

# BGC float navigation and parameters (CTS4 et CTS5-USEA)

How we managed to deploy 206 BGC float



# PLAN

1. CTS4/CTS5-USEA , BGC SENSORS
2. Mission
3. Acquisition
4. 206 deployments (25 different PI)



# 1. CTS4/CTS5-USEA , BGC SENSORS

- RUDICS communication
- Double board (navigation and science)

- DO
- SBE-pH
- OCR504
- ECO (CHL\_A, CDOM, BB)
- c-ROVER

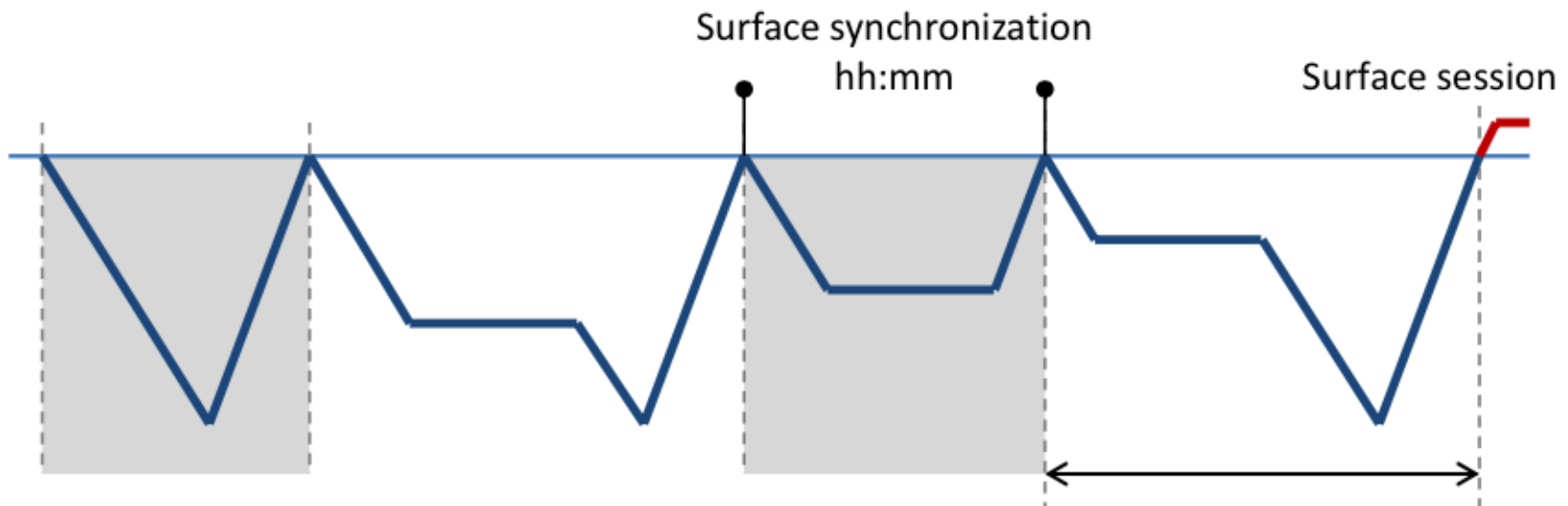
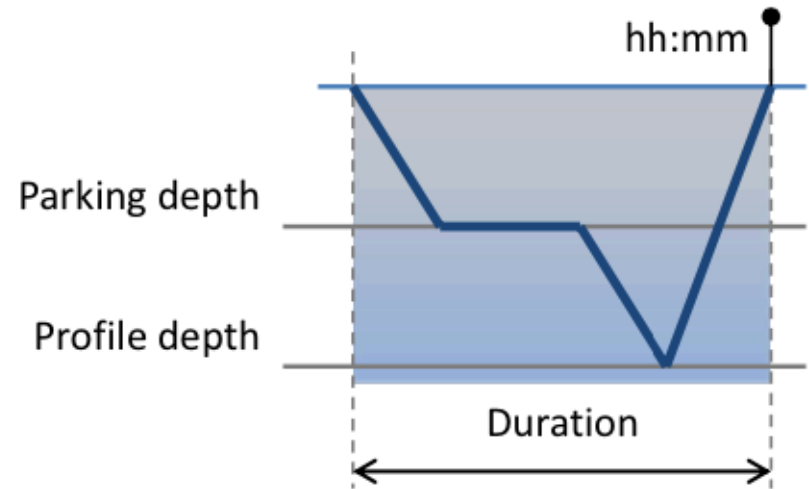
- UVP6-LP (CTS5 USEA only)
- SUNA



## 2. Mission

### Mission features

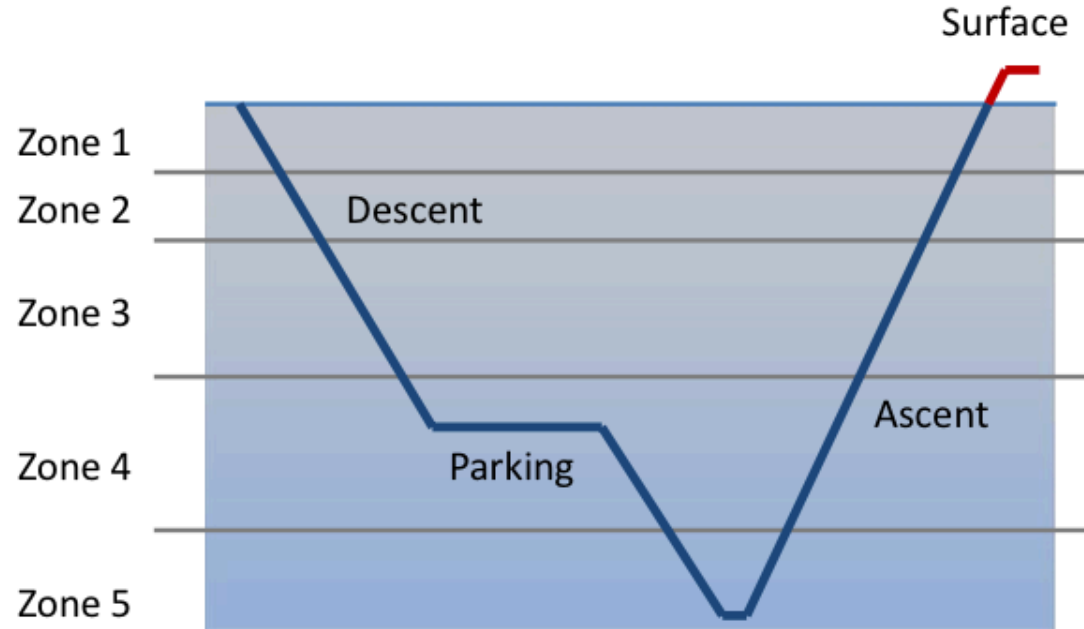
- Profile settings:
  - Parking and profile depths
  - Profile duration (CTS5 USEA only)
  - Surface synchronization time
  - Surface session
- Multi-profile: up to 10 different settings
- Profiles are configured independently



## 3. Acquisition

### Sensor management

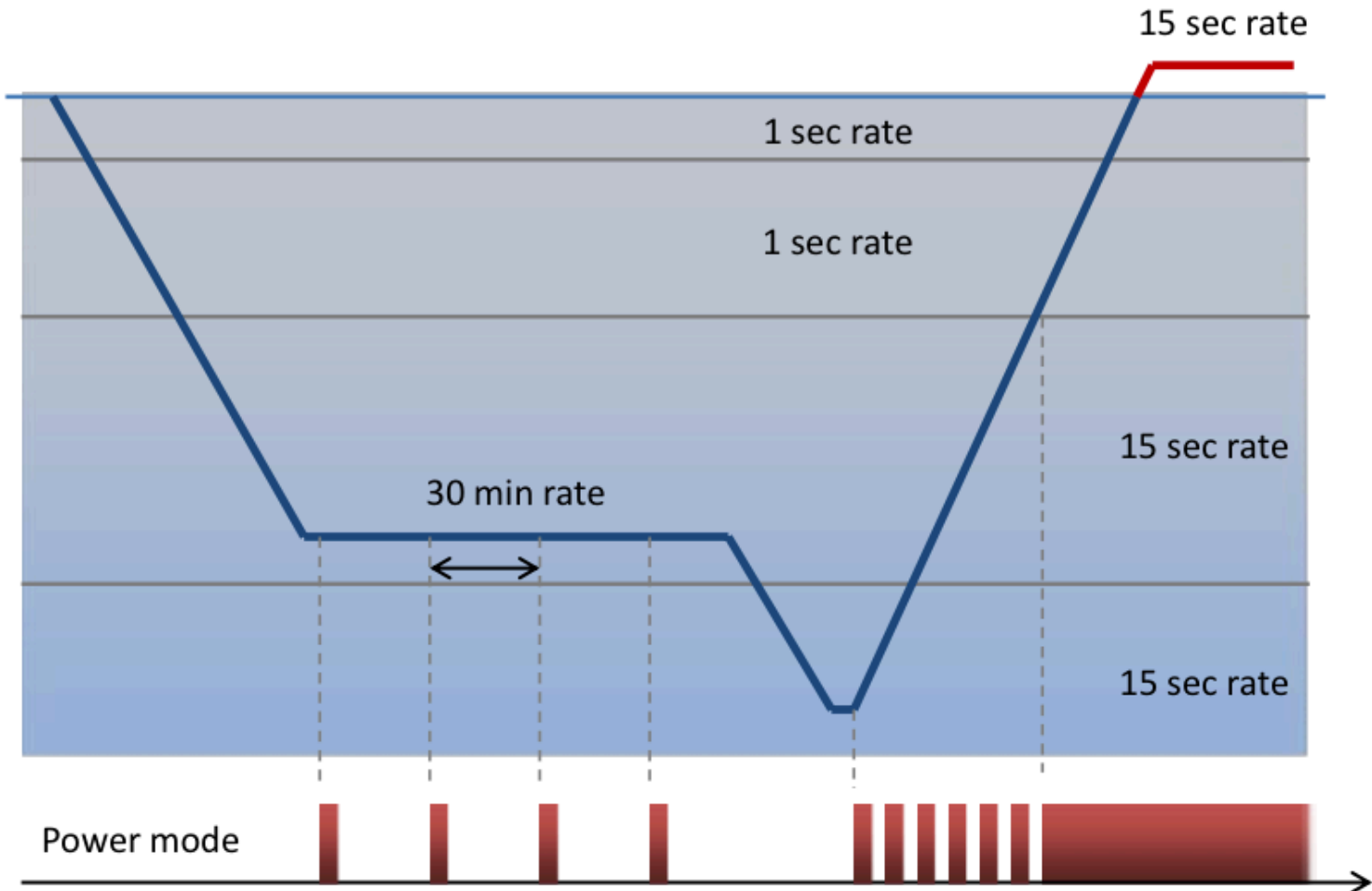
- Water column divided into up to 5 independent zones
- Surface acquisition stage for “in air” measurements
- Sensors are configured independently



### 3. Acquisition

#### Acquisition

- Independent acquisition methods by zone:
  - Continuous + high sampling rate for high resolution
  - Pulsed + low sampling rate to save energy



## 3. Acquisition

### Zone parameters

- Slice thickness
- Processing type:
  - Raw / Raw with decimation (down to 0.1 dbar resolution) (with decimation CTS5 USEA only)
  - Arithmetic mean (down to 0.5 dbar resolution)
  - Arithmetic mean + Standard deviation + Median



More than 500 parameters



customizable mission





## 5. 206 deployments for 25 different PI (principally in EU)

	CTD	O2	OCR504	ECO	pH
<b>0 -&gt; 1db</b>	2s, cont, av/m/s, 1 db	20s, puls, raw, 1 db	60s, puls, raw, 1 db	60s, puls, raw, 1 db	60s, puls, raw, 1 db
<b>1 db -&gt; 10 db</b>	2s, cont, av/m/s, 1 db	10s, puls, raw, 1 db	2s, puls, raw, 1 db	2s, puls, raw, 1 db	2s, puls, raw, 1 db
<b>10 db -&gt; 250 db</b>	2s, cont, av/m/s, 2 db	10s, puls, raw, 2 db	10s, puls, raw, 2 db	10s, puls, raw, 2 db	10s, puls, raw, 2 db
<b>250 db -&gt; 1100 db</b>	2s, cont, av/m/s, 10 db	100s, puls, raw, 10 db	0s, puls, av, 10 db	100s, puls, raw, 10 db	100s, puls, raw, 10 db
<b>1100 db -&gt; 2000 db</b>	2s, cont, av/m/s, 50 db	200s, puls, raw, 50 db	0s, puls, av, 50 db	200s, puls, raw, 50 db	200s, puls, raw, 50 db

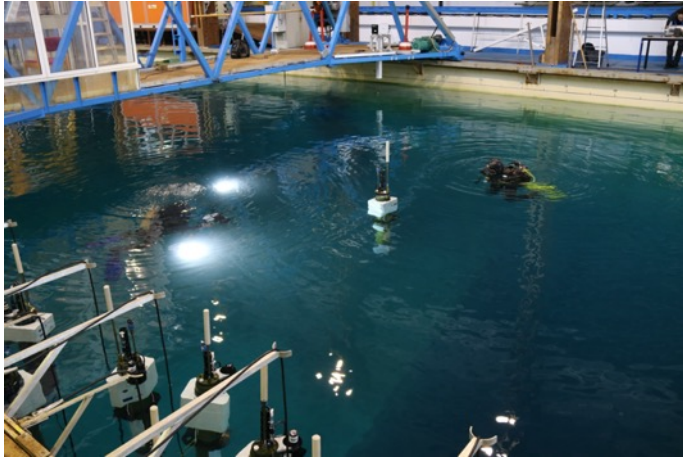
Select by projects:	Profiling	No longer profiling
ALL	<a href="#">71</a>	<a href="#">135</a>
NAOS	<a href="#">25</a>	<a href="#">29</a>
Argo-Italy	<a href="#">4</a>	<a href="#">9</a>
EAIMS	<a href="#">1</a>	<a href="#">5</a>
ATLANTOS	<a href="#">8</a>	<a href="#">1</a>
GMMC_CNES	<a href="#">16</a>	<a href="#">12</a>
UK-Bio-Argo	<a href="#">6</a>	<a href="#">5</a>
remOcean	<a href="#">4</a>	<a href="#">48</a>
SOCLIM	<a href="#">4</a>	<a href="#">4</a>
FPAII-GMMC	<a href="#">1</a>	<a href="#">0</a>
SA-Bio-Argo	<a href="#">1</a>	<a href="#">0</a>
Bay of VLFR	<a href="#">0</a>	<a href="#">1</a>
APMT	<a href="#">1</a>	<a href="#">5</a>
APMT-ICE	<a href="#">0</a>	<a href="#">12</a>
GeoEcoMar	<a href="#">0</a>	<a href="#">1</a>
PEACETIME	<a href="#">0</a>	<a href="#">1</a>
China-Bio-Argo	<a href="#">0</a>	<a href="#">1</a>
Panache	<a href="#">0</a>	<a href="#">1</a>



## 5. 206 deployments for 25 different PI (principally in EU)

### Test in IFREMER tank facility

Noé's talk at 14:00 today : Ifremer test-tank facility overview



### SAME program FOR ALL floats :

- Profile from 0 to 1000m
  - Surface every day at 12 GMT the next day
  - Drift at 1000m
  - Acquisition in Ascent and Descent
- chlorophyll \_a:
    - 1 – 10m : 0.20m resolution
    - 10 – 300m : 1m resolution
    - 250 – 1000m : 10m resolution
    - 1000 – 2000m : 50m resolution



## 5. 206 deployments for 25 different PI (principally in EU)

### FINAL test before sending to his destination

- Full test off the float and sensors
- Full iridium communication
- Collect all the META

Catherine's talk at 10:00 today : Float metadata on DAC – GDAC good practice

Explanation and training the person in charge of deploying the float

### DO a TEST before the departure on the deck (at sea no more stress)

```
COM8 - PuTTY
.....
19-05-10 06:49:24 : SYSTEM > APMT v1.07.009 [ OK ]
19-05-10 06:49:24 : SYSTEM > Serial number=0xFFFF [ OK ]
19-05-10 06:49:24 : SYSTEM > Initialization [ OK ]
19-05-10 06:49:40 : SYSTEM > USEA v1.00.009 [ OK ]
19-05-10 06:49:51 : SYSTEM > The float is armed for cycle 103 [ OK ]
19-05-10 06:49:57 : RUDICS > Modem configuration [ OK ]
19-05-10 06:50:12 : USEA > Update configuration [ OK ]
19-05-10 06:50:37 : SYSTEM > Maintenance enabled for 90 seconds [ OK ]
19-05-10 06:52:07 : SYSTEM > Autotest (full mode) [ OK ]
19-05-10 06:52:07 : USEA > Initialization [ OK ]
19-05-10 06:52:17 : SBE41 > Cut-off pressure=5 dbar [ OK ]
19-05-10 06:52:19 : SBE41 > Sample rate=fast [ OK ]
19-05-10 06:52:28 : CHECK > FRAM memory [ OK ]
19-05-10 06:52:28 : CHECK > FLASH memory [ OK ]
19-05-10 06:52:28 : CHECK > Memory card is not available [ WARNING ]
19-05-10 06:52:28 : CHECK > Ti is not available [ WARNING ]
19-05-10 06:52:29 : CHECK > Pi=1012.5 mbar [ OK ]
19-05-10 06:52:30 : CHECK > Pe=0.0 dbar [ OK ]
19-05-10 06:52:33 : CHECK > Vbatt=11.0 V [ OK ]
19-05-10 06:52:34 : CHECK > RTC=19-05-10 06:52:34 [ OK ]
19-05-10 06:52:34 : CHECK > Water inside detection [ OK ]
19-05-10 06:52:34 : CHECK > USEA [ OK ]
19-05-10 06:52:43 : CHECK > Sensor OCR [ OK ]
19-05-10 06:52:43 : CHECK > Sensor ECO [ OK ]
19-05-10 06:52:43 : CHECK > Te=21.60 degC [ OK ]
19-05-10 06:52:54 : CHECK > Modem [ OK ]

<<< The float is ready for launch !!! >>>
```



**FOLLOW the procedure for the deployment**

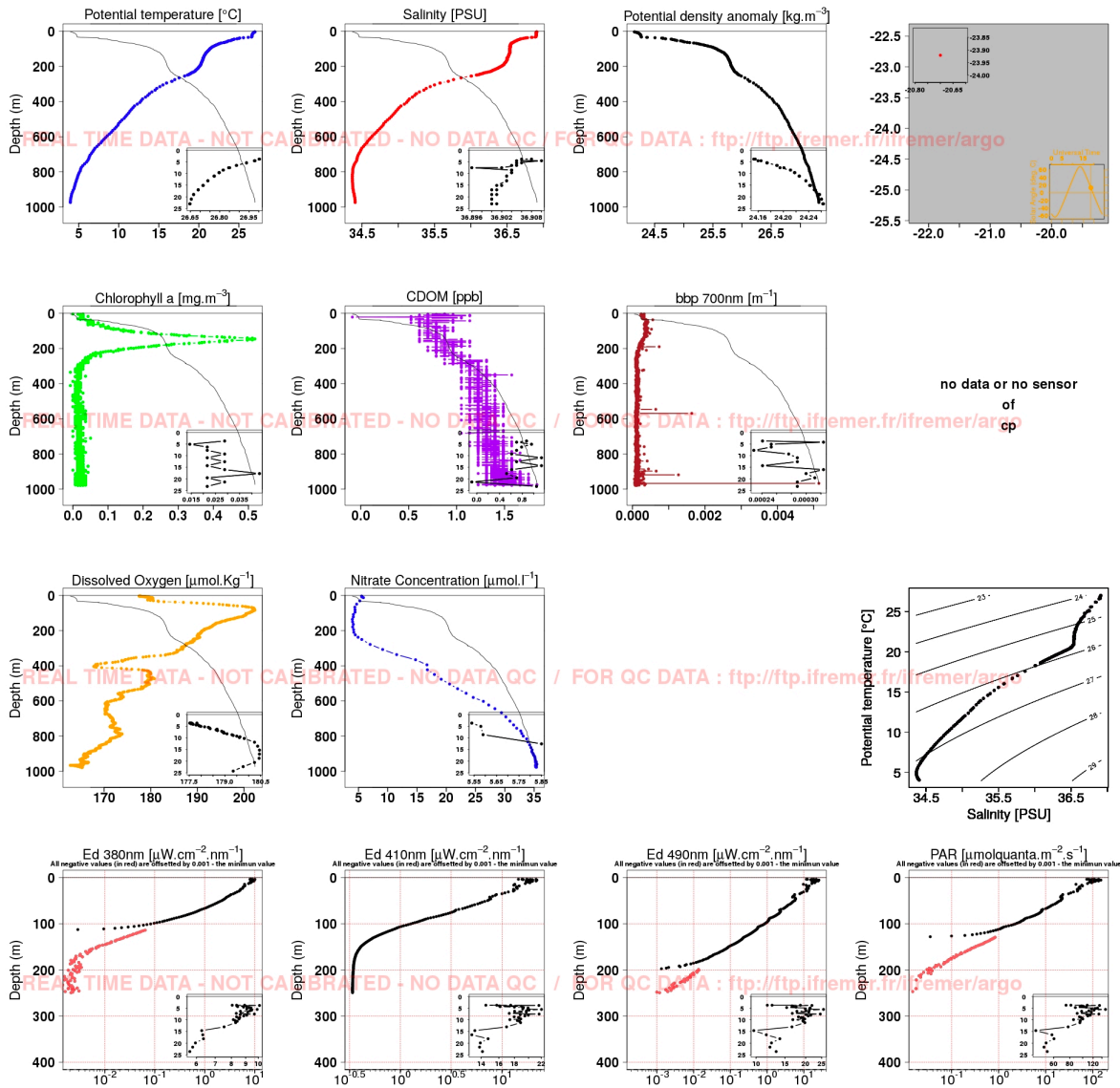


# 5. 206 deployments for 25 different PI (principally in EU)

## data visualisation of the 1st profil

Descent / 14 Mar 2018 18:40 UT / eribio001b\_001\_00

Jpeg created on Wed Mar 21 19:12:17 2018 with data processed on Sat Mar 17 15:51:20 2018 (Lon:-20.7deg, Lat:23.92deg.)



**after 5 days , turn OFF the descent aquisition**



## 5. 206 deployments for 25 different PI (principally in EU)

Set the float to his standard monthly mission at 10 days frequency (or 5 days)

Automatic adjustment of time of surfacing (Sunrise Noon Sunset)

At day 0 : surface at noon,

+ 10 days : sunrise

+ 10 days : noon

+ 10 days : sunset

+ 10 days : noon

+ 10 days : sunrise

+ 10 days : noon

+ 10 days : sunset

+ 10 days : noon .....

once a month we are going a 2000m profiles



# 5. 206 deployments for 25 different PI (principally in EU)

## Month per Month mission

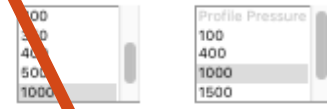
We have a automatique change of the frenquency depend for the a eas

MISSION	MONTH	PROGRAM	DAYS	DRIFT PRESSURE	PROFILE PRESSURE	Activate ?	HR?
eribio002b	1	ATS	5	1000	1000	Y	N
eribio002b	2	ATS	5	1000	1000	Y	N
eribio002b	3	ATS	5	1000	1000	Y	N
eribio002b	4	ATS	5	1000	1000	Y	N
eribio002b	5	ATS	5	1000	1000	Y	N
eribio002b	6	ATS	5	1000	1000	Y	N
eribio002b	7	ATS	5	1000	1000	Y	N
eribio002b	8	ATS	5	1000	1000	Y	N
eribio002b	9	ATS	5	1000	1000	Y	N
eribio002b	10	ATS	5	1000	1000	Y	N
eribio002b	11	ATS	5	1000	1000	Y	N
eribio002b	12	ATS	5	1000	1000	Y	N

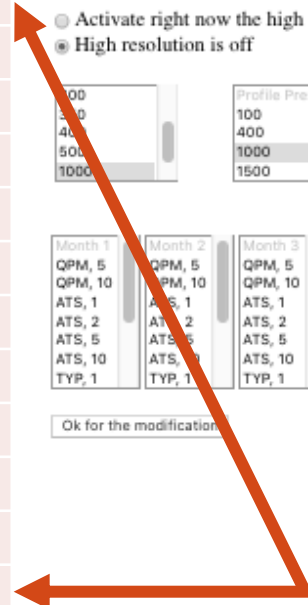
For exemple in austral :

Month	Frequency
January	2
February	5
March	5
April	5
May	5
June	5
July	5
August	5
September	3
October	2
November	2
December	2

- The automatic programmation is active
- Desactivate right now the automatic programmation?
- Activate right now the high resolution
- High resolution is off



Ok for the modification



**Bloom period**



## 5. 206 deployments and 25 different PI (principally in EU)

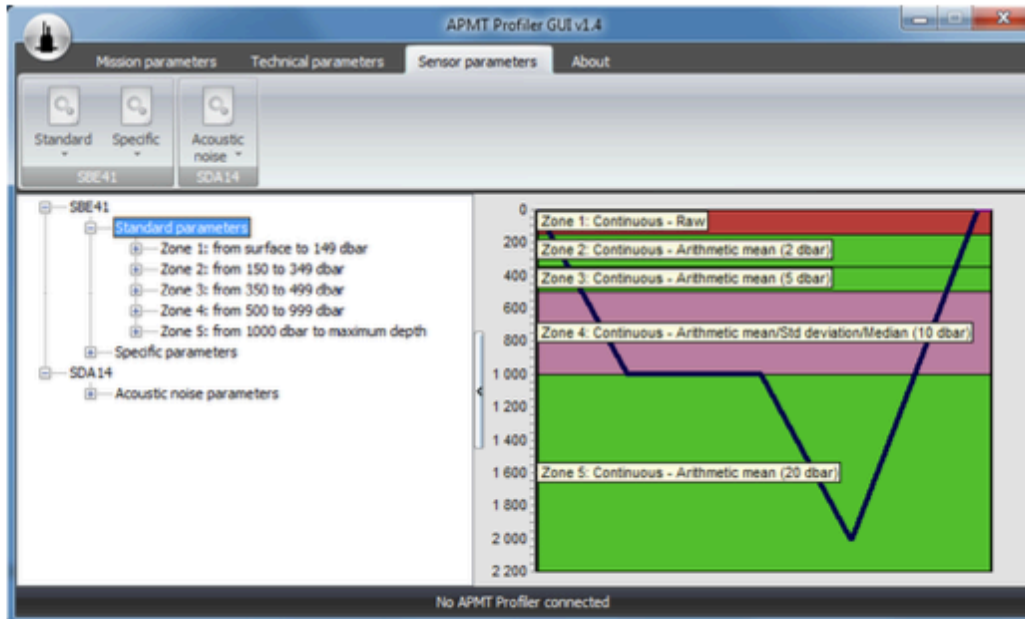
Change mission via a web page (20 validated missions)

n profiles a day every 2, 5 or 10 days  
High sampling resolution

For CTS5-USEA GUI interface :

### Sensor parameters

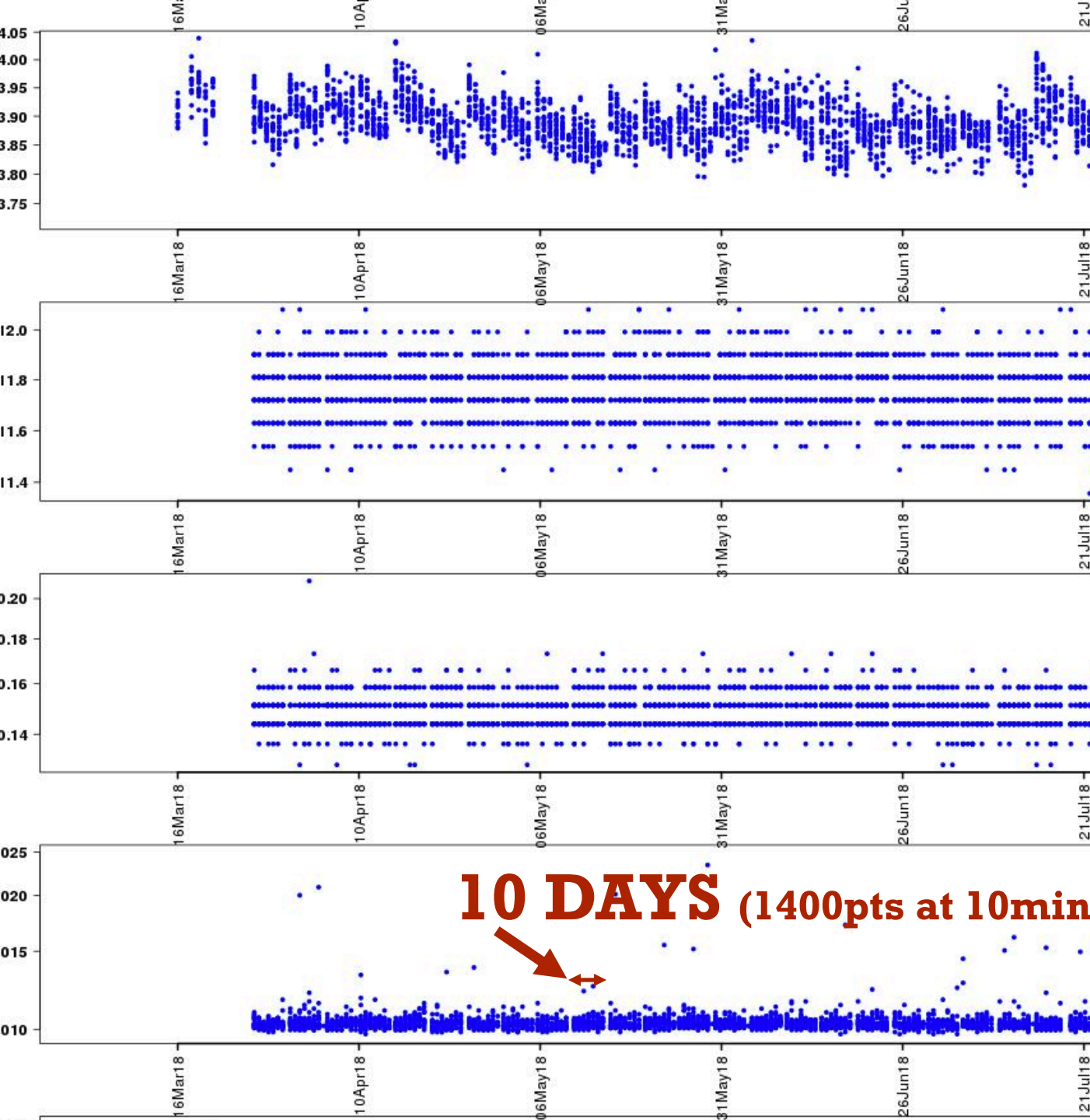
- Set/change acquisition parameters:
  - Power mode
  - Sampling rate
  - Processing type



Edouard's talk at 14:00 today







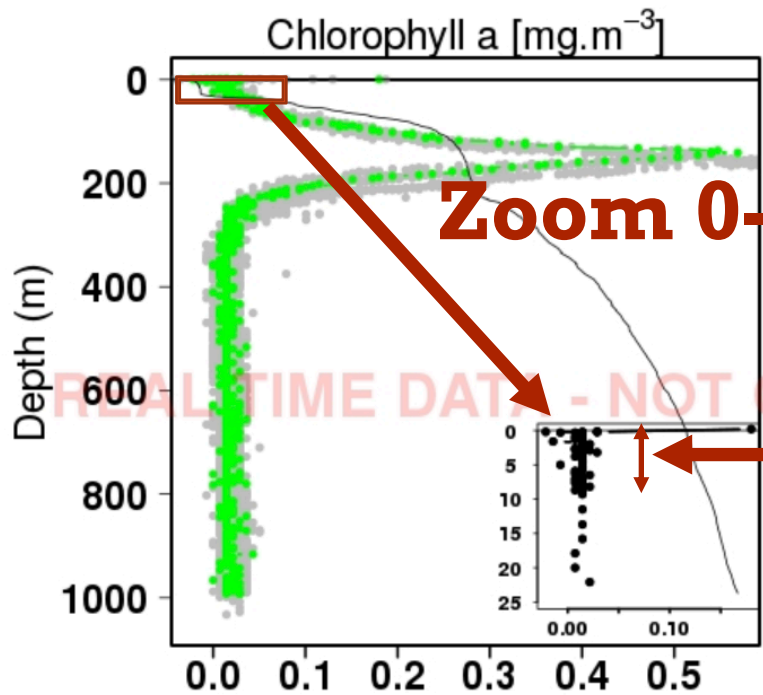
Temp

CDOM

CHI\_A

bbp

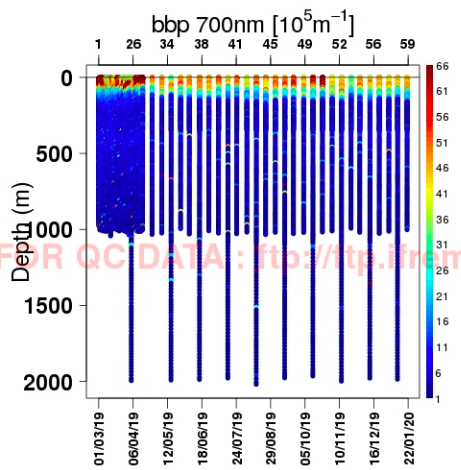
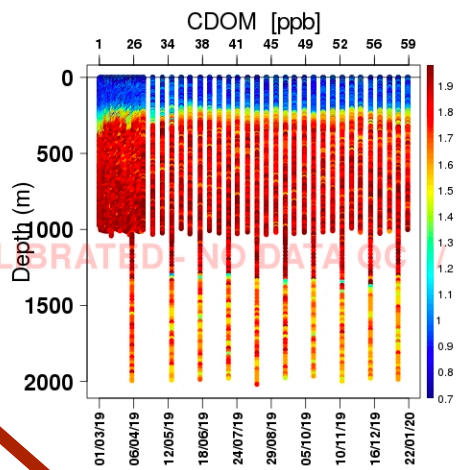
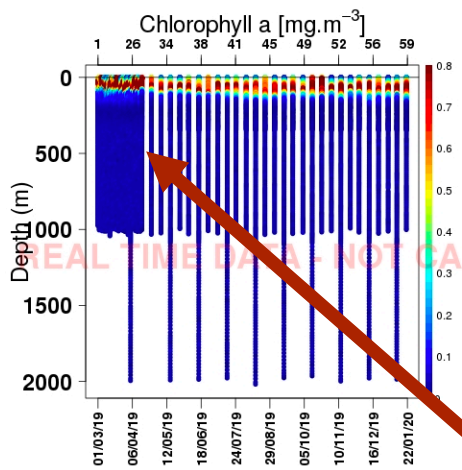
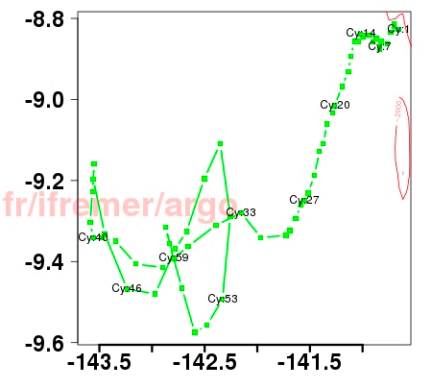
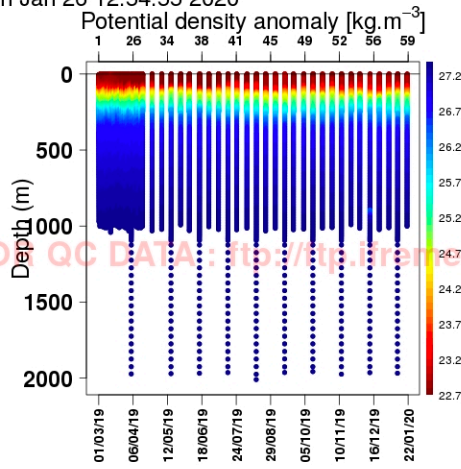
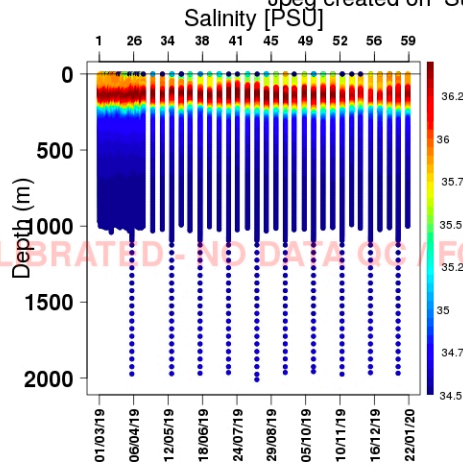
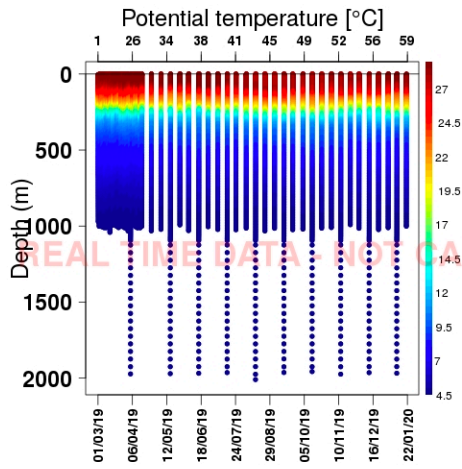




**Zoom 0-25m**

**0 - 10 metres  
Every 2 sec**





no data or no sensor  
of  
cp

↑  
↔  
Every days

Every days 10  
days with a 2000  
every month

