

Platform EEG

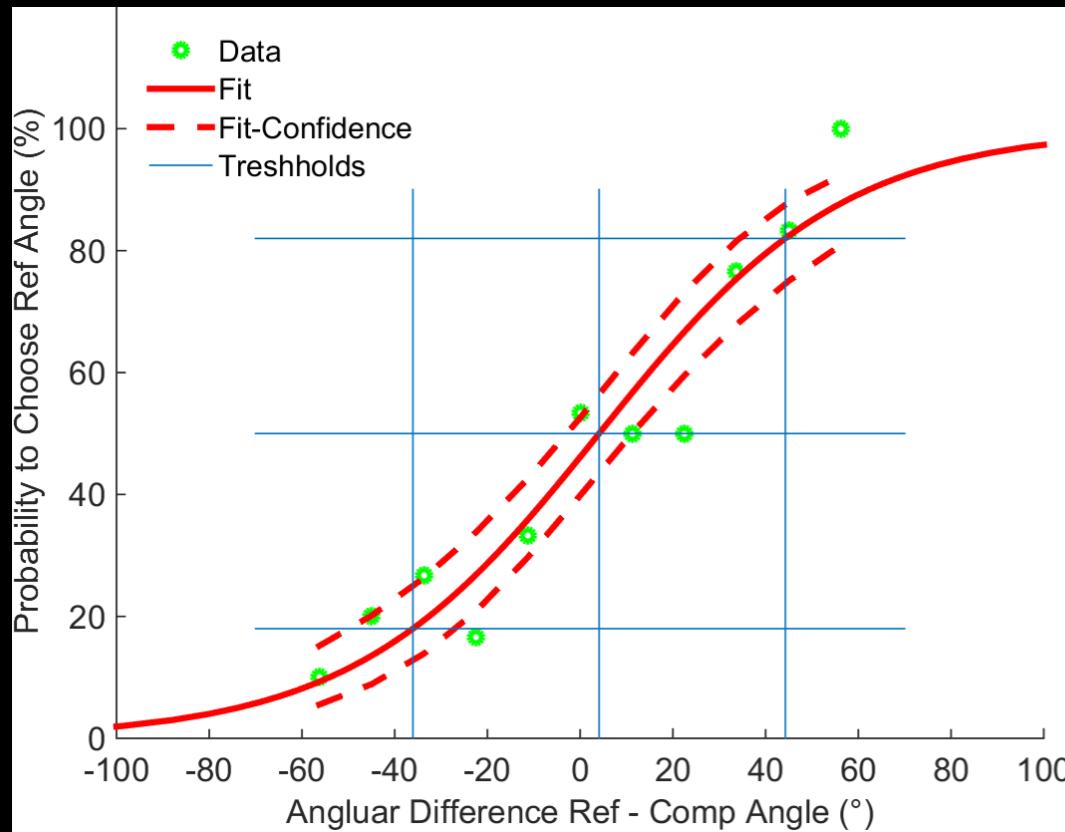
First steps

May 26, 2015

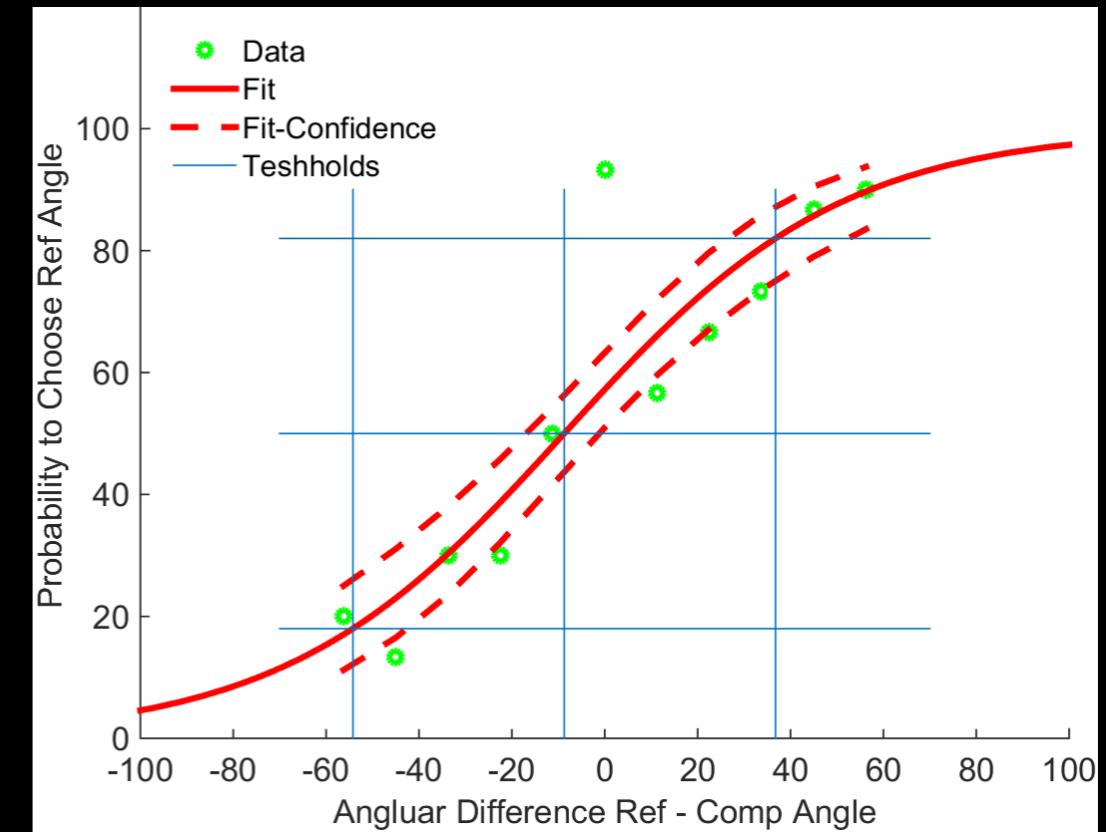
Recordings

- 3 subjects
- *pre* and *post* belt's training recordings (EEG only in the *pre* recordings)
- no certainty's answers trial by trial
- “old” belt
- ANT 128el EEG system
- EEG preparation time ~1.5 hours

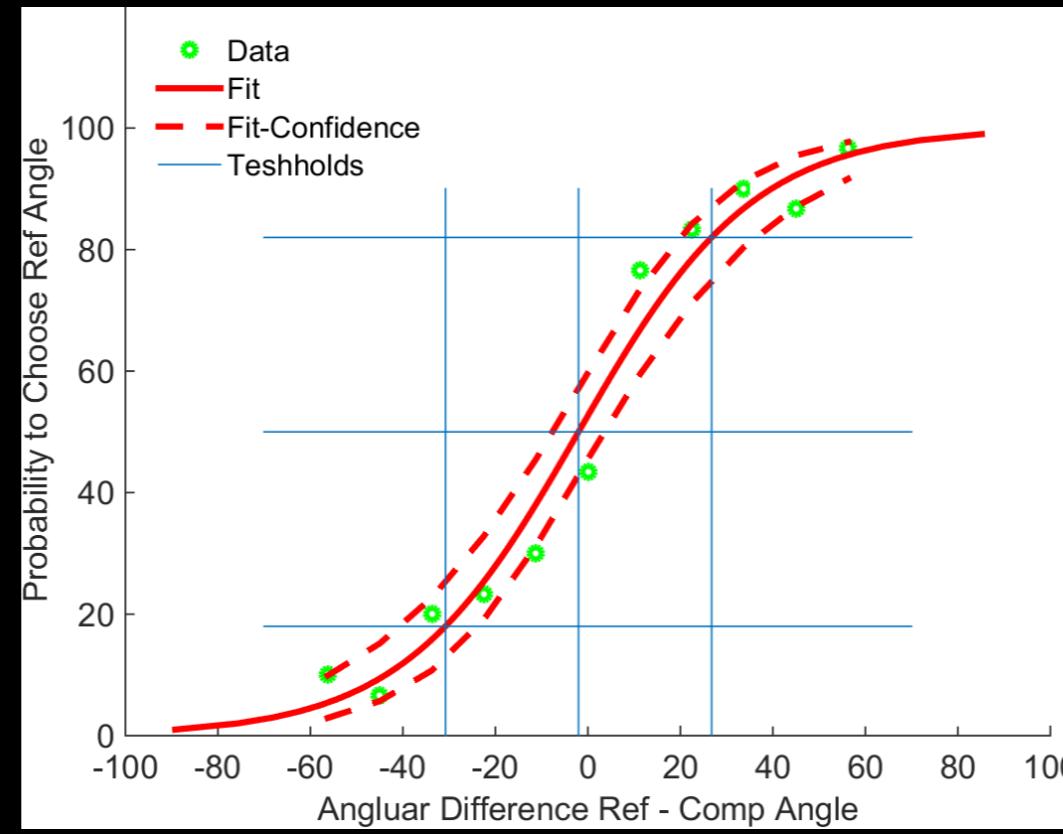
Behavioral pre (subj 1)



Tactile

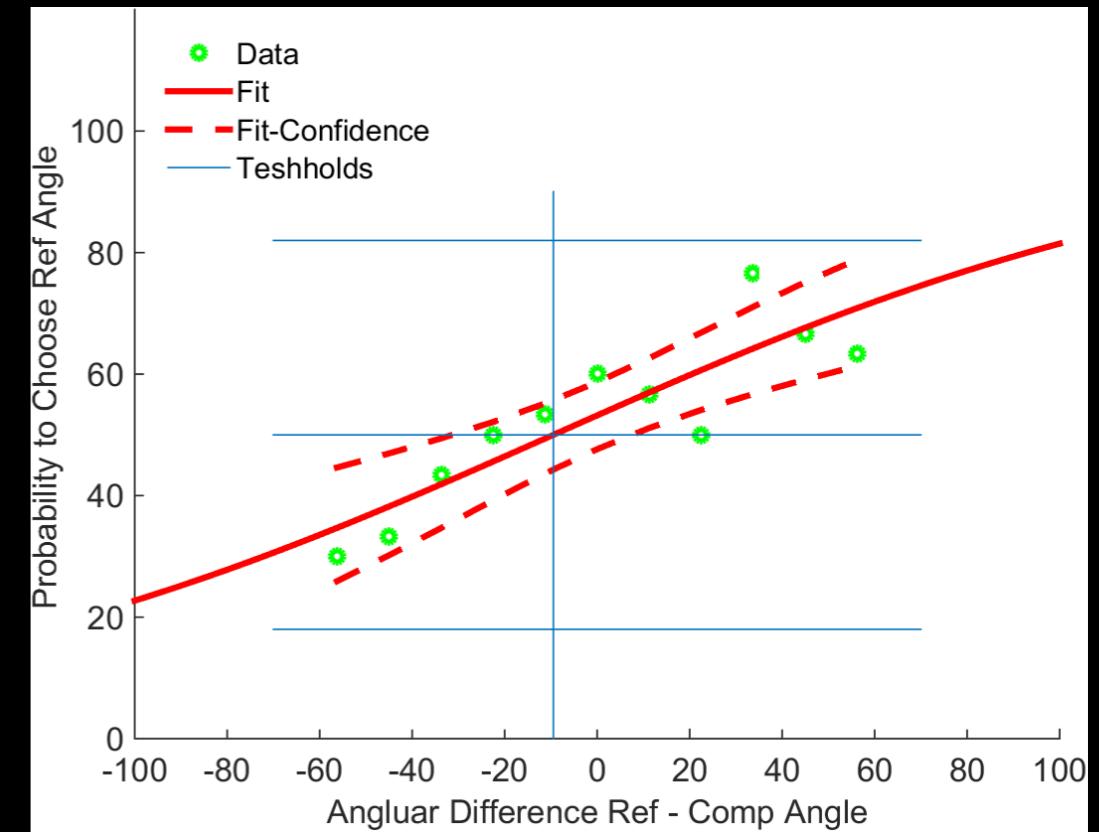
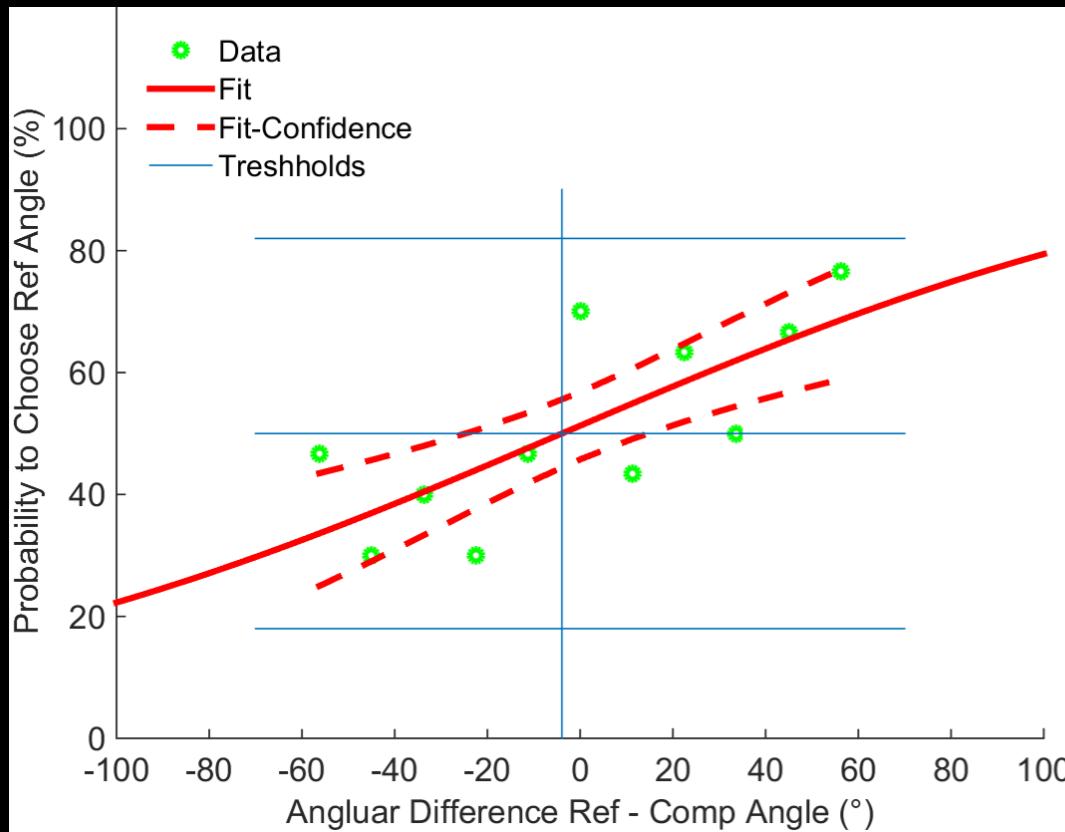


Vestibular

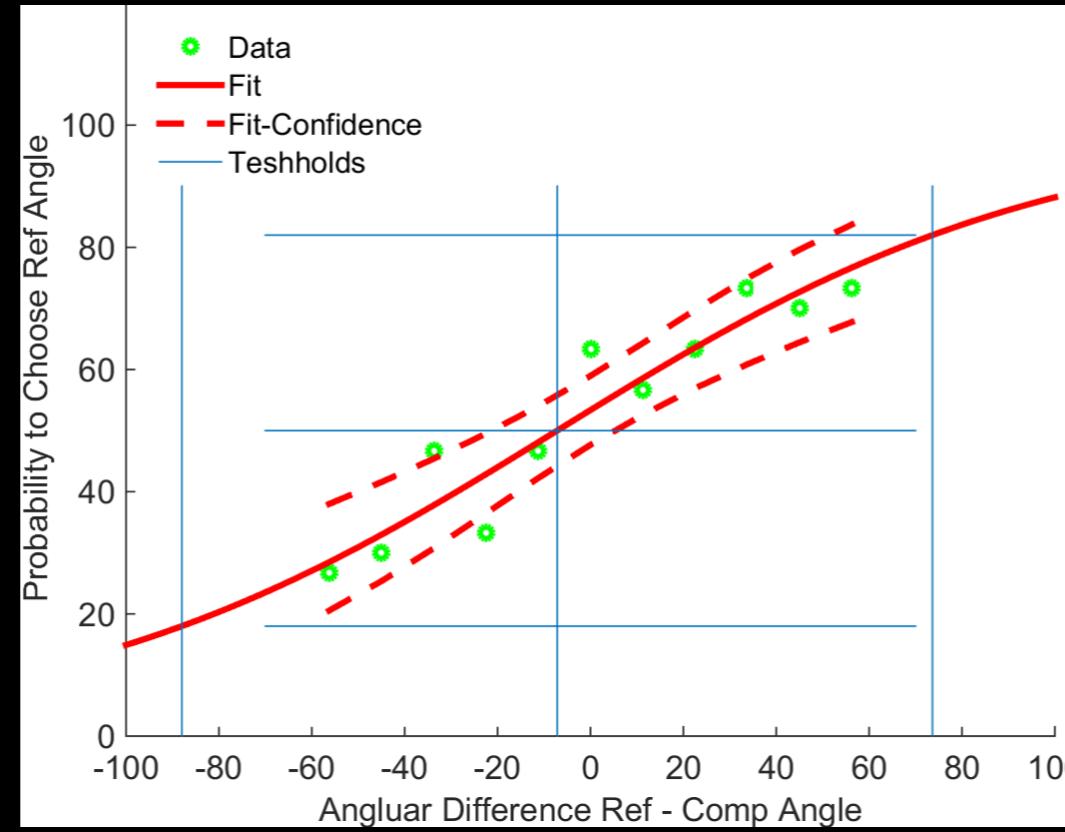


Bimodal

Behavioral pre (subj 2)



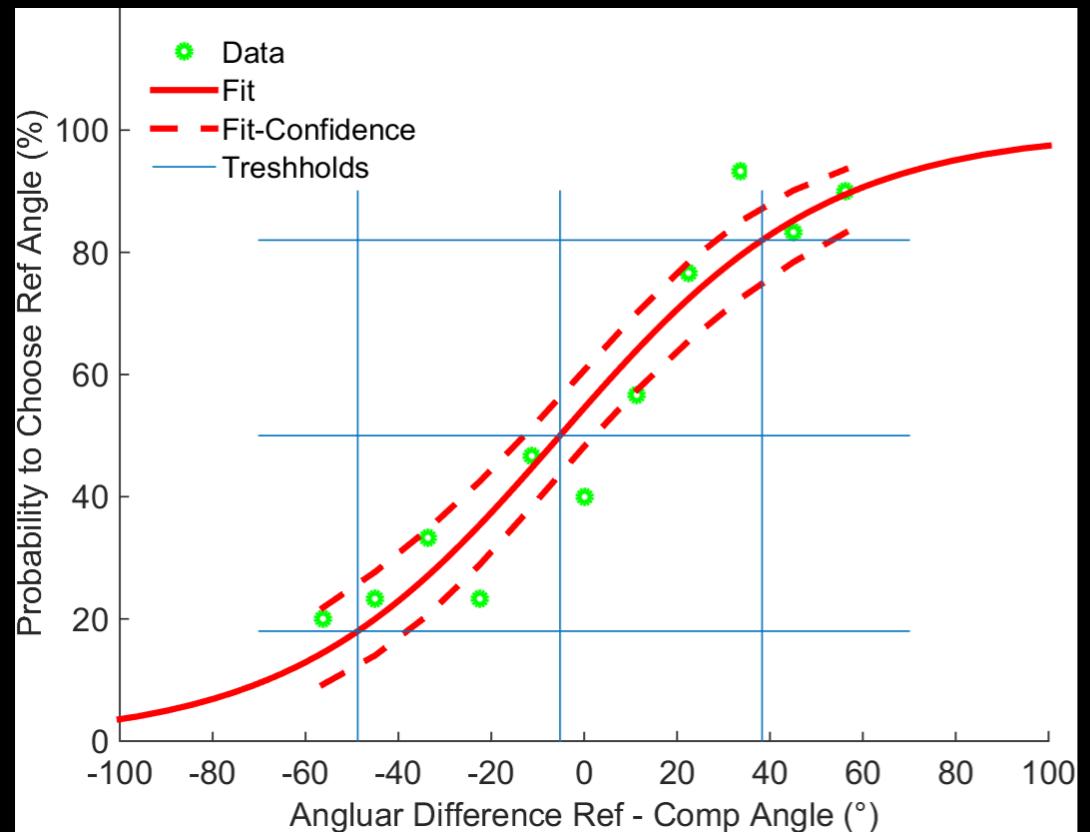
Tactile



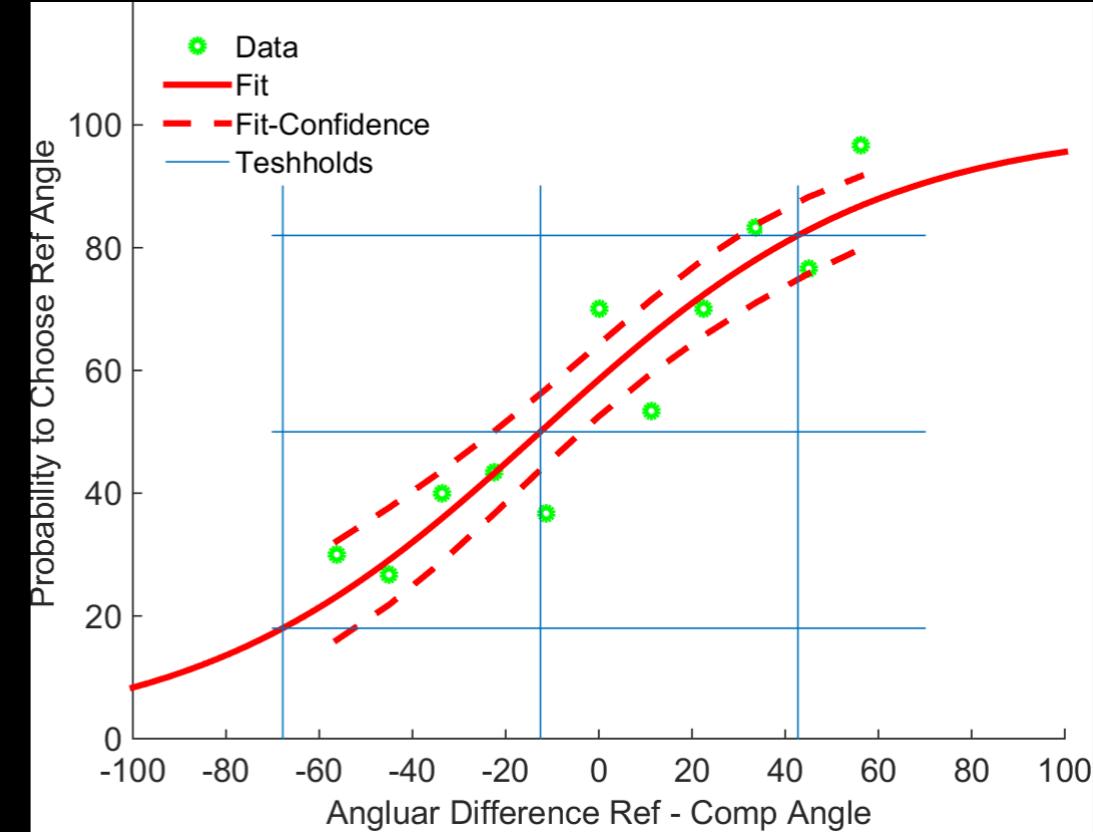
Bimodal

Vestibular

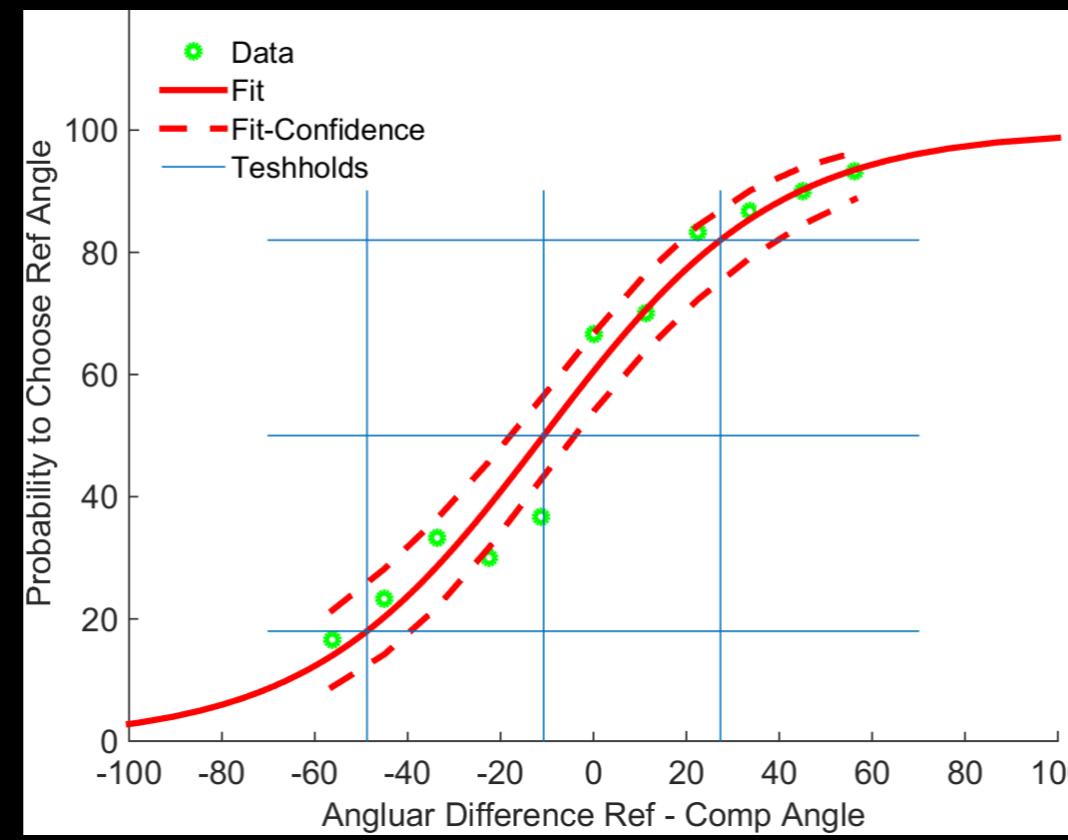
Behavioral post (subj 1)



Tactile

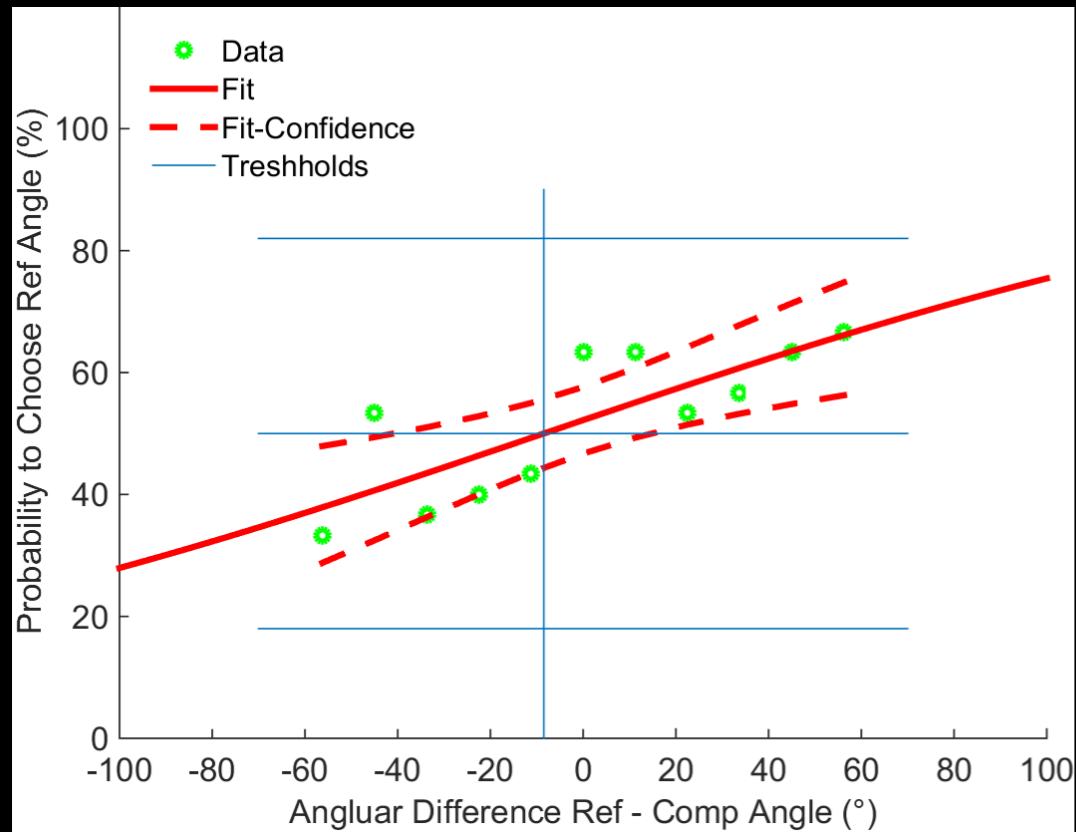


Vestibular

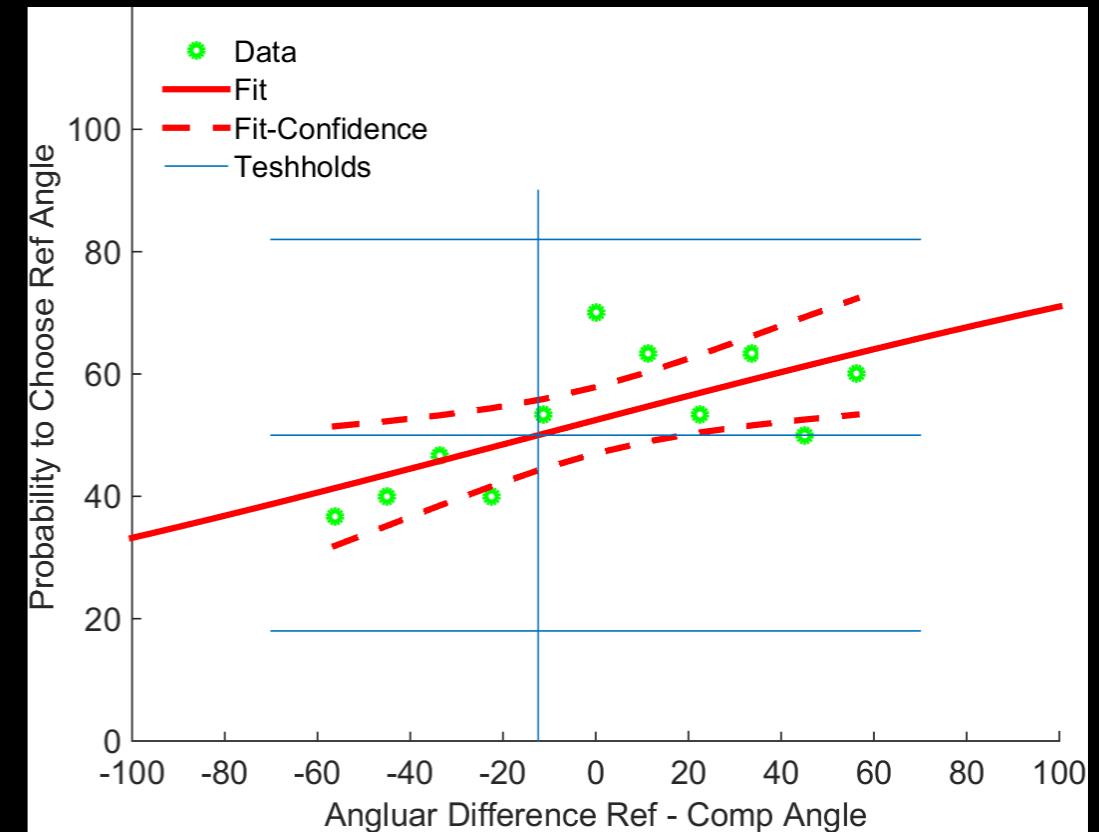


Bimodal

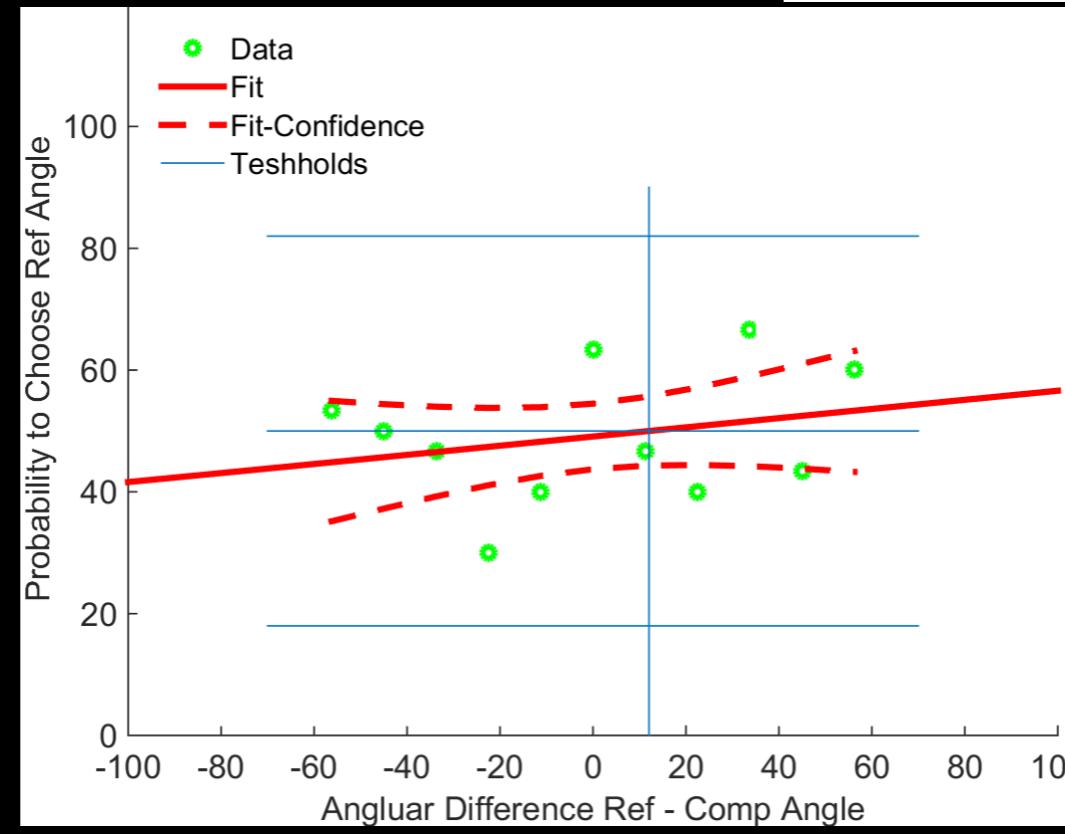
Behavioral post (subj 2)



Tactile



Vestibular



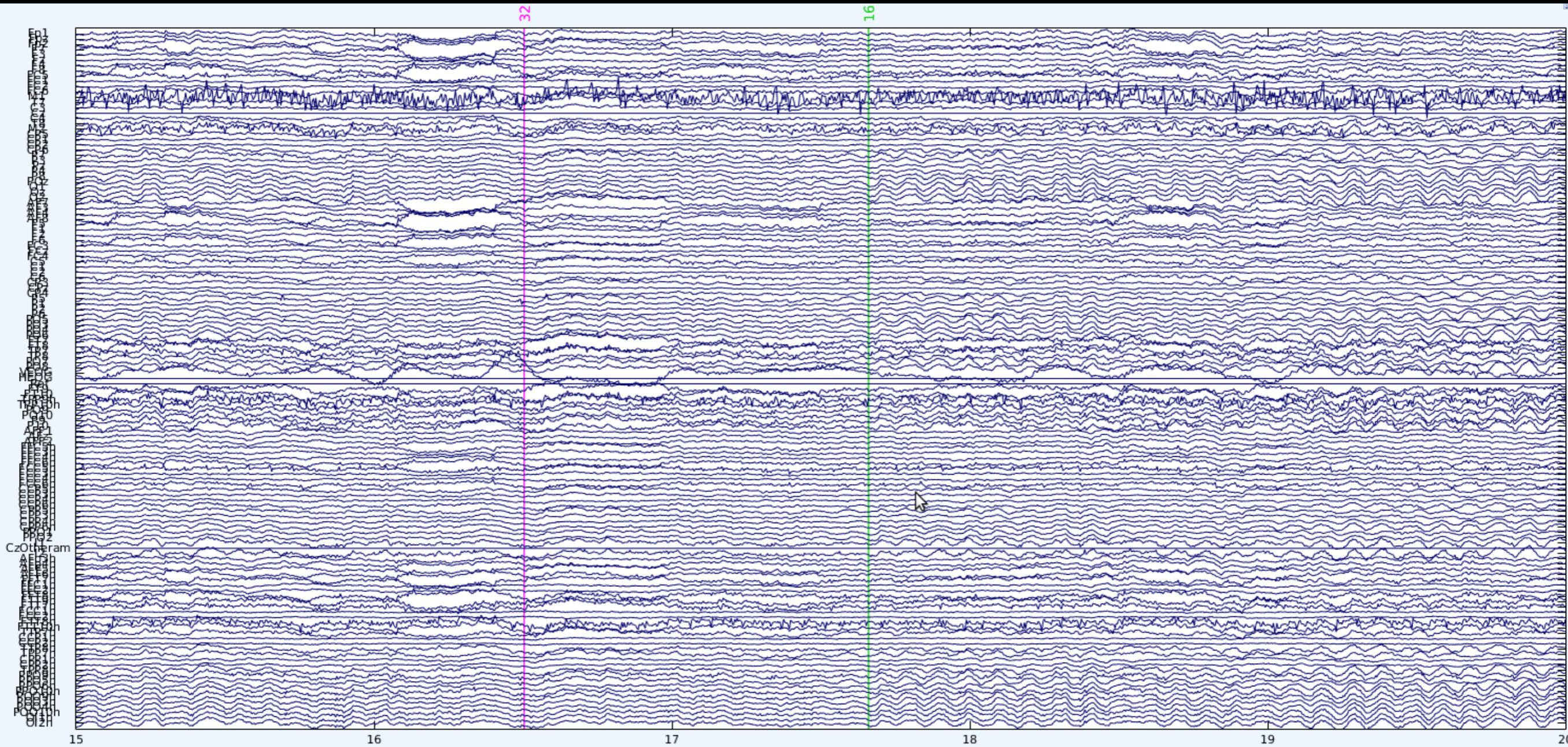
Bimodal

EEG analysis: steps

- Preprocess
- Spectopo
- Event Related Potentials (ERPs)
- Independent Component Analysis (ICA)
- Time-frequency analysis

EEG: raw data

- 16 start platform
- 32 stop platform
- 128 answer
- 64 next trial



CANCEL

Event types

<<

<

15

>

>>

Chan.
FT7

Time
20.1678

Value
-5.5728

20

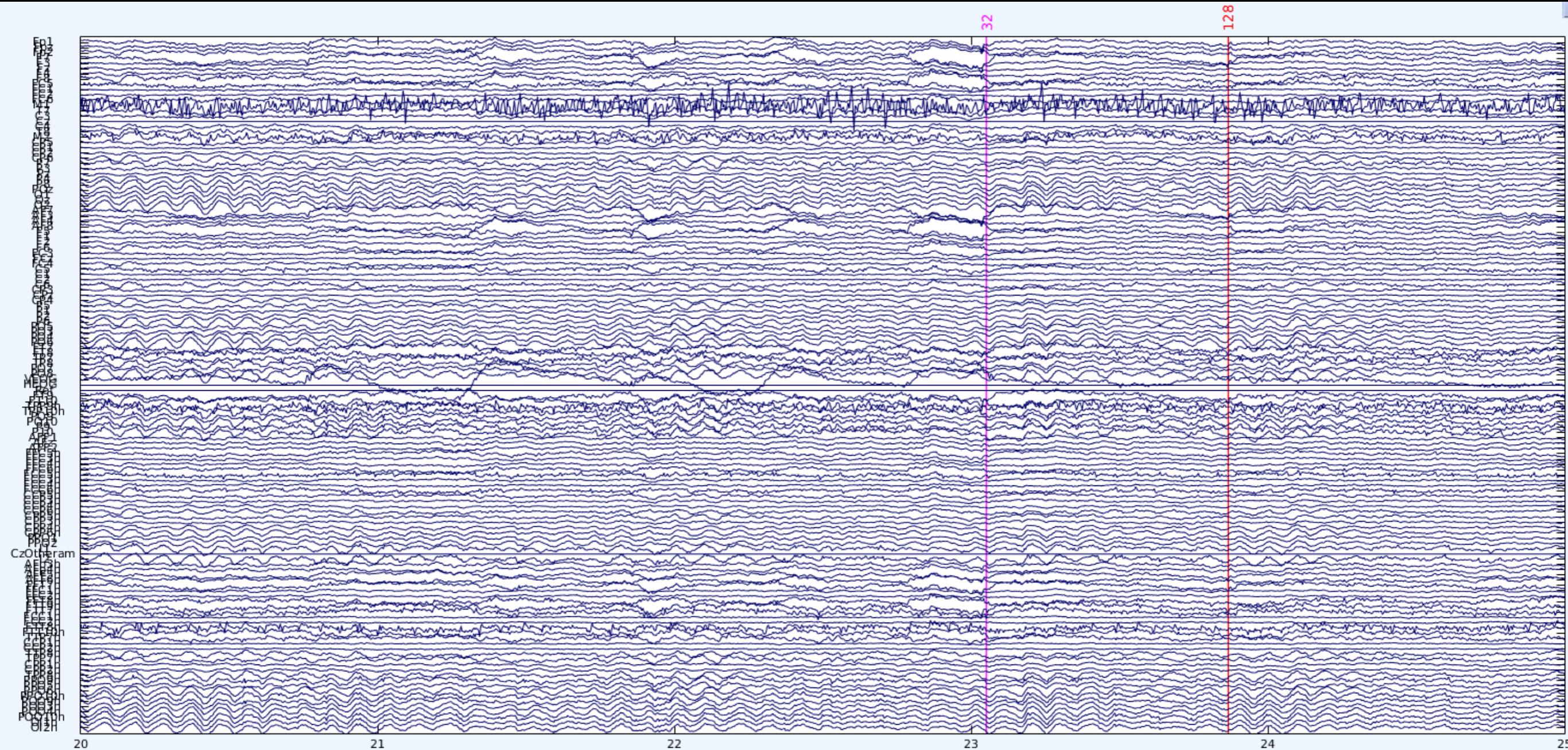
+

-

REJECT

EEG: raw data

- 16 start platform
- 32 stop platform
- 128 answer
- 64 next trial



CANCEL

Event types

<<

<

20

>

>>

Chan.

Time

Value

FT7

20.1678

-5.5728

20

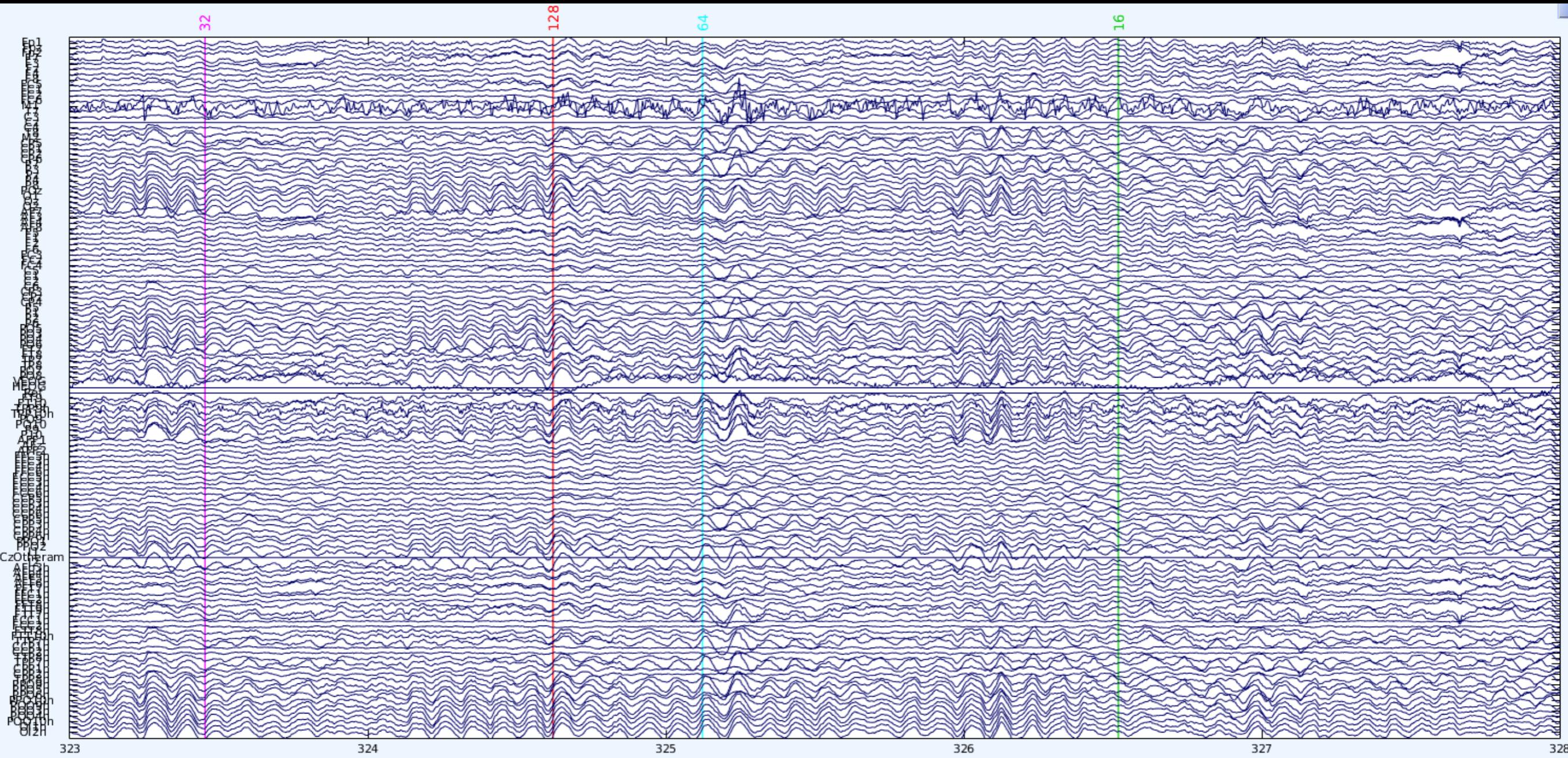
+

-

REJECT

EEG: raw data

- 16 start platform
- 32 stop platform
- 128 answer
- 64 next trial



CANCEL

Event types

<<

<

323

>

>>

Chan.
Fp1

Time
324.0583

Value
-11.0972

20

+

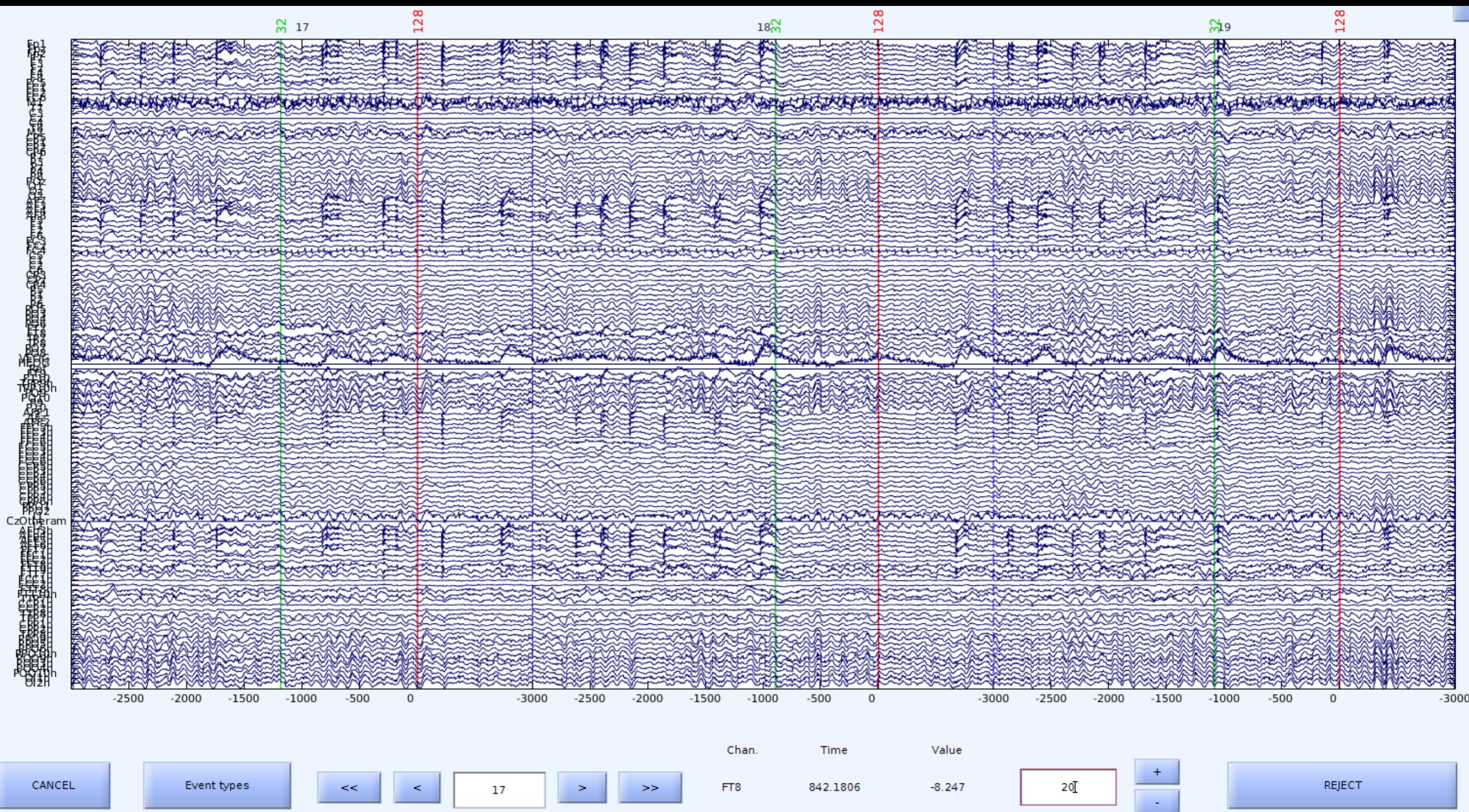
-

REJECT

Preprocess

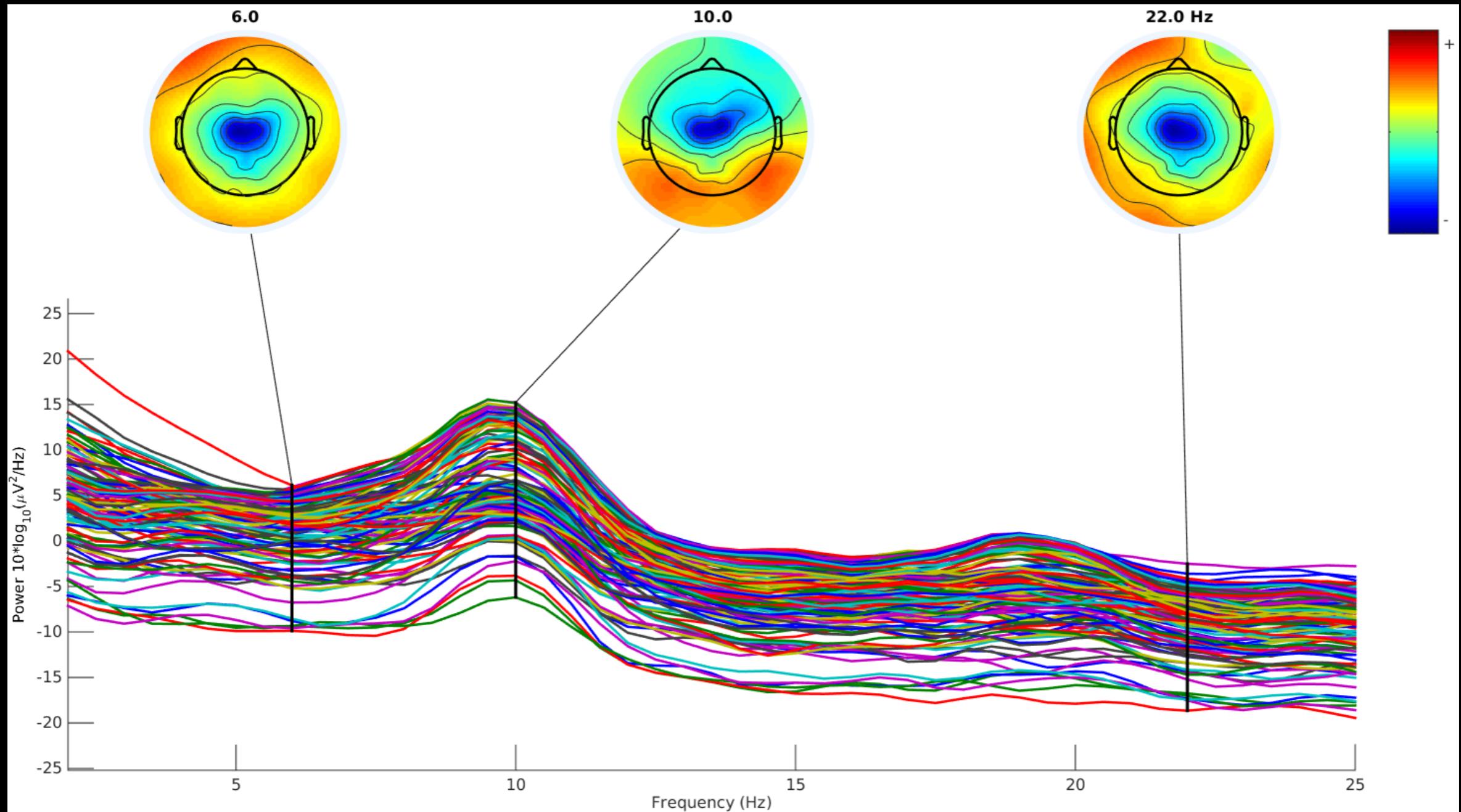
- Sampling rate: 256 Hz
- Filtering (high pass filter = 1)
- Deblanking (triggers)
- Cut out strong artifacts by hand
- Exclude bad channels (only if necessary)

Epoching (answers' trigger)



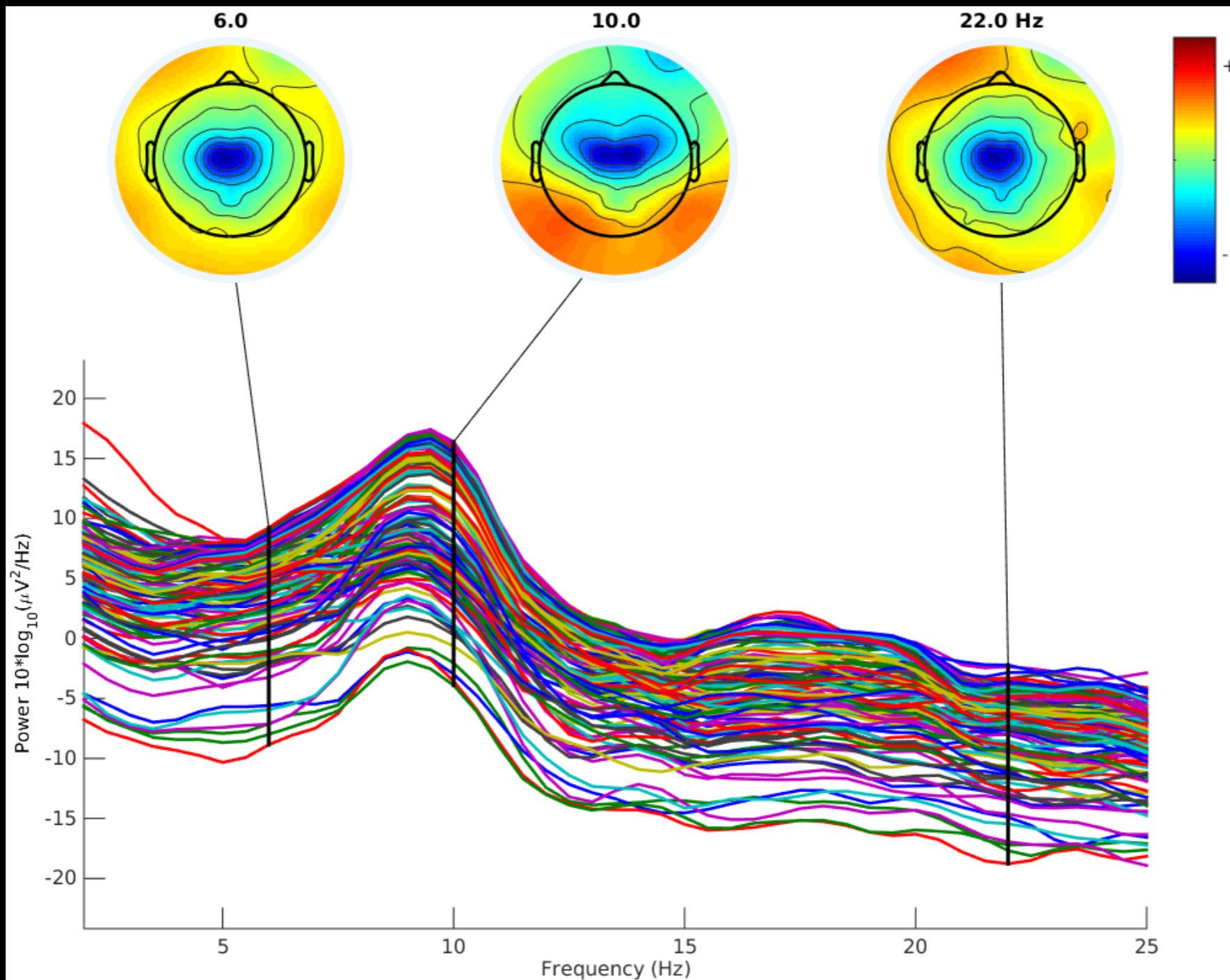
baseline?!

Spectopo



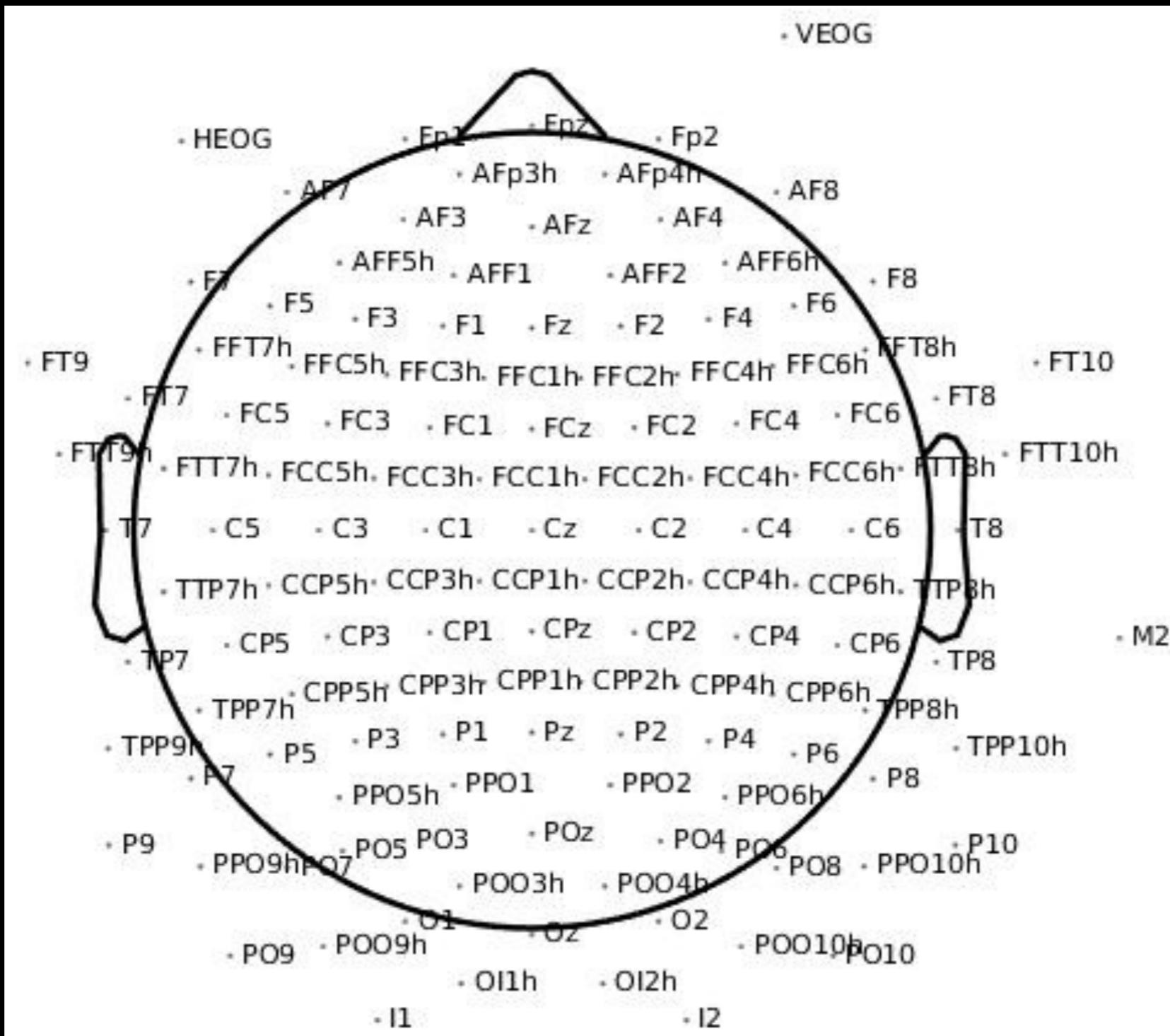
Subj 1 bimodal (session 3)

Spectopo

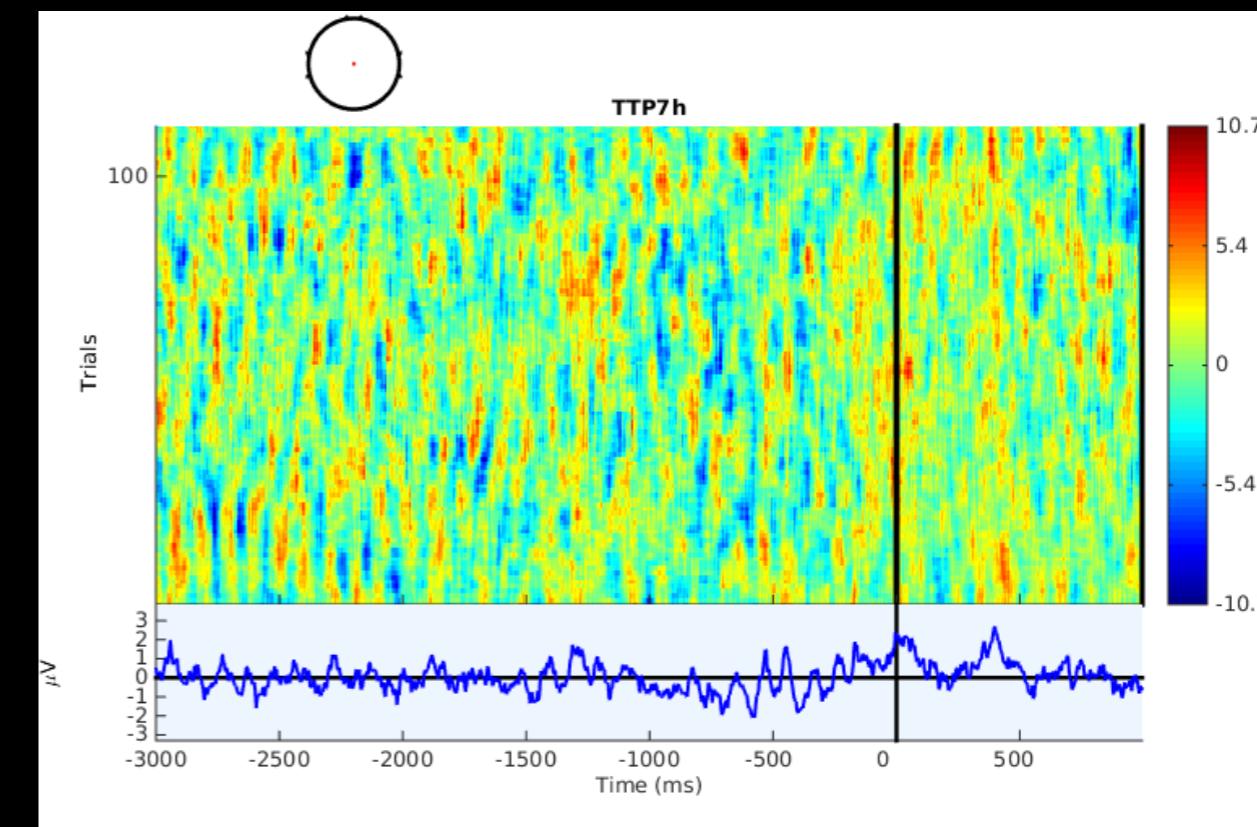
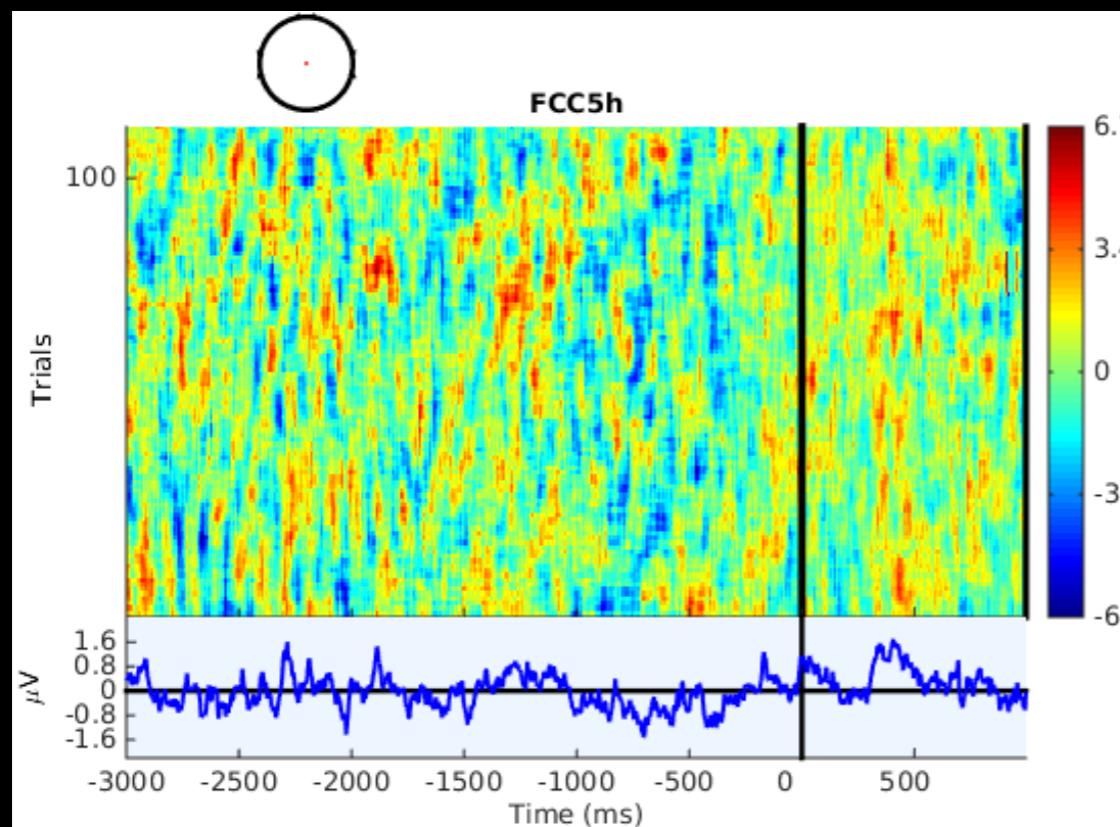
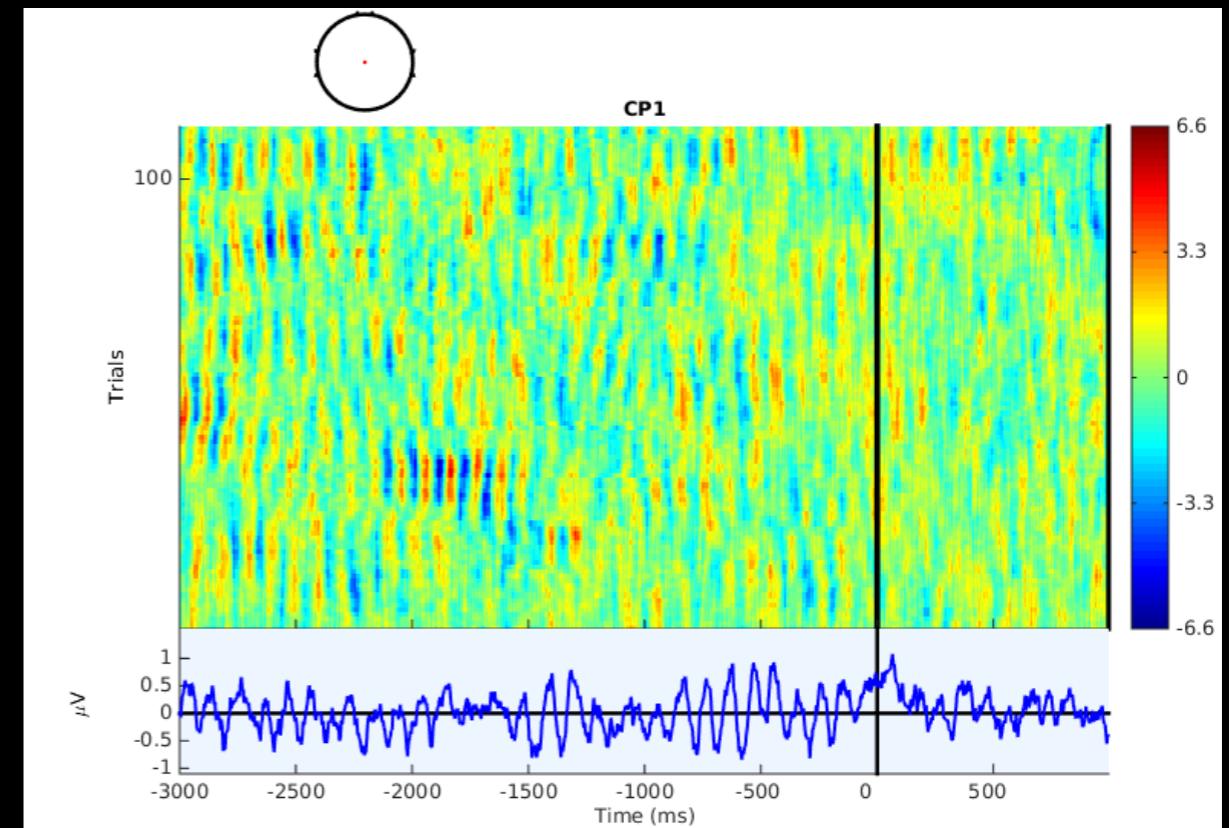
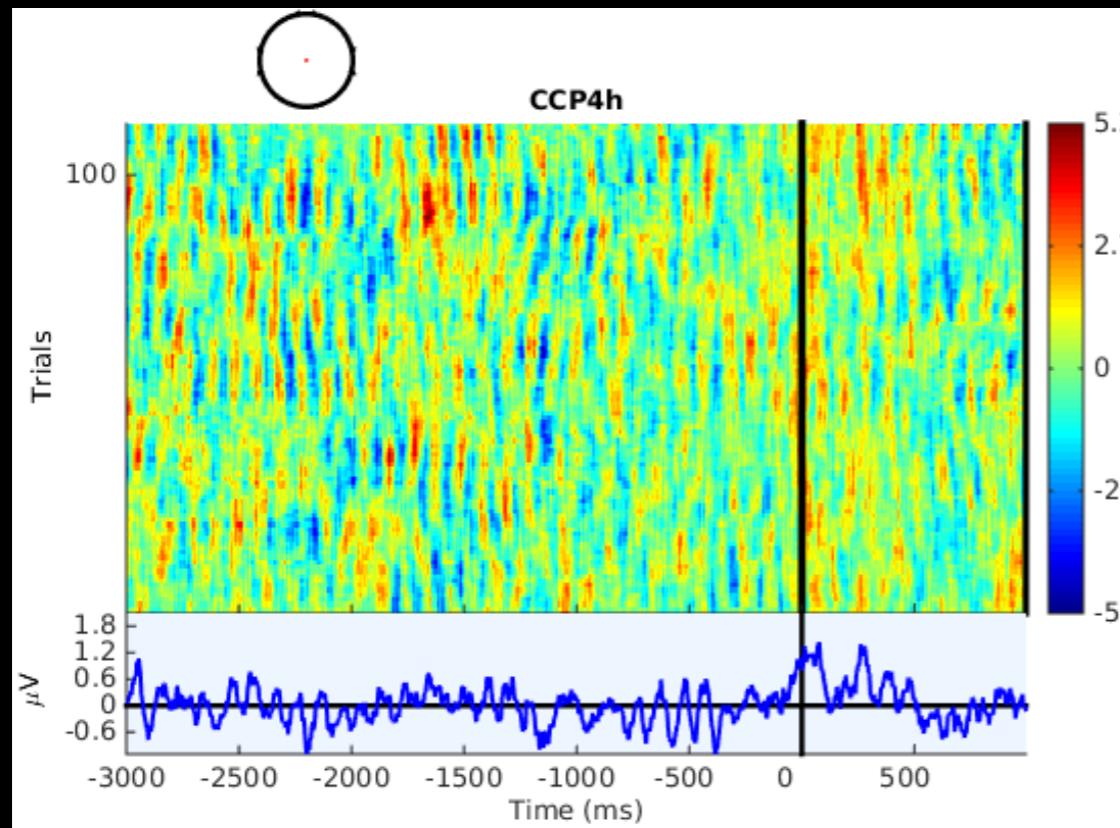


Subj 1 vestibular (session 3)

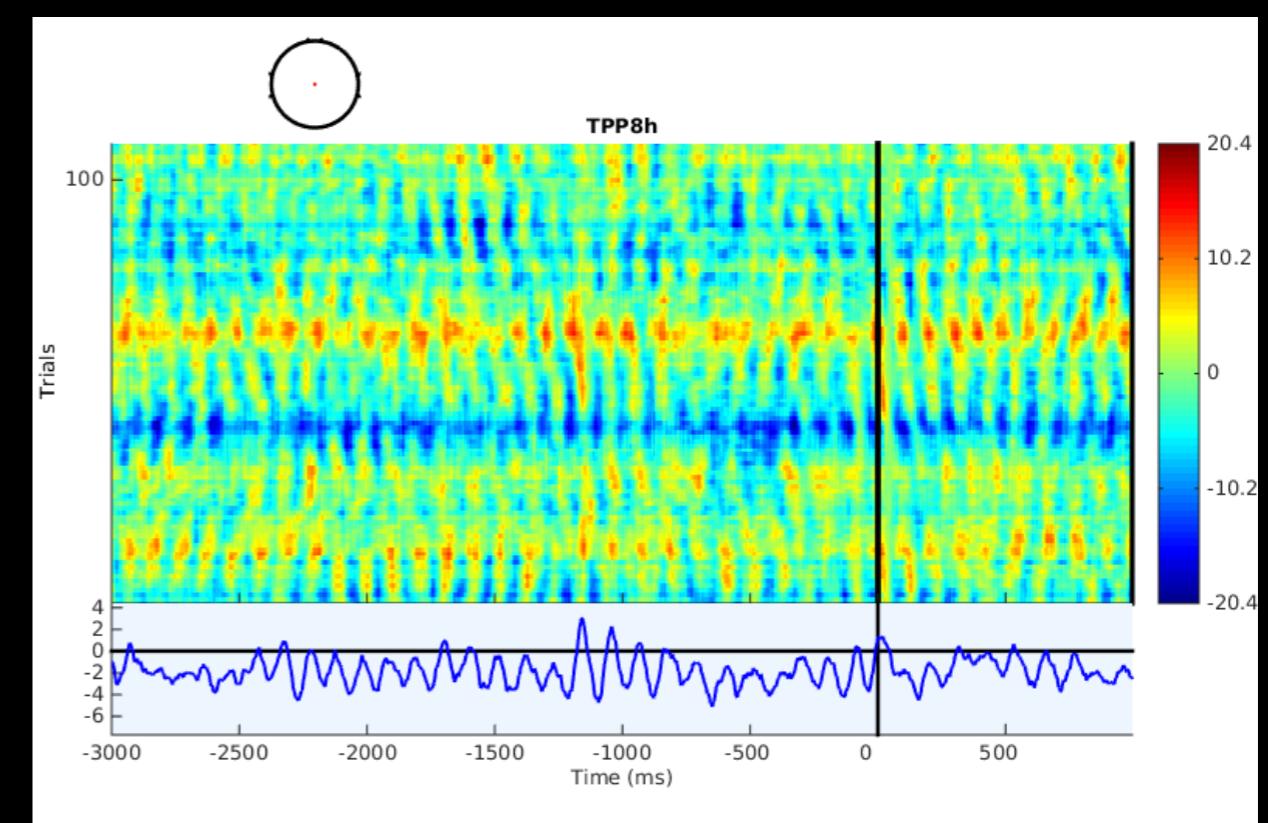
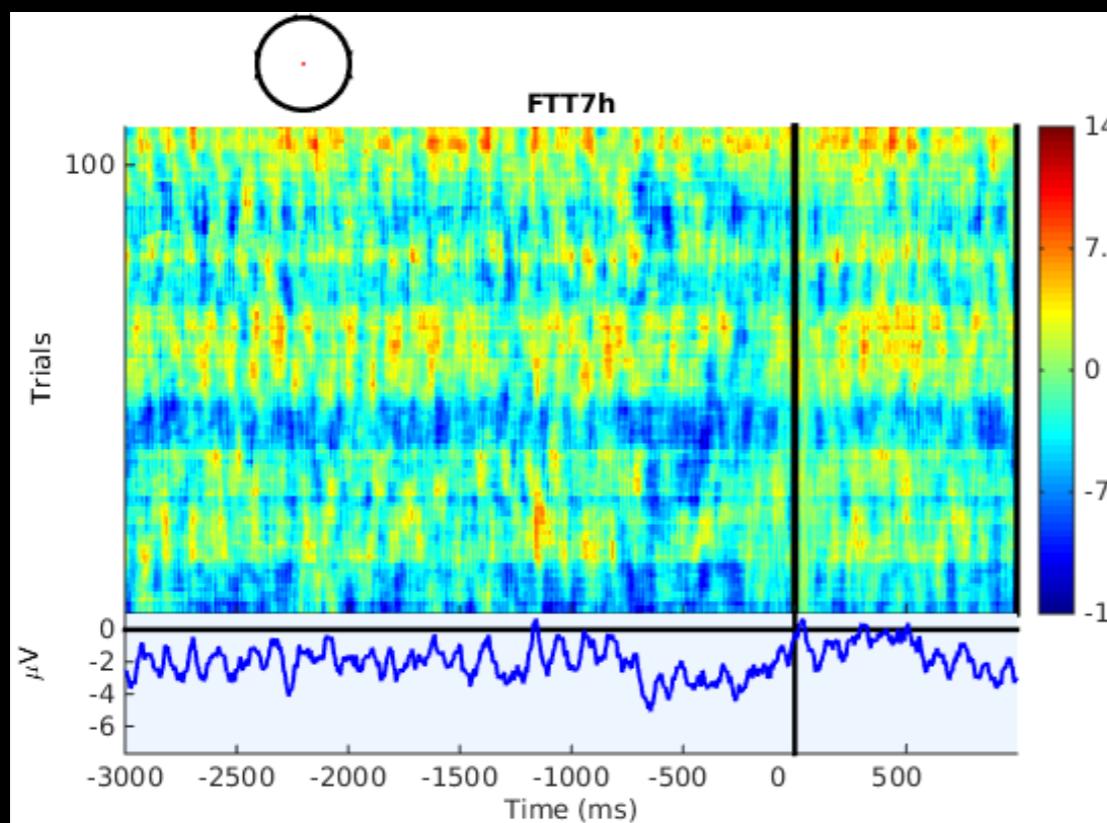
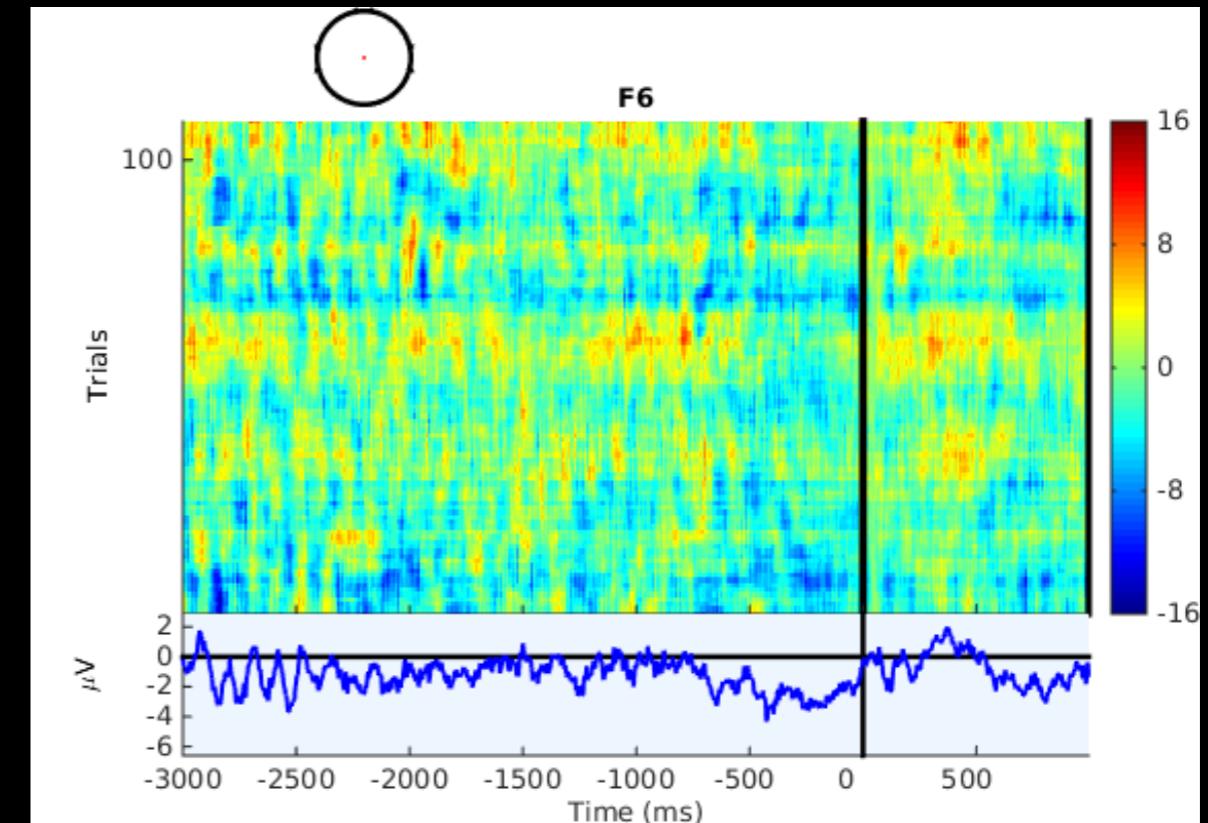
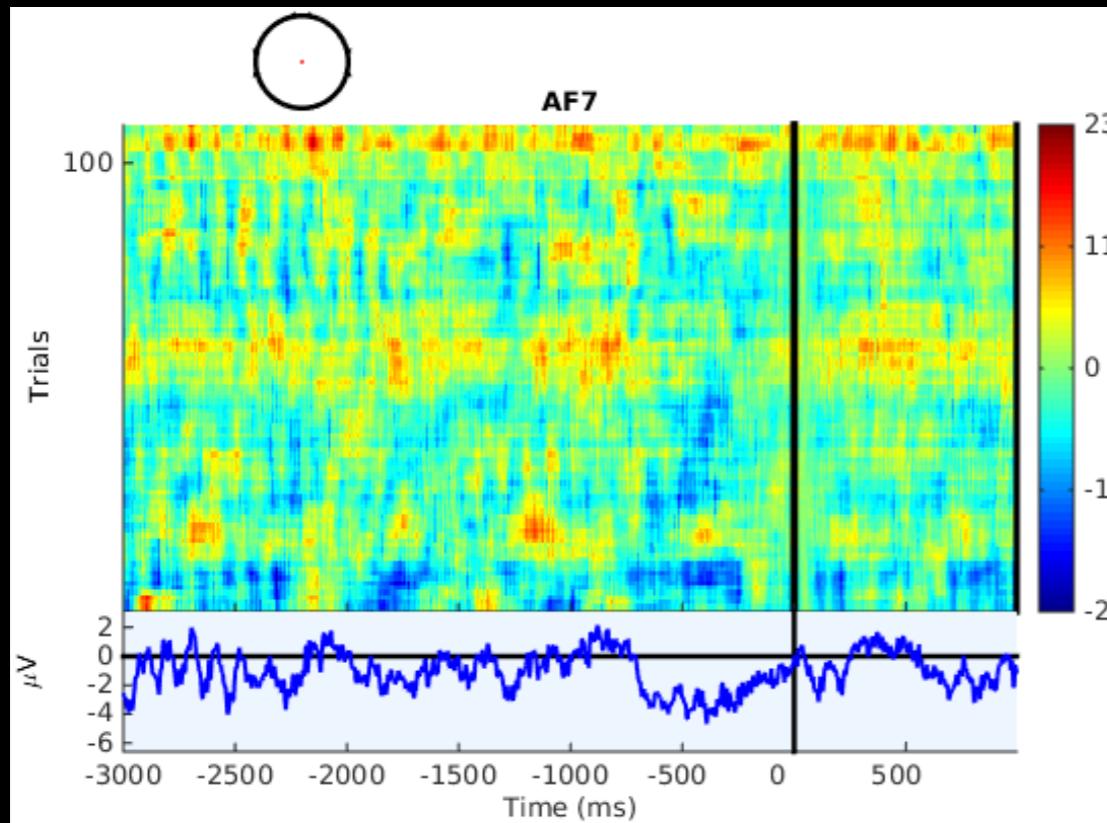
Channels location



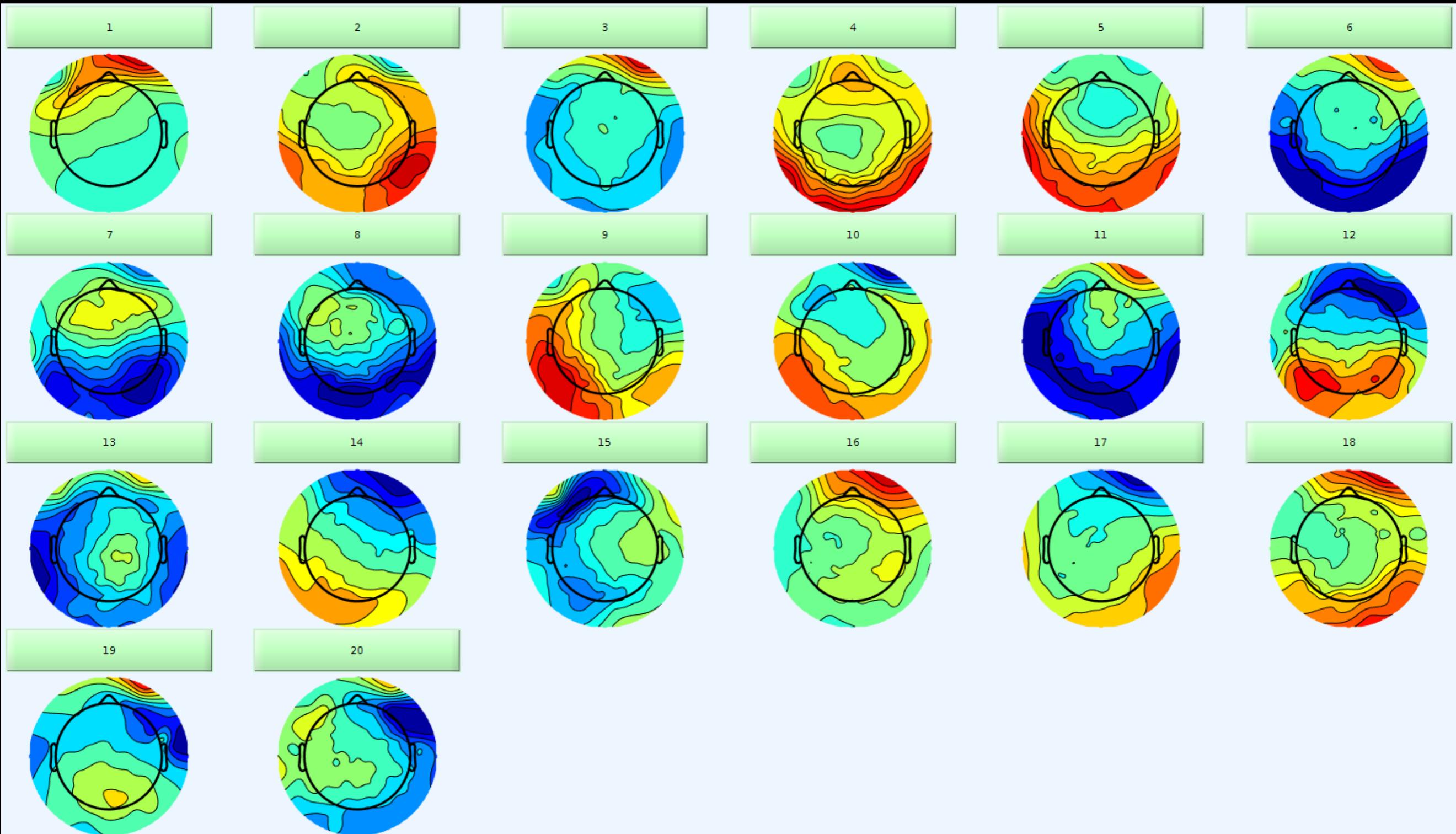
ERPs: subj 1 bimodal



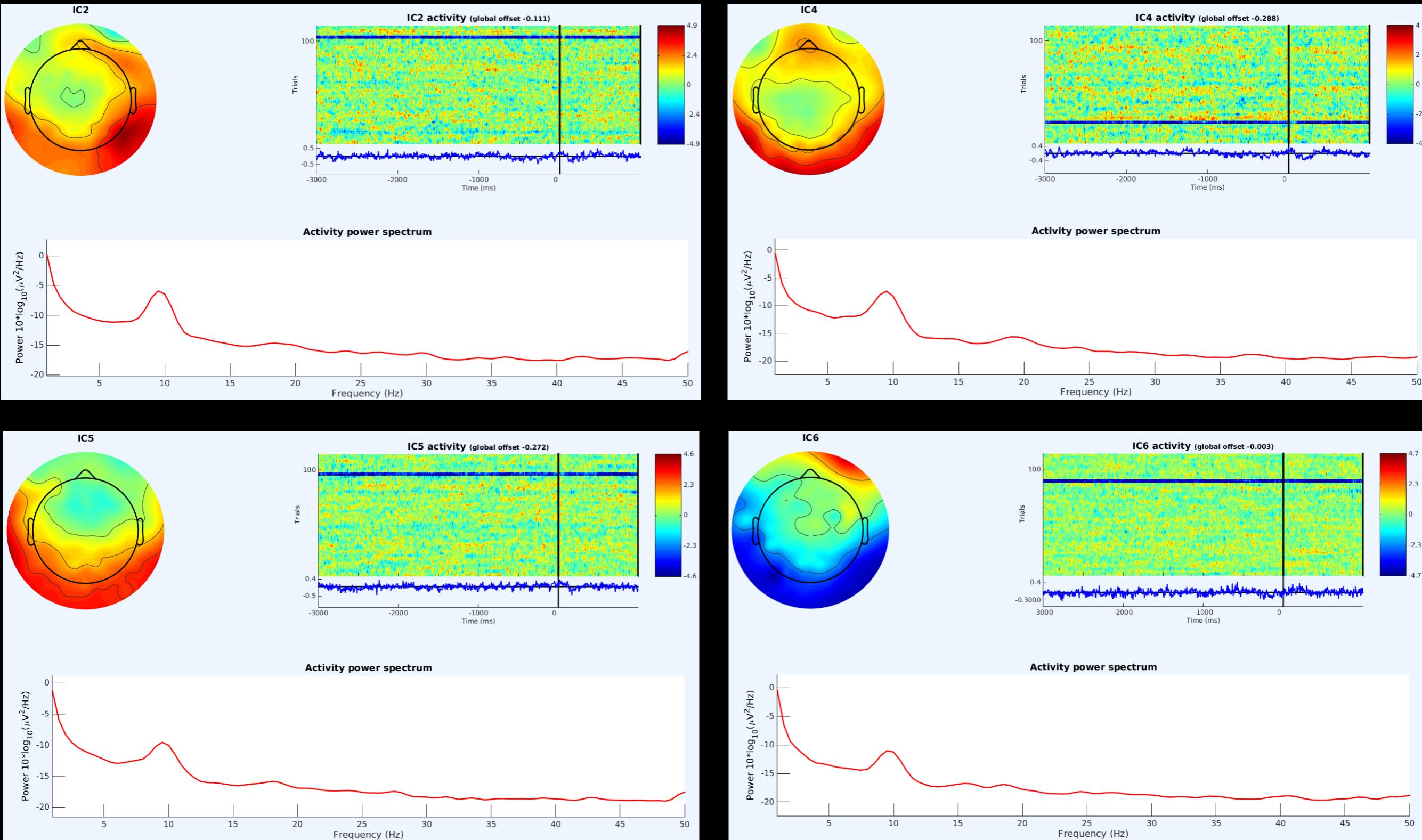
ERPs: subj 1 vestibular



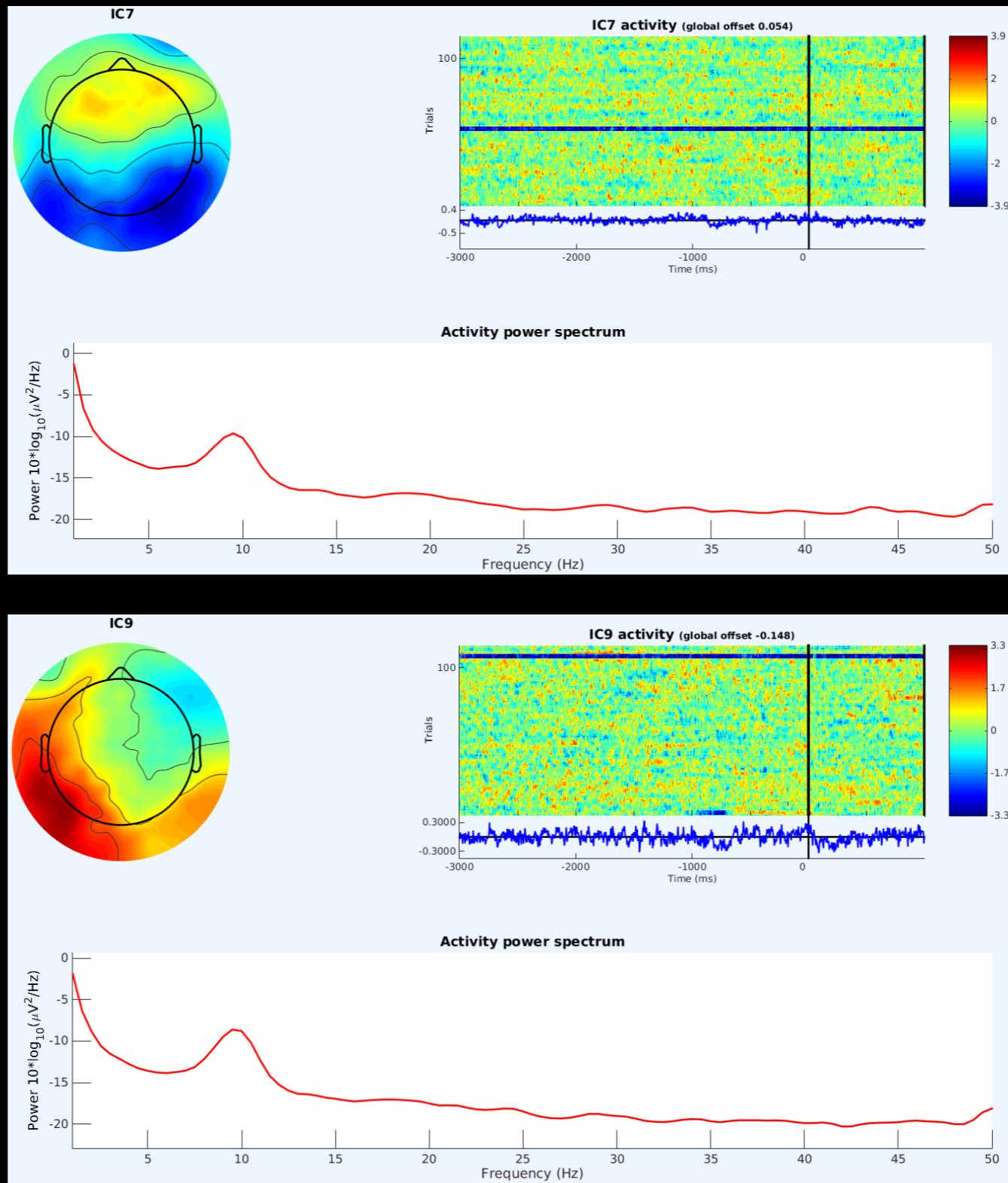
ICA: subj 1 bimodal



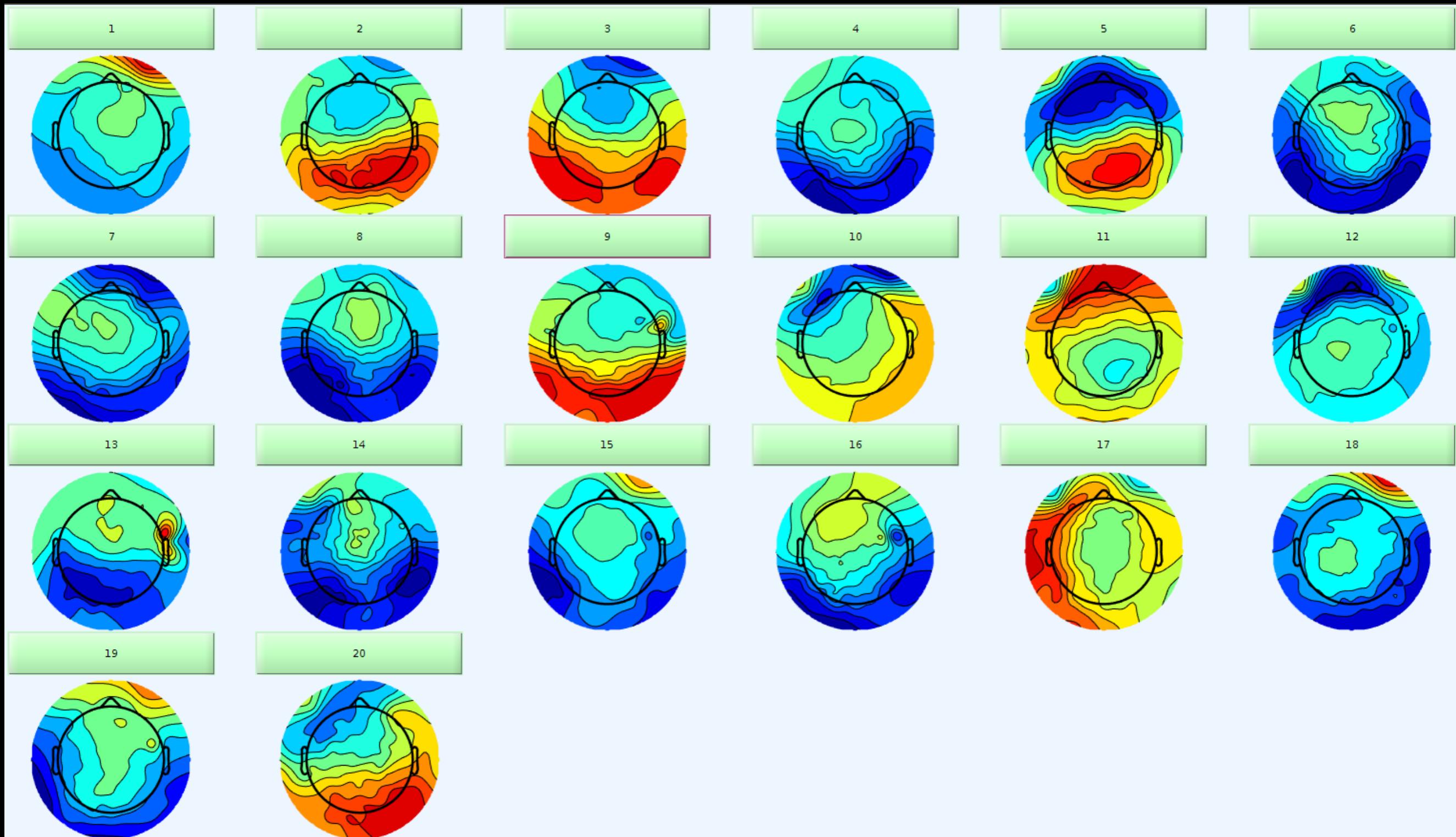
ICA: subj 1 bimodal



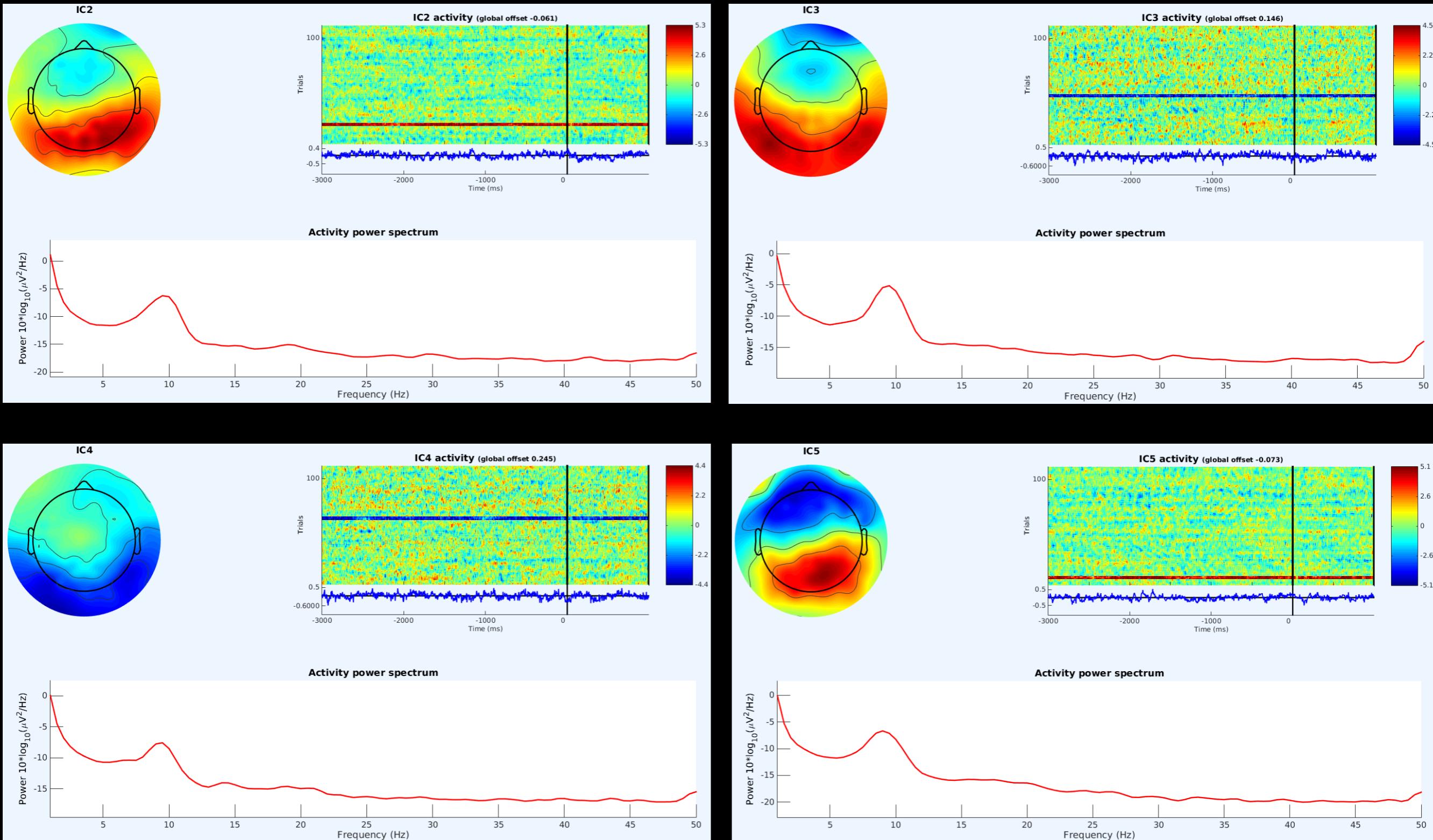
ICA: subj 1 bimodal



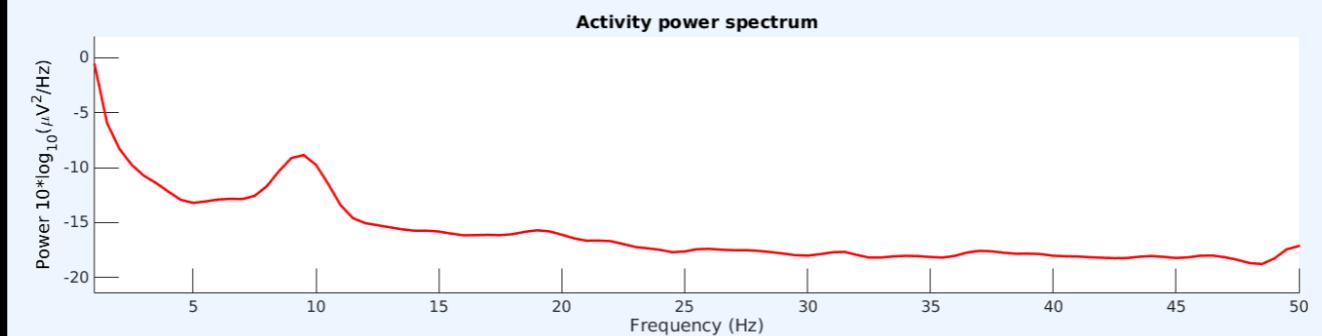
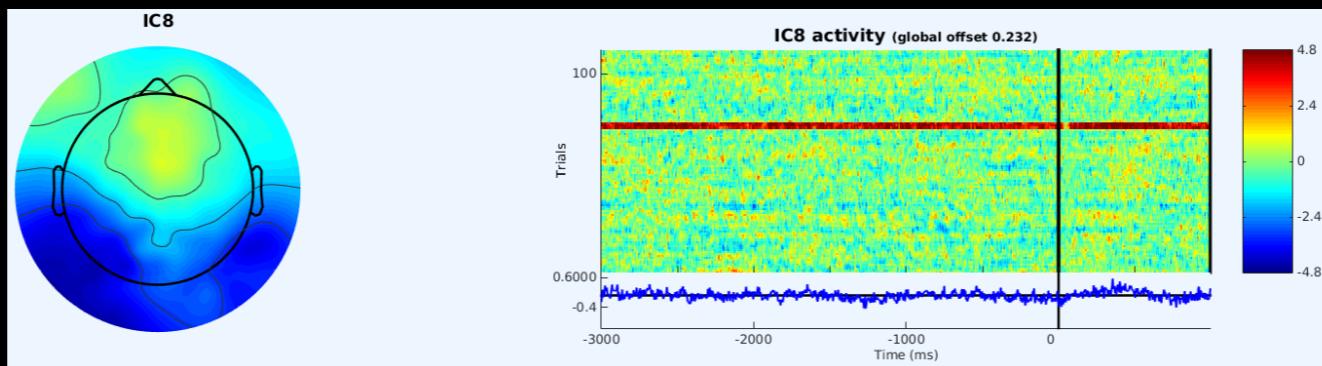
ICA: subj 1 vestibular



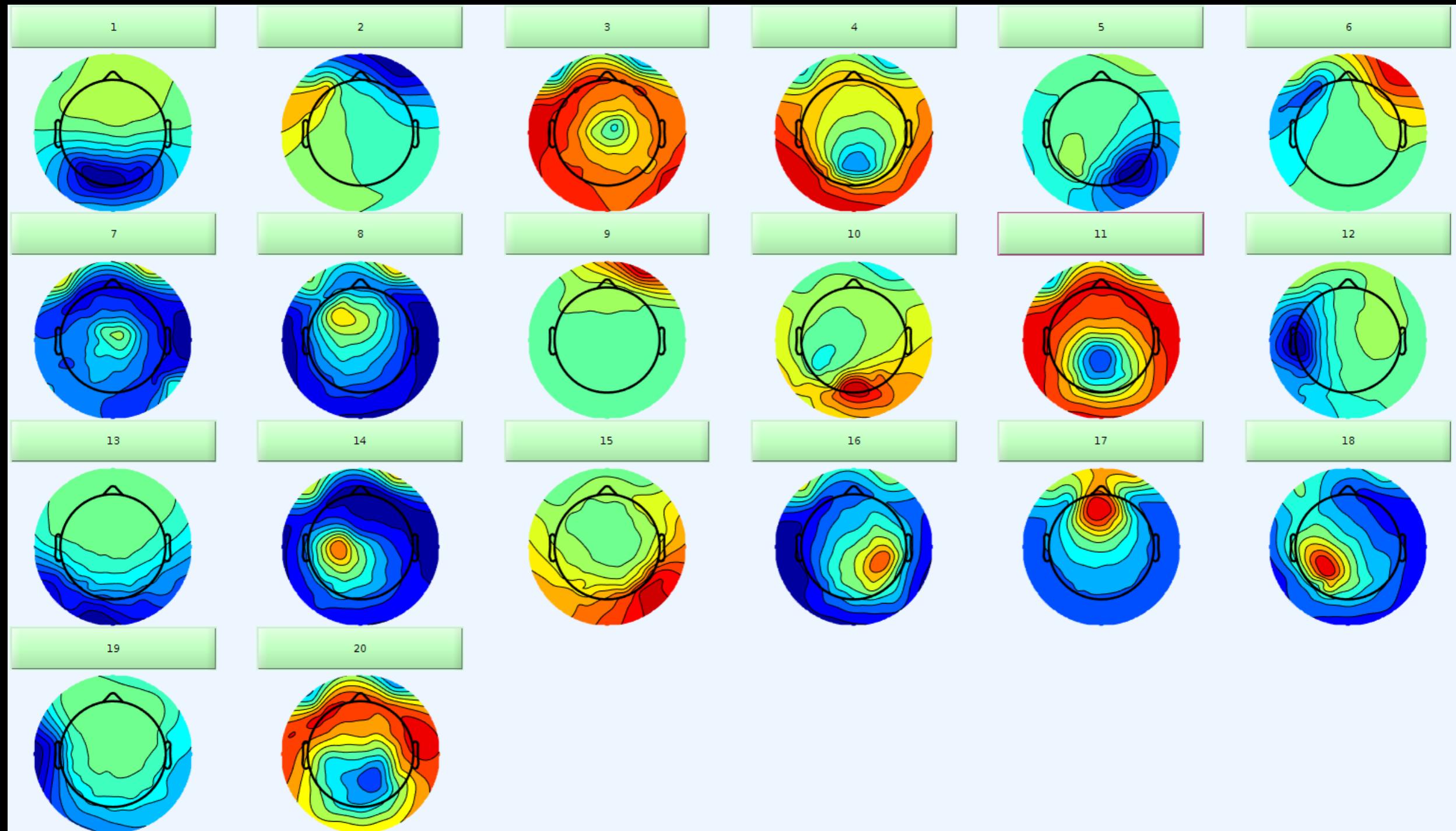
ICA: subj 1 vestibular



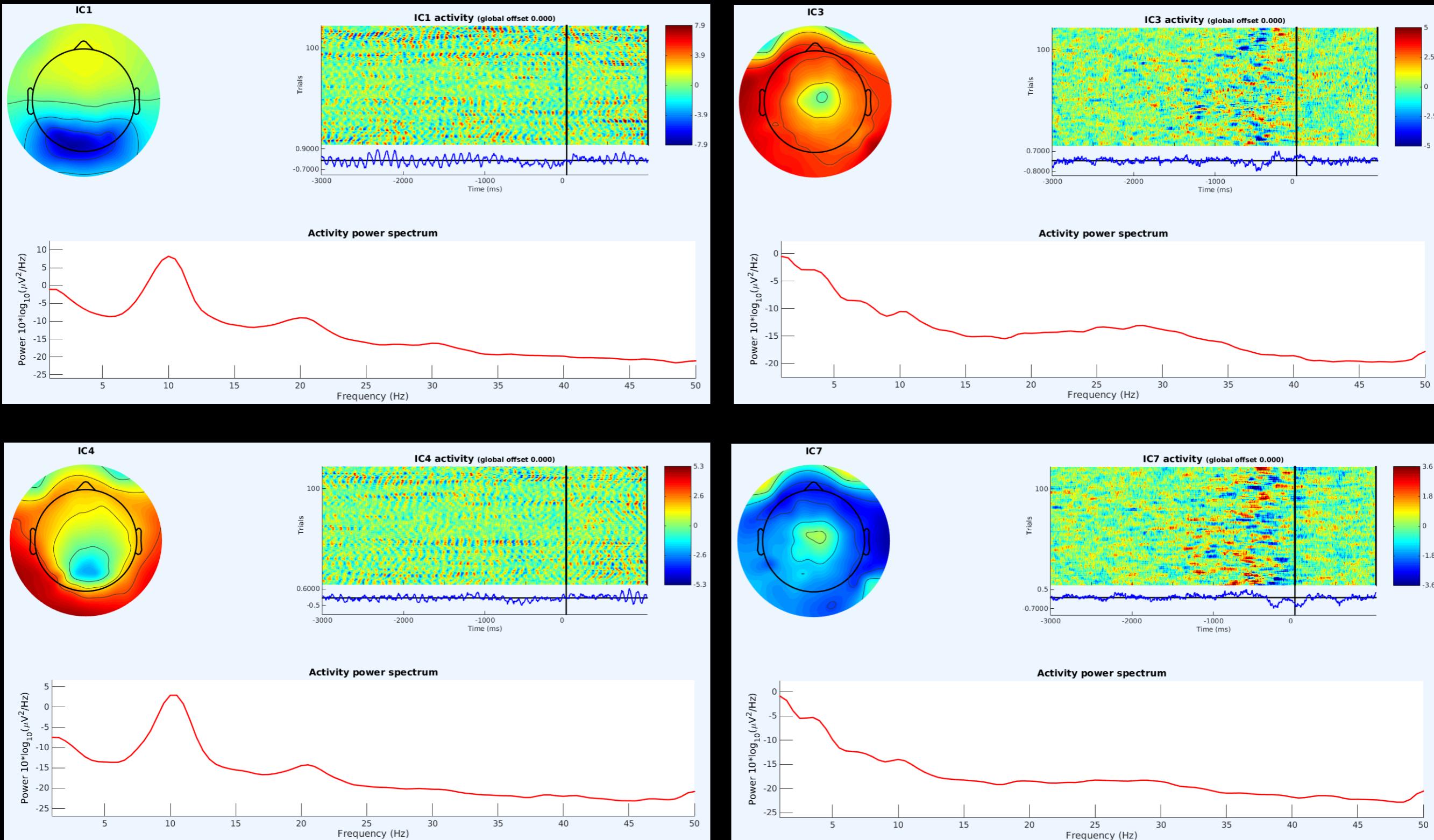
ICA: subj 1 vestibular



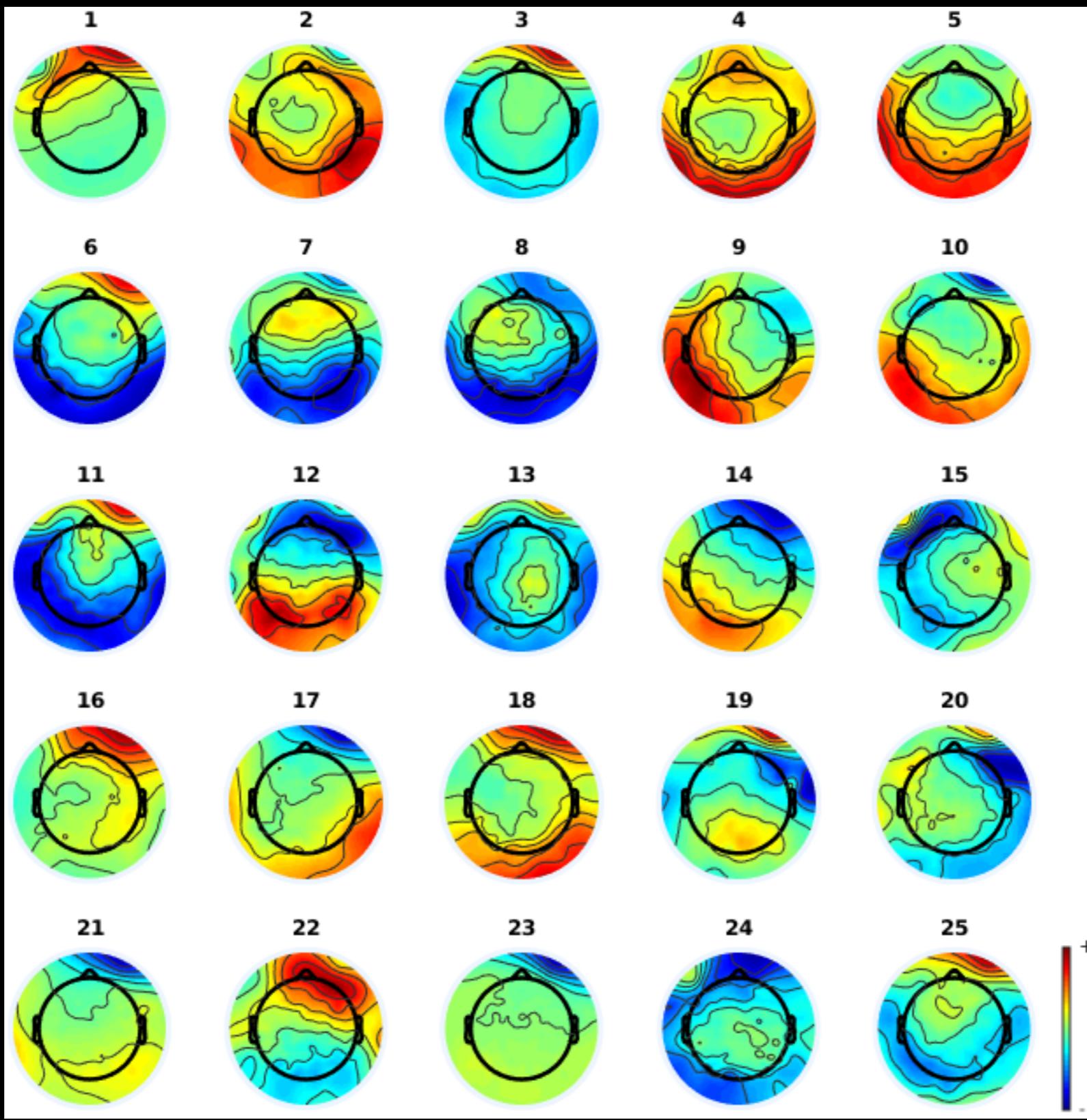
ICA: subj 2 bimodal



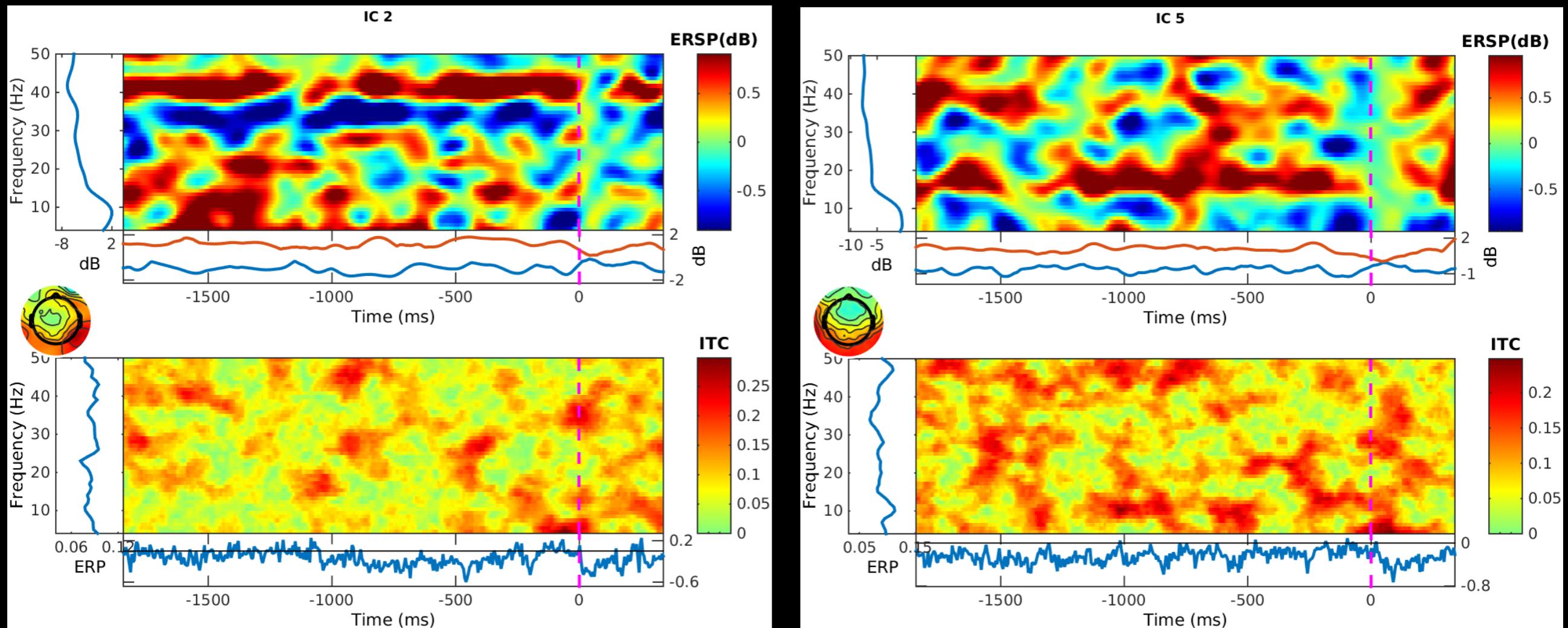
ICA: subj 2 bimodal



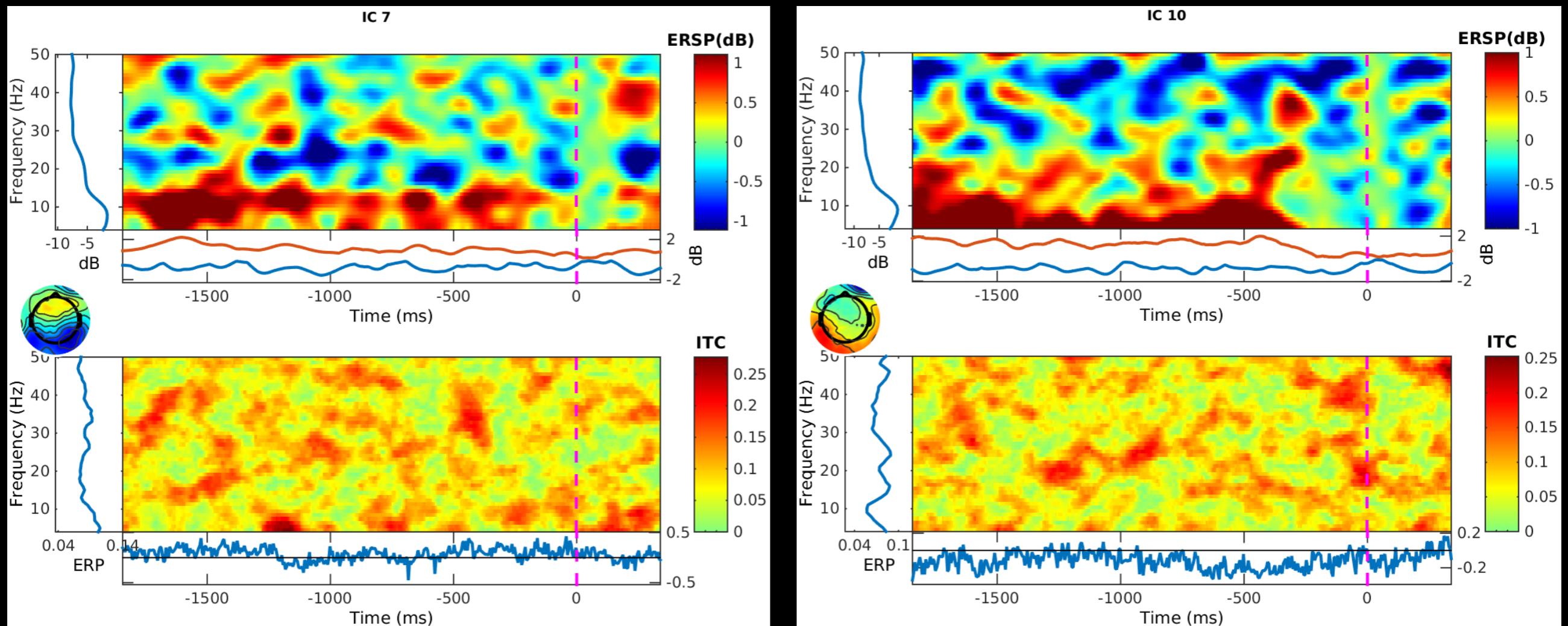
TF: subj 1 bimodal



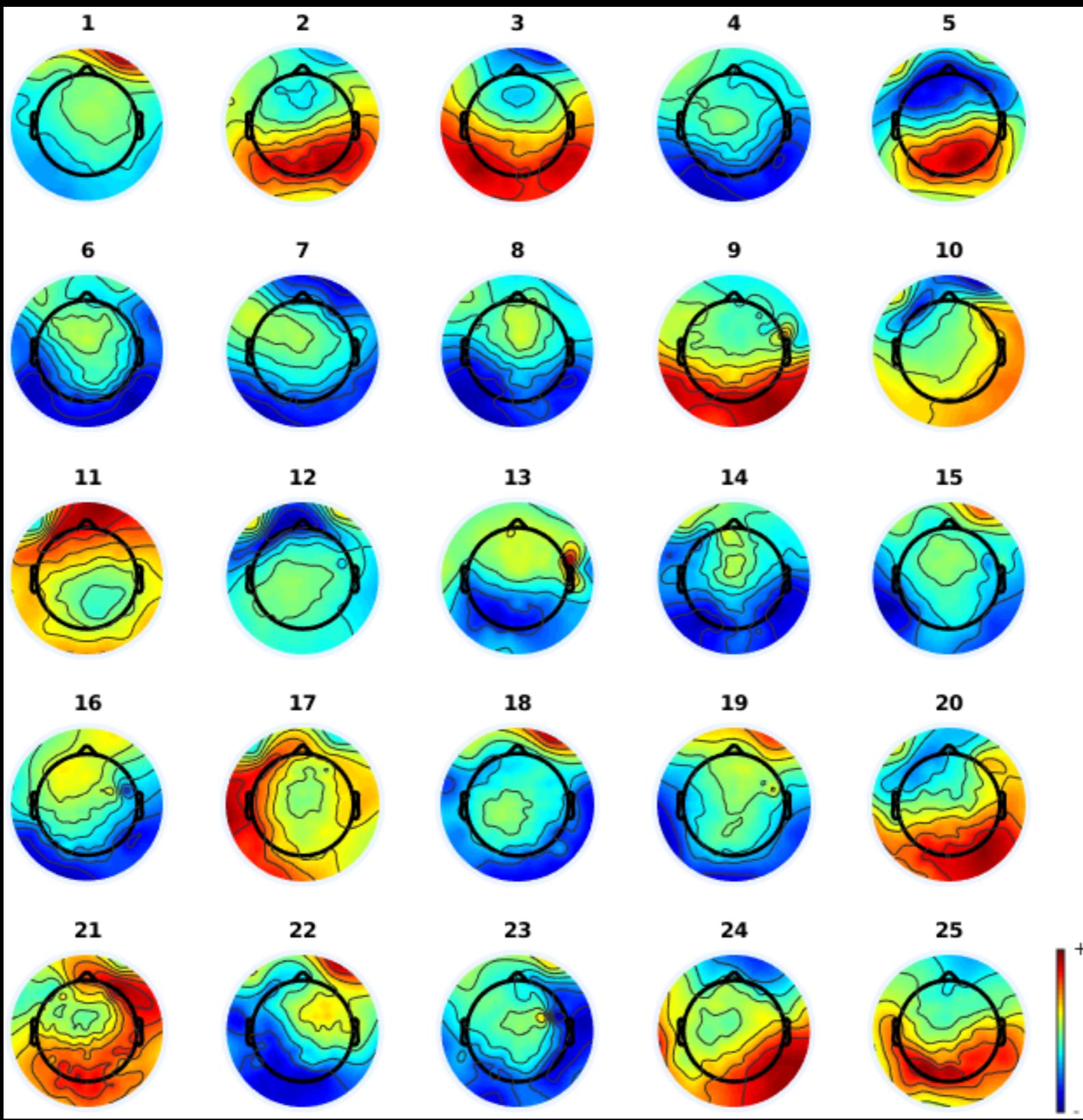
TF: subj 1 bimodal



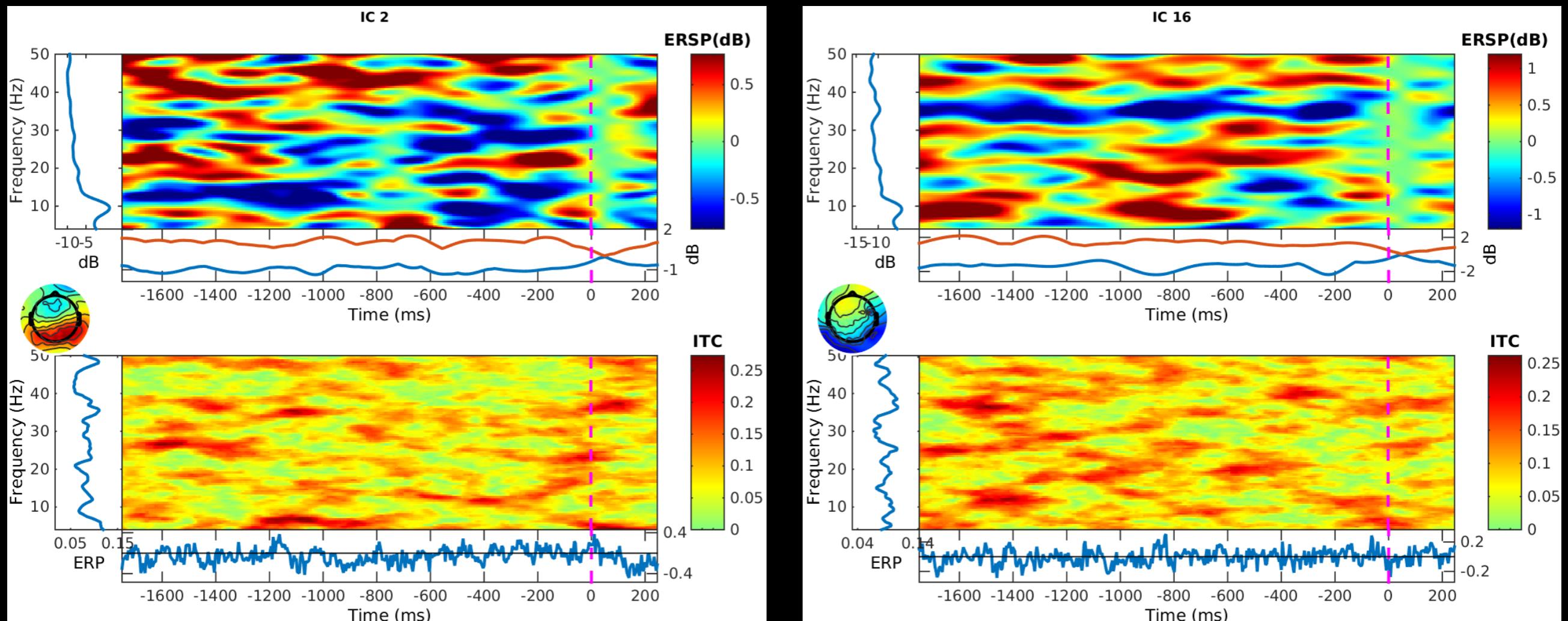
TF: subj 1 bimodal



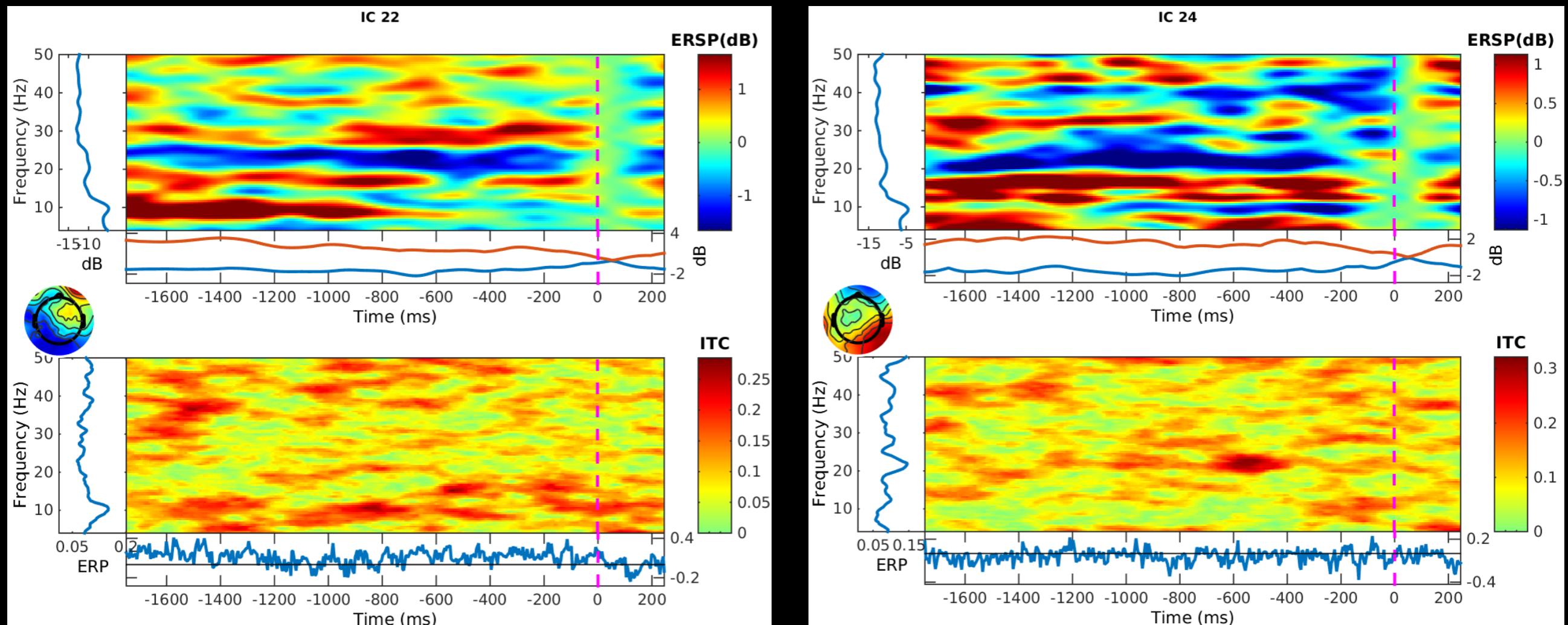
TF: subj 1 vestibular



TF: subj 1 vestibular



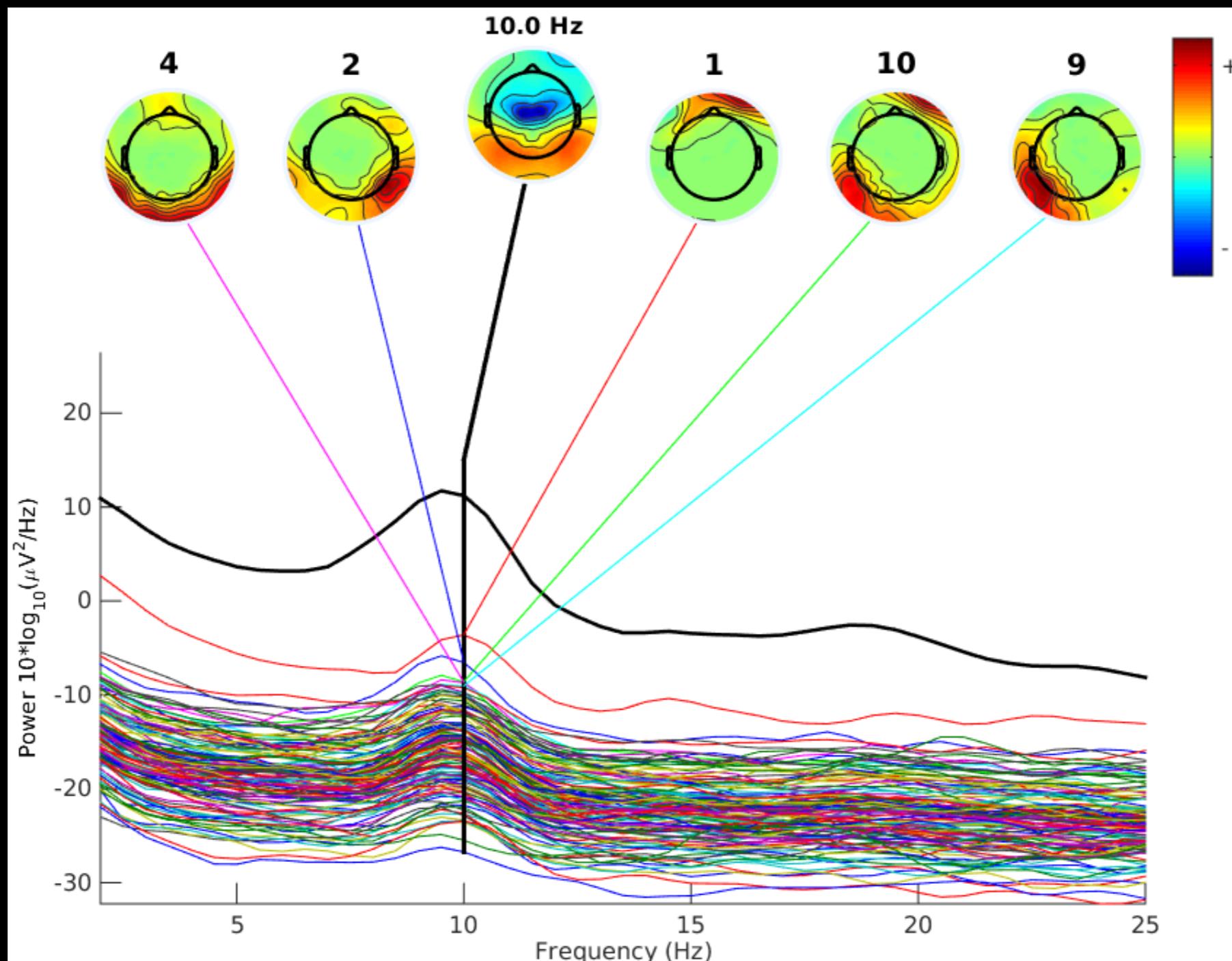
TF: subj 1 vestibular



ICA

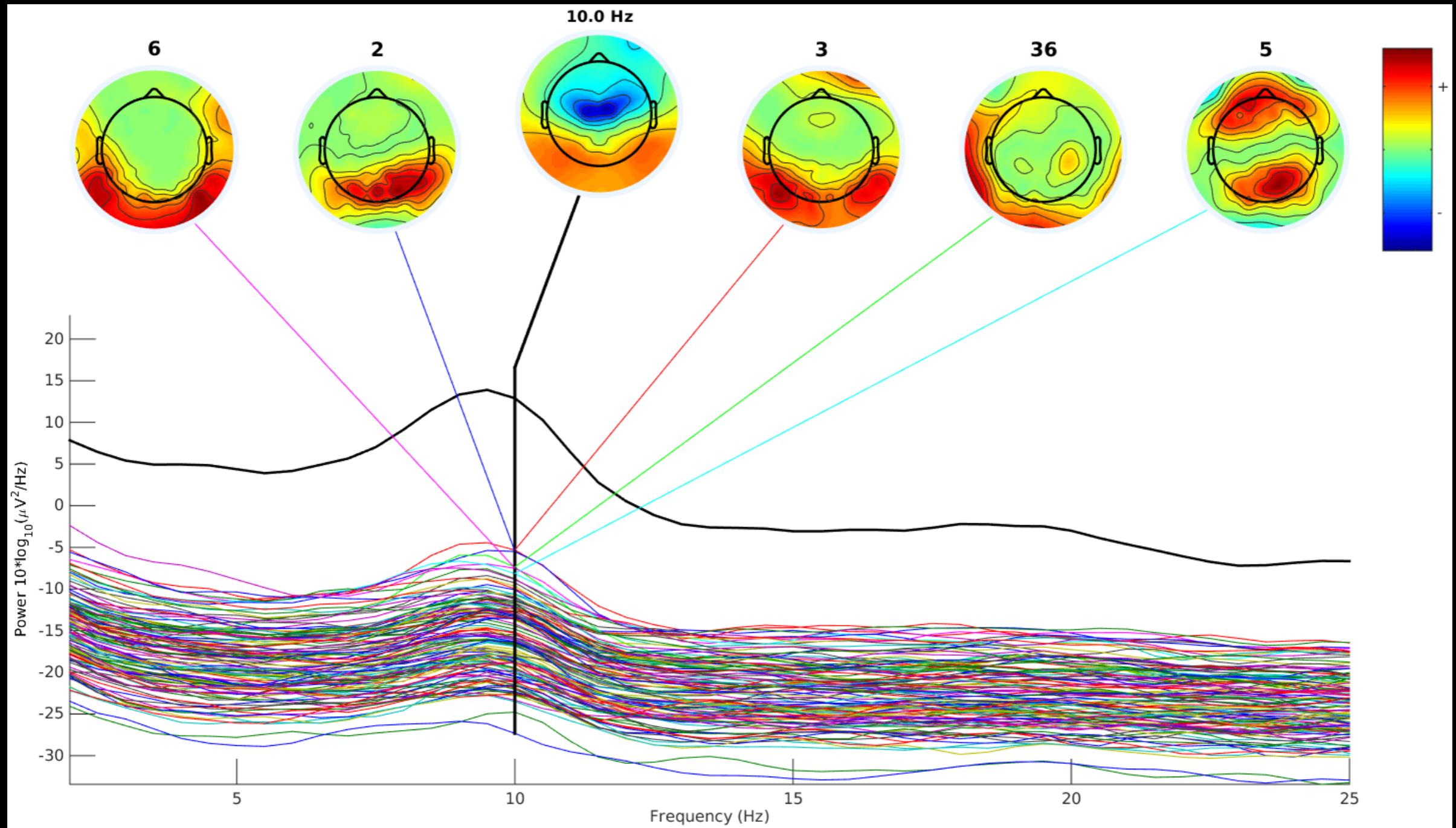
Do we want to remove components (e.g. eye artifacts) or do we want to employ different approaches (e.g. PCA)?

Spectopo components



Subj 1 bimodal

Spectopo components



Subj 1 vestibular

Next steps

- record a few more subjects with the “new” belt and look at the data
- implement trigger for the tactile condition
- define the steps of the analysis we wish to pursue
- start the “official” recordings