Supplementary materials

«Microplastic monitoring in freshwater and marine surface waters using Nile red and kayak paddling - a proposed study design for citizen science»

Master study by: Kristian Louis Jensen.

Results from Linear models:

MP-ACT:
Linear model 1 = Particles_pr_m3MPACT ~ Industry
Coefficients: Estimate Std. Error. P value
IndustryYes 0.1929 7.3383 0.979227

Adjusted R-squared: -0.03843

Model not significant but indicates that through MP-ACT the average difference between Industry Yes and No group could be 0.193 particle per m^3.

Linear model 2 = Particles_pr_m3MPACT ~ Inhabitants
Coefficients: Estimate Std. Error P value
Inhabitants 4.432e-06 1.130e-05 0.698

Adjusted R-squared: -0.03236

Model not significant but suggest that when inhabitants increase by one unit, MP ACT increases by 0.00000443 particles per m^3.

Linear model 3 = Particles_pr_m3MPACT ~ Duration_min
Coefficients: Estimate Std. Error P value
Duration of sample 0.03255 0.19912 0.871

Adjusted R-squared: -0.0374
Model not significant but indicates when duration of sampling increases by one minute, MP-ACT increases by 0.03255 particles per m^3.

MP-VAT:
Linear model 1a = Particles_pr_m3MPVAT ~ Industry
Coefficients: Estimate Std. Error P value
IndustryYes -10.046 7.055 0.166

Adjusted R-squared: 0.03666

Model not significant but indicates that average difference between Industry Yes and No group for MP VAT is 10.046 particles per m^3.

Linear model 2a = Particles_pr_m3MPVAT ~ Inhabitants

Coefficients:	Estimate	Std. Error	P value
Inhabitants	-1.180e-05	1.108e-05	0.296

Adjusted R-squared: 0.005009

Model not significant but indicates that when Inhabitants increases by one unit, MP-VAT decreases by 0.0000118 particles per m^3.

Linear model 3a = Particles_pr_m3MPVAT ~ Duration_min

Coefficients:	Estimate	Std. Error	P value
Duration_min	-0.1218	0.1974	0.542532

Adjusted R-squared: -0.02347

Linear model not significant but indicates that when Duration increases by one unit, MP-VAT decreases by 0.1218 particles per m^3.

1.1.1 1. Paired t-test

$$H0: \mu_{MPACT} = \mu_{MPVAT} \quad H0: \mu MPACT = \mu MPVAT$$

$$H1: \mu_{MPACT} \neq \mu_{MPVAT} \quad H1: \mu MPACT \neq \mu MPVAT$$

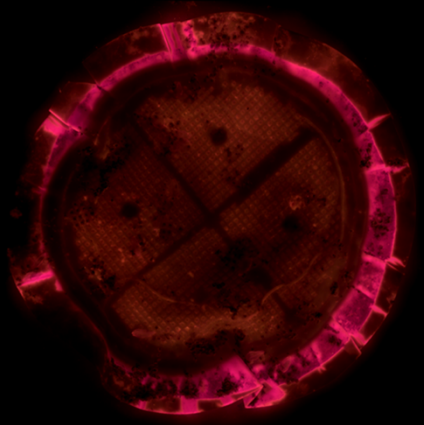
```
t.test(df$Particles_pr_m3MPACT,df$Particles_pr_m3MPVAT, alternative = "two.sided",
       paired = TRUE)
```

```
##
##  Paired t-test
##
## data:  df$Particles_pr_m3MPACT and df$Particles_pr_m3MPVAT
## t = 1.987, df = 27, p-value = 0.05716
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.1809036 11.2673322
## sample estimates:
## mean of the differences
##                5.543214
```

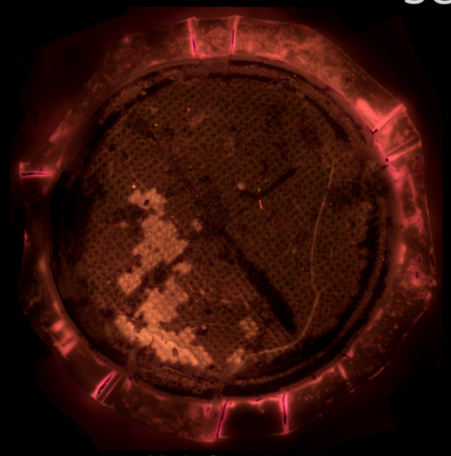
P-value - 0.05716 > 0.05, there is no significance difference in two means of MPACT and MPVAT.

Nile red stained filters:

Seljord



Seljord 01 filter 1 - dismissed



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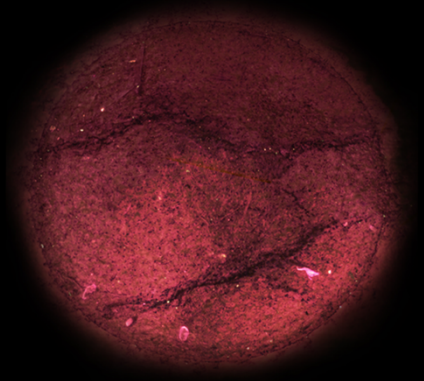

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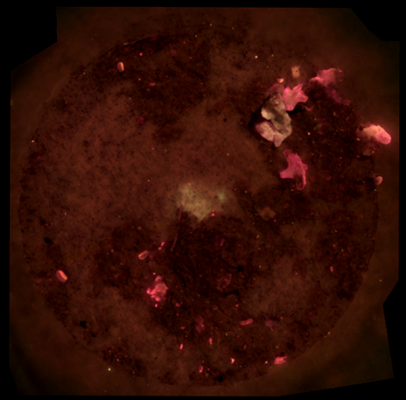

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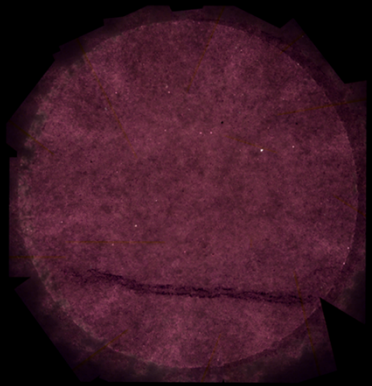

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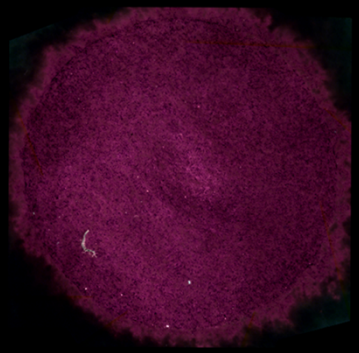

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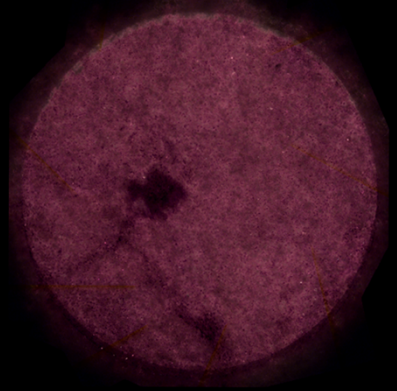

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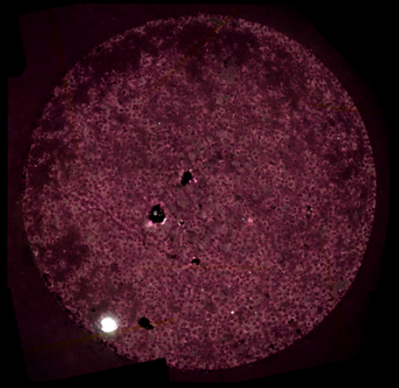

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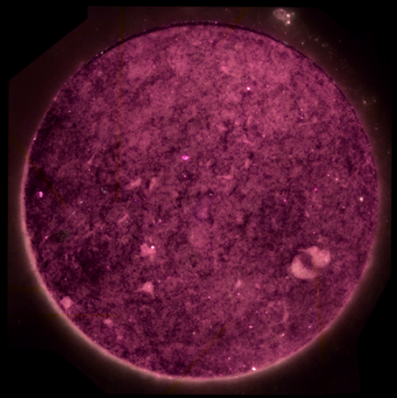
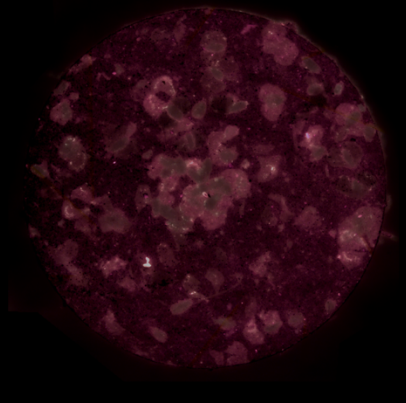


Seljord 03

Notodden



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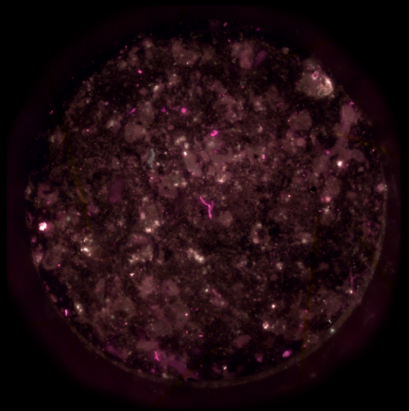

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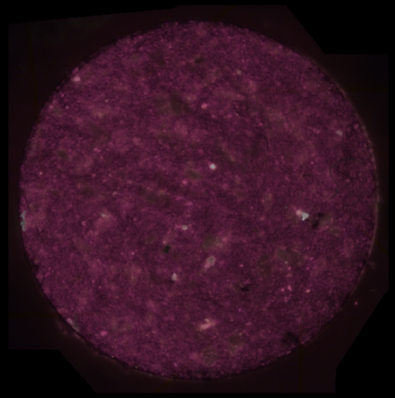

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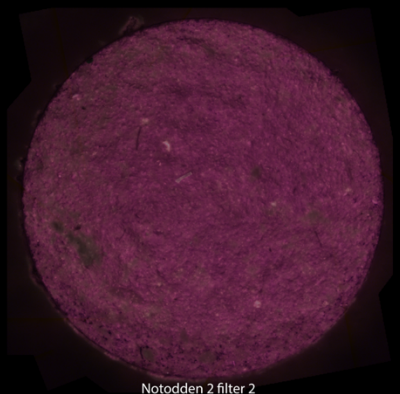

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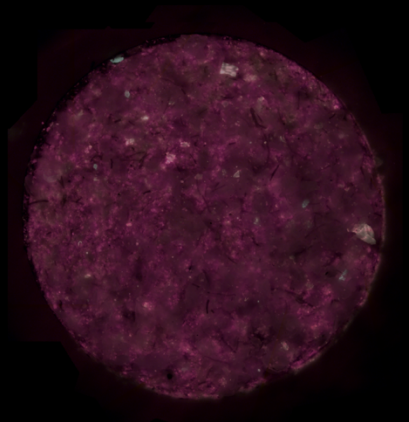

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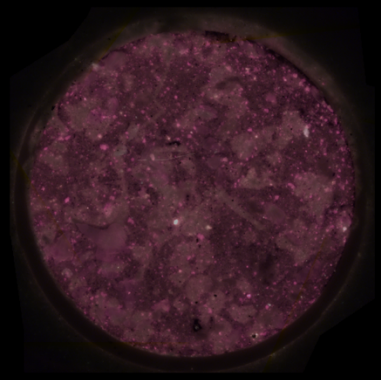
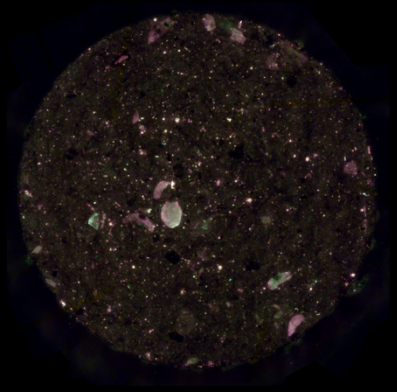


Notodden 3

Gvarv



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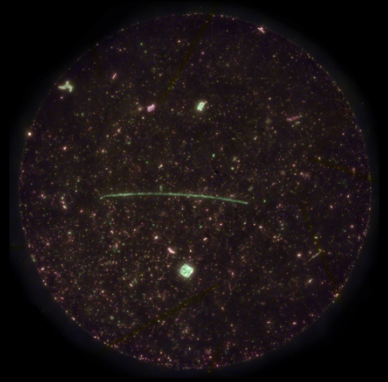

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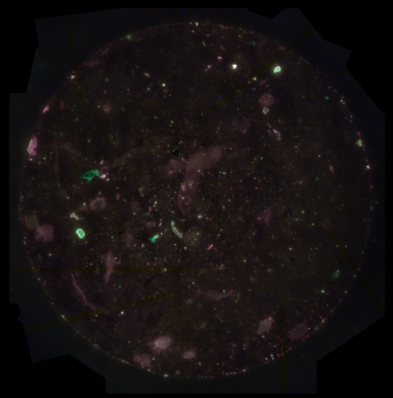
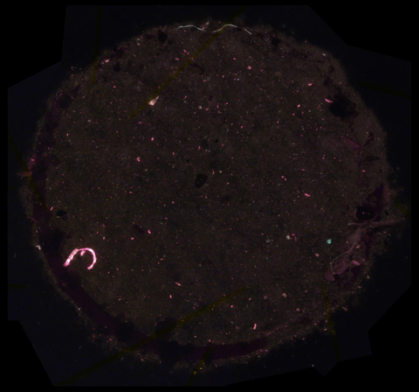


Gvarv 3

Herøya



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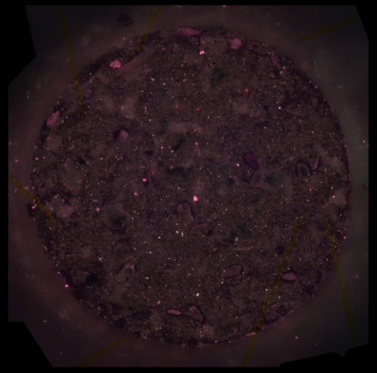

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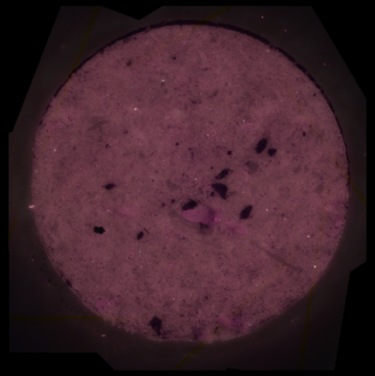

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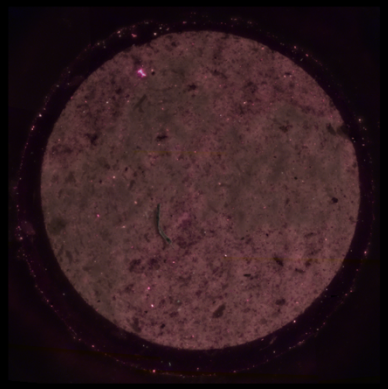

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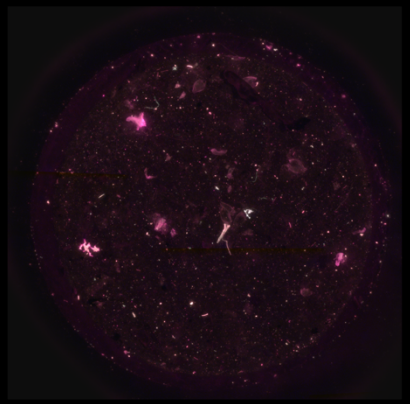
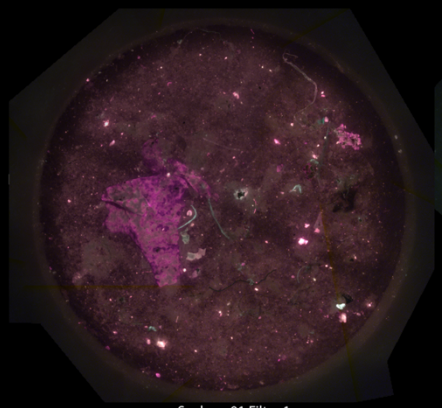


Herøya 03

Svolvær



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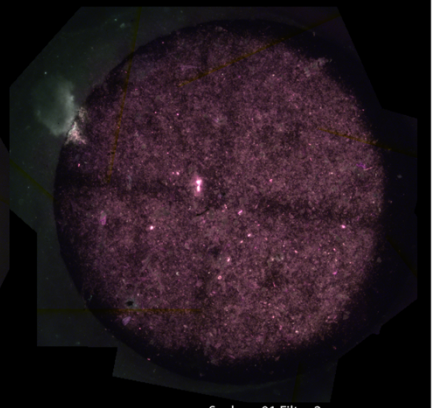

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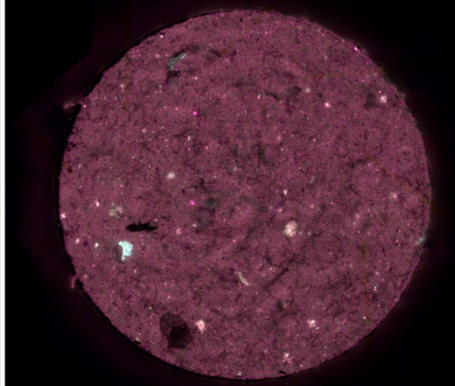

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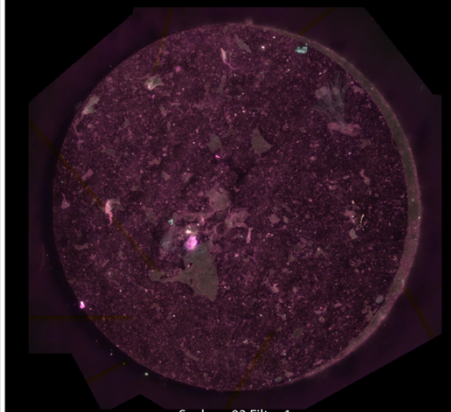

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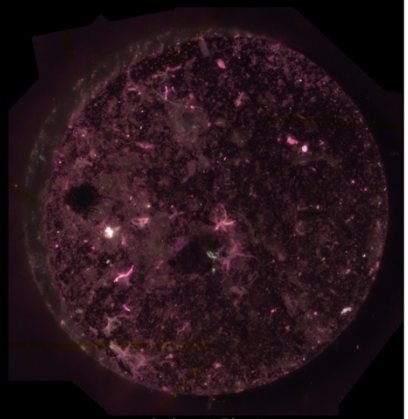
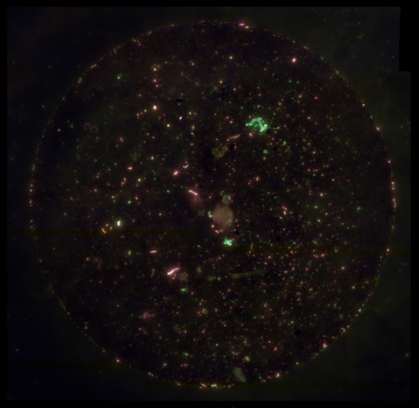
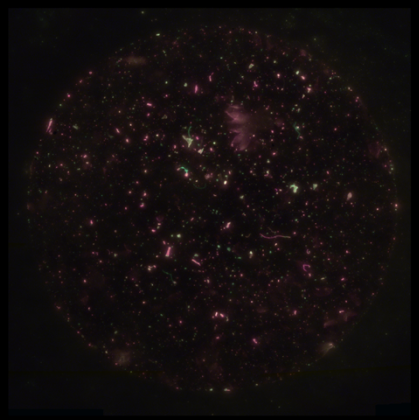


Svolvær 03 Filter 2

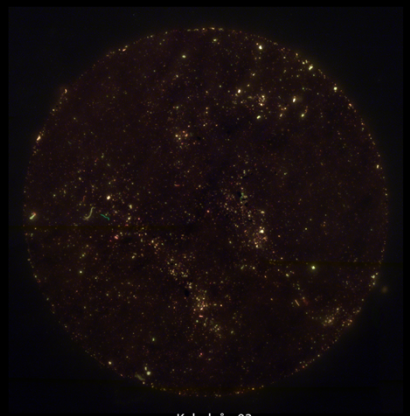
Kabelvåg



Kabelvåg 01

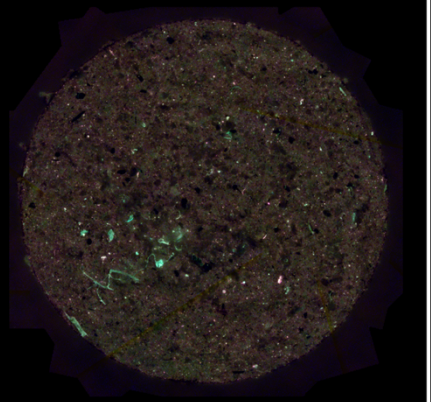


Kabelvåg 02



Kabelvåg 03

Reine



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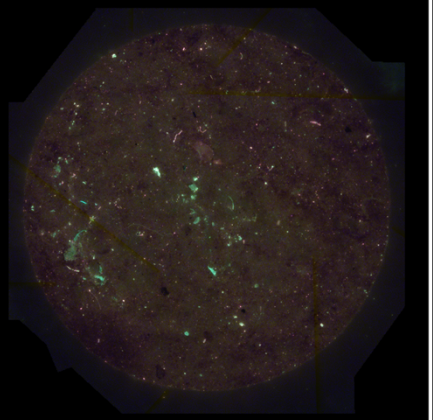

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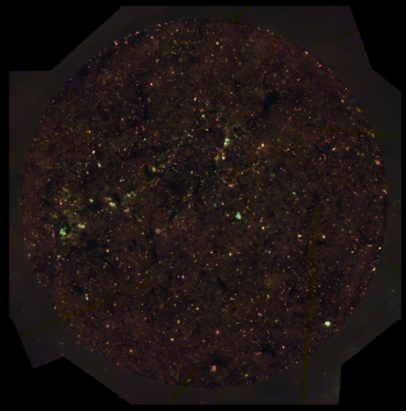
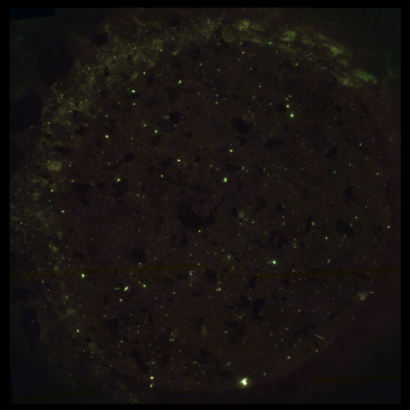
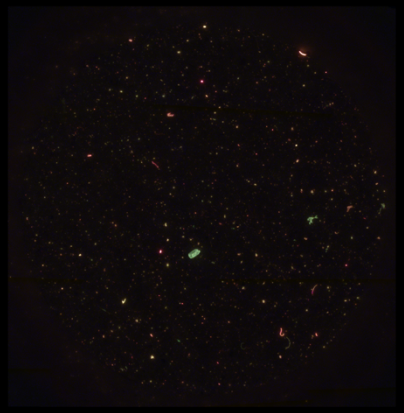


Reine 03

Gibraltar



Gibraltar 1 Filter 1



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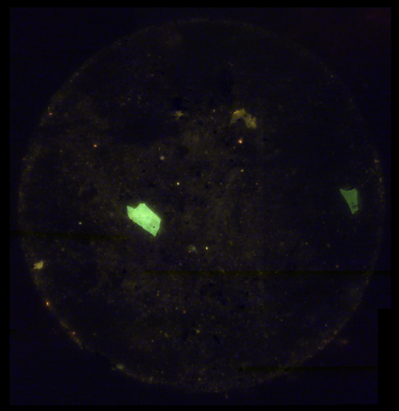

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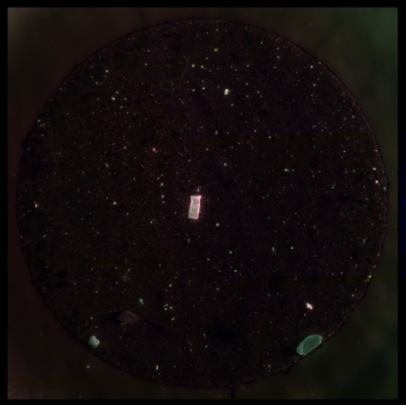

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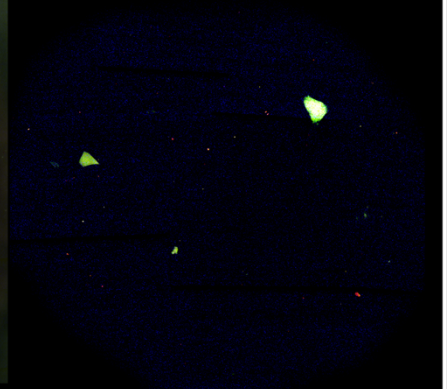

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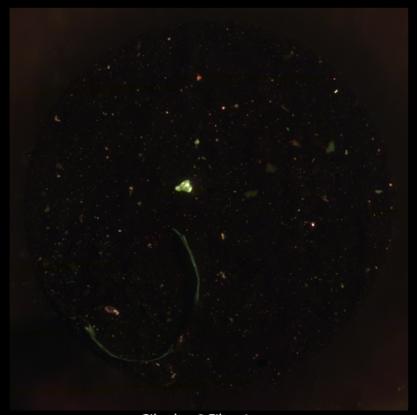

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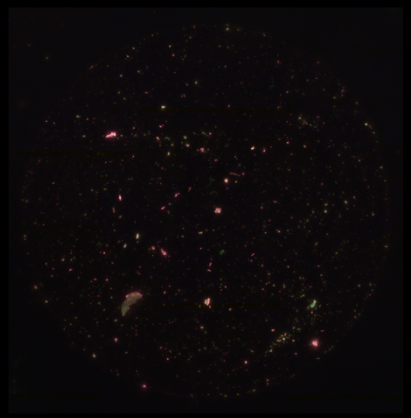
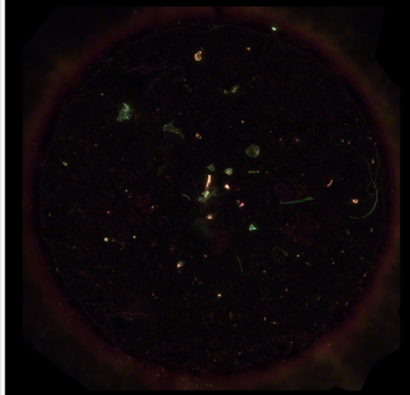
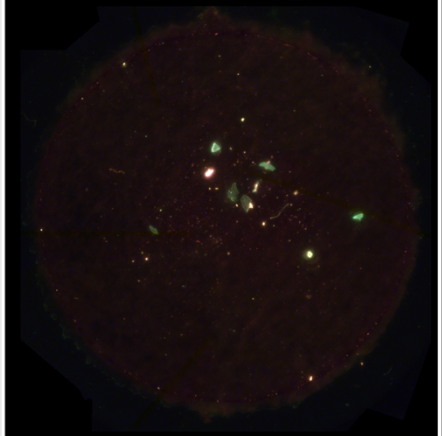
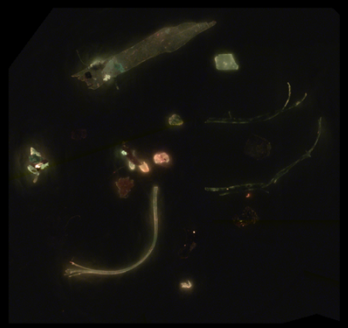


Gibraltar 3 Filter 2

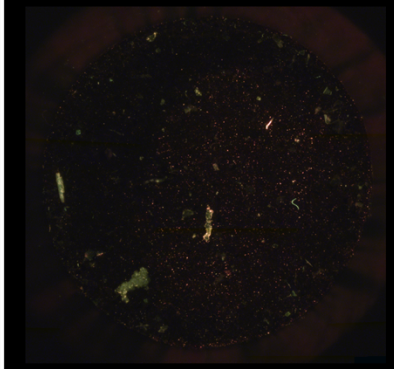
Barceloneta







Badalona



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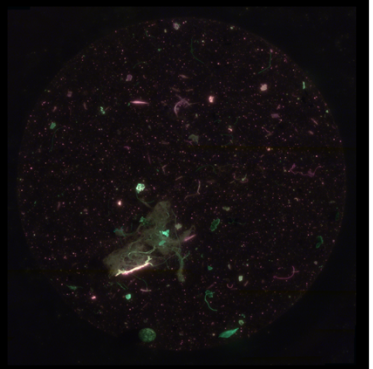
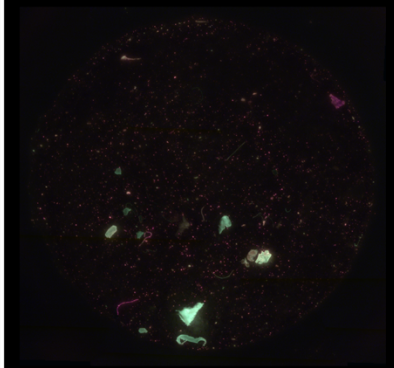
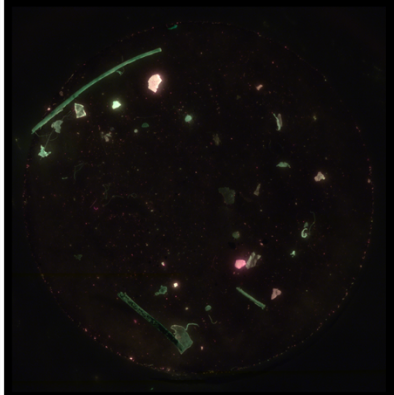


Badalona 01 filter 2



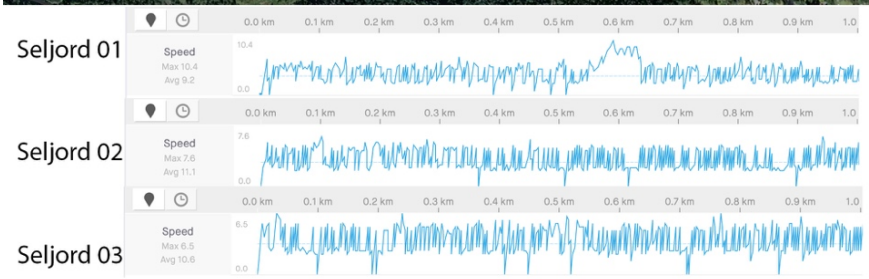
Badalona 2



Badalona 3

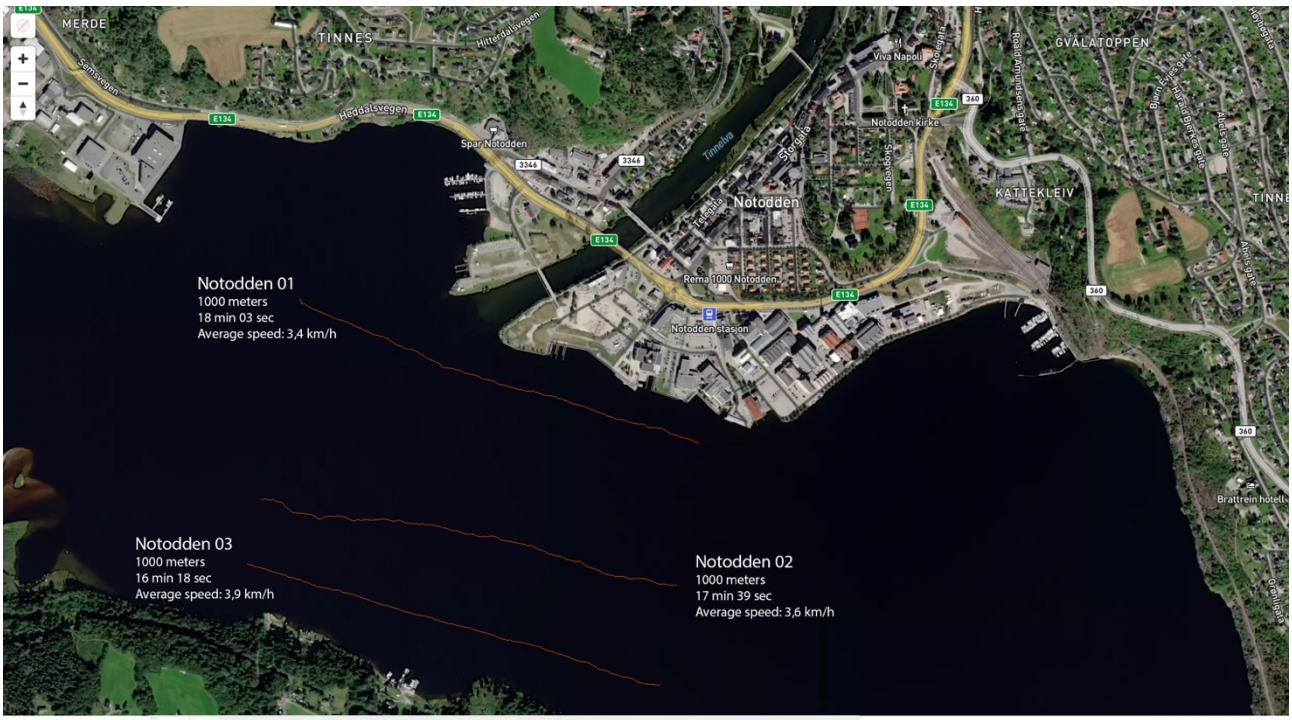
1.2 Map of sampling transects

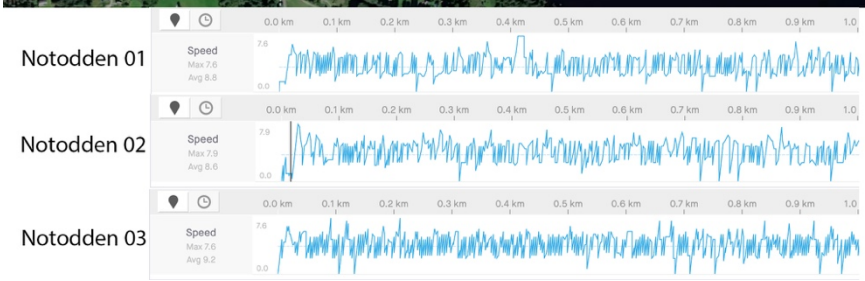
Seljord:



Date: 28/08-2021
Partly Cloudy
Temperature 20 celcius
Humidity 50%
Wind Speed 4.0 km/h
Wind Direction NE
River inflow: No data exists
Very slow, almost indistinguishable

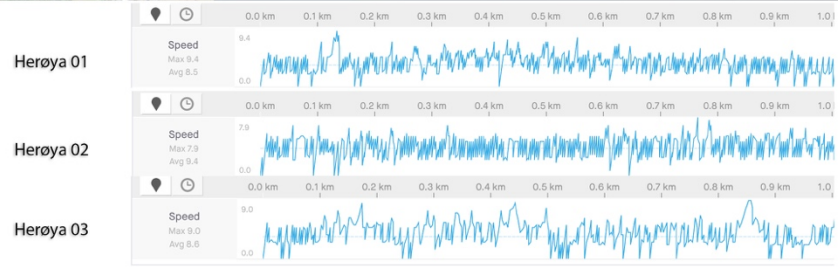
Notodden (Heddalsvannet)





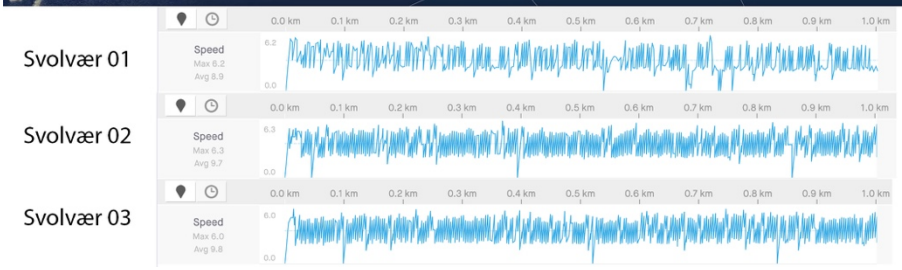
Date: 28/08-2021
Partly Cloudy
Temperature 17 celcius
Humidity 76%
Wind Speed 5.2 km/h
Wind Direction NNE
River inflow: 51,405 m3/s
(Kirkevoll bru at 18.30 o clock)

Herøy (Frierfjorden):



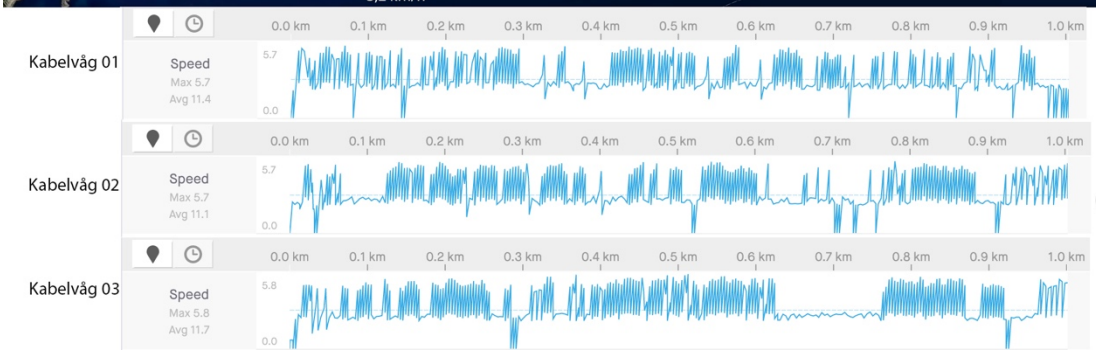
Date: 29/08-2021
Clear
Temperature 24 celcius
Humidity 50%
Wind Speed 7.8 km/h
Wind Direction ENE
River inflow: 140,556 m3/s at 13 PM
(Total Q Skien)

Svolvær (Vågan):



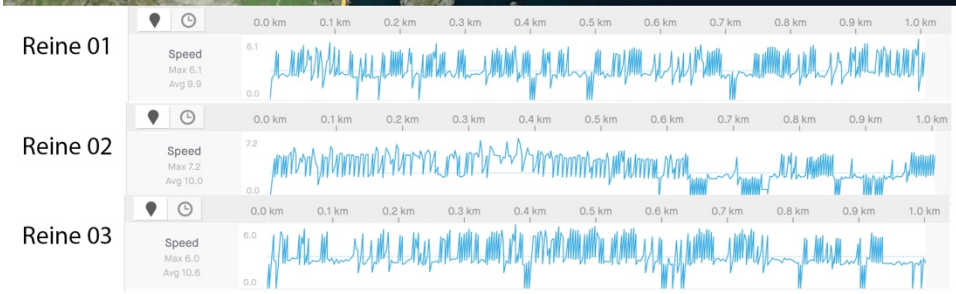
Date: 29/10-2021
Partly Cloudy, Temperature 7 Celcius Humidity 80% Wind Speed 6.4 km/h Wind Direction NW.
Moon: 40% waning moon,
tidal range: 0,5 meter.
Low tide at: 12.23 (low tidal influence)

Kabelvåg (Vågan):



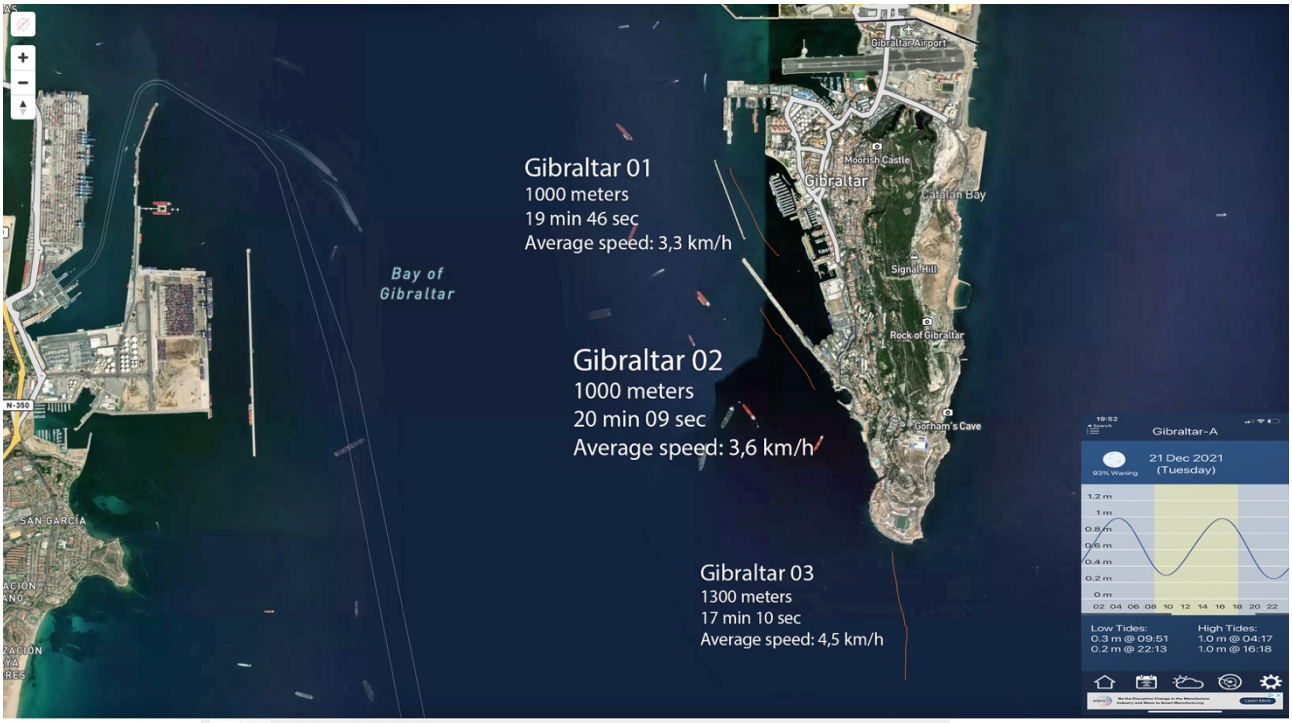
Date: 24/11-2021 :
Partly Cloudy,
Temperature -2 Celcius
Humidity 70%
Wind Speed 16.8 km/h
Wind Direction NNE
75% waning moon,
Tidal range: 1.5 meter.
(medium tidal influence)

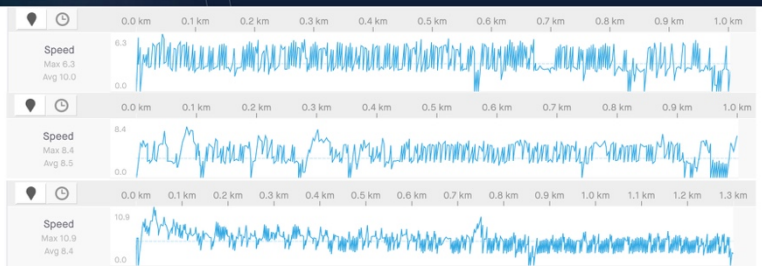
Reinefjorden (Moskenes):



Date: 27/11-2021 :
Clear skies
Temperature -7 Celcius
Humidity 60%
Wind Speed 4.4 km/h
Wind Direction E
25% waning moon,
Tidal range: 0.9 meter.
Low tide at 11.37 (Low tidal influence)

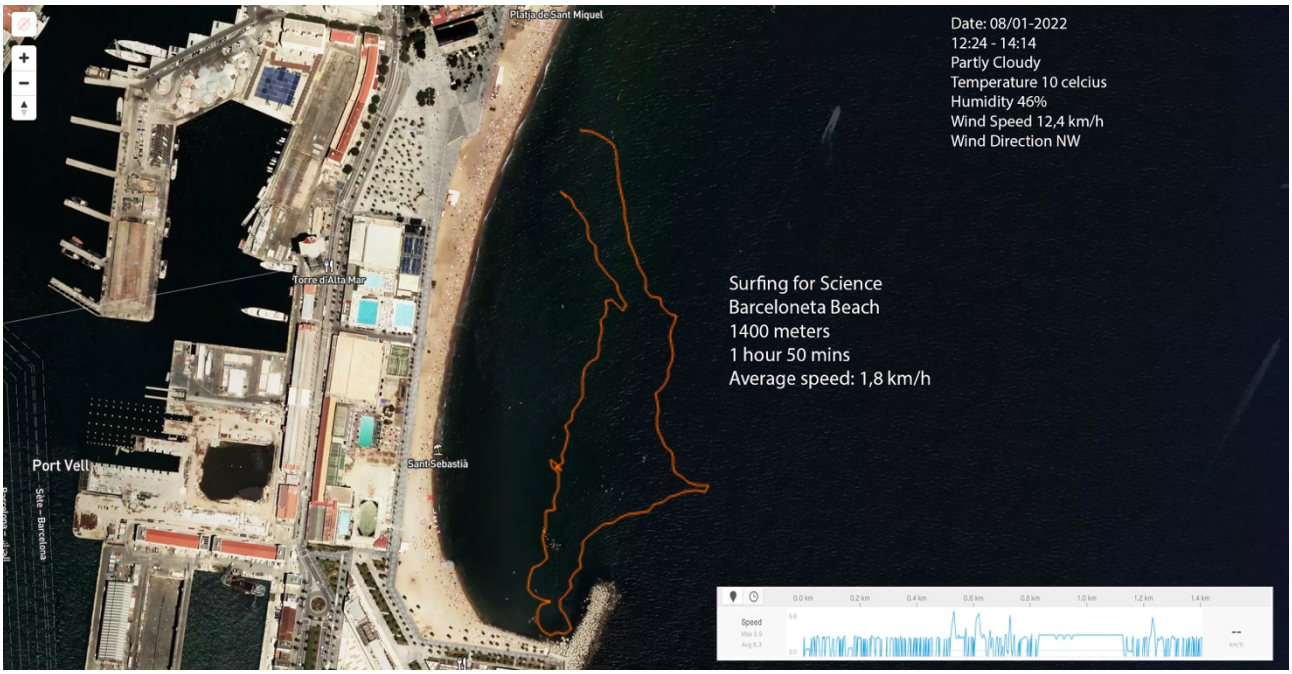
Bay of Gibraltar (UK):



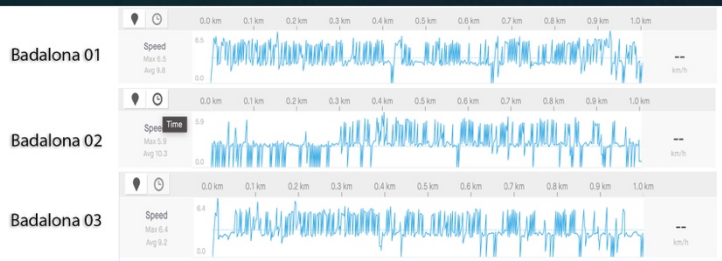


Date: 21/12-2021
Partly Cloudy
Temperature 16 celcius
Humidity 80%
Wind Speed 11.7 km/h
Wind Direction E
Notes. Very strong current in the strait. Max speed 10,9 km/h

Barceloneta (Surf for Science, Barcelona)



Badalona



Flow-o-meter= 243,9 meter

Flow-o-meter= 390 meter

Flow-o-meter= invalid

Date: 12/01-2022
Partly Cloudy
Temperature 12 celcius
Humidity 62%
Wind Speed 8.1 km/h
Wind Direction ENE