Open Questions

PREDEPLOYMENT_CALIB_xxx STRING LENGTH

- PREDEPLOYMENT_CALIB_XXX are in the meta.nc file

- PREVIOUSLY, the size was 1024

- We asked for 4096

  => We don't have room to store a long calibration file or long equations (DOXY / NITRATE)

- Thierry's proposal for an additional chapter 2.6.10 proposal, for the Argo user's manual :

"2.6.10 Predeployment calibration variable dimension

The PREDEPLOYMENT_CALIB_EQUATION, PREDEPLOYMENT_CALIB_COEFFICIENT, PREDEPLOYMENT_CALIB_COMMENT string lengths are by default set to STRING1024.

When necessary (such as for Nitrate sensor), the string length is set to 4096. "

Exemple for NITRATE

PARAMETER = "NITRATE"

PREDEPLOYMENT_CALIB_EQUATION =”The sensor returns UV_INTENSITY_DARK_NITRATE and UV_INTENSITY_NITRATE(Ntrans), a subset of continuous pixels of UV_INTENSITY_NITRATE(N), N = 1 to 256. The Ntrans indices span the interval [PIXEL_START, PIXEL_END] subset of the original array (1 to 256). Thus Ntrans(i) refers to pixel N = (PIXEL_START+i-1). PIXEL_START and PIXEL_END are defined from calibration data so that the [PIXEL_START, PIXEL_END] interval is the smallest interval of pixels that correspond to the [217 nm, 250 nm] interval of wavelengths. Only a subset of the [PIXEL_START, PIXEL_END] interval is processed to compute nitrate concentration. This subset is defined as the [PIXEL_FIT_START, PIXEL_FIT_END] interval which is the smallest interval of pixels that correspond to the [217 nm, 240 nm] interval of wavelengths (thus PIXEL_FIT_START = PIXEL_START). In the following equations the data are computed for each pixel R = PIXEL_FIT_START to PIXEL_FIT_END; ABSORBANCE_SW(R)=-log10[(UV_INTENSITY_NITRATE(R)-UV_INTENSITY_DARK_NITRATE)/UV_INTENSITY_REF_NITRATE(R)]; F(R,T)=(A+B*T)*exp[(C+D*T)*(OPTICAL_WAVELENGTH_UV(R)-OPTICAL_WAVELENGTH_OFFSET)]; E_SWA_INSITU(R)=E_SWA_NITRATE(R)*F(R,TEMP)/F(R,TEMP_CAL_NITRATE); ABSORBANCE_COR_NITRATE(R)=ABSORBANCE_SW(R)-E_SWA_INSITU(R)*PSAL; Perform a multilinear regression to get MOLAR_NITRATE with estimated ABSORBANCE_COR_NITRATE(R) with ABSORBANCE_COR_NITRATE(R)=BASELINE_INTERCEPT+BASELINE_SLOPE*OPTICAL_WAVELENGTH_UV(R)+MOLAR_NITRATE*E_NITRATE(R); NITRATE=MOLAR_NITRATE/rho, where rho is the potential density [kg/L] calculated from CTD data”

PREDEPLOYMENT_CALIB_COEFFICIENT =" PIXEL_START=35, PIXEL_END=76, PIXEL_FIT_START=35, PIXEL_FIT_END=63;
UV_INTENSITY_REF_NITRATE(Ntrans)=[37412.29166667,40030.25000000,42741.87500000,45432.04166667,47890.45833333,49953.58333333,51429.37500000,52159.79166667,52094.54166667,51315.25000000,49942.04166667,48128.08333333,46205.12500000,44256.25000000,42533.33333333,41047.29166667,39920.79166667,39100.20833333,38672.62500000,38492.00000000,38619.91666667,39051.95833333,39662.29166667,40537.66666667,41657.75000000,42952.08333333,44479.45833333,46200.91666667,48060.00000000,50055.08333333,52105.70833333,54106.50000000,56017.12500000,57668.50000000,58959.04166667,59763.41666667,60041.45833333,59659.79166667,58671.41666667,57137.45833333,55076.62500000,52773.04166667]; A=1.1500276, B=0.02840, C=-0.3101349, D=0.001222, OPTICAL_WAVELENGTH_OFFSET=208.5;
OPTICAL_WAVELENGTH_UV(Ntrans)=[217.07,217.86,218.65,219.44,220.23,221.02,221.81,222.60,223.39,224.18,224.97,225.76,226.55,227.34,228.13,228.93,229.72,230.51,231.30,232.10,232.89,233.68,234.47,235.27,236.06,236.85,237.65,238.44,239.24,240.03,240.83,241.62,242.42,243.21,244.01,244.80,245.60,246.39,247.19,247.99,248.78,249.58]; TEMP_CAL_NITRATE=20.155;
E_SWA_NITRATE(Ntrans)=[0.00677218,0.00534786,0.00422602,0.00333490,0.00262609,0.00205092,0.00160600,0.00127921,0.00097924,0.00079266,0.00062711,0.00050231,0.00039663,0.00032128,0.00024922,0.00019977,0.00019884,0.00014188,0.00012114,0.00009859,0.00008577,0.00006516,0.00007669,0.00004643,0.00003962,0.00002723,0.00002678,0.00001013,0.00002632,0.00001246,0.00002210,0.00000134,0.00001108,0.00000517,-0.00000143,-0.00002175,-0.00000076,-0.00000170,-0.00001359,-0.00000694,-0.00000647,-0.00001461];
E_NITRATE(Ntrans)=[0.00472355,0.00437718,0.00403355,0.00368769,0.00338022,0.00309584,0.00281598,0.00253733,0.00228849,0.00203116,0.00179797,0.00157366,0.00137826,0.00119483,0.00104755,0.00089762,0.00074843,0.00063593,0.00054625,0.00045669,0.00037110,0.00030405,0.00023806,0.00020015,0.00016474,0.00013242,0.00009841,0.00007981,0.00004412,0.00003956,0.00001899,0.00001948,-0.00000380,-0.00000297,-0.00000461,-0.00000211,-0.00001947,-0.00002003,-0.00000616,-0.00001470,-0.00000748,-0.00001192]”

PREDEPLOYMENT_CALIB_COMMENT = " Nitrate concentration in umol/kg; see Processing Bio-Argo nitrate concentration at the DAC Level, Version 1.0, May 3rd 2016"

QC=8

The following points need to be clarified, all of them in a Real Time mode context:

For parameter values:

What does QC = 8 mean ?
In the manual it is "Interpolated value".
Is it only that (no information about quality, only about its creation process)? or does it also mean that its is an interpolated value that has not been rejected by a RTQC test?

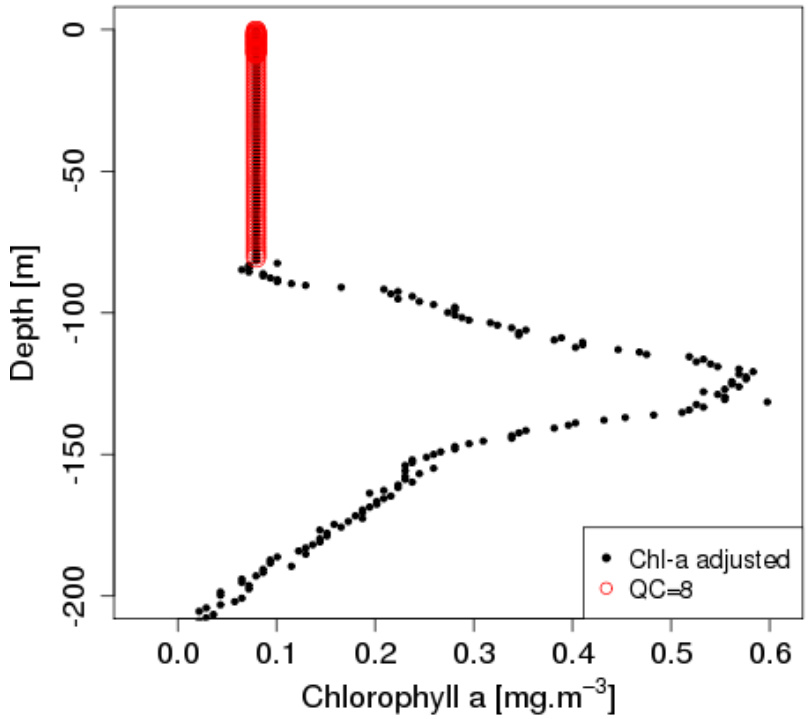
Should QC = 8 values be checked by RTQC tests?
If yes, can we change its value? If yes, how to store the original information that the value has been creating by an interpolation?

For profile location values:

Should interpolated locations be checked with RT tests #4 and #5 ? (in fact with test #4 'position on land' since test #5 'impossible speed' should always succeeds)
If yes, does the test result be reported in the QC? - The proposed idea seems to set QC = 9 when the test failed and to keep QC = 8 otherwise.

When a POSITION_QC = 8 is moved to something else, how can we keep the original information?
At MEDS they use the HISTORY section of the file.
If we want to keep it more visible for the user, my proposal is to store it in the POSITIONING_SYSTEM = 'INTERP' variable.

QC=8



The Non-Photochemical Quenching (NPQ) is a mechanism employed by plants and algae to protect themselves from the adverse effects of high light intensity.

In Xing et al., 2012, we have an estimation of the thickness of the layer potentially affected by the quenching.

Then, to adjust the chlorophyll-A concentration in this layer, it is proposed to extrapolate the maximum adjusted chlorophyll concentration in this layer toward the surface as a way to correct for the quenching effect. so QC=8

Should we keep the QC=8 as the final QC ?

Multiple sensor management

The GDAC file checker allows to append a 2 to PARAMETER_SENSOR

Example : PPOX_DOXY2 is allowed

But doesn’t allow to append a 2 to SENSOR

Example: Ann’s test:

Looking at one of my files, when I had two BBP sensors for the same wavelength, I have two parameter sensor entries – SCATTEROMETER_BBP and SCATTEROMETER_BBP2. But in the SENSOR list, I have only two copies of SCATTEROMETER_BBP. So logically, the second one should have a ‘2’ appended in the SENSOR list. I’ve just tested this and it didn’t pass the GDAC checkers

Multiple sensor management

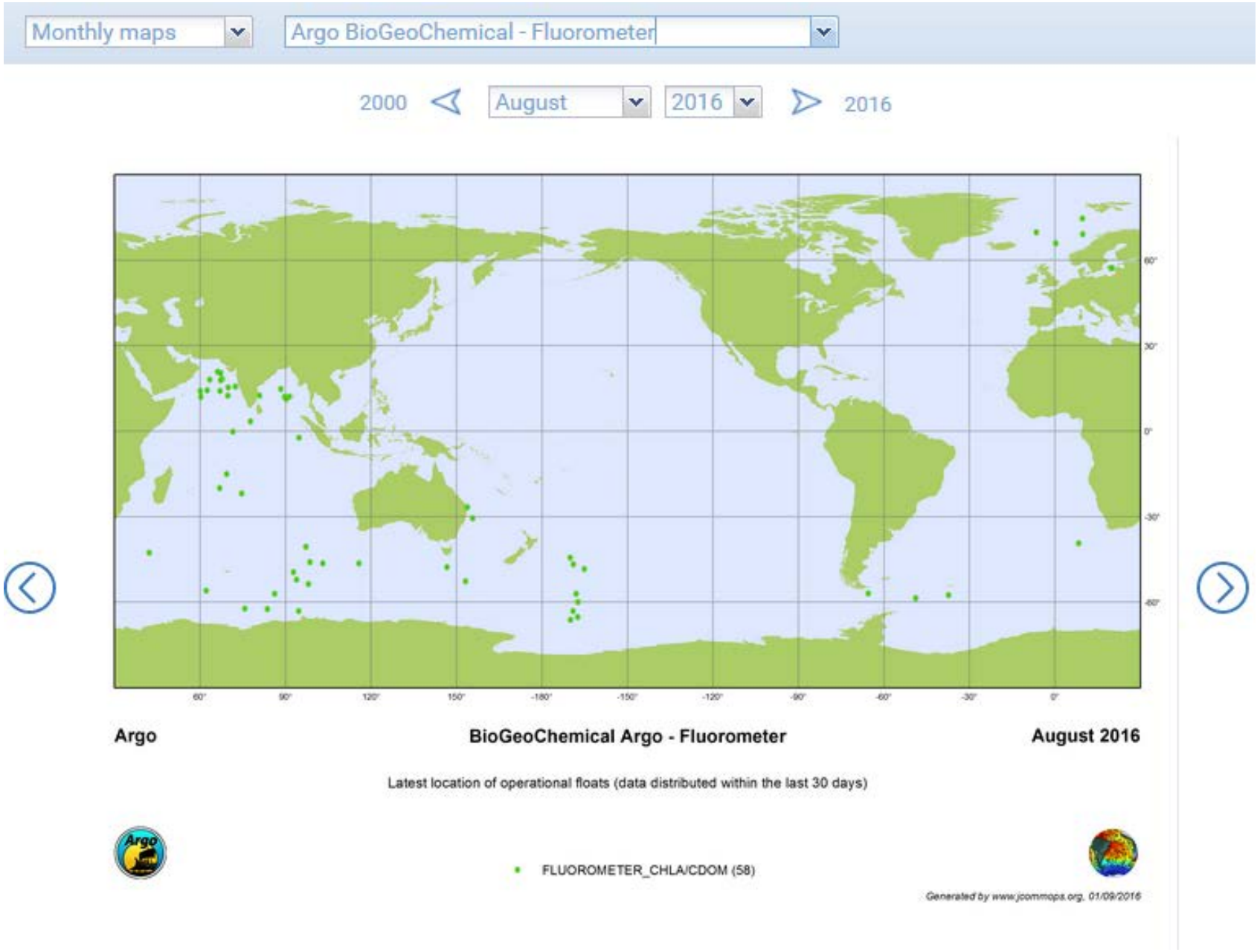
There is a risk to break the link between PARAMETER and SENSOR. This link is useful for the user but also for the software.
For example, in the RTQC some DOXY tests depend on the SENSOR_MODEL.

Thus, if you have:
A Aanderaa 4330 that samples PPOX_DOXY (it is the case in the last Arvor versions which sample IN AIR DO measurements).
A SBE 63 that samples PPOX_DOXY.
PPOX_DOXY and PPOX_DOXY2 are both in the file, you can then assign
PPOX_DOXY and PPOX_DOXY2 to their corresponding sensor with the N_SENSOR
index (min index for the first one and max index for the second).

But, if you have:
A Aanderaa 4330 that doesn't sample PPOX_DOXY .
A SBE 63 that samples PPOX_DOXY.
Only one PPOX_DOXY is present in the file and you cannot retrieve its
SENSOR_MODEL.

You then cannot apply test #47 that specifies that PPOX_DOXY_QC should
be set to '4' for SBE 63 sensor.

SUGGESTION:
ALLOW to APPEND a 2 for THE SENSOR

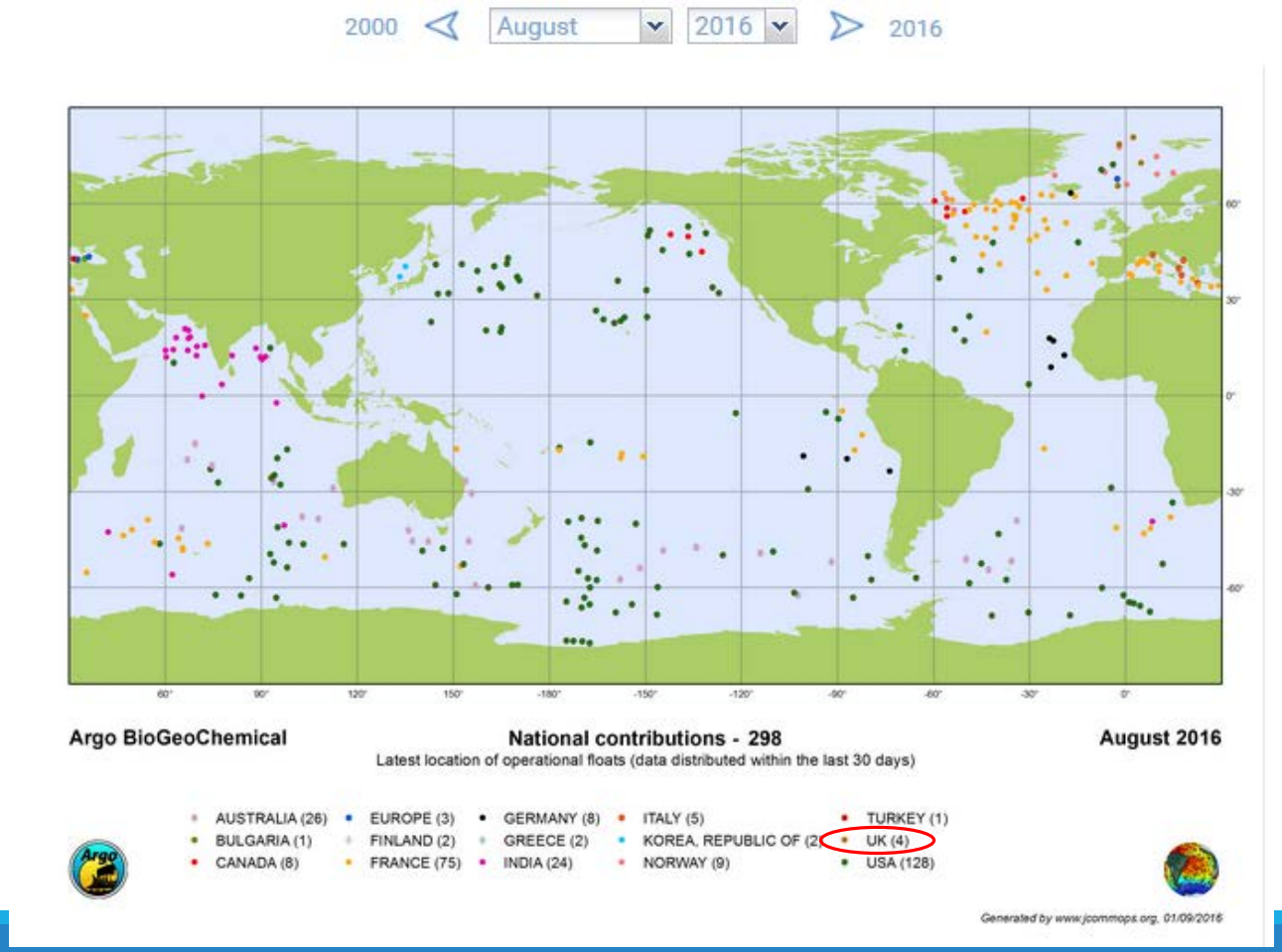


No Fluorometers in the mediterranean sea and in the North Atlantic ?

An issue with table 25 and table 27 ??

Is there an easy way to update the Table 25 and 27 ??

AIC – JCOMMOPS interaction



There should be a solution, to find floats That are working, even if their files are not completlety decoded by the DAC ?

Uk has 9 BGC floats profiling in the Atlantic Ocean

Size of the merge nc files, an issue ?

=> MBARI M file

~10 Mbytes after the floats have been in the water for order of 2.5 years

⟹Villefranche M file can be around ~ 1.2 Gbytes

Is it an issue ?

I tryed to compress a Mfile (*66)

20Mbytes => 300Kbytes

Do we need to store compressed Merge files ? Is it possible?

Configuration parameters to be filled

Mainly for DOXY and In air Calibration,

In metadata.nc files

CONFIG_<short_sensor_name>TimePressureOffset_seconds

- *Time interval between <short_sensor_name> and pressure measurements due to the fact that the <short_sensor_name> answer is not simultaneous with the CTD/pressure answer*
- *<short_sensor_name> can be: Optode, Ocr, Eco, Flbb, Flntu Crover, Suna, Stm, Cyc*

CONFIG_<short_sensor_name>VerticalPressureOffset_dbar

- *vertical pressure offset due to the fact that the sensor is not exactly at the Ctd pressure*
- *<short_sensor_name> can be: Optode, Ocr, Eco, Flbb, Flntu Crover, Suna, Stm, Cyc*

Summary

PREDEPLOYMENT_CALIB_xxx

QC=8

Multiple sensor management

JCOMMOPS INTERACTION

Size of the merge File