



EMODnet Ingestion and safe-keeping of marine data

Interim Progress Report

Reporting Period: 20/05/2019 – 30/09/2019

Date: 16/11/2019

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1. Highlights in this reporting period

- The Final Report and Transfer protocol for the first EMODnet Ingestion contract (**EASME/EMFF/2015/1.3.1.3/SI2.727770**), which ran till 19th May 2019, were finalised and fully accepted on 13th September 2019, after review and additional questions by EU on first draft, which were dealt with in the second final version. This way all obligations for the first EMODnet Ingestion contract were completed and final payment was received by MARIS for transfer to all consortium members.
- Successfully a bid was made for the new Call for Tender for the second EMODnet Ingestion contract (**EASME/EMFF/2018/1.3.1.8/01/SI2.810021**) and negotiations have led to establishing the new contract for EMODnet Ingestion 2 which is active from 11 October 2019.
- Although there was no contract in place since 19 May 2019 (the final date of the first contract), operation of the EMODnet Ingestion portal has been continued in the meantime, and some other activities have been undertaken, which are reported in this Interim Progress Report to close the reporting gap till end September 2019. In this period from 19 May till end September 2019, **the number of submissions has increased from 619 to 649**, while the number of **published data submissions ‘as is’** in the View Submissions service has increased from 506 to 549 (metadata forms and related data sets).

2. Work package progress

Activities are reported for relevant Work Packages for which actions took place in the interim period.

WP0 – Project Management:

The first EMODnet Ingestion contract ran till 19th May 2019 and in agreement with EU a draft Final Report and Transfer Protocol was prepared and submitted by 17th July 2019. This was reviewed by EU and EMODnet Secretariate and a request for additional information was received 26th August 2019. The second version of the Final Report was submitted at 7th September 2019 and this received full acceptance from the EU at 13th September 2019. Thereafter final payment was received by MARIS and the process was started for transfer of shares to all consortium members.

Early March 2019 a new Call for Tender for continuing EMODnet Ingestion, although with a reduced budget, was launched. MARIS checked that the earlier consortium was interested and based upon the positive feedback activities were undertaken for preparing a bid. This was submitted 23rd April 2019 and on 23rd July 2019 message was received from the EU that the bid had been successful. It was required

to gather and provide evidence documents for partners, which took quite some time due to holiday period and need for official documents from national authorities. Finally, all evidence was supplied on 5th October 2019 and this triggered the countersigning of the new EMODnet Ingestion 2 contract on 11th October 2019. The official new contract number is: EASME/EMFF/2018/1.3.1.8/01/SI2.810021. Internally we speak of EMODnet Ingestion 2 contract.

The coordinator participated to the EMODnet Steering Committee and gave there a presentation on the latest status of EMODnet Ingestion. The coordinator also participated to the EMODnet Technical Workinggroup, which was back-to-back with the Steering Committee.

Date	Location	Topic	Short Description
2 – 3 September 2019	Ghent - Belgium	EMODnet Steering Committee meeting	Coordinator presented latest status of EMODnet Ingestion
3 – 4 September 2019	Ghent - Belgium	EMODnet Technical Workinggroup meeting	Coordinator participated in this meeting

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 interim period. 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 and orphan data for projects into controlled EDMERP terms. This improves the integrity and richness of the metadata of the published data submissions for searches, reports and detailed pages.

WP2 – Implement pathways to forward submitted data to the appropriate repository:

A number of qualified data centres from the EMODnet Ingestion Data Centre Matrix 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.

WP3 – Facilitate machine-to-machine transfers:

Activities will be continued under the new contract, also together with EMODnet Physics for identifying, encouraging and supporting new operators of operational oceanography platforms to join the European data exchange and to close the gap between operational oceanography and long-term archival of oceanography time series.

WP4 – Marketing and outreach activities:

In the interim period a number of interesting opportunities were encountered:

Nord Stream 2 pipeline project: MARIS and SMHI were invited to discuss possible data sharing by the Nord Stream 2 pipeline consortium. At 10 – 11 July 2019 both joined a meeting in Zug – Switzerland at the headquarters of the Nord Stream 2 pipeline consortium. MARIS and SMHI presented the overall European marine data landscape, the specific place and role of EMODnet Ingestion, and why it would be beneficial for the industry consortium to share their data. On their turn, the pipeline colleagues explained the Nord Stream2 pipeline project which is well underway in the Baltic Sea.

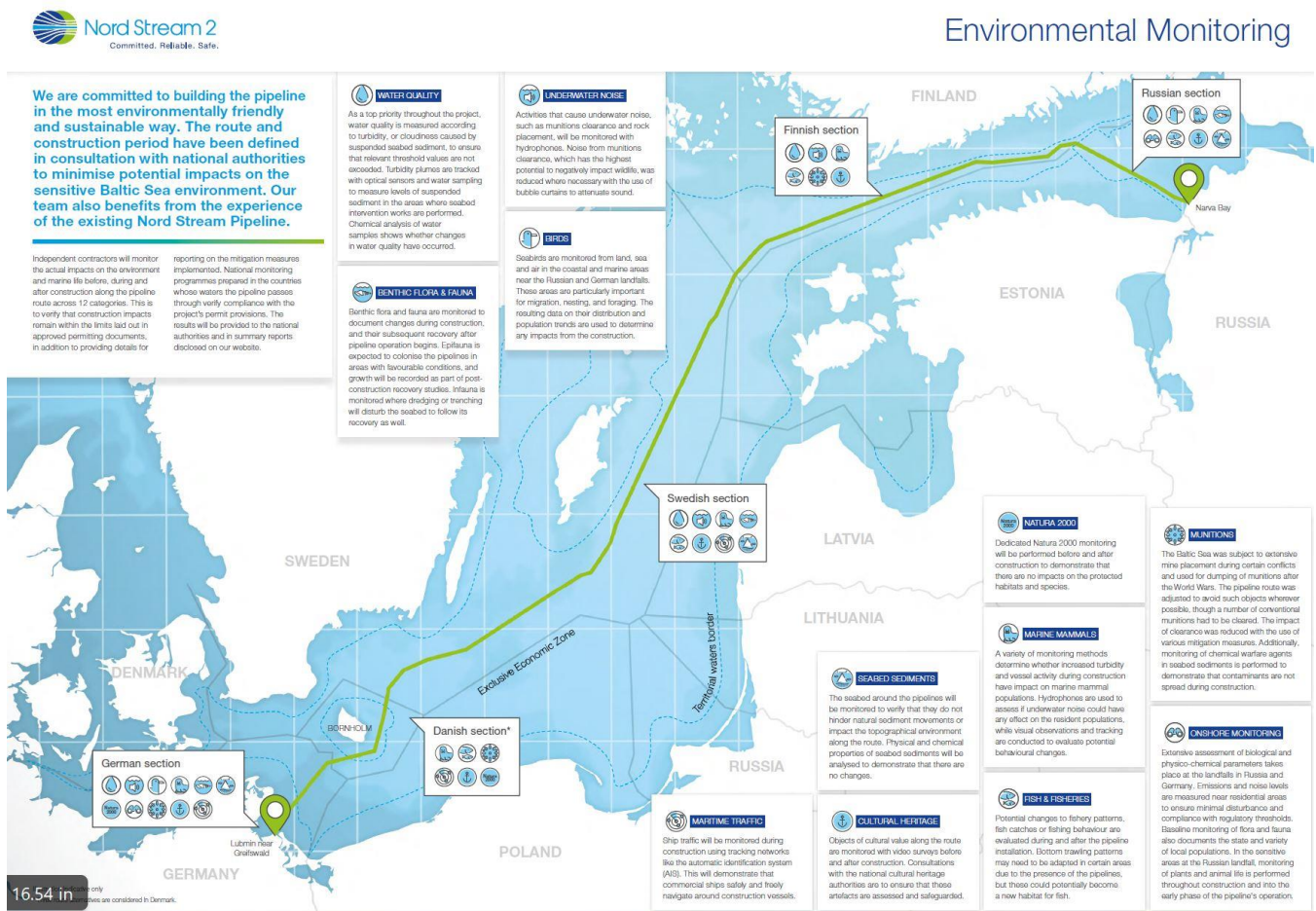


Image: Overview of Nord Stream 2 pipeline trajectory with details on data types

The entire 1,230-kilometre Baltic Sea route from Russia to Germany has been surveyed from the surface to depths of more than 200 metres. To ensure a clear and safe route every detail of the seabed shape has been identified. This includes steep slopes, sediment types and rock outcrops, environmentally sensitive areas, water depth and any items that could affect pipeline installation, from existing infrastructure to shipwrecks to unexploded ordnance. Nord Stream 2 is committed to building the pipeline system in the most environmentally friendly and sustainable way. The pipeline route, construction plan and environmental monitoring programmes have been developed in close consultation with the competent environmental authorities in each country. Independent contractors were chosen for environmental monitoring to verify the actual impacts of construction to the environment and marine life. The environmental monitoring programme includes 17 receptors that collect information about abiotic, biotic and socio-economic parameters across the five countries whose waters the pipeline passes through. Monitoring has taken place before construction, during specific construction activities and will continue after the pipeline is completed. The monitoring programme includes 12 main categories: water quality, seabed sediments, underwater noise, bird populations, marine mammals, flora and fauna, fish and fisheries, cultural heritage, munitions, maritime traffic, onshore environment, and Natura 2000 areas.

At the meeting, MARIS and SMHI, indicated to be very interested in the Nord Stream 2 data and their ingestion. However, we also indicated that a start should be made with selected subsets as the overall volume and diversity of data will be too large for the EMODnet Ingestion data centres considering their processing capacity and budget.

In the months following the meeting, green light was received from the Management Team of Nord Stream 2 consortium to go ahead and a follow-up meeting is planned under the new EMODnet Ingestion 2 contract for going into more detail and setting up arrangements.

i-Atlantic project: initial contact was made through SSBE with the new iAtlantic project, which is a new multidisciplinary research programme seeking to assess the health of deep-sea ecosystems across the full span of the Atlantic Ocean. Funded by a €10.6M grant from the European Union's Horizon 2020 programme, iAtlantic was launched in June 2019 and will run for 4 years. The multidisciplinary consortium of 33 partners from across Europe, USA, Canada, South Africa, Brazil and Argentina is led by Prof. Murray Roberts at University of Edinburgh, while SSBE (managing EMODnet Secretariate) is partner. The project has the ambition to undertake an ocean-wide approach to understanding the factors that control the distribution, stability and vulnerability of deep-sea ecosystems. Work will span the full scale of the Atlantic basin. The latest marine robotics and imaging technology will be used to

develop predictive mapping tools to advance understanding of deep-sea habitat distribution across the ocean. Combined with genomic data and ecological timeseries data, all this new information will provide an unprecedented view of the impacts of climate change on Atlantic ecosystems, allowing scientists to identify key drivers of ecosystem change and determine which areas of the Atlantic Ocean are most vulnerable to the effects of sustained, increasing and multiple pressures. To generate the enormous quantities of data required to achieve this, iAtlantic is underpinned by an extensive field programme comprising some 32 research expeditions that collectively span the length and breadth of the Atlantic Ocean.

One idea is to make use of EMODnet Ingestion for sharing new collected data with EMODnet. This will be further explored by the EMODnet Ingestion team together with SSBE and the coordinator of iAtlantic. Furthermore, at the iAtlantic kick-off contact was made by SSBE with BP as member of IOGP (International Association of Oil & Gas Producers) who was interested in possible sharing of IOGP member data with the iAtlantic project and with EMODnet. SSBE suggested a possible initial step to explore the types of data (parameter, spatial/temporal resolution, location) available for sharing. And together with iAtlantic partners to see any priority datasets for first ingestion, particularly those datasets that may be pertinent to H2020 iAtlantic project delivery. This could also include any IOGP datasets that would fill real gaps in the current EMODnet open access dataset coverage to contribute to the European Marine Knowledge 2020 and the international Seabed 2030 initiative. BP has indicated that they would first meet with the iAtlantic project coordinator to discuss amongst other things how BP respectively IOGP might share data across iAtlantic and with EMODnet. Moreover, BP is intending at some stage to arrange a webinar with IOGP members on how this may work.

This opportunity will be further explored by the EMODnet Ingestion team together with SSBE, the coordinator of iAtlantic and BP (and IOGP).

Eurofleets+ project: EUROFLEETS+ is a successor EU H2020 project to the earlier EUROFLEETS projects and it started in February 2019 under leadership of the Marine Institute (Ireland). EUROFLEETS+ is an alliance of European marine research infrastructures (research vessels, AUVs, and ROVs) to meet the evolving needs of the research and industrial communities. It brings together a significant group of key marine research actors (research vessel operators and technical experts) in Europe, North America and Oceania, comprising 42 marine institutes, universities, foundations and SMEs from 24 countries. It will facilitate open free of charge access to a unique fleet of 27 state-of-the-art research vessels from European and international partners. This will be arranged by competitive transnational access calls which are published at the EUROFLEETS+ portal.

EUROFLEETS+ aims to ensure that research data collected during the funded cruises, and the en-route data collected by the vessels will be made widely available in line with FAIR and Open Research Data

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principles. As part of that, EUROFLEETS+ will manage and populate the EVIOR platform at the EUROFLEETS+ portal, in order to improve information sharing on planned, current and completed cruises, details of research vessels, and data as acquired during cruises. Marine data management is an integral part of the EUROFLEETS+ approach and is implemented in synergy with SeaDataNet and EMODnet, to make use of standards and to ensure that the new collected cruise data will be widely distributed. For that purpose, also use will be made of EMODnet Ingestion as a component in the overall EUROFLEETS+ data management workflow which is schematized in the following image.

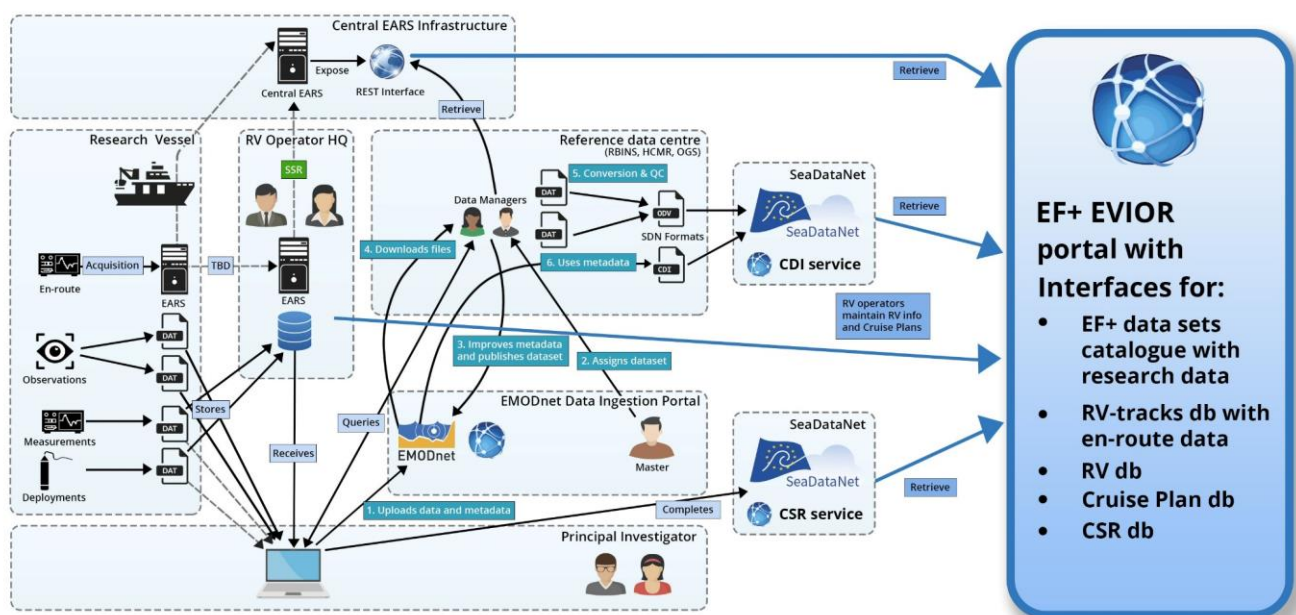


Image: Schematic overview of planned data management flow in Eurofleets+ project with role for EMODnet Ingestion

This opportunity will be further worked out by the EMODnet Ingestion team together with the Eurofleets+ project.

Key indicators of EMODnet Ingestion:

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
May-19	1,517	2,186	96,535	112,093	1.82 GB
Jun-19	1,206	1,592	89,510	105,309	1.67 GB
Jul-19	1,654	2,128	82,554	98,307	1.57 GB
Aug-19	1,476	1,817	4,306	15,358	656.36 MB
Sep-19	2,306	3,150	15,091	27,993	951.15 MB

Table: portal statistics as collected with AWStats

Statistics of submissions.

In the interim period, the number of submissions in the Submission service increased from **619 at 19th May 2019 to 649 submissions at end September 2019**, while the number of published data submissions 'as is' in the View Submissions service has increased **from 506 to 549**. The following figures give characteristics of those published submissions.

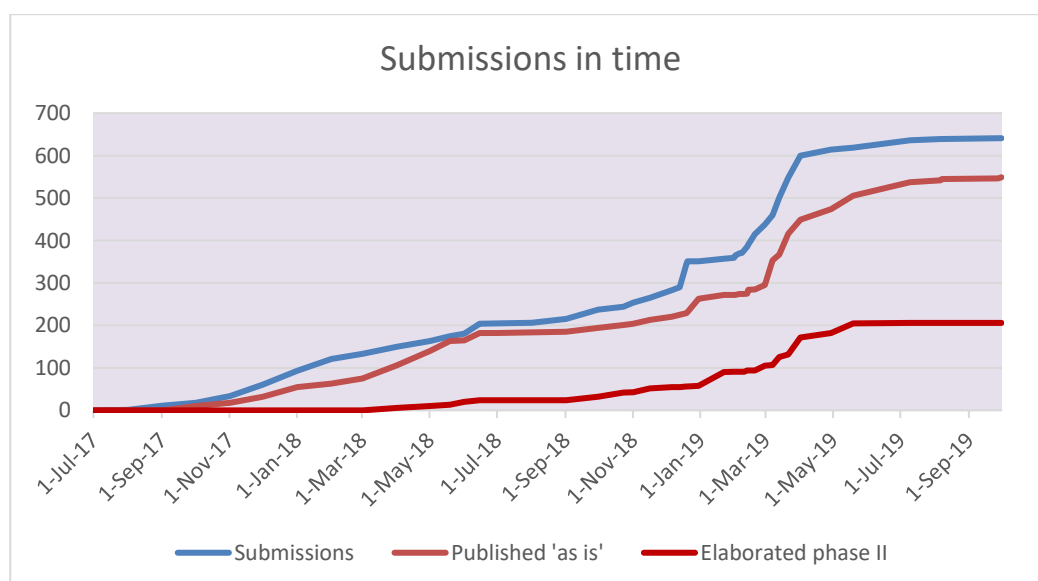


Image: Submissions and processing in time

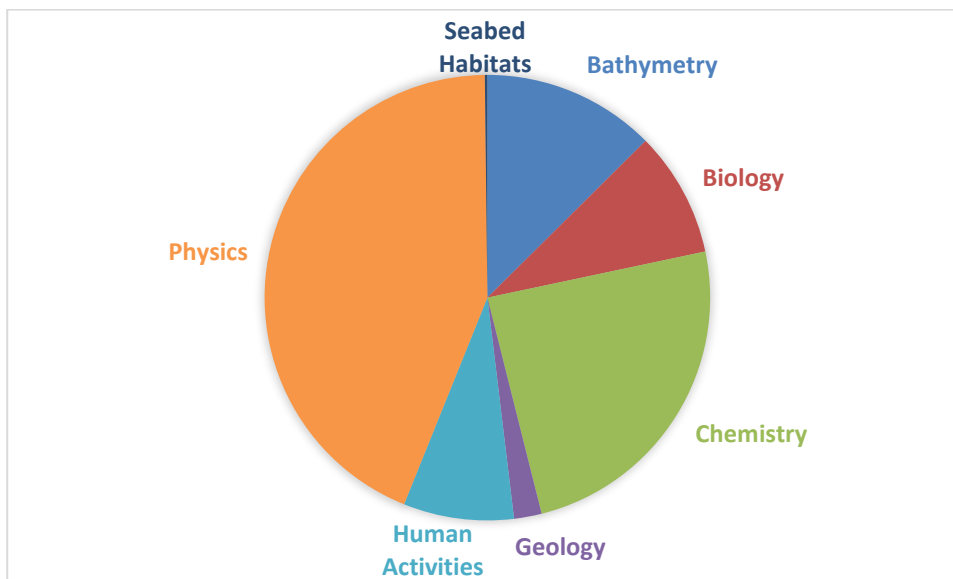


Image: Published submissions by theme

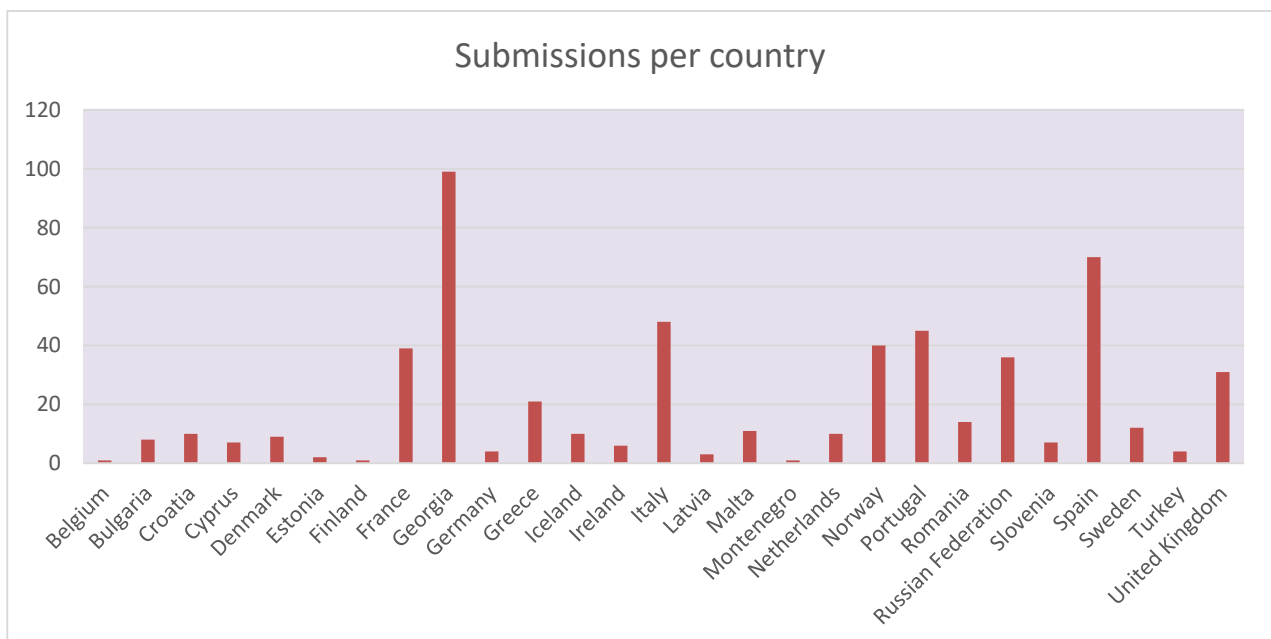


Image: Published submissions by country of submission

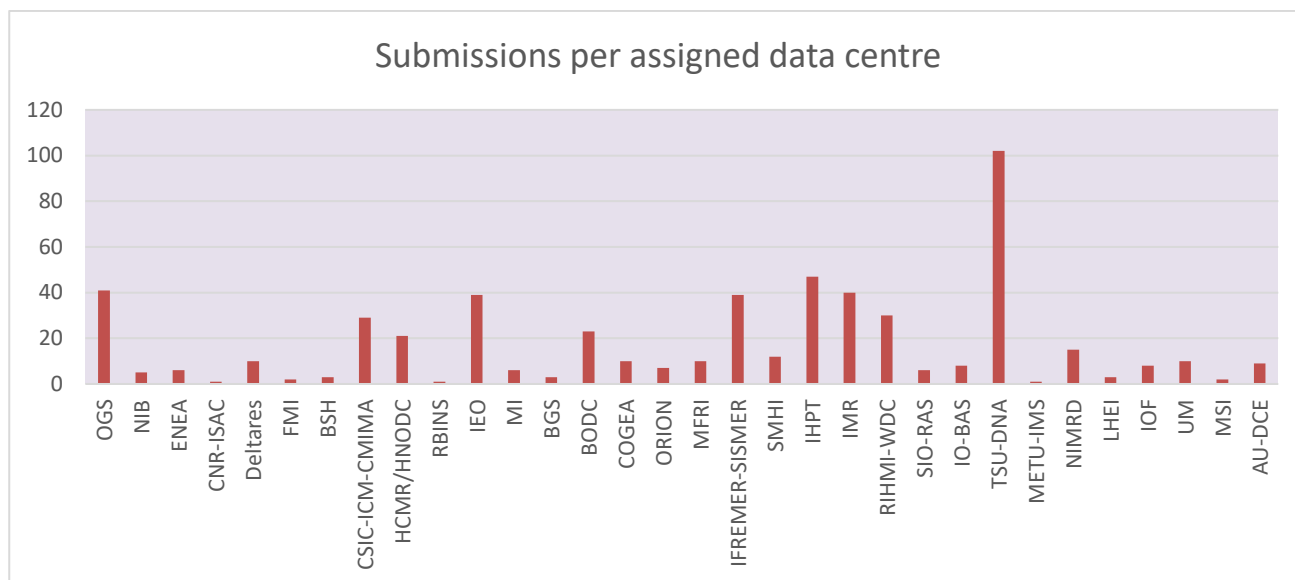


Image: Published submissions by assigned data centres

EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
4882	AQUA4C	1	Company	Belgium
4730	GeoMarine Ltd.	1	Company	Bulgaria
5031	Petro Celtic Varna Office	1	Company	Bulgaria
1265	Scientific - Research Firm "GAMMA"	18	Company	Georgia
4877	Laboratory research centre LTD	57	Company	Georgia
4999	Napirdatsva Ltd	9	Company	Georgia
5066	Black Sea Aquaculture Company LLC	15	Company	Georgia
4750	Water Services Corporation	3	Company	Malta
5151	AquaBioTech Group	1	Company	Malta
1357	NoordzeeWind BV	5	Company	Netherlands
1528	Deltares	7	Company	Netherlands
5045	Bureau Waardenburg BV	1	Company	Netherlands
1746	ESGEMAR/ Esgemar S.A. Estudios geologicos marinos	7	Company	Spain
5043	Eco-Dive	2	Company	Spain
4916	Holmen Papper Ab	2	Company	Sweden
2657	GEMS Survey Ltd	1	Company	United Kingdom
3006	SSE Renewables	1	Company	United Kingdom
4171	Partrac - Head office	1	Company	United Kingdom
1032	Black Sea Basin Directorate	1	Government	Bulgaria
4729	Black Sea–Danube Coastal Association for Research and Development	1	Government	Bulgaria

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249	Department of Fisheries and Marine Research, Division of Marine Biology and Ecology	1	Government	Cyprus
3308	Department of Transport, Tourism and Sport	1	Government	Ireland
1130	ARPA Emilia-Romagna - Struttura Oceanografica Daphne	2	Government	Italy
3009	ISPRA-Institute for Environmental Protection and Research	17	Government	Italy
4938	Portofino Marine Protected Area	2	Government	Italy
5046	ARPA Liguria	1	Government	Italy
179	Malta Environment and Planning Authority - Environment Protection Directorate	1	Government	Malta
706	Transport Malta - Maritime Division (ex. Malta Maritime Authority)	1	Government	Malta
4751	Environment and Resources Authority	5	Government	Malta
1526	Rijkswaterstaat Water, Traffic and Environment	7	Government	Netherlands
3348	Portuguese Environment Agency	4	Government	Portugal
4609	Directorate-General for Territorial Development	6	Government	Portugal
5047	Director General of Health - Information and Analysis Services Directorate	33	Government	Portugal
1755	Environmental Agency of the Republic of Slovenia	1	Government	Slovenia
4879	Ministry of Agriculture, Forestry and Food of Republic of Slovenia	2	Government	Slovenia
354	PdE/ Harbours Authority. Physical Environment Department	1	Government	Spain
28	Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laboratory	3	Government	United Kingdom
1604	The Crown Estate	7	Government	United Kingdom
1165	Black Sea NGO Network	1	NGO	Bulgaria
4727	NGO MARINE SOUND	2	NGO	Bulgaria
4537	ORION	6	NGO	Cyprus
4840	The Keep Sweden Tidy Foundation	2	NGO	Sweden
3429	Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences	1	Research Institute	Bulgaria
700	Institute of Oceanography and Fisheries	10	Research Institute	Croatia
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
486	IFREMER / IDM / SISMER - Scientific Information Systems for the SEA	15	Research Institute	France

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1046	LABORATORY OF SCIENCES OF MARINE ENVIRONMENT (LEMAR)	1	Research Institute	France
1054	IFREMER	21	Research Institute	France
3187	CNRS Paris Institute of Earth Physics, Marine Geoscience Laboratory	1	Research Institute	France
4536	Ocean Physics and Satellite oceanography laboratory (LOPS) - UMR 6523 CNRS-Ifremer-IRD-UBO	2	Research Institute	France
100	Leibniz Institute for Baltic Sea Research Warnemünde	1	Research Institute	Germany
116	Baltic Sea Research Institute Warnemuende, Marine Geology Department	1	Research Institute	Germany
2947	GEOMAR Helmholtz Centre for Ocean Research Kiel	1	Research Institute	Germany
164	Hellenic Centre for Marine Research, Institute of Oceanography (HCMR/IO)	18	Research Institute	Greece
269	Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	3	Research Institute	Greece
4766	Marine and Freshwater Research Institute	10	Research Institute	Iceland
396	Marine Institute	5	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	12	Research Institute	Italy
642	Joint Research Centre (JRC)	6	Research Institute	Italy
4809	National Research Council of Italy - Institute for Marine and Coastal Environment (IAMC) (Sezione Capo Granitola)	1	Research Institute	Italy
698	Latvian Institute of Aquatic Ecology	1	Research Institute	Latvia
4762	Foundation for Environmental Education — Latvia	1	Research Institute	Latvia
5017	Institute of Electronics and Computer Science	1	Research Institute	Latvia
2432	Institute of Marine Biology (IMBK)	1	Research Institute	Montenegro
1340	Wageningen Marine Research, IJmuiden	2	Research Institute	Netherlands
612	Institute of Marine Research - Norwegian Marine 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

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697	National Institute for Marine Research and Development "Grigore Antipa"	14	Research Institute	Romania
681	All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	30	Research Institute	Russian Federation
682	Atlantic Scientific Research Institute for Marine Fishery and Oceanography	12	Research Institute	Russian Federation
684	Arctic and Antarctic Research Institute, Roshydromet (Saint-Petersburg)	1	Research Institute	Russian Federation
685	P.P.Shirshov Institute of Oceanology, RAS	7	Research Institute	Russian Federation
686	P.P.Shirshov Institute of Oceanology, Southern branch	4	Research Institute	Russian Federation
949	World Data Centre-B for Oceanography	6	Research Institute	Russian Federation
1229	National Institute of Biology - Marine Biology Station	1	Research Institute	Slovenia
4878	Institute for Water of the Republic of Slovenia	3	Research Institute	Slovenia
280	CSIC-ICM/ Institute of Marine Sciences	12	Research Institute	Spain
310	IGME, Geological Survey of Spain	5	Research Institute	Spain
353	IEO/ Spanish Oceanographic Institute	16	Research Institute	Spain
1396	IACT-UGR-CSIC / Andalusian Earth Sciences Institute	5	Research Institute	Spain
1402	IEO/ Santander Experimental Aquaculture Facilities	1	Research Institute	Spain
1404	IEO/ Vigo Oceanographic Centre	10	Research Institute	Spain
1405	IEO/ Malaga Oceanographic Centre	1	Research Institute	Spain
1408	IEO/ Murcia Experimental Aquaculture Facilities	19	Research Institute	Spain
2550	Institute of Marine Sciences, Barcelona	7	Research Institute	Spain
4883	ULPGC-IOCAG/ Institute of Oceanography and Global Change	1	Research Institute	Spain
545	Swedish Meteorological and Hydrological Institute	8	Research Institute	Sweden
42	British Geological Survey, Edinburgh	3	Research Institute	United Kingdom
2135	Marine Scotland Science	21	Research Institute	United Kingdom
729	Aarhus University, Department of Bioscience, Marine Ecology Roskilde	4	University	Denmark
3037	Aarhus University, Danish Centre for Environment and Energy	5	University	Denmark
713	Marine Systems Institute at Tallinn University of Technology	1	University	Estonia

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3324	University of Leipzig	1	University	Germany
3453	University Bayreuth	3	University	Germany
774	NUI Galway	1	University	Ireland
1631	University of Tuscia-Viterbo	3	University	Italy
4881	University of Rome Tor Vergata	1	University	Italy
708	International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit	10	University	Malta
4595	University of Bergen / Geophysical Institute	8	University	Norway
2516	University of Algarve, Marine Sciences Centre	2	University	Portugal
4880	Marine and Environmental Sciences Centre - Faculty of Sciences of the University of Lisbon	4	University	Portugal
342	ULPGC/ Las Palmas University. Department of Physics	1	University	Spain
2153	UVIGO/ University of Vigo	5	University	Spain
4937	IISTA/ Andalousian Interuniversity Institute for the Reseach on the Earth System	1	University	Spain
2209	Stockholm University, Department of Meteorology	1	University	Sweden
696	Institute of Marine Sciences, Middle East Technical University	4	University	Turkey
4748	University of Kyrenia	4	University	Turkey

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

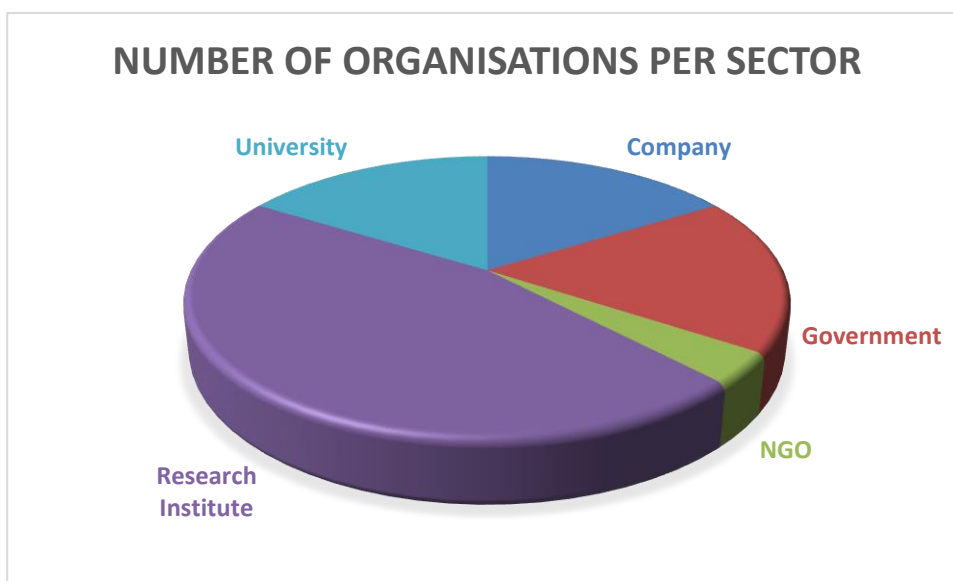


Figure: Division by sector of organisations for data originators and holding centres

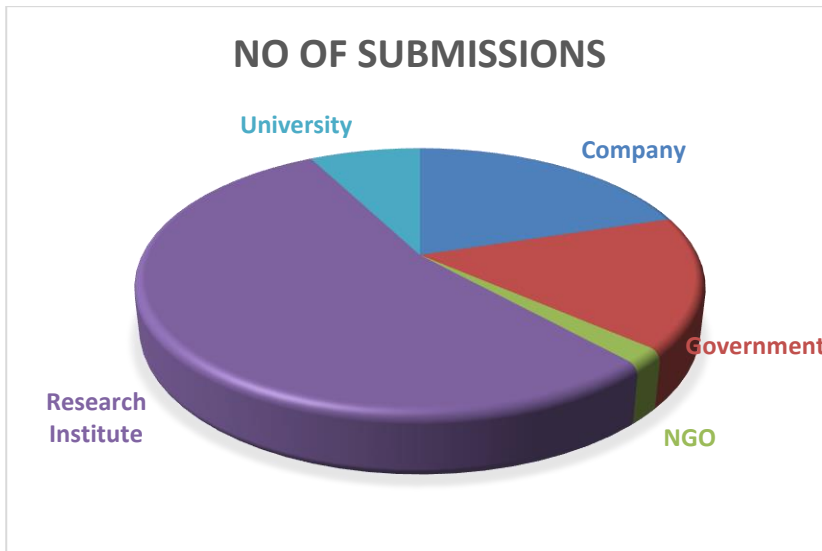


Figure: Division of number of submissions by sector of organisations

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. In the interim period no further elaboration to phase II was achieved.

3. Unexpected difficulties encountered

Nothing to report.