PRODUCT USER MANUAL

For Global Ocean-Delayed Mode in-situ Observations of surface (drifters and HFR) and sub-surface (vessel-mounted ADCPs and Argo drift) water velocity.

INSITU_GLO_PHY_UV_DISCRETE_MY_013_044

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RECORD TABLE

Issue	Date	§	Description of Change	Author	Validated By
1.0	14/12/2015		Creation of the document	Hélène Etienne	
1.1	05/09/2016	II.2	Time series extended with the year 2015	Hélène Etienne	
1.2	30/10/2017		Time series extended with the year 2016	Hélène Etienne	
1.3	14/01/2019		Time series extended with the year 2017 and part of 2018	Hélène Etienne	
2.0	29/03/2020	all	Update of the entire drifters' time series. Addition of two new datasets: gridded total surface currents from High-Frequency Radars and ADCP velocity profiles.	Hélène Etienne, Emma Reyes, Paz Rotllán, Anna Rubio, Thierry Carval, Nathalie Verbrugge	C. Derval
3.0	05/01/2021		Addition of a new dataset: radial surface currents from High Frequency Radars.	Emma Reyes, Paz Rotllán, Anna Rubio, Lohitzune Solabarrieta, Nathalie Verbrugge	
3.1	06/09/2021		Addition of new radial and total HF systems	Emma Reyes, Paz Rotllán, Anna Rubio, Lohitzune Solabarrieta, Nathalie Verbrugge	Stéphane Tarot
3.1	30/11/2021		Correction of external links	Stéphane Tarot	Stéphane Tarot
3.2	16/02/2022	§II.2	Update frequency added	Nathalie Verbrugge	Stéphane Tarot
3.3	23/05/2022	All	product and datasets renaming + new template	N. Verbrugge, A. Rubio	S. Tarot

3.4	06/2023	All	Add Argo dataset + table numeration update + minor corrections	N. Verbrugge	S. Tarot

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GLOSSARY AND ABBREVIATIONS

HFR	High Frequency Radar
ADCP	Acoustic Doppler Current Profiler

I INTRODUCTION

I.1 Summary

This Product User Manual describes the INSITU_GLO_PHY_UV_DISCRETE_MY_013_044 product distributed by the Copernicus Marine Service In Situ Thematic Assembly Centre (In Situ TAC). This manual describes how it is built, what is the content, what data services are available to access them, and how to use the files.

The *In Situ Global ocean* delayed mode product designed for reanalysis purposes integrates the best available version of **in situ data** for **ocean surface currents and current vertical profiles**.

This product concerns **five delayed time datasets** dedicated to near-surface currents measurements coming from two platforms (Lagrangian surface drifters and High Frequency radars), velocity profiles within the water column coming from the Acoustic Doppler Current Profiler (ADCP) platform and velocity at surface and around 1000m (parking depth) coming from Argo floats trajectories:

- **cmems_obs-ins_glo_phy-cur_my_drifter_PT6H, named drifter in the rest of the document**: delayed time zonal and meridional raw velocities measured by drifting buoys, sea surface temperature, quality flags and metadada. These surface observations are part of the DBCP's Global Drifter Program (GDP - http://www.aoml.noaa.gov/phod/dac/dacdata.php). In addition, a wind slippage correction, from 1993 until the end of the time series, is provided by the In Situ TAC (CLS)
- **cmems_obs-ins_glo_phy-cur_my_radar-radial_irr, named radar radial in the rest of the document:** near-surface radial velocities of High Frequency Radars (HFR), quality flags and metadata. These surface observations are part of the European HF radar Network (see Mader et al, 2017 and Corgnati et al., 2018).
- **cmems_obs-ins_glo_phy-cur_my_radar-total_irr, named radar total in the rest of the document:** near-surface zonal and meridional components of High Frequency Radars (HFR) derived total velocities, quality flags and metadata. These surface observations are part of the European HF radar Network (see Mader et al, 2017 and Corgnati et al., 2018) and the HFR US networks.
- **cmems_obs-ins_glo_phy-cur_my_adcp_irr, named adcp in the rest of the document**: three-dimensional water current velocities over a depth range along a vessel underway trajectory or mooring.
- **cmems_obs-ins_glo_phy-cur_my_argo_irr, named argo in the rest of the document**: ocean currents derived from the Andro delayed mode Argo floats trajectories (Ollitraut et al., 2022). Deep current is calculated from floats drift at parking depth, surface current is calculated from float surface drift.

This product is designed to be assimilated into or for validation purposes of operational models operated by ocean forecasting centers, for reanalysis purposes or for research community. These users need data aggregated and quality controlled in a reliable and documented manner.

Information on operational issues on products and services can be found on our User Notification Service. If you have any questions, please contact us.

I.2 History of changes

Date	Description of changes and impacted product
2022/11	Time series extension
2023/11	New Argo drift dataset New ADCP platforms

II DESCRIPTION OF THE PRODUCT SPECIFICATION

II.1 General Information

Product code	**INSITU_GLO_PHY_UV_DISCRETE_MY_013_044** For Global Ocean- Delayed Mode in-situ Observations of surface (drifters, Argo drift and High Frequency radars) and sub-surface (vessel-mounted ADCPs and Argo drift) water velocity				
Dataset[1]	**drifter**	**radar_radial**	**radar_total**	**adcp**	**Argo**
Spatial coverage	*global*	*European Seas from coast to up >200 km (depending on the operating frequency)*	*European and US Seas from coast to up >200 km (depending on the operating frequency)*	*global*	*Global*
Spatial resolution	*Discrete*	*Gridded (Typically ranges from a few hundred meters to 5-6 km, depending on HF Radar operating central frequency and bandwidth)*		*discrete*	*Discrete*
Temporal resolution	*6-hourly*	*Hourly (exceptions with 15' or 30')*	*Hourly (exceptions with 15' or 30')*	*2 minutes*	*Typical resolution of 10 days*
Temporal coverage	*01/01/1990 to 6 months to 1 year from present*	*01/2009 to 6 months to 1 year from present (but not for all the systems)*	*01/2009 to 6 months to 1 year from present (but not for all the systems)*	*04/01/2001 to 1 year to 2 years from present*	*Jan 2000 to 6 to 12 months before present*
Number of vertical levels for UV	*2*	*1*	*1*	*Variable* *Several depths up to 200m for 150kHz ADCP; up to*	*2 depths: surface and parking depth*

[1] File type is detailed when applicable

				850m for 38kHz ADCP	
Variables	*Zonal and Meridional Velocities at 15-m depth, Zonal and Meridional wind-slippage correction, Surface Temperature if available. QC variables and metadata (global attributes) -see Table 3-*	*Zonal and Meridional components and magnitude and direction of radial (referred to the individual measuring HFR stations) velocities at the surface (actual depth depending on the operating frequency), standard deviation of zonal and meridional components of the radial velocities at the surface. QC variables and metadata (global attributes) -see Table 5-*	*Zonal and Meridional Velocities at the surface (actual depth depending on the operating frequency), standard deviation of zonal and meridional velocities at the surface Geometrical Dilution of Precision (GDOP). QC variables and metadata (global attributes) -see Table 5-*	*Vertical profiles of eastward_sea_water_velocity, northward_sea_water_velocity, upward_sea_water_velocity*	*Zonal and Meridional Velocities at surface and sub-surface derived from Argo trajectory files with QC variables and metadata.*
Product type	*Observations, delayed-mode, multi-year*				
Update Frequency	*The product is updated twice a year: in June for a temporal extension; in December for a full reprocessing or/and a temporal extension. A full reprocessing is associated to different improvements (qualification procedures, new data, new methodology,…)*				
Delivery time	*biannual*				
File Format (see section IV.1)	*NetCDF4 classic model*				
Delivery mechanism	*Copernicus Marine Service Information Service – multiyear ftp (ftp://my.cmems-du.eu) –see section III-*				

Table 1: In Situ TAC UV MY product and datasets

II.2 Details of datasets

II.2.1 Drifters trajectories

The Delayed Time Surface Drifters Dataset is constructed from the Atlantic Oceanographic and Meteorological Laboratory (AOML) surface drifter database and upgraded with some ancillary data. AOML participates to the Global Drifter Program (GDP) via the Drifter Operations Center (DOC) and the Drifter Data Assembly Center (DAC):

- The DOC manages global drifter deployments using volunteer ships of the Ship of Opportunity Program, research ships, and aircraft.
- The DAC collects the data, verifies that the drifters are operational, distributes the data to meteorological services via the Global Telecommunications System (GTS), assembles, quality controls (e.g. drogue presence), and makes the data available on the web (Lumpkin et Pazos; 2006; Lumpkin et al., 2012) and offers drifter-derived products.

Satellite-tracked surface drifting buoy observations of currents and sea surface temperature are used. Wind slip correction is then computed by CLS (Rio, 2012), added to the database as well as quality control flags, before the final dissemination of the data to Copernicus Marine Service In Situ TAC GLO in standard file format.

II.2.2 High-Frequency Radars surface currents

The Delayed-Mode Surface currents from HF radars derive from the historical data collected, analysed and pre-processed by AZTI and the European HFR Node, before the final dissemination of the data to Copernicus Marine Service In Situ TAC GLO in standard file format. The European HFR node delivers in near real-time and at hourly basis, maps of surface current velocities from the HF radars that are actively processing and/or delivering their (formatted or raw) data to the node. The HFR node also collects and process near real time HFR for advanced QA/QC and aggregation of files to build the REP dataset of historical surface current velocity data from those operators connected to the node. In the European framework, the EU HFR Node is now managing data from 16 HFR EU networks (built by 40 radar sites) and 5 HFR US networks (just totals; not radials) and it is expected to manage 20 networks (for a total of 50 radar sites) by end 2024. From these 21 networks, 13 EU networks are sending radial and total data in NRT, 1 EU system stopped in 2016 and just provided historical data, and all US networks (5) and 2 EU network are sending NRT total data. Moreover, 11 EU networks have provided time series of historical data before 2019, the beginning year of the NRT dataflow.

HFRs provide surface ocean current data only relative to the surface within an integration depth ranging from tens of centimetres to a few meters, depending on the operating central frequency and averaged over a time interval (mainly around the cardinal hour) and delivered at hourly basis.

Radial velocities are measured on a polar grid and then remapped on a Cartesian grid. The final product is a map of the zonal and meridional components of the radial ocean currents on a regular grid in the area covered by the individual radar stations.

Total velocities are derived using un-weighted least square fit that maps radial velocities, measured by individual measurement stations, onto a Cartesian grid. The final product is a map of the zonal and meridional components of the ocean currents on a regular grid in the area of overlap of two or more radar stations.

II.2.3 Acoustic Doppler Current Profilers velocities

The reprocessed ADCP product is based on the NRT multiparameter product (INSITU_GLO_PHYBGCWAV_DISCRETE_MYNRT_013_030) history directory files downloaded from the Global Distribution Unit. Quality flags for the most relevant parameters have been reprocessed using updated quality assessment procedures. This work has been performed for each platform.

Quality control procedures were developed and tested by Ifremer and the European project AtlantOS: Cascade ADCP data delayed mode data processing. They are available in:

- Copernicus Marine In Situ TAC quality information document for REProcessed vessel ADCP (QUID REP ADCP). https://doi.org/10.13155/70496

More information on these procedures and on the ADCP product quality assessment is available on

https://www.umr-lops.fr/en/Technology/Software/CASCADE-7.2

II.2.4 Surface and parking depth velocities from Argo trajectories

The Argo currents dataset is derived from Argo floats trajectories available in Andro dataset (Ollitraut et al., 2022) which is a full reprocessing of Argo floats data. The raw data are the original data received from satellite, decoded and quality controlled into a trajectory file. Each trajectory is checked by a data scientist. These trajectories are more homogeneous than the trajectory files from Argo GDAC (Global Data Assembly Centre), produced by 12 distinct teams (DACs).

This dataset provides currents at the surface and in subsurface, at the parking depth of the floats. The positions used to estimate the velocities are measured during the surface drift (Argos or GPS positioning, no Iridium). A more detailed description of the method is available in the Quality Information Document of the product : INSITU_GLO_PHY_UV_DISCRETE_MY_013_044 (https://doi.org/10.13155/41256).

III DOWNLOAD A PRODUCT

After registration, you will be able to download our data. To assist you, our HelpCenter is available, and more specifically its section about download.

Information on operational issues on products and services can be found on our User Notification Service. If you have any questions, please contact us.

III.1 Portal ftp structure

The Global Delayed Mode In-situ Surface currents and velocity profiles dataset is available in the **Core/INSITU_GLO_PHY_UV_DISCRETE_MY_013_044** directory.

Data coming from drifters, HF radars, vessel mounted ADCP platforms and argo floats are grouped in 5 different datasets (Figure 1).

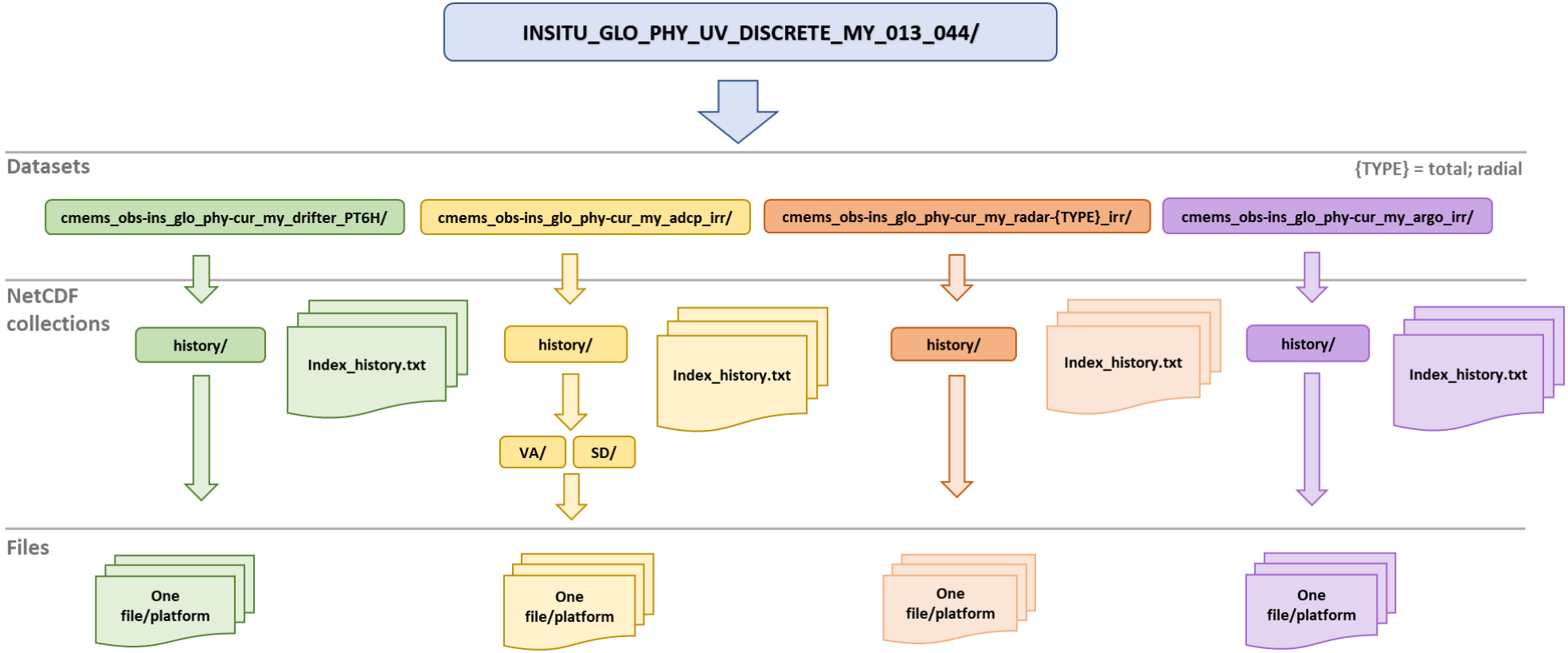

Figure 1: *Directory tree of INSITU_GLO_PHY_UV_DISCRETE_MY_013_044 product*

Additionally, there are 1 index file per data set **(index_history.txt)** describing the content of the directory. These index files are useful for operational subset and download of the datasets files collection by users.

III.1.1 File naming convention

The name convention of the four different datasets included in the product is as following:

Directory	Naming convention	Meaning[2]
cmems_obs-ins_glo_phy-cur_my_drifter_PT6H	RR_XX_YY_CODE_<_ZZZ>.nc E.g.: GL_TS_DC_9945_51510.nc	• **RR:** Region Bigram, • **XX:** File type • **YY:** Data type source • **CODE: unique** Platform code identifier **<_ZZZ>:** optional suffix (e.g. WMO code) • .nc: NetCDF file name suffix
cmems_obs-ins_glo_phy-cur_my_radar-radial_irr	RR_XX_YY_CODE.nc E.g.: GL_RV_HF_HFR-EUSKOOS-HIGE.nc	
cmems_obs-ins_glo_phy-cur_my_radar-total_irr	RR_XX_YY_CODE.nc E.g.: GL_TV_HF_HFR-TirLig.nc	
cmems_obs-ins_glo_phy-cur_my_adcp_irr	RR_XX_YY_CODE.nc E.g.: GL_TS_VA_FMCY.nc	
cmems_obs-ins_glo_phy-cur_my_argo_irr	RR_XX_YY_CODE.nc E.g.: GL_TS_PF_7901091.nc	

- **Region bigrams (RR)**
  - GL: global Production Unit (PU) of the In Situ TAC.
- **File types bigrams (XX)**
  - TS: Time Series or Trajectories
  - TV: gridded total velocities
  - RV: gridded radials velocities
- **Data types bigrams (YY)**
  - DC: drifter buoy reporting calculated sea water current

[2] From the Copernicus In Situ TAC SRD - System Requirement Document: http://dx.doi.org/10.13155/40846

- HF: high frequency radar
- VA: vessel-mounted ADCP
- PF : Argo floats
- SD : Saildrones

- **CODE**
  - The platform code or ID is a unique identifier of the platform within all Copernicus Marine Service In Situ TAC production units. For other identifiers the user should dive into the global attributes of the file where other codes are exposed if available.
- **<_ZZZ> optional suffix:**
  - For drifters: WMO code for drifter dataset assigned by World Meteorological Organization (=0 if not available).

The file naming convention is very useful for finding a particular file from a drifter's trajectory, an HFR system or a vessel-mounted adcp survey

- In the directory of the **cmems_obs-ins_glo_phy-cur_my_drifter_PT6H dataset**, each file corresponds to a particular drifter trajectory, as indicated by the platform ID included in the file name. A search can be made using the WMO ID (indicated also in the filename if available). Please note that the WMO ID can be reassigned, thus more than one file can be found based on this criterion.
- In the directory of the **cmems_obs-ins_glo_phy-cur_my_radar-radial_irr dataset**, each file corresponds to a particular HFR station from a particular HFR network, as indicated by the site ID included in the filename.
- In the directory of the **cmems_obs-ins_glo_phy-cur_my_radar-total_irr dataset**, each file corresponds to a particular HFR system, as indicated by the platform ID included in the filename.
- In the directory of the **cmems_obs-ins_glo_phy-cur_my_adcp_irr dataset**, each file corresponds to a particular platform. ADCP and saildrones data type are available. The file name contains the WMO code of the platform.
  - GL_TS_VA_FABB.nc BEAUTEMPS-BEAUPRE
  - GL_TS_VA_FMCY.nc POURQUOI PAS?
  - GL_TS_VA_FNCM.nc L'ATALANTE
  - GL_TS_VA_FNFP.nc THALASSA
  - GL_TS_VA_FNUR.nc ANTEA
  - GL_TS_VA_FZVN.nc LE SUROIT
  - GL_TS_SD_5801955 Saildrone data

- In the directory of the **cmems_obs-ins_glo_phy-cur_my_argo_irr dataset**, each file corresponds to a particular Argo trajectory, as indicated by the platform ID included in the filename.

III.1.2 Description of the index files

Each index file contains one line per file exposing the *file_name* (ftp link) for downloading plus some metadata for early filtering. The lines in the index are sorted by file name and time coverage start.

- product_id: COP-XX-YY
  - COP: Copernicus trigram
  - XX: region bigram (GL)
  - YY: product version

Example: COP-GL-02

- file_name: ftp link or absolute path of the file in the Copernicus Marine Service FTP server
- geospatial_lat_min
- geospatial_lat_max
- geospatial_lon_min
- geospatial_lon_max
- time_coverage_start
- time_coverage_end
- institution
- date_update
- data_mode:
  - D: delayed-mode data. Data published after all calibrations and quality control procedures have been applied on the internally recorded or best available original data. This is the best possible version of processed data.
- Parameters (separator: blank)

Copernicus Marine Service In Situ data file index_history.txt example
Title : in-situ observations catalog # Description : catalog of available in-situ observations per platform.

```
# Project : Coriolis

# Format version : 1.0

# Date of update : 20191203114032

#
catalog_id,file_name,geospatial_lat_min,geospatial_lat_max,geospatial_lon_min,geospatial_lon_max,
time_coverage_start,time_coverage_end,institution,date_update,data_mode,parameters

COP-GL-02,ftp://my.cmems-du.eu/Core/INSITU_GLO_PHY_UV_DISCRETE_MY_013_044/cmems_obs-
ins_glo_phy-
cur_my_drifter_PT6H/history/GL_TS_DC_99010_4600588.nc,43.215,45.455,189.996,212.031,210-12-
22T00:00:00Z,2011-08-31T12:00:00Z,AOML,2019-10-18T09:44:53Z,D, LONGITUDE LATITUDE TIME
TIME_QC DEPH DEPH_QC POSITION_QC EWCT EWCT_QC NSCT NSCT_QC EWCT_WS EWCT_WS_QC
NSCT_WS NSCT_WS_QC WS_TYPE_OF_PROCESSING TEMP TEMP_QC,.....
```

Users are advised to use these index files to select and then download the files they are interested in.

For example, if a user is interested in retrieving the files that provide data in a specific area, he just has to select the lines for which Lat, Lon are included in the box [lat_min,lon_min: lat_max,lon_max] , store the complete file name in a list and then perform a “get” of all the files of the list.

Examples of scripts :

- for downloading files is available at: http://www.coriolis.eu.org/content/download/10605/70781/file/index.sh
- for downloading files and processing are available at: http://www.coriolis.eu.org/Data-Products/Data-Delivery/Copernicus-In-Situ-TAC/Organization; http://www.marineinsitu.eu/material/

IV FILE FORMAT & CONTENT

IV.1 NetCDF

The products are stored using the NetCDF format.

To know more about the NetCDF format, please follow this link:

https://help.marine.copernicus.eu/en/articles/4427604-what-is-the-format-of-copernicus-marine-products-netcdf

For In Situ files, the used NetCDF format is Argo 3.3 (see https://doi.org/10.13155/29825) and for other files it is CF-1.4.

IV.2 Content

IV.2.1 Content: dimensions

The dimensions are used to represent a real physical dimension (e.g. time, latitude, longitude, depth, etc) but they might also be used to index other quantities (e.g. station)[3]. NetCDF dimensions provide information on the size of the data variables, and additionally the coordinate variables to data. CF convention recommends that if any or all the dimensions of a variable have the interpretations of "date or time" (T), "height or depth" (Z), "latitude" (Y), or "longitude" (X) then those dimensions should appear in the relative order T, Z, Y, X in the variable's definition. Table 2lists the dimensions of the four datasets included in the product.

name	comment	datasets				
		drifter	radar_radial	radar_total	adcp	argo
TIME	Number of time steps.	x	x	x	x	x
DEPTH	Number of depth levels.	x	x	x	x	x

[3] Information provided by https://www.unidata.ucar.edu/software/netcdf/docs/netcdf_data_set_components.html

	Set to 1 for HFR data (equivalent to the sea surface).					
LATITUDE	Dimension of the LATITUDE coordinate variable.	x	x	x	x	x
LONGITUDE	Dimension of the LONGITUDE coordinate variable.	x	x	x	x	x
POSITION	Dimension of the POSITION_QC	x				
STRINGx	Length in characters of the strings used in the data file. It is mandatory that the string length dimension STRINGx has the value of x.		x	x		x
MAXSITE	Maximum number of contributing antennas. Set as an upper bound.			x		
MAXINST	Maximum number of collaborating institutions. Set as an upper bound.		x	x		
REFMAX	Maximum number of external resource linkages. Set as an upper bound.		x	x		

Table 2- List of the dimensions of the data variables

Since HFR data have only one depth layer of measurement, i.e. the surface layer, the dimension DEPTH has size equal to 1 and value equal to 0 meter.

If non-physical variables are present in the data file, e.g. the processing parameters of the HFR device generating the data or the codes of the sites contributing to a total current velocities data, related non-physical dimensions might be defined to expose the variables in the model.

For HFR, more than one STRINGx dimension can be defined, provided that the string length dimension STRINGx has the value of x.

IV.2.2 Content: variables

Variables are used to store the bulk of the data (an array of values of the same type) in a netCDF dataset[8].

IV.2.2.1 Drifter variables

This is a global coverage data set and available variables are listed in Table 3

Variable name	Description	Units
TIME	Date of the data	days since 1950-01-01T00:00:00Z
DEPH	Depth of the temperature and sea water velocity (indicated in the file)	m
LATITUDE	Latitude of the data position	Degree North
LONGITUDE	Longitude of the data position	Degree East
EWCT	West-East sea water velocity at the drogue depth from the drifter position. When drogue is lost (see section IV.5.1), this is the surface sea water velocity (see *Table 4*).	$m.s^{-1}$
NSCT	South-North sea water velocity at the drogue depth from the drifter position. When drogue is lost (see section IV.5.2.1), this is the surface sea water velocity (see *Table 4*).	$m.s^{-1}$
EWCT_WS	West-East wind slippage correction	$m.s^{-1}$
NSCT_WS	South-North wind slippage correction	$m.s^{-1}$
WS_TYPE_OF_PROCESSING	Wind slippage correction processing method	Dimensionless
TEMP	Temperature 20-30 cm beneath the sea surface[4]	Celsius Degrees

Table 3- List of the available variables for the drifter dataset.

The total drifter velocity $\mathbf{U}_d$ is decomposed into different contributions:

- geostrophic current $\mathbf{U}_g$
- Ekman/Stokes current $\mathbf{U}_e$ (wind-driven current)
- Remaining ageostrophic current $\mathbf{U}_a$, including wind slip.

When the drogue is lost, the drifter is directly under the influence of the wind stress. Using DUACS geostrophic current from altimetry (SEALEVEL_GLO_PHY_CLIMATE_L4_REP_OBSERVATIONS_008_057 products[5]) and an empirical Ekman/Stokes model, a wind slippage correction $\mathbf{W}_s$ is computed since the residual current $\mathbf{U}_r=(\mathbf{U}_d-\mathbf{U}_g-\mathbf{U}_e)_f$ is expected to be proportional to the wind slippage $\mathbf{U}_s$ (see section II.2.3 of CMEMS-INS-QUID-013_044 for more details).

This variable is not provided in the Mediterranean Sea nor at the equator for the drogued buoys.

[4] Temperature measurement is not impacted by the drogue loss.

[5] Geostrophic current only available from 01/01/1993 only

The **WS_TYPE_OF_PROCESSING** is an indication of the way the wind slippage correction is computed which can be selected by the user (values as shown in Table 4):

Method	Value	Meaning
Optimal	0	If the drifter's measurement is in optimal mode, it is considered that its trajectories is longer than 200 days
Mean	1	The first/last days of the trajectory are completed using the mean value over the buoy time series
Climatology	2	For drifters with trajectories shorter than 60 days a climatological coefficient is used.
Adaptative	3	From drifter's trajectories ranging between 60 and 200 days an adaptative moving correlation window is used.

Table 4 - WS_TYPE_PROCESSING variable's values

IV.2.2.2 radar_radial & radar_total variables

This is a dataset covering European and US Seas whose available variables are listed in Table 5 (**mandatory variables**, i.e. variables that are always present in each data file, are listed in bold, recommended variables are listed in plain text).

Variable name	Description	Units	Dataset	
			radar_radial	radar_total
TIME	**Time of measurement**	days since 1950-01-01T00:00:00Z	**x**	**x**
DEPH	**Depth of the measurement** (from tens of cm to 1-2 m, depending on the operating frequency)	m	**x**	**x**
LATITUDE	**Latitude of the data position**	Degree North	**x**	**x**
LONGITUDE	**Longitude of the data position**	Degree East	**x**	**x**
EWCT	**Surface Eastward Sea Water Velocity** (gridded maps of the surface current velocity component averaged over a time interval, mainly around the cardinal hour).	m/s	**x**	-

	Surface Eastward Sea Water Velocity (gridded maps of the zonal component of the radial surface ocean current velocity averaged over a time interval, mainly around the cardinal hour).	m/s	-	**x**
NSCT	**Surface Northward Sea Water Velocity** (same as EWCT)	m/s	**x**	-
	Surface Northward Sea Water Velocity (gridded maps of the meridional component of radial surface ocean current velocity averaged over a time interval, mainly around the cardinal hour)	m/s	-	**x**
EWCS ***(or UACC for phase array systems)***	**Standard Deviation Of Surface Eastward Sea Water Velocity**	**m/s**	**x**	**x**
NSCS (or VACC for phase array systems)	**Standard Deviation Of Surface Northward Sea Water Velocity**	**m/s**	**x**	**x**
CCOV	Covariance of Surface Sea Water Velocity (for data measured by Codar systems)	m^2/s^2	x	x
GDOP	**Geometrical Dilution Of Precision** (QC-related parameter)	**dimensionless**	**x**	**x**
UACC ***(or EWCS for direction finding systems)***	**Accuracy of Surface Eastward Sea Water Velocity**	**m/s**	**x**	**x**
VACC ***(or NSCS for direction finding systems)***	**Accuracy of Surface Northward Sea Water Velocity**	**m/s**	**x**	**x**
NARX	Number of Receive Antennas	dimensionless	x	x
NATX	Number of Transmit Antennas	dimensionless	x	x
SLTR	Receive Antenna Latitudes	Degrees North	x	x
SLNR	Receive Antenna Longitudes	Degrees East	x	x

SLTT	Transmit Antenna Latitudes	Degrees North	x	x
SLNT	Transmit Antenna Longitudes	Degrees East	x	x
SCDR	Receive Antenna Codes	dimensionless	x	x
SCDT	Receive Antenna Codes	dimensionless	x	x
BEAR	**Bearing (away from the instrument) of the measurement**	**Degrees true**	-	**x**
RNGE	**Range (away from the instrument) of the measurement**	**km**	-	**x**
RDVA	**Radial Sea Water Velocity Away From Instrument** (gridded maps of the surface current velocity radial component averaged over a time interval, mainly around the cardinal hour)	**m/s**	-	**x**
DRVA	**Direction of Radial Sea Water Velocity Away From Instrument** (gridded maps of the direction of surface current velocity radial component averaged over a time interval, mainly around the cardinal hour)	**Degrees true**	-	**x**
ESPC ***(or HCSS for phase array systems)***	**Radial Standard Deviation of Current Velocity over the Scatter Patch**	**m/s**	-	**x**
ETMP ***(or EACC for phase array systems)***	**Radial Standard Deviation of Current Velocity over the Coverage Period**	**m/s**	-	**x**
HCSS ***(or ESPC for direction finding systems)***	**Radial Variance of Current Velocity Over Coverage Period**	**m/s**	-	**x**
EACC ***(or ETMP for direction finding systems)***	**Radial Accuracy of Current Velocity Over Coverage Period**	**m/s**	-	**x**

Table 5- gridded radar_radial and radar_total dataset.

Concerning the variables EWCS, NSCS, UACC and VACC:

- EWCS and NSCS variables are related to the parameters defining the variance of the velocity component measurements present (mainly) in direction-finding HF radar systems (see Rubio et al., 2017). They are computed at each time step, and therefore considered not statistically solid.
- UACC and VACC variables are related to the parameters defining the accuracy of the velocity component measurements and they are mainly present in phased-array HF radar systems. Thus, the two couples of variables are alternative, depending on the system producing the data.

Concerning the variables ESPC, ETMP, HCSS and EACC, it has to be noted that ESPC and ETMP are related to the parameters defining the standard deviation of the radial velocity component measurements present (mainly) in direction finding systems.

The HCSS and EACC variables are related to the parameters defining the variance and the accuracy of the radial velocity component measurements and they are mainly present in phased array systems. Thus, the two couples of variables are alternative, depending on the system producing the data.

IV.2.2.2.1 radar_radial & radar_total SeaDataNet identifiers

SeaDataNet (SDN) is the European project that federates the network of EU national oceanographic data centres. SDN is a data provider for Copernicus. Each SDN station distributed in Copernicus NetCDF data file have to include the following additional variables:

Name	Comment
SDN_CRUISE	Text string identifying the grouping label for the data object to which the data row belongs. For HFR data it is set equal to the site_code attribute, that is the EDIOS Series id of the HFR network.
SDN_STATION	Text string identifying the data object to which the data row belongs. For HFR data it is set equal to the platform_code attribute.
SDN_LOCAL_CDI_ID	The local identifier of the Common Data Index record associated with the data row.
SDN_EDMO_CODE	The key identifying the organization responsible for assigning the local CDI given in the European Directory of Marine Organizations (EDMO).
SDN_REFERENCES	Link to a single landing page - an XHTML document providing additional information.

SDN_XLINK	Text strings containing a URI (URN or URL) pointing to a web resource such as a usage metadata document for the data object to which the array element belongs.

Table 6 – List of SeaDataNet additional variables

IV.2.2.2.2 radar_radial & radar_total SDN namespace variables attributes

Variable attributes required in the SDC CF extension are part of the European common data and metadata model for NRT HFR current data. In particular, the SDN extensions to CF were concerned with providing storage for standardized semantics and metadata included in the SDN profiles format. The standardized semantics are included as four mandatory parameter attributes for each data or coordinate variable, which are:

Name	Comment
sdn_parameter_urn	URN (URL) for the parameter description taken from the P01 vocabulary.
sdn_parameter_name	Plain language label (Entryterm) for the parameter taken from the P01 vocabulary at the time of data file creation.
sdn_uom_urn	URN (URL) for the parameter units of measure taken from the P06 vocabulary.
sdn_uom_name	Plain language label (Entryterm) for the parameters' units of measure, taken from the P06 vocabulary at the time of data file creation.

Table 7- SeaDataNet mandatory variables atttributes

According to SDC CF extension, the **ancillary_variables** attribute is mandatory and has to be set as the list of QC variables related to the specific variable.

IV.2.2.3 ADCP variables

Variable name	Description	Units
TIME	Date of the data	days since 1950-01-01T00:00:00Z
DEPH	Depth of the temperature and sea water velocity (indicated in the file)	m
LATITUDE	Latitude of the data position	Degree North

LONGITUDE	Longitude of the data position	Degree East
EWCT	Eastward_sea_water_velocity	m s-1
NSCT	Northward_sea_water_velocity	m s-1
VCSP	Upward_sea_water_velocity	m s-1

Table 8 – List of ADCP variables description

IV.2.2.4 Argo variables

Variable name	Description	Units
TIME	Date of the data	days since 1950-01-01T00:00:00Z
PRES	Representative pressure of the current observation	decibar
LATITUDE	Latitude of the data position	Degree North
LONGITUDE	Longitude of the data position	Degree East
EWCT	West-East sea water velocity at the representative pressure	m.s-1
NSCT	South-North sea water velocity at the representative pressure	m.s-1
TIME_INTERVAL	Time interval of the current variable (measured between two locations)	day
PLATFORM_CODE	The float platform code	n/a

GROUNDED	Indicates the best estimate of whether the float touched the ground for that cycle. The conventions are described in Argo reference Table 10 here.	n/a

Table 9 - List of the available variables for Argo current dataset

flag	Meaning
Y	Yes, the float touched the ground
B	Yes, the float touched the ground after bathymetry check with an outside database
N	No, the float did not touch the ground
S	Float is known to be drifting at a shallower depth than originally programmed
U	Unknown

Table 10- Argo reference ; GROUNDED flags

IV.2.3 Content: quality control variables

QC variables (TIME_QC, POSITION_QC and DEPH_QC) for coordinate variables are mandated by the Copernicus Marine Service In Situ TAC profile.

No CF-1.6 standard names exist for QC variables; thus, long names are used. QC variables are of type byte.

QC variables (as defined in Table 6) can also exist not linked to a target physical variable (e.g. GDOP threshold QC variable linked to GDOP variable), but also as standalone variables reporting the results of a specific QC test (as detailed in the QUID report of this product), e.g. Over-water test.

Variable name	Long_name	Variable dimensionality	datasets				
			drifter	radar_radial	radar_total	adcp	argo

TIME_QC	Time Quality Flag	scalar	x	x	x	x	x
POSITION_QC	Position Quality Flags	scalar or gridded	X scalar	X gridded	X gridded	X scalar	x
DEPH_QC	Depth Quality Flag	scalar	x	x	x	x	
PRES_QC	Pressure Quality Flag	scalar					x
EWCT_QC	Drogue status Flag (=1: Drogue on; =3: Drogue lost)	scalar	x				x
NSCT_QC	Drogue status Flag (=1: Drogue on; =3: Drogue lost)	scalar	x				x
EWCT_WS_QC	Status of the wind slippage correction of velocity data Flag (=1: Computed data; =Fill_value: No data computed)	scalar	x				
NSCT_WS_QC	Status of the wind slippage correction of velocity data Flag (=1: Computed data; =Fill_value: No	scalar	x				

	data computed)						
QCflag	Overall Quality Flags	gridded		x	x		
VART_QC	Variance Threshold Quality Flags	gridded		x	x		
CSPD_QC	Velocity Threshold Quality Flags	gridded		x	x		
GDOP_QC	GDOP Threshold Quality Flags	gridded			x		
DDNS_QC	Data Density Threshold Quality Flags	gridded			x		

Table 11- QC variables of the datasets included in this product.

IV.2.3.1 Quality control flags

The quality control flags are common for the four datasets included in the product and they indicate the quality of the data values in a file and are assigned after quality control procedures have been performed (as detailed in the QUID manual of the current product).

When QC information is provided as a separate flag variable, CF-1.6 requires that these variables carry the “flag_values” and “flag_meanings” attributes. These flags or codes are used in the <DATA>_QC variables to describe the quality of each measurement (as specified in Table 12

Code	Meaning	Comment
0	No QC was performed	-
1	Good data	All real-time QC tests passed.
2	Probably good data	-

3	Bad data that are potentially correctable	These data are not to be used without scientific correction.
4	Bad data	Data have failed one or more of the tests.
5	Value changed	Data may be recovered after transmission error.
6	Not used	-
7	Nominal value	-
8	Interpolated value	Missing data may be interpolated from neighbouring data in space or time.
9	Missing value	-

Table 12- Data flags for the datasets included in this product.

- For **drifters:**
  - the indication of the drogue status (=1: Drogue on; =3: drogue lost) is given by the DEPH_QC, NSCT_QC and EWCT_QC variables
  - the wind-slippage correction of the velocity data (=1: computed data; =Filled_value=no data computed) is provided by the NSCT_WS_QC and EWCT_WS_QC.
  - For sea surface temperature provided by drifters, the DEPTH_QC=7 means that the measurement is given at a nominal value.
- For **radar_radial** & **radar_total**:
  - A file with no valid time, depth and position is not distributed on Copernicus In Situ TAC.
  - A valid time, depth and position have a TIME_QC, DEPH_QC and POSITION_QC variables, respectively, set to 1, 2, 5, 7 or 8 (good, probably good, value changed, nominal, interpolated).
  - Since the datasets radar_total are gridded data, they are distributed even if the Qcflag (overall QC flag for the file) is not entirely filled with good_data (qc_flag=1). This is because it may happen that some vectors on the grid are labelled as good_data and some other as bad_data. Users can apply the QC variables (there is one QC variable per each QC test applied to the data) as masks for the geophysical variables.
- For **adcp:**

- Dates and positions are flagged good (QC = 1) or bad (QC = 4), and only these 2 flags values are used.
- Same for current variables eastward_sea_water_velocity, northward_sea_water_velocity, upward_sea_water_velocity and sea_water_depth

- For **argo**:
  - The data distributed have positions and dates quality flags equal to 1 (good data). The initial argo data used to compute the velocities with positions and dates that do not have a QC 1 are ignored

IV.2.4 Content: global attributes

The global attribute section of a NetCDF file describes the contents of the file overall and allows for data discovery. All fields should be human-readable and use units that are easy to understand. Global attribute names are case sensitive.

Attributes are organized by function: Discovery and Identification, Geo-spatial-temporal, Conventions used, Publication information, and Provenance.

IV.2.4.1 Common global attributes

"Common" global attributes comprehend those present in all of the available datasets (drifter, adcp, radar_total, radar_radial, argo) and listed in Table 13.

Discovery and identification	
Attribute	***Description***
data_mode	Indicates if the file contains real-time, delayed-mode or mixed data.
title	Free-format text describing the dataset, for use by human readers. Use the file name if in doubt.
naming_authority	The organization that manages data set names.
id	The "id" and "naming_authority" attributes are intended to provide a globally unique identification for each dataset. The id may be the file name without .nc suffix, which is designed to be unique.
institution_edmo_code	SeaDataNet EDMO code of the platform's institution
institution	Name of the platform's institution plus, optionally, the country in brackets

contact	The contact emails for questions or feedback on the dataset (blank separated list)
distribution_statement	Statement describing data distribution policy.
Conventions used	
Attribute	***Description***
netcdf_version	NetCDF version used for the dataset.
format_version	Copernicus in situ NetCDF format version
conventions	Name of the conventions followed by the dataset (a blank separated list).
Geo-spatial-temporal	
Attribute	***Description***
geospatial_lat_min	The southernmost latitude, a value between -90 and 90 degrees; may be string.
geospatial_lat_max	The northernmost latitude, a value between -90 and 90 degrees.
geospatial_lon_min	The westernmost longitude, a value between -180 and 180 degrees.
geospatial_lon_max	The easternmost longitude, a value between -180 and 180 degrees. (ACDD, GDAC)
geospatial_vertical_min	Minimum depth or height of measurements.
geospatial_vertical_max	Maximum depth or height of measurements.
time_coverage_start	Start date of the data in UTC. See note on time format below.
time_coverage_end	Final date of the data in UTC. See note on time format below.
cdm_data_type	The Unidata CDM (common data model) data type used by THREDDS. e.g. point, profile, section, station, station_profile, trajectory, grid, radial, swath, image; use Station for mooring data.
data_type	A vocabulary driven type of data. See §3.1.1
Publication information	
Attribute	***Description***
data_assembly_center	Data Assembly Center (DAC) in charge of this data file.
update_interval	P6M (biannual)

citation	The citation to be used in publications using the dataset; should include a reference to Copernicus In Situ TAC but may contain any other text deemed appropriate by the PI and DAC.
Provenance	
Attribute	***Description***
date_update	The date on which this file was last updated.
last_date_observation	The last valid observation date and position.
last_latitude_observation	The last valid observation date and position.
last_longitude_observation	The last valid observation date and position.
history	Provides an audit trail for modifications to the original data. It should contain a separate line for each modification, with each line beginning with a timestamp, and including user name, modification name, and modification arguments. The time stamp should follow the format outlined in the note on time formats below.

Table 13 - Common global attributes for drifter, adcp, radar_total, radar_radial and argodatasets

IV.2.4.2 Specific global attributes

"Specific" global attributes comprehend those present in only certain datasets (either drifter, adcp, radar_total or radar_radial) and listed in the dedicated tables.

IV.2.4.2.1 Specific drifter dataset global attributes

Global attributes for the drifter dataset include the so-called 'common' attributes (Table 13) plus the ones in Table 14.

Discovery and identification	
Attribute	***Description***
platform_code	AOML unique platform identifier.

platform_name	Type of platform. Equal to "**DRIFTING BUOY**" in present case.
wmo_platform_code	WMO id of the platform
references	References of the PUM and QUID of the product
contact	cmems-service@ifremer.fr
AOML_experiment_number	Id of the deployment experiment
Geo-spatial-temporal	
Attribute	***Description***
area	Spatial coverage of the data. Set to "**Global Ocean**"
deployment_date	Date of the platform deployment
deployment_lon	Longitude of the platform deployment
deployment_lat	Latitude of the platform deployment
date_drog_lost	Date of the platform drogue lost, if any
Publication information	
Attribute	***Description***
pi_name	Helene Etienne : hetienne@groupcls.com
doi	doi reference of the dataset
qc_manual	OceanSITES Users Manual v1.2
Conventions used	
Attribute	***Description***

death_type	Platform status and, if inactive, the cause(s) of death (Table 15*)*
comment	Corresponding Instrument type code (Table 16).

Table 14 - Specific global attributes for the drifter dataset

AOML Code	Death type
0	buoy still alive
1	buoy ran aground
2	picked up by vessel
3	stop transmitting
4	sporadic transmissions
5	bad batteries
6	inactive status

Table 15- Death type.

Code	Instrument type	Measurements
SVP	Standard Surface Velocity Program drifter	SST
SVPB	SVP with Barometer	SST, air pressure
SVPC	SVP with seabird Conductivity	SST, SSS
SVPW	SVP with Wind sensor	SST, wind speed and direction
SVPBS	SVP with Barometer and Salinity	SST, Pressure
SVPBW	SVP with Barometer and Wind sensor	SST, wind speed and direction, air pressure

Table 16- Instrument type.

IV.2.4.2.2 Specific radar_radial & radar_total datasets global attributes

Global attributes for the radar radial and radar_total datasets includes the so-called 'common' attributes (Table 13) plus the ones in Table 17. The European common data and metadata model for real-time HFR data divides global attributes to be adopted for HFR data in three categories:

- Mandatory Attributes: always present in each HFR data file. The Mandatory Attributes include attributes necessary to comply with CF-1.6 and OceanSITES conventions. Mandatory Attributes are listed in bold type.
- Recommended Attributes: Not always present in each HFR data file. The Recommended Attributes include attributes necessary to comply with INSPIRE and Unidata Dataset Discovery conventions. *Recommended Attributes* are listed in italic type.
- Suggested Attributes: Not always present in each HFR data file. The Suggested Attributes include attributes that can be relevant in describing the data, whether it is part of the standard or not. Suggested Attributes are listed in plain type.

Notes on global attributes:

- date_created and date_modified, are an interpretation of the ACDD file dates. Date_created is the timestamp on the file, date_modified may be used to represent the 'version date' of the geophysical data in the file. The date_created may change when e.g. metadata is added or the file format is updated, and the optional date_modified MAY be earlier.
- Geospatial extents (geospatial_lat_min, max, and lon_min, max) are preferred to be stored as strings, however numeric fields are acceptable

Discovery and Identification	
Attribute	***Description***
site_code	The site code identifies a defined area where observations are performed.

	Site codes are defined in a homogeneous way. The policy for HFR data is to define a site_code for the network and one platform_code for the total current data files. **The site_code is set equal to the EDIOS Series id of the HFR network.** **It is mandatory to have the prefix 'HFR-' in the EDIOS Series id (the use of '_' is forbidden, please use '-' instead).** The EDIOS codes are managed by the SeaDataNet project; they are available at http://seadatanet.maris2.nl/v_edios_v2/search.asp
platform_code	The platform_code is used for indexing the files, and for data synchronization between the distribution units (the regions of the In Situ TAC). Therefore, it has to be unique for each platform, and common among the In Situ TAC. Platform codes are defined in a homogeneous way. The policy for the radar_total dataset is to define a site_code for the network and one platform_code for the total current data files. **The naming convention is: *platform_code=<EDIOS Series id>-Total* for total current data files and: platform_code= <EDIOS Series id>-<EDIOS Platform id> for radial current data files.** The EDIOS codes are managed by the SeaDataNet project; they are available at http://seadatanet.maris2.nl/v_edios_v2/search.asp
DoA_estimation_method	Specifies if the system is Direction Finding or Beam Forming. Possible values are "Direction Finding" and "Beam Forming".
calibration_type	Specifies if calibration has been performed. Possible values are: "None", "Ideal", "APM", "full", "internal", "physical", "AEA".
last_calibration_date	Reports the date of the last calibration. It must be specified as a string in the ISO8601 standard "YYYY-MM-DD-Thh:mm:ssZ". UTC must be used, and specified.
calibration_link	Indicates the link to a contact person able to provide data about the calibration.
source	SeaVoX-SeaDataNet platform categories L06 reports platform categories, as a code and a label. I.e "coastal structure" for HFR data.
source_platform_category_code	SeaVoX-SeaDataNet platform categories L06 reports platform categories, as a code and a label I.e "17" for HFR.
project	The scientific project that produced the data.

	Each project must have its own EDMERP entry. The EDMERP codes are managed by the SeaDataNet project; they are available at http://seadatanet.maris2.nl/v_edmerp/search.asp
keywords	Provide comma-separated list of terms that will aid in discovery of the dataset.
keywords_vocabulary	GCMD Science Keywords 'SeaDataNet Parameter Discovery Vocabulary' or 'AGU Index Terms'.
data_language	The language in which the data elements are expressed.
data_character_set	The character set used for expressing data.
metadata_language	The language in which the metadata elements are expressed.
metadata_character_set	The character set used for expressing metadata.
topic_category	ISO 19115 topic category.
network	A grouping of sites based on common shore-based logistics or infrastructure.
Geo-spatial-temporal	
Attribute	***Description***
area	Geographical coverage.
geospatial_lat_units	Conforms to udunits. If not specified, then “degrees_north” is assumed.
geospatial_lon_units	Conforms to udunits. If not specified, then “degrees_east” is assumed.
geospatial_vertical_resolution	Vertical resolution of the measurement. For HFR data it is set as the maximum integration depth of the radar measurement, according to its operating frequency.
geospatial_vertical_units	Units of depth. If not specified, then “m” is assumed.
geospatial_vertical_positive	Indicates which direction is positive; "up" means that z represents height, while a value of "down" means that z represents pressure or depth. If not specified then “down” is assumed.
time_coverage_resolution	Interval between records. ISO8601 standard is used: PnYnMnDTnHnMnS.

time_coverage_duration	Duration of the time coverage of the data. ISO8601 standard is used: PnYnMnDTnHnMnS.
reference_system	ESPG coordinate reference system.
grid_resolution	Resolution of the grid for total velocity data. *Recommended*.
cdm_data_type	The Unidata CDM (common data model) data type used by THREDDS. e.g. point, profile, section, station, station_profile, trajectory, grid, radial, swath, image; Grid is used for gridded HFR data. *Recommended* (ACDD)
Publication information	
Attribute	***Description***
publisher_name	Name of the person responsible for metadata and formatting of the data file.
publisher_email	Email address of the person responsible for metadata and formatting of the data file.
publisher_url	Web address of the institution or of the data publisher.
license	A statement describing the data distribution policy; it may be a project- or DAC-specific statement, but must allow free use of data.
acknowledgment	A place to acknowledge various types of support for the project that produced this data.
Provenance	
Attribute	***Description***
date_modified	The date on which the data file was last modified. Time is specified as a string according to the ISO8601 standard: "YYYY-MM-DDThh:mm:ssZ"
processing_level	Level of processing and quality control applied to data. The radar_total data set delivered corresponds to LEVEL 3B data, following the definition of the processing levels for the identification of the different data produced during the processing workflow of a HF radar. Level 3B are surface currents mapped on uniform space-time grid scales and that have been processed with a minimum set of QC.[6]

[6] Please refer to Appendix A of the JERICO-NEXT deliverable D5.14 "Recommendation Report 2 on improved common procedures for HFR QC analysis" for the processing level

contributor_name	A semi-colon-separated list of the names of any individuals or institutions that contributed to the creation of this data. **Mandatory**. (ACDD)
contributor_role	The roles of any individuals or institutions that contributed to the creation of this data, separated by semi-colons.
contributor_email	The email addresses of any individuals or institutions that contributed to the creation of this data, separated by semi-colons.
Conventions used	
Attribute	***Description***
netcdf_format	NetCDF format used for the dataset.

Table 17- Specific global attributes for the radar_radial and radial_total datasets

IV.2.4.2.3 Specific adcp dataset global attributes

Global attributes for the adcp dataset include the so-called 'common' attributes (Table 13) plus the ones in Table 13.

Discovery and identification	
Attribute	***Description***
platform_code	The unique platform code within Copernicus In Situ TAC
source	SeaVoX-SeaDataNet platform categories L06 reports platform categories, as a code and a label. i.e "research vessel"
source_platform_category_code	SeaVoX-SeaDataNet platform categories L06 reports platform categories, as a code and a label. i.e 31 for research vessels
wmo_platform_code	WMO (World Meteorological Organization) identifier for the platform
institution_references	The references of the platform's institution (blank separated)
comment	Miscellaneous information about the data or methods used to produce it. Any free-format text is appropriate.
Publication information	

definition (as summarized in Table 10; http://www.jerico-ri.eu/download/jerico-next-deliverables/JERICO-NEXT-Deliverable_5.14_V1.pdf)

Attribute	*Description*
doi	A blank separated list of DOIs (Digital Object Identifier) related to data aggregated in this file. Use the DOI URI (Universal Resource Identifier).
pi_name	Name of the principal investigator in charge of the platform.
qc_manual	This field contains the name of the manual that describes the quality control procedure. There are documents for WAVES REP and BGC also.

Table 18 - Specific global attributes for the adcp dataset

IV.2.4.2.4 Specific argo dataset global attributes

Global attributes for the drifter dataset include the so-called 'common' attributes (Table 13) plus the ones in Table 19.

Discovery and identification	
Attribute	***Description***
platform_code	AOML unique platform identifier.
coriolis_platform_code	Coriolis Center unique platform identifier.
platform_name	Type of profiling float
wmo_platform_code	WMO id of the platform
references	Link to reference Website of the Copernicus Marine Service and the In Situ TAC
contact	cmems-service@ifremer.fr
source_platform_category_code & source	Origin (code and text description) of the float = "drifting subsurface profiling float"
Geo-spatial-temporal	

Attribute	*Description*
Time_coverage_duration	Delay in days between the first and last measurements in the file
Publication information	
Attribute	***Description***
pi_name	" "
doi	doi reference of the dataset
qc_manual	OceanSITES Users Manual v1.2
Conventions used	
Attribute	***Description***
comment	Corresponding Instrument type code (Table 11).

Table 19 – List of specific global attributes for Argo dataset

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