



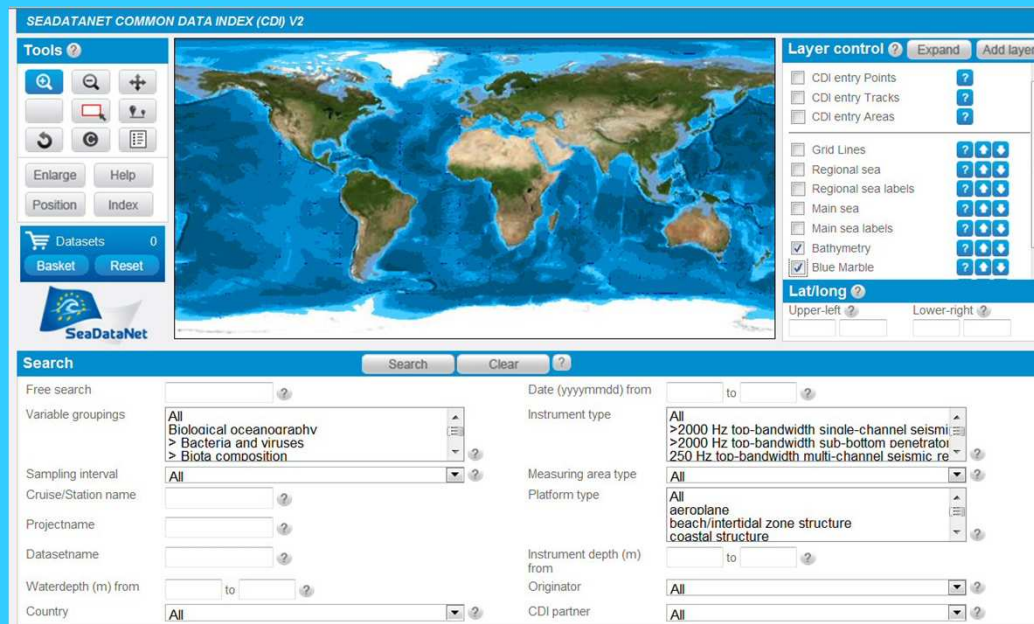
**Development of advanced access and viewing services  
following SeaDataNet D5.6 and D8.7  
and EMODNet Chemistry**

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**Ostend – Belgium, 20<sup>th</sup> May 2014,  
SeaDataNet Training Workshop**

# WMS – WFS services on CDI Data discovery and access service

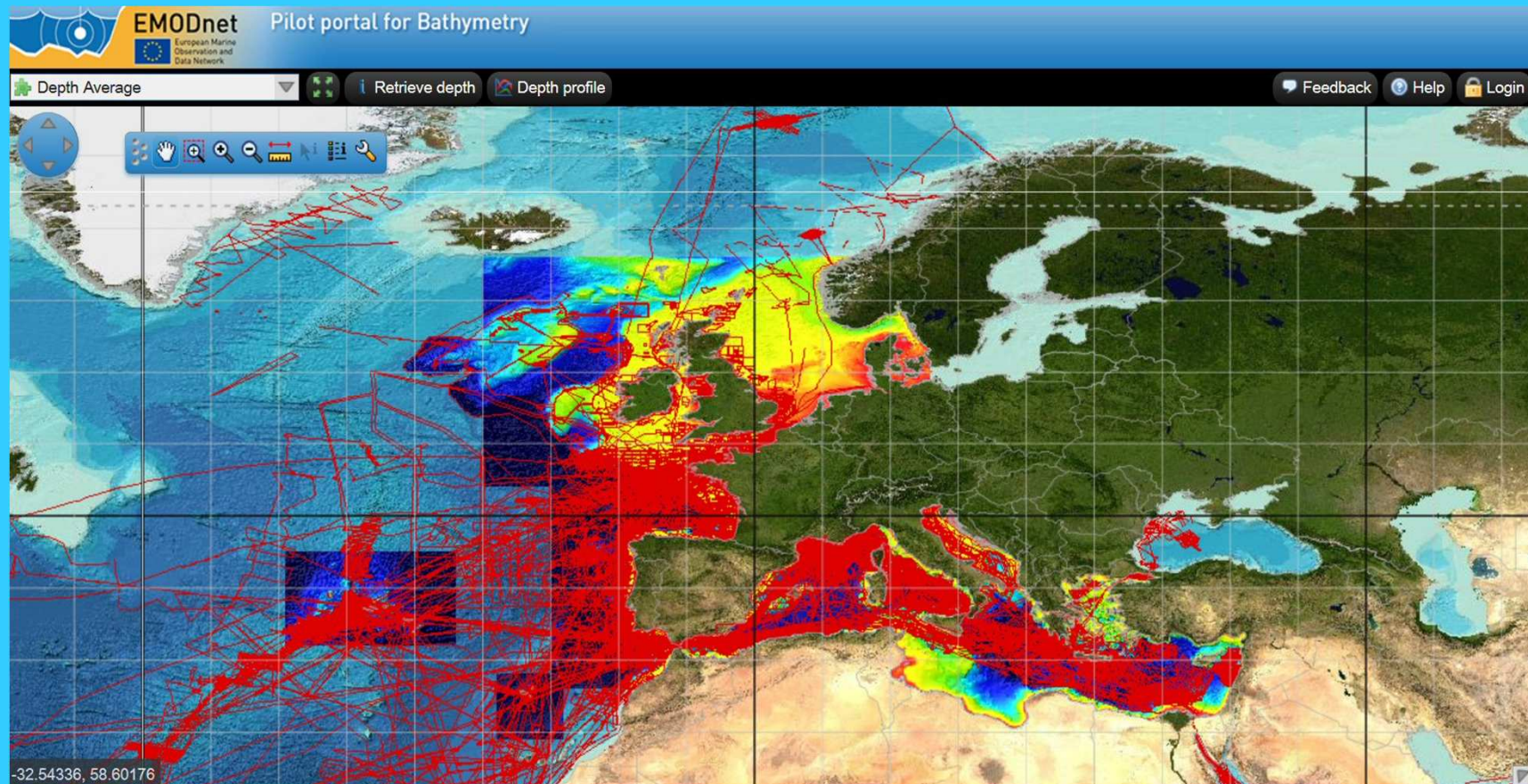
- CDI service gives harmonised discovery and access to distributed data as managed by connected data centres
- Development of WMS – WFS services



**CDI User Interface**

# SeaDataNet – WMS - WFS

## ■ Example of WMS



Layer of SDN CDI for surveys by WMS in Bathymetry Viewer

## Great progress with WMS - WFS

- CDI service has dynamic WMS – WFS for set selections:

[http://geoservice.maris2.nl/wms/seadatanet/cdi\\_v2/emodnet/chemistry](http://geoservice.maris2.nl/wms/seadatanet/cdi_v2/emodnet/chemistry)

[http://geoservice.maris2.nl/wms/seadatanet/cdi\\_v2/emodnet/hydrography](http://geoservice.maris2.nl/wms/seadatanet/cdi_v2/emodnet/hydrography)

[http://geoservice.maris2.nl/wms/seadatanet/cdi\\_v2/seadatanet](http://geoservice.maris2.nl/wms/seadatanet/cdi_v2/seadatanet)

- Getcapabilities

[http://geoservice.maris2.nl/wms/seadatanet/cdi\\_v2/emodnet/chemistry?service=WMS&request=GetCapabilities](http://geoservice.maris2.nl/wms/seadatanet/cdi_v2/emodnet/chemistry?service=WMS&request=GetCapabilities)

- Example WMS request:

[http://geoservice.maris2.nl/wms/seadatanet/cdi\\_v2/seadatanet?styles=&format=image/png&transparent=true&request=getmap&version=1.1.1&srs=EPSG:4326&layers=lines&width=580&height=290&bbox=-180,-90,180,90](http://geoservice.maris2.nl/wms/seadatanet/cdi_v2/seadatanet?styles=&format=image/png&transparent=true&request=getmap&version=1.1.1&srs=EPSG:4326&layers=lines&width=580&height=290&bbox=-180,-90,180,90)

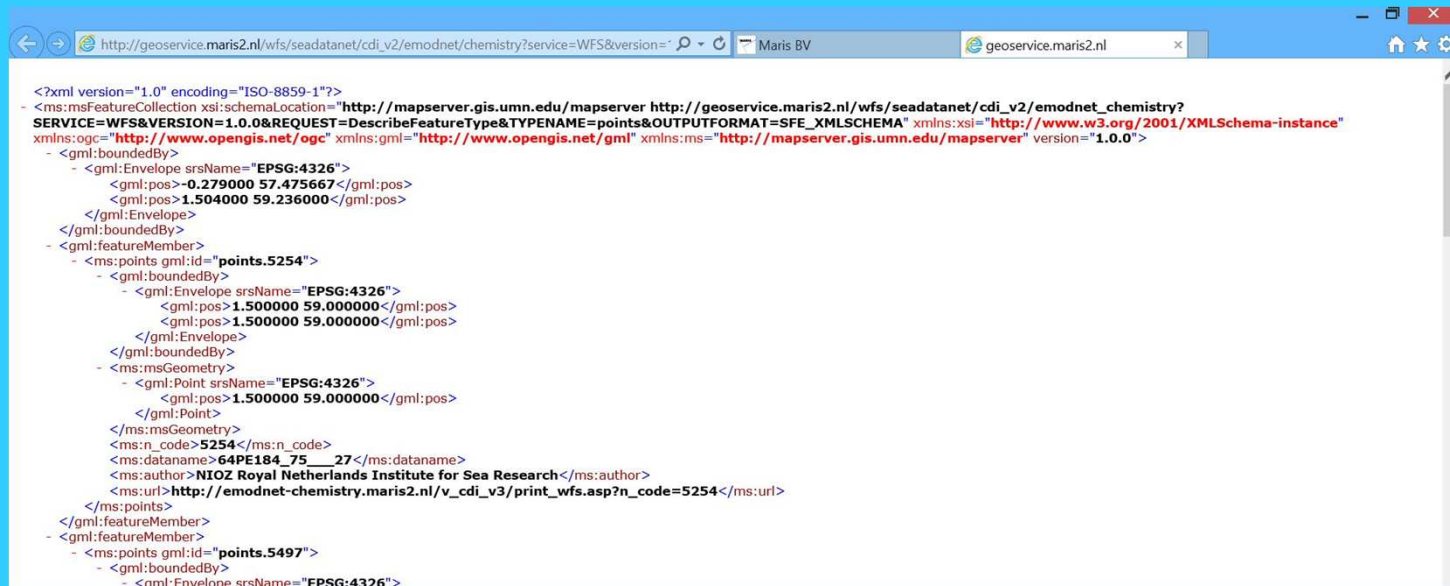


# SeaDataNet WMS - WFS

- Getcapabilities indicates what is available. In CDI case it is both WMS and WFS. Implementing WFS is depending on the client and needs programming
- Example of WFS request:

[http://geoservice.maris2.nl/wfs/seadatanet/cdi\\_v2/emodnet/chemistry?service=WFS&version=1.0.0&request=getfeature&outputformat=gml3&typename=points&maxfeatures=10&bbox=-0.2793103448275872,57.4448275862069,1.5206896551724127,59.244827586206895](http://geoservice.maris2.nl/wfs/seadatanet/cdi_v2/emodnet/chemistry?service=WFS&version=1.0.0&request=getfeature&outputformat=gml3&typename=points&maxfeatures=10&bbox=-0.2793103448275872,57.4448275862069,1.5206896551724127,59.244827586206895)

Gives:



```
<?xml version="1.0" encoding="ISO-8859-1"?>
<ms:msFeatureCollection xsi:schemaLocation="http://mapserver.gis.umn.edu/mapserver http://geoservice.maris2.nl/wfs/seadatanet/cdi_v2/emodnet_chemistry?
SERVICE=WFS&VERSION=1.0.0&REQUEST=DescribeFeatureType&TYPENAME=points&OUTPUTFORMAT=SFE_XMLSCHEMA" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:ogc="http://www.opengis.net/ogc" xmlns:gml="http://www.opengis.net/gml" xmlns:ms="http://mapserver.gis.umn.edu/mapserver" version="1.0.0">
  <gml:boundedBy>
    <gml:Envelope srsName="EPSG:4326">
      <gml:pos>-0.279000 57.475667</gml:pos>
      <gml:pos>1.504000 59.236000</gml:pos>
    </gml:Envelope>
  </gml:boundedBy>
  <gml:featureMember>
    <ms:points gml:id="points.5254">
      <gml:boundedBy>
        <gml:Envelope srsName="EPSG:4326">
          <gml:pos>1.500000 59.000000</gml:pos>
          <gml:pos>1.500000 59.000000</gml:pos>
        </gml:Envelope>
      </gml:boundedBy>
      <ms:msGeometry>
        <gml:Point srsName="EPSG:4326">
          <gml:pos>1.500000 59.000000</gml:pos>
        </gml:Point>
      </ms:msGeometry>
      <ms:n_code>5254</ms:n_code>
      <ms:dataname>64PE184_75_27</ms:dataname>
      <ms:author>NIOZ Royal Netherlands Institute for Sea Research</ms:author>
      <ms:url>http://emodnet-chemistry.maris2.nl/v_cdi_v3/print_wfs.asp?n_code=5254</ms:url>
    </ms:points>
  </gml:featureMember>
  <gml:featureMember>
    <ms:points gml:id="points.5497">
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          <gml:pos>1.500000 59.000000</gml:pos>
        </gml:Envelope>
      </gml:boundedBy>
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        </gml:Point>
      </ms:msGeometry>
      <ms:n_code>5497</ms:n_code>
      <ms:dataname>64PE184_75_27</ms:dataname>
      <ms:author>NIOZ Royal Netherlands Institute for Sea Research</ms:author>
      <ms:url>http://emodnet-chemistry.maris2.nl/v_cdi_v3/print_wfs.asp?n_code=5497</ms:url>
    </ms:points>
  </gml:featureMember>

```

# SeaDataNet WMS – WFS – example in SIMORC

The screenshot displays the SIMORC User Interface, which is a web-based platform for oceanographic data. The interface is divided into several sections:

- Top Section:** A world map showing the distribution of data points (red dots) across the globe. To the right of the map is a 'Layer control' panel with a list of layers: SeaDataNet, Metocean Data, DFO - ISDM Canada, Metocean data, Grid Lines, Regional sea, Regional sea labels, and Main sea. The 'SeaDataNet' layer is selected.
- Left Section:** A 'Tools' panel with buttons for 'ENLARGE', 'HELP', 'POSITION', and 'INDEX'. Below this is a 'Search' panel with various search criteria: 'Free search', 'Variable groupings' (All, Chemical oceanography, Carbonate system, Dissolved gases), 'Sampling Interval', 'Cruise/Station name', 'Projectname', 'Datasetname', 'Waterdepth (m) from', and 'Country owner'.
- Right Section:** A 'Layer control' panel with a list of layers: SeaDataNet, Metocean Data, DFO - ISDM Canada, Metocean data, Grid Lines, Regional sea, Regional sea labels, Main sea, Main sea labels, Bathymetry, Blue Marble, and World. The 'SeaDataNet' layer is selected. Below this is a 'Lat/long' panel with 'Upper-left' and 'Lower-right' coordinates.
- Bottom Section:** A 'Search' panel with various search criteria: 'Free search', 'Variable groupings' (All, Chemical oceanography, Carbonate system, Dissolved gases), 'Sampling Interval', 'Cruise/Station name', 'Projectname', 'Datasetname', 'Waterdepth (m) from', 'Country owner', 'Date (yyyymmdd) from', 'Instrument type', 'Measuring area type', 'Platform type', 'Instrument depth (m) from', and 'Data owner'.

An 'Info' window is open over the map, displaying details for four found datasets:

Found 4	
n_code;	953663
dataname;	8300012151110D
measuring_;	Point
url;	<a href="#">Details</a>
n_code;	953670
dataname;	8300012154820D
measuring_;	Point
url;	<a href="#">Details</a>
n_code;	953651
dataname;	8300012144370D
measuring_;	Point

CDI layer of physical oceanography data sets from SeaDataNet as WMS – WFS in the SIMORC User Interface ([www.simorc.com](http://www.simorc.com)) . URLs to SeaDataNet

## Outstanding actions: WMS - WFS

- Include WMS – WFS in the Store Query – Bookmark function in the SeaDataNet CDI User Interface
- Then every user can make and share its own WMS – WFS layer following its selection
- Will be fully ready soon

## **Developing central buffer services to support products generation and additional visualisation**

- Robot harvester is operational and has been applied for automatically harvesting ca 1.000.000 T&S data sets as part of the joint data climatology product development SeaDataNet – MyOcean
- Robot harvester can now be configured for specific data buffer profiles and in agreement (SLA's) with data providers AND specific data user communities (such as MyOcean, SeaDataNet regional dataproduct groups, EMODNet, ...)
- Very good progress is made with implementing a buffer CMS to set profiles, to oversee harvesting and maintenance of these buffer subsets
- the central buffer system with specific subsets will be maintained automatically by the buffer CMS in connection with RSM - robot user system, following new and updated CDI submissions



# SeaDataNet – buffer CMS to configure buffers



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FOR OCEAN & MARINE DATA  
MANAGEMENT

Operated in cooperation with



## CDI-buffer - Content Management System

Welcome to the CDI Buffer Content Management System. This CMS allows to configure profiles of user communities and their specific data requirements for which data sets will be retrieved and maintained automatically in specific buffers.

## Buffer - CMS



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MANAGEMENT

Operated in cooperation with



Free search  
Users

Found 3 Show 1

General Users Filter Summary

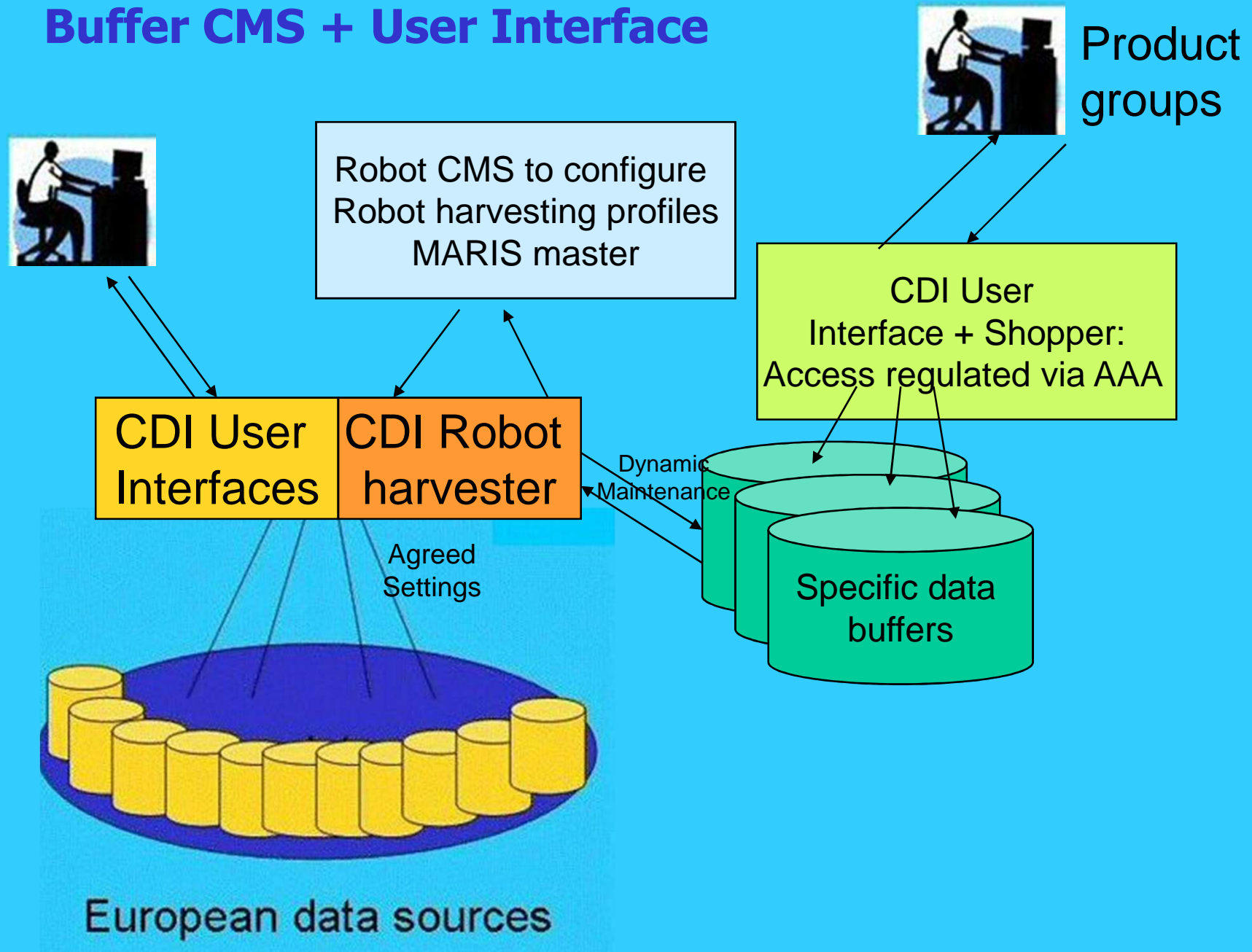
CDI-record in this filter 240977  
Management info cdi\_buffer

Status	Data_format_I24	Count
0 (Order Next run)	ODV	3641
10 (Waiting for connection)	ODV	1441
60 (User action completed)	ODV	232998
90 (Access denied)	ODV	873
Total		238953

Key: 3  
Created: 7/3/2014 11:50:45  
Last update: 23/4/2014 11:59:22

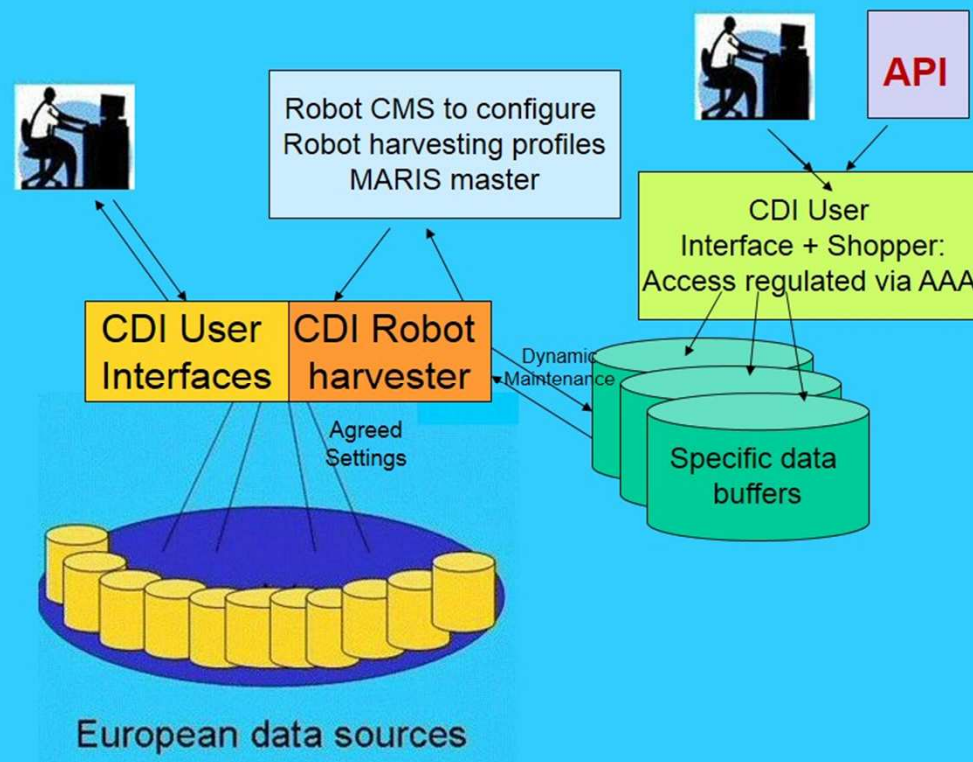
Here are system error messages displayed.

# Buffer CMS + User Interface



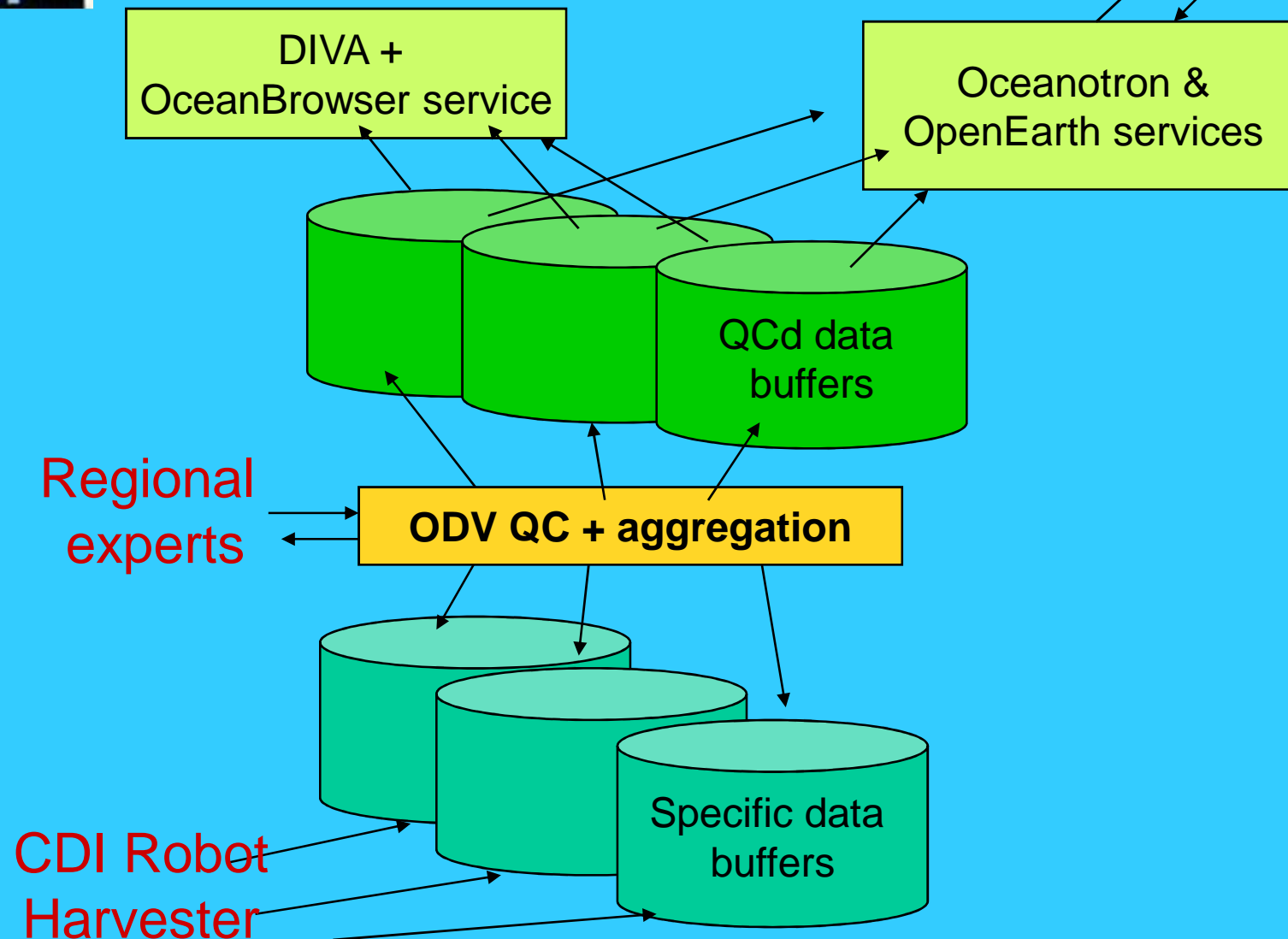
# Regulated transfer to regional groups via central user interface + RSM and via API + RSM

- The central buffers will be made accessible for shopping (= selecting by metadata and retrieving data sets and RSM tracking)
- This must be regulated so that only agreed and registered users / clients have access to buffer subsets as agreed and administered in the Buffer CMS



## Processing extracted buffer data sets to validated aggregated data sets

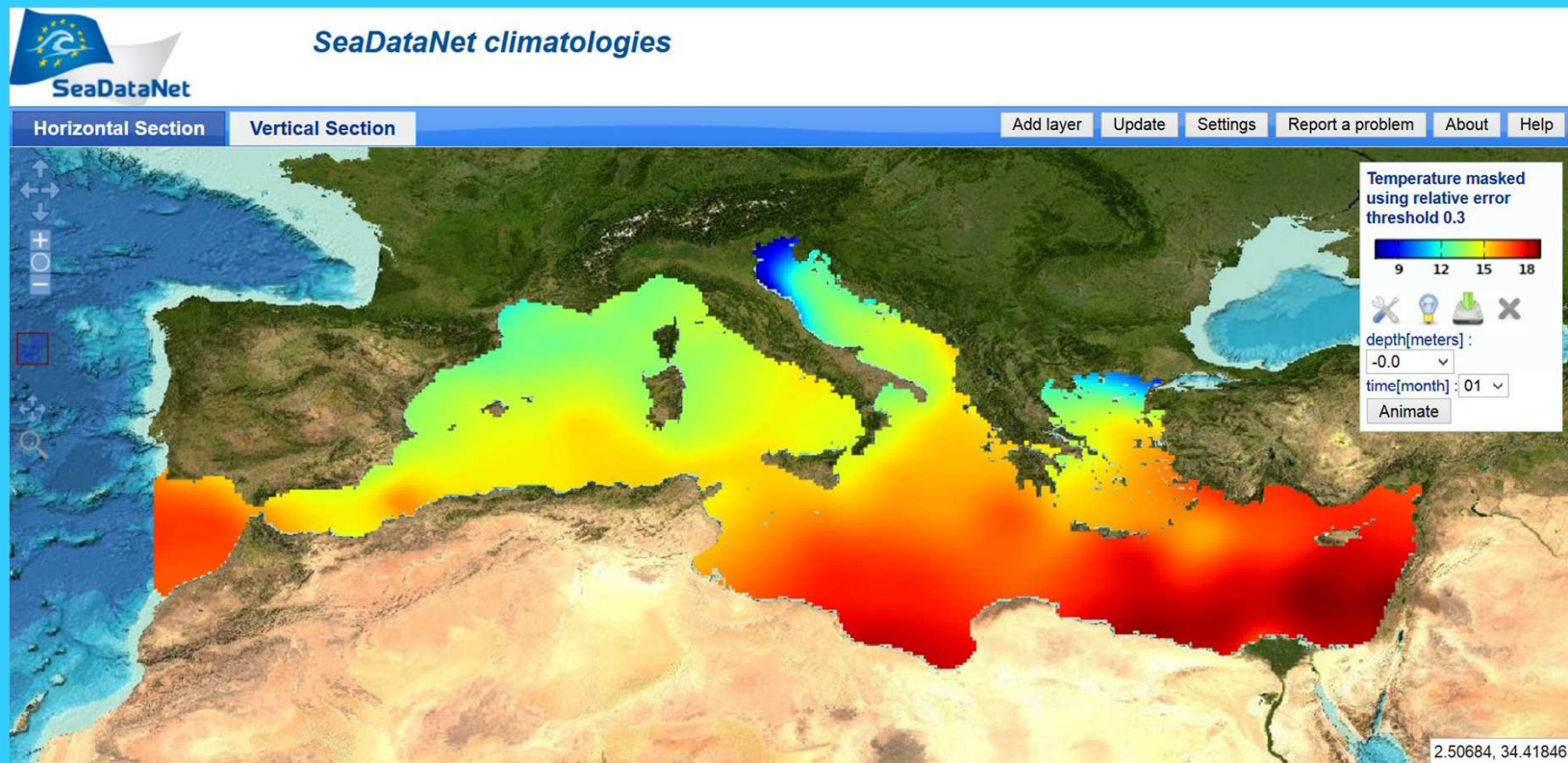
- the central buffer system will contain 'raw' data sets for specific parameters and as harvested from the distributed data centres  
=> further action needed for making the collection more homogeneous and validated => aggregated data sets
- this can be done by using **ODV** software and specific expertise per region and/or discipline
- Also use will be made of the new **P35 Vocabulary for aggregating P01 terms**. The P35 population is making progress:  
[http://seadatanet.maris2.nl/v\\_bodc\\_vocab\\_v2/welcome.asp](http://seadatanet.maris2.nl/v_bodc_vocab_v2/welcome.asp)





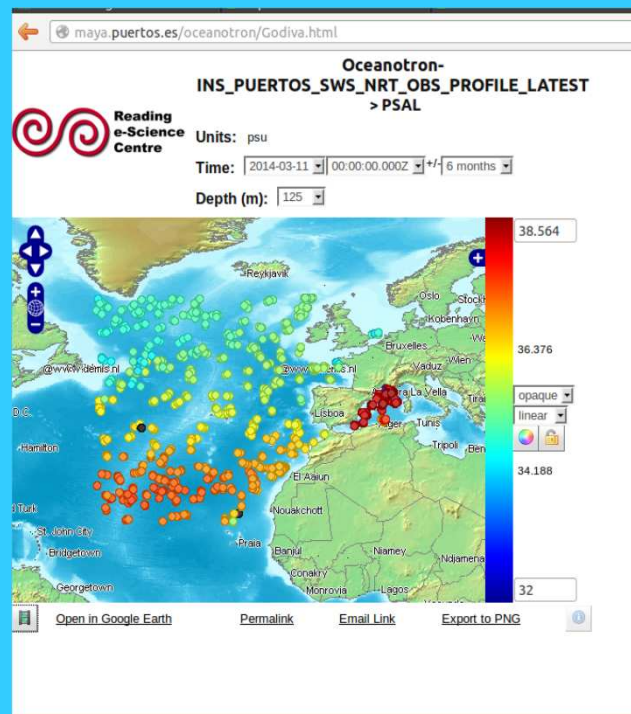
## Advanced services on top of validated buffer data

- These buffers of aggregate data sets can serve regional groups to prepare interpolated DIVA maps as data products
- These DIVA maps are NetCDF files and can be subsetting and visualised via the existing OceanBrowser service as maintained by UIG and available via the SeaDataNet portal



## Advanced services on top of validated buffers

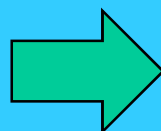
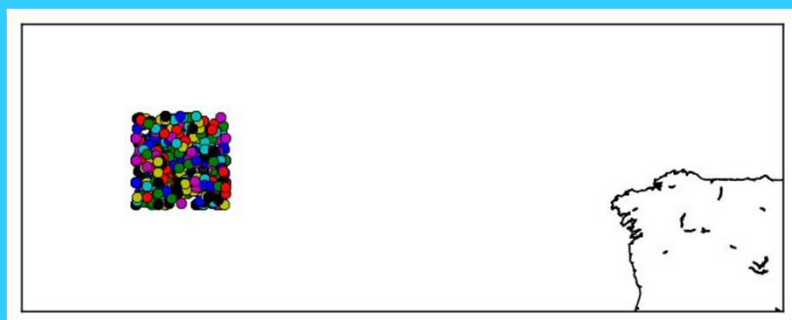
- Facilitating access to these aggregate buffer data sets by machine analytical processes to generate and deliver analytical results and graphics.
- Interfacing with **Oceanotron** – a marine data server as being developed by IFREMER in the framework of MyOcean. It can read local repositories such as MyOcean repository of in-situ data and make these available by web services (OpenDAP or OGC WMS). Latest version 1.3.1 is deployed for MyOcean web portal to support OGC WMS protocol



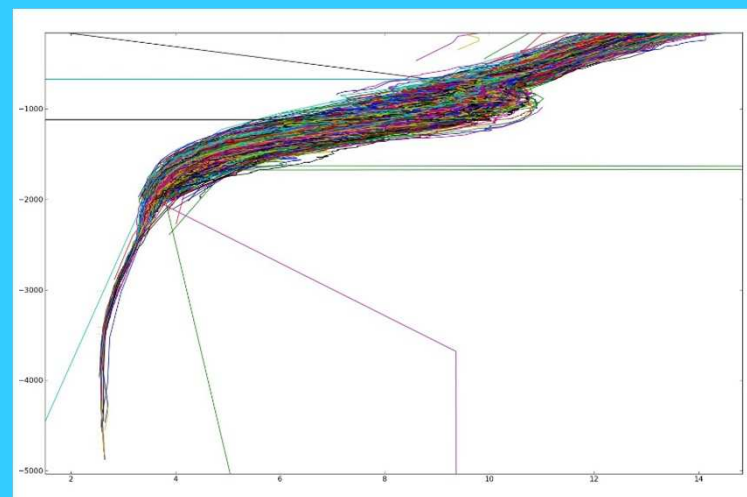
<http://maya.puertos.es/oceanotron/Godiva.html>

## Advanced services on top of validated buffers

- Ongoing work for SeaDataNet is making Oceanotron fit for reading ODV validated collections of data as ODV binary files using the ODV API V1.0 as developed by AWI. This is then making the ODV files available by OGC WMS.
- Prototype now works on vertical profiles
- OPENDAP and WMS services demo:
  - <http://oceanotrndemo0.ifremer.fr/oceanotron/>
- OPENDAP Web client:
  - <http://www.ifremer.fr/oceanotronPortal/>

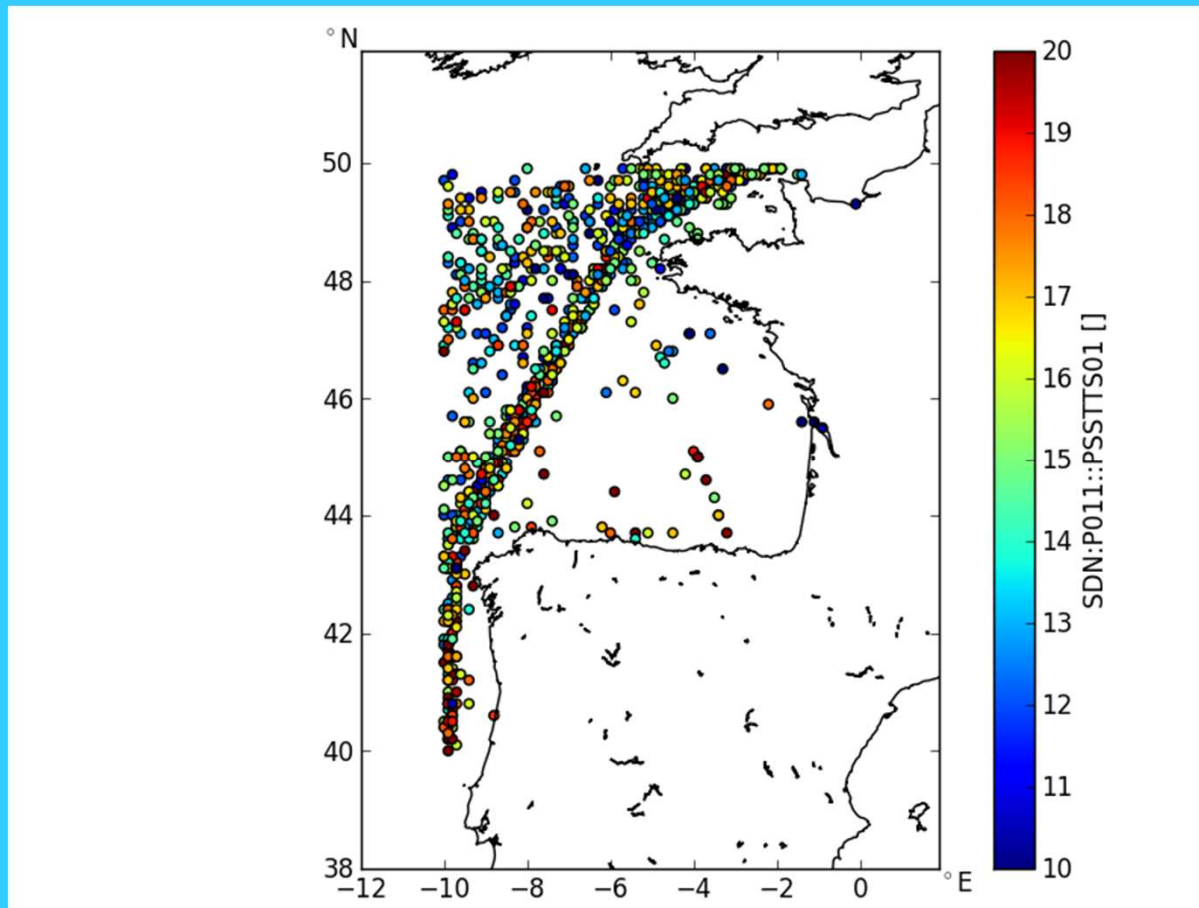


Further work ongoing for SeaDataNet on developing OGC SOS on top of Oceanotron server



## EMODNet Chemistry – WPS for visualising

- Implementing Work Process Services (WPS) on top of subset of buffer data for monitoring stations to visualise data and time series, developments by Deltares via OpenEarth



## Future perspective:

- Distributed CDI infrastructure for maintaining infrastructure of connected data centres and for serving general users
- Robot buffer system for maintaining central buffer data collections for specific groups and purposes in agreement with data providers
- Regulated access for subsets for expert groups to validate and aggregate the 'raw' data sets into validated data collections with registration in central RSM section
- Validated data collections to be used internally for generating specific data products such as DIVA interpolated maps with viewing via OceanBrowser (WMS)
- Selected validated data collections to be considered as formal data products and to be made accessible for public viewing via Oceanotron and possible services on top of that
- WPS processes can take the OGC compliant output and generate on the fly added value graphics such as station time series, concentration plots for a given time and space window, etc



## Extra viewing services

- **ODV** software for analysis and visualisation of ODV files
- **Sensor Web Enablement** in relation with CDI and EDIOS for visualising time series



END

