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Regional project (PERSEUS) oriented system for storage and operative exploration of Mediterranean and Black Sea cast data.

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PERSEUS project

- Policy-oriented marine Environmental Research for the Southern European Seas (PERSEUS) is a research project that assesses the dual impact of human activity and natural pressures on the Mediterranean and Black Seas.
- PERSEUS merges natural and socio-economic sciences to predict the long-term effects of these pressures on marine ecosystems.
- About 50 institutions.
- Started 01/JAN/2012 for 4 years

Task 9.1: PERSEUS oceanographic data management

- The task 9.1 aims to develop and maintain the oceanographic information management system of PERSEUS.
- The specific aim is to collect physical, geochemical and biological data of the Mediterranean and Black Seas' ecosystems originated from:
 - a) historical data bases (DB) of relevant sources (SESAME, MyOcean, SeaDataNet, WOD, ...)
 - b) observations carried out in the framework of PERSEUS.
- Access to data should be provided to wide spectrum of users, in a timely manner, following the regulations and restrictions of the PERSEUS Data Policy.
- PERSEUS DB should satisfy to major requirements of the SeaDataNet oceanographic data processing: support BODC vocabularies, import and export data in ODV format, carry out specific quality control etc.

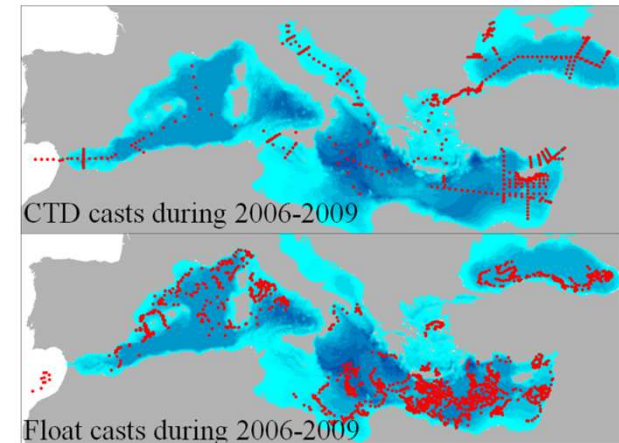
From MEDAR/MEDATLAS collection to SESAME Cast DB

Extractions from Public available Data bases:



- Import to MEDACC (MS ACCESS)

- Periodical import of rescued historical data
- On-line submission interface following by import to MEDACC
- Periodical conversion MEDACC to MS SQL DB
- GIS like query interface
- Export to ODV format
- During the period 2006-2011 MEDACC was significantly extended by rescued historical data and by data observed within the SESAME framework.



From SESAME Cast DB to PERSEUS DB

- Mapping SESAME parameters vocabulary to SDN vocabularies P021, P011, P061
- Mapping all metadata tables (Country, Ships, Institutions, Instruments) according to SDN vocabularies
- Redevelopment MS SQL DB
- On April 2013 all historical data including the SESAME DB were released for free exchange. According to SESAME data policy

Merging PERSEUS DB with NODC/NOAA DB on end 2012

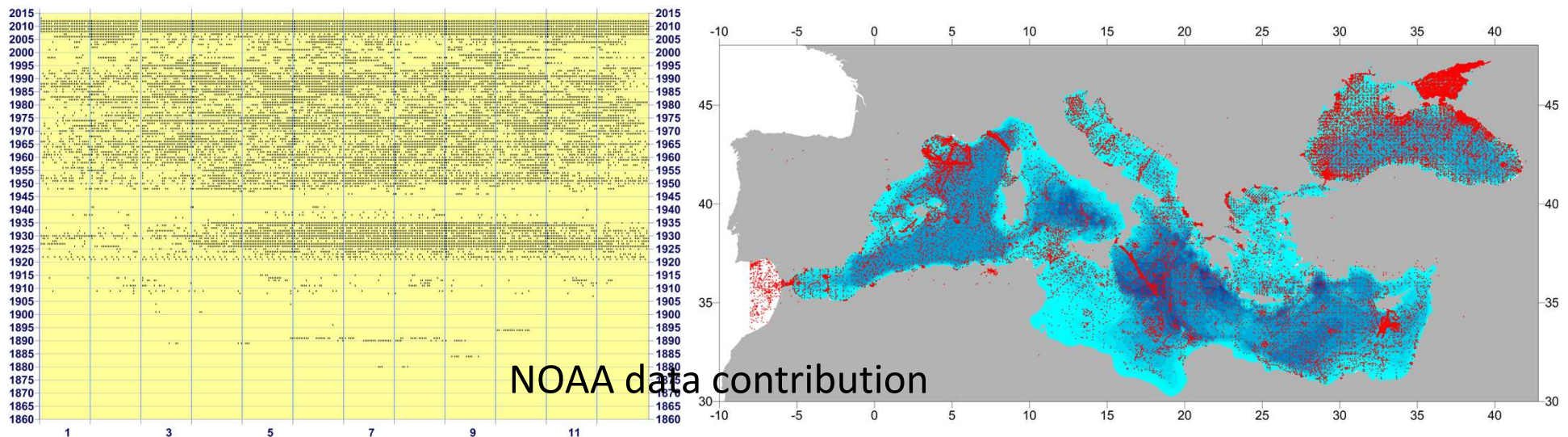
Two casts from different datasets were defined as duplicated when the all following conditions were satisfied:

- Differences in longitude and latitude < 0.0051° (about 500 m)
- Difference in date and time ≤ 2 minutes
- Both casts have identical instrument type (or data category) according to NOAA-BODC(C771) vocabularies mapping

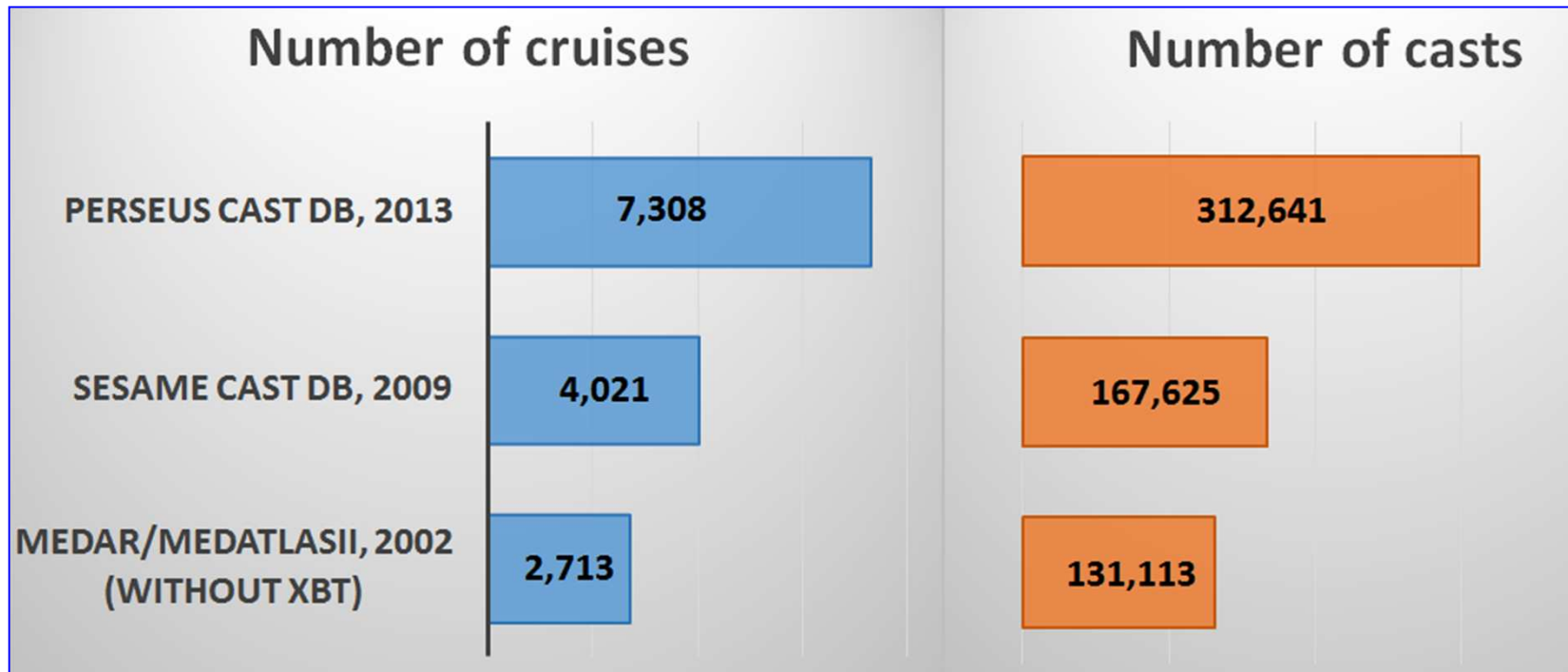
NOAA Dataset	BODC (C771)
OSD	H09
CTD	H10
XCTD	H10
PFL	D06
UOR	H11
GLD	H11

Results of analysis on duplicated casts

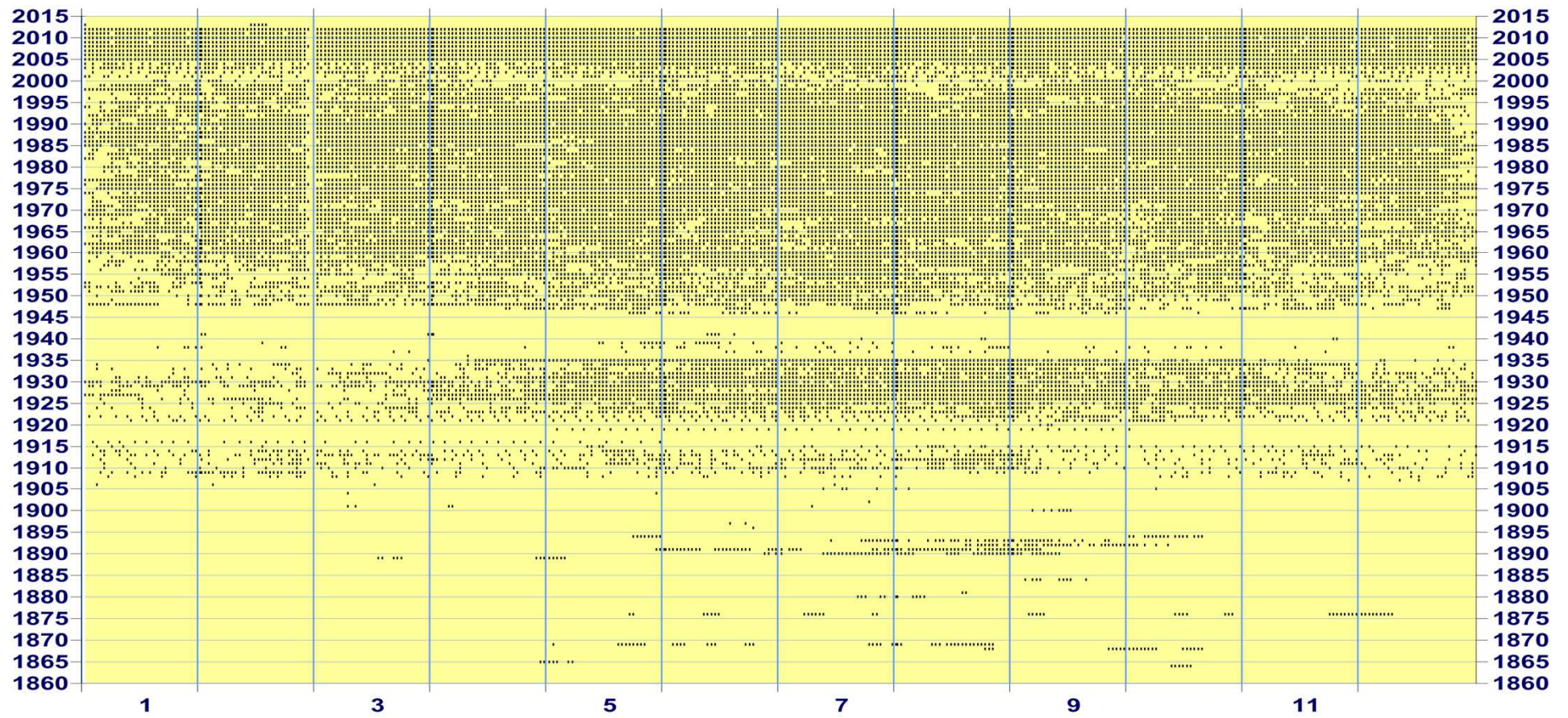
- 2956 cruises (150778 cast) from ISRAMAR DB are recommended to NODC/NOAA to consider for import.
- 3187 cruises (140724 casts) from NODC/NOAA DB were accepted for import into ISRAMAR DB.



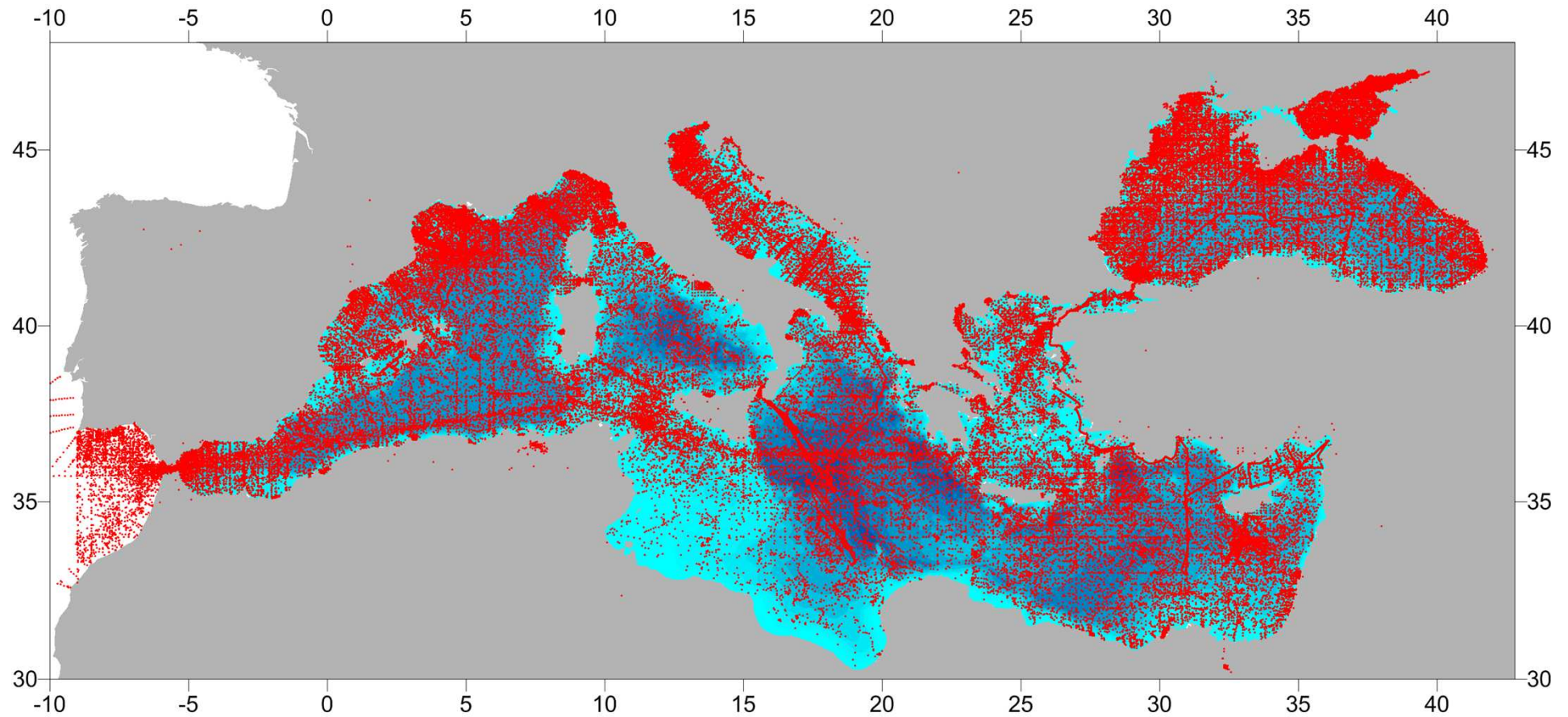
Current volume of data in PERSEUS Cast DB



Time distribution of casts

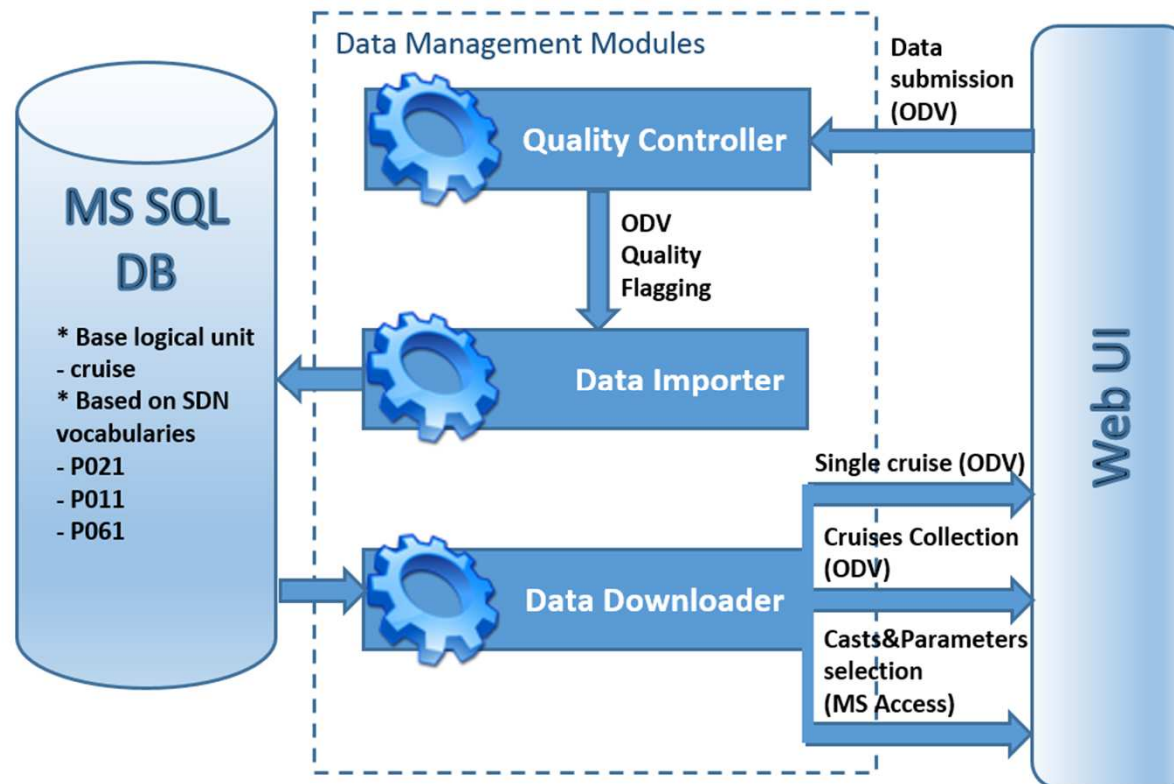


Space distribution of casts



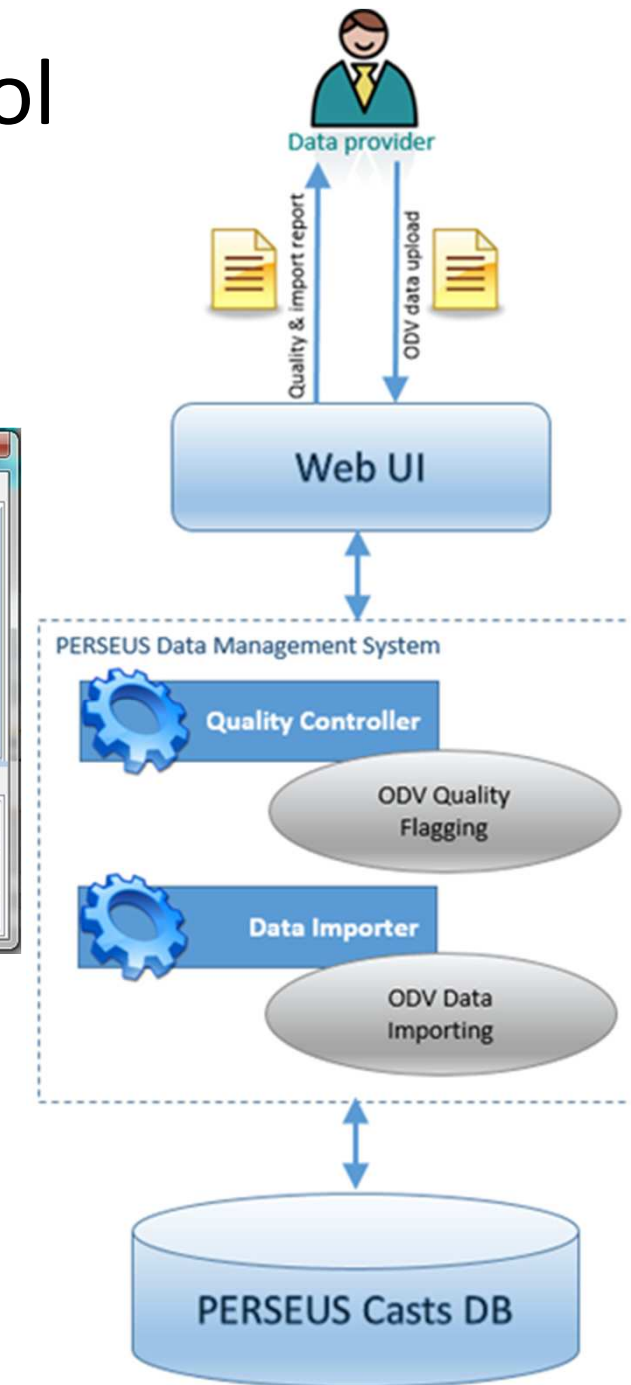
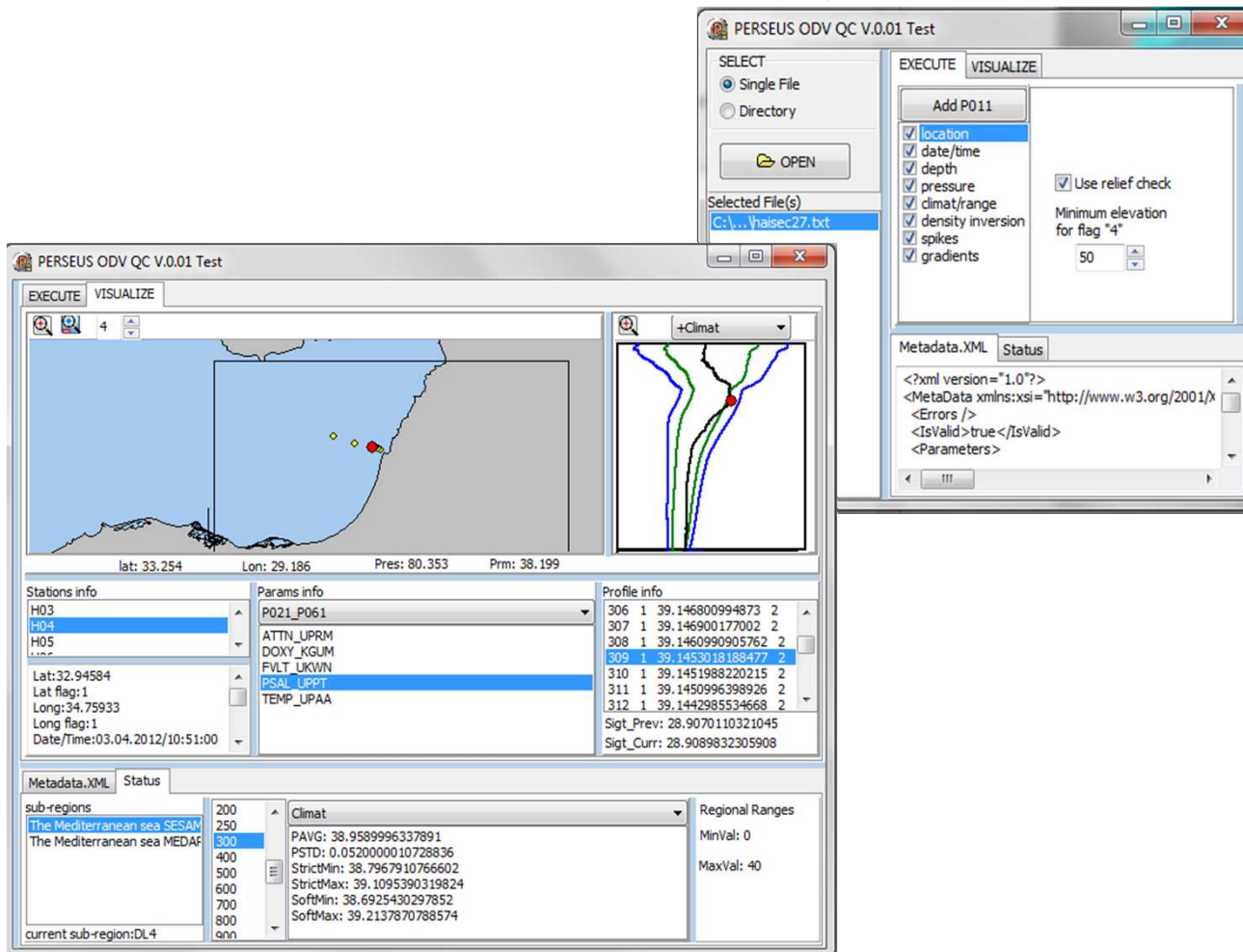
Cast DB management system

- Casts are grouped both by physical cruise and by instruments (CTD, Bottles, Floats etc.). These groups form a base logical unit.



On-line Import & Quality Control

- ODV format for Import
- MHI software for QC



Parameters definition

- Imported from SDN XML extension of ODV
- Defined via on-line form if the XML extension is absent

ODV Data Submission

If you're facing any problems with data formatting or upload process, please [contact us](#) and we will add your data manually or help you to correct formatting.

1 Upload Data File → 2 Parameters Setting → 3 Fill Cruise Metadata → 4 Finish

Below is the list of parameters, that we found in uploaded data set file.
Each parameter has to be mapped to [Parameters P011 and Units P061 codes of BODC](#).
Please fill missed codes using [parameters code search](#), click 'Validate' and 'Continue' if validation succeeded. (*frequently used parameters table may help you to find codes faster*)
If you don't need some of parameters to be imported to the database, please uncheck 'For Import' checkbox.

Parameters

Local Name	P011 Code	P061 Code	For Import
Pres [db]	<input type="text" value="PRESR01"/>	<input type="text" value="UPDB"/>	<input checked="" type="checkbox"/>
Temp [deg]	<input type="text" value="TEMPPR01"/>	<input type="text" value="UPAA"/>	<input checked="" type="checkbox"/>
Sal [psu]	<input type="text" value="PSALZZXX"/>	<input type="text" value="UPPT"/>	<input checked="" type="checkbox"/>
DOX1	<input type="text" value="DOXYZZXX"/>	<input type="text" value="UPPT"/>	<input checked="" type="checkbox"/>

Help to data supplier to define parameters

Parameters Code Search

P021 Parameters Search

P011 Parameters Search

P061 Units Search

Frequently Used Parameters

P011 Code	P011 Term	P061 Code	P061 Term
PRESPR01	Pressure (spatial co-ordinate) exerted by the water body by profiling pressure sensor and corrected to read zero at sea level	UPDB	Decibars
TEMPPR01	Temperature of the water body	UPAA	Degrees Celsius
PSALZZXX	Practical salinity of the water body by computation using UNESCO 1983 algorithm	UPPT	Parts per thousand
DOXYZZXX	Concentration of oxygen {O2} per unit volume of the water body [dissolved phase]	UPOX / UPPT	Micromoles per litre / Parts per thousand
OXYSZZ01	Saturation of oxygen {O2} in the water body [dissolved phase]	UPCT	Percent
TCO2ZZXX	Concentration of carbon (total inorganic) {TCO2} per unit volume of the water body [dissolved plus reactive particulate phase]	UPPM	Parts per million
PHOSYYDZ	Concentration of phosphate {PO4} per unit volume of the water body [dissolved plus reactive particulate phase]	UPOX	Micromoles per litre
PHXXZZXX	pH per unit volume of the water body	UUPH	pH units
FLUOZZZZ	Fluorescence of the water body	USPC	Not specified
ALKYZZXX	Total alkalinity per unit volume of the water body	UPOX	Micromoles per litre
POPTDR01	Transmittance (red light wavelength) per 25cm of the water body by 25cm path length red light transmissometer	UPCT	Percent
TURBXXXX	Turbidity of the water body	USTU	Nephelometric Turbidity Units

Cruises Metadata Extension for ODV Format

- XML extension of ODV format with cruise metadata

```
//Cruise_Metadata
//<rpOrgName SDNIdent="SDN:EDMO::963">IOLR</rpOrgName>
//<dataType SDNIdent="SDN:C77::H71">Water bottle stations</dataType>
//<platform SDNIdent="SDN:C174::47SK">S...
//<country SDNIdent="SDN:C320::IL">Israel</country>
//<project>test</project>
//
```

1 Upload Data File 2 Parameters Setting 3 Fill Cruise Metadata 4 Finish

The submission process is almost finished. The last step is to fill the general cruise information and click 'Finish' button.

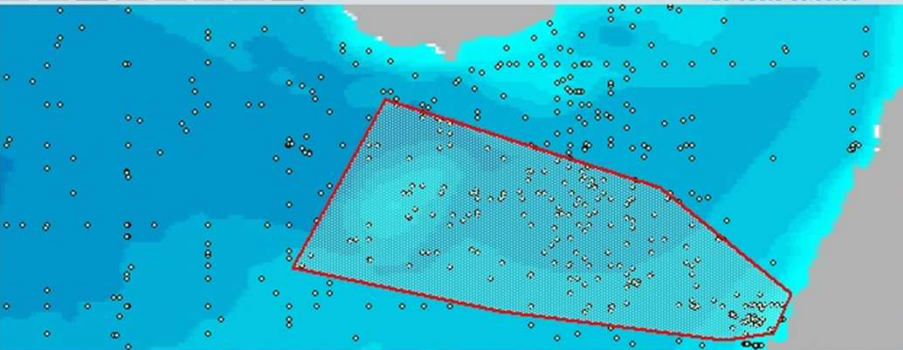
Dataset Name *:	<input type="text" value="HaiSec28_CYBO_114700"/>
Project *:	<input type="text" value="test"/>
Summary:	<input type="text"/>
Ship *:	<input type="text" value="Shikmona"/>
Data Center *:	<input type="text" value="Israel Oceanographic and Limnological Research (IOLR)"/>
PERSEUS Work Package *:	<input type="text" value="Choose"/>
Country *:	<input type="text" value="Israel"/>
Availability *:	<input type="text" value="Choose"/>
Comments:	<input type="text"/>

(*) Required field

On-line query builder for data selection and download

Interactive Cast Map

? [Navigation icons] 426 casts selected



Add to Query?

Parameters

type text to filter list...

- Dissolved total and organic nitrogen concentr
- Dissolved total or organic phosphorus concer
- Electrical conductivity of the water column
- Excretion rate parameters in the water colum
- Horizontal spatial co-ordinates
- Horizontal velocity of the water column (curre
- Light absorption in the water column
- Metadata parameters
- Microzooplankton taxonomic abundance in w
- Microzooplankton taxonomy-related biomass
- New production in water bodies
- Nitrate concentration parameters in the water**
- Nitrification rate in the water column

Query

Polygon of 8 points: [Lon = 32° 35' 27" E, La ^

Instrument types: Water bottle stations

Parameters: Nitrate concentration parameters

Run Query

Clear Query

Get Cruises List

Log In for Download

Dates (dd/mm/yyyy)

From: 11/01/2000

To: 14/02/2013

Selected Cruises List

Back to cruises selection on [map](#)

<input type="checkbox"/>	Cruise Name	Start Date	End Date	Country	Ship Name	Aviability	Down load
<input type="checkbox"/>	POEM05-AS87 (IBM-I)_BOT	31/08/1987	18/09/1987	Italy	Bannock		
<input type="checkbox"/>	POEM05-AS87 (ITT-I)_BOT	31/08/1987	18/09/1987	Italy	Bannock		
<input type="checkbox"/>	POEM05-AS87 (IRPEM-I)	31/08/1987	18/09/1987	Italy	Bannock		
<input type="checkbox"/>	03906	31/08/1987	17/09/1987	Italy	Unknown		

0 cruises selected for download of 250 allowed.

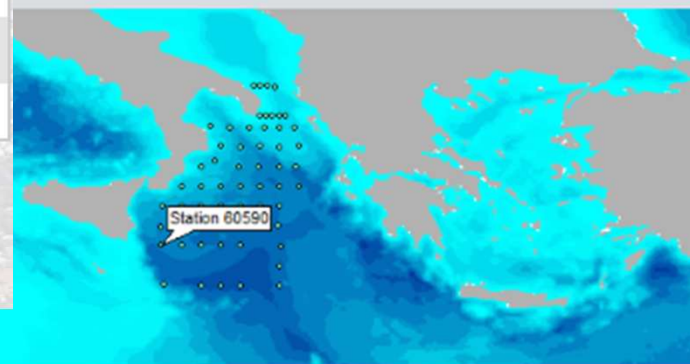
Include SDN data columns in ODV.

[Agregate ODV Download](#)

POEM05-AS87 (ITT-I)_BOT

3, 1987

[POEM 05 AS87 \(ITT/IBM/IRPEM\)](#)



Start: Aug 31, 1987

Sep 18, 1987 14:10:00, Station: 60590

End: Sep 18, 1987

Cruise Metadata

Instrument type:	Water bottle stations	Project:	POEM
Country:	Italy	Ship:	Bannock
Data provider:	unknown	Contact:	unknown
Data accessibility:	unrestricted	Download:	

Cruise Measured Parameters

Code P021	Parameter	Casts
AHGT	Vertical spatial coordinates	59
AMON	Ammonium concentration parameters in the water column	33
DOXY	Dissolved oxygen parameters in the water column	106
NTRA	Nitrate concentration parameters in the water column	35
NTRI	Nitrite concentration parameters in the water column	34
PHOS	Phosphate concentration parameters in the water column	33
PSAL	Salinity of the water column	59
SLCA	Silicate concentration parameters in the water column	35
TEMP	Temperature of the water column	59

Query result

Data Availability

According to PERSEUS Data Policy and PERSEUS Publication Strategy, the access to each dataset is defined by the data provider during the data submission procedure. The following data availability flags are implemented according to [SeaDataNet Data Access Restriction Policies \(L081\)](#) vocabulary.

Unrestricted *(free)*

The data are freely available to anybody and may be used for any purpose. Usage acknowledgement may be required.

Most of the cruises are exported from public available databases [MEDATLAS 2002](#); [MATER](#); [WODB0](#); [CORIOLIS](#); [ICES](#).

By negotiation *(restricted)*

The metadata regarding the cruises is open but data can be obtained on a case-by-case basis through negotiation with data provider.

Organization *(for partners)*

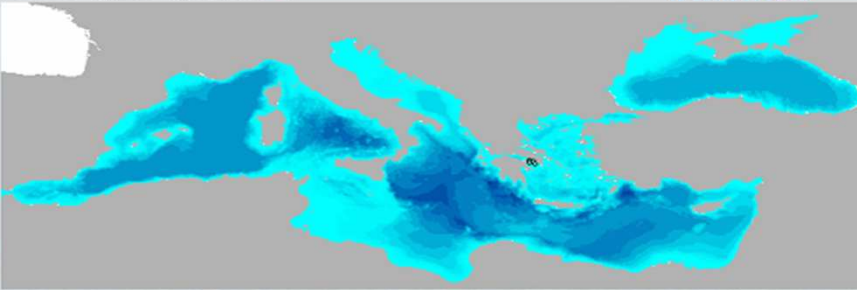
The datasets are available to PERSEUS partners only.

Group cruises name - additional selection criteria

- Selection of data by Group name allows to see all logical units acquired within the physical cruise.

Interactive Cast Map

10 casts selected



Add to Query?

Cruises groups

sesame

- SESAME/INTERREG-HCMR Sep 2000
- SESAME/METROMED-HCMR Feb 1998
- SESAME/METROMED-HCMR Jul 1997
- SESAME_SP2 Sep 2008
- SESAME_SP3 Oct 2008
- SESAME-HCMR Mar 1999**
- SESAME-HCMR Apr 1995
- SESAME-HCMR Apr 1999
- SESAME-HCMR Apr 2000
- SESAME-HCMR Apr 2002
- SESAME-HCMR Apr 2004
- SESAME-HCMR Aug 1994
- SESAME-HCMR Aug 1997

Query

Cruises groups: SESAME-HCMR Mar 1999

Run Query

Clear Query

Get Cruises List

Log In for Download

Dates (dd/mm/yyyy)

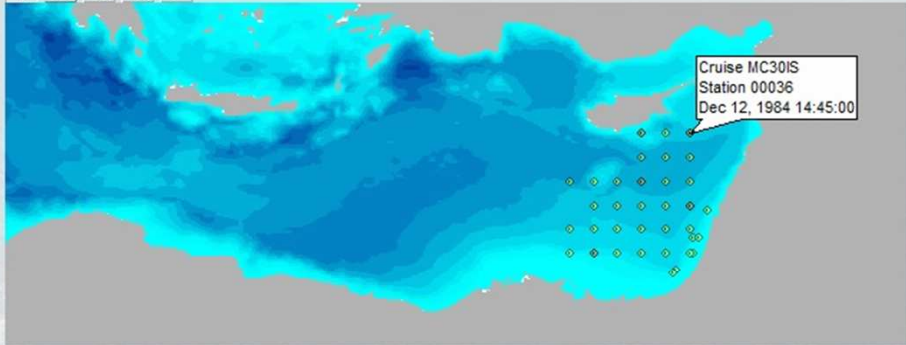
From: 11/01/1864

To: 14/02/2013

Cruises Group Information: MC 30 IS

From Dec 4, 1984 to Dec 13, 1984

Back to selection on the map



Group Metadata

Instrument types:	Water bottle stations,CTD stations	Cruises in group:	2
Countries:	Israel	Casts in group:	43
Ships:	Shikmona	Duration:	9 days

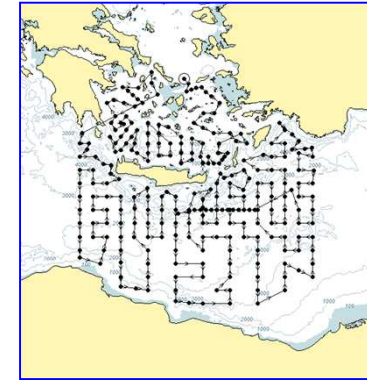
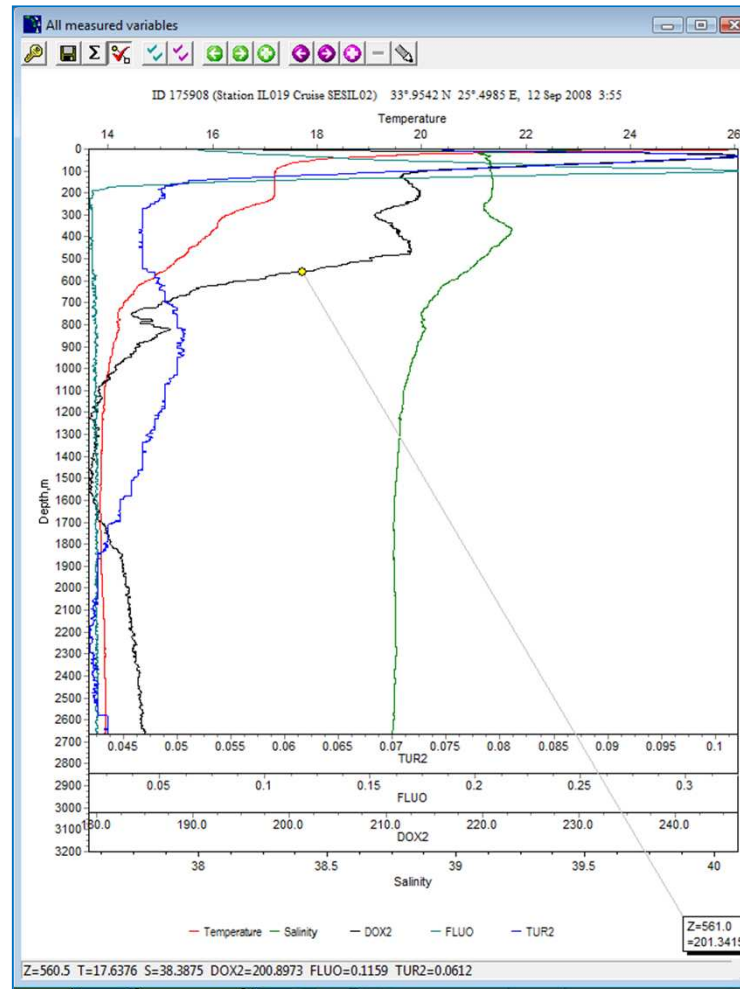
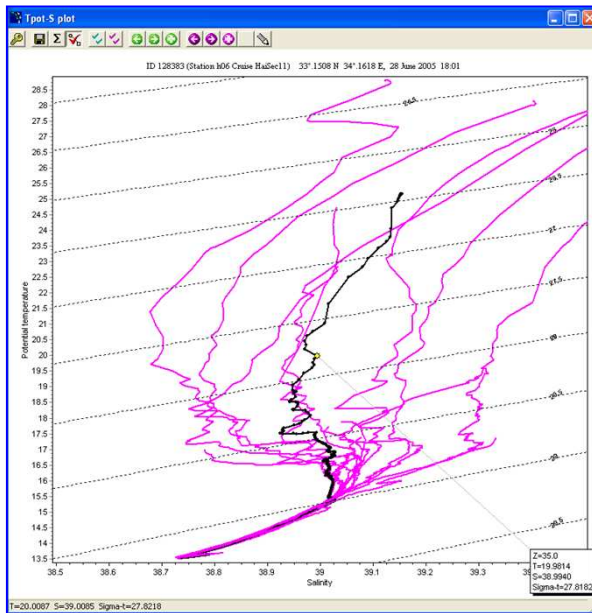
Cruises Information

Color	Cruise Name	Ship	Start	End	Casts	Map
■	MC30IS_BOT	Shikmona	04/12/1984	12/12/1984	5	Hide
■	MC30IS	Shikmona	04/12/1984	13/12/1984	38	Hide

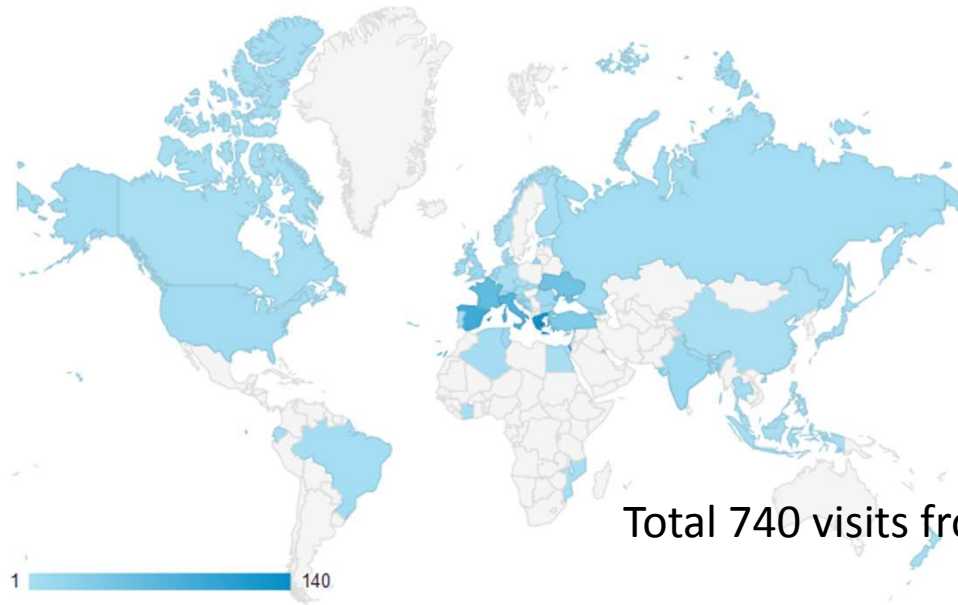
Data export after selection

- Single ODV file with data from one cruise and one instrument (It can be loaded into ODV by drag and drops)
- Aggregated ODV files (Up to 250 cruises as zip file. It can be loaded into ODV by Import SDN spreadsheet)
- Casts with selected parameters and units homogenization in form of MS ACCESS DB (Up to 100,000 casts)

Analysis of exported MS ACCESS DB with MHI software "Hydrolog"



PERSEUS CAST DB On-line Visitors



Services	Number
Total download requests	445
Total ODV downloads	379
Single Cruise ODV Downloads	375
Aggregated Cruises ODV Downloads	4
MS Access Downloads	65

Thank you for attention