

PRODUCT USER MANUAL

For Near Real Time and Delayed Mode Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b

INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Period covered: 1990-2015

Issue: 1.4

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CMEMS version scope : Version 3

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CHANGE RECORD

Document version	Date	change	Description of Change	Author	Validated By
1.0	10/02/2013		Creation of the document	Julie Gatti	S Pouliquen
1.1	15/01/2015		Remove daily product	S Pouliquen	L. Crosnier
1.2	May 1 2015	all	Change format to fit CMEMS graphical rules		L. Crosnier
1.3	Mar 15 2016	all	Change MyOcean in CMEMS	S Pouliquen	S Pouliquen
1.3a	Mar 15 2016		Minor typo changes	L. Petit de la Villéon	
1.4	Mar 07 2017	All	Update	T.Szekely	




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GLOSSARY AND ABBREVIATIONS

CF	Climate Forecast (convention for NetCDF)
CORA	COriolis Re-Analysis
COROLIS	In situ data system for operational oceanography
DT	Delayed Time
EU	European Union
FTP	File Transfer Protocol
GDAC	Global Data Archiving Centre
GTS	Meteorological data exchange network
INS	In situ
ISAS	In Situ Analysis System
MFC	Monitoring and Forecasting Centre
NetCDF	Network Common Data Form
NRT	Near Real Time
OA	Objective Analysis
PUM	Product User Manual
RAN	ReANalysis
R&D	Research and Development
RT	Real Time
S	Sea Salinity
T	Sea Temperature
TAC	Thematic Assembly Centre

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I INTRODUCTION

I.1 Scope of this document


This Product User Manual describes the INSITU_GLO_TS_OA_OBSERVATIONS_013_002_a and the gridded product of the INSITU_GLO_TS_REP_OBSERVATIONS_013_001_b products from the CMEMS In Situ Thematic Centre: how they are built, which content, which data services are available to access them.

I.2 The CMEMS project

The main objective of the COPERNICUS Marine and Environment Monitoring Service is to deliver and operate a rigorous, robust and sustainable Ocean Monitoring and Forecasting system to users for marine applications: maritime safety, marine resources, marine and coastal environment and climate, seasonal and weather forecasting. The CMEMS INSTAC prepares re-analysed datasets for reanalysis activities performed by the CMEMS MFCs and external users in collaboration with the SeaDataNet infrastructure and the EMODnet program for the global ocean and the European regional seas.

I.3 Short introduction to the products

Products INSITU_GLO_TS_OA_OBSERVATIONS_013_002_a and INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b generated by the Coriolis team (the Data Centre and the R&D team) in Brest, France, provide global Temperature and Salinity observations datasets and objective analysis gridded fields at different time scales. The first one is a Near Real Time product (NRT) while the second one (also called CORA, Cabanes *et al.*, 2013, doi:10.5194/osd-9-1273-2012) is a reanalysis of these Near Real Time datasets in delayed-mode.


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II SYSTEM DESCRIPTION

The operational analysis system set up by the IN SITU TAC Global component is operated by CORIOLIS data centre and R&D team. It produces quality-controlled temperature and salinity observations datasets and gridded fields. The system is based on a statistical analysis method (objective analysis, Bretherton *et al.*, 1976) developed and maintained at LPO (Laboratoire de Physique des Océans, Gaillard *et al.*, 2009): the In Situ Analysis System (ISAS). It is performed on the datasets extracted from the Coriolis database for data quality control and producing gridded scalar fields. This system allows presenting a synthesis and a validation of the dataset, providing a support for localized experience (cruises), providing a validation source for operational models, observing seasonal cycle and inter-annual variability. It is the In Situ Objective analysis operational nominal product for the Global Ocean. The dataset contains data from different types of instruments: mainly Argo floats, XBT, CTD and XCTD, and Moorings. The data are stored in 7 files types: PF, XB, CT, OC, MO, BA, TE explained hereafter in the manual (§V.1).

Since early 2015, the INSITU_GLO_TS_OA_OBSERVATIONS_013_002_a product uses the version 6.2 of ISAS. In the near real time system, the production version may be changed and there is no reprocessing planned when there is a change in ISAS version. At a contrary, the INSITU_GLO_TS_REP_OBSERVATIONS_013_001_b (CORA-GLOBAL-05.0) product is processed from 1990 using the same ISAS version.

Further information on the ISAS tool is available at <http://dx.doi.org/10.13155/22583>

 <p>Logo of the Copernicus Marine Environment Monitoring Service (CMEMS) In Situ TAC. The logo is circular with 'COPERNICUS' at the top and 'MARINE ENVIRONMENT MONITORING SERVICE' around the bottom. Inside the circle, it says 'CMEMS IN SITU TAC' and 'Contract IN SITU - TAC until April 30 2018'. There are also logos for the European Union and Copernicus.</p>	<p>PUM for Objective Analysis Products</p> <p>INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a</p>	<p>Ref: CMEMS-INS-PUM-013-002_ab</p> <p>Date : March 07, 2017 Document version: v1.4</p>
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III PRODUCT DESCRIPTION

III.1 General Information

The operational analysis system is operated by the IN SITU TAC on different time scales through the two products.

For the INSITU_GLO_TS_OA_OBSERVATIONS_013_002_a product, there are two different timescales:

- A Real-Time Objective Analysis (the LATEST daily data, former RTOAGL01)


For the Global Ocean, on a daily basis, gridded objective analysis fields of temperature and salinity are produced using profiles from the in-situ real time database of the global in-situ centre and used for checking the data consistency. In the case of the in situ data assessment, the residual from objective analysis are used to detect outliers that have gone through the automatic tests and anomalous data that are then checked by an operator and eventually flagged as bad if necessary. **Since MyOcean V5 (from April 8 2015) this product is not distributed to CMEMS users as no suitable for user applications.**

- A Near-Real-Time Objective Analysis (the MONTHLY data, former NRTOAGL01)

The objective analysis is re-run once a month, as new data arrive more than 3 weeks after acquisition and are therefore not statistically quality-controlled through the daily analysis.

For the INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b product, a complete re-analysis is performed in delayed mode on all the data extracted from the Coriolis database since 1990 and updated each year to add the latest complete year of data. The present versions of the products covers the years 1990-2015.

THIS IS THE PRODUCT TO USE WHEN AVAILABLE AS THE TIME SERIE IS HOMOGENEOUS IN TERM OF VERSION OF THE ANALYSIS SYSTEM AND THE OBSERVATION USED HAVE BEEN SCIENTIFICALLY ASSESSED

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III.2 Details of datasets

The following manual applies to the following list of products described in CMEMS Catalogue

Short Description	Product code	Area	Delivery Time
Global NRT	INSITU_GLO_TS_OA_OBSERVATIONS_013_002_a	Global	Monthly
Global DT	INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b	Global	Yearly


Table 1: List of INS TAC products for which this manual apply

Detailed information on the INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b product is available at: <http://www.coriolis.eu.org/Science2/Global-Ocean/CORA>

Hence, the end of this chapter will focus on the INSITU GLO TS OA OBSERVATIONS 013 002 a product.

III.3 Temporal extent of analysis and update date for the INSITU_GLO_TS_OA_OBSERVATIONS_013_002_a product

Monthly, real time analysis runs with a six-week window, 21 days before and after the date of the analysis centred on the 15th of the month. The analysis is delivered on the 7th of the month following the date of the analysis for validation purposes and for the research community: at the beginning of each month the monthly fields of the previous month are reprocessed using all the data available for the period. This time series shouldn't contain gaps unless no data was available for this month.

 <p>Logo of the Copernicus Marine Environment Monitoring Service (CMEMS). The logo is circular with 'COPERNICUS' at the top and 'MARINE ENVIRONMENT MONITORING SERVICE' around the bottom. Inside the circle, it says 'CMEMS IN SITU TAC'. Below the circle, there are logos for the European Union, Copernicus, and the French Republic. Text below the logos reads 'Contract IN SITU - TAC' and 'Until April 30 2018'.</p>	<p>PUM for Objective Analysis Products</p> <p>INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a</p>	<p>Ref: CMEMS-INS-PUM-013-002_ab</p> <p>Date : March 07, 2017 Document version: v1.4</p>
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IV PRODUCT DISTRIBUTION

IV.1 Which Download mechanism is available for this product?

The download mechanisms available for this product are:

- Subsetter
- CMEMS FTP

IV.2 How to Download this product?

You first need to register. Please find the registration steps on our website:

<http://marine.copernicus.eu/web/34-products-and-services-faq.php#1>

Once registered, the CMEMS FAQ will guide you on how to download a product through the CMEMS Web Portal Subsetter and FTP Services.

IV.3 Portal ftp structure

The directory organization on the ftp portal is described below.

Les paramètres nécessaires sont manquants ou erronés.

Figure 1: ftp portal structure of the INSITU_GLO_TS_OA_OBSERVATIONS_013_002_a product

While the directory field is accessible on FTP, DirectGetFile and thredds/wms via **CORIOLIS-GLOBAL-NRTOA-OBS TIME_SERIE** the complete set of directory is only available on FTP though **CORIOLIS-GLOBAL-NRTOA-OBS**.

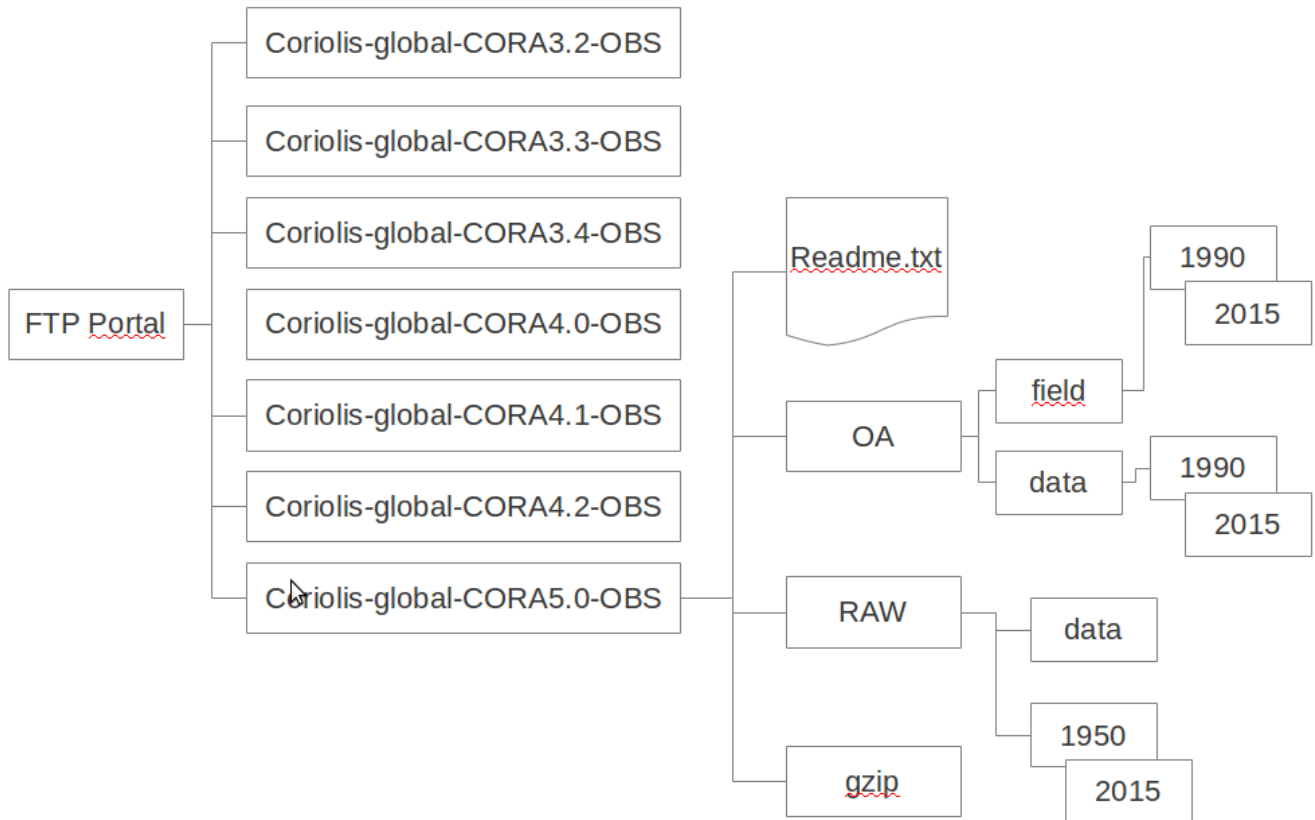



Figure 2: ftp portal structure of the INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b product

The following directories of the ftp portal relate to various and different data:

- INSITU / RAW: raw files of the CORIOLIS database stored per date per file type on observation levels.
- STD: data interpolated on standard levels stored per date per file type.
- OA: the data and field sub-directories relate respectively to the auxiliary data used for the objective analysis and analysis residuals, and to the gridded field produced by the objective analysis and estimation error.
- MAP: display of the gridded fields produced by the OA at five standard levels for each parameter (T and S).

For detailed information on CORA , please visit: <http://www.coriolis.eu.org/Science2/Global-Ocean/CORA>

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V FILES NOMENCLATURE AND FORMAT

Only files of the INSITU_GLO_TS_OA_OBSERVATIONS_013_002_a product are described hereafter since a full description of the CORA files is available at: <http://www.coriolis.eu.org/Science2/Global-Ocean/CORA>

V.1 Nomenclature of files when downloaded through the CMEMS FTP Service

INSITU_GLO_TS_OA_OBSERVATIONS_013_002_a files nomenclature when downloaded through the CMEMS CMEMS FTP service is based as follows:

-The INSITU files: **CO_code_YYYYMMDD_PR_TT.nc** and STD files: **ST_code_YYYYMMDD_PR_TT.nc**

where:

- code is the name of the analysis performed: RTOAGL01 or NRTOAGL01,
- YYYYMMDD is the date of the data,
- PR stands for vertical Profile,
- TT is the type of file (data): XB (XBT or XCTD), PF (Argo), BA (Bathythermograph data from GTS), TE (TESAC data from GTS), MO (moorings), OC (CTD and XCTD from WOD2009) or CT (CTD).

- The OA files: **OA_code_YYYYMMDD_type_param.nc**

where:

- code is the name of the analysis performed: RTOAGL01 or NRTOAGL01,
- YYYYMMDD is the date of the analysis,
- type is the type of analysis product: dat for data or fld for gridded field,
- param is the parameter : TEMP (sea temperature) or PSAL (sea salinity).

- The MAP files: **MA_code_YYYYMMDD_param_IIII.png**


Where :

- code is the name of the analysis performed: RTOAGL01 or NRTOAGL01,
- YYYYMMDD is the date of the analysis,
- param is a four letter code for the parameter : TEMP (sea temperature) or PSAL (sea salinity),
- IIII is the immersion in meters (10, 100, 300, 1000 and 1600).

V.2 File Format: Netcdf

The products are stored using the NetCDF format.

NetCDF (network Common Data Form) is an interface for array-oriented data access and a library that provides an implementation of the interface. The netCDF library also defines a machine-independent format for representing scientific data. Together, the interface, library, and format support the creation, access, and

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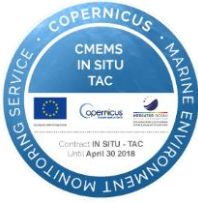
sharing of scientific data. The netCDF software was developed at the Unidata Program Centre in Boulder, Colorado. The netCDF libraries define a machine-independent format for representing scientific data.

Please see Unidata netCDF pages for more information, and to retrieve netCDF software package.

NetCDF data is:

- * Self-Describing. A netCDF file includes information about the data it contains.
- * Architecture-independent. A netCDF file is represented in a form that can be accessed by computers with different ways of storing integers, characters, and floating-point numbers.
- * Direct-access. A small subset of a large dataset may be accessed efficiently, without first reading through all the preceding data.
- * Appendable. Data can be appended to a netCDF dataset along one dimension without copying the dataset or redefining its structure. The structure of a netCDF dataset can be changed, though this sometimes causes the dataset to be copied.
- * Sharable. One writer and multiple readers may simultaneously access the same netCDF file.

For INSITU files, the used NetCDF format is Argo 2.3 (see <http://www.argodatamgt.org/Documentation/Argo-NetCDF-sample-files>) and for other files it is CF-1.4.



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V.3 Structure and semantic of NetCDF maps files

For CO_code_YYYYMMDD_PR_TT.nc:

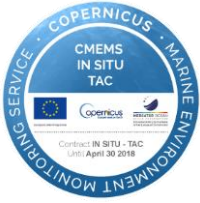
```
netcdf CO_RTOAGL01_20130101_PR_BA {
```

dimensions:

```
DATE_TIME = 14 ;  
STRING256 = 256 ;  
STRING64 = 64 ;  
STRING32 = 32 ;  
STRING16 = 16 ;  
STRING8 = 8 ;  
STRING4 = 4 ;  
STRING2 = 2 ;  
N_PROF = 49 ;  
N_PARAM = 2 ;  
N_LEVELS = 473 ;  
N_CALIB = 1 ;  
N_HISTORY = UNLIMITED ; // (0 currently)
```

variables:

```
char DATA_TYPE(STRING16) ;  
    DATA_TYPE:long_name = "Data type" ;  
    DATA_TYPE:_FillValue = " " ;  
char FORMAT_VERSION(STRING4) ;  
    FORMAT_VERSION:long_name = "File format version" ;  
    FORMAT_VERSION:_FillValue = " " ;  
char HANDBOOK_VERSION(STRING4) ;  
    HANDBOOK_VERSION:long_name = "Data handbook version" ;  
    HANDBOOK_VERSION:_FillValue = " " ;  
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 = " " ;  
char DATE_CREATION(DATE_TIME) ;  
    DATE_CREATION:long_name = "Date of file creation" ;  
    DATE_CREATION:conventions = "YYYYMMDDHHMISS" ;  
    DATE_CREATION:_FillValue = " " ;
```



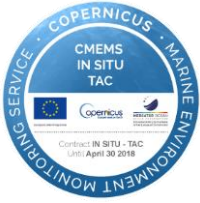
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```
char DATE_UPDATE( DATE_TIME ) ;
    DATE_UPDATE:long_name = "Date of update of this file" ;
    DATE_UPDATE:conventions = "YYYYMMDDHHMISS" ;
    DATE_UPDATE:_FillValue = " " ;
char PLATFORM_NUMBER( N_PROF, STRING8 ) ;
    PLATFORM_NUMBER:long_name = "Float unique identifier" ;
    PLATFORM_NUMBER:conventions = "WMO float identifier : A9IIIII" ;
    PLATFORM_NUMBER:_FillValue = " " ;
char PROJECT_NAME( N_PROF, STRING64 ) ;
    PROJECT_NAME:long_name = "Name of the project" ;
    PROJECT_NAME:_FillValue = " " ;
char PI_NAME( N_PROF, STRING64 ) ;
    PI_NAME:long_name = "Name of the principal investigator" ;
    PI_NAME:_FillValue = " " ;
char STATION_PARAMETERS( N_PROF, N_PARAM, STRING16 ) ;
    STATION_PARAMETERS:long_name = "List of available parameters for the station" ;
    STATION_PARAMETERS:conventions = "Argo reference table 3" ;
    STATION_PARAMETERS:_FillValue = " " ;
int CYCLE_NUMBER( N_PROF ) ;
    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 ;
char DIRECTION( N_PROF ) ;
    DIRECTION:long_name = "Direction of the station profiles" ;
    DIRECTION:conventions = "A: ascending profiles, D: descending profiles" ;
    DIRECTION:_FillValue = " " ;
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 = " " ;
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 = " " ;
char DATA_STATE_INDICATOR( N_PROF, STRING4 ) ;
    DATA_STATE_INDICATOR:long_name = "Degree of processing the data have passed
through" ;
```



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```
DATA_STATE_INDICATOR:conventions = "Argo reference table 6" ;
DATA_STATE_INDICATOR:_FillValue = " " ;
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 = " " ;
char INST_REFERENCE(N_PROF, STRING64) ;
    INST_REFERENCE:long_name = "Instrument type" ;
    INST_REFERENCE:conventions = "Brand, type, serial number" ;
    INST_REFERENCE:_FillValue = " " ;
char FIRMWARE_VERSION(N_PROF, STRING16) ;
    FIRMWARE_VERSION:long_name = "Instrument version" ;
    FIRMWARE_VERSION:conventions = "" ;
    FIRMWARE_VERSION:_FillValue = " " ;
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 = " " ;
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" ;
    JULD:conventions = "Relative julian days with decimal part (as parts of day)" ;
    JULD:_FillValue = 999999. ;
    JULD:axis = "T" ;
char JULD_QC(N_PROF) ;
    JULD_QC:long_name = "Quality on Date and Time" ;
    JULD_QC:conventions = "Argo reference table 2" ;
    JULD_QC:_FillValue = " " ;
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:_FillValue = 999999. ;
double LATITUDE(N_PROF) ;
    LATITUDE:long_name = "Latitude of the station, best estimate" ;
```



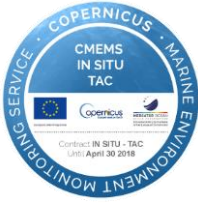
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```
LATITUDE:standard_name = "latitude" ;
LATITUDE:units = "degree_north" ;
LATITUDE:_FillValue = 99999. ;
LATITUDE:valid_min = -90. ;
LATITUDE:valid_max = 90. ;
LATITUDE:axis = "Y" ;
double LONGITUDE(N_PROF) ;
LONGITUDE:long_name = "Longitude of the 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" ;
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 = " " ;
char POSITIONING_SYSTEM(N_PROF, STRING8) ;
POSITIONING_SYSTEM:long_name = "Positioning system" ;
POSITIONING_SYSTEM:_FillValue = " " ;
char PROFILE_DEPH_QC(N_PROF) ;
PROFILE_DEPH_QC:long_name = "Global quality flag of DEPH profile" ;
PROFILE_DEPH_QC:conventions = "Argo reference table 2a" ;
PROFILE_DEPH_QC:_FillValue = " " ;
char PROFILE_TEMP_QC(N_PROF) ;
PROFILE_TEMP_QC:long_name = "Global quality flag of TEMP profile" ;
PROFILE_TEMP_QC:conventions = "Argo reference table 2a" ;
PROFILE_TEMP_QC:_FillValue = " " ;
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 = " " ;
float DEPH(N_PROF, N_LEVELS) ;
DEPH:long_name = "DEPTH UNDER SEA SURFACE" ;
DEPH:standard_name = "depth" ;
DEPH:_FillValue = 99999.f ;
```

PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Ref: CMEMS-INS-PUM-013-002_ab

Date : March 07, 2017
Document version: v1.4

```
DEPH:units = "meter" ;
DEPH:valid_min = 0.f ;
DEPH:valid_max = 12000.f ;
DEPH:C_format = "%7.1f" ;
DEPH:FORTTRAN_format = "F7.1" ;
DEPH:resolution = 0.1f ;

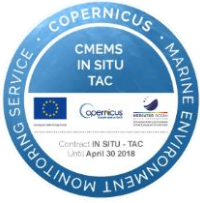
char DEPH_QC(N_PROF, N_LEVELS) ;
    DEPH_QC:long_name = "quality flag" ;
    DEPH_QC:conventions = "Argo reference table 2" ;
    DEPH_QC:_FillValue = " " ;

float DEPH_ADJUSTED(N_PROF, N_LEVELS) ;
    DEPH_ADJUSTED:long_name = "DEPTH UNDER SEA SURFACE" ;
    DEPH_ADJUSTED:_FillValue = 99999.f ;
    DEPH_ADJUSTED:units = "meter" ;
    DEPH_ADJUSTED:valid_min = 0.f ;
    DEPH_ADJUSTED:valid_max = 12000.f ;
    DEPH_ADJUSTED:C_format = "%7.1f" ;
    DEPH_ADJUSTED:FORTTRAN_format = "F7.1" ;
    DEPH_ADJUSTED:resolution = 0.1f ;

char DEPH_ADJUSTED_QC(N_PROF, N_LEVELS) ;
    DEPH_ADJUSTED_QC:long_name = "quality flag" ;
    DEPH_ADJUSTED_QC:conventions = "Argo reference table 2" ;
    DEPH_ADJUSTED_QC:_FillValue = " " ;

float DEPH_ADJUSTED_ERROR(N_PROF, N_LEVELS) ;
    DEPH_ADJUSTED_ERROR:long_name = "DEPTH UNDER SEA SURFACE" ;
    DEPH_ADJUSTED_ERROR:_FillValue = 99999.f ;
    DEPH_ADJUSTED_ERROR:units = "meter" ;
    DEPH_ADJUSTED_ERROR:valid_min = 0.f ;
    DEPH_ADJUSTED_ERROR:valid_max = 12000.f ;
    DEPH_ADJUSTED_ERROR:C_format = "%7.1f" ;
    DEPH_ADJUSTED_ERROR:FORTTRAN_format = "F7.1" ;
    DEPH_ADJUSTED_ERROR:resolution = 0.1f ;

float TEMP(N_PROF, N_LEVELS) ;
    TEMP:long_name = "SEA TEMPERATURE IN SITU ITS-90 SCALE" ;
    TEMP:standard_name = "sea_water_temperature" ;
    TEMP:_FillValue = 99999.f ;
    TEMP:units = "degree_Celsius" ;
```



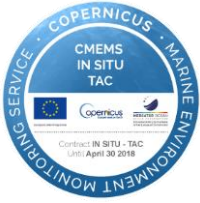
PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Ref: CMEMS-INS-PUM-013-002_ab

Date : March 07, 2017
Document version: v1.4

```
TEMP:valid_min = -2.f ;
TEMP:valid_max = 40.f ;
TEMP:C_format = "%9.3f" ;
TEMP:FORTTRAN_format = "F9.3" ;
TEMP:resolution = 0.001f ;
char TEMP_QC(N_PROF, N_LEVELS) ;
    TEMP_QC:long_name = "quality flag" ;
    TEMP_QC:conventions = "Argo reference table 2" ;
    TEMP_QC:_FillValue = " " ;
float TEMP_ADJUSTED(N_PROF, N_LEVELS) ;
    TEMP_ADJUSTED:long_name = "SEA TEMPERATURE IN SITU ITS-90 SCALE" ;
    TEMP_ADJUSTED:_FillValue = 99999.f ;
    TEMP_ADJUSTED:units = "degree_Celsius" ;
    TEMP_ADJUSTED:valid_min = -2.f ;
    TEMP_ADJUSTED:valid_max = 40.f ;
    TEMP_ADJUSTED:C_format = "%9.3f" ;
    TEMP_ADJUSTED:FORTTRAN_format = "F9.3" ;
    TEMP_ADJUSTED:resolution = 0.001f ;
char TEMP_ADJUSTED_QC(N_PROF, N_LEVELS) ;
    TEMP_ADJUSTED_QC:long_name = "quality flag" ;
    TEMP_ADJUSTED_QC:conventions = "Argo reference table 2" ;
    TEMP_ADJUSTED_QC:_FillValue = " " ;
float TEMP_ADJUSTED_ERROR(N_PROF, N_LEVELS) ;
    TEMP_ADJUSTED_ERROR:long_name = "SEA TEMPERATURE IN SITU ITS-90 SCALE" ;
    TEMP_ADJUSTED_ERROR:_FillValue = 99999.f ;
    TEMP_ADJUSTED_ERROR:units = "degree_Celsius" ;
    TEMP_ADJUSTED_ERROR:C_format = "%9.3f" ;
    TEMP_ADJUSTED_ERROR:FORTTRAN_format = "F9.3" ;
    TEMP_ADJUSTED_ERROR:resolution = 0.001f ;
char PARAMETER(N_PROF, N_CALIB, N_PARAM, STRING16) ;
    PARAMETER:long_name = "List of parameters with calibration information" ;
    PARAMETER:conventions = "Argo reference table 3" ;
    PARAMETER:_FillValue = " " ;
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 = " " ;
char SCIENTIFIC_CALIB_COEFFICIENT(N_PROF, N_CALIB, N_PARAM, STRING256) ;
```



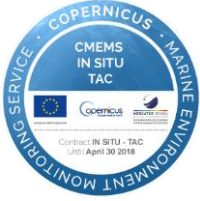
PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Ref: CMEMS-INS-PUM-013-002_ab

Date : March 07, 2017
Document version: v1.4

```
SCIENTIFIC_CALIB_COEFFICIENT:long_name = "Calibration coefficients for this equation" ;
SCIENTIFIC_CALIB_COEFFICIENT:_FillValue = " " ;
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 = " " ;
char SCIENTIFIC_CALIB_DATE(N_PROF, N_CALIB, N_PARAM, DATE_TIME) ;
SCIENTIFIC_CALIB_DATE:long_name = "Date of calibration" ;
SCIENTIFIC_CALIB_DATE:_FillValue = " " ;
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 = " " ;
char HISTORY_STEP(N_HISTORY, N_PROF, STRING4) ;
HISTORY_STEP:long_name = "Step in data processing" ;
HISTORY_STEP:conventions = "Argo reference table 12" ;
HISTORY_STEP:_FillValue = " " ;
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 = " " ;
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 = " " ;
char HISTORY_REFERENCE(N_HISTORY, N_PROF, STRING64) ;
HISTORY_REFERENCE:long_name = "Reference of database" ;
HISTORY_REFERENCE:conventions = "Institution dependent" ;
HISTORY_REFERENCE:_FillValue = " " ;
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 = " " ;
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 = " " ;
```



PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Ref: CMEMS-INS-PUM-013-002_ab

Date : March 07, 2017
Document version: v1.4

```
char HISTORY_PARAMETER(N_HISTORY, N_PROF, STRING16) ;
    HISTORY_PARAMETER:long_name = "Station parameter action is performed on" ;
    HISTORY_PARAMETER:conventions = "Argo reference table 3" ;
    HISTORY_PARAMETER:_FillValue = " " ;
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" ;
float HISTORY_STOP_PRES(N_HISTORY, N_PROF) ;
    HISTORY_STOP_PRES:long_name = "Stop pressure action applied on" ;
    HISTORY_STOP_PRES:_FillValue = 99999.f ;
    HISTORY_STOP_PRES:units = "decibar" ;
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 ;
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 = " " ;

// global attributes:
:title = "Argo float vertical profile" ;
:institution = "" ;
:source = "Argo float" ;
:history = "2013-01-17T08:45:29Z creation" ;
:references = "http://www.argodatamgt.org/Documentation" ;
:comment = "" ;
:user_manual_version = "2.4" ;
:Conventions = "Argo-2.4 CF-1.6" ;
:featureType = "trajectoryProfile" ;
}
```



PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Ref: CMEMS-INS-PUM-013-002_ab

Date : March 07, 2017
Document version: v1.4

For ST_code_YYYYMMDD_PR_TT.nc:

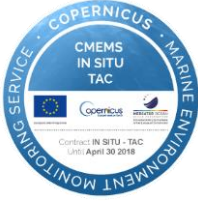
netcdf ST_RTOAGL01_20130101_PR_BA {

dimensions:

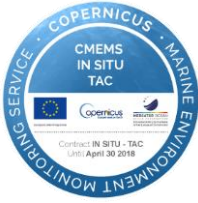
DATE_TIME = 14 ;
STRING64 = 64 ;
STRING32 = 32 ;
STRING16 = 16 ;
STRING8 = 8 ;
STRING4 = 4 ;
STRING2 = 2 ;
N_PROF = 49 ;
N_LEVELS = 99 ;
RP_NB_PROF = 49 ;

variables:

char DATA_TYPE(String16) ;
 DATA_TYPE:long_name = "Data type" ;
char REFERENCE_DATE_TIME(Date_Time) ;
 REFERENCE_DATE_TIME:long_name = "Date of reference for Julian days" ;
 REFERENCE_DATE_TIME:conventions = "YYYYMMDDHHMISS" ;
char DATA_MODE(N_Prof) ;
 DATA_MODE:long_name = "Delayed mode or real time data" ;
 DATA_MODE:conventions = "R : real time; D : delayed mode" ;
char PI_NAME(N_Prof, String64) ;
 PI_NAME:long_name = "Name of the principal investigator" ;
char PLATFORM_NUMBER(N_Prof, String8) ;
 PLATFORM_NUMBER:long_name = "Float unique identifier" ;
 PLATFORM_NUMBER:conventions = "WMO float identifier" ;
char DATA_CENTRE(N_Prof, String2) ;
 DATA_CENTRE:long_name = "Data centre in charge of float data processing" ;
 DATA_CENTRE:conventions = "GTSP table" ;
char DC_REFERENCE(N_Prof, String32) ;
 DC_REFERENCE:long_name = "Station unique identifier in data centre" ;
 DC_REFERENCE:conventions = "Data centre convention" ;
char INST_REFERENCE(N_Prof, String64) ;
 INST_REFERENCE:long_name = "Instrument type" ;



```
INST_REFERENCE:conventions = "Brand, type, serial number" ;
char WMO_INST_TYPE(N_PROF, STRING4) ;
WMO_INST_TYPE:long_name = "Coded instrument type" ;
WMO_INST_TYPE:conventions = "WMO code table 1770 - instrument type" ;
double JULD(N_PROF) ;
JULD:standard_name = "time" ;
JULD:long_name = "Julian day (UTC) of the station relative to REFERENCE_DATE_TIME" ;
JULD:units = "days since 1950-01-01 00:00:00 UTC" ;
JULD:conventions = "Relative julian days with decimal part (as parts of day)" ;
double LATITUDE(N_PROF) ;
LATITUDE:standard_name = "latitude" ;
LATITUDE:long_name = "Latitude of the station, best estimate" ;
LATITUDE:units = "degree_north" ;
LATITUDE:valid_min = -90. ;
LATITUDE:valid_max = 90. ;
double LONGITUDE(N_PROF) ;
LONGITUDE:standard_name = "longitude" ;
LONGITUDE:long_name = "Longitude of the station, best estimate" ;
LONGITUDE:units = "degree_east" ;
LONGITUDE:valid_min = -180. ;
LONGITUDE:valid_max = 180. ;
double DEPTH(N_LEVELS) ;
DEPTH:long_name = "Depth" ;
DEPTH:units = "m" ;
DEPTH:valid_min = 0. ;
DEPTH:valid_max = 10000. ;
float TEMP(N_PROF, N_LEVELS) ;
TEMP:_FillValue = 99999.f ;
TEMP:long_name = "Ocean temperature (T90) (interpolated on Z levels)" ;
TEMP:units = "degree_Celsius" ;
TEMP:valid_min = -3. ;
TEMP:valid_max = 40. ;
float TEMP_ERR_ME(N_PROF, N_LEVELS) ;
TEMP_ERR_ME:_FillValue = 99999.f ;
TEMP_ERR_ME:long_name = "Error on interpolated temperature" ;
TEMP_ERR_ME:units = "degree_Celsius" ;
TEMP_ERR_ME:valid_min = 10. ;
```



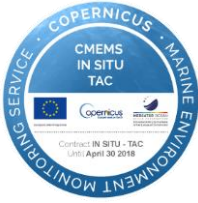
PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Ref: CMEMS-INS-PUM-013-002_ab

Date : March 07, 2017
Document version: v1.4

```
float TEMP_CLIM(N_PROF, N_LEVELS) ;  
    TEMP_CLIM:_FillValue = 99999.f ;  
    TEMP_CLIM:long_name = "Climatology reference of profile" ;  
    TEMP_CLIM:units = "degree_Celsius" ;  
    TEMP_CLIM:valid_min = 40. ;  
byte TEMP_QC(N_PROF, N_LEVELS) ;  
    TEMP_QC:_FillValue = 0b ;  
    TEMP_QC:conventions = "Q where Q =[0-9]" ;  
    TEMP_QC:long_name = "Quality on interpolated temperature" ;  
float TEMP_CLIM_STD(N_PROF, N_LEVELS) ;  
    TEMP_CLIM_STD:_FillValue = 99999.f ;  
    TEMP_CLIM_STD:long_name = "Standard deviation of climatology reference of profile" ;  
    TEMP_CLIM_STD:units = "degree_Celsius" ;  
    TEMP_CLIM_STD:valid_min = 0. ;  
    TEMP_CLIM_STD:valid_max = 60. ;  
float PSAL(N_PROF, N_LEVELS) ;  
    PSAL:_FillValue = 99999.f ;  
    PSAL:long_name = "Salinity (S78) (interpolated on Z levels)" ;  
    PSAL:units = "1e-3" ;  
    PSAL:comment = "PSS" ;  
    PSAL:valid_min = 0. ;  
    PSAL:valid_max = 60. ;  
float PSAL_ERR_ME(N_PROF, N_LEVELS) ;  
    PSAL_ERR_ME:_FillValue = 99999.f ;  
    PSAL_ERR_ME:long_name = "Error on interpolated salinity" ;  
    PSAL_ERR_ME:units = "1e-3" ;  
    PSAL_ERR_ME:comment = "PSS" ;  
    PSAL_ERR_ME:valid_min = 10. ;  
float PSAL_CLIM(N_PROF, N_LEVELS) ;  
    PSAL_CLIM:_FillValue = 99999.f ;  
    PSAL_CLIM:long_name = "Climatology reference of profile" ;  
    PSAL_CLIM:units = "1e-3" ;  
    PSAL_CLIM:comment = "PSS" ;  
    PSAL_CLIM:valid_min = 60. ;  
byte PSAL_QC(N_PROF, N_LEVELS) ;  
    PSAL_QC:_FillValue = 0b ;  
    PSAL_QC:conventions = "Q where Q =[0-9]" ;
```



PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Ref: CMEMS-INS-PUM-013-002_ab

Date : March 07, 2017
Document version: v1.4

```
PSAL_QC:long_name = "Quality on interpolated salinity" ;
float PSAL_CLIM_STD(N_PROF, N_LEVELS) ;
PSAL_CLIM_STD:_FillValue = 99999.f ;
PSAL_CLIM_STD:long_name = "Standard deviation of climatology reference of profile" ;
PSAL_CLIM_STD:units = "1e-3" ;
PSAL_CLIM_STD:comment = "PSS" ;
PSAL_CLIM_STD:valid_min = 0. ;
PSAL_CLIM_STD:valid_max = 60. ;
char RP_DCREF_ORI(RP_NB_PROF, STRING32) ;
RP_DCREF_ORI:long_name = "DC_reference of raw profiles" ;
char RP_DCREF_RED(RP_NB_PROF, STRING32) ;
RP_DCREF_RED:long_name = "DC_reference of STD profiles" ;
char RP_TEMP_QC_STD(RP_NB_PROF) ;
RP_TEMP_QC_STD:long_name = "TEMPQC flag from STD" ;
RP_TEMP_QC_STD:conventions = "Q =[0-9], Q=0 no std QC, Q=1 std QC ok, Q=5 averaged
profile with std QC ok,Q=8 averaged profile with std QC not ok" ;
char RP_PSAQC_STD(RP_NB_PROF) ;
RP_PSAQC_STD:long_name = "PSALQC flag from STD" ;
RP_PSAQC_STD:conventions = "Q =[0-9], Q=0 no std QC, Q=1 std QC ok, Q=5 averaged
profile with std QC ok,Q=8 averaged profile with std QC not ok" ;

// global attributes:
>Last_update = "17-Jan-2013 10:17:13" ;
>SoftwareVersion = "ISAS_V5.2b/STD" ;
>Conventions = "CF-1.4" ;
}
```




PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Ref: CMEMS-INS-PUM-013-002_ab

Date : March 07, 2017
Document version: v1.4

For OA_code_YYYYMMDD_data_param.nc:

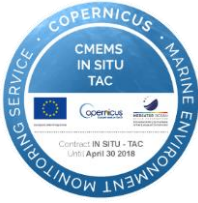
```
netcdf OA_RTOAGL01_20130102_dat_PSAI {
```

dimensions:

```
DATE_TIME = 14 ;  
STRING64 = 64 ;  
STRING32 = 32 ;  
STRING16 = 16 ;  
STRING8 = 8 ;  
STRING4 = 4 ;  
STRING2 = 2 ;  
N_PROF = 8312 ;  
N_LEVELS = 152 ;  
RP_NB_PROF = 19600 ;
```

variables:

```
char DATA_TYPE(STRING16) ;  
    DATA_TYPE:long_name = "Data type" ;  
char REFERENCE_DATE_TIME(DATE_TIME) ;  
    REFERENCE_DATE_TIME:long_name = "Date of reference for Julian days" ;  
    REFERENCE_DATE_TIME:conventions = "YYYYMMDDHHMISS" ;  
char DATA_MODE(N_PROF) ;  
    DATA_MODE:long_name = "Delayed mode or real time data" ;  
    DATA_MODE:conventions = "R : real time; D : delayed mode" ;  
char PI_NAME(N_PROF, STRING64) ;  
    PI_NAME:long_name = "Name of the principal investigator" ;  
char PLATFORM_NUMBER(N_PROF, STRING8) ;  
    PLATFORM_NUMBER:long_name = "Float unique identifier" ;  
    PLATFORM_NUMBER:conventions = "WMO float identifier" ;  
char DATA_CENTRE(N_PROF, STRING2) ;  
    DATA_CENTRE:long_name = "Data centre in charge of float data processing" ;  
    DATA_CENTRE:conventions = "GTSP table" ;  
char DC_REFERENCE(N_PROF, STRING32) ;  
    DC_REFERENCE:long_name = "Station unique identifier in data centre" ;  
    DC_REFERENCE:conventions = "Data centre convention" ;  
char INST_REFERENCE(N_PROF, STRING64) ;  
    INST_REFERENCE:long_name = "Instrument type" ;
```



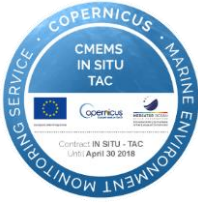
PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Ref: CMEMS-INS-PUM-013-002_ab

Date : March 07, 2017
Document version: v1.4

```
INST_REFERENCE:conventions = "Brand, type, serial number" ;
char WMO_INST_TYPE(N_PROF, STRING4) ;
WMO_INST_TYPE:long_name = "Coded instrument type" ;
WMO_INST_TYPE:conventions = "WMO code table 1770 - instrument type" ;
double JULD(N_PROF) ;
JULD:standard_name = "time" ;
JULD:long_name = "Julian day (UTC) of the station relative to REFERENCE_DATE_TIME" ;
JULD:units = "days since 1950-01-01 00:00:00 UTC" ;
JULD:conventions = "Relative julian days with decimal part (as parts of day)" ;
double LATITUDE(N_PROF) ;
LATITUDE:standard_name = "latitude" ;
LATITUDE:long_name = "Latitude of the station, best estimate" ;
LATITUDE:units = "degree_north" ;
LATITUDE:valid_min = -90. ;
LATITUDE:valid_max = 90. ;
double LONGITUDE(N_PROF) ;
LONGITUDE:standard_name = "longitude" ;
LONGITUDE:long_name = "Longitude of the station, best estimate" ;
LONGITUDE:units = "degree_east" ;
LONGITUDE:valid_min = -180. ;
LONGITUDE:valid_max = 180. ;
double DEPTH(N_LEVELS) ;
DEPTH:long_name = "Depth" ;
DEPTH:units = "m" ;
DEPTH:valid_min = 0. ;
DEPTH:valid_max = 10000. ;
float PSAL(N_PROF, N_LEVELS) ;
PSAL:_FillValue = 99999.f ;
PSAL:long_name = "Salinity (S78) (interpolated on Z levels)" ;
PSAL:units = "1e-3" ;
PSAL:comment = "PSS" ;
PSAL:valid_min = 0. ;
PSAL:valid_max = 60. ;
float PSAL_ERR_ME(N_PROF, N_LEVELS) ;
PSAL_ERR_ME:_FillValue = 99999.f ;
PSAL_ERR_ME:long_name = "Error on interpolated salinity" ;
PSAL_ERR_ME:units = "1e-3" ;
```



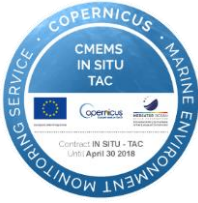
PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Ref: CMEMS-INS-PUM-013-002_ab

Date : March 07, 2017
Document version: v1.4

```
PSAL_ERR_ME:comment = "PSS" ;
PSAL_ERR_ME:valid_min = 10. ;
float PSAL_CLIM(N_PROF, N_LEVELS) ;
PSAL_CLIM:_FillValue = 99999.f ;
PSAL_CLIM:long_name = "Climatology reference of profile" ;
PSAL_CLIM:units = "1e-3" ;
PSAL_CLIM:comment = "PSS" ;
PSAL_CLIM:valid_min = 60. ;
byte PSAL_QC(N_PROF, N_LEVELS) ;
PSAL_QC:_FillValue = 0b ;
PSAL_QC:conventions = "Q where Q =[0-9]" ;
PSAL_QC:long_name = "Quality on interpolated salinity" ;
float PSAL_CLIM_STD(N_PROF, N_LEVELS) ;
PSAL_CLIM_STD:_FillValue = 99999.f ;
PSAL_CLIM_STD:long_name = "Standard deviation of climatology reference of profile" ;
PSAL_CLIM_STD:units = "1e-3" ;
PSAL_CLIM_STD:comment = "PSS" ;
PSAL_CLIM_STD:valid_min = 0. ;
PSAL_CLIM_STD:valid_max = 60. ;
float PSAL_ERR_UR(N_PROF, N_LEVELS) ;
PSAL_ERR_UR:long_name = "Error from unresolved scales" ;
PSAL_ERR_UR:_FillValue = 99999.f ;
PSAL_ERR_UR:units = "1e-3" ;
PSAL_ERR_UR:comment = "PSS" ;
float PSAL_RESID(N_PROF, N_LEVELS) ;
PSAL_RESID:long_name = "Residuals" ;
PSAL_RESID:_FillValue = 99999.f ;
PSAL_RESID:units = "1e-3" ;
PSAL_RESID:comment = "PSS" ;
char RP_DCREF_ORI(RP_NB_PROF, STRING32) ;
RP_DCREF_ORI:long_name = "DC_reference of raw profiles" ;
char RP_DCREF_RED(RP_NB_PROF, STRING32) ;
RP_DCREF_RED:long_name = "DC_reference of STD profiles" ;
char RP_PSAI_QC_STD(RP_NB_PROF) ;
RP_PSAI_QC_STD:long_name = "PSAIQC flag from STD" ;
RP_PSAI_QC_STD:conventions = "Q =[0-9], Q=0 no std QC, Q=1 std QC ok, Q=5 averaged
profile with std QC ok,Q=8 averaged profile with std QC not ok" ;
```



PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
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Date : March 07, 2017
Document version: v1.4

// global attributes:

```
:Last_update = "02-Jan-2013 13:51:48" ;  
:SoftwareVersion = "ISAS_V5.2b/POSTOA" ;  
:Conventions = "CF-1.4" ;
```

```
}
```



PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

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Date : March 07, 2017
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For OA_code_YYYYMMDD_fld_param.nc

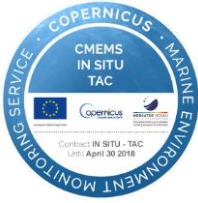
netcdf OA_NRTOAGL01_20121215_fld_TEMP {

dimensions:

longitude = 720 ;
latitude = 545 ;
DEPTH = 152 ;
time = UNLIMITED ; // (1 currently)

variables:

```
float longitude(longitude) ;  
    longitude:standard_name = "longitude" ;  
    longitude:units = "degree_east" ;  
    longitude:valid_min = -180.f ;  
    longitude:valid_max = 180.f ;  
float latitude(latitude) ;  
    latitude:standard_name = "latitude" ;  
    latitude:units = "degree_north" ;  
    latitude:valid_min = -90.f ;  
    latitude:valid_max = 90.f ;  
float DEPTH(DEPTH) ;  
    DEPTH:standard_name = "depth" ;  
    DEPTH:units = "m" ;  
    DEPTH:positive = "down" ;  
    DEPTH:valid_min = 0.f ;  
    DEPTH:valid_max = 2000.f ;  
float time(time) ;  
    time:standard_name = "time" ;  
    time:units = "days since 1950-01-01 00:00:00 UTC" ;  
short TEMP(time, DEPTH, latitude, longitude) ;  
    TEMP:long_name = "Temperature" ;  
    TEMP:units = "degree_Celsius" ;  
    TEMP:valid_min = -23000s ;  
    TEMP:valid_max = 20000s ;  
    TEMP:_FillValue = 32767s ;  
    TEMP:add_offset = 20. ;  
    TEMP:scale_factor = 0.001 ;
```



PUM for Objective Analysis Products

INSITU_GLO_TS_OA_REP_OBSERVATIONS_013_002_b
INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

Ref: CMEMS-INS-PUM-013-002_ab

Date : March 07, 2017
Document version: v1.4

```
TEMP:comment = "Estimated by optimal interpolation" ;
```

```
byte pct_variance(time, DEPTH, latitude, longitude) ;
```

```
pct_variance:long_name = "Error on temperature (percent of a priori variance)" ;
```

```
pct_variance:units = "1" ;
```

```
pct_variance:valid_min = 0. ;
```

```
pct_variance:valid_max = 100. ;
```

```
pct_variance:_FillValue = 127b ;
```

```
pct_variance:add_offset = 0. ;
```

```
pct_variance:scale_factor = 1. ;
```

```
// global attributes:
```

```
:CONVENTIONS = "COARDS" ;
```

```
:producer_agency = "Ifremer" ;
```

```
:projetc_name = "CORIOLIS" ;
```

```
:data_set = "global interpolated data set" ;
```

```
:data_manager = "Ifremer" ;
```

```
:software_version = "ISAS_V5.2b/POSTOA" ;
```

```
:south_latitude = -77.01048f ;
```

```
:north_latitude = 89.89626f ;
```

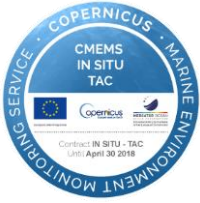
```
:west_longitude = -180.f ;
```

```
:east_longitude = 179.5f ;
```

```
:creation_time = "20130107T102949" ;
```

```
:reference_date = "19500101T000000" ;
```

```
}
```



V.4 Example of png file

Figures displaying the OA gridded fields are in the Portable Network Graphics format. An example of such figures is presented below for a temperature gridded field at 10m-deep.

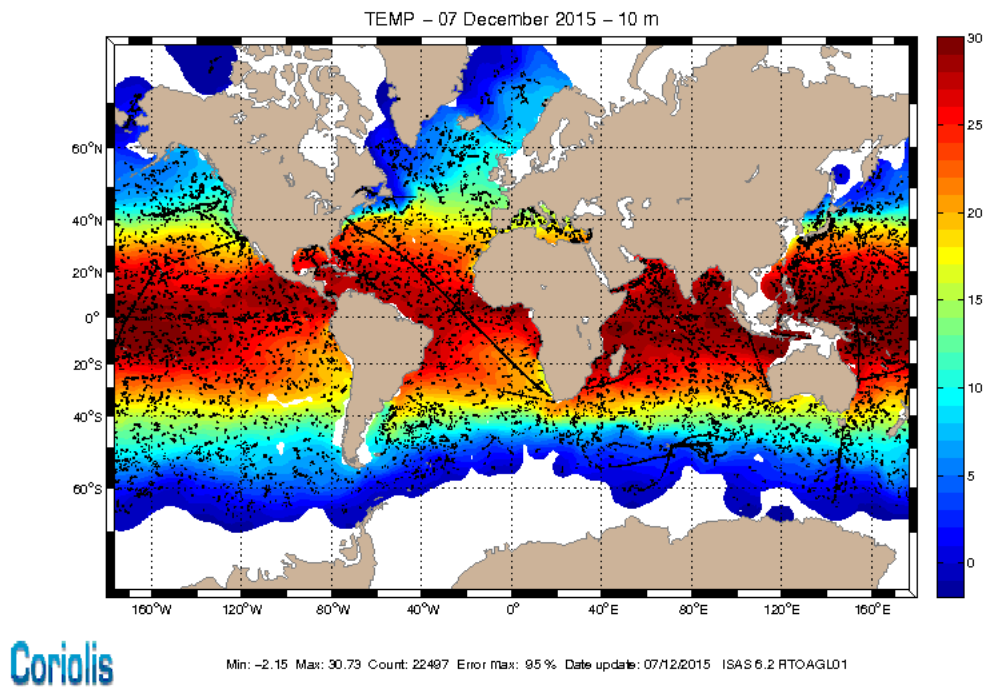


Figure 3: The Temperature gridded field at 10-m deep on 7^h December 2015 is in colour. Black dots represent the data measurements used by the objective analysis.

These figures can be “quickly” viewed on the Coriolis website at: <http://www.coriolis.eu.org/Data-Products/Products/Gridded-Fields>