IMDIS 2013
Lucca, Italy, 22-25 September, 2013

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

**Isaac Gertman[1], Yevgeniya Krivenko[1], Tal Ozer[1], Boris Katsenelson[1],**

**Vladimir Belokopytov[2], Andrey Ingerov[2], Alexey Khaliulin[2]**

# 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 a 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:



Soviet POEM

WOD09



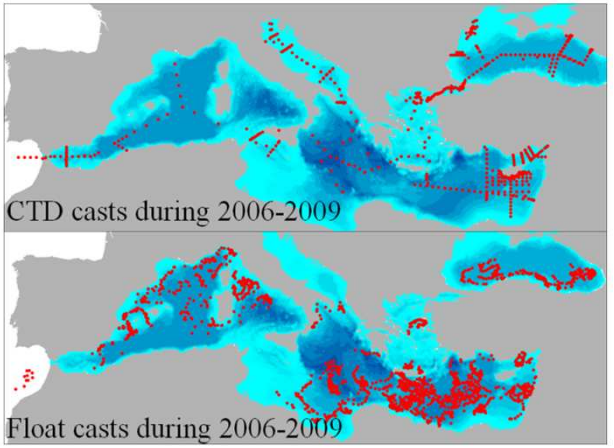

NATO TU BS

DYFAMED



- 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

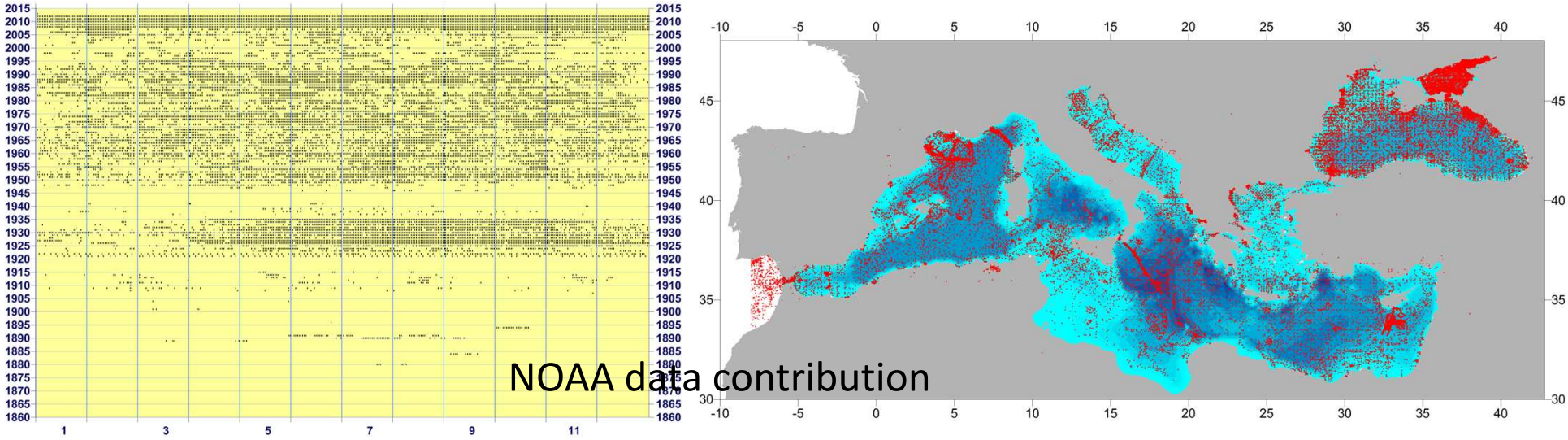
Two casts from different datasets were defined as duplicated when the all following conditions were satisfied:

- 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

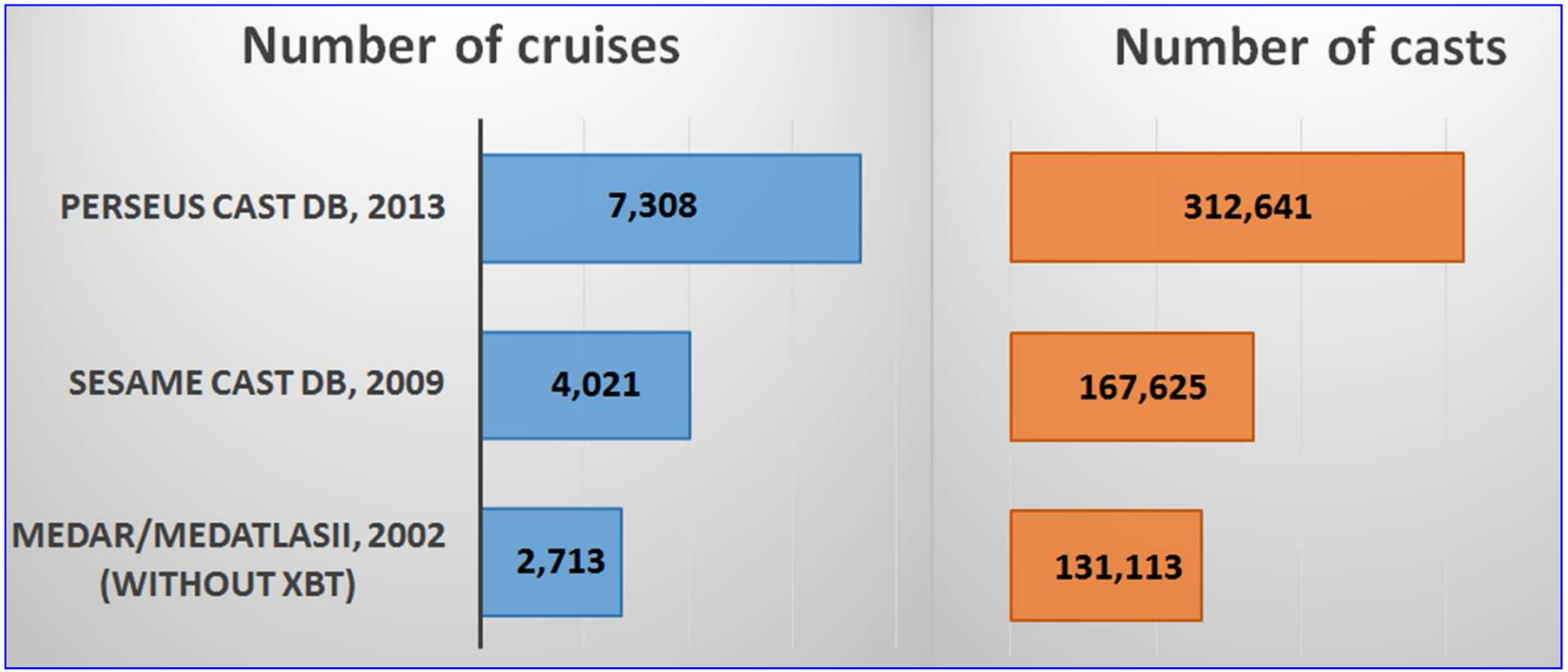
| NOAA Dataset | BODC (C771) |
|---|---|
| OSD | H09 |
| CTD | H10 |
| XCTD | H10 |
| PFL | D06 |
| UOR | H11 |
| GLD | H11 |

# Results of analysis on duplicated casts

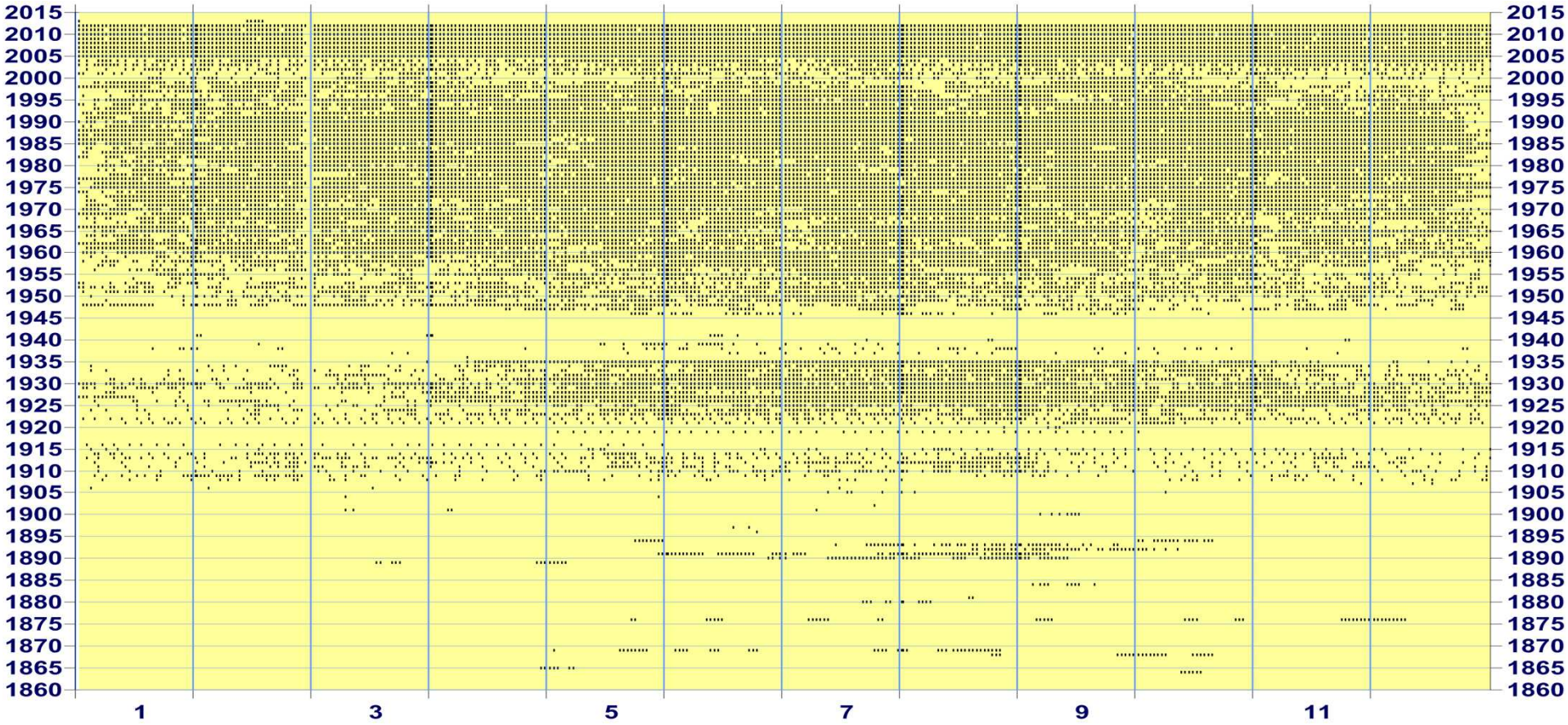
- 2956 cruises (150778 cast) from ISRAMAR DB are recommended to NODC/NOAA to consider for import.
- 3187 cruises (140724 casts) from NODC/NOAA DB were accepted for import into ISRAMAR DB.



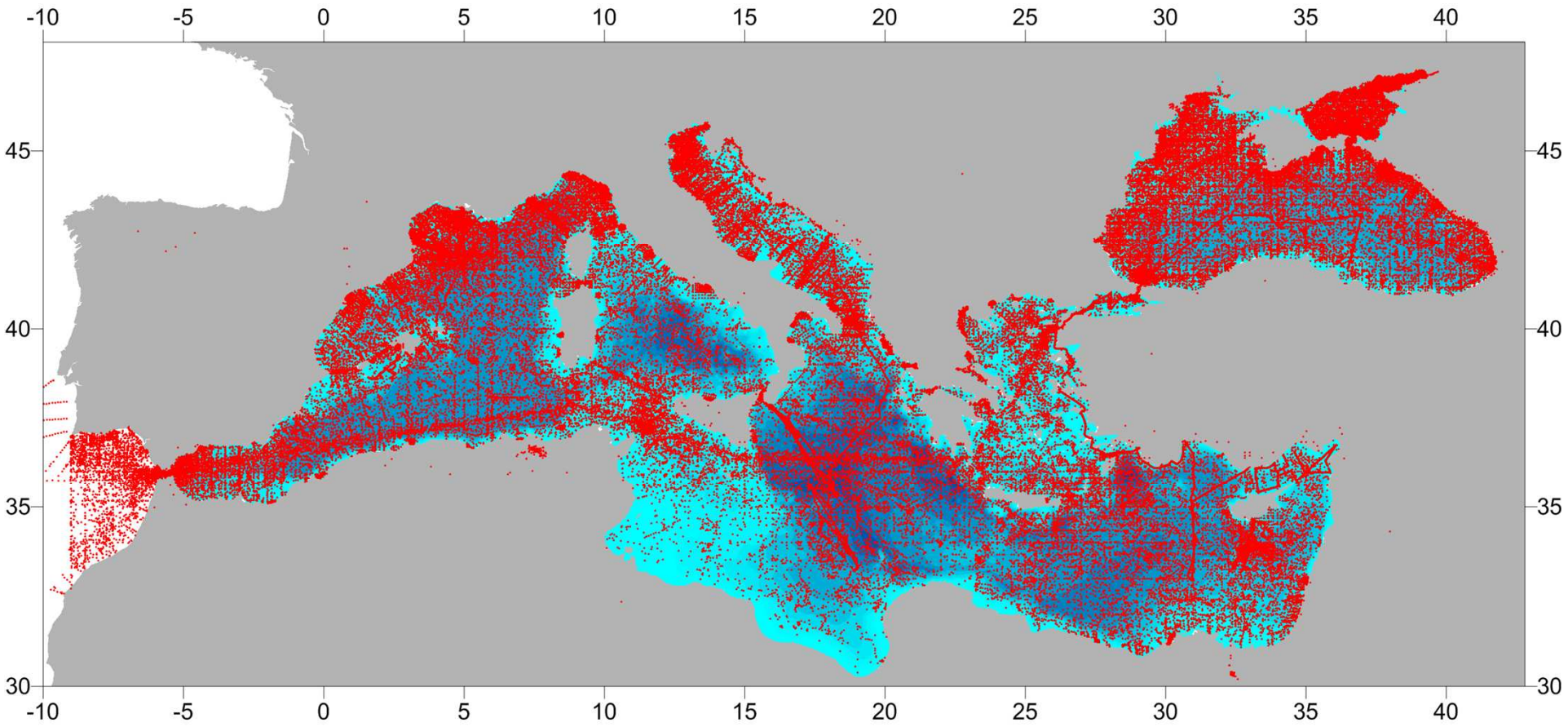
# Current volume of data in PERSEUS Cast DB



# Time distribution of casts

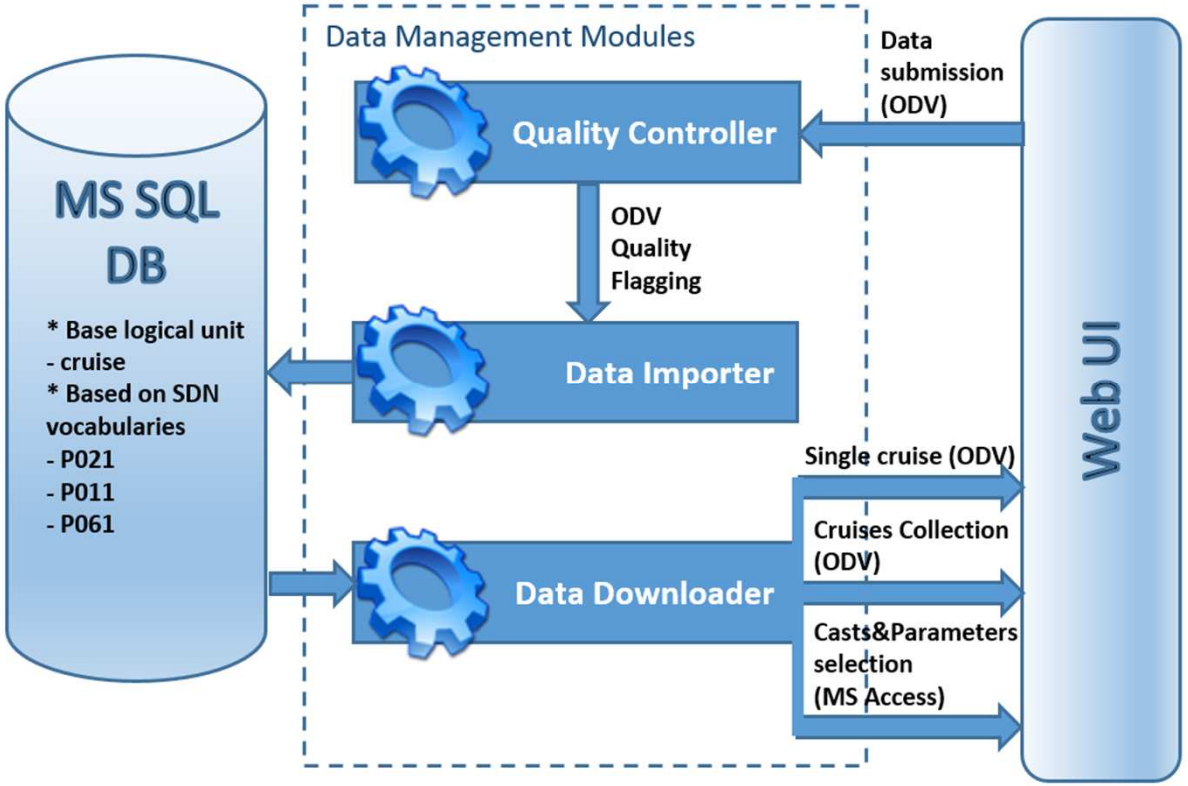


# Space distribution of casts



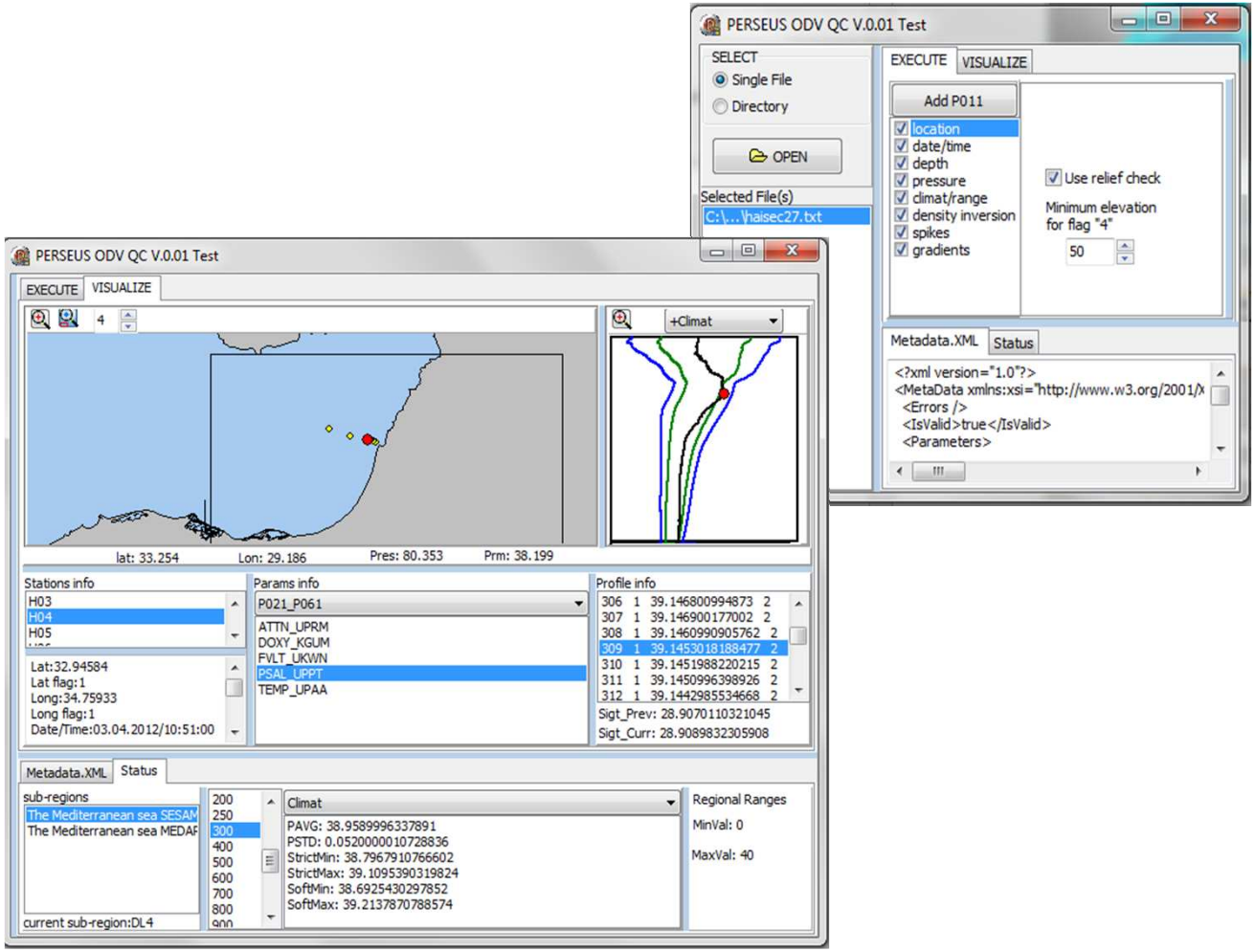
# Cast DB management system

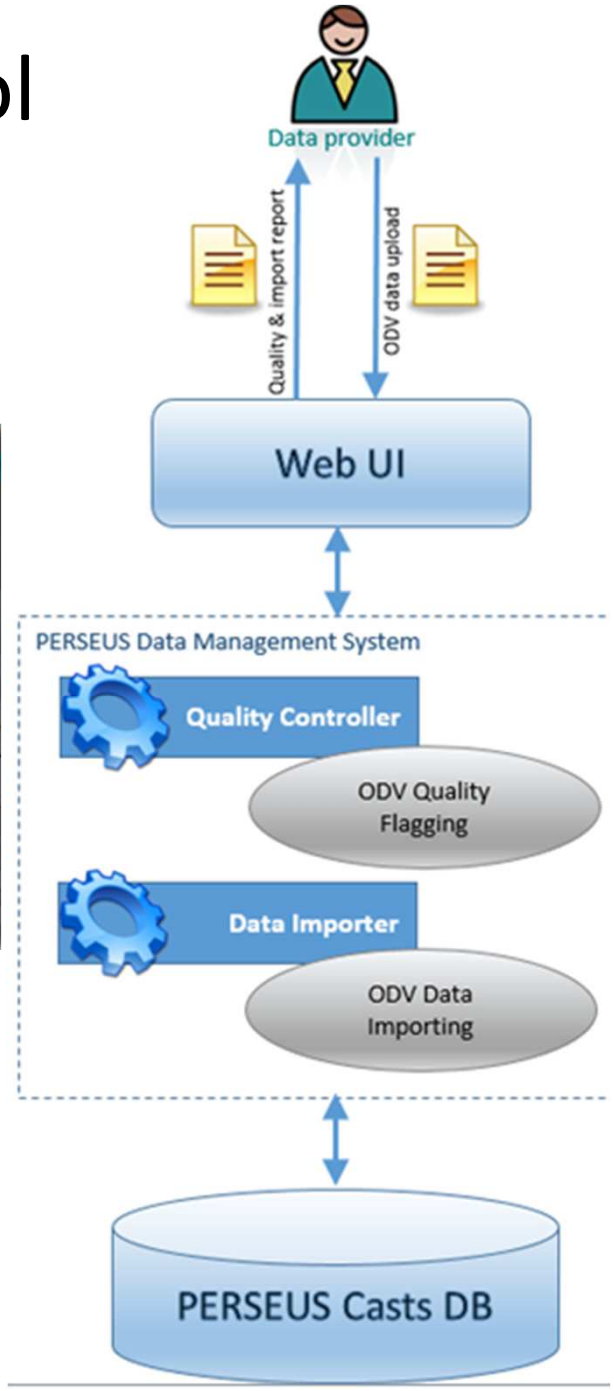
- Casts are grouped both by physical cruise and by instruments ( CTD, Bottles, Floats etc.,). These groups form a base logical unit.



# On-line Import & Quality Control

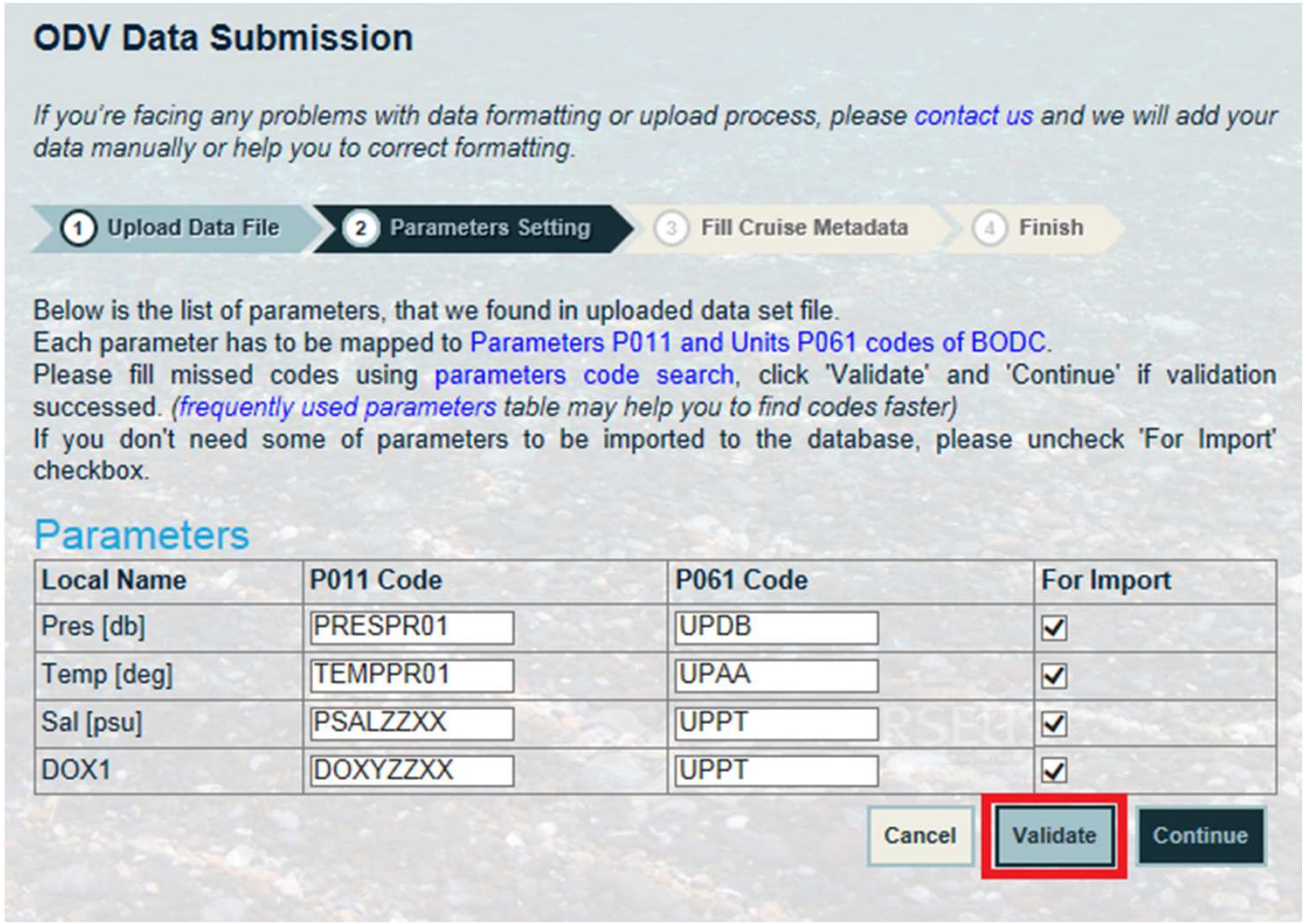
- ODV format for Import
- MHI software for QC



# Parameters definition

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



# Help to data supplier to define parameters

## Parameters Code Search

P021 Parameters Search | P011 Parameters Search | P061 Units Search

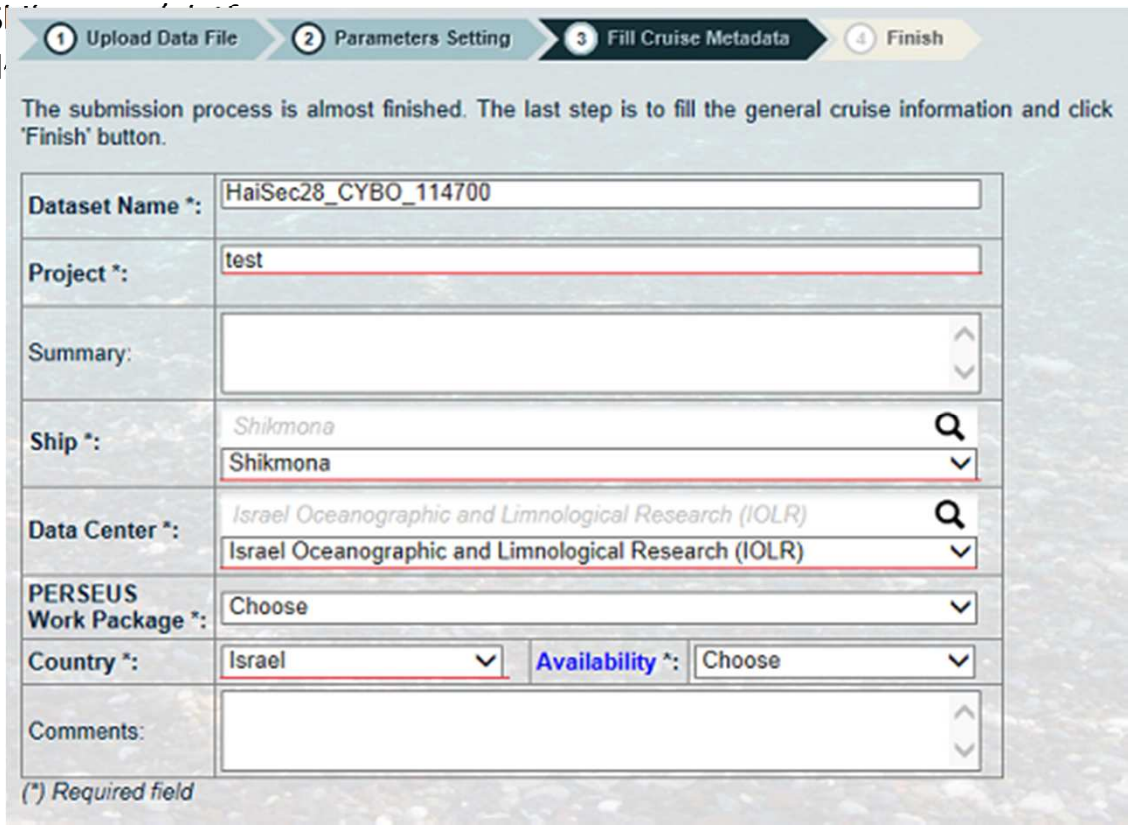
## Frequently Used Parameters

| 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 |

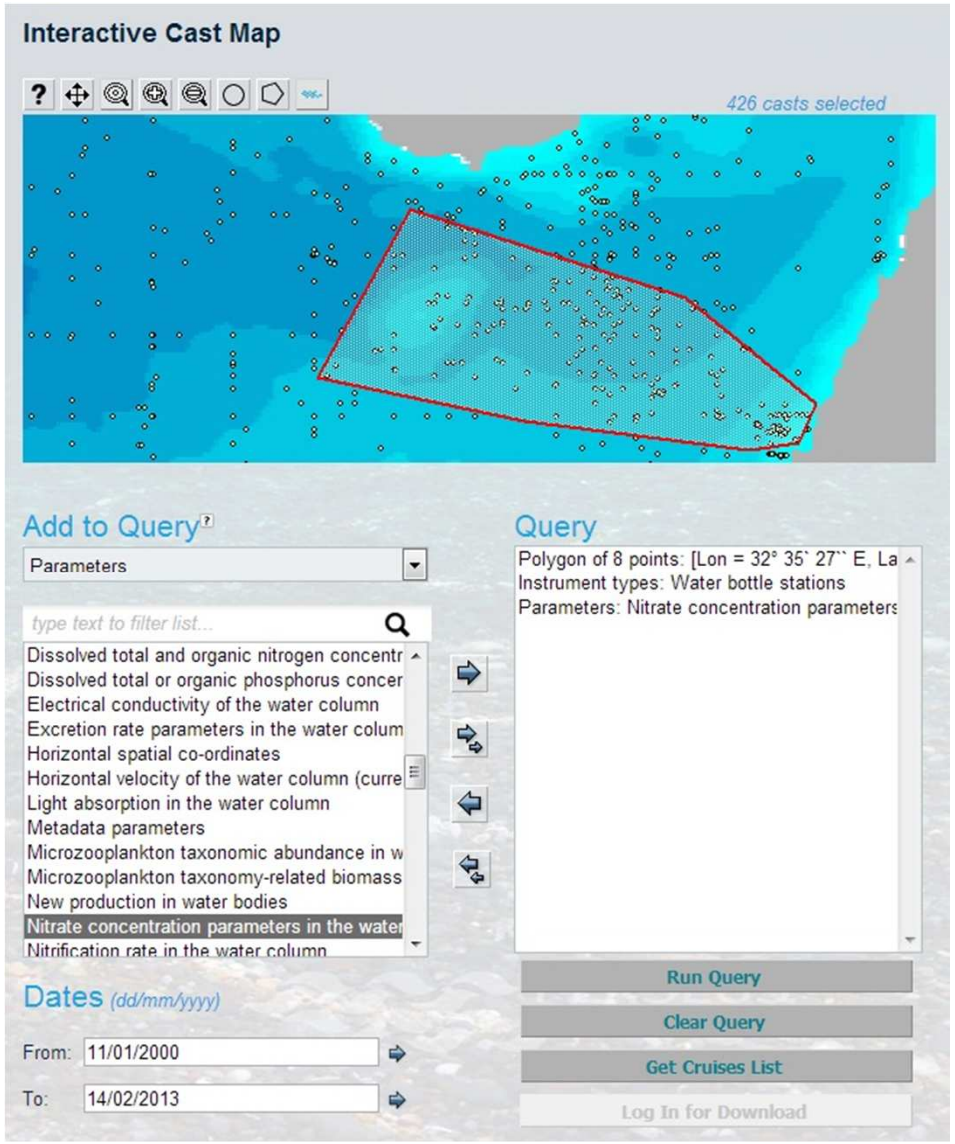
# Cruises Metadata Extension for ODV Format

- 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
//<project>test</project>
//



# On-line query builder for data selection and download



## Selected Cruises List

Back to cruises selection on map

| Cruise Name | Start Date | End Date | Country | Ship Name | Availability | Download |
|---|---|---|---|---|---|---|
| POEM05-AS87 (IBM-I)_BOT | 31/08/1987 | 18/09/1987 | Italy | Bannock | | |
| POEM05-AS87 (ITT-I)_BOT | 31/08/1987 | 18/09/1987 | Italy | Bannock | | |
| POEM05-AS87 (IRPEM-I) | 31/08/1987 | 18/09/1987 | Italy | Bannock | | |
| 03906 | 31/08/1987 | 17/09/1987 | Italy | Unknown | | |

0 cruises selected for download of 250 allowed.

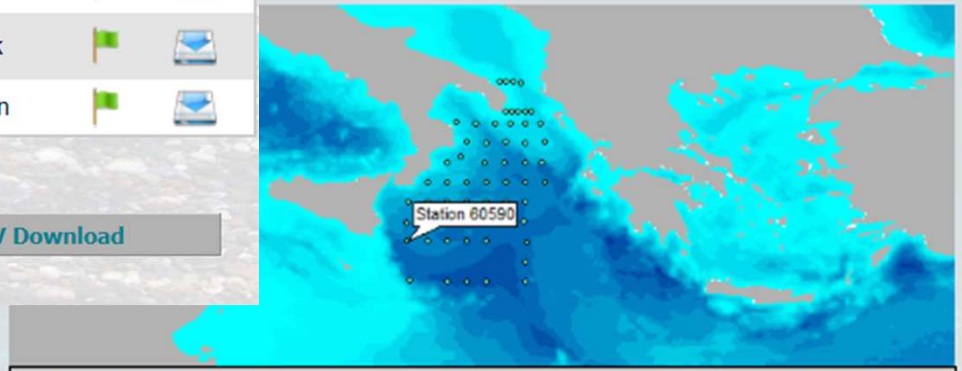
Include SDN data columns in ODV.

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.

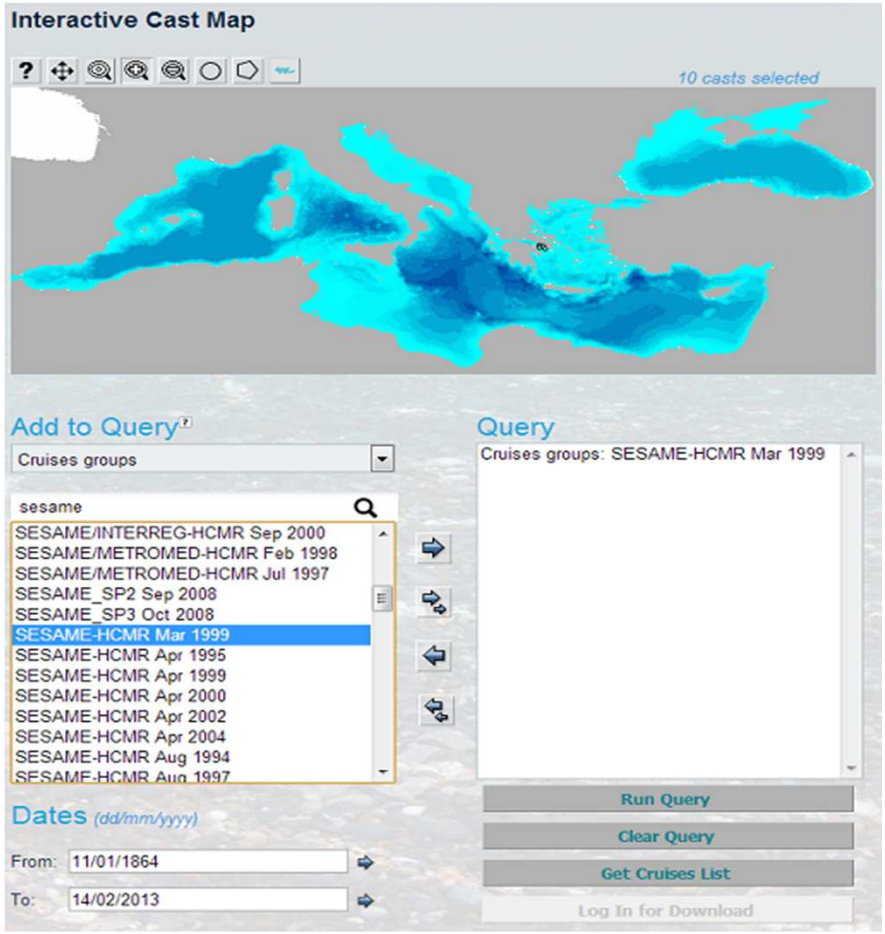
---

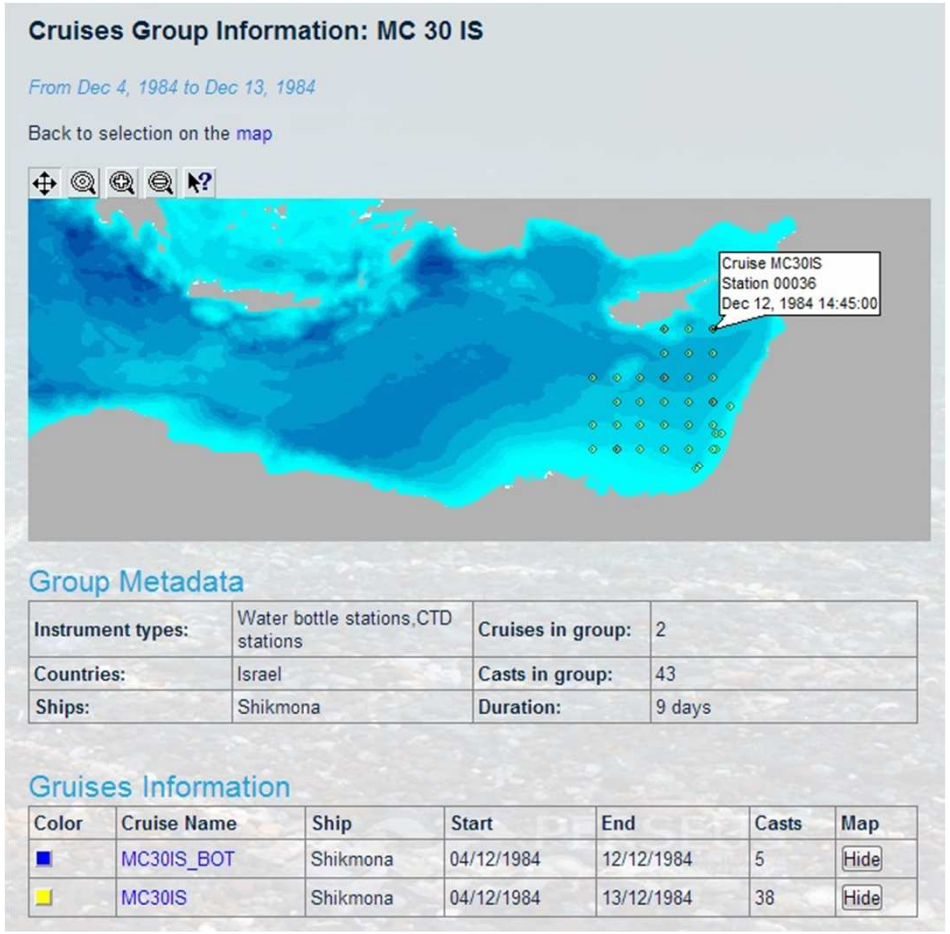
### Organization *(for partners)*

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.

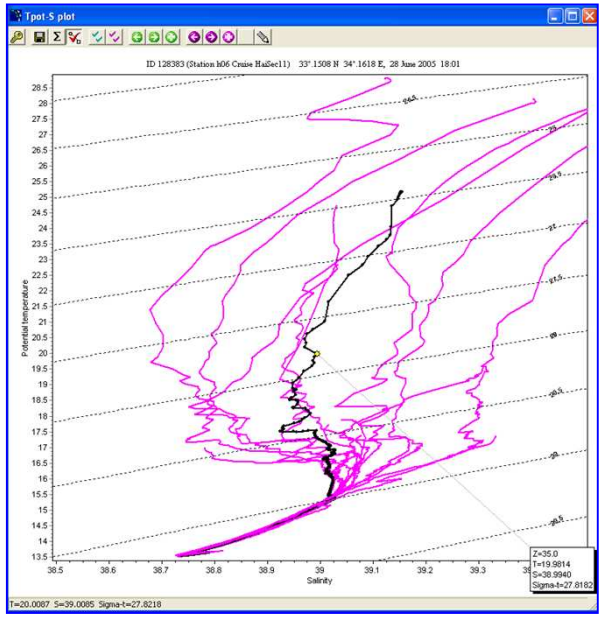


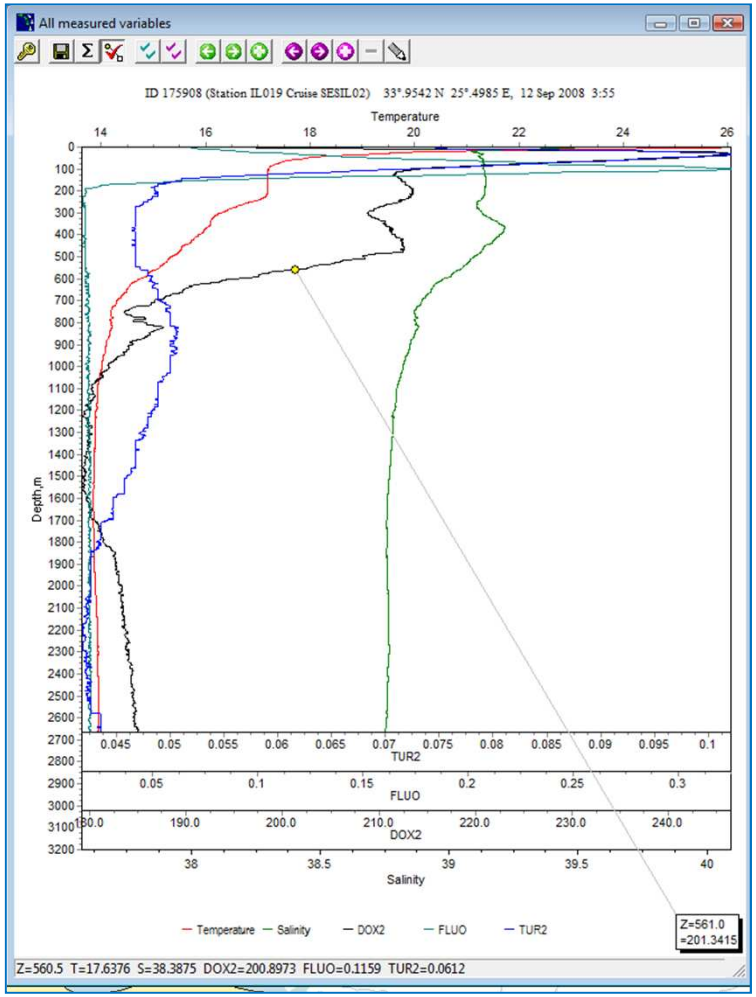



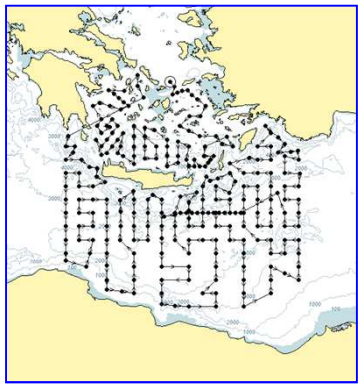
# Data export after selection

- 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)

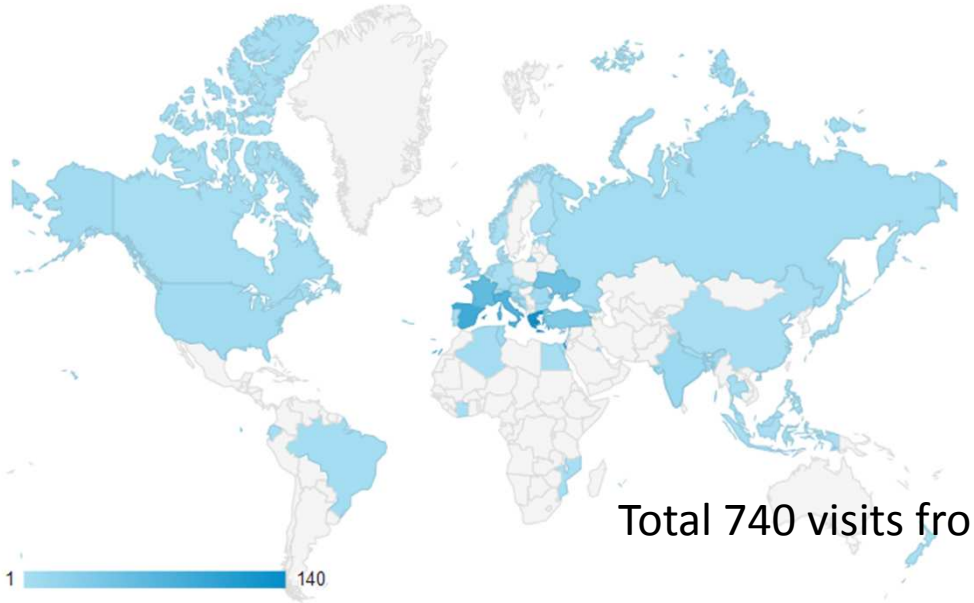
# Analysis of exported MS ACCESS DB with MHI software “Hydrolog”

# PERSEUS CAST DB On-line Visitors




Total 740 visits from Sep 2012 to Sep 2013

| 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