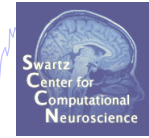
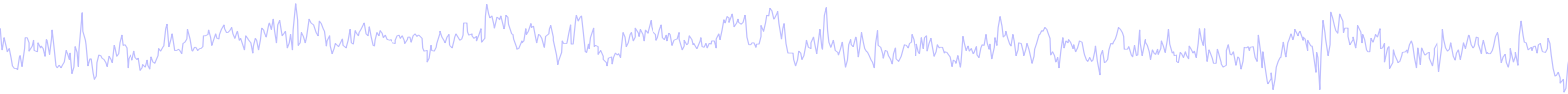
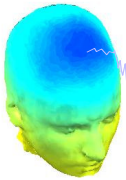


# Data import and preprocessing



## Task 1

- Import raw data
- Re-reference data
- Scroll channel data

## Task 2

- Import channel location file

## Task 3

- Import data events

## Task 4

- Extract data epochs
- Select epochs/events

## Task 5

- Analysis of ERPs
- Export EEG data

## Task 6

- Reject badchannels

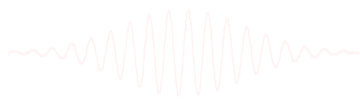
## Task 7

- Reject continuous data

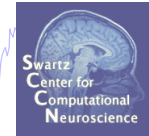
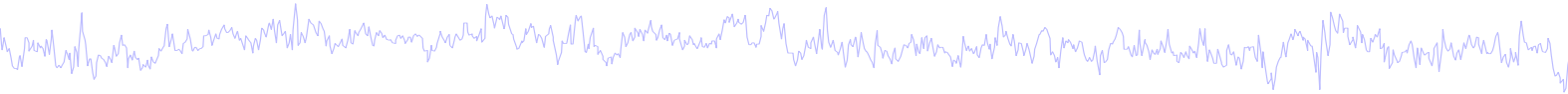
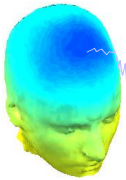
## Task 8

- Reject data epochs

Exercise...



# Data import and preprocessing



## Task 1

- Import raw data
- Re-reference data
- Scroll channel data

## Task 2

- Import channel location file

## Task 3

- Import data events

## Task 4

- Extract data epochs
- Select epochs/events

## Task 5

- Analysis of ERPs
- Export EEG data

## Task 6

- Reject badchannels

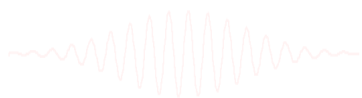
## Task 7

- Reject continuous data

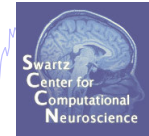
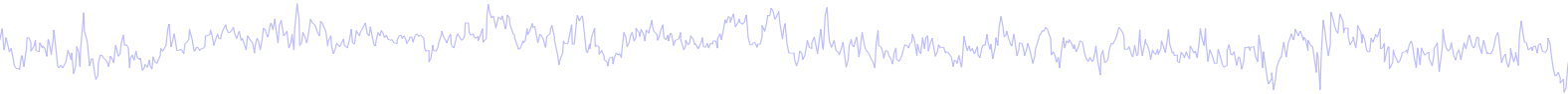
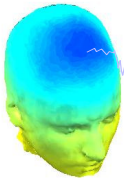
## Task 8

- Reject data epochs

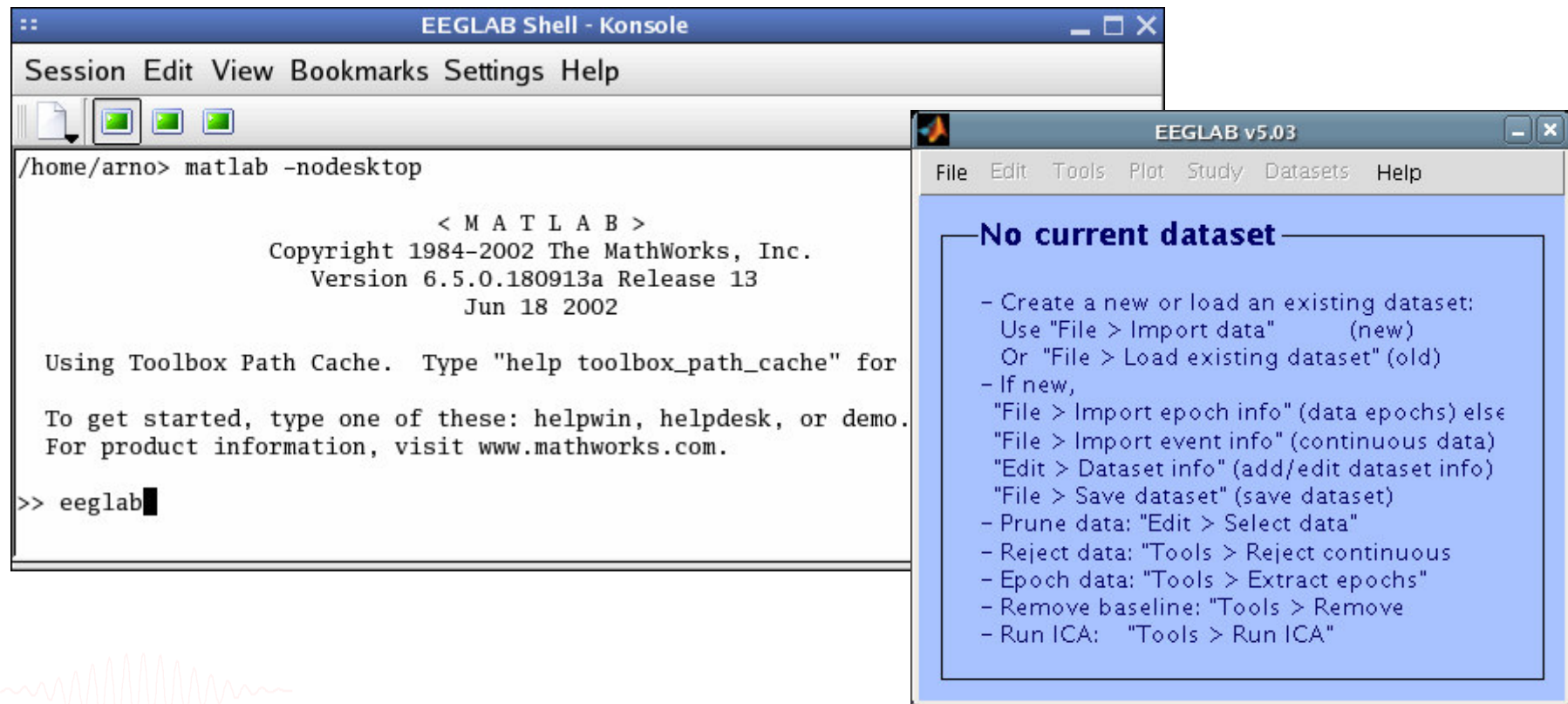
Exercise...



# The EEGLAB Matlab software

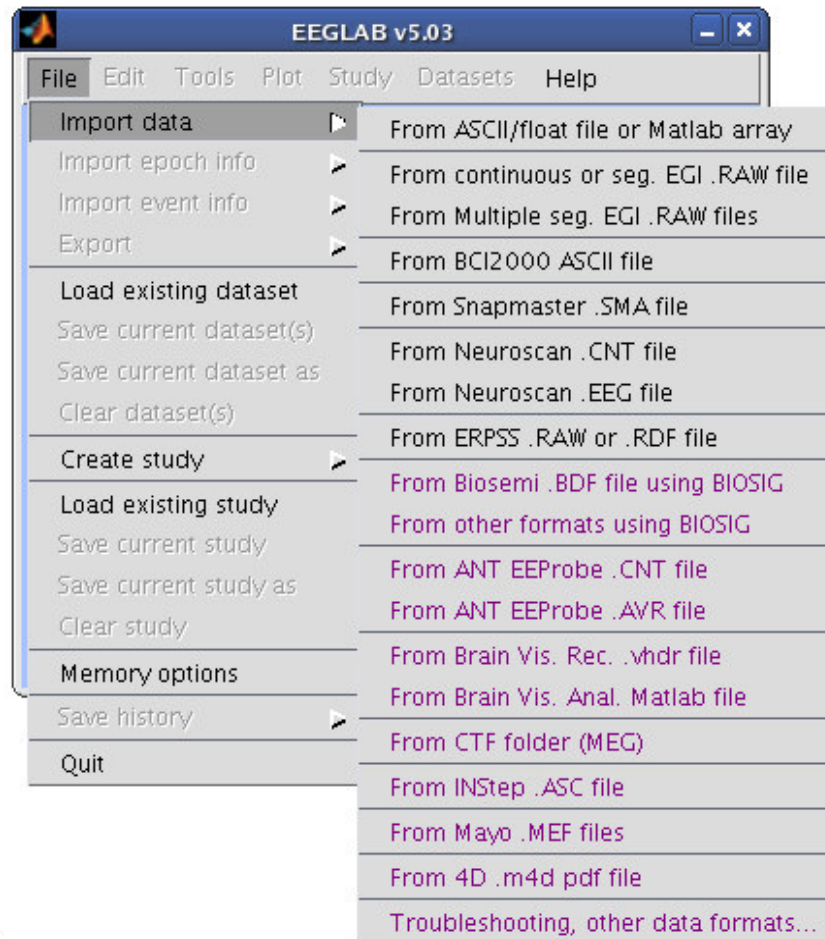
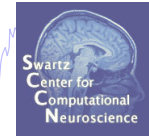
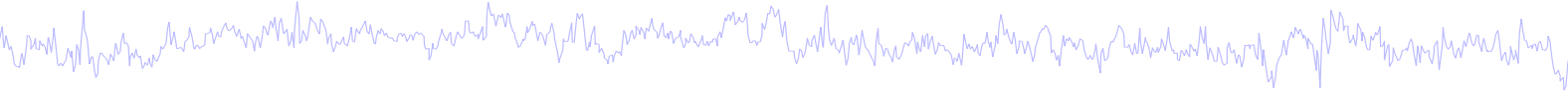
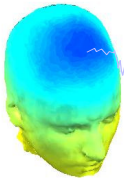


## main graphic interface



60 menus, more than 300 Matlab functions and more than 50,000 lines of code

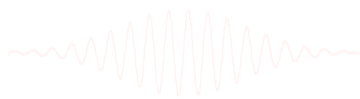
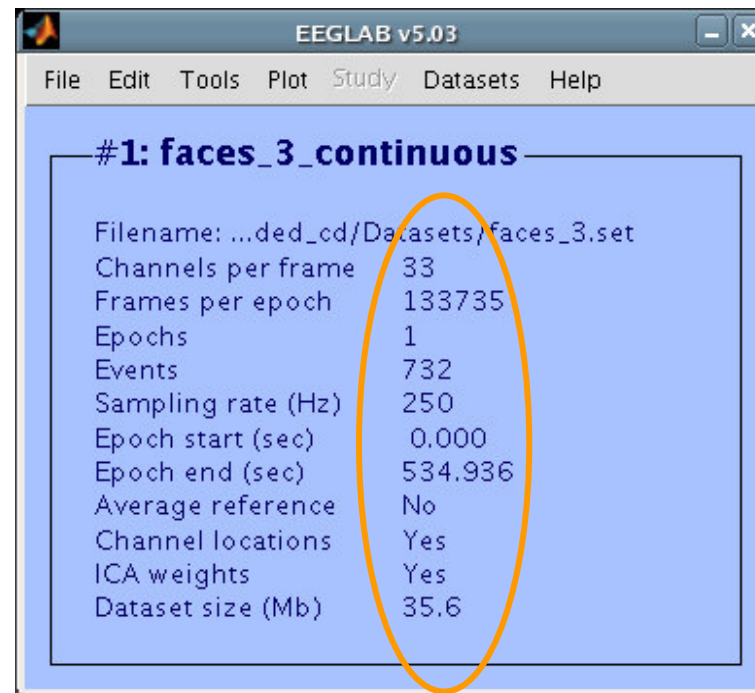
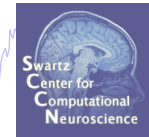
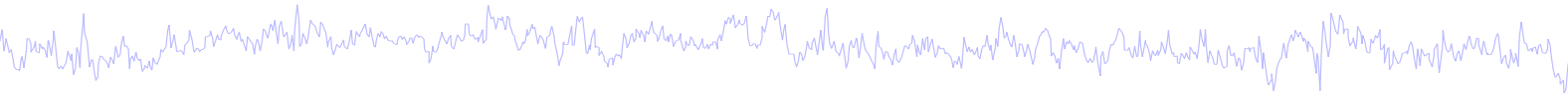
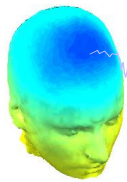
# Importing a dataset



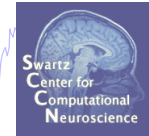
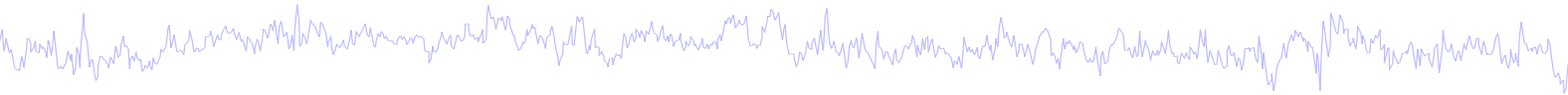
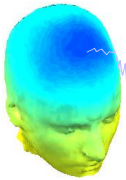
**EEGLAB supports many different raw data formats**



# Imported EEG data



# The example data: faces vs. objects



## File

../data/faces\_3.set

## Data

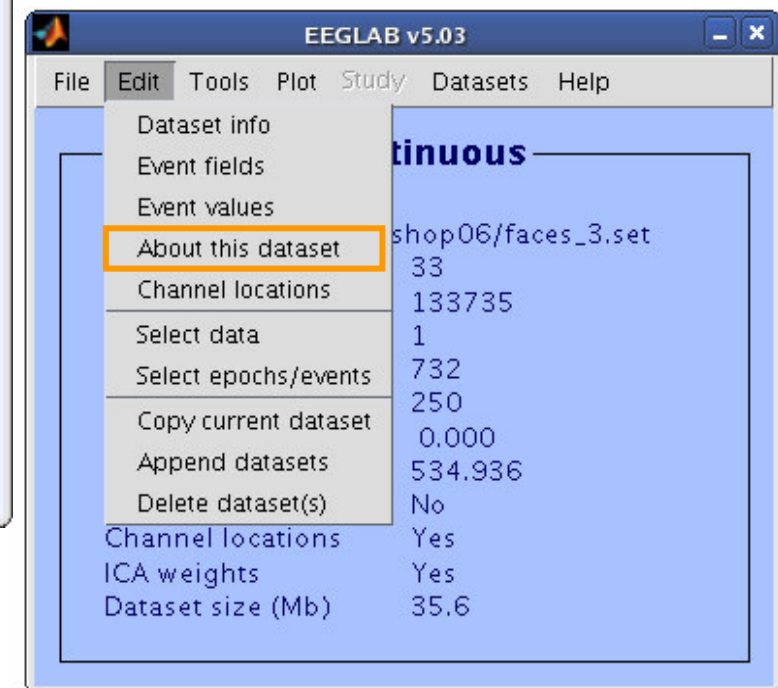
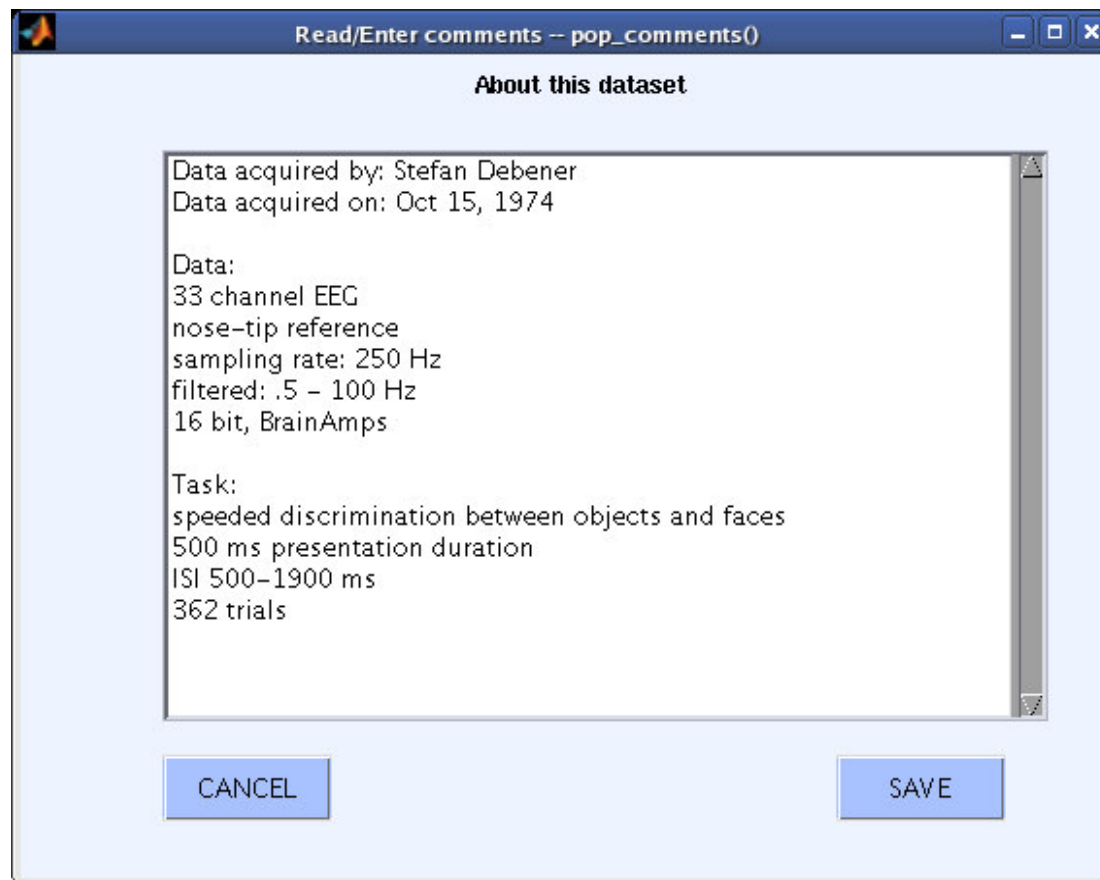
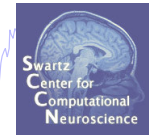
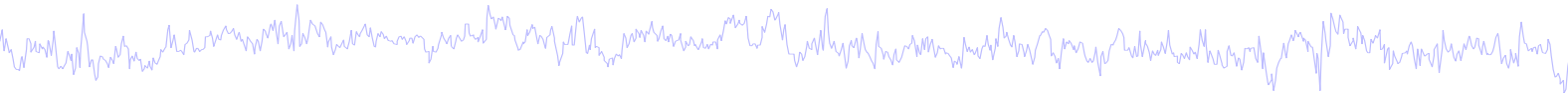
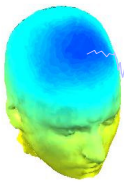
33 channel EEG, nose-tip reference, 250 Hz sampling rate, 0.5-100 Hz, 16 bit, BrainAmps

## Task

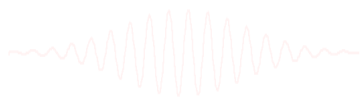
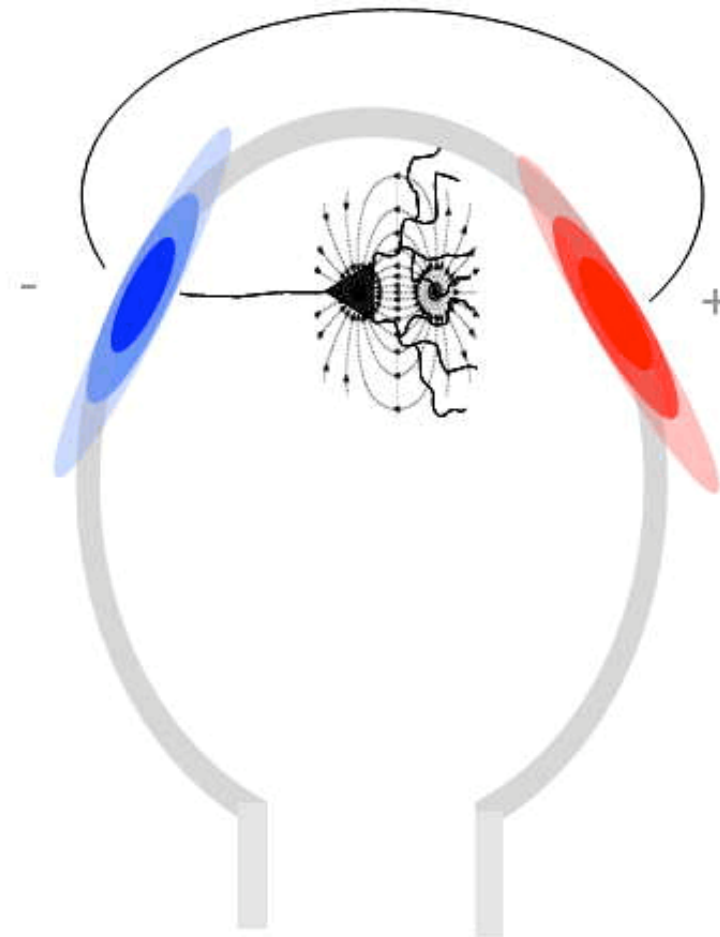
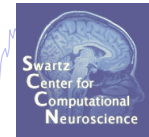
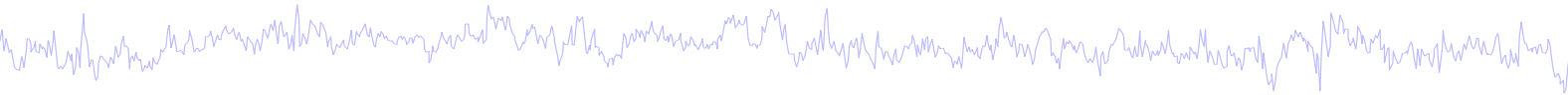
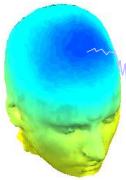
speeded discrimination between objects and faces, 500 ms presentation duration, ISI 500-1900 ms, 362 trials



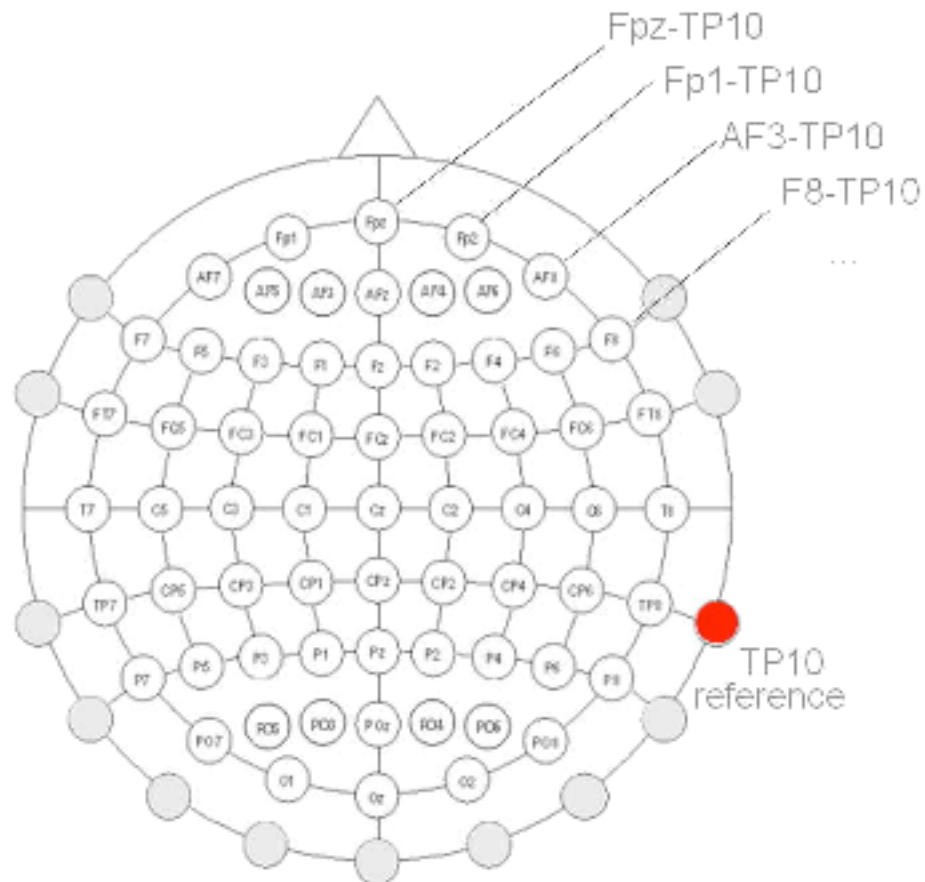
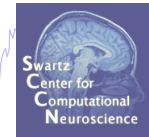
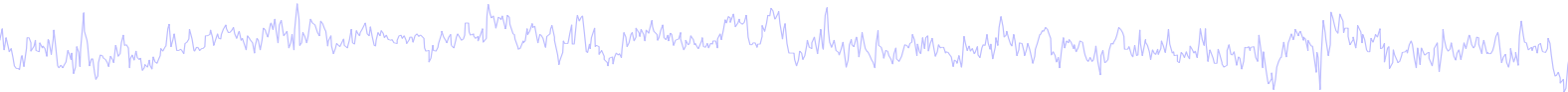
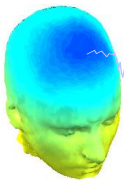
# Comments



# Re-reference data



# Re-reference data



1. Average Reference assumption

$$Fpz + Fp1 + AF3 + F8 + FT8 + \dots + TP10 = 0$$

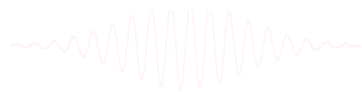
2. First recalculate the activity at reference TP10

Sum of all electrode activity =

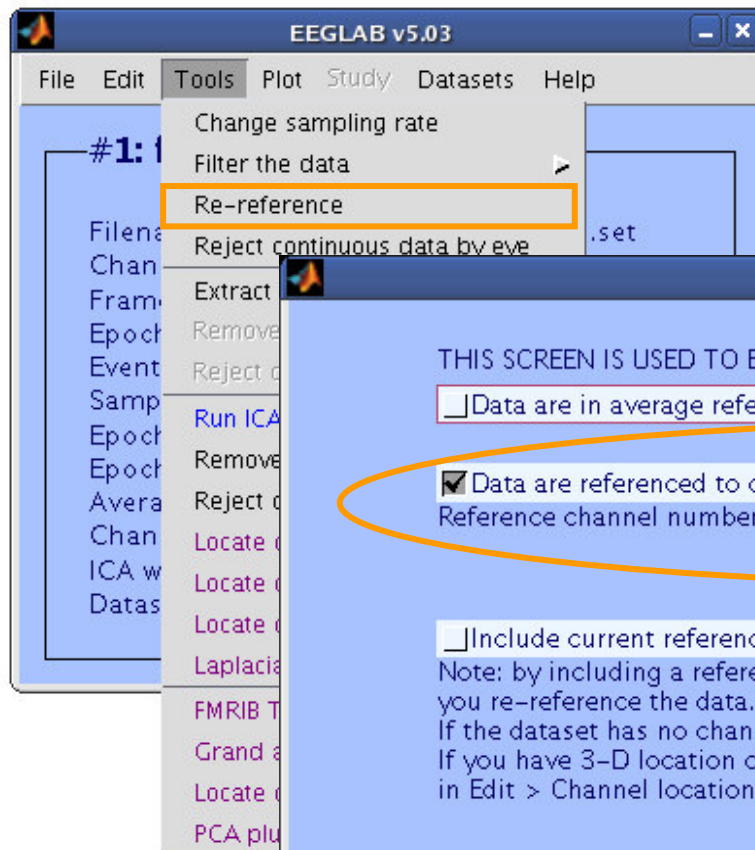
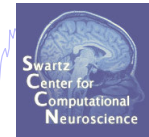
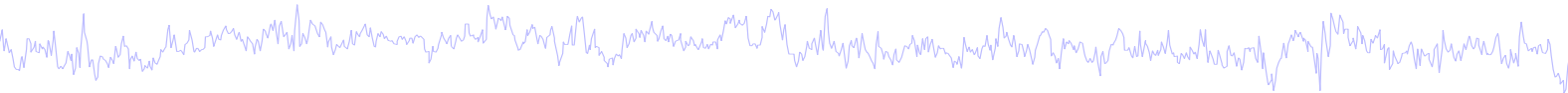
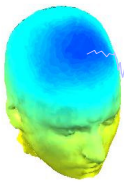
$$Fpz + Fp1 + AF3 + F8 + \dots - 64TP10 \\ \text{minus } Fpz + Fp1 + AF3 + F8 + \dots + TP10 = 0$$

$$TP10 = - (\text{Sum of all electrode activity})/65$$

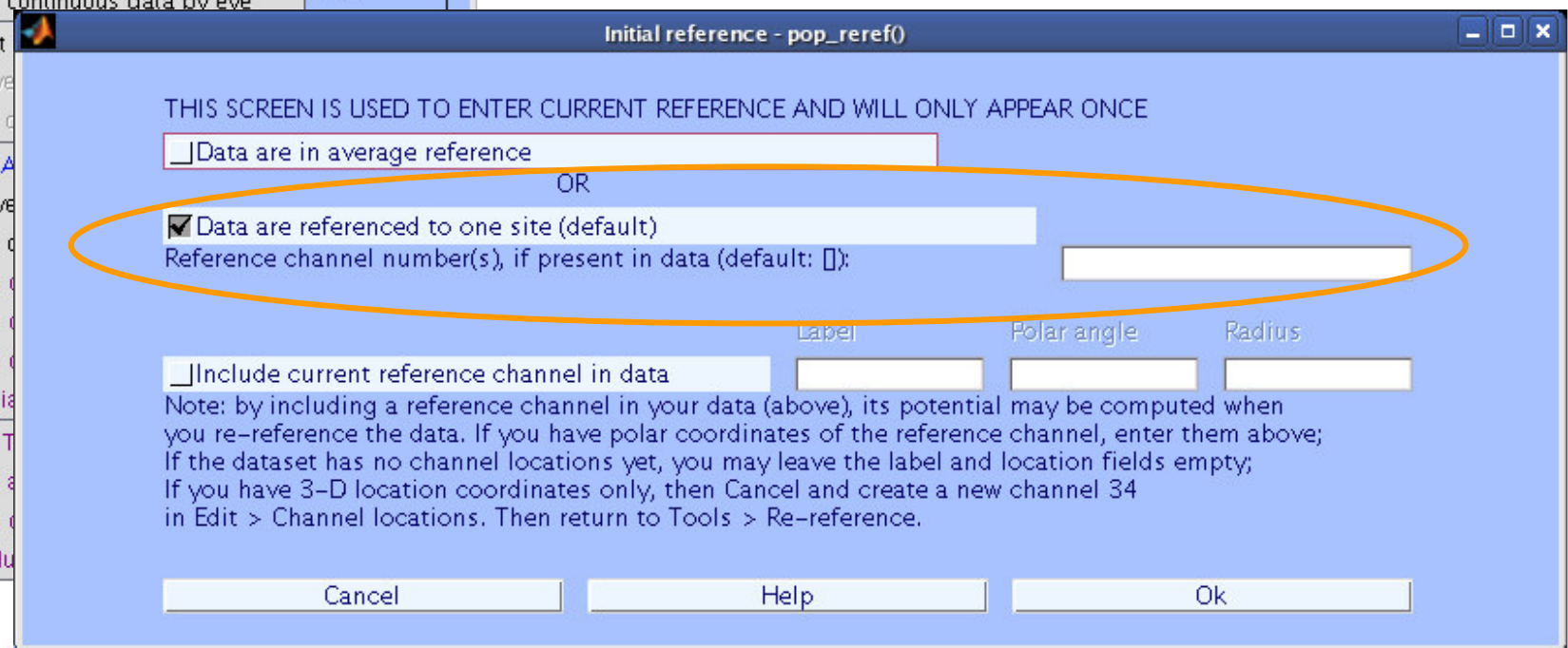
3. Add up the activity of TP10 to all channels



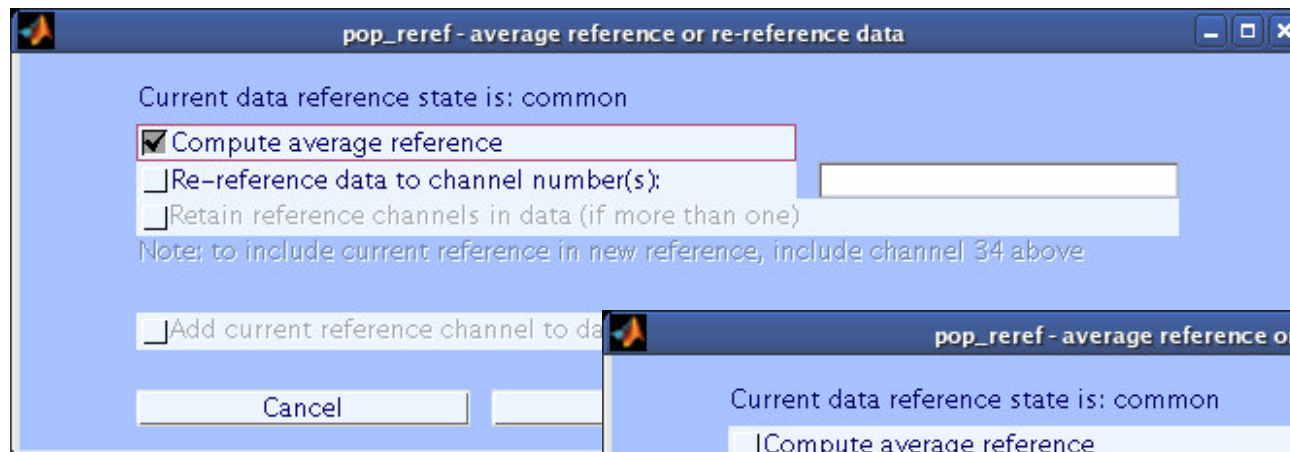
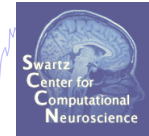
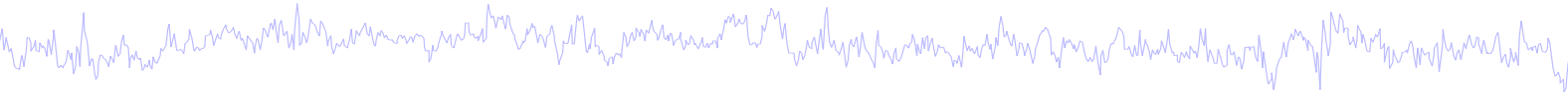
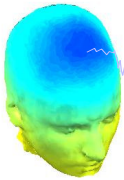
# Re-reference data



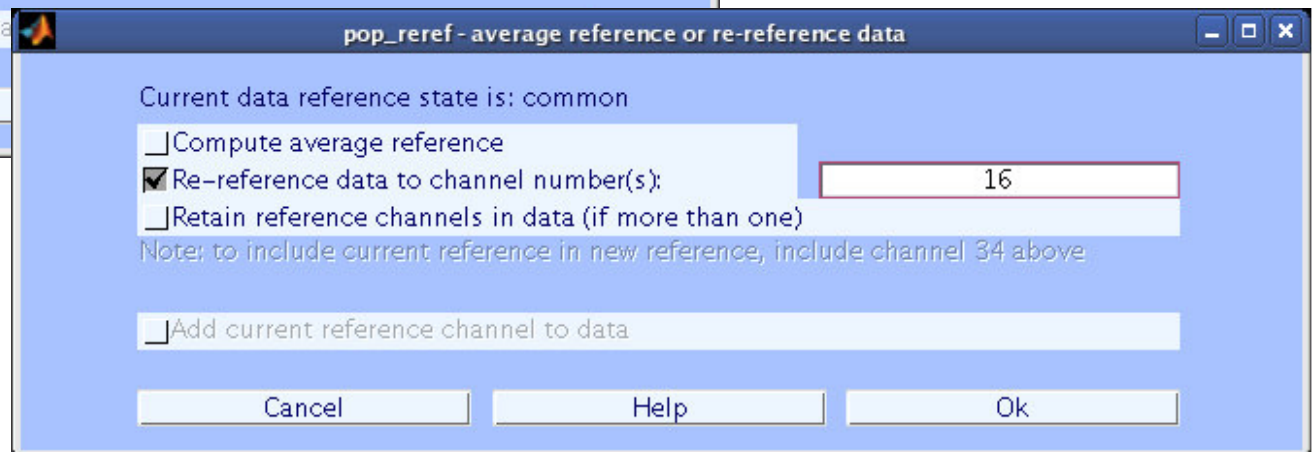
Specify the reference scheme of imported data



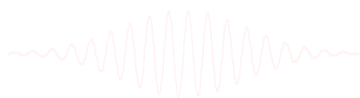
# Rereferencing, cont'd



**2 re-reference  
choices**

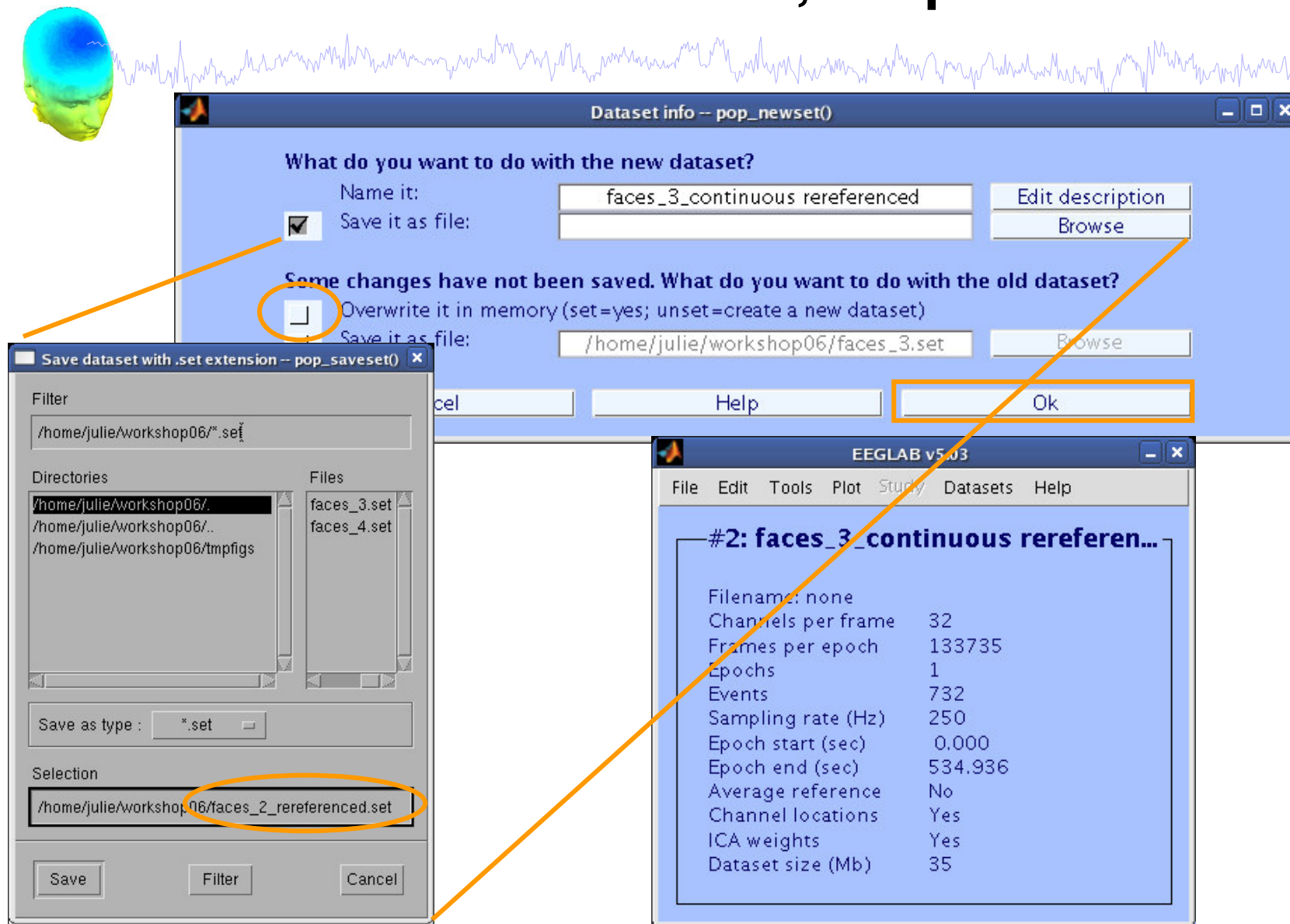


```
EEG = pop_reref( EEG, 16, 'refstate', 0);
```



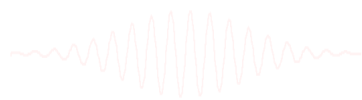
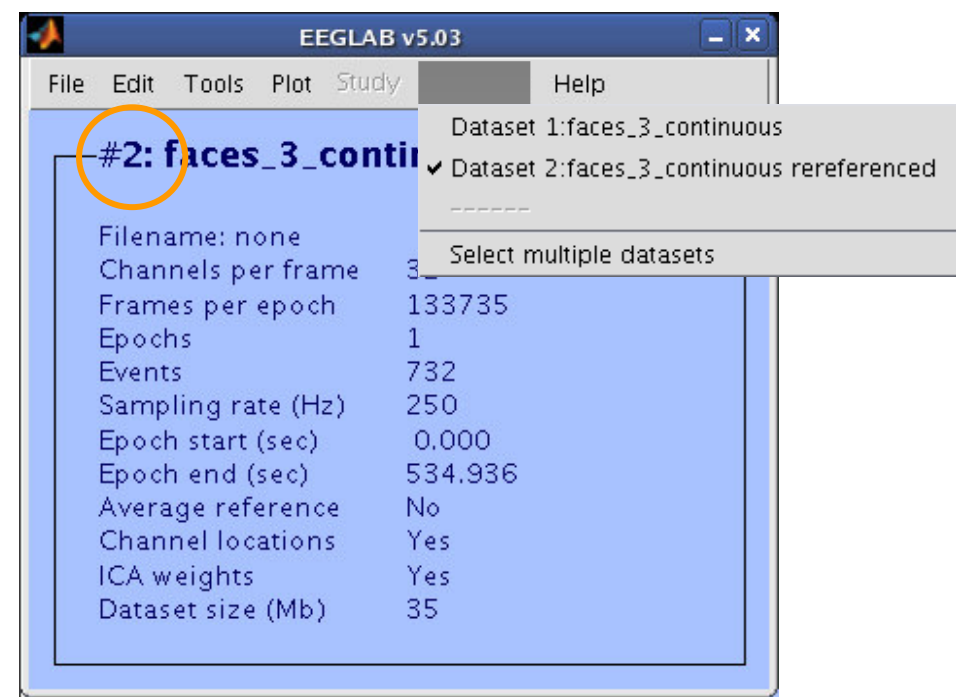
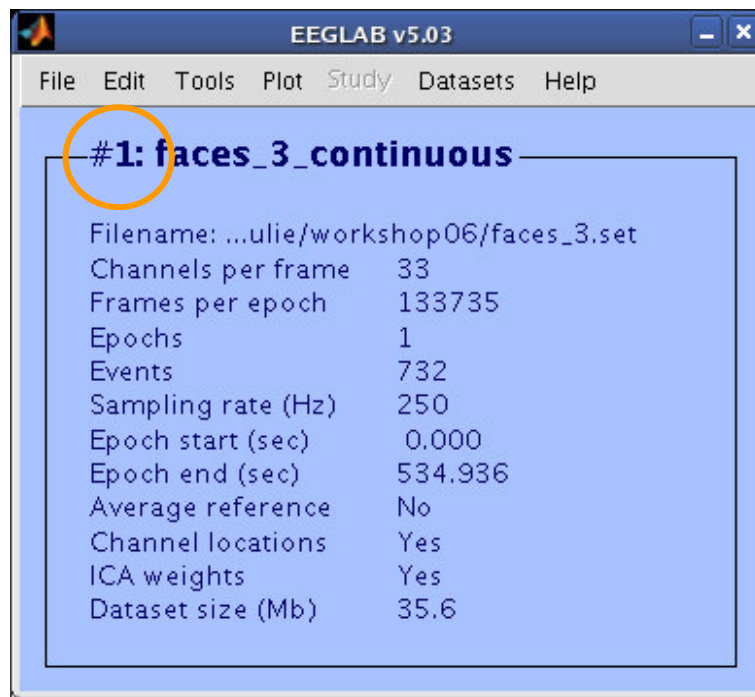
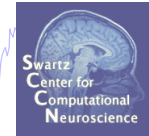
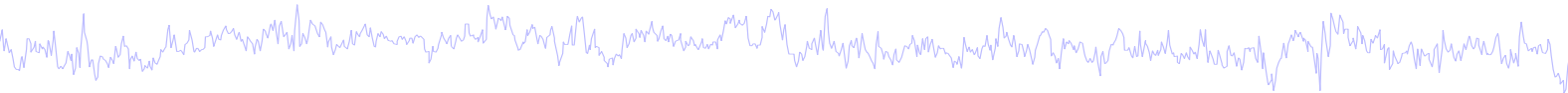
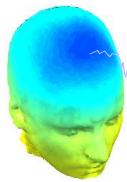


# Save new dataset, keep old one

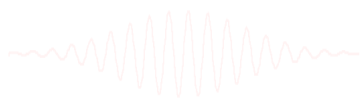
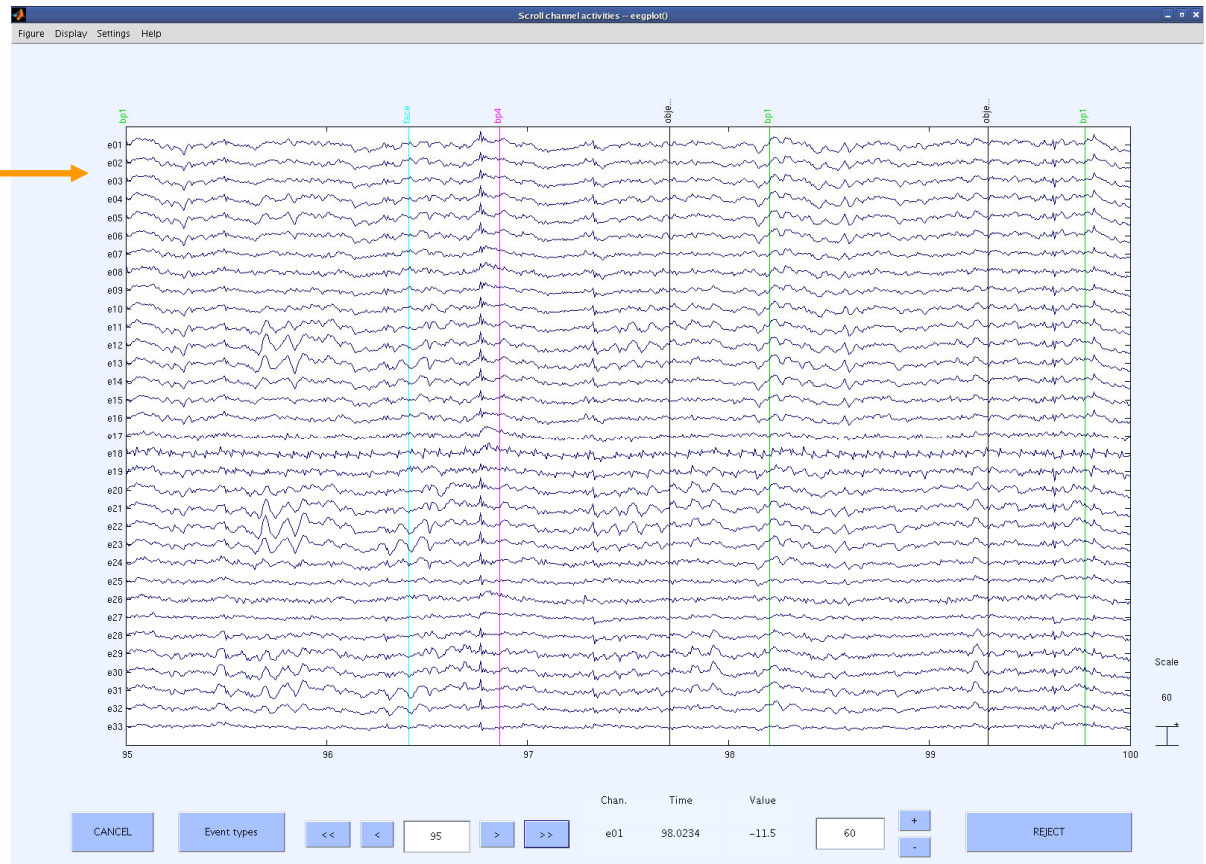
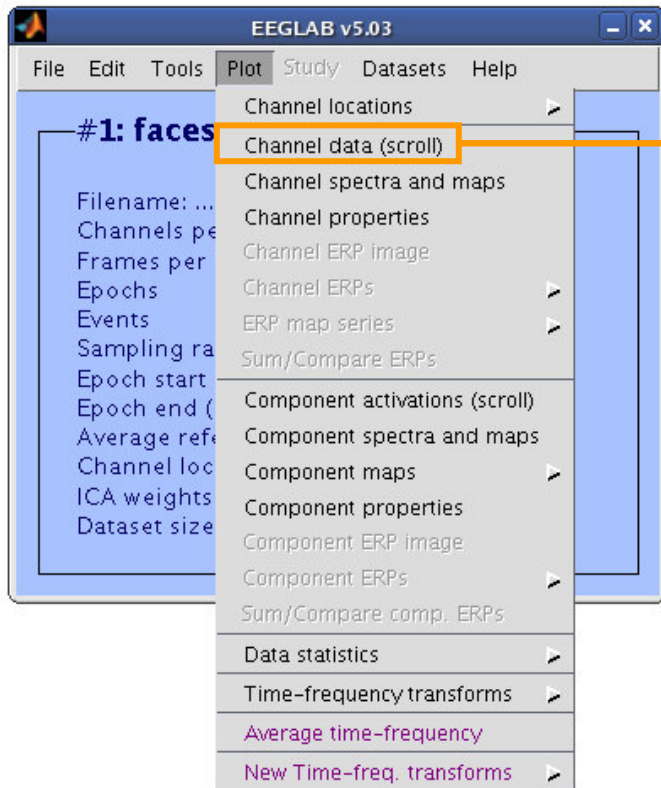
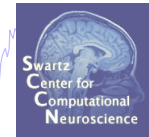
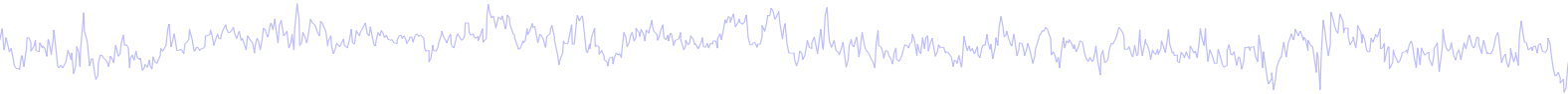
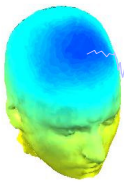


```
[ALLEEG EEG CURRENTSET] = pop_newset(ALLEEG,...  
    EEG, 1, 'setname', 'rereferenced data');
```

# Multiple active datasets (ALLEEG)



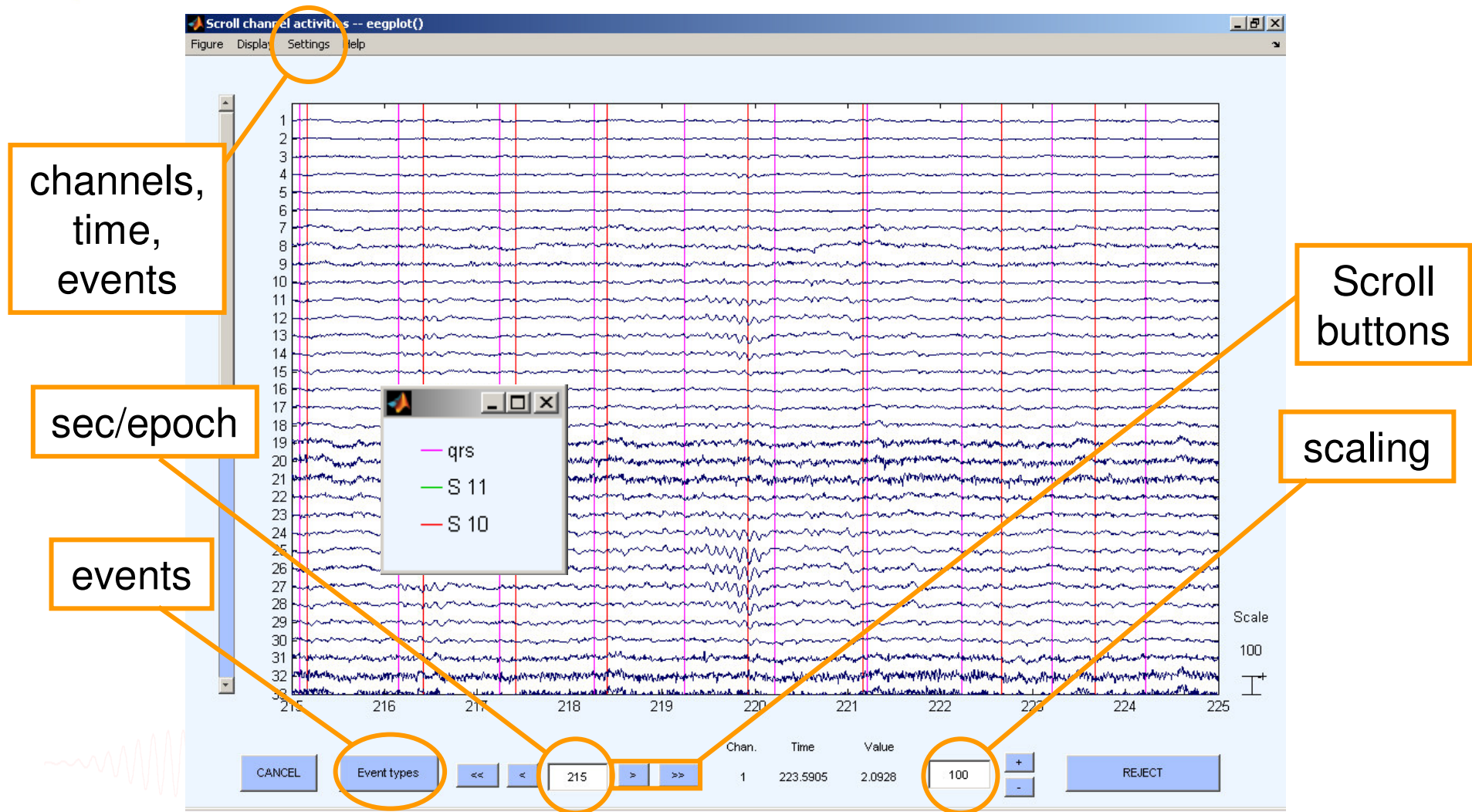
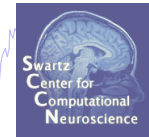
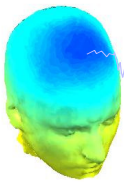
# Scroll data



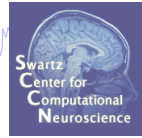
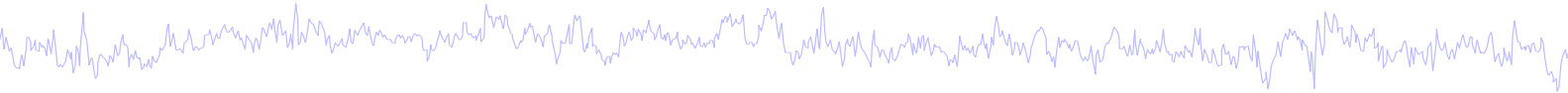
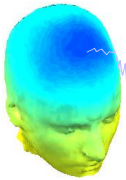
```
>> pop_eegplot (EEG, 1, 1, 1);
```



# Scroll channel data



# Data import and preprocessing



## Task 1

- Import raw data
- Re-reference data
- Scroll channel data

## Task 2

- Import channel location file

## Task 3

- Import data events

## Task 4

- Extract data epochs
- Select epochs/events

## Task 5

- Analysis of ERPs
- Export EEG data

## Task 6

- Reject badchannels

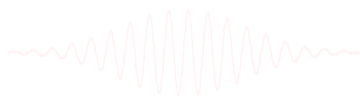
## Task 7

- Reject continuous data

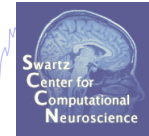
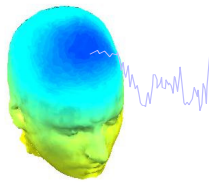
## Task 8

- Reject data epochs

Exercise...



# Import channel locations

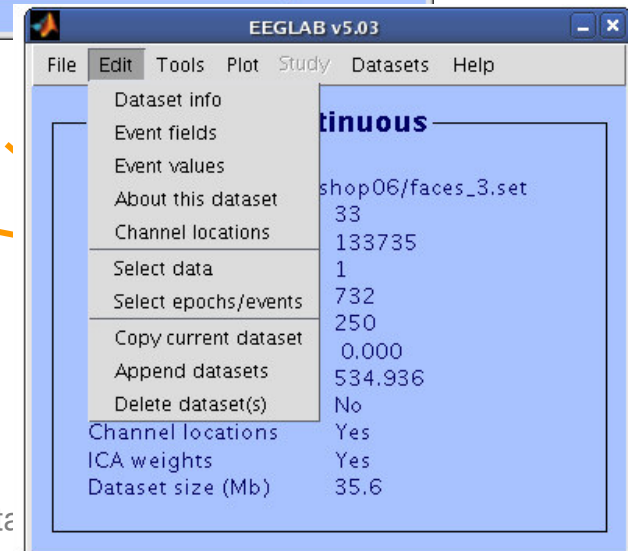


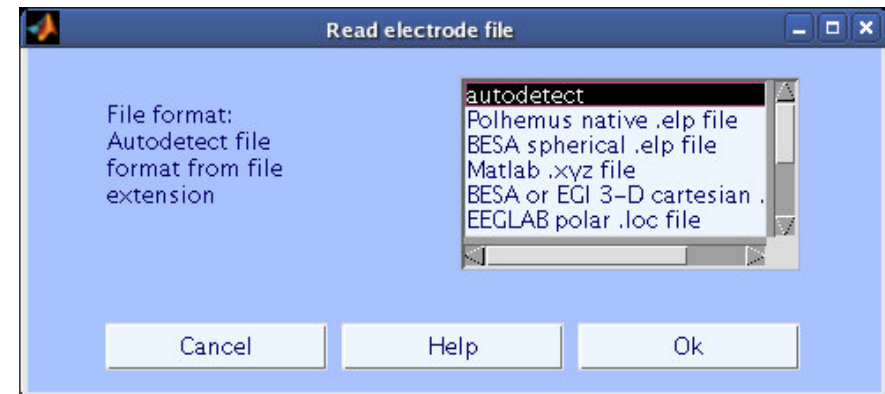
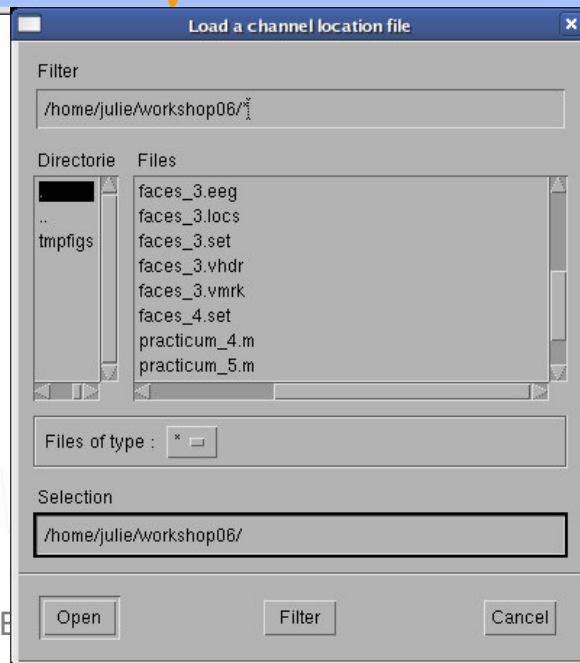
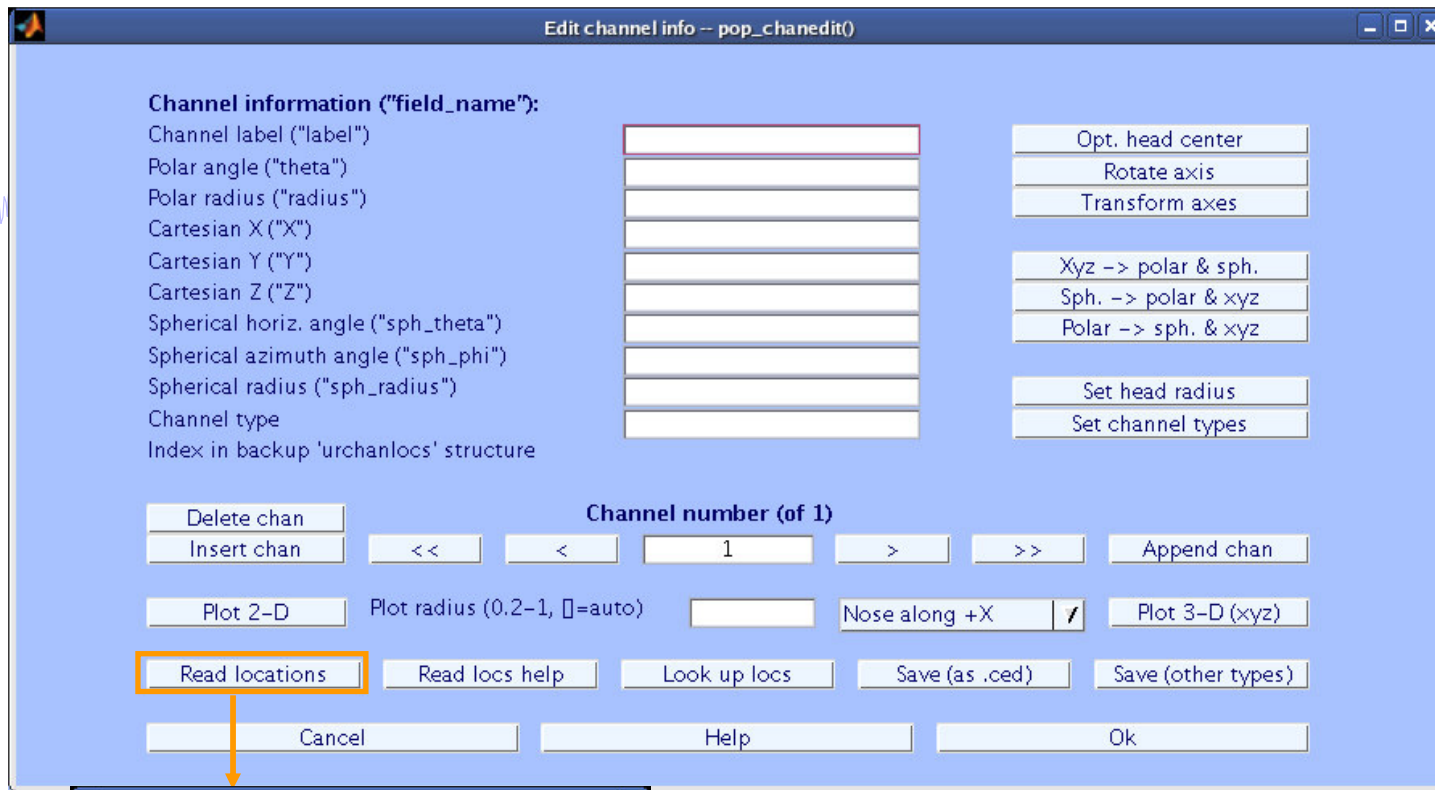
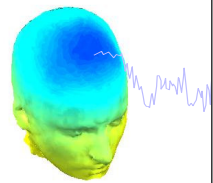
Edit channel info -- pop\_chanedit()

**Channel information ("field\_name"):**

Channel label ("label")	<input type="text"/>	<input type="button" value="Opt. head center"/>
Polar angle ("theta")	<input type="text"/>	<input type="button" value="Rotate axis"/>
Polar radius ("radius")	<input type="text"/>	<input type="button" value="Transform axes"/>
Cartesian X ("X")	<input type="text"/>	
Cartesian Y ("Y")	<input type="text"/>	<input type="button" value="Xyz -&gt; polar &amp; sph."/>
Cartesian Z ("Z")	<input type="text"/>	<input type="button" value="Sph. -&gt; polar &amp; xyz"/>
Spherical horiz. angle ("sph_theta")	<input type="text"/>	<input type="button" value="Polar -&gt; sph. &amp; xyz"/>
Spherical azimuth angle ("sph_phi")	<input type="text"/>	
Spherical radius ("sph_radius")	<input type="text"/>	<input type="button" value="Set head radius"/>
Channel type	<input type="text"/>	<input type="button" value="Set channel types"/>
Index in backup 'urchanlocs' structure	<input type="text"/>	

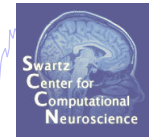
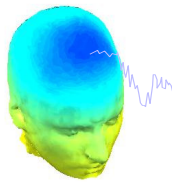
- Use channel names and automatically assign channel location
- Import channel location file
- Modify/stretch/rotate channel locations
- Set channel types...





7 file formats supported  
(Polhemus, BESA, ...)





Edit channel info -- pop\_chanedit()

**Channel information ("field\_name"):**

Channel label ("label")  
Polar angle ("theta")  
Polar radius ("radius")  
Cartesian X ("X")  
Cartesian Y ("Y")  
Cartesian Z ("Z")  
Spherical horiz. angle ("sph\_theta")  
Spherical azimuth angle ("sph\_phi")  
Spherical radius ("sph\_radius")  
Channel type  
Index in backup 'urchanlocs' structure

e01
90
0
3.7494e-33
-6.1232e-17
1
-90
90
1

Opt. head center  
Rotate axis  
Transform axes

XYZ -> polar & sph.  
Sph. -> polar & xyz  
Polar -> sph. & xyz

Set head radius  
Set channel types

Delete chan  
Insert chan

Channel number (of 33)

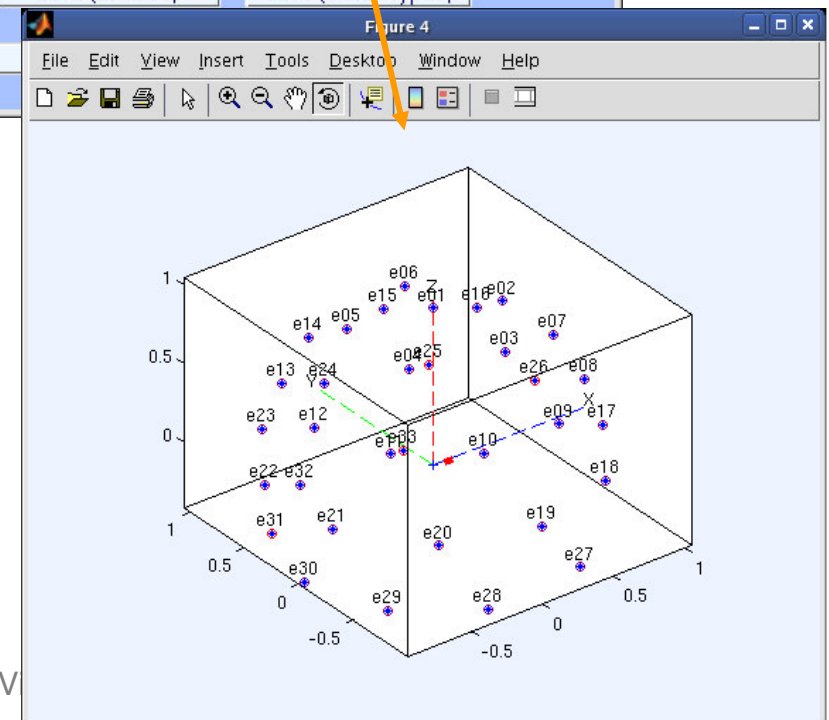
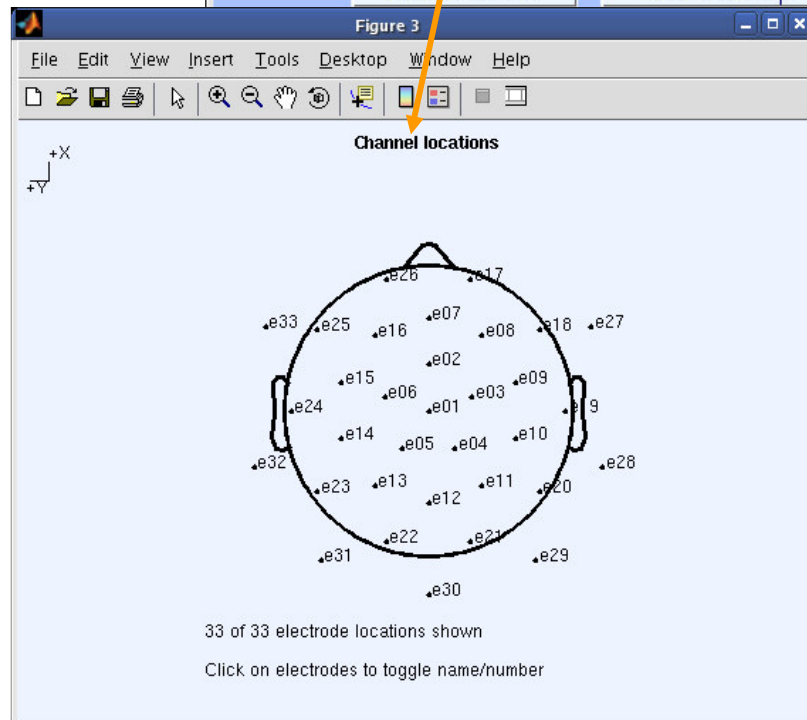
<< < 1 > >>

Append chan

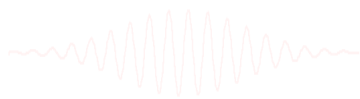
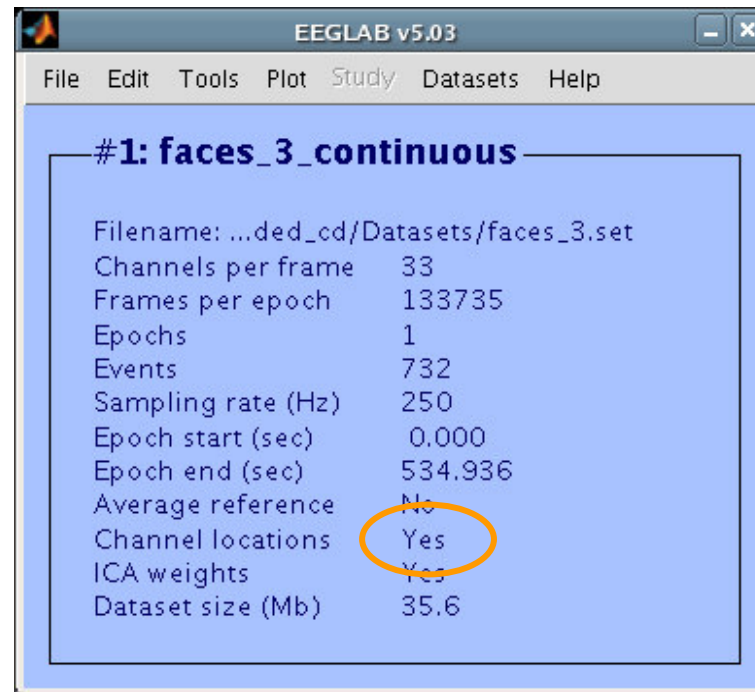
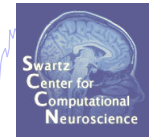
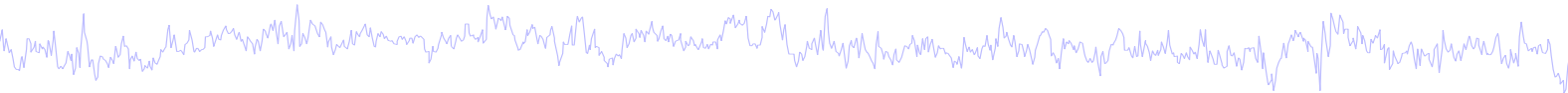
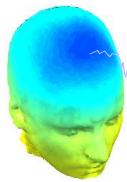
Plot 2-D Plot radius (0.2-1, []=auto) Nose along +X Plot 3-D (xyz)

Read locations Read locs help Look up locs Save (as .ced) Save (other types)

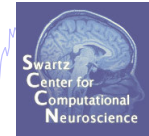
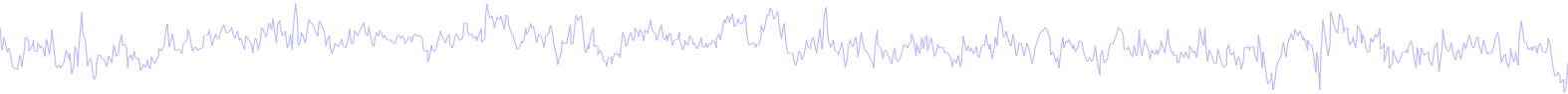
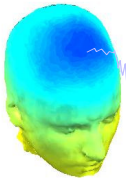
Help



# Import channel locations



# Data import and preprocessing



## Task 1

- Import raw data
- Re-reference data
- Scroll channel data

## Task 2

- Import channel location file

## Task 3

- Import data events

## Task 4

- Extract data epochs
- Select epochs/events

## Task 5

- Analysis of ERPs
- Export EEG data

## Task 6

- Reject badchannels

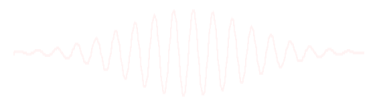
## Task 7

- Reject continuous data

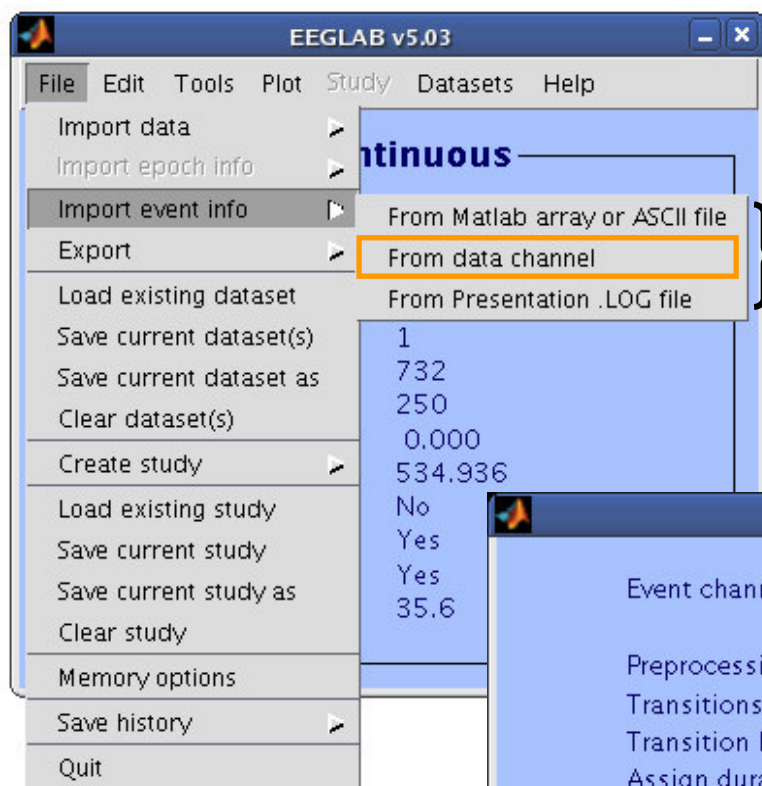
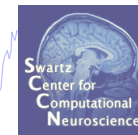
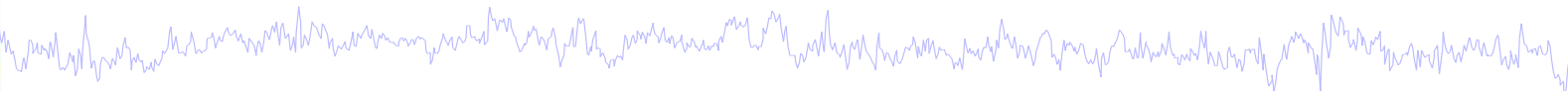
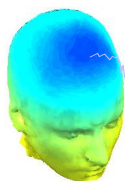
## Task 8

- Reject data epochs

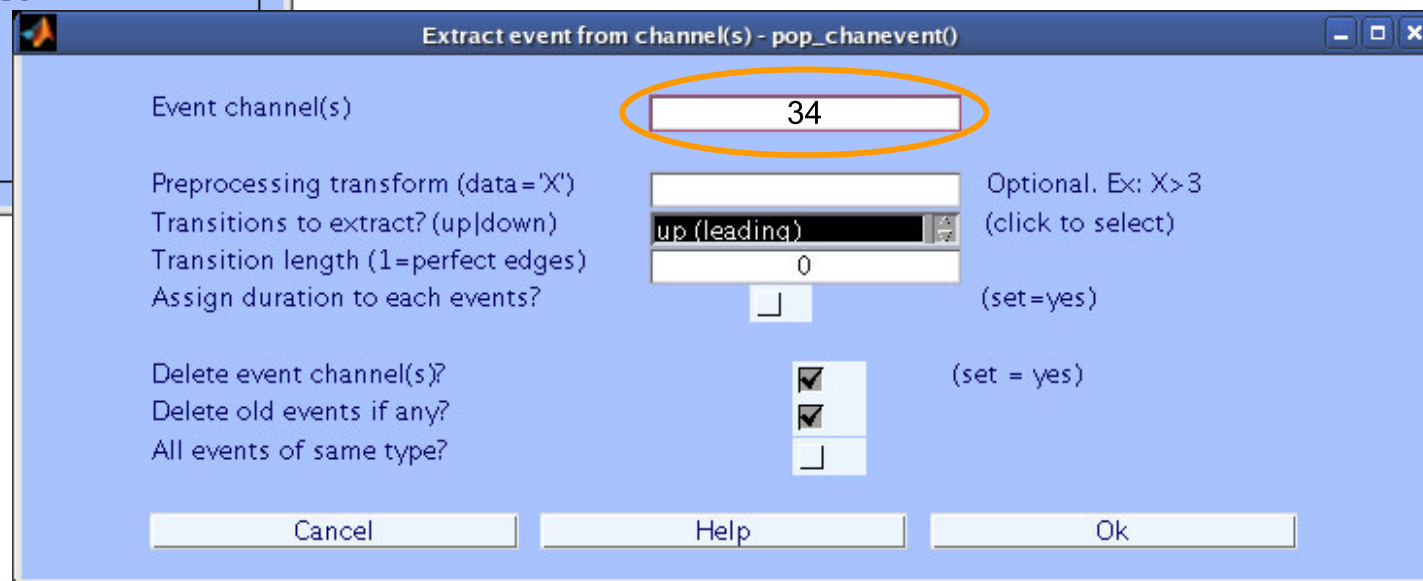
Exercise...

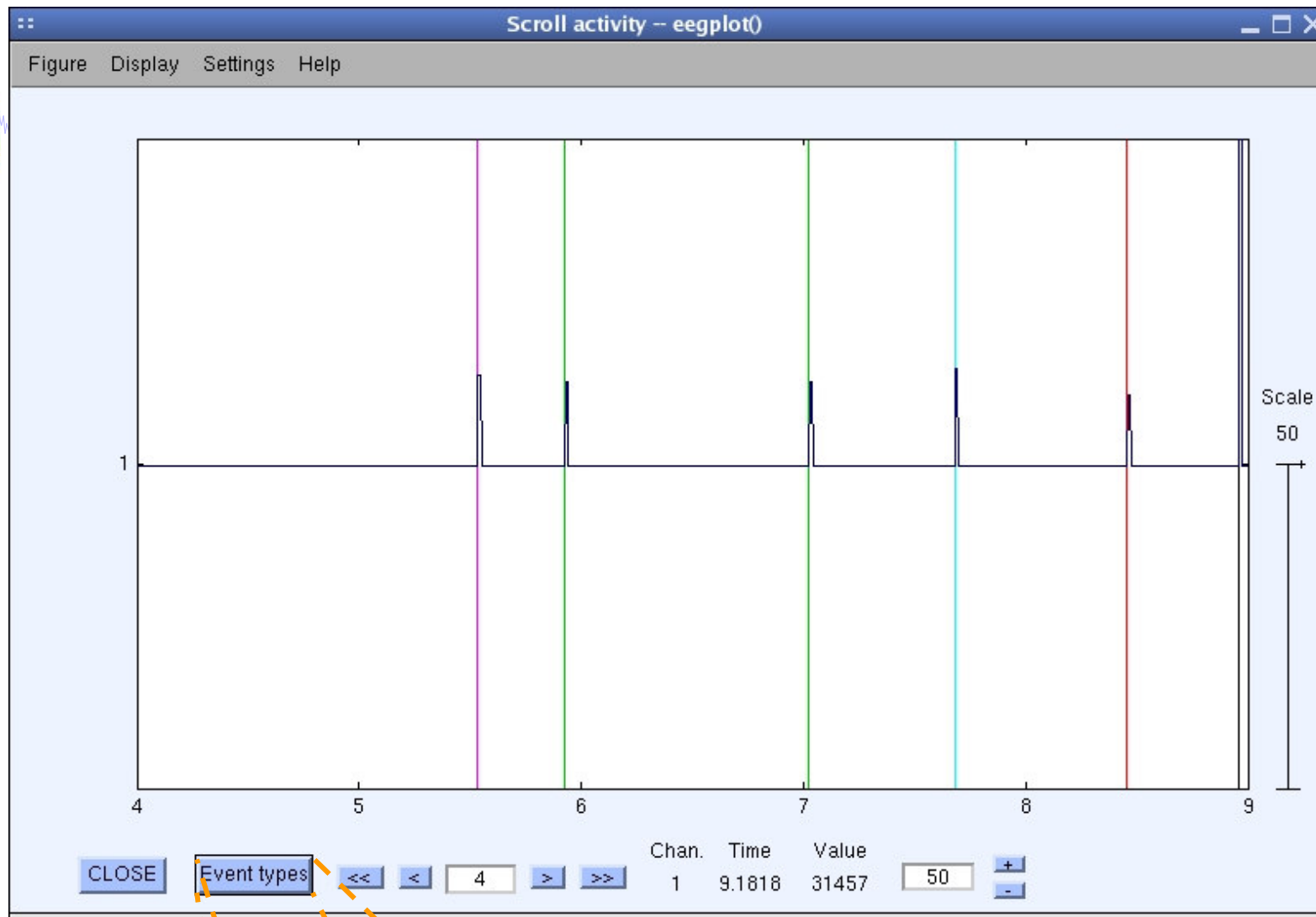
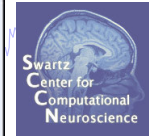
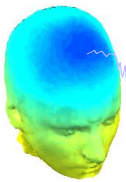


# Import data events

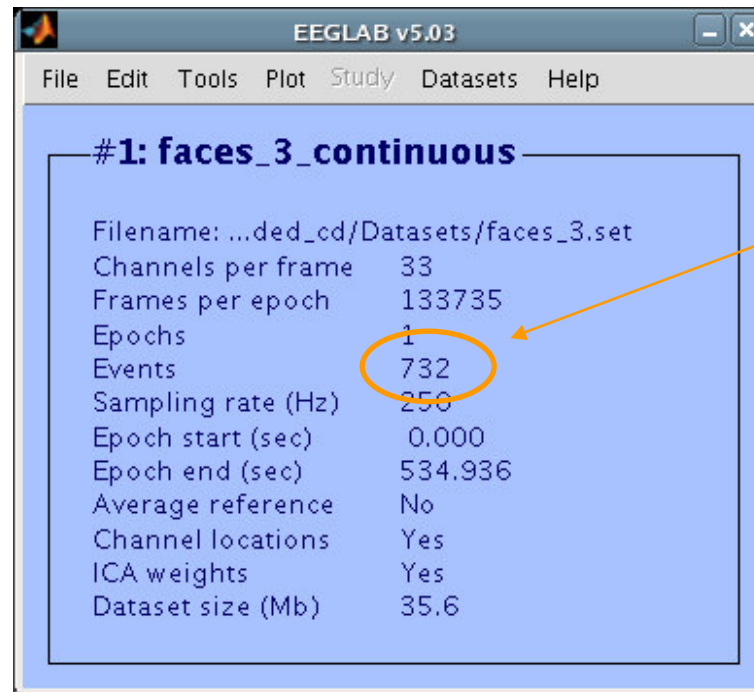
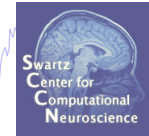
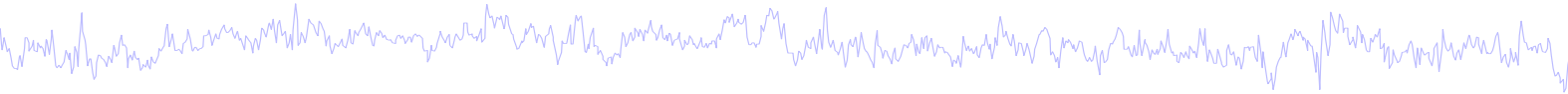
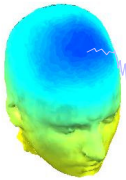


- Import events from Matlab array or ASCII file
- Import events from data channel
- Import from Presentation event file

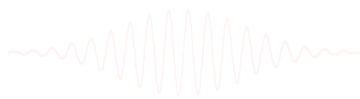




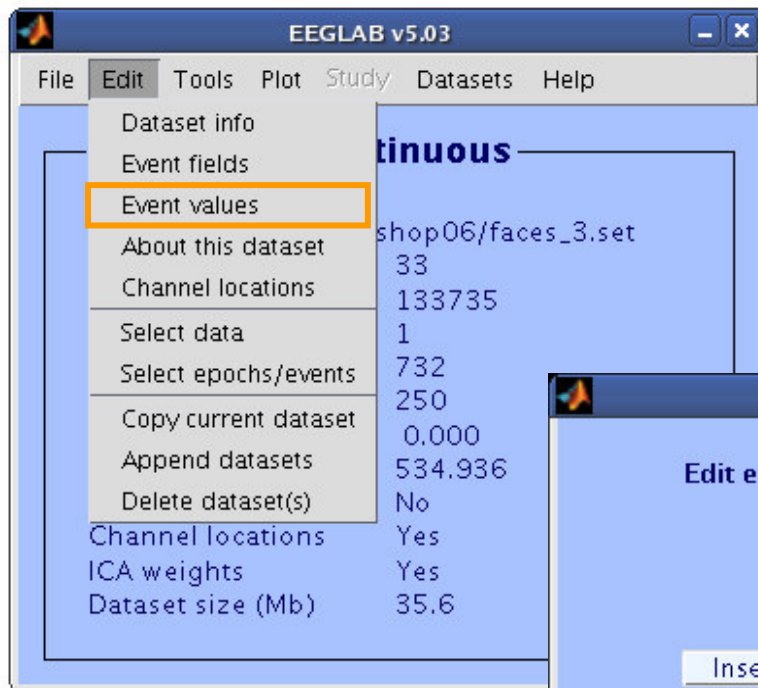
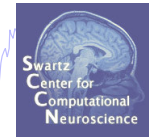
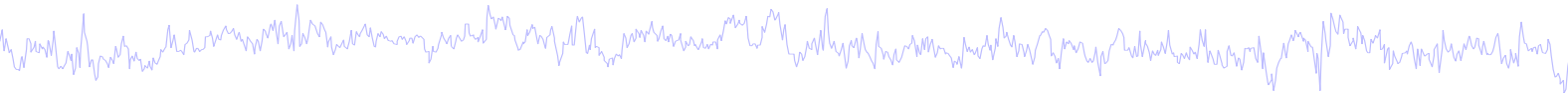
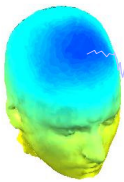
# Import data events



If event import was successful, you will see an appropriate number here



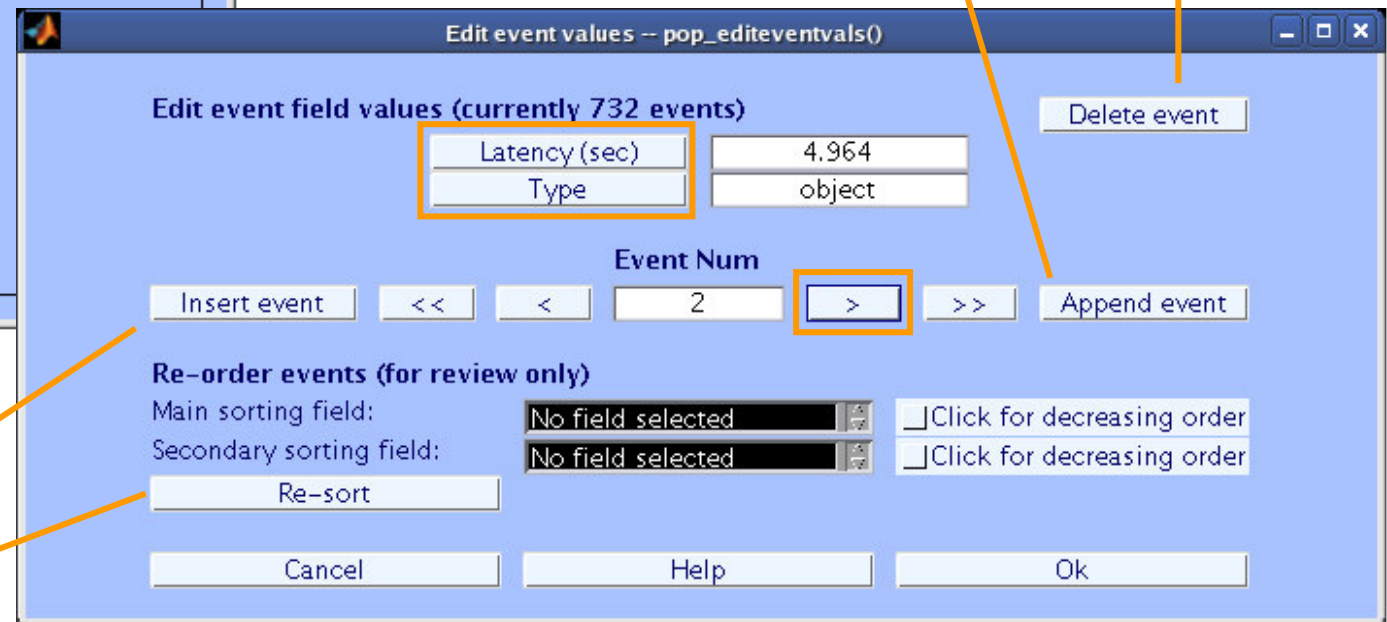
# Review event values



Event 'type' and 'latency' are recognized fields

Append event  
**AFTER**  
current event

Delete  
**CURRENT**  
event

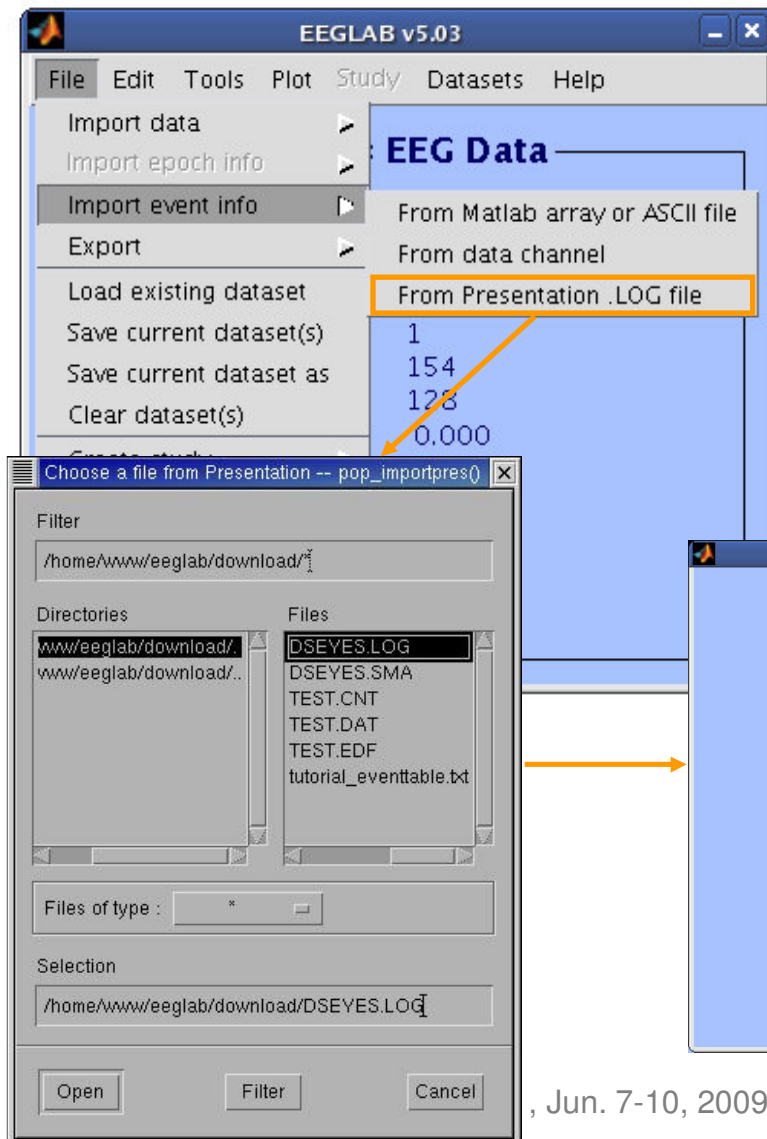
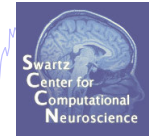
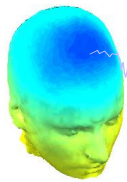


Insert event  
**BEFORE**  
current event

To resort: first  
select **Main**  
sorting field



# Alternative method for importing events: Import events from event file



...

Check alignment between pre-existing (old) and loaded event latencies:

Old event latencies (10 first): 10789 21315 31375 41902 51962 62489 ...

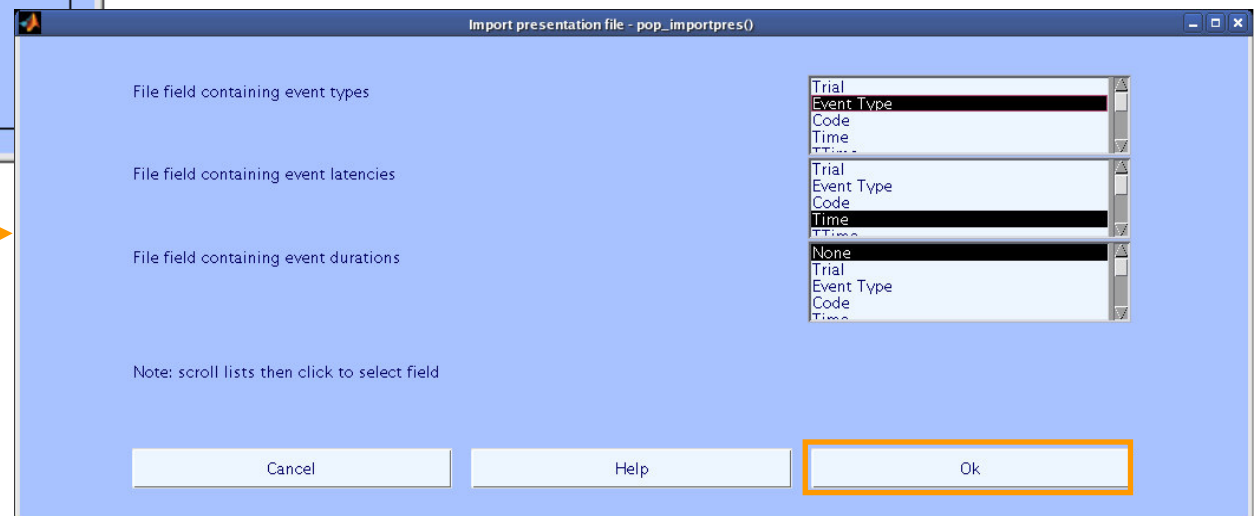
New event latencies (10 first): 10789 21315 31376 41902 51963 62489 ...

Best sampling rate ratio found is 0.9999895. Below latencies after adjustment

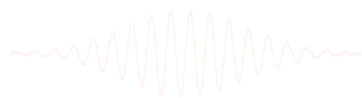
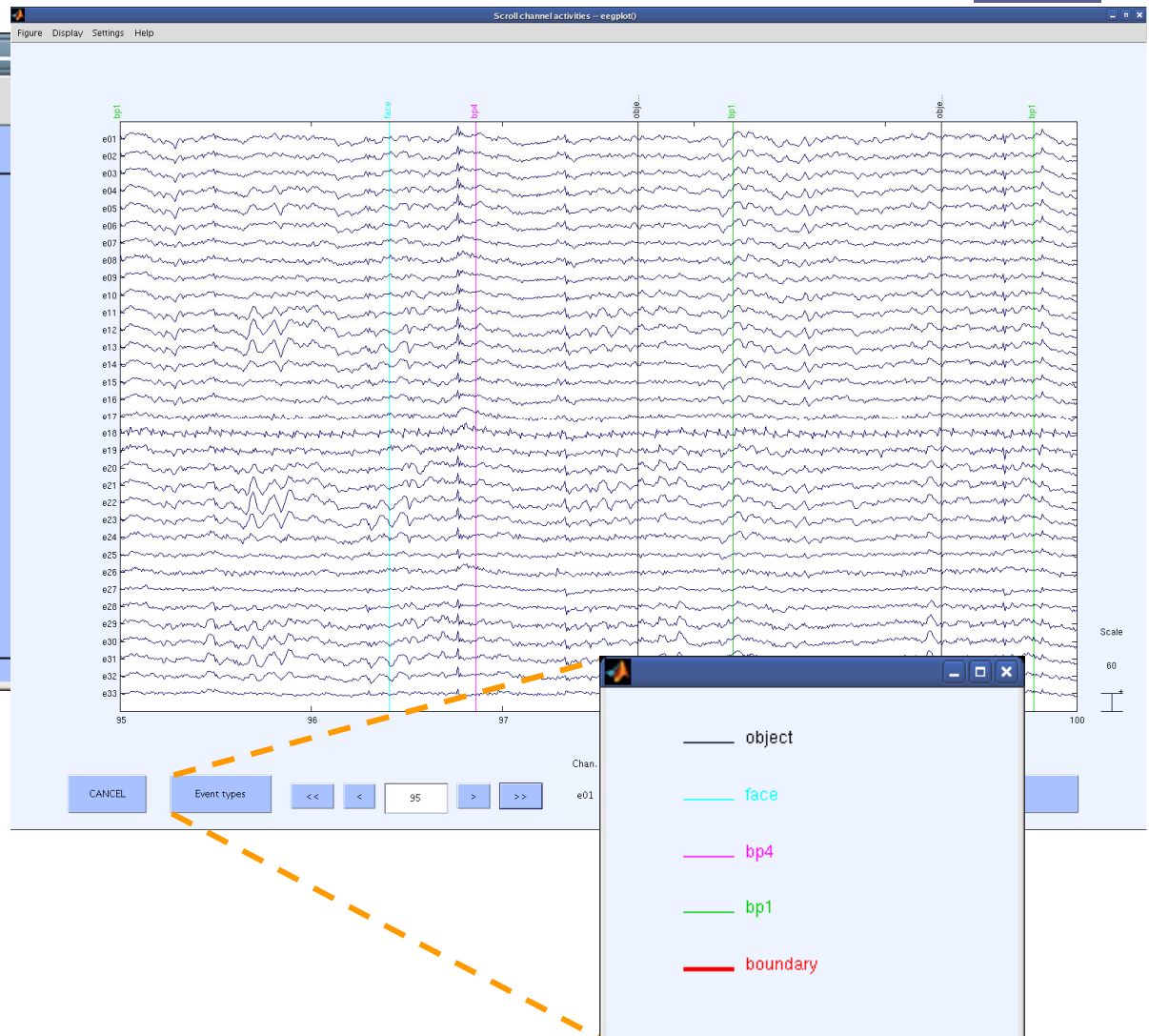
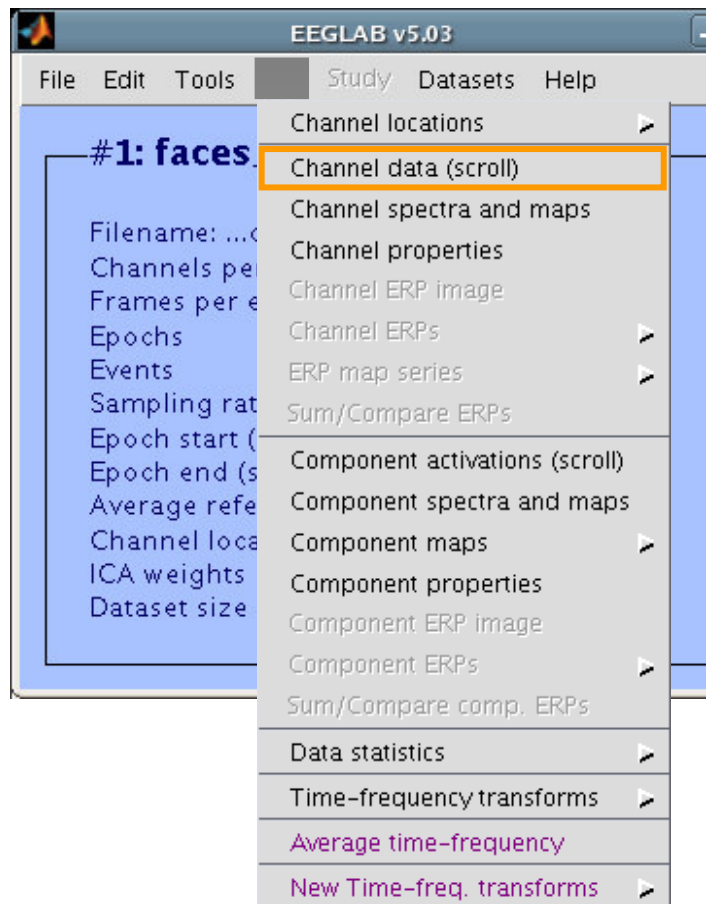
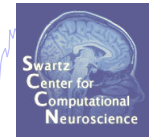
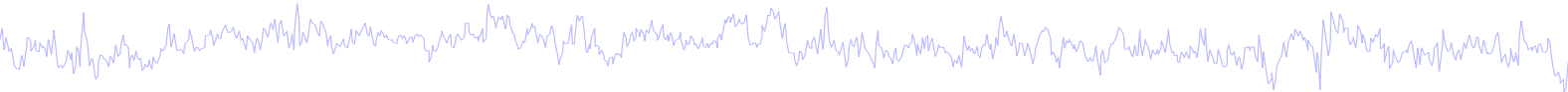
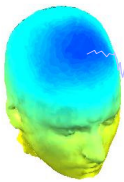
Old event latencies (10 first): 10789 21315 31376 41902 51963 62488 ...

New event latencies (10 first): 10789 21315 31375 41902 51962 62489 ...

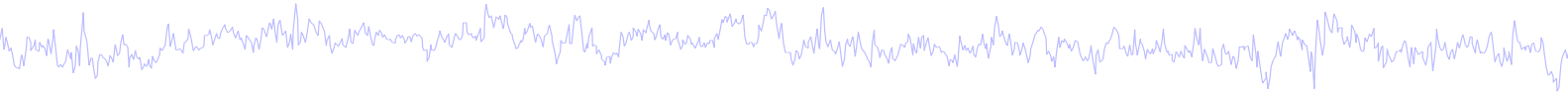
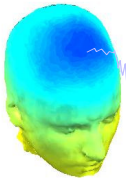
...



# Scroll data with events



# Data import and preprocessing



## Task 1

- Import raw data
- Re-reference data
- Scroll channel data

## Task 2

- Import channel location file

## Task 3

- Import data events

## Task 4

- Extract data epochs
- Select epochs/events

## Task 5

- Analysis of ERPs
- Export EEG data

## Task 6

- Reject badchannels

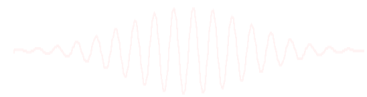
## Task 7

- Reject continuous data

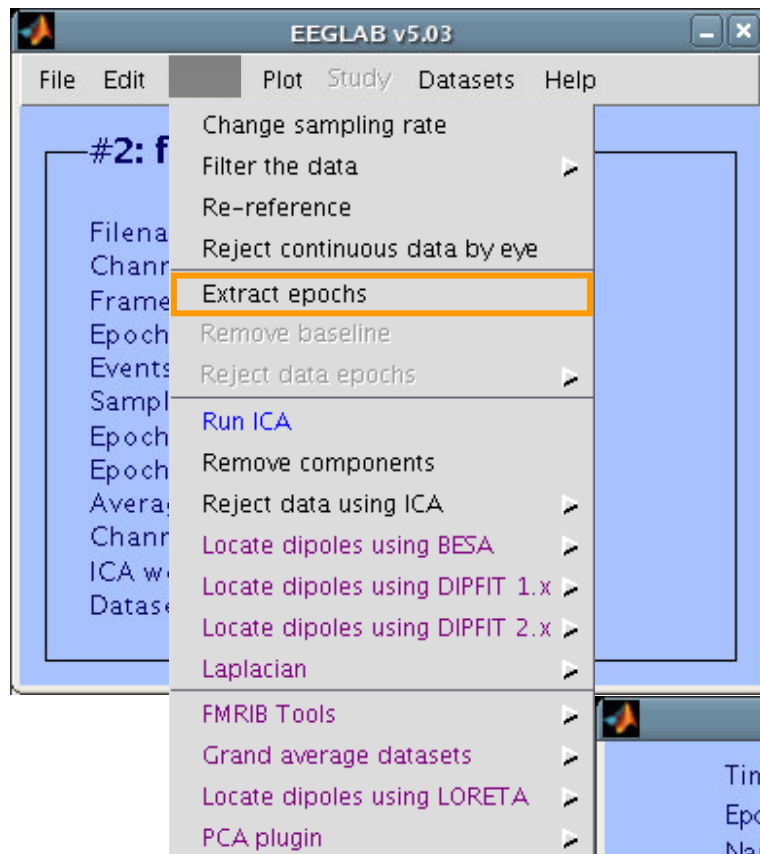
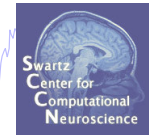
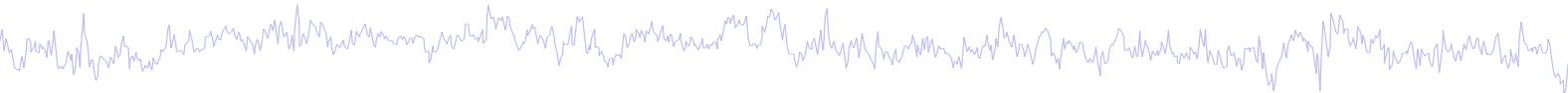
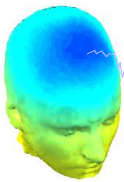
## Task 8

- Reject data epochs

Exercise...

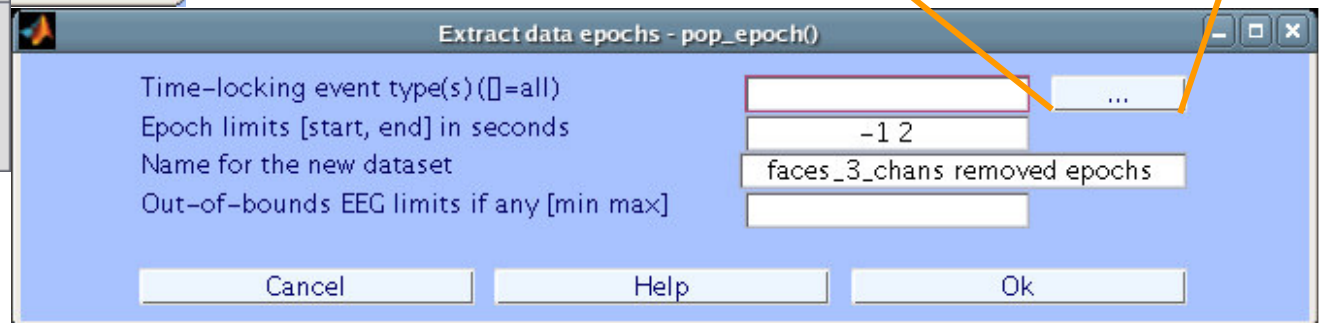
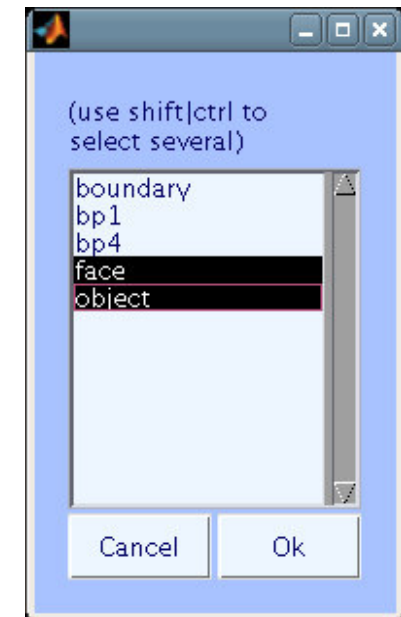


# Extract epochs

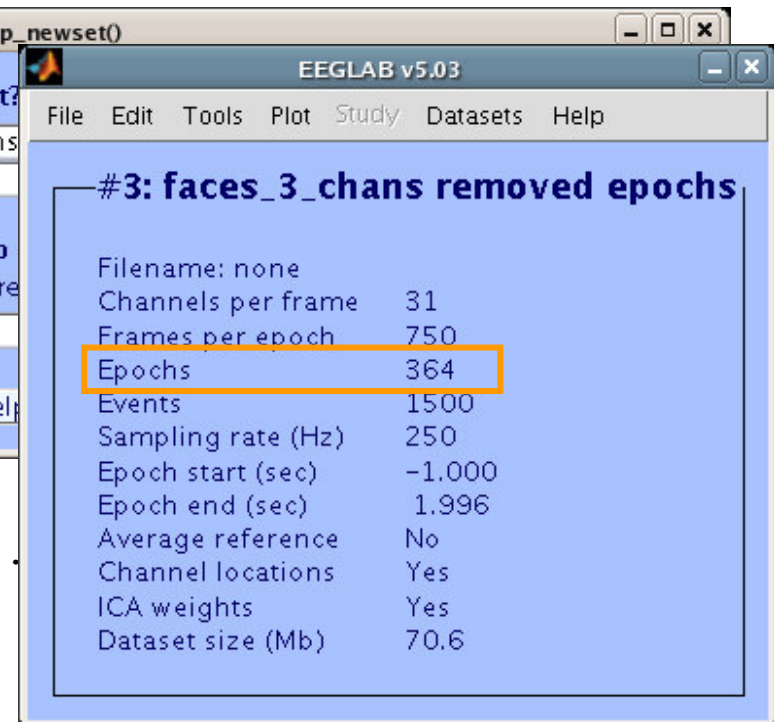
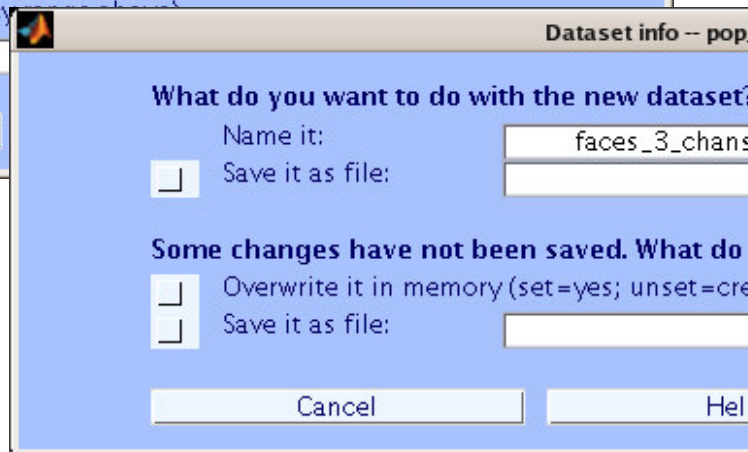
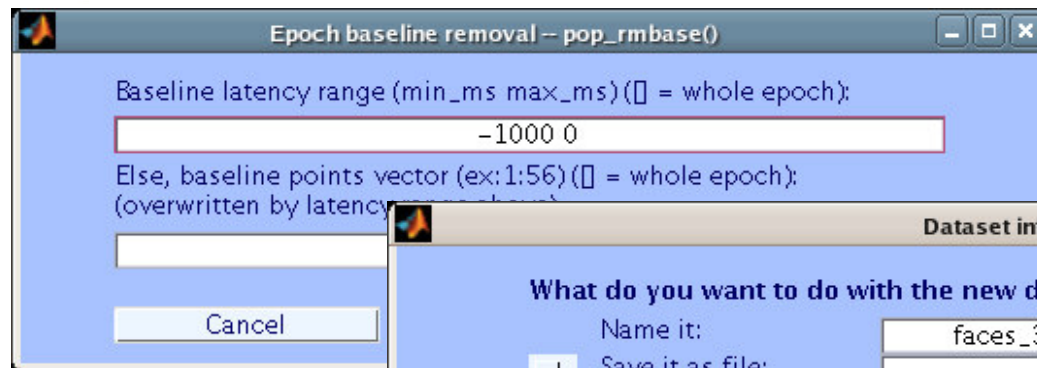
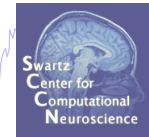
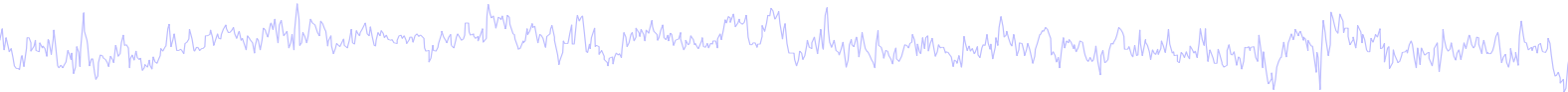
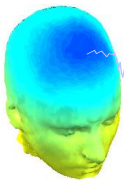


```
>> eeg_eventtypes (EEG)
```

<b>boundary</b>	<b>1</b>
<b>bp1</b>	<b>183</b>
<b>bp4</b>	<b>184</b>
<b>face</b>	<b>182</b>
<b>object</b>	<b>182</b>



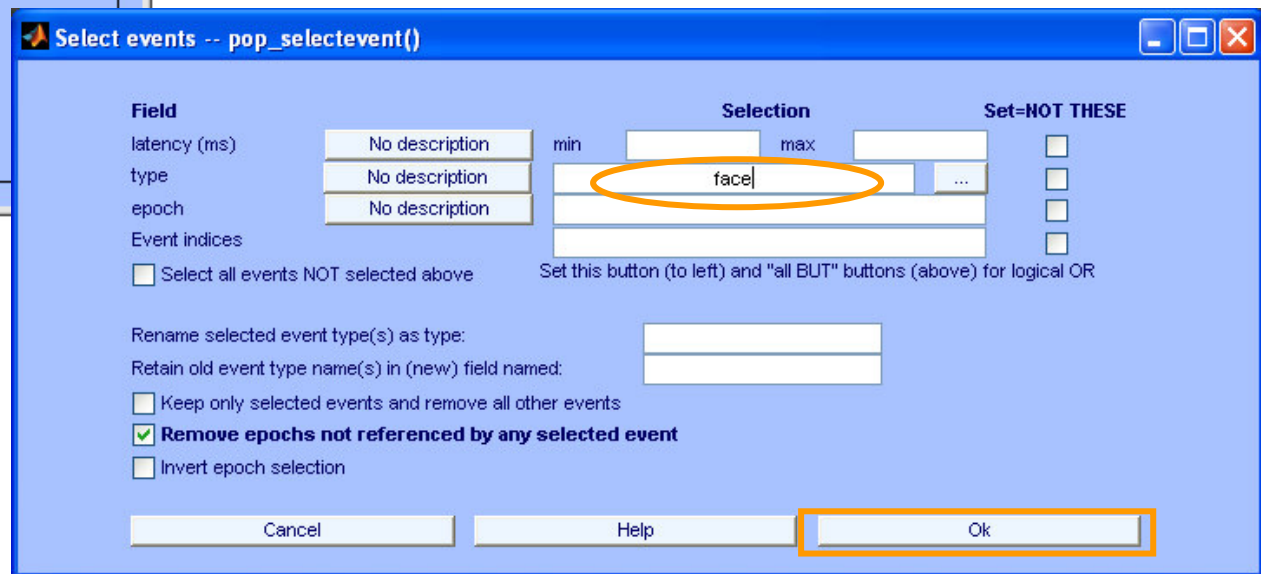
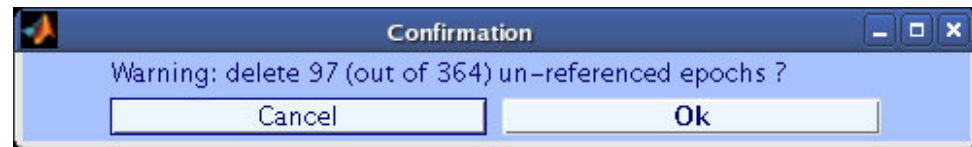
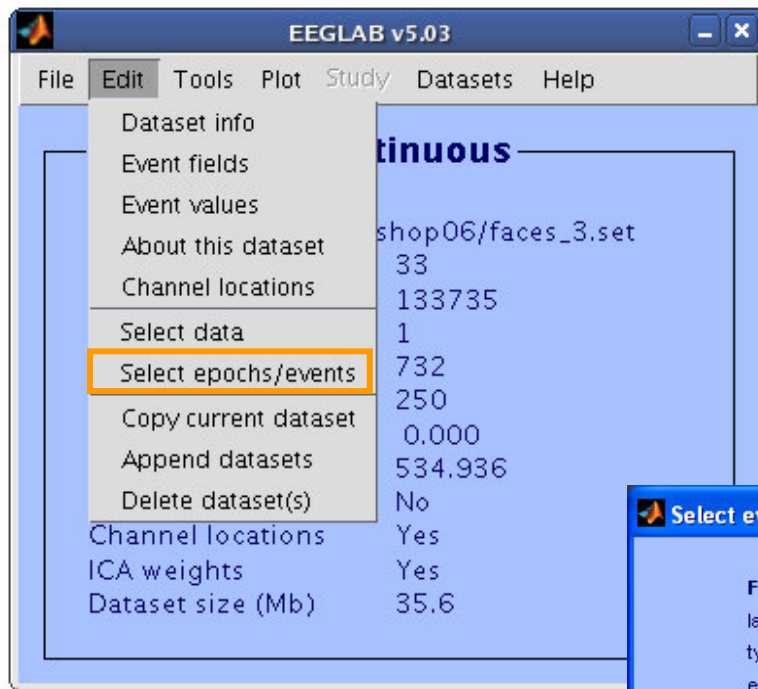
# Extract epochs



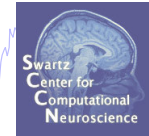
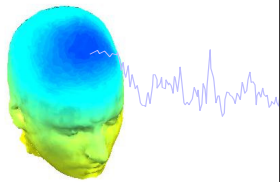
```
>> EEG = pop_epoch(EEG, {'face' 'object'}, [-1 2], ...
    'newname', 'faces_3_chans removed epochs', ...
    'epochinfo', 'yes');
>> EEG = pop_rmbase(EEG, [-1000 0]);
>> [ALLEEG EEG CURRENTSET] = pop_newset (ALLEEG, EEG, ...
    CURRENTSET, 'setname', 'faces_3_chans removed epochs');
```



# Select epochs

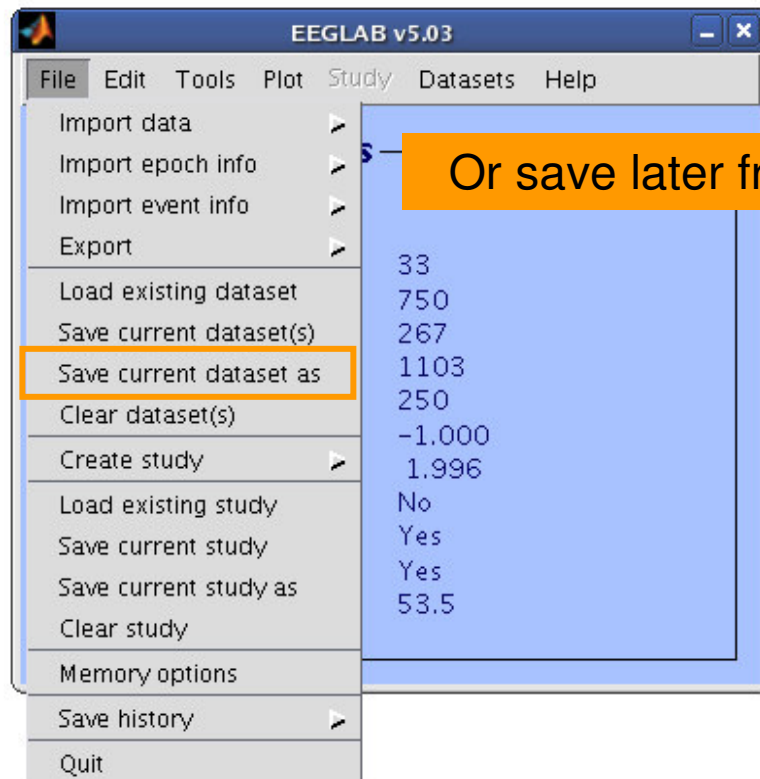


```
>> EEG = pop_selectevent(EEG, 'type', {'face'}, ...
    'deleteevents', 'off', 'deleteepochs', 'on');
>> [ALLEEG EEG CURRENTSET] = pop_newset(ALLEEG, EEG, 4, ...
    'setname', 'faces only epochs');
```

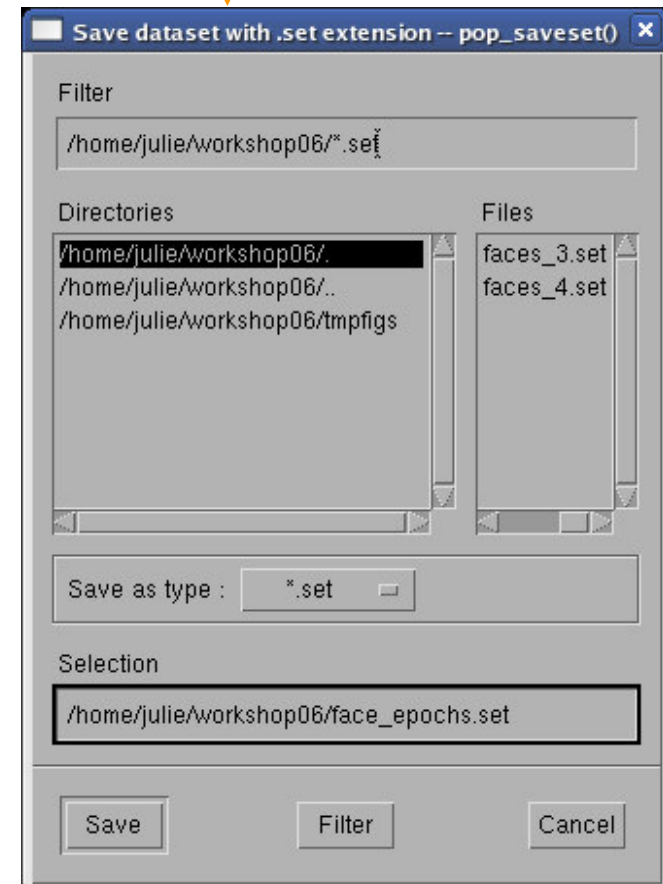


**'Do not overwrite  
current dataset'**

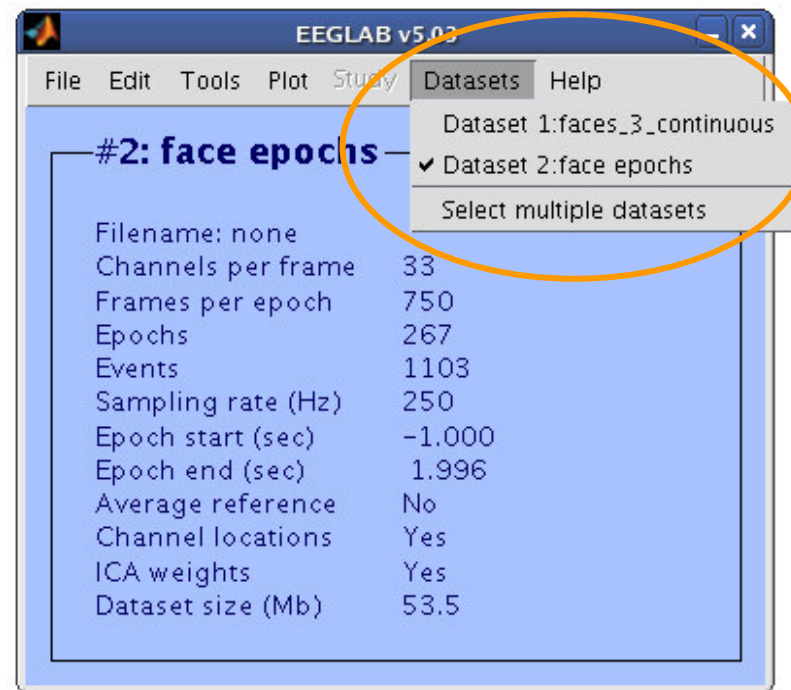
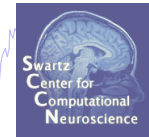
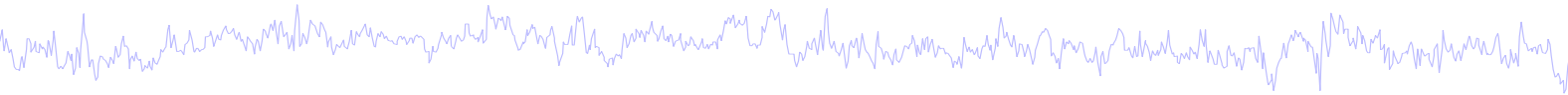
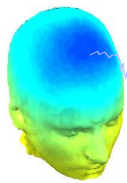
Save dataset (optional)



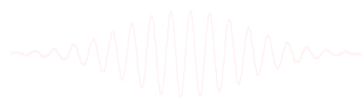
Or save later from menu



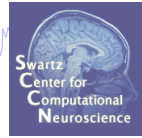
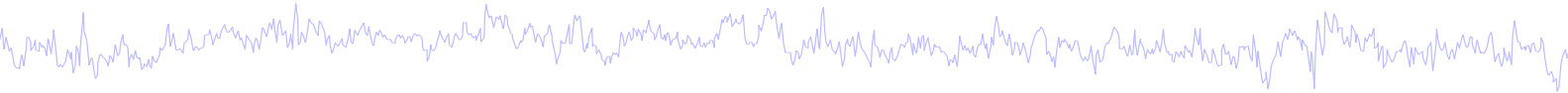
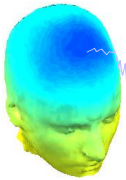




**New dataset  
created**



# Data import and preprocessing



## Task 1

- Import raw data
- Re-reference data
- Scroll channel data

## Task 2

- Import channel location file

## Task 3

- Import data events

## Task 4

- Extract data epochs
- Select epochs/events

## Task 5

- Analysis of ERPs
- Export EEG data

## Task 6

- Reject badchannels

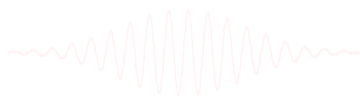
## Task 7

- Reject continuous data

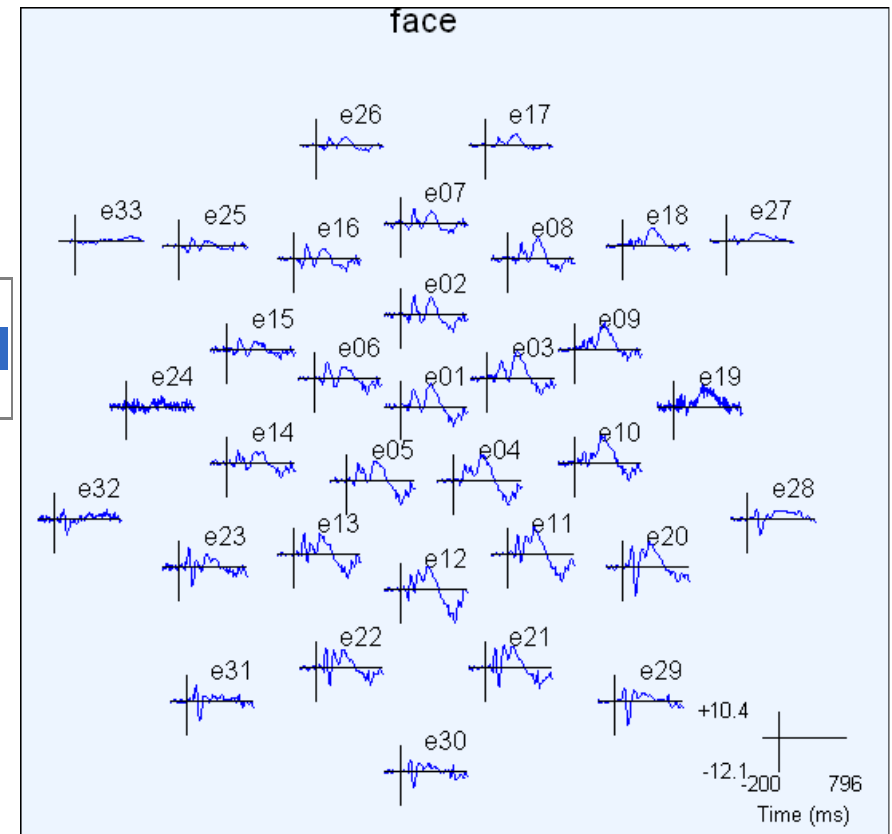
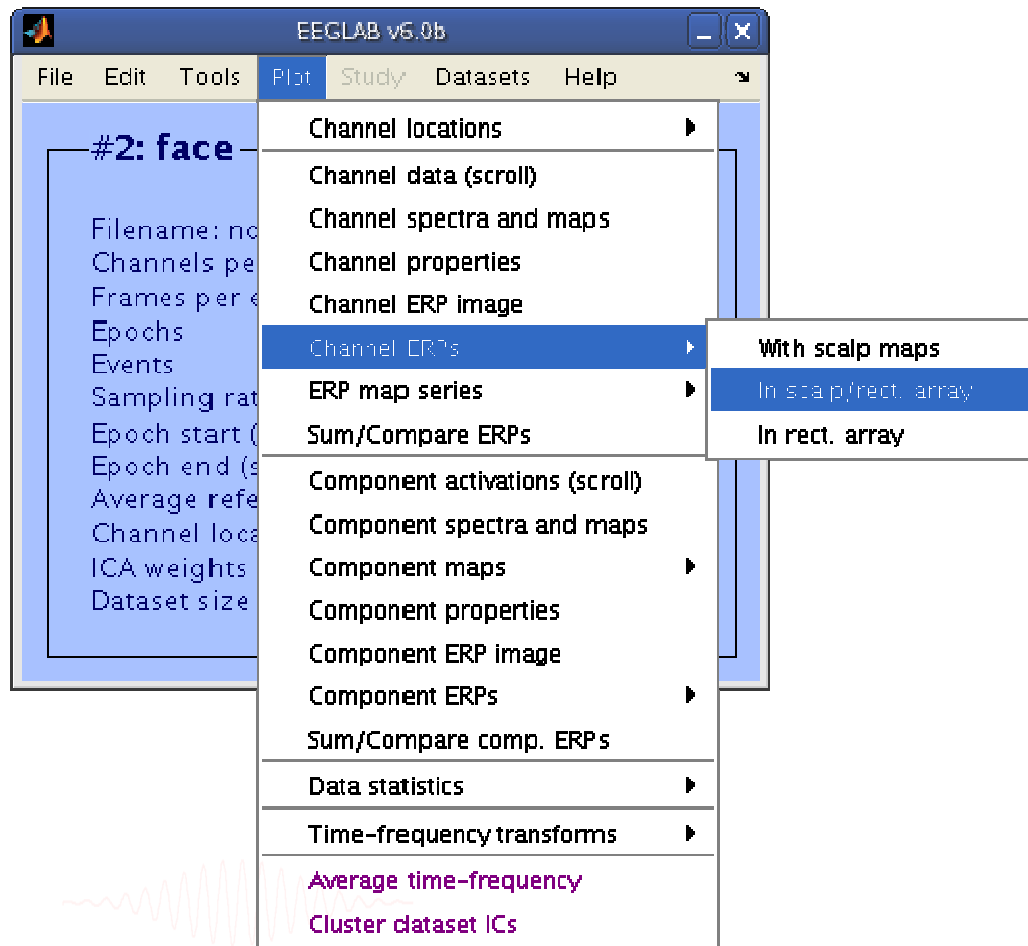
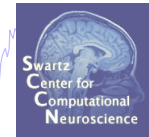
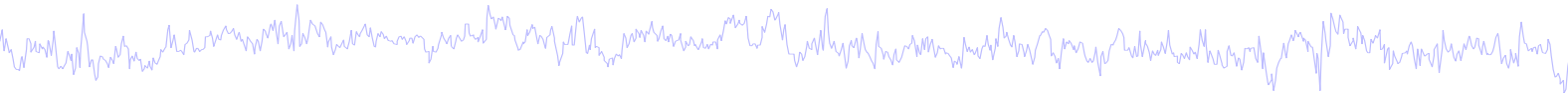
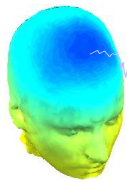
## Task 8

- Reject data epochs

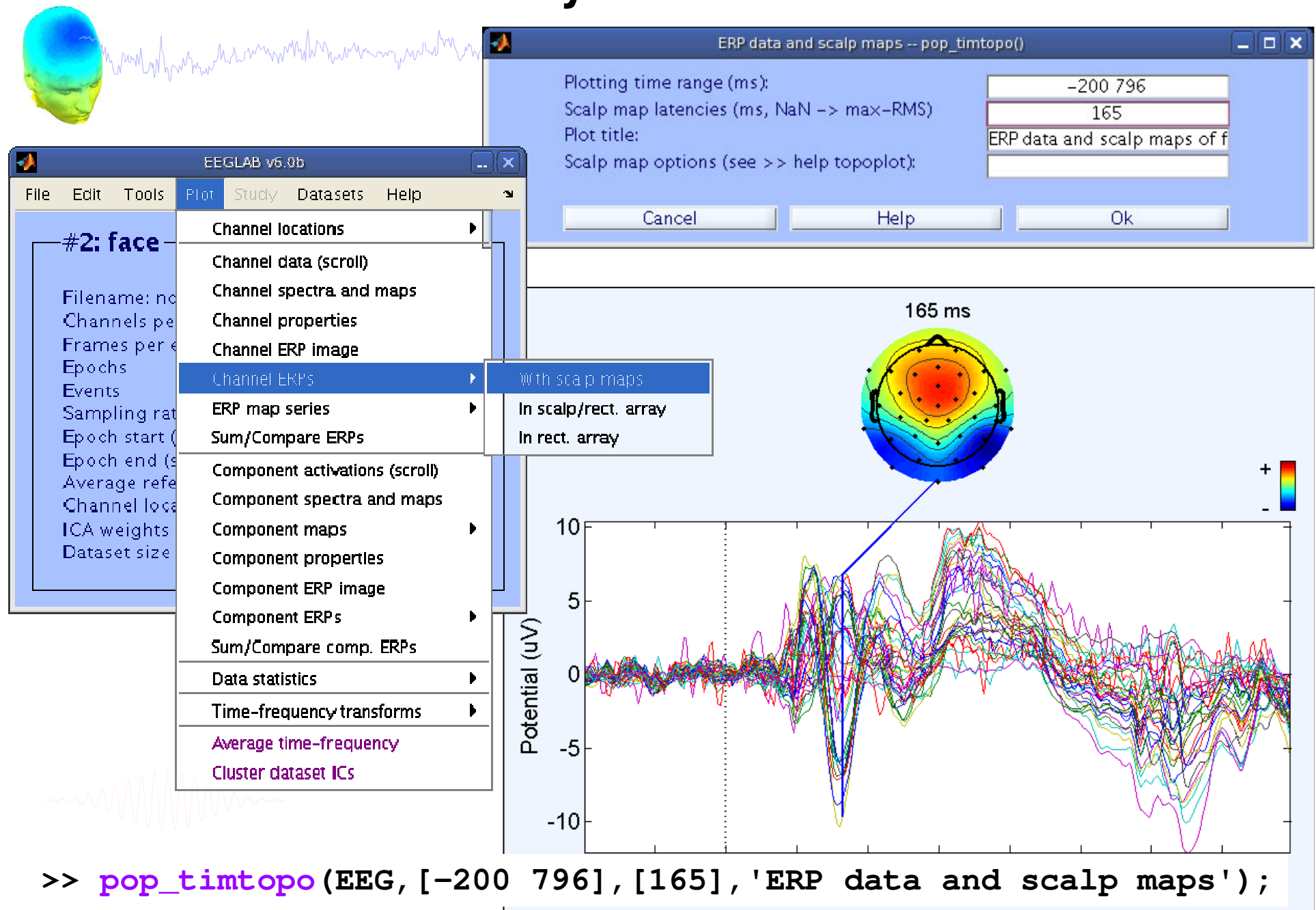
Exercise...



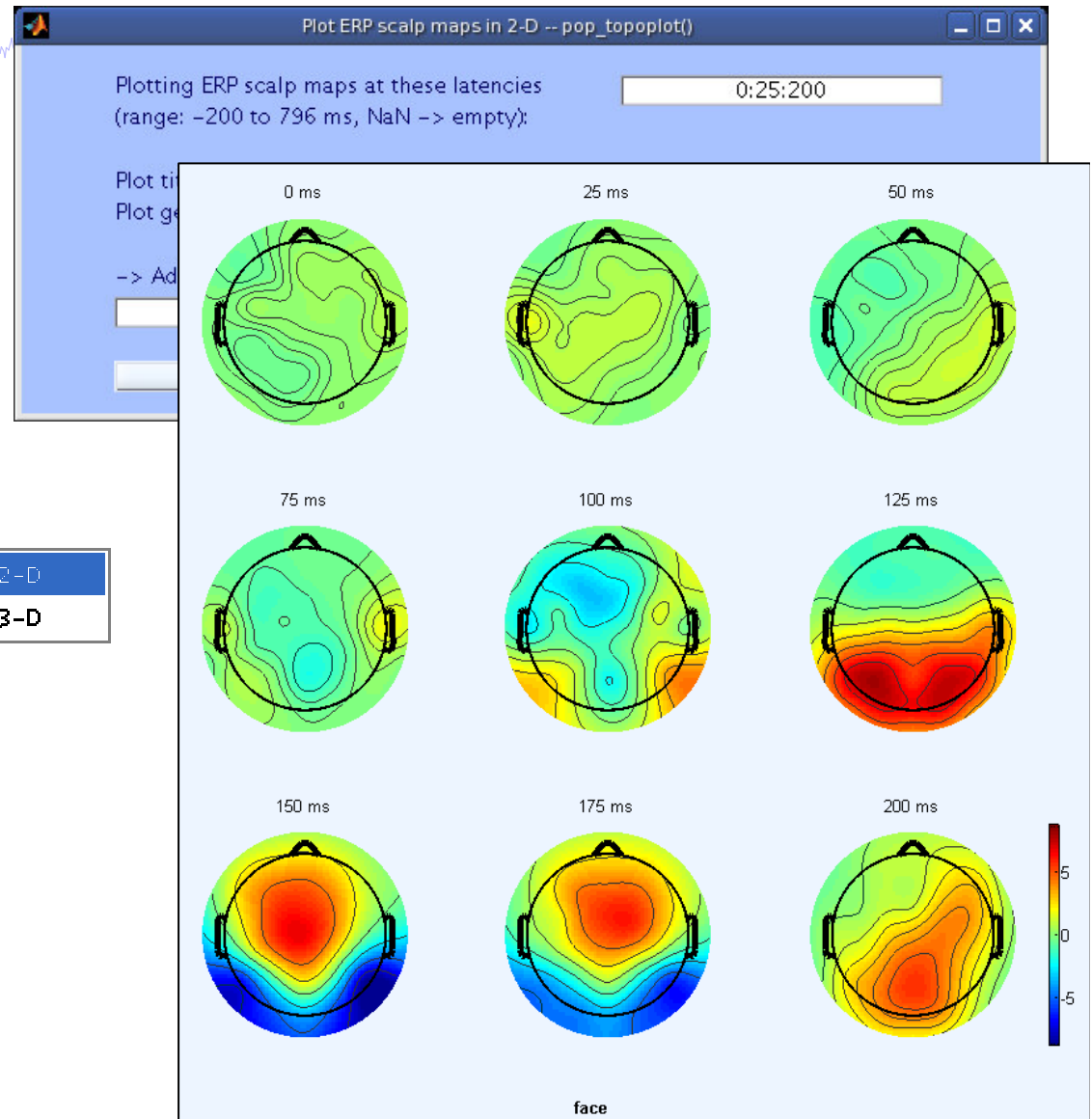
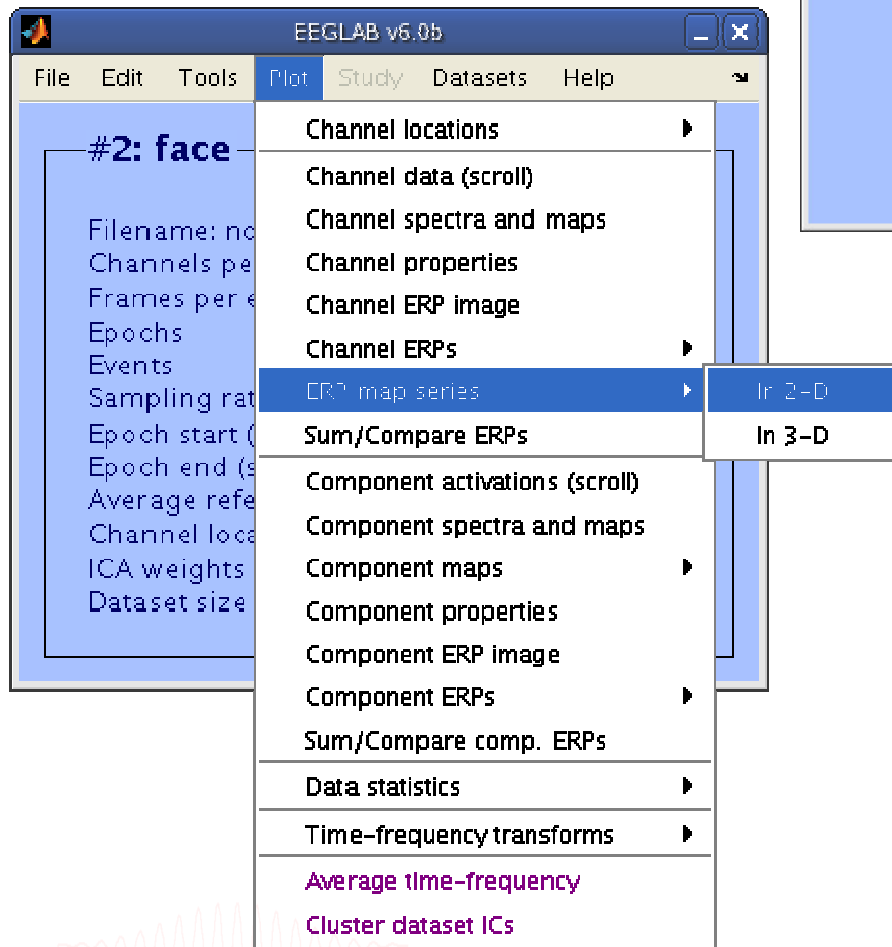
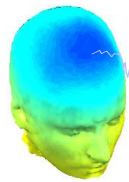
# Analysis of ERPs



# Analysis of ERPs

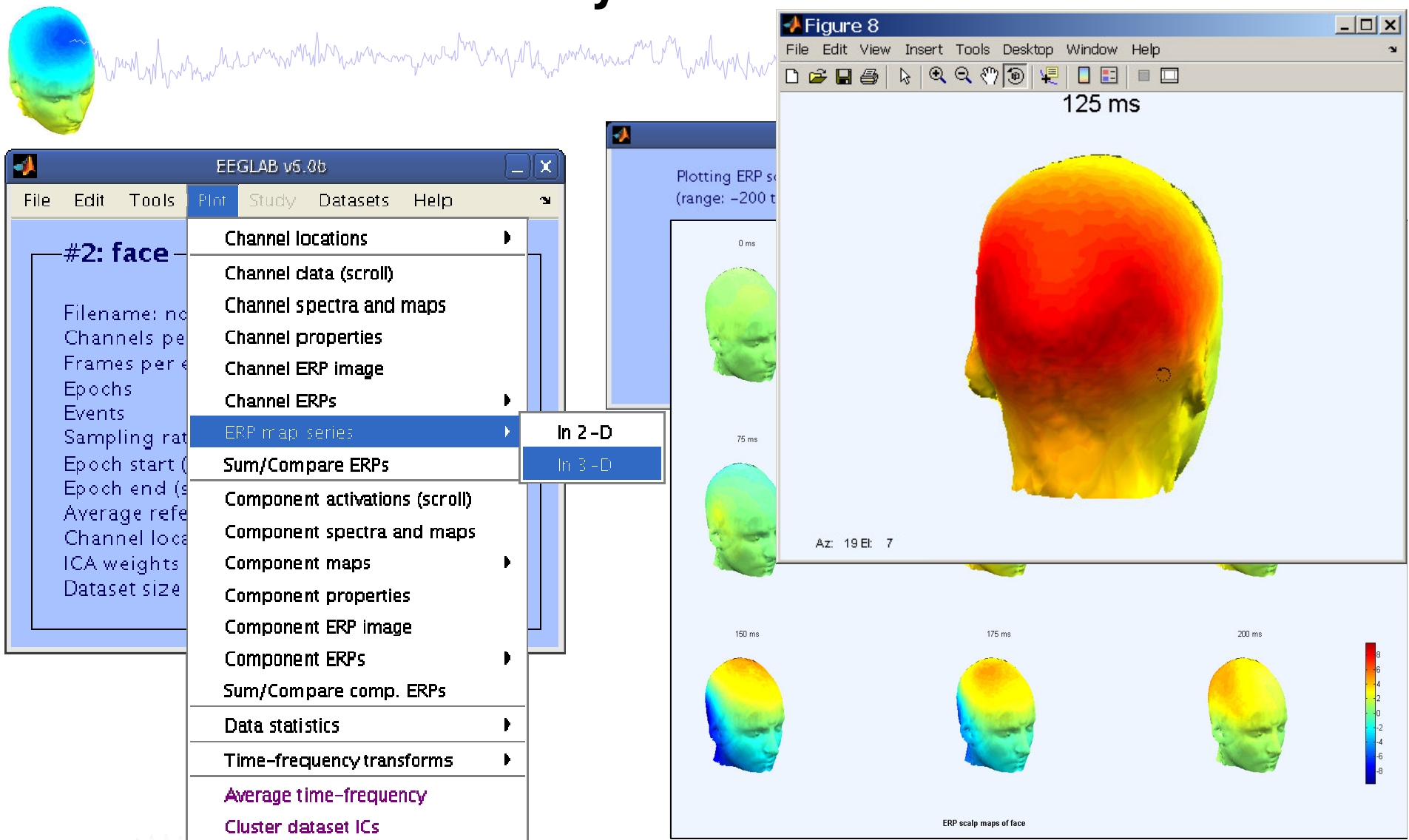


# Analysis of ERPs



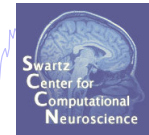
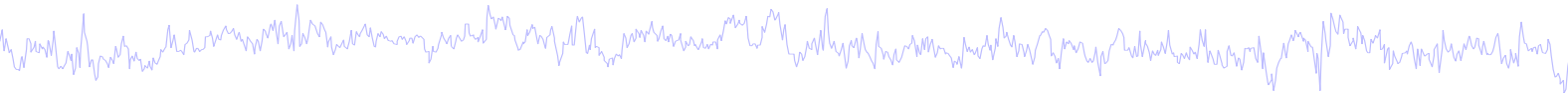
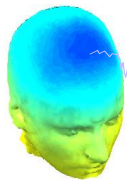
```
>>pop_topoplot(EEG,1,[0:25:200],'face',[3 3],0,'electrodes','off');
```

# Analysis of ERPs



```
>> pop_headplot(EEG,1,[0:25:200],'ERP scalp maps',[3 3],...
'electrodes','off');
```

# Export EEG data



EEGLAB v4.512

File Edit Tools Plot Datasets Help

Import data  
Import epoch info  
Import event info  
**Export**  
Load existing dataset  
Save current dataset  
Save datasets  
Clear dataset(s)  
Maximize memory  
Save history  
Quit

ICA weights  
Dataset size (Mb)

SpeedProject's SpeedEdit - [faces]

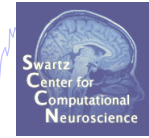
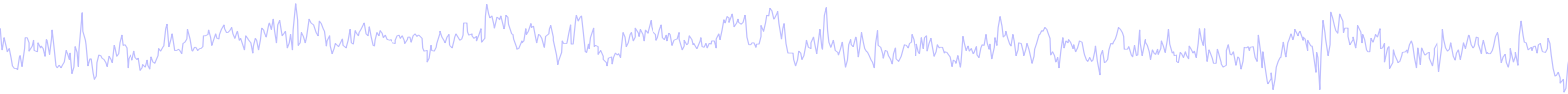
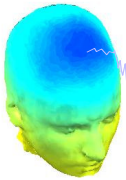
Datei Bearbeiten Format Ansicht Fenster Hilfe

	e01	e02	e03	e04	e05	e06	e07	e08	e09	e10	e11	e12	e13
Exp	-0.7021	-0.6395	-0.5491	-0.3844	-0.4730	-0.5075	-0.7165	-0.7949	-0.4038	-0.4629	-0.1161	-0.1454	-0.3393
Exp	-0.7116	-0.7245	-0.4236	-0.2221	-0.4850	-0.7165	-0.7949	-0.4038	-0.4629	-0.1161	-0.1454	-0.3393	-0.7188
Exp	-0.5483	-0.6298	-0.2757	-0.0396	-0.3252	-0.7949	-0.4038	-0.4629	-0.1161	-0.1454	-0.3393	-0.7188	-0.4372
Exp	-0.4038	-0.4629	-0.1161	-0.1454	-0.3393	-0.7188	-0.4372	-0.0962	0.2113	-0.0913	-0.1361	0.0039	0.0085
Exp	-0.3721	-0.3333	-0.1556	-0.3324	-0.4109	-0.7188	-0.4372	-0.0962	0.2113	-0.0913	-0.1361	0.0039	0.0085
Exp	-0.2317	-0.1290	-0.2646	-0.2754	-0.2334	-0.4372	-0.0962	0.2113	-0.0913	-0.1361	0.0039	0.0085	0.1603
Exp	0.0962	0.2113	-0.0913	-0.1361	0.0039	0.0085	0.1603	0.3770	0.2577	0.0617	0.3868	0.5652	0.3752
Exp	0.5633	0.6851	0.3850	0.0617	0.2508	0.4841	0.5633	0.6851	0.3850	0.0617	0.2508	0.4841	0.5633
Exp	0.7854	0.9445	0.7090	0.2071	0.3589	0.6747	0.7854	0.9445	0.7090	0.2071	0.3589	0.6747	0.7854
Exp	0.3744	0.5905	0.2864	-0.1259	0.0329	0.3895	0.3744	0.5905	0.2864	-0.1259	0.0329	0.3895	0.3744
Exp	-0.0672	0.1176	-0.2224	-0.4370	-0.1789	0.0444	-0.0672	0.1176	-0.2224	-0.4370	-0.1789	0.0444	-0.0672
Exp	-0.0826	-0.0019	-0.1886	-0.2928	-0.0028	-0.1215	-0.0826	-0.0019	-0.1886	-0.2928	-0.0028	-0.1215	-0.0826
Exp	-0.0582	-0.0889	-0.1299	-0.1322	0.1167	-0.2183	-0.0582	-0.0889	-0.1299	-0.1322	0.1167	-0.2183	-0.0582
Exp	-0.1189	-0.2618	-0.2840	-0.1262	0.1378	-0.2262	-0.1189	-0.2618	-0.2840	-0.1262	0.1378	-0.2262	-0.1189
Exp	-0.0765	-0.2820	-0.4683	-0.0749	0.2594	-0.1621	-0.0765	-0.2820	-0.4683	-0.0749	0.2594	-0.1621	-0.0765
Exp	0.1603	-0.0609	-0.3273	0.1355	0.4519	0.0595	0.1603	-0.0609	-0.3273	0.1355	0.4519	0.0595	0.1603
Exp	0.3770	0.2577	0.0617	0.3868	0.5652	0.3752	0.3770	0.2577	0.0617	0.3868	0.5652	0.3752	0.3770

```
>> pop_export(EEG, 'D:\tmp\faces.dat', 'erp', 'on', ...
    'transpose', 'on', 'time', 'off');
```



# Data import and preprocessing



## Task 1

- Import raw data
- Re-reference data
- Scroll channel data

## Task 2

- Import channel location file

## Task 3

- Import data events

## Task 4

- Extract data epochs
- Select epochs/events

## Task 5

- Analysis of ERPs
- Export EEG data

## Task 6

- Reject badchannels

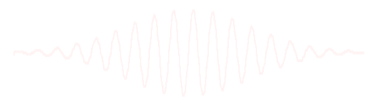
## Task 7

- Reject continuous data

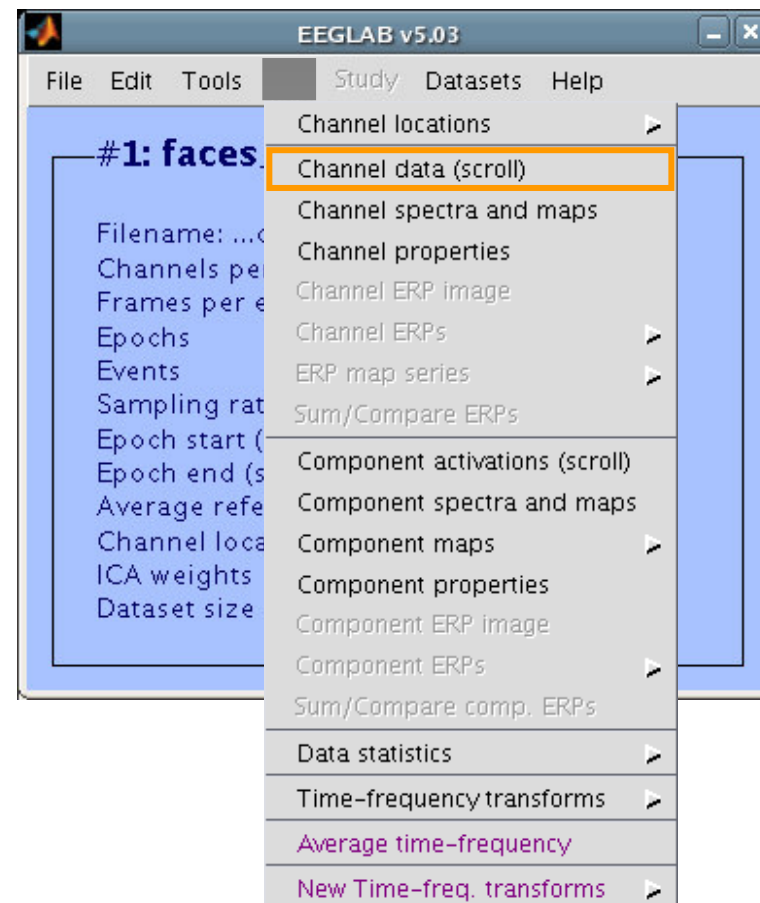
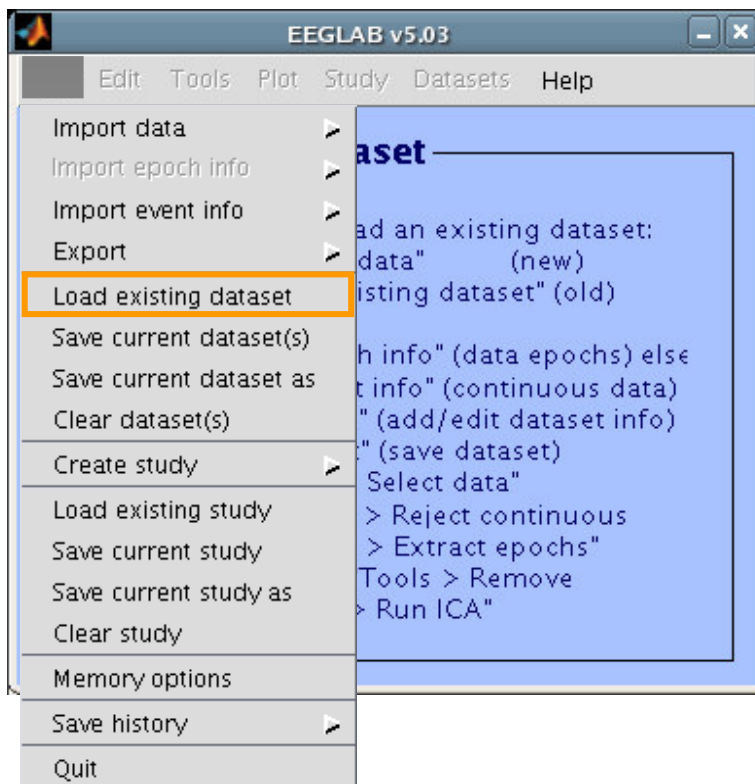
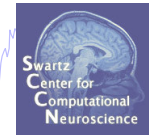
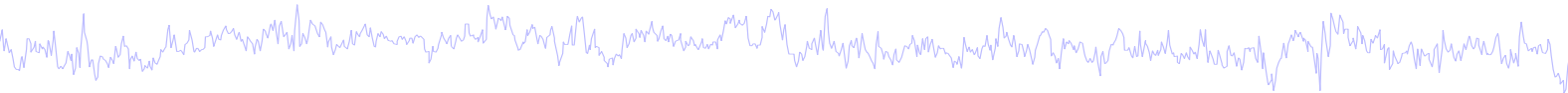
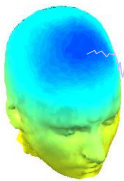
## Task 8

- Reject data epochs

Exercise...

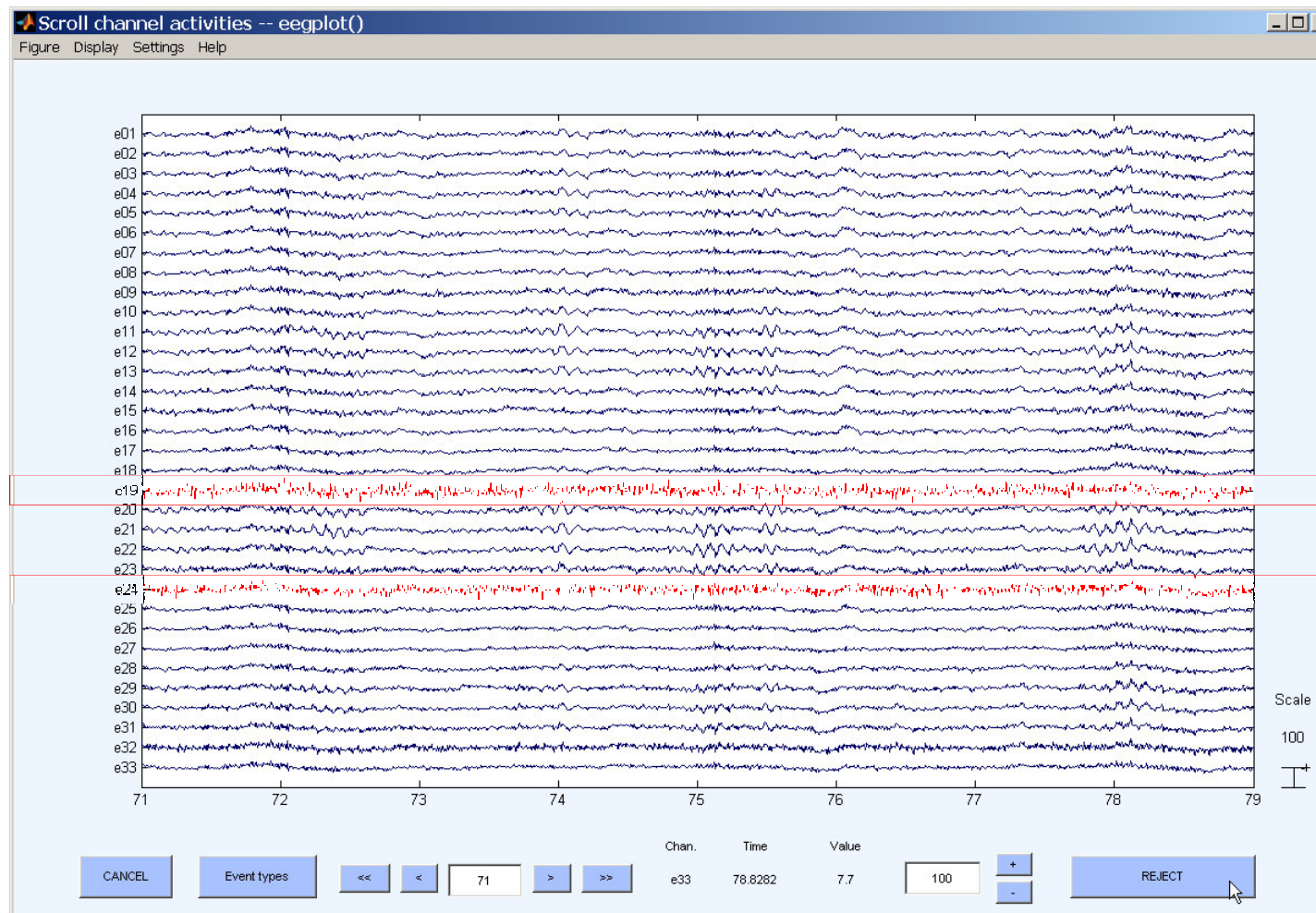
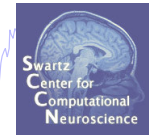
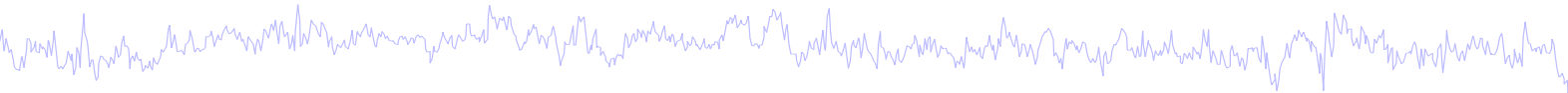
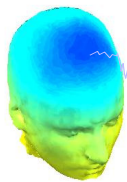


# Load/scroll data



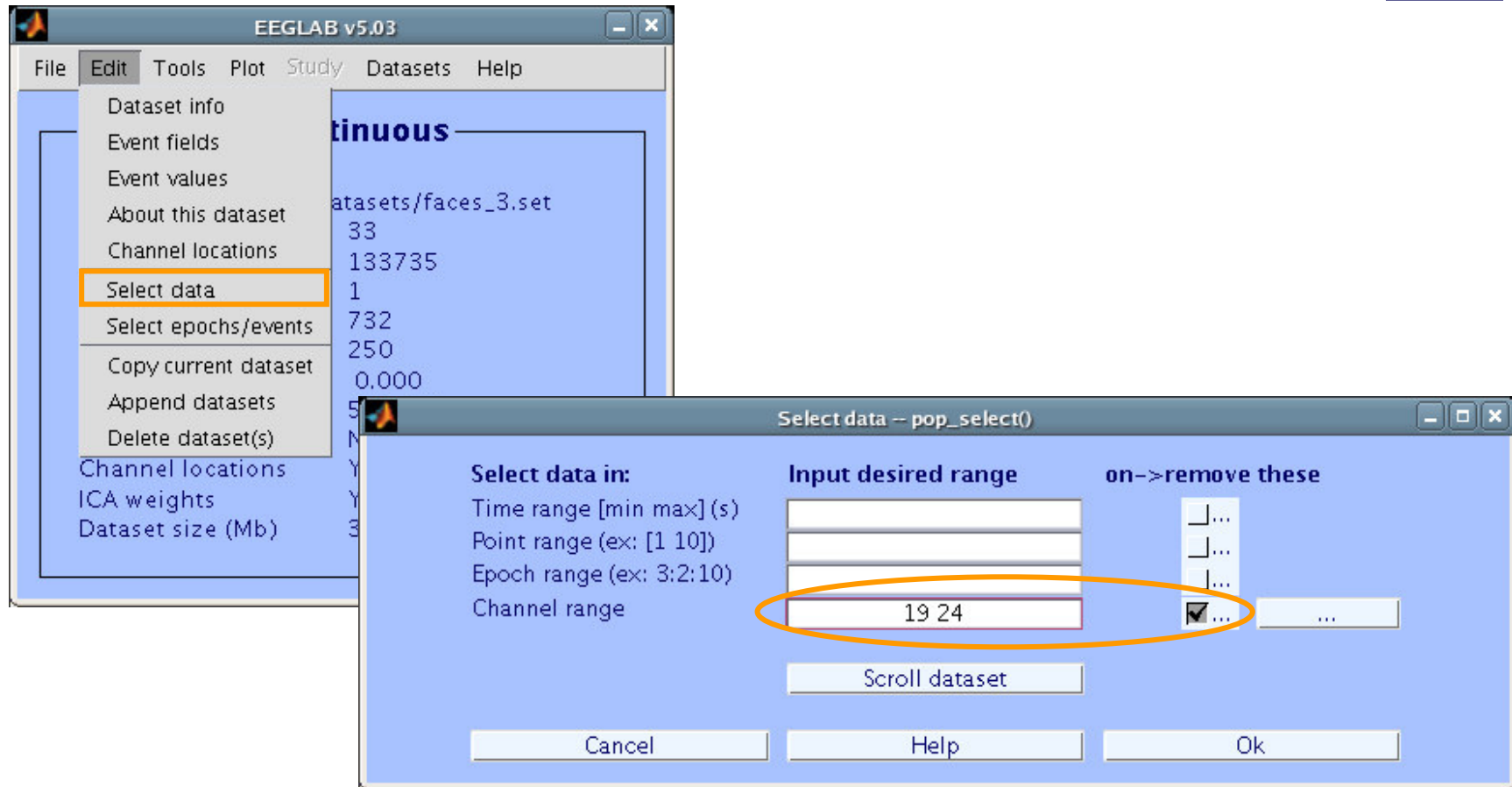
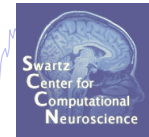
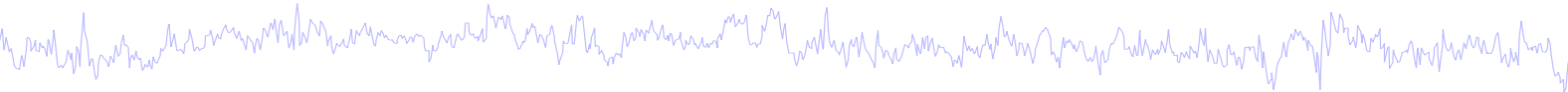
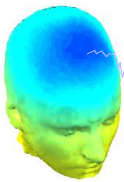
```
>> EEG = pop_loadset('faces_3.set', '...\data\');  
>> [ALLEEG EEG CURRENTSET] = eeg_store(ALLEEG, EEG, 0);
```

# Reject bad channels



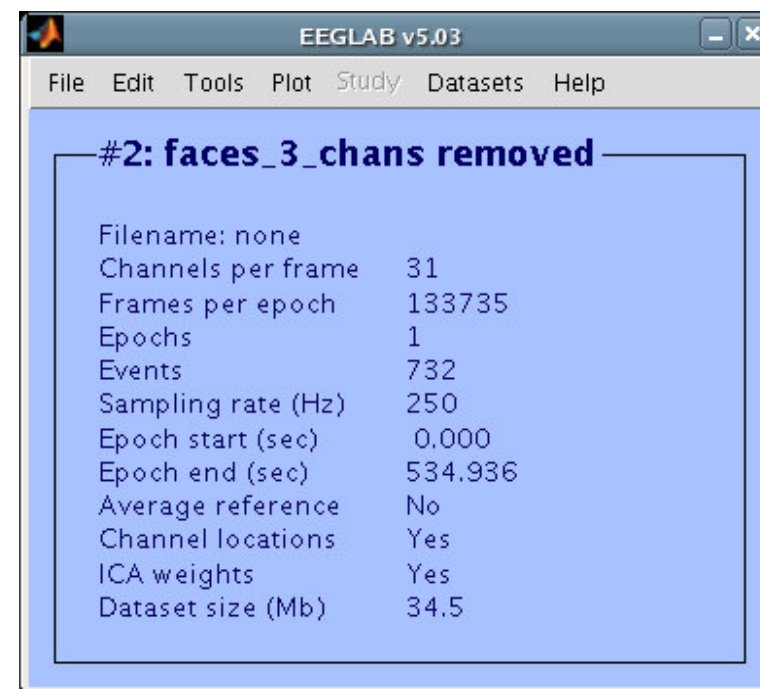
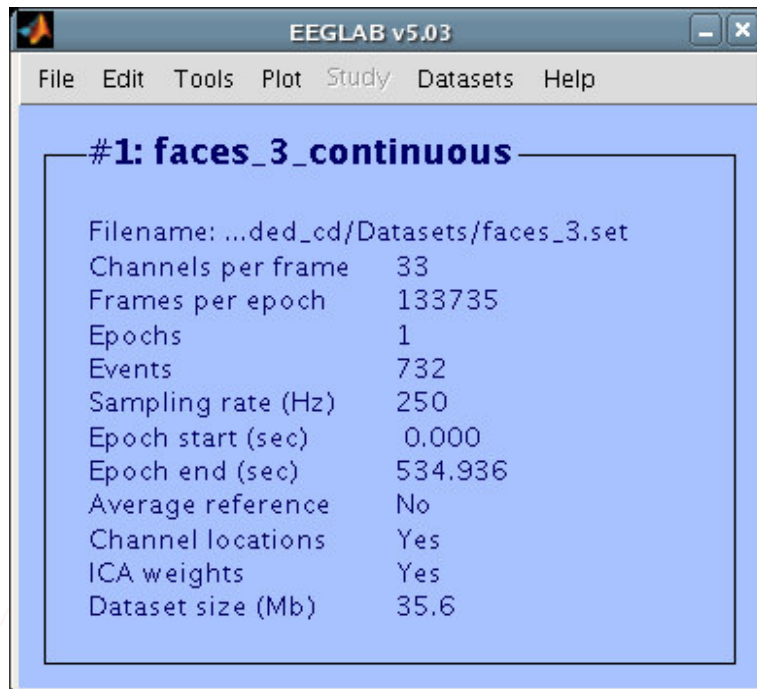
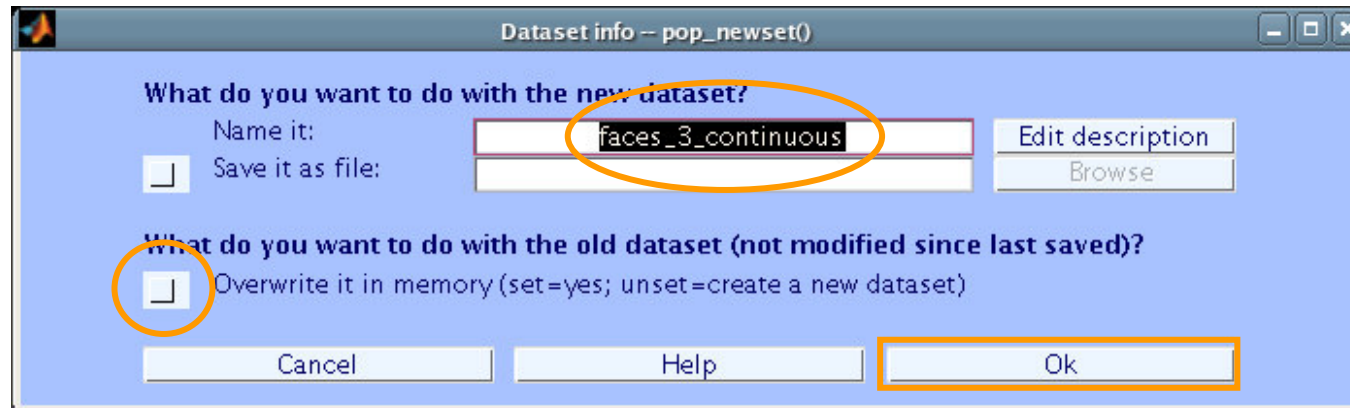
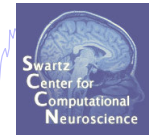
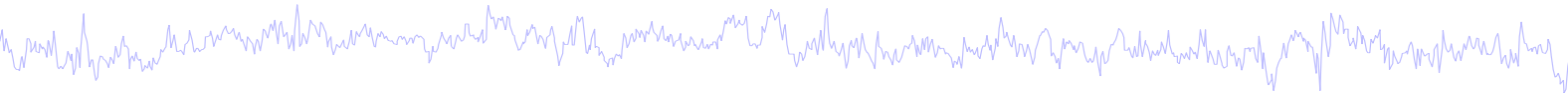
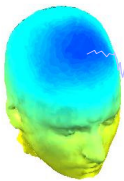
```
>> pop_eegplot(EEG, 1, 1, 1);
```

# Reject bad channels



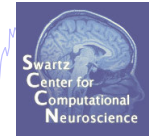
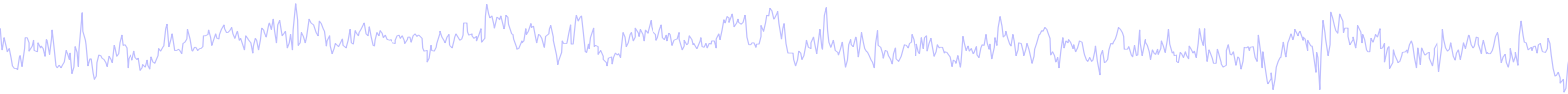
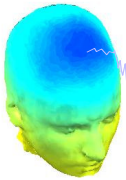
`EEG = pop_select(EEG, 'nochannel', [19 24]);`

# Reject bad channels





# Data import and preprocessing



## Task 1

- Import raw data
- Re-reference data
- Scroll channel data

## Task 2

- Import channel location file

## Task 3

- Import data events

## Task 4

- Extract data epochs
- Select epochs/events

## Task 5

- Analysis of ERPs
- Export EEG data

## Task 6

- Reject badchannels

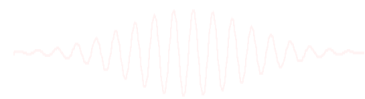
## Task 7

- Reject continuous data

## Task 8

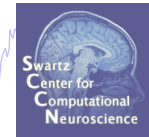
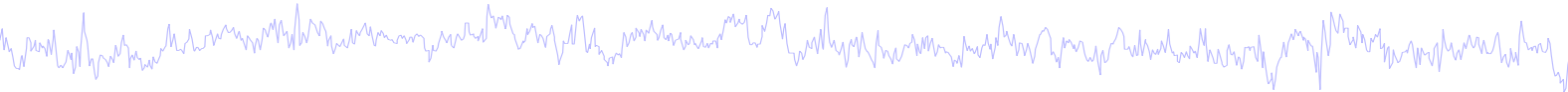
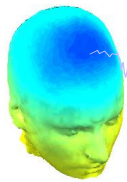
- Reject data epochs

Exercise...





# Reject continuous data



Equivalent!!

EEGLAB v5.03

File Edit Plot Study Datasets Help

#2: f

Change sampling rate

Filter the data

Re-reference

Reject continuous data by eye

Extract epochs

Remove baseline

Reject data epochs

Run ICA

Remove components

Reject data using ICA

Locate dipoles using BESA

Locate dipoles using DIPFIT 1.x

Locate dipoles using DIPFIT 2.x

Laplacian

Warning

Mark stretches of continuous data for rejection by dragging the left mouse button. Click on marked stretches to unmark. When done, press "REJECT" to excise marked stretches (Note: Leaves rejection boundary markers in the event table).

Cancel Continue

EEGLAB v5.03

File Edit Tools Study Datasets Help

#2: faces

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

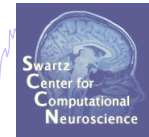
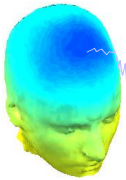
Data statistics

Time-frequency transforms

Average time-frequency

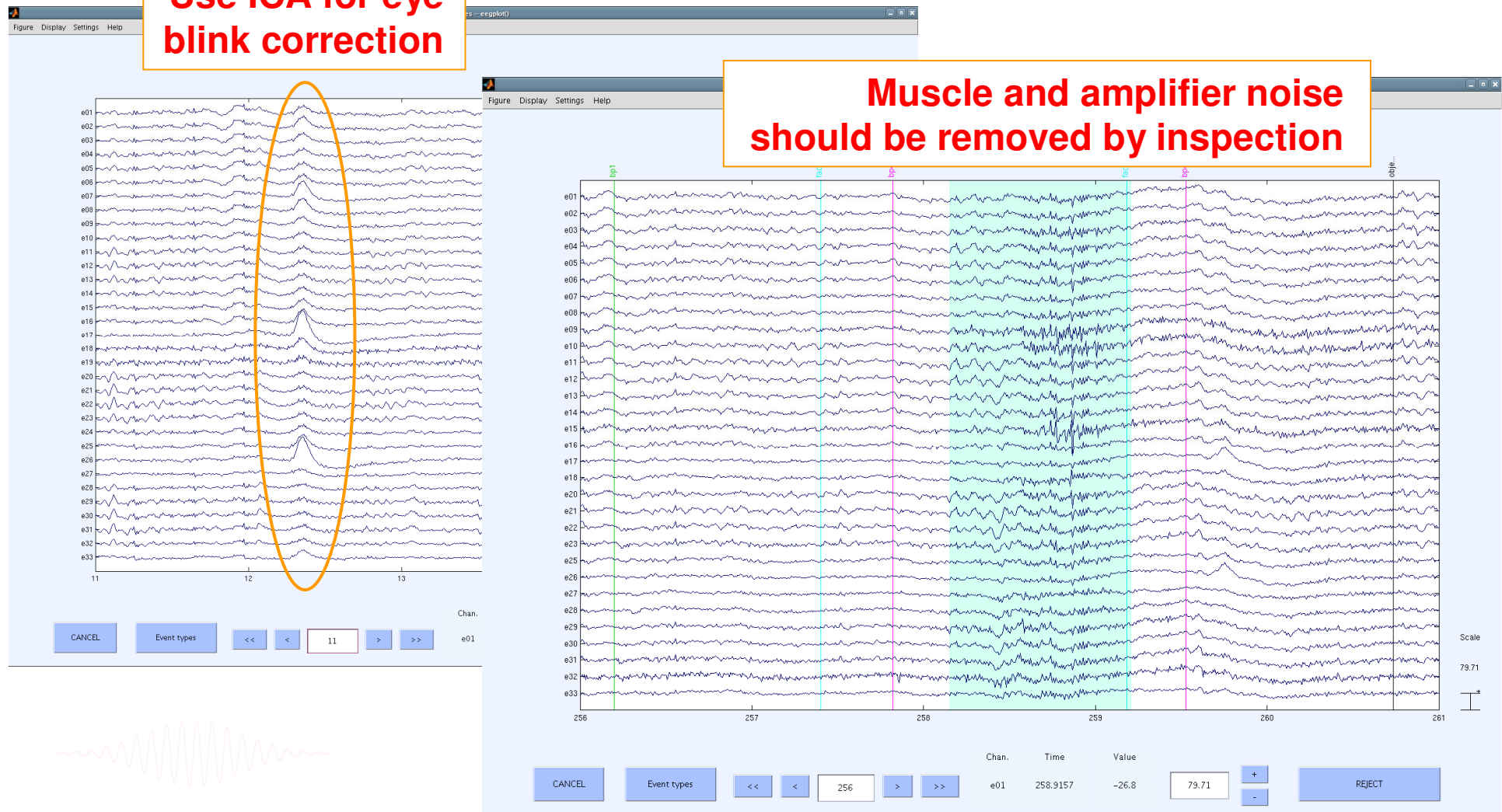
New Time-freq. transforms

# Reject continuous data

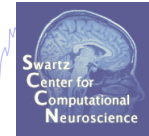
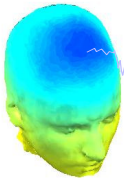


**Use ICA for eye  
blink correction**

**Muscle and amplifier noise  
should be removed by inspection**



# Reject continuous data



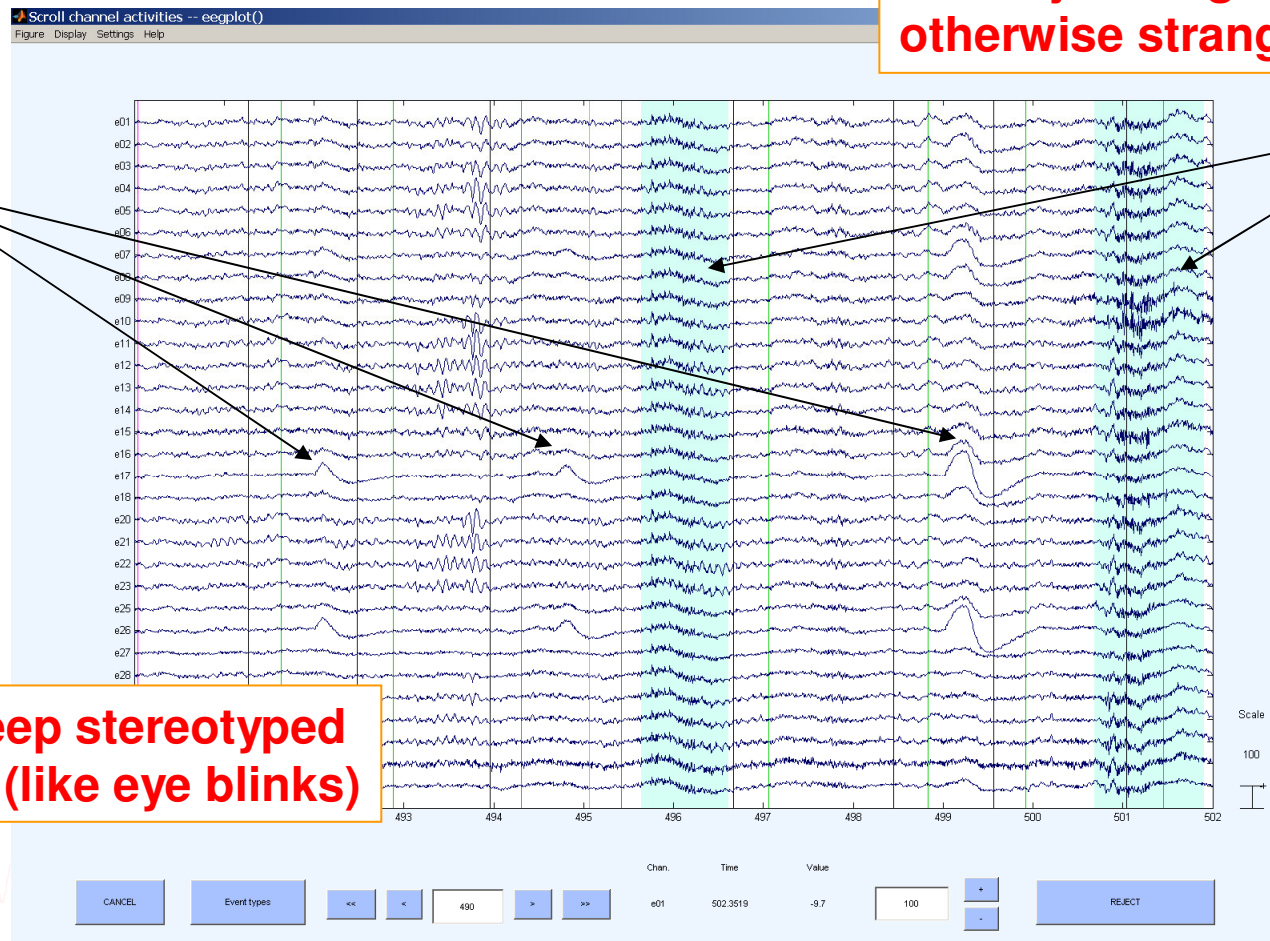
**To prepare data for ICA:**

**Reject large muscle or otherwise strange events...**

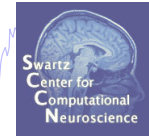
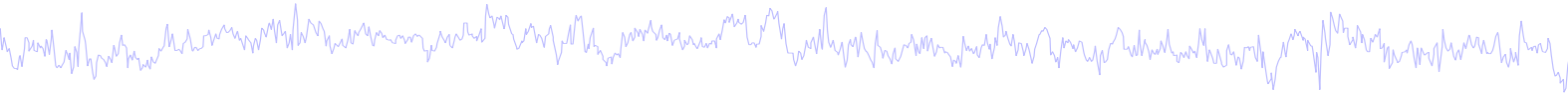
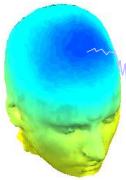
**Keep**

**Reject**

**... but keep stereotyped artifacts (like eye blinks)**



# Data import and preprocessing



## Task 1

- Import raw data
- Re-reference data
- Scroll channel data

## Task 2

- Import channel location file

## Task 3

- Import data events

## Task 4

- Extract data epochs
- Select epochs/events

## Task 5

- Analysis of ERPs
- Export EEG data

## Task 6

- Reject badchannels

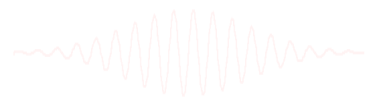
## Task 7

- Reject continuous data

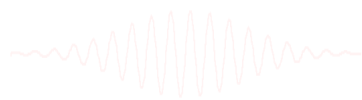
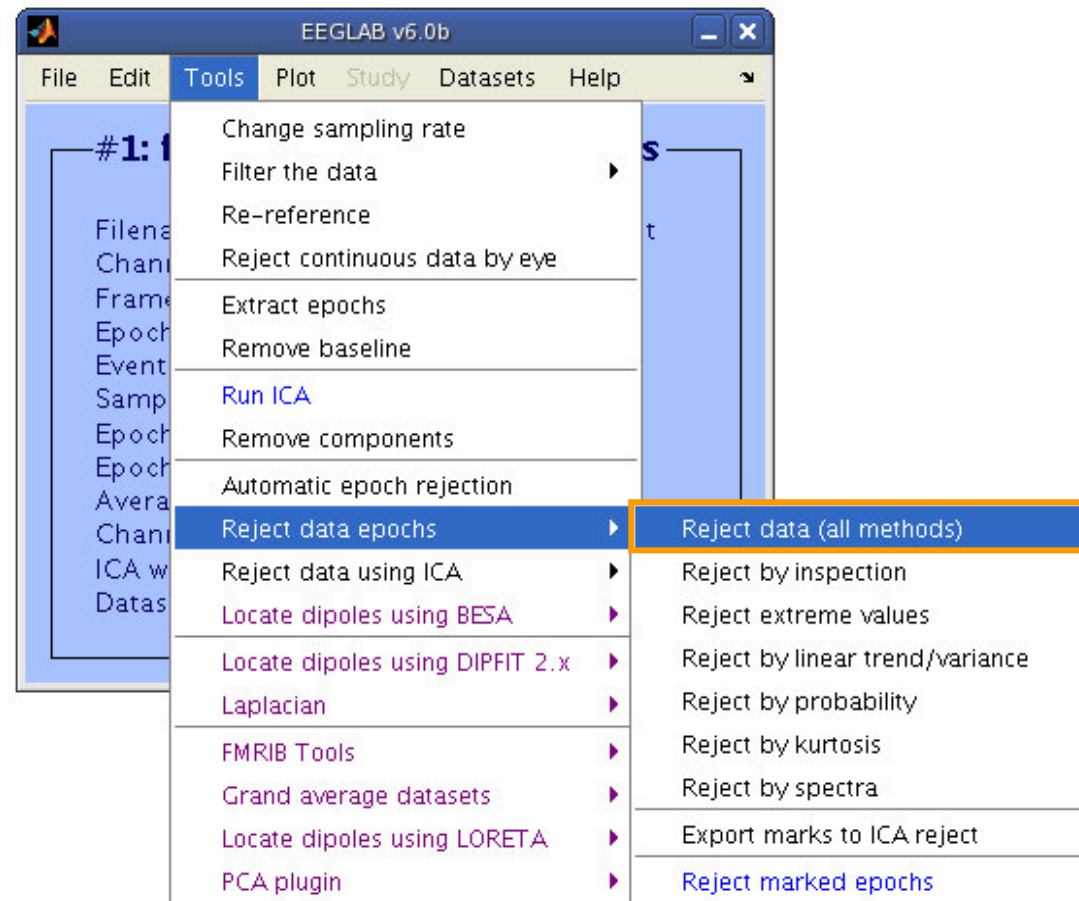
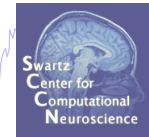
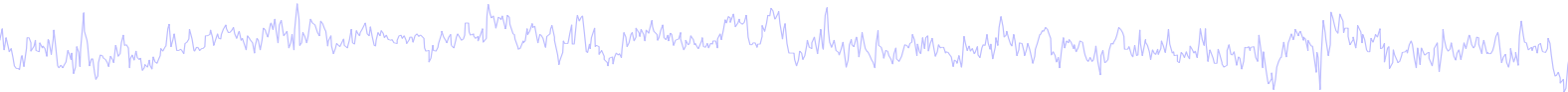
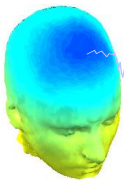
## Task 8

- Reject data epochs

Exercise...

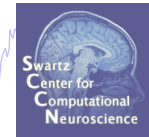
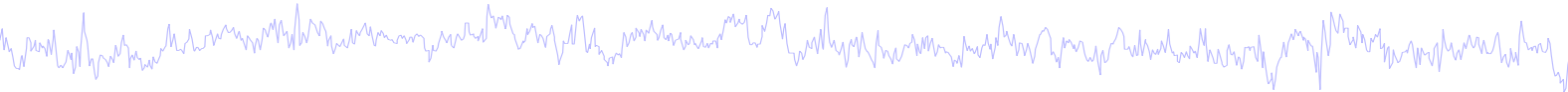
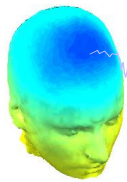


# Reject data epochs





# Reject data epochs



visual  
inspection

Reject trials using data statistics - pop\_rejmenu()

Mark trials by appearance ☐ Scroll Data Marked trials 0

**Find abnormal values**

Upper limit(s) (uV)  Lower limit(s) (uV)   
 Start time(s) (ms)  Ending time(s) (ms)   
 Electrode(s)  Currently marked trials

**Find abnormal trends**

Max slope (uV/epoch)  R-squared limit (0 to 1)   
 Electrode(s)  Currently marked trials

**Find improbable data**

Single-channel limit (std. dev.)  All channels limit (std. dev.)   
 Electrode(s)  Currently marked trials

**Find abnormal distributions**

Single-channel limit (std. dev.)  All channels limit (std. dev.)   
 Electrode(s)  Currently marked trials

**Find abnormal spectra (slow)**

Upper limit(s) (dB)  Lower limit(s) (dB)   
 Low frequency(s) (Hz)  High frequency(s) (Hz)   
 Electrode(s)  Currently marked trials

**Plotting options**

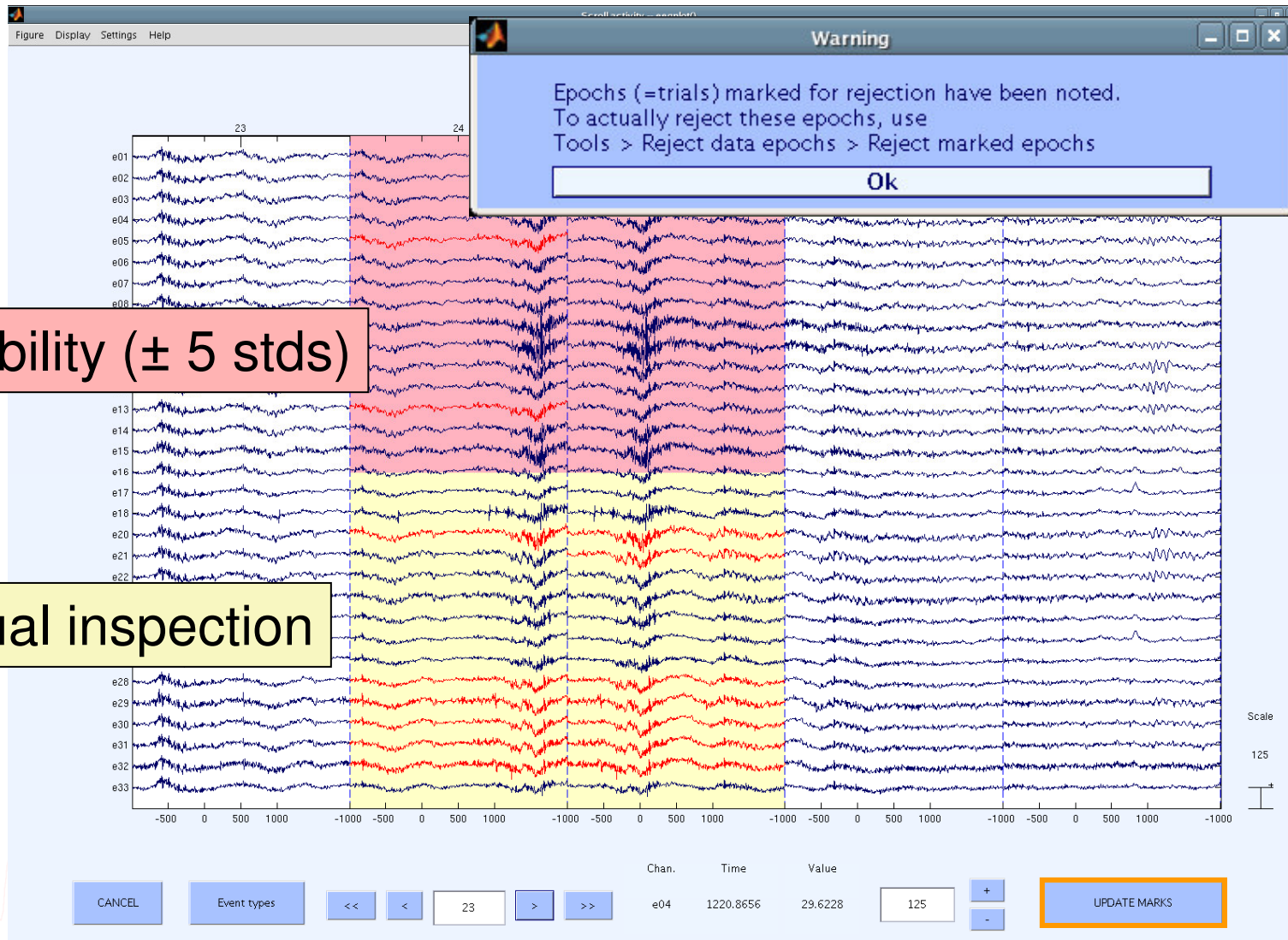
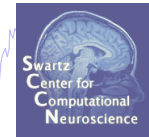
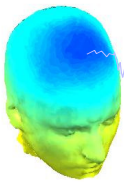
Show all trials marked for rejection by the measure selected above or checked below ☒

☒ Abnormal appearance ☒ Abnormal values ☒ Abnormal trends  
☒ Improbable epochs ☒ Abnormal distributions ☒ Abnormal spectra

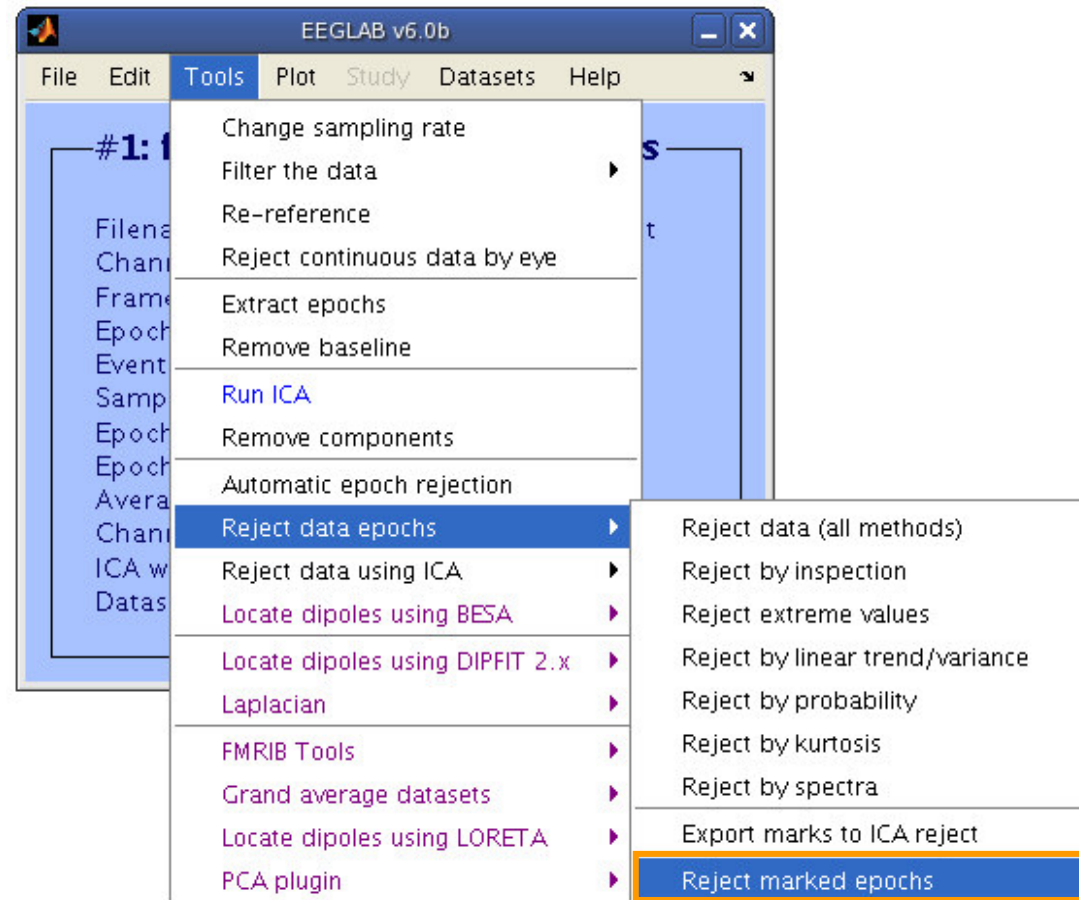
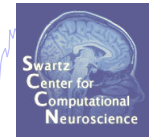
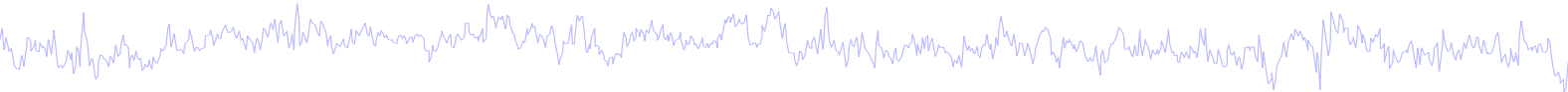
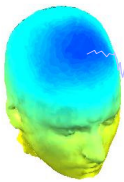
probability



# Reject data epochs

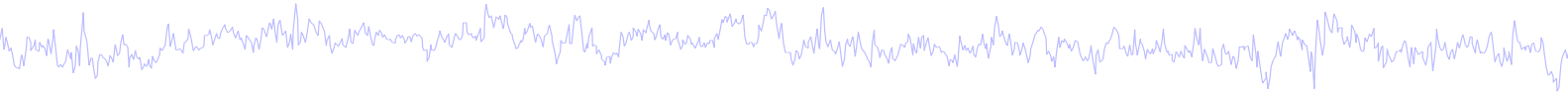
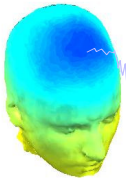


# Reject data epochs



```
>> EEG = pop_jointprob(EEG, 1, [1:31], 5, 5, 0, 0);  
>> EEG = pop_rejepoch(EEG, find(EEG.reject.rejglobal), 0);
```

# Data import and preprocessing



## Task 1

- Import raw data
- Re-reference data
- Scroll channel data

## Task 2

- Import channel location file

## Task 3

- Import data events

## Task 4

- Extract data epochs
- Select epochs/events

## Task 5

- Analysis of ERPs
- Export EEG data

## Task 6

- Reject badchannels

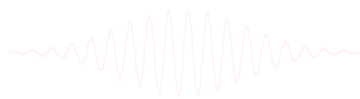
## Task 7

- Reject continuous data

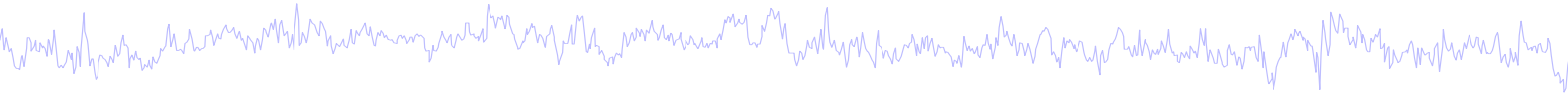
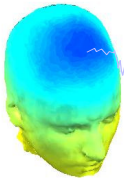
## Task 8

- Reject data epochs

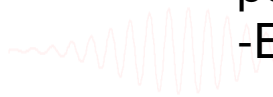
**Exercise...**



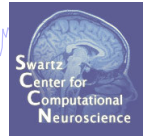
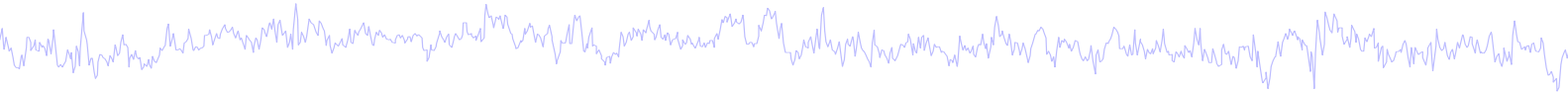
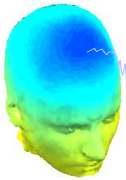
# Exercise 1



- **ALL**
  - Load faces\_3.set
  - Do not save your changes under the same name!
- **Novice**
  - Rereference the data to Cz.
  - Scroll data and explore plotting options under 'Settings'.
- **Intermediate**
  - Load channel locations from .locs file in 'data' folder, explore options to transform axes.
  - Review events in Edit->Event values, rename an event in Select epochs/events.
  - Create a new event field in Edit->Event fields.
- **Advanced**
  - Epoch the data on faces and objects separately, then use pop\_comperp to compare ERPs between conditions.
  - Explore other menu options.



## Exercise 2



- **ALL**
  - Load faces\_3.set or faces\_4.set
  - Epoch the data on faces and objects
  - From Reject data epochs->All methods menu
  - Scroll the data and perform visual rejection
  - Try other rejection protocols and compare
  - Explore channel probability and abnormal distribution plots

