

Documentation

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>

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

Argo Quality Control Manual For Biogeochemical Data : philosophy

- As there are many different groups of experts in charge of the assessment of different biogeochemical data set, the Argo quality control manual for biogeochemical data:

=> should be considered as the cover document of all biogeochemical data quality control manuals.

=> presents the generic tests applied to biogeochemical data

=> provides links to documentations relative to each biogeochemical data reporting in detail all the quality control procedures (both generic and specific tests).

This philosophy allows different groups in charge of different biogeochemical data sets to write the quality control procedures

=> Update in July 2016, to write the Argo quality control Manual for Dissolved oxygen concentration

Argo Quality Control Manual For Biogeochemical Data : history and reference

History

Date (dd/mmm/yyyy)	Comment
10/Nov/2015	Creation of the document by Virginie, Henry, Catherine, and Annie.
1/March/2016	Version 1.0
8/july/2016	Creation of a DOXY QC manual

Reference Documents

Reference N°	Title	Link
#RD1	Argo Quality Control Manual for CTD and Trajectory Data	http://dx.doi.org/10.13155/33951
#RD2	Argo Quality Control Manual for Biogeochemical Data	http://dx.doi.org/10.13155/40879
#RD3	Argo user manual	http://dx.doi.org/10.13155/29825
#RD4	Bio-Argo quality control manual for Chlorophyll-A concentration	http://dx.doi.org/10.13155/35385
#RD5	Quality control for Bio-Argo particle backscattering	TBD
#RD6	Quality control manual for radiometry	TBD
#RD7	Quality control manual fo Nitrate concentration	TBD
#RD8	Quality control manual for CDOM	TBD
#RD9	Quality control manual for Dissolved oxygen concentration	TBD

Test number	Test name	Type of parameter involved ('c', 'i', 'b')
1	Platform Identification	all
2	Impossible Date Test	all
3	Impossible Location Test	all
4	Position on Land Test	all
5	Impossible Speed Test	all
6	Global Range Test	all
7	Regional Range Test	'c' and 'i'
8	Pressure Increasing Test	'c'
9	Spike Test	all
10	Top and Bottom Spike Test : removed	n/a
11	Gradient Test	all
12	Digit Rollover Test	'c' and 'i'
13	Stuck Value Test	all
14	Density Inversion	'c'
15	Grey List	all
16	Gross salinity or temperature sensor drift	'c' and 'i'
17	Visual QC	all
18	Frozen profile	'c' and 'i'
19	Deepest pressure test	all
20	Questionable Argos position test	all
21	Near-surface unpumped CTD salinity test	'c'
22	Near-surface mixed air/water test	all
23	Real-time Quality Control Flag Scheme for float data deeper than 2000 dbar	all
24 to 56	Not used	
57	DOXY specific test	'b'
58	CDOM specific test	'b'
59	NITRATE specific test	'b'
60	PAR specific test	'b'
61	IRRADIANCE specific test	'b'
62	BBP specific tests	'b'
63	CHLA specific tests	'b'



Generic Tests are described in the cover document



Specific Tests are described in the document dedicated to the parameter

Argo quality control Manual : Introduction

This document describes two levels of quality control:

- The first level is the real-time system that performs a set of agreed automatic checks.
 - Adjustment in real-time can also be performed and the real-time system can evaluate quality flags for adjusted fields
- The second level is the delayed-mode quality control system.

In b-Argo profile files, biogeochemical parameters can receive adjustments at different times. Therefore the variable `PARAMETER_DATA_MODE` (`N_PROF`, `N_PARAM`) is added to b-Argo profile files to indicate the data mode of each `<PARAM>` in each `N_PROF`.

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

Argo quality control Manual : Introduction (2) get the data

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

1. Retrieve the data mode of the <PARAM> parameter (from DATA_MODE(N_PROF) in a c-file and from PARAMETER DATA MODE(N_PROF, N_PARAM) in a b-file or a m-file),
2. 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.

Note that the data mode of a I-Argo parameter may depend on the DAC decision to include or not adjusted fields for I-Argo parameters in the b-Argo profile file:

- If <PARAM>_ADJUSTED, <PARAM>_ADJUSTED_QC and <PARAM>_ADJUSTED_ERROR are present in the file, the data mode of the I-Argo parameter can be 'R', 'A' or 'D',
- If not, the data mode of the I-Argo parameter should always be 'R'.

Argo quality control Manual : Contents

1. Real Time quality control for DOXY and associated intermediate Parameter « R »
 1. Real Time quality control for vertical profiles
 2. Real time quality control for trajectories
 3. Real time quality control for Near surface data
 4. Real time quality control for Deep data
2. Real Time quality control for data adjusted in Real Time « A »
3. Delayed mode quality control « D »