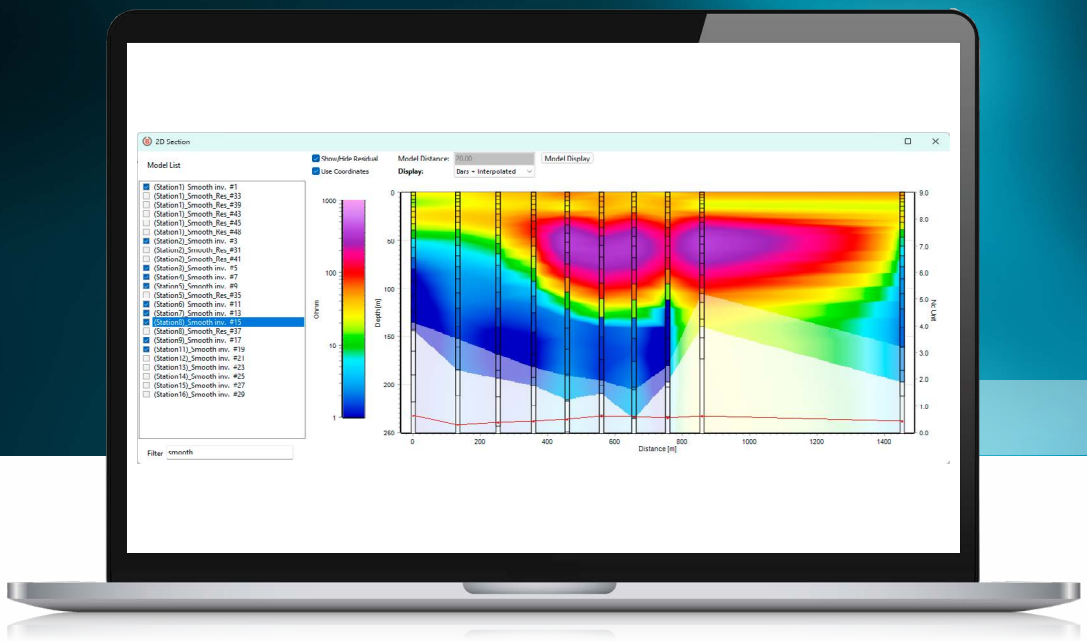
SEEQUENT

AGS | SPIA

SPIA 2024.2

new release



Release Notes

This SPIA release includes powerful 2D visualisation and customisation tools from Res2DInv. Upgrade to version 2024.2 to display and customise model profiles in 2D sections with intuitive navigation and filtering for efficient data analysis and interpretation.

New and Improved Features in SPIA 2024.2

2D Viewer

Model management: Efficiently manage and filter models in a SPIA project.

- View and filter all models in the 2D Viewer.
- Show or hide the residual for each model.
- Use coordinates to set the true distance between displayed models.

Display customisation: Visualise models with a range of display options.

- View models as bars, an interpolated section, or both. Customise bar width, border style, and colour.
- Set the distance between displayed models if coordinates are unavailable, or to view multiple models from the same measurement without plots overlapping.
- Compare measurement locations and interpolated values to understand their spatial relationship.
- Bind models with depth using fixed length or Depth Of Investigation with selectable fading options.

User interaction: Interact intuitively with plots.

- Switch between data units by right-clicking on a plot.
- Access a full-colour scale editor tool by right-clicking on the colour scale.
- Save plots as images, as shown on the monitor, in a fixed user-defined size, or a fixed scale.

Release History

DATE 10-12-2024, 2024.2

New features

New 2D viewer to display models on a 2D section, including:

- A list of all models created in the SPIA project with an easy filter option to search for the models needed to be displayed in the 2D section.
- Options to show or hide the residual for each model.
- Ability to use coordinates to set the true distance between the models displayed.
- Option to set a model distance between each model displayed on the 2D section without using coordinates. This can also be used to display several models from the same measurement to see results from different inversions.
- Model display preferences, allowing users to set the bar width, border of each model along with border style and colour.
- Options for how models should be blended with depth, either by a fixed length or by Depth Of Investigation with several selectable fading options.
- Drop down to select if the 2D section should display the models as bars, as an interpolated section, or both with bars on top of the interpolated section.
- Easy switching between data units by right-clicking on the plot.
- Full colour scale editor tool, accessible by right-clicking on the colour scale.
- Ability to save the plot as an image, either as the screen size shown on the monitor, a fixed size defined by the user, or a fixed scale.

DATE 17-09-2024, 2024.1.1

New features

- Wiki pages have been moved to a new location: https://help.seequent.com/
- Support for import of sTEM/GroundTEM data.
- Support for import of GateOpen/GateClose times through USF format.
- PDF model reports now show coordinates both as projected meter and lat/long.
- For soundings containing only one raw stack, the actual imported standard deviation for the raw data is shown on the chart (if the standard deviation has been imported). For soundings containing several raw stacks, any imported standard deviation on raw data is not used, and only uniform standard is displayed.

Corrected bugs

- The license would not be released immediately on program close, even when using 'While app is running'.
- Changes in Preferences were not saved.
- USF import: Bugfix for USF files with no EPSG value.
- USF import: Autogenerate RampOn time if not found in the data file.
- ProTEM import: Bugfix for coordinate files containing empty lines.
- Temfast import: Added missing settings file.

DATE 12-03-24, 2024.1

New features

- USF import: Support for import of full waveform description.
- USF import: Support for import of standard deviations on raw data.
- USF import: Support for coordinate system transformation.
- Uniform standard deviation is now configurable from SPIAConfig.ini.
- ProTEM import: Support for Y receiver component.

Corrected bugs

- In some cases, DOI would be missing in PDF reports.
- Data recording time was not displayed correctly.

DATE 06-07-2023, 3.8.0.0

New features

- Licensing through Seequent ID.
- Model Export: Support for export to Geosoft .gdb format.

Corrected bugs

- Bugfixes for data export to Amira and USF formats.
- Cap noisy/erroneous data at dB/dt = 1e6 to avoid database overflow.
- SPIA DC: Bug for IP inversion of some Schlumberger datasets solved by increasing accuracy of electrode positions.

DATE 10-10-2022, 3.7.0.0

New features

- Updated map tool with increased label and map quality.
- Protem input: Support for X-component data.
- USF import: Support for X-component data.
- Import: Check that wave form times are valid.
- Amira/ESF import: Sanity checks on RampOn and RampOff times.
- Amira/ESF import: Support for data unit µv/Am2.
- AarhusInv updated to version 8.30.

Corrected bugs

- If all data is negative when inverting in log space, display a better error message.
- Amira export: Missing space in front of 'RX_FRONTGATE'.
- Amira export: Do not use '/' on column header line.
- Data imported in a coordinate system without corresponding datum/UTM zone required a restart of SPIA before coordinates were displayed correctly.
- SPIA projects without any coordinate info could not be opened.

DATE 15-02-2022, 3.6.0.1

Corrected bugs

- Some older projects containing IP inversions could not be opened.

DATE 09-02-2022, 3.6.0.0

New features

- Aarhus SPIA is now using the embedded version of
- Firebird 2.5. The Firebird service is no longer in use and can
- be uninstalled.
- Support for floating licenses – automatically unregister license when program is closed.
- Import data from existing SPIA project (.gdb file) into open project.
- Load external start model from GUI.
- DC import: Support both space and tab delimiters in data files.
- TEM ESF import: Option to choose whether gate times should start at Ramp On or Ramp Off.
- TEMFAST import: It is now possible to import several soundings from one .tem file.

Corrected bugs

- Save start model: A saved start model was not shown correctly on GUI when starting a new advanced inversion.

DATE 10-02-2021, 3.5.2.0

Corrected bugs

- Inversion error for coincident loop configuration.
- Bugfix for renaming nodes in projects with no coordinates.
- Bugfix for import of selected Geonics TEM58 ProTEM files

DATE 04-01-2021, 3.5.1.0

Corrected bugs

- Project nodes could not be renamed.
- Broken inversion nodes in a project could prevent XYZ model export.
- Models from newly imported data could not be exported.

DATE 15-12-2020, 3.5.0.0

New features

- Export of data to Amira or Universal Sounding Format (USF).
- Export of models to new XYZ format - each layer for each model has its own line. Used for import in e.g. Leapfrog.
- Run All: Now possible to invert selected stations only.
- Changing model edition ('Final' for Aarhus Workbench import) now possible for multiselected models.
- Receiver Z-position for channels is now visible and editable.

Corrected bugs

- Renamed stations were not shown on map.
- .csv export: For multiselected nodes, only the last node was exported.

DATE 25-08-2020, 3.4.1.0

New features

- License server security update.

Corrected bugs

- External startmodel: STDs from file were not applied.
- Advanced inversion: Applying STD to resistivity and depth did not work properly.

DATE 30-04-2020, 3.4.0.0

New features

- New updated ProTEM importer. Support for all transmitter configurations.
- WalkTEMImporter: Support for offset in Z direction for receiver loop.

Corrected bugs

- When using external start model from file, STDs were not read correctly.
- Changing InUse flags on raw data by 'Disable positives'/'Disable negatives' buttons did not trigger a reprocessing of data.
- If a station had been renamed, models imported from SPIA to Workbench would not have the correct station label.
- Showing stations on map did in some cases not work.
- USFImporter: Improved log/error messages.
- WalkTEMImporter: If coordinates were missing from first station, entire project would not get an EPSG.

DATE 06-02-2020, 3.3.2.0

Corrected bugs

- If Offset Loop configuration, do not auto-disable negative data points.
- Show Graph functionality under Model tab was broken.
- Run All: Do not show individual info messages from each station.
- Run All did not work after deleting a station.
- Show stations on map would also show deleted stations.
- Amira/ESF importer: Check that Ramp Off time is not zero.
- WalkTEMImporter: Continue import if a broken station is found.

DATE 17-12-2019, 3.3.1.0

Corrected bugs

- Bugfix for deleting newly created inversion nodes.
- Improved saving of axis settings for models.
- Open Street Maps support added.

DATE 06-12-2019, 3.3.0.0

New features

- Support for IP inversion on TEM data (Cole-Cole and MPA).
- Support for import of integral IP for DC data.
- Support for IP inversion on DC IP data.
- New functionality for enabling/disabling either only positives or only negatives in the selected data.
- Possibility to disable forward calculations in Edit mode.
- Possibility to use existing model in project as start model.
- Export: Station name added as column in xyz file.
- Export to images/csv enabled when multiselecting.
- Export: Show station name for models.
- Show on map: Label positions with station name.
- WalkTEM: Support for import and inversion of X and Y components.

Corrected bugs

- Do not reset zoom on multiselect.
- Several minor bugfixes for loading external start model.
- Bugfix for merging channels on drag-drop.
- Bugfix for drag-dropping two channels to the the same station.
- Offset loop configuration: Do not disable negative data, always run in linear space, and never use approximate derivates.
- Export immediately after coordinate transformation would export in old EPSG.
- Database path was limited to 128 characters.
- WalkTEM Importer: Skip sps lines where coordinates are zero.
- Amira/ESF and USF Importer: Bugfix when importing data where station names already exist in project.
- Amira/ESF Importer: The usf file created had field shift factor = Nan instead of 1.
- Amira/ESF Importer: Add gate time shift before checking if gate is located inside ramp and setting quality of the point to off.
- Amira/ESF Importer: Data was not imported when only one file was selected in the list.

DATE 17-10-2018, 3.2.1.0

New features

- Sounding position are shown by Open Street Maps.
- When drag-dropping a channel to a different sounding, do not merge channels if they have different receiver offsets.

DATE 07-02-2018, 3.2.0.0

New features

- WalkTEMImporter/HGGWalktemImporter: Support for different gate time shifts and gate factors on hardware channels.
- ESF import: Possibility to convert coordinates to different EPSG.
- ESF import: Support units as column.
- ESF import: Support for ‘Line’ as sounding separator.
- ESF import: Prompt user for TxArea and RxArea if they do not exist in data file.
- ESF import: Support for several ‘&’ separated header lines.

Corrected bugs

- Inversions labelled ‘final’ could not be exported to csv file and image.

DATE 03-01-2018, 3.1.0.0

New features

- Entering a coordinate in lat-long format will now only change EPSG if no EPSG has been set for the project.
- EPSG selector is moved to the project node.
- Changing the EPSG will trigger a recalculation of UTM coordinates for the entire project.
- USF importer: It is assumed that ChannelNo =1 if '/Channel' doesn't exist.

Corrected bugs

- TEM: If project has two or more datasets could give an range check error when selecting stations.
- DC import: Do not allow import of lines with same combination of MN and AB/2 (gives error in Wenner correction).

DATE 03-11-2017, 3.0.2.0

New features

- If project contains EPSG, also show it for stations where UTM coordinates are not set.

Corrected bugs

- Improved handling of temporary files to avoid occasional I/O errors and '.emo/.fwr files not found' errors.
- DC: UTM coordinates were not loaded for Schlumberger projects.
- Do not allow setting UTM coordinates without choosing an EPSG.
- USF importer: Bugfix for import of data without coordinates.

DATE 27-10-2017, 3.0.1.0

Corrected bugs

- EPSG bugfix for databases without coordinates.
- Backwards compatibility for older databases without Field Polarity information.

DATE 25-10-2017, 3.0.0.0

New features

- Support for all EPSG coordinate reference systems (in meters)
- Update of ribbon user interface including hints.
- Significant speed-up in load of projects.
- It is now possible to invert using L1 norm ('Blocky' mode) instead of L2 norm.
- Possibility to use external start model.
- DC: Support for import of different configurations (Schlumberger, Wenner, dipole-dipole, and general). Only one type of configuration per project is allowed.
- TEM: Copy sounding feature (all channels, without models).
- TEM: Possibility to move GPS position (defined by a distance in meters and a direction).
- Last used inversion settings will be saved and used for creating start model for next inversion.
- Possibility to export model as image or CSV file.
- Rebuild of database feature.
- ESF TEM: It is now possible to import and invert X and Y components.

Corrected bugs

- ABEM WalkTEM importer: Fixed a bug in sorting of stations.
- DC: Models did not have UTM coordinates and could not be seen in Workbench.
- TEM: Do not run spike filter if segment has less than 10 sweeps.
- In some cases, changing the STD of data points would not be written correctly in the database.
- Collapsed/expanded status of nodes in the tree would not be remembered.
- Fixed a bug in automatic renaming of nodes when using Signal/Noise functionality.
- Protem Importer: Sweeps with zero current are now always labelled as noise.
- Protem Importer: First sweep in segment would always be labelled as noise.

DATE 24-05-2017, 2.3.1.0

New features

- Executables are digitally signed and timestamped to aid users and virus-scanners verify their authenticity.

Corrected bugs

- Exported dat and syn files did in some cases not contain the correct data.

DATE 22-05-2017, 2.3.0.0

New features

- HGGWalkTEMImporter: Possibility to split data from different hardware channels in different soundings.
- HGGWalkTEMImporter: CoilAmpGains are no longer read from the ini file, but directly from the data file.
- ProtemImporter: Support more channels in Protem47 mode.
- Possibility to not automatically disable negative data during inversion (DisableNegativeDuringInversion=No in [em1dinv] section in SPIAConfig.ini).

Corrected bugs

- HGGWalkTEMImporter: Allow negative offsets on Rx.
- Bugfix for normalization of data where hardware channels 0 and 1 uses different Gains.

DATE 14-03-2017, 2.2.0.0

New features

- Improved start resistivity for DOI calculations when running simple inversions

Corrected bugs

- A bug in the spike filtering of raw data would cause to much raw data to be disabled.
- Corrected some labels in export files.
- ESF Importer: Imported data containing dummy values could not be inverted.

DATE 09-11-2016, 2.1.3.0

Corrected bugs

- Stations containing inversions could not be deleted.
- Changing smoothness in dropdown for Standard Inversion did not have any effect on the inversion result (smoothness was always ‘Normal’).
- Warning that TxArea is not found in database when showing inversions would be shown multiple times.
- Bugfix in load of frontgate
- HGGWalkTEMImporter: Optimize filter settings on import.

DATE 26-10-2016, 2.1.2.0

Corrected bugs

- Charts were drawn incorrectly in model reports.
- Corrected wrong channel info in model reports.
- Models with depths > 1000 m were plotted incorrectly.
- If inversions were performed before setting an EPSG for the project, models could not be imported into Aarhus Workbench.
- STDs were plotted as to large on data in RhoA (graphical error only).
- ESF importer: Keywords are now case insensitive.

DATE 18-10-2016, 2.1.1.0

Corrected bugs

- Removed warning that preferences cannot be saved for non-admin users.

DATE 17-10-2016, 2.1.0.0

New features

- Allow mixed Offset Loop/Central Loop configurations and inversion.
- Sign on data can be seen by checking 'Show Sign' on Data View tab.
- Stacked data points for gates where all raw data is off are no longer visible/selectable on plot.
- Raw data in use flags are no longer affected by changing stacked data in use flags.
- New select tool: Select all points for all series within a box.
- Display position of mouse on data charts.
- Support for plotting multiple channels or models.
- Front gate time is shown with channel info.
- Receiver position is shown and may be altered in channel info.
- Include channels for inversion functionality moved from Preferences to Inversion tab.
- Model info moved to new Model tab which becomes visible when a model is selected.
- Support for up to 12 channels.
- Support for connection to license server through proxy server.
- Possibility to flip data sign for a channel using 'Flip Sign' on Data View tab.
- Possibility to convert a noise channel to a data channel and vice versa using 'Signal/Noise' on Data View tab.
- Possibility to enter coordinates in UTM format.
- Possibility to open importers from SPIA and import raw data into an existing project.
- F1 online help.
- New Importer: ESF/Amira format can now be imported.

Corrected bugs

- Improved rendering quality of charts in pdf reports.
- Model colors now match channel colors.
- When changing between soundings, selected channels is no longer reset.
- First gate time would sometimes be wrong in channel info.
- Do not reset zoom level when points are toggled on/off.
- USFImporter: Save log file to disk. More useful error messages.

DATE 08-01-2016, 2.0.2.0

Corrected bugs

- Fixed an importer bug.

DATE 14-12-2015, 2.0.1.0

Corrected bugs

- Fixed a bug in the automatic update of Firebird.

DATE 10-12-2015, 2.0.0.0

Note: Firebird 2.5 is required from this version.

New features

- A channel can be drag-dropped into a different station. If channel number does not already exist, the channel is moved. If it exists, the raw data from the two channels is stacked in case the two channels have the same gate times, current, and repetition frequency. Otherwise the channel is assigned a new number and moved. Undo-button for drag-drop is located in the Tree-tab.
- 'Select Series' tool added as a Chart Functionality under the Data View tab. Used for enabled/disabling points in an entire sweep.
- Axes on model plots for all station models may be set in Preferences.
- Online help (F1) enabled.
- New Project functionality enabled.

Corrected bugs

- Splitter between sub-windows enabled.
- Improved design of Preferences.
- Do not change axes for model plots when entering/leaving edit mode.
- In some cases it was possible to start several inversions at the same time, which caused an error.
- Not all channels were imported when using the import functionality.

DATE 12-05-2015, 1.2.3.0

Corrected bugs

- Fixed a bug in the importers that could cause data without frontgates to fail to import

DATE 06-05-2015, 1.2.2.0

New features

- The Borland Database Engine (BDE) has been replaced by the InterBase Data Access Components (IBDAC) in all instances. It should no longer be necessary to have the BDE Information Utility installed in order to run SPIA-TEM.
- On inversion, SPIA-TEM would sometimes report an em1dinv error with a missing error file. The inversion folder is now copied to the work directory and a message is shown asking the user to attach the files to the error report

Corrected bugs

- Resistivity/Depth textbox no longer accepts illegal characters

DATE 23-04-2015, 1.2.1.0

Corrected bugs

- Added files that were missing in the update package

DATE 22-04-2015, 1.2.0.0

New features

- Improved SPIA-TEM performance significantly for workspaces with a high node count.
- USF-Importer will now perform Frontgate-filtering before importing from USF-file to GERDA.
- Importers now store their own name and version with SPIA-TEM data.
- Importer name and version are now displayed in the info sheet if available in the given dataset
- Changed the way stations are named in HGGWalkTEMImporter so that they are easier to correlate with field notes
- The error message box that appears when running an inversion with too few enabled points has been changed
- Default DOI value changed from 500m to 800m in the SPIAConfig.ini

Corrected bugs

- The Import functionality under the File tab should now operate correctly. Refer to the manual for information on how it works.
- Fixed a bug where models would not update their coordinates when the station coordinates were changed
- Recording Time should now be displayed correctly in the info tab when a sounding is selected
- 'Data points in use' should now update correctly on the info sheet when setting points in use / not in use
- Fixed a bug that would sometimes cause the wrong node to be shown with the Show Location button

DATE 25-02-2015, 1.1.5.0

New features

- Manual can now be opened from the starting window
- Release History can now be opened from the starting window

Corrected bugs

- WalkTEMImporter: Fixed a problem that occurred if the user was pointing to an import folder with empty subfolders
- SPIA-TEM: Fixed compatibility with database files created using an old importer

DATE 16-01-2015, 1.1.4.0

Corrected bugs

- WalkTEMImporter: Fixed an issue preventing longer measurement times than 65535 µsek.
- WalkTEMImporter: A log file is now written if an error in converting the files occur. The version no. can be find in this log file.

DATE 28-11-2014, 1.1.3.0

New features

- The minimum number of points per channel required for an inversion can now be set in SpiaConfig using MinPointsPrChannel.

Corrected bugs

- Fixed an issue that caused SPIA to incorrectly return a 'Please Report..' error when trying to run an inversion with no TEM files. This now yields a simple error message.

DATE 04-11-2014, 1.1.2.0

New features

- Front gate time may be included in inversion.

Corrected bugs

- WalkTEMImporter: Current was not imported correctly for sps files with very few lines.

DATE 13-10-2014, 1.1.1.0

New features

- STDs cannot be changed in Raw data view. These have never been used, since the stacked STDs are generated from the averaging of the sweeps.
- License may now be unregistered without opening a database.

Corrected bugs

- Instrument mode: Tree was partly visible.

DATE 27-08-2014, 1.1.0.0

New features

- Negative data are always removed when inverting data. If negative data is removed, it can be seen in the project log (File -> Show Project Log).
- Lines in data plot may be turned on/off using a checkbox under Data View -> Data Transforms.
- Possibility to correct for CoilAmpGains entered wrong when measuring.
- First gate time shown in metadata is now the first gate that may be used for inversion, instead of the actual first gate in measurement.
- Logo may be added to Model Reports by giving a path to the logo in the inifile or under File -> Preferences..
- Model Report settings may be changed under File -> Preferences.
- Database engine changed from BDE to IBDAC.

Corrected bugs

- When changing coordinates, new GPS position was not saved correctly in model tables in database after inversion.
- Instrument mode: Show layered model instead of smooth model.
- Instrument mode: Residual, DOI and number of layers was disappearing when switching beetwen data og model views.
- Instrument mode: Buttons on WalkTEM did not work properly in SPIA-TEM.
- WalktemImporter: Southern hemisphere GPS coordinates now imported correctly.
- WalkTEMImporter: When the number of shots was the same for high and low moment, the correct current could not be identified from the sps file(s).

DATE 29-04-2014, 1.0.1.19

New features

- Installer: Do not install Borland Database Engine and Firebird if these are already installed.
- Possibility to add TXRampLM and TXRampHM in inifile and use these for waveform generation instead of generating from RampTimeOn, RampTimeOff and repetition frequency.
- Disabled data points with no value are printed as 999 instead of NaN in .tem files.
- Show lines between data points on charts.

Corrected bugs

- Bugfix in Walktem Importer to make the WUI-Importer-SPIA-TEM workflow function properly on the instrument.
- Data point total and in use are not shown on station level.
- Bugfix for transmitter loop areas different from 1600.
- Bugfix for model report functionality: Some soundings were duplicated in the pdf report.
- Bugfix for model report functionality with very large datasets.

DATE 02-04-2014, 1.0.1.18

Corrected bugs

- Graceful error message when trying to invert negative data.
- Fixed bug when opening recent projects with long names containing '(...)' in the display.

DATE 01-04-2014, 1.0.1.17

Corrected bugs

- Improved general performance and smoothed out a few hiccups

DATE 31-03-2014, 1.0.1.16

Corrected bugs

- Fixed behaviour 'View Manual' and 'View Release History' buttons

DATE 31-03-2014, 1.0.1.15

Corrected bugs

- PDF model reports should now work correctly for all OS and screen resolutions

DATE 07-03-2014, 1.0.1.14

New features

- Possibility to create PDF model reports for a single station, or for all stations in the project with the same edition label. Known issue: model report does not work properly for selected OS/screen resolutions. Work in progress!
- Possibility to disable selected channels during inversion for all stations in a project.

Corrected bugs

- Saving corrected GPS coordinates working again.
- Optimization of tree update after inversion and enabling/disabling points.
- Edit mode for advanced inversion stabilized.

DATE 19-12-2013, 1.0.1.13

Corrected bugs

- Fixed an issue causing 'Floating point division by zero' during auto-processing of data with very small stack sizes.
- Fixed some issues causing errors for databases with no GPS information.
- Fixed issue causing only channels with channel number < 4 to be inverted.

DATE 09-12-2013, 1.0.1.12

Corrected bugs

- Fixed bug caused by nonadmin users not having write access to C:\Program Files.

DATE 20-11-2013, 1.0.1.11

New features

- Colors on data and model plots can now be set via RGB values in SPIAConfig.ini
- Stack size is now shown as metadata

Corrected bugs

- Much better handling and display of errors from inversion code
- Tree navigation optimized – much faster now
- Proper formatting of values in model output grid
- Check for updates has been moved to program startup, and there is now a progress bar showing download progress
- STD on noise channels is set to the uniform STD

DATE 02-10-2013, 1.0.1.10

Corrected bugs

- Fixed error in modfile which caused all inversion to crash
- Fixed plot error showing up for selected negative GateTimeShifts

DATE 30-09-2013, 1.0.1.9

Corrected bugs

- Edition label bug fixed.

DATE 20.09.2013, 1.0.1.8

Corrected bugs

- SPIA-TEM now works properly without internet connection.
- WalkTEMImporter does now not crash on negative GateTimeShift in the inifile.