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H2020 project

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## **M 8.2.1**

### **Title: E-learning document for data handling**

Date: March 2021

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## Introduction

MEESO will create new knowledge and data on the mesopelagic community, its biodiversity, drivers of its biomass, and its role in carbon sequestration, its role in the oceanic ecosystem and its interactions with the epipelagic community which includes several important commercial fish stocks. MEESO will demonstrate and implement new acoustic and trawl-sampling solutions which will allow quantification of abundances and spatial distributions of the mesopelagic resources. MEESO partners will also make available for analyses within the project data from a range of standard monitoring cruises. Additionally, numerous future scientific and commercial trial cruises are planned by the partners for 2019 and 2020. MEESO will develop new technologies for catching and processing mesopelagic resources in close cooperation between academia and industry, including trawls, on-board handling and processing

ICES is leading WP1 (Data management and dissemination) in the MEESO project, in partnership with the MEESO project ICES is working to facilitate a data collection and provide metadata information of the data. WP1 will ensure data collected under the project available with the FAIR (Findable, Accessible, Interoperable and Reusable) principles. This e-learning document contains the information about ICES database data collection flows and metadata catalogue for data resources and transferring data to international data collection. It is a joint effort between WP1 and data originator partners ensuring a smooth transition from data collection to a submission with international data standards to ensure consistency of quality. This e-learning document is useful as a data submission guideline, because it covers wider range of topic such as data management, data model and data format description.

## Data Portal and Data Management

The Data Portal is where processed acoustic data (acoustic data associated to an acoustic category) and associated biotic trawl data get uploaded into the ICES Acoustic Database. Data can be uploaded either as CSV or XML file format and get converted and validated immediately using XSD Schema and Schematron rules as well as controlled vocabularies. The controlled vocabularies are managed through ICES vocabulary server, while metadata are served through ICES metadata catalogue. Output from the system are data files that can be directly passed into abundance indices estimation software like StoX and EchoR. A full description of the acoustic data portal is available from the Acoustic Data Portal main page: <https://www.ices.dk/data/data-portals/Pages/acoustic.aspx>.

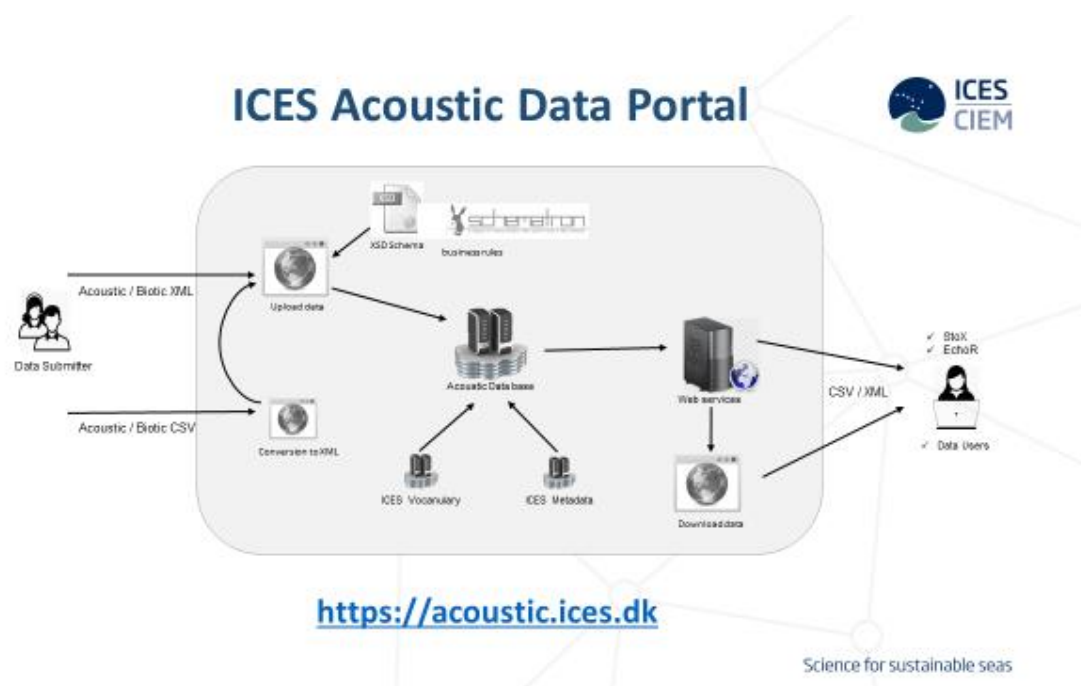


Figure 1. ICES Acoustic Data Portal diagram

## ICES Acoustic and Biotic Data Format

The acoustic data format consists of two parts – an acoustic and a biotic part. The acoustic part of the format is based on the SISP 4 – *A metadata convention for processed acoustic data from active acoustic systems*, which is developed by the ICES Working Group on Fisheries Acoustics, Science and Technology (WGFAST). The biotic part of the format is based on the ICES Database of Trawl Surveys (DATRAS).

### Acoustic Data Format

In the acoustic data format description package, downloadable from the acoustic data portal, [https://ices.dk/data/Documents/Acoustic/ICES\\_Acoustic\\_data\\_format\\_description.zip](https://ices.dk/data/Documents/Acoustic/ICES_Acoustic_data_format_description.zip), the included *Acoustic.csv.xlsx* file provides a detailed description of the CSV format for the acoustic part of the data format, while the file *Acoustic.csv* (Figure 2) shows an actual example of data.

[illegible]

As seen from the descriptions, each record type should have only one header line and at least one associated record. Typically, a data file will contain one header and one related record for each of the metadata record types, while a data record type will have one header followed by any number of the data records. Reporting format can be customized by the submitters, where only mandatory fields and used optional fields need to be included, i.e. optional fields not in use can be left out of the data file together with their headers.

In the acoustic data format description package, the included biotic file, *Biotic.csv* (Table 1), contains the biotic format description and a data example, where information from certain fields in *Cruise*, *Haul* and *Catch* records are mandatory, while all of the *Biology* record is only recommended.

The *Haul* record define a large number of haul related variables e.g. location, haul duration, depth of the haul, gear features as well as several other environmental conditions.

The optional *Biology* record type, is used for additional information on the individual biology of the catch, including individual weight, length, sex, maturity and age.

Table 1. Headers in bold correspond to Key fields. The "\*" at the field status means that the field is mandatory to report at certain conditions. Read the field definition for more information.

Record Header	Field Header	Field Status	Field definition	Options	Example
Cruise	<b>Cruise</b>	mand.	Key field used to identify record type	Cruise	Cruise
(mand.)	<b>Header/Record</b>	mand.	Key field used to identify header and record rows	Header, Record	Header
	CruiseSurvey	mand.	Survey - AC_Survey, see Options; multiple references are allowed - report with tilde '~'	<a href="http://vocab.ices.dk/?ref=1453">http://vocab.ices.dk/?ref=1453</a>	HERAS~CSH AS
	CruiseCountry	mand.	Country code based on ISO 3166 2-alpha standard - ISO_3166, see Options	<a href="http://vocab.ices.dk/?ref=337">http://vocab.ices.dk/?ref=337</a>	DK
	CruiseOrganisation	opt.	Organisation code - EDMO, see Options	<a href="http://vocab.ices.dk/?ref=1398">http://vocab.ices.dk/?ref=1398</a>	703
	CruisePlatform	mand.	Platform code - SHIPC, see Options	<a href="http://vocab.ices.dk/?ref=315">http://vocab.ices.dk/?ref=315</a>	26D1
	CruiseStartDate	mand.	Cruise start date using ISO 8611: YYYY-MM-DD		2016-01-01
	CruiseEndDate	mand.	Cruise end date using ISO 8611: YYYY-MM-DD	End date must be higher than the start date	2016-01-21
	CruiseLocalID	mand.	National cruise identifier		26D1201601
Haul	<b>Haul</b>	mand.	Key field used to identify record type	Haul	Haul
(mand.)	<b>Header/Record</b>	mand.	Key field used to identify header and record rows	Header, Record	Record
	<b>CruiseLocalID</b>	mand.	Reference to the CruiseLocalID in the Cruise record		26D1201601
	HaulGear	mand.	Biotic sampler - Gear, see Options	<a href="http://vocab.ices.dk/?ref=2">http://vocab.ices.dk/?ref=2</a>	PEL
	HaulNumber	mand.	Sequential numbering of hauls during the cruise		12
	HaulStationName	mand.	Station number. National coding system, not defined by ICES		42E912
	HaulStartTime	mand.	Haul start time (GMT) using ISO 8601 format YYYY-MM-DDThh:mm or YYYY-MM-DD hh:mm		2016-01-01T14:55
	HaulDuration	mand.	Haul duration in minutes. Start time - the moment when the gear settles at the stated towing speed. Stop is defined as the start of hauling of the gear.		30
	HaulValidity	mand.	Haul validity code - AC_HaulValidity, see Options	<a href="http://vocab.ices.dk/?ref=1474">http://vocab.ices.dk/?ref=1474</a>	V
	HaulStartLatitude	mand.	Start fishing position: Degree.Decimal Degree of latitude		-0.4754
	HaulStartLongitude	mand.	Start fishing position: Degree.Decimal Degree of longitude.		56.7768
	HaulStopLatitude	opt.	Stop fishing position: Degree.Decimal Degree of latitude.		-0.4798
	HaulStopLongitude	opt.	Stop fishing position: Degree.Decimal Degree of longitude.		56.8312
	HaulStatisticalRectangle	opt.	ICES statistical rectangle area reference.		42E9
	HaulMinTrawlDepth	mand.	Minimum depth (positive value in metres) of the trawl headline. Report only min.depth for the same trawl depth, if different depths applied, report both min. and max. fields		25
	HaulMaxTrawlDepth	opt.	Maximum depth (positive value in metres) of the trawl headline		75
	HaulBottomDepth	opt.	Bottom depth in metres		150
	HaulDistance	opt.	Actual distance in metres between haul start and haul end point.		3560
	HaulNetopening	mand.	Mean value in metres of vertical net opening measurements		3.5
	HaulCodendMesh	opt.	Codend mesh size in mm		22
	HaulSweepLength	opt.	Length of sweep in metres		75
	HaulGearExceptions	opt.	Gear exceptions - AC_GearExceptions, see Options	<a href="http://vocab.ices.dk/?ref=1476">http://vocab.ices.dk/?ref=1476</a>	B
	HaulDoorType	opt.	Door type - AC_DoorType, see Options	<a href="http://vocab.ices.dk/?ref=1477">http://vocab.ices.dk/?ref=1477</a>	R
	HaulWarpLength	opt.	Length of warp in metres. Defined by fishing depth.		80
	HaulWarpDiameter	opt.	Warp diameter in millimetres.		20
	HaulWarpDensity	opt.	Warp weight in kg per linear meter of warp.		75
	HaulDoorSurface	opt.	Door surface area in square metres.		1.4
	HaulDoorWeight	opt.	Door weight in kilograms.		780
	HaulDoorSpread	opt.	Mean value in metres of door spread measurements.		15
	HaulWingSpread	opt.	Mean value in metres of wing spread measurements.		25

Record Header	Field Header	Field Status	Field definition	Options	Example
	HaulBuoyancy	opt.	Total buoyancy of the net floats in kilograms.		350
	HaulKiteArea	opt.	Kite area in square metres.		4.5
	HaulGroundRopeWeight	opt.	Ground rope total weight in kilograms.		450
	HaulRigging	opt.	Rigging is used in the beam trawl surveys.		
	HaulTickler	opt.	Number of ticklers in the Beam trawl surveys.		
	HaulHydrographicStationID	opt.	The national hydrographic station reference		204578902
	HaulTowDirection	opt.	Direction of towing in degrees. 360=direction from south to north.		184
	HaulSpeedGround	opt.	Ground speed of towing in knots.		4.5
	HaulSpeedWater	opt.	Trawl speed on water in knots.		5.5
	HaulWindDirection	opt.	Direction of wind in degrees. Calm=0, 360=direction from north to south.		340
	HaulWindSpeed	opt.	Speed of wind in metres/sec.		4.5
	HaulSwellDirection	opt.	Direction of swell in degrees. No movement=0, 360=direction from south to north.		240
	HaulSwellHeight	opt.	Height in metres of the formation of long wavelength ocean surface waves defined as swell		0.6
	HaulLogDistance	opt.	Distance linking to the acoustic data records		14500
	HaulStratum	opt.	AC_Stratum, see Options	<a href="http://vocab.ices.dk/?ref=1535">http://vocab.ices.dk/?ref=1535</a>	SURF
Catch	Catch	mand.	Key field used to identify record type	Catch	Catch
(mand.)	Header/Record	mand.	Key field used to identify header and record rows	Header, Record	Header
	CruiseLocalID	mand.	Reference to the CruiseLocalID in the Cruise record		26D1201601
	HaulGear	mand.	Reference to the HaulGear in the Haul record	<a href="http://vocab.ices.dk/?ref=2">http://vocab.ices.dk/?ref=2</a>	PEL
	HaulNumber	mand.	Reference to the HaulNumber in the Haul record		12
	CatchDataType	mand.	Code R specifies that catch data are reported as recorded, sub-sampling factor can vary per sampling category - AC_CatchDataType, other codes are currently not allowed, see Options	<a href="http://vocab.ices.dk/?ref=1475">http://vocab.ices.dk/?ref=1475</a>	R
	CatchSpeciesCode	mand.	Official WoRMS AphiaID code of the species reported at the given record - SpecWORMS, see Options. Any valid code from <a href="http://www.marinespecies.org/">http://www.marinespecies.org/</a> can be added to the list - send the respective request to <a href="mailto:accessions@ices.dk">accessions@ices.dk</a>	<a href="http://vocab.ices.dk/?ref=365">http://vocab.ices.dk/?ref=365</a>	126417
	CatchSpeciesValidity	mand.	Species validity code for use in assessments (data with code 1 only will be used) - AC_SpeciesValidity, see Options	<a href="http://vocab.ices.dk/?ref=1485">http://vocab.ices.dk/?ref=1485</a>	1
	CatchSpeciesCategory	mand.	Catch species sampling category identifier for sample categories by size and/or sex in the same haul. Each category can have a distinct subsampling factor. Report sequential numbers 1,2,3...10 per haul and species. If the sample was not split by categories, report 1 in this field.		1
	CatchSpeciesCategoryNumber	opt.*	Total number of fish of the given species and category in this haul. If no categorizing was performed, total number of fish of the given species per haul. <b>This field must be reported if length distribution is reported.</b>		7000
	CatchWeightUnit	opt.*	Unit for reporting of weight-related fields in this Catch record - AC_WeightUnit, see Options. <b>This field must be reported if any Weight fields are reported.</b>	<a href="http://vocab.ices.dk/?ref=1488">http://vocab.ices.dk/?ref=1488</a>	kg
	CatchSpeciesCategoryWeight	opt.*	Weight of fish for the given species and category in the haul. If no categorizing was performed, total weight of the species per haul.		595
	CatchSpeciesSex	opt.	Sex category identifier. If no sample categorizing by sex was performed, leave the field blank - AC_Sex, see Options	<a href="http://vocab.ices.dk/?ref=1478">http://vocab.ices.dk/?ref=1478</a>	F
	CatchSubsampledNumber	opt.*	Number of measured fish in the given haul, species, category. <b>Must be reported if length distribution is reported.</b> If whole catch was measured, the number would be the same as SpeciesCategoryNumber.		20
	CatchSubsamplingFactor	opt.	Subsampling factor in the given category. Report 1 if no subsampling is applied. If f.ex. 1/6 of the catch was measured, report 6.		350
	CatchSubsampleWeight	opt.*	Weight of the subsampled fish per haul, species, and category. <b>This field must be reported if SpeciesCategoryWeight is reported.</b> If no subsampling		2

Record Header	Field Header	Field Status	Field definition	Options	Example
			was performed, the value would be the same as in the SpeciesCategoryWeight.		
	CatchLengthCode	opt.*	Length code used for reporting of the Length class. Must be the same for the same species in the haul. Must be reported if species length distribution per haul and category is reported - AC_LengthCode, see Options	<a href="http://vocab.ices.dk/?ref=1486">http://vocab.ices.dk/?ref=1486</a>	mm
	CatchLengthClass	opt.*	Length class. <b>This field must be reported if species length distribution per haul and category is reported</b>		380
	CatchLengthType	opt.	Length measurement type - AC_LengthMeasurementType, see Options	<a href="http://vocab.ices.dk/?ref=1479">http://vocab.ices.dk/?ref=1479</a>	1
	CatchNumberAtLength	opt.*	Number of fish per length in the given species category in this haul. This field is not adjusted with the subsampling factor, so the sum of Numbers at Length would be equal to the SubsampledNumber. <b>Must be reported if length distribution is reported.</b>		5
	CatchWeightAtLength	opt.	Total weight of the category by length class		0.5
Biology (recom)	<b>Biology</b>	mand.	Key field used to identify record type	Biology	Biology
	<b>Header/Record</b>	mand.	Key field used to identify header and record rows		Record
	<b>CruiseLocalID</b>	mand.	Reference to the CruiseLocalID in the Cruise record		26D1201601
	<b>HaulGear</b>	mand.	Reference to the HaulGear in the Haul record	<a href="http://vocab.ices.dk/?ref=2">http://vocab.ices.dk/?ref=2</a>	PEL
	<b>HaulNumber</b>	mand.	Reference to the HaulNumber in the Haul record		12
	<b>CatchSpeciesCode</b>	mand.	Species reference as reported in the Catch record	<a href="http://vocab.ices.dk/?ref=365">http://vocab.ices.dk/?ref=365</a>	126417
	<b>CatchSpeciesCategory</b>	mand.	Reference to the SpeciesCategory in the Catch record.		1
	BiologyStockCode	opt.	ICES fish stock ID - ICES_StockCode, see Options	<a href="http://vocab.ices.dk/?ref=357">http://vocab.ices.dk/?ref=357</a>	anf.27.1-2
	BiologyFishID	mand.	Fish identification number - running sampling number of the individual fish		5
	BiologyLengthCode	mand.	Length code of the reported individual length. <b>If length distribution on the catch level is reported, the code should be the same as in the respective parent Catch record</b> - AC_LengthCode, see Options	<a href="http://vocab.ices.dk/?ref=1486">http://vocab.ices.dk/?ref=1486</a>	mm
	BiologyLengthClass	mand.	Length class. <b>If length distribution on the catch level is reported, the value should be the same as in the respective parent Catch record</b>		380
	BiologyWeightUnit	opt.	Unit for reporting weight fields in Biology record - AC_WeightUnit, see Options	<a href="http://vocab.ices.dk/?ref=1488">http://vocab.ices.dk/?ref=1488</a>	gr
	BiologyIndividualWeight	opt.	Individual weight		145
	BiologyIndividualSex	opt.	Gender of the given specimen as defined by dissection - AC_Sex, see Options	<a href="http://vocab.ices.dk/?ref=1478">http://vocab.ices.dk/?ref=1478</a>	F
	BiologyIndividualMaturity	opt.	Maturity of the reported specimen. Requires dissection. - AC_MaturityCode, see Options	<a href="http://vocab.ices.dk/?ref=1480">http://vocab.ices.dk/?ref=1480</a>	65
	BiologyMaturityScale	opt.	Maturity scale used for reporting the maturity data - AC_MaturityScale, see Options	<a href="http://vocab.ices.dk/?ref=1481">http://vocab.ices.dk/?ref=1481</a>	M6
	BiologyIndividualAge	opt.	Age of specimen in years		7
	BiologyAgePlusGroup	opt.	If the older fish is grouped under the age plus group, flag the age used for grouping - AC_AgePlusGroup, see Options	<a href="http://vocab.ices.dk/?ref=1484">http://vocab.ices.dk/?ref=1484</a>	plusgroup
	BiologyAgeSource	opt.	Age reading source material - AC_AgeSource, see Options	<a href="http://vocab.ices.dk/?ref=1482">http://vocab.ices.dk/?ref=1482</a>	Scale
	BiologyGeneticSamplingFlag	opt.	Was genetic sampling of the species performed? - AC_SamplingFlag, see Options	<a href="http://vocab.ices.dk/?ref=1483">http://vocab.ices.dk/?ref=1483</a>	no
	BiologyStomachSamplingFlag	opt.	Was stomach sampling of the specimen performed? - AC_SamplingFlag, see Options	<a href="http://vocab.ices.dk/?ref=1483">http://vocab.ices.dk/?ref=1483</a>	yes
	BiologyParasiteSamplingFlag	opt.	Was parasite sampling of the specimen performed? - AC_SamplingFlag, see Options	<a href="http://vocab.ices.dk/?ref=1483">http://vocab.ices.dk/?ref=1483</a>	NA
	BiologyIndividualVertebraeCount	opt.	Vertebrae count as a stock identifier, if applicable		143



## Acoustic Data Model

The acoustic part of the data format consists of six record types: the five metadata record types *Instrument*, *Calibration*, *Data Acquisition*, *Data Processing*, and *Cruise*; and one data record type *Data*, which is the combination of Log, Sample and Data entities in the data model below (Figure 3).

Metadata record, EchoType, in the model is optional, and is used only if the *Data* record is reported with these EchoTypes. When the SaCategory is used for data reporting, the record EchoType should be excluded from the reporting format.

The Biotic part of the data format consists of four record types: one metadata record *Cruise*; and three data record types *Haul*, *Catch*, and *Biology*.

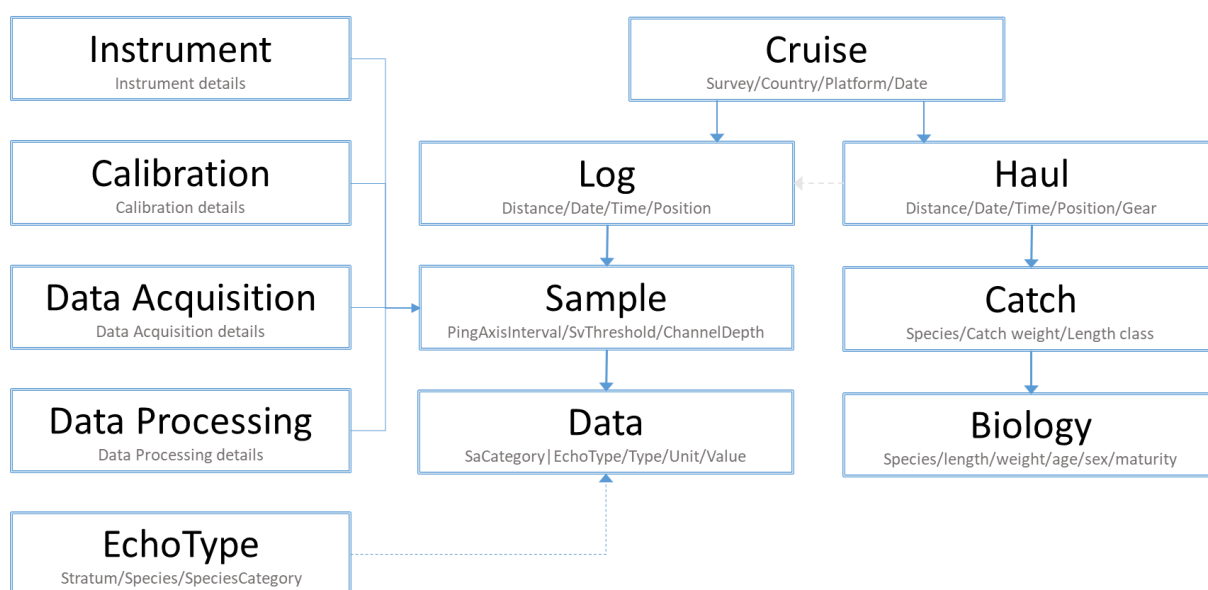


Figure 3. Data model describing Acoustic data.

## Vocabulary Validation and Submission

Both the acoustic and the biotic parts of the format contain fields that rely on controlled vocabularies. The vocabularies are accessible via the ICES vocabulary server <https://vocab.ices.dk>. If a given code does not exist, or if code relations are missing in the related vocabulary lists, an error will be raised during the validation. A new vocabulary item and an associated code, or a code relation can be requested via [acoustic@ices.dk](mailto:acoustic@ices.dk).

Besides validation against controlled vocabularies a number of validation rules are applied and tested for, during data submission. These consist of a mixture of CSV, XSD and Schematron rules, which both can be general or specific in nature towards a given surveys. All current validation rules can at any time be viewed through: <https://acoustic.ices.dk/validationrules> and new validation rules can be created as seen fit.

In the submission process, a submitted XML file will be validated directly against the XML Schema and Schematron rules. A submitted CSV file will immediately be converted into the XML format, to allow validation. Files that successfully pass the data validation can be

uploaded to the acoustic database. If validation for some reason fails and errors are found during the validation process, a detailed validation error report will be produced and sent to the submitter, so that the submitter can correct the errors before resubmitting.

Acoustic and biotic data within the acoustic database can be managed through the acoustic portal at <https://acoustic.ices.dk/submissions>.

**BROWSE SUBMISSIONS**

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Survey Code	Country...	Platfor...	Start Date	End Date	Cruise localID	AccessionID	Acoustic	Biotic
							Submission Date	Submission Date
Select Filter	Select	Select			Select Filter			
6aSPAWN	IE	45CV	2020-11-07	2021-01-06	45CV2020NWHerring	20210062	2021-01-26 17:04	2021-01-25 17:18
BIAS	EE	67BC	2020-10-18	2020-10-25	CLO1	20210092	2021-02-03 15:59	2021-02-09 07:13
BIAS	LV	67BC	2020-10-08	2020-10-17	2020-ZR013	20210437	2021-03-02 11:05	2021-03-08 14:38
CSHAS	IE	45CE	2020-10-06	2020-10-22	45CE2020CSHAS	20203100	2020-11-02 13:27	2020-11-16 11:18
BIAS	DE	06SL	2020-10-02	2020-10-21	06SL783	20210032	2021-01-27 09:41	2021-03-15 12:19
PELTIC	GB	74E9	2020-10-01	2020-11-07	CEND1620	20203721	2020-12-10 00:41	2020-12-09 23:47
BIAS	SE	77SE	2020-09-30	2020-10-14	BIAS_2020_SWE	20210384	2021-03-10 14:42	2021-02-25 13:20
BIAS	FI	34A3	2020-09-22	2020-10-04	20209001	20204355	2021-01-14 09:34	2021-02-03 13:33
6aSPAWN	NL	64T2	2020-09-15	2020-09-19	NL6aSPAWN2020	20210015	2021-01-13 21:24	2021-01-16 00:24
BIAS	PL	67BC	2020-09-15	2020-09-30	67BC202009	20203057	2020-10-22 09:46	2021-03-23 15:25

Go to page: 1 Show rows: 10 1-10 of 193

Submit file

Figure 4. Browsable submissions

At <https://acoustic.ices.dk/ViewOnMap> data within the acoustic data portal can be viewed on a map (Figure 5).

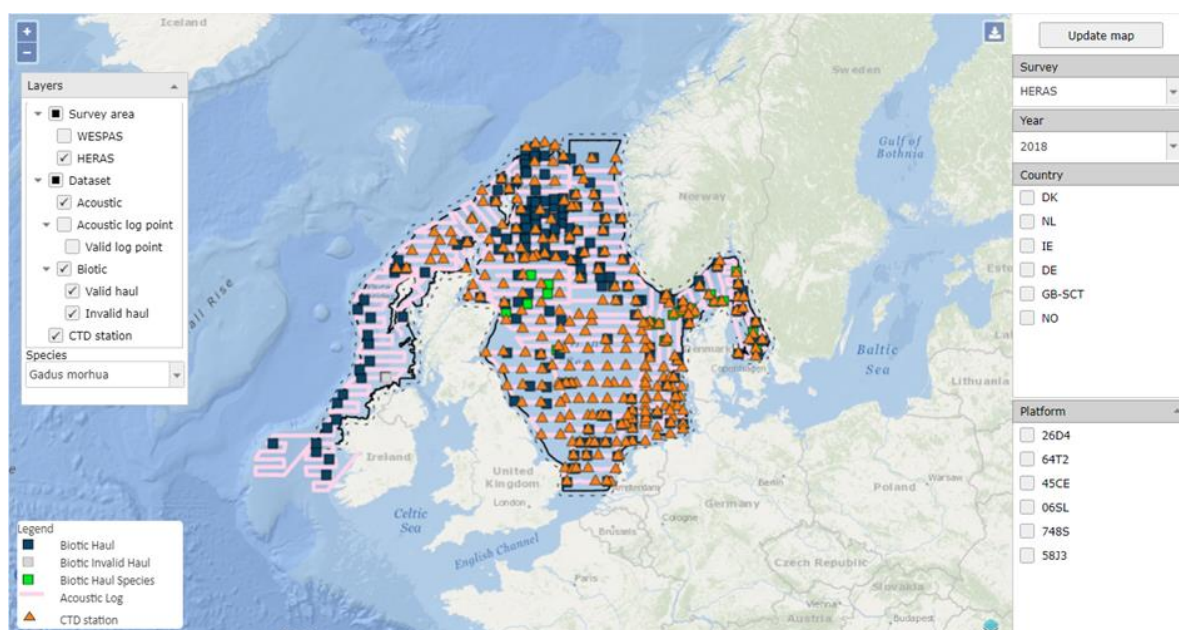


Figure 5. Map view of acoustic data

Both the acoustic and biotic data within the data portal can be filtered by Survey, Year, Country and/or Platform. Valid/Invalid data can be displayed and species within the biotic data can be

highlighted. Even CTD data collected during a given cruise can be viewed, if they have been submitted to ICES Oceanographic Data Portal.

## **ICES Oceanographic Data**

The ICES oceanographic database holds a wealth of oceanographic data from 1877 to present.

Currently, oceanographic data can be submitted in any format, as long as it well described and structured consistently. Nonetheless, please note that the oceanographic submission format is about to change in July 2021. The new oceanographic submission format and further information can be found here:

<https://www.ices.dk/data/data-portals/pages/ocean-format.aspx>.

The core parameters held in the ICES oceanographic database are available for download include these fields:

- Temperature
- Salinity
- Oxygen
- Phosphate, Total Phosphorus
- Silicate
- Nitrate, Nitrite, Ammonium, Total Nitrogen
- Hydrogen Sulphide
- pH, Alkalinity
- Chlorophyll a
- Secchi depths

Hydrochemistry data can be downloaded from the oceanographic data portal (Figure 6):  
<https://ocean.ices.dk>.

## CTD and Bottle data

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The ICES Oceanographic database currently contains 1668960 stations and of these, 358128 are high resolution CTD stations.

Last Updated: 2020-03-15

Period	Area	Parameter
From 1920-04-06 2	90	CTD
To 2020-04-06 2	-180 Map 180	Temperature/Salinity
	-90 2	Oxygen
		Phosphate
		Total Phosphorus 2
Other		Submit
Country Any		Reset Submit
Ship Any		
Search results		
Select period, area, parameter(s), country and ship and click 'Submit'		
Statistics		

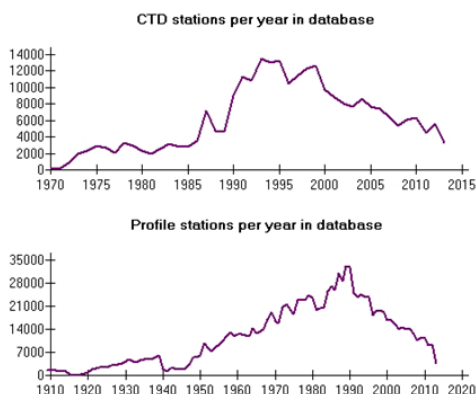


Figure 2. CTD and Bottle data downloadable from the Oceanographic Data Portal

## Cruise Summary Reports

The Cruise Summary Reports (CSR = former ROSCOPs) are used for reporting on measurements and samples collected at sea to provide metadata for scientists, data managers and programme managers to find information on who has collected what, when and where. The data types covered in the CSR metadata include, physical and chemical oceanography, biology and fisheries, contaminations, geology and geophysics and meteorology.

Traditionally, it is the Chief Scientist's obligation to submit a CSR to his/her National Oceanographic Data Centre (NODC) no later than two weeks after the cruise has ended. This provides a first level inventory of measurements and samples collected during the cruise. Currently, the CSR directory covers cruises from 1873 until today, which includes more than 2000 research vessels, a total of nearly 53 000 cruises, in European and international waters. This includes historic CSRs from European countries, which are available from the ICES database from 1960 and onwards.

Cruise Summary Report search interface at ICES <https://ocean.ices.dk/csr> can be seen and at <https://www.seadatanet.org/Metadata/CSR-Cruises>, where these are currently been maintained. ICES Acoustic Data Portal are relying on the CSR's for metadata related to cruises.

# ICES Metadata Catalogue

Metadata for the MEESO project have to be publicly available and easily discoverable. For that reason, all underlying datasets have to be accompanied by metadata records that are going to be stored in the Metadata catalogue maintained by ICES. The catalogue can be found under this url: <http://gis.ices.dk/geonetwork>. This catalogue supports all the common standards for metadata (ISO19115, ISO19119, ISO19139 etc.) and it has all INSPIRE functionalities enabled (validation, editor, viewer).

Metadata are important for the project for a number of reasons. They provide information on where and how to access the data in question. For example, which institute is providing them, what format they are in, or how they can be used. Furthermore, generating metadata records and storing them within a single catalogue will significantly increase the accessibility and discoverability of the data with the use of key words, DOIs and persistent URLs. This is especially important for data that are not hosted by ICES, as they can still be accessed through their metadata via a single portal.

ICES Data Centre created a MEESO metadata template specifically for the project. The MEESO metadata template aims to facilitate the data submitters to edit and validate their records according the INSPIRE directive requirements. The users can also create and edit metadata records without publishing them. This allows the data providers to record information about data records that are yet to be completed – giving the project team an overview of what is, and will be, available. Metadata of biological and acoustic, biochemical and oceanography, fishing industry and interview dataset will follow FAIR principles.

Adding and validating metadata records for MEESO in the ICES Metadata catalogue is done by following these eight steps:

## **Adding metadata:**

1. Login to the ICES geonetwork: <https://gis.ices.dk/geonetwork> using the following credentials:
  - a. User name: “meeso\_editor”
  - b. Password: xxxxx

Login information for the MEESO metadata catalogue can be attained by contacting ICES at [acoustic@ices.dk](mailto:acoustic@ices.dk)

2. Choose “*Contribute*” and “*Add new record*”
3. From the page that follows, choose “*Dataset*”, “*Template for MEESO*” and “*In... MEESO*”

## Create a

Create a Dataset

From Template for MEESEO

HARVESTING TEMPLATE - THREDDS - UNIDATA DISCOVERY

Laminaria hyperborea kelp model in More

Template for MEESEO

Template for Vector data in ISO19139 (preferred!)

Template for Vector data in ISO19139 (multilingual)

In ...

MEESEO

+ Create x Cancel

4. To switch to the INSPIRE view click on the views (👁) icon drop down:

✓ Cancel Save & close Save metadata 👁

Show messages: 👍 👎

## Validating and Saving:

1. To validate a record, click on the check (✓) symbol:

Categories Group ✓ Validate Cancel Save & close Save metadata

✓ Validate

Inspire validation

TG version 1.3

TG version 2.0 - Data sets and series

TG version 2.0 - Network services

Choose or drop an image here

Associated resources

Add

Online resources

WWW:LINK-1.0-http-related  
<http://ecosystemdata.ices.dk>  
ICES data portal  
ICES data portal, where it is possible to view DATRAS distribution maps.

2. Click on the thumbs down (👎) symbol to show the validation errors:



# MEESO Metadata Record Format

All metadata records will be created by the MEESO partners. With the support from ICES, these records will then be quality controlled and validated against the INSPIRE requirements. When all the quality checks have been applied, the records will then be published and made publicly available by a link via the MEESO and ICES websites. Below is a template of the MEESO metadata record.

Identification

File identifier

a94eb19f-3cde-4a92-b0b1-e4d25ba5de26

Title \*

Copy of template Template for MEESO created at 2021-03-18 15:16:33

Abstract \*

Some Abstract

Hierarchy level

Dataset

+ Hierarchy level

Online resource

URL

http://uriToDataset.com

Protocol

WWW:LINK-1.0-http--related

Recommended values

+ Online resource

Resource identifier

+ Resource identifier

Compute resource identifier

Language

eng

Spatial representation type

Text, table

+ Spatial representation type

Encoding

Format

ZIP

Recommended values

Version

1

Specification

+ Encoding

Projection

WGS 1984

+ Projection



## Classification of data and services

Topic category \* Biota x

Search ...

+ Topic category code

## Keywords

GEMET - INSPIRE themes, version 1.0

Other keywords

Keyword

MEESO

Type

Keyword

Baltic Sea

Northeast Atlantic

Type

## Geographic coverage

Geographic bounding box

Choose a region

WGS84 (EPSG:4326)

+ Geographic bounding box

## Temporal reference

Temporal extent

Begin

End

Date \*

+ Temporal information

### Temporal reference

Temporal extent	Begin	<input type="text" value="01/01/1965"/>	<input type="text" value="14:03"/>	<input type="button" value="🕒"/>	<input type="button" value="🕒"/>
	End	<input type="text" value="Unknown"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="--:--"/>	<input type="button" value="🕒"/>
Date *	Publication	<input type="text" value="01/01/2011"/>	<input type="text" value="11:10"/>	<input type="button" value="🕒"/>	<input type="button" value="🕒"/>

### Quality and validity

Lineage	<p>ICES is a receiver of Marine Data from national programmes and other marine institutes, therefore ICES is not the primary collection point of marine evidence that it holds and disseminates to the users of the data.</p> <p>Data are quality assured using internal and external programmes. For example, the national laboratories that take part in monitoring programmes related to contaminants and biological effects that submit information to ICES, subscribe to the Quality Assurance of Information for Marine Environmental Monitoring in Europe (QUASIMEME) or the Biological Effects Quality Assurance in Monitoring Programmes (BEQUALM) inter-laboratory proficiency-testing schemes and perform internal quality assurance. ICES operates through a network of scientific expert and advisory groups. These groups, and the processes they feed into, act as a quality check on the marine evidence, both in terms of how the evidence was gathered and how the evidence has been subsequently treated. The groups, in cooperation with regional programmes under the Regional Sea Conventions, set standards and guidelines for the collection, transmission and analysis of these data.</p> <p>In addition, the ICES Secretariat provides supplementary quality assurance through its internal programmes related to the different types of marine data collection datasets, which is feedback to the participating national and regional programmes. These internal and external programmes and procedures have been established over a period of 30 or more years. They continue to evolve and strive to reflect the best available practices in the collection and treatment of marine data relevant to the ICES community.</p>
Spatial resolution	<div><input type="button" value="+ Spatial resolution (scale)"/></div>
Spatial resolution	<div><input type="button" value="+ Spatial resolution (distance)"/></div>

### Conformity

Conformity	Tech spec title	<input type="text" value="COMMISSION REGULATION (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and"/>
	Tech spec URL	<input type="text" value="http://data.europa.eu/eli/reg/2010/1089"/>
	Date	<input type="text" value="08/12/2010"/>
	Conformity	<input type="radio"/> Not evaluated <input checked="" type="radio"/> Conformant <input type="radio"/> Not conformant

### Restrictions on access and use

Access constraints	<div><input type="button" value="+ Use limitation"/></div>
	<div><input data="" guidelines-and-policy="" https:="" ices-data-policy.aspx"="" ices.dk="" pages="" type="text" value="Data is available under the terms of the ICES Data Policy. (See: &lt;a href="/>https://ices.dk/data/guidelines-and-policy/Pages/ICES-data-policy.aspx)"/&gt;</div> <div><input type="button" value="+ Access constraints"/></div>

### Responsible organization (s)

Contact for the resource	Organisation name	<input type="text" value="ORG"/>
	Email	<input type="text" value="admin@ices.dk"/>
	Role	<input type="text" value="Print of contact"/>
	<div><input type="button" value="+ Add contact"/></div>	

~ Metadata information

Contact for the metadata	Organisation name
	<input type="text" value="ICES"/>
	Email
	<input type="text" value="accessions@ices.dk"/>
	Role
	<input type="text" value="Point of contact"/>
	<input type="button" value="Add author"/>
Date stamp *	<input type="text" value="2021-03-18T15:17:45"/>
Metadata language	<input type="text" value="eng"/>
Character set	<input type="text" value="UTF8"/>

# Annex 1.

## Useful Links

Name	URL
Acoustic data portal	<a href="https://ices.dk/data/Documents/Acoustic/ICES_Acoustic_data_format_description.zip">https://ices.dk/data/Documents/Acoustic/ICES_Acoustic_data_format_description.zip</a>
Acoustic data format	<a href="https://www.ices.dk/data/data-portals/Pages/acoustic.aspx">https://www.ices.dk/data/data-portals/Pages/acoustic.aspx</a> .
Oceanographic data portal	<a href="https://ocean.ices.dk">https://ocean.ices.dk</a>
Cruise Summery report	<a href="https://ocean.ices.dk/csr">https://ocean.ices.dk/csr</a>
ICES meta data catalogue	<a href="https://gis.ices.dk/geonetwork/srv/eng/catalog.search#/home">https://gis.ices.dk/geonetwork/srv/eng/catalog.search#/home</a>
Metadata data catalogue (MEESO)	<a href="https://gis.ices.dk/geonetwork/srv/eng/catalog.search#/search?facet.q=recordOwner%2FEditor%2520Meeso&amp;resultType=details&amp;sortBy=relevance&amp;fast=index&amp; content_type=json&amp;from=1&amp;to=20">https://gis.ices.dk/geonetwork/srv/eng/catalog.search#/search?facet.q=recordOwner%2FEditor%2520Meeso&amp;resultType=details&amp;sortBy=relevance&amp;fast=index&amp; content_type=json&amp;from=1&amp;to=20</a>
Metadata data catalogue (SUMMER)	<a href="https://gis.ices.dk/geonetwork/srv/eng/catalog.search#/search?facet.q=sourceCatalog%2F98270cd4-2425-4cb6-a31c-b320bed6df40&amp;resultType=details&amp;sortBy=relevance&amp;fast=index&amp; content_type=json&amp;from=1&amp;to=20">https://gis.ices.dk/geonetwork/srv/eng/catalog.search#/search?facet.q=sourceCatalog%2F98270cd4-2425-4cb6-a31c-b320bed6df40&amp;resultType=details&amp;sortBy=relevance&amp;fast=index&amp; content_type=json&amp;from=1&amp;to=20</a>
Quality Control Check	<a href="https://www.ices.dk/data/tools/Pages/quality-control.aspx">https://www.ices.dk/data/tools/Pages/quality-control.aspx</a>
ICES vocabularies	<a href="https://vocab.ices.dk/">https://vocab.ices.dk/</a>
ICES Data Policy	<a href="https://www.ices.dk/data/Documents/ICES-Data-policy.pdf">https://www.ices.dk/data/Documents/ICES-Data-policy.pdf</a>
INSPIRE Knowledge Base	<a href="https://inspire.ec.europa.eu/">https://inspire.ec.europa.eu/</a>