Argo auxiliary files format for the Coriolis DAC

Version 1.2
January 5th, 2024

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History of the document

Version	Date	Comment
1.0	09/02/2017	JP Rannou : creation of the document
1.1	08/06/2017	JP Rannou : DATA_CENTER added in TECH_AUX format (to fit with Matlab decoder version '012b')
	17/02/2021	FLOAT_META_DATA_VALUE(N_FLOAT_META_DATA, STRING4096) instead of FLOAT_META_DATA_VALUE(N_FLOAT_META_DATA, STRING512)
1.2	05/01/2024	JP Rannou : added version 2.0 of metadata file format

Reference documents

Reference#	Title	Link
RD1	Argo user's manual	http://dx.doi.org/10.13155/29825

1   Introduction

This document describes the format of the NetCDF files produced by the Coriolis DAC to store auxiliary data.

Auxiliary data are transmitted by Argo floats (or computed from transmitted data) but are too specific or outside the framework of Argo to be stored in the Argo NetCDF files.

The Argo floats of the Coriolis DAC produce up to four NetCDF files types (depending on float type, version and configuration):

- A meta data file
- A technical data file
- Individual profile data files
- A trajectory data file

The Argo user's manual [RD1] should be read and understood before the present one.

2   Formats description

2.1   Metadata file format versions 1.0 and 2.0

There are two versions of metadata file format: 1.0 and 2.0. They only differ by the type of LAUNCH_CONFIG_PARAMETER_VALUE and CONFIG_PARAMETER_VALUE variables which is 'double' in version 1.0 and 'char' in version 2.0.

2.1.1   Global attributes

global attributes:
    :title = "Argo float auxiliary metadata file"
    :institution = "CORIOLIS"
    :source = "Argo float"
    :history = "2017-02-09T08:53:53Z creation; 2017-02-09T09:06:47Z last update (coriolis float real time data processing)"
    :references = " "
    :user_manual_version = "1.0"
    :Conventions = "CF-1.6 Coriolis-Argo-Aux-1.0" or "CF-1.6 Coriolis-Argo-Aux-2.0"

Global attribute name	Definition
title	A succinct description of what is in the dataset.
institution	Specifies where the original data was produced.
source	The method of production of the original data. If it was model-generated, source should name the model and its version, as specifically as could be useful. If it is observational, source should characterize it (e.g., "surface observation" or "radiosonde").
history	Provides an audit trail for modifications to the original data. Well-behaved generic NetCDF filters will automatically append their name and the parameters with which they were invoked to the global history attribute of an input NetCDF file. We recommend that each line begin with a timestamp indicating the date and time of day that the program was executed.
references	Published or web-based references that describe the data or methods used to produce it.
user_manual_version	The version number of the user manual.
Conventions	The conventions supported by this file, blank separated.

2.1.2 Dimensions and definitions

Name	Definition	Comment
DATE_TIME	DATE_TIME = 14	This dimension is the length of an ASCII date and time value. Date_time convention is : YYYYMMDDHHMISS YYYY : year MM : month DD : day HH : hour of the day MI : minutes SS : seconds Date and time values are always in universal time coordinates (UTC). Examples : 20010105172834 : January 5th 2001 17:28:34 19971217000000 : December 17th 1997 00:00:00
STRING4096 STRING1024 STRING512 STRING256 STRING128 STRING64 STRING32 STRING16 STRING8 STRING4	STRING4096 = 4096 STRING1024 = 1024 STRING512 = 512 STRING256 = 256 STRING128 = 128 STRING64 = 64 STRING32 = 32 STRING16 = 16 STRING8 = 8 STRING4 = 4	String dimensions.
N_FLOAT_META_DATA	N_FLOAT_META_DATA = <int value>	Number of additional miscellaneous meta data.
N_STATIC_CONFIG_PARAM	N_STATIC_CONFIG_PARAM = <int value>	Number of static configuration parameters.
N_LAUNCH_CONFIG_PARAM	N_LAUNCH_CONFIG_PARAM = <int value>	Number of pre-deployment or launch configuration parameters.
N_CONFIG_PARAM	N_CONFIG_PARAM = <int value>	Number of configuration parameters.
N_SENSOR	N_SENSOR = <int value>	Number of sensors mounted on the float and used to measure the parameters.
N_PARAM	N_PARAM = <int value>	Number of parameters measured or calculated for a pressure sample.
N_MISSIONS	N_MISSIONS = UNLIMITED	Number of missions.

2.1.3 General information on the meta-data file

This section contains information about the whole file.

Name	Definition	Comment
DATA_TYPE	char DATA_TYPE(STRING16) DATA_TYPE:long_name = "Data type" DATA_TYPE:conventions = "Reference table AUX_1" DATA_TYPE:_FillValue = " "	This field contains the type of data contained in the file. The list of acceptable data types is in the reference table AUX_1.
FORMAT_VERSION	char FORMAT_VERSION(STRING4) FORMAT_VERSION:long_name = "File format version" FORMAT_VERSION:_FillValue = " "	File format version. Example : «1.0»
DATE_CREATION	char DATE_CREATION(DATE_TIME) DATE_CREATION:long_name = "Date of file creation" DATE_CREATION:conventions = "YYYYMMDDHHMISS" DATE_CREATION:_FillValue = " "	Date and time (UTC) of creation of this file. Format : YYYYMMDDHHMISS Example : 20011229161700 : December 29th 2001 16:17:00
DATE_UPDATE	char DATE_UPDATE(DATE_TIME) DATE_UPDATE:long_name = "Date of update of this file" DATE_UPDATE:conventions = "YYYYMMDDHHMISS" DATE_UPDATE:_FillValue = " "	Date and time (UTC) of update of this file. Format : YYYYMMDDHHMISS Example : 20011230090500 : December 30th 2001 09:05:00

2.1.4   Float characteristics

This section contains the main characteristics of the float.

Name	Definition	Comment
PLATFORM_NUMBER	char PLATFORM_NUMBER(STRING8) PLATFORM_NUMBER:long_name = "Float unique identifier" PLATFORM_NUMBER:conventions = "WMO float identifier : A9IIIII" PLATFORM_NUMBER:_FillValue = " "	WMO float identifier. WMO is the World Meteorological Organization. This platform number is unique. Example : 6900045
FLOAT_SERIAL_NO	char FLOAT_SERIAL_NO(STRING32) FLOAT_SERIAL_NO:long_name = "Serial number of the float" FLOAT_SERIAL_NO:_FillValue = " "	This field should contain only the serial number of the float. Example 1679
DATA_CENTRE	char DATA_CENTRE(STRING2) DATA_CENTRE:long_name = "Data centre in charge of float data processing" DATA_CENTRE:conventions = "Argo reference table 4" DATA_CENTRE:_FillValue = " "	Code of the data centre in charge of the float data management. The data centre codes are described in the Argo reference table 4. Example : IF for Ifremer

The following variables are used to store additional miscellaneous metadata that are part of float characteristics.

Name	Definition	Comment
FLOAT_META_DATA_NAME	char FLOAT_META_DATA_NAME(N_FLOAT_META_DATA, STRING128) FLOAT_META_DATA_NAME:long_name = "Name of miscellaneous float metadata" FLOAT_META_DATA_NAME:_FillValue = " "	Name of miscellaneous float metadata.
FLOAT_META_DATA_VALUE	char FLOAT_META_DATA_VALUE(N_FLOAT_META_DATA, STRING4096) FLOAT_META_DATA_VALUE:long_name = "Value of miscellaneous float metadata" FLOAT_META_DATA_VALUE:_FillValue = " "	Value of miscellaneous float metadata.
FLOAT_META_DATA_DESCRIPTION	char FLOAT_META_DATA_DESCRIPTION (N_FLOAT_META_DATA, STRING1024) FLOAT_META_DATA_DESCRIPTION:long_name = "Description of miscellaneous float metadata" FLOAT_META_DATA_DESCRIPTION:_FillValue = " "	Description of miscellaneous float metadata.

2.1.5   Configuration parameters

This section describes the configuration parameters for a float. It is important to note that configuration parameters are float settings, not measurements reported by the float.

Configuration parameters may or may not be reported by a float.

Configuration parameter names are identified by the "CONFIG" prefix.

2.1.5.1   Static configuration parameters

Static configuration parameters are set before deployment; they could not be modified at sea once the float started its mission.

Name	Definition	Comment
STATIC_CONFIG_PARAMETER_NAME	char STATIC_CONFIG_PARAMETER_NAME(N_STATIC_CONFIG_PARAM, STRING128) STATIC_CONFIG_PARAMETER_NAME:long_name = "Name of static parameter" STATIC_CONFIG_PARAMETER_NAME:_FillValue = " "	Name of static configuration parameter.
STATIC_CONFIG_PARAMETER_VALUE	char STATIC_CONFIG_PARAMETER_VALUE(N_STATIC_CONFIG_PARAM, STRING128) STATIC_CONFIG_PARAMETER_VALUE:long_name = "Value of static parameter" STATIC_CONFIG_PARAMETER_VALUE:_FillValue = " "	Value of static configuration parameter.
STATIC_CONFIG_PARAMETER_DESCRIPTION	char STATIC_CONFIG_PARAMETER_DESCRIPTION(N_STATIC_CONFIG_PARAM, STRING1024) STATIC_CONFIG_PARAMETER_DESCRIPTION:long_name = "Description of static parameter" STATIC_CONFIG_PARAMETER_DESCRIPTION:_FillValue = " "	Description of static configuration parameter.

2.1.5.2   Launch configuration parameters for format version 1.0

Launch configuration parameters are set before deployment; they could be modified at sea once the float started its mission.

Name	Definition	Comment
LAUNCH_CONFIG_PARAMETER_NAME	char LAUNCH_CONFIG_PARAMETER_NAME(N_LAUNCH_CONFIG_PARAM, STRING128) LAUNCH_CONFIG_PARAMETER_NAME:long_name = "Name of configuration parameter at launch" LAUNCH_CONFIG_PARAMETER_NAME:_FillValue = " "	Name of configuration parameter at launch.
LAUNCH_CONFIG_PARAMETER_VALUE	double LAUNCH_CONFIG_PARAMETER_VALUE(N_LAUNCH_CONFIG_PARAM) LAUNCH_CONFIG_PARAMETER_VALUE:long_name = "Value of configuration parameter at launch" LAUNCH_CONFIG_ PARAMETER_VALUE:_FillValue = 999999	Value of configuration parameter at launch.
LAUNCH_CONFIG_PARAMETER_DESCRIPTION	char LAUNCH_CONFIG_PARAMETER_DESCRIPTION(N_LAUNCH_CONFIG_PARAM, STRING1024) LAUNCH_CONFIG_PARAMETER_DESCRIPTION:long_name = "Description of configuration parameter at launch" LAUNCH_CONFIG_PARAMETER_DESCRIPTION:_FillValue = " "	Description of configuration parameter at launch.

2.1.5.3   Launch configuration parameters for format version 2.0

Launch configuration parameters are set before deployment; they could be modified at sea once the float started its mission.

Name	Definition	Comment
LAUNCH_CONFIG_PARAMETER_NAME	char LAUNCH_CONFIG_PARAMETER_NAME(N_LAUNCH_CONFIG_PARAM, STRING128) LAUNCH_CONFIG_PARAMETER_NAME:long_name = "Name of configuration parameter at launch" LAUNCH_CONFIG_PARAMETER_NAME:_FillValue = " "	Name of configuration parameter at launch.
LAUNCH_CONFIG_PARAMETER_VALUE	char LAUNCH_CONFIG_PARAMETER_VALUE(N_LAUNCH_CONFIG_PARAM, STRING128) LAUNCH_CONFIG_PARAMETER_VALUE:long_name = "Value of configuration parameter at launch" LAUNCH_CONFIG_ PARAMETER_VALUE:_FillValue = " "	Value of configuration parameter at launch.
LAUNCH_CONFIG_PARAMETER_DESCRIPTION	char LAUNCH_CONFIG_PARAMETER_DESCRIPTION(N_LAUNCH_CONFIG_PARAM, STRING1024) LAUNCH_CONFIG_PARAMETER_DESCRIPTION:long_name = "Description of configuration parameter at launch" LAUNCH_CONFIG_PARAMETER_DESCRIPTION:_FillValue = " "	Description of configuration parameter at launch.

2.1.5.4   Modified configuration parameters for format version 1.0

These configuration parameters are part of configuration parameters at launch that have been modified at sea during the float mission.

Name	Definition	Comment
CONFIG_PARAMETER_NAME	char CONFIG_PARAMETER_NAME(N_CONFIG_PARAM, STRING128) CONFIG_PARAMETER_NAME:long_name = "Name of configuration parameter" CONFIG_PARAMETER_NAME:_FillValue = " "	Name of configuration parameter.
CONFIG_PARAMETER_VALUE	double CONFIG_PARAMETER_VALUE(N_MISSIONS, N_CONFIG_PARAM) CONFIG_PARAMETER_VALUE:long_name = "Value of configuration parameter" CONFIG_PARAMETER_VALUE:_FillValue = 999999	Value of configuration parameter.
CONFIG_MISSION_NUMBER	int CONFIG_MISSION_NUMBER(N_MISSIONS) CONFIG_MISSION_NUMBER:long_name = "Unique number denoting the missions performed by the float" CONFIG_MISSION_NUMBER:conventions = "1...N, 1 : first complete mission" CONFIG_MISSION_NUMBER:_FillValue = 99999	Unique number of the mission to which this parameter belongs.
CONFIG_MISSION_COMMENT	char CONFIG_MISSION_COMMENT(N_MISSIONS, STRING256) CONFIG_MISSION_COMMENT:long_name = "Comment on configuration" CONFIG_MISSION_COMMENT:_FillValue = " "	Comment on this configuration mission. Example : "This mission follows a 1000 dbar meddie during parking"

2.1.5.5   Modified configuration parameters for format version 2.0

These configuration parameters are part of configuration parameters at launch that have been modified at sea during the float mission.

Name	Definition	Comment
CONFIG_PARAMETER_NAME	char CONFIG_PARAMETER_NAME(N_CONFIG_PARAM, STRING128) CONFIG_PARAMETER_NAME:long_name = "Name of configuration parameter" CONFIG_PARAMETER_NAME:_FillValue = " "	Name of configuration parameter.
CONFIG_PARAMETER_VALUE	char CONFIG_PARAMETER_VALUE(N_MISSIONS, N_CONFIG_PARAM, STRING128) CONFIG_PARAMETER_VALUE:long_name = "Value of configuration parameter" CONFIG_PARAMETER_VALUE:_FillValue = " "	Value of configuration parameter.
CONFIG_MISSION_NUMBER	int CONFIG_MISSION_NUMBER(N_MISSIONS) CONFIG_MISSION_NUMBER:long_name = "Unique number denoting the missions performed by the float" CONFIG_MISSION_NUMBER:conventions = "1...N, 1 : first complete mission" CONFIG_MISSION_NUMBER:_FillValue = 99999	Unique number of the mission to which this parameter belongs.
CONFIG_MISSION_COMMENT	char CONFIG_MISSION_COMMENT(N_MISSIONS, STRING256) CONFIG_MISSION_COMMENT:long_name = "Comment on configuration" CONFIG_MISSION_COMMENT:_FillValue = " "	Comment on this configuration mission. Example : "This mission follows a 1000 dbar meddie during parking"

2.1.6   Float sensor information

This section contains information about the sensors of the profiler.

Name	Definition	Comment
SENSOR	char SENSOR(N_SENSOR, STRING32) SENSOR:long_name = "Name of the sensor mounted on the float" SENSOR:conventions = "Reference table AUX_25" SENSOR:_FillValue = " "	Names of the sensor mounted on the float.
SENSOR_MAKER	char SENSOR_MAKER(N_SENSOR, STRING256) SENSOR_MAKER:long_name = "Name of the sensor manufacturer" SENSOR_MAKER:conventions = "Reference table AUX_26" SENSOR_MAKER:_FillValue = " "	Name of the sensor manufacturer.
SENSOR_MODEL	char SENSOR_MODEL(N_SENSOR, STRING256) SENSOR_MODEL:long_name = "Type of sensor" SENSOR_MODEL:conventions = "Reference table AUX_27" SENSOR_MODEL:_FillValue = " "	Model of the sensor.
SENSOR_SERIAL_NO	char SENSOR_SERIAL_NO(N_SENSOR, STRING16) SENSOR_SERIAL_NO:long_name = "Serial number of the sensor" SENSOR_SERIAL_NO:_FillValue = " "	Serial number of the sensor.

2.1.6.1 Float parameter information

This section contains information about the parameters measured by the profiler or derived from profiler measurements.

Name	Definition	Comment
PARAMETER	char PARAMETER(N_PARAM, STRING64) PARAMETER:long_name = "Name of parameter computed from float measurements" PARAMETER:conventions = "Reference table AUX_3a" PARAMETER:_FillValue = " "	Name of the parameter measured by float sensors or derived from float measurements.
PARAMETER_SENSOR	char PARAMETER_SENSOR(N_PARAM, STRING128) PARAMETER_SENSOR:long_name = "Name of the sensor that measures this parameter" PARAMETER_SENSOR:conventions = "Reference table AUX_25" PARAMETER_SENSOR:_FillValue = " "	Name of the sensor that measured the float parameter.
PARAMETER_UNITS	char PARAMETER_UNITS(N_PARAM, STRING32) PARAMETER_UNITS:long_name = "Units of value, accuracy and resolution of the parameter" PARAMETER_UNITS:_FillValue = " "	Units of value, accuracy and resolution of the parameter.
PARAMETER_ACCURACY	char PARAMETER_ACCURACY(N_PARAM, STRING32) PARAMETER_ACCURACY:long_name = "Accuracy of the parameter" PARAMETER_ACCURACY:_FillValue = " "	Accuracy of the parameter.
PARAMETER_RESOLUTION	char PARAMETER_RESOLUTION(N_PARAM, STRING32) PARAMETER_RESOLUTION:long_name = "Resolution of the parameter" PARAMETER_RESOLUTION:_FillValue =" "	Resolution of the parameter returned by the sensor (note that this is not necessarily equivalent to the resolution of the parameter returned by the float through telemetry).

2.1.7 Float calibration information

This section contains information about the calibration of the profiler. The calibration described in this section is an instrumental calibration. The delayed mode calibration, based on a data analysis is described in the profile format.

Name	Definition	Comment
PREDEPLOYMENT_CALIB _EQUATION	char PREDEPLOYMENT_CALIB_EQUATION(N_PARAM, STRING4096) PREDEPLOYMENT_CALIB_EQUATION:long_name = "Calibration equation for this parameter" PREDEPLOYMENT_CALIB_EQUATION:_FillValue = " "	Calibration equation for this parameter.
PREDEPLOYMENT_CALIB_COEFFICIENT	char PREDEPLOYMENT_CALIB_COEFFICIENT(N_PARAM, STRING4096) PREDEPLOYMENT_CALIB_COEFFICIENT:long_name = "Calibration coefficients for this equation" PREDEPLOYMENT_CALIB_COEFFICIENT:_FillValue = " "	Calibration coefficients for this equation.

PREDEPLOYMENT_CALIB_COMMENT	char PREDEPLOYMENT_CALIB_COMMENT(N_PARAM, STRING4096) PREDEPLOYMENT_CALIB_COMMENT:long_name = "Comment applying to this parameter calibration" PREDEPLOYMENT_CALIB_COMMENT:_FillValue = " "	Comments applying to this parameter calibration.

2.2 Technical data file format

2.2.1 Global attributes

global attributes:
    :title = "Argo float auxiliary technical data file"
    :institution = "CORIOLIS"
    :source = "Argo float"
    :history = "2017-02-09T09:06:42Z creation; 2017-02-09T09:06:42Z last update (coriolis float real time data processing)"
    :references = " "
    :user_manual_version = "1.0"
    :Conventions = "CF-1.6 Coriolis-Argo-Aux-1.0"

Global attribute name	Definition
title	A succinct description of what is in the dataset.
institution	Specifies where the original data was produced.
source	The method of production of the original data. If it was model-generated, source should name the model and its version, as specifically as could be useful. If it is observational, source should characterize it (e.g., "surface observation" or "radiosonde").
history	Provides an audit trail for modifications to the original data. Well-behaved generic NetCDF filters will automatically append their name and the parameters with which they were invoked to the global history attribute of an input NetCDF file. We recommend that each line begin with a timestamp indicating the date and time of day that the program was executed.
references	Published or web-based references that describe the data or methods used to produce it.
user_manual_version	The version number of the user manual.
Conventions	The conventions supported by this file, blank separated.

2.2.2 Dimensions and definitions

Name	Definition	Comment
DATE_TIME	DATE_TIME = 14	This dimension is the length of an ASCII date and time value. Date and time values are always in universal time coordinates (UTC). Date_time convention is : YYYYMMDDHHMISS YYYY : year MM : month DD : day HH : hour of the day MI : minutes SS : seconds Examples : 20010105172834 : January 5th 2001 17:28:34 19971217000000 : December 17th 1997 00:00:00
STRING1024 STRING256 STRING64 STRING32 STRING8 STRING4 STRING2	STRING1024 = 1024 STRING256 = 256 STRING64 = 64 STRING32 = 32 STRING8 = 8 STRING4 = 4 STRING2 = 2	String dimensions.
N_TECH_AUX_LABEL	N_TECH_AUX_LABEL = <int value>	Number of auxiliary technical labels.

N_TECH_MEAS_PARAM	N_TECH_MEAS_PARAM = <int value>	Number of technical parameters providing series of measurements.
N_TECH_MEASUREMENT	N_TECH_MEASUREMENT = <int value>	Number of technical parameter measurements.
N_TECH_PARAM	N_TECH_PARAM = UNLIMITED	Number of technical parameters.

2.2.3 General information on the technical data file

This section contains information about the technical data file itself.

Name	Definition	Comment
PLATFORM_NUMBER	char PLATFORM_NUMBER(STRING8) PLATFORM_NUMBER:long_name = "Float unique identifier" PLATFORM_NUMBER:conventions = "WMO float identifier : A9IIIII" PLATFORM_NUMBER:_FillValue = " "	WMO float identifier. WMO is the World Meteorological Organization. This platform number is unique. Example : 6900045
DATA_TYPE	char DATA_TYPE(STRING32) DATA_TYPE:long_name = "Data type" DATA_TYPE:conventions = "Reference table AUX_1" DATA_TYPE:_FillValue = " "	This field contains the type of data contained in the file. The list of acceptable data types is in the reference table AUX_1.
FORMAT_VERSION	char FORMAT_VERSION(STRING4) FORMAT_VERSION:long_name = "File format version" FORMAT_VERSION:_FillValue = " "	File format version Example : «1.0»
REFERENCE_DATE_TIME	char REFERENCE_DATE_TIME(DATE_TIME) REFERENCE_DATE_TIME:long_name = "Date of reference for Julian days" REFERENCE_DATE_TIME:conventions = "YYYYMMDDHHMISS" REFERENCE_DATE_TIME:_FillValue = " "	Date of reference for julian days. The recommended reference date time is "19500101000000" : January 1st 1950 00:00:00
TECHNICAL_MEASUREMENT_PARAMETERS	char TECHNICAL_MEASUREMENT_PARAMETERS(N_TECH_MEAS_PARAM, STRING64) TECHNICAL_MEASUREMENT_PARAMETERS:long_name = "List of available technical parameters for the station" TECHNICAL_MEASUREMENT_PARAMETERS:conventions = "Reference table AUX_3b" TECHNICAL_MEASUREMENT_PARAMETERS:_FillValue = " "	List of available technical parameters for the station.
DATA_CENTRE	char DATA_CENTRE(STRING2) DATA_CENTRE:long_name = "Data centre in charge of float data processing" DATA_CENTRE:conventions = "Argo reference table 4" DATA_CENTRE:_FillValue = " "	Code of the data centre in charge of the float data management. The data centre codes are described in the Argo reference table 4. Example : IF for Ifremer
DATE_CREATION	char DATE_CREATION(DATE_TIME) DATE_CREATION:long_name = "Date of file creation" DATE_CREATION:conventions = "YYYYMMDDHHMISS" DATE_CREATION:_FillValue = " "	Date and time (UTC) of creation of this file. Format : YYYYMMDDHHMISS Example : 20011229161700 : December 29th 2001 16 :17 :00
DATE_UPDATE	char DATE_UPDATE(DATE_TIME)	Date and time (UTC) of update of this file.

DATE_UPDATE:long_name = "Date of update of this file" DATE_UPDATE:conventions = "YYYYMMDDHHMISS" DATE_UPDATE:_FillValue = " "	Format : YYYYMMDDHHMISS Example : 20011230090500 : December 30th 2001 09 :05 :00

2.2.4 Technical data

Technical data of each profile can be reported by the float as:

- A set of unique technical measurements (at most one measurement of each technical parameter for each profile),
- A series of parameter measurements (for each profile).

2.2.4.1 Set of unique technical measurement

This section contains a set of technical data for each profile.

For each cycle, for each technical parameter, the name of the parameter and the value of the parameter are recorded.

The parameter name and its value are recorded as strings of 256 characters.

Name	Definition	Comment
TECHNICAL_PARAMETER_NAME	char TECHNICAL_PARAMETER_NAME(N_TECH_PARAM, STRING256) TECHNICAL_PARAMETER_NAME:long_name="Name of technical parameter" TECHNICAL_PARAMETER_NAME:_FillValue = " "	Name of the technical parameter. The list of technical parameter names is provided through the TECH_AUX_PARAM_LABEL variable.
TECHNICAL_PARAMETER_VALUE	char TECHNICAL_PARAMETER_VALUE(N_TECH_PARAM, STRING256) TECHNICAL_PARAMETER_VALUE:long_name="Value of technical parameter" TECHNICAL_PARAMETER_VALUE:_FillValue = " "	Value of the technical parameter. Example : "125049"
CYCLE_NUMBER	int CYCLE_NUMBER(N_TECH_PARAM) CYCLE_NUMBER:long_name = "Float cycle number" CYCLE_NUMBER:conventions = "0...N, 0 : launch cycle (if exists), 1 : first complete cycle" CYCLE_NUMBER:_FillValue = 99999	Cycle number of the technical parameter. Example : 157

Technical parameter names are identified by the "TECH" prefix, their descriptions are provided by the following variables.

Name	Definition	Comment
TECH_AUX_PARAM_LABEL	char TECH_AUX_PARAM_LABEL(N_TECH_AUX_LABEL, STRING256) TECH_AUX_PARAM_LABEL:long_name = "Name of auxiliary technical parameter label used by this float type and version" TECH_AUX_PARAM_LABEL:_FillValue = " "	Name of auxiliary technical parameter label used by this float type and version.
TECH_AUX_PARAM_DESCRIPTION	char TECH_AUX_PARAM_DESCRIPTION(N_TECH_AUX_LABEL, STRING1024) TECH_AUX_PARAM_DESCRIPTION:long_name = "Description of auxiliary	Description of auxiliary technical parameter label used by this float type and version.

	technical parameter label used by this float type and version" TECH_AUX_PARAM_DESCRIPTION:_FillValue = " "	

2.2.4.2 Series of technical parameter measurements

This section contains a series of technical parameter measurements for each profile.

Name	Definition	Comment
JULD	double JULD(N_TECH_MEASUREMENT) JULD:long_name = "Julian day (UTC) of each measurement relative to REFERENCE_DATE_TIME" JULD:standard_name = "time" JULD:units = "days since 1950-01-01 00:00:00 UTC" JULD:conventions = "Relative julian days with decimal part (as parts of day)" JULD:resolution = <X> JULD:_FillValue = 999999. JULD:axis = "T"	Julian day of the measurement. The integer part represents the day, the decimal part represents the time of the measurement. Date and time are in universal time coordinates. The julian day is relative to REFERENCE_DATE_TIME. Example : 18833.8013889885 : July 25 2001 19:14:00 <X>: these field depends on float type and version.
JULD_STATUS	char JULD_STATUS(N_TECH_MEASUREMENT) JULD_STATUS:long_name="Status of the date and time" JULD_STATUS:conventions = "Argo reference table 19" JULD_STATUS:_FillValue = " "	Status flag on JULD date and time. The flag scale is described in the Argo reference table 19. Example: 2 : Value is transmitted by the float
JULD_QC	char JULD_QC(N_TECH_MEASUREMENT) JULD_QC:long_name = "Quality on date and time" JULD_QC:conventions = "Argo reference table 2" JULD_QC:_FillValue = " "	Quality flag on JULD date and time. The flag scale is described in the Argo reference table 2. Example : 1: the date and time seems correct.
JULD_ADJUSTED	double JULD_ADJUSTED(N_TECH_MEASUREMENT) JULD_ADJUSTED:long_name = "Adjusted julian day (UTC) of each measurement relative to REFERENCE_DATE_TIME" JULD_ADJUSTED:standard_name = "time" JULD_ADJUSTED:units = "days since 1950-01-01 00:00:00 UTC" JULD_ADJUSTED:conventions = "Relative julian days with decimal part (as parts of day)" JULD_ADJUSTED:resolution = <X> JULD_ADJUSTED:_FillValue = 999999. JULD:axis = "T"	Adjusted julian day of the measurement. The integer part represents the day, the decimal part represents the time of the measurement. Date and time are in universal time coordinates. The julian day is relative to REFERENCE_DATE_TIME. The date may be adjusted due to float clock drift or expert review. Example: 18833.8013889885 : July 25 2001 19:14:00 <X>: these field depends on float type and version.
JULD_ADJUSTED_STATUS	char JULD_ADJUSTED_STATUS(N_TECH_MEASUREMENT JULD_ADJUSTED_STATUS:long_name=" Status of the JULD_ADJUSTED date" JULD_ADJUSTED_STATUS:conventions = "Argo reference table 19" JULD_ADJUSTED_STATUS:_FillValue = " "	Status flag on JULD date and time. The flag scale is described in the Argo reference table 19. Example: 2 : Value is transmitted by the float
JULD_ADJUSTED_QC	char JULD_ADJUSTED_QC(N_TECH_MEASUREMENT JULD_ADJUSTED_QC:long_name = "Quality on adjusted date and time" JULD_ADJUSTED_QC:conventions = "Argo reference table 2"	Quality flag on JULD_ADJUSTED date and time. The flag scale is described in the Argo reference table 2. Example : 1 : the date and time seems correct.

	JULD_ADJUSTED_QC:_FillValue = " "	
CYCLE_NUMBER_MEAS	int CYCLE_NUMBER_MEAS(N_TECH_MEASUREMENT) CYCLE_NUMBER_MEAS:long_name = "Float cycle number of the measurement" CYCLE_NUMBER_MEAS:conventions = "0...N, 0 : launch cycle, 1 : first complete cycle" CYCLE_NUMBER_MEAS:_FillValue = 99999	Cycle number of the float for this series of measurements. For one cycle number, there are usually several measurements received. This cycle number must match the profile cycle number. Example : 17 for measurements performed during the 17th cycle of the float.
MEASUREMENT_CODE	int MEASUREMENT_CODE(N_TECH_MEASUREMENT) MEASUREMENT_CODE:long_name = "Flag referring to a measurement event in the cycle" MEASUREMENT_CODE:conventions = "Argo reference table 15" MEASUREMENT_CODE:_FillValue = 99999	Flag for each event in the cycle which corresponds to the Argo reference table 15. Example: 100 : All measurements made at start of descent to drift pressure.
<TECH_PARAM>	float <TECH_PARAM>(N_TECH_MEASUREMENT) <TECH_PARAM>:long_name = "<X>" <TECH_PARAM>:standard_name = "<X>" <TECH_PARAM>:_FillValue = <X> <TECH_PARAM>:units = "<X>" <TECH_PARAM>:valid_min = <X> <TECH_PARAM>:valid_max = <X> <TECH_PARAM>:C_format = "<X>" <TECH_PARAM>:FORTRAN_format = "<X>"	<TECH_PARAM> contains the original values of a technical parameter listed in the "code" column of the reference table AUX_3b. <X> : these fields are specified in the columns of the reference table AUX_3b.
<TECH_PARAM>_QC	char <TECH_PARAM>_QC(N_TECH_MEASUREMENT) <TECH_PARAM>_QC:long_name = "quality flag" <TECH_PARAM>_QC:conventions = "Argo reference table 2" <TECH_PARAM>_QC:_FillValue = " "	Quality flag applied on each <TECH_PARAM> values. The flag scale is specified in the Argo reference table 2.

2.3 Profile file format

2.3.1 Global attributes

global attributes:
  :title = "Argo float vertical profile auxiliary data"
  :institution = "CORIOLIS"
  :source = "Argo float"
  :history = "2017-02-16T17:46:44Z creation; 2017-02-16T17:46:44Z last update (coriolis float real time data processing)"
  :references = " "
  :user_manual_version = "1.0"
  :Conventions = "CF-1.6 Coriolis-Argo-Aux-1.0"
  :featureType = "trajectoryProfileCoriolisAux"

Global attribute name	Definition
title	A succinct description of what is in the dataset.
institution	Specifies where the original data was produced.
source	The method of production of the original data. If it was model-generated, source should name the model and its version, as specifically as could be useful. If it is observational, source should characterize it (e.g., "surface observation" or "radiosonde").
history	Provides an audit trail for modifications to the original data. Well-behaved generic NetCDF filters will automatically append their name and the parameters with which they were invoked to the global history attribute of an input NetCDF file. We recommend that each line begin with a timestamp indicating the date and time of day that the program was executed.
references	Published or web-based references that describe the data or methods used to produce it.
user_manual_version	The version number of the user manual.
Conventions	The conventions supported by this file, blank separated.
featureType	The NetCDF CF feature type.

2.3.2 Dimensions

Name	Value	Definition
DATE_TIME	DATE_TIME = 14	This dimension is the length of an ASCII date and time value. Date_time convention is : YYYYMMDDHHMISS YYYY : year MM : month DD : day HH : hour of the day MI : minutes SS : seconds Date and time values are always in universal time coordinates (UTC). Examples : 20010105172834 : January 5th 2001 17:28:34 19971217000000 : December 17th 1997 00:00:00
STRING256 STRING64 STRING32 STRING16 STRING8 STRING4 STRING2	STRING256 = 256 STRING64 = 64 STRING32 = 32 STRING16 = 16 STRING8 = 8 STRING4 = 4 STRING2 = 2	String dimensions.
N_PROF	N_PROF = <int value>	Number of profiles contained in the file. This dimension depends on the data set. A file contains at least one profile. There is no defined limit on the maximum number of profiles in a file.
N_PARAM	N_PARAM = <int value>	Maximum number of parameters measured or calculated for a pressure sample. This dimension depends on the data set.
N_LEVELS	N_LEVELS = <int value>	Maximum number of pressure levels contained in a profile. This dimension depends on the data set.
N_CALIB	N_CALIB = <int value>	Maximum number of calibrations performed on a profile. This dimension depends on the data set.

N_HISTORY	N_HISTORY = UNLIMITED	Number of history records.

2.3.3   General information on the profile file

This section contains information about the whole file.

Name	Definition	Comment
DATA_TYPE	char DATA_TYPE(STRING16) DATA_TYPE:long_name = "Data type" DATA_TYPE:conventions = "Reference table AUX_1" DATA_TYPE:_FillValue = " "	This field contains the type of data contained in the file. The list of acceptable data types is in the reference table AUX_1.
FORMAT_VERSION	char FORMAT_VERSION(STRING4) FORMAT_VERSION:long_name = "File format version" FORMAT_VERSION:_FillValue = " "	File format version. Example : «1.0»
REFERENCE_DATE_TIME	char REFERENCE_DATE_TIME(DATE_TIME) REFERENCE_DATE_TIME:long_name = "Date of reference for Julian days" REFERENCE_DATE_TIME:conventions = "YYYYMMDDHHMISS" REFERENCE_DATE_TIME:_FillValue = " "	Date of reference for julian days. The recommended reference date time is "19500101000000" : January 1st 1950 00:00:00
DATE_CREATION	char DATE_CREATION(DATE_TIME) DATE_CREATION:long_name = "Date of file creation" DATE_CREATION:conventions = "YYYYMMDDHHMISS" DATE_CREATION:_FillValue = " "	Date and time (UTC) of creation of this file. Format : YYYYMMDDHHMISS Example : 20011229161700 : December 29th 2001 16 :17 :00
DATE_UPDATE	char DATE_UPDATE(DATE_TIME) DATE_UPDATE:long_name = "Date of update of this file" DATE_UPDATE:conventions = "YYYYMMDDHHMISS" DATE_UPDATE:_FillValue = " "	Date and time (UTC) of update of this file. Format : YYYYMMDDHHMISS Example : 20011230090500 : December 30th 2001 09 :05 :00

2.3.4   General information for each profile

This section contains general information on each profile.

Each item of this section has a N_PROF (number of profiles) dimension.

Name	Definition	Comment
PLATFORM_NUMBER	char PLATFORM_NUMBER(N_PROF, STRING8) PLATFORM_NUMBER:long_name = "Float unique identifier" PLATFORM_NUMBER:conventions = "WMO float identifier : A9IIIII" PLATFORM_NUMBER:_FillValue = " "	WMO float identifier. WMO is the World Meteorological Organization. This platform number is unique. Example : 6900045
PROJECT_NAME	char PROJECT_NAME(N_PROF, STRING64) PROJECT_NAME:long_name = "Name of the project" PROJECT_NAME:_FillValue = " "	Name of the project which operates the profiling float that performed the profile. Example : "GYROSCOPE" (EU project for ARGO program)
PI_NAME	char PI_NAME (N_PROF, STRING64) PI_NAME:long_name = "Name of the principal investigator" PI_NAME:_FillValue = " "	Name of the principal investigator in charge of the profiling float. Example : Yves Desaubies
STATION_PARAMETERS	char STATION_PARAMETERS(N_PROF, N_PARAM, STRING64) STATION_PARAMETERS:long_name = "List of available parameters for the station" STATION_PARAMETERS:conventions = "Reference table AUX_3a" STATION_PARAMETERS:_FillValue = " "	List of parameters contained in this profile. The parameter names are listed in reference table AUX_3a.
CYCLE_NUMBER	int CYCLE_NUMBER(N_PROF) CYCLE_NUMBER:long_name = "Float cycle number" CYCLE_NUMBER:conventions = "0...N, 0 :	Float cycle number.

	launch cycle (if exists), 1 : first complete cycle" CYCLE_NUMBER:_FillValue = 99999	
DIRECTION	char DIRECTION(N_PROF) DIRECTION:long_name = "Direction of the station profiles" DIRECTION:conventions = "A: ascending profiles, D: descending profiles" DIRECTION:_FillValue = " "	Type of profile on which measurement occurs. A : ascending profile D : descending profile
DATA_CENTRE	char DATA_CENTRE(N_PROF, STRING2) DATA_CENTRE:long_name = "Data centre in charge of float data processing" DATA_CENTRE:conventions = "Argo reference table 4" DATA_CENTRE:_FillValue = " "	Code for the data centre in charge of the float data management. The data centre codes are described in the Argo reference table 4. Example : "ME" for MEDS
DC_REFERENCE	char DC_REFERENCE(N_PROF, STRING32) DC_REFERENCE:long_name = "Station unique identifier in data centre" DC_REFERENCE:conventions = "Data centre convention" DC_REFERENCE:_FillValue = " "	Unique identifier of the profile in the data centre. Data centres may have different identifier schemes. DC_REFERENCE is therefore not unique across data centres.
DATA_STATE_INDICATOR	char DATA_STATE_INDICATOR(N_PROF, STRING4) DATA_STATE_INDICATOR:long_name = "Degree of processing the data have passed through" DATA_STATE_INDICATOR:conventions = "Argo reference table 6" DATA_STATE_INDICATOR:_FillValue = " "	Degree of processing the data has passed through. The data state indicator is described in the Argo reference table 6.
DATA_MODE	char DATA_MODE(N_PROF) DATA_MODE:long_name = "Delayed mode or real time data" DATA_MODE:conventions = "R : real time; D : delayed mode; A : real time with adjustment" DATA_MODE:_FillValue = " "	Indicates if the profile contains real time, delayed mode or adjusted data. R : real time data D : delayed mode data A : real time data with adjusted values
PARAMETER_DATA_MODE	char PARAMETER_DATA_MODE(N_PROF, N_PARAM) PARAMETER_DATA_MODE:long_name = "Delayed mode or real time data" PARAMETER_DATA_MODE:conventions = "R : real time; D : delayed mode; A : real time with adjustment" PARAMETER_DATA_MODE:_FillValue = " "	Describe the data mode of the individual parameter : R : real time data D : delayed mode data A : real time data with adjusted values
PLATFORM_TYPE	char PLATFORM_TYPE(N_PROF, STRING32) PLATFORM_TYPE:long_name = "Type of float" PLATFORM_TYPE:conventions = "Argo reference table 23" PLATFORM_TYPE:_FillValue = " "	Type of float listed in the Argo reference table 23. Example: SOLO, APEX, PROVOR, ARVOR, NINJA
FLOAT_SERIAL_NO	char FLOAT_SERIAL_NO(N_PROF, STRING32) FLOAT_SERIAL_NO:long_name = "Serial number of the float" FLOAT_SERIAL_NO:_FillValue = " "	Serial number of the float.
FIRMWARE_VERSION	char FIRMWARE_VERSION(N_PROF, STRING32) FIRMWARE_VERSION:long_name = "Instrument firmware version" FIRMWARE_VERSION:_FillValue = " "	Firmware version of the float.
WMO_INST_TYPE	char WMO_INST_TYPE(N_PROF, STRING4) WMO_INST_TYPE:long_name = "Coded instrument type" WMO_INST_TYPE:conventions = "Argo reference table 8" WMO_INST_TYPE:_FillValue = " "	Instrument type from WMO code table 1770. A subset of WMO table 1770 is documented in the Argo reference table 8. Example : 846 : Webb Research float, Seabird sensor
JULD	double JULD(N_PROF) JULD:long_name = "Julian day (UTC) of the station relative to REFERENCE_DATE_TIME" JULD:standard_name = "time" JULD:units = "days since 1950-01-01 00:00:00 UTC"	Julian day of the profile. The integer part represents the day, the decimal part represents the time of the profile. Date and time are in Universal Time. The julian day is relative to REFERENCE_DATE_TIME.

	JULD:conventions = "Relative julian days with decimal part (as parts of day)" JULD:resolution = <X> JULD:_FillValue = 999999. JULD:axis = "T"	<X>: these field depends on float type and version. Example : 18833.8013889885 : July 25 2001 19:14:00
JULD_QC	char JULD_QC(N_PROF) JULD_QC:long_name = "Quality on date and time" JULD_QC:conventions = "Argo reference table 2" JULD_QC:_FillValue = " "	Quality flag on JULD date and time. The flag scale is described in the Argo reference table 2. Example : 1: the date and time seems correct.
JULD_LOCATION	double JULD_LOCATION(N_PROF) JULD_LOCATION:long_name = "Julian day (UTC) of the location relative to REFERENCE_DATE_TIME" JULD_LOCATION:units = "days since 1950-01-01 00:00:00 UTC" JULD_LOCATION:conventions = "Relative julian days with decimal part (as parts of day)" JULD_LOCATION:resolution = <X> JULD_LOCATION:_FillValue = 999999.	Julian day of the location of the profile. The integer part represents the day, the decimal part represents the time of the profile. Date and time are in Universal Time. The julian day is relative to REFERENCE_DATE_TIME. <X>: these field depends on float type and version. Example : 18833.8013889885 : July 25 2001 19:14:00
LATITUDE	double LATITUDE(N_PROF) LATITUDE:long_name = "Latitude of the station, best estimate" LATITUDE:standard_name = "latitude" LATITUDE:units = "degree_north" LATITUDE:_FillValue = 99999. LATITUDE:valid_min = -90. LATITUDE:valid_max = 90. LATITUDE:axis = "Y"	Latitude of the profile. Unit : degree north This field contains the best estimated latitude. The latitude value may be improved in delayed mode. The measured locations of the float are located in the trajectory file. Example : 44.4991 : 44° 29' 56.76" N
LONGITUDE	double LONGITUDE(N_PROF) LONGITUDE:long_name = "Longitude of the station, best estimate" LONGITUDE:standard_name = "longitude" LONGITUDE:units = "degree_east" LONGITUDE:_FillValue = 99999. LONGITUDE:valid_min = -180. LONGITUDE:valid_max = 180. LONGITUDE:axis = "X"	Longitude of the profile. Unit : degree east This field contains the best estimated longitude. The longitude value may be improved in delayed mode. The measured locations of the float are located in the trajectory file. Example : 16.7222 : 16° 43' 19.92" E
POSITION_QC	char POSITION_QC(N_PROF) POSITION_QC:long_name = "Quality on position (latitude and longitude)" POSITION_QC:conventions = "Argo reference table 2" POSITION_QC:_FillValue = " "	Quality flag on position. The flag on position is set according to (LATITUDE, LONGITUDE) quality. The flag scale is described in the Argo reference table 2. Example: 1: position seems correct.
POSITIONING_SYSTEM	char POSITIONING_SYSTEM(N_PROF, STRING8) POSITIONING_SYSTEM:long_name = "Positioning system" POSITIONING_SYSTEM:_FillValue = " "	Name of the system in charge of positioning the float locations from the Argo reference table 9. Examples : ARGOS
PROFILE_<PARAM>_QC	char PROFILE_<PARAM>_QC(N_PROF) PROFILE_<PARAM>_QC:long_name = "Global quality flag of <PARAM> profile" PROFILE_<PARAM>_QC:conventions = "Argo reference table 2a" PROFILE_<PARAM>_QC:_FillValue = " "	Global quality flag on the PARAM profile. PARAM is among the STATION_PARAMETERS. The overall flag is set to indicate the percentage of good data in the profile as described in the Argo reference table 2a. Example : PROFILE_TEMP_QC = A : the temperature profile contains only good values PROFILE_PSAL_QC = C : the salinity profile contains 50% to 75% good values
VERTICAL_SAMPLING_SCHEME	char VERTICAL_SAMPLING_SCHEME(N_PROF, STRING256) VERTICAL_SAMPLING_SCHEME:long_name = "Vertical sampling scheme" VERTICAL_SAMPLING_SCHEME:conventions = "Argo reference table 16" VERTICAL_SAMPLING_SCHEME:_FillValue = " "	Use vertical sampling scheme to differentiate and identify profiles from a single-cycle with different vertical sampling schemes. See the Argo reference table 16.
CONFIG_MISSION_NUMBER	int CONFIG_MISSION_NUMBER(N_PROF) CONFIG_MISSION_NUMBER:long_name = "	Unique number of the mission to which this profile belongs.

| | Unique number denoting the missions performed by the float"
CONFIG_MISSION_NUMBER:conventions = "1...N, 1 : first complete mission"
CONFIG_MISSION_NUMBER:_FillValue = 99999 | |

2.3.5   Measurements for each profile

Name	Definition	Comment
<PARAM>	float <PARAM>(N_PROF, N_LEVELS) <PARAM>:long_name = "<X>" <PARAM>:standard_name = "<X>" <PARAM>:_FillValue = <X> <PARAM>:units = "<X>" <PARAM>:valid_min = <X> <PARAM>:valid_max = <X> <PARAM>:C_format = "<X>" <PARAM>:FORTRAN_format = "<X>" <PARAM>:resolution = <X>	<PARAM> contains the original values of a parameter listed in reference table AUX_3a. <X> : this field is specified in the reference table AUX_3a.
<PARAM>_QC	char <PARAM>_QC(N_PROF, N_LEVELS) <PARAM>_QC:long_name = "quality flag" <PARAM>_QC:conventions = "Argo reference table 2" <PARAM>_QC:_FillValue = " "	Quality flag applied on each <PARAM> values. The flag scale is specified in the Argo reference table 2.
<PARAM>_ADJUSTED	float <PARAM>_ADJUSTED(N_PROF, N_LEVELS) <PARAM>_ADJUSTED:long_name = "<X>" <PARAM>_ADJUSTED:standard_name = "<X>" <PARAM>_ADJUSTED:_FillValue = <X> <PARAM>_ADJUSTED:units = "<X>" <PARAM>_ADJUSTED:valid_min = <X> <PARAM>_ADJUSTED:valid_max = <X> <PARAM>_ADJUSTED:C_format = "<X>" <PARAM>_ADJUSTED:FORTRAN_format = "<X>" <PARAM>_ADJUSTED:resolution= <X>	<PARAM>_ADJUSTED contains the adjusted values derived from the original values of the parameter. <X> : this field is specified in the reference table AUX_3a. When no adjustment is performed, the FillValue is inserted.
<PARAM>_ADJUSTED_QC	char <PARAM>_ADJUSTED_QC(N_PROF, N_LEVELS) <PARAM>_ADJUSTED_QC:long_name = "quality flag" <PARAM>_ADJUSTED_QC:conventions = "Argo reference table 2" <PARAM>_ADJUSTED_QC:_FillValue = " "	Quality flag applied on each <PARAM>_ADJUSTED values. The flag scale is specified in the Argo reference table 2. When no adjustment is performed, the FillValue is inserted.
<PARAM>_ADJUSTED_ERROR	float <PARAM>_ADJUSTED_ERROR(N_PROF, N_LEVELS) <PARAM>_ADJUSTED_ERROR:long_name = "Contains the error on the adjusted values as determined by the delayed mode QC process" <PARAM>_ADJUSTED_ERROR:_FillValue = <X> <PARAM>_ADJUSTED_ERROR:units = "<X>" <PARAM>_ADJUSTED_ERROR:C_format = "<X>" <PARAM>_ADJUSTED_ERROR:FORTRAN_format = "<X>" <PARAM>_ADJUSTED_ERROR:resolution= <X>	<PARAM>_ADJUSTED_ERROR Contains the error on the adjusted values as determined by the delayed mode QC process. <X> : this field is specified in the reference table AUX_3a. When no adjustment is performed, the FillValue is inserted.

2.3.6 Calibration information for each profile

This section contains calibration information for each parameter of each profile.

Each item of this section has a N_PROF (number of profiles), N_CALIB (number of calibrations), N_PARAM (number of parameters) dimension.

Name	Definition	Comment
PARAMETER	char PARAMETER(N_PROF, N_CALIB, N_PARAM, STRING64) PARAMETER:long_name = "List of parameters with calibration information" PARAMETER:conventions = "Reference table AUX_3a" PARAMETER:_FillValue = " "	Name of the calibrated parameter. The list of parameters is in the reference table AUX_3a.
SCIENTIFIC_CALIB_EQUATION	char SCIENTIFIC_CALIB_EQUATION(N_PROF, N_CALIB, N_PARAM, STRING256) SCIENTIFIC_CALIB_EQUATION:long_name = "Calibration equation for this parameter" SCIENTIFIC_CALIB_EQUATION:_FillValue = " "	Calibration equation applied to the parameter.
SCIENTIFIC_CALIB_COEFFICIENT	char SCIENTIFIC_CALIB_COEFFICIENT(N_PROF, N_CALIB, N_PARAM, STRING256) SCIENTIFIC_CALIB_COEFFICIENT:long_name = "Calibration coefficients for this equation" SCIENTIFIC_CALIB_COEFFICIENT:_FillValue = " "	Calibration coefficients for this equation.
SCIENTIFIC_CALIB_COMMENT	char SCIENTIFIC_CALIB_COMMENT(N_PROF, N_CALIB, N_PARAM, STRING256) SCIENTIFIC_CALIB_COMMENT:long_name = "Comment applying to this parameter calibration" SCIENTIFIC_CALIB_COMMENT:_FillValue = " "	Comment about this calibration Example : The sensor is not stable
SCIENTIFIC_CALIB_DATE	char SCIENTIFIC_CALIB_DATE (N_PROF N_CALIB, N_PARAM, DATE_TIME) SCIENTIFIC_CALIB_DATE:long_name = "Date of calibration" SCIENTIFIC_CALIB_DATE:conventions = "YYYYMMDDHHMISS" SCIENTIFIC_CALIB_DATE:_FillValue = " "	Date of the calibration. Example : 20011217161700

2.3.7 History information for each profile

This section contains history information for each action performed on each profile by a data centre.

Each item of this section has a N_HISTORY (number of history records), N_PROF (number of profiles) dimension.

Name	Definition	Comment
HISTORY_INSTITUTION	char HISTORY_INSTITUTION(N_HISTORY, N_PROF, STRING4) HISTORY_INSTITUTION:long_name = "Institution which performed action" HISTORY_INSTITUTION:conventions = "Argo reference table 4" HISTORY_INSTITUTION:_FillValue = " "	Institution that performed the action. Institution codes are described in the Argo reference table 4. Example : ME for MEDS
HISTORY_STEP	char HISTORY_STEP(N_HISTORY, N_PROF, STRING4)	Code of the step in data processing for this history record. The step codes are described in the Argo

	HISTORY_STEP:long_name = "Step in data processing" HISTORY_STEP:conventions = "Argo reference table 12" HISTORY_STEP:_FillValue = " "	reference table 12. Example : ARGQ : Automatic QC of data reported in real-time has been performed
HISTORY_SOFTWARE	char HISTORY_SOFTWARE (N_HISTORY, N_PROF, STRING4) HISTORY_SOFTWARE:long_name = "Name of software which performed action" HISTORY_SOFTWARE:conventions = "Institution dependent" HISTORY_SOFTWARE:_FillValue = " "	Name of the software that performed the action. This code is institution dependent. Example : WJO
HISTORY_SOFTWARE_RELEASE	char HISTORY_SOFTWARE_RELEASE(N_HISTORY, N_PROF, STRING4) HISTORY_SOFTWARE_RELEASE:long_name = "Version/release of software which performed action" HISTORY_SOFTWARE_RELEASE:conventions = "Institution dependent" HISTORY_SOFTWARE_RELEASE:_FillValue = " "	Version of the software. This name is institution dependent. Example : «1.0»
HISTORY_REFERENCE	char HISTORY_REFERENCE (N_HISTORY, N_PROF, STRING64) HISTORY_REFERENCE:long_name = "Reference of database" HISTORY_REFERENCE:conventions = "Institution dependent" HISTORY_REFERENCE:_FillValue = " "	Code of the reference database used for quality control in conjunction with the software. This code is institution dependent. Example : WOD2001
HISTORY_DATE	char HISTORY_DATE(N_HISTORY, N_PROF, DATE_TIME) HISTORY_DATE:long_name = "Date the history record was created" HISTORY_DATE:conventions = "YYYYMMDDHHMISS" HISTORY_DATE:_FillValue = " "	Date of the action. Example : 20011217160057
HISTORY_ACTION	char HISTORY_ACTION(N_HISTORY, N_PROF, STRING4) HISTORY_ACTION:long_name = "Action performed on data" HISTORY_ACTION:conventions = "Argo reference table 7" HISTORY_ACTION:_FillValue = " "	Name of the action. The action codes are described in the Argo reference table 7. Example : QCF$ for QC failed
HISTORY_PARAMETER	char HISTORY_PARAMETER(N_HISTORY, N_PROF, STRING16) HISTORY_PARAMETER:long_name = "Station parameter action is performed on" HISTORY_PARAMETER:conventions = "Reference table AUX_3a" HISTORY_PARAMETER:_FillValue = " "	Name of the parameter on which the action is performed.
HISTORY_START_PRES	float HISTORY_START_PRES(N_HISTORY, N_PROF) HISTORY_START_PRES:long_name = "Start pressure action applied on" HISTORY_START_PRES:_FillValue = 99999.f HISTORY_START_PRES:units = "decibar"	Start pressure the action is applied to.
HISTORY_STOP_PRES	float HISTORY_STOP_PRES(N_HISTORY, N_PROF) HISTORY_STOP_PRES:long_name = "Stop pressure action applied on"	Stop pressure the action is applied to.

	HISTORY_STOP_PRES:_FillValue = 99999.f HISTORY_STOP_PRES:units = "decibar"	
HISTORY_PREVIOUS_VALUE	float HISTORY_PREVIOUS_VALUE(N_HISTORY, N_PROF) HISTORY_PREVIOUS_VALUE:long_name = "Parameter/Flag previous value before action" HISTORY_PREVIOUS_VALUE:_FillValue = 99999.f	Parameter or flag of the previous value before action. Example : 2 (probably good) for a flag that was changed to 1 (good)
HISTORY_QCTEST	char HISTORY_QCTEST(N_HISTORY, N_PROF, STRING16) HISTORY_QCTEST:long_name = "Documentation of tests performed, tests failed (in hex form)" HISTORY_QCTEST:conventions = "Write tests performed when ACTION=QCP$; tests failed when ACTION=QCF$" HISTORY_QCTEST:_FillValue = " "	This field records the tests performed when ACTION is set to QCP$ (QC performed), the test failed when ACTION is set to QCF$ (QC failed). The QCTEST codes are describe in the Argo reference table 11. Example : 0A (in hexadecimal form)

2.4 Trajectory file format

2.4.1 Global attributes

global attributes:
:title = "Argo float trajectory auxiliary data file"
:institution = "CORIOLIS"
:source = "Argo float"
:history = "2017-02-16T17:47:35Z creation; 2017-02-16T17:47:35Z last update (coriolis float real time data processing)"
:references = " "
:user_manual_version = "1.0"
:Conventions = "CF-1.6 Coriolis-Argo-Aux-1.0"
:featureType = "trajectoryCoriolisAux"
:comment_on_resolution = "<depends on float type and version>"
:comment_on_measurement_code= "<depends on float type and version >"

Global attribute name	Definition
title	A succinct description of what is in the dataset.
institution	Specifies where the original data was produced.
source	The method of production of the original data. If it was model-generated, source should name the model and its version, as specifically as could be useful. If it is observational, source should characterize it (e.g., "surface observation" or "radiosonde").
history	Provides an audit trail for modifications to the original data. Well-behaved generic NetCDF filters will automatically append their name and the parameters with which they were invoked to the global history attribute of an input NetCDF file. We recommend that each line begin with a timestamp indicating the date and time of day that the program was executed.
references	Published or web-based references that describe the data or methods used to produce it.
user_manual_version	The version number of the user manual.
Conventions	The conventions supported by this file, blank separated.
featureType	The NetCDF CF feature type.
comment_on_resolution	Comment on parameter resolution.
comment_on_resolution	Comment on measurement codes.

2.4.2 Dimensions and definitions

Name	Definition	Comment
DATE_TIME	DATE_TIME = 14	This dimension is the length of an ASCII date and time value. Date and time values are always in universal time coordinates (UTC). Date_time convention is : YYYYMMDDHHMISS YYYY : year MM : month DD : day HH : hour of the day MI : minutes SS : seconds Examples : 20010105172834 : January 5th 2001 17:28:34 19971217000000 : December 17th 1997 00:00:00
STRING64 STRING32 STRING16 STRING8 STRING4 STRING2	STRING64 = 64 STRING32 = 32 STRING16 = 16 STRING8 = 8 STRING4 = 4 STRING2 = 2	String dimensions.
N_PARAM	N_PARAM = <int value>	Maximum number of parameters measured or calculated for a pressure sample.
N_MEASUREMENT	N_MEASUREMENT = UNLIMITED	This dimension is the number of recorded locations, cycle timings and measurements of the file.
N_CYCLE	N_CYCLE = <int value>	Number of collected float cycles. If all the cycles have been collected (i.e. if there are no missing cycles), it is

		the number of cycles performed by the float. In this particular case, as some floats begin cycle numbering at 0, others at 1, in the former, N_CYCLE = max(CYCLE_NUMBER) +1. In the latter, N_CYCLE = max(CYCLE_NUMBER) Example : N_CYCLE = 100
N_HISTORY	N_HISTORY = <int value>	Maximum number of history records for a location. This dimension depends on the data set.

2.4.3   General information on the trajectory file

This section contains information about the whole file.

Name	Definition	Comment
DATA_TYPE	char DATA_TYPE(STRING16) DATA_TYPE:long_name = "Data type" DATA_TYPE:conventions = "Reference table AUX_1" DATA_TYPE:_FillValue = " "	This field contains the type of data contained in the file. The list of acceptable data types is in the reference table AUX_1. Example : Argo trajectory
FORMAT_VERSION	char FORMAT_VERSION(STRING4) FORMAT_VERSION:long_name = "File format version" FORMAT_VERSION:_FillValue = " "	File format version. Example : "1.0"
REFERENCE_DATE_TIME	char REFERENCE_DATE_TIME(DATE_TIME) REFERENCE_DATE_TIME:long_name = "Date of reference for Julian days" REFERENCE_DATE_TIME:conventions = "YYYYMMDDHHMISS" REFERENCE_DATE_TIME:_FillValue = " "	Date of reference for julian days. The recommended reference date time is "19500101000000" : January 1st 1950 00:00:00
DATE_CREATION	char DATE_CREATION(DATE_TIME) DATE_CREATION:long_name = "Date of file creation " DATE_CREATION:conventions = "YYYYMMDDHHMISS" DATE_CREATION:_FillValue = " "	Date and time (UTC) of creation of this file. Format : YYYYMMDDHHMISS Example : 20011229161700 : December 29th 2001 16 :17 :00
DATE_UPDATE	char DATE_UPDATE(DATE_TIME) DATE_UPDATE:long_name = "Date of update of this file" DATE_UPDATE:conventions = "YYYYMMDDHHMISS" DATE_UPDATE:_FillValue = " "	Date and time (UTC) of update of this file. Format : YYYYMMDDHHMISS Example : 20011230090500 : December 30th 2001 09 :05 :00

2.4.4   General information on the float

This section contains general information on the float.

Name	Definition	Comment
PLATFORM_NUMBER	char PLATFORM_NUMBER(STRING8) PLATFORM_NUMBER:long_name = "Float unique identifier" PLATFORM_NUMBER:conventions = "WMO float identifier : A9IIIII" PLATFORM_NUMBER:_FillValue = " "	WMO float identifier. WMO is the World Meteorological Organization. This platform number is unique. Example : "6900045"
PROJECT_NAME	char PROJECT_NAME(STRING64) PROJECT_NAME:long_name = "Name of the project" PROJECT_NAME:_FillValue = " "	Name of the project which operates the float that performed the trajectory. Example : "GYROSCOPE" (EU project for ARGO program)
PI_NAME	char PI_NAME (STRING64) PI_NAME:long_name = "Name of the principal investigator" PI_NAME:_FillValue = " "	Name of the principal investigator in charge of the float. Example : Yves Desaubies
TRAJECTORY_PARAMETERS	char TRAJECTORY_PARAMETERS(N_PARAM,STRING64) TRAJECTORY_PARAMETERS:long_name = "List of available parameters for the station" TRAJECTORY_PARAMETERS:conventions = "Reference table AUX_3a"	List of parameters contained in this trajectory file. The parameter names are listed in the reference table AUX_3a.

	TRAJECTORY_PARAMETERS:_FillValue = " "	
DATA_CENTRE	char DATA_CENTRE(STRING2) DATA_CENTRE:long_name = "Data centre in charge of float data processing" DATA_CENTRE:conventions = "Argo reference table 4" DATA_CENTRE:_FillValue = " "	Code for the data centre in charge of the float data management. The data centre codes are described in the Argo reference table 4. Example : "ME" for MEDS
DATA_STATE_INDICATOR	char DATA_STATE_INDICATOR(STRING4) DATA_STATE_INDICATOR:long_name = "Degree of processing the data have passed through" DATA_STATE_INDICATOR:conventions = "Argo reference table 6" DATA_STATE_INDICATOR:_FillValue = " "	Degree of processing the data has passed through. The data state indicator is described in the Argo reference table 6.
PLATFORM_TYPE	char PLATFORM_TYPE(STRING32) PLATFORM_TYPE:long_name = "Type of float" PLATFORM_TYPE:conventions = "Argo reference table 23" PLATFORM_TYPE:_FillValue = " "	Type of float listed in the Argo reference table 23. Example: SOLO, APEX, PROVOR, ARVOR, NINJA.
FLOAT_SERIAL_NO	char FLOAT_SERIAL_NO(STRING32) FLOAT_SERIAL_NO:long_name = "Serial number of the float" FLOAT_SERIAL_NO:_FillValue = " "	This field should contain only the serial number of the float.
FIRMWARE_VERSION	char FIRMWARE_VERSION(STRING32) FIRMWARE_VERSION:long_name = "Instrument firmware version" FIRMWARE_VERSION:_FillValue = " "	Firmware version of the float.
WMO_INST_TYPE	char WMO_INST_TYPE(STRING4) WMO_INST_TYPE:long_name = "Coded instrument type" WMO_INST_TYPE:conventions = "Argo reference table 8" WMO_INST_TYPE:_FillValue = " "	Instrument type from WMO code table 1770. A subset of WMO table 1770 is documented in the Argo reference table 8. Example : 831

2.4.5 N_MEASUREMENT dimension variable group

This section describes the variables found in the N_MEASUREMENT dimension variable group.

Name	definition	comment
JULD	double JULD(N_MEASUREMENT) JULD:long_name = "Julian day (UTC) of each measurement relative to REFERENCE_DATE_TIME" JULD:standard_name = "time" JULD:units = "days since 1950-01-01 00:00:00 UTC" JULD:conventions = "Relative julian days with decimal part (as parts of day)" JULD:resolution = <X> JULD:_FillValue = 999999. JULD:axis = "T"	Julian day of the location (or measurement). The integer part represents the day, the decimal part represents the time of the measurement. Date and time are in universal time coordinates. The julian day is relative to REFERENCE_DATE_TIME. <X>: these field depends on float type and version. Example : 18833.8013889885 : July 25 2001 19:14:00
JULD_STATUS	char JULD_STATUS(N_MEASUREMENT) JULD_STATUS:long_name="Status of the date and time" JULD_STATUS:conventions = "Argo reference table 19" JULD_STATUS:_FillValue = " "	Status flag on JULD date and time. The flag scale is described in the Argo reference table 19. Example: 2 : Value is transmitted by the float
JULD_QC	char JULD_QC(N_MEASUREMENT) JULD_QC:long_name = "Quality on date and time" JULD_QC:conventions = "Argo reference table 2" JULD_QC:_FillValue = " "	Quality flag on JULD date and time. The flag scale is described in the Argo reference table 2. Example : 1: the date and time seems correct.
JULD_ADJUSTED	double JULD_ADJUSTED(N_MEASUREMENT) JULD_ADJUSTED:long_name = "Adjusted	Adjusted julian day of the location (or measurement). The integer part represents the day, the decimal part

	julian day (UTC) of each measurement relative to REFERENCE_DATE_TIME" JULD_ADJUSTED:standard_name = "time" JULD_ADJUSTED:units = "days since 1950-01-01 00:00:00 UTC" JULD_ADJUSTED:conventions = "Relative julian days with decimal part (as parts ofday)" JULD_ADJUSTED:resolution = <X> JULD_ADJUSTED:_FillValue = 999999. JULD:axis = "T"	represents the time of the measurement. Date and time are in universal time coordinates. The julian day is relative to REFERENCE_DATE_TIME. The date may be adjusted due to float clock drift or expert review. <X>: these field depends on float type and version. Example : 18833.8013889885 : July 25 2001 19:14:00
JULD_ADJUSTED_STATUS	char JULD_ADJUSTED_STATUS(N_MEASUREMENT) JULD_ADJUSTED_STATUS:long_name="Status of the JULD_ADJUSTED date" JULD_ADJUSTED_STATUS:conventions = "Argo reference table 19" JULD_ADJUSTED_STATUS:_FillValue = " "	Status flag on JULD date and time. The flag scale is described in the Argo reference table 19. Example: 2 : Value is transmitted by the float
JULD_ADJUSTED_QC	char JULD_ADJUSTED_QC(N_MEASUREMENT) JULD_ADJUSTED_QC:long_name = "Quality on adjusted date and time" JULD_ADJUSTED_QC:conventions = "Argo reference table 2" JULD_ADJUSTED_QC:_FillValue = " "	Quality flag on JULD_ADJUSTED date and time. The flag scale is described in the Argo reference table 2. Example : 1 : the date and time seems correct.
CYCLE_NUMBER	int CYCLE_NUMBER(N_MEASUREMENT) CYCLE_NUMBER:long_name = "Float cycle number of the measurement" CYCLE_NUMBER:conventions = "0...N, 0 : launch cycle, 1 : first complete cycle" CYCLE_NUMBER:_FillValue = 99999	Cycle number of the float for this series of measurements, locations and timings. Some floats begin with a cycle 0 and some begin at cycle number 1. Cycle number is -1 for the float's launch and includes the time and location. For one cycle number, there are usually several locations/measurement received. This cycle number must match the profile cycle number. Example : 17 for measurements performed during the 17th cycle of the float.
CYCLE_NUMBER_ADJUSTED	int CYCLE_NUMBER_ADJUSTED (N_MEASUREMENT) CYCLE_NUMBER_ADJUSTED:long_name = "Adjusted float cycle number of the measurement" CYCLE_NUMBER_ADJUSTED:conventions = "0...N, 0 : launch cycle, 1 : first complete cycle" CYCLE_NUMBER_ADJUSTED:_FillValue = 99999	Adjusted cycle number of the float for this series of measurements, locations and timings. Some floats begin with a cycle 0 and some begin at cycle number 1. For one cycle number, there are usually several locations/measurement received. Sometimes cycle numbers are assigned erroneously and need to be corrected. This variable contains the corrected cycle numbers. Example : 17 for measurements performed during the 17th cycle of the float.
MEASUREMENT_CODE	int MEASUREMENT_CODE (N_MEASUREMENT) MEASUREMENT_CODE:long_name = "Flag referring to a measurement event in the cycle" MEASUREMENT_CODE:conventions = "Argo reference table 15" MEASUREMENT_CODE:_FillValue = 99999	Flag for each event in the cycle which corresponds to Argo reference table 15. Example: 100 : All measurements made at start of descent to drift pressure . Could be time, location, surface pressure, etc.
<PARAM>	float <PARAM>(N_MEASUREMENT) <PARAM>:long_name = "<X>" <PARAM>:standard_name = "<X>" <PARAM>:_FillValue = <X> <PARAM>:units = "<X>" <PARAM>:valid_min = <X> <PARAM>:valid_max = <X> <PARAM>:C_format = "<X>" <PARAM>:FORTRAN_format = "<X>"	<PARAM> contains the original values of a parameter listed in the "code" column of the reference table AUX_3a. <X> : these fields are specified in the columns of the reference table AUX_3a.
<PARAM>_QC	char <PARAM>_QC(N_MEASUREMENT) <PARAM>_QC:long_name = "quality flag" <PARAM>_QC:conventions = "Argo reference table 2" <PARAM>_QC:_FillValue = " "	Quality flag applied on each <PARAM> values. The flag scale is specified in the Argo reference table 2.
<PARAM>_ADJUSTED	float <PARAM>_ADJUSTED(N_MEASUREMENT) <PARAM>_ADJUSTED:long_name = "<X>" <PARAM>_ADJUSTED:standard_name = "<X>" <PARAM>_ADJUSTED:_FillValue = <X> <PARAM>_ADJUSTED:units = "<X>"	<PARAM>_ADJUSTED contains the adjusted values derived from the original values of the parameter. <X> : these fields are specified in the columns of the reference table AUX_3a. When no adjustment is performed, the FillValue is inserted.

	\<PARAM\>_ADJUSTED:valid_min = \<X\> \<PARAM\>_ADJUSTED:valid_max = \<X\> \<PARAM\>_ADJUSTED:comment = "\<X\>" \<PARAM\>_ADJUSTED:C_format = "\<X\>" \<PARAM\>_ADJUSTED:FORTRAN_format = "\<X\>" \<PARAM\>_ADJUSTED:resolution= \<X\>	
\<PARAM\>_ADJUSTED_QC	char \<PARAM\>_ADJUSTED_QC(N_MEASUREMENT) \<PARAM\>_ADJUSTED_QC:long_name = "quality flag" \<PARAM\>_ADJUSTED_QC:conventions = "Argo reference table 2" \<PARAM\>_ADJUSTED_QC:_FillValue = " "	Quality flag applied on each \<PARAM\>_ADJUSTED values. The flag scale is specified in the Argo reference table 2. When no adjustment is performed, the FillValue is inserted.
\<PARAM\>_ADJUSTED_ERROR	float \<PARAM\>_ADJUSTED_ERROR(N_MEASUREMENT) \<PARAM\>_ADJUSTED_ERROR:long_name = "Contains the error on the adjusted values as determined by the delayed mode QC process." \<PARAM\>_ADJUSTED_ERROR:_FillValue = \<X\> \<PARAM\>_ADJUSTED_ERROR:units = "\<X\>" \<PARAM\>_ADJUSTED_ERROR:C_format = "\<X\>" \<PARAM\>_ADJUSTED_ERROR:FORTRAN_format = "\<X\>" \<PARAM\>_ADJUSTED_ERROR:resolution= \<X\>	\<PARAM\>_ADJUSTED_ERROR contains the error on the adjusted values of the parameter. \<X\> : these fields are specified in the columns of the reference table AUX_3a. When no adjustment is performed, the FillValue is inserted.

2.4.6 N_CYCLE dimension variable group

This section contains information on the variables with dimension N_CYCLE.

Name	Definition	Comment
CONFIG_MISSION_NUMBER	int CONFIG_MISSION_NUMBER(N_CYCLE) CONFIG_MISSION_NUMBER:long_name = "Unique number denoting the missions performed by the float" CONFIG_MISSION_NUMBER:conventions = "1...N, 1 : first complete mission" CONFIG_MISSION_NUMBER:_FillValue = 99999	Unique number of the mission to which this cycle belongs.
CYCLE_NUMBER_INDEX	int CYCLE_NUMBER_INDEX(N_CYCLE) CYCLE_NUMBER_INDEX:long_name = "Cycle number that corresponds to the current index" CYCLE_NUMBER_INDEX:conventions = "0...N, 0 : launch cycle, 1 : first complete cycle" CYCLE_NUMBER_INDEX:FillValue = 99999	Cycle number of the float that corresponds to the information contained in the current index. This cycle number must match the profile cycle number, ensuring that the trajectory and profile with the same cycle number contain data from the same cycle. Example: 17 means information for the 17th cycle of the float is contained in this index.
CYCLE_NUMBER_INDEX_ADJUSTED	int CYCLE_NUMBER_INDEX_ADJUSTED(N_CYCLE) CYCLE_NUMBER_INDEX_ADJUSTED:long_name = "Adjusted cycle number that corresponds to the current index" CYCLE_NUMBER_INDEX_ADJUSTED:conventions = "0...N, 0 : launch cycle, 1 : first complete cycle" CYCLE_NUMBER_INDEX_ADJUSTED:FillValue = 99999	Corrected cycle number of the float that corresponds to the information contained in the current index. Errors may be found in CYCLE_NUMBER_INDEX variable which are corrected and contained in this variable. Example: 17 means information for the 17th cycle of the float is contained in this index.
DATA_MODE	char DATA_MODE(N_CYCLE) DATA_MODE:long_name = "Delayed mode or real time data"	Indicates if the trajectory cycle contains real time, adjusted or delayed mode data. A delayed mode cycle means the positions, times, cycle number, pressure, temperature, and

| | DATA_MODE:conventions = "R : real time; D : delayed mode; A : real time with adjustment" DATA_MODE:_FillValue = " " | salinity (if measured) have been quality controlled. Additional parameters like oxygen may not be quality controlled. Floats often have delayed mode data only after they die, but can have both delayed mode and real time data. When this occurs, two trajectory files exist - a real time file ("R") with only real time data for all the cycles in the float record and a delayed mode file ("D") with both real time and delayed mode data for all the cycles that have been delayed mode quality controlled. Floats can be adjusted in real time with adjusted time values only in the JULD_ADJUSTED variable and its associated _STATUS and _QC variables. This occurs when floats are corrected in real time for clock drift. Examles : 'R' : real time data 'D' : delayed mode data 'A' : real time data with adjusted values |

2.4.7   History information

This section contains history information for each action performed on each measurement.

Name	Definition	Comment
HISTORY_INSTITUTION	char HISTORY_INSTITUTION(N_HISTORY, STRING4) HISTORY_INSTITUTION:long_name = "Institution which performed action" HISTORY_INSTITUTION:conventions = "Argo reference table 4" HISTORY_INSTITUTION:_FillValue = " "	Institution that performed the action. Institution codes are described in the Argo reference table 4. Example : "ME" for MEDS
HISTORY_STEP	char HISTORY_STEP(N_HISTORY, STRING4) HISTORY_STEP:long_name = "Step in data processing" HISTORY_STEP:conventions = "Argo reference table 12" HISTORY_STEP:_FillValue = " "	Code of the step in data processing for this history record. The step codes are described in the Argo reference table 12. Example : "ARGQ" : Automatic QC of data reported in real-time has been performed
HISTORY_SOFTWARE	char HISTORY_SOFTWARE(N_HISTORY, STRING4) HISTORY_SOFTWARE:long_name = "Name of software which performed action" HISTORY_SOFTWARE:conventions = "Institution dependent" HISTORY_SOFTWARE:_FillValue = " "	Name of the software that performed the action. This code is institution dependent. Example : "OW"
HISTORY_SOFTWARE_RELEASE	char HISTORY_SOFTWARE_RELEASE(N_HISTORY, STRING4) HISTORY_SOFTWARE_RELEASE:long_name = "Version/release of software which performed action" HISTORY_SOFTWARE_RELEASE:conventions = "Institution dependent" HISTORY_SOFTWARE_RELEASE:_FillValue = " "	Version of the software. This name is institution dependent. Example : "1.0"
HISTORY_REFERENCE	char HISTORY_REFERENCE(N_HISTORY, STRING64) HISTORY_REFERENCE:long_name = "Reference of database" HISTORY_REFERENCE:conventions = "Institution dependent" HISTORY_REFERENCE:_FillValue = " "	Code of the reference database used for quality control in conjunction with the software. This code is institution dependent. Example : "WOD2001"

HISTORY_DATE	char HISTORY_DATE(N_HISTORY, DATE_TIME) HISTORY_DATE:long_name = "Date the history record was created" HISTORY_DATE:conventions = "YYYYMMDDHHMISS" HISTORY_DATE:_FillValue = " "	Date of the action. Example : "20011217160057"
HISTORY_ACTION	char HISTORY_ACTION(N_HISTORY, STRING4) HISTORY_ACTION:long_name = "Action performed on data" HISTORY_ACTION:conventions = "Argo reference table 7" HISTORY_ACTION:_FillValue = " "	Name of the action. The action codes are described in the Argo reference table 7. Example : "QCF$" for QC failed
HISTORY_PARAMETER	char HISTORY_PARAMETER(N_HISTORY, STRING64) HISTORY_PARAMETER:long_name = "Station parameter action is performed on" HISTORY_PARAMETER:conventions = "Reference table AUX_3a" HISTORY_PARAMETER:_FillValue = " "	Name of the parameter on which the action is performed.
HISTORY_PREVIOUS_VALUE	float HISTORY_PREVIOUS_VALUE(N_HISTORY) HISTORY_PREVIOUS_VALUE:long_name = "Parameter/Flag previous value before action" HISTORY_PREVIOUS_VALUE:_FillValue = 99999.	Parameter or flag of the previous value before action. Example :' 2' (probably good) for a flag that was changed to '1' (good)
HISTORY_INDEX_DIMENSION	char HISTORY_INDEX_DIMENSION(N_HISTORY) HISTORY_INDEX_DIMENSION:long_name = "Name of dimension to which HISTORY_START_INDEX and HISTORY_STOP_INDEX correspond" HISTORY_INDEX_DIMENSION:conventions = "C: N_CYCLE, M: N_MEASUREMENT" HISTORY_INDEX_DIMENSION:_FillValue = " "	Name of dimension to which HISTORY_START_INDEX and HISORY_STOP_INDEX correspond. 'C': N_CYCLE 'M': N_MEASUREMENT
HISTORY_START_INDEX	int HISTORY_START_INDEX(N_HISTORY) HISTORY_START_INDEX:long_name = "Start index action applied on" HISTORY_START_INDEX:_FillValue = 99999	Start index the action is applied to. This index corresponds to N_MEASUREMENT or N_CYCLE, depending on the corrected parameter
HISTORY_STOP_INDEX	int HISTORY_STOP_INDEX(N_HISTORY) HISTORY_STOP_INDEX:long_name = "Stop index action applied on" HISTORY_STOP_INDEX:_FillValue = 99999	Stop index the action is applied to. This index corresponds to N_MEASUREMENT or N_CYCLE, depending on the corrected parameter.
HISTORY_QCTEST	char HISTORY_QCTEST(N_HISTORY, STRING16) HISTORY_QCTEST:long_name = "Documentation of tests performed, tests failed (in hex form)" HISTORY_QCTEST:conventions = "Write tests performed when ACTION=QCP$; tests failed when ACTION=QCF$" HISTORY_QCTEST:_FillValue = " "	This field records the tests performed when ACTION is set to QCP$ (QC performed), the test failed when ACTION is set to QCF$ (QC failed). The QCTEST codes are describe in the Argo reference table 11. Example : "0A" (in hexadecimal form)

2.5 File localization and naming

2.5.1 Coriolis auxiliary files localization
==TBD==

2.5.2 Coriolis auxiliary files naming convention
The produced auxiliary files comply with the following naming conventions.

2.5.2.1 Metadata file
<FloatID>_meta_aux.nc

where:

- <FloatID> is the float WMO number

Example: 4901802_meta_aux.nc

2.5.2.2 Technical data file
<FloatID>_tech_aux.nc

where:

- <FloatID> is the float WMO number

Example: 4901802_tech_aux.nc

2.5.2.3 Profile data files
<R/D><FloatID>_<XXX><D>_aux.nc

where:

- <FloatID> is the float WMO number,
- <R/D> indicates Real-Time data (R) or Delayed-Mode data (D),
- <XXX> is the cycle number,
- <D> is added for descending profile (default is ascending profile).

Example: R4901802_012_aux.nc

2.5.2.4 Trajectory data file
<FloatID>_<R/D>traj_aux.nc

where:

- <FloatID> is the float WMO number,
- <R/D> indicates Real-Time data (R) or Delayed-Mode data (D).

Example: 4901802_Rtraj_aux.nc

3   Reference tables

3.1   Reference table AUX_1: data type

This table contains the list of acceptable values for DATA_TYPE field of auxiliary files.

Name
Aux-Argo profile
Aux-Argo trajectory
Argo auxiliary meta-data
Argo auxiliary technical data

3.2   Reference table AUX_3: parameter code table

3.2.1 Reference table AUX_3a: sensor parameter code table

The following table describes the defined sensor parameter codes for auxiliary files. Note that the codes of the Argo reference table 3 could also be present in the auxiliary files.

Parameter name	long_name	cf standard_name	Unit	valid_min	valid_max

3.2.2 Reference table AUX_3b: technical parameter code table

The following table describes the defined technical parameter codes for auxiliary files.

Parameter name	long_name	standard_name	Unit	valid_min	valid_max
PUMP_ACTION_FLAG	Pump action flag	-	boolean	0	1
PUMP_ACTION_DURATION	Pump action duration	-	dsec	-	-
VALVE_ACTION_FLAG	Valve action flag	-	boolean	0	1
VALVE_ACTION_DURATION	Valve action duration	-	dsec	-	-

3.3   Reference Table AUX_25: SENSOR

This table contains the list of the defined SENSOR for auxiliary files. Note that the SENSOR of the Argo reference table 25 could also be present in the auxiliary files.

SENSOR

3.4 Reference Table AUX_26: SENSOR_MAKER

This table contains the list of the defined SENSOR_MAKER for auxiliary files. Note that the SENSOR_MAKER of the Argo reference table 26 could also be present in the auxiliary files.

SENSOR_MAKER	Description

3.5 Reference Table AUX_27: SENSOR_MODEL

This table contains the list of the defined SENSOR_MODEL for auxiliary files. Note that the SENSOR_MODEL of the Argo reference table 27 could also be present in the auxiliary files.

SENSOR_MODEL	Comment