

# EMODnet Ingestion and safe-keeping of marine data

11th Quarterly Report

Reporting Period: 01/01/2019 - 31/03/2019

Date: 10/04/2019



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### 1. Highlights in this reporting period

- The number of **published data submissions** 'as is' in the **View Submissions service** (aka Summary Records service) has increased largely from **263 to 449 submissions** (metadata forms and related data sets) and of these **172** submissions (was **57**) have been elaborated **to Phase II** and their data sets are now also available at national and European portals;
- Partners have made further progress with promoting EMODnet Ingestion and encouraging data submitters. Next to the 449 published submissions 151 additional submissions are under processing and also further activities are underway for phase II elaboration on already published submissions;
- The tenth quarterly progress report was submitted at 15<sup>th</sup> January 2019 to EASME, EU DG MARE and EMODnet Secretariate.

### 2. Work package progress

The EU Tender specifications requested the following Tasks:

Task 1	Construct a web-portal
Task 2	Implement pathways for delivering data to final repositories
Task 3	Facilitate machine-to-machine transfers
Task 4	Operate a help-service for users to provide their data in the most appropriate
	format
Task 5	Allow providers of data to track the progress of their data from submission
	through to their storage in a repository
Task 6	Include a 'data wanted' function that allows users seeking certain types of
	information to specify their needs
Task 7	Participate in discussions with EMODnet partners in order to improve the
	efficiency of the whole collection, assembly and dissemination process
Task 8	Maintain a summary record of data delivered
Task 9	Engage in outreach activities towards significant holders of marine data whose
	data are not yet already available
Task 10	Service continuity
Task 11	Project Management



The EMODnet Ingestion consortium proposed a Work Plan that groups specific tasks, comparable in nature, under the same Work Packages (WP), also to make the execution with the large consortium easier and more effective.

Work Package	Work Package title	Covering tasks	WP leader
No.			
WP0	Project Management	Task 7 – EMODnet tuning	MARIS
		Task 10 – service continuity	
		Task 11 – Project Management	
WP1	Construct and operate central	Task 1 - web-portal	HCMR
	Data Ingestion portal with	Task 5 – tracking service	
	services	Task 6 – data wanted service	
		Task 8 – summary service	
WP2	Implement and operate	Task 2 – pathways	IFREMER
	pathways	Task 4 – help service	
WP3	Facilitate machine-to-machine	Task 3 – machine-to-machine	ETT
	transfers		
WP4 Marketing and outreach		Task 9 - outreach RBINS	

Progress on the Work packages and related tasks are described in the following pages.

#### WP0 - Project Management:

As part of task 11 the coordinator prepared the 10th quarterly progress report which was accepted by the EU (EASME and DG MARE). In the 11th quarterly reporting period the coordinator of EMODnet Ingestion has made arrangements for the final plenary project meeting:

Date	Location	Topic	Short Description
3 – 4 April	Rome - Italy	EMODnet Ingestion	All consortium members will report on their activities
2019		Final plenary project	which will provide necessary input for the final
		meeting	project report.

The EMODnet Ingestion contract will run till 19th May 2019 and contractually a draft final report was planned 2 months before the end. However there was no option for planning the final plenary project



meeting earlier, while this meeting is necessary for organising the input from all consortium members to the final report. Therefore the coordinator will request EASME for a delay of the draft final report till early May 2019. This will also apply for the transfer protocol as the delay will allow to wait for the response of EASME to the discussion document on transfer for EMODnet Bathymetry as this will set the conditions for all EMODnet lots.

## WP1 - Construct and operate central Data Ingestion portal with services:

As part of task 1 (web-portal) the EMODnet Ingestion portal has been maintained in the present quarter. Moreover as part of task 8 (summary service) editing activities have taken place for the View Submissions service concerning replacing so-called orphan data for organisations from free text into controlled EDMO terms. This improves the integrity of the metadata of the published data submissions for searches, reports and detailed pages.

Furthermore very good progress has been made with developing the 'matching service' for data-wanted post-its.

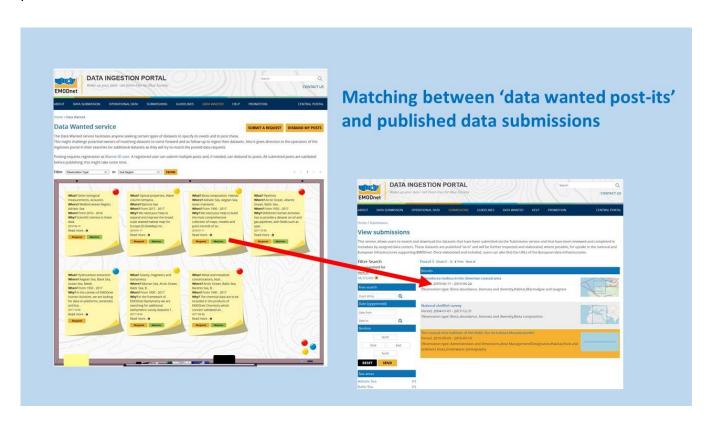


Figure: Matching service



In practice a matching is made between published data submissions and data wanted post-its by means of a dynamic coupling table. If applicable, data wanted posts now feature a matching button which links directly to a subset of submissions in the View Submissions service. Originators of post-its will be alerted by email on a weekly basis and only if new matches have become available in that week, so that it will not be experienced as 'spamming'. The matching function is already active at the portal (see figure above) and the alert mailing service will be activated before the middle of April 2019. This way the last outstanding contract requirement will be fulfilled.

# WP2 - Implement pathways to forward submitted data to the appropriate repository:

Concerning task 2 (pathways) the number of qualified data centres from the EMODnet Ingestion network and EMODnet Thematic networks that are included in the Data Centre Matrix of engaged data centres has increased from 49 to 50. Many of them have been actively involved in the processing of data submissions that were relevant for their expertise and country. This can be seen in detail in the analyses in the report on WP4.

During the reporting quarter further progress has been made with achieving data submissions and with completing these by assigned data centres to be published 'as is' in the View Submissions service. The number of published submissions has increased from **263** to **449**. The features of these submissions will be further described under WP4. Moreover an increasing number have been elaborated and populated into European data infrastructures driving EMODnet portals, namely from **57** to **172** submissions. In several cases this has resulted in very valuable and extensive populations whereby 1 submission translated into tens to thousands of entries in the SeaDataNet or EurOBIS systems which underpin several EMODnet Thematic portals.

Further steps were made with the (semi-)automatic coupling of SEANOE and EMODnet Ingestion. Originally, SEANOE is a French national science ingestion portal (www.seanoe.org) operated by IFREMER. SEANOE has been adopted as extra service at the SeaDataNet portal, inviting European scientists to publish their scientific papers and associated data collections in return for a DOI which will facilitate their wider citation. The plan is to forward (selected) scientific submissions to SEANOE to EMODnet Ingestion for further processing of the associated data collections for inclusion and publishing in national and European portals. Recently the mapping between the data models of SEANOE and the EMODnet Submission service has been fully finalized and agreed between IFREMER and HCMR and as a consequence a few amendments will be made to the submission service, adding some extra metadata fields. This will be done on short term in order to facilitate that more than 50 SEANOE submissions will be exchanged for further population and elaboration before the end of the current contract.



As part of the North Sea wind energy use case Deltares has finalised the AQUO – SeaDataNet and AQUA – EurOBIS conversion procedures and has applied this for:

- converting a large volume of chemical and physical data sets from the national Rijkswaterstaat
  marine database into SeaDataNet formats. More than 8.500 CDI records have been generated
  and populated into the CDI service. In particular it concerns water quality data, namely for
  eutrophication which is highly relevant for EMODnet Chemistry. More CDIs are underway for
  contaminants data and physical parameters;
- elaborating a number of ingestion submissions for biological data acquired in the context of the monitoring of wind farm impacts in the Netherlands North Sea sector into populations for EurOBIS ic EMODnet Biology. This is illustrated in the image below.

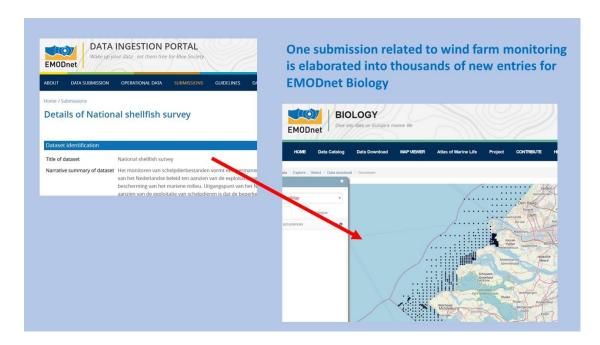


Figure: Example of submission elaborated into multiple entries in EMODnet portal

For task 4 (help service) more requests were received and answered, bringing the total number of feedback messages to 25 since the start. Following the requests another item has been added to the FAQ.

#### WP3 - Facilitate machine-to-machine transfers:

The task 3 (machine-to-machine) **NRT machine-to-machine ingestion** aims at identifying and arranging additional NRT data stations for EMODnet Physics. These can originate from additional operators that are willing to get connected and share their NRT data freely in EMODnet Physics. The portal explains how the NRT exchange is organised between operators of observing stations and EuroGOOS —



Copernicus and it gives a link to the EMODnet Physics portal to show how NRT stations can be displayed and used. In the reporting period additional providers were connected as NRT data streams to EMODnet Physics:

NRT stations	Operator
3 Ferrybox lines	NIVA, Norway
8 moorings	IZOR, Croatia
2 hydrophones	AZTI - Spain
2 MO buoys, Portofino – Capo Mele	ARPAL, Italy
2 ATM stations	UPC, Spain
2 MO buoys	UNITUSCIA, Italy
170 River Stations	various
HFR data	PLOCAN, Spain

In addition activities are underway for: 15 Lighthouses Ireland, 2 more gliders, Russian stations, RU NODC, 8 Icelandic stations, HFR data, Norway, and 4 MO buoys, Malta

A major event is planned by means of the International FerryBox Workshop (Genova – Italy 24-26/4/2019). At the event EMODnet will be presented and in particular EMODnet Physics and EMODnet Ingestion. Another aim is to engage the audience of operators for harmonisation of data format and data flow and for facilitating to join open data distribution.

#### WP4 - Marketing and outreach activities:

Marketing and outreach activities are undertaken as part of task 9 (outreach) by all consortium members and aim at promoting the EMODnet Ingestion portal and services as well as identifying, encouraging and supporting potential data providers to submit relevant marine data sets by means of the Ingestion portal. It is done in synergy with the central promotion as undertaken by the EMODnet Secretariat and making also use of the EMODnet Thematic networks which are deeply involved in the pathways of processing and uptake of submitted data sets. The aim is to engage different communities by understanding their needs and establishing win – win situations.

In the present quarter promotion was made at a number of events, such as:

9 February 2019 – Trondheim – Norway – MIM (MAREANO – INFOMAR – MARE MAP) Meeting:
 UKRI- BGS promoted EMODnet and the use of EMODnet Ingestion at this meeting of MIM



researchers to discuss the diverse approaches to deal with the similar challenges shared by all three mapping programmes. The agenda for this group was to focus on three topics; seabed geomorphology, seabed sampling approaches, and automated seafloor mapping;

- 26 February 2019 Helsinki Finland FINMARI Researcher Day 2019: FMI promoted EMODnet Ingestion and its network of qualified data centres at FINMARI which is a cross-institutional consortium in Finland assembling research institutes, universities and a state-owned company, all with a strong interest in marine research;
- 27 February 2019 Brussels Belgium Community of Practice Workshop Algae production in Europe: COGEA participated and promoted EMODnet as a platform for presenting maps relevant for the algae production community. COGEA also promoted EMODnet Ingestion as already a few submissions about algae production have been achieved;
- 5 7 March 2019 Talinn Estonia INTERREG CW Pharma meeting: LHEI promoted using EMODnet Ingestion and its network of qualified data centres for distribution of project results and sustainability of data from the project;
- 13 March 2019 Athens Greece: HCMR promoted EMODnet Chemistry marine litter data management and exploring options for data sharing through the EMODnet Data Ingestion in a meeting with the Cooperation Network for the Marine Environment of the A.C. Laskaridis Charitable Foundation;
- 18 21 March 2019 Paphos Cyprus Seventh International Conference on Remote Sensing and Geoinformation of Environment. ORION promoted EMODnet and options of EMODnet Ingestion to the network of leading experts in the field of Remote Sensing and Geo-information.

Promotion of EMODnet Ingestion is planned at several events such as:

- 16 17 May 2019 Lisbon Portugal Maritime Day by COGEA;
- 7 12 April 2019 Vienna Austria EGU 2019 Conference with presentations by several partners such as MARIS, ETT, and BODC;
- 24 26 April 2019 Genova Italy Ferrybox workshop with EMODnet presentations planned by ETT and SMHI;
- 23 June 2019 Croatia National Committee for the Development and Implementation of the Marine and Coastal Management Strategy with EMODnet presentation planned by IOF;
- 18 19 July 2019 Rijeka Croatia SOUNDSCAPE project meeting with EMODnet presentation planned by IOF

Furthermore, several partners had contacts with potential data submitters to make them aware of	f the
Ingestion service and to give them guidance and support for the actual submission.	

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Portal statistics:



All EMODnet Thematic portals and the Central EMODnet portal have included references and links to the EMODnet Ingestion portal.

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan-19	2,097	2,752	52,163	66,683	1.29 GB
Feb-19	2,059	3,945	50,399	64,380	1.29 GB
Mar-19	1,853	2,557	68,136	89,209	1.70 GB

#### Statistics of submissions.

End of March 2019 there are **600** submissions in the Submission service, of which **449** already have been published in the Summary service. The following figures give characteristics of those published submissions.

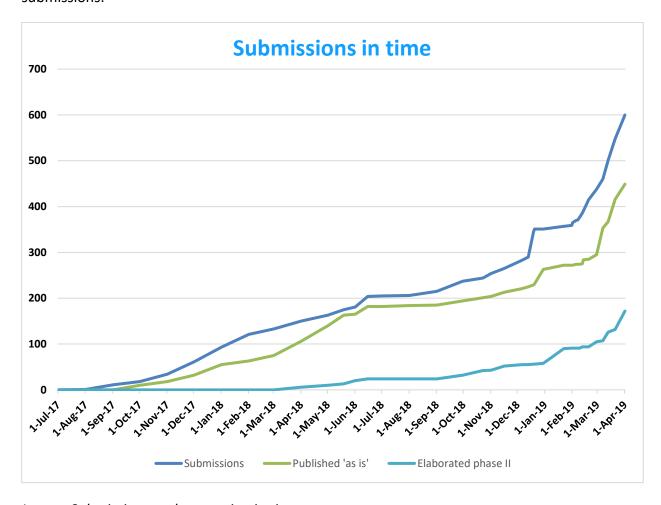


Image: Submissions and processing in time

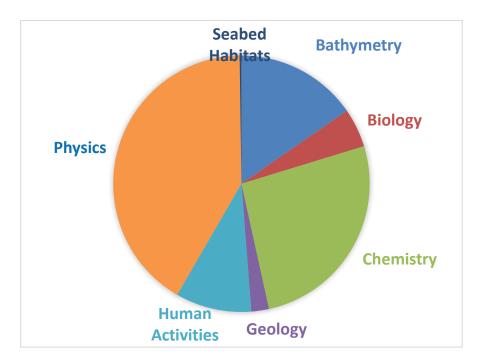


Image: Published submissions by theme

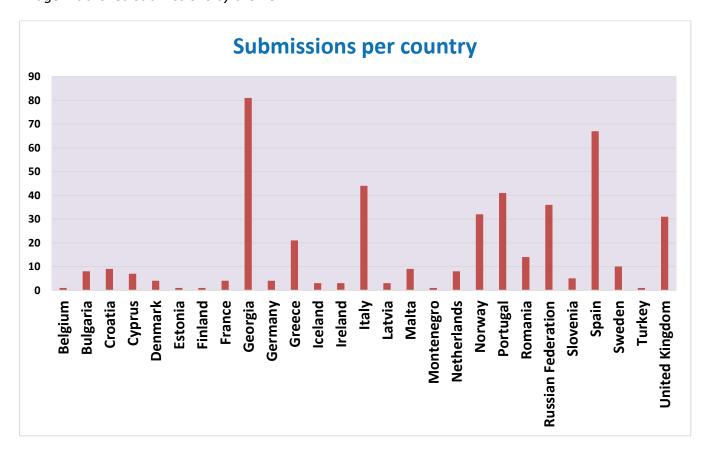


Image: Published submissions by country of submission



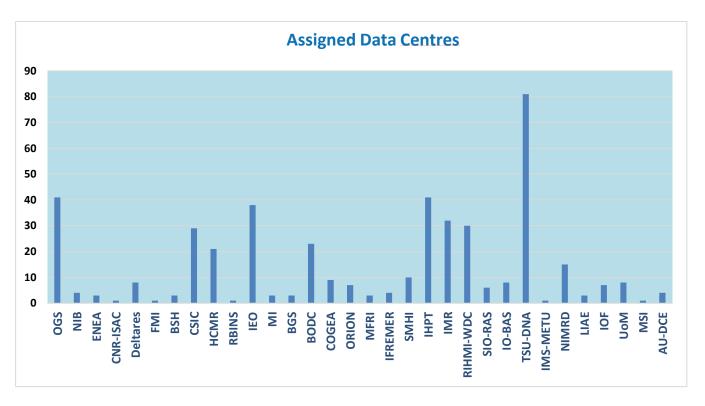


Image: Published submissions by assigned data centres

EDMO	ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
4882	AQUA4C	1	Company	Belgium
1032	Black Sea Basin Directorate	1	Government	Bulgaria
1165	Black Sea NGO Network	1	NGO	Bulgaria
4727	NGO MARINE SOUND	2	NGO	Bulgaria
4730	GeoMarine Ltd.	1	Company	Bulgaria
5031	Petro Celtic Varna Office	1	Company	Bulgaria
700	Institute of Oceanography and Fisheries	9	Research Institute	Croatia
	Department of Fisheries and Marine Research,			
249	Division of Marine Biology and Ecology	1	Government	Cyprus
4537	ORION	6	NGO	Cyprus
4748	University of Kyrenia	1	University	Cyprus
	Aarhus University, Department of Bioscience,			
729	Marine Ecology Roskilde	4	University	Denmark
3979	Estonian Environmental Research Centre	1	Research Institute	Estonia
1104	Finnish Environment Institute	1	Research Institute	Finland
1725	Finnish Meteorological Institute	1	Research Institute	Finland



EDMO	ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
	LABORATORY OF SCIENCES OF MARINE			
1046	ENVIRONMENT (LEMAR)	1	Research Institute	France
1054	IFREMER	1	Research Institute	France
	CNRS Paris Institute of Earth Physics, Marine			
3187	Geoscience Laboratory	1	Research Institute	France
	Ocean Physics and Satellite oceanography			
	laboratory (LOPS) - UMR 6523 CNRS-Ifremer-IRD-			
4536	UBO	2	Research Institute	France
1265	Scientific - Research Firm "GAMMA"	18	Company	Georgia
4877	Laboratory research centre LTD	54	Company	Georgia
4999	Napirdatsva Ltd	9	Company	Georgia
100	Baltic Sea Research Institute Warnemuende (IOW)	1	Research Institute	Germany
	Baltic Sea Research Institute Warnemuende (IOW),			,
116	Marine Geology	1	Research Institute	Germany
2947	GEOMAR Helmholtz Centre for Ocean Research Kiel	1	Research Institute	Germany
3324	University of Leipzig	1	University	Germany
3453	University Bayreuth	2	University	Germany
	Hellenic Centre for Marine Research, Institute of		,	,
164	Oceanography (HCMR/IO)	18	Research Institute	Greece
	Hellenic Centre for Marine Research, Hellenic			
	National Oceanographic Data Centre			
269	(HCMR/HNODC)	3	Research Institute	Greece
4766	Marine and Freshwater Research Institute	3	Research Institute	Iceland
396	Marine Institute	3	Research Institute	Ireland
134	CNR, Institute of Marine Sciences S.S. of Lerici (SP)	3	Research Institute	Italy
136	ENEA Centro Ricerche Ambiente Marino - La Spezia	9	Research Institute	Italy
642	Joint Research Centre (JRC)	5	Research Institute	Italy
	ARPA Emilia-Romagna - Struttura Oceanografica			
1130	Daphne	2	Government	Italy
1631	University of Tuscia-Viterbo	3	University	Italy
	ISPRA-Institute for Environmental Protection and			
3009	Research	17	Government	Italy
	National Research Council of Italy - Institute for			
	Marine and Coastal Environment (IAMC) (Sezione			
4809	Capo Granitola)	1	Research Institute	Italy
4881	University of Rome Tor Vergata	1	University	Italy



EDMO	ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
4938	Portofino Marine Protected Area	2	Government	Italy
5046	ARPA Liguria	1	Government	Italy
	3			,
698	Latvian Institute of Aquatic Ecology	1	Research Institute	Latvia
4762	Foundation for Environmental Education — Latvia	1	Government	Latvia
5017	Institute of Electronics and Computer Science	1	Research Institute	latvia
	Malta Environment and Planning Authority -			
179	Environment Protection Directorate	1	Government	Malta
	Transport Malta - Maritime Division (ex. Malta			
706	Maritime Authority)	1	Government	Malta
	International Ocean Institute - Malta Operational			
	Centre (University Of Malta) / Physical			
708	Oceanography Unit	8	University	Malta
4750	Water Services Corporation	3	Company	Malta
4751	Environment and Resources Authority	4	Government	Malta
2432	Institute of Marine Biology (IMBK)	1	Research Institute	Montenegro
	IMARES, Wageningen UR, Institute for Marine			
1340	Resources and Ecosystem Studies, IJmuiden	2	Research Institute	Netherlands
1357	NoordzeeWind BV	5	Company	Netherlands
1526	Rijkswaterstaat Water, Traffic and Environment	7	Government	Netherlands
1528	Deltares	6	Research Institute	Netherlands
5045	Bureau Waardenburg BV	1	Company	Netherlands
	Institute of Marine Research - Norwegian Marine			
612	Data Centre (NMD)	1	Research Institute	Norway
1212	Norwegian Meteorological Institute	28	Research Institute	Norway
1417	Norwegian Institute of Water Research (NIVA)	3	Research Institute	Norway
3348	Portuguese Environment Agency	4	Government	Portugal
4609	Directorate-General for Territorial Development	4	Government	Portugal
	Marine and Environmental Sciences Centre - Faculty			
4880	of Sciences of the University of Lisbon	2	University	Portugal
	Director General of Health - Information and			
5047	Analysis Services Directorate	33	Government	Portugal
	National Institute for Marine Research and			
697	Development "Grigore Antipa"	14	Research Institute	Romania
4700	Black Sea–Danube Coastal Association for Research	_	Decree where we	<b>D</b>
4729	and Development	1	Research Institute	Romania
	All-Russia Research Institute of Hydrometeorological			Russian
681	Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	29	Research Institute	Russian Federation
001	Atlantic Scientific Research Institute for Marine	23	nesearch mstitute	
682	Fishery and Oceanography	12	Research Institute	Russian Federation
002	Arctic and Antarctic Research Institute,	12	ויביבמונוו וווצנונענפ	Russian
684	Roshydromet (Saint-Petersburg)	1	Research Institute	Federation
004	nosity at office (Saint 1 etc.)		nescaren mstitute	Leactadon



EDMO	ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
				Russian
685	P.P.Shirshov Institute of Oceanology, RAS	7	Research Institute	Federation
	P.P.Shirshov Institute of Oceanology, Southern			Russian
686	branch	4	Research Institute	Federation
				Russian
949	World Data Centre-B For Oceanography	7	Research Institute	Federation
1229	National Institute of Biology - Marine Biology Station	1	Research Institute	Slovenia
1755	Environmental Agency of the Republic of Slovenia	1	Government	Slovenia
4878	Institute for Water of the Republic of Slovenia	2	Research Institute	Slovenia
	Ministry of Agriculture, Forestry and Food of			
4879	Republic of Slovenia	1	Government	Slovenia
280	CSIC-ICM/ Institute of Marine Sciences	12	Research Institute	Spain
310	IGME, Geological Survey of Spain	5	Research Institute	Spain
	ULPGC/ Las Palmas University. Department of			
342	Physics	1	University	Spain
353	IEO/ Spanish Oceanographic Institute	16	Research Institute	Spain
	PdE/ Harbours Authority. Physical Environment			
354	Department	1	Government	Spain
	Andalusian Institute of Earth Sciences (IACT). CSIC			
1396	and University of Granada	5	Research Institute	Spain
1402	IEO/ Santander Experimental Aquaculture Facilities	1	Research Institute	Spain
1404	IEO/ Vigo Oeanographic Centre	10	Research Institute	Spain
1405	IEO/ Malaga Oceanographic Centre	1	Research Institute	Spain
1408	IEO/ Murcia Experimental Aquaculture Facilities	19	Research Institute	Spain
	ESGEMAR/ Esgemar S.A. Estudios geologicos			
1746	marinos	7	Company	Spain
2163	UVIGO/ University of Vigo	5	University	Spain
2550	Institute of Marine Sciences, Barcelona	7	Research Institute	Spain
	ULPGC-IOCAG/ Institute of Oceanography and			
4883	Global Change	1	Research Institute	Spain
	IISTA/ Andalousian Interuniversitary Institute for the			
4937	Reseach on the Earth System	1	University	Spain
5043	Eco-Dive	1	Company	Spain
545	Swedish Meteorological and Hydrological Institute	7	Research Institute	Sweden
2209	Stockholm University, Department of Meteorology	1	Research Institute	Sweden
4840	The Keep Sweden Tidy Foundation	2	NGO	Sweden
	Institute of Marine Sciences, Middle East Technical			
696	University	1	University	Turkey
	Centre for Environment, Fisheries and Aquaculture			United
28	Science, Lowestoft Laboratory	3	Research Institute	Kingdom



EDMO	ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
				Uinited
2657	GEMS Survey Ltd	1	Company	Kingdom
				United
42	British Geological Survey, Edinburgh	3	Research Institute	Kingdom
				United
1604	The Crown Estate	7	Government	Kingdom
				United
2135	Marine Scotland Science	21	Research Institute	Kingdom
				United
3006	SSE Renewables	1	Company	Kingdom
				United
4171	Partrac - Head office	1	Company	Kingdom

Table: Overview of data originators and holding centres with number of related submissions



Figure: Division by sector of organisations for data originators and holding centres



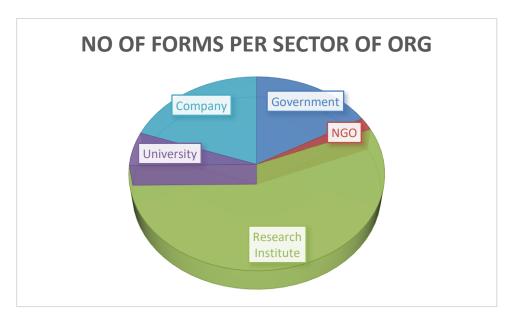


Figure: Division of number of submissions by sector of organisations

The above reported Ingestions all concern submissions of data sets made to the Submission service and then completed for publishing at the View Submission service. There are also direct ingestions which bypass the Submission service. This is the case for ingestions by oceanography operators to the European operational oceanography data exchange. Also there is a mission in EMODnet Ingestion to educate data providers and to arrange that regular submissions will go directly to the appropriate data centres and no longer through the Submission service.

Many data are also already elaborated to phase II which implies conversion of data sets and associated metadata to common formats and uptake in national and European data management infrastructures which dynamically results in availability in EMODnet Thematic portals.

In many cases one submission results in multiple records in the receiving systems. Below are two examples from UKRI-BODC to illustrate this. One concerns submissions from the Marine Data Exchange portal as set up by Crowne Estate for the offshore energy sector. The other concerns cruises as submitted by Marine Scotland Science. In both cases there is quite a multiplier and the data sets will provide added value for several users.



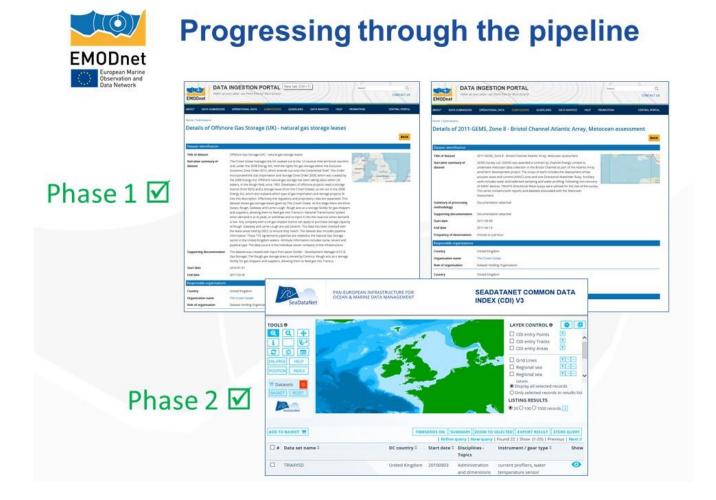


Figure: Illustration of pathway from submission to European portal





# **Cruises from Marine Scotland Science**



Figure: Illustration of pathway from submission to European portal



### 3. Unexpected difficulties encountered

Nothing to report.