



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: 01/07/2020 – 30/09/2020

Date: 19/10/2020

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1. Highlights in this reporting period

- In the reporting period, the numbers of submissions and processing of submissions have increased considerably. **Submissions** went **from 759 to 822**, the number of **published data submissions ‘as is’** in the View Submissions service increased **from 619 to 674** (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 255 to 286**.
- At 30th September – 1st October 2020 a plenary meeting by web conference took place of the full EMODnet Ingestion 2 consortium in order to monitor progress of all project activities, overall and per country, and to gather input for the annual interim report which will be prepared for the project period from 11th October 2019 – 10th October 2020.

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:

In July 2020, a third Quarterly Progress Report for April – June 2020 was prepared and submitted by MARIS to EASME, EU DG MARE, and EMODnet Secretariate, which has been accepted.

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

Coordination took place by e-mail and short bilateral web conferences. At 30th September – 1st October 2020 a full project meeting took place by web conference, involving the full EMODnet Ingestion 2 consortium. At the meeting progress of all project activities, overall and per country, was discussed and input was gathered for the annual interim report which is under preparation for the first year of the project from 11th October 2019 – 10th October 2020.

Contributions were given for the EMODnet 2019 Annual report upon request of the EMODnet Secretariat. Moreover, the coordinator of EMODnet Ingestion 2 participated in the preparations and event around ‘EMODnet 10 years’.

Date	Location	Topic	Short Description
31 July 2020	Web Conf	Preparation 'EMODnet 10 years' - session	Discussing possible panel members and their invitation between MARIS, SMHI and HCMR.
3 August 2020	Web Conf	EMODnet Physics – Ingestion cooperation	Discussing progress of activities for the EMODnet Physics – Ingestion cooperation between MARIS and ETT.
17 September 2020	Web Conf	SWE adoption in Eurofleets+ project	Discussing progress of SWE adoption for transfer of (meta)data from Research Vessels to HUB and further publishing through client between MARIS and Eurofleets+ group
22 September 2020	Web Conf	EMODnet 10 years	Participating in this event with MARIS and HCMR
30 September – 1 October 2020	Web Conf	EMODnet Ingestion 2 plenary meeting	Discussing progress, annual reporting, and further planning with all consortium members

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 technical issues as well as keeping content up-to-date.

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.

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 can be checked by a 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.

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 63 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 55 phase I publications and 31 phase II publications.

All actors are regularly alerted to undertake timely the necessary actions and improve the performance of the system, by means of 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 3 requests for support were received: 2 were from partners asking questions about how to deal with specific submissions; 1 from an external user, having trouble with user registration, which was solved same day.

WP3 – Facilitate machine-to-machine transfers:

Task 3 – Facilitate machine-to-machine transfers:

Activities have continued 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. Several communications took place by ETT with operators. This will be reported in more detail in the coming Interim Report.

Another activity with EMODnet Physics 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 which also support is given by 52North, leading SWE expert and member of EMODnet Ingestion 2 consortium. In collaboration with the Ligurian DLTM, the test was completed of the 52N SOS Services package. The package is now fully installed and running at the Ligurian DLTM HPC facility, providing support for the RT data exchange demonstrator. During the period also the demonstrator endpoint (realtime.emodnet-physics.eu) was updated so that it is now offering more than 1550 sensors from several sources as indicated in the following table.

provider	NEXOS	IRCEL - CELINE	OBSEA	PIM	CNR + ARPA ER	HZG – FerryBox	SMHI	INOGS	MONALISA prj	52N FLUGGS server
Sensors	12	111	2	5	669	569	2825	15	31	83
Types	Mobile Platforms	Time series	Time series	Time series	Time series	Time series	Time series	Time Series	Time Series	Time Series
Datasets	14	598	17	15	4	327585	4591	64	353	212

Table 1. RT SWE Demonstrator linked sources

It is also worth mentioning that the activities on smart sensors from fishermen is gaining further momentum: real-time data is flowing from a variety of sources including ILVO and NOAA NEFSC into EMODnet Physics via the Berring Data Collective along with their own data. Furthermore, there has been progress in getting these data streams into Copernicus CMEMS and WMO via dialogues with IFREMER and JCOMMOPS. An ever-increasing number of regions are interested in starting pilot projects: Ghana, Portugal, Canada. and the Southern Ocean. In addition, the first operational assimilation of this data stream has been started with the Doppio model on the East Coast of the USA.

During the period also a start was made with exploring a wider integration of the Broker (DAB) software component as developed and supported by partner CNR. The DAB is already offering e.g. Italian ARPA EM (Emilia Romagna Region Environmental Agency) river water levels in RT to the SOS SWE demonstrator and the plan is to design a dedicated workflow for providers that would like to adopt this technology as it supports various protocols for (meta)data harvesting and access such as OGC, OAI-PMH, OpenSearch, CKAN, and CUAHSI standard services.

There was also further progress with the adoption of the SWE Toolkit approach by the EU H2020 EUROFLEETS+ project for research vessels. This uptake is managed by MARIS and 52North together with colleagues from the EUROFLEETS+ project. Earlier the toolkit had been configured at CSIC (Spain) which runs a hub for receiving underway data sets (navigation, meteo, and salinometer data) and from research vessels, which are then made available by means of SOS services for retrieval and display at the EUROFLEETS+ EVIOR platform, adopting the 52North client program (Helgoland viewer). Further work is now ongoing for expanding the information stream from the vessels with event information and for customizing the viewer interface at the EVIOR platform. While, the EUROFLEETS+ group is preparing for outfitting several research vessels with an on-board system for locally gathering metadata and data and then transmitting this to the hub. Although the practical implementation is delayed due to COVID-19 crisis which required postponing several transnational cruises.

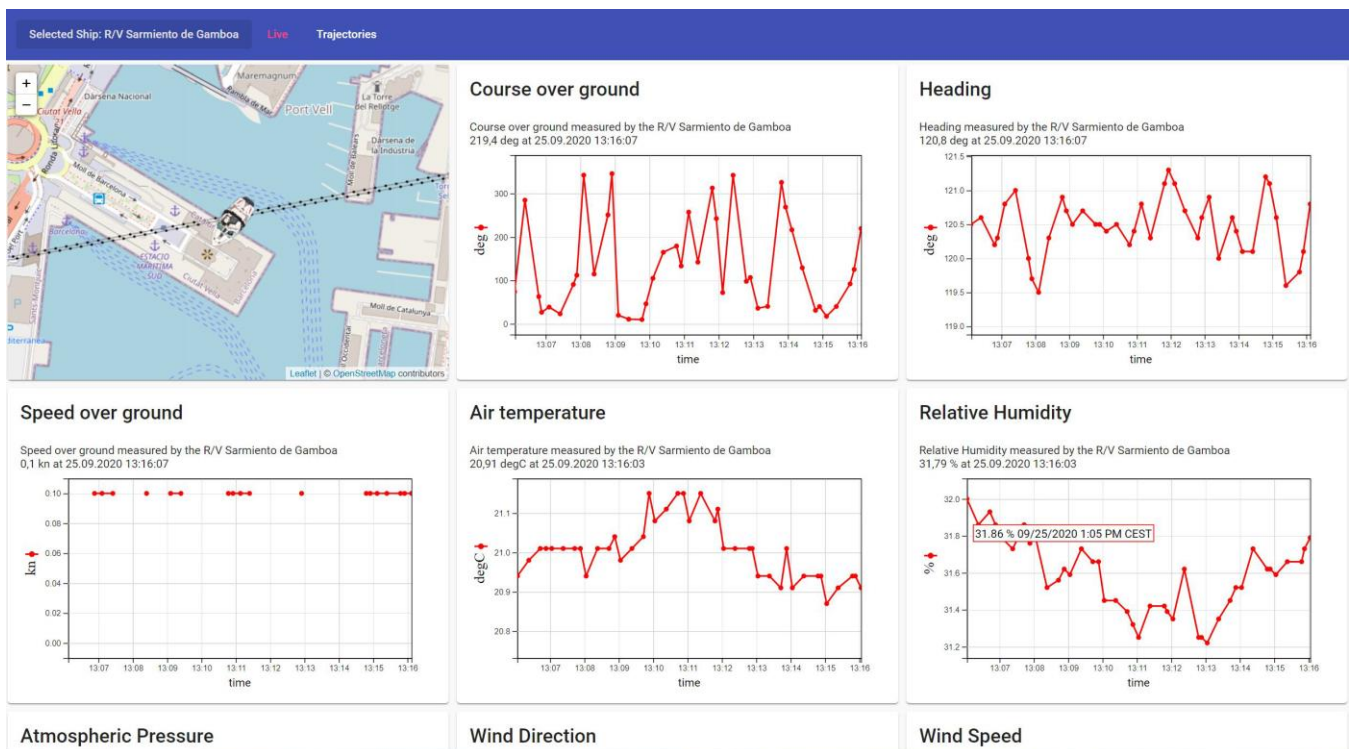


Image: EuroFleets+ SWE Dashboard for displaying underway data sets such as navigation tracks

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 again limited progress with promotion activities and contacts with potential data providers encouraging and supporting them for ingesting new data sets, as these activities were seriously hampered by the COVID-19 crisis and the severe lock-downs in countries of many of the EMODnet Ingestion 2 partners. Major events, that normally would have been visited for promotion, have been cancelled / postponed to later dates.

In practice, promotion took place at only a few occasions, such as oral presentations at the IHO Crowdsourced Bathymetry Working Group (30 June – 2 July 2020), EuroGOOS Tide Gauge Task Team meeting (1 – 2 July 2020), EuroGOOS HF Radar Task Team meeting (7 July 2020), Meteorological Service of Israel (20 July 2020), Clean Sea Mersin Project Meeting (21 July 2020), SOOS Annual General Assembly (27 - 29 July 2020), Malta National event (4 September 2020), Earth Observation Data for Science and Innovation in the Black Sea (EO4SIBS) Project meeting (15 September 2020), SeaDataCloud User Workshop (17 September 2020), and Helsinki University, the Faculty of Biological and Environmental Sciences, Finland (21 September 2020).

As part of WP4 all data centres in the EMODnet Ingestion 2 consortium have been requested by partner RBINS to analyse again their national situation and identify potential data sources of possible interest to EMODnet which then can be used as lists for follow-up. However, this time they could build upon the insights and lessons learned during the preceding four years. For that purpose, each data centre was sent an excel survey form and a guidance note with lessons learnt and useful hints. The reported national overviews have been collated by RBINS in an inventory with indication of themes and assessment of potential (low, medium, high). The full inventory of more than 300 entries will be included in the coming Interim Report.

Furthermore, RBINS has started activities for updating and expanding the material as used for promoting EMODnet Ingestion. The ideas were discussed at the Plenary Project meeting and will be worked out in the coming months, tuning with the EMODnet Secretariat. Ideas concern: 1) updating leaflets; 2) new stickers; 3) updating the EMODnet Ingestion movie, in particular with achieved results in numbers and examples; 4) A0 poster; 5) pins; and 6) Digital background for web conferences.

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. The portal statistics illustrate that the COVID-19 crisis still has a major

effect on the number of visitors and visits. Normally being used to at least 10.000 visitors per month, these statistics have largely decreased since March 2020 to no more than 700 - 1.000 visitors per month.

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2020	17,873	76,507	84,538	98,382	1.06 GB
Feb 2020	11,708	47,943	61,344	70,574	1.08 GB
Mar 2020	2,909	11,340	92,592	103,103	1.73 GB
Apr 2020	1,096	32,546	57,386	66,624	1.57 GB
May 2020	1,085	22,807	197,560	205,591	3.29 GB
Jun 2020	678	1,034	28,211	35,450	1.11 GB
Jul 2020	651	1,355	7,035	15,301	824.44 MB
Aug 2020	636	957	8,708	16,843	948.72 MB
Sep 2020	775	1,250	6,879	20,040	1.26 GB

Table: portal statistics as collected with AWStats

Statistics of submissions.

In the reporting period, the number of **Submissions** went **from 759 to 822**, the number of **published data submissions 'as is'** in the View Submissions service increased **from 619 to 674** (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 255 to 286**. The following figures give characteristics of those published submissions.

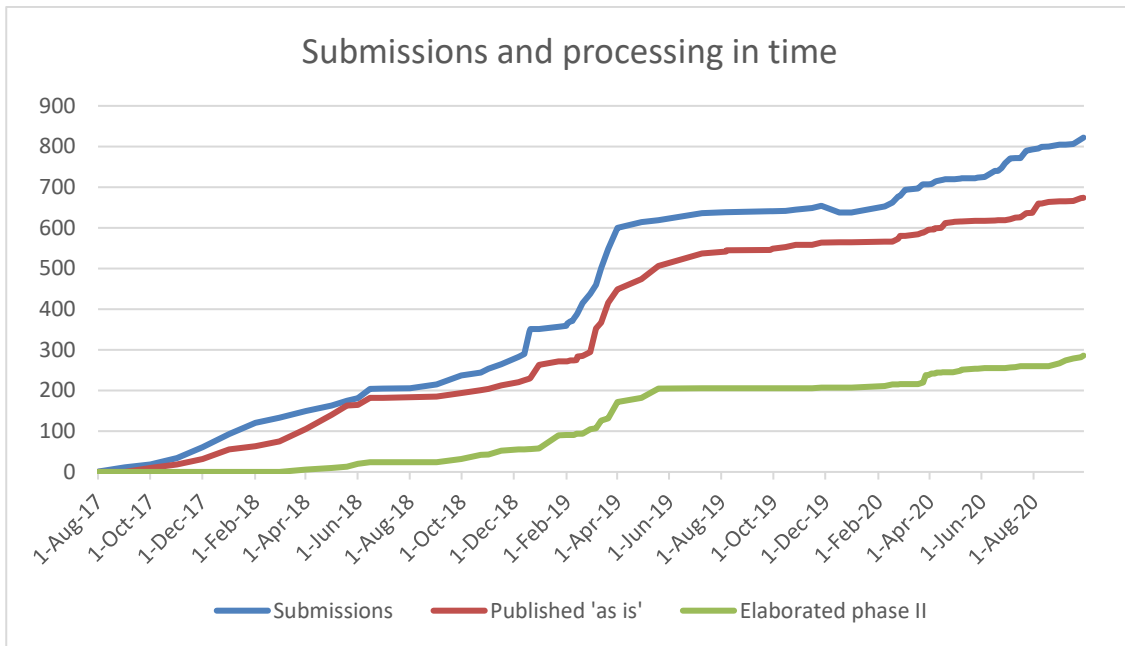


Image: Submissions and processing in time

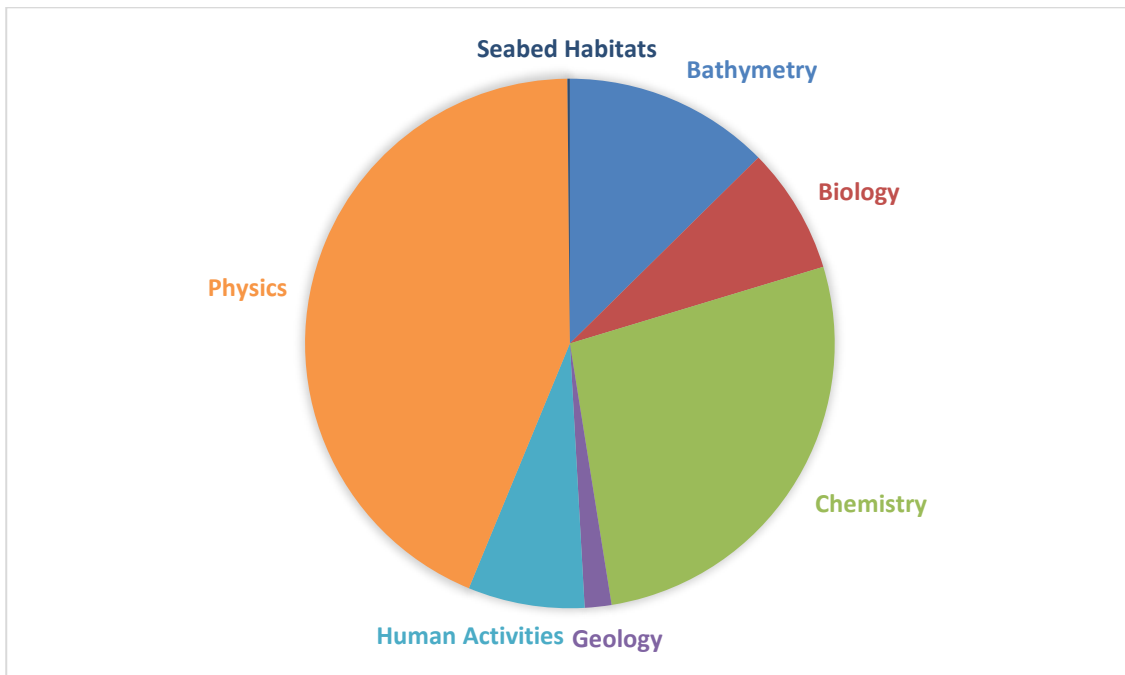


Image: Published submissions (674) by theme

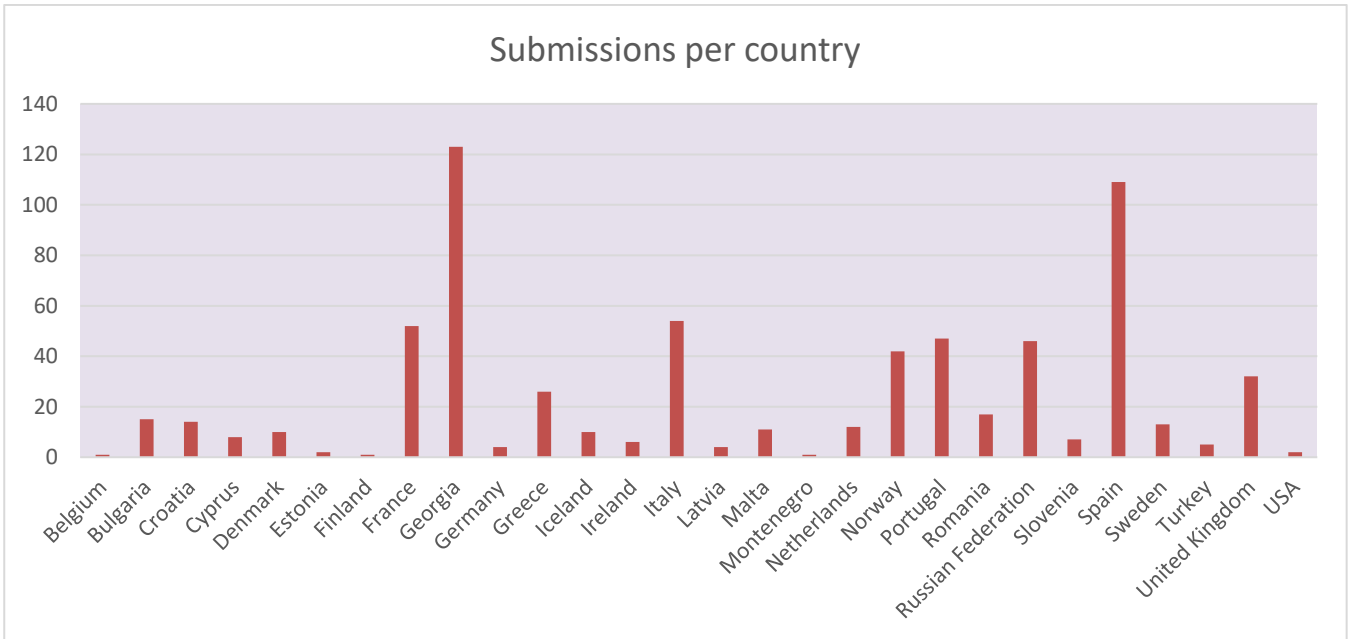


Image: Published submissions (674) by country of submission

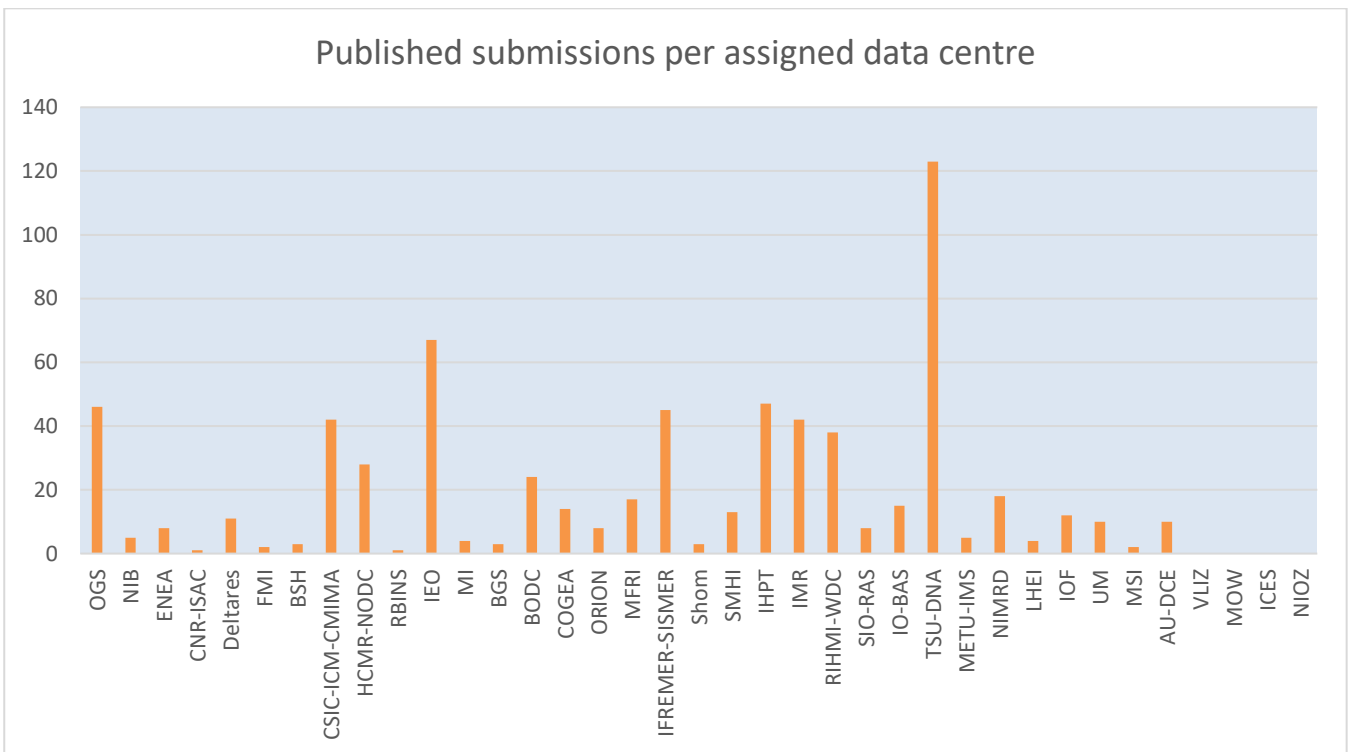


Image: Published submissions (674) by assigned data centres

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
5231	Berring Data Collective	1	Company	Denmark
1265	Scientific - Research Firm "GAMMA"	18	Company	Georgia
4877	Laboratory research centre LTD	81	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
4171	Partrac - Head office	1	Company	United Kingdom
5209	Saildrone	2	Company	USA
1032	Black Sea Basin Directorate	3	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	2	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
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	3	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	28	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
5229	CNR, Institute for the study of anthropic impacts and sustainability in the marine environment	1	Research Institute	Italy
134	CNR, Institute of Marine Sciences S.S. of Lerici (SP)	3	Research Institute	Italy
136	ENEA Centro Ricerche Ambiente Marino - La Spezia	14	Research Institute	Italy
642	Joint Research Centre (JRC)	8	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	2	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)	4	Research Institute	Norway
697	National Institute for Marine Research and Development "Grigore Antipa"	16	Research Institute	Romania
686	P.P.Shirshov Institute of Oceanology, Southern branch	1	Research Institute	Russian Federation
681	All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	36	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	12	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
2157	CSIC-ICM-CMIMA/ Institute of Marine Sciences. Mediterranean Marine and Environmental Research Centre. Department of Marine Science.	6	Research Institute	Spain
280	CSIC-ICM/ Institute of Marine Sciences	17	Research Institute	Spain
310	IGME, Geological Survey of Spain	10	Research Institute	Spain

353	IEO/ Spanish Oceanographic Institute	39	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-IOGAG/ Institute of Oceanography and Global Change	1	Research Institute	Spain
545	Swedish Meteorological and Hydrological Institute	8	Research Institute	Sweden
2696	Turkish Marine Research Foundation (TUDAV)	1	Research Institute	Turkey
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
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	9	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/ Andalusian Interuniversity Institute for the Reseach on the Earth System	1	University	Spain
2172	UB/ Barcelona University	3	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

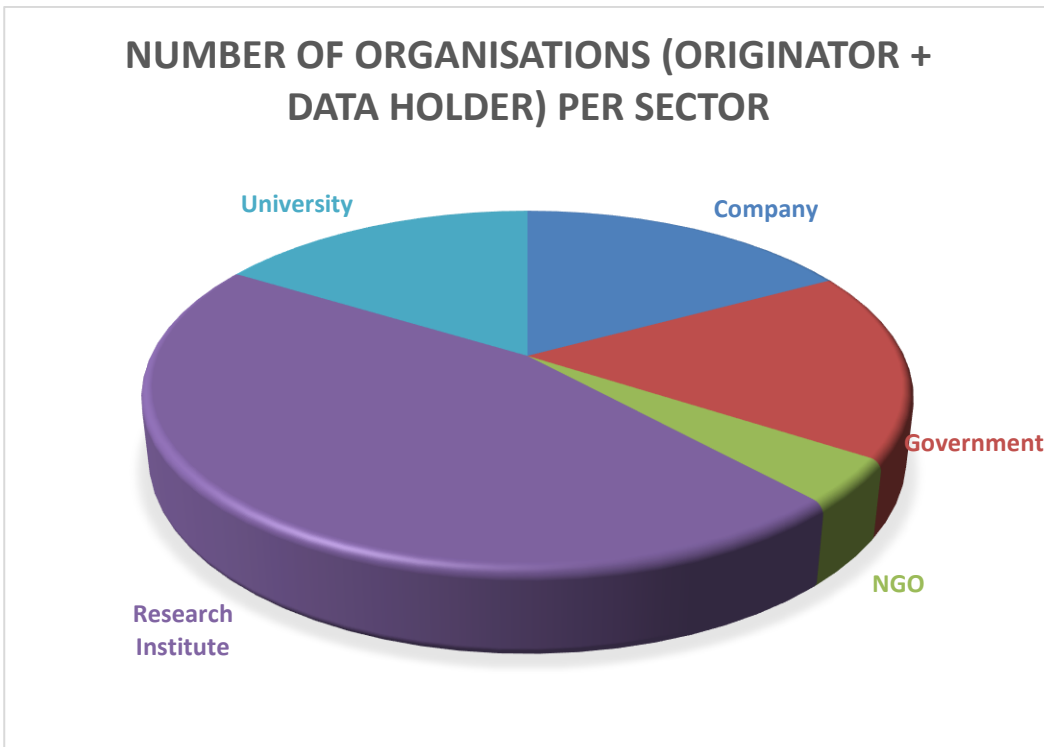


Figure: Division by sector of organisations (123) for data originators and holding centres

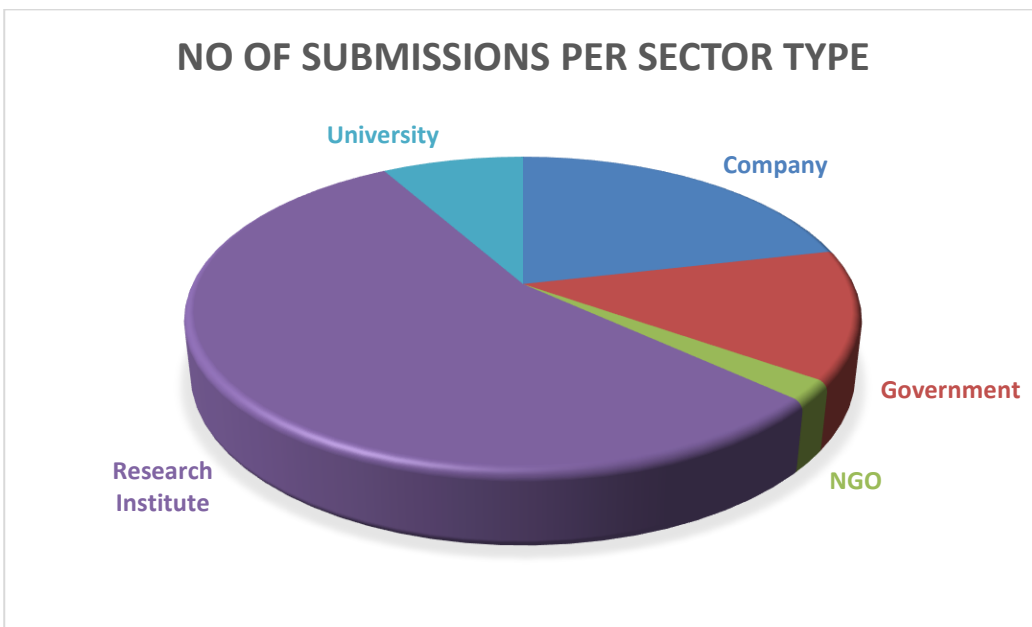


Figure: Division of number of submissions (674) by sector of data originators and holding centres

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 388 records are now at Phase I publication and 286 records are at Phase II publication.

3. Unexpected difficulties encountered

The COVID-19 crisis is considerably hampering the promotion and marketing for EMODnet Ingestion 2 as well as the acquisition of new data submitters. Major events have been postponed to later dates or have been altered to web conferences which in practice reach less attendants and less opportunities for marketing and bilateral communication with potential new data providers. There are still a lot of new submissions; however these are originating mostly from existing organisations.