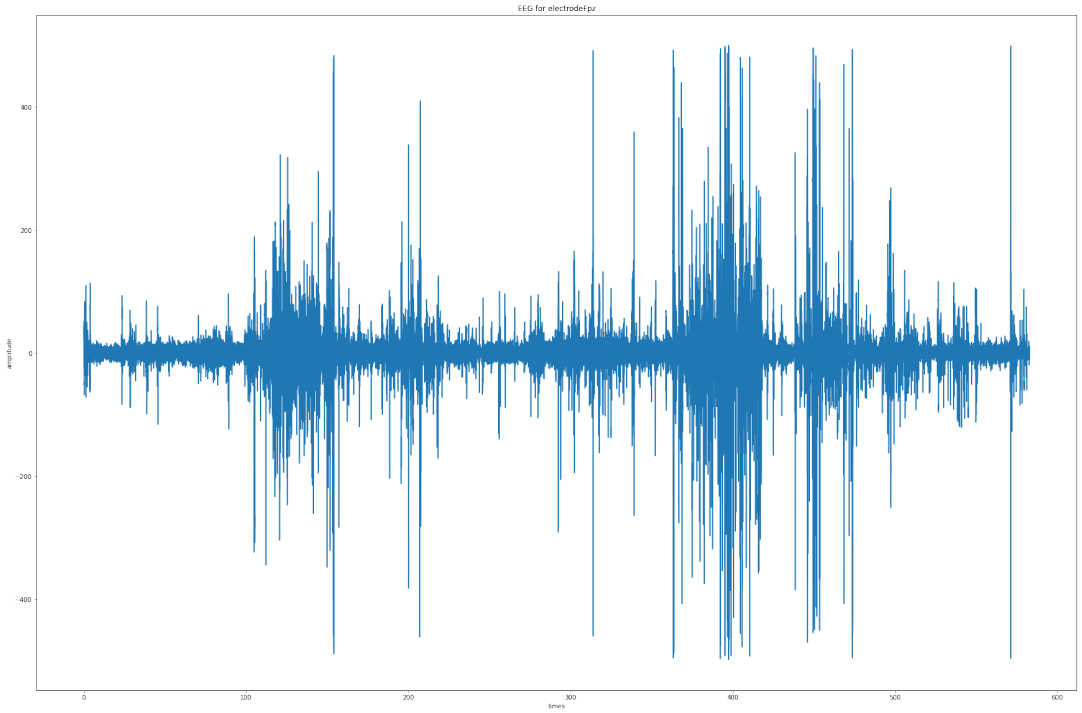
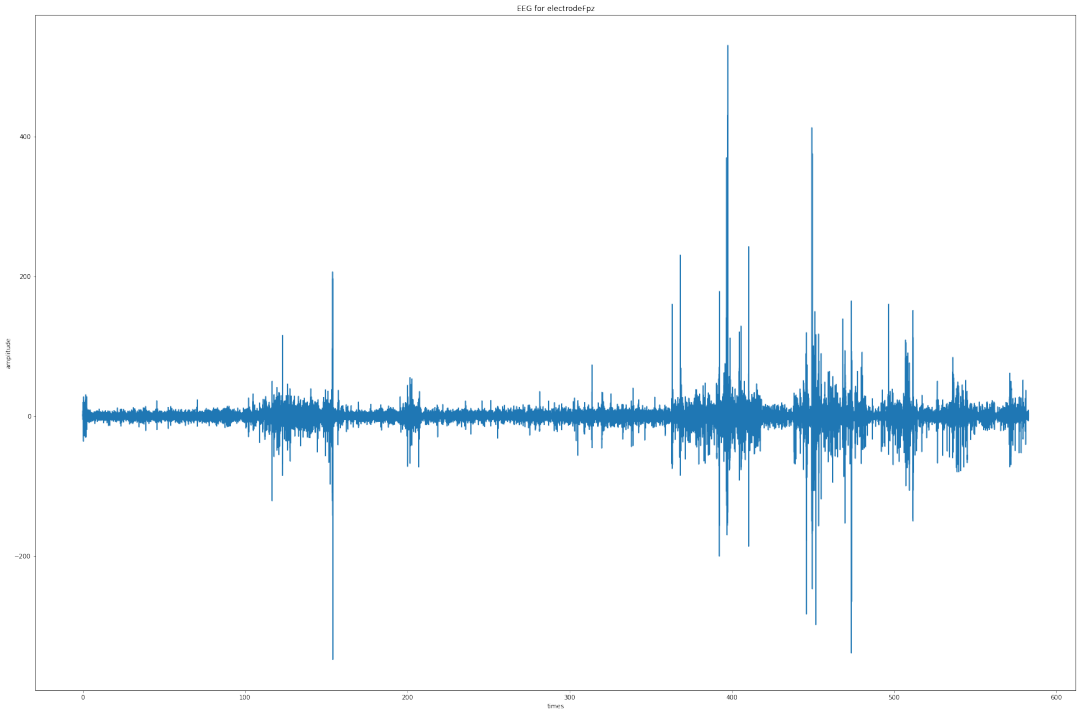
Perf1 signal

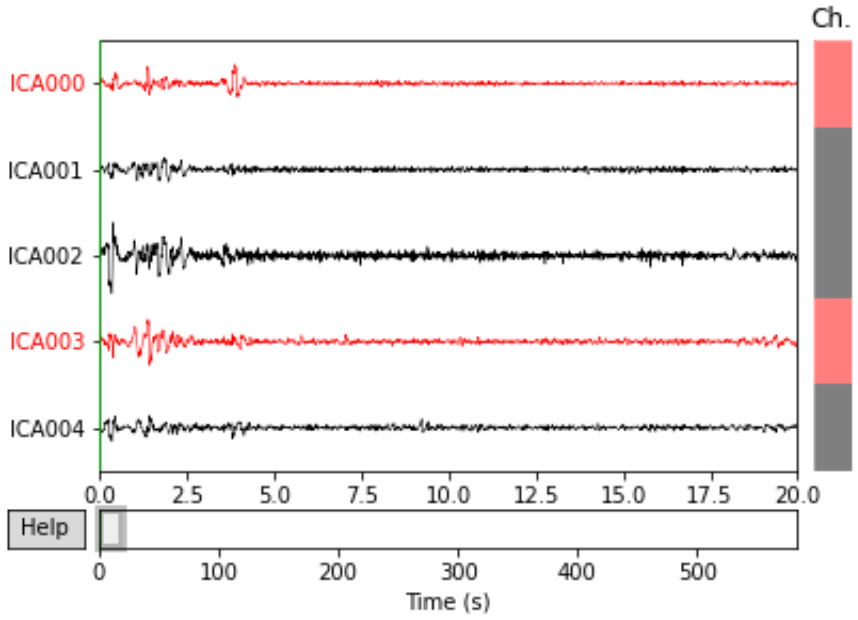
Before ICA

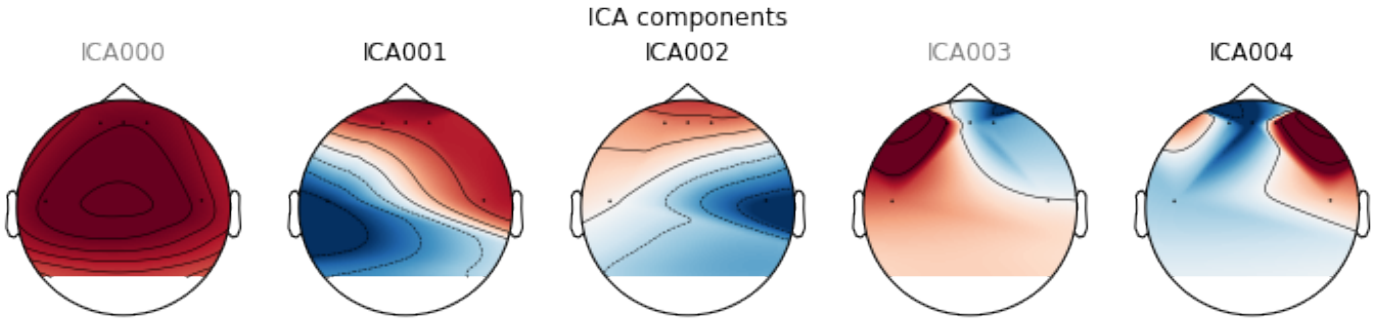


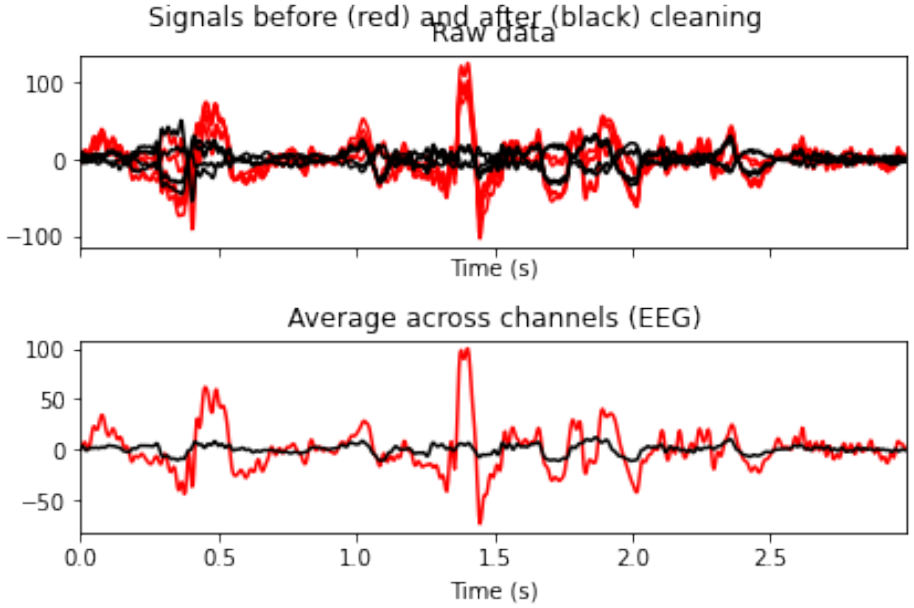
After ICA



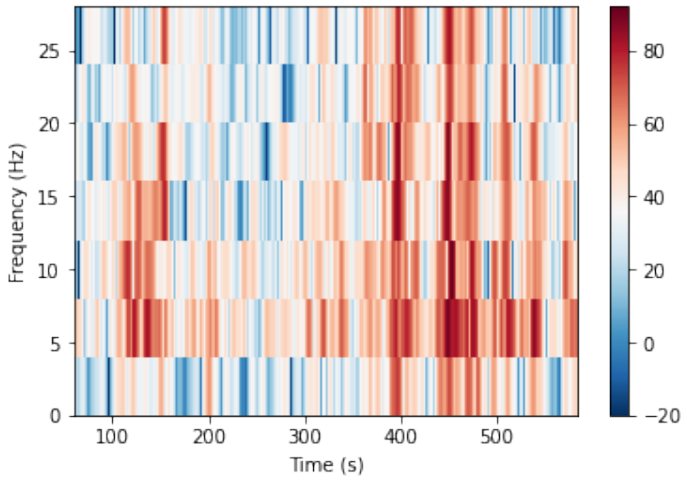
Summary ICA

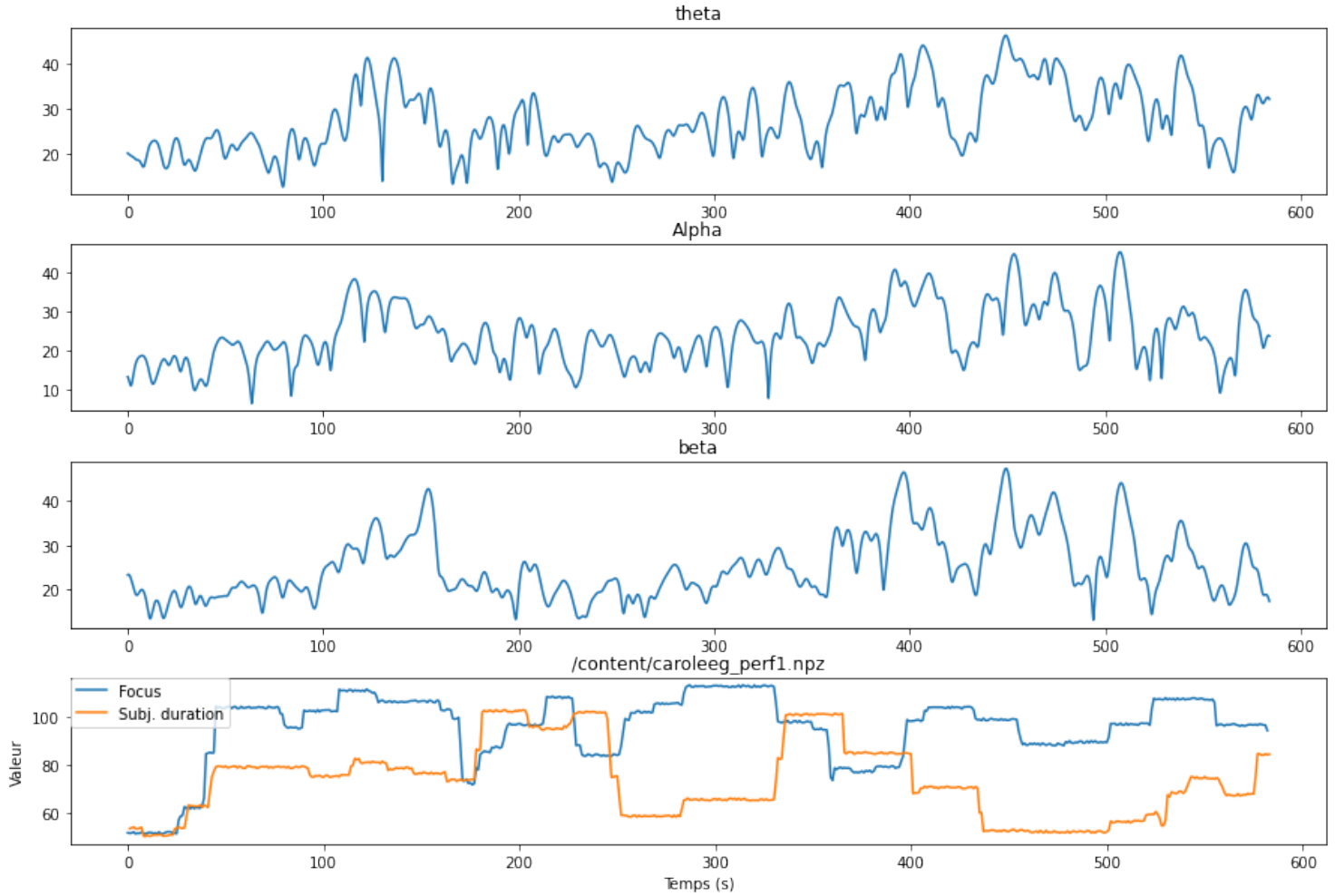

Ch.
ICA000
ICA001
ICA002
ICA003
ICA004
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
Help
0
100
200
300
400
500
Time (s)


ICA components
ICA000
ICA001
ICA002
ICA003
ICA004


Signals before (red) and after (black) cleaning
Raw data
100
0
−100
Time (s)
Average across channels (EEG)
100
50
0
−50
0.0
0.5
1.0
1.5
2.0
2.5
Time (s)

Time frequency analysis





Overall correlations

- Subjt vs powers

```
Correlation for Theta : -0.178859 (p_value : 0.000014)
Correlation for Alpha : -0.066140 (p_value : 0.110648)
Correlation for Beta : -0.165921 (p_value : 0.000057)
Correlation for Beta/Alpha : -0.151503 (p_value : 0.000241)
```

- focus vs powers

```
Correlation for Theta : 0.195022 (p_value : 0.000002)
Correlation for Alpha : 0.165119 (p_value : 0.000062)
Correlation for Beta : 0.155610 (p_value : 0.000162)
Correlation for Beta/Alpha : -0.019887 (p_value : 0.631802)
```

Overall correlations

- Subjt vs powers

```
Correlation for Theta : -0.178859 (p_value : 0.000014)
Correlation for Alpha : -0.066140 (p_value : 0.110648)
Correlation for Beta : -0.165921 (p_value : 0.000057)
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- focus vs powers

```
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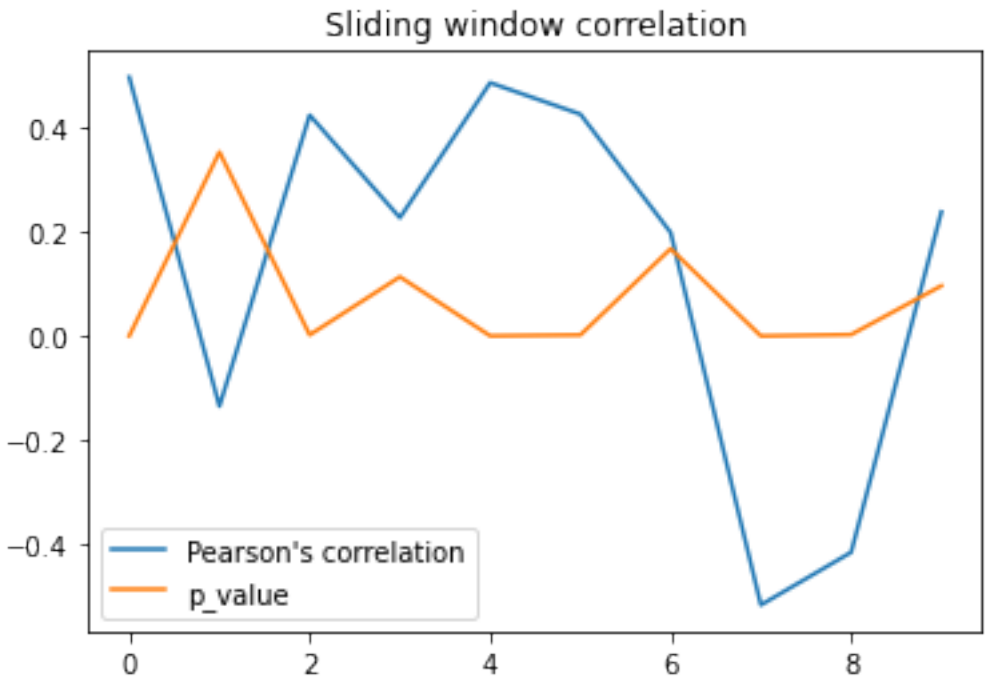
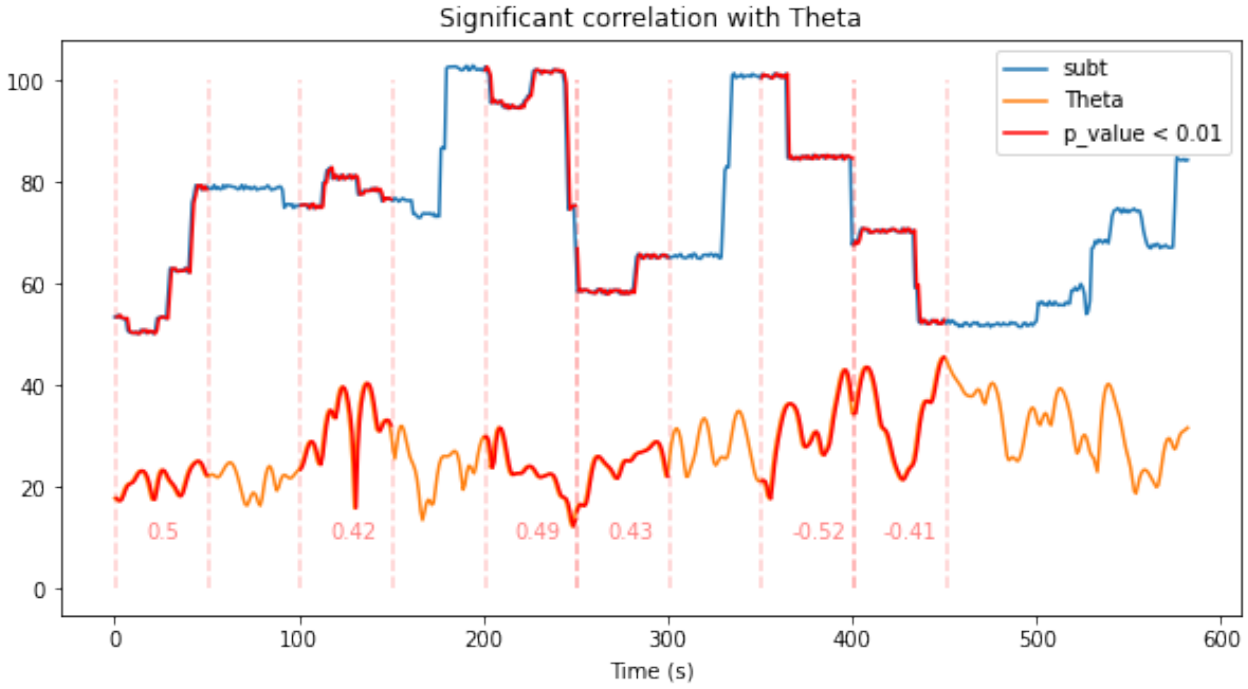
Correlation for Alpha : 0.165119 (p_value : 0.000062)
Correlation for Beta : 0.155610 (p_value : 0.000162)
Correlation for Beta/Alpha : -0.019887 (p_value : 0.631802)
```

Sliding window correlations

- Subjt vs Theta powers

Window_size = 50
Commentaire : Je ne sais pas s'il est très pertinent de faire les analyses par fenêtre.

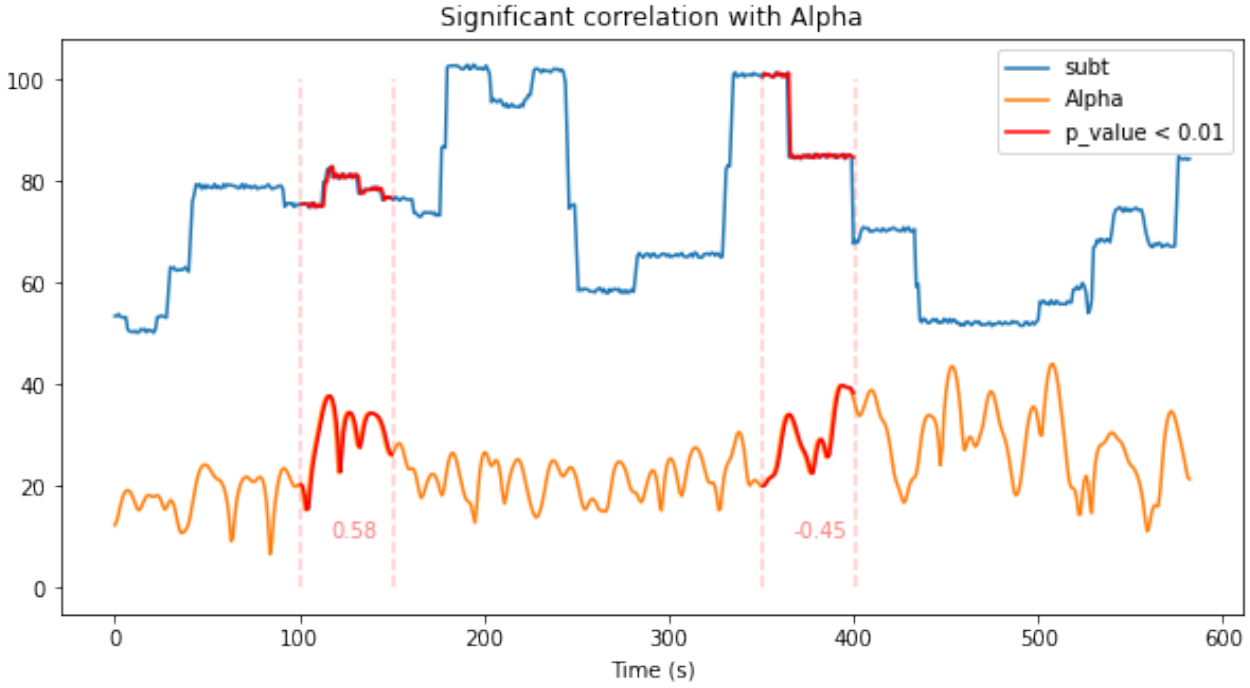




Sliding window correlations

Commentaire : Rien ici

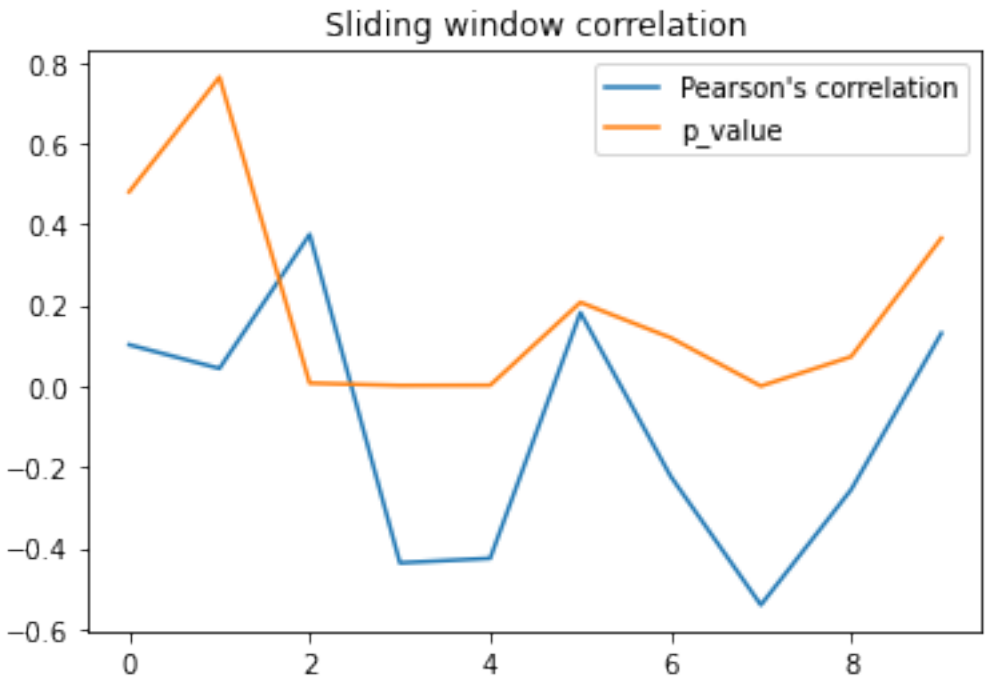
- Subjt vs Alpha powers

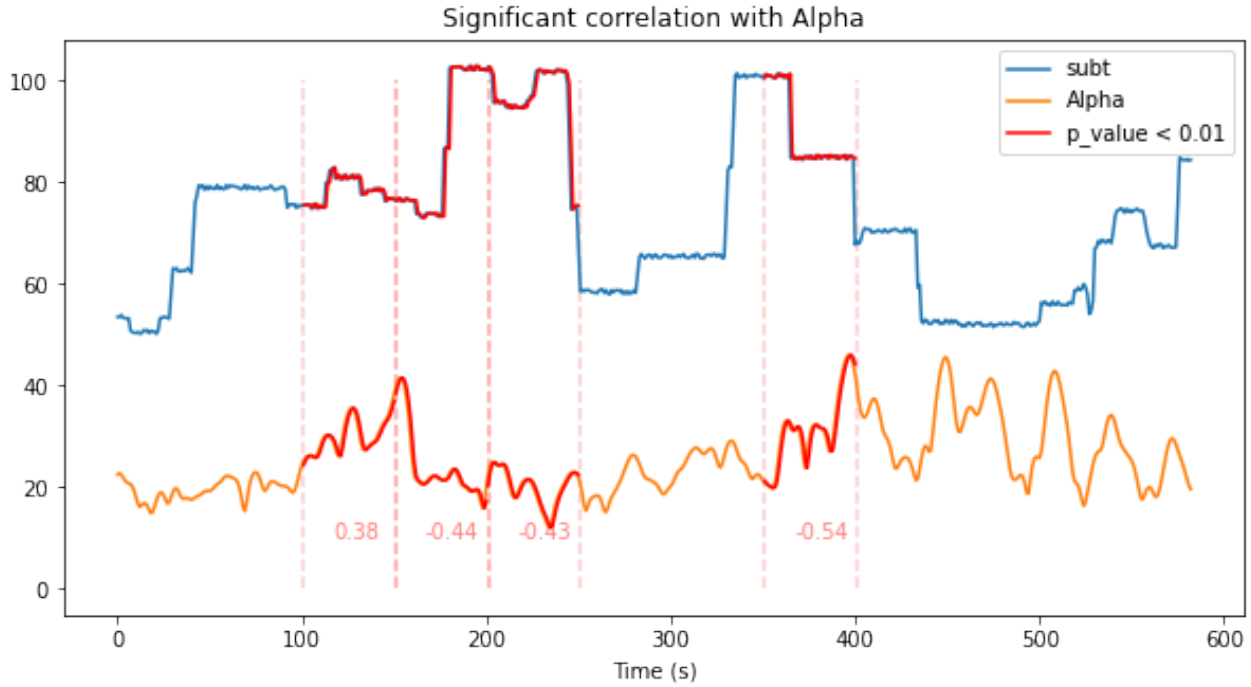


Sliding window correlations

Commentaire :

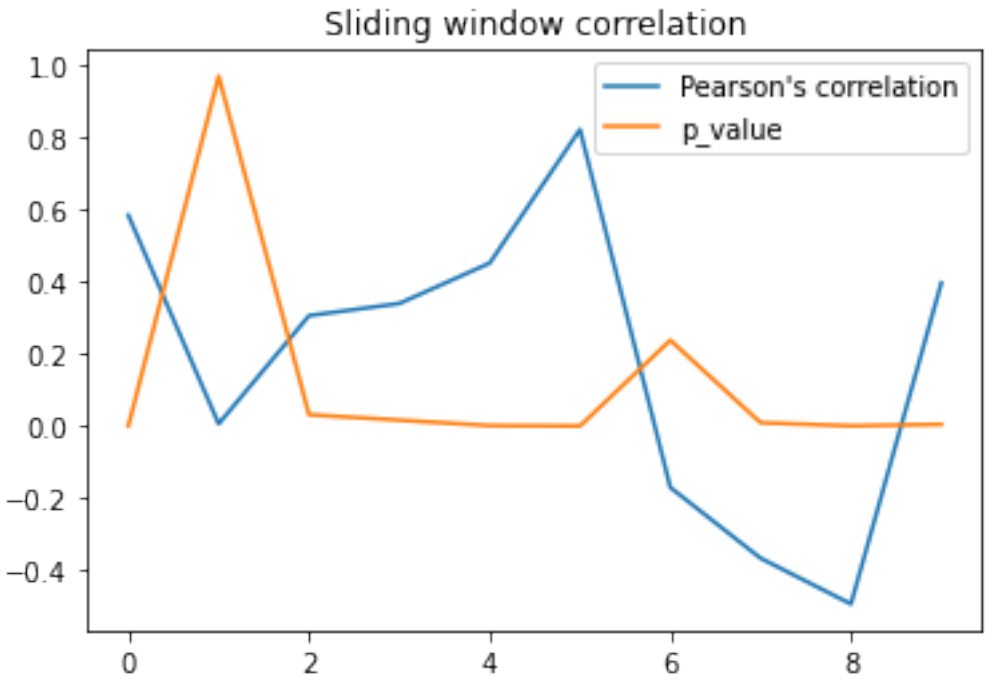
- Subjt vs Beta powers

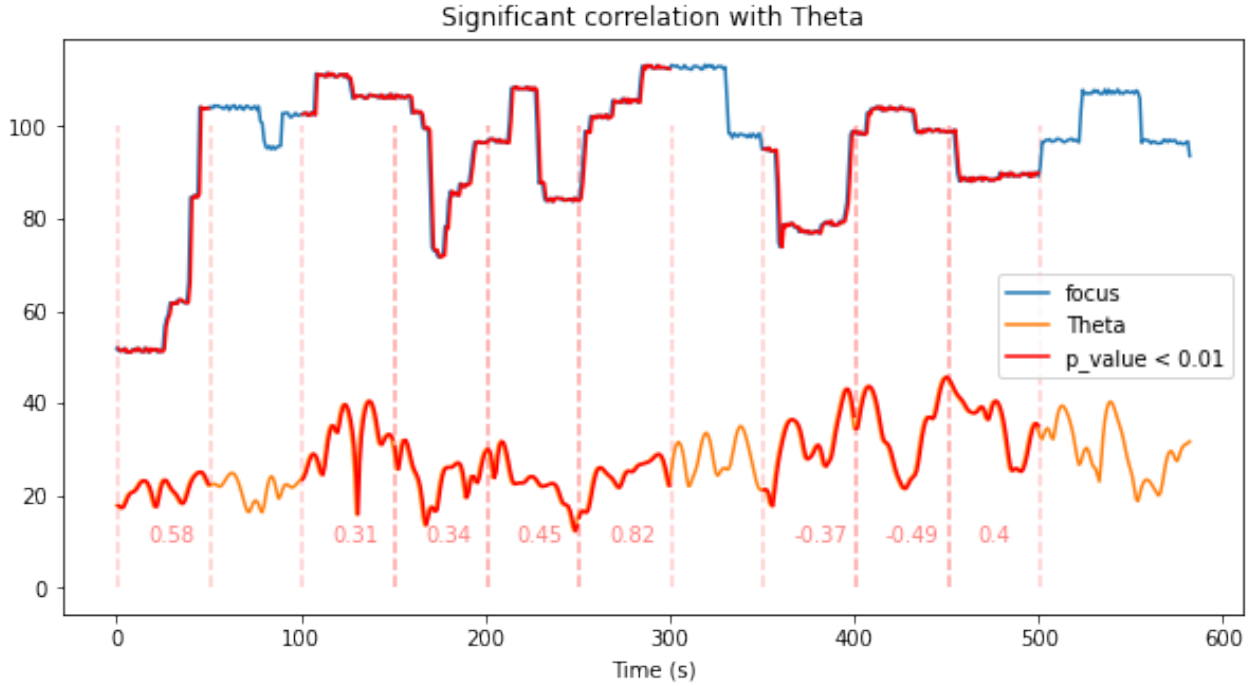




Sliding window correlations

- Focus vs Theta powers



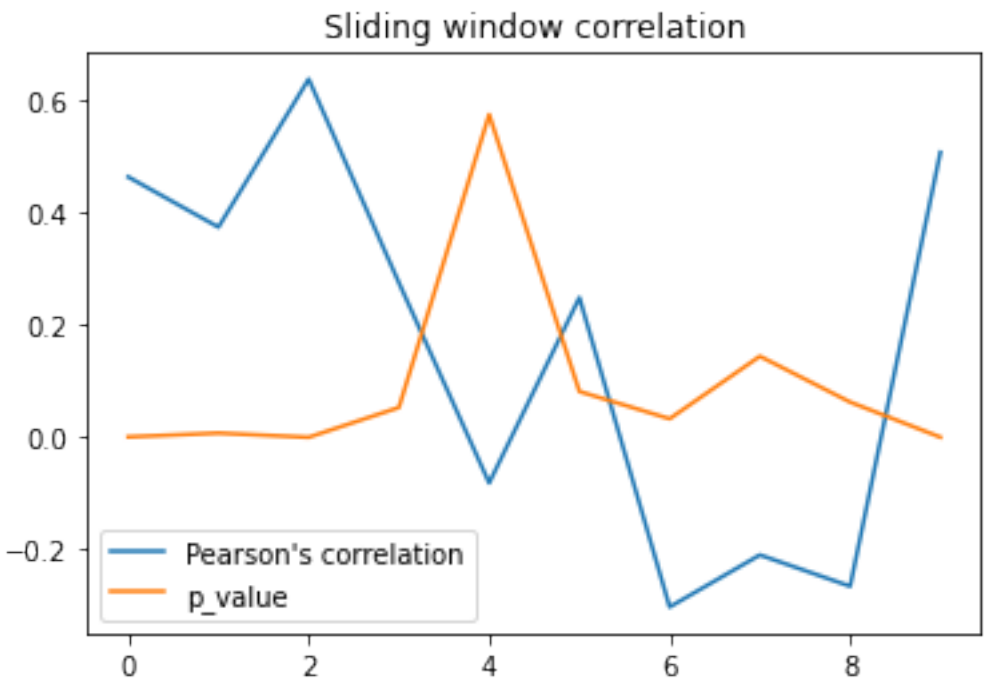


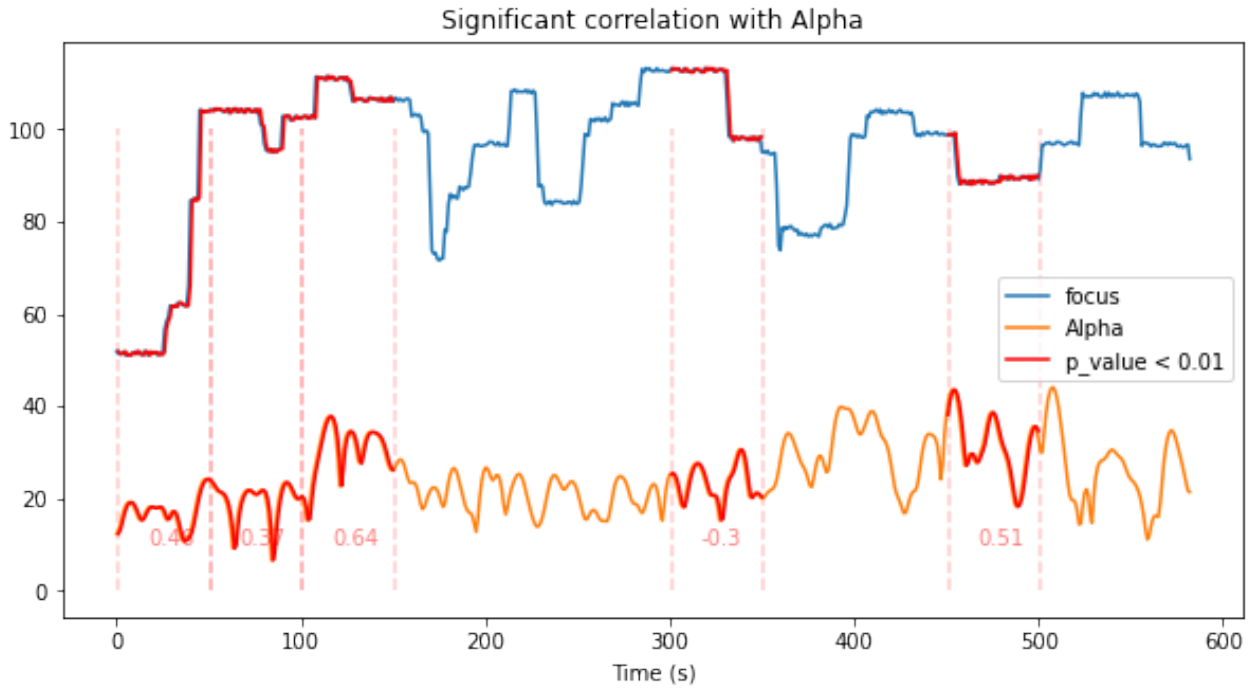
En rose : Correlation

Sliding window correlations

Commentaire : Rien ici

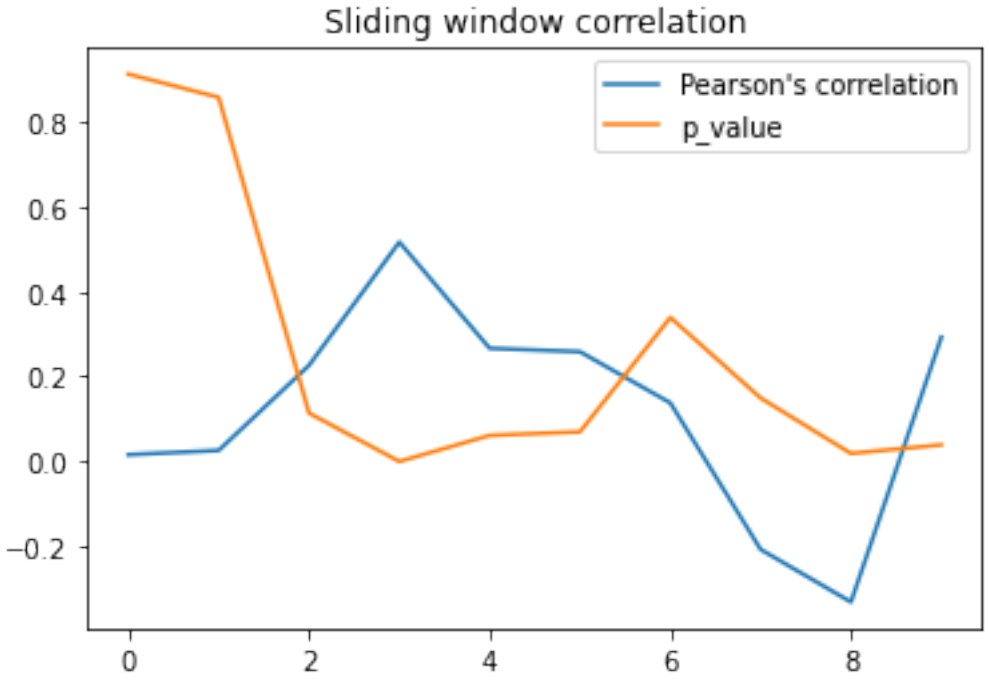
- Focus vs Alpha powers

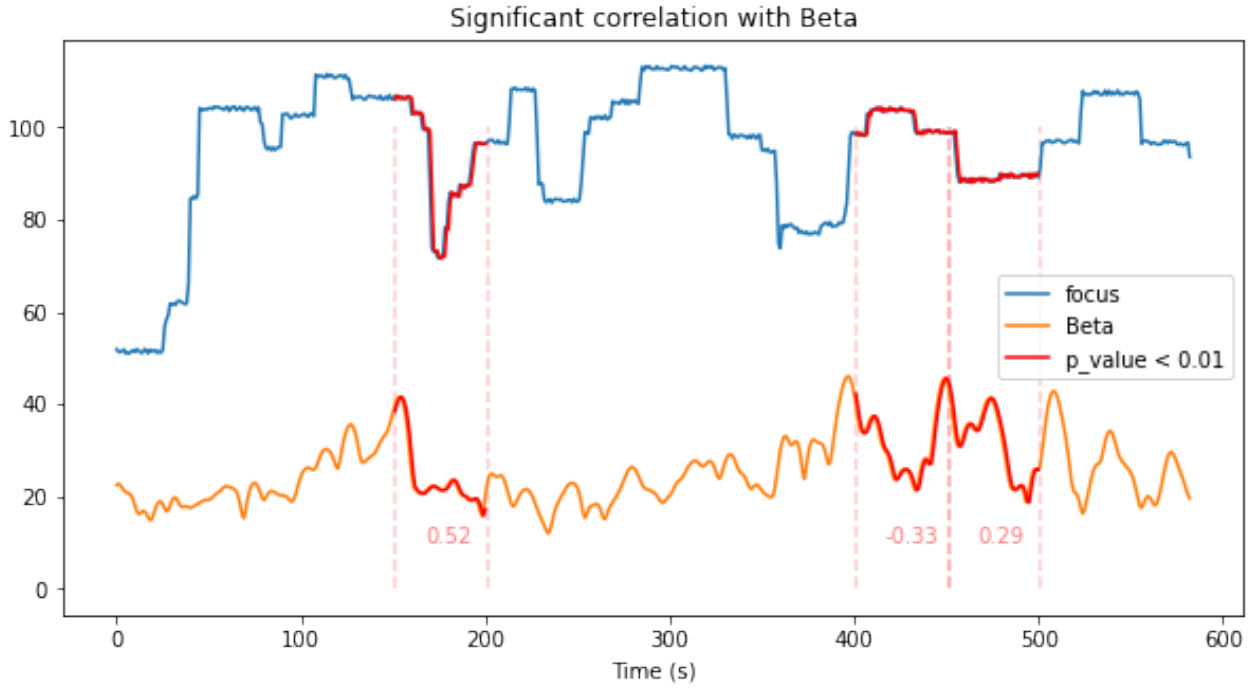




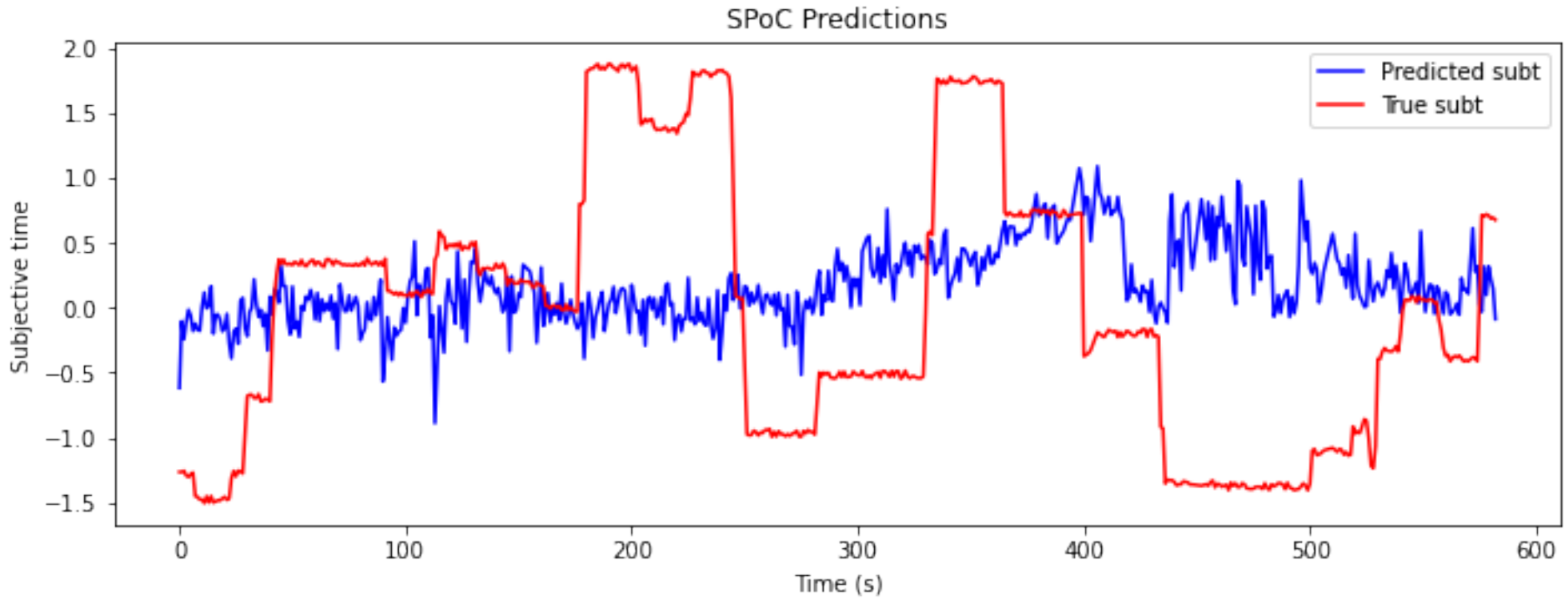
Sliding window correlations

- Focus vs Beta powers





SPOC (en cours)



Overall correlations, with bad segments removed

Data dropped : 99s, approximately 16% of data

- Subjt vs powers

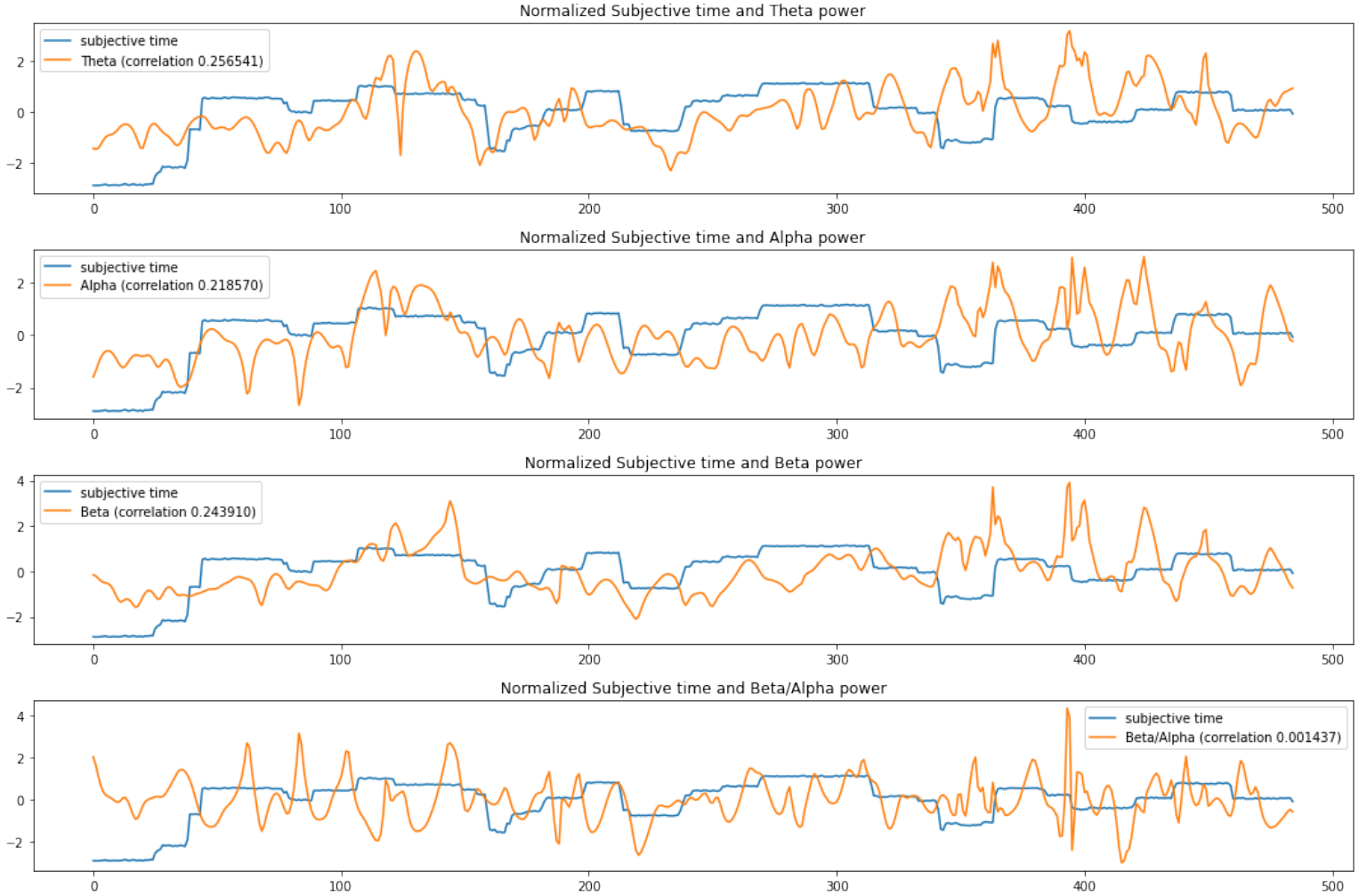
```
Correlation for Theta : -0.079763 (p_value : 0.079284)
Correlation for Alpha : 0.058588 (p_value : 0.197731)
Correlation for Beta : -0.069132 (p_value : 0.128420)
Correlation for Beta/Alpha : -0.167626 (p_value : 0.000209)
```

- focus vs powers

```
Correlation for Theta : 0.256541 (p_value : 0.000000)
Correlation for Alpha : 0.218570 (p_value : 0.000001)
Correlation for Beta : 0.243910 (p_value : 0.000000)
Correlation for Beta/Alpha : 0.001437 (p_value : 0.974815)
```

Overall correlations, with bad segments removed

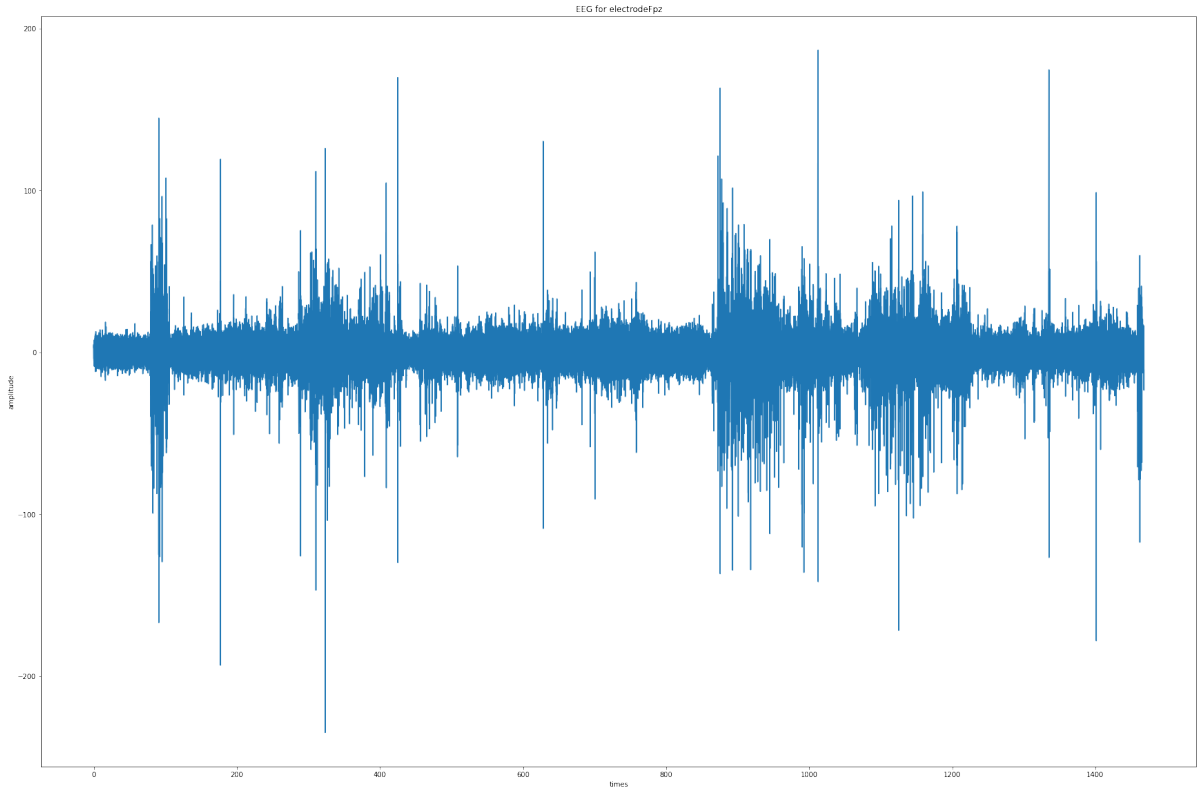
Data dropped : 99s, approximately 16% of data



Perf3 signal

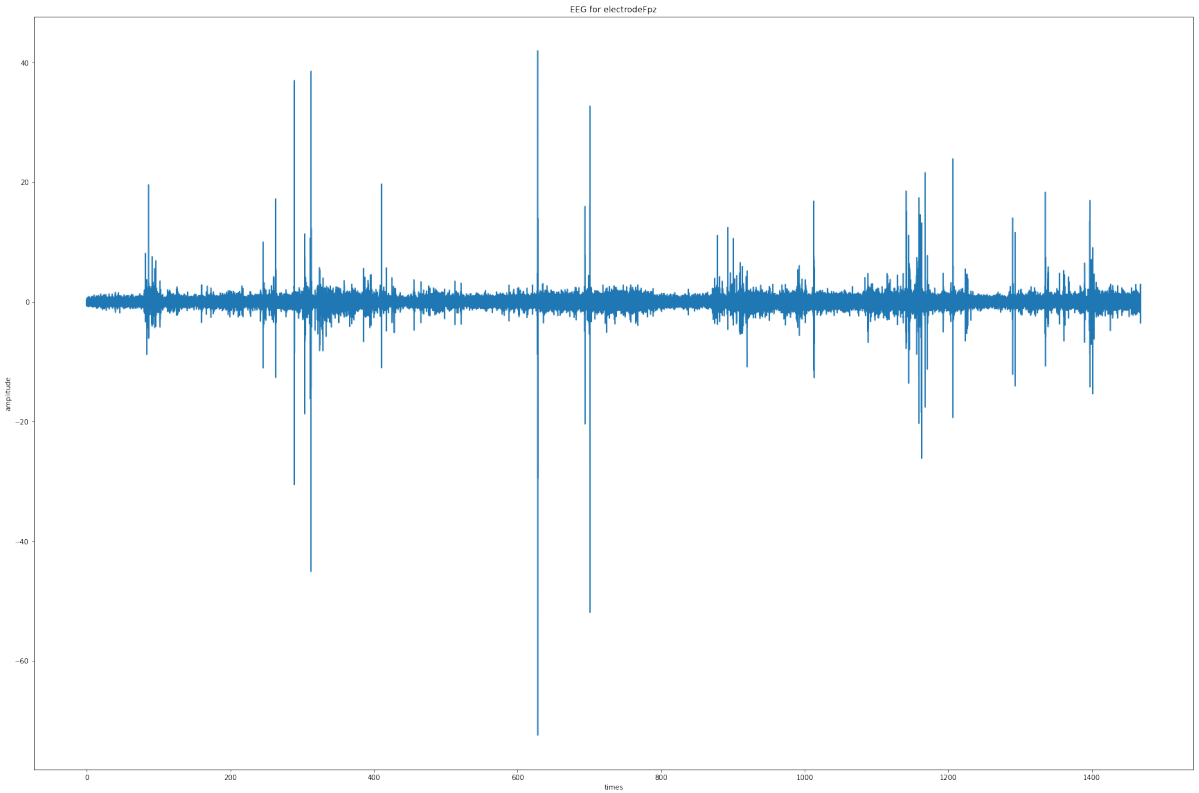
Before ICA

2020-06-20 23:57:27+00:00

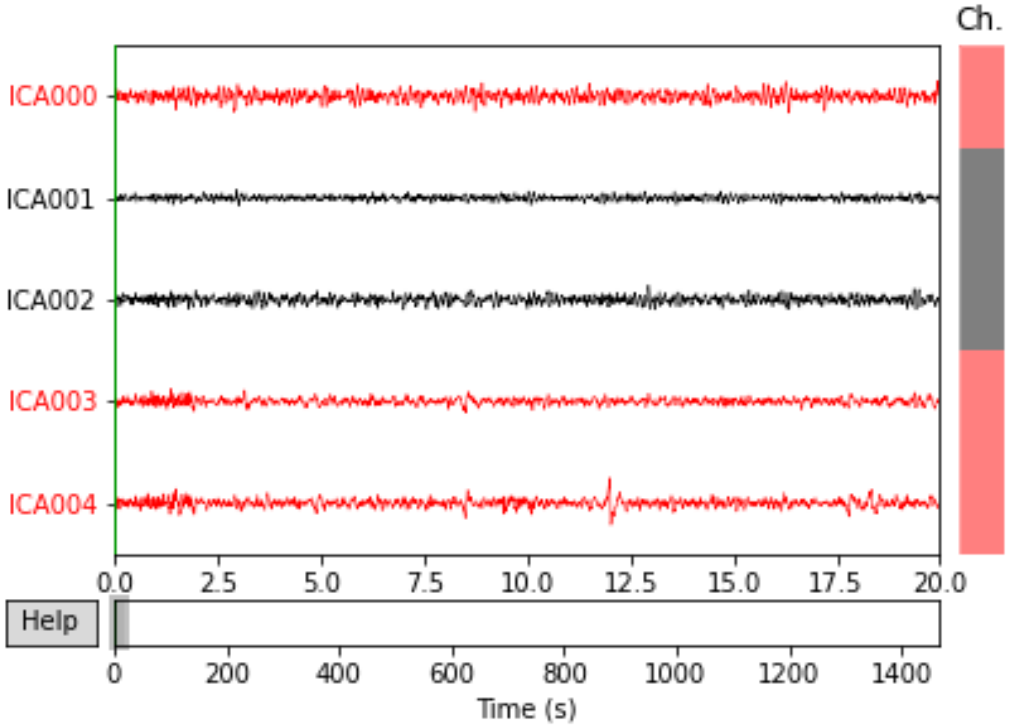


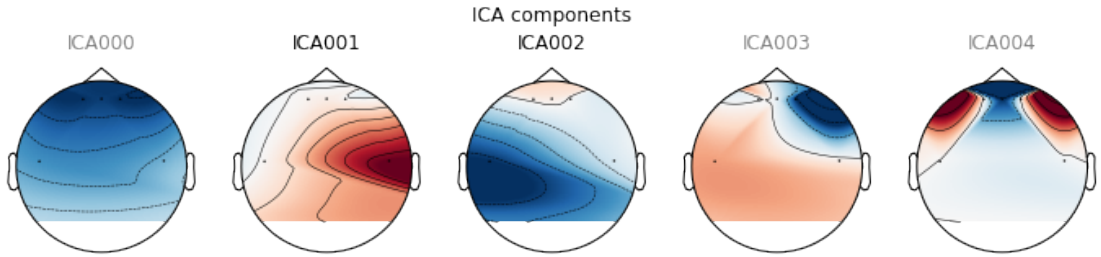
After ICA

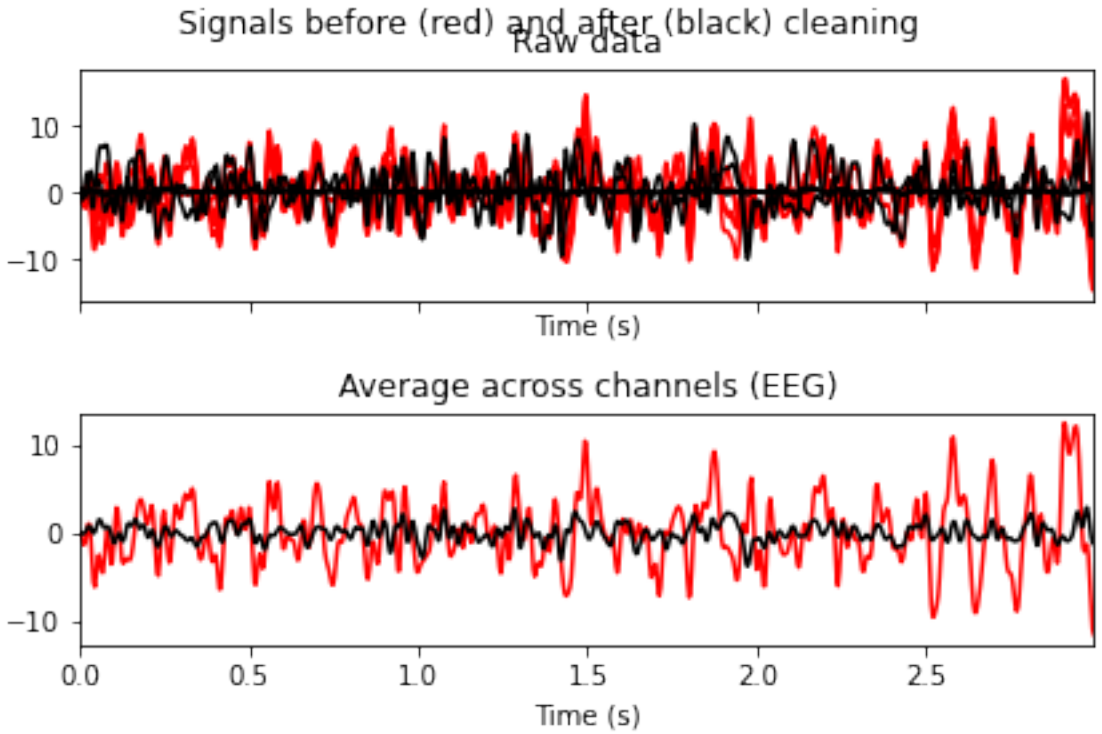
2020-06-20 23:57:27+00:00



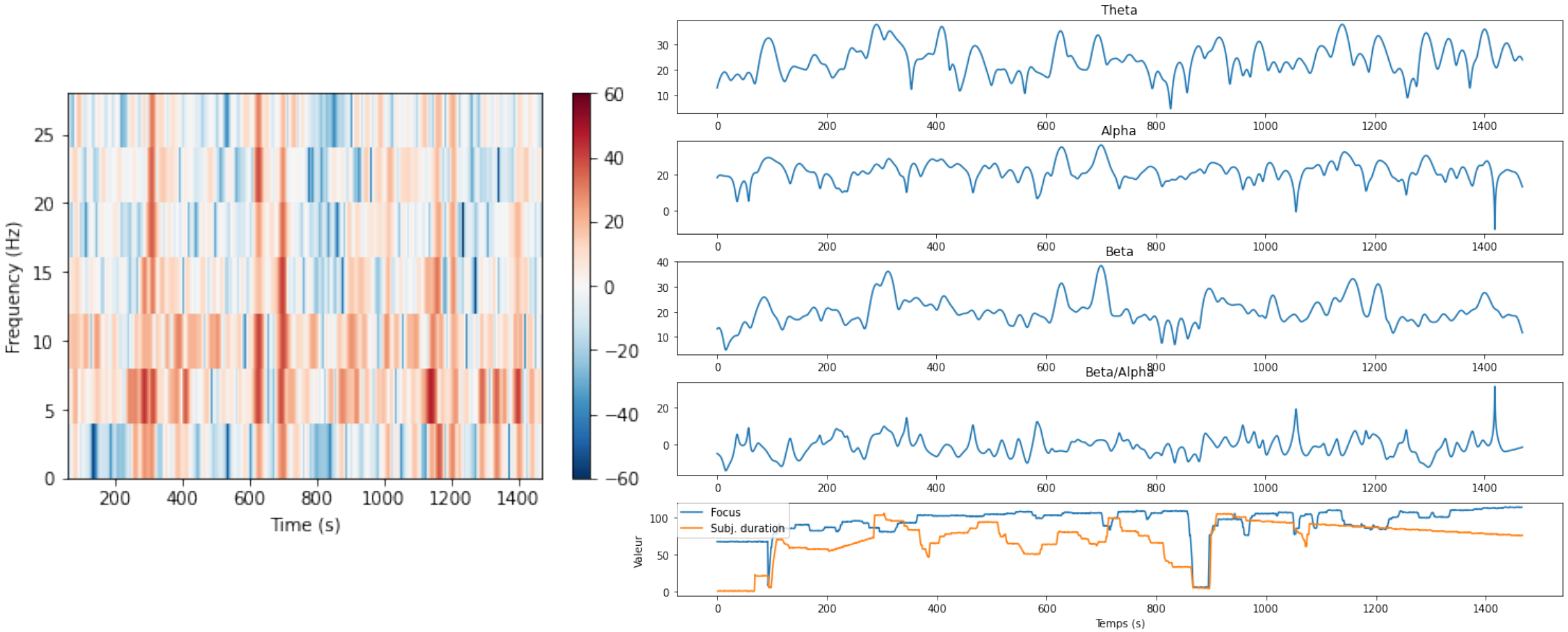
Summary ICA


Ch.
ICA000
ICA001
ICA002
ICA003
ICA004
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
Help
0
200
400
600
800
1000
1200
1400
Time (s)


ICA components
ICA000
ICA001
ICA002
ICA003
ICA004


Signals before (red) and after (black) cleaning
Raw data
10
0
−10
Time (s)
Average across channels (EEG)
10
0
−10
0.0
0.5
1.0
1.5
2.0
2.5
Time (s)

Time frequency analysis

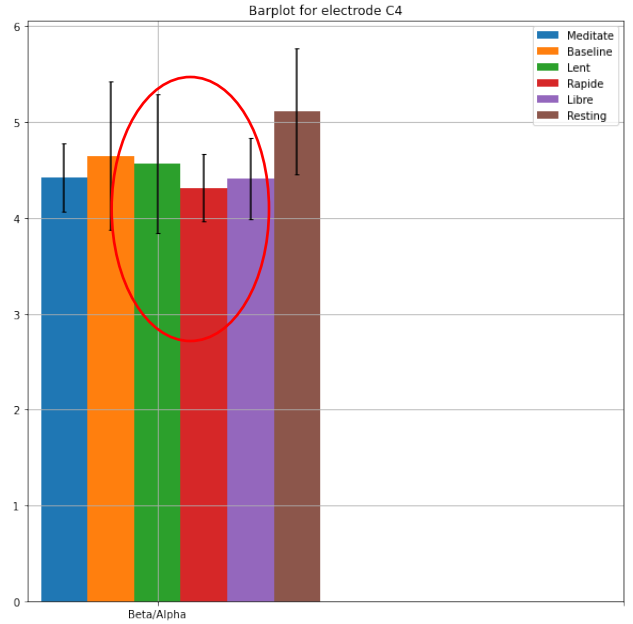


Overall correlations

- Subjt vs powers

```
Correlation for Theta : 0.294691
Correlation for Alpha : 0.201329
Correlation for Beta : 0.414094
Correlation for Beta/Alpha : 0.231844
```

Commentaire : Dans l'analyse de données précédente on avait trouvé des puissances plus importantes en Beta/Alpha pour lent. Pareil pour theta.



- focus vs powers

```
Correlation for Theta : -0.055957 (p_value : 0.032107)
Correlation for Alpha : 0.011022 (p_value : 0.673171)
Correlation for Beta : -0.000669 (p_value : 0.979583)
Correlation for Beta/Alpha : -0.012361 (p_value :
0.636180)
```

Overall correlations

Overall correlations, with bad segments removed

Data dropped : 210s, approximately 15% of data

- Subjt vs powers

```
Correlation for Theta : 0.334861 (p_value : 0.000000)
Correlation for Alpha : 0.244511 (p_value : 0.000000)
Correlation for Beta : 0.461380 (p_value : 0.000000)
Correlation for Beta/Alpha : 0.211899 (p_value : 0.000000)
```

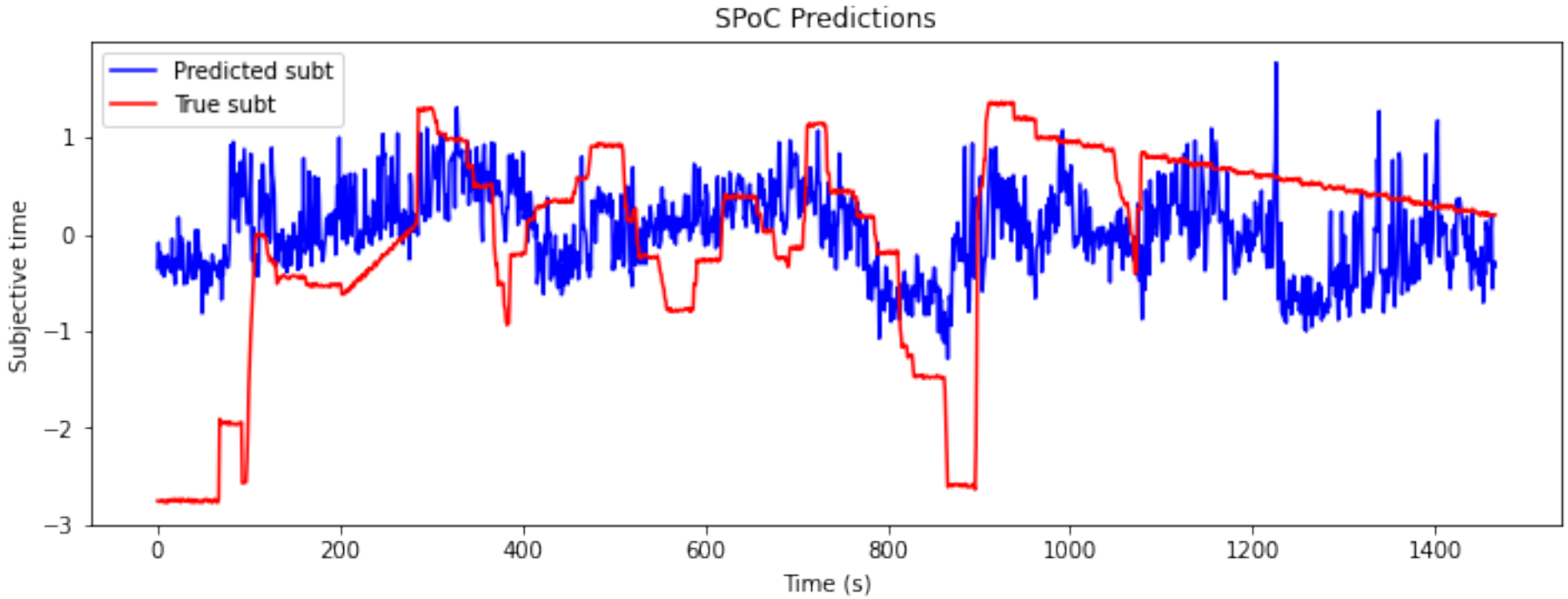
- focus vs powers

```
Correlation for Theta : -0.007808 (p_value : 0.786133)
Correlation for Alpha : 0.077015 (p_value : 0.007359)
Correlation for Beta : 0.059054 (p_value : 0.039989)
Correlation for Beta/Alpha : -0.020237 (p_value : 0.481871)
```

Overall correlations

SPOC

1. Filter raw : 13-25 Hz
2. Devide into 1s epochs and remove bad epochs
3. Spoc (4 components)
4. Regression Ridge()
5. Cross_val (kFold : nsplit = 2)



Correlation : 0.25