted data.

SkyTEM inversion

1. Altitudes and angles can now be visualized in the “View Inversion Result” on the Inversion Explorer and on the Section Window. It is possible to see both the starting values for the inversion as well as the output values from the inversion.
2. A special constraint can now be defined on the Inversion Job window for the combined inversion of x-data and z-data.

Bug Fixes SkyTEM

1. If the altitude for the transmiter is undefined (it is standing on the ground) the transmitter and receiver altitudes are set to the values defined in the geometry file.
2. If the altitude of the receiver coil is larger than the altitude of the tranmsitter coil (the receiver is below the transmitter) the altitude of the transmitter is moved downward by half the altitude diffrence between the two coils. This prevents the receiver coil to move down in the first layer when using Semdi for inversion. This change does not apply when the inversion is done in the Workbench
3. The width of the trapez filters has been increased by a factor of two so the width given under the processing settings is the full width - not the half-width. All filter widths already stored in the GERDA database are automatically recaluclated when a processing node is activated.
4. All Key fields in the SkyTEM list fields are upgraded so the Key is no longer a string but an integer (stored in a character field). The upgrade is done automatically when a SkyTEM processing node is activated.
5. The correction factor is now applied independent of the altitude - i.e. the factor is always applied.
6. Changed the default values in the SkyTEM processing so they fit the recommended settings.
7. SkyTEM data points can now be deleted from the Sounding plots
8. Exception handling for cleaning up the Workspace and memory has been implemented if an error occurs during basic processing of SkyTEM data.
9. The progress counter is now reset before writing the tem files for a particular software channel.
10. An error in the SkyTEM geometry loader causing the number of devices to be wrong has been fixed

Other bug fixes

1. The performance for updating points on the map from e.g. the inversion module or the CVES module has been dramitically increased.
2. Added search function to the “Create DBQ from Inversion Jobs" window. Also fixed a bug that would cause an exception on clicking OK with no items selected. Made the form height adjustable.
3. Negative RMT data values are now marked as not in use when submitting them for inversion. A warning dialog has been added to make the user aware of this.
4. Fixed a bug in the RMT module that sometimes prevented E2/H1 data from being written
5. Fixed a timer bug that would sometimes cause an out of bounds exception on the Inversion Model Explorer window.
6. It is now possible to save inversion settings when entering an inversion via the properties button.
7. Power law dependency is implemented for the inversion system for all data types
8. Fixed a bug that would sometimes cause out-of-bounds exceptions on the Model Position Explorer.
9. Fixed a +/- 1 STD error in the resubmission code
10. Properties on CVES nodes added

The CVES and HEM import-modules have been optimized for a much faster import.

06.10.2006 1.9.28.517

NEW CVES module

1. A fully functional CVES module has been implemented.
2. The module contains of three parts: 1) An existing data importer importing ascii datafiles to the GERDA database format; 2) A processing system allowing the user to view data as soundings, pseudo-sections or profiles. Bad data points can be removed or extra noise can be added to individual data points; 3) An inversion part featuring 1D-LCI type inversion of the data sets using the embi program. Both multi-layer and few-layer inversions are supported. 2D inversion will be ready for the next release.
3. The map is fully integrated enabling map-view of individual electrodes or sounding positions. Topography is also supported.
4. Asymmetrical electrode configurations such as gradient array type data or dipole-dipole data are fully supported and the visualization tools are designed to handle these configurations.
5. It is not possible with the current release to open and re-process data set already imported to GERDA.

Embi

1. A coloured panel has been added to embi. A green panel indicates no errors and red indicates that errors have occurred

MT module

1. A few bugs have been fixed in the inversion part of the MT module

SkyTEM module

1. The minimum standard deviation on the altitude has been changed to 10 %
2. A sign error on the altitudes caused the Tx and the Rx position to be shifted in the SkyTEM processing module. This has been corrected.

Bug Fix

1. Coordinate systems on the southern hemisphere are now supported
2. A bug relating to user-defined colour scales when viewing inversion results has been fixed.
5. Profiles generated with “Copy profile layers” now has the same layer selection as the parent profile

04.10.2006 1.8.27.516

Important (Danish user only)

1. Before uploading Interbase databases to GERDA (GEUS) remember to run DBUpgrade.exe with SQL-script “Clear tables.sql”.

Optimization

1. Support of MEP data sub-array type 14-15 (gradient data) from RES2DINV inv-file (new types).
2. TEM and CVES importer modules now support a range of coordinate systems.

Bug Fix

1. Problem with importing data into a access databases fixed
2. Minor bug fixed
11.

27.06.2006 1.8.27.515

Bug Fix

1. Import and processing MT data.
3.

03.05.2006 1.8.27.514

Optimization

1. Importer is optimized by using a centralized import object. For most imports this results in a much faster import.

Inversion Visualization Module.

1. Data Residual Column added

Bug Fix

1. Delete node. Fixed bug where nodes having substring like the node intended for deletion, also was deleted.
2. Inversion Visualisation system. It is now possible to save deleted points to the GERDA database.
3. Fixed error in Inversion Job.
4. Added check of empty model list, prior to starting the Inversion Visualization system.
5. Active SkyTEM processings are now closed when the workspace is closed.
6. Appended _Inv to names for exported files in GeoSoft Inversion Model File.
7. Header in xyz-files in geoeditor format has been changed.
8. Fixed an error in the SkyTEM inversion module where the forward response curve could be toggled on/off.
9. Default database type for “connect to database” has been changed.

29.03.2006 1.8.27.513

Inversion Visualization Module – SkyTEM and MT data types.

1. For a visual interface of the inverted data, there is now a complete inversion visualization module, which gives the opportunity to view inverted data as model-bars, model-lines, model-data curves and as tables.
   For ease of viewing it is possible to view only a selection of the data, it is even possible to set the system in “play” mode, so it automatically changes the selection every so and so seconds.
2. Inversion is now fully integrated in the Workbench. The inversion can be set up as laterally constrained inversion (LCI) and LCI with smooth models. There is no need to start external processes for the task manually.
   It is even possible to start the batch inversion controller program EMBI (through the Workbench) in multiple instances or on multiple computers (when running the Firebird database). The output data from EMBI is stored directly in the Workbench database.
3. The inversion kernel em1dinv is now “locked” to the Workbench. The kernel is shipped in version 4.0x.

MT (RMT) Processing Module

1. An importer part. Importing MT raw data ascii files to a GERDA database. The raw data files are linked to spatial positions through a location file listing station names and utm-positions for all data.
2. A processing part. The processing displays the imported data and allows the user to remove bad data points and/or specify extra noise to specific data. The changes are saved to the database.
3. An inversion part. The inversion part has many features for laterally constrained inversion (LCI), vertical smoothing of models and adding a priori information allowing the user full control of the setup of the inversion process.

Import and export of shape and geo-tiff files

1. The Workbench is now fully integrated with the ESRI file formats shape and geo-tiff. Shape and geo-tiff files can be loaded into the GIS map similar to tab files. Also all Workbench themes can be exported as either shape files or for raster images geo-tiff files.

Bug Fix

1. Coordinate transformation – Under certain circumstances the EPSG value was translated wrong.
2. Made the Cancel button on the "Select database type" form work.
3. The title line in xyz files is translated to proper English.
4. A geometry object can be reapplied to a SkyTEM dataset
5. The gate standard deviation from the geometry object is now added to the raw data for SkyTEM data.
6. A factor of 2/3 was missing when transforming dbdt STD to Rhoa STD (for geometry and user STD) for SkyTEM data.
7. It is now possible to export models on profiles to .XYZ files.
8. Two indexes are added to the GERDA database on the ODVMODSE table when a GERDA database is loaded into the Workspace. This greatly increases the performance when extracting large DBQ's
9. Problem with matching currents in SkyTEM is now fixed.
10. Plus lot and lots of other fixes.

10.03.2006 1.7.26.512

Bug Fix

1) Jupiter databases in coordinate system EUREF89 causes an error when extracting boreholes. The reason was that EUREF89 is spelt EUREF. The Workbench recognize now EUREF as EUREF89.

2) Because of missing indexes in the Gerda TEM tables some queries could take very long time to fetch. The missing indexes are now created on the fly.

3) It is now possible to export SSV themes to ascii files.

4) On the SSV Borehole Editor a check has been removed on the field Use Intervals. The check could sometimes make it impossible to close the window.

A check has been changed on the Job editor so standard deviations below 2 are allowed.

07.03.2006 1.7.26.511

Bug Fix

It is possible to extract Themes Data in SSV Module. The New Themes… item is enabled.

27.09.2005 1.7.25.510 **New SSV Module**

1 The SSV is a new concept using geostatistical estimation and non-linear inversion to optimize a function translating geophysical resistivity models to geophysical clay thickness incorporating reported clay thicknesses in boreholes. The clay thickness in the upper part of the subsurface is an important factor for the water infiltration speed and thereby the vulnerability of underlying aquifers. Borehole information contains the most detailed information on clay thicknesses, but is most often too sparse for the detail level required in actual mapping situations. Geophysical data, on the other hand, has the desired spatial coverage but the measured quantity is resistivity and not clay thickness. The SSV concept act as a hands off interpolator between the boreholes translating the geophysical models to geophysical clay thickness. The concept includes geophysical data uncertainties and uncertainties on the description of the boreholes. The primary user input is reported clay thicknesses with uncertainty levels for boreholes in a borehole database query (BHQ). The borehole clay thicknesses are then connected to the geophysical information through one or more data base queries (DBQs).

5) **Various bug fix**

14.09.2005 1.6.24.508 **Bug fix**

1. A memory allocation error has been fixed when loading layers on profiles. The allocation error only occurs when loading very large datasets.

2. An coordinate system error has been partly fixed when drawing profiles on the map. When working with the map do NOT try to change the projection of the map - let MapX handle this itself. Changing the coordinate system causes the profiles to be located at shifted coordinates. The bug will be fixed in a later release of the Workbench.
3. A bug causing an access violation when creating new SkyTEM processing nodes has been fixed.

1.

07.09.2005 1.6.23.507 **Bug fix**

All importer modules in the Workbench have been changed so that data and model parameter standard deviations has the form 1.xx. The old format was either 0.xx or 1.xx.

01.07.2005 1.6.23.505 **SkyTEM processing**

1. Shortcuts have been added to sounding plot and sounding list for scrolling and updating buffer.

Bug fix

1. An error handling coordinate transformation of borehole coordinates has been fixed.

Data Theme error handling on Access database has been fixed.

27.06.2005 1.6.22.503 **Bug fix**

An error handling coordinate systems has been fixed.

15.06.2005 1.6.21.502 **CVES Module**

1. CVES processing: 1D processed data can be exported to DCP files.
2. CVES processing: Bug fix: Column in Res2DInv export file with GERDA keys has been removed. This column caused error when read by Res2DInv.

SkyTEM Module

1. SkyTEM processing: License check has been added to SkyTEM processing module

Other

1. EUREF 89: Bug fix: DB Queries on Access GERDA database with data in EUREF 89 caused error. This has been fixed.
2. EUREF 89: Bug fix: Creating a tab file for a MapInfo image caused error, because the map component does not support EUREF 89. Instead WGS 84 is now used by tab files.
3. Processing modules: Sounding positions and data have been separated on two charts on the processing form.
4. ESRI shape files: Shape files can be imported and exported into the Workbench. The shape files are internally converted to tab files and added to the GIS map. When exporting raster images (e.g. the thematic maps) they are exported as geo tiff files.
2.

27.05.2005 1.6.20.498

New Functions

1. Combined themes.
   Now it is possible to combine themes on the map. Data are extracted from DBQ's and can be combined on different criterias (f.x. Depth STD, Thickness STD, Elevation, Resistivity and so on...). The new function is placed in Workspace manager tree on the map dropdown menu and is called New Combined Themes…

2. Data Theme (Only for Paces Data)
   The function creates a new data theme showing apparent resistivities for the paces data. The function appears in the dropdown menu in Workspace Manager tree and is called New Data Theme....

Changes and bug fixed in SkyTEM processing.

1. A number of bugs have been fixed in the SkyTEM processing module
1.

26.05.2005 1.6.20.495

Bug fixes I SkyTEM processing

1. A number of minor bugs have been fixed in the SkyTEM processing module.

05.05.2005 1.6.20.486

Changes and bug fixes

1. When saving rerun of processing only values changed are saved.
2. Buffer position is stored for next run.
3. SITEM functionality for Soundings list form.
4. Listing of auxiliary parameters in sounding list box.
5. Update and fixes in editing form.
6. Progress bars added for several time consuming procedures, mainly when interfacing with GERDA.
7. Fix of ACCESS version of workspace manager database.
8. Button added for geometry file edit tool in SkyTEM import.
9. New extension on setting files ".pro"
10. New commands button on settings-form giving access to right-click menu.
11. Update of default processing parameters.
12. Enhanced user interface.
13. Numerous other minor bug fixes in user interface and database IO.

04.04.2005 1.6.19.483

New Functions

1. **SkyTEM processing.** First release of new module for processing of SkyTEM data. The module in its current state includes :

a. Import of raw data into GERDA
b. Filtering and editing of data
c. Filtering and editing of altitude measurements
d. Display of control parameters
e. Integration of data processing with GERDA database
f. Export of data to TEM files for inversion in SEMDI

11.03.2005 1.5.18.455

New Functions

1. **Output to GeoEditor and GeoSoft.** Output of models has been added to DBQ export menu.
2. **Import from external files**. A dummy value can now be set, to exclude positions in themes.

Changes

1. **Add Topography**. You now specify the coordinate system of the Grid file holding the topography data. If the coordinate system differs from the Query coordinate system, the grid coordinates are transformed to match the query coordinate system.
2. **View data**. Selections of new data are no longer added to the same form, but to one form for each selection.
3. **Export map to file or clipboard**. Has been separated into two forms – one for export to file and one for export to clipboard. Settings of export have been reduced to resolution and size.
4. **Memory setup**. When setting up memory usage for Workbench, user does no longer has to pass the location of the firebird.conf file. The user interface has also been simplified.
5. **DBQ.** When making a new DBQ all TEM subtypes (e.g. tem40, skyTEM1 etc) are shown in the data type select field.
6. **Upgrading the workspace.** A check has been added to the upgrade procedure so that the original workspace is restored automatically if an error occurs during an upgrade. Furthermore, is now checked that the user has sufficient disk space for the upgrade.
7. **Check for disk space.** Check for free disk space has been added when opening the workspace and when clicking a node in the workspace manager. The following checks are made on
    a. the workspace directory drive. A warning is shown if the free disk space is below 100 Mb.
    b. the TEMP directory. A warning is shown if the free disk space is below 400 Mb. This directory is also used by MapX.
    c. the workspace directory whenever a node is selected. A warning is shown when the free disk space is below 50 Mb. This check is bypassed if requested at an interval at less than 20 sec.

Various bug fixes

14. **New Profiles**. Various changes in user interface.
15. **Point Theme**. Colour scale is saved.
16. **Import from external files**. A number of minor errors have been fixed.
17. **Zoom on profiles**. When zooming on profile with a large amount of data, the zoom becomes very slow. This has been fixed.
18. **Disconnect from GERDA database.** An access violation occurring when Del is pressed on a GERDA database has been fixed.
19. **DBQ.** Pressing the Cancel button when asked for a DBQ name did not stop the creation of the DBQ node.

20. **New SQL for queering models.** The SQL used for queering models has been rewritten for enhanced performance.
21. **SkyTEM online.** Support for moving map added.
22. **Topography.** Fixed errors with progress bar and removed some of the reporting to Workspace log.
23. **GSTAT gridding.** Fixed problems with progress bar. In the start up of a gridding GSTAT uses a lot of time on sorting the data into a quad tree structure. This is now reported to the user in text instead of actual progress in the bar which now exclusively reports actual progress on the gridding itself.
24. **PACES Import**. While importing data a lot of unnecessary information was added to the workspace log. This has been removed.
25. **Profiles**. A lot of unnecessary information was added to the workspace log. This has been removed.

03.03.2005 1.4.16.444

New Functions

1. Import of external files. Data can be imported from ASCII files into the workbench. Themes, grids etc. based on these files are now supported.
2. 3D visualization. New functionality for viewing grids and boreholes has been implemented and is released in a preliminary version.

Various bug fixes

1. Workspace database. A bug in the previous version of the workspace database has been fixed.

04.01.2005 1.4.15.436

Various Bug fixes

1. When reopening a map the dataset on Geophysical theme layers on the map were not loaded. This has been corrected.
2. Colour scale saving. Saving to a colour scale file had an error which has been corrected.
3. Database. It is no longer possible to make a DBQ or BHQ when no databases are active.
4. Export. When exporting layers the layers are no longer redrawn regardless of export type. Now the redraw is only made when strictly necessary to generate the files to export.
5. Map Layers and GST files. When a reference to a layer existed in a GST file and a reference also existed in the WM, but the tab files had been deleted, the workbench was unable to open the map and thus the workspace. This has been fixed by removing the reference in the GST file, and setting the layer to invisible in the WM.
6. CVES Importer bug. Errors have been fixed in the CVES importer. When importing General Arrays, both lateral focus points in TDVFWRES.DISTANCE and center positions of cells in TDVCELL.DISTANCE wrong positions were written.

New Functions

1. Labels on profiles. The labelling on profiles has been significantly improved. It is now possible to have full control of labelling of layers, titles of bars, labels with projected distances from profile. Furthermore functionality for merging well layers, skipping labels etc. has been implemented. When updating old workspaces, existing label settings are replaced with default values.

12.11.2004 1.4.14.426

Various Bug fixes

2. Open Workspace: When opening a workspace, the same functions were called repeatedly.
3. Open Workspace: A workspace could not be opened if the last opened workspace was positioned on a network drive, which has been disconnected.
4. Open Workspace: If a workspace is moved from a network drive, it cannot be opened.

28.10.2004 1.4.14.422

Various Bug fixes

1. Workspace Manager: Synchronizing between map, profiles and Workspace Manager has been optimized.
2. Add Topography: . When adding topography to data and models where models shared the same data, e.g. in overlapping PACES sections, only one of the models were assigned a topography value when working on a dataset query. This has been fixed.
3. Copy background layers. The copy functionality now removes any write protection from the layers stored in the Workspace.

New Functions

2. Borehole Reports. It is now possible to view scanned borehole reports directly from the map.
3. Point Pattern. DBQ, BHQ and theme map point properties are now edited and stored directly in the Workbench.
4. Grids on profiles. It is now possible to control the distance sampling of the grid for the profile.
5. Layers on profiles. Functionality for copying layers between profiles is now in place.
6. New profiles can now be created from PACES ticloc ASCII files, or XY ASCII files. Functionality for making fence diagrams and copying and shifting existing profiles has been implemented.

06.09.2004 1.4.13.408

Various Bug fixes

1. CVES Import: Importer could not import a profile, if an electrode defined in way point file, did not exist in INV file. A memory error was produced, that might make the system crash.
2. TEM Import: When Model and Dataset ID's didn't match, elevations could be added to wrong soundings, when mapping from a Data Query to the model part of GERDA, and visa versa.

Help

Online help: The online help has been updated with this version.

31.08.2004 1.4.13.405

Various Bug fixes

1. CVES Import: Unable to import general arrays. Has been fixed.
2. CVES Import: TwoDVMod.IsTopoMod in GERDA is set to wrong value, when topography has not been included in modelling. Has been fixed.
3. DB Query: Error in sql when executing query on an ACCESS GERDA database. Has been fixed.
4. Colour scale: When using first level in a smoothed color scale, the colour is set to the colour of the last level of the scale. Has been fixed.

06.08.2004 1.4.13.401

Profiles

1. New: Boreholes from PCJupiter can now be displayed on profiles. Layer colours are extracted directly from a table in the PCJupiter database.
2. New: [ALT + Left Click] on a Borehole Bar on the profile plot launches the Borehole report for the borehole.

3. New: Layer managing is now possible on the workspace manager. Right clicking a profile data node and pressing “up” or “down” moves the data up or down in the plotting sequence of the profile plot.
4. New: Labelling of layers and bars are now available on model and borehole bars.
5. Change: The editing of model and borehole bars displayed has been enhanced.
6. Change: Individual Models and Bars on the profile can now be temporarily edited directly on the profile plot.
7. Change: When adding a data node to a profile, the data are now instantly shown on the profile.
8. Bug Fix: When extracting coupled data onto the map in a query, the profile gave an error when trying to locate a model for these map points. This error has been fixed. A warning I written in the Workspace Log for you to inspect.

Borehole Module

1. New: Query functions have been implemented for extracting a selection of boreholes.
2. New: A browser for the Jupiter database has been added.
3. New: Settings of boreholes.

DB Query

1. Change: The form for setting up a DB Query has been changed.

Various bug fixes:

1. Bug fix: Error when opening workspace using tif files as background layers. Background files with write protection also caused error. Has been fixed.
2. Bug fix: An error in drawing data values in View Data form has been fixed.
3. Bug fix: An error in colour scale has been fixed.
4. Bug fix: A periodic error when writing tab files has been fixed.
5. Bug fix: Fixed bug in validate function.
6. Bug fix: Bug, causing selected sounding in view data not to be selected on map, fixed.
7.

25.06.2004 1.3.12.336

Borehole Module

5. New: Boreholes from PCJupiter can now be displayed on a map, and inspected through the Borehole report generated by GEUS.

All Import Modules

1. Update: New Gerda structure implemented.

18.06.2004 1.3.11.319

Main Program

1. New (TB): Profiles. Grids are now fully implemented in the program, enabling cutting and displaying grid values in various forms on the profile plots.
2. New (JRP): Printing is now possible on right-click menu on colour scale.
3. Minor Change (TB): When updating to new workspace version default values are now used for missing parameters from old profiles.
4. BugFix (TB): When restoring a workspace the layers on the profile form were drawn twice. This has been corrected.
5. BugFix (TB): Profiles. Fixed bug in linking models on profile plot window with models on map.
6. BugFix (TB): Grid Image. Fixed annoying bug reporting “unable to open lvl file“ when showing image dialog.

7. BugFix (TB): Grid Image. Fixed “after burner” error, causing the image to be slightly shifted.

17.03.2004 1.3.9.312

Main Program

1. New (JRP): A template can be generated from map. Settings of all background files are copied from the map and saved into a text file. The user can create a new map from this template, or the files can be imported into an existing map.
2. New (JRP): Background theme files can be copied into a workspace folder WorkspaceDir\BackgroundThemes. With this, all files are placed in workspace folders, and the workspace can be move to another location.
3. BugFix (JRP): Errors in print of map has been fixed. On colour scale form, a print menu item has been placed on right click menu.
4. BugFix (TB): Profiles is now fully implemented for DBQ’s (both TEM and PACES) and partly for Grid Themes. Added extra functionality for adding profiles and editing the plotting layout and corrected some minor bugs.
5. New (TB): Added support for exporting Grids in Vertical Mapper Grid format.
6. BugFix (EA): Running of GSTAT on a network drive is now possible again.
7. Optimization (EA): The extraction of Models from GERDA has been further optimized.

30.01.2004 1.3.8.265

New Function – Profiles

1. New (TB&EA): A new function has been introduced in this version of the Workbench. A line can be drawn on the map, and a profile is generated from this, showing DB Query points near the profile line.

Main Program

8. Optimization (EA): The extraction of DB Query points from GERDA has been optimized.
9. BugFix (TB): Error in general layer search has been fixed.
10. BugFix (JRP): Error when cancelling GSTAT has been fixed.
11. Change (JRP): The map is now always saved, when a change is made on the map.
12. Optimization (JRP): The saving of bitmaps has been optimized.
13. Change (JRP): Export of DB Query has been added.
14. BugFix (JRP): Error in validation of layer names has been fixed.
15. BugFix (JRP): Value field on geophysical theme label has been added.
16. BugFix (JRP): Colour scale of theme points can now be shown.
17. BugFix: Various minor bugs have been fixed.

CVES Import Module

1. Bugfix (JRP): Various minor bugs have been fixed. None has to do with imported data.

08.01.2004 1.3.8.260

Installation

1. Change (EA): IDDA3235.dll is now set in the BDE manager during the installation of the workbench.
2. BugFix (TB): An error in the installation of DAO has caused Windows Installer to be called during execution of the Workbench. This has been fixed.

Main Program

1. Change (EA): A workspace can only be opened for exclusive use. If another user tries to open the workspace, an error message is given. This prevents the workspace from becoming corrupted.

2. Change (EA): Workspace log browser can now be viewed from workspace menu.
3. BugFix (JRP): An error in logarithmic gridding has been fixed.
4. BugFix (JRP): Tree nodes in workspace manager was sometimes positioned below tree, with no parent. This has been fixed.
5. Change (JRP): A workspace can be moved to another folder, without corrupting the workspace.

Module Surface

1. New (TB): Added interpolation of grid to image pixel size. The interpolation is performed on an existing grid, from a Krieging, and is done by a triangulating procedure. This ensures that the original resolution of the grid is not compromised, and that areas between grid nodes are assigned a reasonable value making the image smoother.
2. New(TB/EA): A Gerda database can now be assigned topography using a Surfer Grid file containing topography data.

TEM Import Module

1. New (TB): Added support of SkyTEM data type.
2. Change (TB): The importer now uses the internal Workspace Log instead of a log file.
3. Change (TB): The assignment procedure of a map to the importer has changed.

CVES Import Module

1. Bugfix (JRP): An error in calculation of coordinates from surfer grid file has been fixed.

01.12.2003 1.2.7.258

Main Program

18. BugFix (JRP): When a grid image is exported, the name of the image in the tab is changed so it does not contain the absolute file path.

CVES Import Module

Bugfix (JRP): Idents of models to be imported are changed. Ident of a 1D model is *<project>.mep.<name>section<no>* and ident of a 2D models is *<project>.mep.<name>*. Iteration number is not written in ident.

14.10.2003 1.2.7.257

Main Program

1. BugFix (EA): When the user presses the Cancel button in the window where he select database type the program continues to open the workspace. This is fixed and the radio buttons is now also initialized correctly.
2. BugFix (JRP): Before a map is shown, it is checked that all referenced files exist. If a referenced file doesn't exist, the user is prompted for a removal of the layer.

CVES Import Module

Bugfixes (JRP): No topography was imported with a 1d dataset, and current and potential electrode was switched.

18.9.2003 1.2.7.255

Main Program

1. BugFix (TB): Bug in *Colour scale Engine* for making logarithmic Grey Colour scales has been fixed.
2. BugFix (JRP/TB): Fixed several minor bugs in main program functionality, including maps, colour scales, themes. Also minor layout changes.
3. BugFix (JRP): A bug causing a map not to be saved on close has been fixed.
4. BugFix (JRP): A bug in scaled printing has been fixed.

5. BugFix (TB): A bug in the coordination of ViewData and the map has been fixed.
6. Update (TB): The program help has been substantially extended.

Module Geophysical Themes

1. Minor Change (TB): *Depth to Good Conductor* parameter Minimum layer thickness has been made optional.

CVES Import Module

1. Change (TB/JRP): Added positioning functionality – first release.
2. Minor BugFix (JRP): Fixed various minor bugs.

1.

17.9.2003 1.2.6.241

Main Program

1. BugFix (JRP,JL,TB): Various bug fixes in program

TEM Import Module

4. BugFix (TB): All models were imported as *Minimum Depth* models with the Model.Model field in the Gerda database set to "1DDMIN1" instead of "1d-vertical". This bug has been corrected. *Minimum Depth* models are now only supported through the TEM model importer.
1.

11.9.2003 1.2.6.234

Main Program

1. Change: Complete rewrite of workspace manager database and user interface. This release is not backward compatible with old workspaces.
2. Change: Major changes in map functionality and user interface.
3. Minor Change: Automated installation of service packs.

Module Statistics

1. First official release of module

Module Surface

1. First official release of module

Module Geophysical Themes

2. First official release of module

CVES Import Module

1. First official release of module

Paces Import Module

5. Various patches and updates.

30.7.2003 1.1.5.92

Paces Import Module

1. Added check of number of channels in output.db.

26.6.2003 1.1.4.81

Main Program

1. Bug Fix (EA): A bug occurring when opening a new Gerda database was corrected.

TEM Import Module

1. Bug Fix (TB): Plotting of negative db/dt values from processed data resulted in an error when plotting the data. This has been fixed.

4.2.2003 1.1.3.61

Main Program

1. New Feature (TB): The “Property” option on the right-click-menu on themes has been activated. See theme modules.
2. New Feature (TB): The “show” and “hide” functions on the right-click-menu on Grid-images have been implemented, enabling toggling of images on the map without using the map layer control.

PACES Import Module

1. Minor Change (TB): When not importing GDT files, the field FileNo in table PAMA is left blank.
2. Minor Change (TB): When trying to import profiles with same name into one dataset, an exception is raised.

Module Statistics

1. Change (TB): Redesign of form layout.
2. New Feature (TB): Browsing of an existing theme by inspecting the properties used in the theme calculation.

Module Geophysical Themes

1. Change (TB): Redesign of form layout.
2. New Feature (TB): Browsing of an existing theme by inspecting the properties used in the theme calculation.

14.1.2003 1.1.2.51

PACES Import Module

1. Bug Fix (TB): A relation between tMaster and tProject caused only the first GDT file listed in the Paces table Project.db to be imported, ignoring the rest of the files. The bug has been fixed.
2. Bug Fix (TB): When mapping the roll-on/roll-off TIC values to SonID domain an error occurred, causing some SonID’s not to be imported thus causing an error when trying to import the related SIP database. The bug has been fixed by applying a buffer of 8 SonID’s at the start/end of a profile line. The value of 8 comes from the assumption of a min. sounding distance of 5 meters and max. distance between configuration centres of 40 meters, thus giving a lag of 40/5=8 SonID's.

17.12.2002 1.1.1.41

PACES Import Module

1. Bug Fix (TB): A bug in the reading of raw GDT files causing a range check error has been fixed.
2. Bug Fix (TB): A bug in reading of TIC values from Tic-loc file has been corrected.

3.12.2002 1.1.0.34

Main Program

1. New feature (EA+LN): Queries can be made on a GERDA database and shown on the GIS map as points.
2. New feature (EA+LN): A Query can be gridded and the image shown on the GIS map. The gridding procedure uses standard Surfer grid files. Grid images are created using standard Surfer lvl files. These features are contained in the Surface module.
3. New feature (EA+LN): Queries can be shown on the GIS map as coloured points (mif themes). Colures are determined using a standard Surfer lvl file.
4. New feature: Geophysical themes (e.g. clay thickness and average resistivity maps) can be created from any query from a GERDA database. These features are contained in the Surface, Statistics and Geophysical Themes modules.
5. Bug fixes (EA) numerous bug fixes on the Workspace Manager.

6. Change (EA). The Workspace database has been redesigned. Old Workspace database can not be upgraded.
7. Changes in module: ImportTEM.

TEM Import Module

1. Minor Change (TB): Writing of TEM data tables has been optimized.
2. Minor Change (TB): Change of TEM progress bar layout
3. Minor Change (TB): All TEM import windows now appear center of desktop.
4. Change (TB): Comments in the Logfile and in Note fields of Gerda tables Model and Dataset has been redesigned.
5. Bug Fix (TB): The automatic rollback on import error and Undo function has been fixed.
6. Bug Fix(TB): An error occurred when reading TEM-files where data values where separated by only one space. This has been corrected.

PACES Import Module

1. First release of module

Module Surface

3. First release of module in beta version

Module Statistics

1. First release of module in beta version

Module Geophysical Themes

1. First release of module in beta version

12.11.2002 1.0.9.13

Main Program

1. New feature (EA): Workspaces created with older version of the program is now automatically upgraded to the newest version.
2. Bug Fix (MH): A referential constraint between Gerda tables ODVMODSE and DATASET has been corrected.
3. New feature (EA): The workspace now contains its own registration database parallel to the windows registration database. The database is used to store settings common for the Workspace.
4. Change (EA): The design of the Project Management window has been changed in order to make it easier to reads all settings. The Project Management window now also contains settings for PACES data and instrument.

TEM Import Module

1. Change (TB): It is now possible to unselect an item in the listboxes by holding down the CTRL key while pressing the selected item with the mouse.
2. Bug Fix (TB): A memory leak has been fixed. The leak caused the program to break down after importing a couple of hundred TEM soundings.
3. Bug Fix (TB): Fields “Software” and “ModelType” in Model table are corrected to lower case.
4. Bug Fix (TB): The main form window is now made inactive while importing a sounding.
5. Bug Fix (TB): An error in the undo function in association with new database has been corrected.
6. Bug Fix (TB): An error associated with reading older versions of the SiTEM database has been corrected.

7. Bug Fix (TB): Undo information was not cleared when starting a new import project directly after another. The undo information is now cleared when new data are pointed to.
8. Bug Fix (TB): The “Cancel” button on the import settings form now works properly.
9. Bug Fix (TB): A check of TEM instrumentation has been added.

02.10.2002 1.0.8.12

TEM Import Module

1. Bug Fix (TB): The undo had an error when undoing an import of only EMO-files.
2. Change (TB): The “Ident” field of the Dataset and the Model Gerda tables is now added to the line in the logfile window. Also the “Dataset” and the “Model” fields in the Dataset and Model tables are added.

07.05.2002 1.0.7.11

TEM Import Module

1. Change (TB): When auto matching SiTEM data and EMO-files, only noise data and channels present in the TEM-files associated with the EMO-file are marked in the SiTEM box. If the user attempts to import channels from the SiTEM data not available in the TEM-files a warning is shown.
2. New feature (TB): Plotting of model response, processed and raw data in both Rhoa and dB/dt has been implemented. Selection of which plot type to use is made on the preference form.

09.04.2002 1.0.6.9

TEM Import Module

1. Change (TB): When a new UTM-file, EMO-directory or a new SiTEM database has been loaded, and preferences has not been set, the user is reminded to set the preferences box when executing import.
2. Bug Fix (TB): Undo information was wrong when message “data has been imported” was shown and the user chooses not to import the already present data. This has been corrected.
3. Bug Fix (TB): Map is updated correctly when the “undo” function has been used.
4. Bug Fix (TB): Line is removed from log-window when undo is used.
5. Bug Fix (TB): Line is now added to import window when data HAS been successfully written to the database.
6. New Feature (TB): It is now possible to open old log files in the logfile window, and thus continue old projects. However undo information is not stored for old projects, only within each session.
7. Bug Fix (TB): When Sitem AI numbers are present in the TEM-files associated with the EMO-file, a unique link between the Sitem database and the TEM-files are present. To avoid misuse, picking is thus disabled in the Sitem box, if AI matching is enabled and present.
8. Bug Fix (TB): When undoing import data in the Table DSetGEIn was not deleted, this has been corrected.
9. Bug Fix (TB): When undoing an import a text file was placed in c:\temp, causing an error if this directory didn’t exist. This has been corrected.
10. Bug Fix (TB): When importing the query to the Gerda database was not freed, this has been corrected.
11. Bug Fix (TB): When opening an EMO-file version 2.04, depth constraints were read uncorrectly, causing a range check error. This has been corrected.
12. Bug Fix (TB): An error in reading calculated forward responses were corrected.

05.04.2002	1.0.5.8	**TEM Import Module** 1. Bug fix (TB): Bug in reading of filters from SiTEM database corrected. 2. Bug fix (EA): Error plotting HMTEM data in the importer for HMTEM processed after January 1st 2002. 3. Bug fix (LN): Model in EMO file older than ver. 1.30 generated an exception in the model plot. 4. Change (EA): If the same sounding is imported twice, the importer now generates a warning.
26.03.2002	1.0.4.7	**TEM Import Module** 1. Bug Fix(TB): Bug in auto matching fixed 2. Bug Fix (TB): Correct error message handling the situation when a TEM file referenced in the EMO-file does not exist.
22.03.2002	1.0.3.6	**Main Program** 1. Change (LN): MapX runtime and software protection driver is installed automatically after installation of GGGWorkbench **TEM Import Module** 1. New feature (TB): For data to be imported correctly you must indicate the Tem data type. This is done in the Settings window, on the Data Acquisition tabsheet.
21.03.2002	1.0.2.5	**Main Program** 1 New feature (EA): If a database pointed to by the GGG workspace is not found on the hard drive the database is removed form the GGG Workspace 2 Bug fix (EA): When reconnecting to a Workspace Data database the database could not be used because of an error in the database path string. 3 Bug fix (EA): Synchronization between the select tree and the sheets on the Project Management for has been fixed. The same applies on the extended project management window. 4 Bug fix (EA): Selections on the Project Management window, when applied using keystrokes were not updated in the GGG Workspace. **TEM Import Module** 1 Bug fix (TB): AI numbers stored in TEM files are now used correctly to mark data in SiTEM listbox. 2 Bug fix (TB): Check has been added to control the format of the UTM file. 3 New feature (TB): New option in the settings window enabling and disabling matching based on SiTEM AI numbers from the TEM files.
20.03.2002	1.0.1.4	**Main Program** 1. First release of software **TEM Import Module** 2. First release of module
19.03.2002		

13.03.2002