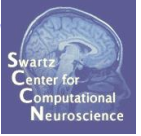
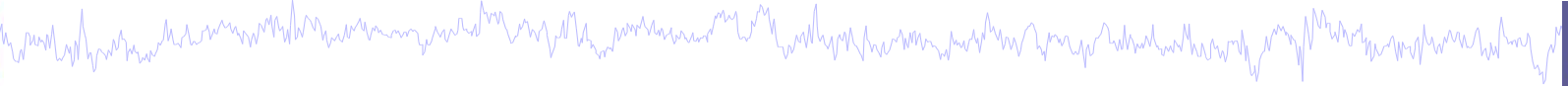


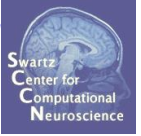
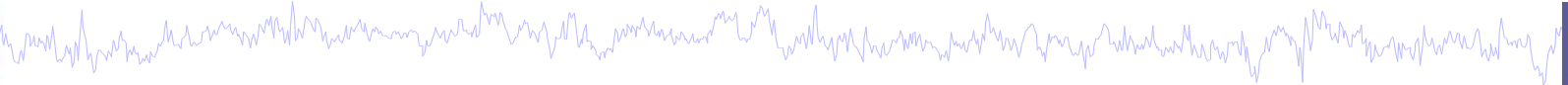
Evaluate ICA decomposition and artifacts



- 1) Evaluate IC Decomposition**
- 2) IC Properties**
- 3) Identify Artifacts**
- 4) Intro to ICLabel Website**



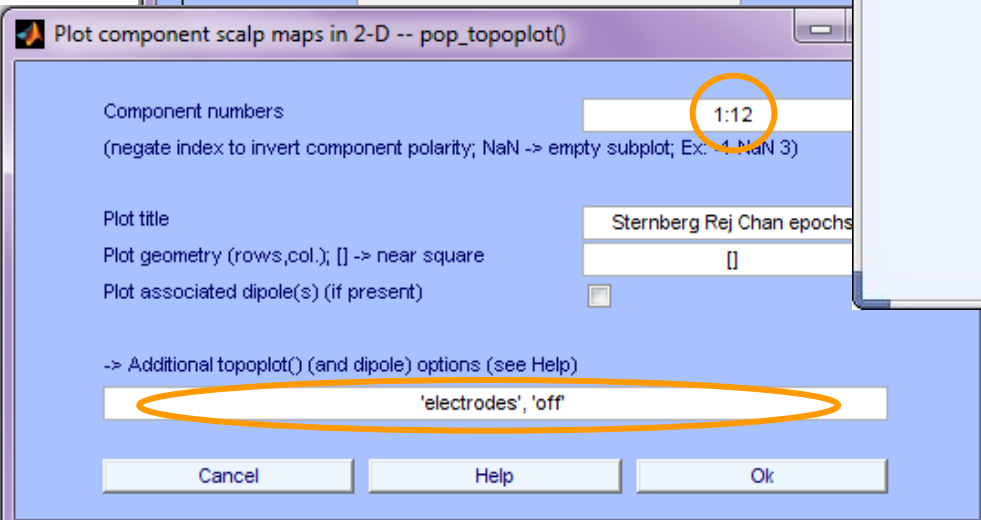
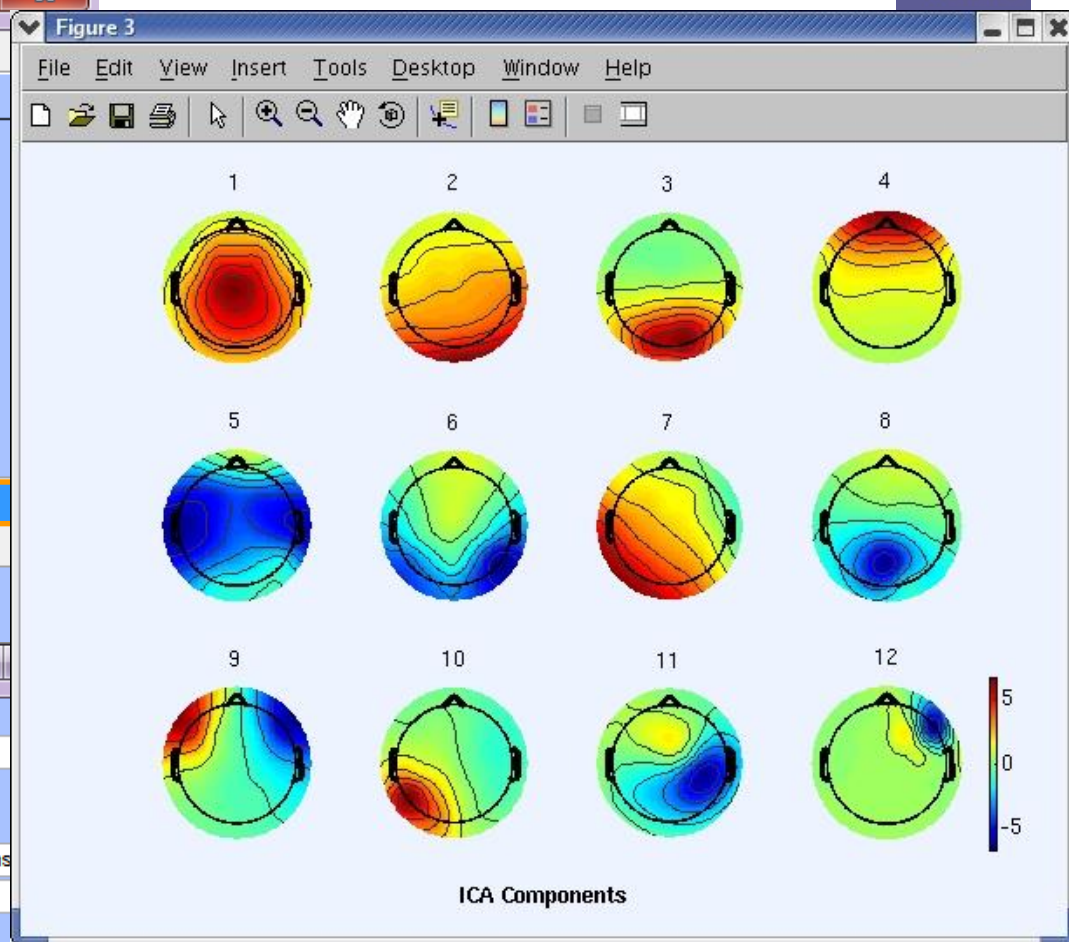
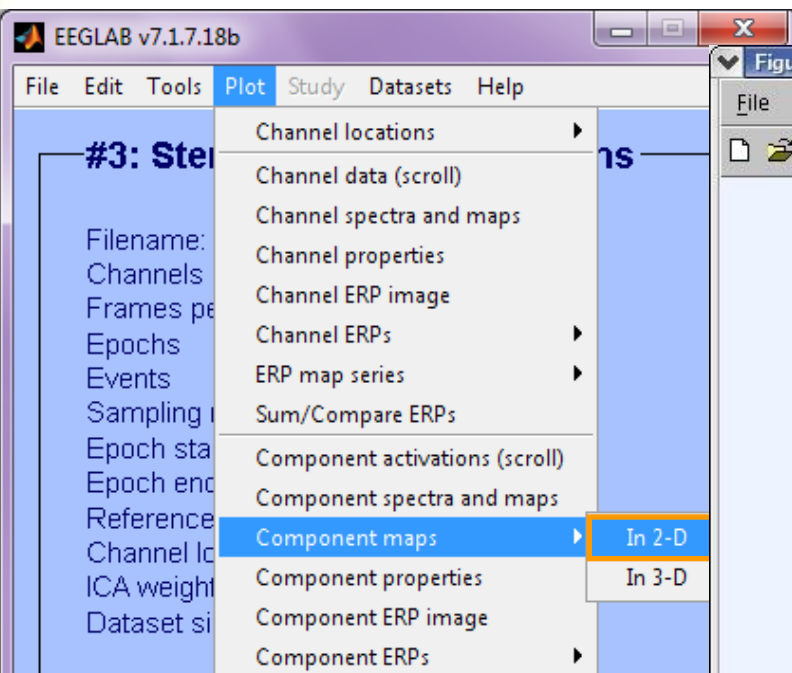
Evaluate ICA decomposition and artifacts



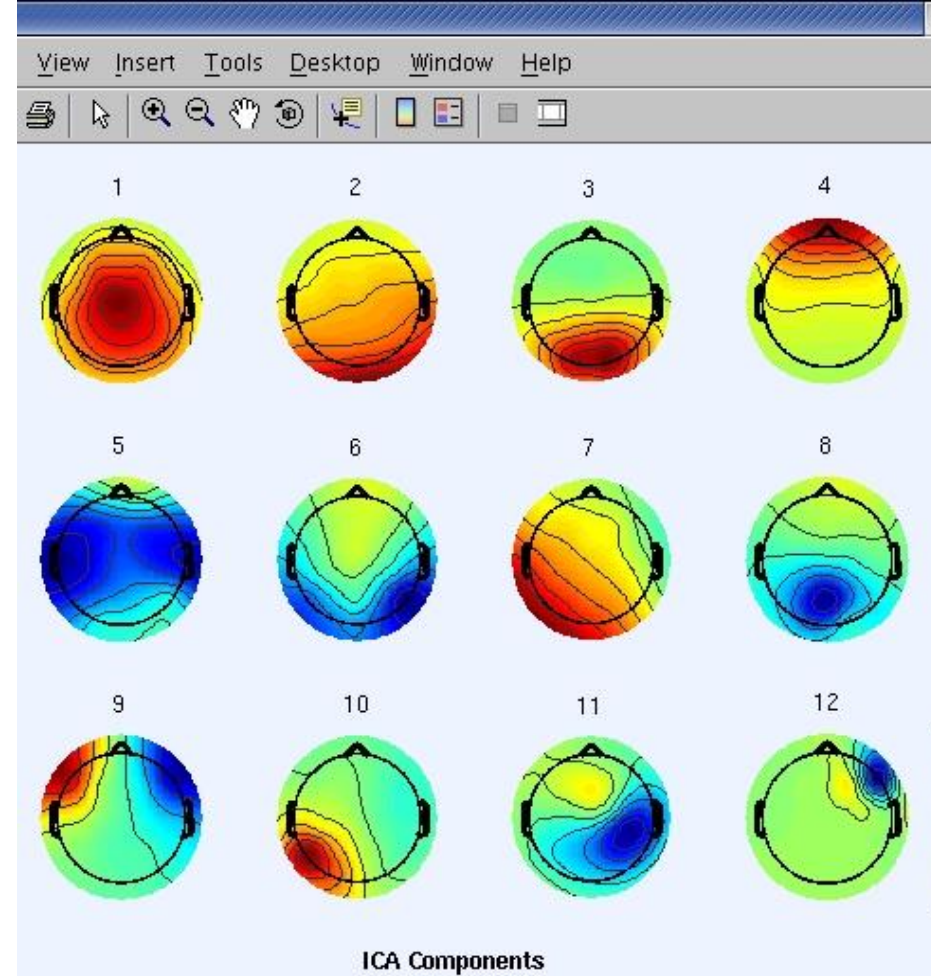
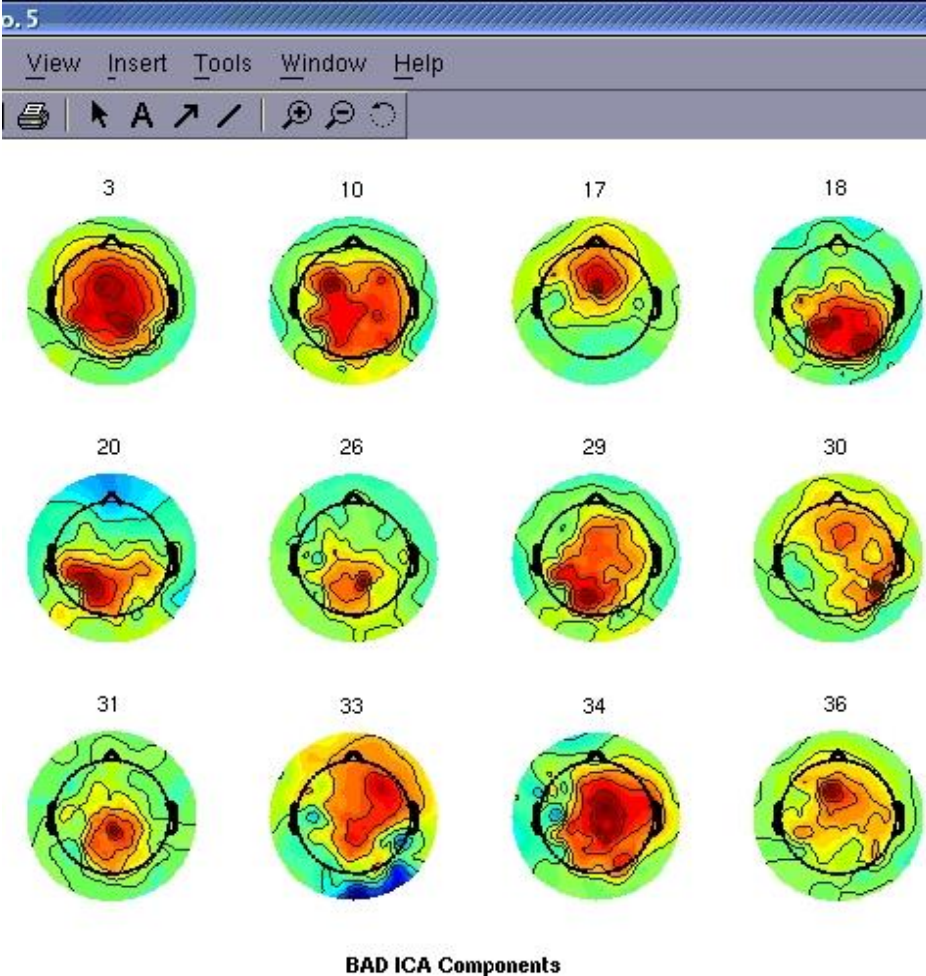
- 1) **Evaluate IC Decomposition**
- 2) **IC Properties**
- 3) **Identify Artifacts**
- 4) **Intro to ICLabel Website**



Plot ICA scalp maps



Compare 'good' and 'bad' scalp maps



Scroll component activities



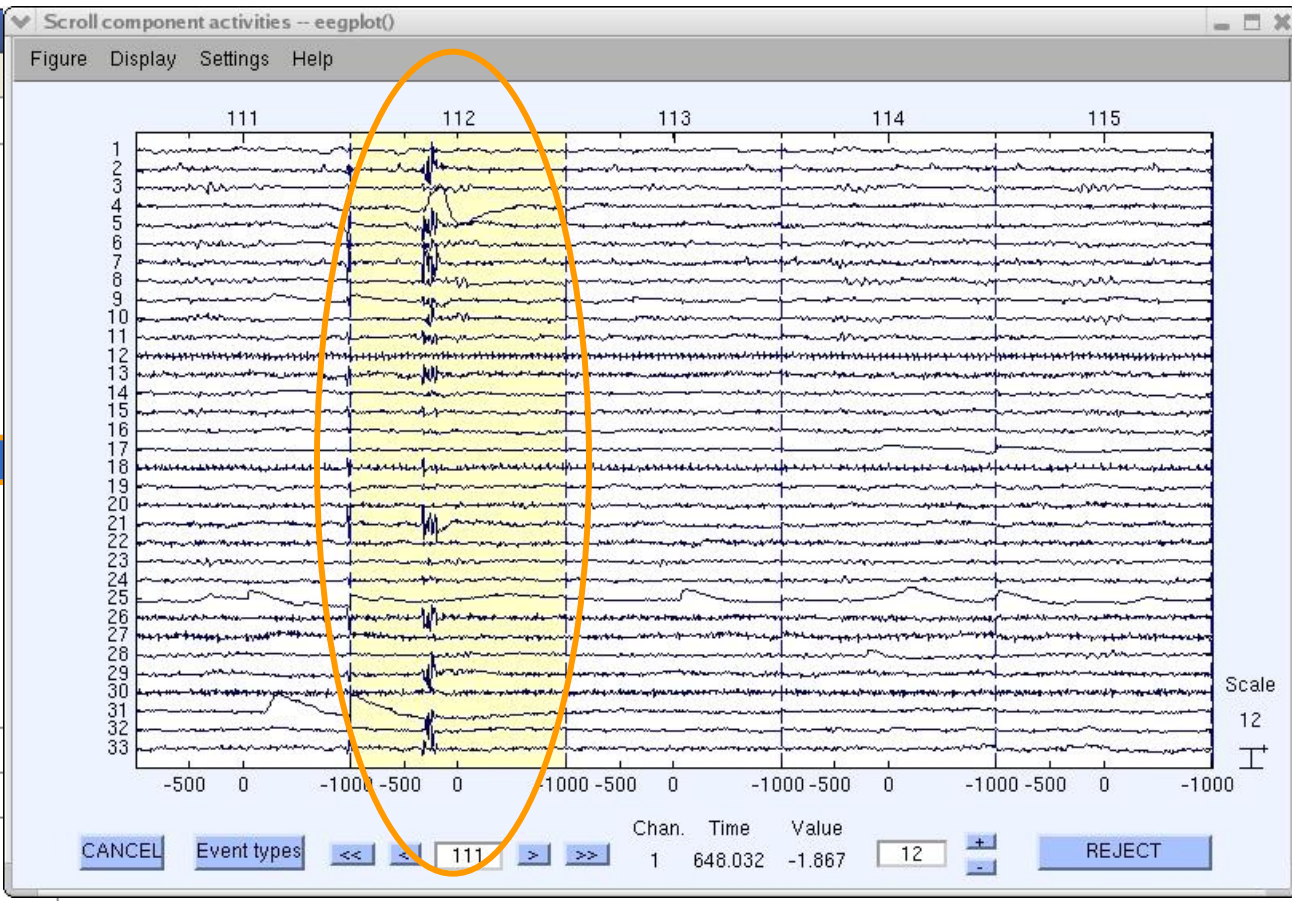
EEGLAB v6.0b

File Edit Tools **Plot** Study Datasets Help

#1: faces

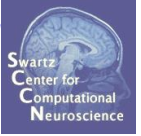
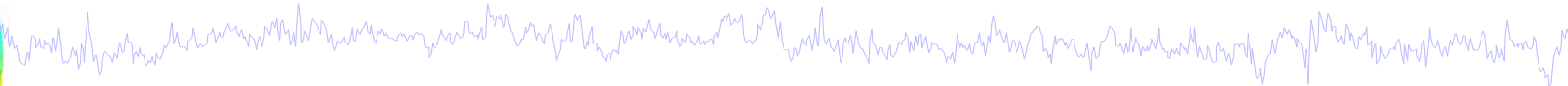
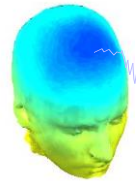
Filename: ...
Channels per ...
Frames per ...
Epochs
Events
Sampling rate
Epoch start (s)
Epoch end (s)
Average reference
Channel locations
ICA weights
Dataset size

- 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
- Time-frequency transforms
- Average time-frequency
- Cluster dataset ICs



**Time periods that are not independent across ICs
should be removed and ICA run again for better decomposition**

Evaluate ICA decomposition and artifacts



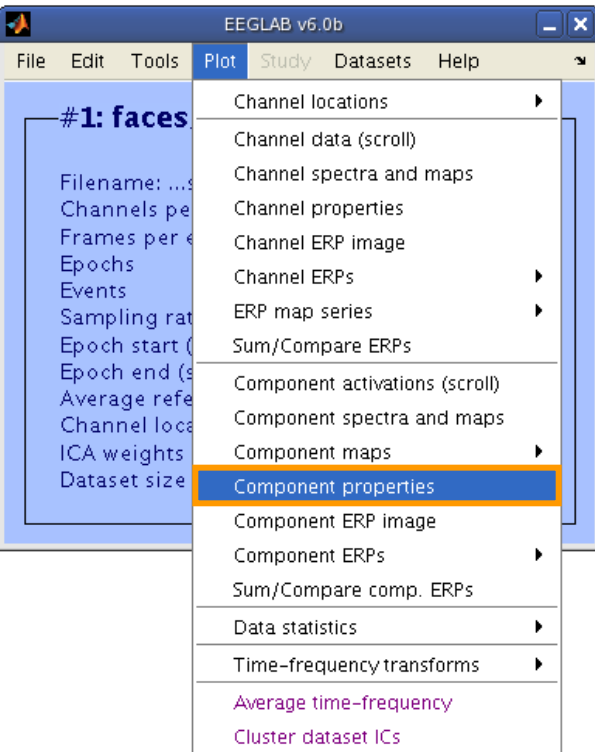
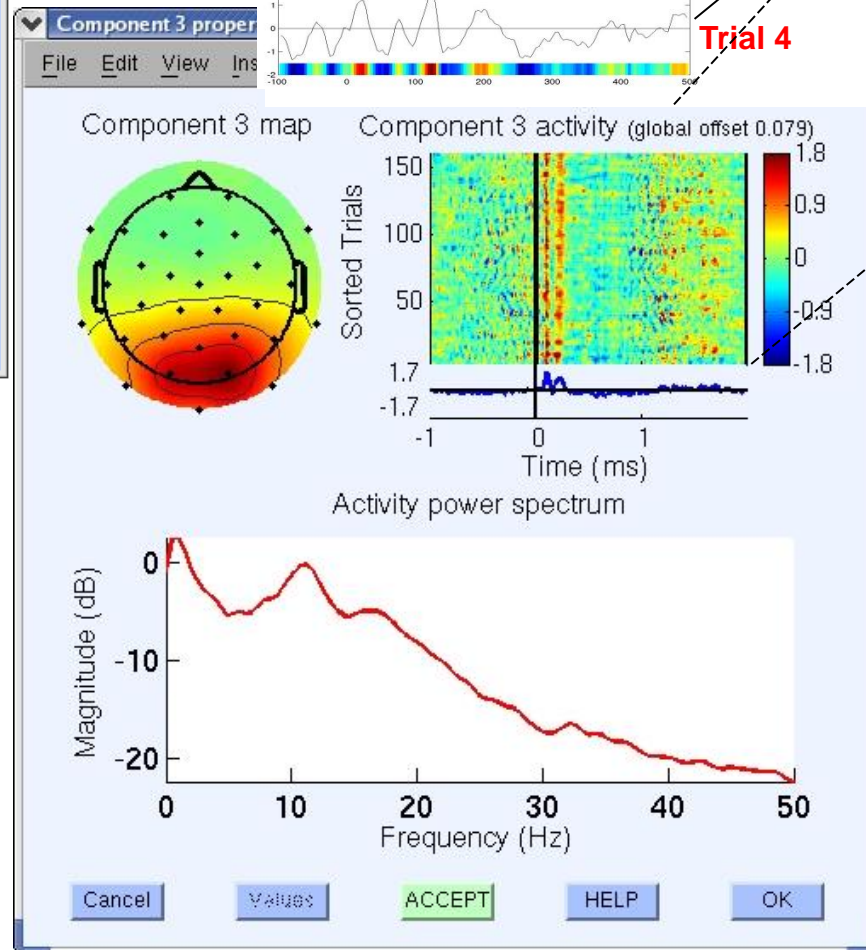
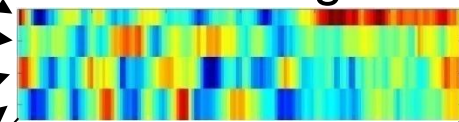
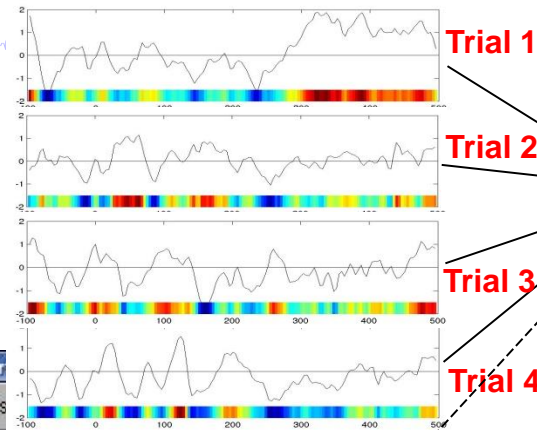
- 1) Evaluate IC Decomposition
- 2) IC Properties
- 3) Identify Artifacts
- 4) Intro to ICLabel Website

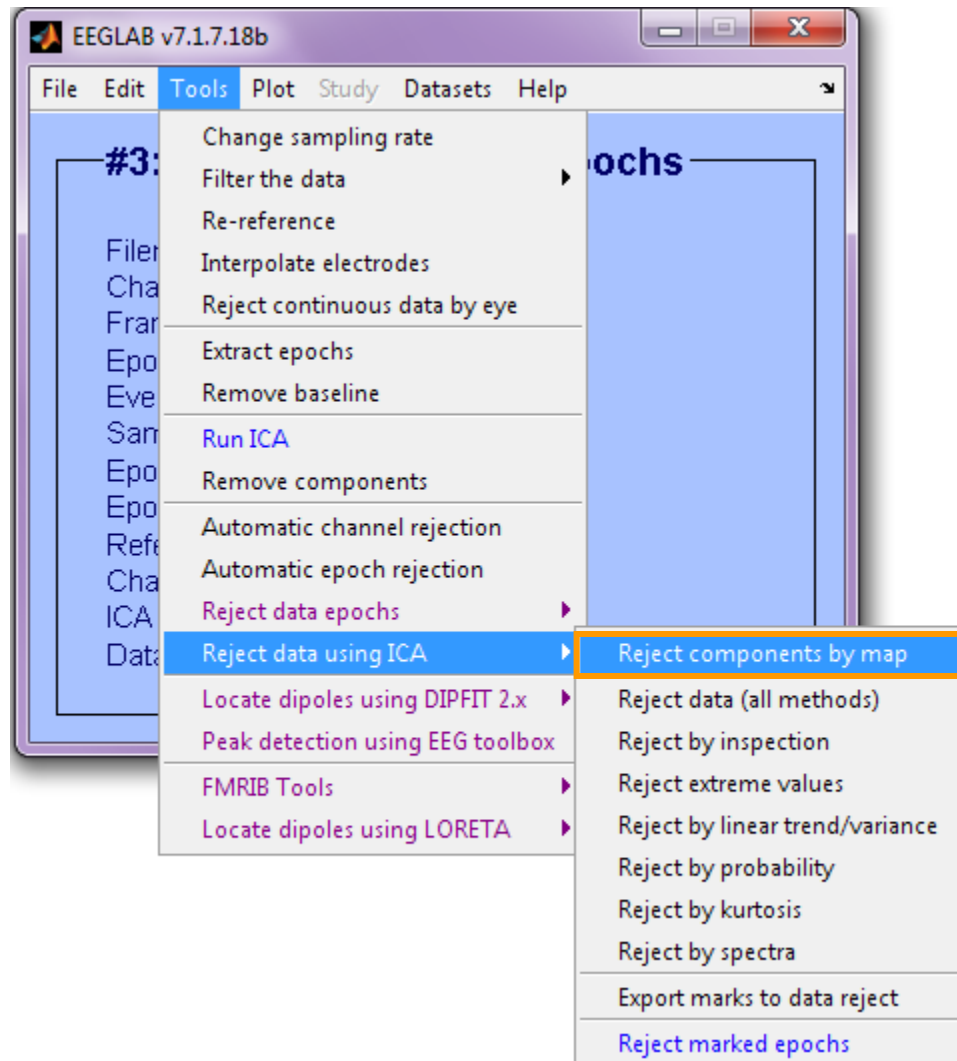


Plot ICA component properties

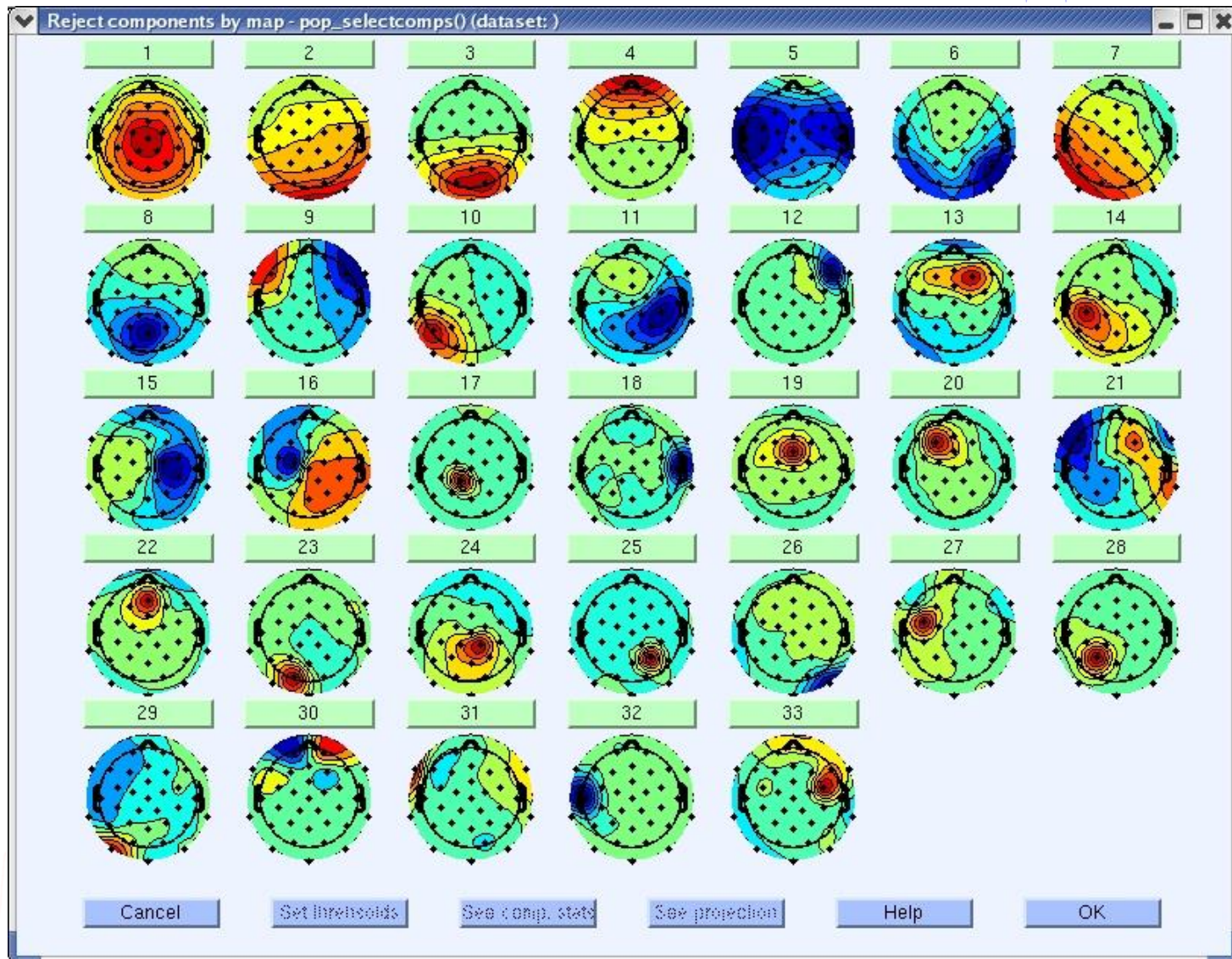


ERP Image

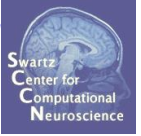
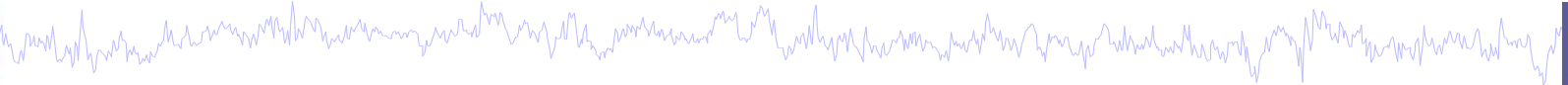
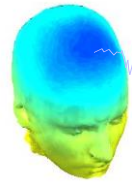




Component scalp maps/properties

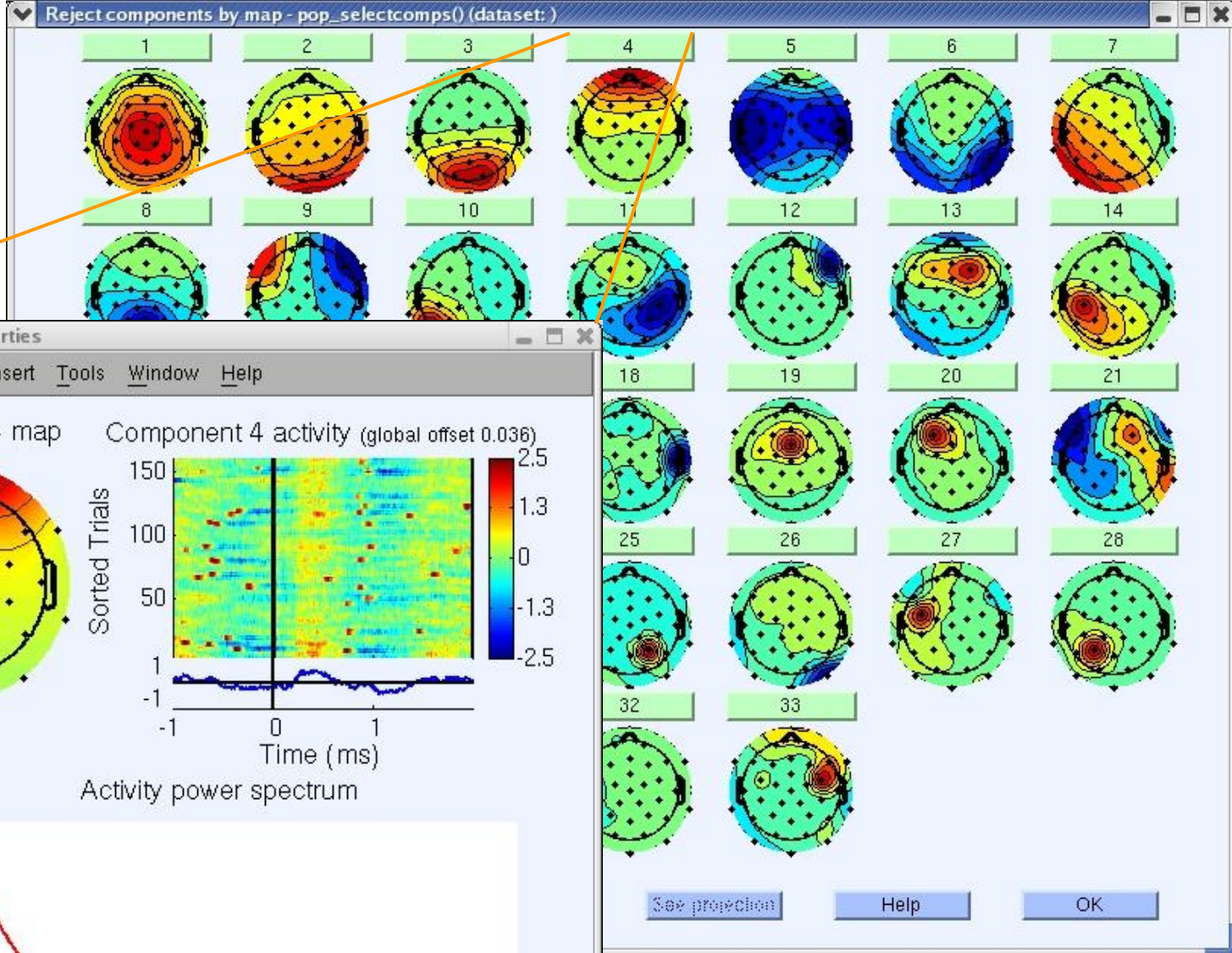


Evaluate ICA decomposition and artifacts

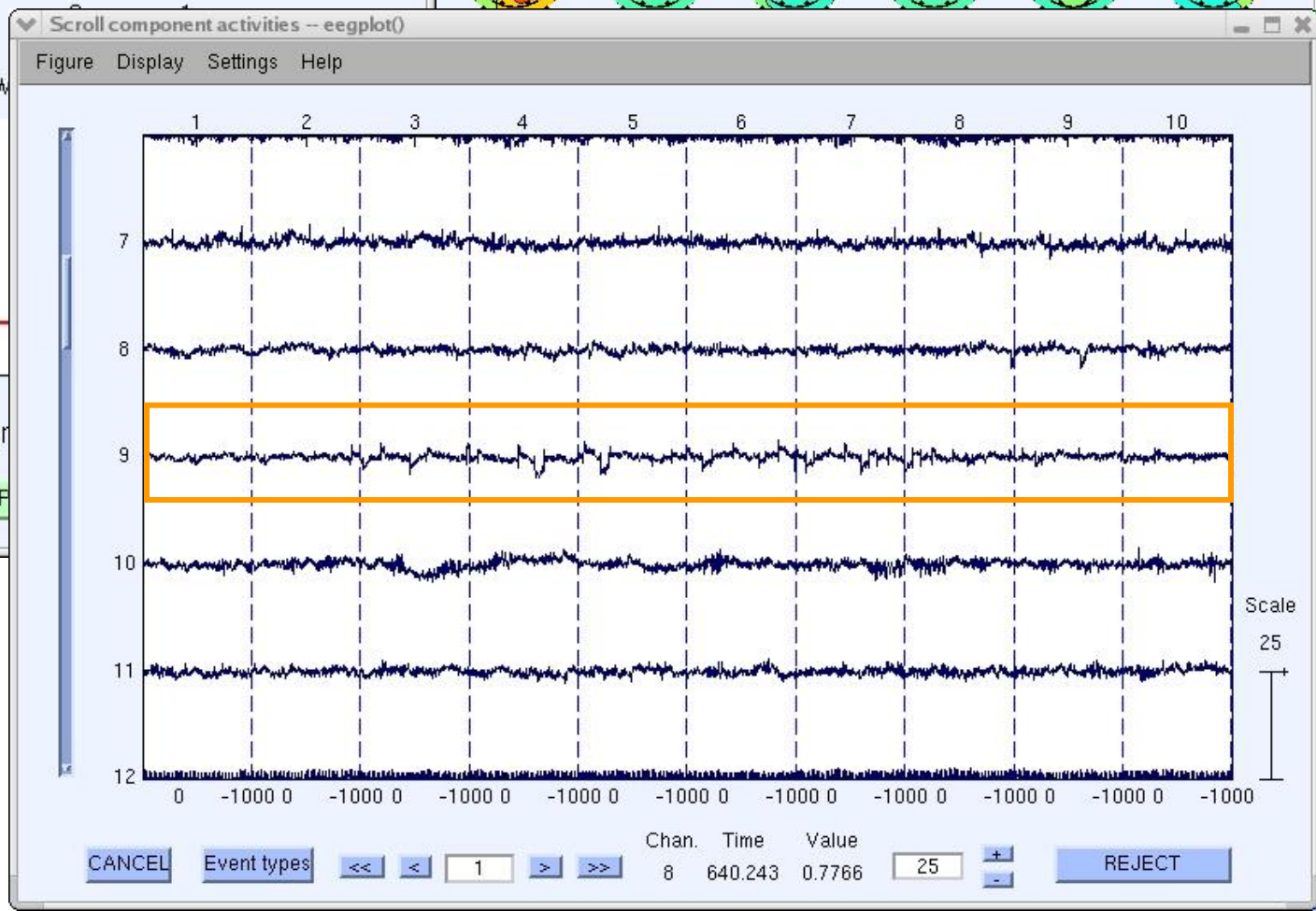
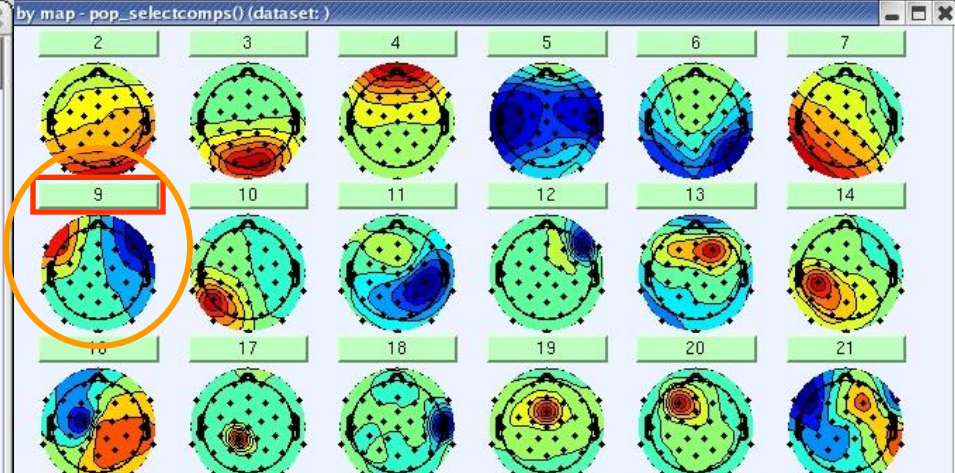
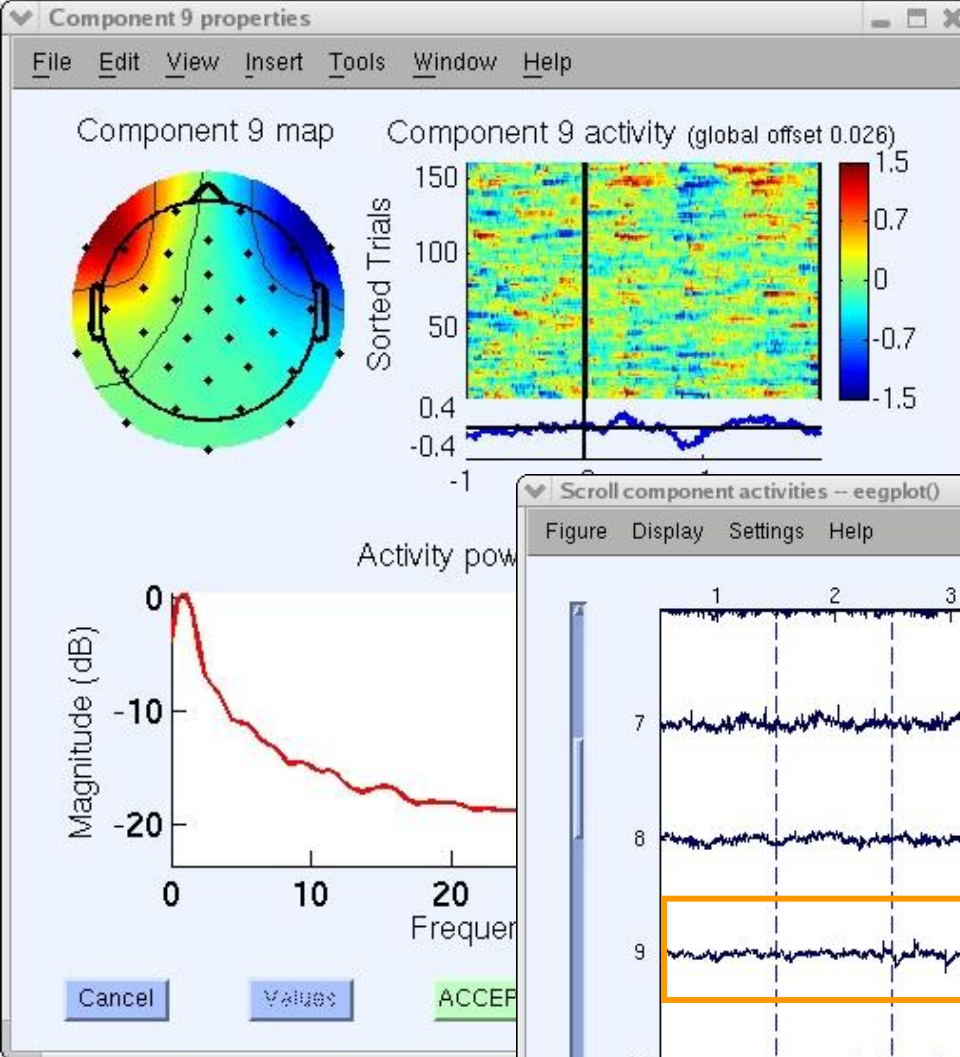


- 1) Evaluate IC Decomposition
- 2) IC Properties
- 3) Identify Artifacts
- 4) Intro to ICLabel Website

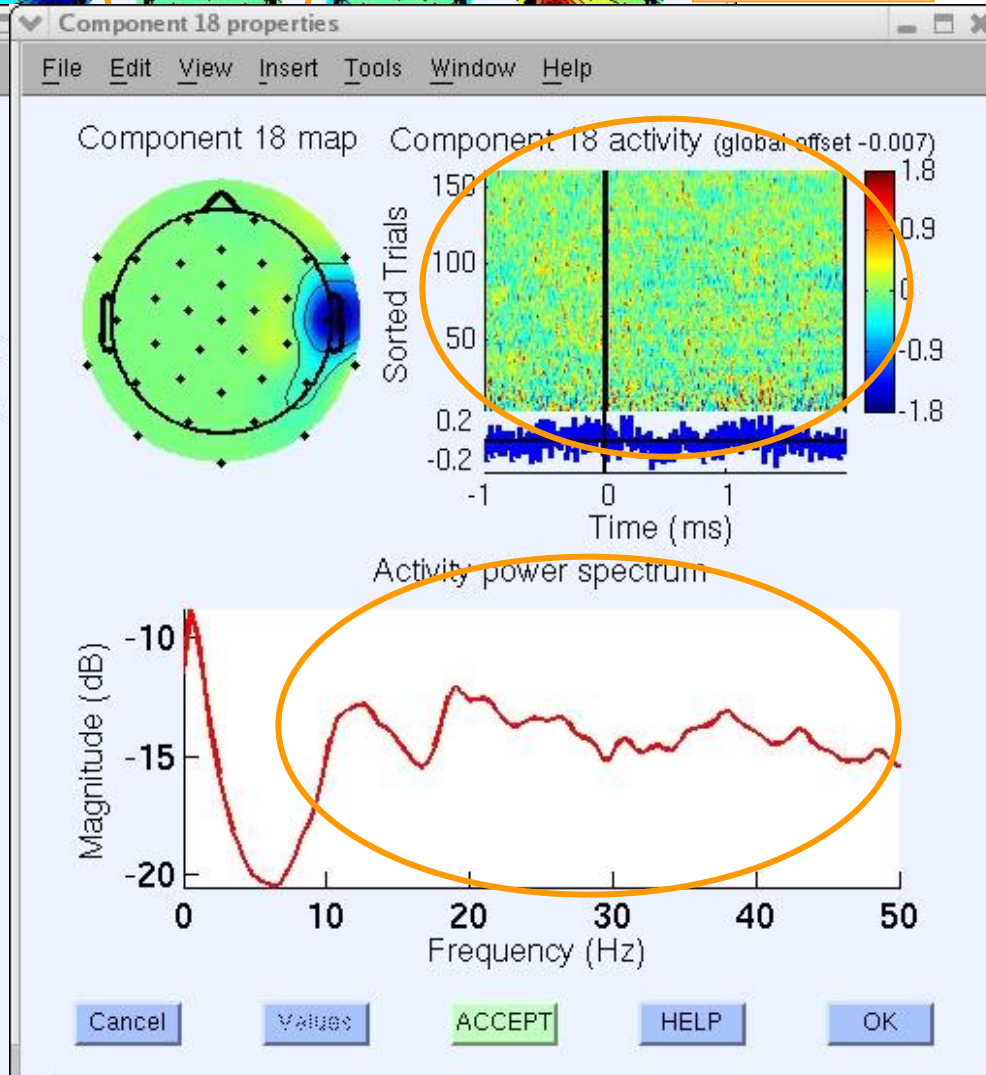
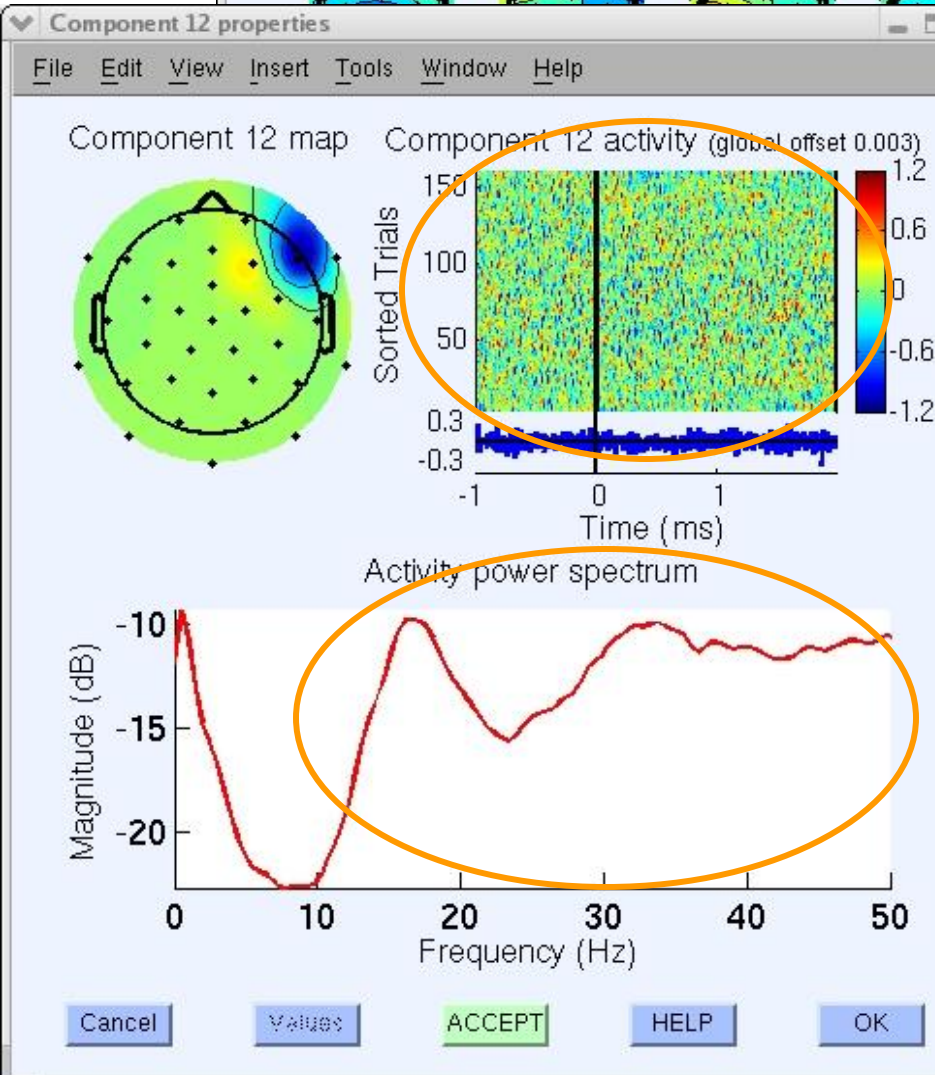
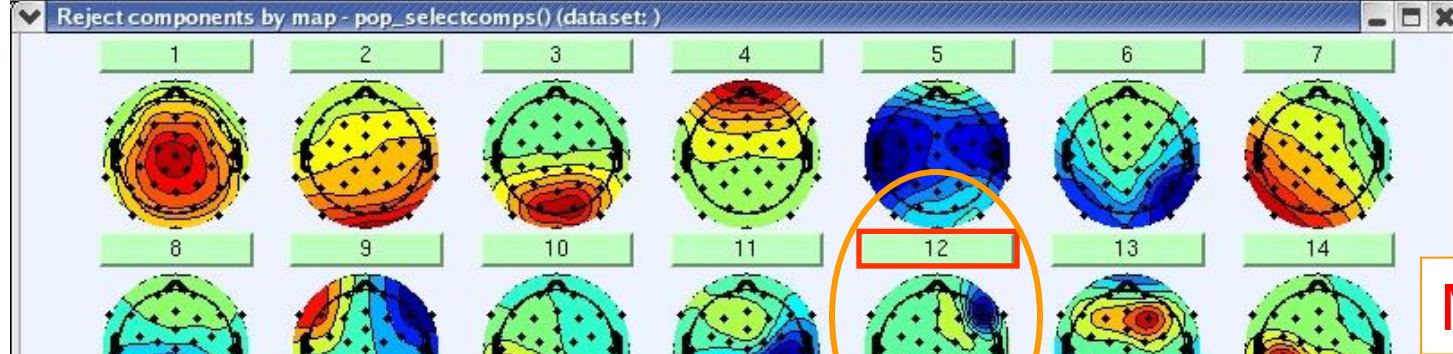


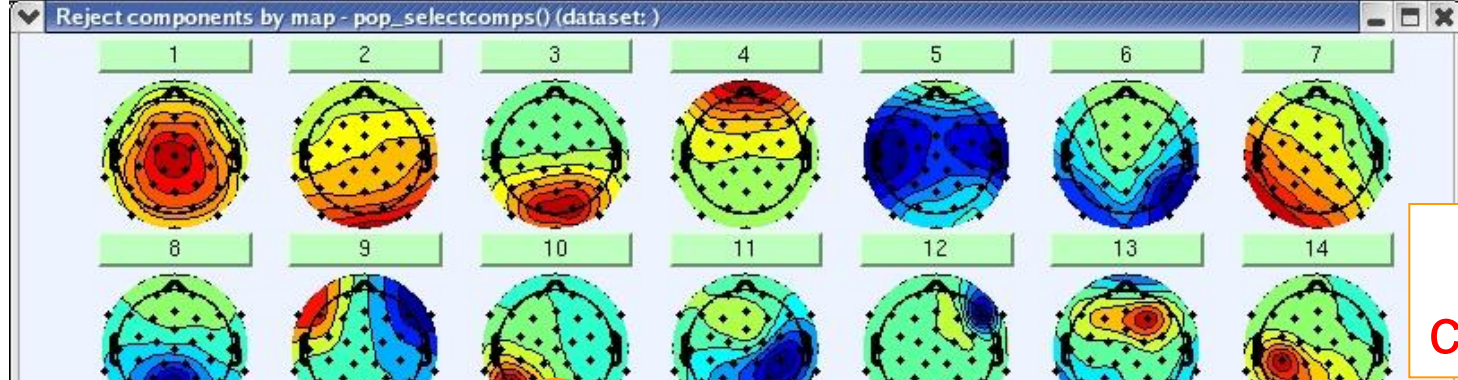


Eye blink component

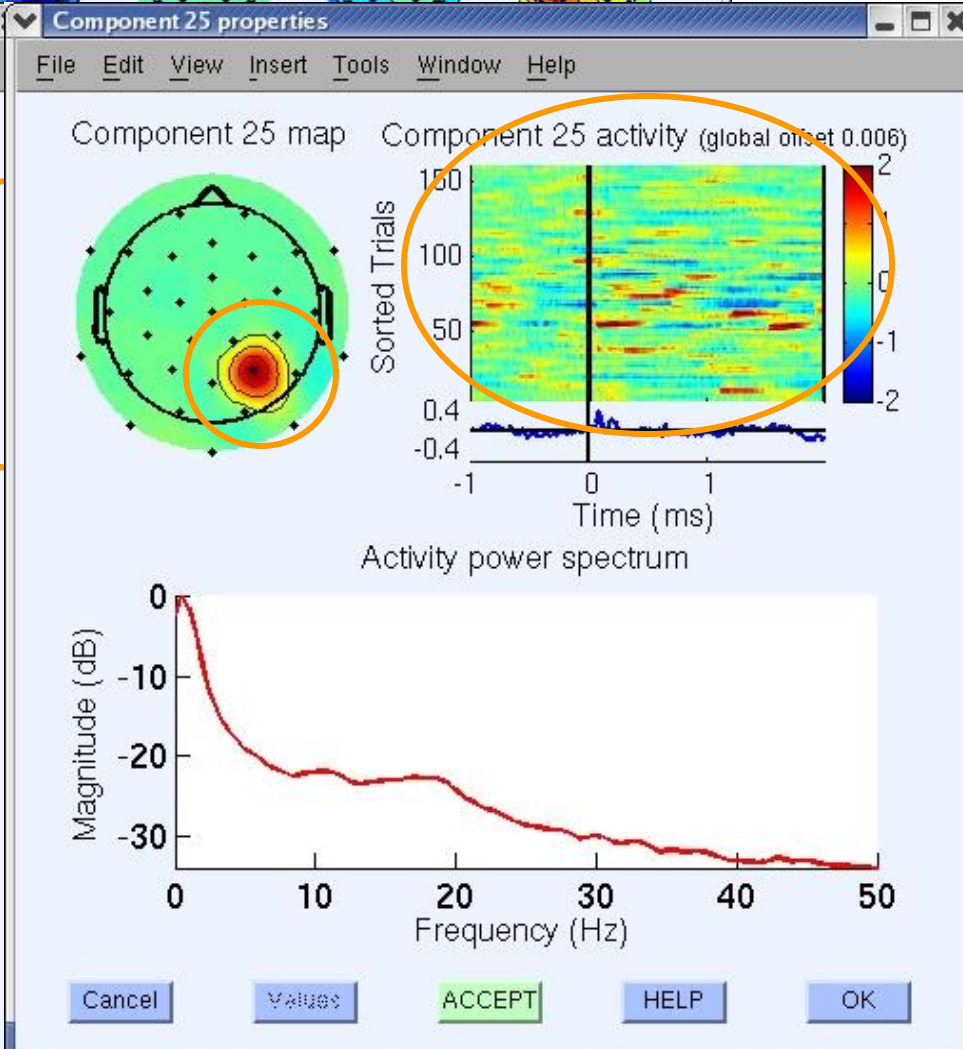
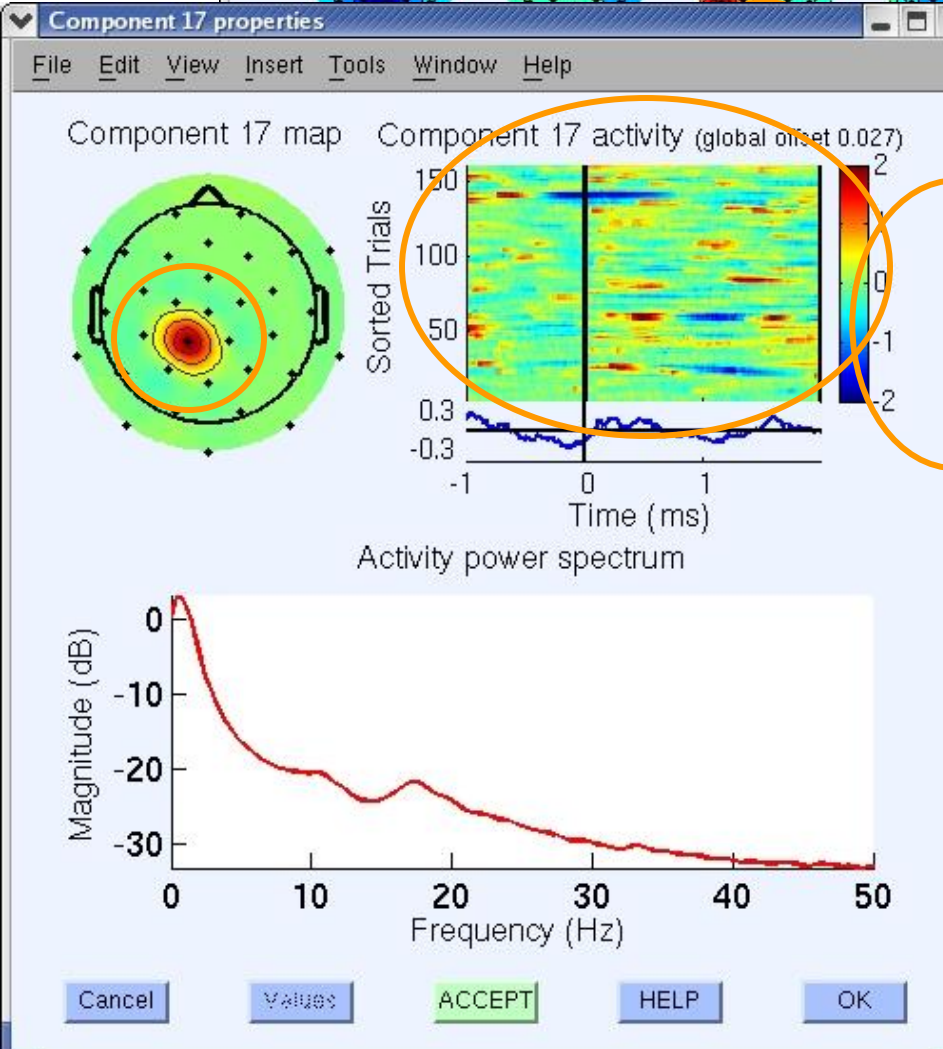


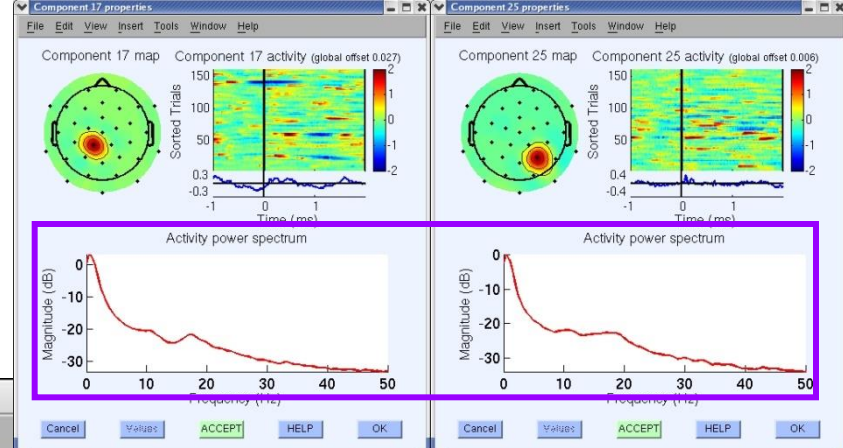
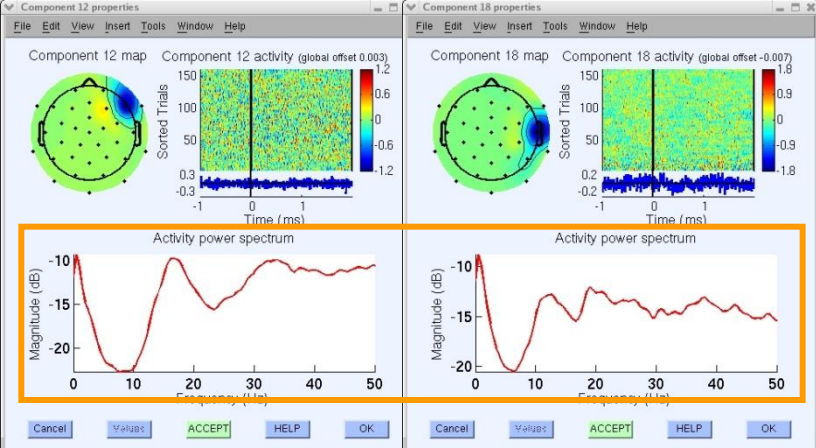
Lateral eye
movement





Bad
channels





EEGLAB v1.4.1

File Edit Tools Plot Study

#1: faces

Filename: ...

Channels per ...

Frames per e...

Epochs

Events

Sampling rat...

Epoch start (...)

Epoch end (...)

Average refe...

Channel loca...

ICA weights

Dataset size

Channel

Channel

Channel

Channel

Channel

Channel

ERP map

Sum/Co

Compon

Compon

Compon

Compon

Compon

Compon

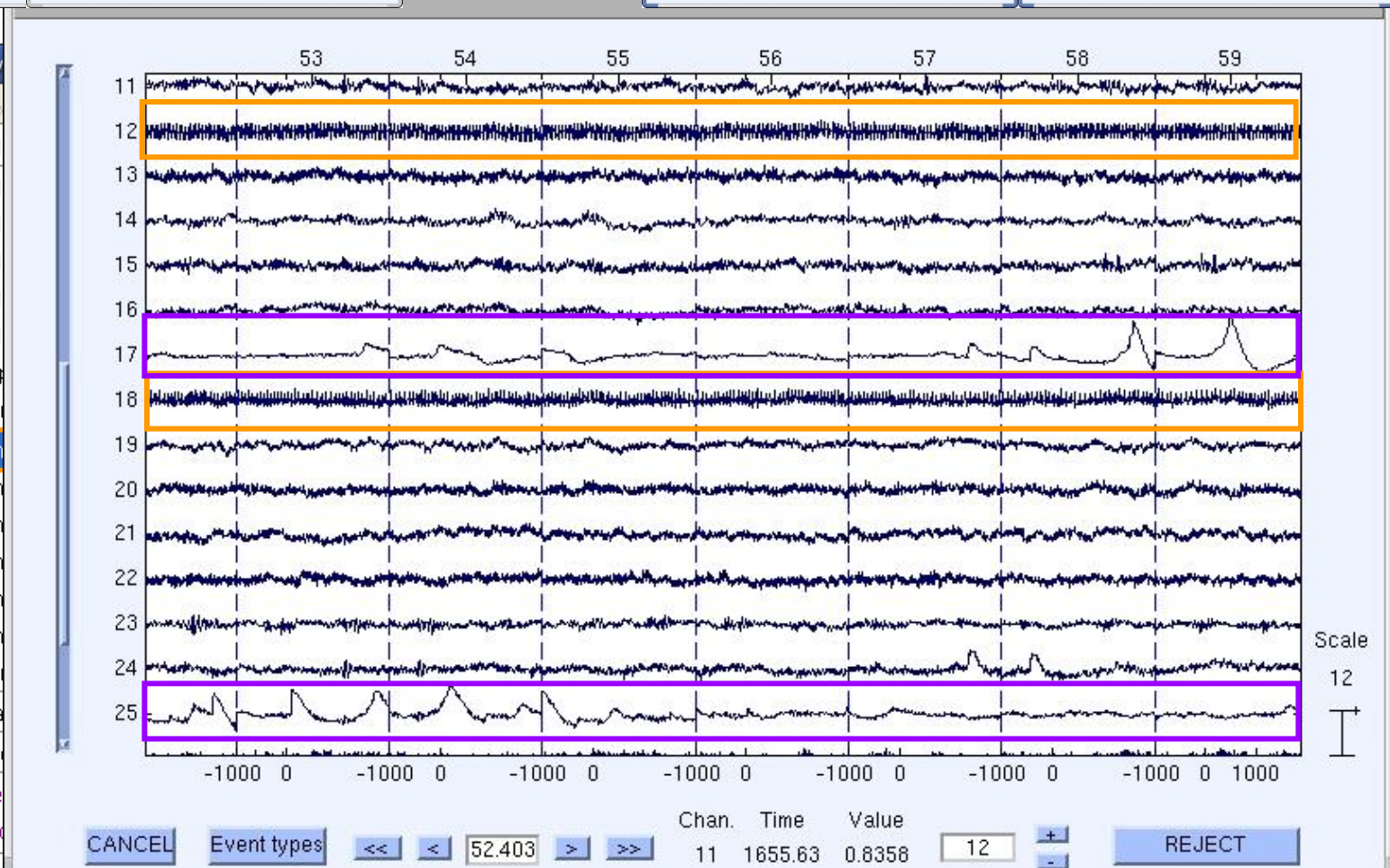
Sum/Co

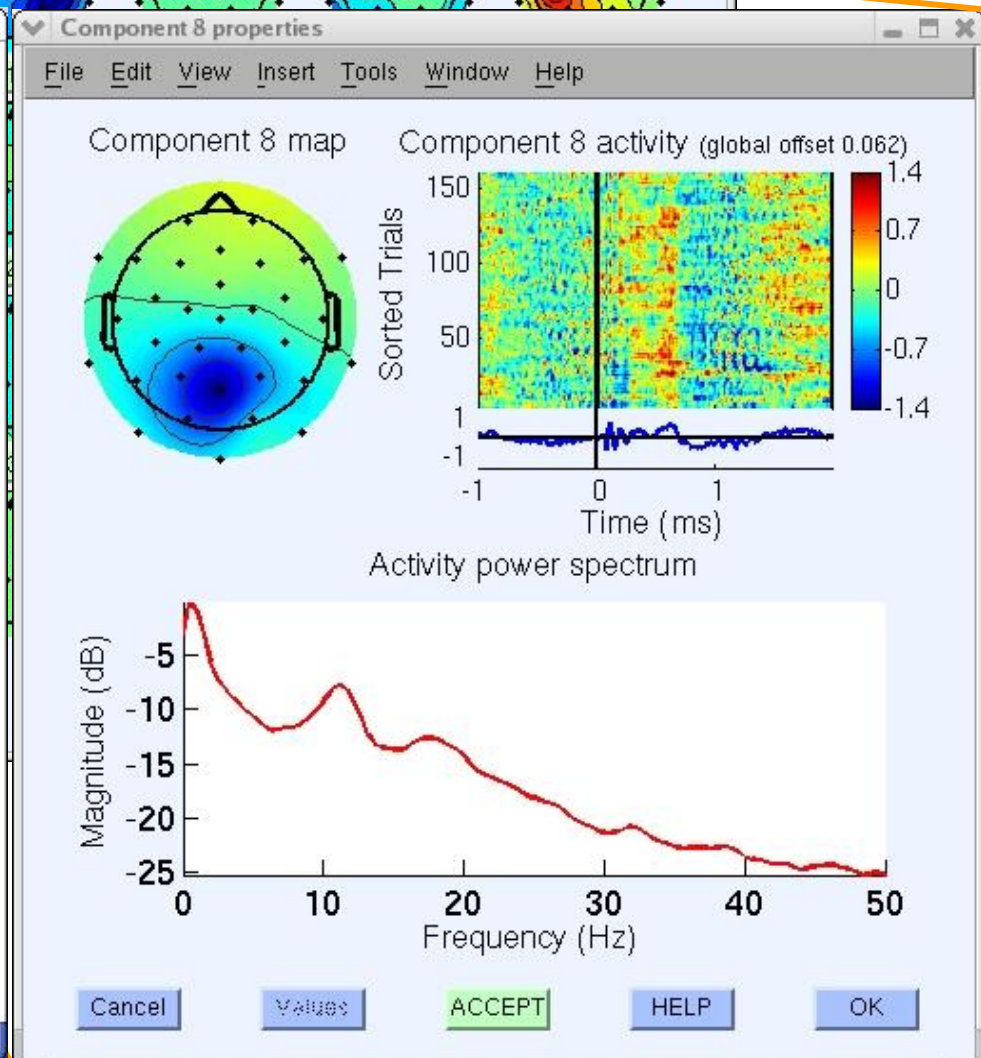
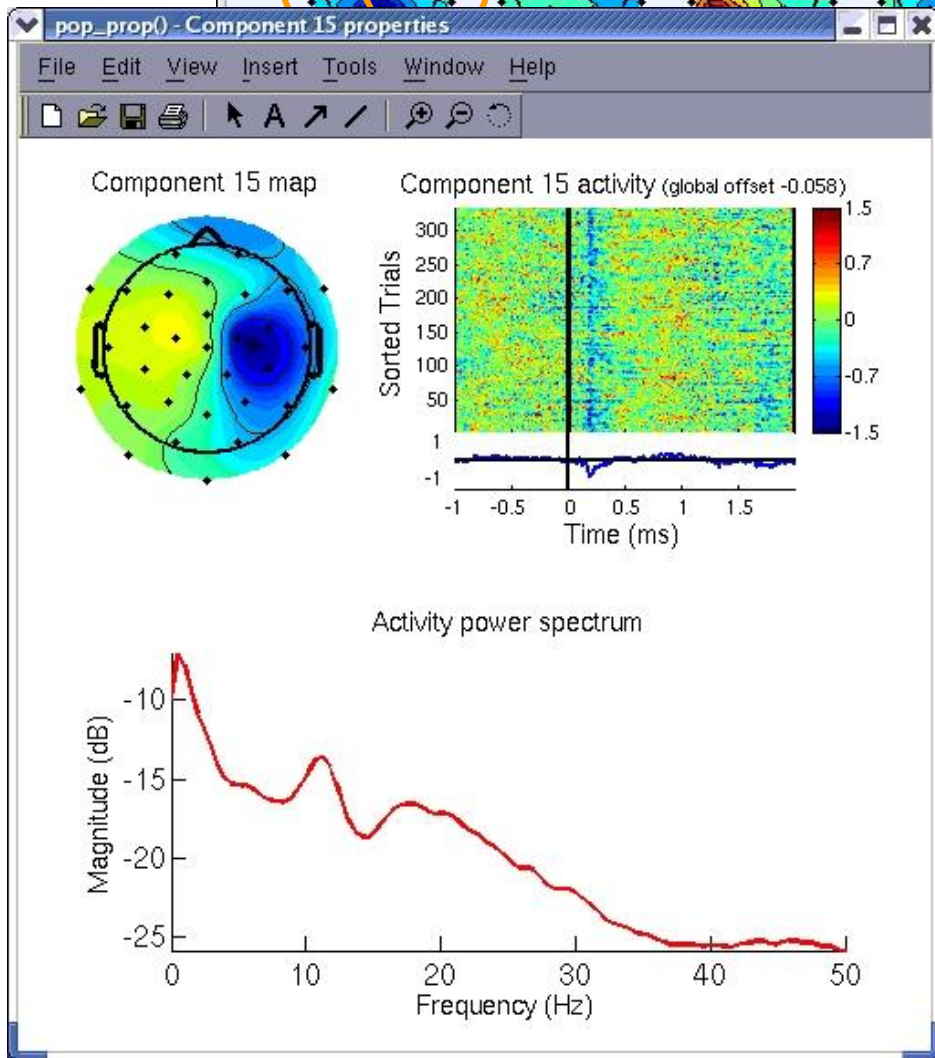
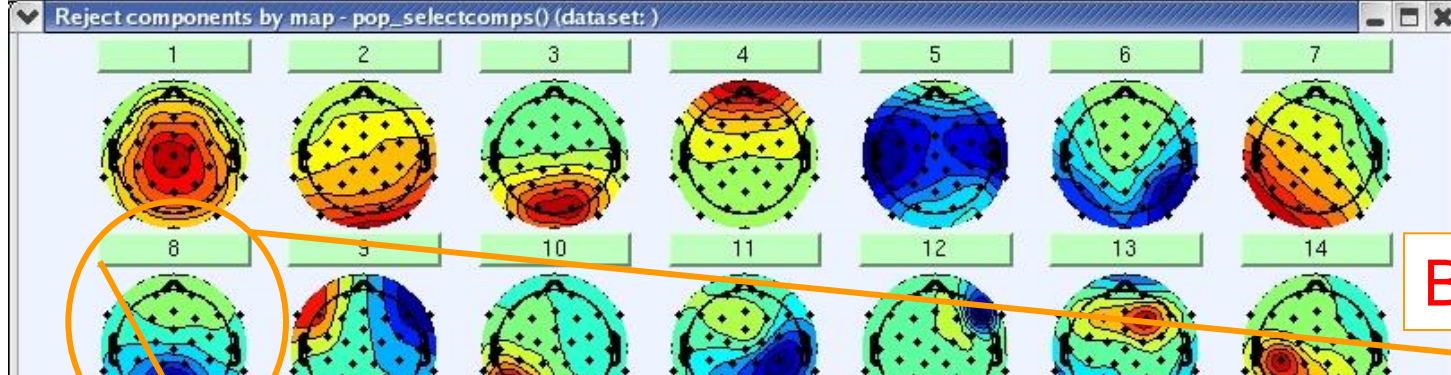
Data sta

Time-fr

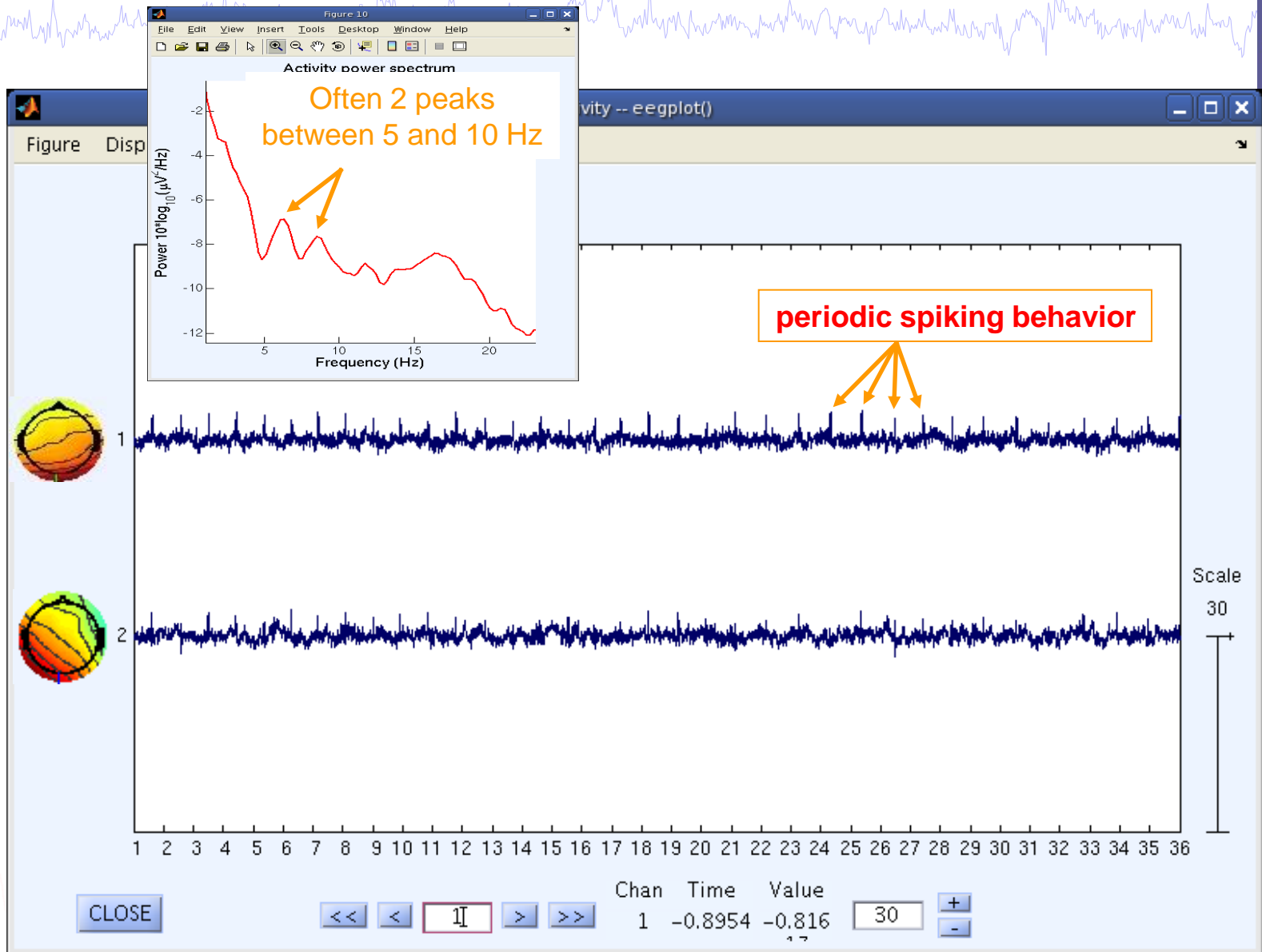
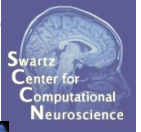
Average

Cluster

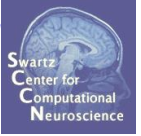
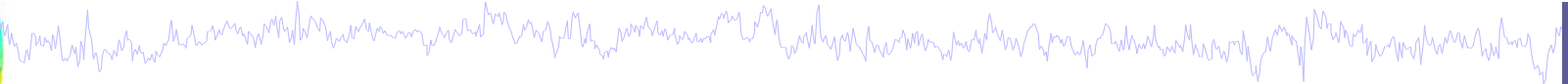




Pulse artifacts



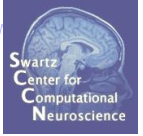
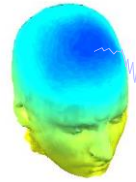
Evaluate ICA decomposition and artifacts



- 1) Evaluate IC Decomposition
- 2) IC Properties
- 3) Identify Artifacts
- 4) Intro to ICLabel Website



ICLabel website



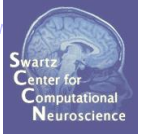
ICLabel project: create automated EEG IC classifier (labeler)

Reaching.ucsd.edu:8000/tutorial
Purpose of the website:
Gather IC labels to accompany our
vast collection of datasets.

ICLabel Login

[Need To Register?](#)[Forgot Your Password?](#)[What Is This Site?](#)[Just want to practice?](#)[Check Out The Leaderboard!](#)

ICLabel website - Profile



Features:

1. Label collection
2. Tutorial on IC classification
3. Labeling practice

Profile for [SCCN] Luca Pion-Tonachini

[Label EEG Components](#)

[Tutorial](#)

[Practice Labeling](#)

[Leave A Comment](#)

[Log Out](#)

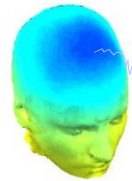
welcome to your profile. Below you can see some statistics of your activity. To the left, you can navigate to other parts of the website. If you are new to labeling EEG components, I highly recommend reading the tutorial and practicing on some components with feedback. If there is something you think is missing, let me know by leaving a comment (link to the left).

Number of labels submitted: 2782

Time of last submitted label: 2016-11-13 22:48:48

Member since: 2016-01-28 01:11:14

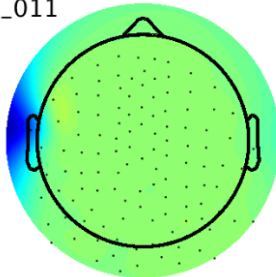
ICLabel website - Label

[Newest IC](#)[Back 1](#)[Log Out](#)

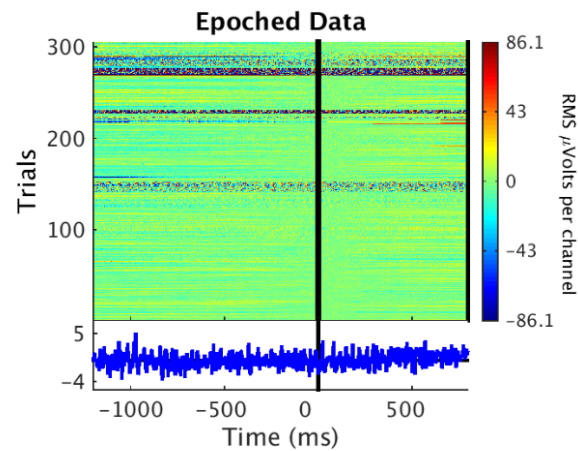
User: [SCCN] Luca Pion-Tonachini
Labels: 2782

[Leaderboard](#)[Tutorial](#)[Profile](#)

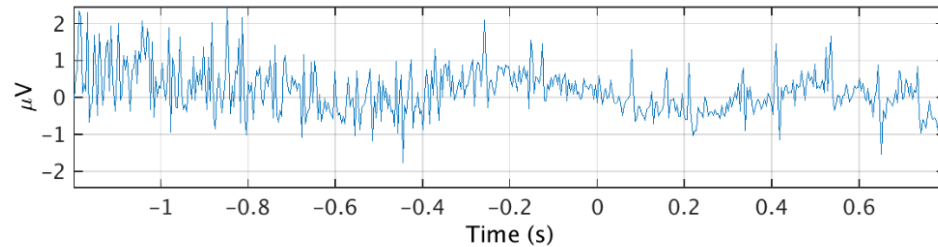
072188_011



IC 11 of 30
Data Var. Accounted For:
15.96%

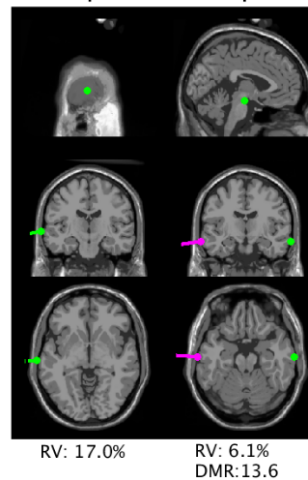


Component Time Series

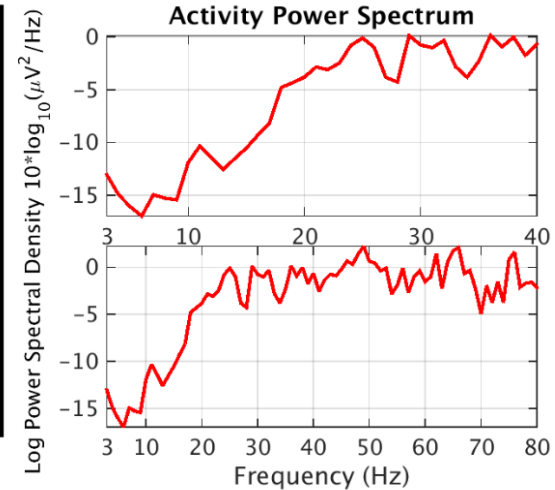


1 dipole

2 dipole



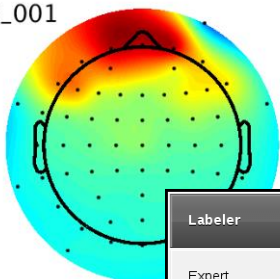
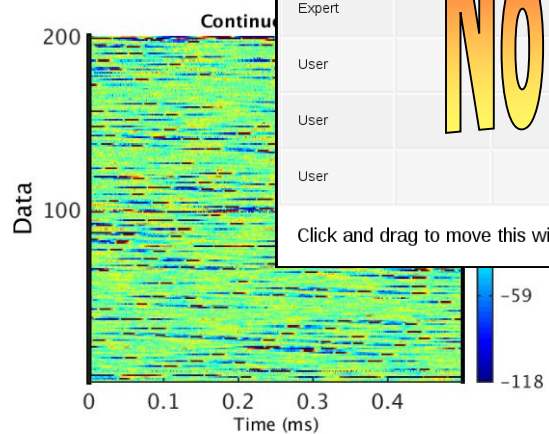
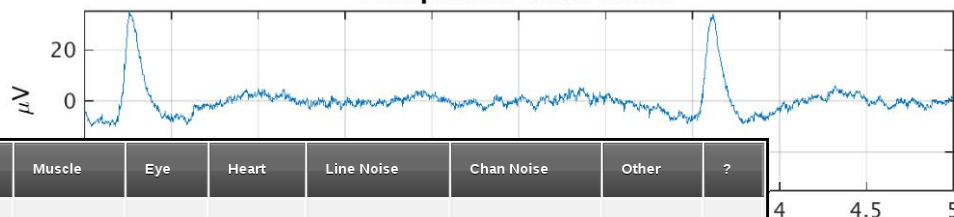
Activity Power Spectrum

[Brain](#)[Muscle](#)[Eye](#)[Heart](#)[Next](#)[Line Noise](#)[Chan Noise](#)[Other](#)[?](#)

ICLabel website – Label feedback

[Leaderboard](#)[Tutorial](#)[Profile](#)

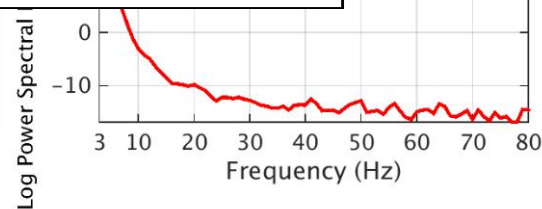
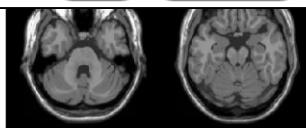
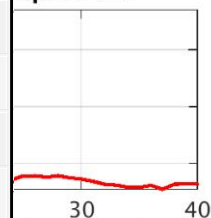
012599_001

**Component Time Series**

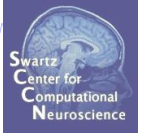
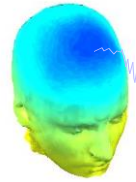
Labeler	Brain	Muscle	Eye	Heart	Line Noise	Chan Noise	Other	?
Expert			✓					
Expert			✓					
Expert								
User								
User								
User			✓					

Click and drag to move this window.

[Next](#) [Comment](#)

Spectrum[Brain](#)[Muscle](#)[Eye](#)[Heart](#)[Submit](#)[Line Noise](#)[Chan Noise](#)[Other](#)[?](#)

ICLabel website - Tutorial



Tutorial: EEG Independent Component Labeling

[Overview](#)

[Why Help Us?](#)

[How To Label](#)

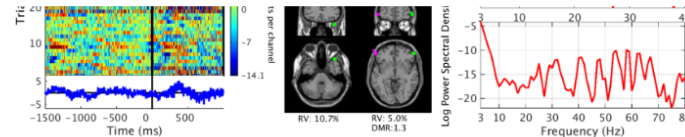
[Telling Components Apart](#)

[Practice Labeling](#)

[Leave A Comment](#)

[Return To Labeling](#)

[Profile](#)



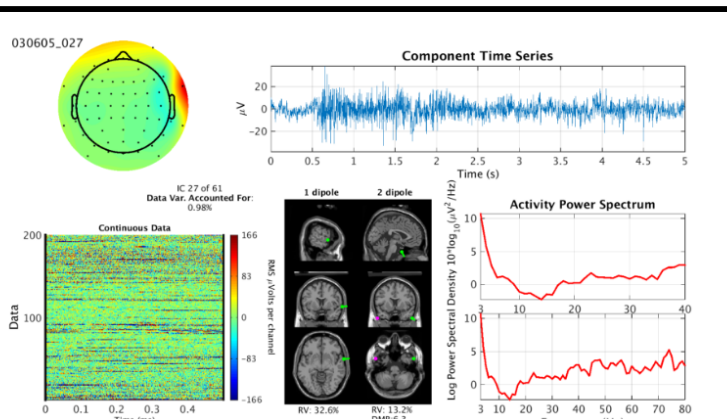
This component captures the effects of horizontal eye movement, although some high frequency power is included from some other source.

Muscle Component

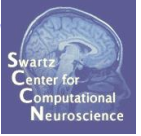
Muscle components describe the electrical fields generated by muscle activity, known as [electromyography](#) (EMG). Their activations are powerful relative to EEG but motor unit action potentials (the underlying source of EMG) do not synchronize causing most of the power of EMG to be spread out among higher frequencies. Nonetheless, these components can still look dipolar, although they will seem very shallow as they are not localized within the brain. You can tell a shallow dipole by how concentrated its scalp topography is. The more concentrated, the shallower. That isn't to say that all muscle components will be dipolar.

Summary

- Power concentrated in higher frequencies (20 Hz and above)
- Can still be dipolar, but will be located outside the skull



Exercises



Now:

- Load `stern_125Hz.set`
- Epoch the data on **memorize** (ie B, C,...) letters -1 to 2s
- Find and identify “brain” ICs
- Can you distinguish some of the non-brain ICs as well?

Now and/or later:

- Practice on the ICLabel website:
reaching.ucsd.edu:8000/labelfeedback
- Extra Credit: Submit labels once you feel proficient

