Inventory oceanographic data assembled in the PERSEUS multidisciplinary database.

Deliverable Nr. 9.9

Project Full title	Policy-oriented marine Environmental Research in the Southern EUropean Seas
Project Acronym	PERSEUS
Grant Agreement No.	287600
Coordinator	Dr. E. Papathanassiou
Project start date and duration	1st January 2012, 48 months
Project website	www.perseus-net.eu

Deliverable Nr.	9.9	Deliverable Date	14/DEC/2014
Work Package No	9		
Work Package Title	Communication, Outreach & Information Management		
Responsible			
Authors & Institutes Acronyms	Dr. Isaac Gertman, Mrs. Yevgeniya Krivenko, Mr. Tal Ozer (IOLR).		
Status:	Final (F)		
	Draft (D)	●	
	Revised draft (RV)		
Dissemination level:	Public (PU)	●	
	Restricted to other program participants (PP)		
	Restricted to a group specified by the consortium (RE)		
	Confidential, only for members of the consortium (CO)		

CONTENTS

EXECUTIVE SUMMARY

The PERSEUS Cast DB on December 2014 contains the largest collection in the world of vertical profiles of physical (excluding XBT data), chemical and biological parameters observed from research vessels and autonomous platform in Mediterranean and Black Seas. The DB, which was based on the SESAME Cast DB, was significantly expanded by importing data extracted from world data collections (WOD09 and SeaDataNet) and by importing new data acquired during the PERSEUS project. The data base structure and data organization satisfy SeaDataNet standards.

SCOPE

Task 9.1 of the PERSEUS project aims to develop and maintain oceanographic cast database for a large community of users, allowing easy access to a huge collection of historical Mediterranean and Black Sea data. Currently, a user can select and download a subset of the database either as an ODV collection or as a standalone MS ACCESS DB. The user requested data can be aggregated and harmonized (conversion of units according to the SeadataNet standards) before a standalone DB is prepared for download.

INVENTORY OCEANOGRAPHIC DATA ASSEMBLED IN THE PERSEUS MULTIDISCIPLINARY DATABASE.

1. Introduction

A project oriented oceanographic cast data management system ([PERSEUS Cast DB](#)) was developed in the framework of task 9.1. The DB contains vertical profiles of physical (excluding XBT data), chemical and biological parameters observed from research vessels and autonomous platform in Mediterranean and Black Seas. Initially, datasets from SESAME cast DB were imported. SESAME cast DB contains data from:

- [MEDAR/MEDATLAS II](#) DB;

- The [MATER](#) project collection;

- Soviet cruises (1987-1990) in the Eastern Mediterranean published on the [CIESM web site](#);

- The World Ocean Database 2005 ([WOD05](#));

- The [Coriolis](#) Database (up to 2008);

- The [ICES](#) Oceanographic Database (up to 2008);

- The [Black Sea inter-disciplinary multivariable historical database](#) supported by the Institute of Marine Sciences in Turkey(up to 2009);

- The [DYFAMED](#) database supported by Observatoire Océanologique de Villefranche sur Mer in France(up to 2009);

- Additional historical and new data, which was submitted by SESAME partners during the SESAME project.

On April 2013 all data in the SESAME DB were released for free data exchange.

During the PERSEUS project, the DB was significantly redeveloped and further expanded. A large portion of data were extracted from permanently upgraded world oceanographic collections: [NODC](#) (NOAA) and [SeaDataNet](#). All neutral buoyancy floats data and gliders data, which are relevant to PERSEUS, were also submitted for import by [CORIOLIS](#) datacenter. Finally, the PERSEUS partners submitted new CTD and bottle data acquired in the frameworks of national projects supported by PERSEUS.

2. Data content on December 2014

The logical unit of the database is the data acquired during an oceanographic **Cast**. Metadata of the cast consists of observation time, longitude, latitude, and bottom depth. Each cast contains the vertical profile data for at least one parameter (defined by terms from the standard usage vocabulary - [P011](#), with units of measurements defined by the standard unit vocabulary term - [P061](#)). Each cast contains at least one level of observation defined by an appropriate parameter (e.g. depth [m]; pressure [db]).

Another logical unit in the database is a **Cruise**, which unites a group of casts collected by specific instrument type (e.g. CTD, Bottle or Rosetta, Float, Glider) and observed within one oceanographic survey. Metadata of the cruise contains: Data Category Code (instrument type, C77), Country Code, C320, Ship Code, C174, Laboratory Code, EDMO;

Project Name, Scientist Name. Each cruise contains at least one cast. If, within one survey, observation were carried out by several types of instrument (e.g. CTD and Rosetta), the survey is presented in the DB by two separate cruises with different Data Category Codes.

The overall number of casts and cruises is presented in Fig. 1. Fig. 2-5 present the distribution of casts according to time, space, and country.
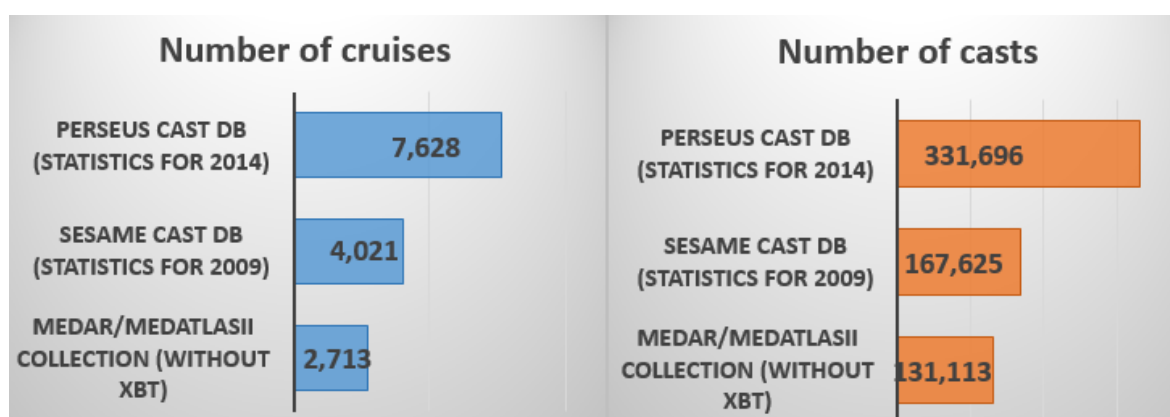

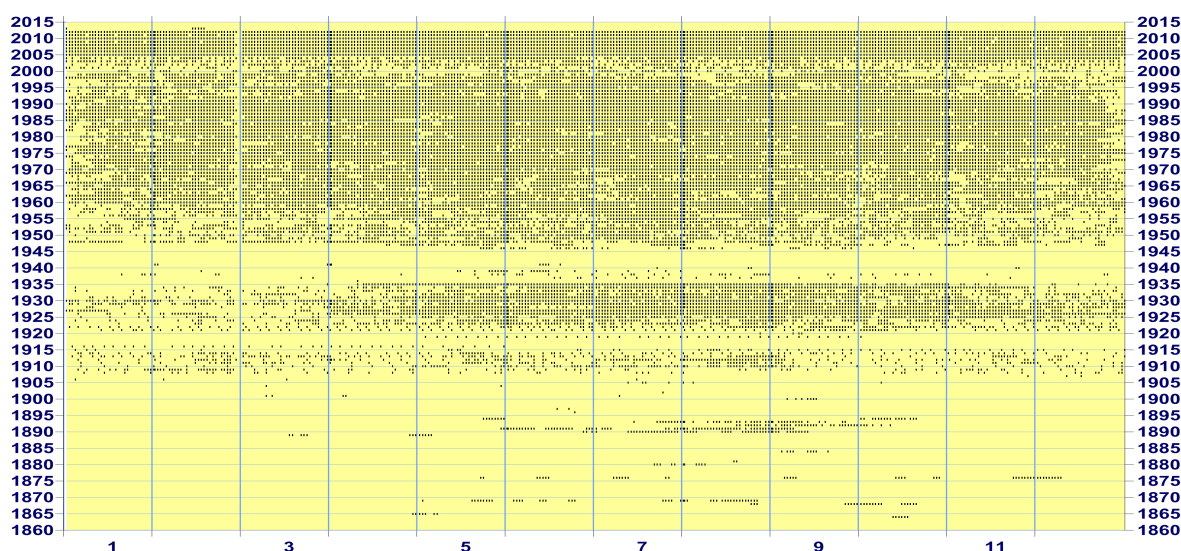Figure 1. Comparison of database size between MEDAR/MEDATLAS-II, SESAME and PERSEUS.

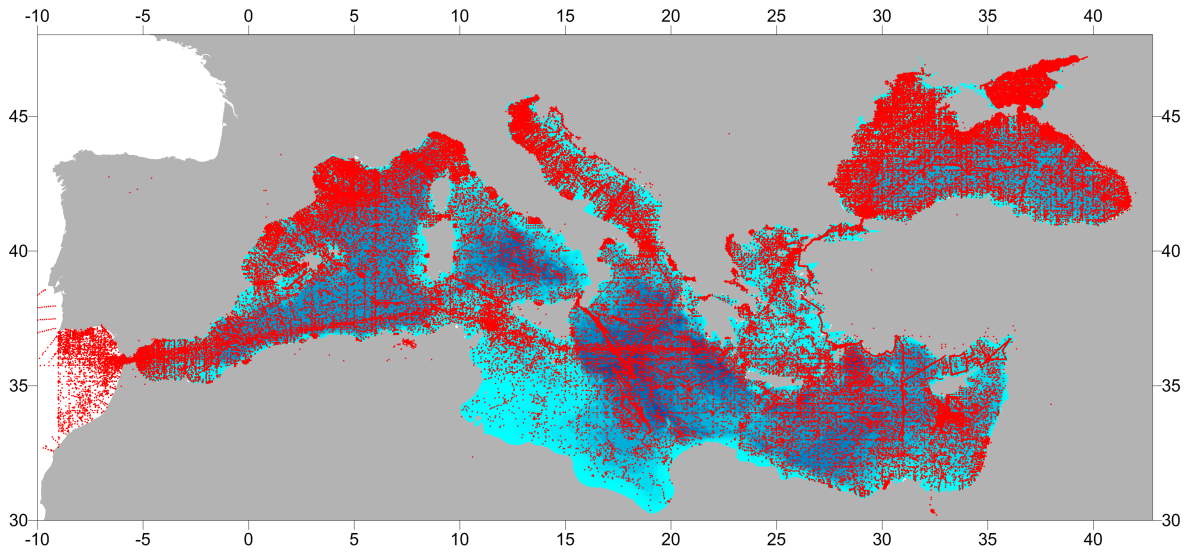Figure 2. Time distribution of data casts acquisition in the PERSEUS Casts DB

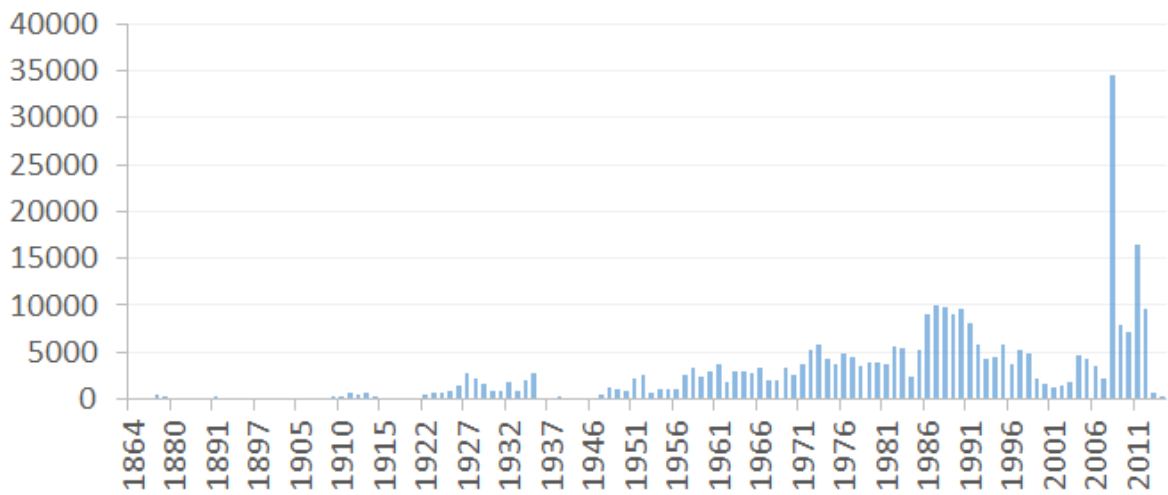Figure 3. Space distribution of cast locations in the PERSEUS DB.

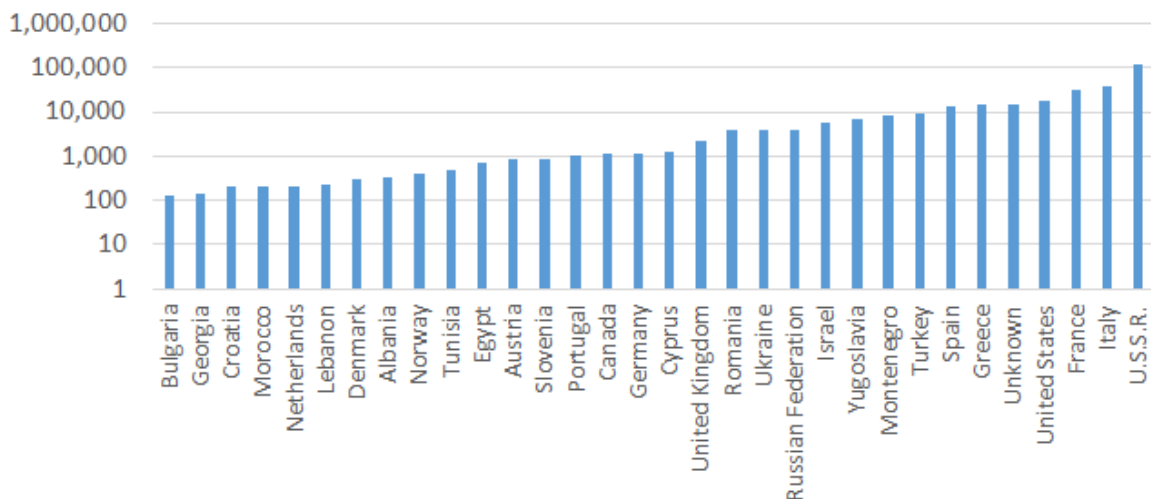Figure 4. Number of casts per year within the DB.

Figure 5. Number of casts per country within the DB.

The PERSEUS cast DB contains vertical profiles for 28 parameter (in terms of parameter discovery vocabulary P021) characterizing physical, chemical, and biological properties of sea water (Appendix 1). In the database, these parameters are presented by 82 terms of parameters usage vocabulary P011 (Appendix 2). Aggregation of data with appropriate unit conversion can be done by exporting selected data into a [MS ACCESS standalone database](#).

3.   Upgrading the DB during PERSEUS project.

3.1 Import of historical data from the SESAME cast DB

Initially the PERSEUS DB was filled with data from the SESAME Cast DB. The major problem of conversion was the mapping between metadata terms used in the SESAME DB and standard metadata terms introduced in framework of SeaDataNet project. Below is a short statistic of data inherited from the SESAME DB.

Countries:	32
Data centers:	19
Cruises:	4224
Casts:	191947
Number of parameters in terms of data discovery vocabulary (P021):	74
Number of parameters in terms of data usage vocabulary (P011):	190

3.2 Import of historical data from WOD09

The next step of the PERSEUS DB expansion consisted of synchronizing the dataset collection with NODC (NOAA) data. A subset of WOD09 was downloaded on 24/FEB/2013 using "World Ocean Database Search and Select" online interface (http://www.nodc.noaa.gov/OC5/SELECT/dbsearch/dbsearch.html). The subset was selected according to the search criteria:
- Data type: OSD, CTD/XCTD, PFL, UOR and GLD.
- Spatial range: North-Eastern corner: 47.25 deg N, 42 deg E;
         South-Western corner: 30.08 deg N, 8 deg W
         (Cast from Biscay Bay (Atlantic Ocean) were removed).

6168 cruises (250048 casts) were accepted for further analysis to exclude duplications, which already exists in the PERSEUS DB. The following casts were considered as duplicates:
- Differences in geographic coordinates (longitude and latitude) are less than or equal to 0.0051° (approx. 500 m)
- Difference in date and time of the casts are less than or equal to 2 minutes
- Both casts have identical instrument type (or data category).
- List of parameters in the PERSEUS DB cast is a sublist of the list of parameters in the WOD09 cast.

The following mapping between BODC instrument codes C77 and WOD09 instrument codes was used:

WOD09	BODC (C771)
OSD	H09
CTD	H10
XCTD	H10

PFL	D06
UOR	H11
GLD	H11

The following mapping between BODC parameter codes P021 and WOD09 parameter codes was used:

WOD09	BODC P021
Temperature	TEMP
Salinity	PSAL
Pressure	AHGT
Oxygen	DOXY
Chlorophyll	CPWC
pH	ALKY
Phosphate	PHOS
Nitrate	NTRA
Silicate	SLCA
Alkalinity	ALKY
CFC11	FR11
tCO2	TCO2
Conductivity	CNDC
CFC12	FR11
CFC113	FR11
Tritium	WRAD
Helium	HEXC
DeltaHe3	WSTB
Neon	HEXC

All non-duplicated data were converted to ODV format and imported into the PERSEUS DB. Short statistics of data import from the WOD09 DB is given below:

Countries:	29
Data centers:	62
Cruises:	3037
Casts:	120574
Number of parameters in terms of data discovery vocabulary (P021):	14
Number of parameters in terms of data usage vocabulary (P011):	18

3.3 Import of historical data from SeaDataNet.

Search of non-duplicated casts was also curried for Mediterranean and Black Sea data extracted from the SeaDataNet collection. This extraction was carried out on March 2014 and only data collected after 01/01/2008 were accepted for analysis because most of the previously collected data were already imported during the SESAME project. The same algorithm of duplicated cast definition described in Section 3.2 was used. The conversion process was less time consuming because the SDN data was

downloaded in the standard ODV format. Short statistics of the SeaDataNet dataset import process is given below:

Countries:	8
Data centers:	11
Cruises:	89
Casts:	16940
Number of parameters in terms of data discovery vocabulary (P021):	26
Number of parameters in terms of data usage vocabulary (P011):	54

3.4 Import of new data acquired in the framework of PERSEUS project.

Two types of cast data were submitted by PERSEUS partners:
- CTD and Bottle data acquired from research vessels and submitted by data originators through the PERSEUS Cast DB data submission interface;
- Autonomous platforms data (Floats and Gliders) submitted by data originators to the Coriolis data center and imported from the Coriolis center DB to the PERSEUS Cast DB.

The statistics of imported PERSEUS data on December 2014 is presented below:

Countries:	6
Data centers:	8
Cruises:	295
Casts:	1742
Number of parameters in terms of data discovery vocabulary (P021):	27
Number of parameters in terms of data usage vocabulary (P011):	81

All PERSEUS relevant data from Coriolis data center were dowloaded from ftp://vftp1.ifremer.fr/ site according to **index_monthly_PERSEUS.txt index file** prepared by the Coriolis partner. Only cast data-type (data_type = 'OceanSITES vertical profile') was imported into the PERSEUS DB. The total number of imported cruises was 152 and the number of casts was 1488. The mapping of NetCDF variables from Coriolis to SDN standards is presented bellow:

Names in NETCDF original files			Mapping to BODC common vocabularies		
Variable Name	Standard_name	Units	P02 Code	P01 Code	P06 Code
PRES	sea_water_pressure	decibar	AHGT	PRESPR01	UPDB
PSAL	sea_water_practical_salinity, sea_water_salinity	psu	PSAL	PSALZZXX	UPPT
TEMP	sea_water_temperature	degree_Celsius	TEMP	TEMPPR01	UPAA
OSAT	fractional_saturation_of_oxygen_in_sea_water	%	DOXY	OXYSZZ01	UPCT
FLUO		relative unit	FVLT	FLUOZZZZ	UUUU
FLU2		milligram/m3	CPWC	CPHLPM01	UMMC
DOX1	volume_fraction_of_oxygen_in_sea_water	ml/l	DOXY	DOXYZZXX	UMLL
DOX2	moles_of_oxygen_per_unit_mass_in_sea_water	micromole/kg	DOXY	DOXMZZXX	KGUM
CNDC	sea_water_electrical_conductivity	S/m	CNDC	CNDCZZ01	UECA

A list of CTD cruises carried out in the period 2010-2014 can be found in Appendix 3. The spatial distribution of the cast of these cruises is shown on the Fig. 6 as a screen shot of the online interactive PERSEUS Cast DB interface.
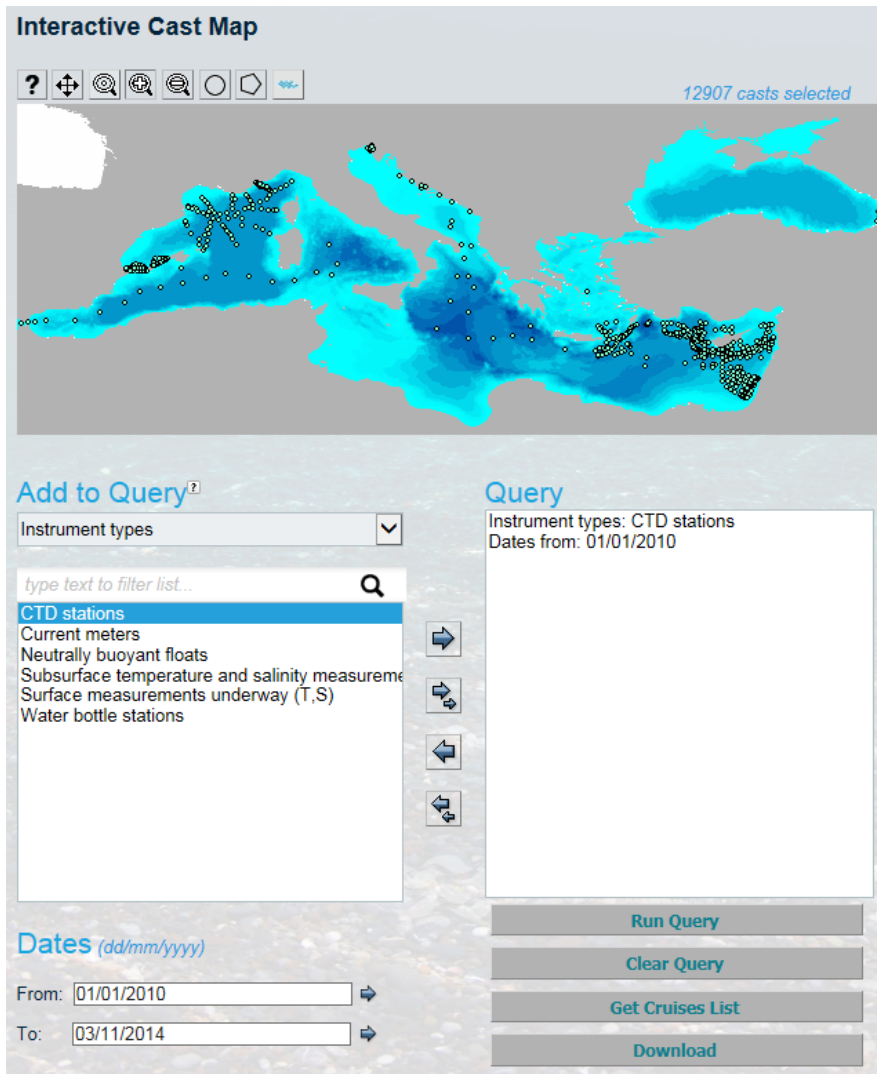
Figure 6. Location of CTD casts acquired during period 2010-2014 and imported in the PERSEUS Cast DB (see Annex 3). The map is generated online on a GIS-like interactive map.

The location of all float data acquired during the period 2010-2014 and imported to the PERSEUS Cast DB is shown on the Fig. 7.

Interactive Cast Map

? ⊕ ⊕ ⊕ ⊕ ○ ◇ ≋   *5843 casts selected*

Add to Query ?

| Instrument types ▼ |

| type text to filter list... 🔍 |

CTD stations
Current meters
Neutrally buoyant floats
Subsurface temperature and salinity measureme
Surface measurements underway (T,S)
Water bottle stations

➡
⇨
⬅
⇦

Query

Dates from: 01/01/2010
Instrument types: Neutrally buoyant floats

| Run Query |
| Clear Query |
| Get Cruises List |
| Download |

Dates *(dd/mm/yyyy)*

From: 01/01/2010 ➡
To: 03/11/2014 ➡

Figure 7. Location of floats casts acquired during period 2010-2014 and imported in the PERSEUS Cast DB.

4. Appendixes

4.1 The list of parameters characterizing physical, chemical and biological properties of seawater in terms of parameter discovery vocabulary P021 (PERSEUS Cast DB December 2014).

P021 Code	Parameter name
AHGT	Vertical spatial coordinates
ALKY	Alkalinity, acidity and pH of the water column
AMON	Ammonium concentration parameters in the water column
ATTN	Transmittance and attenuance of the water column
BATX	Bacteria taxonomic abundance in water bodies
CATX	Phytoplankton taxonomic biomass in water bodies
CNDC	Electrical conductivity of the water column
CPWC	Chlorophyll pigment concentrations in the water column
DOXY	Dissolved oxygen parameters in the water column
FVLT	Raw fluorometer output
GP079	Zooplankton wet weight biomass
MATC	Microzooplankton taxonomy-related biomass expressed as carbon per unit volume of the water column
MATX	Microzooplankton taxonomic abundance in water bodies
MSIC	Zooplankton carbon biomass per unit area of the water column
NTRA	Nitrate concentration parameters in the water column
NTRI	Nitrite concentration parameters in the water column
PATX	Phytoplankton taxonomic abundance in water bodies
PHOS	Phosphate concentration parameters in the water column
PSAL	Salinity of the water column
RVDS	River flow and discharge
SIXX	Concentration of silicon species in the water column
TEMP	Temperature of the water column
ZADX	Zoobenthos dry weight biomass
ZATX	Zooplankton taxonomy-related abundance per unit volume of the water column
ZBTX	Zoobenthos taxonomic abundance
ZCTC	Zooplankton taxonomy-related biomass expressed as carbon per unit

	volume of the water column
ZWTX	Zoobenthos taxonomy-related wet weight biomass per unit area of the bed

4.2 The list of parameters presenting physical, chemical and biological properties of seawater in terms of parameter usage vocabulary P011 (PERSEUS Cast DB December 2014).

P011 Code	Parameter name
ABUN6687	Abundance of Favella (ITIS: 46707: WoRMS 172431) per unit volume of the water body by optical microscopy
AMONZZXX	Concentration of ammonium {NH4} per unit volume of the water body [unknown phase]
ATTNMS01	Attenuance (red light wavelength) per unit length of the water body by WET Labs 25cm path length transmissometer and calibration to read zero in clear water
ATTNZS02	Attenuance (red light wavelength) per unit length of the water body by WET Labs transmissometer and calibration to read zero in clear water
C345M01Z	Carbon biomass of Noctiluca scintillans (ITIS: 10150: WoRMS 109921) per unit volume of the water body by optical microscopy and abundance to carbon conversion
C581M10Z	Carbon biomass of Favella serrata (ITIS: 610065: WoRMS 196835) per unit volume of the water body by optical microscopy and abundance to carbon conversion
CAB00039	Abundance of Penilia avirostris (ITIS: 83836: WoRMS 106272) per unit volume of the water body by optical microscopy
CBMPUA08	Carbon biomass of Decapoda (ITIS: 95599: WoRMS 1130) per unit area of the water body by estimation from displacement volumes
CNDCZZ01	Electrical conductivity of the water body
CPHLPM01	Concentration of chlorophyll-a {chl-a} per unit volume of the water body [particulate phase] by in-situ chlorophyll fluorometer and manufacturer`s calibration applied
DOXMZZXX	Concentration of oxygen {O2} per unit mass of the water body [dissolved plus reactive particulate phase]
DOXYSU01	Concentration of oxygen {O2} per unit volume of the water body [dissolved plus reactive particulate phase] by Sea-Bird SBE 43 sensor and no calibration against sample data
DOXYSU02	Concentration (second sensor) of oxygen {O2} per unit volume of the water body [dissolved plus reactive particulate phase] by Sea-Bird SBE 43 sensor

	and no calibration against sample data
DOXYZZ01	Concentration of oxygen {O2} per unit volume of the water body [dissolved plus reactive particulate phase] by in-situ sensor
DOXYZZXX	Concentration of oxygen {O2} per unit volume of the water body [dissolved plus reactive particulate phase]
FLUOZZZZ	Fluorescence of the water body
MDMAP005	Concentration of nitrate {NO3} per unit mass of the water body [unknown phase]
MDMAP007	Concentration of nitrite {NO2} per unit mass of the water body [unknown phase]
N430S00Z	Abundance of Callianassa (ITIS: 97733: WoRMS 107072) per unit area of the bed by sieving and picking under an optical microscope
ODSDM021	Salinity of the water body
OXMFWW03	Wet weight biomass of Bivalvia (ITIS: 79118: WoRMS 105) per unit area of the bed by picking and gravimetry
OXMFWW19	Wet weight biomass of Gastropoda (ITIS: 69459: WoRMS 101) per unit area of the bed by picking and gravimetry
OXMFWW20	Wet weight biomass of Polychaeta (ITIS: 64358: WoRMS 883) per unit area of the bed by picking and gravimetry
OXYSZZ01	Saturation of oxygen {O2} in the water body [dissolved plus reactive particulate phase]
P030M16Z	Abundance of Chaetoceros curvisetus (ITIS: 2787: WoRMS 149221) per unit volume of the water body by optical microscopy
P035M02Z	Abundance of Cyclotella caspia (ITIS: 2440: WoRMS 163196) per unit volume of the water body by optical microscopy
P068M01Z	Abundance of Leptocylindrus danicus (ITIS: 2395: WoRMS 149106) per unit volume of the water body by optical microscopy
P078M01Z	Abundance of Paralia sulcata (ITIS: 2346: WoRMS 149055) per unit volume of the water body by optical microscopy
P101M01Z	Abundance of Skeletonema costatum (ITIS: 2402: WoRMS 149074) per unit volume of the water body by optical microscopy
P110M01A	Abundance of Thalassionema nitzschioides var. parva per unit volume of the water body by optical microscopy
P229M12Z	Abundance of Gymnodinium breve (ITIS: 10157: WoRMS 162532) per unit volume of the water body by optical microscopy
P229M49Z	Abundance of Gymnodinium sanguineum (ITIS: 331274: WoRMS 162544) per unit volume of the water body by optical microscopy

P257M08Z	Abundance of Prorocentrum micans (ITIS: 9879: WoRMS 110303) per unit volume of the water body by optical microscopy
P266M02Z	Abundance of Scrippsiella trochoidea (ITIS: 10537: WoRMS 110172) per unit volume of the water body by optical microscopy
P328M04Z	Abundance of Trachelomonas volvocina (ITIS: 9697: WoRMS 163404) per unit volume of the water body by optical microscopy
P345M01Z	Abundance of Noctiluca scintillans (ITIS: 10150: WoRMS 109921) per unit volume of the water body by optical microscopy
P392M03Z	Abundance of Anabaena flosaquae (ITIS: 1109: WoRMS 146588) per unit volume of the water body by optical microscopy
P466M01Z	Abundance of Microcystis aeruginosa (ITIS: 750: WoRMS 146558) per unit volume of the water body by optical microscopy
PHOSZZXX	Concentration of phosphate {PO4} per unit volume of the water body [unknown phase]
PHXXPR01	pH per unit volume of the water body by pH electrode
POPTDR01	Transmittance (red light wavelength) per 25cm of the water body by 25cm path length red light transmissometer
PRESPR01	Pressure (spatial co-ordinate) exerted by the water body by profiling pressure sensor and corrected to read zero at sea level
PSALST01	Practical salinity of the water body by CTD and computation using UNESCO 1983 algorithm
PSALZZXX	Practical salinity of the water body by computation using UNESCO 1983 algorithm
Q114M00Z	Carbon biomass of Harpacticidae (ITIS: 86329: WoRMS 115153) per unit volume of the water body by optical microscopy and abundance to carbon conversion
Q300M00M	Carbon biomass of Copepoda (ITIS: 85257: WoRMS 1080) [Stage: nauplii] per unit volume of the water body by optical microscopy and abundance to carbon conversion
SCHLFLPM	Concentration of chlorophyll-a {chl-a} per unit volume of the water body [particulate GF/F-5um phase] by filtration, acetone extraction and fluorometry
SDDSCH01	Riverine discharge of suspended particulate matter
SIXXXFP2	Concentration of silicon {Si} per unit volume of the water body [particulate >0.4/0.45um phase] by filtration, thin-film preparation and X-ray fluorescence
TEMPP901	Temperature (ITS-90) of the water body
TEMPPR01	Temperature of the water body
TEMPS901	Temperature (ITS-90) of the water body by CTD or STD

WABN6763	Abundance of Mnemiopsis leidyi (ITIS: 53917: WoRMS 106401) per unit volume of the water body
WWBM6763	Wet weight biomass of Mnemiopsis leidyi (ITIS: 53917: WoRMS 106401) per unit volume of the water body
Z114M00Z	Abundance of Harpacticidae (ITIS: 86329: WoRMS 115153) per unit volume of the water body by optical microscopy
Z131M09Q	Abundance of Sagitta setosa (ITIS: 158796: WoRMS 154107) [Stage: adult] per unit volume of the water body by optical microscopy
Z250M00R	Abundance of Decapoda (ITIS: 95599: WoRMS 1130) [Stage: larvae] per unit volume of the water body by optical microscopy
Z300M00M	Abundance of Copepoda (ITIS: 85257: WoRMS 1080) [Stage: nauplii] per unit volume of the water body by optical microscopy
Z301M01Z	Abundance of Acartia clausi (ITIS: 86085: WoRMS 104251) per unit volume of the water body by optical microscopy
Z314M01Z	Abundance of Paracalanus parvus (ITIS: 85323: WoRMS 104685) per unit volume of the water body by optical microscopy
Z322M02Z	Abundance of Pseudocalanus elongatus (ITIS: 85370: WoRMS 104515) per unit volume of the water body by optical microscopy
Z36FM00Z	Abundance of Pontella (ITIS: 86053: WoRMS 104209) per unit volume of the water body by optical microscopy
Z39DM00Z	Abundance of Labidocera (ITIS: 86042: WoRMS 104208) per unit volume of the water body by optical microscopy
Z420M00R	Abundance of Gastropoda (ITIS: 69459: WoRMS 101) [Stage: larvae] per unit volume of the water body by optical microscopy
Z710M00R	Abundance of Polychaeta (ITIS: 64358: WoRMS 883) [Stage: larvae] per unit volume of the water body by optical microscopy
Z821M00Z	Abundance of Oikopleura (ITIS: 159668: WoRMS 103367) per unit volume of the water body by optical microscopy
ZBAF0192	Ash-free dry weight biomass of Callianassa (ITIS: 97733: WoRMS 107072) per unit area of the bed by identification by optical microscopy and gravimetric determination of loss on ignition
ZBN00047	Abundance of Amphitrite (ITIS: 67900: WoRMS 153508) per unit area of the bed by sieving and picking under an optical microscope
ZBN00095	Abundance of Aricidea roberti (ITIS: 204493: WoRMS 130569) per unit area of the bed by sieving and picking under an optical microscope
ZBN00143	Abundance of Balanus improvisus (ITIS: 89622: WoRMS 106218) per unit area of the bed by sieving and picking under an optical microscope
ZBN00227	Abundance of Cerastoderma glaucum (ITIS: 205619: WoRMS 138999) per unit area of the bed by sieving and picking under an optical microscope

ZBN00549	Abundance of Fabricia sabella (ITIS: 68159: WoRMS 130911) per unit area of the bed by sieving and picking under an optical microscope
ZBN00900	Abundance of Melinna palmata (ITIS: 67769: WoRMS 129808) per unit area of the bed by sieving and picking under an optical microscope
ZBN01321	Abundance of Prionospio cirrifera (ITIS: 67031: WoRMS 131153) per unit area of the bed by sieving and picking under an optical microscope
ZBVV0047	Ash-free dry weight biomass of Amphitrite (ITIS: 67900: WoRMS 153508) per unit area of the bed by identification by optical microscopy and gravimetric determination of loss on ignition
ZBVV0095	Ash-free dry weight biomass of Aricidea roberti (ITIS: 204493: WoRMS 130569) per unit area of the bed by identification by optical microscopy and gravimetric determination of loss on ignition
ZBVV0143	Ash-free dry weight biomass of Balanus improvisus (ITIS: 89622: WoRMS 106218) per unit area of the bed by identification by optical microscopy and gravimetric determination of loss on ignition
ZBVV0227	Ash-free dry weight biomass of Cerastoderma glaucum (ITIS: 205619: WoRMS 138999) per unit area of the bed by identification by optical microscopy and gravimetric determination of loss on ignition
ZBVV0549	Ash-free dry weight biomass of Fabricia sabella (ITIS: 68159: WoRMS 130911) per unit area of the bed by identification by optical microscopy and gravimetric determination of loss on ignition
ZBVV0900	Ash-free dry weight biomass of Melinna palmata (ITIS: 67769: WoRMS 129808) per unit area of the bed by identification by optical microscopy and gravimetric determination of loss on ignition
ZBVV1321	Ash-free dry weight biomass of Prionospio cirrifera (ITIS: 67031: WoRMS 131153) per unit area of the bed by identification by optical microscopy and gravimetric determination of loss on ignition

4.3 The list of CTD cruises carried out in period 2010-2014 and imported into PERSEUS Cast DB

The table contains CTD casts, with more than 3 levels.

Country	Cruise Name	First Day	N casts	N levels
Croatia	Monitoring_2012_01	11-Jan-12	3	15
Croatia	Monitoring_2012_02	21-Feb-12	3	15
Croatia	Monitoring_2012_03	14-Mar-12	7	36
Croatia	Monitoring_2012_04	01-Apr-12	5	27
Croatia	Monitoring_2012_05	15-May-12	3	15
Croatia	Monitoring_2012_06	13-Jun-12	9	48
Croatia	Monitoring_2012_07	10-Jul-12	9	48
Croatia	Monitoring_2012_08	22-Aug-12	4	20
Croatia	Monitoring_2012_09	26-Sep-12	3	15
Croatia	Monitoring_2012_10	22-Oct-12	8	42
Croatia	Monitoring_2012_11	15-Nov-12	3	15
Croatia	Monitoring_2012_12	12-Dec-12	4	20
Cyprus	CYBO_IOLR	23-Dec-12	20	70153
Cyprus	CYBO_HaiSec28	29-Oct-12	8	33945
Cyprus	CYBO_HaiSec30	22-Dec-13	10	32252
France	MOOSE (DYFAMED)^3	15-Feb-10	9	17489
France	EUROSITES	03-Apr-10	40	74193
France	ISOFLORE	07-Apr-10	2	2157
France	MOOSE_GE 55	25-May-10	55	119933
France	MOOSE (DYFAMED)^4	17-Jan-11	8	16251
France	BOUSSOLE_2011	18-Jan-11	115	47299
France	BOUSSOLE_2012 (119 ET 120)	22-Jan-12	24	9736
France	MOOSE (DYFAMED)^7	24-Jan-12	2	3273
France	BOUSSOLE_2012	07-Mar-12	58	26167
France	OMER	08-Apr-12	18	4906
France	BOUSSOLE_2012 (123)	15-May-12	9	3662
France	FGTO^11	16-Sep-12	17	8034
France	BOUSSOLE_2012 (127)	19-Sep-12	8	3255
France	MOOSE (DYFAMED)^5	21-Sep-12	1	798
France	MOOSE (DYFAMED)^8	24-Nov-12	1	1100
France	BOUSSOLE_2012 (130)	07-Dec-12	7	2866
France	MOOSE (DYFAMED)^6	11-Dec-12	1	2444
Germany	M84_3	05-Apr-11	62	263430
Israel	HaiSec23	09-Mar-10	7	11992
Israel	HaiSec24	22-Dec-10	6	10634
Israel	HaiSec25	27-Mar-11	6	10466
Israel	HaiSec26_COSEM03	22-Aug-11	19	20130
Israel	HaiSec27	03-Apr-12	6	10522
Israel	HaiSec28_CYBO	29-Oct-12	6	10000
Israel	BSGas01	13-Mar-13	52	118340
Israel	HaiSec30_CYBO	22-Dec-13	17	15000
Israel	HaiSec31	11-Mar-14	7	7130
Italy	LTER_H10_ARPA_FVG	13-Jan-10	8	145
Italy	Ferriera_2010	25-Jan-10	7	211
Italy	LTER_H10_2010	07-Sep-10	1	35
Slovenia	NIB_EWN_2011	13-Jan-11	83	380
Slovenia	NIB_EWN_2012	09-Jan-12	81	368
Slovenia	NIB_EWN_2013	10-Jan-13	41	186
Spain	SOCIB-RADMED0213 37	14-Feb-13	2	366
Spain	SOCIB-RADMED0213	14-Feb-13	36	34760
Spain	SOCIB_Canales_May2014	07-May-14	31	48826
Turkey	SHODB_2010	02-Jan-10	84	10032
Turkey	SHODB_2011	19-Feb-11	28	2283
Turkey	SHODB_2012	02-Jan-12	99	7571
Turkey	SHODB_2013	02-Jan-13	74	4150