OceanSITES

Taking the pulse of the global ocean

March 26th, 2008

Supprimé : May 2nd, 2006

cordo/dti-mut/03-034

OceanSITES User's Manual

Version 1.1

Supprimé : 0

OceanSITES
User's Manual
Ref : cordo/dti-mut/03-034
Version : 1.1
Date : 26/03/2008
Authors :

- OceanSITES data management team

Supprimé : 0
Supprimé : 02/05/2006

Table of contents

History

Version	Date	Comment
0.1	20/03/2003	TC : creation of the document
0.2	10/12/2003	TC : general update for Argo trajectory 2.1 compatibility
0.3	20/02/2004	TC : updates on locations, mooring name, data state indicator, parameters table, epic codes, history information
0.3.2	26/05/2004	N.G.: make more flexible, add dataset (metadata) file
0.4	01/06/2004	TC : separate data set description and data file
0.5	21/06/2004	TC : merge with Steve Hankins's strawman
0.6	28/06/2004	TC : updates from Nan Galbraith, Steve Hankins, Jonathan Gregory, Brian Eaton
0.7	09/02/2005	YI : updates on attributes
0.7	23/05/2005	Maureen Edwards : NOCS data centre, new GF3 parameters
0.7	24/05/2005	Roy Lowry : physical parameters from BODC Data Markup Vocabulary
0.8	11/10/2005	TC : remove latitude and longitude dimension. <PARAM> dimension is TIME instead of (TIME, LATITUDE, LONGITUDE)
0.8	01/02/2006	TC : update of reference table 3 parameter codes NG : reference table 2.1 parameter quality control indicator added TC : §5 file naming convention added
1.0	18/02/2006	TC : updates following OceanSITES data management meeting 2006, Hawai'I §2.1 : LEVEL dimension replaces DEPTH to accomadate depth or pressure §2.2 : QC_MANUAL field created §2.2 : CONVENTION field removed §2.2 : PLATFORM_CODE added §2.2 : SITE_CODE added §2.2 : WMO_PLATFORM_CODE added §2.3 : DEPTH renamed DEPH to comply to GF3 §2.3 : DATA_MODE set at measurement level §3 : metadata file description transfered to "OceanSITES meta-data proposal" until approval §5 : file naming convention updated
1.0	19/02/2006	NG : data codes in chapter 4.1.2
1.0	28/04/2006	PF & NG : data mode optional
1.0	28/04/2006	TC & JG : §2.2 global attributes
1.1	April 2008	TC : general revision for OceanSites 2008 meeting

1. Overview

The objective is to define both a common format for data exchange within the proje ct and to identify the minimal metadata content for data to be exchanged. The format is built on the community-supported Climate and Forecast standard NetCDF implementation which supplies a standard vocabulary and some metadata conventions that we adopt.

For each data set :

- A unique name for moorings comprising the dataset
- data center name
- contact person : person in charge of the dataset
- date of last update of the data set
- list of available parameters
- list of files comprising the dataset
- overall dates, overall location(s)

For each file:

- unique address for each mooring : WMO code or unique name
- data center name
- contact person : person in charge of the data in the file
- data centre : centre which processed the data file
- date of last update or creation of thedata in this file
- list of parameters
- technical parameters
- overall dates, overall location(s)
- number of dimensions
- type of timebase (original, averaged, gridded)
- file containing source data, if appropriate

For each parameter :

- sampling method description
- data processing level
- list of instruments and sensors
- calibration equation if applicable
- parameter unit
- technical parameters

For each measurement :

- date and time (UTC)
- measured parameter
- historical parameters
- QC

2. OceanSITES data format

An OceanSITES data file contains measurements such as temperature, salinity, continuously performed at different levels on a platform (eg : mooring), as well as meteorological or other parameters recorded at the site, derived variables associated with the site, and complete location and time information.

The requirements are drawn almost exclusively from the netCDF Style Guide :

- Dimension names are not standardized so that optionally multiple variables with different coordinates can be combined in a single file ;
- ~~Variable names are not standardized, so that multiple variables containing the same physical quantity can be contained in a single file ;~~
- Units are compliant with CF/COARDS/Udunits ;
- Time is encoded as recommended by Unidata and used by COARDS, CF and others.

For more information on CF and COARDS see :

- http://cf-pcmdi.llnl.gov/
- http://www.ferret.noaa.gov/noaa_coop/coop_cdf_profile.html.

Mis en forme : Barré

Supprimé : http://www.cgd.ucar.edu/cms/eaton/cf-metadata/CF-1.0.html

2.1. Data file dimensions

Name	Definition	Comment
TIME	TIME= unlimited;	Number of recorded measurements of the file.
LEVEL	LEVEL=<int value>;	Number of depth levels on the mooring. Example : For a mooring with measurements at 10, 50, 100, 150, 200 meters LEVEL = 5
STRING256 STRING64 STRING32 STRING8	STRING64 = 256; STRING64 = 64; STRING32 = 32; STRING8 = 8;	String dimensions.
STRING5 STRING4 STRING2 DATE_TIME	STRING4 = 5; STRING4 = 4; STRING4 = 2 DATE_TIME = 14;	

Supprimé : STRING14

If necessary, additional dimensions can be used in OceanSITES files, as defined in the CF standard. For instance, to indicate that different measured parameters are associated with different depth arrays, dimensions LEVEL and LEVEL_2 may be specified. Data from instruments at different locations may be combined in a single file using additional location dimensions, LATITUDE, LONGITUDE and LATITUDE_2, LONGITUDE_2.

2.2. Global attributes

The global attribute section is dedicated to metadata. It is intended to provide information mainly for the benefit of human readers. It is organized in 5 sections :

- What : what are the data in this dataset ;
- Where : the spatial coverage of the data ;
- When : the temporal coverage of the data ;
- Who : who produced the data ;
- How : how where produced the data , how are they available .

The global attributes follows the recommendations of Unidata NetCDF Attribute Convention for Dataset Discovery :

http://www.unidata.ucar.edu/software/netcdf-java/formats/DataDiscoveryAttConvention.html#cdm_data_type_Attribute

The title, institution, source, history, references and comment global attributes are necessary follow the CF-1.1 convention.

Mis en forme : Police : Italique, Non Surlignage

Mis en forme : Police : Italique, Non Surlignage

Mis en forme : Police : Italique

Name	Value	Definition
WHAT		
title	:title="OceanSITES CIS in-situ data";	A succinct description of what is in the dataset. The "title" attribute gives a brief description of the dataset. It should be human readable and reasonable to display in a list of such names. e.g. : "OceanSITES ESTOC in-situ data"
institution	:institution="National Oceanographic Centre";	Specifies where the original data was produced. Data provider name
source	:source="ocean in-situ observation"	The method of production of the original data. If it was model-generated, source should name the model and its version, as specifically as could be useful. If it is observational, source should characterize it (e.g., "surface observation" or "radiosonde").
history	:history="2005-04-11 08:35:00Z data collected";	Provides an audit trail for modifications to the original data. Well-behaved generic netCDF filters will automatically append their name and the parameters with which they were invoked to the global history attribute of an input netCDF file. We recommend that each line begin with a timestamp indicating the date and time of day that the program was executed. The "history" attribute provides an audit trail for modifications to the original data. It should contain a separate line for each modification with each line including a timestamp, user name, modification name, and modification arguments. *TC : use iso8601 for all the string dates ?*
references	:references=http://www.nocs.uk;	Published or web-based references that describe the data or methods used to produce it. References that describe the data or the methods used to produce it. Include here the names of configuration files that have been used as well as selected configuration parameters
comment	:comment="..."	Miscellaneous information about the data or methods used to produce it. The "comment" attribute allows for miscellaneous information about the dataset. Use of this attribute is recommended as appropriate.
conventions	:conventions="CF-1.1";	Name of the conventions followed by the dataset. e.g. : "CF-1.1"
netcdf_version	:netcdf_version=3.5	Netcdf version used for the data set
date_creation	:date_creation="2006-04-11 08:35:00Z";	File creation date (UT) in the form "yyyy-mm-dd hh:mm:ss UT" (Year-Month-Day -Hour-Minute-second) *TC : use iso8601 for all the string dates ?*

Mis en forme : Police : Italique

Mis en forme : Police : Italique

Supprimé : 0

Supprimé : UT

Mis en forme : Police : Italique

Supprimé : *18xx*

summary	:summary="...";	The "summary" attribute gives a longer description of the dataset. Its use is highly recommended. In many discovery systems, the title and the summary will be displayed in the results list from a search. It should therefore capture the essence of the dataset it describes. For instance, we recommend this field include information on the type of data contained in the dataset, how the data was created (e.g., instrument X; or model X, run Y), the creator of the dataset, the project for which the data was created, the geospatial coverage of the data, and the temporal coverage of the data. This should just be a summary of this information, more detail should be provided in the recommended creator attributes, the recommended geospatial attributes, and the recommended temporal attributes.
naming_authority	:naming_authority="OceanSITES" :id="OS_CIS-1_200502_TS »	The "id" and "naming_authority" attributes are intended to provide a globally unique identification for each dataset. The "id" value should attempt to uniquely identify the dataset. The naming authority allows a further refinement of the "id". The combination of the two should be globally unique for all time. We recommend using reverse-DNS naming for the naming authority. For example, naming_authority="edu.ucar.unidata" and id="NCEP/NAM_211_2005-05-24_12Z".
keywords_vocabulary	: keywords_vocabulary="..."	The "keywords_vocabulary" attribute identifies the controlled list of keywords from which the values in the "keywords" attribute are taken. If you are following a guideline for the words/phrases in your "keywords" attribute, put the name of that guideline here. The use of this attribute is recommended and its value will be used by THREDDS to identify the vocabulary from which the keywords come. Common values for the "keywords_vocabulary" attribute include: Vocabulary ID: "AGU Index Terms" — Reference URL: http://www.agu.org/pubs/indexterms/ Vocabulary ID: "GCMD Science Keywords" — Reference URL: http://gcmd.gsfc.nasa.gov/Resources/valids/gcmd_parameters.html
cdm_data_type	: cdm_data_type="Station"	The "cdm_data_type" attribute gives the THREDDS data type appropriate for this dataset. E.g., "Point", "Trajectory", "Station", "Radial", "Grid", "Swath". CDM : common data model from Unidata. More : http://www.unidata.ucar.edu/projects/THREDDS/CDM/CDM-TDS.htm
data_mode	:data_mode='D'	Indicates if the file contains real time or delayed mode data. R : real time data D : delayed mode data M : mixed real-time and delayed mode data
WHERE		
area southernmost_latitude	:area="Western Europe"; :southernmost_latitude="35";	Geographical coverage e.g.: Global Ocean, North Atlantic Ocean, North-West European shelves Value between -90° and 90°
northernmost_latitude	:northernmost_latitude="55";	Value between -90° and 90°
westernmost_longitude	:westernmost_longitude="-11°";	Value between -180° and 180°
easternmost_longi tude	:easternmost longitude="14°";	Value between -180° and 180°
minimum_depth	: minimum_depth ="10.0";	Minimum depth for measurements
maximum_depth	: maximum_depth ="2000.0";	Maximum depth for measurements
sensor_depth	:sensor_depth="0,2,5,8,75,100,500"	Nominal depth of each sensor or level
~~latitude~~	~~:latitude="0.0"~~	~~Nominal latitude of a site~~
longitude	:longitude="-10"	Nominal longitude of a site
WHEN		
start_date	:start_date="2006-03-01 00:00:00Z";	Start date of the data in UT in the form "yyyy-mm-dd hh:mm:ss UT" (Year-Month-Day -Hour-Minute-second) *TC : use iso8601 for all the string dates ?*
stop_date	:stop_date="2006-03-05 23:59:29Z";	Final date of the data in UT in the form "yyyy-mm-dd hh:mm:ss UT" (Year-Month-Day -Hour-Minute-second) *TC : use iso8601 for all the string dates ?*
WHO		
~~Institution~~	~~:institution="Southampton National Oceanographic Cebtre";~~	~~Data provider name~~
institution_references	:institution_referenc	References for data provider, the place to find all information upon the data set

Supprimé : ,
Supprimé : Gric
Supprimé : Image
Supprimé : Station
Supprimé : Trajectory
Supprimé : Radial
Supprimé : Time-series
Supprimé : float
Supprimé : UT
Mis en forme : Police :Italique
Mis en forme : Police :Italique

	es="http://www.nocs.uk";	(Web-based)
ontact	:contact= "codac@nocs.uk";	User desk e-mail
author	:author= "John Smith"	Name of the person responsible for the creation of the dataset.
HOW		
distribution_statement	:distribution_statement="Data restrictions: for registered users only ";	Text like “Approved for public release. Distribution unlimited” or "Data restrictions: for registered users only" or better to link to the place where the rule is described
quality_index	:quality_index="A";	A code value valid for the whole dataset : 0 unknown quality A excellent (no known problems, regular quality checking) B probably good (occasional problems, validation phase) C extremely suspect, frequent problems

Supprimé : C

Mis en forme : Anglais (Royaume-Uni)

Supprimé :

2.3. General attributes, meta-data informations

~~The general attributes are a subset of the meta-data file.~~

The general attributes are of character type.

Do we get rid of section 2.3 "General attributes" and move these items in global attributes? I think that the global attributes section is for human readers "only". If some information needs to be processed by software, don't you think that it is better to appear as a variable in the "General attributes section"?

Variables moved in global attributes section:

QC_MANUAL
DISTRIBUTION_STATEMENT: already in global attributes
CITATION
DATE_CREATION
DATE_UPDATE
DATE_SOURCE
PROJECT_NAME
PI_NAME
DATA_CENTRE
DATA_TYPE
FORMAT_VERSION

Variables that could remain in "General attributes"
PLATFORM_CODE
SITE_CODE
WMO_PLATFORM_CODE

Name	Definition	Comment
DATA_TYPE	char DATA_TYPE(STRING32); DATA_TYPE:long_name = "Data type"; DATA_TYPE:_FillValue = " ";	This field contains the type of data contained in the file. The list of acceptable data types is in the reference table 1. Example : “OceanSITES data”
FORMAT_VERSION	char FORMAT_VERSION(STRING4); FORMAT_VERSION:long_name = "File format version"; FORMAT_VERSION:_FillValue = " ";	File format version Example : «1.0»
QC_MANUAL	Char QC_MANUAL(STRING64); QC_MANUAL:long_name = "Quality control manual reference"; QC_MANUAL:_FillValue = " ";	This field contains the name of the manual that describes the quality contrl procedure. Exemple : “OceanSITES quality control manual V1.0”
DATE_CREATION	char DATE_CREATION(DATE_TIME); DATE_CREATION:long_name = "Date of file creation"; DATE_CREATION:conventions = "YYYYMMDDHHMISS"; DATE_CREATION:_FillValue = " ";	Date and time (UTC) of creation of this file. Format : YYYYMMDDHHMISS Example : 20011229161700 : December 29th 2001 16:17:00 *TC : use iso8601 for all the string dates ?*
DATE_UPDATE	char DATE_UPDATE(DATE_TIME); DATE_UPDATE:long_name = "Date of update of this file"; DATE_UPDATE:conventions = "YYYYMMDDHHMISS"; DATE_UPDATE:_FillValue = " ";	Date and time (UTC) of update of this file. Format : YYYYMMDDHHMISS Example : 20031230161700 : December 30th 2001 16:17:00 *TC : use iso8601 for all the string dates ?*
DATE_SOURCE	char DATE_SOURCE (DATE_TIME); DATE_SOURCE:long_name = "Date of source of this file"; DATE_SOURCE:conventions = "YYYYMMDDHHMISS"; DATE_SOURCE:_FillValue = " ";	Date and time (UTC) of source of this file. Format : YYYYMMDDHHMISS This is the date of the original file that may come from an other project (eg : Woce) Example : 19850529161700 : May 5th 1985 16:17:00 *TC : use iso8601 for all the string dates ?*

Supprimé : comment
Supprimé : comment
Supprimé : comment
Supprimé : comment
Mis en forme : Police :Italique
Supprimé : C
Mis en forme : Police :Italique
Supprimé : C
Mis en forme : Police :Italique

DISTRIBUTION_STATEMENT	char DISTRIBUTION_STATEMENT(STRING64); DISTRIBUTION_STATEMENT:long_name = "Restriction on use for these data"; DISTRIBUTION_STATEMENT:_FillValue = " ";	Restriction on use for these data. Example : "NONE"
CITATION	char CITATION (STRING256); CITATION:long_name = "This sentence should be used for publication"; CITATION:_FillValue = " ";	The citation should be used for publications. Example : "These data were collected and made freely available by the International OceanSITES Project and the national programmes that contribute to it."
PLATFORM_CODE	char PLATFORM_CODE(STRING32); PLATFORM_CODE:long_name = "Platform unique identifier"; PLATFORM_CODE:conventions = "OceanSITES naming convention"; PLATFORM_CODE:_FillValue = " ";	Platform unique code within OceanSITES project. Examples : CIS-1 mooring on CIS site (Central Irminger Sea). PIRATA-LAMBADA for Lambada buoy from PIRATA project.
SITE_CODE	char SITE_CODE(STRING32); SITE_CODE:long_name = "Site unique identifier"; SITE_CODE:conventions = "OceanSITES naming convention"; SITE_CODE:_FillValue = " ";	Name of the site within OceanSITES project. Example : CIS for Central Irminger Sea. LAMBADA for Pirata Lambada site.
WMO_PLATFORM_CODE	char WMO_PLATFORM_CODE(STRING5); WMO_PLATFORM_CODE:long_name = "WMO code"; WMO_PLATFORM_CODE:conventions = "WMO naming convention : A8411"; WMO_PLATFORM_CODE:_FillValue = " ";	WMO identifier for a mooring. WMO is the World Meteorological Organization. This platform number is unique within OceanSITES project. Example: 13009 for PIRATA-LAMBADA buoy.
PROJECT_NAME	char PROJECT_NAME(STRING64); PROJECT_NAME:long_name = "Name of the project"; PROJECT_NAME:_FillValue = " ";	Name of the project which operates the mooring. Example: PIRATA
PI_NAME	char PI_NAME (STRING64); PI_NAME:long_name = "Name of the principal investigator"; PI_NAME:_FillValue = " ";	Name of the principal investigator in charge of the mooring. Example: Jacques SERVAIN
DATA_CENTRE	char DATA_CENTRE(STRING2); DATA_CENTRE:long_name = "Data centre in charge of data processing"; DATA_CENTRE:conventions = "OceanSites reference table 4"; DATA_CENTRE:_FillValue = " ";	Code for the data centre in charge of the mooring data management. The data centre codes are described in the reference table 4. Example : ME for MEDS

Supprimé : DATA_RESTRICTIONS
Supprimé : C
Supprimé : DATA_RESTRICTIONS
Supprimé : DATA_RESTRICTIONS
Supprimé : comment
Supprimé : DATA_RESTRICTIONS
Supprimé : C
Supprimé : comment
Supprimé : Restriction on use for t
Supprimé : ese data
Supprimé : C
Supprimé : C
Supprimé : C
Supprimé : Float
Supprimé : comment
Supprimé : float
Supprimé : Argo

2.4. Measurements

This section contains measurements performed on a platform (eg : mooring).

The “axis” attribute provides an unambiguous mechanism to orient a coordinate variable in 4-space.

Name	Definition	Comment
TIME	Double TIME(TIME); TIME:long_name = "days since 1950-01-01 00:00:00"; TIME:standard_name = "time"; TIME:units = "days since 1950-01-01 00:00:00"; TIME:conventions = "Relative julian days with decimal part (as parts of the day)"; TIME:axis = "T"; TIME:_FillValue = 999999.; TIME:epic_code = 601.;	Julian day of the measurement. The integer part represents the day, the decimal part represents the time of the measurement. Date and time are in universal time coordinate. Example : 18833.8013889885 : July 25 2001 19:14:00
TIME_QC	Byte TIME_QC(TIME); TIME_QC:long_name = “quality flag”; TIME_QC:conventions = “OceanSITES reference table 2”; TIME_QC: _FillValue = 0;	Quality flag applied on each TIME values. The flag scale is specified in table 2.
LATITUDE *if applicable*	Float LATITUDE(TIME); LATITUDE:long_name = "Latitude of each location"; LATITUDE:standard_name = "latitude"; LATITUDE:units = "degree_north"; LATITUDE:_FillValue = 99999.f; LATITUDE:valid_min = -90.f; LATITUDE:valid_max = 90.f; LATITUDE:epic_code = 500; LATITUDE:axis='Y';	Latitude of the mooring. This variable is mandatory for single point observations Unit : degree north Example : 44.4991 for 44° 29’ 56.76’’ N
LONGITUDE *if applicable*	Float LONGITUDE(TIME); LONGITUDE:long_name = "Longitude of each location"; LONGITUDE:standard_name = "longitude"; LONGITUDE:units = “degree_east"; LONGITUDE:_FillValue = 99999.f; LONGITUDE:valid_min = -180.f; LONGITUDE:valid_max = 180.f; LONGITUDE:epic_code = 501; LONGITUDE:axis='X';	Longitude of the mooring. This variable is mandatory for single point observations Unit : degree east Example : 16.7222 for 16° 43’ 19.92’’ E
POSITION_QC	Byte POSITION_QC(TIME); POSITION_QC:long_name = “quality flag”; POSITION_QC:conventions = “OceanSITES reference table 2”; POSITION_QC: _FillValue = 0;	Quality flag applied on each LATITUDE and LONGITUDEvalues. The flag scale is specified in table 2.
DEPH PRES	Float DEPH (LEVEL); DEPH:long_name = "Depth of each measurement"; DEPH:standard_name = "depth"; DEPH:units = "meter"; DEPH:positive = "down"; DEPH:axis="z"; DEPH:_FillValue = -99999.f; DEPH:valid_min = 0.f; DEPH:valid_max = 12000.f; DEPH:epic_code =;	Depth of each measurement. Unit : meter In case of pressure use PRES Unit : decibar Example : 513 meters Z axes may be positive=”UP” (atmospheric) or positive=”DOWN” (ocean)
DEPH_QC PRES_QC	Byte DEPH_QC(TIME); DEPH_QC:long_name = “quality flag”; DEPH_QC:conventions = “OceanSITES reference table 2”; DEPH_QC: _FillValue = 0;	Quality flag applied on each DEPH values. The flag scale is specified in table 2.
<PARAM>	Float <PARAM>(TIME, LEVEL); <PARAM>:long_name = "<Y>"; <PARAM>:standard_name = "<X>"; <PARAM>:units = "<Y>"; <PARAM>:_FillValue = <Y>; <PARAM>:QC_indicator = <Z>; <PARAM>:valid_min = <Y>; <PARAM>:valid_max = <Y>; <PARAM>:comment = "<Y>";	<PARAM> contains the values of a parameter The name of the parameter starts with a parameter code listed in reference table 3. Example of <PARAM> names : TEMP, TEMP_DOXY <X> : the standard name of the parameter is specified in the reference table 3. <Y> : this fields are platform dependant.

Supprimé :

Supprimé : UTC

Supprimé : UTC

Supprimé : *optional*

Supprimé : optional

Supprimé : ; the nominal latitude is included in the global attributes section

Supprimé : *optional*

Supprimé : optional; the nominal longitude is included in the global attributes section

Supprimé : T

	<PARAM>:ancillary_variables = "<Y>" ; <PARAM>:resolution = <Y>; <PARAM>:epic_code = <Y>;	<Z> : the quality control indicator is specified in table 2.1
<PARAM>_QC	Byte <PARAM>_QC(TIME, LEVEL); <PARAM>_QC:long_name = “quality flag”; <PARAM>_QC:conventions = “OceanSITES reference table 2”; <PARAM>_QC:_FillValue = 0;	Quality flag applied on each <PARAM> values. The flag scale is specified in table 2.
<PARAM>_DATA_MODE *optional*	Char <PARAM>_DATA_MODE(TIME, LEVEL); <PARAM>_DATA_MODE:long_name = "Delayed mode or real time data"; <PARAM>_DATA_MODE:conventions = "R : real time; D : delayed mode"; <PARAM>_DATA_MODE:_FillValue = " ";	This variable is opti onal. It is included when the dataset mixes real -time data and delayed mode data. Otherwise, it is located at the global attributes level. Indicates if the file contains real time or delayed mode data. R : real time data D : delayed mode data

Different depth or pressure levels

If for some measurements it is more natural to use depth (DEPH, e.g. velocities from an ADCP), while for others it is better to use pressure (PRES, e.g. from MicroCat sensors on the mooring line), the data should be recorded in separate files.

Suggestion from Matthias Lankhorst : If PRES is used, DEPH should be provided as nominal values or as a simplified function of PRES and LATITUDE (Unesco 1983. Algorithms for computation of fundamental properties of seawater, 1983. Unesco Tech. Pap. in Mar. Sci., No. 44, 53 pp.)."

Supprimé : *If the d epth or pressure from different instruments on a same mooring mismatch, they should be recorded in separate files.* ¶
Example : on an ADCP the velocity is record ed at fixed depths, while a temperature sensor fixed on the moo ring line moves up and down at variable depths. These ADCP data and temperature data should be recorded in separate files.¶

Supprimé : ***Question*** *: should we keep EPIC codes ?* ¶

3. OceanSITES meta-data format

Can we decide that the global attributes section of data format contains the meta-data ?

The Ocean sites meta-data format is under construction.

The data management team is investigating an XML SENSORML description.

When approved, this document will be inserted in chapter 3 “OceanSITES meta-data format” of the User’s Manual.

Note that the OceanSITES format already contains a subset of meta-data.

An OceanSITES meta-data file contains information about an OceanSITES platform configuration.

For each deployment of a mooring, a meta-data file is created. For each change in a mooring characteristics, a meta-data file is created.

4. Reference tables

4.1. Reference table 1 : data type and data code

4.1.1. Data Type

The following table contains the list of acceptable contents for DATA_TYPE field.

Data type
OceanSITES data
OceanSITES meta-data

4.1.2. Data code

Data codes are used for file naming convention in chapter 5.1.

- T : temperature
- S : salinity
- C : conductivity
- O : oxygen
- M : meteorological parameters
- V : velocity

4.2. Reference table 2 : quality control flag scale

This table describes quality control flags assigned to measurements after quality control.
These codes are used in the <PARAM>_QC variables that accompany each measurement, cf. section 2.4."

Code	Meaning	Real-time comment	Delayed mode 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 ?	Data were not observed but	-

Supprimé : Not used

		reported?	
8	Interpolated value	Missing data may be interpolated from neighbouring data in space or time.	-
9	Missing value	-	-

... [1]

Mise en forme : Puces et numéros

4.2.1. Reference table 2.1: quality control level indicator

This table describes the quality procedures applied to all the measurement of a parameter.
These values are used as an overall quality indicator (i.e. one summarizing all measurements) in the attributes of each variable <PARAM>, cf. section 2.4.

Code	Meaning
0	No QC performed
1	Ranges applied, bad data flagged
2	Data interpolated
3	Sensor malfunctioning (data possibly useful)
4	data missing (which is different from sensors malfunctioning)
5	data manually reviewed
6	data verified against model or other contextual information
7	other QC process applied

4.3. Reference table 3 : OceanSITES parameter dictionary

Convention for parameter names, standard names and units

- Parameter names
  They are not strictly standardized, so that multiple variables containing the same physical quantity can be contained in a single file.
  However, the parameter names are based in part on the group codes of the GF3 dictionnary (4 characters).
  When necessary, a parameter name has a suffix that designates secondary parameters[1].
  The suffix starts with the character "_".
- The NetCDF "standard_name" attribute contains the standardized parameter name, based in part on CF conventions.
- The NetCDF "units" attribute are compliant with CF/COARDS/Udunits.

Supprimé : a parameter name have

Example

On a mooring, sea temperature measured by a series of Microcat CTD is reported as TEMP, with a standard name of SEA_WATER_TEMPERATURE.

Secondary temperature measurements[1] performed by an oxygen sensor is reported as TEMP_DOXY with a standard name of SEA_WATER_TEMPERATURE.

For both measurement, the unit attribute is "degree_Celsius".

References

The OceanSITES parameter names are based partly on GF3 group codes available at :

- ftp://ftp.pol.ac.uk/pub/bodc/jgofs/datadict/new/parameter.csv

Associated to each parameter name, the standard_name is based partly on CF conventions available at :

- http://cf-pcmdi.llnl.gov/documents/cf-standard-names/7/cf-standard-name-table.html

Supprimé : <#>http://www.cgd.ucar.edu/mailman/listinfo/cf-metadata¶ http://www.cgd.ucar.edu/cms/eaton/cf-metadata/CF-1.0.html

The units are compliants with CF/COARDS/Udunits definition available at :

- http://ferret.wrc.noaa.gov/noaa_coop/coop_cdf_profile.html

Supprimé : http://www.oceansites.org/data/units

[1] A secondary parameter is an additional measurement performed by a sensor not specifically decicated to this parameter (eg : a temperature from an oxygen sensor, a temperature from a thermosalinograph).

Valid parameter names and standard names

The valid parameter names, standard names, long_names and units are available at :

- http://www.ifremer.fr/co/etc/oceansites/oceansites-user-manual-parameters.pdf

Supprimé : ¶
PARAM ... [2]

4.4. Reference table 4: Data Assembly Center Codes

Data centres and institutions	
BO	BODC, United Kingdom
IF	Ifremer, France
JA	Jamstec, Japan
JM	JMA, Japan
ME	MEDS, Canada
NO	National Oceanography Centre, Southampton
PM	PMEL, USA
SI	SIO, Scripps, USA
WH	Woods Hole Oceanographic Institution, USA
GT	GTS : used for data coming from WMO GTS network

5. File naming convention

The OceanSITES files comply with the following naming conventions:

Supprimé : conventions :

5.1. Data file naming convention

OS_XXX_YYY_ZZZ<_PARTX>.nc

- OS : OceanSITES prefix
- XXX : platform code
- YYY : configuration code
- ZZZ : data type code from reference table 1
  The data type code is the addition of the primary (main) parameters measured in a file.
  The data type code will not list secondary parameters.
- <_PARTX> : when an OceanSites data file size becomes excessive (eg : > 100Mb), it can be splitted in smaller parts : PART1, PART2, … PARTN

Example :

- OS_CIS-1_200502_TS.nc

  This file contains the CTD data from CIS mooring, from Animate project, for the deployment performed in February 2005.
  Note that the data start in February until the next re-deployment.

Supprimé : ¶

5.2. Metadata file naming convention

Do we remove this section if meta-data are reported in the global attributes of data files ?

OS_XXX_YYY_META.xml

- OS : OceanSITES prefix
- XXX : platform code
- YYY : configuration code

Example :

- OS_CIS-1_200502_META.nc

  This file contains the meta-data of CIS mooring, from Animate project, for the deployment performed in February 2005.
  These meta-data are valid from February 2005 until the next re-deployment.

Page 17: [1] Supprimé tmsi-idm-isi 22/03/2008 23:10:00

Page 19: [2] Supprimé isi 25/03/2008 18:34:00

PARAM	Standard Name
CNDC	SEA_WATER_ELECTRICAL_CONDUCTIVITY
PRES	SEA_WATER_PRESSURE
DEPH	DEPTH
PSAL	SEA_WATER_SALINITY
TEMP	SEA_WATER_TEMPERATURE
RELH	RELATIVE_HUMIDITY
ATMP	~~AIR_TEMPERATURE~~ ATMOSPHERIC PRESSURE
EWSB	WIND_SPEED
CAPH	AIR_PRESSURE
SWR	SURFACE_DOWNWELLING_SHORTWAVE_FLUX_IN_AIR
LWR	SURFACE_DOWNWELLING_LONGWAVE_FLUX_IN_AIR
RFVL	SEA_WATER_SPEED
DOXY	DISSOLVED_OXYGEN
FLU2	FLUORESCENCE
OPBS	OPTICAL_BACKSCATTERING_COEFFICIENT
PCO2	CARBON_DIOXIDE

Parameters awaiting definition

PARAM	Standard Name	long_name	unit	comment	convention
????	DIRECTION_OF_SEA_WATER_VELOCITY				
????	THICKNESS_OF_RAINFALL_AMOUNT				
????	RAINFALL_RATE				
????WSPD	WIND_SPEED				
????WDIR	WIND_TO_DIRECTION				
????	EASTWARD_WIND				
????	NORTHWARD_WIND				
????	PHOTOSYNTHETICALLY_ACTIVE_RADIATION				
????	IRRADIANCE_AT_MULTIPLE_WAVELENGTHS				
????	RADIANCE_AT_MULTIPLE_WAVELENGTHS				
????	BEAM_ATTENUATION				
????	ABSORBTION_AND_ATTENUATION_COEFFICIENT_AT MULTI_WAVELENGTHS				
????	NITRATE_ABSORBANCE				
ATMS	SURFACE_AIR_PRESSURE				
DRYT	air_temperature	Air Temperature	degree_Celsius		
DEWT	dew_point_temperature	Dew Point Temperature	degree_Celsius		
SRAD	isotropic_shortwave_radiance_in_air	Shortwave Radiation	W/m^2		
VAVH	sea_surface_wave_significant_height	Significant Wave Height	m	Spectrally derived average height of the highest one-third of the waves during the sampling period	WMO-No. 7 Wave Analy Forecasting
VAVT	sea_surface_wave_zero_upcrossing_period	Average Wave Period	s	Spectrally derived average wave period of all waves	WMO-No. 7 Wave Analy

				during the sampling period	Forecasting
VDIR	sea_surface_wave_from_direction	Wave Direction	degrees_true	Spectral derived wave direction at the peak of the energy spectrum	WMO-No. 7 Wave Analy Forecasting
VDEN	sea_surface_wave_variance_spectral_density	Spectral Wave Density	m^2/Hz	Energy for each frequency component	WMO-No. 7 Wave Analy Forecasting
D	sea_water_sigma_theta	sigma-theta (potential density)	kg/m**3	-	-
UCUR	eastward_sea_water_velocity	zonal current	cm/s	-	-
VCUR	northward_sea_water_velocity	meridional current	cm/s	-	-
CSPD	sea_water_speed	current speed	cm/s	-	-
CDIR	sea_water_direction	sea_water_direction	deg from N	-	-
UWND	eastward_wind	zonal wind	m/s	-	-
VWND	northward_wind	meridional wind	m/s	-	-
WSPD	wind_speed	wind speed	m/s	-	-
WDIR	wind_to_direction	wind direction (oceanographic convention, blowing to)	deg from N	-	-
AIRT	air_temperature	air temperature	deg C	-	-
RH	relative_humidity	relative humidity	%	-	-
SW	surface_downwelling_shortwave_flux_in_air	shortwave radiation	W/m**2	-	-
LW	surface_downwelling_longwave_flux_in_air	longwave radiation	W/m**2	-	-
RAIN	rainfall_rate	rain	mm/hr	-	-
iso17	isotherm_depth	17C isotherm depth	m	-	-
dynht	dynamic_height	dynamic height at sea surface referenced to 500db	cm	-	-
HEAT	heat_content	upper ocean heat content from 0 to 300m depth	10**10 J/m**2	-	-
xpos	longitude	buoy longitude	deg	-	-
ypos	latitude	buoy latitude	deg	-	-