

Status of BGC-Argo data management

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Plan

- Introduction : Biogeochemical variables
- Adopting Argo rules
 - Tables (configuration parameters, technical parameters, parameter list)
 - Files Format
 - Processing and QC manual
 - Actual status of the documentation
- Development
 - Checking initiatives
 - DM TOOLS
- Web sites and Diffusion List

Six core Biogeochemical-Argo variables

Oxygen ^{1,3,4}

=> DOXY

Nitrate ^{1,4}

=> NITRATE

pH ^{1,4}

=> PH

Chlorophyll a ^{2,3,4}

=> CHLA

Backscattering ³

=> BBP<nnn>

Irradiance ^{3,4}

=> DOWN_IRR<nnn>

1 Essential Ocean Variables: EOVs:

2 Biological Ecosystem Ocean Variables : Biological eEOVs

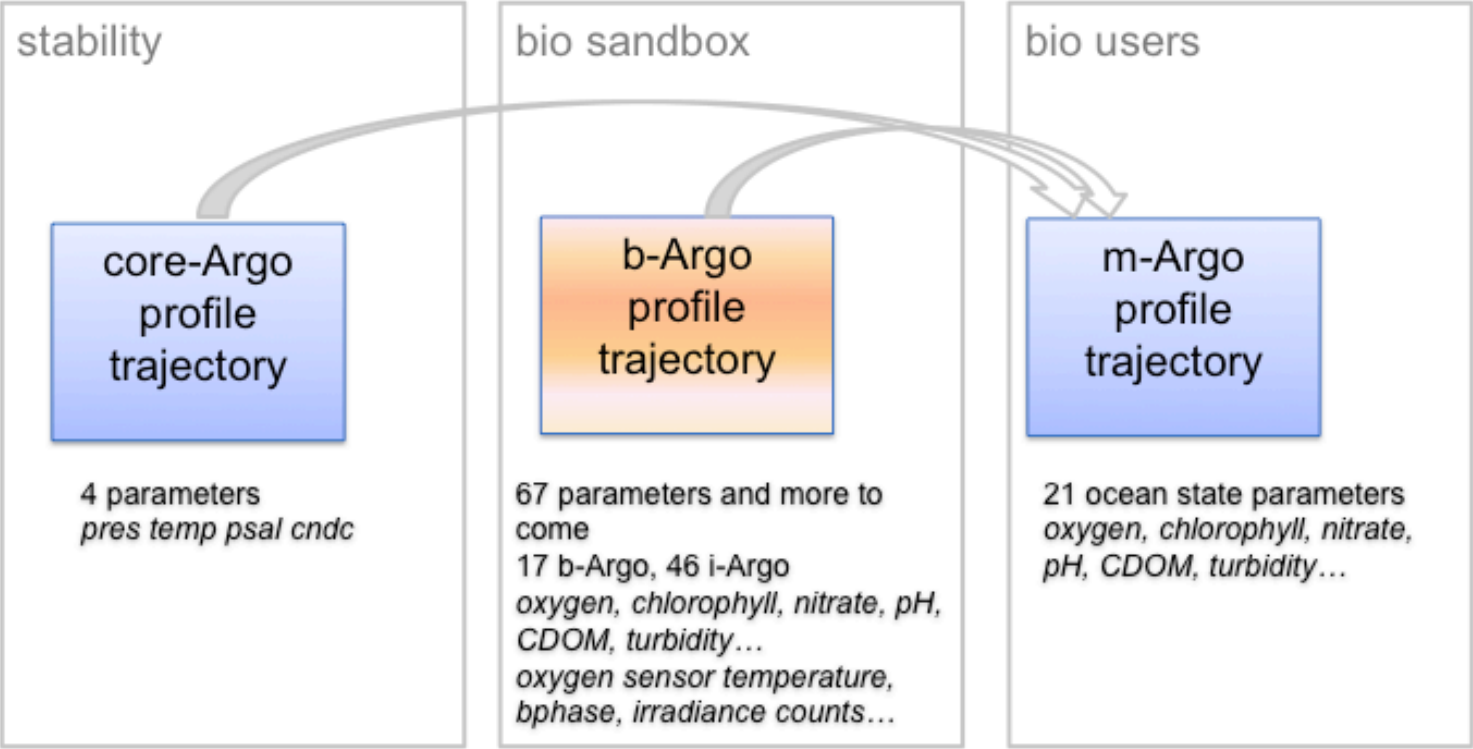
3 Biogeochemistry Ecosystem Ocean Variables: Biogeochemistry eEOVS

4 Essential Climate Variables (ECVs), either oceanic or atmospheric

Tables

- Argo physical parameters list: Core-Argo and BGC-Argo, February 2nd 2016
*Climate and Forecast Norm, SeaDataNet reference, units...
with Justin Buck (BODC)*
- Configuration parameter names, BGC-Argo, January 4th 2017
*ADMT14, Action 23 :Check the new Bio Argo configuration parameter table, to ensure that all their float types are covered.
alongside with Esmee Van Wijk (CSIRO) on the core configuration parameters*
- Technical parameters names, version 7.8, January 4th 2017
interact with Birgit Klein (BSH)

Argo formats 3.1 core/bio data



Nom	Taille	Date de modification
[répertoire parent]		
6901032_BRtraj.nc	5.1 MB	01/08/2016 13:57:00
6901032_Mprof.nc	22.9 MB	01/08/2016 14:44:00
6901032_Rtraj.nc	1.1 MB	01/08/2016 13:57:00
6901032_meta.nc	428 kB	20/12/2016 17:22:00
6901032_prof.nc	937 kB	01/08/2016 15:47:00
6901032_tech.nc	734 kB	01/08/2016 13:57:00
profiles/		01/08/2016 14:43:00

In profiles:
 BR6901032_001.nc
 BR6901032_001D.nc...
 MR6901032_001.nc
 MR6901032_001D.nc...
 R6901032_001.nc
 R6901032_001D.nc...

- [Details on User's manual, chapter 2.6 "B-Argo profile and trajectory format additional features"](#)

ADMT15, Ottawa 2014, Thierry Carval

Access the « best » version of a parameter

The data mode describes the data mode of the individual parameter :

- R : real time data
- A : real time data with adjusted values
- D : delayed mode data

Thus, to access the 'best' existing version of a parameter (<PARAM>) data, except PRES, the user should:

- Retrieve the data mode
 - from DATA_MODE(N_PROF) in a c-file
 - from PARAMETER_DATA_MODE(N_PROF, N_PARAM) in a b-file or a m-file
- Access the data:
 - If the data mode is 'R': In <PARAM>, <PARAM>_QC and PROFILE_<PARAM>_QC,
 - If the data mode is 'A' or 'D': In <PARAM>_ADJUSTED, <PARAM>_ADJUSTED_QC, PROFILE_<PARAM>_QC and <PARAM>_ADJUSTED_ERROR.

NB : In b-Argo profile files, the variable PARAMETER_DATA_MODE associated to the variable PRES is always 'R', as adjusted values provided for PRES are only stored in the core profile file.

Two quality control documents

During the ADMT16, it has been decided to split the Argo quality control manual in two manuals:

- Argo quality control manual for CTD and trajectory data, version 3, December 15th 2015: <http://dx.doi.org/10.13155/33951> (Annie)
(JULD, LATITUDE, LONGITUDE, PRES, TEMP, PSAL, TEMP, CNDC)
- Argo quality control Manual for biogeochemical data, version 1.0, March 1st 2016: <http://dx.doi.org/10.13155/40879> (Catherine)

It was published with the « warning message » suggested last year

Users should be aware that although biogeochemical data are now freely available at the Argo Global Data Assembly Centres (GDACs) along with their CTD data, the accuracy of these biogeochemical data at their raw state is not suitable for direct usage in scientific applications. Users are warned that the raw biogeochemical data should be treated with care, and that often, adjustments are needed before these data can be used for meaningful scientific applications.

Any user of these biogeochemical data that would develop a specific and dedicated adjustment improving their accuracy is welcome to exchange with ADMT on the developed and applied method

Cookbook and QC Manual

The idea is to have for every Biogeochemical PARAMETER:

- Bio-Argo processing chlorophyll-A concentration at the DAC level, September 2015
<http://dx.doi.org/10.13155/39468>
- Bio-Argo quality control manual for Chlorophyll-A concentration, version 1.0, December 2014
<http://dx.doi.org/10.13155/35385>

Basically data are made publically available in two QC modes :

=> “R” Real-time data (distributed in less than 24 hours) are quality-controlled and flagged using an automated procedure.

=> “D” Delayed-mode data are produced later (over 1 year) and require the control and validation by a scientific expert.

Publication and ADMT

Processing :

- BBP:
 - ✓ BETA is measured -> BBP is in the merge file
 - ✓ Scattering by pure seawater: Zhang et al., 2009
 - ✓ DOI and Matlab code stored on the Argo data management web site
- CHLA:
 - ✓ To be done : Roesler et al., 2016

Quality Control :

- CHLA:
 - ✓ Non photochemical Quenching (Xing et al., 2012)
 - ✓ To be done : CDOM contamination (Xing et al., 2016)
- Radiometry:
 - ✓ Organelli et al., 2016, but no agreement at ADMT

#	Processing at the DAC level	RT-QC	DM-QC
O ₂	DOI 10.13155/39795	DOI 10.13155/40879	DOI 10.13155/40879
NO ₃	DOI 10.13155/46121		
pH			
Chla	DOI 10.13155/39468	DOI 10.13155/35385	
b _{bp}	DOI 10.13155/39459		
Irradiance			

Legend	Done	On-going	To be done
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[Carval T. & al \(2015\). Argo user's manual V3.2. \[http://doi.org/10.13155/29825\]\(https://doi.org/10.13155/29825\)](https://doi.org/10.13155/29825)

[Schmechtig, C. Thierry, V. The Bio Argo Team \(2016\). Argo quality control manual for biogeochemical data. \[http://doi.org/10.13155/40879\]\(https://doi.org/10.13155/40879\)](https://doi.org/10.13155/40879)

Summary of Biogeochemical-Argo Meta Data and Profile Data Availability for CORIOLIS DAC

as of June 11, 2017

compiled by Henry Bittig, LOV, Villefranche-sur-Mer

1 CORIOLIS DAC summary

Number of CORIOLIS floats as identified from different sources

	CHLA	BBP	CDOM	DOXY	NITRATE	PH	DOWN_IRR	PAR	CP
total number of floats	134	132	115	303	42	—	118	118	15
JCOMMOPS	132	132	115	264	42	—	118	118	15
GDAC meta files	125	119	115	302	42	—	118	118	15
...pre-v3.1	6	—	—	66	—	—	—	—	—
...in v3.1	119	119	115	236	42	—	118	118	15
GDAC profile files	117	117	113	264	41	—	116	116	14
...pre-v3.1	—	—	—	41	—	—	—	—	—
...in v3.1	117	117	113	223	41	—	116	116	14
GDAC merge index	117	117	113	223	41	—	116	116	14

Henry Bittig, ADMT17, Tianjin

BBP: Austral Ocean check

Wetlabs Sensor	Measurements angle	Full Width at Half Maximum (FWHM)	Bandwidth	χ
MCOMS and SeaOWL UV-A	149°	20°	20nm	1.142*
Single Channel Sensors	124°	20°	20nm	1.076**
Dual Channel Sensors (FLbb, FLNTU)	142°	30°	20nm	1.097*
Three Channel Sensors	124°	20°	20nm	1.076**

Argo data management

Processing Bio-Argo particle backscattering at the DAC level

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Combined Three Channel Sensors	124°	20°	20nm	1.076**
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Table 1: Summary of all the WETLabs ECO sensors' characteristics for backscattering meters. (cf 5. Annexes) (* Mike Twardowski, Com. Pers) (** Sullivan et al., 2013)

in austral ocean we have :

- 3 type of floats (sbe, nke, wrc)
- 4 differents type of bbp sensors (ECO_FLBB, ECO_FLBBCD, ECO_FLBB_AP2, MCOMS_FLBBCD)
- 4 DACs (Incois, Coriolis, CSIRO, AOML)

Do we manage to get consistent data sets ??

Antoine Poteau, ADMT17, Tianjin

DM Tools development

Several developments are on going

- **Visual Control for DM QC**

ex : SCOOP (Coriolis/IFREMER Tool)

Scoop-Argo : visual quality control for Argo NetCDF data files

<http://doi.org/10.17882/48531>

- **Automated procedures**

ex : LOCODOX (Coriolis/IFREMER Tool) DM-QC for DOXY

=> Need to be Adapted for CHLA, BBP

ex: SAGE (MBARI Tool) DM-QC based on Neural Network (pH, NO3)

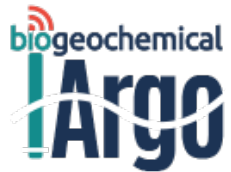
=> still in development



ARGO DATA MANAGEMENT

<http://www.argodatamgt.org/>

Argo user's manual, QC documents, technical and configuration parameters



BGC-Argo

<http://www.biogeochemical-argo.org/>

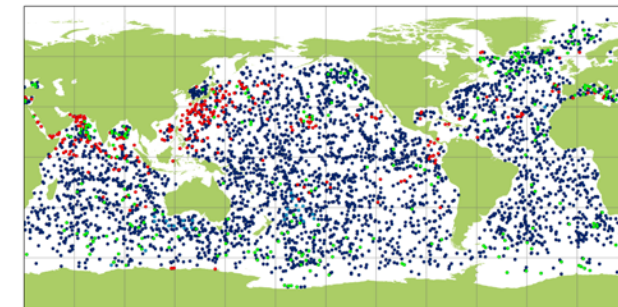
Meeting presentations, interactive BGC-Argo Map



AIC - JCOMMOPS

<http://www.jcommops.org/>

Maps, Metadata



Diffusion list :

argo-bio@jcommops.org

In project : a diffusion list for development