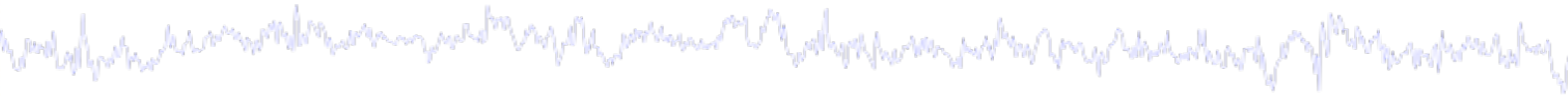
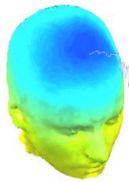


Evaluating ICA components



Plot 1

Component ERP

Plot 2

Component spectral power

Plot 3

Component ERP images

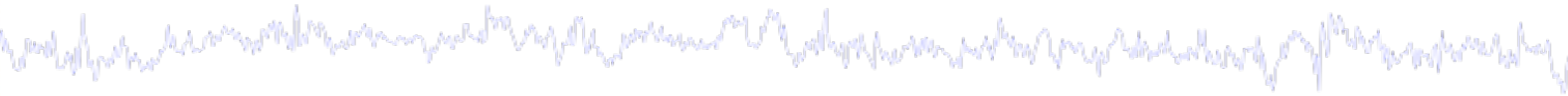
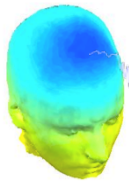
Plot 4

Component ERSP

Exercise...



Evaluating ICA components



Plot 1

Component ERP

Plot 2

Component spectral power

Plot 3

Component ERP images

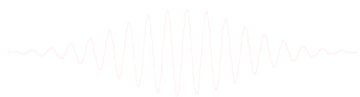
Plot 4

Component ERSP

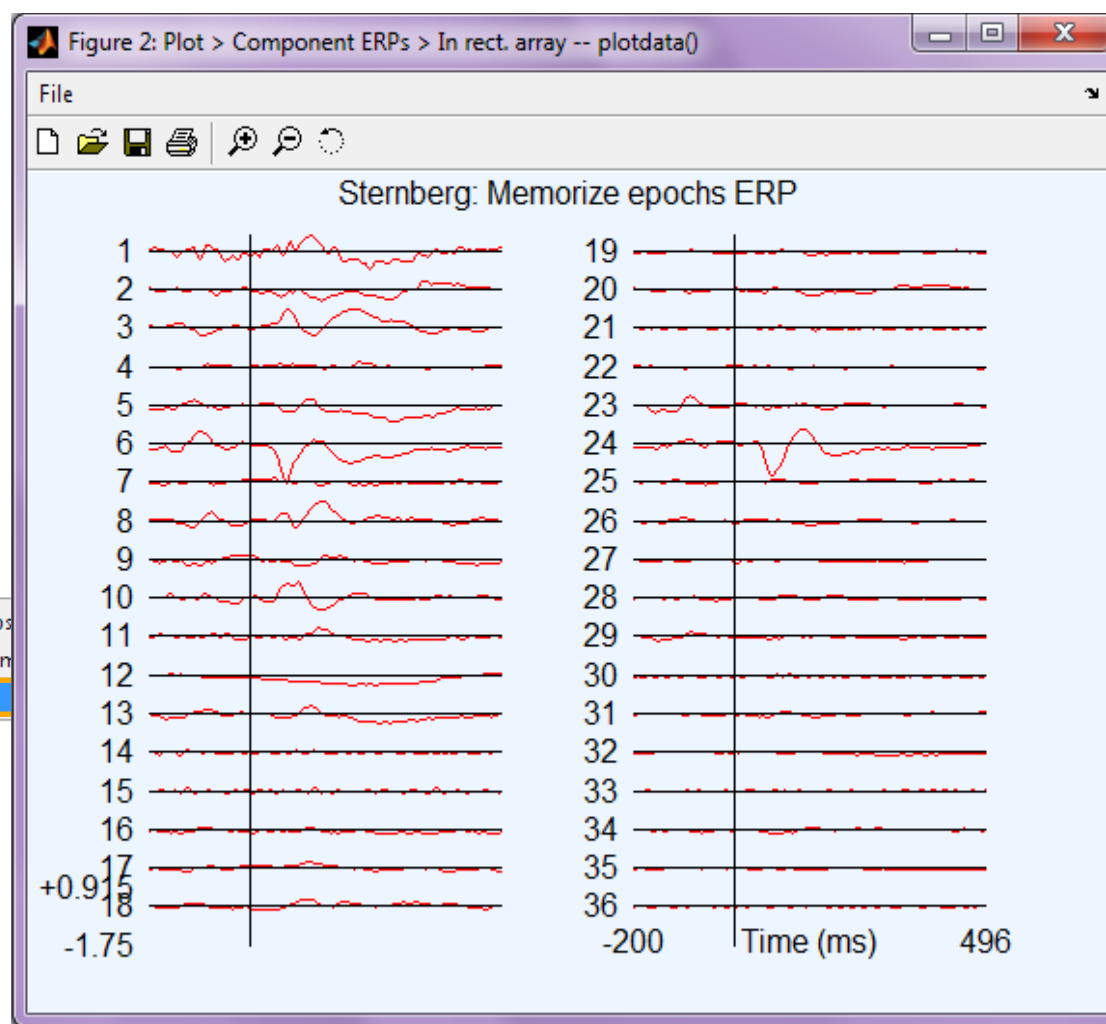
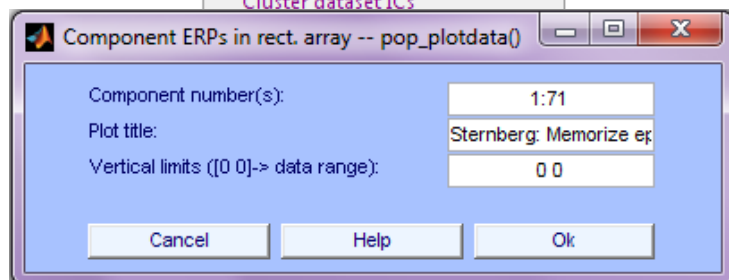
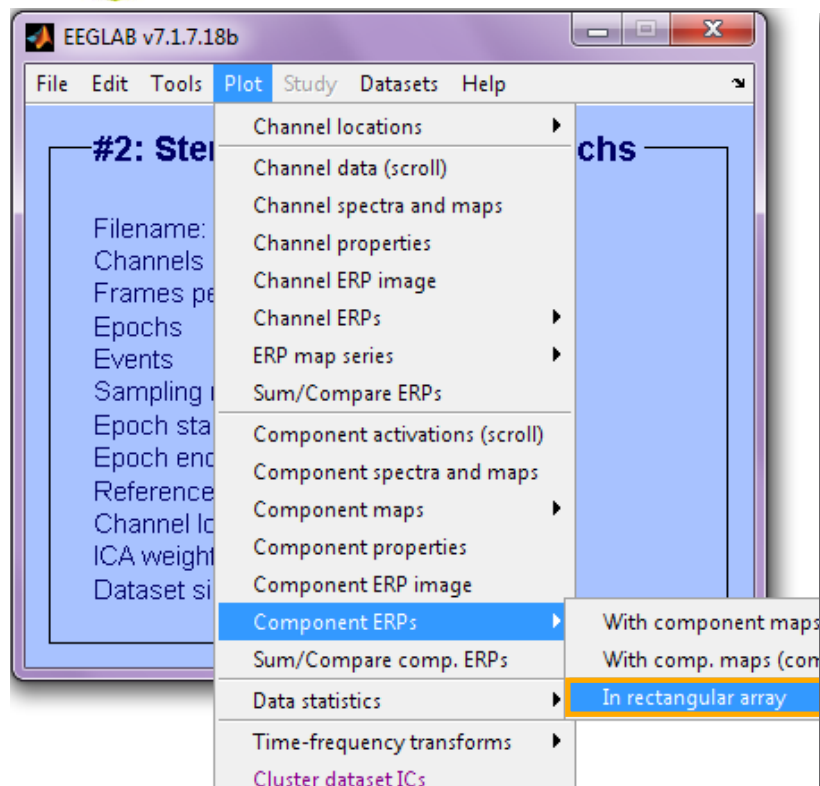
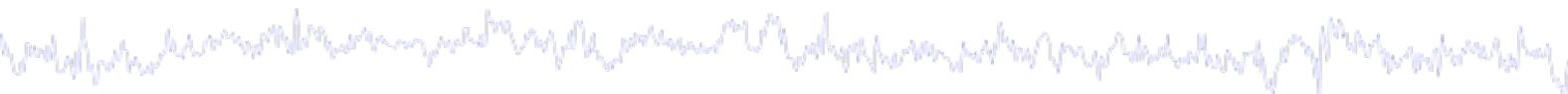
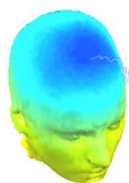
Plot 5

Component cross coherence

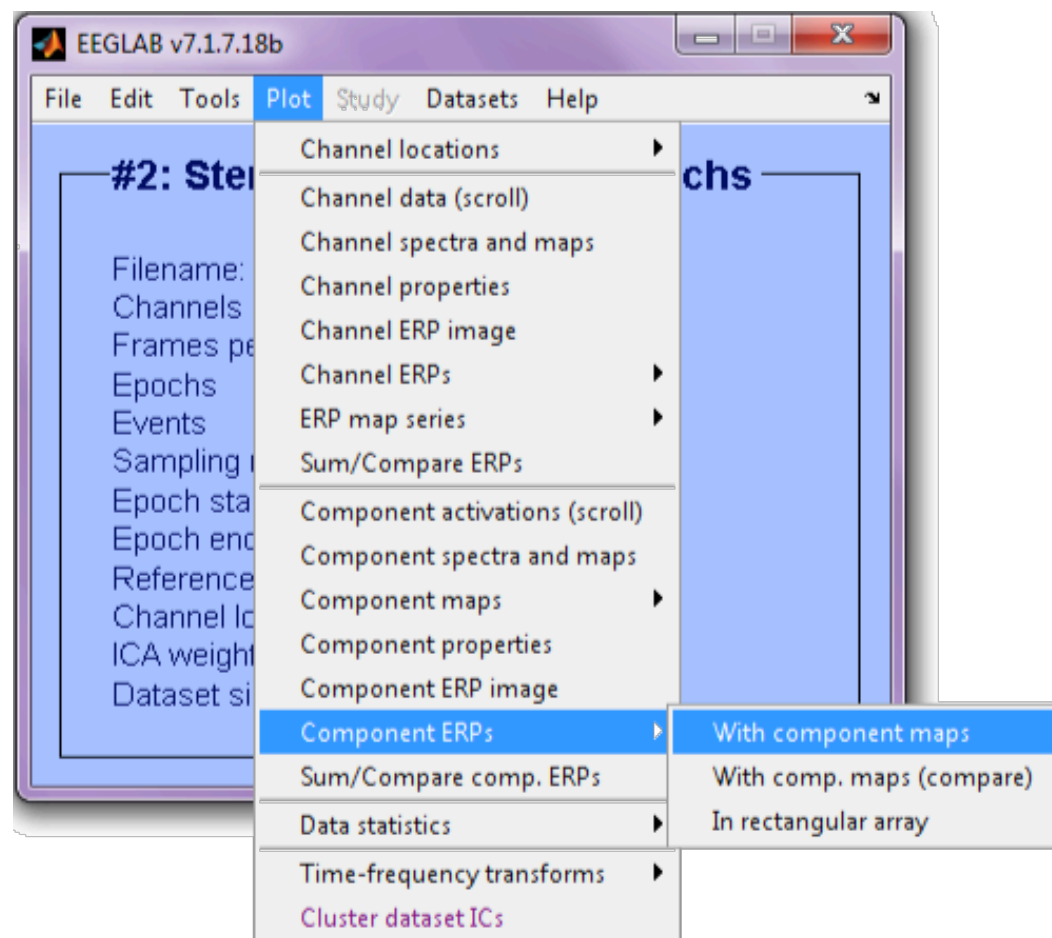
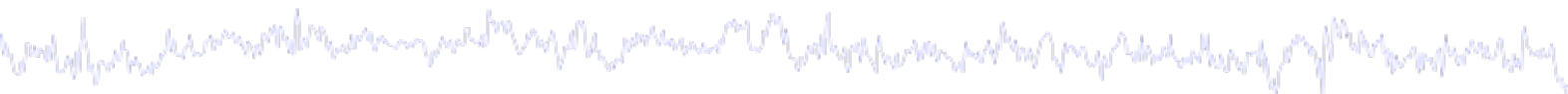
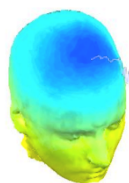
Exercise...



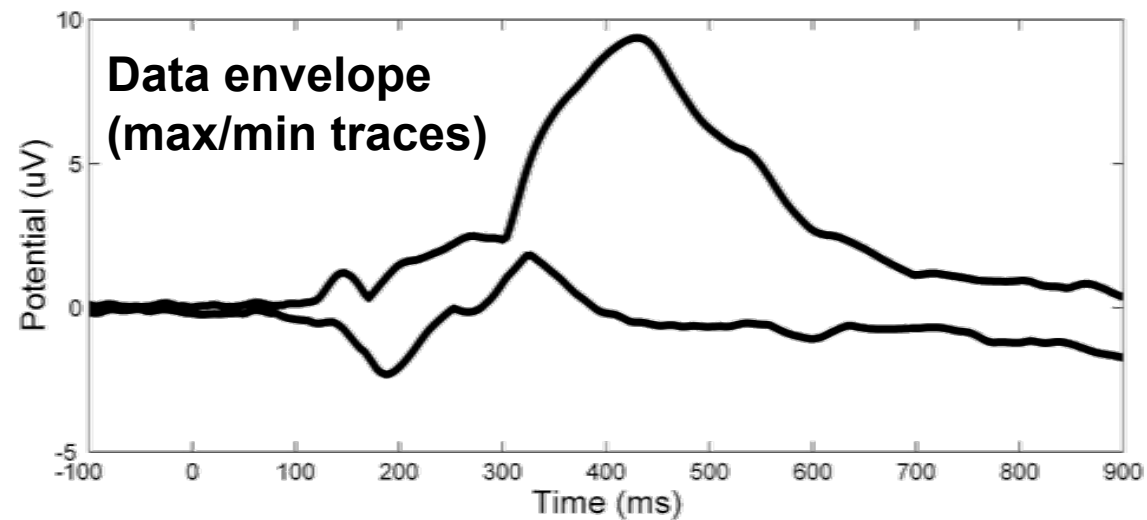
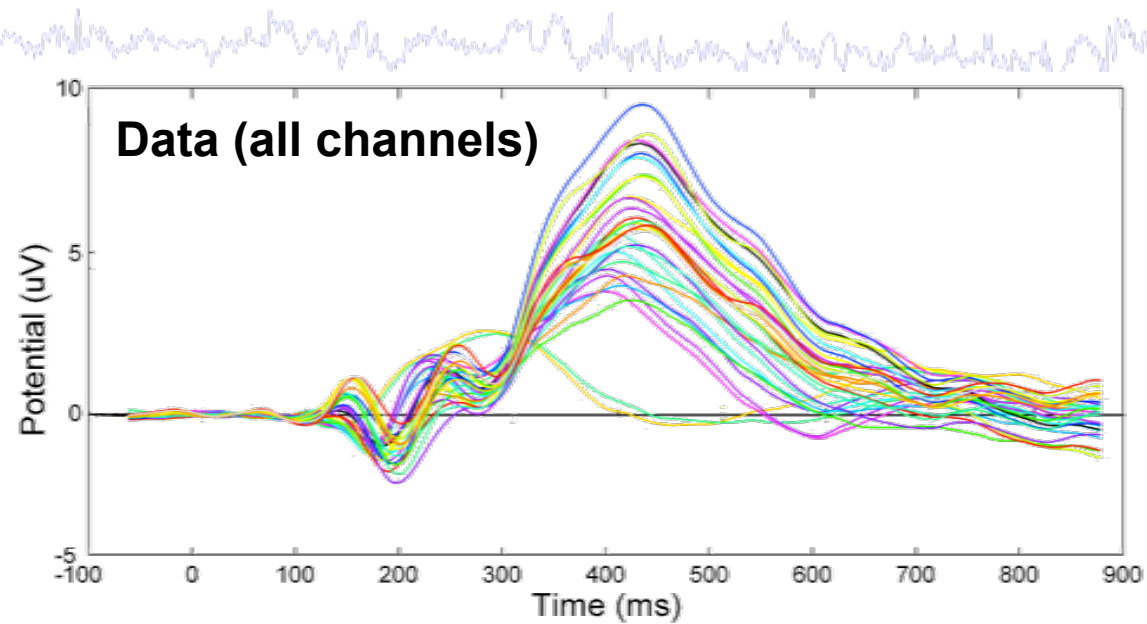
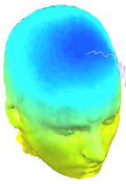
Component ERPs



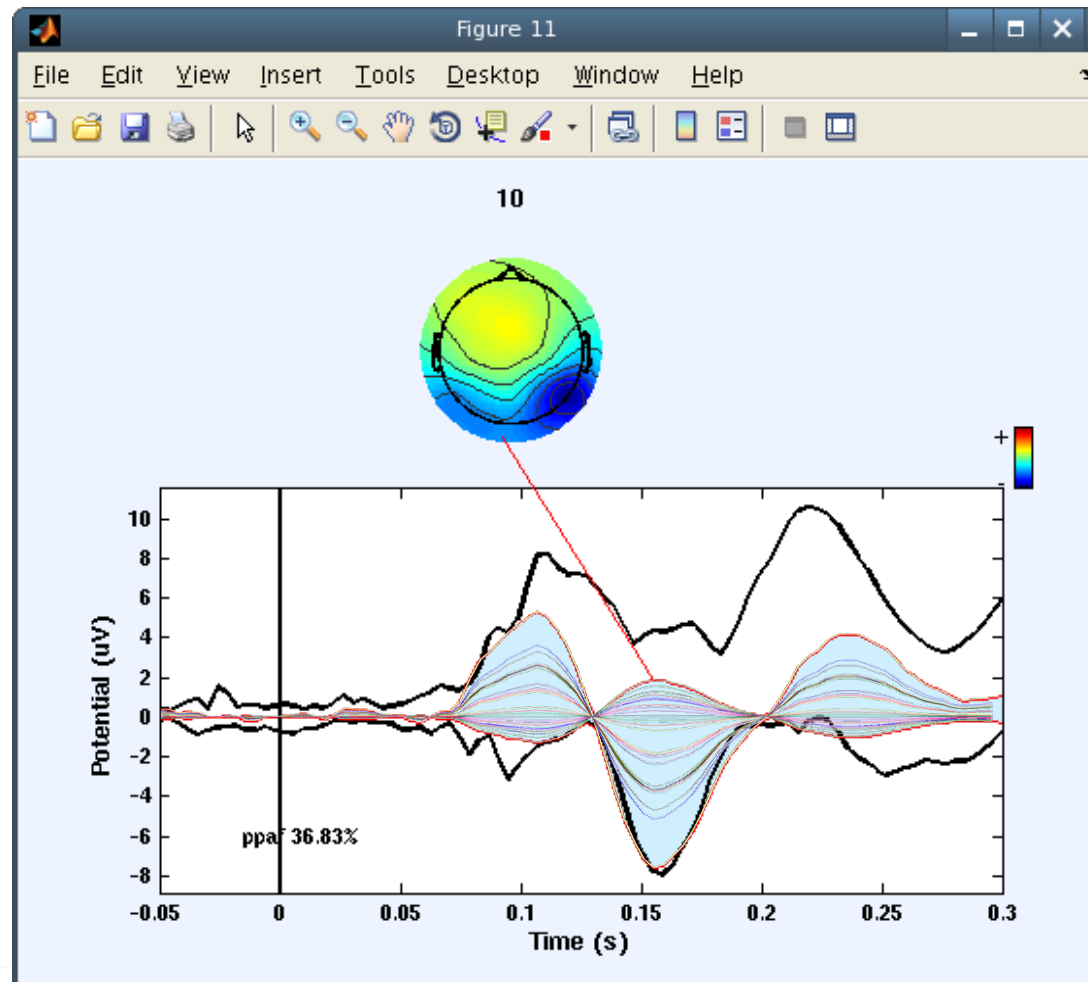
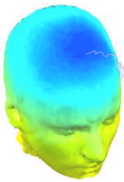
Component ERP envelope



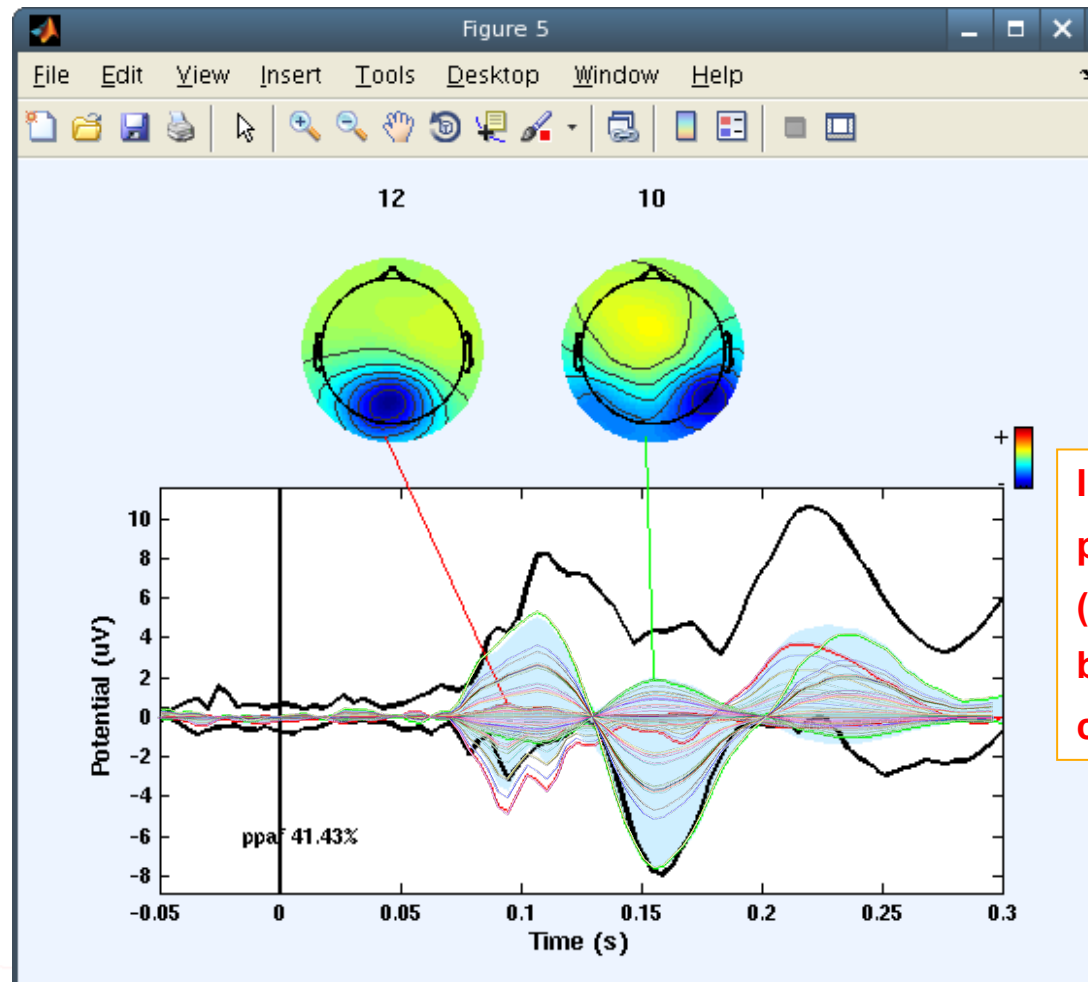
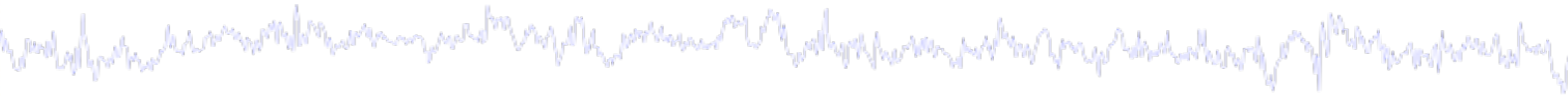
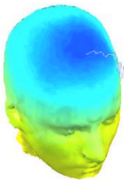
Definition: The data envelope



IC back-projection envelope

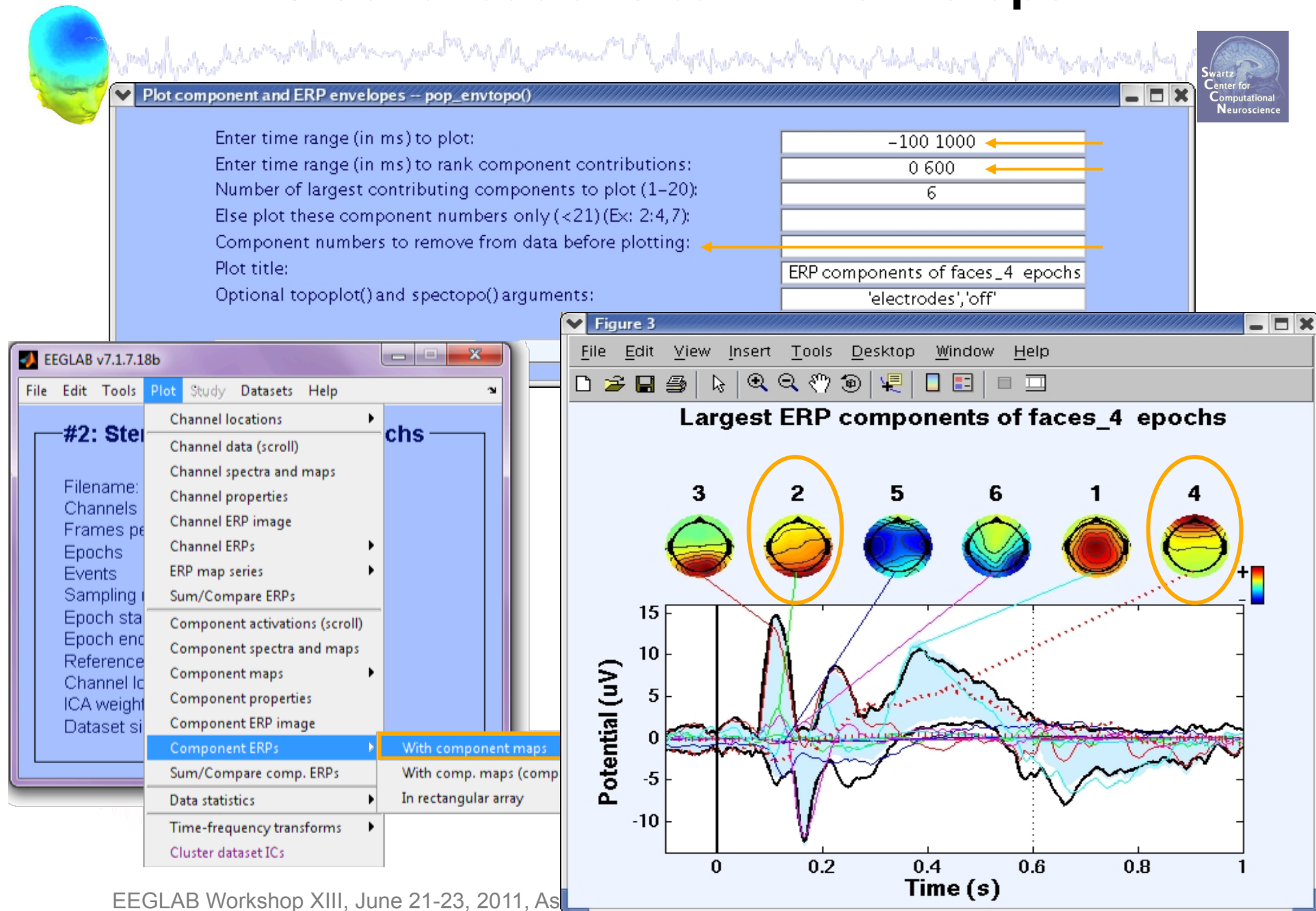


IC back-projection envelope

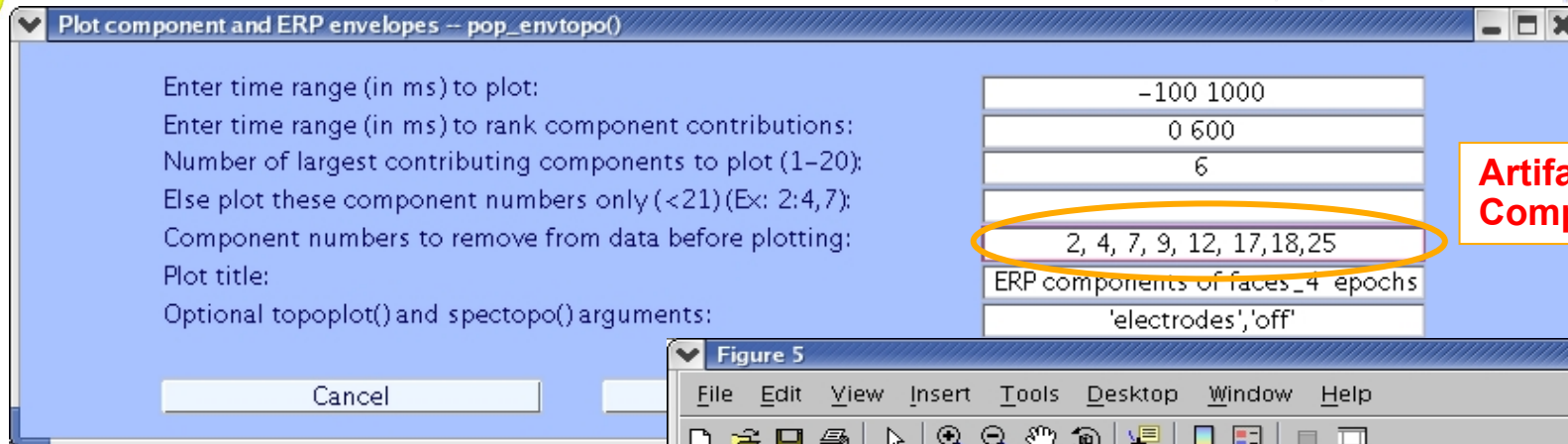
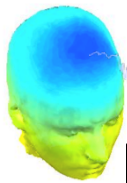


**IC envelopes
plotted for simplicity
(instead of all
back-projected
channels)**

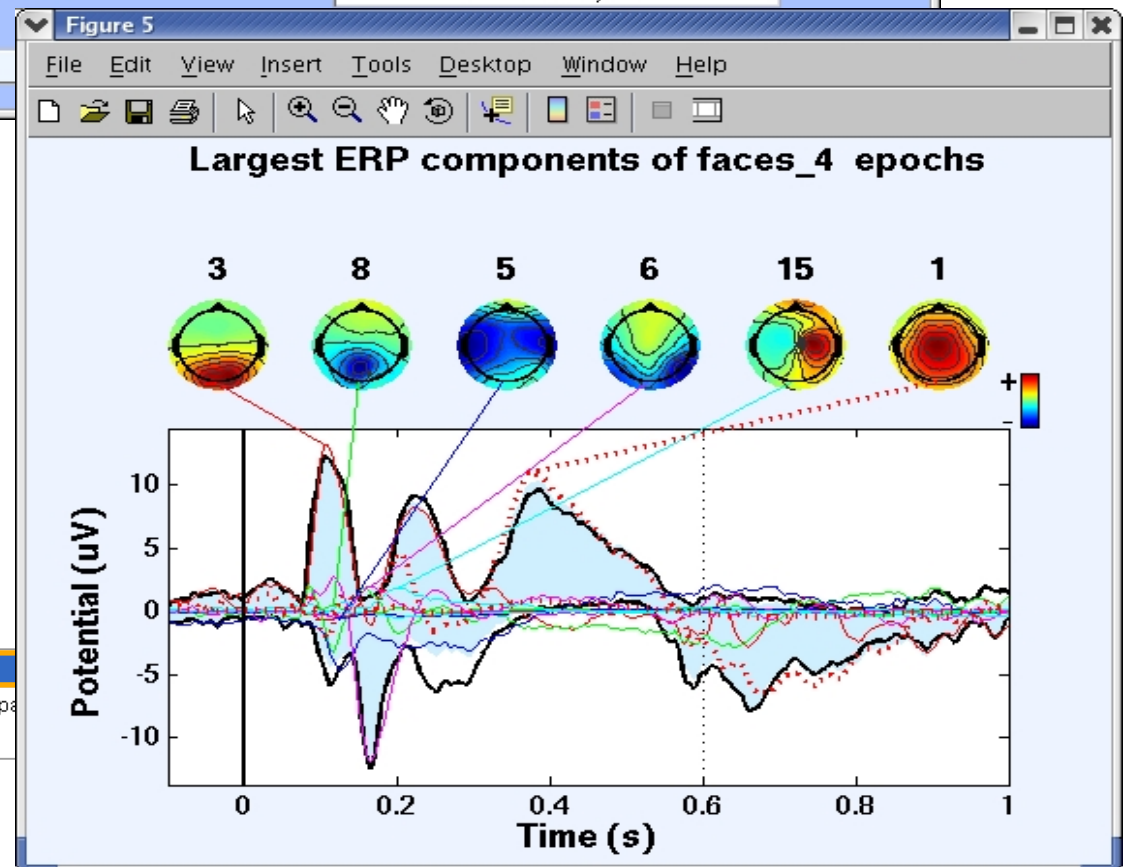
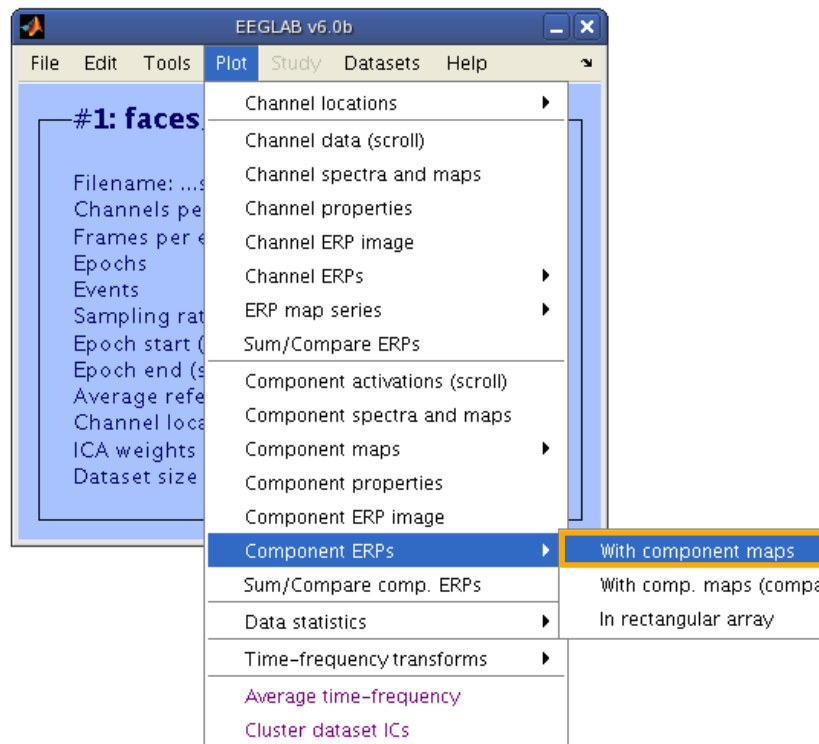
IC contributions to ERP envelope



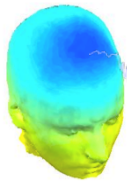
Component contribution to the dataset ERP



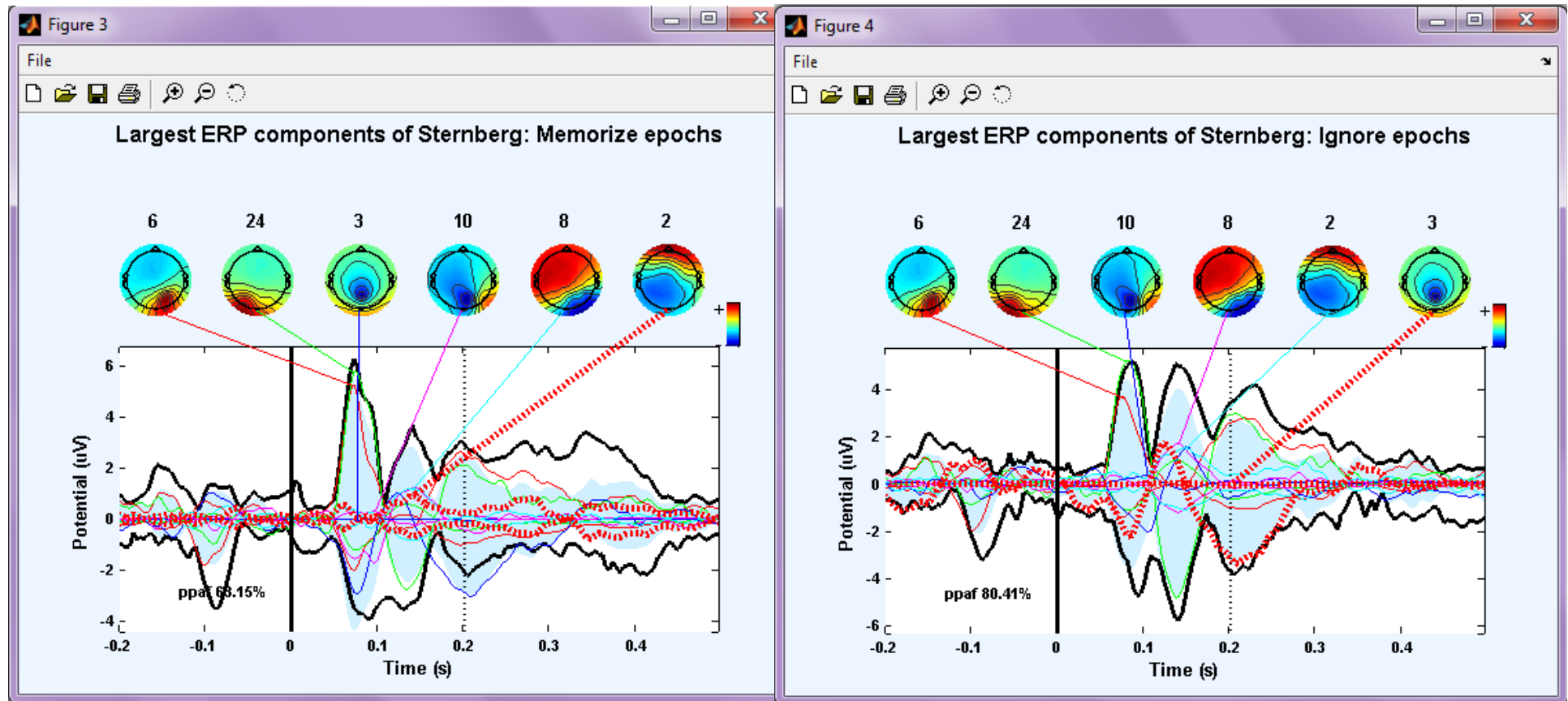
Artifact Components



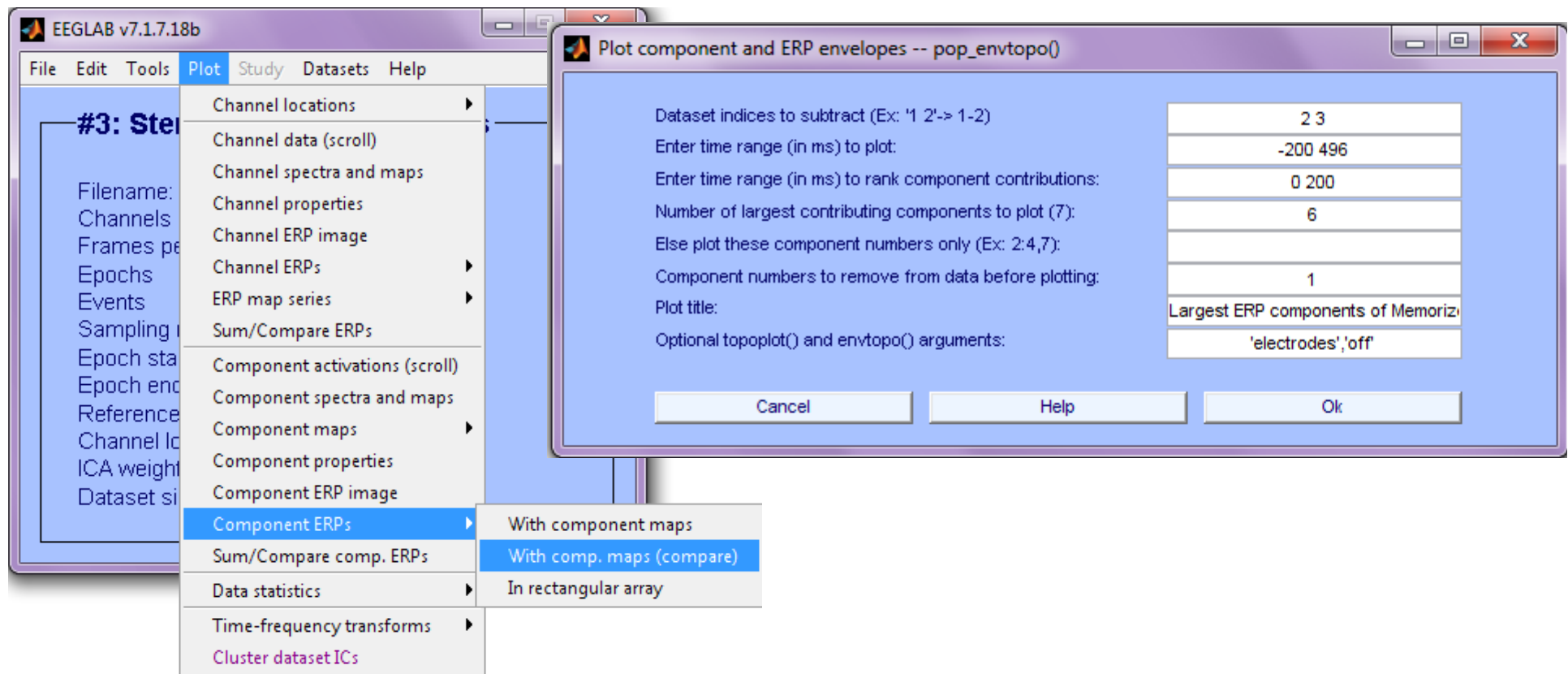
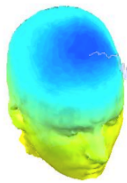
IC ERP difference



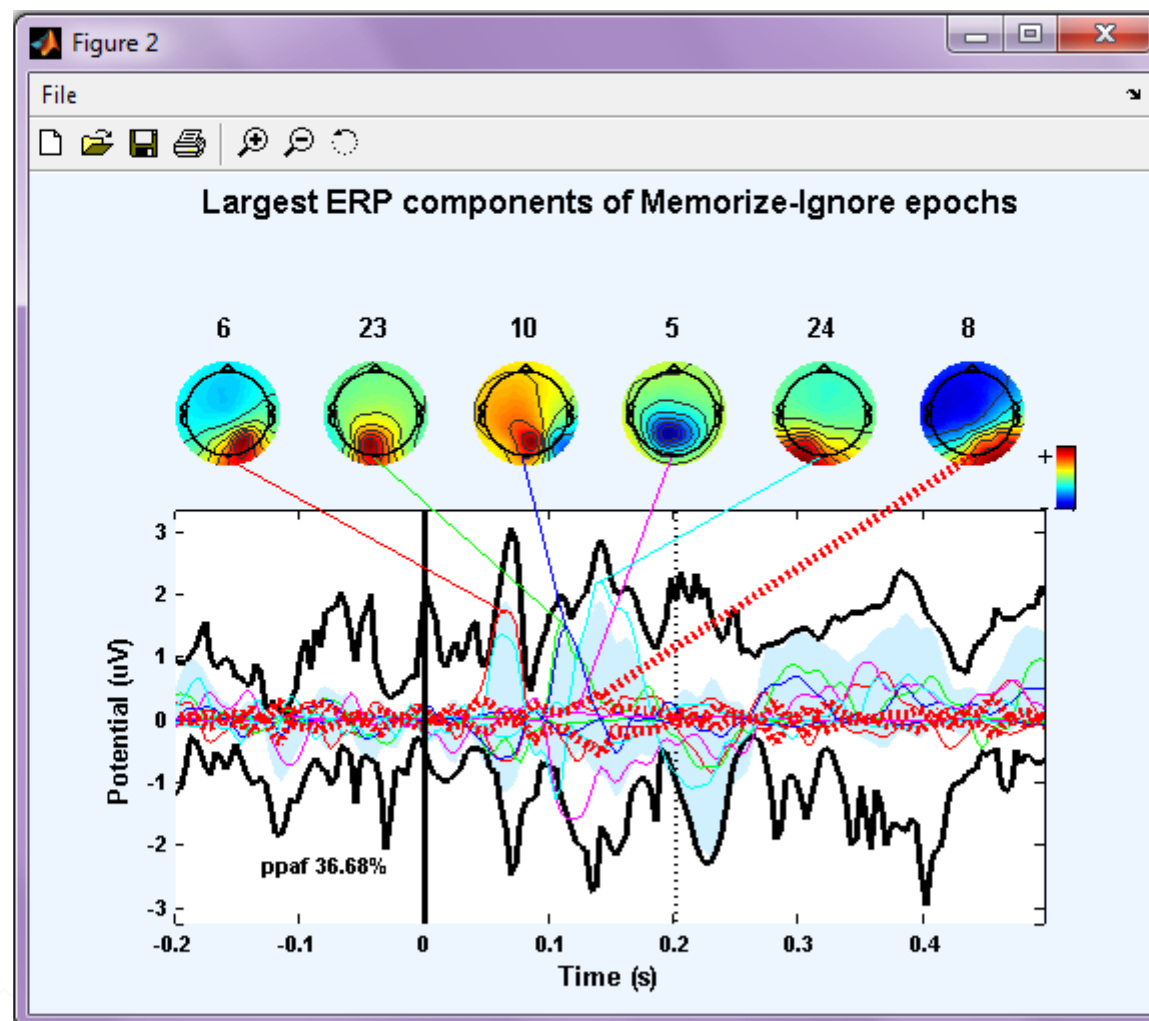
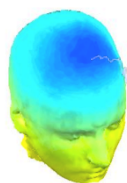
What is the IC ERP difference between these 2 conditions?



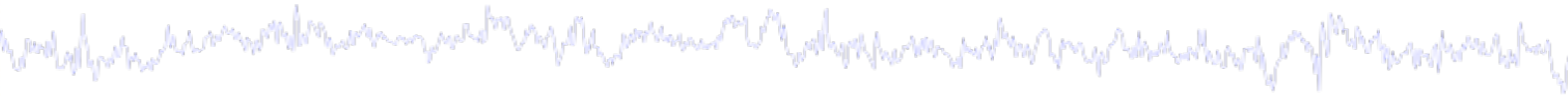
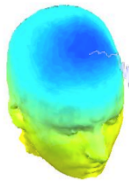
IC ERP difference



IC ERP difference



Evaluating ICA components



Plot 1

Component ERP

Plot 2

Component spectral power

Plot 3

Component ERP images

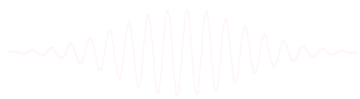
Plot 4

Component ERSP

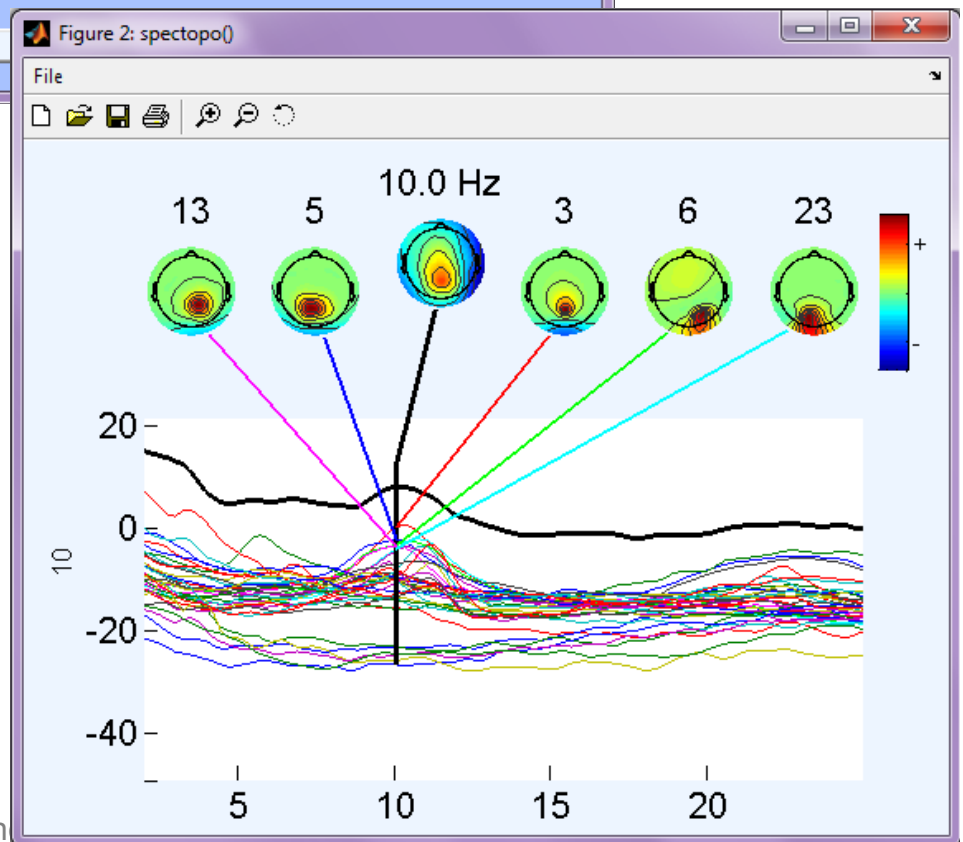
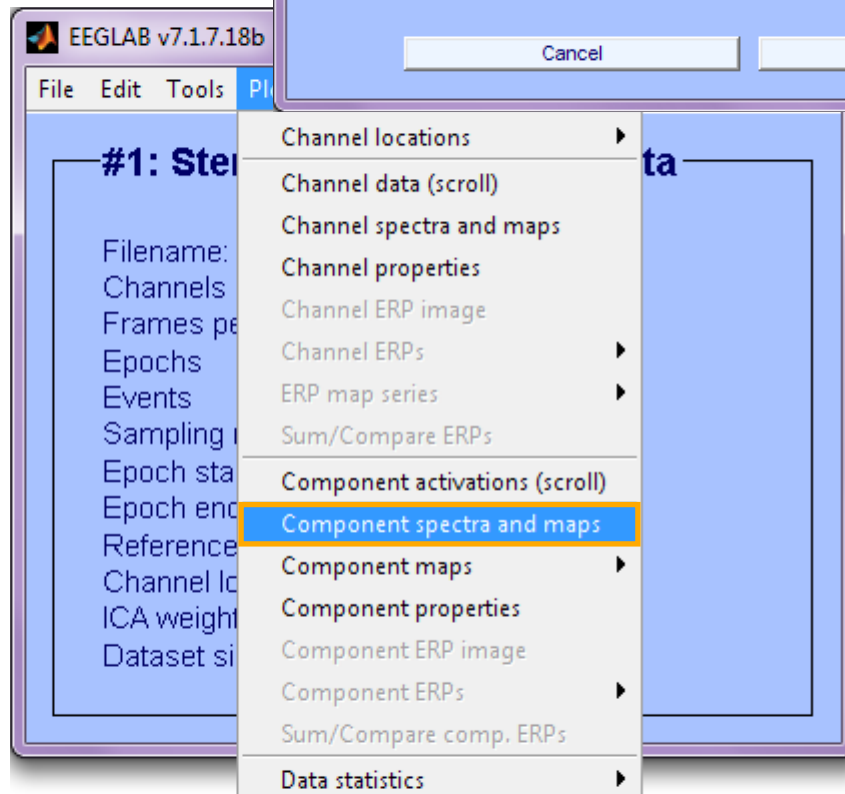
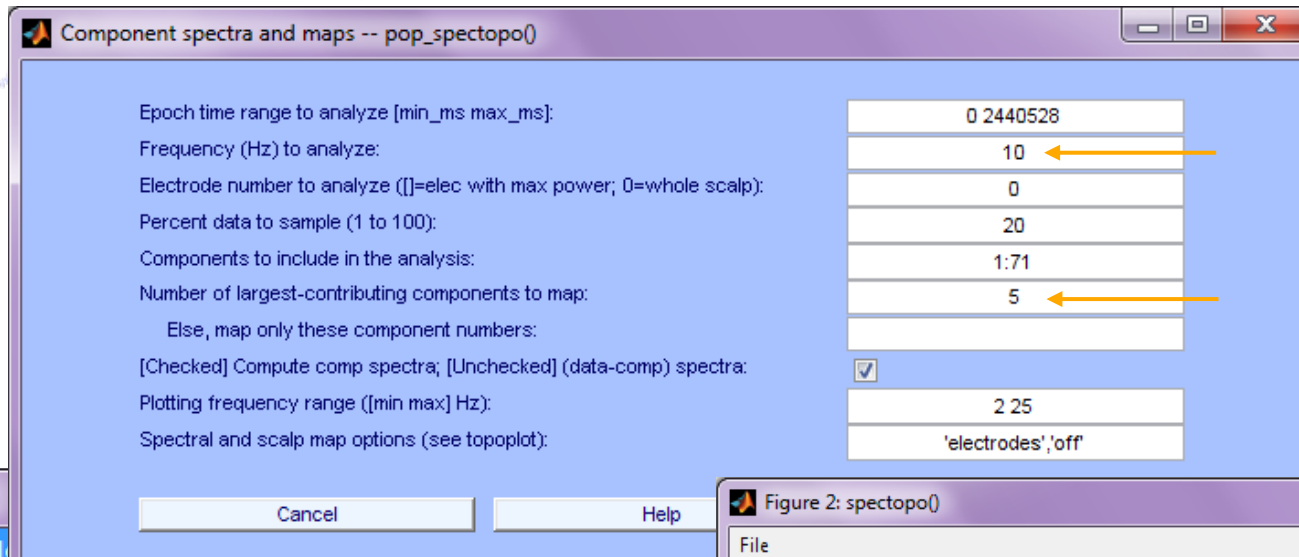
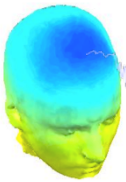
Plot 5

Component cross coherence

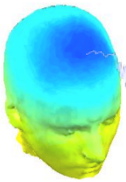
Exercise...



Plot component power



Plot component power



Component spectra and maps -- pop_spectopo()

Epoch time range to analyze [min_ms max_ms]: 0 2440528

Frequency (Hz) to analyze: 6

Electrode number to analyze ([]=elec with max power; 0=whole scalp): 0

Percent data to sample (1 to 100): 20

Components to include in the analysis: 1:71

Number of largest-contributing components to map: 5

Else, map only these component numbers:

[Checked] Compute comp spectra; [Unchecked] (data-comp) spectra: ☒

Plotting frequency range ([min max] Hz): 2 25

Spectral and scalp map options (see topoplot):

Cancel

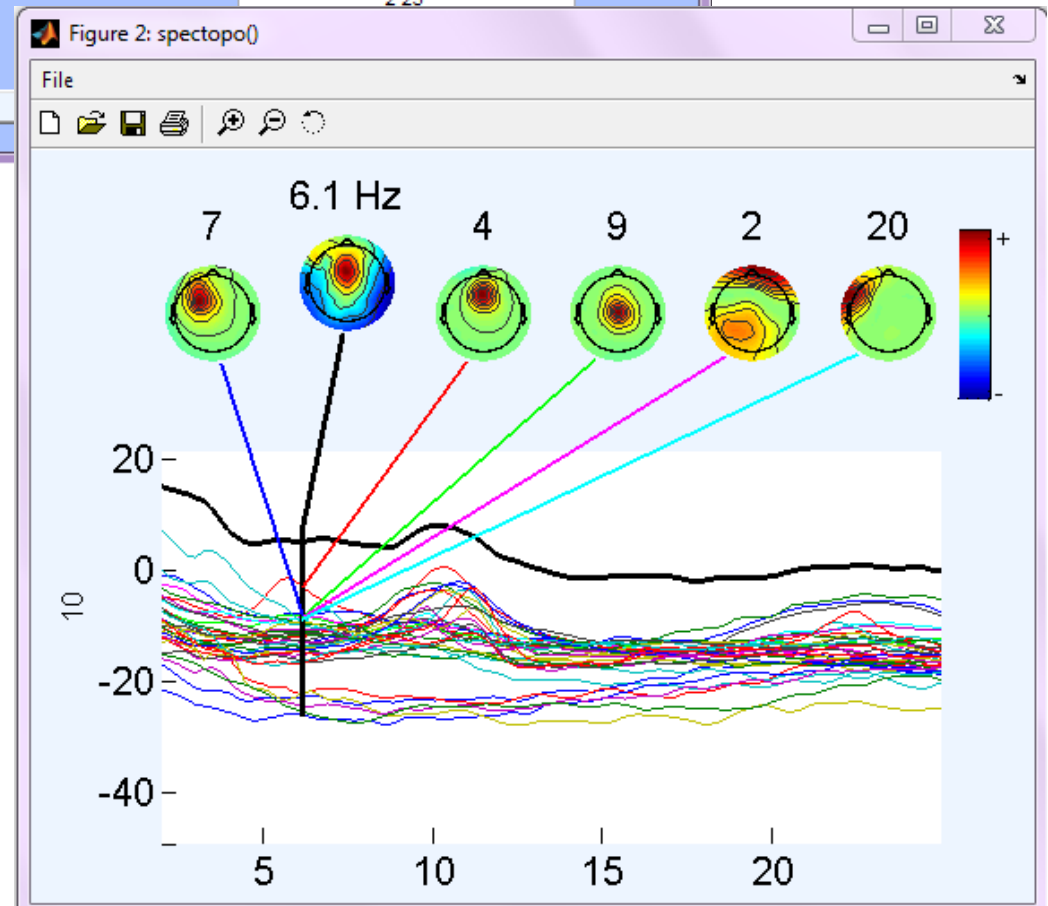
EEGLAB v7.1.7.18b

File Edit Tools Plot

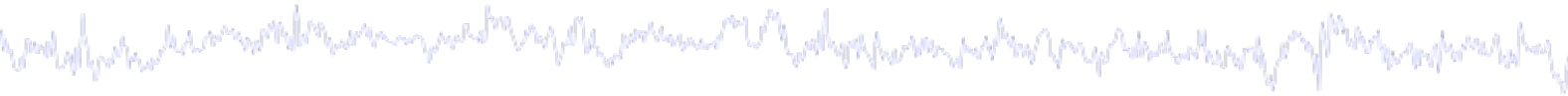
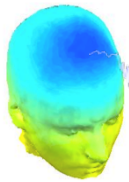
#1: Step

Filename:
Channels
Frames per
Epochs
Events
Sampling
Epoch sta
Epoch end
Reference
Channel lo
ICA weight
Dataset si

Channel locations
Channel data (scroll)
Channel spectra and maps
Channel properties
Channel ERP image
Channel ERPs
ERP map series
Sum/Compare ERPs
Component activations (scroll)
Component spectra and maps
Component maps
Component properties
Component ERP image
Component ERPs
Sum/Compare comp. ERPs
Data statistics



Evaluating ICA components



Plot 1

Component ERP

Plot 2

Component spectral power

Plot 3

Component ERP images

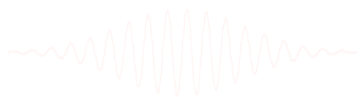
Plot 4

Component ERSP

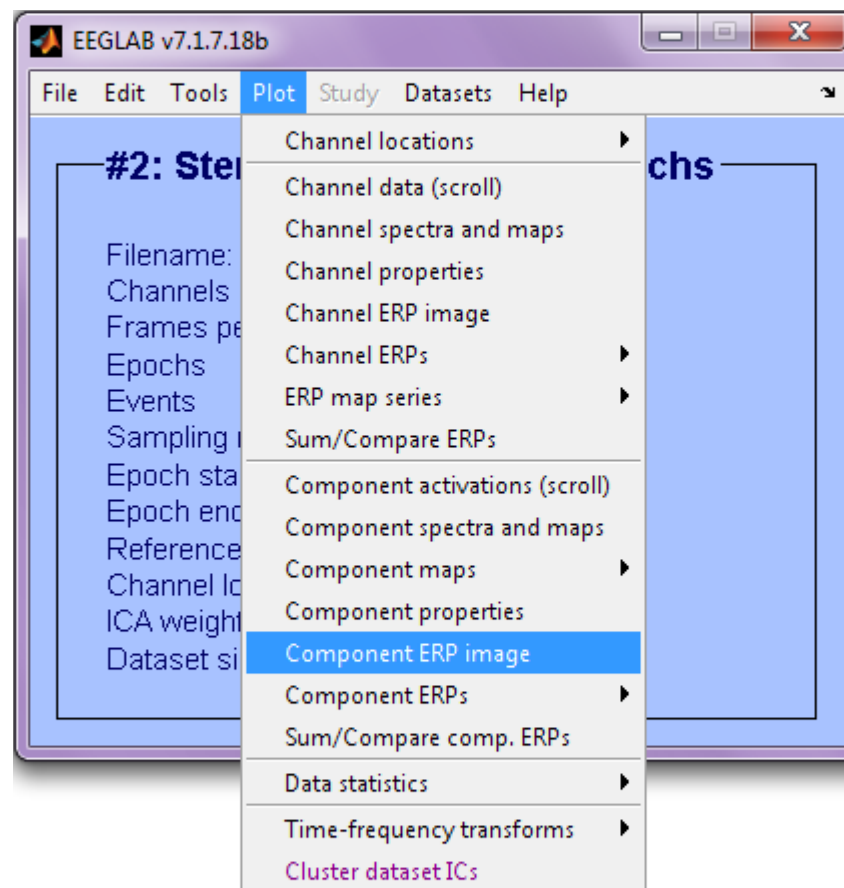
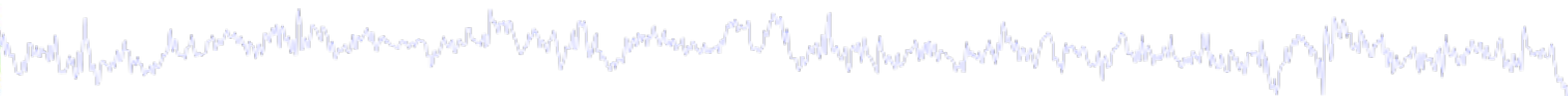
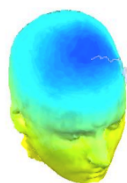
Plot 5

Component cross coherence

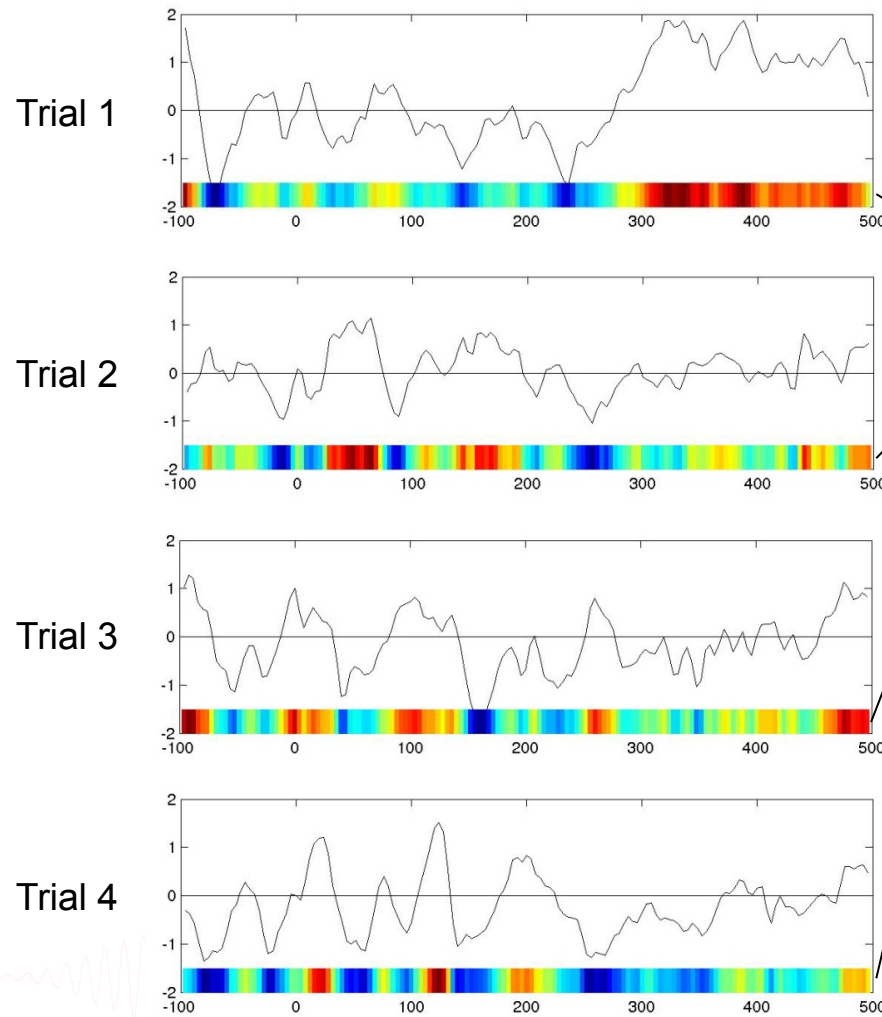
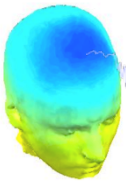
Exercise...



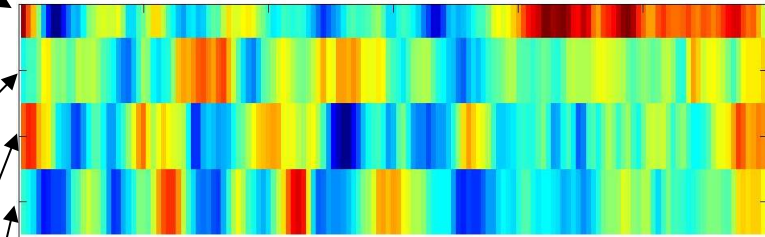
Component ERP image



ERP Image basics

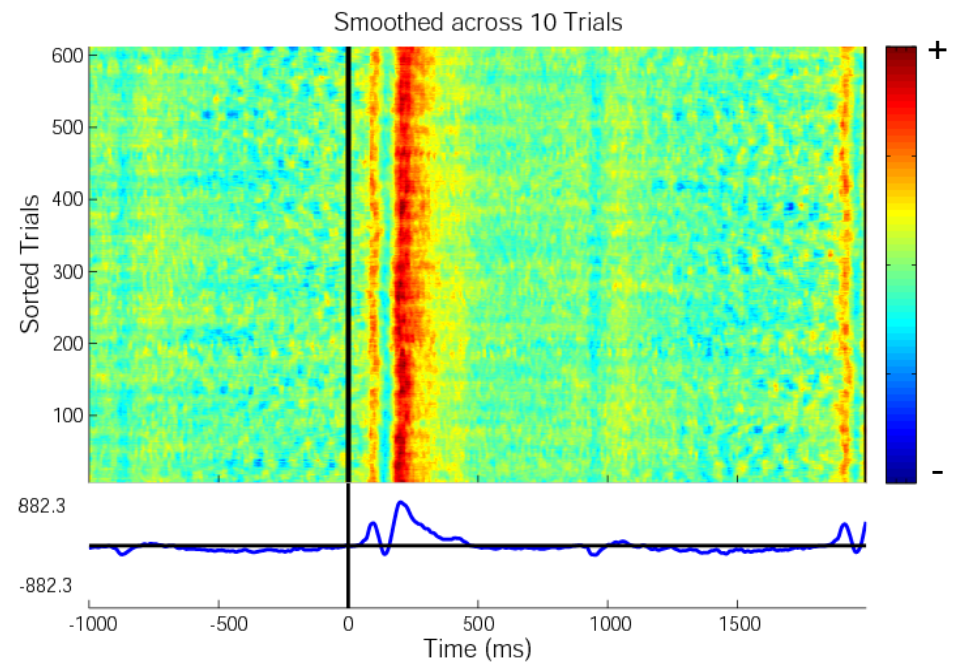
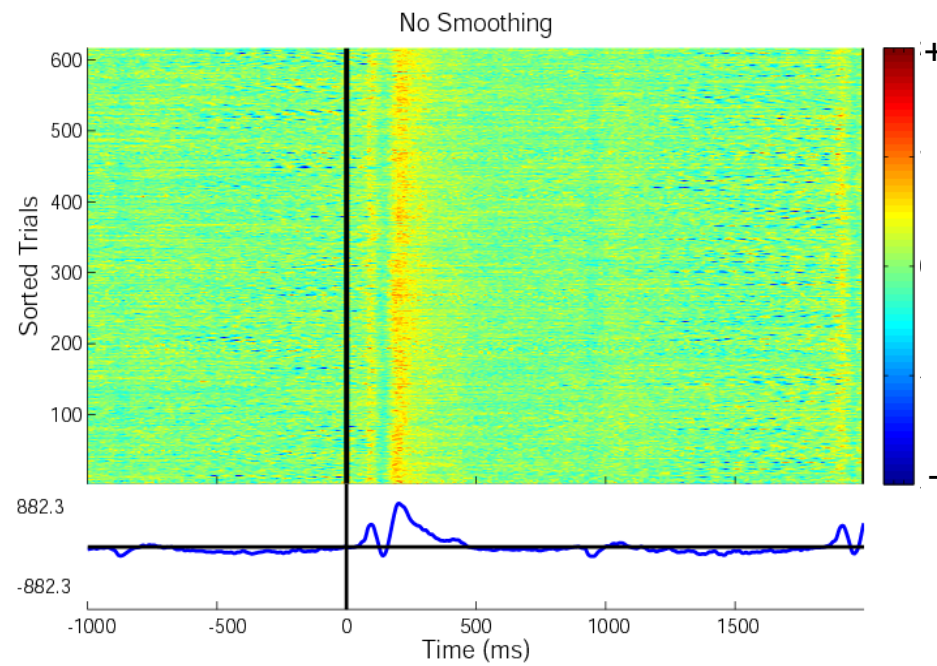
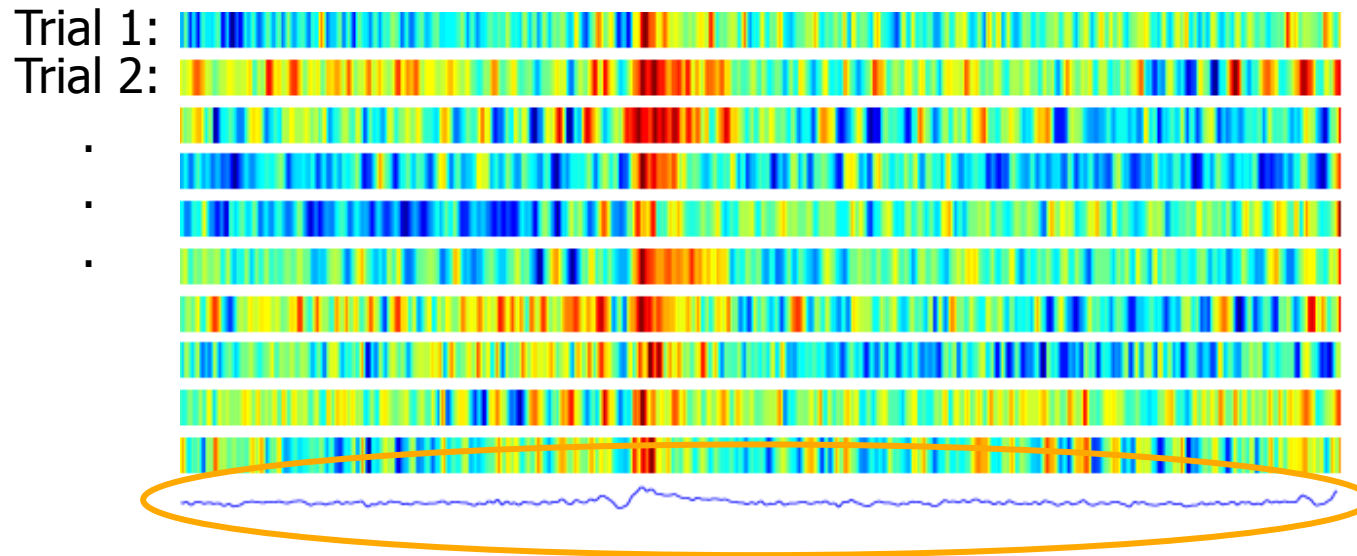


ERP Image



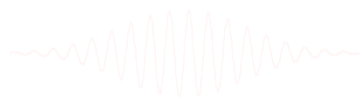
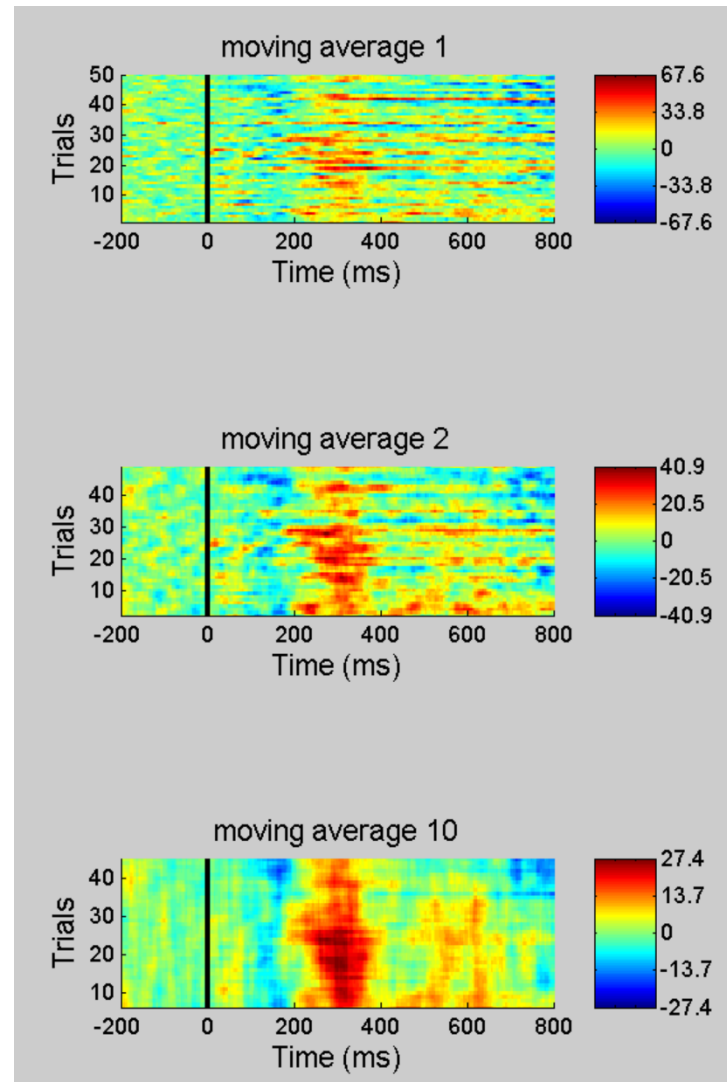
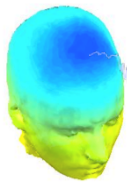
by default, sorted by
time-on-task
(1st trial, 2nd trial, ...)

ERP Image basics

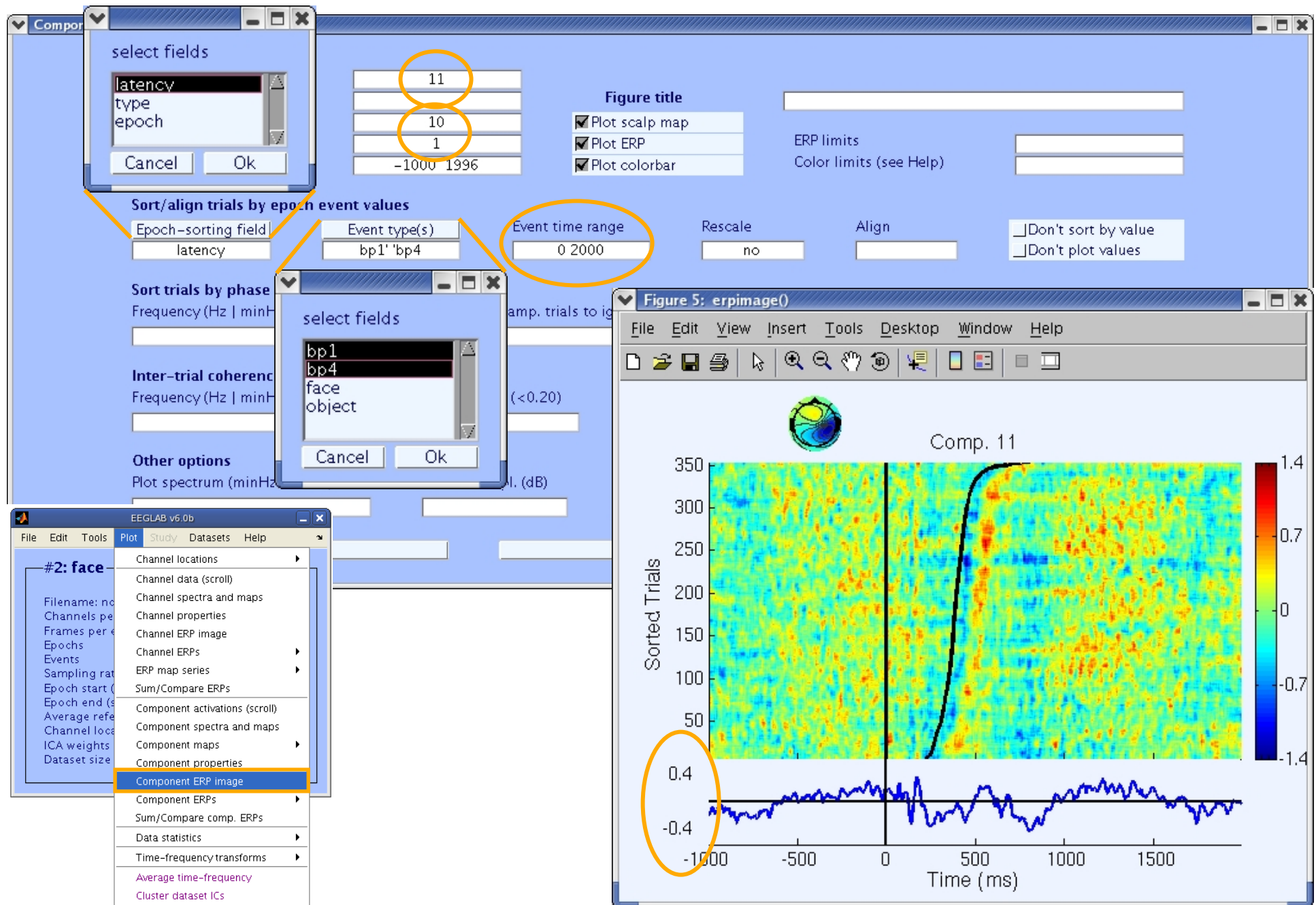


E

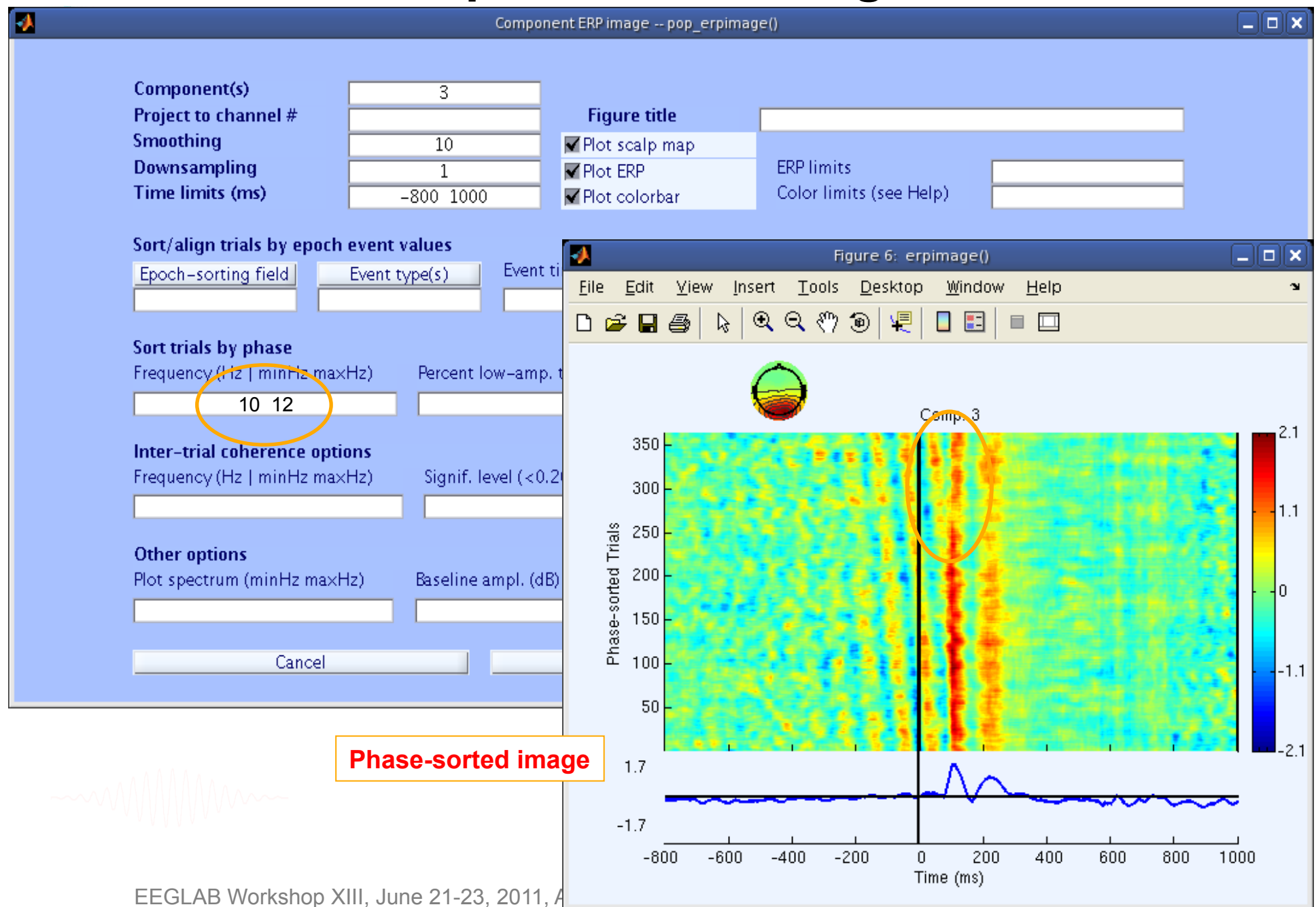
ERP Images: smoothing across trials



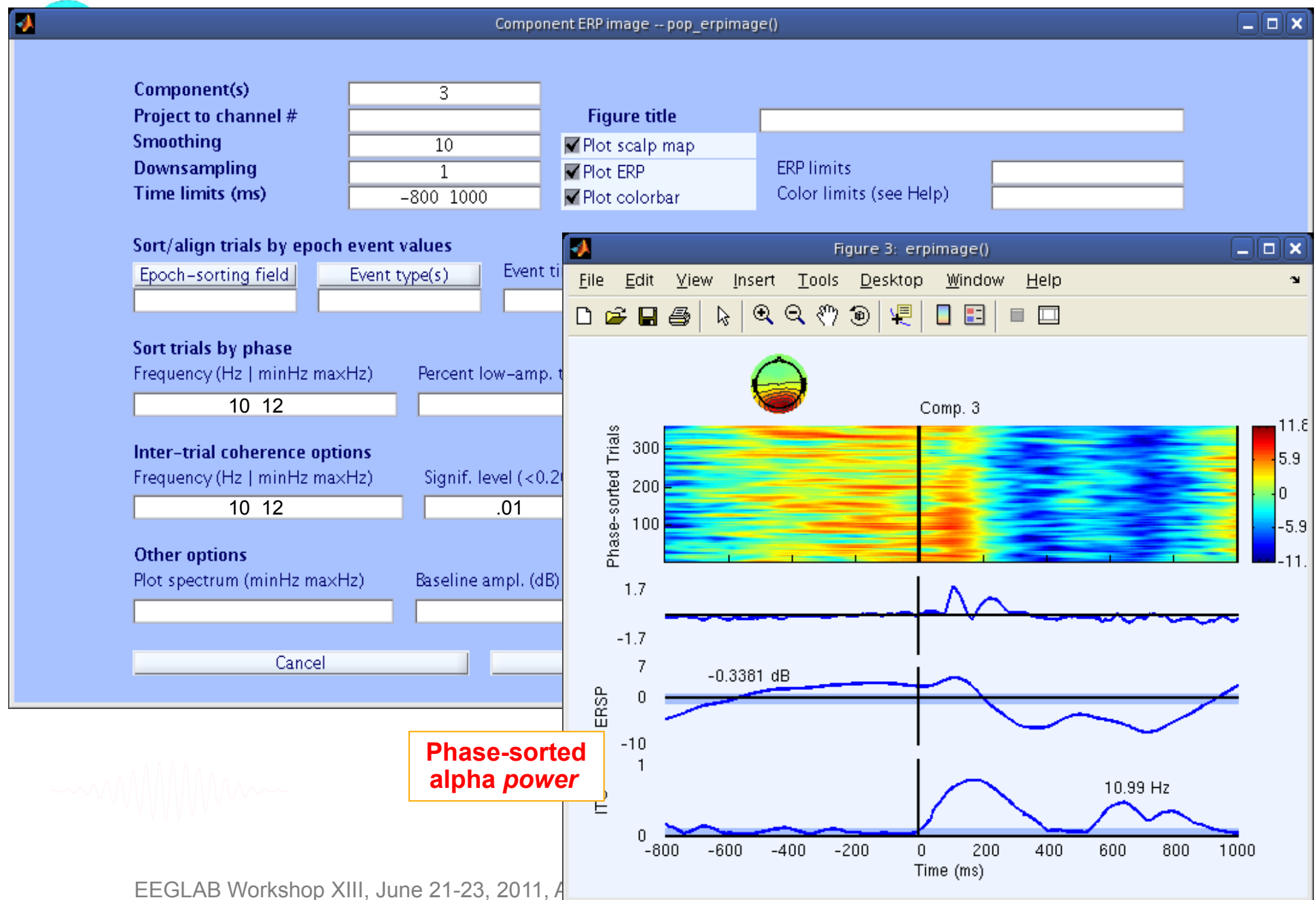
Component ERP Images



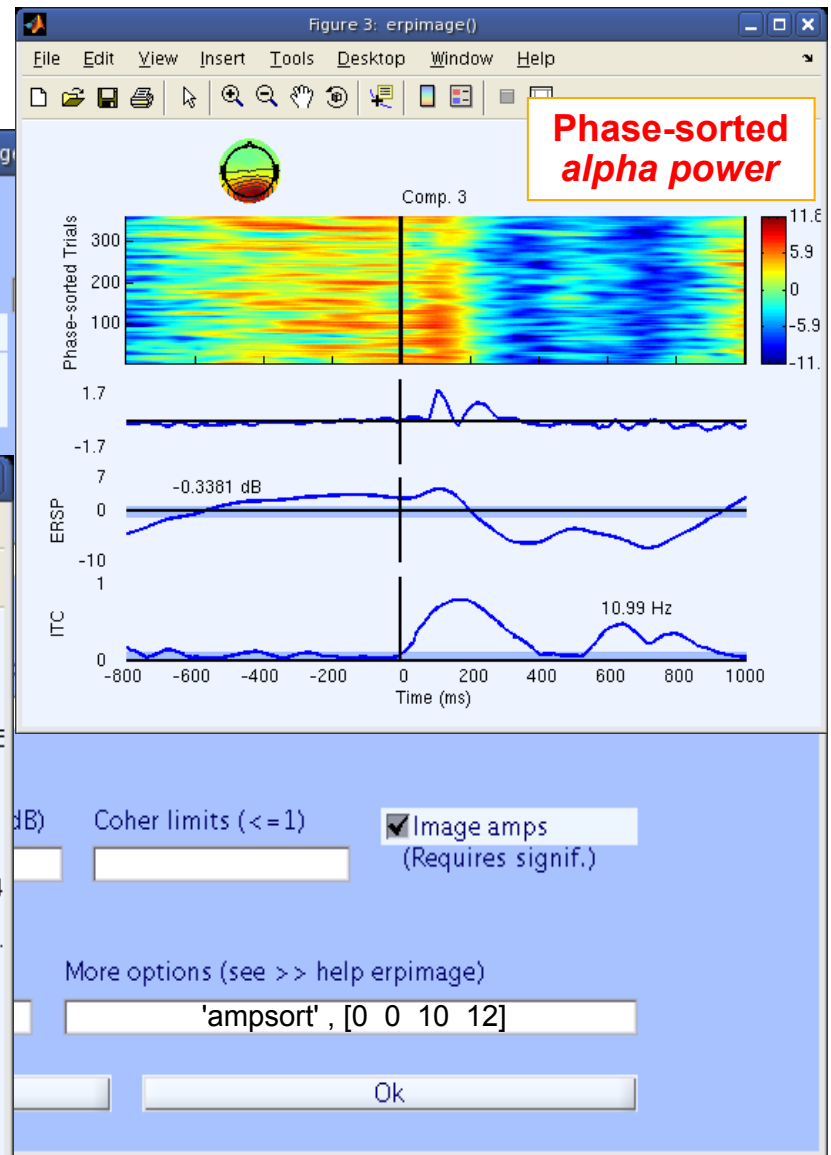
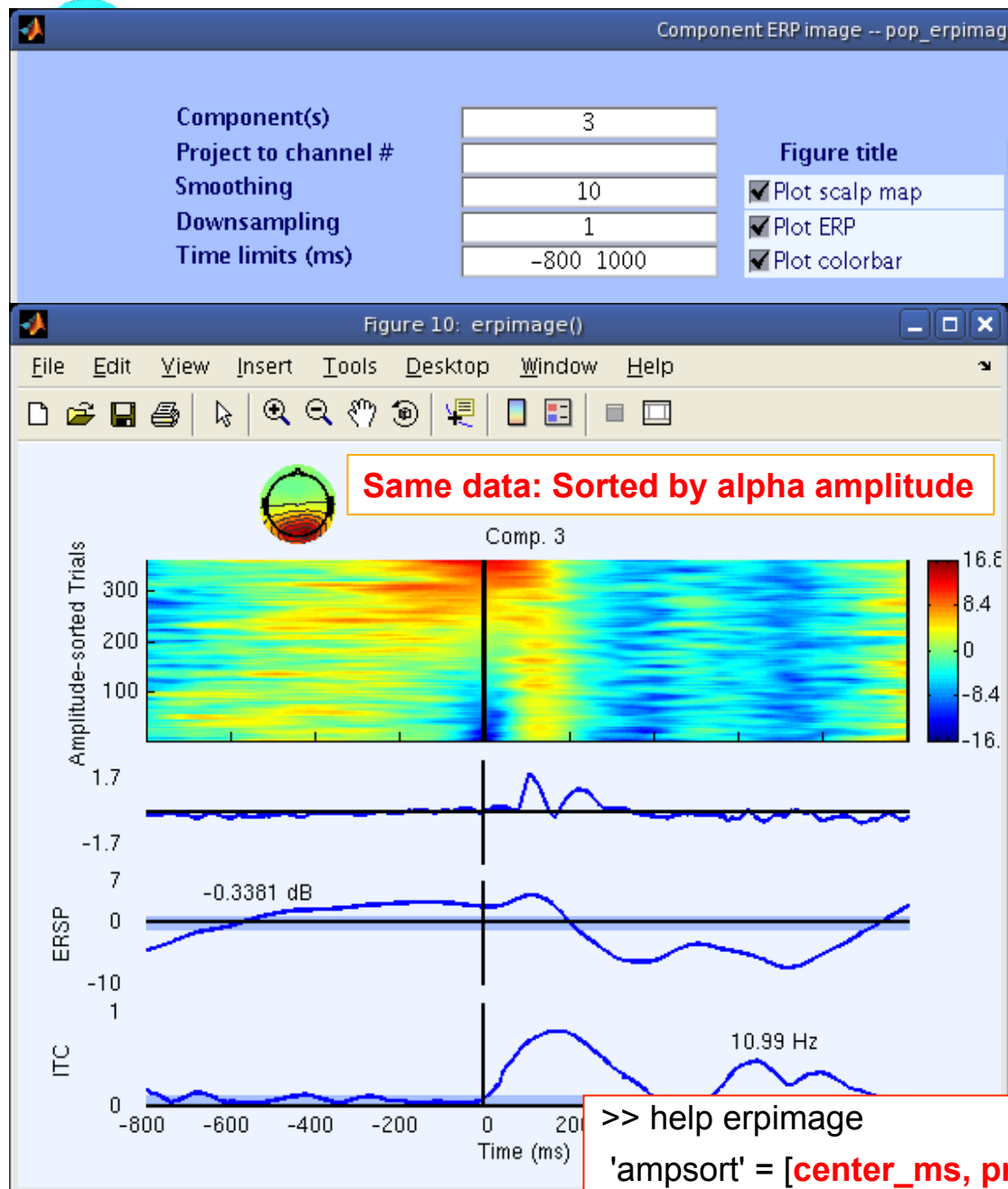
Component ERP Images



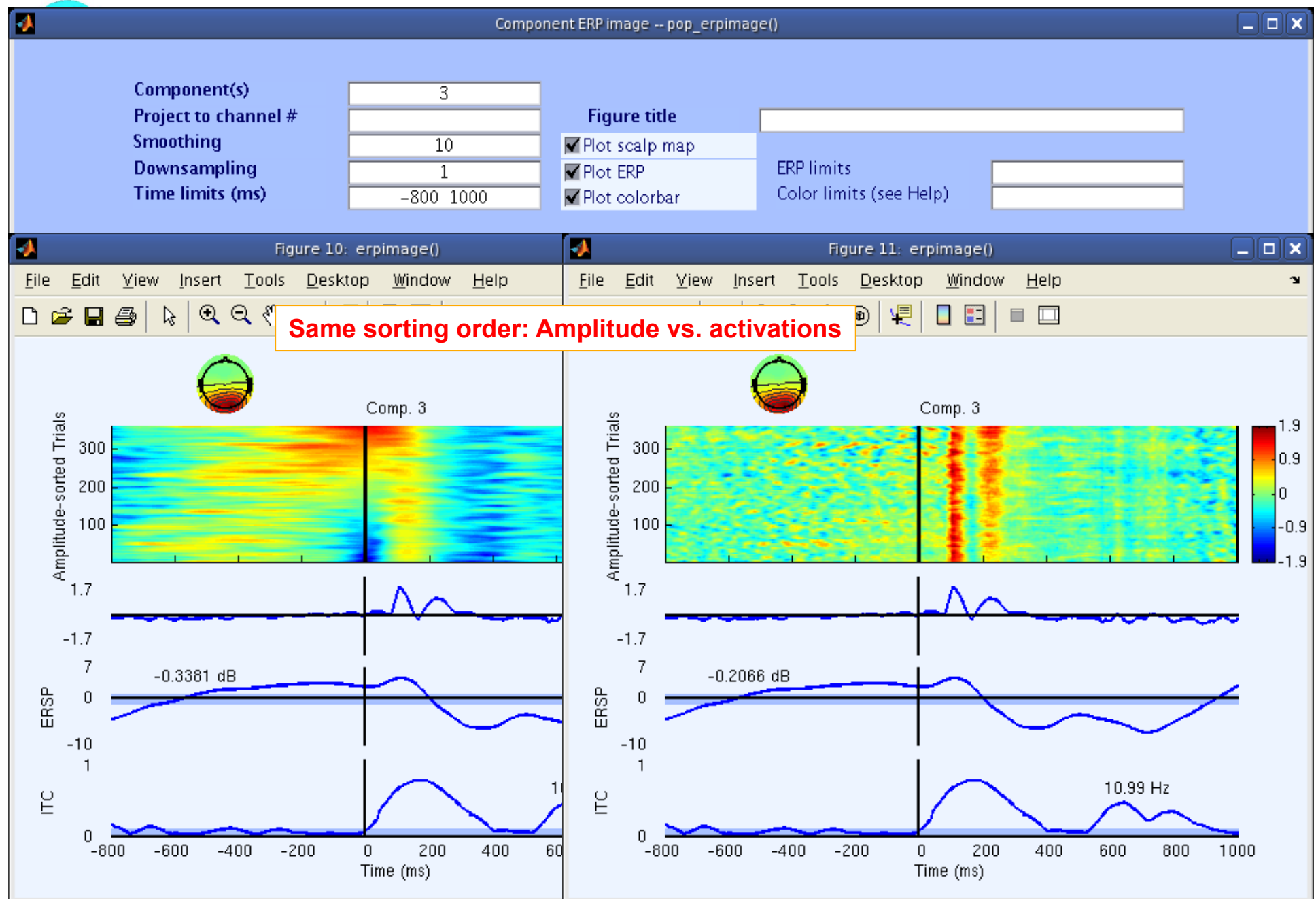
Component ERP Images



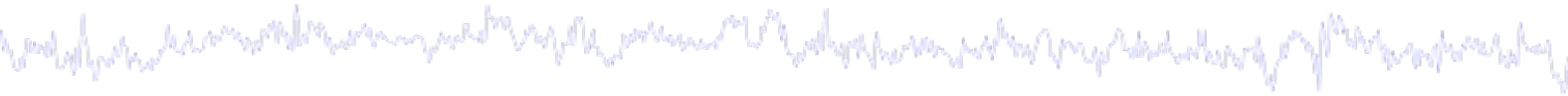
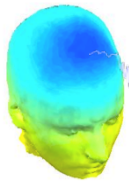
Component ERP



Component ERP Images



Evaluating ICA components



Plot 1

Component ERP

Plot 2

Component spectral power

Plot 3

Component ERP images

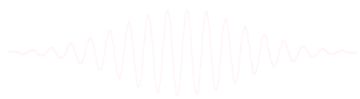
Plot 4

Component ERSP

Plot 5

Component cross coherence

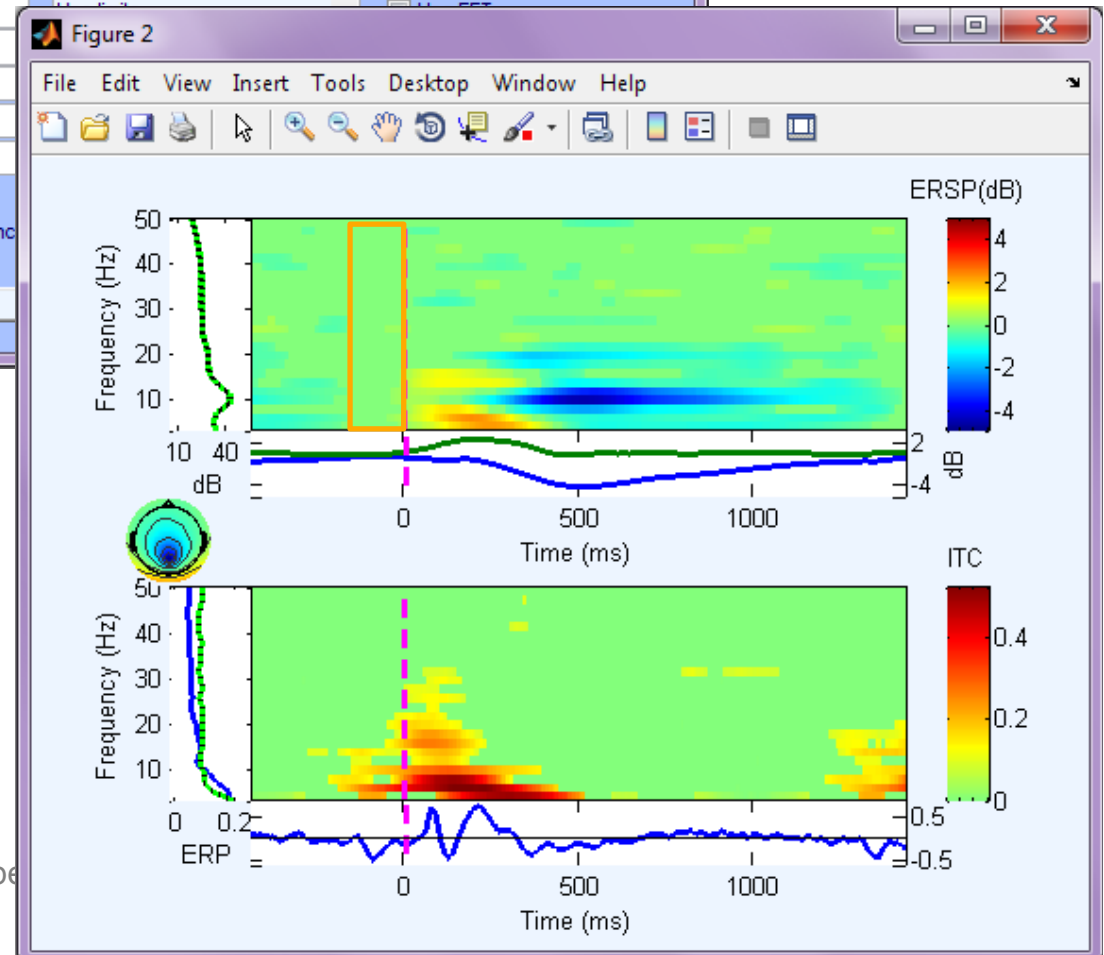
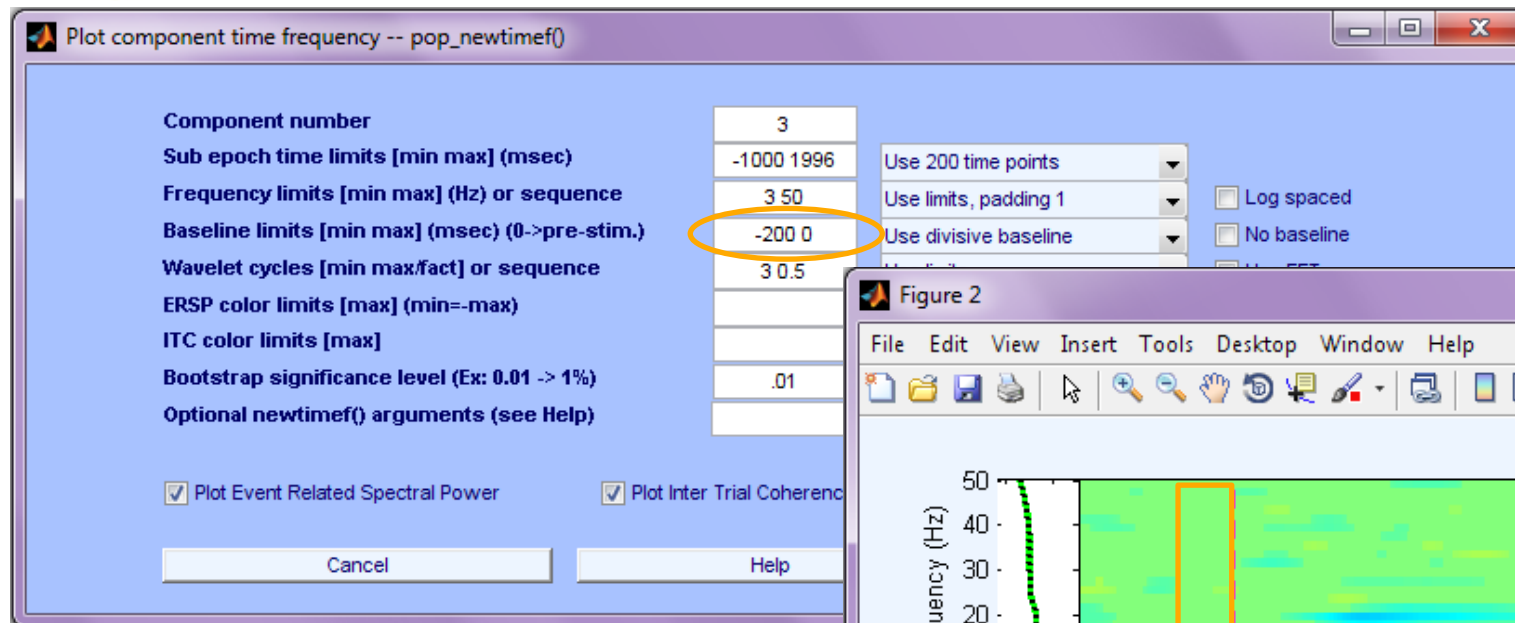
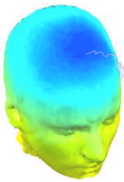
Exercise...



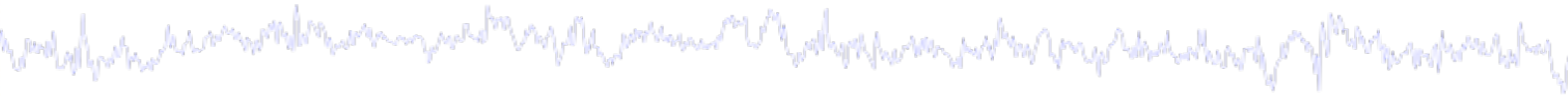
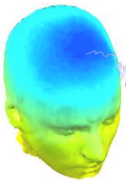
A 3D visualization of a human head with a color-coded brain map. The map shows a distribution of values across the brain surface, with a prominent blue area on the left side of the head (viewer's left) and a yellow area on the right side (viewer's right). A white EEG waveform is overlaid on the right side of the head, showing a series of peaks and troughs.



Plot IC ERSP



Exercise



- **ALL**
 - Load stern.set, epoch on Memorize letters, reject noise
- **Novice**
 - From the GUI, plot component ERPs with maps
 - Pick an interesting IC and plot an ERP image of it
 - Try sorting by RT or phase, is there any relationship to the IC activation pattern? What about power in a frequency band of choice?
- **Intermediate**
 - Plot ERSPs for selected ICs
 - ~ Compare FFT, wavelet(s), and multi-taper methods for ERSP

