Geo-Seas

# Pan-European infrastructure for management of marine and ocean geological and geophysical data

# Geo-Seas portal
# Data Discovery and Access Service

By
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# Objectives 1

Geo-Seas

- Provide users access to harmonised marine geological and geophysical **metadata and observation data sets** in common, standard formats and ready for use, through a **single data portal**.

**BY**

- **Interconnecting** the national marine geological and geophysical data centres of 17 European coastal countries and their data management systems, by **adopting and adapting** the SeaDataNet infrastructure approach, architecture and middleware components.

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# Objectives 2

Geo-Seas

- Provide users with a number of dedicated geological and geophysical **data tools and services** following a user survey

**BY**

- Developing downloadable **software packages and online services** for **analysing and visualising data sets** as retrieved from the Geo-Seas portal

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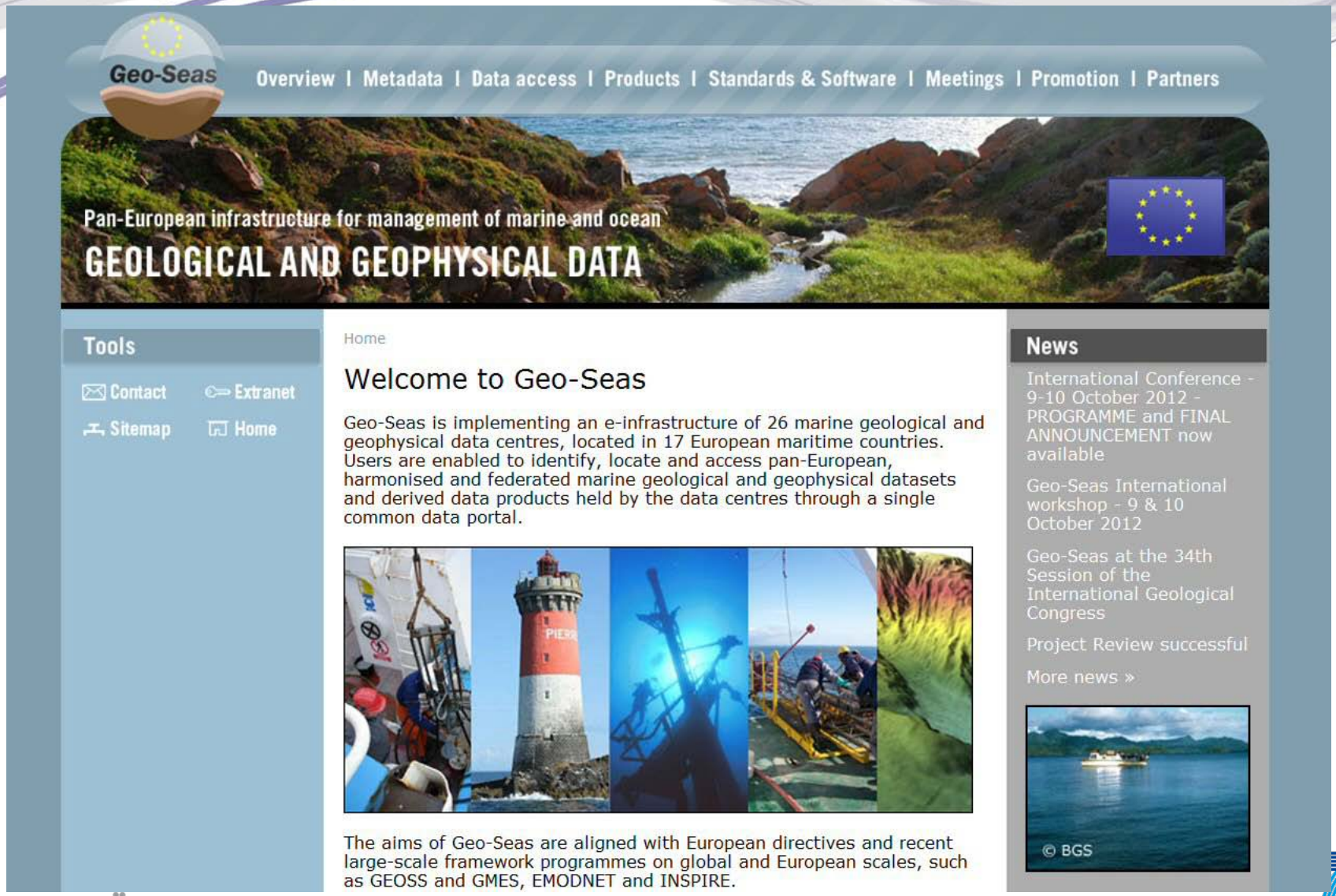
# Portal with harmonised services and tools for users and data centres

Geo-Seas

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www.geo-seas.eu

# Data access services

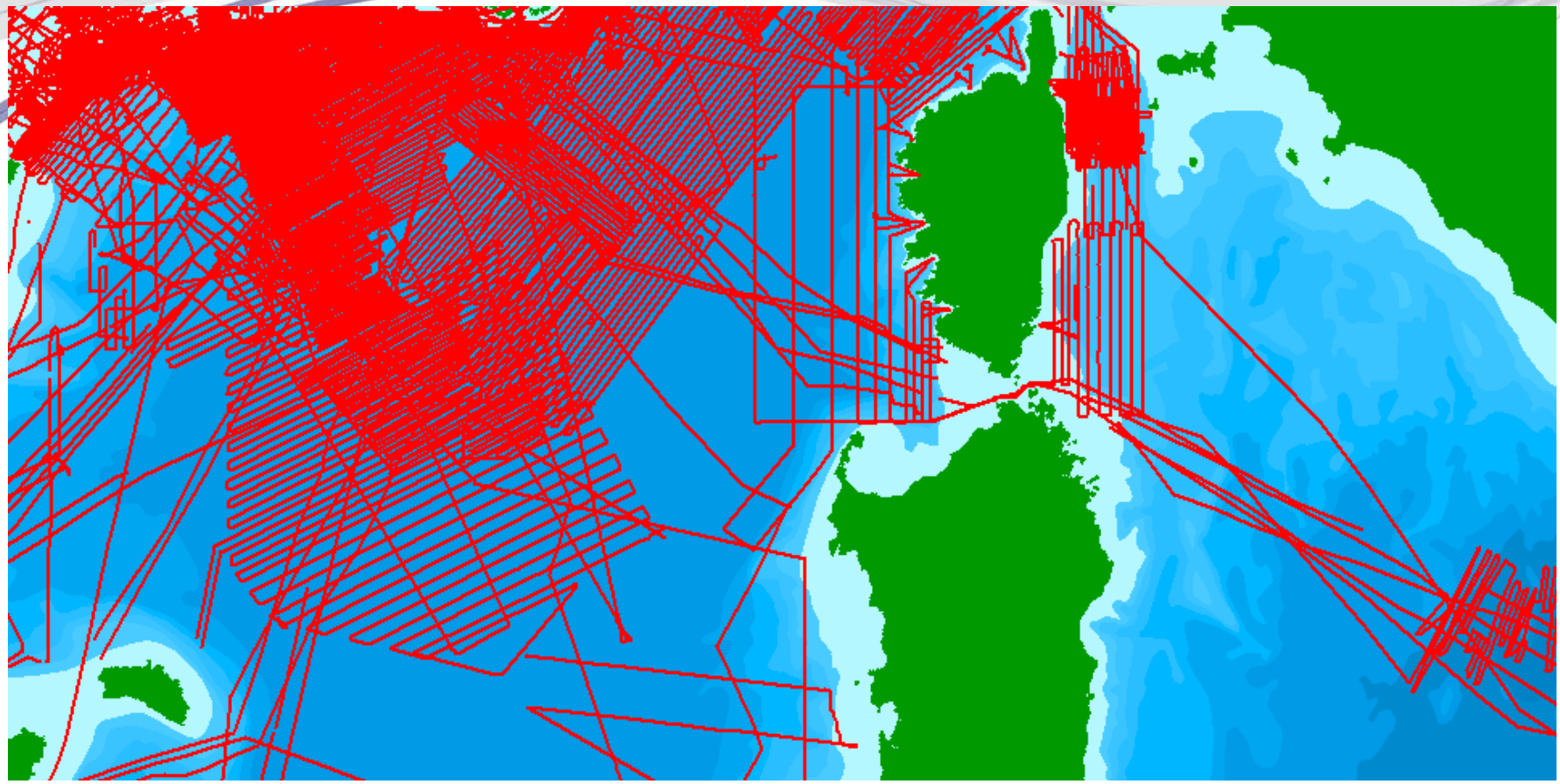
- SeaDataNet has developed the Common Data Index (CDI) service as a Data  Discovery and Access service, giving descriptions of distributed data sets and their access conditions

- The CDI metadata format is a profile of ISO 19115 for describing marine observation data. It is fully compliant with data discovery services as defined by INSPIRE and includes a pointer to the data access services

- As part of Geo-Seas this CDI format has been adopted and adapted, enriching its basis, and making it now fit for describing also observations for geological and geophysical data types.

# Data access services

Geo-Seas



CDI format has been enriched with GML for supporting tracks and Polygons; Example with bathymetric surveys

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# CDI metadata format

- The CDI gives answers to the following basic questions:
  - Where?
  - When?
  - What?
  - How?
  - Who?
  - Where to find data?
  - Other relevant information?
  - Other relevant services?
- A few CDI fields are free text but the majority of fields is described with controlled terms from Common Vocabularies, ensuring harmonisation of metadata

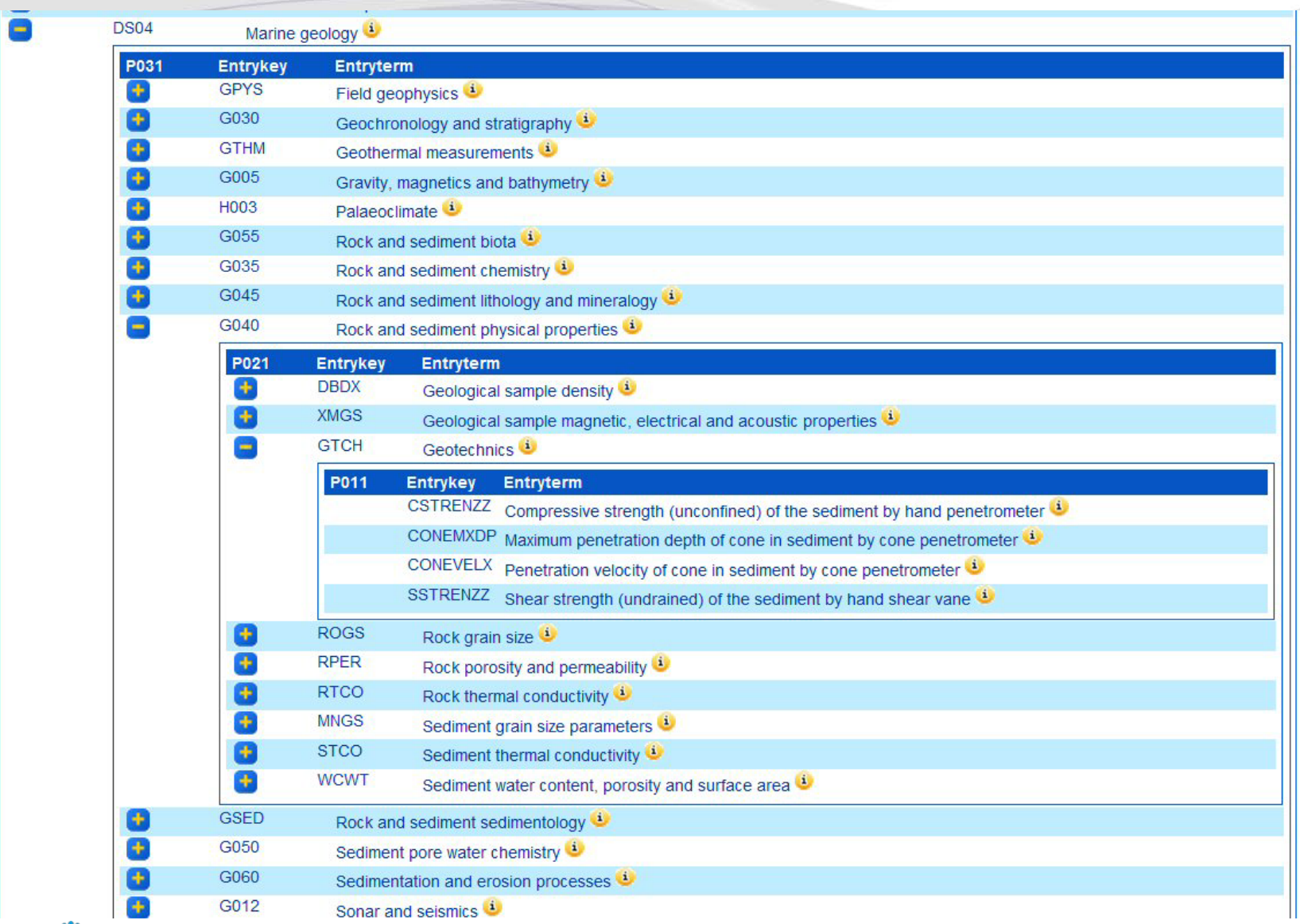
# Common Vocabularies

- SeaDataNet maintains Common Vocabularies as lists of standardised terms that cover a broad spectrum of disciplines of relevance to the oceanographic and wider community, such as parameters, disciplines, sea area names, platform classes, instrument types, units, and so on.

- Geo-Seas has expanded these lists with many additional terms for the geological and geophysical domains. This was also done by adopting specific vocabularies from the international GeoSciML project.

# Common Vocabularies

Geo-Seas



DS04 Marine geology

| P031 | Entrykey | Entryterm |
|---|---|---|
| + | GPYS | Field geophysics |
| + | G030 | Geochronology and stratigraphy |
| + | GTHM | Geothermal measurements |
| + | G005 | Gravity, magnetics and bathymetry |
| + | H003 | Palaeoclimate |
| + | G055 | Rock and sediment biota |
| + | G035 | Rock and sediment chemistry |
| + | G045 | Rock and sediment lithology and mineralogy |
| − | G040 | Rock and sediment physical properties |

| P021 | Entrykey | Entryterm |
|---|---|---|
| + | DBDX | Geological sample density |
| + | XMGS | Geological sample magnetic, electrical and acoustic properties |
| − | GTCH | Geotechnics |

| P011 | Entrykey | Entryterm |
|---|---|---|
| | CSTRENZZ | Compressive strength (unconfined) of the sediment by hand penetrometer |
| | CONEMXDP | Maximum penetration depth of cone in sediment by cone penetrometer |
| | CONEVELX | Penetration velocity of cone in sediment by cone penetrometer |
| | SSTRENZZ | Shear strength (undrained) of the sediment by hand shear vane |

| | | |
|---|---|---|
| + | ROGS | Rock grain size |
| + | RPER | Rock porosity and permeability |
| + | RTCO | Rock thermal conductivity |
| + | MNGS | Sediment grain size parameters |
| + | STCO | Sediment thermal conductivity |
| + | WCWT | Sediment water content, porosity and surface area |

| | | |
|---|---|---|
| + | GSED | Rock and sediment sedimentology |
| + | G050 | Sediment pore water chemistry |
| + | G060 | Sedimentation and erosion processes |
| + | G012 | Sonar and seismics |

**Example of Parameter Vocabulary list**

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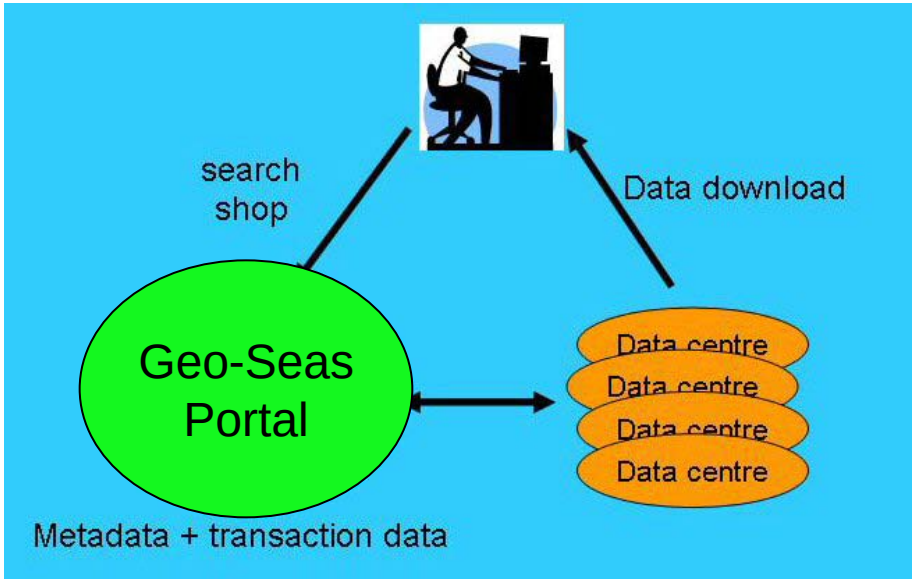
# CDI Data Discovery and Access Service

- The CDI catalogue describes individual data measurements (such as a grab sample or core or seismic survey line).

- It also provides a unique interface for getting access to the data sets themselves, that are managed in the distributed Geo-Seas data centres

**Search – Find – Bind principle**



# CDI Data Discovery and Access Service implementation

- **26** marine geological and geophysical data centres, located in **17** European coastal countries, have been connected to the Geo-Seas infrastructure

- This included installing local software, mapping local metadata and vocabs to the common Geo-Seas models, converting local data sets to common Geo-Seas formats, and preparing metadata and data entries.

- This also included developing the dedicated Geo-Seas CDI Data Discovery and Access service at the Geo-Seas portal

# Connected Geo-Seas data centres

Geo-Seas

NERC BGS (UK)
NERC BODC (UK)
EGK (Estonia)
LIGG (Lithuania)
IFREMER (France)
BRGM (France)
TNO (Netherlands)
BSH (Germany)
IGME (Spain)
LNEG (Portugal)
IGME (Greece)
CNRS (France)
BGR (Germany)

NGU (Norway)
PGI (Poland)
GEUS (Denmark)
LU (Latvia)
IO-BAS (Bulgaria)
NOA (Greece)
CEFAS (UK)
MUMM (Belgium)
UB (Spain)
UCC (Ireland)
GSI (Ireland)
OGS (Italy)
SHOM (France)

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# CDI Data Discovery and Access Service implementation

- These **26** Geo-Seas Data Centres now deliver data, originating from their own institutes and from other parties in their countries, directly through the Geo-Seas CDI Data Discovery and Access service;

- At present in excess of **75,000** metadata records and corresponding data sets are available via the Geo-Seas portal; these are derived from seabed sediment samples, boreholes, borehole samples, geophysical surveys (seismic, gravity, magnetic) of the seabed and sub-seabed, cone penetration tests, and sides can sonar surveys

# Data Shopping Mechanism

Geo-Seas

**Step 1** → **Step 2** → **Step 3**

Search

Shop

Order/Checkout

**Step 4** → **Step 5** → **Step 6**

Confirm your userid-password

View progress online

Data download

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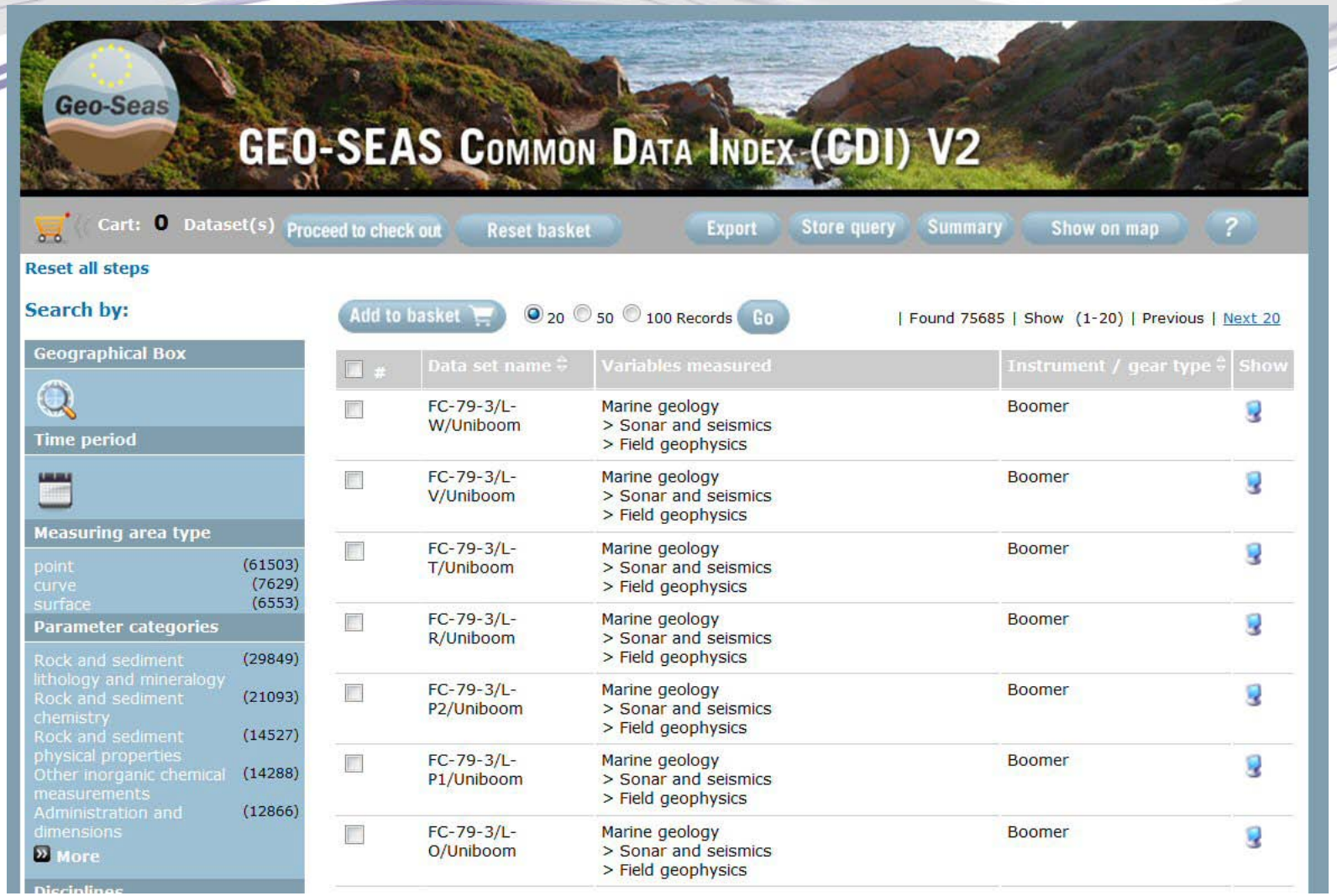
# Data Policy

- **Metadata**
  - free and open access, no registration required
- **Data access services**
  - Users must register once for a personal login - password
    - Users agree with "**Geo-Seas User Licence**"
  - This safeguards the rights and obligations of both the users and the data providers
  - This facilitates the follow-up of a user request to multiple data centres (asynchronous processing)
  - This drives the access decision based upon combination of the 'type of user' as registered and the 'data access restriction' label as included in each CDI record. This results in '**access OK**', '**access to be negotiated**' or '**access denied**'.

# CDI Seach and Shopping Dialogue at the portal

Geo-Seas




Quick search CDI user interface, intuitive and following a drill-down principle (as used by hotel booking systems

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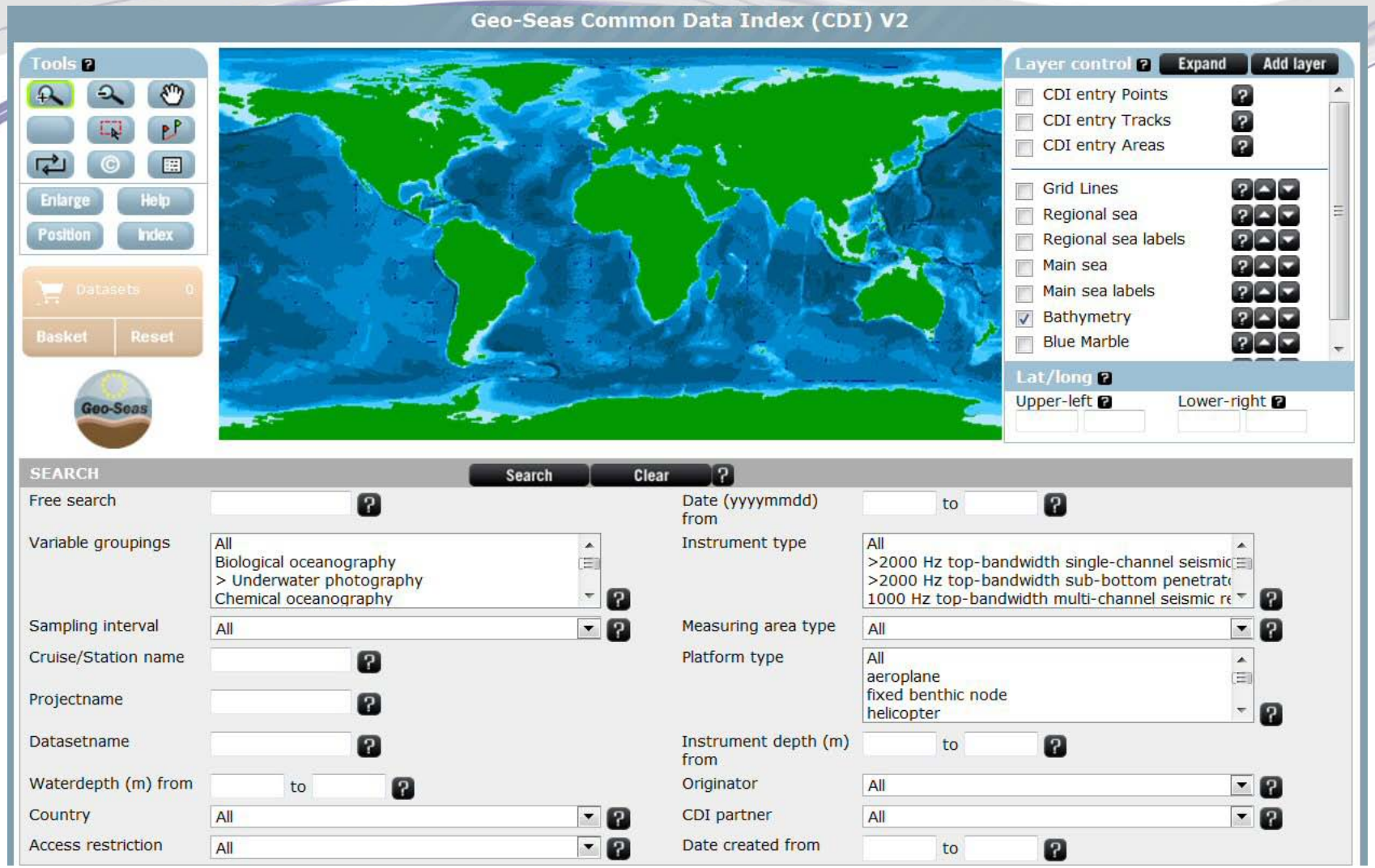
# CDI Search and Shopping Dialogue at the portal

Geo-Seas




Extended search CDI user interface , which facilitates combining multiple search criteria for specific queries

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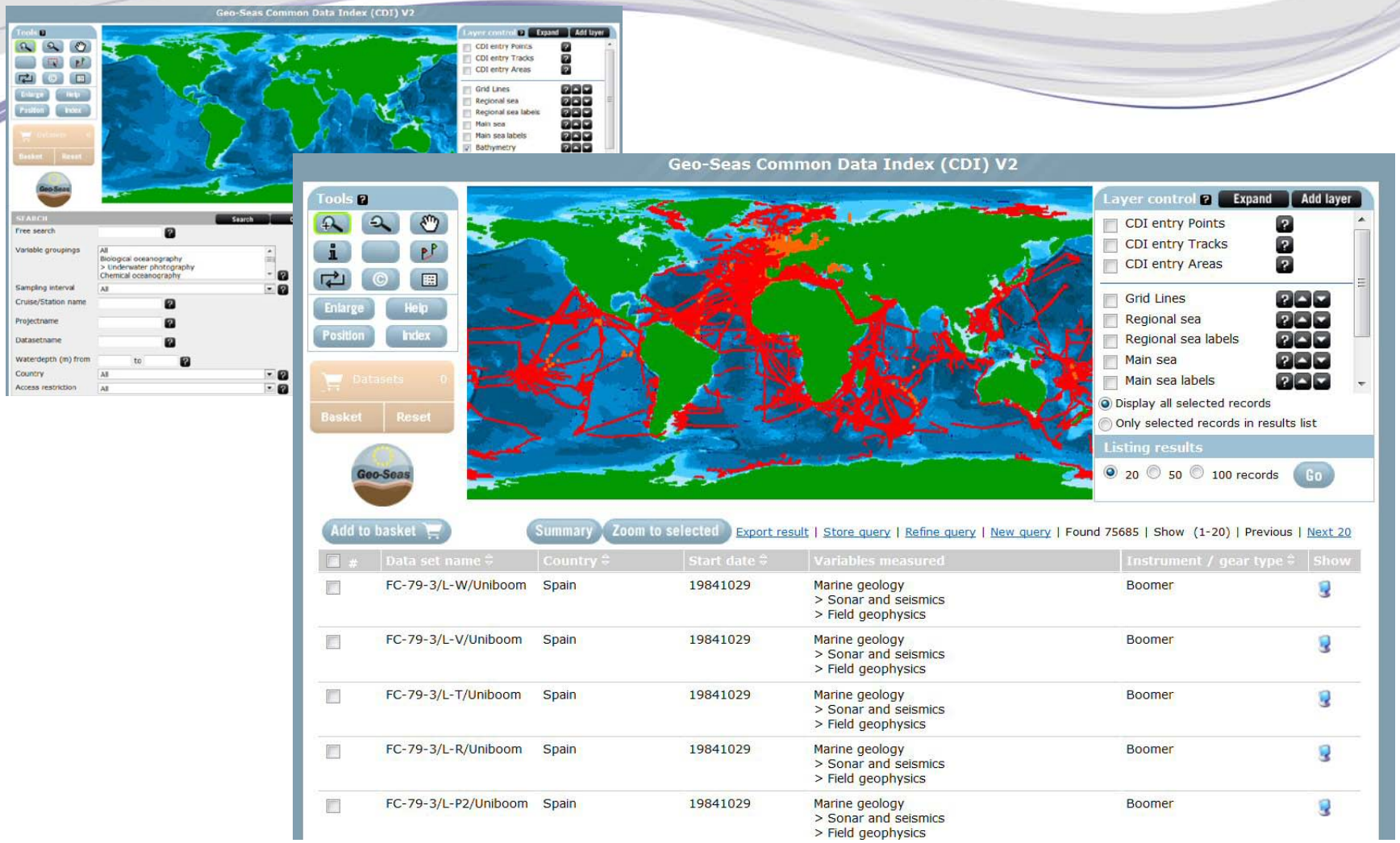
# CDI Search and Shopping Dialogue at the portal

Geo-Seas




Search – Results page

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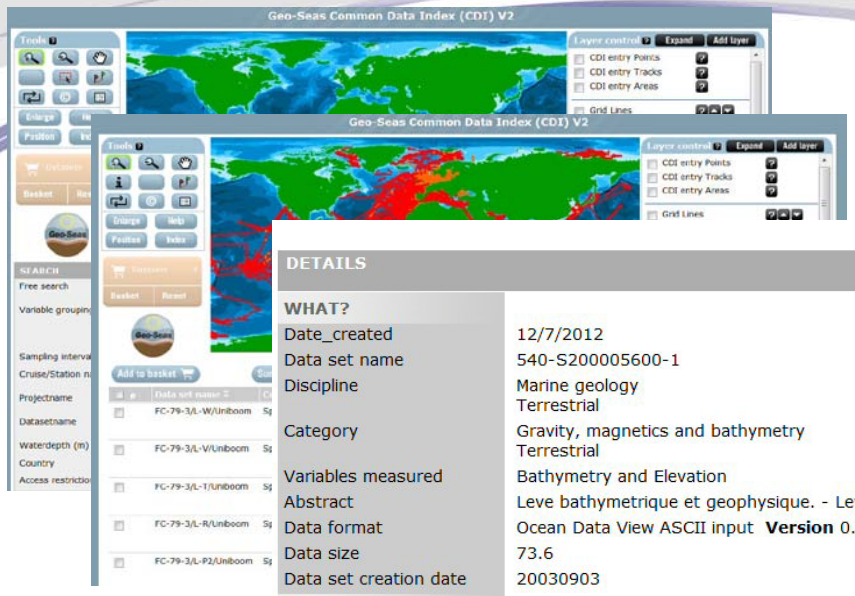
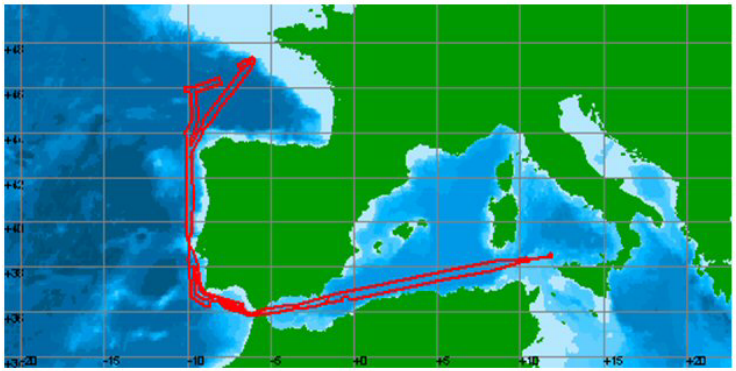
# CDI Search and Shopping Dialogue at the portal

Geo-Seas




| New query | Results | Found 9597 | Show 2 | Previous | Next

**DETAILS**

| | |
|---|---|
| **WHAT?** | |
| Date_created | 12/7/2012 |
| Data set name | 540-S200005600-1 |
| Discipline | Marine geology<br>Terrestrial |
| Category | Gravity, magnetics and bathymetry<br>Terrestrial |
| Variables measured | Bathymetry and Elevation |
| Abstract | Leve bathymetrique et geophysique. - Leve bathymetrique au sondeur multifaisceaux. - 2388326 sondes/soundings |
| Data format | Ocean Data View ASCII input **Version** 0.4 |
| Data size | 73.6 |
| Data set creation date | 20030903 |
| **WHERE?** | |
| Map |  |
| GML id | ms01 |
| GML objects | **Name** / **Description**: Coverage, Coverage |
| Datum | World Geodetic System 84 |
| Measuring area type | surface |

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Search – Results – Details page

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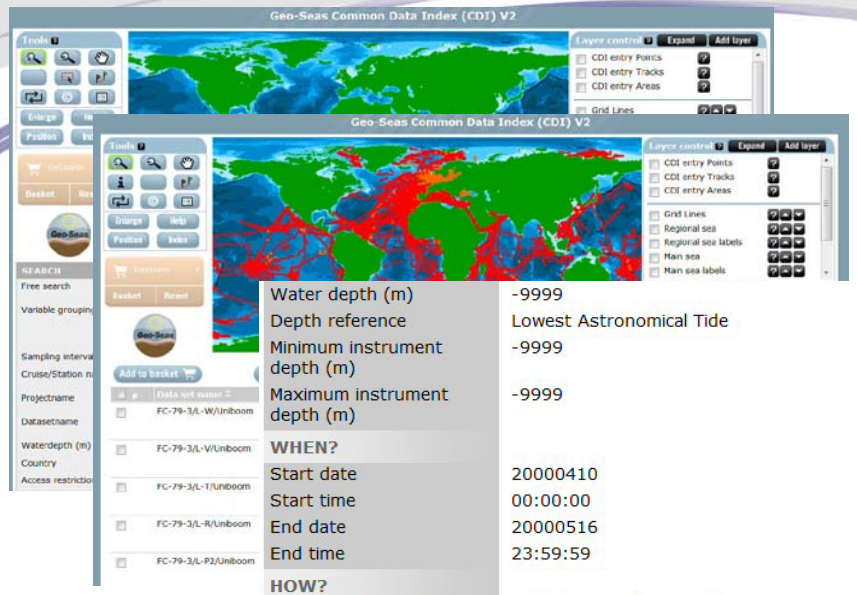
# CDI Search and Shopping Dialogue at the portal

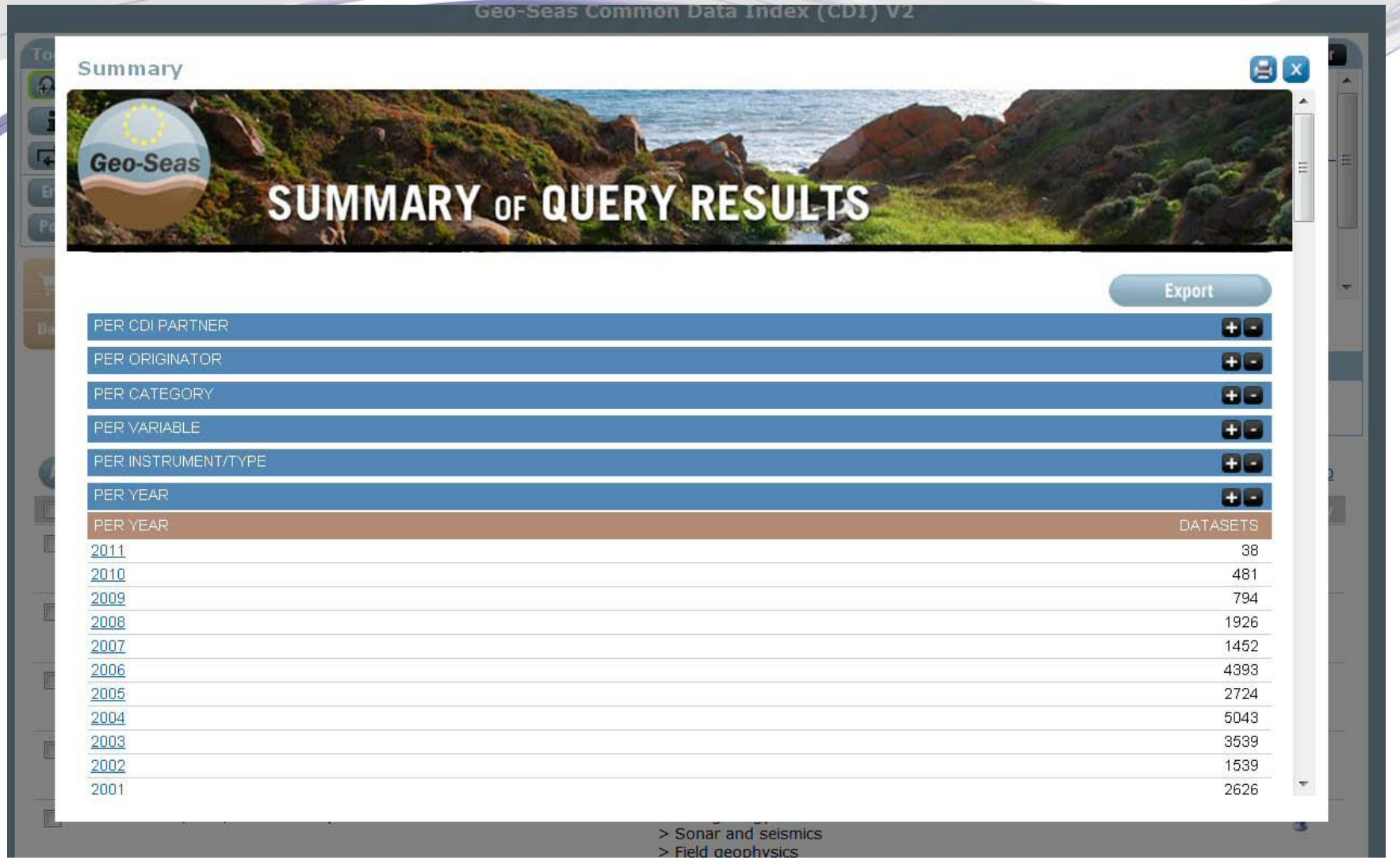



| | |
|---|---|
| Water depth (m) | -9999 |
| Depth reference | Lowest Astronomical Tide |
| Minimum instrument depth (m) | -9999 |
| Maximum instrument depth (m) | -9999 |
| **WHEN?** | |
| Start date | 20000410 |
| Start time | 00:00:00 |
| End date | 20000516 |
| End time | 23:59:59 |
| **HOW?** | |
| Instrument / gear type | multi-beam echosounders |
| Platform type | unknown |
| Cruise name | OCEAN ATLANTIQUE MER MEDITERRANEE Transit du BH1 L ESPERANCE en 2000. |
| Alternative cruise name | S200005600 |
| Cruise start date | 20000410 |
| **WHO?** | |
| Originator | SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MARINE) |
| Data Holding centre | SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MARINE) |
| **HOW TO GET THE DATA?** | |
| Data Distributor | SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MARINE) |
| Access/ordering of data | web data access with registration |
| Internet access/ordering | |
| Access restriction | by negotiation<br>distribution cost charge<br>licence |
| **CDI-METADATA** | |
| CDI-record id | 1297983 |
| CDI-record creation date | 20120711 |
| CDI-partner | SHOM (SERVICE HYDROGRAPHIQUE ET OCEANOGRAPHIQUE DE LA MARINE) |

Search – Results – Details 2 page

# CDI Search and Shopping Dialogue at the portal

Geo-Seas




Summary option on Results, facilitating overview of results and drilling down

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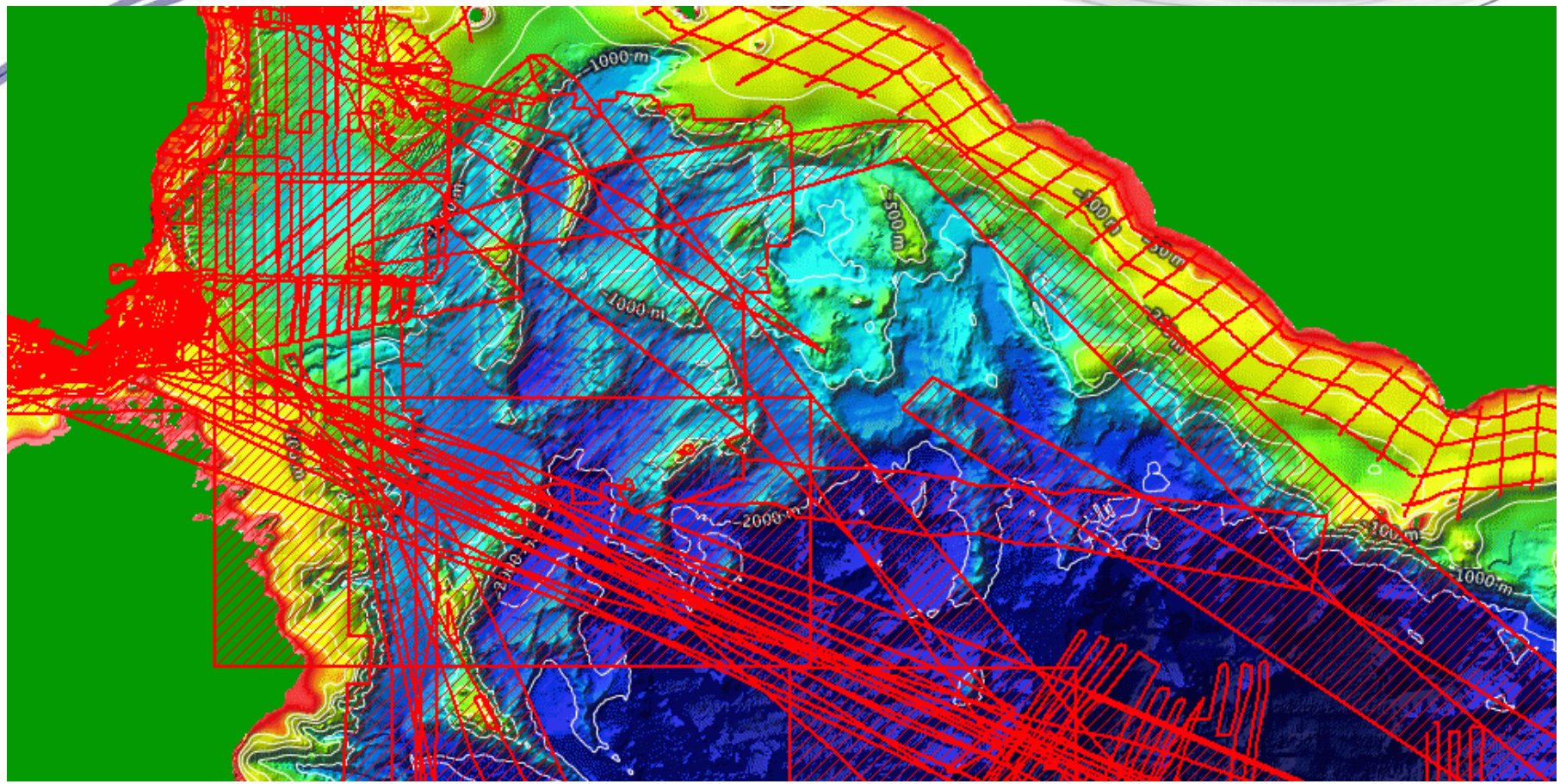
# CDI Search and Shopping Dialogue at the portal

- Users can store their query profile as a bookmark and forward these to others
- Users can zoom in – zoom out – pan on the dynamic map of the CDI user interface
- Users can import WMS services from external servers in the CDI dynamic map
- Users can switch on various layers on the map
- Users can export the maps as images
- Users can import the CDI WMS services into external WMS servers

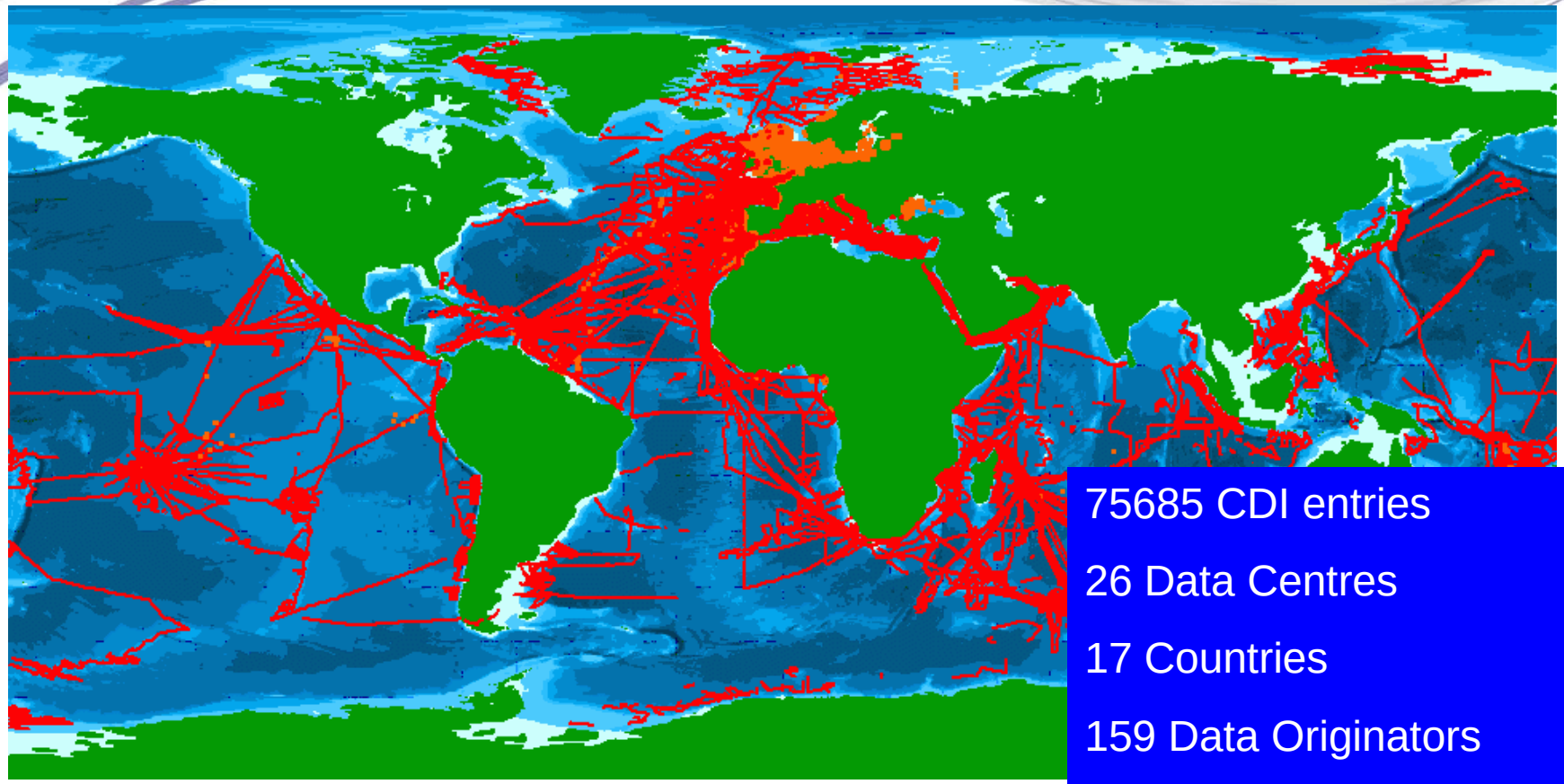
# CDI Search and Shopping Dialogue at the portal




EMODNet Bathymetry WMS imported into CDI User Interface as background map

# CDI Search and Shopping Dialogue at the portal

Geo-Seas



Present CDI coverage

75685 CDI entries

26 Data Centres

17 Countries

159 Data Originators

Samples, cores, boreholes, seismics and bathymetry

1800 – 2011

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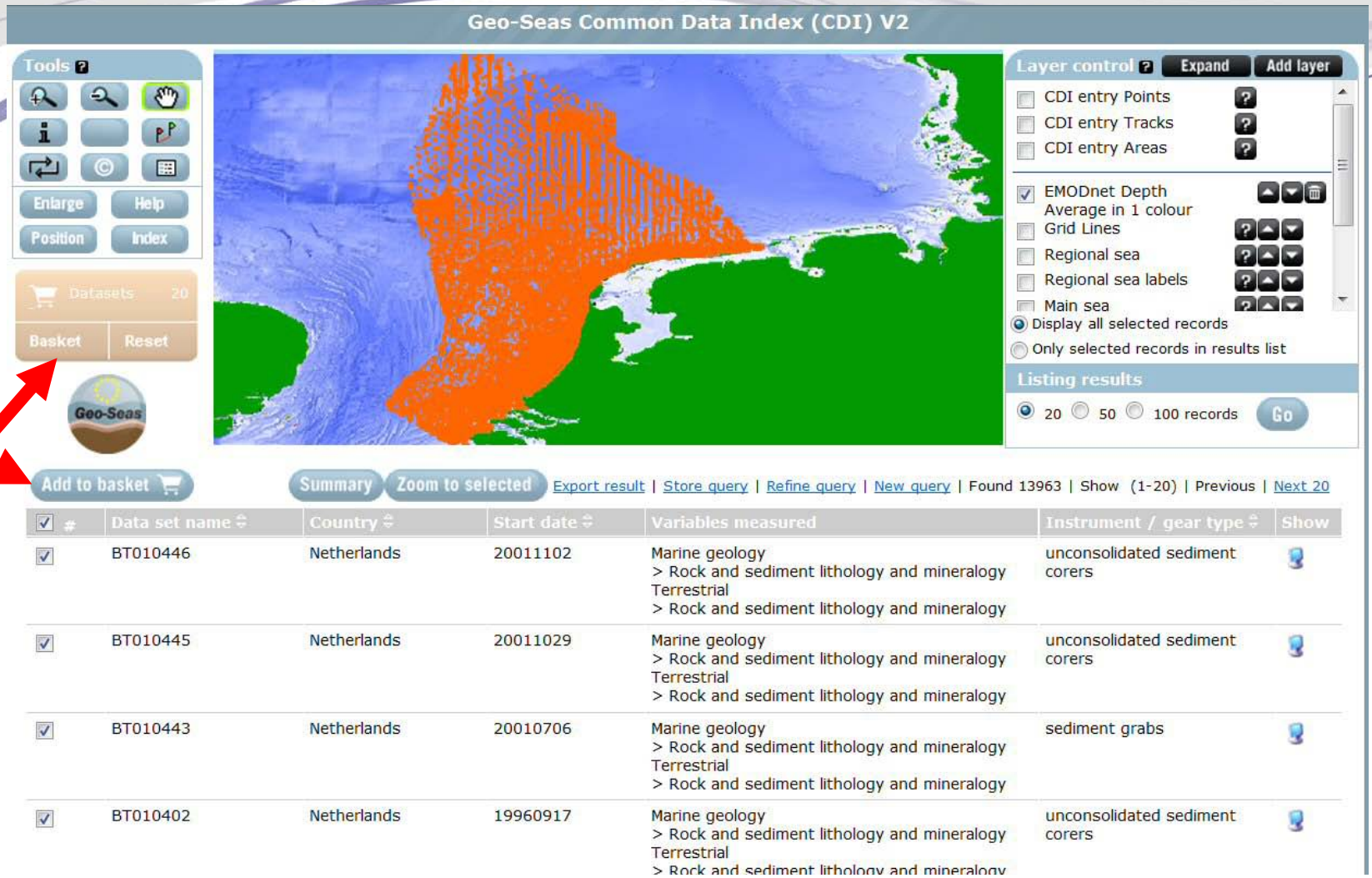
# CDI Search and Shopping Dialogue at the portal

Geo-Seas




| # | Data set name | Country | Start date | Variables measured | Instrument / gear type | Show |
|---|---|---|---|---|---|---|
| ☑ | BT010446 | Netherlands | 20011102 | Marine geology > Rock and sediment lithology and mineralogy Terrestrial > Rock and sediment lithology and mineralogy | unconsolidated sediment corers | |
| ☑ | BT010445 | Netherlands | 20011029 | Marine geology > Rock and sediment lithology and mineralogy Terrestrial > Rock and sediment lithology and mineralogy | unconsolidated sediment corers | |
| ☑ | BT010443 | Netherlands | 20010706 | Marine geology > Rock and sediment lithology and mineralogy Terrestrial > Rock and sediment lithology and mineralogy | sediment grabs | |
| ☑ | BT010402 | Netherlands | 19960917 | Marine geology > Rock and sediment lithology and mineralogy Terrestrial > Rock and sediment lithology and mineralogy | unconsolidated sediment corers | |

Search for TNO data and 20 entries in shopping basket

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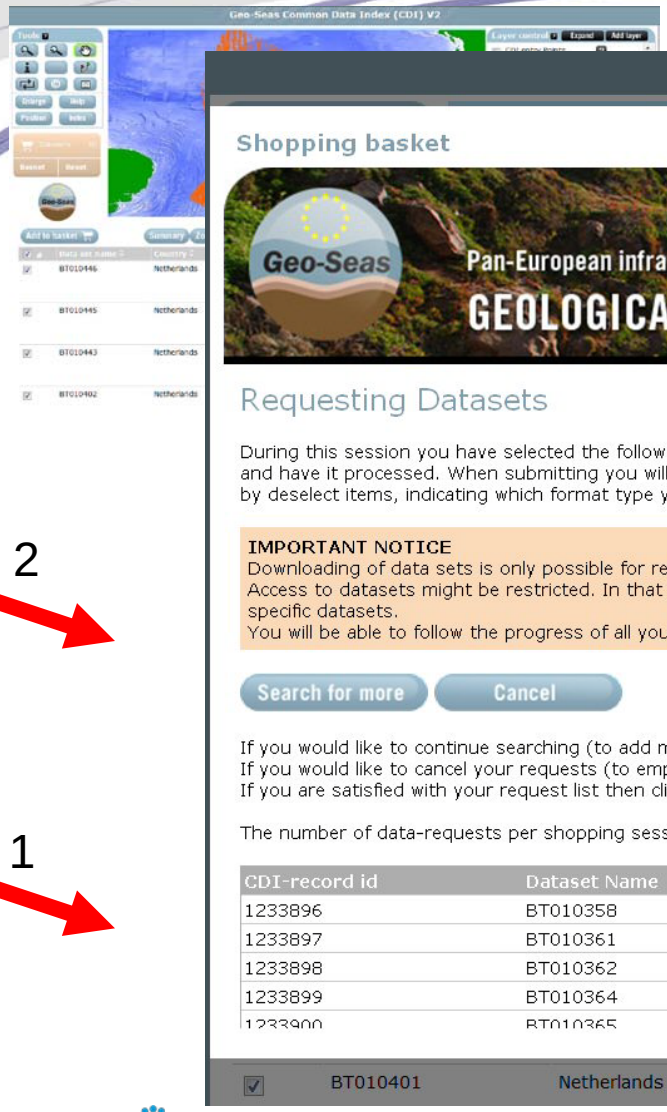
# CDI Search and Shopping Dialogue at the portal

Geo-Seas




2

1

3

Shopping list with 20 TNO entries

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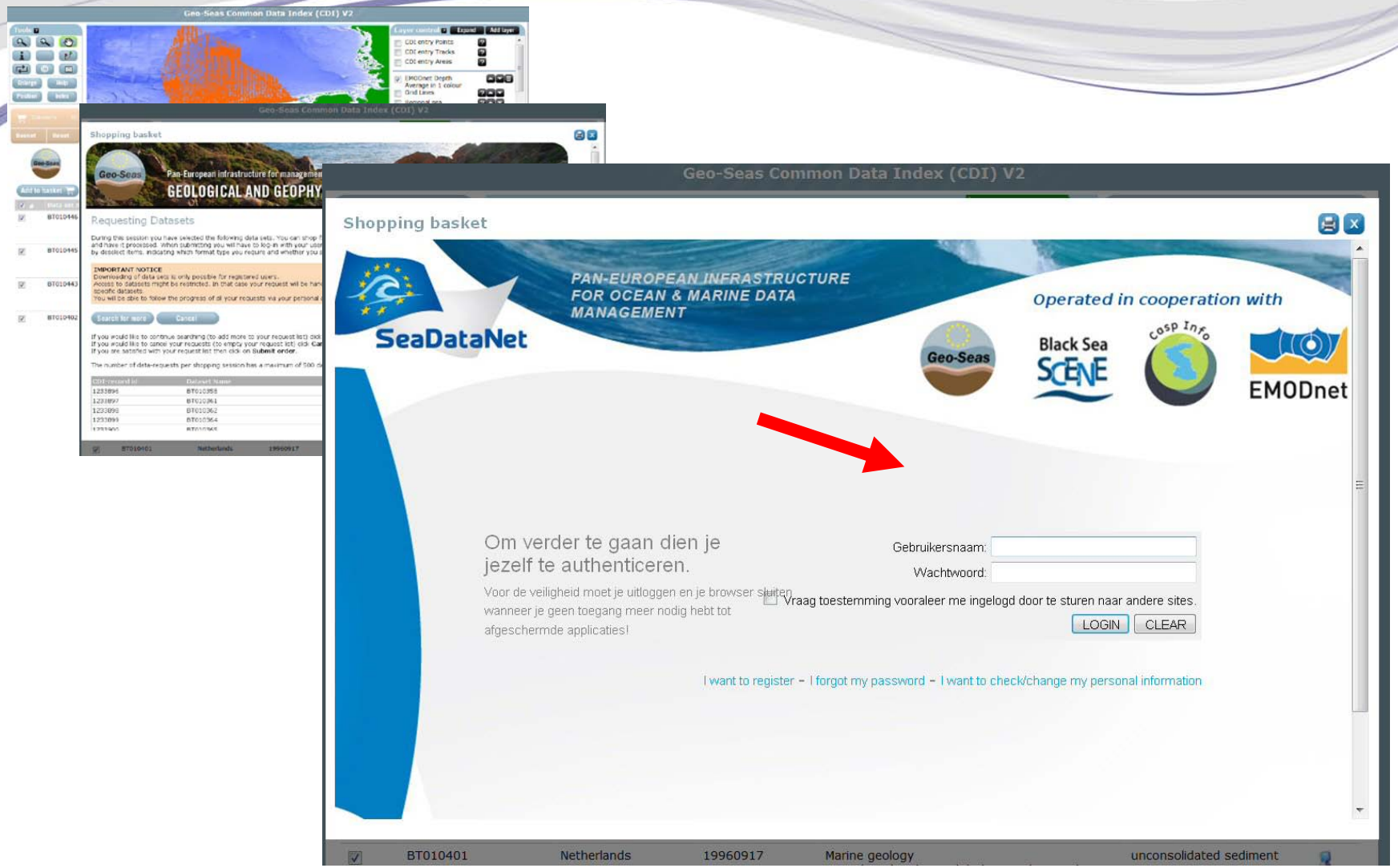
# CDI Search and Shopping Dialogue at the portal




Login with user id – password, supported by Geo-Seas, SeaDataNet, EMODNEt and others

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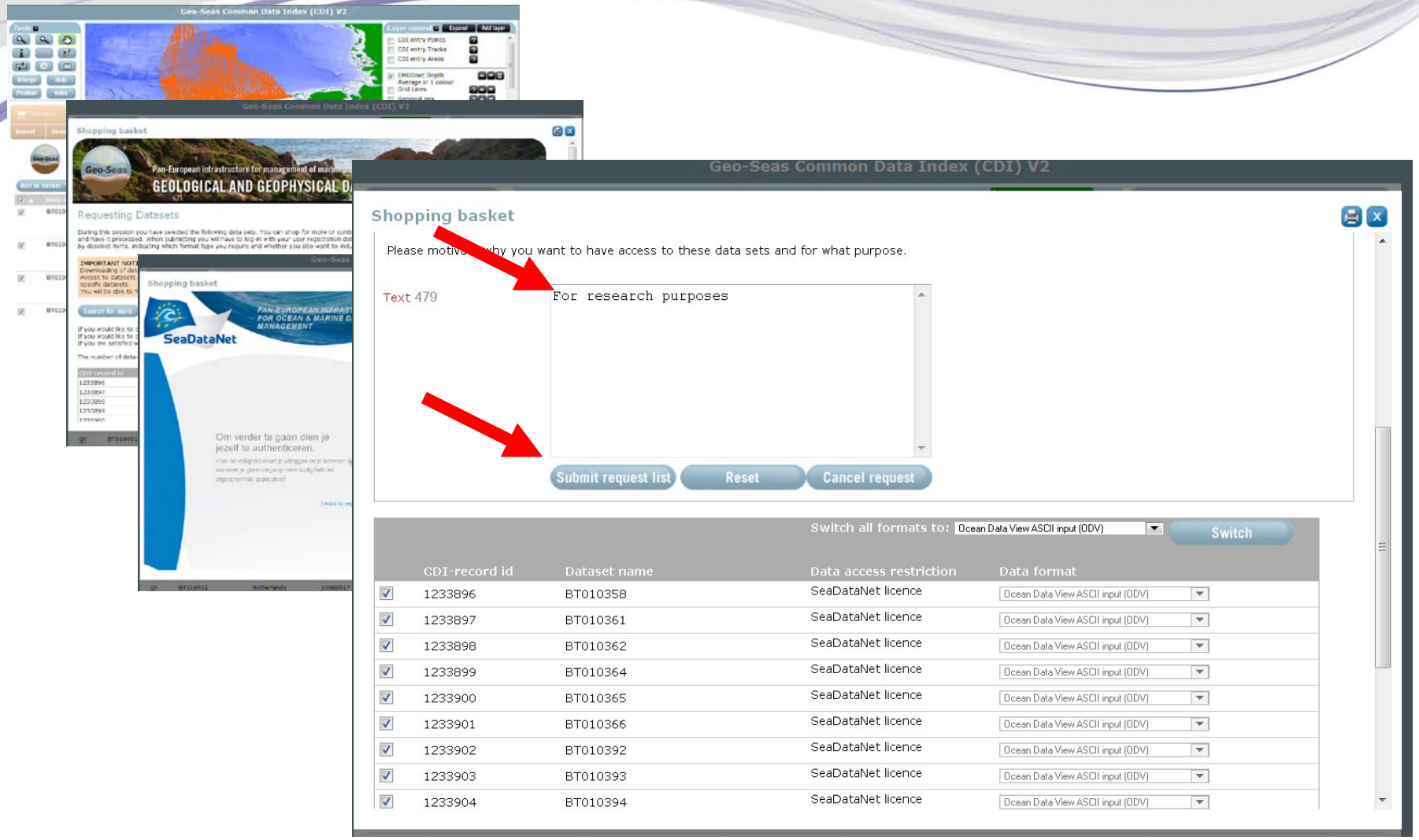
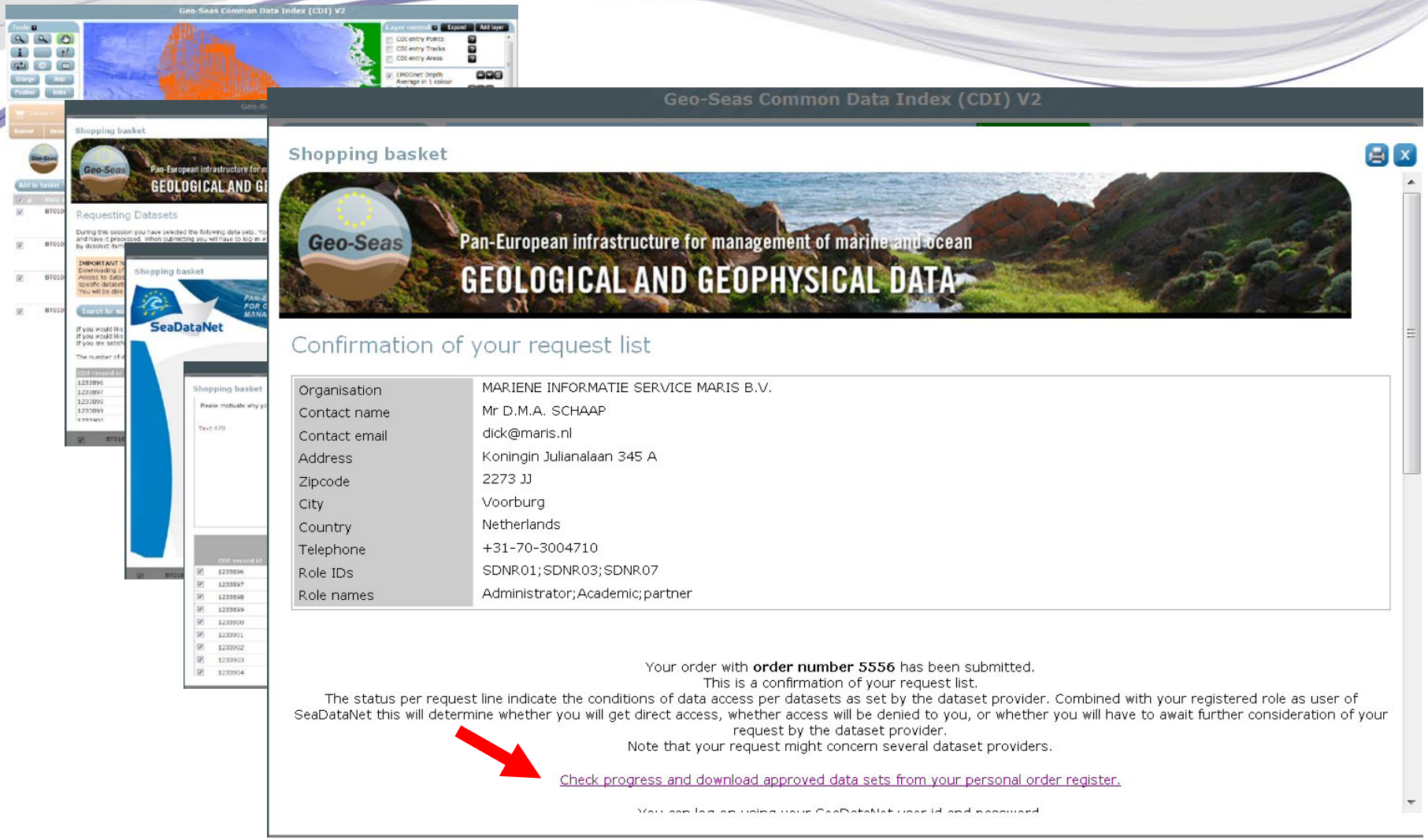
# CDI Search and Shopping Dialogue at the portal




Finalise and confirm shopping request

# CDI Search and Shopping Dialogue at the portal

Geo-Seas

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Confirmation of shopping request and link to RSM for follow-up of shopping process and downloading

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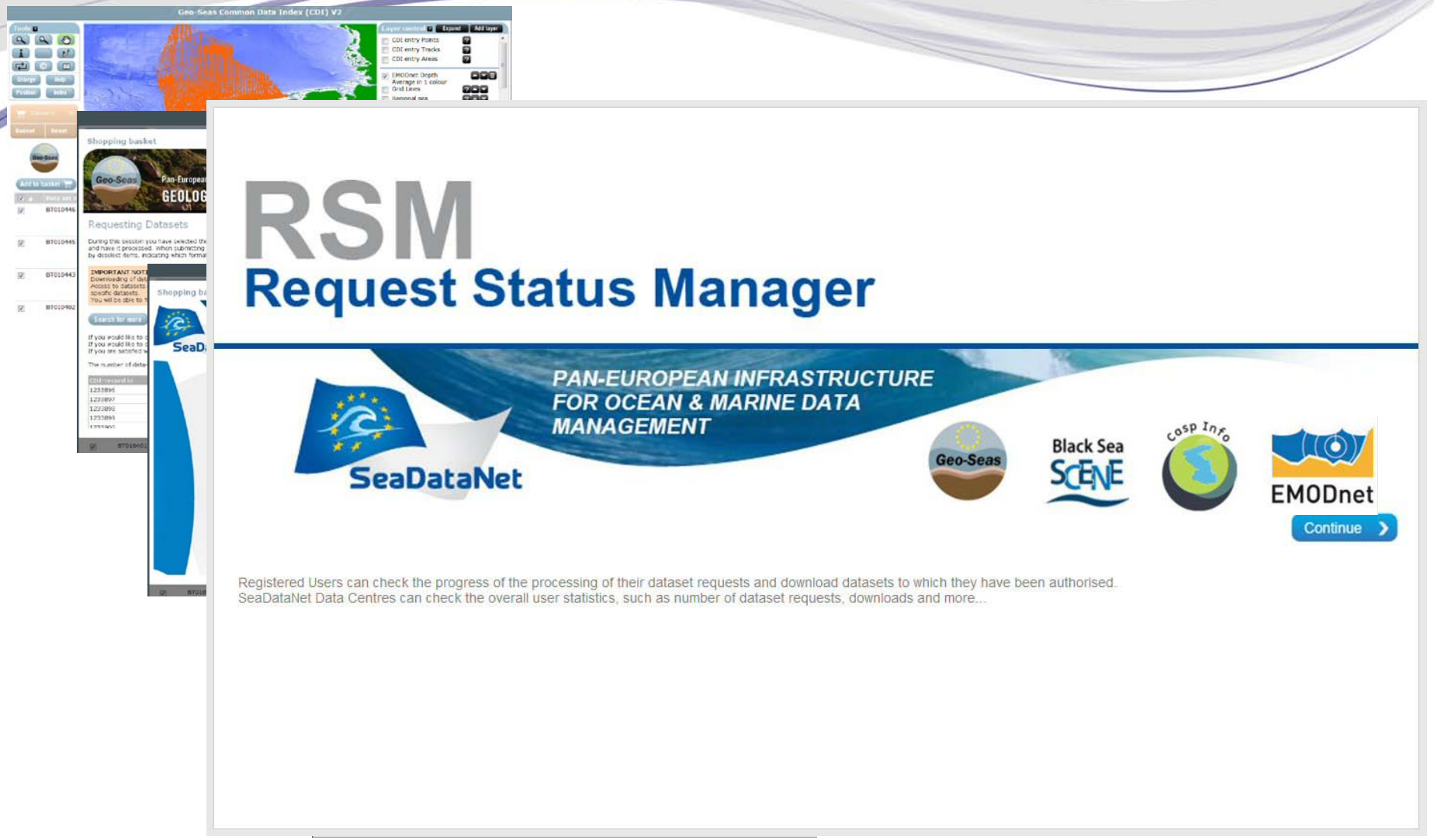
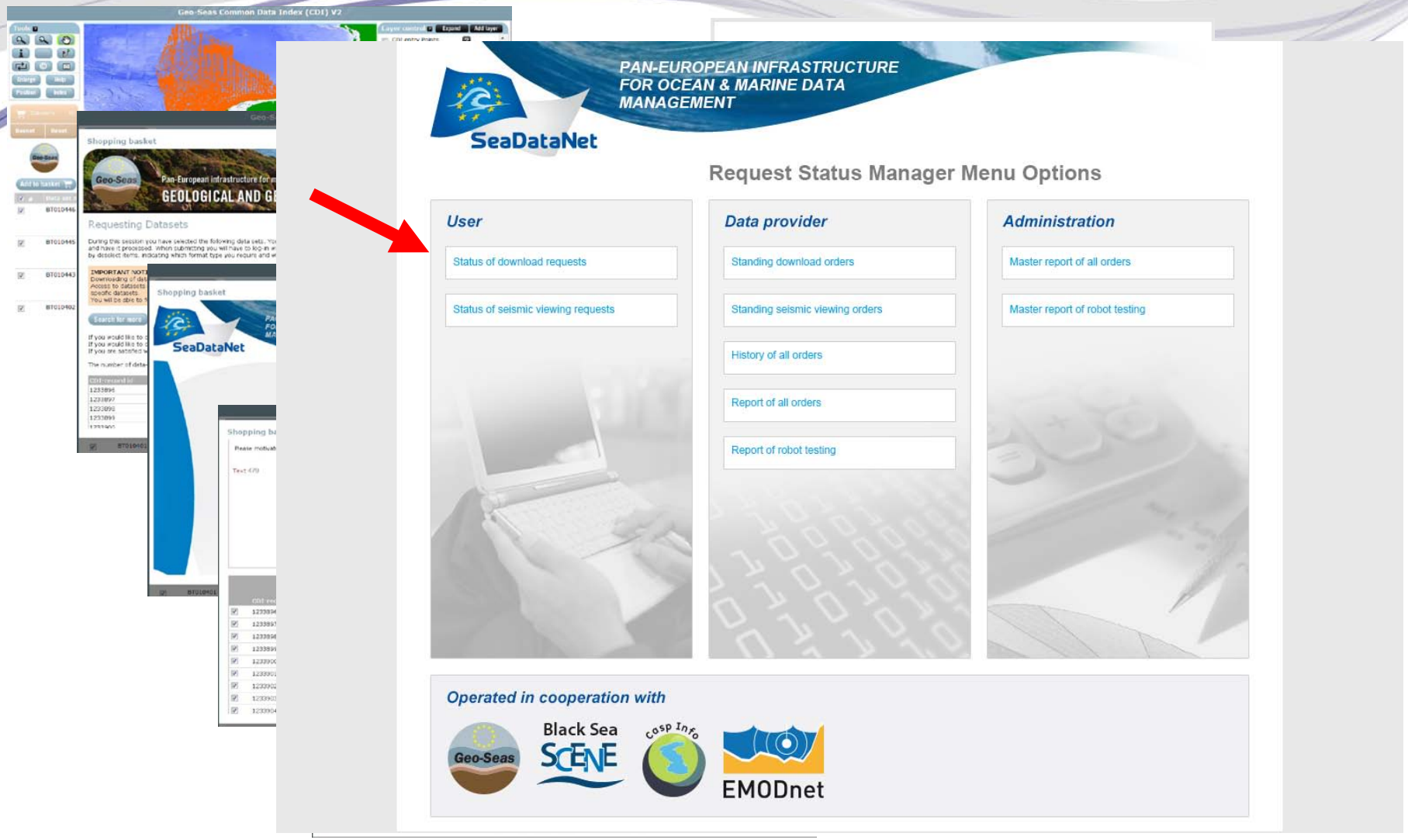
# CDI Search and Shopping Dialogue at the portal




Login to Request Status Manager (RSM) for follow-up of shopping process and downloading

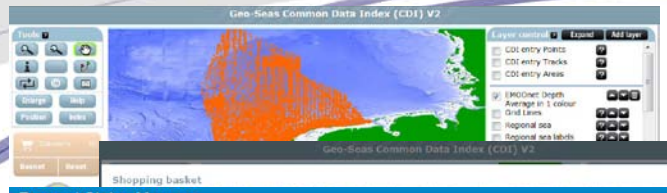
# CDI Search and Shopping Dialogue at the portal




Request Status Manager (RSM) dashboard with options for users, data centres and adminstration

# CDI Search and Shopping Dialogue at the portal

Geo-Seas




RSM
Request Status Manager

Request Status Manager

Customer | CDI partner | Logout | Help | Home

PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT

SeaDataNet

Geo-Seas | Black Sea SCENE | Cosp Info | EMODnet

Overview of your data set requests and processing per Data Centre

| FOUND 58 | SHOW (26-50) | PREVIOUS 25 | NEXT 8

| | | Status of dataset requests | | | | |
|---|---|---|---|---|---|---|
| Data centre | Country | Approval pending | Ready for downloading | Downloaded | Access denied | All |
| Karadeniz Technical University, Faculty of Marine Sciences | Turkey | | | 3 | | 3 |
| Aarhus University, Department of Bioscience, Marine Ecology Roskilde | Denmark | | | 389 | | 389 |
| Marine Hydrophysical Institute | Ukraine | | | 2261 | | 2261 |
| Marine Systems Institute at Tallinn University of Technology | Estonia | | | 224 | | 224 |
| Cyprus Oceanography Center | Cyprus | | | 60 | | 60 |
| International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit | Malta | | | 20 | | 20 |
| Institute of Oceanography and Fisheries | Croatia | | | 37 | | 37 |
| Latvian Institute of Aquatic Ecology | Latvia | | | 20 | | 20 |
| National Institute for Marine Research and Development "Grigore Antipa" | Romania | | | 3780 | 346 | 4126 |
| Institute of Marine Sciences, Middle East Technical University | Turkey | | | 4336 | 5 | 4341 |
| Iv.Javakhishvili Tbilisi State University, Centre of Relations with UNESCO Oceanological Research Centre and GeoDNA (UNESCO) | Georgia | | | 86 | | 86 |
| Bulgarian National Oceanographic Data Centre(BGODC), Institute of Oceanology | Bulgaria | | 1 | 234 | 1 | 236 |
| P.P.Shirshov Institute of Oceanology, RAS | Russian Federation | | | 471 | | 471 |
| All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC) | Russian Federation | | | 4605 | | 4605 |
| TNO Geological Survey of the Netherlands | Netherlands | | 60 | 795 | | 855 |

RSM with overview of user requests and their status

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# CDI Search and Shopping Dialogue at the portal

Geo-Seas

RSM
Request Status Manager

Request Status Manager

Customer | CDI partner | Logout | Help | Home

PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT

SeaDataNet | Geo-Seas | Black Sea SCENE | Casp Info | EMODnet

Overview of your data set requests and processing per Dat

Download selected datasets in zip file | 25 50 100 1000 RECORDS Go | FOUND 60 | SHOW (1-25) | PREVIOUS | NEXT 25

TNO Geological Survey of the Netherlands — Status: Ready for downloading

| Dataset CDI-ID | Dataset name | Request-ID | Request-key | Request date | Last update | Format |
|---|---|---|---|---|---|---|
| 1233915 | BT010446 | 864932 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233914 | BT010445 | 864931 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233913 | BT010443 | 864930 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233912 | BT010402 | 864929 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233911 | BT010401 | 864928 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233910 | BT010400 | 864927 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233909 | BT010399 | 864926 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233908 | BT010398 | 864925 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233907 | BT010397 | 864924 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233906 | BT010396 | 864923 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233905 | BT010395 | 864922 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233904 | BT010394 | 864921 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233903 | BT010393 | 864920 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233902 | BT010392 | 864919 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233901 | BT010366 | 864918 | 5556 | 2012-10-08 | 2012-10-08 | ODV |
| 1233900 | BT010365 | 864917 | 5556 | 2012-10-08 | 2012-10-08 | ODV |

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RSM with overview of user requests at TNO which are Ready for download

SEVENTH FRAMEWORK PROGRAMME

# CDI Search and Shopping Dialogue at the portal

PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT

SeaDataNet

Operated in cooperation with

Geo-Seas | Black Sea SCENE | Caspian Info | EMODnet

Personal overview of downloadable and viewable files at selected Data Centre

**User: ds1ee60**

## Downloads

| Zipfile name | Download | Remove from this list, once download complete |
|---|---|---|
| userds1ee60-data_centre1229-2012-09-28_result.zip | Download | Remove |

## Views

| Viewable files | View | Remove from this list, once done |
|---|---|---|
| userds1ee60-data_centre1229-2012-09-28_result | Go | Remove |
| userds1ee60-data_centre1229-2012-09-28_result | Go | Remove |

Data sets, approved for downloading are combined in zip files, that you can download. The zip file builds up during the day and each new approved download request is added. Each zip file will be removed after 30 days!

Seismic data sets, approved for viewing are listed individually. Click on the View button for individual viewing. Each Viewable file will be removed after 5 days!

These downloadable and/or viewable files are prepared by the local data centre, that is responsible for managing and distributing the selected data sets.
Please remove files from the list, once your downloading and/or viewing has been successful.

Close window

User personal page at TNO for downloading and viewing of data sets

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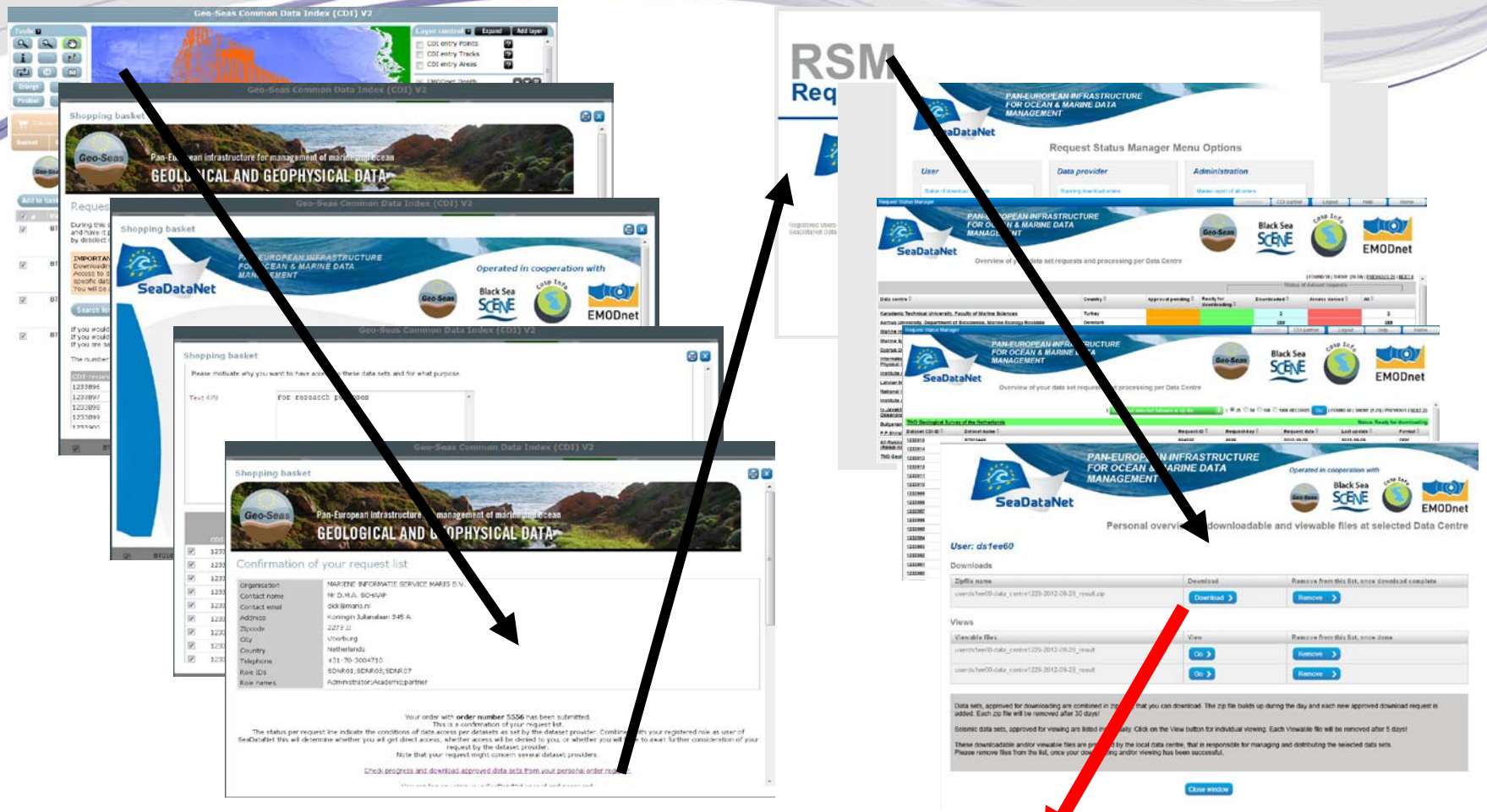
SEVENTH FRAMEWORK PROGRAMME

# CDI Search and Shopping Dialogue at the portal

Geo-Seas




Data sets in standard format
Incl metadata

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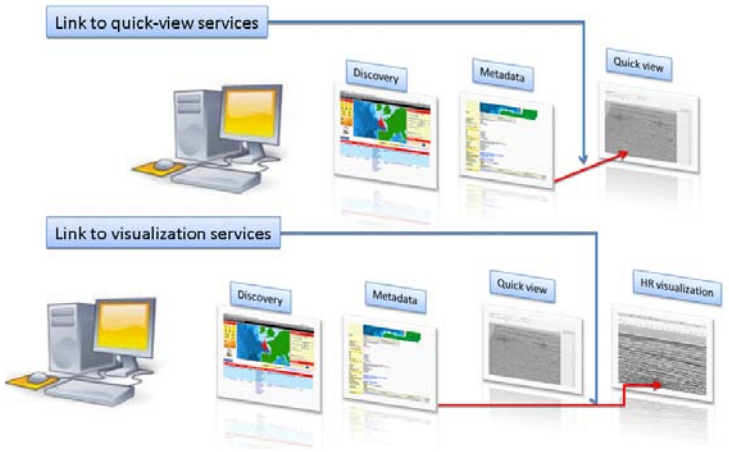
SEVENTH FRAMEWORK PROGRAMME

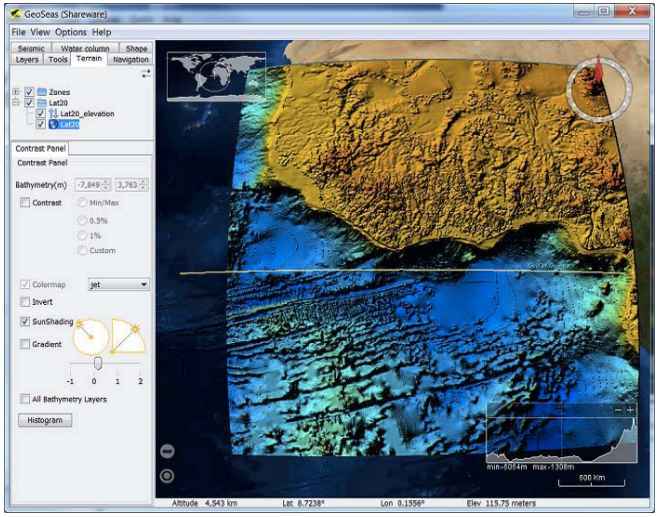
## CDI Search and Shopping Dialogue at the portal

- Dialogue looks long and complicated, but in practice is easy and has many benefits:
- Users can request access from multiple data centres in one go
- Immediately accessible data sets are available after circa 10 minutes for downloading
- Requests can also concern data sets which require additional negotiation
- Users can oversee all their requests in time and with status
- Data providers can also oversee all users and their requests to their data centre, to justify their services
- Data providers can give access after negotiation
- Overall all transactions via the Geo-Seas portal can be administered and analysed
- Extra services can be added such as viewing

# CDI extra portal services

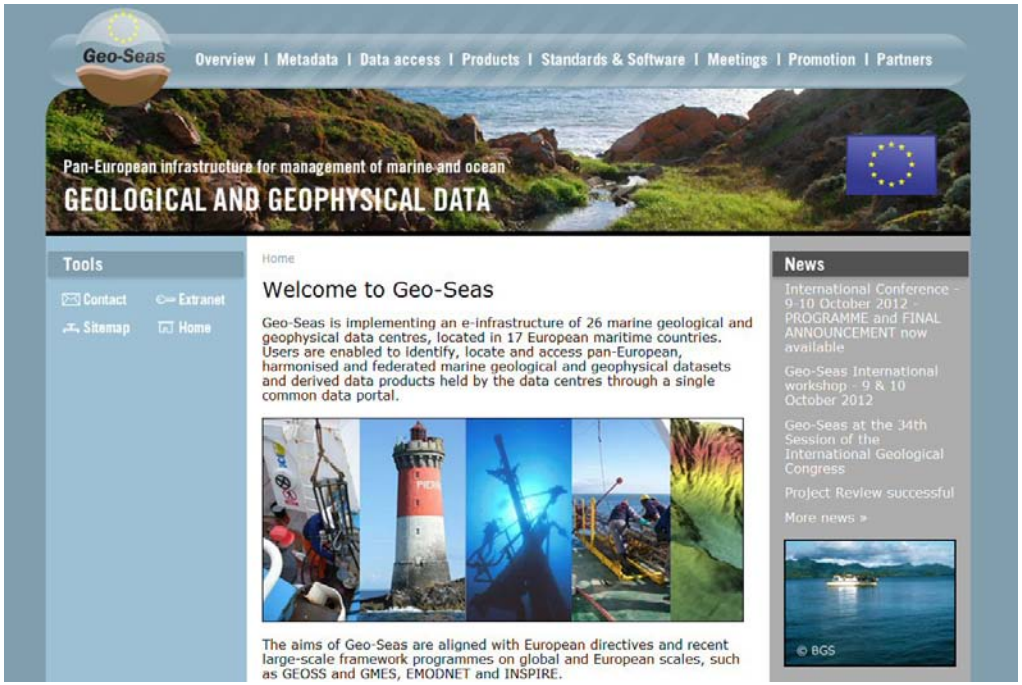
- Portal also provides access to dedicated tools and services that have been developed in Geo-Seas for analysing and viewing the retrieved Geo-Seas data sets:
  - Porcupine Borehole Viewer software
  - 3D-Viewer for bathymetric DTMs
  - Low resolution seismic viewing services
  - High resolution seismic viewing services
- These tools and services will be presented by colleagues



Geo-Seas

# THANK YOU




www.geo-seas.eu

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