

BESA Research Update History

Listed below are the changes and bugfixes provided in the updates of BESA Research 5.3:

Version 5.3.7 January 2011

General Functions:

- The program has been adapted to be compatible with the new program, BESA MRI, in addition to BrainVoyager, for MRI coregistration.
- A *.evt file that was generated on a Mac can now be read.
- File export of epochs around triggers: epochs within artifact events are now excluded from export.
- File export to Besa Binary format: data compression was broken in the September and October versions of BESA Research.
- When reading a CTF file, BESA could hang. This was a general problem caused by an attempt to refresh the display if the reader had opened a dialog.

Batch Scripting:

- New versions of the epilepsy processing batch scripts.
- Command 'SABeamformer' now works as intended. Previously, a dual-source beamformer command led to a single source image, and vice versa.
- Command 'ImportASCII' didn't work if no segment label was defined. The 'Import ASCII' checkbox in the File List was sometimes ignored, making it impossible to use the ImportASCII command.
- Mechanism "%basename-n%" failed in batches if the string was followed by a hyphen (e.g. "%basename-n%-export").

MATLAB Interface:

- Export around triggers to Matlab: the exported time range of each epoch was 2s too early if "Current filters" was selected and the data were filtered.
- When a marked segment in an average file was sent to Matlab, the latency string started with the first latency of the average containing the marked segment, and not with the first latency of the marked segment.

Version 5.3.6 October 2010

General Functions:

- *.foc and *.fsg files could not be read correctly if they had been generated by function "ERP / Combine Conditions, channels, find peaks...".
- Files exported with the option "Standard 81 electrode locations" were not read correctly.
- MEG data recorded with 4D Neuromaging / BTI systems were not read correctly.

Batch Scripting:

- Command "TriggerSelect" did not allow to select conditions.
- If the channel tab is activated, only the original reference can be set for the Peaks & Mean Amplitudes output.

Source Analysis:

- Source labels longer than 32 characters led to a crash when exporting source waveforms. The limit for source labels has now been set to 30 characters.

MATLAB Interface:

- Matlab export of time-frequency results: The channel coordinates are now no longer normalized. The field name in struct besa_tfc has been changed from "coordinates_US" to "coordinates". EEG and source location units are based on the unit sphere coordinate system. MEG coordinates are in the device coordinate system.

MRI Coregistration:

- BESA Research now contains a list of realistic standard electrode coordinates located on a standard head surface (file default.sfp in the Standard Electrodes folder [Public Documents] / BESA / Research_5_3 / Montages / Channels / StandardElectrodes). BESA Research allows to apply these coordinates automatically when MRI coregistration is to be carried out with EEG data that has no digitized electrode position information.

Version 5.3.5 September 2010

General Functions:

- When exporting segmented data to a target file, the first segment in the target file was missing the zero time point marker.
- Export around triggers:
 - only the first event in an epoch was exported.
 - All the trigger events were saved twice to the target file, the second time with false times. This led to an invalid exported event file.
 - Pattern events are now included.
 - The event comment was omitted.
 - The time range exported is now inclusive, leading to one additional exported sample at the beginning of the epoch.
 - The zero time marker in the exported files occurred one time point too late.
- The Besa.cfg file is now no longer dependent on the program version. This means that settings such as the Recent File List are retained across versions.
- New 'Recent Files' menu item to close all currently open files and open those that were open at the end of the last session.
- New Segment events were not exported if they didn't have a date and if all events were selected for export.
- When the display width was set to 0.1 s, the space bar did not page forward and the backspace did not page backward.
- Export of events in average segments did not work.
- Background check for updates was initiated every time BESA was started instead of once every 7 days (or as specified in BESA.ini).

- If 'Options / General / Baseline correction for continuous data' was set, then after returning from 'Combine Conditions / Peaks & Mean Amplitudes', the option 'Filters / Baseline correction over whole trace' was switched on.
- Crash when importing New Segment Average events from an event file (*.evt).
- After deleting imported events, a change between the presence or absence of average segments (with the prestimulus baseline) wasn't updated correctly in the display.
- New menu items under 'Options / General' to select full or truncated displays of file names in the window title bar and in the File Menu list of currently open files.
- Segment boundaries were not saved or read back correctly in a *.evt file.

Auxiliary File Handling:

- Start MRI program immediately after selecting Coregistration, if the coregistration file (*.sfh) is incomplete or doesn't exist.
- When starting MRI coregistration, if the electrodes are not digitized, open a dialog to suggest that the electrode configuration on the standard head should be used.
- The coregistration file was occasionally marked for not reading at times when this was not intended.
- If a BESA binary file had a surface point file associated, and this file was deselected, the head radius and sphere coordinates were not recomputed unless the file was closed and reopened.

Batch Scripting:

- Peaks and Mean Amplitudes: Bad channels are now interpolated instead of set to 0 in the output.
- Now always turn off 'Baseline correction over whole trace/segment' in 'Combine Conditions' operations and in batches.
- The SAreularization batch command didn't work correctly.
- 'SAchannelTypeForFit' didn't work to switch between MEG channel types if no EEG channels were present in the data file.
- Corrections to interaction between the Run Scripts Tab and the Set Baseline Dialog: On 'Cancel', settings remain unchanged. The dialog now opens with the current settings from the Run Scripts Tab.
- If no batch commands were defined, and "Leave files open..." was checked, the files were opened without the correct channel definitions.

Source Analysis:

- After importing an external image, image weighting by the previous image stopped working.
- When loading an artifact file to be included in the source model, a long component label is shortened to a maximum of 25 characters. Previously, long labels led to a crash when saving source waveforms. Long labels occur in files with combined EEG, MAG, and GRA channels.

ERP Analysis:

- Bugfixes to the artifact scan tab when bad/interpolated channel status was changed.
- The length of the condition label is restricted to 53 characters. Previously BESA crashed if a longer string was defined.

MATLAB Interface:

- 3D Regularization values sent to Matlab from the Source Analysis window were not correct for images generated from MEG. The current EEG settings were set in the Matlab structures.
- Warning messages for errors in the BESA-Matlab interface setup, checking on the system PATH environment variable and its match to the currently installed BesaMatlab Dll.

Version 5.3.4 August 2010

General functions:

- Instability problems of BESA 5.3.3 are fixed (possible crashes when opening foc or fsg files).
- Crash during MRI coregistration under Windows XP.
- Relative paths to sfh files in a subfolder of the data folder were not treated correctly. This led to a number of errors when the MRI was in a separate location.
- "MRI program was not started within the time limit" message was shown even though BrainVoyager started correctly.
- MRI Coregistration dialog: If the brain surface mesh was missing, the red exclamation mark was sometimes displayed.
- Baseline correction parameters were not initialized correctly, sometimes leading to a crash when opening the Baseline Correction dialog.
- Appending fsg averages to a preexisting fsg file caused prestimulus intervals to be lost for some of the segments.
- Export of continuous data to EDF format: If the number of records didn't fit exactly into 20 s, the exported EDF file had discontinuities and New Segment events at approx 20 s boundaries.
- Export of epochs around triggers has been accelerated.

Source Analysis:

- Dipole fit with set cursor was computed over whole time interval rather than at cursor latency in versions 5.3.2 and 5.3.3.

Version 5.3.3 July 2010

General functions:

- Couldn't read avr file generated by BESA. Misleading error message about too many samples.
- Message displayed and handling when artifact file doesn't match with the bad channel configuration of the file.
- Surrogate correction didn't work for CTF files (any files in which the first channel wasn't MEG).
- Coordinates were assigned to a polygraphic channel if this channel followed EEG with the reference defined.
- Reading data blocks of compressed foc files with high amplitude values lead to an invalid file error.
- Export around Triggers to Simple Binary could fail if the number of triggers was extremely large.
- Import ASCII didn't work anymore.
- Removed stray text in the Export dialog window.
- Dependencies in the Export dialog window for standard deviation radio button corrected
- Coregistration: BrainVoyager 64-Bit version wasn't found correctly.

MATLAB Interface:

- If MATLAB was closed during a BESA/MATLAB session, and BESA reopened it, the paths to the BESA-MATLAB scripts was lost.

Batch Scripting:

- Greying of rejected triggers was broken for batches.
- Added cut, copy, paste to batch list dropdown menu and keyboard short cuts.
- Additional channels montage no longer disabled in batch.
- Grand averages crash when the number of target channels differed from the number of source channels.
- Export to SPSS: separate numbers by a single space, so that SPSS can read the input directly

Source Analysis:

- Display of maximum value in the image window title now correct after importing an image and immediately after an image is generated.

Version 5.3.2 May 2010

General functions:

- Crashes in ERP dialog for users who don't have a license for the time-frequency/coherence module.
- Updates are now checked for automatically in the background. Default is every 7 days. Adjust using DaysBetweenUpdateChecks=n in the [Updates] section of BESA.ini. n=-1 for never.
- The network dongle can also be checked for updates. Use CheckNetworkDongle=On in the [Updates] section of BESA.ini. The update must still be carried out with the dongle plugged in locally.
- Various other enhancements to the update module, e.g. progress bar for the download, window displaying history text.
- On data export of marked segment, the current baseline for segments setting for a file was always applied. Now it is only applied if "use filters" is selected.
- Crash when reading an epoched data file with custom baseline turned on, and the baseline time range was off the edge of the display.
- Mapping window opened again after FFT maps shown and the FFT windows were closed.
- If there were less than 12 channels in the data, trying to scroll channels in the Edit Channel Configuration Dialog crashed BESA Research.
- In exported files with a date change, a new segment after midnight had the same date as before midnight.
- For some graphic cards the 3D mapping window was empty or even crashed during drawing. Occasionally, the mapping dll crashed when the mapping window was closed.
- If a .pos file was attached to a CTF file, the data waveforms were displayed incorrectly.
- Several readers use BESA.ini to specify parameters. This only worked correctly if BESA.ini was located in the BESA Research root folder. Applied to EGI raw, EDF/BDF/Trackit, NKC, Vangard, XLTEK.
- A new parameter in the Generic reader allows to specify an event file to define all the types of event that BESA Research can use.
- Exporting from an average file: time zero marker was lost.

- When writing ela and elp files, if no EEG channels were present, the target files had a fictitious channel appended.
- Reading data blocks of compressed foc files with high amplitude values led to an invalid file error.

Batch Scripting:

- Peaks and Mean Amplitudes: A new Baseline button allows to select prestimulus baseline settings. Previous behavior: baseline for segments setting was always applied.
- During a batch, press and hold down the Pause or Delete key to interrupt the batch and enter Single Step mode. Press and hold down the Esc key to cancel the batch.
- The MAINSetBaseline command has been renamed to "MAINBaseline". Old batches will still work correctly.
- After generating a grand average, make the grand average file the current file. Previously the file was opened, but one had to switch to the file in the main BESA display.
- New 'Set Default' button in SARegularization command.
- When generating grand averages, the current baseline for segments setting was applied to the data. Now it is never applied.
- Shift-R shortcut to open batch dialog previously only worked if a data file was open.
- Crash when running single step mode when the command string was long.
- Combined channels were not averaged correctly if there was more than one file in the file list.
- Segment labels were not exported if they were defined in the batch.

ERP Analysis:

- ERP/Save Events As/Open Event File: allow import and export of segment boundaries. Option to export accepted (after artifact scan) triggers, i.e. only those triggers that are black, excluding triggers that are colored grey.
- Intervals selected when doing artifact scan and average for filters were zero. These have been reset to 1s or 2s (depending on filter). This is the BESA 5.2 behavior. Triggers at the beginning and end of the data file are, however included, even if the interval between the epoch edge and the edge of the file is less than the 1 or 2 s limit. This is different from BESA 5.2.

Source Analysis:

- After generating a 3D image (e.g. Loreta), when the cursor is placed at an image maximum, the amplitude at the maximum is displayed in the window title bar.
- When using the realistic head model approximation, fit results may depend on the starting orientation of the dipole. Therefore, orientations of fit-enabled single dipoles are now pre-fit before running the actual fit.
- When switching to an image maximum, the value at the maximum is displayed in the title bar.
- Source Analysis: When importing an image a second time, the same image type is now offered in the file open box.
- Source Analysis: After importing a *.dat image file, the file is now closed. Previously it had remained open and couldn't be deleted.

Time-frequency Analysis:

- When exporting time-frequency data to ASCII files, an empty folder was sometimes created in the installation drive's root directory.

Matlab interface:

- The 64-bit Matlab interface program could use 100% CPU if BESA Research crashed. It now turns itself off if BESA Research is no longer running.
- A variable 'pathstr' was sometimes left in the MATLAB workspace after sending data from BESA Research.

Version 5.3.1 February 2010

General functions:

- Menu-guided update check did not recognize program updates, if the license dongle was not attached to the local computer
- Specified width of the bandpass and notch filters is now interpreted as full width between the 6dB cutoffs (used to be half width).
- Data export to ASCII Multiplexed format produced incorrect file headers in rare cases.
- If electrode thickness was changed in a *.fsg file, the head radius wasn't updated correctly.
- In newer foc files with segments, the mapping time was incorrect from the second segment on.

MATLAB Interface:

- Path to the BESA script folders was not correctly set in older MATLAB versions.

Batch scripting:

- Batch command "FileOpen" did not work correctly.
- Batch "AudIntensity-IndividualWaveforms+MATLAB-Statistics.bbat" (used in BESA Research Tutorial 3) contained an incorrect path specification.
- Placeholder %-nnbasename% can be used to strip the first nn characters from the basename.
- Peak analysis output to SSPS format: header line contained unwanted spaces.

Source Analysis:

- 3D Image setting "Weighting by previous image" didn't work correctly.