



# 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: 01/04/2020 – 30/06/2020

Date: 13/07/2020

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## 1. Highlights in this reporting period

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- In the reporting period, the numbers of submissions and processing of submissions have increased considerably. **Submissions** went **from 707 to 759**, the number of **published data submissions ‘as is’** in the View Submissions service increased **from 595 to 619** (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 238 to 255**.
- An official agreement has been made with the Nord Stream 2 pipeline consortium by which they will make a lot of environmental observation data sets available for EMODnet Ingestion for publishing and further elaboration. A start has been made with data sets which have been collected in the trajectory of the pipeline in the Swedish waters of the Baltic Sea. Partner SMHI has been assigned for dealing with these data sets and recently has received a large submission which will be processed after the summer holiday period.

## 2. Work package progress

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

### ***WP0 – Project Management:***

#### Task 10 – Service continuity during operation and for transition:

In April 2020, a second Quarterly Progress Report for January – March 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:

Due to COVID-19 crisis, it was necessary to postpone the full project meeting, which was planned to happen in May 2020, back-to-back with the European Maritime Day 2020 in Cork, Ireland, as this would have given also a good opportunity for promotion and marketing. Earlier, it was planned to have a face-to-face meeting around September 2020 at the same location, but considering present situation it seems better to plan a web conference in September – October 2020. In the meantime, coordination mostly take 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.

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Date	Location	Topic	Short Description
8 April 2020	Web Conf	EMODnet Physics progress meeting	Discussing progress of EMODnet Physics, including the joint EMODnet Physics – EMODnet Ingestion activities.
20 April 2020	Web Conf	EMODnet – CMEMS coordination meeting	Discussing progress from EMODnet and CMEMS and exploring further options for synergy and future perspectives.
21 - 22 April 2020	Web Conf	EMODnet Steering Committee meeting	Overall project progress monitoring, new perspective for EMODnet, and discussing several strategic development.
23 – 24 April 2020	Web Conf	EMODnet Technical Working Group meeting	Technical progress, and discussing new perspective for EMODnet.

### ***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 52 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 24 phase I publications and 17 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 no requests for support were received.

### ***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. 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. Together with 52North, leading SWE expert and member of EMODnet Ingestion 2 consortium, the first installation and validation of the new interoperability SOS SWE package at an

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operator of observing platforms was achieved. The 52N instance is now installed and running at the Ligurian DLTM HPC facility. The experience with the practical installation provided some extra hints for inclusion in the installation guideline, that will be released in the next reporting period. The SWE instance will be configured with the real time streams and by end of July it is planned that two ARPAL wave buoys will be connected and providing their data streams. ARPAL is the Ligurian Regional Agency for Environment Protection.

There is an open dialog for ingesting and linking Antarctic Circumnavigation Expedition (ACE) data, and after having made a generic design of the data flow, the project is now moving to a testing phase. ACE is using Zenodo as mission metadata repository: a special ACE-adaptor was developed in the reporting period to harvest metadata from the Zenodo instance. Although it is a custom tool, the basic structure might be further extended to facilitate EMODnet Ingestion to connect to more relevant Zenodo sources. Further analysis is planned. This could work like the already operational exchange from SEANOE to EMODnet Ingestion.

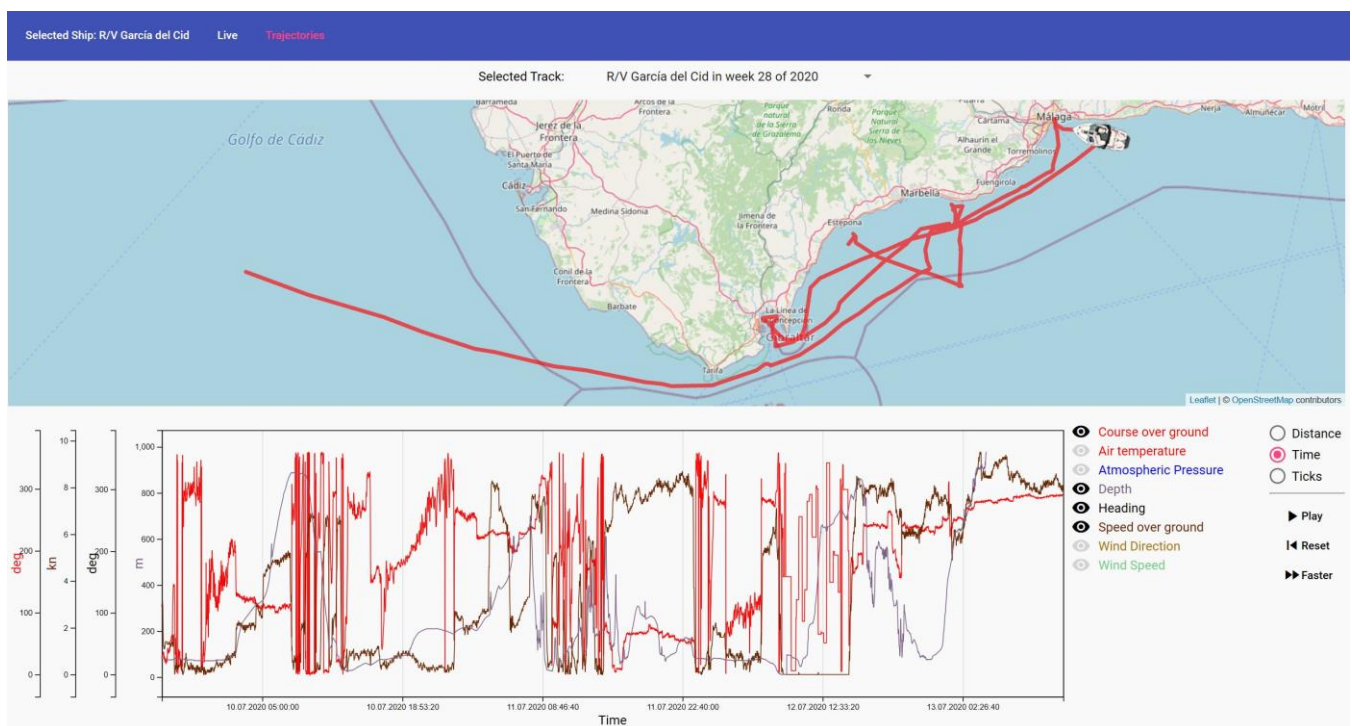


Figure: EUROFLEETS+ SWE dashboard at CSIC for underway data from sailing research vessels

The figure above illustrates that the adoption of the SWE Toolkit approach by the EU H2020 EUROFLEETS+ project has also made further progress. The 52North SWE Toolkit has been configured at CSIC (Spain) which now 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). So far, several CSIC research vessels have been connected while deployment is ongoing for research vessels from Denmark and Iceland that will be used for the first EUROFLEETS+ transnational research cruises. Guidance has been given to the scientific cruise teams for preparing data management plans for the delayed mode data sets and how to share these later on through the EMODnet Ingestion service for elaboration and long term archival in selected NODCs and consecutive publishing in SeaDataNet and EMODnet.

### ***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 only limited progress with promotion activities and contacts with potential data providers encouraging and supporting them for ingesting new data sets. 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. EGU-2020 was altered into a web conference and EMODnet Ingestion was mentioned in the EMODnet Physics presentation. Unfortunately, the planned on-site promotion with leaflets and poster could not be deployed. In practice, promotion took place at only a few occasions, such as an oral presentation at the HazRunoff Workshop (27 May 2020) about river data management with circa 20 participants and an oral presentation and display of the EMODnet Ingestion animation movie at the Fishing for Data Workshop (20 May 2020) about engaging the Fishing Vessels community with more than 300 participants.

Despite these limitations, still more than expected progress was achieved with 52 new data submissions in the reporting period. A number of interesting cases of phase II elaboration will be highlighted. There is a submission for the SIMBIOS project (2000-2002), supported by the Italian Ministry of Research, which aimed at the investigation of the Sardinia Sea and Sardinia Channel. Five oceanographic cruises were organised between 2000 and 2002 involving hydrodynamics and biochemical measurements. A diagnostic ocean circulation model was used to study the surface dynamics. The single submission by CNR, Istituto per l'Ambiente Marino Costiero (Sezione di Oristano) has resulted into a collection of circa 400 CTD stations which have been populated into the CDI service for feeding into EMODnet.



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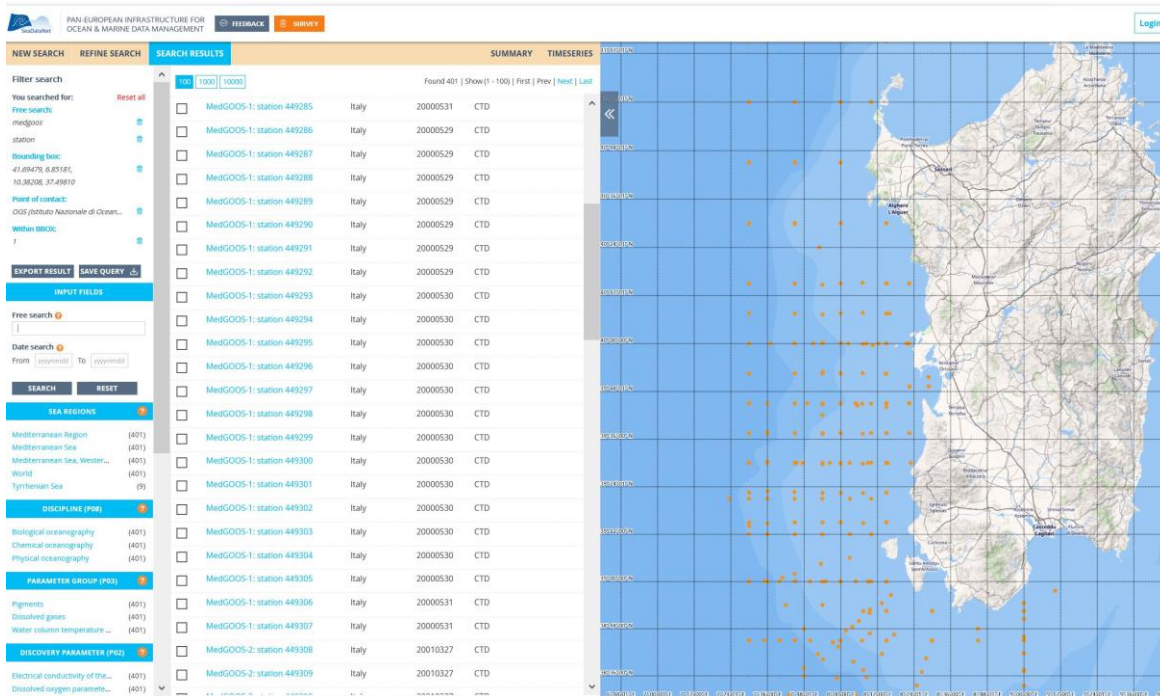
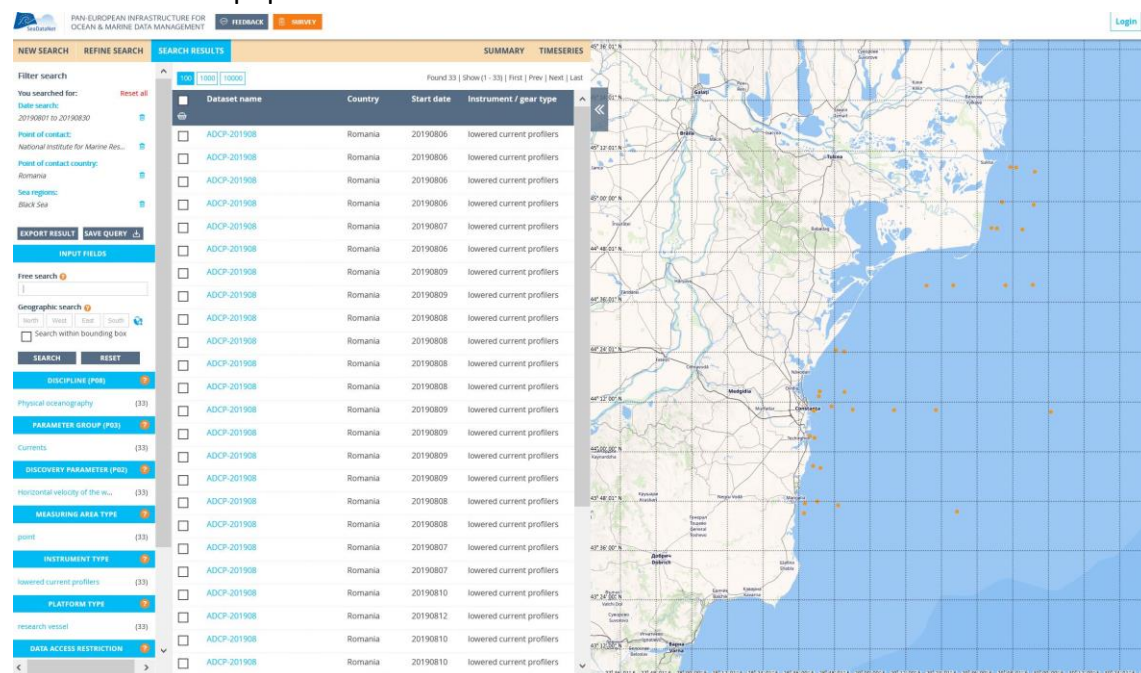


Figure:

SIMBIOS (2000 – 2002) data from Italy included in CDI service for feeding EMODnet

The Romanian MONITORING project (2018 – 2020) aims at studying the Black Sea marine ecosystem's ecological state evolution through the MSFD descriptors based on the physical-chemical and biological parameters monitored in the Romanian marine waters. Part of the submission by National Institute for Marine Research and Development "Grigore Antipa" (NIMRD) has resulted in circa 30 ADCP stations which have been populated into the CDI service.





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Figure: MONITORING (2018 – 2020) data from Romania included in CDI service for feeding EMODnet

Two ingestions were made for data collected by Saildrone during the cruise legs ANTA-SD-019 and ATL2MED-SD-1030. The ingested datasets included 45 parameters plus 3 reference parameters time, lat, lon. HCMR as assigned data centre managed to map 24 out of the 45 submitted parameters, because it was the first time they handled such data. Additional P01 codes have been requested from BODC and will be added later.

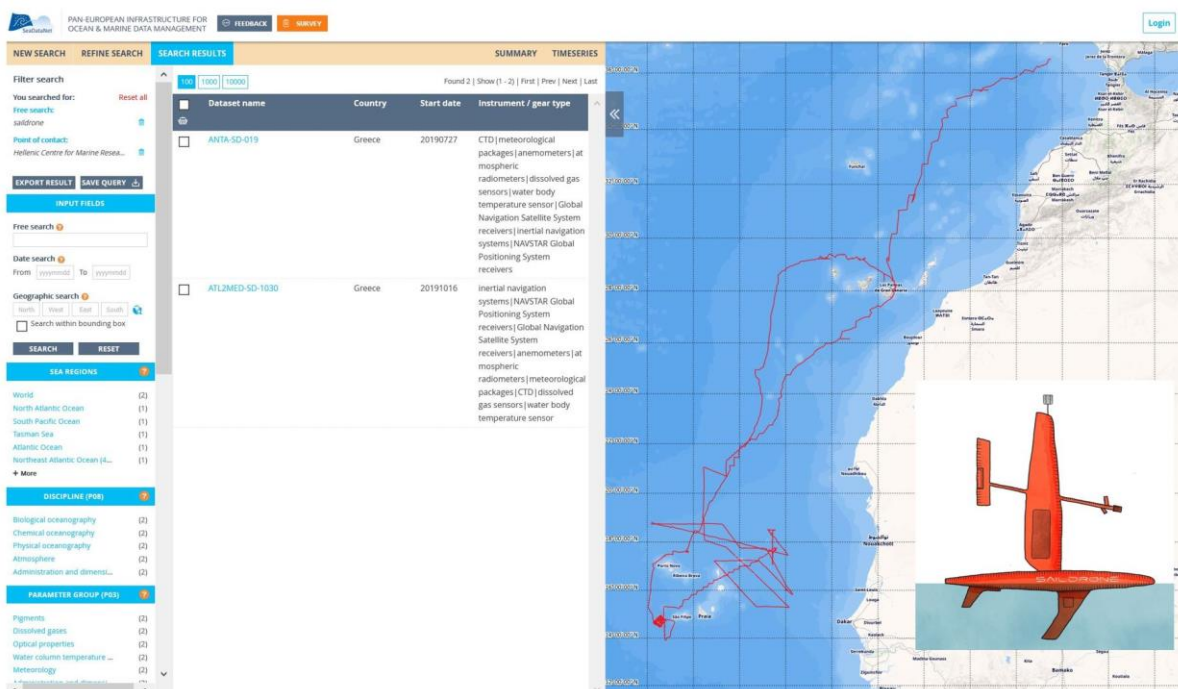


Figure: Saildrone cruise leg data sets included in CDI service for feeding EMODnet

The earlier draft agreement with the Nord Stream 2 pipeline consortium has been finalised and recently signed by the Nord Stream 2 pipeline consortium and MARIS as EMODnet Ingestion 2 coordinator. The negotiations were also joined by SMHI. The agreement specifies further details about the practicalities and liabilities of sharing data by the Nord Stream 2 pipeline consortium through EMODnet Ingestion. As a first step the Nord Stream 2 pipeline consortium has prepared a package with data and documentation for environmental observation data (physics, chemistry, geology, habitats, bathymetry) as collected in the pipeline trajectory in Swedish waters. The package has been assigned to SMHI as data centre and they will undertake processing after the summer holiday period. More data packages will follow for other trajectories of the pipeline.

### 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 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 1.000 visitors per month.

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
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
Apr-20	1,096	32,546	57,386	66,624	1.57 GB
May-20	1,085	22,807	197,560	205,591	3.29 GB
Jun-20	658	996	28,045	34,758	1.08 GB

*Table: portal statistics as collected with AWStats*

### Statistics of submissions.

In the reporting period, the number of **Submissions** went **from 707 to 759**, the number of **published data submissions 'as is'** in the View Submissions service increased **from 595 to 621** (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 238 to 255**. The following figures give characteristics of those published submissions.

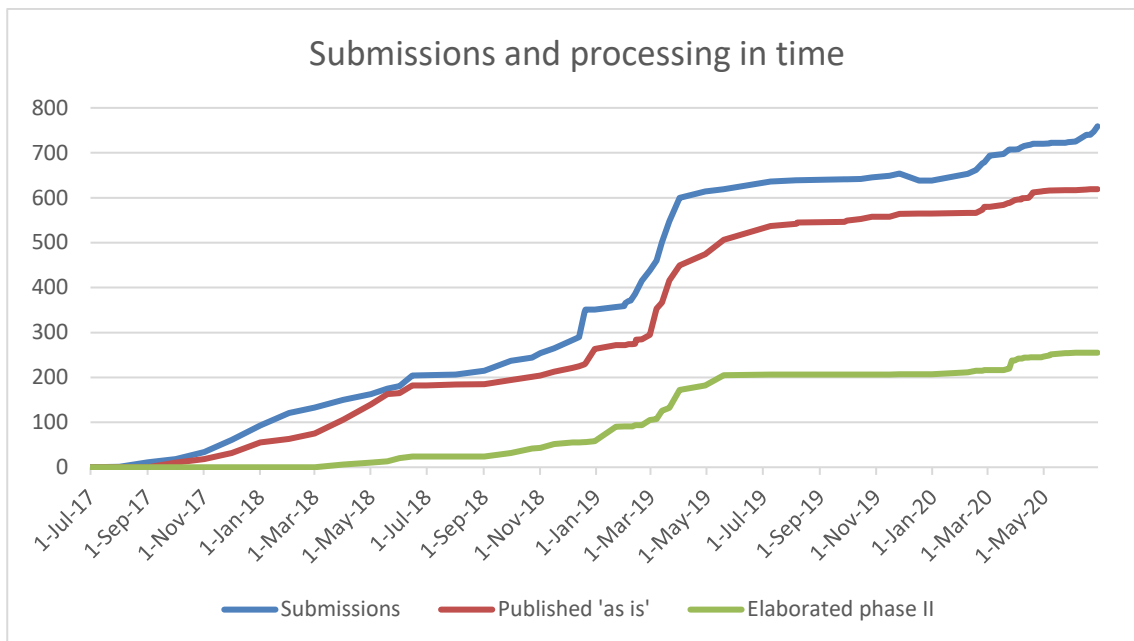


Image: Submissions and processing in time

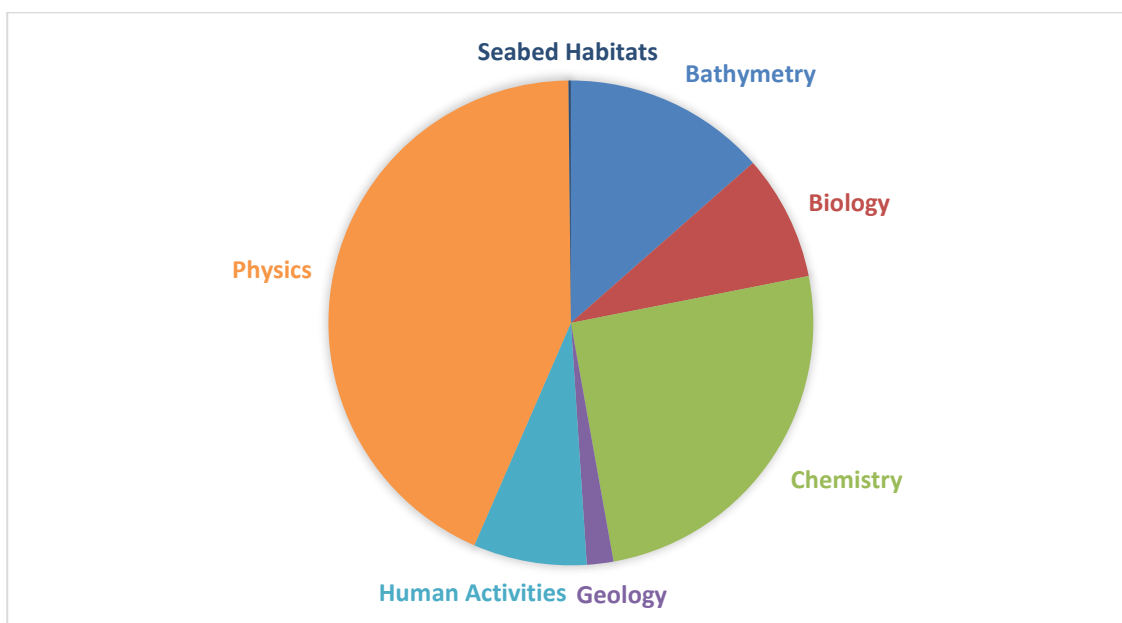


Image: Published submissions (621) by theme

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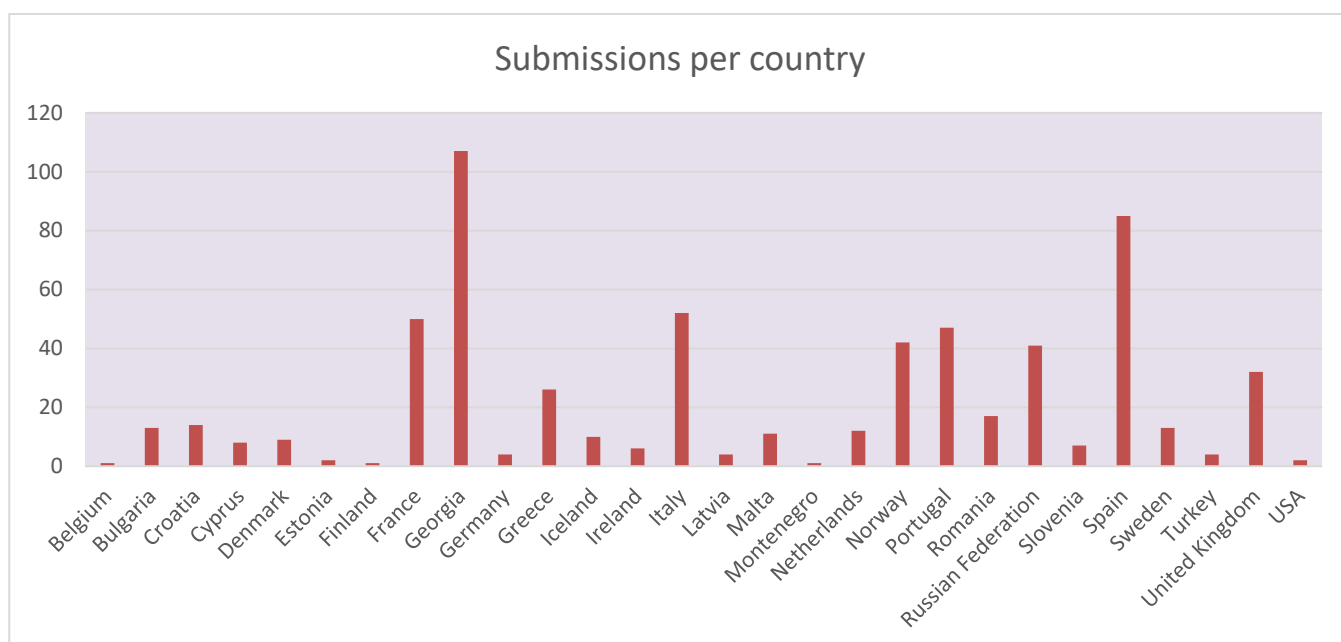


Image: Published submissions (621) by country of submission

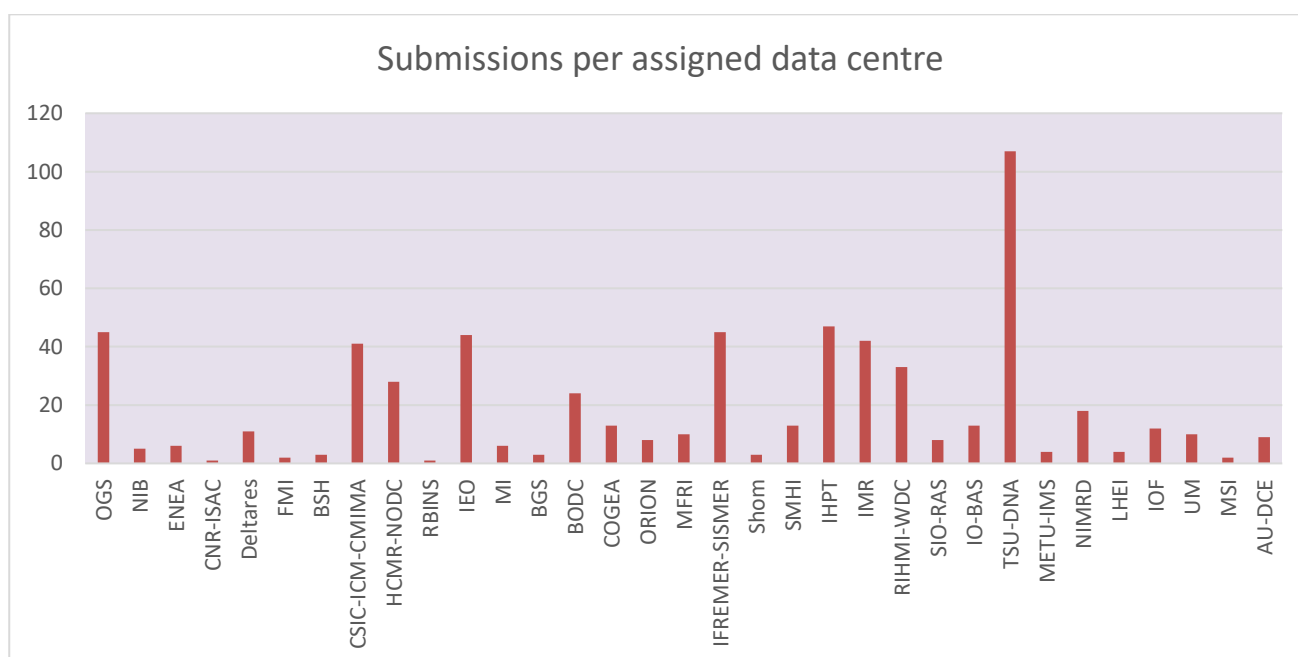


Image: Published submissions (621) by assigned data centres

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

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EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
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
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	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

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EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
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	26	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



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EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
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	12	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

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EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
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)	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	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	16	Research Institute	Spain
310	IGME, Geological Survey of Spain	10	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

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EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
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
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

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EDMO	DATA ORIGINATOR / HOLDING CENTRE	No	SECTOR	COUNTRY
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/ Andalousian 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*

## NUMBER OF ORGANISATIONS (ORIGINATOR + DATA HOLDER) PER SECTOR

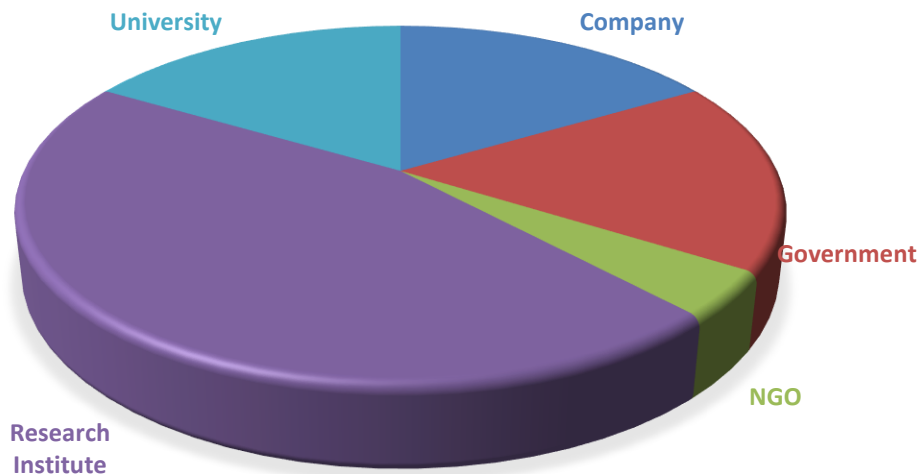


Figure: Division by sector of organisations (121) for data originators and holding centres

## NO OF SUBMISSIONS PER SECTOR TYPE

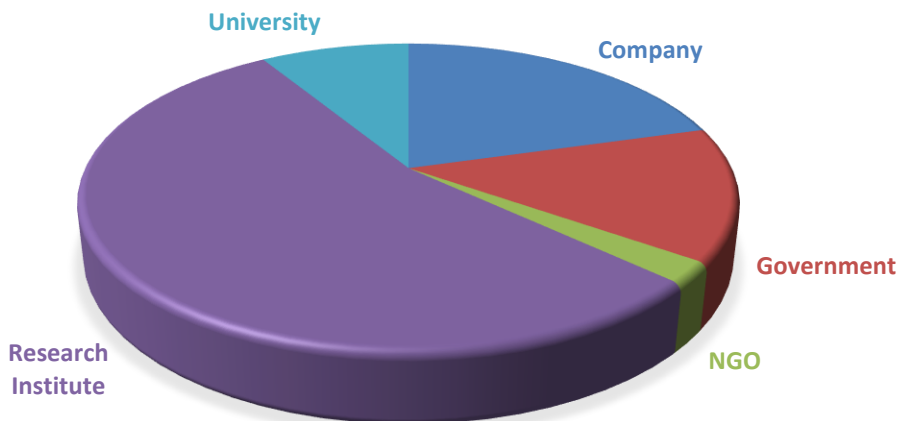


Figure: Division of number of submissions (621) by sector of data originators and holding centres

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 366 records are now at Phase I publication and 255 records are at Phase II publication.

### 3. Unexpected difficulties encountered

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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.