

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 differents 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

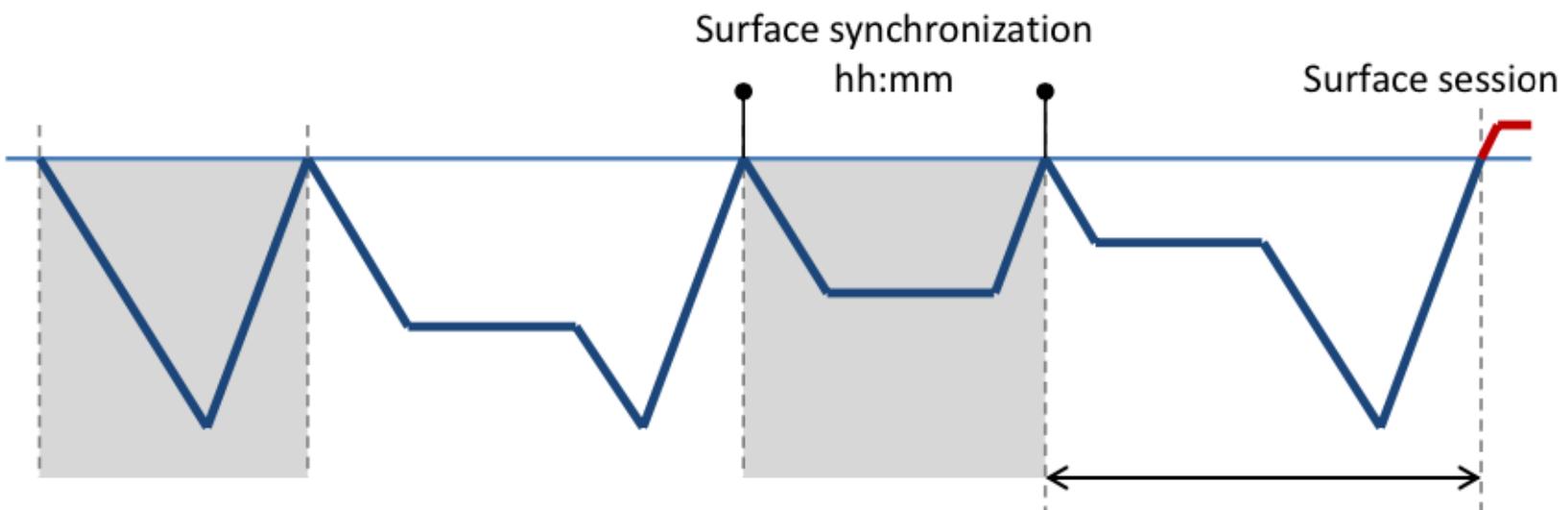
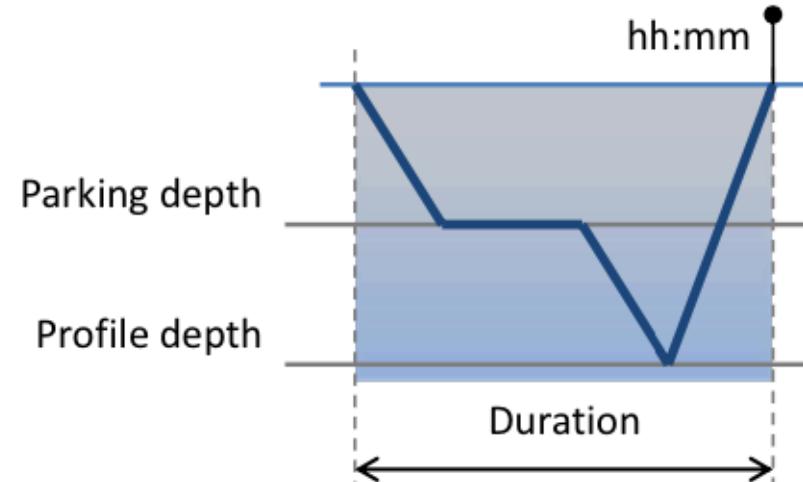
- UVP6-LP (**CTS5 USEA only**)
- SUNA



2. Mission

Mission features

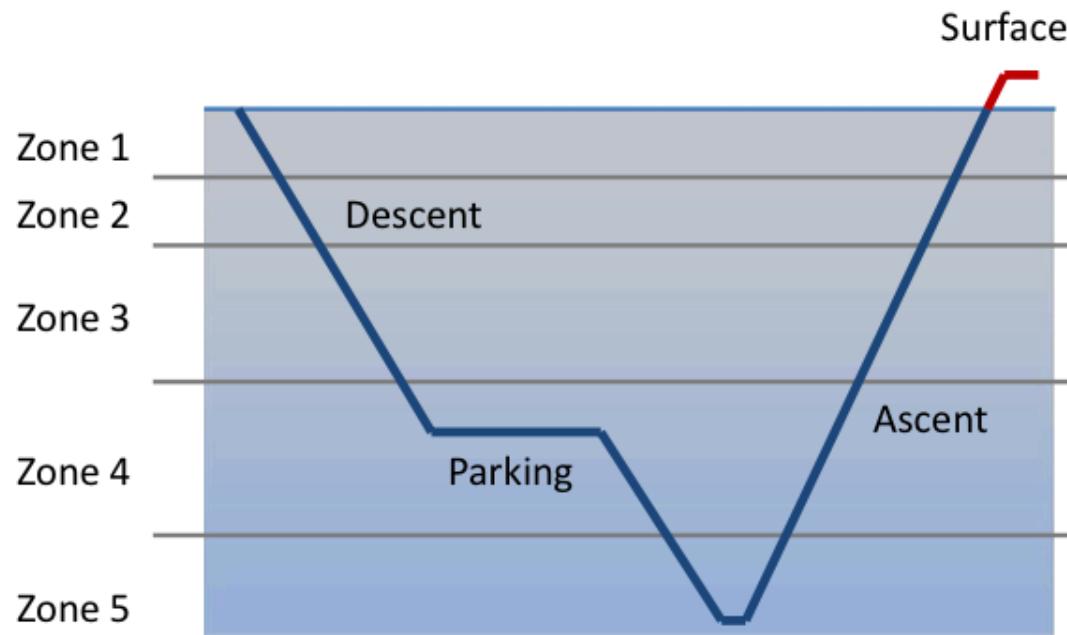
- Profile settings:
 - Parking and profile depths
 - Profile duration (**CTS5 USEA only**)
 - Surface synchronization time
 - Surface session
- Multi-profile: up to 10 different settings
- Profiles are configured independently



3. Acquisition

Sensor management

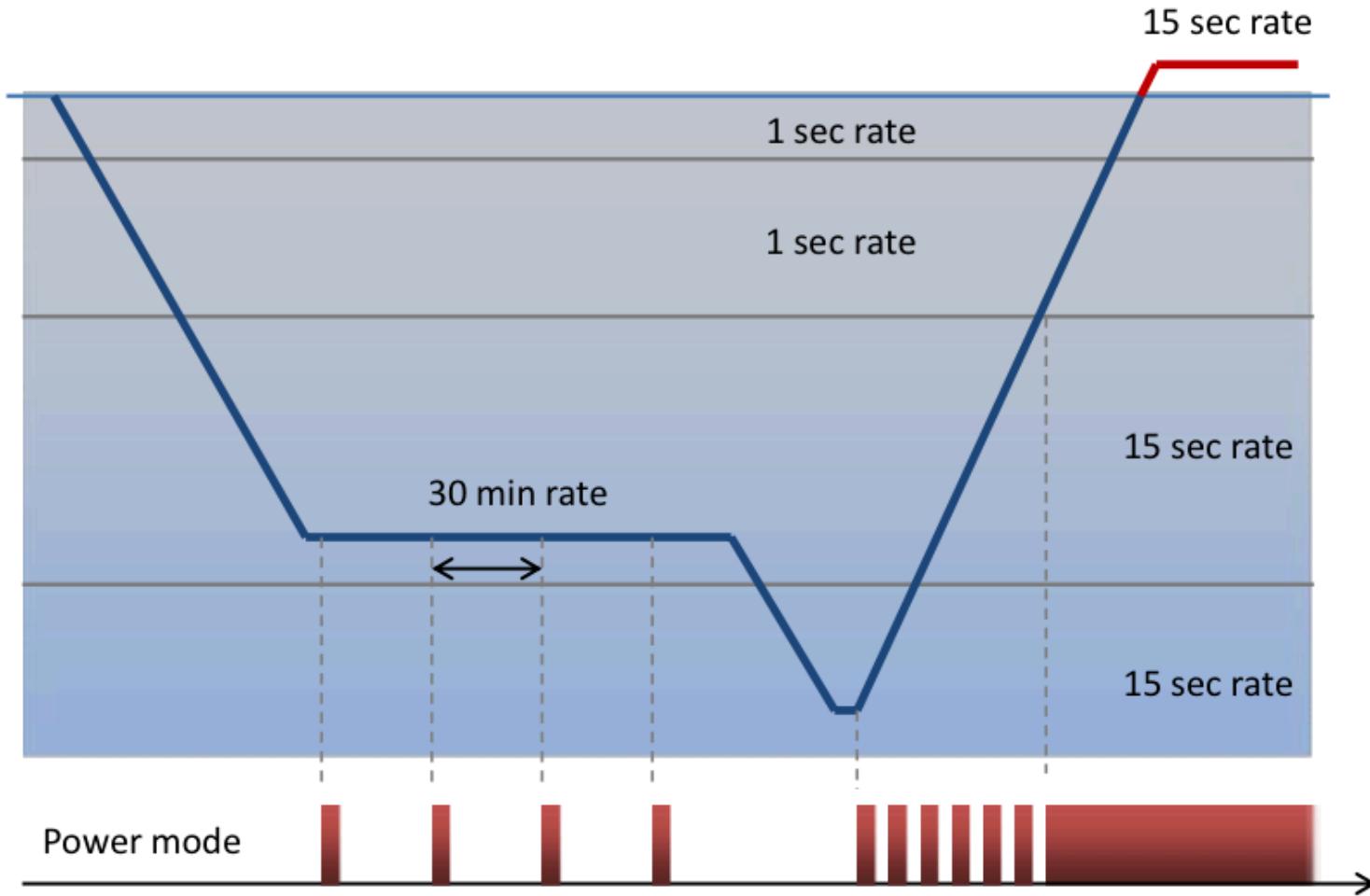
- Water column divided into up to 5 independent zones
- Surface acquisition stage for “in air” measurements
- Sensors are configured independently



3. Acquisition

Acquisition

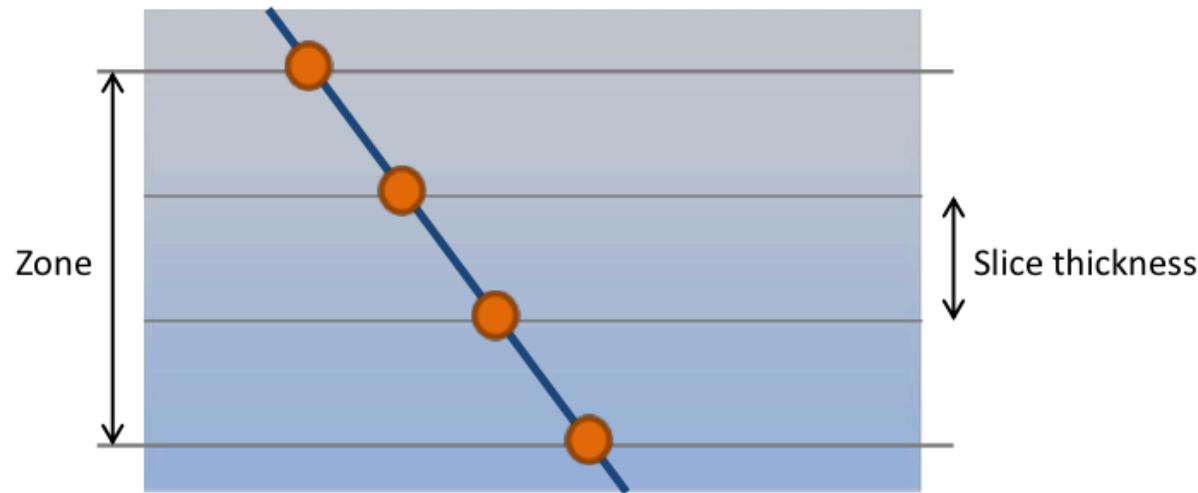
- Independent acquisition methods by zone:
 - Continuous + high sampling rate for high resolution
 - Pulsed + low sampling rate to save energy



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 differents PI (principaly in EU)

	CTD	O2	OCR504	ECO	pH
0 -> 1 db	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
1 db -> 10 db	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
10 db -> 250 db	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
250 db -> 1100 db	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
1100 db -> 2000 db	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

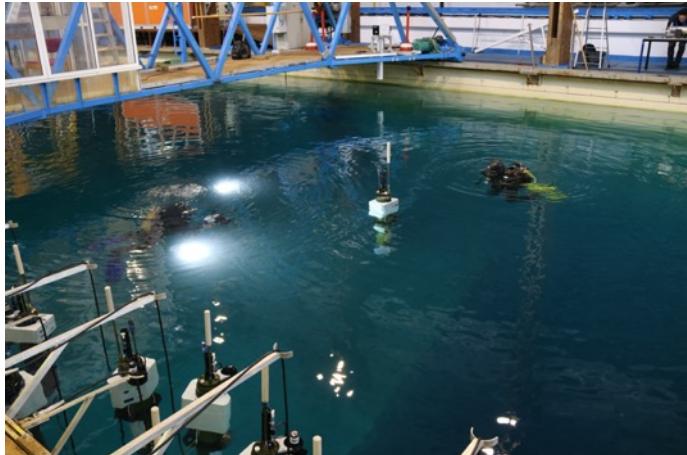
Select by projects:	Profiling	No longer profiling
ALL	<u>71</u>	<u>135</u>
NAOS	<u>25</u>	<u>29</u>
Argo-Italy	<u>4</u>	<u>9</u>
EAIMS	<u>1</u>	<u>5</u>
ATLANTOS	<u>8</u>	<u>1</u>
GMMC_CNES	<u>16</u>	<u>12</u>
UK-Bio-Argo	<u>6</u>	<u>5</u>
remOcean	<u>4</u>	<u>48</u>
SOCLIM	<u>4</u>	<u>4</u>
FPAII-GMMC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



5. 206 deployments for 25 differents PI (principaly 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 differents PI (principaly 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)

```
.....  
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 !!! >>>
```



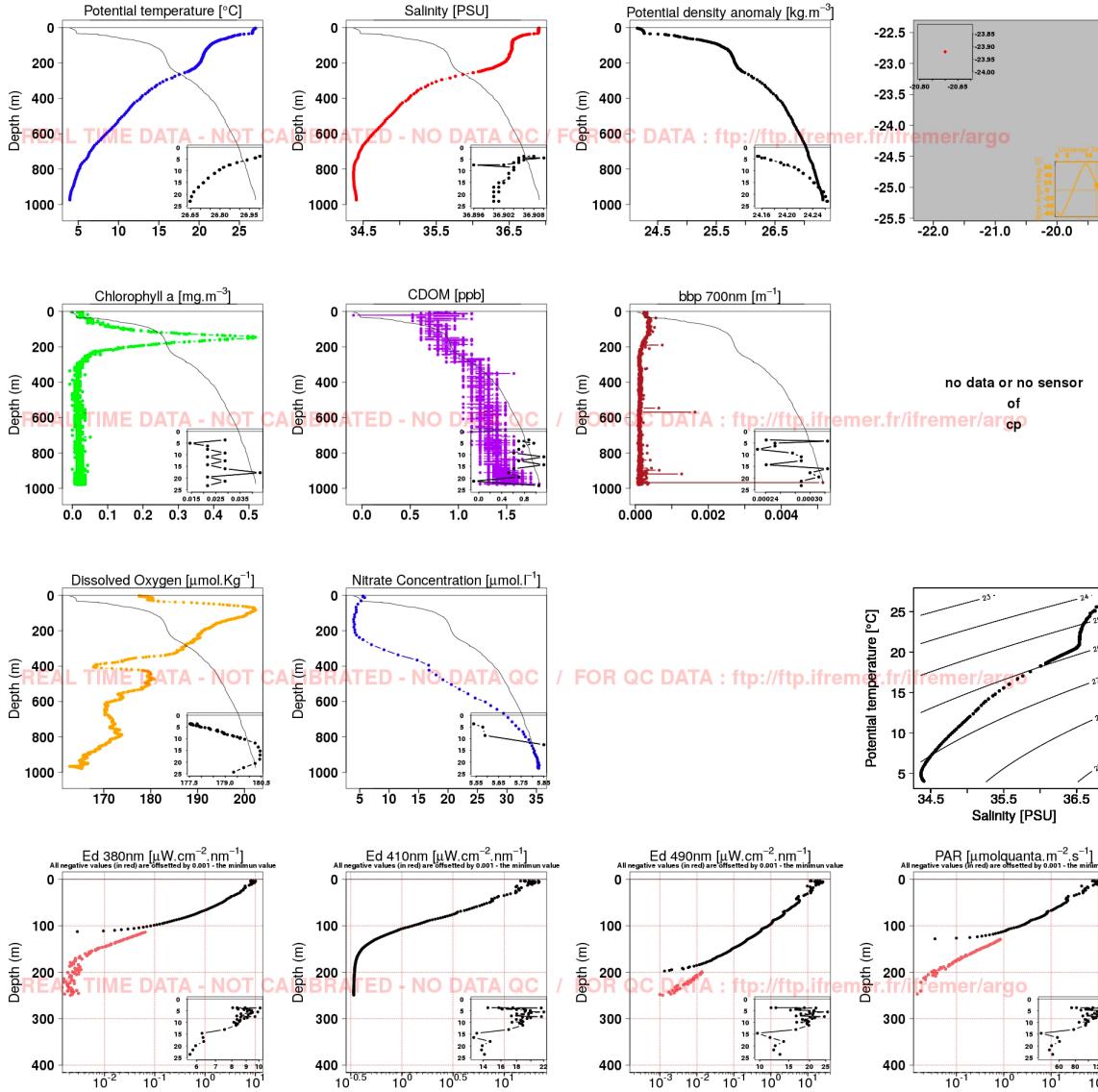
FOLLOW the procedure for the deployment



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 differents PI (principaly 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 differents PI (principaly in EU)

Month per Month mission

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

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



Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
QPM, 5	QPM, 5	QPM, 5									
QPM, 10	QPM, 10	QPM, 10									
ATS, 1	ATS, 1	ATS, 1									
ATS, 2	ATS, 2	ATS, 2									
ATS, 5	ATS, 5	ATS, 5									
ATS, 10	ATS, 10	ATS, 10									
TYP, 1	TYP, 1	TYP, 1									

Ok for the modification

Bloom period



5. 206 deployments and 25 differents PI (principaly in EU)

Change mission via a web page (20 validated missions)

n profiles a day every 2, 5 or 10 days

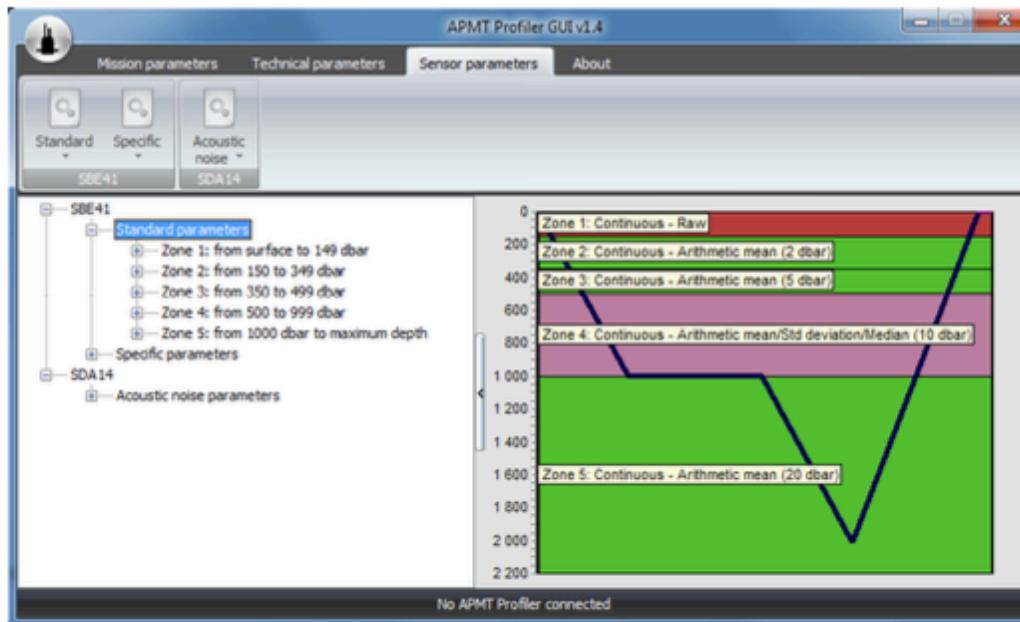
Hight sampling resolution

For CTS5-USEA GUI interface :

Sensor parameters

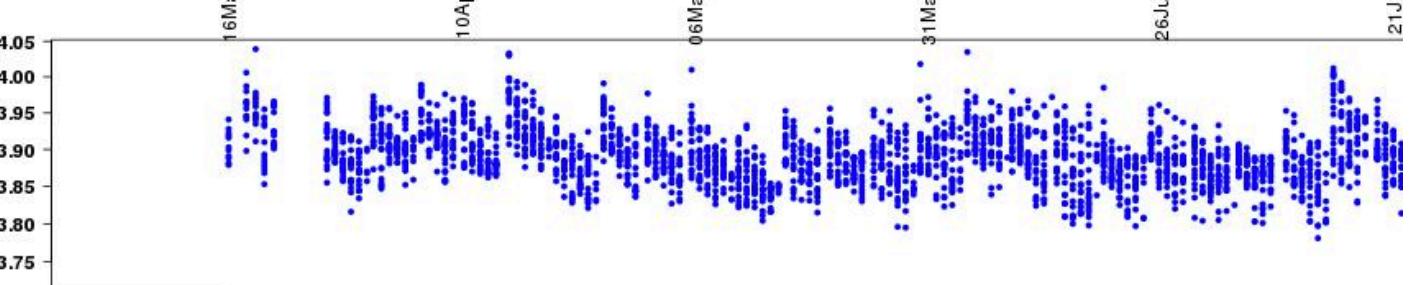
➤ Set/change acquisition parameters:

- Power mode
- Sampling rate
- Processing type

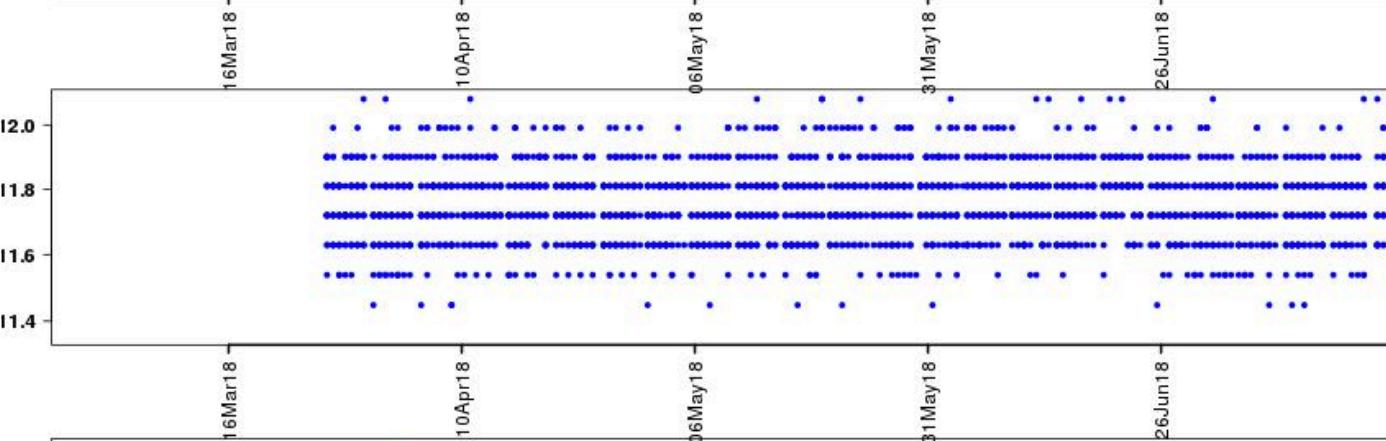


Edouard's talk at 14:00 today

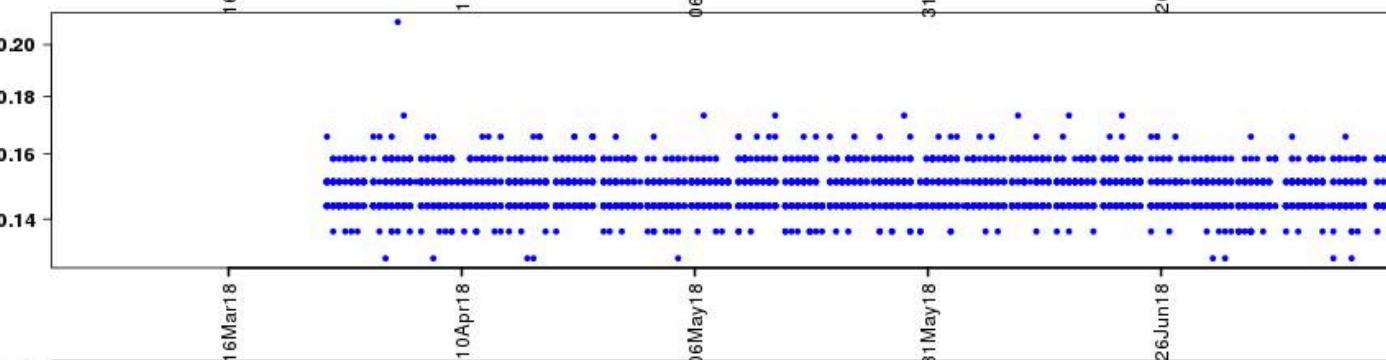




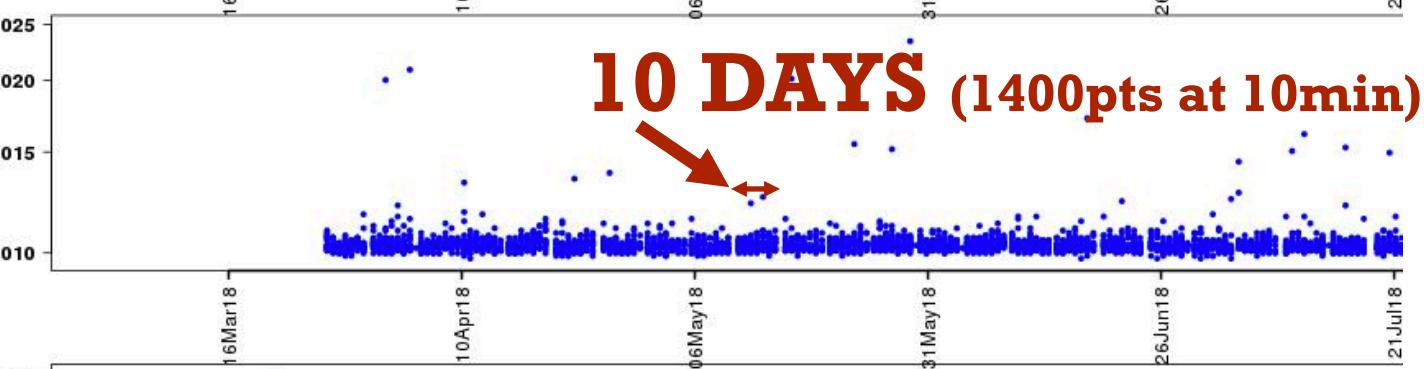
Temp



CDOM

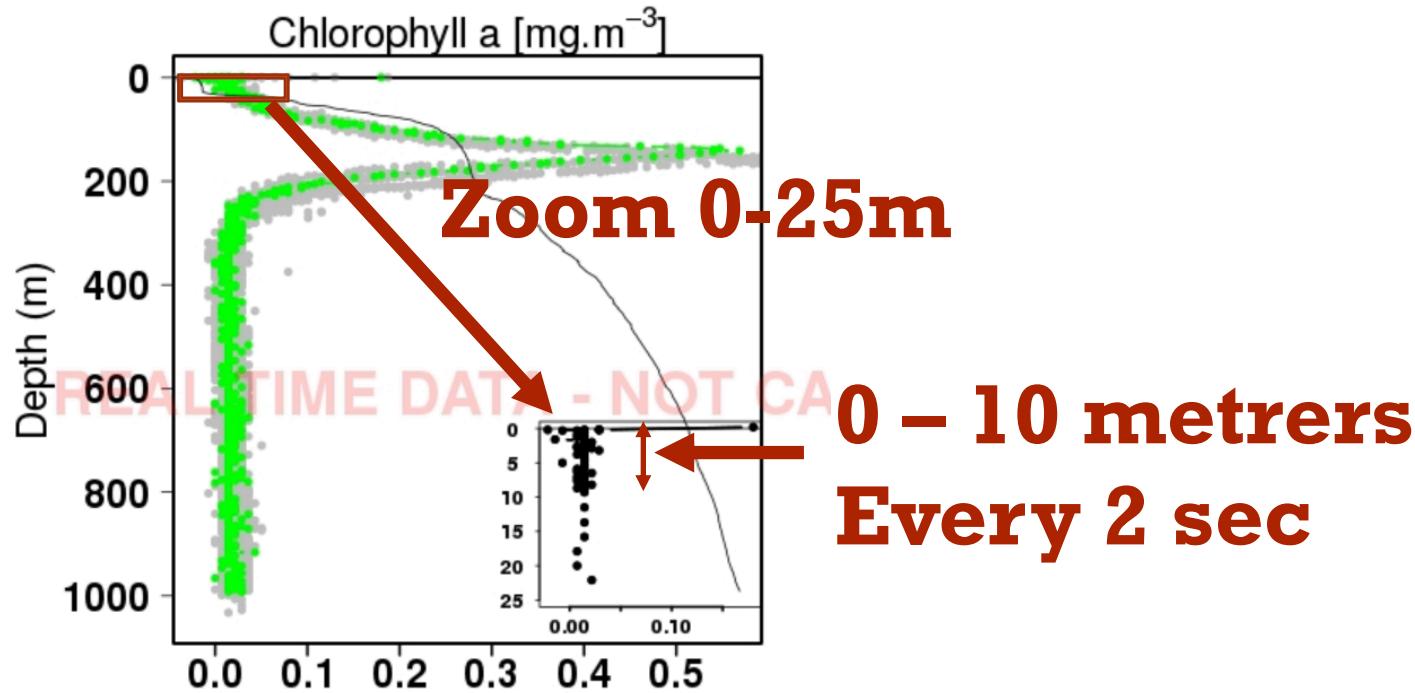


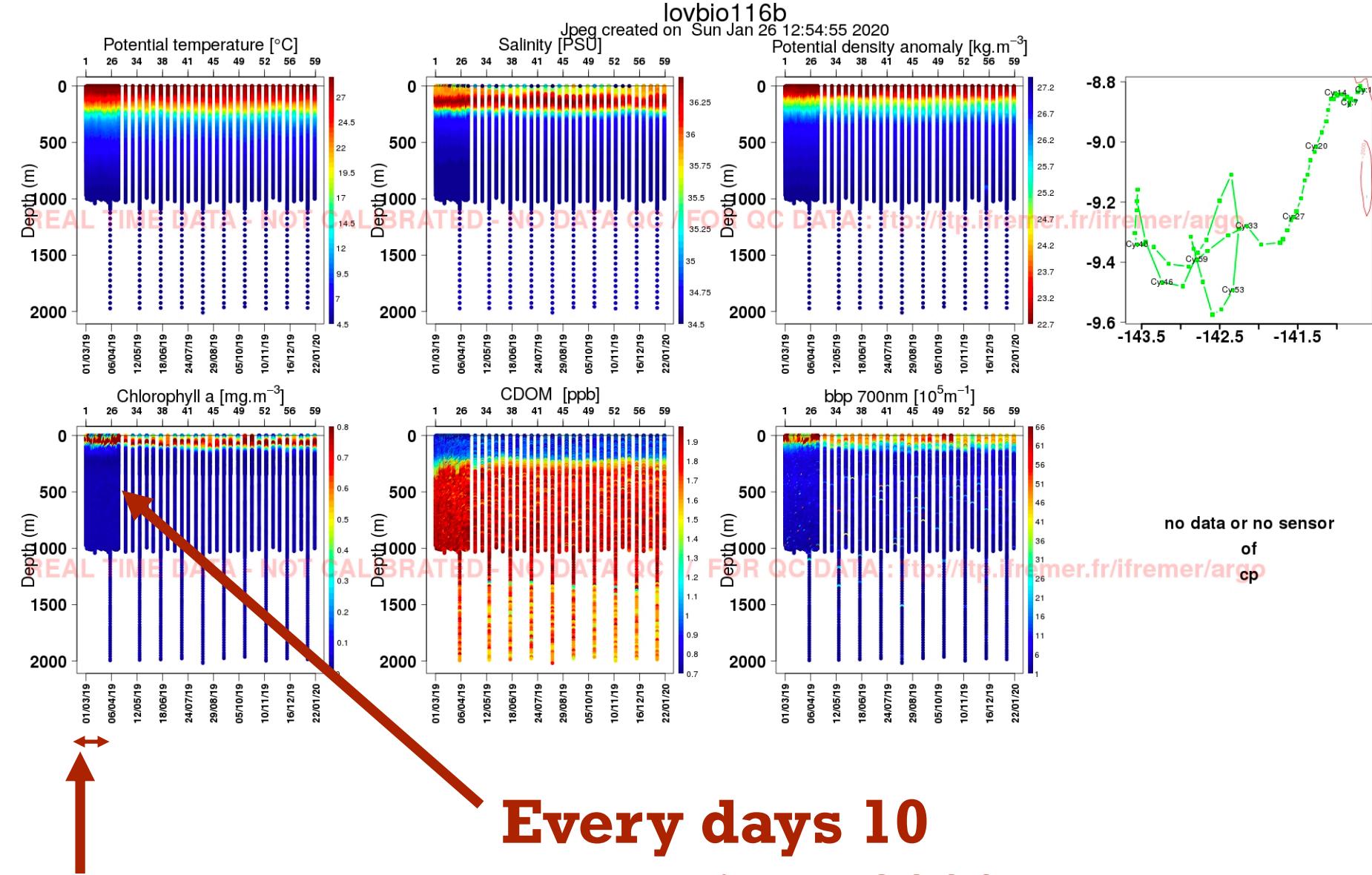
CHl_A



bbp







**Every days 10
days with a 2000
every month**

