



EMODnet Ingestion and safe-keeping of marine data no 2

EASME/EMFF/2018/1.3.1.8/01/SI2.810021

Quarterly Progress Report

Reporting Period: 01/01/2020 – 31/03/2020

Date: 19/04/2020

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1. Highlights in this reporting period

- As follow-up to the official contract, established 11 October 2019 between EASME and MARIS for the second EMODnet Ingestion project with reference **EASME/EMFF/2018/1.3.1.8/01/SI2.810021**, MARIS has established a partner agreement and a series of Subcontracts with all consortium members which all have been duly signed.
- In the reporting period, the numbers of submissions and processing of submissions have increased considerably. **Submissions went from 638 to 707**, the number of **published data submissions ‘as is’** in the View Submissions service increased **from 565 to 595** (metadata forms and related data sets), while the number of **submissions** that have been elaborated **to phase II**, implicating uptake in European marine data infrastructures feeding into EMODnet, increased **from 207 to 238**.
- The major increase in submissions is partly due to the dynamic exchange between the SeaDataNet SEANOE data citing service and EMODnet Ingestion, which came into production in 2020. SEANOE facilitates European scientists to publish their scientific papers and associated data collections in return for a DOI which promotes their wider citation. Selected scientific submissions from SEANOE are harvested by EMODnet Ingestion for further metadata completion, publishing ‘as-is’, and elaboration of data sets for inclusion and publishing in national and European portals.

2. Work package progress

Activities are reported for Work Packages and related Tasks as mentioned in the Tender documents.

WPO – Project Management:

Task 10 – Service continuity during operation and for transition:

Since the official signing of the EMODnet Ingestion 2 contract on 11th October 2019, MARIS as coordinator has undertaken further contractual activities for drafting and getting agreement and signatures for the partner contract with HCMR and bilateral subcontracts with the 44 other members of the EMODnet Ingestion 2 consortium. In the reporting period all contractual arrangements with the consortium members have been completed.

In January 2020, a first Quarterly Progress Report for October – December 2019 was prepared and submitted by MARIS to EASME, EU DG MARE, and EMODnet Secretariate, which has been accepted. As



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follow-up and on request on EASME, the content of the portal was reviewed for possible Brexit issues, considering that the UK has officially left the EU. In practice, no changes were required as EMODnet Ingestion already has a larger network of organisations from many countries in Europe, whereby in web presentations no distinction is made in EU members and non-EU members.

Task 7 – Participate in discussions with EMODnet partners in order to improve the efficiency of the whole collection, assembly and dissemination process:

Activities were undertaken for organizing a full project meeting in May 2020, back-to-back with the European Maritime Day 2020 in Cork, Ireland, which would have given also a good opportunity for promotion and marketing. Unfortunately, due to the COVID-19 crisis the planned project meeting on location cannot take place and will be postponed to a later date, while coordination mostly takes place by e-mail and short web conferences. The EMODnet Ingestion 2 consortium also comprises the coordinators of each of the thematic lots, which allows for tuning with their project activities.

Date	Location	Topic	Short Description
13 March 2020	Web Conf	New vision and strategy for EMODnet	Short meeting in which EU DG MARE revealed a new vision and strategy for EMODnet including a more integrated approach.

WP1 – Construct and operate central Data Ingestion portal with services:

Task 1 - Maintain and further develop a web-portal:

The EMODnet Ingestion portal has been maintained in the reporting period, whereby also care is taken that all services keep functioning as required. This can include solving some bugs or making some amendments for improving functionality.

Task 5 – Allow providers of data to track the progress of their data from submission through to their storage in a repository:

The online Submission service has built in functionality for data providers to follow the processing of their data submissions, which is done in several steps each indicated by a status field. Moreover, it has two phases, with phase I aimed at publishing the ingested data sets 'as-is' with metadata completed by an assigned data centre, and with phase II aimed at elaborating the ingested data sets to standard formats for inclusion and sharing in national and European data infrastructures, feeding into EMODnet thematic lots. Data providers can follow the progress on-line and are contacted by assigned data centres, in case there are additional questions about the ingested data sets. Data providers also have a right to block phase I publication of their data sets within 30 days after completion by the assigned data centres. In practice no use is made of this option and by default all phase I completed data sets are published after 30 days review. For phase II publication no further agreement is asked from the data providers,

which they can also follow on-line, but they might be contacted for further information to support the elaboration process.

For the dynamic exchange between the SeaDataNet SEANOE data citing service and EMODnet Ingestion several fine-tuning actions have been undertaken. SEANOE has started adopting controlled vocabularies, thus improving the overall quality and homogeneity of the submissions harvested by the Ingestion Service. In addition to that, additional checks are performed on SEANOE end to ensure thematic consistency of the submission fed to Ingestion Service. The dynamic exchange has been taken into production, and this has resulted in a series of SEANOE data submissions which need to be processed by assigned data centres like any other data submission.

Task 6 – Include a ‘data wanted’ function that allows users seeking certain types of information to specify their needs:

This function is offered by the Data Wanted service which facilitates users to submit post-its, which are then matched with published datasets. Users will receive alert messages every time new matches have been established.

Task 8 – Maintain a summary record of data delivered:

This function is offered by the View Submissions service a.k.a. summary service. Each completed submission is migrated to that service for publishing as part of a discovery and access service. Distinction is made in phase I and II which has been added as a new search facet. During the reporting period, next to giving regular follow-up to the publishing process, editing activities have taken place aimed at 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. While the harvesting mechanism in the Submission service has been improved with further data file integrity checks, smarter cleaning and matching of free text content with Ingestion vocabularies.

Indicators have been generated about the performance of Data Ingestion portal, which are reported in the section on WP4.

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

Task 2 – Implement pathways for delivering data to final repositories:

EMODnet Ingestion 2 has a network of 50 data centres which are ‘recruited’ from EMODnet Ingestion and Thematic portals consortia to act as ‘assigned data centres’. In practice, each ingested data submission will be assigned by MARIS to a qualified data centre from this network, who then will do further processing. In the reporting period 69 new submissions have been recorded and for those data centres have been assigned. Moreover, HCMR as scientific coordinator has interacted with several data

centres to progress with the processing and publishing process which has resulted in 30 phase I publications and 29 phase II publications.

Additionally, the already existing notification system in the Submission service has been enriched with new rules. These rules facilitate MARIS and HCMR as Ingestion Administrators to act upon and improve the time required for SEANOE submissions to reach national and European portals. More actions are planned to further fine tune the notification system. The goal is to motivate all actors undertake timely the necessary actions and improve the performance of the system, which will be a combination of automatic triggering of e-mails and human communication.

Task 4 – Operate a help-service for users to provide their data in the most appropriate format:

In the reporting period no requests for support were received.

WP3 – Facilitate machine-to-machine transfers:

Task 3 – Facilitate machine-to-machine transfers:

Activities have been continued under the new contract, 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. One activity is focused on further promoting and supporting the implementation of Sensor Web Enablement (SWE) standards and services at oceanography operators for joining the EMODnet NRT – RT data sharing framework. For that purpose, together with 52North, leading SWE expert and member of EMODnet Ingestion 2 consortium, updating is undertaken of the SWE pages at the EMODnet Physics portal. This features a prototype SWE viewing service and also a guideline and SWE software package for oceanography site operators, supporting and enabling them to set-up an SOS Server with local data repository, adopting SWE data model, which then feeds into the client-viewer service as part of the EMODnet prototype SWE viewing service. The package also allows the oceanography operators to set-up and configure their own viewing service. During the period, updating was completed for a new release of the SOS system. The new package is public available in github (<https://github.com/52North/sensorweb-server>, <https://github.com/52North/sensorweb-server-helgoland>).

In collaboration between EMODnet Ingestion and EMODnet Physics, the new package will be deployed for data streams from two wave buoys in Liguria (ARPAL – Ligurian Regional Agency for Environment Protection). The near real time (NRT) data stream from these two buoys has already been included in EMODnet Physics, and the SWE configuration will expand this exchange with a real time (RT) data transfer. Part of the demonstrator activity is to describe the platforms and sensors by using the SMLE editor that is already using SeaDataNet SWE profiles by means of SeaDataNet vocabularies for most metadata elements. This step will facilitate the harmonization of the metadata delivery from real-time to long term preservation of marine data.

A comparable SWE promotion and approach is undertaken for the EU H2020 EUROFLEETS+ project which is an alliance of European marine research infrastructures (research vessels, AUVs, and ROVs) to meet the evolving needs of the research and industrial communities. The project will fund several research cruises, for which all data and metadata acquired will be published. The data management will be implemented in synergy with SeaDataNet and EMODnet Ingestion. The following image gives an overview of the planned data flow.

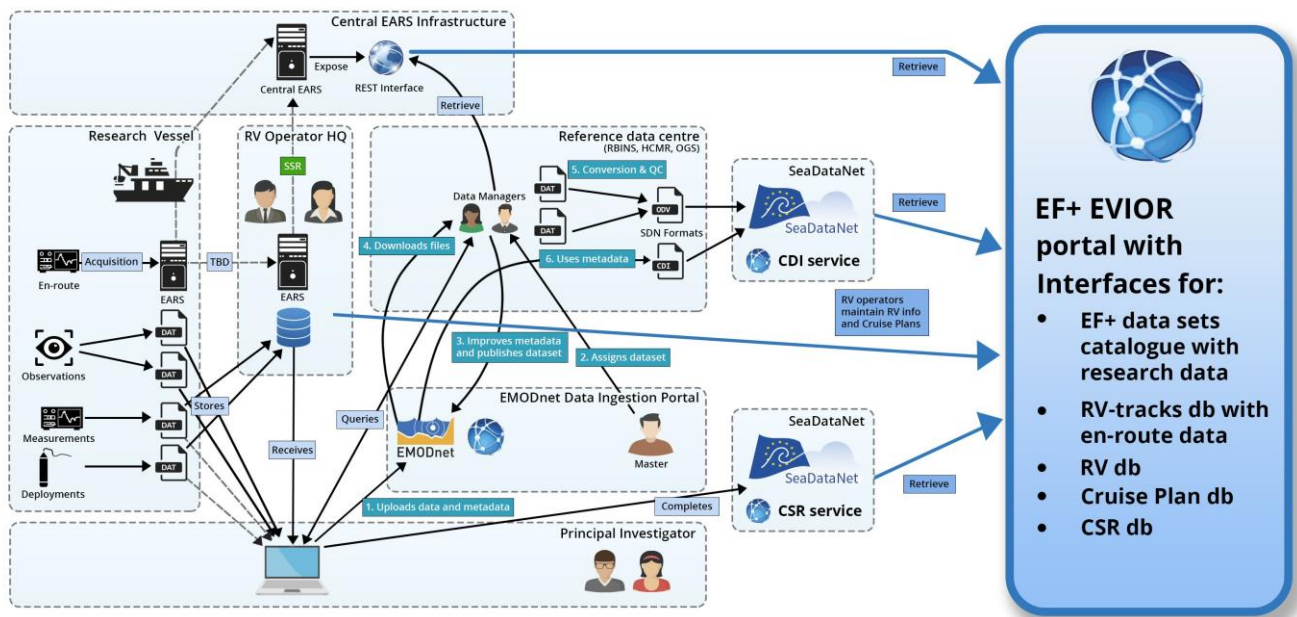


Figure: Data Management plan for data streams from Eurofleets+ research vessel cruises

At a Eurofleets+ meeting in Barcelona, Spain, 11-12 February 2020, joined by MARIS and 52North, this approach was discussed further and it was decided to expand the data management plan with adopting the SWE package (see above) and SWE standards for supporting a near real time (NRT), distribution, and publishing of underway data from the sailing vessels. A feasible concept was established at the meeting and activities are underway since for implementing this other SWE use case for EMODnet Ingestion2.

WP4 – Marketing and outreach activities:

Task 9 - Engage in outreach activities towards significant holders of marine data whose data are not yet already available. This shall include holders of data from offshore licensing activities:

In the reporting period members of the consortium made progress with promotion activities and contacts with potential data providers encouraging and supporting them for ingesting new data sets. The COVID-19 crisis made the participation to physical meetings for promotion more difficult later in the



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reporting period as several events were cancelled / postponed to later dates. Cancelled events included for instance Oceanology International 2020, European Maritime Day 2020, Seafood Expo Global, and 6.th Hydrographic Engineering Conference / 1.st Portuguese-Spanish Hydrographic Engineering Conference.

EMODnet Ingestion was promoted at several events (partly physical / partly web organized). These included: EMODnet Arctic map discussion (13 January 2020), BOOS Steering Committee (17 January 2020), Arctic ROOS Annual Meeting and Arctic – UN Decade workshop (27-29 January 2020), Ocean Sciences conference (15-20 February 2020), ICES/EMODnet/Berring Data Collective fishing for data discussion (6 March 2020), Earth Observation Data for Science and Innovation in the Black Sea project Mid Term Review meeting (24 March 2020).

EMODnet Ingestion abstracts were submitted to EGU 2020 (May 2020, conference cancelled, but selected presentations might be done by web streaming), IMDIS 2020 (October 2020) and MarTech Workshop (planned June 2020).

Despite the COVID-19 crisis, very good progress was achieved with 69 new data submissions in the reporting period. A number of interesting cases will be highlighted. IHPT (Portugal) has sent a formal request to naval staff to start the declassifying process of historical military BT and XBT profiles, which includes more than twenty five thousand bathy messages (temperature versus depth) since 1957. Most probably, the Naval Staff will agree to free a portion of these datasets, which will be undertaken using the EMODnet Ingestion workflow. BGS (UK) has ongoing discussion with Cefas on processed backscatter data from the Civil Hydrography Programme surveys and with Maritime and Coastguard Agency (MCA) on potential sample analysis data. NIMRD (Romania) had meetings with the NGO “Mare Nostrum” which resulted in new submissions. BODC (UK) has elaborated 640 CTD casts from cruises in 2016 – 2017 from Marine Scotland Science (MSS) to Phase II populating these into BODC, SeaDataNet CDI service, which feeds into EMODnet. BODC (UK) also worked up data sets for time-series of physical and chemical transports through the Rockall Trough from SAMS (Scottish Association for Marine Science) to Phase I. These were collected in the EU HORIZON 2020 ATLAS project, which has more interesting data sets collected which are not yet made available in the European marine data exchange. For that purpose MARIS and HCMR together with SSBE, partner in the ATLAS project, discussed a feasible approach using EMODnet Ingestion for getting more of the Atlas data sets made available for wider use. SSBE proposed the approach at the final ATLAS GA meeting, 9-10 March 2020, as a way forward for delivering the ATLAS data sets as tangible project results. A further follow-up is expected and will be safeguarded by SSBE. IO-BAS (Bulgaria) contacted several organisations in Bulgaria, such as port authorities, and Black Sea water management departments, while CSIC (Spain) contacted energy companies running submarine pipelines and cables. Moreover, CSIC continues to encourage successfully its relations in the Spanish bathymetry scientific community for releasing bathymetry survey data sets from old and recent cruises as these can be used as input for EMODnet Bathymetry to enrich the EMODnet Digital Bathymetry. ORION (Cyprus)



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worked together with the Department of Fisheries and Marine Research to process their submission of beach litter monitoring data (2018-2019). Further guidance is now underway by ORION to support the Department to adopt the Marine Litter standards as promoted by EMODnet Chemistry with TG-ML for easier integration into the EMODnet Marine Litter databases and products. HCMR (Greece) is regularly reminding HCMR scientists to make use of EMODnet Ingestion as a first step for publishing data from their completed projects as part of the European marine data exchange. This resulted already in submissions for Greek data of the Interreg Adriatic-Ionian HARMONIA and EU DG ENV MEDREGION Projects. In principle, the Ingestion pathway will be used for the data output of the ongoing Greek national MARRE Project. On top of that, HCMR has agreed with Greek authorities to use EMODnet Ingestion as the prevailing mechanism for gathering the data collected within the Greek MSFD monitoring programme, for those data sets which are to be made publicly available. COGEA (Italy) supported EU JRC for an updated data submission of their data set on macroalgae and microalgae production facilities. This does not only include new facilities, but also new fields of information, such as information on species harvested/cultivated. Another data submission by EU-JRC on spirulina producers is on its way.

Further steps were also made with the Nord Stream 2 pipeline consortium. Following the webex of MARIS and SMHI with the consortium in December 2019, a request was made for MARIS to provide a document explaining in more detail how the ingestions will be handled, acknowledged, and published. This was delivered and followed by a next request to derive an agreement from that document specifying further details about the practicalities and liabilities of sharing data by the Nord Stream 2 pipeline consortium through EMODnet Ingestion. This draft agreement has also been delivered by MARIS and is now under review by the management of the pipeline consortium. Once this has been settled, then the actual submission can start. For this, the pipeline consortium has prepared a metadata inventory of data sets with sufficient detail. Once all formalities have been cleared, then the data inventory will be used to select subsets, based upon suitability for EMODnet lots, that will be ingested and further elaborated. The overall volume and diversity of data will be too large for the EMODnet Ingestion data centres considering their processing capacity and budget.

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
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Jan-20	17,873	76,507	84,538	98,382	1.06 GB
Feb-20	11,708	47,943	61,344	70,574	1.08 GB
Mar-20	2,909	11,340	92,592	103,103	1.73 GB

Table: portal statistics as collected with AWStats

Statistics of submissions.

In the reporting period, the number of **Submissions** went **from 638 to 707**, the number of **published data submissions 'as is'** in the View Submissions service increased **from 565 to 595** (metadata forms and related data sets), while the number of **submissions** that have been elaborated **to phase II**, implicating uptake in national and European marine data infrastructures, feeding into EMODnet, increased **from 207 to 238**. The following figures give characteristics of those published submissions.

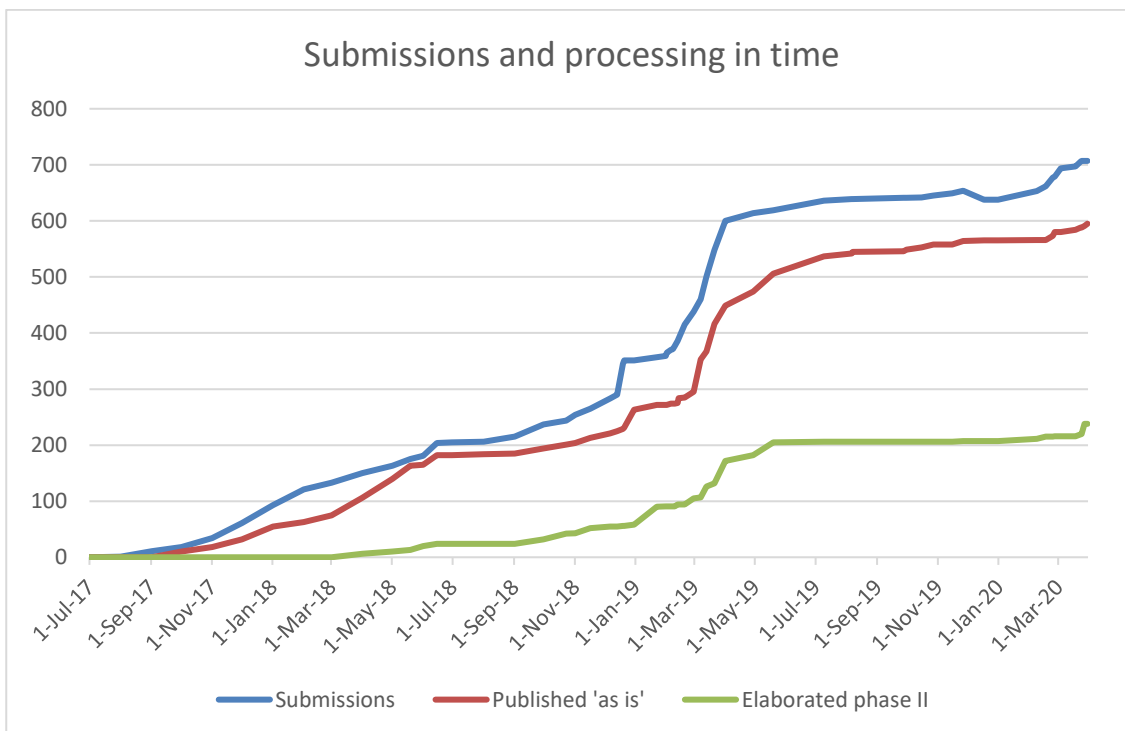


Image: Submissions and processing in time

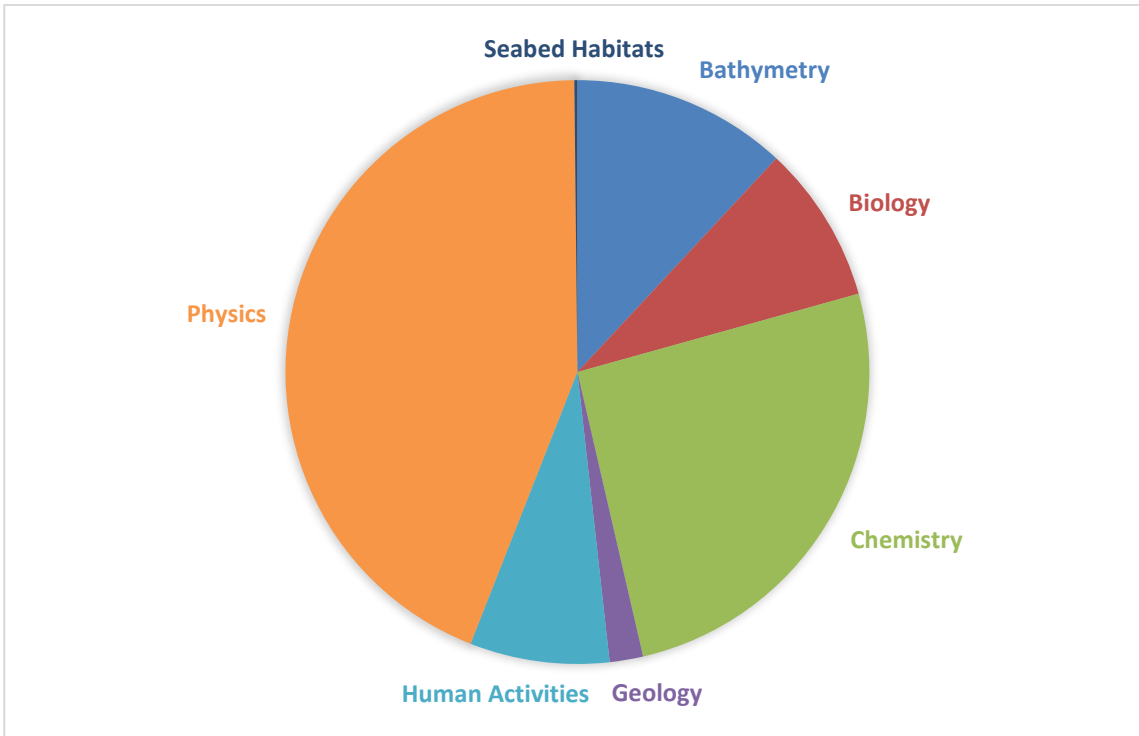


Image: Published submissions (595) by theme

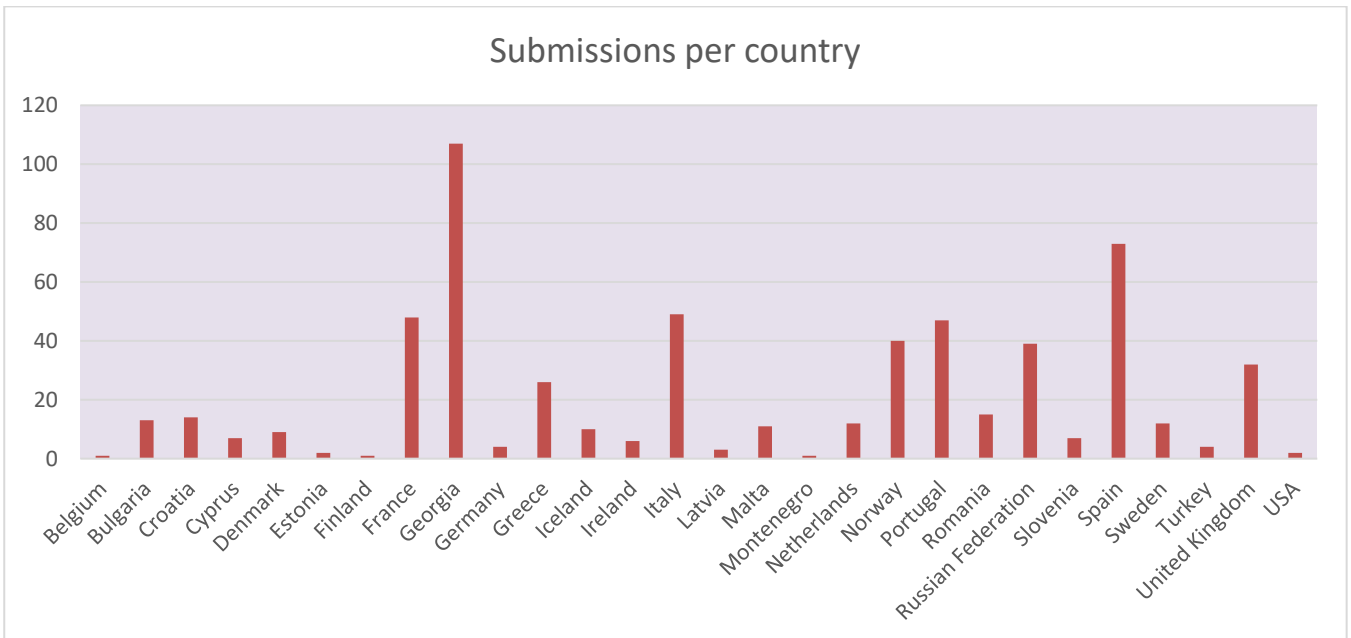


Image: Published submissions (595) by country of submission

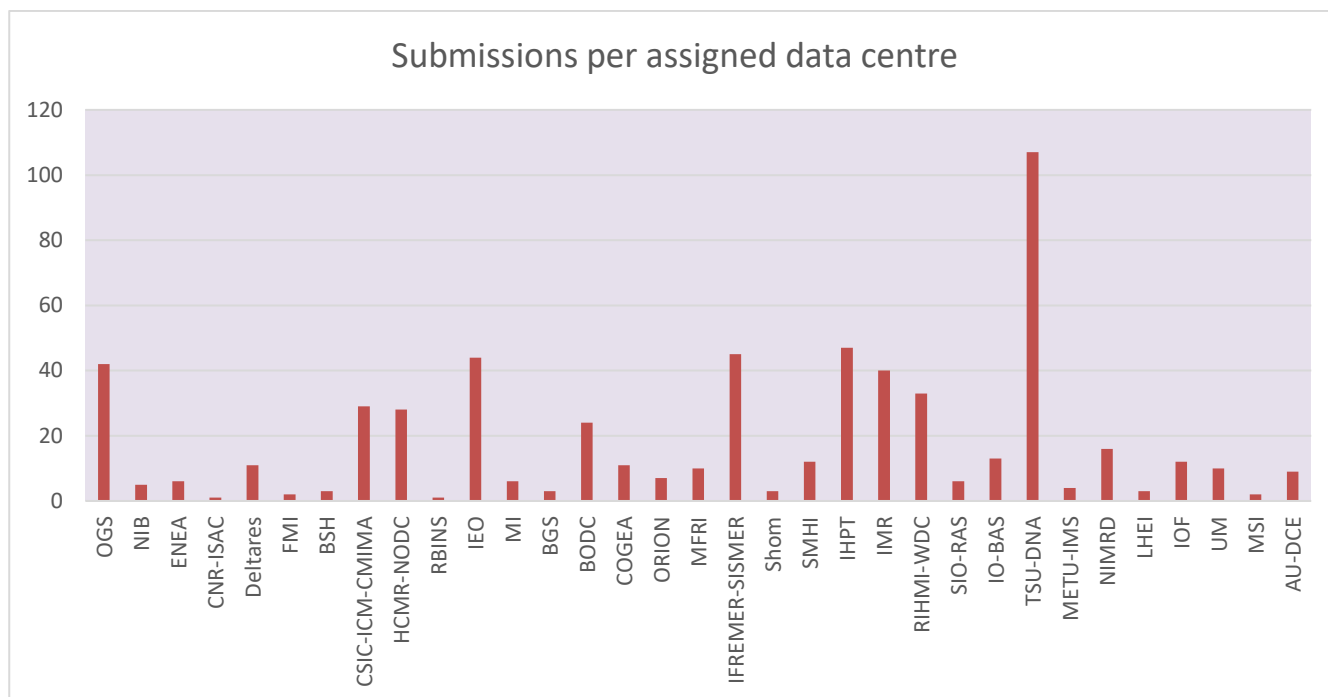


Image: Published submissions (595) by assigned data centres

EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
4882	AQUA4C	1	Company	Belgium
4730	GeoMarine Ltd.	1	Company	Bulgaria
5031	Petro Celtic Varna Office	3	Company	Bulgaria
1265	Scientific - Research Firm "GAMMA"	18	Company	Georgia
4877	Laboratory research centre LTD	65	Company	Georgia
4999	Napirdatsva Ltd	9	Company	Georgia
5066	Black Sea Aquaculture Company LLC	15	Company	Georgia
2764	ETT S.p.A.	1	Company	Italy
4750	Water Services Corporation	3	Company	Malta
5151	AquaBioTech Group	1	Company	Malta
1357	NoordzeeWind BV	5	Company	Netherlands
1528	Deltares	8	Company	Netherlands
5045	Bureau Waardenburg BV	2	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

EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
4171	Partrac - Head office	1	Company	United Kingdom
5209	Saildrone	2	Company	USA
1032	Black Sea Basin Directorate	1	Government	Bulgaria
4729	Black Sea-Danube Coastal Association for Research and Development	1	Government	Bulgaria
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
574	Royal Netherlands Navy, Hydrographic Service	1	Government	Netherlands
1526	Rijkswaterstaat Water, Traffic and Environment	9	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	2	NGO	Bulgaria

EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
4727	NGO MARINE SOUND	4	NGO	Bulgaria
4537	ORION	6	NGO	Cyprus
5079	Non-governmental environmental organization "Mare Nostrum"	1	NGO	Romania
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	14	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	24	Research Institute	France
1054	IFREMER Head Office	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)	22	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

EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
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
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)	31	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	11	Research Institute	Russian Federation
949	World Data Centre-B For Oceanography	7	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

EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
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
1623	AZTI - Tecnalia, Headquarters Pasaia(Gipuzkoa)	1	Research Institute	Spain
2550	Institute of Marine Sciences, Barcelona	7	Research Institute	Spain
3497	PLOCAN/ Oceanic Platform of the Canary Islands	4	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
44	Scottish Association for Marine Science	1	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
3324	University of Leipzig	1	University	Germany
3453	University Bayreuth	2	University	Germany
302	University of Athens, Department of Chemistry, Division of Inorganic and Environmental Chemistry, Environmental and Marine Chemistry Group (EMCG/UATH)	1	University	Greece

EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
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
2163	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

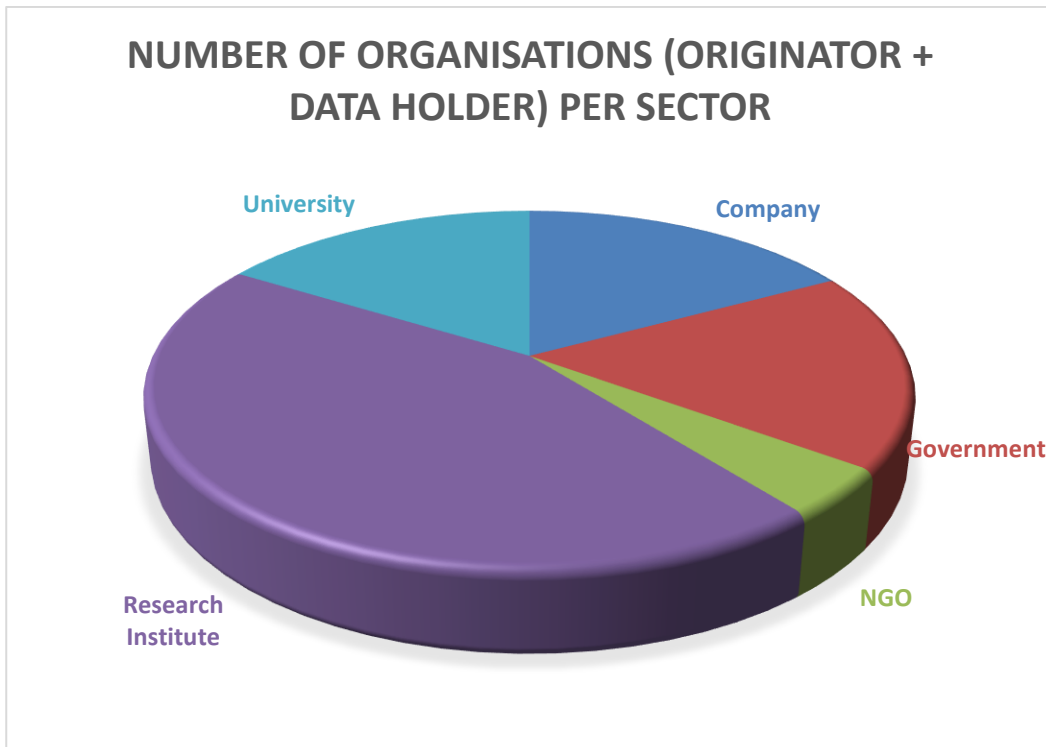


Figure: Division by sector of organisations (117) for data originators and holding centres

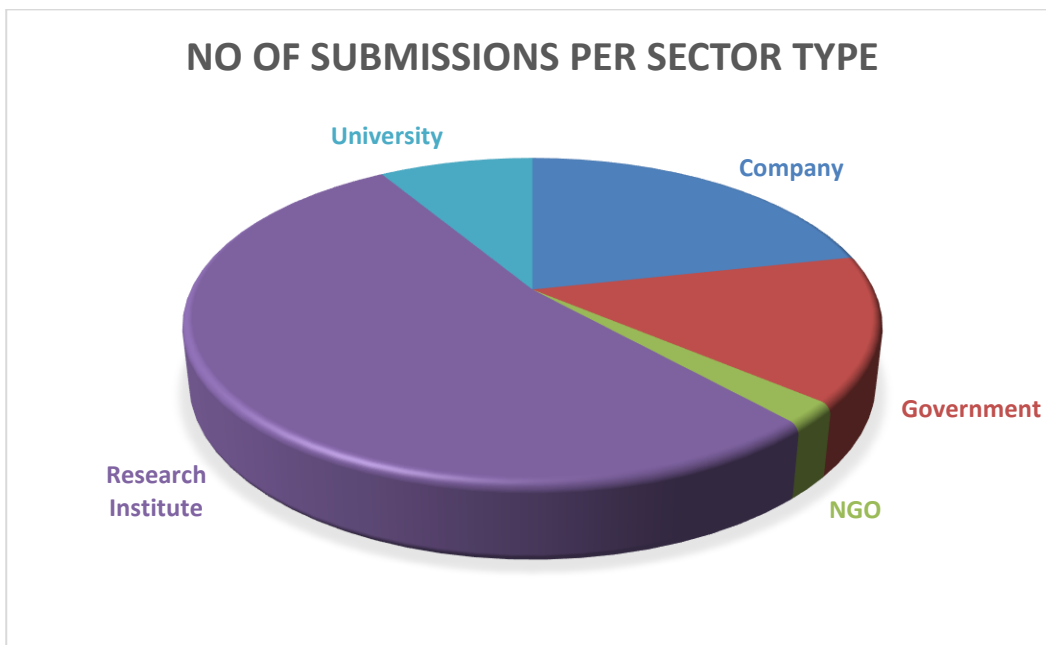


Figure: Division of number of submissions (595) by sector of data originators and holding centres



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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 of which 357 records are now at Phase I publication and 238 records are at Phase II publication. In the reporting period quite a large number of submissions were elaborated to Phase II, namely 31 submissions.

3. Unexpected difficulties encountered

Nothing to report.