

INDES

Product User Manual - In situ observations

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People involved in this issue:		
Written by (*):	V. Rosmorduc	Date + Signature:(visa ou réf)
Checked by (*):	B. Pirrotta	Date + Signature:(visa ou réf)
Approved by (*):		Date + Signature:(visa ou réf)
Application authorized by (*):	R. De Dianous	Date + Signature:(visa ou réf)

**In the opposite box: Last and First name of the person + company if different from CLS*

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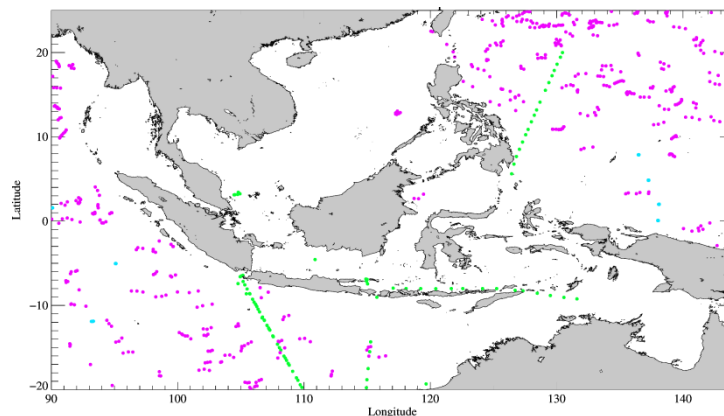
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1. PURPOSE

This document presents the information needed by users for the **in situ observation** products provided in the frame of the Indeso project.

This document is organized as follows:

- Chapter 2; processing: input data and method applied.
- Chapter 3; the product description, with the different files provided, the nomenclature.
- Chapter 4; the file format.
- Chapter 5; how to download products.
- Chapter 6; bibliographical references.



2. PROCESSING

2.1. INTRODUCTION

This product covers real-time and historical in-situ observations data of temperature and salinity profiles, surface velocities from surface drifters and tide gauges. These data are collected from main global networks (Argo, GOSUD, OceanSITES, DBCP, GTS, GLOSS/CLIVAR) over the INDES0 area. This product is updated continuously.

This product covers three in situ observations datasets: temperature and salinity profiles, surface velocities from surface drifters and tide gauges.

2.2. INPUT DATA

2.2.1. TEMPERATURE AND SALINITY PROFILES:

Temperature and salinity profiles are from Argo floats, XBTs, CTDs, moorings. Files are provided in Netcdf format (<http://www.argodatamgt.org/content/download/19594/126754/file/argo-dm-user-manual-v3.03.pdf>). Pressure, temperature and salinity observations are quality controlled using automated procedures. All variables are thus provided with quality flags. This dataset is updated daily.



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2.2.2. SURFACE DRIFTERS VELOCITIES

Surface drifters velocities are from the international Global Drifter Program (<http://www.aoml.noaa.gov/phod/dac/index.php>).

Files are provided in ascii format with the following content: wmo (drifter unique id), date (in days since 1950-01-01 00:00:00 UTC), longitude, latitude, zonal velocities, meridional velocities. Velocities are provided in m/s. High frequencies have been filtered. Temporal resolution is 3 hours. This dataset is updated weekly.

2.2.3. TIDE GAUGE

Tide gauge observations are from the University of Hawaii Sea Level Center (http://uhslc.soest.hawaii.edu/thredds/uhslc_quality.html).

Files are provided in Netcdf format. Ocean tidal effects and atmospheric effects are provided together with sea surface height from the tide gauge instrument. Temporal resolution is 1 hour. This dataset is updated weekly.

3. DESCRIPTION OF THE PRODUCT SPECIFICATION

3.1. PRODUCT GENERAL CONTENT AND SPECIFICATIONS

Each Indeso product includes a series of related datasets. Those datasets are delivered with different names (see nomenclature - §3.2), contents (see NetCDF contents and Ascii contents - §3.1) and format (§4).

Note that the datasets available for a given user depend on the user profile.

Dataset Name	Dataset time coverage	Production frequency	Geographical coverage	Spatial Resolution	File format
Profiles (T/S/U/V) historical & real-time	from start to T0	daily	20S-25N/90E-144E	discrete	NetCDF
Profiles (T/S/U/V) historical	from start to (T0 - 30 days)	daily	20S-25N/90E-144E	discrete	NetCDF
Surface drifters velocities historical & real-time	from start to T0	weekly	20S-25N/90E-144E	discrete	ascii
Surface drifters velocities historical	from start to (T0 - 30 days)	weekly	20S-25N/90E-144E	discrete	ascii
Tide gauge historical & real-time	from start to T0	weekly	20S-25N/90E-144E	discrete	NetCDF CF
Tide gauge historical	from start to (T0 - 30 days)	weekly	20S-25N/90E-144E	discrete	NetCDF CF

3.2. NOMENCLATURE OF FILES

Files downloaded using Indeso downloading services are named using a unique identifier (13 digits, corresponding to the current time (downloading time) in milliseconds since January 1, 1970 midnight UTC) at the end of the file name.



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Profiles (T/S/U/V) historical&real-time
 PROFILES-RT_%nnnnnnnnnnnn.zip
 PROFILES_%Y%m%d.nc

Profiles (T/S/U/V) historical
 PROFILES_%nnnnnnnnnnnn.zip
 PROFILES_%Y%m%d.nc

Surface drifters velocities historical&real-time
 UV_DRIFTERS-RT_%nnnnnnnnnnnn.zip
 UV_DRIFTERS_%Y%m%d(start)_%Y%m%d(end).asc

Surface drifters velocities historical
 UV_DRIFTERS_%nnnnnnnnnnnn.zip
 UV_DRIFTERS_%Y%m%d(start)_%Y%m%d(end).asc

Tide gauge historical&real-time
TG_%NAME_%Y%m%d(start)_%Y%m%d(end).nc

Tide gauge historical
 TG_%NAME_%Y%m%d(start)_%Y%m%d(end).nc

Where

%nnnnnnnnnnnn is the identifier inserted by the downloading service

%NAME

Name	Lon	Lat
AMBON	128.2	-3.7
BENOA	115.216	-8.75
BITUNG	125.1833	1.433333
BOOBY_ISL	141.9167	-10.6
BROOME	122.2167	-18
CHITTAGONG	91.83334	22.23333
CILACAP	109.0167	-7.75
COCOS_ISLAND	96.9	-12.11667
CURRIMAO	120.4833	18.01667
DARWIN	130.85	-12.46667
DAVAO	125.6333	7.083333
TG_ISHIGAKI	124.15	24.33333
KAOHSIUNG	120.2833	22.61667
KO_LAK	99.81667	11.8
KO_TAPHAO_NOI	98.43333	7.833333
LAMBAR	116.0667	-8.733333
LANGKAWI	99.75	6.433333
LEGASPI	123.75	13.15

LUBANG	120.2	13.81667
MALAKAL	134.4667	7.333333
MANILA	120.9667	14.58333
MAUMLAKI	131.2833	-7.983333
MAULABOH	96.13333	5.133333
MOULMEIN	97.61667	16.48333
PADANG	100.3333	-1
PRIGI	111.7333	-8.283333
QUARRY_BAY	114.2167	22.3
QUINHON	109.25	13.76667
SABANG	95.33334	5.833333
SADENG	110.7833	-8.5
SIBOLGA	98.76667	1.75
SITTWE	92.76667	11.68333
SUBIC_BAY	120.2833	14.81667
TANJONG_PAGAR	103.85	1.266667
TELUKDALAM(TEDA)	97.81667	0.55
VUNG_TAU	107.0667	10.33333
WAIKELO	119.2333	-9.4
YAP	138.1333	9.516667

and

Date	Macro used	# digits	Ex: Date 2001/03/20 9H15M20S
Year	%Y	4	2001
Month	%m	2	03
Day in month	%d	2	20

3.3. ACKNOWLEDGMENTS

(a) Original INDES0 Products - or Value Added Products or Derivative Works developed from INDES0 Products including pictures - shall include the following credit conspicuously displayed and written in full:

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4. DATA FORMAT

4.1. NETCDF

The products are stored using the NetCDF CF 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 sharing of scientific data. The NetCDF software was developed at the Unidata Program Center 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 on: <http://www.unidata.ucar.edu/packages/netcdf/>

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.

4.2. STRUCTURE AND SEMANTIC OF NETCDF FILES

Variable name	Description (long_name)	Dimensions	Units
PROFILES-RT_%Y%m%d.nc or PROFILES_%Y%m%d.nc			
Netcdf multi profiles			
Dimensions (main ones): N_PROF, N_LEVELS, DATE_TIME, ...			
PRES	SEA PRESSURE	(N_PROF, N_LEVELS)	decibar
PRES_QC	Quality flag	(N_PROF, N_LEVELS)	/
PRES_ADJUSTED	SEA PRESSURE	(N_PROF, N_LEVELS)	decibar
PRES_ADJUSTED_QC	Quality flag	(N_PROF, N_LEVELS)	/
TEMP	SEA TEMPERATURE IN SITU ITS-90 SCALE	(N_PROF, N_LEVELS)	degree_Celsius
TEMP_QC	Quality flag	(N_PROF, N_LEVELS)	/
TEMP_ADJUSTED	SEA TEMPERATURE IN SITU ITS-90 SCALE	(N_PROF, N_LEVELS)	degree_Celsius
TEMP_ADJUSTED_QC	Quality flag	(N_PROF, N_LEVELS)	/
PSAL	PRACTICAL SALINITY	(N_PROF, N_LEVELS)	psu
PSAL_QC	Quality flag	(N_PROF, N_LEVELS)	/
PSAL_ADJUSTED	PRACTICAL SALINITY	(N_PROF, N_LEVELS)	psu
PSAL_ADJUSTED_QC	Quality flag	(N_PROF, N_LEVELS)	/

DC_REFERENCE	Station unique identifier in data centre	(N_PROF, STRING32)	/
DATA_TYPE	Data type	STRING16	/
FORMAT_VERSION	File format version	STRING4	/
HANDBOOK_VERSION	Data handbook version	STRING4	/
REFERENCE_DATE_TIME	Date of reference for Julian days	DATE_TIME	YYYYMMDDHHMISS
DATE_CREATION	Date of file creation	DATE_TIME	YYYYMMDDHHMISS
DATE_UPDATE	Date of update of this file	DATE_TIME	YYYYMMDDHHMISS
JULD	Julian day (UTC) of the station relative to REFERENCE_DATE_TIME	(N_PROF)	days since 1950-01-01 00:00:00 UTC
JULD_QC	Quality on Date and Time	(N_PROF)	/
PROFIL_DATE_UPDATE	Profil date of update in julian day (UTC)	(N_PROF)	days since 1950-01-01 00:00:00 UTC
PROFIL_DATE_CREATION	Profil date of creation in julian day (UTC)	(N_PROF)	days since 1950-01-01 00:00:00 UTC
LATITUDE	Latitude of the station, best estimate	(N_PROF)	degree_north
LONGITUDE	Longitude of the station, best estimate	(N_PROF)	degree_east
POSITION_QC	Quality on position (latitude and longitude)	(N_PROF)	/
PLATFORM_NUMBER	Float unique identifier	(N_PROF,STRING64)	/
PI_NAME	Name of the principal investigator	(N_PROF,STRING64)	/
STATION_PARAMETERS	List of available parameters for the station	(N_PROF,N_PARAM,STRING16)	/
WMO_INST_TYPE	Coded instrument type	(N_PROF,STRING64)	/
PLATFORM_CODE	Platform code	(N_PROF,STRING64)	/
DATA_MODE	Delayed mode or real time data	(N_PROF)	/
TALEV	Annual Levitus temperature on DEPH/PRES	(N_PROF, N_LEVELS)	°C
TMLEV	Monthly Levitus temperature	(N_PROF, N_LEVELS)	°C
TASTD	STD of annual Levitus temperature	(N_PROF, N_LEVELS)	°C
TMSTD	STD of monthly Levitus temperature	(N_PROF, N_LEVELS)	°C
SALEV	Annual Levitus salinity on DEPH/PRES	(N_PROF, N_LEVELS)	PSU
SMLEV	Monthly Levitus salinity	(N_PROF, N_LEVELS)	PSU
SASTD	STD of annual Levitus salinity	(N_PROF, N_LEVELS)	PSU
SMSTD	STD of monthly Levitus salinity	(N_PROF, N_LEVELS)	PSU
TALEV_ADJUSTED	Annual Levitus temperature on DEPH_ADJUSTED/PRES_ADJUSTED	(N_PROF, N_LEVELS)	°C
TMLEV_ADJUSTED	Monthly Levitus temperature	(N_PROF, N_LEVELS)	°C
TASTD_ADJUSTED	STD of annual Levitus temperature	(N_PROF, N_LEVELS)	°C
TMSTD_ADJUSTED	STD of monthly Levitus temperature	(N_PROF, N_LEVELS)	°C
SALEV_ADJUSTED	Annual Levitus salinity on DEPH_ADJUSTED/PRES_ADJUSTED	(N_PROF, N_LEVELS)	PSU
SMLEV_ADJUSTED	Monthly Levitus salinity	(N_PROF, N_LEVELS)	PSU
SASTD_ADJUSTED	STD of annual Levitus salinity	(N_PROF, N_LEVELS)	PSU
SMSTD_ADJUSTED	STD of monthly Levitus salinity	(N_PROF, N_LEVELS)	PSU
DEPH	Depth calculated from pressure	(N_PROF, N_LEVELS)	m
DEPH_QC	Global quality on calculated depth	(N_PROF, N_LEVELS)	/
DEPH_ADJUSTED	Adjusted depth calculated from adjusted pressure	(N_PROF, N_LEVELS)	m

DEPH_ADJUSTED_QC	Global quality on calculated depth adjusted	(N_PROF, N_LEVELS)	/
TEMP_WHICH_QC	quality flag	(N_PROF, N_LEVELS)	/
PSAL_WHICH_QC	quality flag	(N_PROF, N_LEVELS)	/
PRES_WHICH_QC	quality flag	(N_PROF, N_LEVELS)	/
DEPH_WHICH_QC	quality flag	(N_PROF, N_LEVELS)	/
PROFILE_WHICH_QC	quality flag	(N_PROF, N_LEVELS)	/
TEMP_ADJ_WHICH_QC	quality flag	(N_PROF, N_LEVELS)	/
PSAL_ADJ_WHICH_QC	quality flag	(N_PROF, N_LEVELS)	/
PRES_ADJ_WHICH_QC	quality flag	(N_PROF, N_LEVELS)	/
DEPH_ADJ_WHICH_QC	quality flag	(N_PROF, N_LEVELS)	/
PROFILE_ADJ_WHICH_QC	quality flag	(N_PROF, N_LEVELS)	/
PARAMETERINT	List of added parameters	(L_PARAMETERINT,C_PARAMETERINT)	/

Variable name	Description (long_name)	Standard_name	Dimensions	Units
TG_%NAME_%Y%m%d(start)_%Y%m%d(end).nc				
Netcdf-CF station				
Dimensions: latitude=1, longitude=1, time				
latitude	Latitude	latitude	(latitude)	degrees_north
longitude	Longitude	longitude	(longitude)	degrees_east
time	Date in Julian day	time	(time)	days since 1950-01-01 00:00:00
ssh_from_tidegauge	sea surface height from the tide gauge instrument	sea_surface_height_above_geoid	(time,latitude,longitude)	m
ssh_from_tide	sea surface height from the Demerliac tidal model	sea_surface_height_amplitude_due_to_geocentric_ocean_tide	(time,latitude,longitude)	m
ssh_from_IB	sea surface height from the MOG2D Inverse Barometer model	sea_surface_height_correction_due_to_air_pressure_and_wind_at_high_frequency	(time,latitude,longitude)	m

4.3. STRUCTURE AND SEMANTIC OF ASCII FILES

UV_DRIFTERS_%Y%m%d(start)_%Y%m%d(end).asc					
Ascii file (tabulated)					
station_number	date (in Julian day: days since 1950-01-01 00:00:00 UTC)	longitude (degrees_east)	latitude (degrees_north)	zonal velocity (m/s)	meridional velocity (m/s)

5. HOW TO DOWNLOAD A PRODUCT

5.1. REGISTRATION

To access data, registration is required. During registration process, the user shall accept using licenses for the use of INDES products and services.

License shall include:

- Data use conditions,
- Legal and contractual clauses

5.2. ACCESS SERVICES

Different services enable registered users to access the data. Depending on the dataset, not all of them are relevant.

Dataset Name	File format	Discover	View	Get
Profiles (T/S/U/V) historical & real-time	netCDF	Yes	No	Yes
Surface drifters velocities historical & real-time	ascii	Yes	No	Yes
Tide gauge historical & real-time	netCDF	Yes	No	Yes