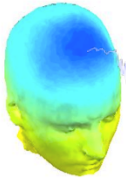


# STUDY plot menu



Task 1

Plot cluster summaries

Task 2

Plot individual ICs

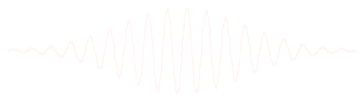
Task 3

Plot using statistical thresholds

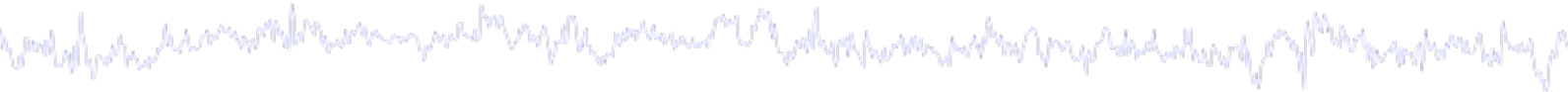
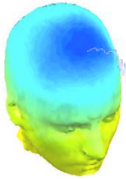
Task 3

Eliminate/reassign ICs

Exercise...



# Precompute data measures



EEGLAB v9.0.0.0b

File Edit Tools Plot **Study** Datasets Help

**STUDY set:**

Study filename:	...s/data
Study task name	
Nb of subjects	
Nb of conditions	
Nb of sessions	
Nb of groups	
Epoch consistency	
Channels per frame	61
Channel locations	yes
Clusters	1
Status	Pre-clustered
Total size (Mb)	8.2

Edit study info  
Select/Edit study design(s)  
**Precompute channel measures**  
Plot channel measures

Precompute component measures  
Measure Product clustering ▶  
PCA clustering (original) ▶  
Edit/plot clusters

Select and compute component measures for later clustering -- pop\_precomp()

Pre-compute channel measures for STUDY 'Sternberg' - 'STUDY.design 1'

Channel list (default:all)  ...

Spherical interpolation of missing channels (performed after optional ICA removal below)

Remove ICA artifactual components pre-tagged in each dataset

Remove artifactual ICA cluster or clusters (hold shift key)

ParentCluster 1  
Cis 2  
Cis 3  
Cis 4

List of measures to precompute

ERPs Baseline ([min max] in ms)

Power spectrum Spectopo parameters  'specmode', 'fft' Test

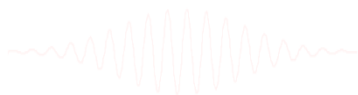
ERSPs } Time/freq. parameters  'cycles', [3 0.5], 'nfreqs', 100 Test

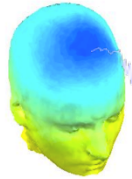
ITCs }

Save single-trial measures for single-trial statistics - requires disk space

Recompute even if present on disk

Help Cancel Ok





Choose which channel

Choose which subject

### View and edit current channels -- pop\_chanplot()

Study "

Select channel to plot

- All FP1
- All FP2
- All F3
- All F4
- All C3
- All C4
- All P2

Select subject(s) to plot

- All subjects
- cba FP1
- clm FP1
- ega FP1
- fsa FP1
- gro FP1
- hbb FP1

Plot ERPs

Params

Plot spectra

Params

Plot ERSPs

Params

Plot ITCs

Params

Plot channel properties

Plot ERP(s)

Params

Plot spectra

Params

Plot ERSP(s)

Params

Plot ITC(s)

Params

Plot channel properties (soon)

Create channel group (soon)

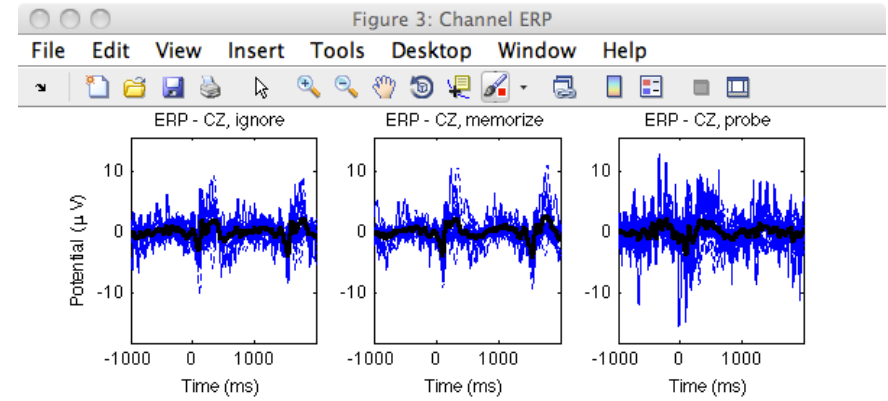
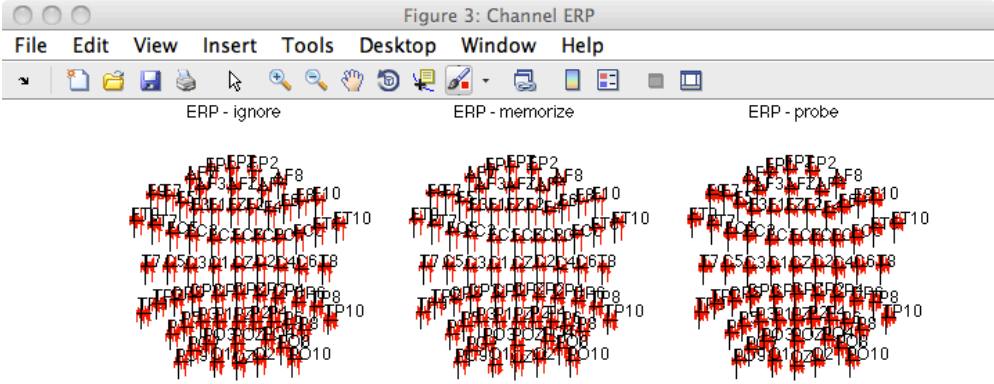
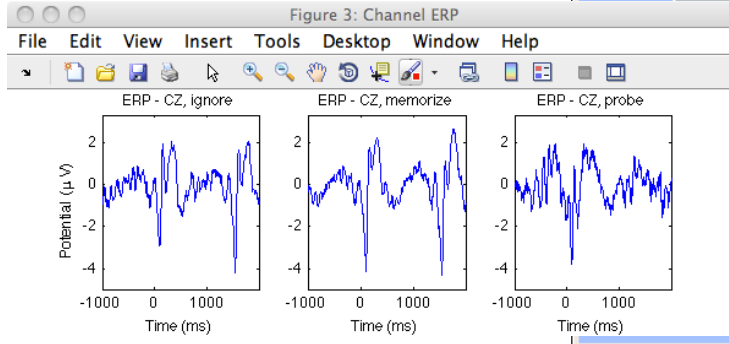
Edit channel group (soon)

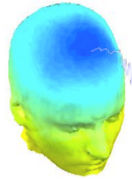
Delete channel group (soon)

Save STUDY set to disk

/home/delorme/matlab/animal/animal.stu

Cancel Help Ok





Choose which channel

Choose which subject

View and edit current channels -- pop\_chanplot()

Study "

Select channel to plot Sel. all

- AI1 FP1
- AI1 FP2
- AI1 F3
- AI1 F4
- AI1 C3
- AI1 C4
- AI1 P2

Plot ERPs

Params

Select subject(s) to plot

- All subjects
- cba FP1
- clm FP1
- ega FP1
- fsa FP1
- gro FP1
- web FP1

Plot ERP(s)

Params

Params

Params

Plot spectra

Plot ERSP(s)

Plot ITC(s)

Plot channel properties

Plot channel properties (soon)

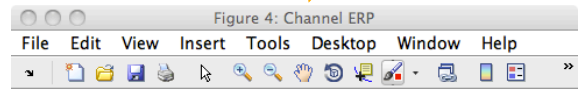
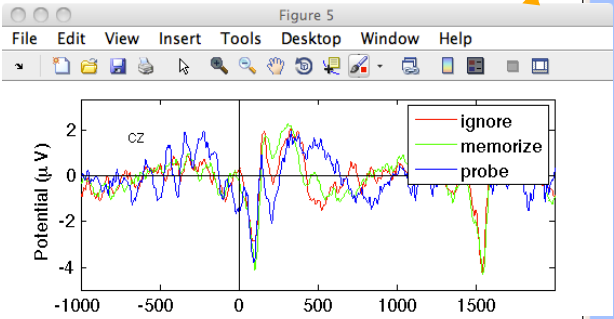
Create channel group (soon)

Edit channel group (soon)

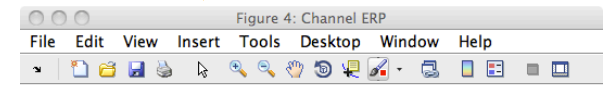
Save STUDY set to disk

/home/delorme/matlab/animal/animal.stu ...

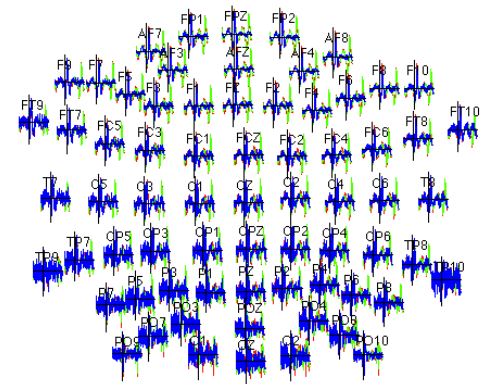
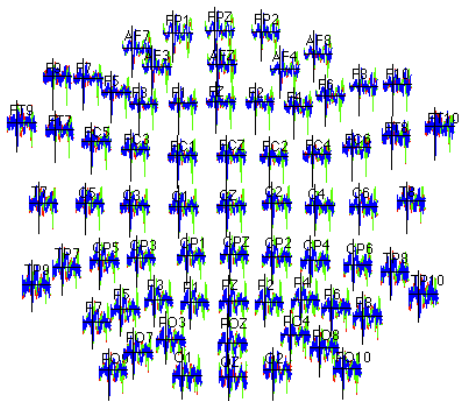
Cancel Help Ok



ERP



S03 ERP







### View and edit current channels -- pop\_chanplot()

Study "

Select channel to plot Sel. all

- All FP1
- All FP2
- All F3
- All F4
- All C3
- All C4
- All P3

Plot ERPs  
Plot spectra  
Plot ERSPs  
Plot ITCs  
Plot channel properties

Create channel group (soon)  
Edit channel group (soon)

Save STUDY set to disk

Cancel

Select subject(s) to plot

- All subjects
- cba FP1
- clm FP1
- ega FP1
- fsa FP1
- gro FP1
- kek FP1

Plot ERP(s)  
Plot spectra  
Plot ERSP(s)  
Plot ITC(s)  
Plot channel properties (soon)

Delete channel group (soon)

### Set parameters for plotting ERPs -- pop\_erpparams()

Time range in ms [low high]  Plot limits in uV [low high]

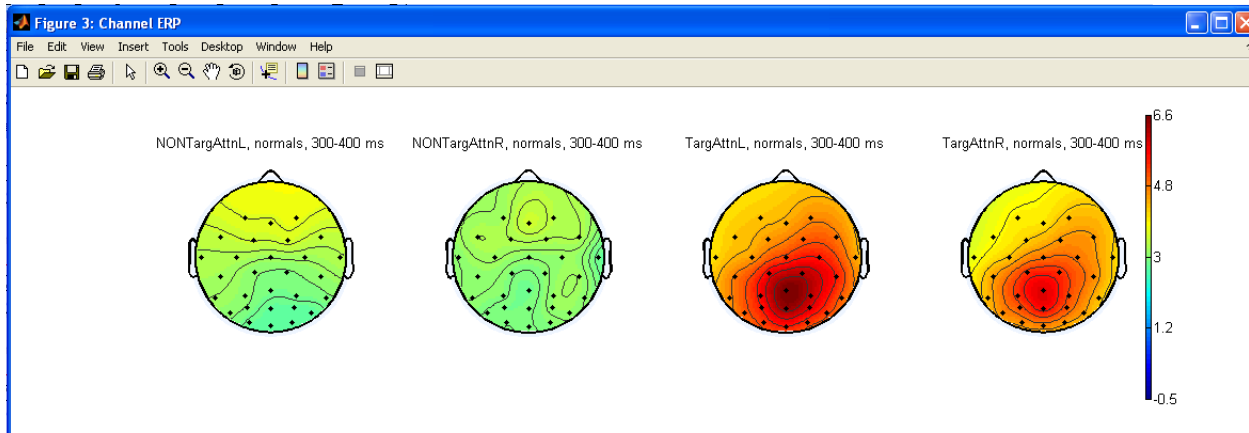
Plot scalp map at latency [ms]  Display filter in Hz [high]

Plot conditions on the same panel  
 Plot groups on the same panel

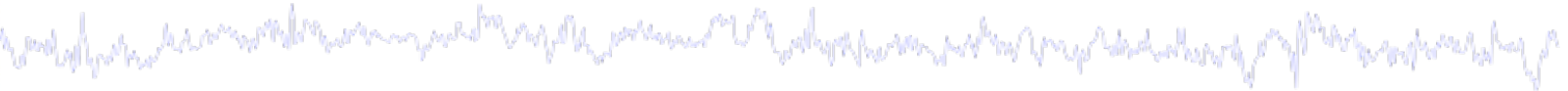
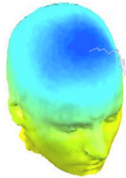
Statistics  Threshold

Compute condition statistics  
 Compute group statistics

Cancel Help Ok



# View and edit clusters



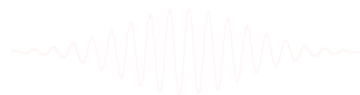
EEGLAB v6.0b

File Edit Tools Plot Study Datasets Help

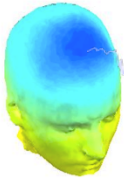
**STUDY set: At**

Study filename:  
Study task name  
Nb of subjects  
Nb of conditions  
Nb of sessions  
Nb of groups  
Epoch consistency    yes  
Channels per frame    31  
Channel locations    yes  
Clusters                26  
Status                  Pre-clustered  
Total size (Mb)        39.1

- Edit study info
- Precompute channel measures
- Plot channel measures
- Precompute component measures
- Build preclustering array
- Cluster components
- Edit/plot clusters**



# 2. Pre-compute measures



Components

EEGLAB v9.0.0.0b

File Edit Tools Plot **Study** Datasets Help

**STUDY set:**

Study filename: .../data  
Study task name  
Nb of subjects  
Nb of conditions  
Nb of sessions  
Nb of groups  
Epoch consistency  
Channels per frame: 61  
Channel locations: yes  
Clusters: 1  
Status: Pre-clustered  
Total size (Mb): 8.2

- Edit study info
- Select/Edit study design(s)
- Precompute channel measures
- Plot channel measures
- Precompute component measures**
- Measure Product clustering
- PCA clustering (original)
- Edit/plot clusters

Channels

EEGLAB v9.0.0.0b

File Edit Tools Plot **Study** Datasets Help

**STUDY set:**

Study filename: .../data  
Study task name  
Nb of subjects  
Nb of conditions  
Nb of sessions  
Nb of groups  
Epoch consistency  
Channels per frame: 61  
Channel locations: yes  
Clusters: 1  
Status: Pre-clustered  
Total size (Mb): 8.2

- Edit study info
- Select/Edit study design(s)
- Precompute channel measures**
- Plot channel measures
- Precompute component measures
- Measure Product clustering
- PCA clustering (original)
- Edit/plot clusters

Select and compute component measures for later clustering -- pop\_precomp()

**Pre-compute channel measures for STUDY " - 'STUDY.design 1'**

Channel list (default:all) [ ] ...

- Spherical interpolation of missing channels (performed after optional ICA removal below)
- Remove ICA artifactual components pre-tagged in each dataset
- Remove artifactual ICA cluster or clusters (hold shift key) [ ParentCluster 1 ]

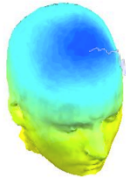
**List of measures to precompute**

- ERPs Baseline ([min max] in ms) [ ]
- Power spectrum Spectopo parameters [ 'specmode', 'fft' ] [ Test ]
- ERSPs Time/freq. parameters [ 'cycles', [3 0.5], 'hfreqs', 100 ] [ Test ]
- ITCs

- Save single-trial measures for single-trial statistics - requires disk space
- Recompute even if present on disk

[ Help ] [ Cancel ] [ Ok ]

# 3. Cluster components



EEGLAB v6.0b

File Edit Tools Plot **Study** Datasets Help

**STUDY set: Attention**

Study filename:  
Study task name  
Nb of subjects  
Nb of conditions  
Nb of sessions  
Nb of groups  
Epoch consistency: yes  
Channels per frame: 31  
Channel locations: yes  
Clusters: 1  
Status: Pre-clustered  
Total size (Mb): 32.4

- Edit study info
- Precompute channel measures
- Plot channel measures
- Precompute component measures
- Build preclustering array**
- Cluster components
- Edit/plot clusters

Select and compute component measures for later clustering -- pop\_preclust()

**Build pre-clustering matrix for STUDY 'Attention'**  
Select the cluster to refine during sub-clustering (any existing sub-hierarchy will be overwritten)

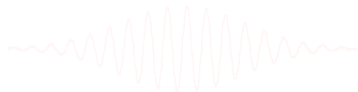
ParentCluster 1 (181 ICs)

(note: only measures that have been precomputed may be used)

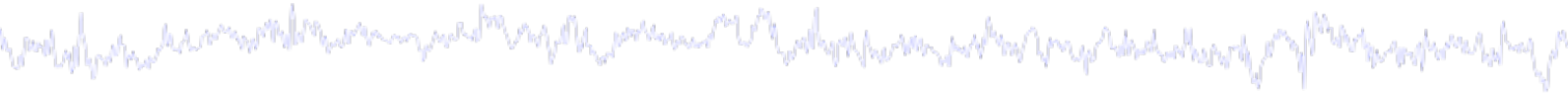
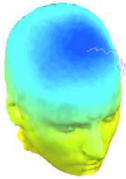
Load	Dims.	Norm.	Rel. Wt.	
<input checked="" type="checkbox"/> spectra	10	<input checked="" type="checkbox"/>	1	Freq. range [Hz] 3 25
<input checked="" type="checkbox"/> ERPs	10	<input checked="" type="checkbox"/>	1	Time range [ms] 0 600
<input checked="" type="checkbox"/> dipoles	3	<input checked="" type="checkbox"/>	10	
<input type="checkbox"/> scalp maps	10	<input checked="" type="checkbox"/>	1	Use channel values <input checked="" type="checkbox"/> Absolute values
<input checked="" type="checkbox"/> ERSPs	20	<input checked="" type="checkbox"/>	1	Time range [ms] 0 1500 Freq. range [Hz] 3 45
<input checked="" type="checkbox"/> ITCs	10	<input checked="" type="checkbox"/>	1	Time range [ms] 0 600 Freq. range [Hz] 2 30
<input type="checkbox"/> Final dimensions	10			

Save STUDY to file /home/julie/WorkshopSD2007/STUDY/attention.study ...

Cancel Help Ok



# Plot cluster data



View and edit current component clusters -- pop\_clustedit()

Study 'Attention': 181 of 181 components clustered

Select cluster to plot

- All cluster centroids
- ParentCluster 1 (181 ICs)
- outlier 2 (1 ICs)
- Cls 3 (5 ICs)

Plot scalp maps

Plot dipoles

Plot ERPs

Plot spectra

Plot ERSPs

Plot ITCs

Plot cluster properties

Create new cluster

Rename selected cluster

Merge clusters

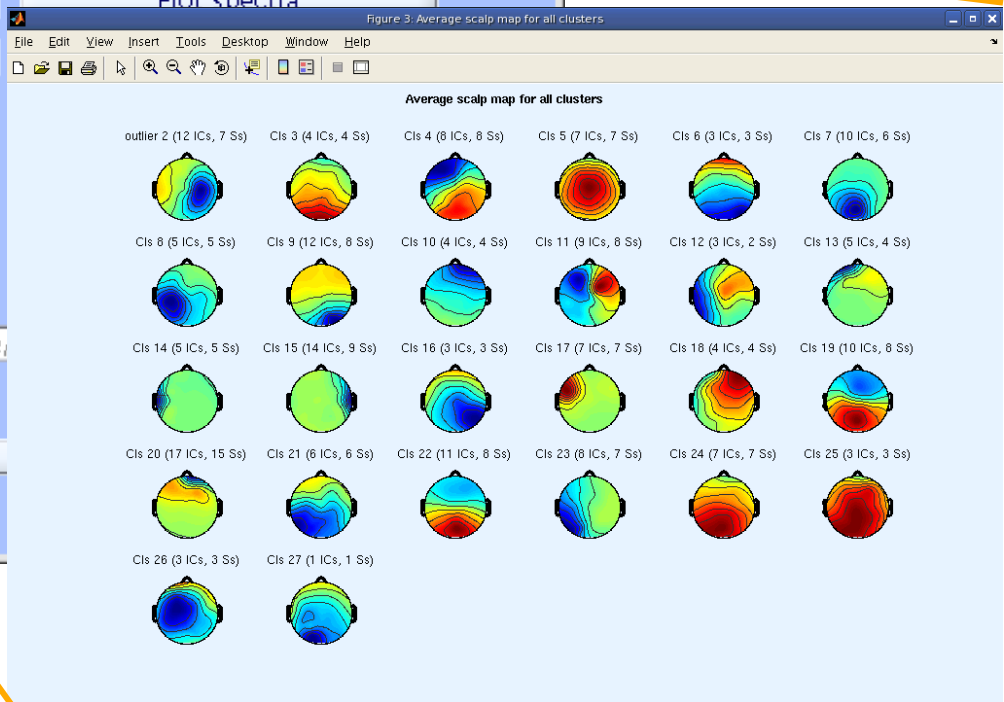
Save STUDY set to disk /home/julie/

Cancel Help

Params

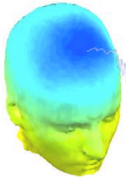
Params

Params



Plot mean scalp maps for easy reference

# Plot cluster data



Choose which cluster

View and edit current component clusters -- pop\_clustedit()

Study 'Attention': 181 of 181 components clustered

Select cluster to plot

- Cls 6 (3 ICs)
- Cls 7 (10 ICs)**
- Cls 8 (5 ICs)
- Cls 9 (12 ICs)

Select component(s) to plot

- All components
- S01 IC6
- S05 IC9
- S06 IC12

Plot scalp map(s)

Plot dipoles

Plot ERPs

Plot spectra

Plot ERSPs

Plot ITCs

Plot cluster properties

Create new cluster

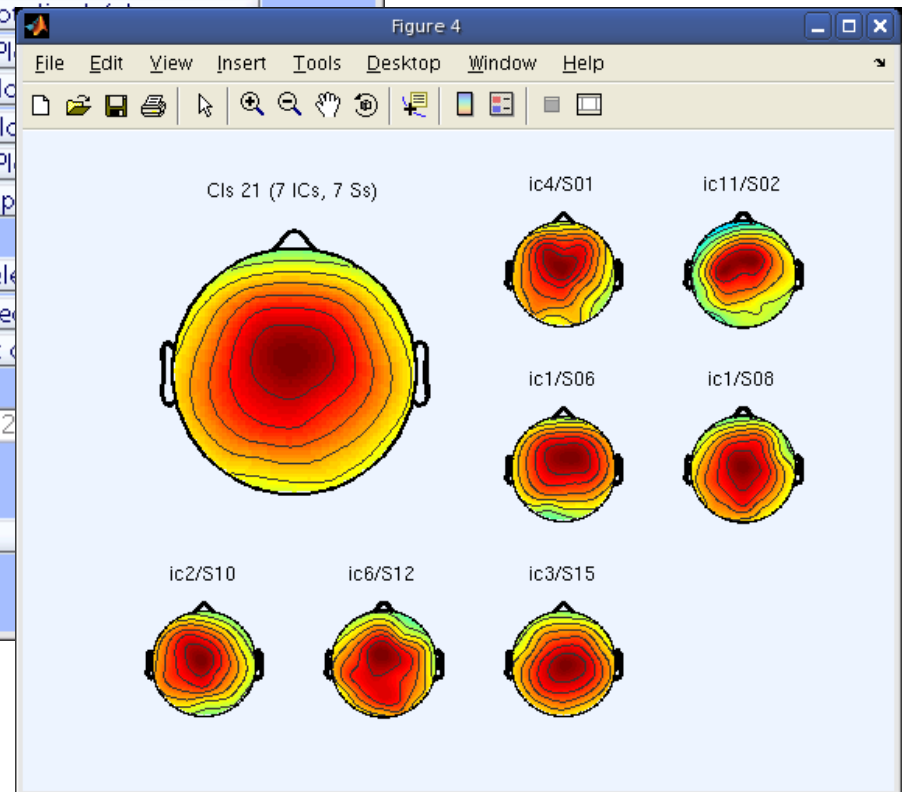
Rename selected cluster

Merge clusters

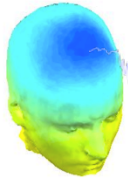
Save STUDY set to disk  /home/julie/WorkshopSD2

Cancel Help

Choose which components



# Plot cluster data



Component clusters -- pop\_clustedit()

Select component(s) to plot

All components  
S02 IC3  
S02 IC11  
S02 IC12  
S02 IC17

Plot scalp map(s)  
**Plot dipole(s)**  
Plot ERP(s)  
Plot spectra  
Plot ERSP(s)  
Plot ITC(s)  
Plot component properties

Params  
Params  
Params

Plot scalp maps  
Plot dipoles  
Plot ERPs  
Plot spectra  
Plot ERSPs  
Plot ITCs  
Plot cluster properties

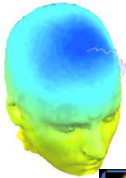
Create new cluster  
Rename selected cluster  
Merge clusters

Reassign selected component(s)  
Remove selected outlier comps.  
Auto-reject outlier components

Save STUDY set to disk /home/julie/workshop06/5subjects/WSstudy.study ...

Cancel Help Ok

# Plot cluster data



View and edit current component clusters -- pop\_clustedit()

Study #: 151 of 151 components clustered

Select cluster to plot

- Cls 15 (8 ICs)
- Cls 16 (6 ICs)
- Cls 17 (4 ICs)
- Cls 18 (14 ICs)
- Cls 19 (14 ICs)

Select component(s) to plot

- All components
- S02 IC3
- S02 IC11
- S02 IC12
- S02 IC17

Plot scalp maps

Plot dipoles

Plot ERPs

Plot spectra

Params

Params

Set ERP plotting parameters -- pop\_erpparams()

Time range in ms [low high]

Plot limits in uV [low high]

Plot scalp map at latency [ms]

Display filter in Hz [high]

Plot conditions on the same panel

Plot groups on the same panel

Statistical method to use

Statistical threshold (p<)

Compute condition statistics

Compute group statistics

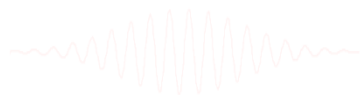
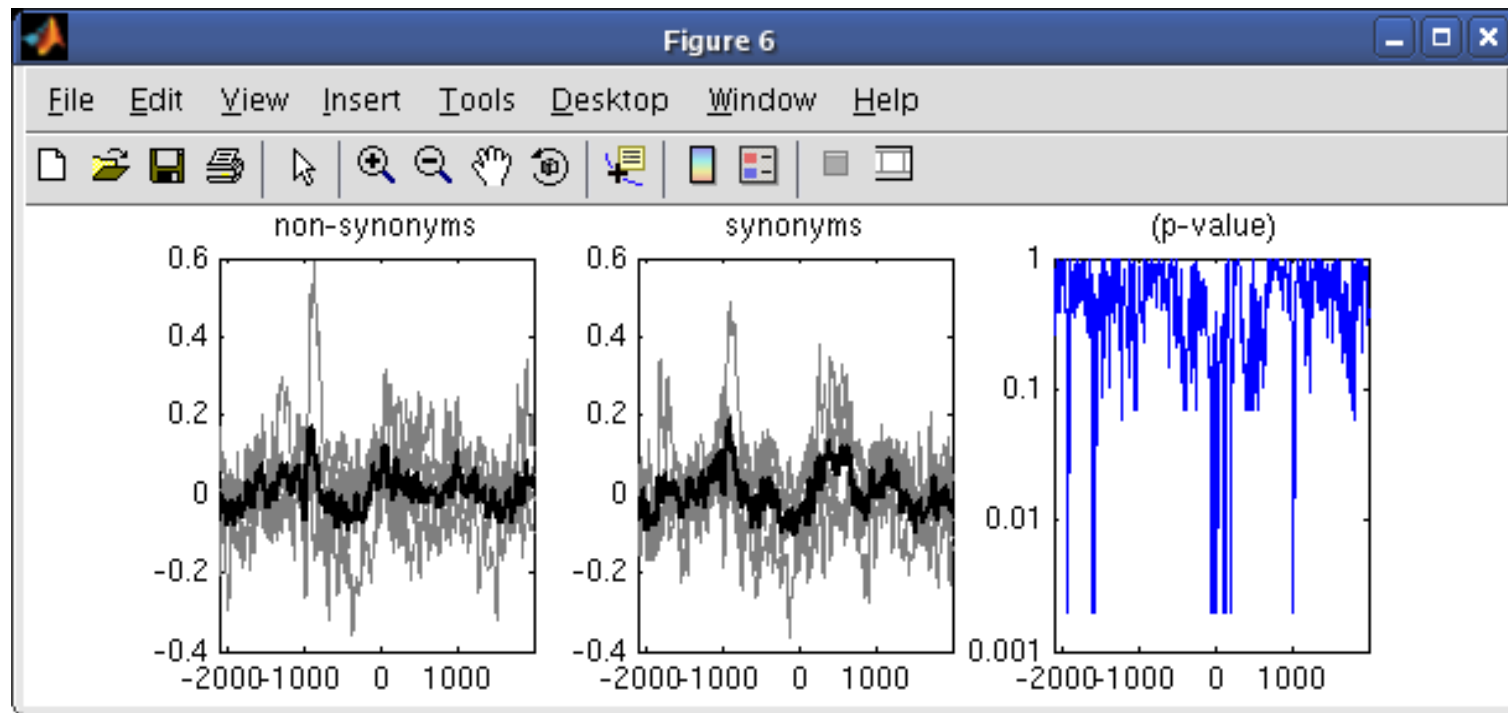
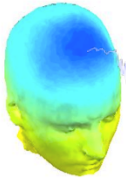
Use single trials (when available)

Use False Discovery Rate to correct for multiple comparisons

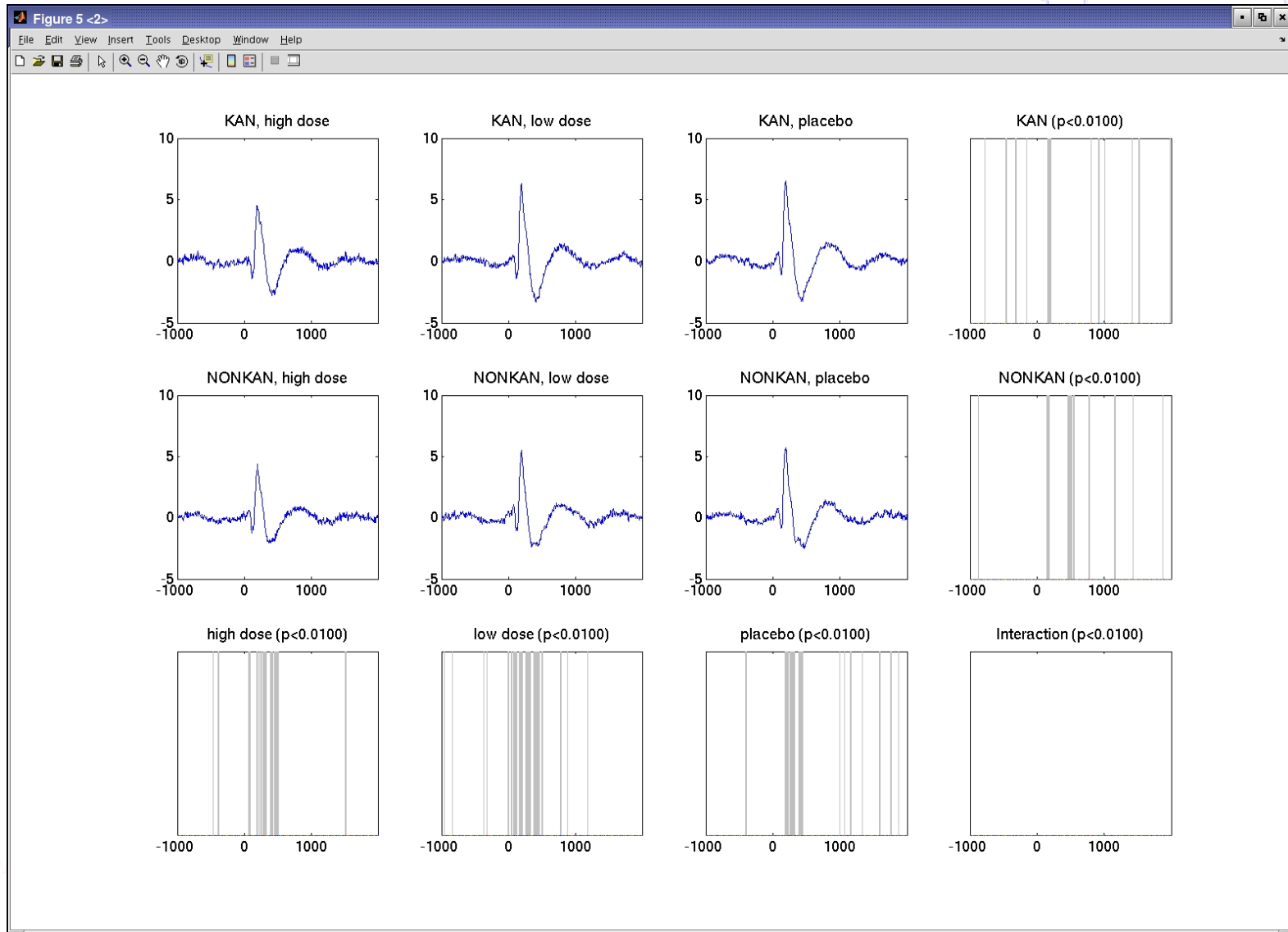
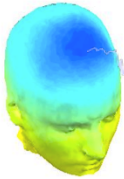
Help Cancel Ok



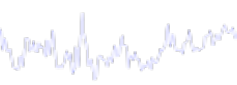
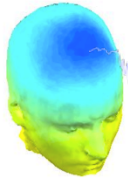
# Plot cluster ERP



# STUDY ERPs with p-value



# Other plotting options...



Set ERP plotting parameters -- pop\_erpparams()

Time range in ms [low high]

Plot limits in uV [low high]

Plot scale map at latency (ms)

Display filter in Hz [high]

Plot conditions on the same panel

Plot groups on the same panel

Statistical method to use

Statistical threshold (p<)

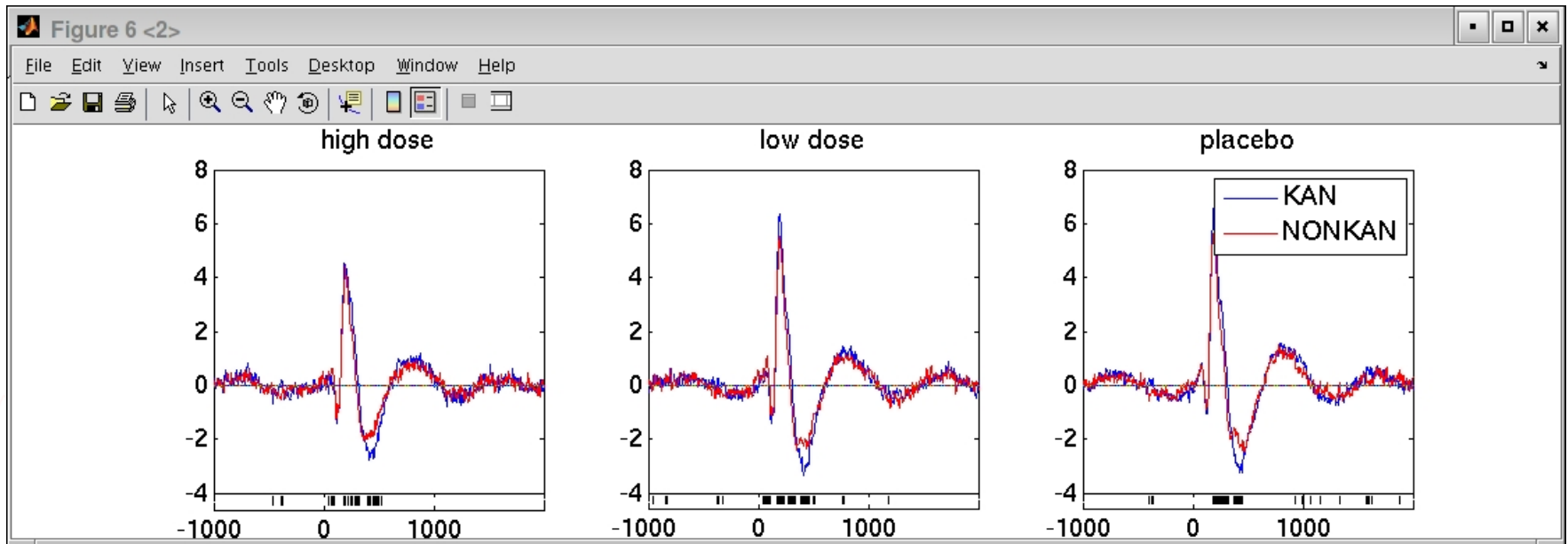
Compute condition statistics

Compute group statistics

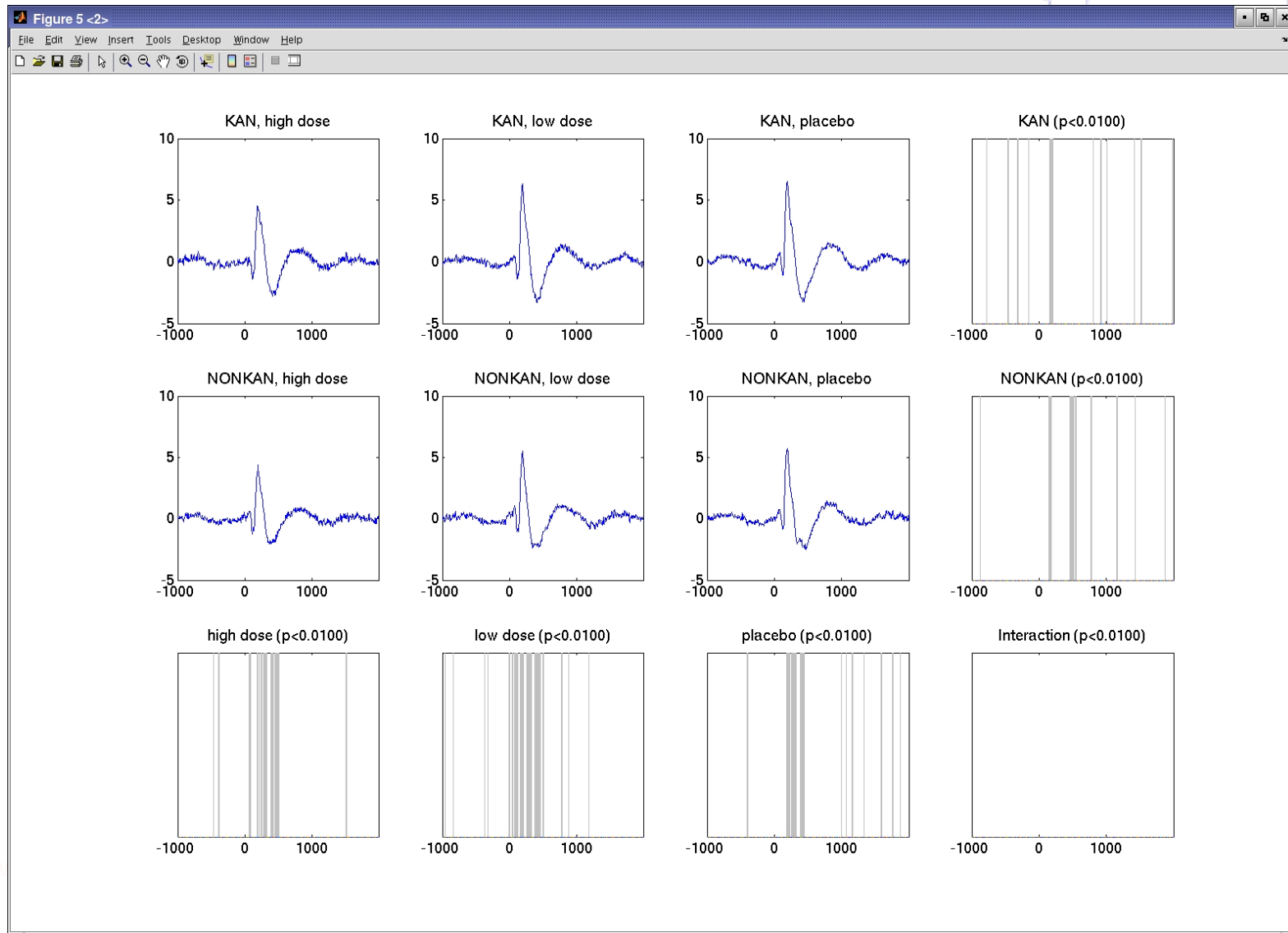
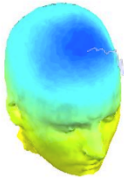
Use single trials (when available)

Use False Discovery Rate to correct for multiple comparisons

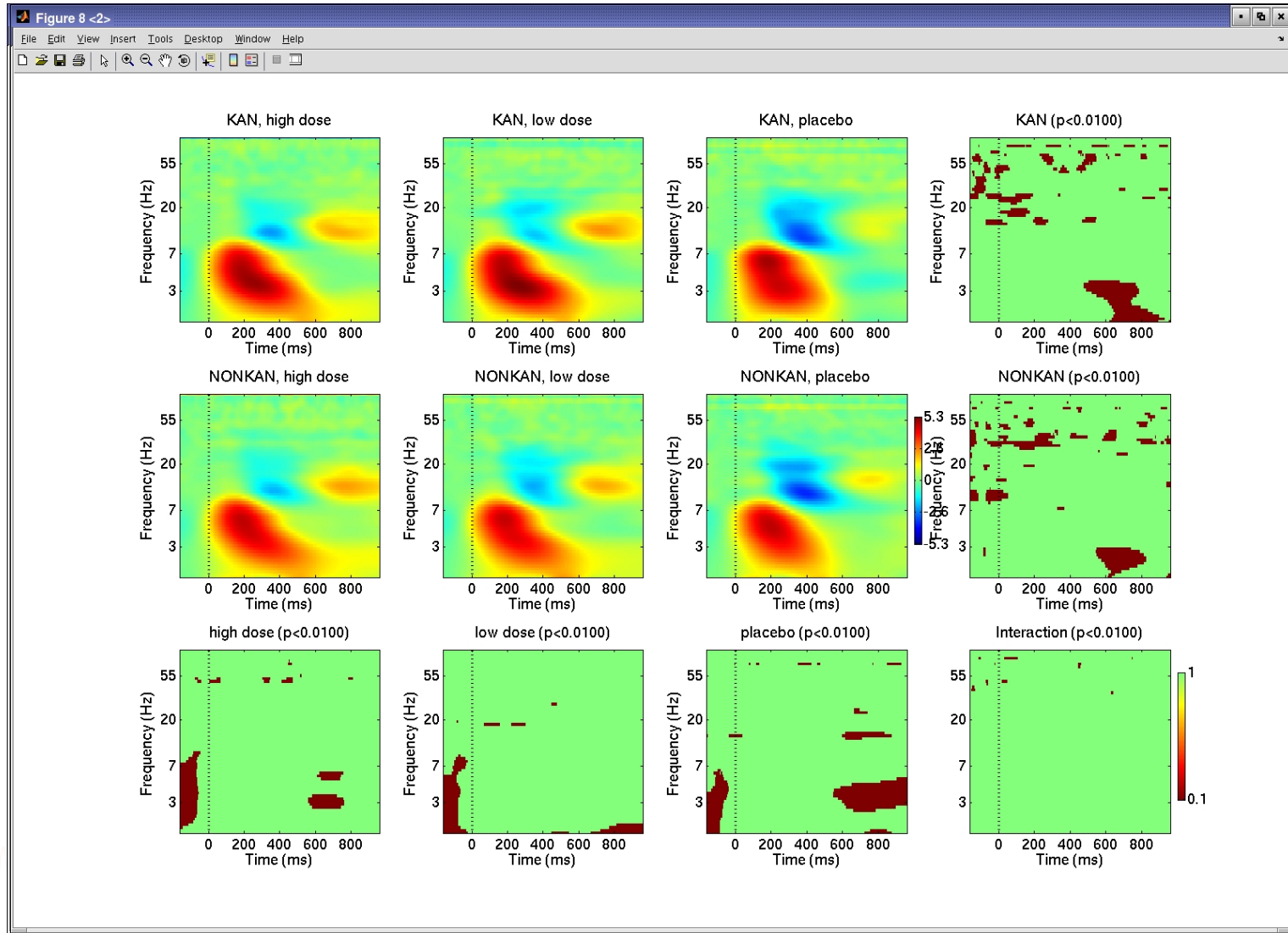
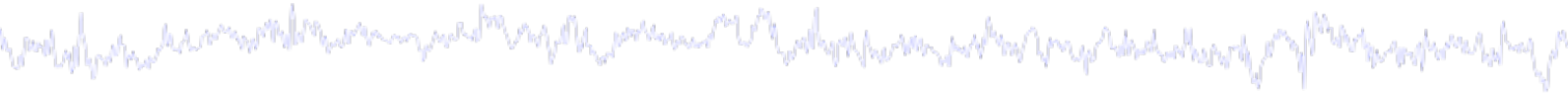
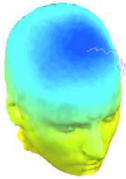
Help Cancel Ok



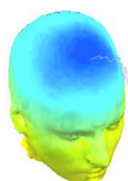
# STUDY ERPs with threshold



# STUDY ERSPs with statistics



# Reassigning components



View and edit current component clusters -- pop\_clustedit()

Study #: 151 of 151 components clustered

Select cluster to plot

- Cls 12 (6 ICs)
- Cls 13 (5 ICs)
- Cls 14 (11 ICs)

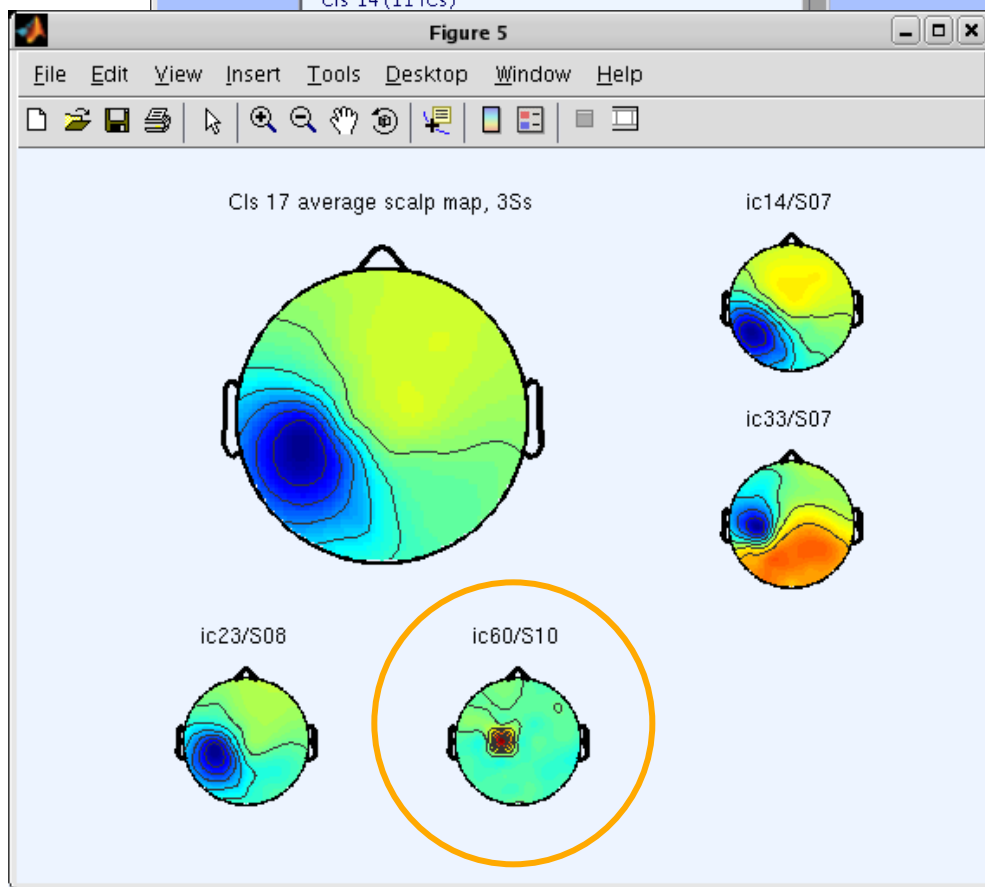
Select component(s) to plot

- All components
- S07 IC14
- S07 IC33
- S08 IC23
- S10 IC60

Plot scalp map(s)

Plot dipole(s)

Plot ERP(s)



Cls 17 - 3 sets - 4 components (4 dipoles)

File Edit View Insert Tools Desktop Window Help

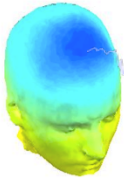
5 dipoles:

- Plot one
- Keep|Next
- Next
- Prev
- Keep|Prev
- 1
- IC14, S07
- RV: 0.96%
- X tal: -46
- Y tal: -25
- Z tal: 46

Display:

- Mesh on
- Tight view
- Sagittal view
- Coronal view
- Top view
- No controls

# Reassigning components



View and edit current component clusters -- pop\_clustedit()

Study #: 151 of 151 components clustered

Select cluster to plot

- Cls 13 (5 ICs)
- Cls 14 (11 ICs)
- Cls 15 (8 ICs)
- Cls 16 (6 ICs)
- Cls 17 (4 ICs)

Select component(s) to plot

- All components
- S07 IC14
- S07 IC33
- S08 IC22
- S10 IC60

Remove outliers - from pop\_clustedit()

Remove currently selected component below from CIs 17 to its outlier cluster?

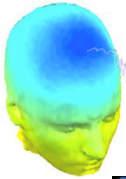
- S10 IC60

Buttons: Cancel, Ok, Remove selected outlier comps., Auto-reject outlier components

Save STUDY set to disk:  /home/julie/workshop06/5subjects/WSstudy.study

Buttons: Cancel, Help, Ok

# Outlier cluster reassignment



View and edit current component clusters -- pop\_clustedit()

Study #: 151 of 151 components clustered

**Select cluster to plot**

- Cls 16 (6 ICs)
- Cls 17 (3 ICs)
- Cls 18 (14 ICs)
- Cls 19 (14 ICs)
- Outliers Cls 17 20 (1 ICs)**

Plot scalp maps

Plot dipoles

Plot ERPs

Plot spectra

Plot ERSPs

Plot ITCs

Plot cluster properties

Params

Params

Params

**Select component(s) to plot**

- All components**
- S10 IC60

Plot scalp map(s)

Plot dipole(s)

Plot ERP(s)

Plot spectra

Plot ERSP(s)

Plot ITC(s)

Plot component properties

Reassign selected component(s)

Remove selected outlier comps.

Auto-reject outlier components

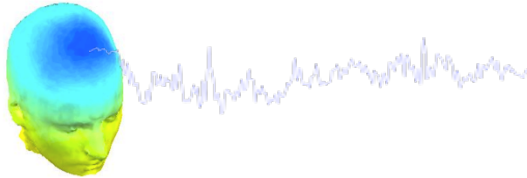
Save STUDY set to disk

/home/julie/workshop06/5subjects/WSstudy.study

Cancel Help Ok



# Parameters



ERP

Set ERP plotting parameters -- pop\_erpparams()

Time range in ms [low high]

Plot scalp map at [latency [ms]]

Plot conditions on the same panel

Plot groups on the same panel

Statistical method to use

Compute condition statistics

Compute group statistics

Use single trials (when available)

Use False Discovery Rate to correct for multiple comparisons

Plot limits in uV [low high]

Display filter in Hz [high]

Statistical threshold (p<)

Spectrum

Set spectrum plotting parameters -- pop\_specparams()

Frequency [low\_Hz high\_Hz]

Plot scalp map at freq. [Hz]

Subtract individual subject mean spectrum

Plot conditions on the same panel

Plot groups on the same panel

Plot limits [low high]

ERSP/ITC

Set ERSP|ITC plotting parameters -- pop\_erspparams()

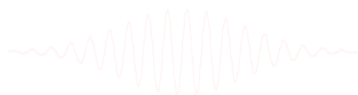
Time range in ms [Low High]

Freq. range in Hz [Low High]

Power limits in dB [Low High]

Compute ERSP baseline across conditions

ITC limit (0-1) [High]



EEGLAB v9.0.0.0b

File Edit Tools Plot **Study** Datasets Help

**STUDY set:**

Study filename: ...s/data  
 Study task name  
 Nb of subjects  
 Nb of conditions  
 Nb of sessions  
 Nb of groups  
 Epoch consistency  
 Channels per frame 61  
 Channel locations yes  
 Clusters 1  
 Status Pre-clustered  
 Total size (Mb) 8.2

- Edit study info
- Select/Edit study design(s)
- Precompute channel measures
- Plot channel measures
- Precompute component measures
- Measure Product clustering ▶
- PCA clustering (original) ▶
- Edit/plot clusters

Select STUDY design

STUDY.design 1

Add design  
 Rename design  
 Delete design

**Subjects**

S01  
 S02  
 S03  
 S04  
 S05  
 S06  
 S07  
 S08  
 S09  
 S10  
 S11  
 S12  
 S13

Select all subjects

**Independent variable 1**

condition  
 duration  
 init\_index  
 init\_time  
 inset  
 load ...

Ind. var. 1 values

ignore  
 memorize  
 probe

Combine selected values  
 Unpaired statistics

**Independent variable 2**

None  
 condition  
 duration  
 init\_index  
 init\_time  
 inset

Ind. var. 2 values

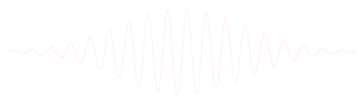
Combine selected values  
 Unpaired statistics

Use only specific datasets/trials

Delete all datafiles associated with this STUDY design

Save the STUDY

Cancel Ok



EEGLAB v9.0.0.0b

File Edit Tools Plot **Study** Datasets Help

**STUDY set:**

Study filename: ...s/data  
 Study task name  
 Nb of subjects  
 Nb of conditions  
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 Epoch consistency  
 Channels per frame 61  
 Channel locations yes  
 Clusters 1  
 Status Pre-clustered  
 Total size (Mb) 8.2

Edit study info  
**Select/Edit study design(s)**  
 Precompute channel measures  
 Plot channel measures  
 Precompute component measures  
 Measure Product clustering ▶  
 PCA clustering (original) ▶  
 Edit/plot clusters

# Select subjects

Select STUDY design

STUDY.design 1

Add design  
 Rename design  
 Delete design

**Subjects**

S01  
 S02  
 S03  
 S04  
 S05  
 S06  
 S07  
 S08  
 S09  
 S10  
 S11  
 S12  
 S13

Select all subjects

**Independent variable 1**

condition  
 duration  
 init\_index  
 init\_time  
 inset  
 load ...

Ind. var. 1 values

ignore  
 memorize  
 probe

Combine selected values  
 Unpaired statistics

**Independent variable 2**

None  
 condition  
 duration  
 init\_index  
 init\_time  
 inset

Ind. var. 2 values

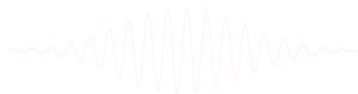
Combine selected values  
 Unpaired statistics

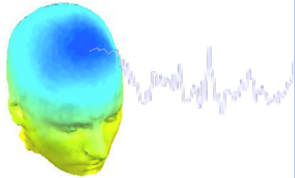
Use only specific datasets/trials

Delete all datafiles associated with this STUDY design

Save the STUDY

Cancel Ok





Edit STUDY design -- pop\_studydesign()

### Select STUDY design

Audio versus light all subjects  
All stimulus type - non dual subjects only  
Blank versus other stimulus type - non dual subjects only  
Audio preceded by different stimulus types  
Audio versus ligh accross sessions - non dual subjects only  
Audio versus light accross presentation - non dual subjects only

Add design  
Rename design  
Delete design

### Subjects

c1  
c2  
c3  
c4  
c5  
c6  
c7  
c8  
nd1  
nd2  
nd3  
nd4  
nd5  
nd6  
nd7  
nd8

Select all subjects

### Independent variable 1

None  
group  
stimulusType  
presentation  
session  
prevevent

Ind. var. 1 values

audio  
blank  
both  
light  
audio - light

Combine selected values  
Unpaired statistics

### Independent variable 2

None  
group  
stimulusType  
presentation  
session  
prevevent

Ind. var. 2 values

control  
nondual

Combine selected values  
Unpaired statistics

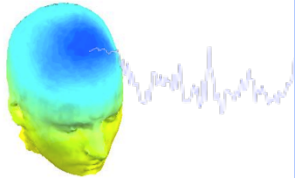
Use only specific datasets/trials

Delete all datafiles associated with this STUDY design

Save the STUDY

Cancel Ok





Edit STUDY design -- pop\_studydesign()

### Select STUDY design

Audio versus light all subjects  
**All stimulus type - non dual subjects only**  
Blank versus other stimulus type - non dual subjects only  
Audio preceded by different stimulus types  
Audio versus ligh accross sessions - non dual subjects only  
Audio versus light accross presentation - non dual subjects only

Add design  
Rename design  
Delete design

### Subjects

c1  
c2  
c3  
c4  
c5  
c6  
c7  
c8  
**nd1**  
nd2  
nd3  
nd4  
nd5  
nd6  
nd7  
nd8

Select all subjects

### Independent variable 1

None  
group  
**stimulusType**  
presentation  
session  
preevent

Ind. var. 1 values

audio  
blank  
both  
light  
audio - light

Combine selected values  
Unpaired statistics

### Independent variable 2

**None**  
group  
stimulusType  
presentation  
session  
preevent

Ind. var. 2 values

Combine selected values  
Unpaired statistics

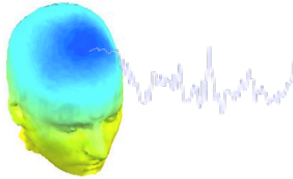
Use only specific datasets/trials

Delete all datafiles associated with this STUDY design

Save the STUDY

Cancel Ok





Edit STUDY design -- pop\_studydesign()

### Select STUDY design

Audio versus light all subjects  
All stimulus type - non dual subjects only  
**Blank versus other stimulus type - non dual subjects only**  
Audio preceded by different stimulus types  
Audio versus ligh accross sessions - non dual subjects only  
Audio versus light accross presentation - non dual subjects only

Add design  
Rename design  
Delete design

### Subjects

c1  
c2  
c3  
c4  
c5  
c6  
c7  
c8  
**nd1**  
nd2  
nd3  
nd4  
nd5  
nd6  
nd7  
nd8

Select all subjects

### Independent variable 1

None  
group  
**stimulusType**  
presentation  
session  
preevent

Ind. var. 1 values

audio  
**blank**  
both  
light  
**audio - light**

Combine selected values  
Unpaired statistics

### Independent variable 2

**None**  
group  
stimulusType  
presentation  
session  
preevent

Ind. var. 2 values

Combine selected values  
Unpaired statistics

Use only specific datasets/trials

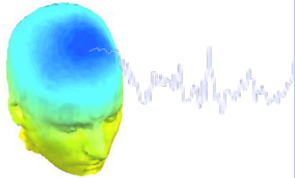
Delete all datafiles associated with this STUDY design

Save the STUDY

Cancel Ok







Edit STUDY design -- pop\_studydesign0

### Select STUDY design

Audio versus light all subjects  
All stimulus type - non dual subjects only  
Blank versus other stimulus type - non dual subjects only  
**Audio preceeded by different stimulus types**  
Audio versus ligh accross sessions - non dual subjects only  
Audio versus light accross presentation - non dual subjects only

Add design  
Rename design  
Delete design

### Subjects

c1  
c2  
c3  
c4  
c5  
c6  
c7  
c8  
**nd1**  
**nd2**  
nd3  
nd4  
nd5  
nd6  
nd7  
nd8

Select all subjects

### Independent variable 1

None  
group  
stimulusType  
presentation  
session  
**prevevent**

Ind. var. 1 values

audio  
blank  
both  
light

Combine selected values  
Unpaired statistics

### Independent variable 2

**None**  
group  
stimulusType  
presentation  
session  
prevevent

Ind. var. 2 values

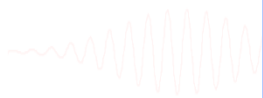
Combine selected values  
Unpaired statistics

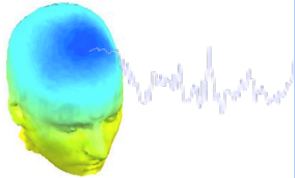
Use only specific datasets/trials

Delete all datafiles associated with this STUDY design

Save the STUDY

Cancel Ok





Edit STUDY design -- pop\_studydesign()

### Select STUDY design

Audio versus light all subjects  
All stimulus type - non dual subjects only  
Blank versus other stimulus type - non dual subjects only  
Audio preceded by different stimulus types  
**Audio versus ligh accross sessions - non dual subjects only**  
Audio versus light accross presentation - non dual subjects only

Add design  
Rename design  
Delete design

### Subjects

c1  
c2  
c3  
c4  
c5  
c6  
c7  
c8  
nd1  
nd2  
nd3  
nd4  
nd5  
nd6  
nd7  
nd8

Select all subjects

### Independent variable 1

None  
group  
**stimulusType**  
presentation  
session  
prevevent

Ind. var. 1 values

audio  
blank  
both  
**light**  
audio - light

Combine selected values  
Unpaired statistics

### Independent variable 2

None  
group  
stimulusType  
presentation  
**session**  
prevevent

Ind. var. 2 values

1  
**2**

Combine selected values  
Unpaired statistics

Use only specific datasets/trials

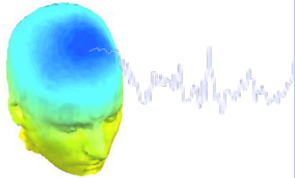
Delete all datafiles associated with this STUDY design

Save the STUDY

Cancel Ok







Edit STUDY design -- pop\_studydesign()

### Select STUDY design

Audio versus light all subjects  
All stimulus type - non dual subjects only  
Blank versus other stimulus type - non dual subjects only  
Audio preceded by different stimulus types  
Audio versus light across sessions - non dual subjects only  
**Audio versus light across presentation - non dual subjects only**

Add design  
Rename design  
Delete design

#### Subjects

c1  
c2  
c3  
c4  
c5  
c6  
c7  
c8  
**nd1**  
**nd2**  
**nd3**  
**nd4**  
**nd5**  
**nd6**  
**nd7**  
**nd8**

Select all subjects

#### Independent variable 1

None  
group  
**stimulusType**  
presentation  
session  
preevent

Ind. var. 1 values

**audio**  
blank  
**light**  
audio - light

Combine selected values  
Unpaired statistics

#### Independent variable 2

None  
group  
stimulusType  
**presentation**  
session  
preevent

Ind. var. 2 values

**evoked**  
spontaneous

Combine selected values  
Unpaired statistics

Use only specific datasets/trials

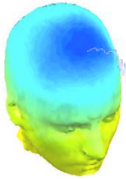
Delete all datafiles associated with this STUDY design

Save the STUDY

Cancel Ok



# Exercises



## **Suggestion for exercises:**

Load stern.study in STUDY folder

From the GUI, compute ERP for data channels. Plot grand average ERP for all channels. Experiment with statistics.

Then move to the plotting cluster function. Plot ERSP for frontal midline theta cluster (cluster 19) and remove outliers by hand.

Build a STUDY design to compare letter with high memory load versus letter with low memory load. Recompute spectrum for components and compare the two conditions for the frontal midline cluster (cluster 19).

