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Title	**MEDIN data guideline for the recording of water sample data.**
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Author(s)	
Document Owner	C. Postlethwaite
Reviewed by	MEDIN Data Standards Group, S. Gontarek, G. Dawson
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Summary	This guideline is a data archive standard for the collection of discrete water samples which are subsequently used for chemical or biological determination. Used correctly the guideline facilitates easy use and reuse of the data. A template to record metadata and data is also provided if required.
Keywords	Oceanography, water, sample, nutrients, contaminants, chemistry.

Change history		
Version	**Date**	**Change**
1.0	22/12/2009	First draft of document
3.0	22/05/2010	Redrafted in new data guideline structure
3.1	13/07/2010	Redrafted following review and published
3.2	30/08/2011	Revised in light of review comments and put into new structure
4.0	11/10/2012	Put field titles in camel case and made

		revisions to sample data table. Added a dBASE compatible field title. Added a colour coded field name summary list.
4.1	16/09/2013	Revised in light of new comments and put into new structure.

1 Introduction

1.1 What are MEDIN compliant data?

There are 3 requirements to ensure that your water sample data are MEDIN compliant:

1) **You supply General Metadata about your data –** *See Appendix A*
2) **You supply Detailed Metadata about your data –** *This may be included in a survey/cruise report or as additional metadata – See Appendix B*
3) **Your data are in a format that MEDIN accepts –** *See Appendix C*

Example of a MEDIN compliant discrete water sample dataset:
A file containing General Metadata (Appendix A)
A Survey Report that contains Detailed Metadata (Appendix B)
Discrete water sample data submitted in a well organized folder structure (Appendix C)

1.2 Scope

This guideline covers the collection of discrete water samples which are then used for chemical or biological determination. This guideline does not cover in-situ measurements. Other more detailed guidelines exist for specific analyses however this guideline provides a general structure and content that should be seen as a minimum. It covers both the raw data from such sampling and derived summary information.

1.3 Archiving Data

The British Oceanographic Data Centre (BODC) is the MEDIN Data Archive Centre (DAC) responsible for archiving data from discrete water samples. Contact details for BODC are provided below:

Contact Details:

The British Oceanographic Data Centre (BODC)

Email: enquiries@bodc.ac.uk

Telephone: +44 (0) 151 795 4884

1.4 Summary of the information required

A General Metadata:

This section lists the general metadata that should be provided with your data.

You can use the form here to record your General Metadata and can find additional information in Appendix A

The General Metadata fields are common throughout all MEDIN data guidelines and only need to be given once and referenced if your data set is composed of many data types and therefore conforms to a number of MEDIN Data Guidelines. If your collection of data forms part of a wider project or time series then the **Project Information** must be recorded but if the work is a small survey then project details may not be required.

What is a Survey/Project?

A **survey** is a uniquely identifiable programme of data collection such as a research cruise, moored instrument deployment or survey event. This information is likely to be the same for all sample events (e.g. stations) and subsamples in a given data set such as a cruise. Note that in the event that these are not common to all sample events then they should be specified for each one.

A **project** is a collection of surveys that have been completed for a common purpose. For example: an environmental impact assessment composed of a number of separate surveys; scientific research composed of a number of different research cruises; a legislative monitoring programme which is conducted each year over several years. A project is usually funded by the same organization(s) for its lifetime.

Survey Information:

This information is mandatory and **must** be supplied with your data to ensure it can be reused:

1. surveyName
2. surveyType
3. surveyAbstract
4. surveyCode
5. originator
6. owner
7. surveyStartDate
8. surveyEndDate
9. timeZone
10. spatialCRS
11. positionFix
12. horizontalAccuracy

Additional items:
Please provide as much of the following information as possible to help others assess your data:

Survey Information:

1. originalCRS
2. transformation
3. depthCRS
4. verticalAccuracy
5. platformType
6. platformName
7. cruiseReportReference
8. confidentiality

Project Information:
Please provide as much of the following information as possible if your survey forms part of a wider project:

1. projectName
2. projectCode
3. projectStartDate
4. projectEndDate
5. projectWebsite

B Detailed Metadata:

This section lists the detailed metadata that should be collected with your data, in order to provide information about the instrument and processing techniques used.

You can use the form here to record your Detailed Metadata and can find additional information in Appendix B.

The Detailed Metadata fields are specific to each data guideline and should be completed for each type of data. The information requested here may be supplied as additional metadata or may be supplied in a cruise or survey report.
The information in this category covers sample methods, instruments and processing techniques, and should be completed for each mooring deployment,

Method Information:

This information is mandatory and **must** be supplied with your data to ensure it can be reused:

1. methodID
2. Instrument
3. sampleProcessing
4. QCScheme

Additional Items:

Please provide as much of the following information as possible to help others assess your data:

1. analysis
2. dataProcessing
3. replicates
4. analyticalLaboratory
5. analyticalPersonnel
6. methodNotes
7. methodQCNotes

C Data:

This section gives a summary of the required data content and format for oceanographic data from discrete water samples:

Station Information,

Sample Event Information,

and

Sample Data

You can use the forms here to record your station and sample event data.

Format

To submit your data to a Data Archive Centre the data must be saved and transferred in the .csv file format.

Content

What is a Station?
A station refers to a specific target location of sampling. It is useful to record the station position in addition to the sample event information, for example if you are returning to a fixed target station as a basis for repeat replicate sample events and for repeat monitoring surveys.

What is a Sample Event?
A sample event is the specific date, time, location/extent and local conditions for the water sample collection.

Station Information:
Please provide as much of the following information as possible if your sampling takes place at defined stations:

1. stationID
2. geometry
3. primaryLatitude
4. primaryLongitude
5. stationName
6. secondaryLatitude
7. secondaryLongitude
8. originalCoordinates
9. stationNotes

Sample Event:
This information is mandatory and **must** be supplied with your data to ensure it can be reused:

1. sampleEventID
2. surveyCode
3. methodID
4. sampleLatitude
5. sampleLongitude
6. sampleDate
7. sampleTime
8. sampleDepth

Sample Event
Additional Items:
Please provide as much of the following information as possible to help others assess your data:

1. stationID
2. originalSampleLatitude
3. originalSampleLongitude
4. locationName
5. rosettePosition
6. samplingPersonnel
7. sampleEventNotes
8. associatedInformation
9. CTDProfileLink

Sample Data:
This information is mandatory and **must** be supplied with your data to ensure it can be reused:

1. sampleEventID
2. parameter(chemical) or species(biological)
3. value(chemical) or abundance(biological)
4. units

Sample Data
Additional Items
Please provide as much of the following information as possible to help others assess your data:

1. replicateID
2. biomass(species only)
3. developmentStage (species only)
4. referenceImage (species only)
5. specimens (species only)
6. sampleNotes

2 Guidance

2.1 Background to Data Guidelines

The Marine Environmental Data and Information Network (MEDIN) is working towards creating a framework of consistent standards covering the major types of data collection undertaken in the marine environment around the UK. The principle benefits of this suite of standards are:

- Allows contracting organisation to easily specify a format that data should be returned in that can be readily used and includes all relevant attributes
- Provides a consistent format for contractors to work to (rather than a different format for each contract)
- Data can be readily exported to Data Archiving Centres and other users
- Instils good practice amongst users

Each standard defines the data and information that must be stored with a particular data type to ensure it can be readily used and reused. As this type of information is specific for different data types, guidelines are developed for each type. This document describes one such format. Other standards can be accessed through www.oceannet.org.

2.2 Using this Data Guideline

The data guideline is split into sections that refer to information that should be collated at different levels as shown below:

A General Metadata
B Detailed Metadata
C Data

A General Metadata

The General Metadata tables are common to all Data Guidelines and so only need to be completed once for a survey even if a number of different techniques and data guidelines are used.

Survey - a uniquely identifiable programme of data collection such as a research cruise, moored instrument deployment or survey event

Project - a collection of surveys that have been completed for a common purpose

B Detailed Metadata

The detailed metadata are specific to a technique of data collection (e.g. trawl, grab etc) and are subsequently specific to each Data Guideline.

Sampling Method (Data Production Tools) – Details of any method or instruments used to collect the data

C Data

Station – a target location used as the basis for replicate sample events and for repeat monitoring surveys. The fixed station table should only be used if a fixed point, transect or area is used as the basis for replicate sample events and for repeat monitoring surveys.

Sample Event – date, time and location of specific data collection event, details of any accompanying data.

Sample Data – the data

The tables in the Appendices outline the data fields, a description and, where available, a controlled vocabulary and/or format which should be used to store the data. Each field is either mandatory, conditional or optional as indicated by M, C, or O respectively. Conditional means that the field must be completed if a value is known. In the absence of an existing spreadsheet or database to hold the information, it is recommended that the template here is used. Instructions are also provided in the template.

In the event that historical data which does not have all the necessary mandatory fields is being configured into this guideline, then it is permissible to use the following entry terms:

Term	Description
unknown	The correct value is not known to and not computable by the creator of this information. However a correct value probably exists.
inapplicable	There is no appropriate value. To be used in cases where metadata elements cannot be set null due to schema constraints.

In some cases it may be necessary to extend this guideline for a specific purpose such as a specific exchange of data between applications or to fulfil the needs of a specific project. This is permissible, however we advise that the broad structure and format is maintained and that where possible controlled vocabularies are used. As any extension to the structure and format may be useful for other organisations please inform MEDIN of further agreements.

2.3 Controlled Vocabularies

MEDIN makes use of controlled vocabularies (sometimes called “Term Lists”) to ensure that information provided alongside data is unambiguous. The available catalogues of controlled vocabularies used for this MEDIN data guideline are provided primarily by SeaDataNet, the International Council for the Sea (ICES) and EPSG. If a term is not available in a recommended list then please contact MEDIN to arrange for the term to be added.

The SeaDataNet list may be viewed at http://seadatanet.maris2.nl/v_bodc_vocab_v2/welcome.asp. By clicking on the list any term may be searched for by using the drop-down menus or all terms viewed by clicking search. The terms may be viewed in groups of 15 or may be downloaded into an excel file.

The ICES term lists are available at http://vocab.ices.dk/
Use the search box to find term lists, you can also select the theme you require to filter your search. The results are shown for the selected list and may be downloaded into MS Excel by selecting the Excel symbol at the top right of the list.

The EPSG database of coordinate reference systems (http://www.epsg-registry.org/) provides a dictionary of reference systems with a code for each entry. In brief, to find a code, enter the title (e.g. WGS84) into the ‘Name’ field and click search. The name, code and further information is displayed. If you are looking for a specific type of reference system such as ‘vertical’ then click

in the 'Type' box, hover over coordinate reference system and click on vertical and then click the search button and all recorded vertical reference systems are shown. If you want to search for a reference system in a particular part of the world (e.g. Northern Ireland Grid) the you may do so by submitting a term to the 'Area' box or fill out the lat and longs then click search. The website also provides a database of the reference systems and web services to access the information.

2.4 Relationship between MEDIN data guidelines and MEDIN discovery metadata

The MEDIN discovery metadata format is aimed at allowing the non-informed user to discover data sets and it is likely that one 'discovery' data set record will contain a large range of data types that are in turn covered by a range of data guidelines. To enable individuals to reuse data of a specific nature (e.g. benthic invertebrate data) then related information must be collected (e.g. data owner, reference systems used etc). Some of the information which is collected in the General Metadata in a data guideline is also required to create a discovery metadata record. Who creates the MEDIN discovery record for a dataset is case specific and dependant on the organisation, and the relationship it has with a Data Archive Centre. However it is intended that the information collected at the 'Survey Information' level is reused for creating a MEDIN discovery metadata record. Further details are available on the MEDIN website which demonstrate clearly which fields in the MEDIN Data Guidelines can be reused for which elements in the MEDIN Discovery Metadata Standard.

2.5 Updates and Feedback

If you have any comments or feedback on this guidelines please contact enquiries@oceannet.org . Standards develop over time and it is likely that this standard will change in the future. We advise that you return to the MEDIN website to identify new versions and that you sign up to the MEDIN Standards e-mail listing (e-mail enquiries@oceannet.org) and Marine Data News to be kept informed of developments.

Appendix A

General Metadata:

This section describes the general metadata that should be provided with your data.

You can use the form here to record your General Metadata

The General Metadata fields are common throughout all MEDIN data guidelines and only need to be given once and referenced if your data set is composed of many data types and therefore conforms to a number of MEDIN Data Guidelines. Where data collection is undertaken on research vessels the data below can often be sourced in the Cruise Summary Report. If your collection of data forms part of a wider project or time series then the **Project Information** must be recorded but if the work is a small survey then project details may not be required.

A.1 Guidance:

Detailed descriptions and examples are given below to help you create General Metadata to accompany your data.

Survey Information:

This information **must** be supplied with your data to ensure it can be reused:

Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
surveyName	M	Title of the survey	Free text;	2004 CCW Menai Strait benthic monitoring survey
surveyType	M	Category of survey for use in subsequent searching for certain types of surveys.	Controlled Vocabulary; OGP SSDM WORK_CATEGORY Domain;	Geophysical and Hi-Res Seismic (Analogue and Digital Survey) **Or** Free text; Oceanographic; benthic biology; fish stock

	surveyAbstract	M	Brief description of the purpose of the survey and other types of measurements that were made for the survey.	Free text;	Survey was the first in a series of 3 in 2010 whose specific aim was to identify sites suitable for further monitoring. Geophysical techniques were used in combination with grabs and cores to assess seabed type.
	surveyCode	M	A unique code for the survey to allow links to be built between this and sample event data, (the cruise identifier code could be used). To ensure uniqueness, it is recommended that the website of the organization responsible for the work is used followed by a unique code designated by the responsible organization.	Free text;	http://www.noc.ac.uk/JCR3022; http://www.bennett.ac.uk/RIBJULY_03_01
	originator	M	The organization who has created the data set. If the organization is not in EDMO please contact enquiries@oceannet.org to add it. If a person who is not associated with any organization generated the data then please provide the name in the sample event table.	Controlled vocabulary: **European Directory of Marine Organizations** at http://seadatanet.maris2.nl/v_edmo/welcome.asp	28: Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laboratory 2588: ABP Marine Environmental Services Ltd
	owner	M	Organization that owns the data set. If the organization is not in EDMO please contact enquiries@oceannet.org to add it.	Controlled vocabulary: **European Directory of Marine Organizations** at http://seadatanet.maris2.nl/v_edmo/welcome.asp	78: Department of Environment Fisheries and Rural Affairs 53: BP Exploration and Production

	surveyStartDate	M	The date and time that the survey started.	Date or DateTime; yyyy-mm-dd or yyyy-mm-dd hh:mm:ss	2009-01-24 12:33:00
	surveyEndDate	C	The date and time that the survey ended. May be left null if the survey is ongoing.	Date or DateTime; yyyy-mm-dd or yyyy-mm-dd hh:mm:ss	2009-02-16 16:33:00
	timeZone	M	Give the time zone in which the date and time of the data acquisition is made (preferably Coordinated Universal Time (UTC))	Free text;	UTC
	spatialCRS	M	Spatial coordinate reference system. Describes the system of spatial referencing. i.e. the datum used to supply the decimal latitudes and longitudes. There are additional fields to indicate the datum of the original data if the coordinates have been transformed.	Controlled vocabulary: **EPSG Geodetic Parameter Dataset** at http://www.epsg-registry.org/	**WGS84** code: EPSG::7030; **British National Grid** (projected) code: EPSG::27700; **ETRS89 / UTM zone 28N** code: EPSG::25828; **ETRS89 / UTM zone 29N** code: EPSG::25829; **ED50** code: EPSG::4230; **UTM31N** code: EPSG::23031
	positionFix	M	Position fix method and source. Give the method and source of the position fix instrument.	Free text;	Differential GPS taken from the ships navigation equipment. 4 point satellite fix achieved
	horizontal Accuracy	M	Horizontal positional accuracy. How accurate the spatial positions are likely to be.	Decimal; units = metres	15.2

Additional Items:
Please provide as much of the following information as possible to help others assess you data:

Survey Information:

Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
originalCRS	C	Datum of original coordinate if different from the one used to supply data.	Controlled vocabulary: EPSG Geodetic Parameter Dataset at http://www.epsg-registry.org/ or other defined coordinate reference system register;	
transformation	C	Transformation used to create decimal degrees if transformation undertaken.	Free text;	Data was converted from OSGB to WGS84 in ArcGIS using the petroleum transformation.
depthCRS	C	Depth coordinate reference system. Give the reference to which the depth has been calculated e.g. Ordnance Datum Newlyn; Highest Astronomical Tide. Mandatory if seabed depths are given for each sample. See controlled vocabulary lists.	Controlled vocabulary: **EPSG Geodetic Parameter Dataset** at http://www.epsg-registry.org/	**Ordnance Datum Newlyn** code: EPSG::5701 **Malin Head height** code: EPSG::5731
verticalAccuracy	C	Vertical positional accuracy. How accurate the vertical resolution is. Must be provided if seabed depths are given.	Decimal; units = metres	0.5

	platformType	O	The platform type (e.g. Research Vessel) from which the sampling device was deployed.	Controlled vocabulary: SeadataNet Platform Classes, **Table L06** at http://seadatanet.maris2.nl/v_bodc_vocab_v2/welcome.asp;	31: Research Vessel; 13: beach/intertidal zone structure; 48: mooring; 71: human
	platformName	C	Mandatory if a vessel was used for the survey. The name of the ship from which the sampling device was deployed. If your ship is not on the list please contact accessions@ices.dk	Controlled vocabulary: ICES Reference Codes, **Table SHIPC** at http://vocab.ices.dk/	74LG: Lough Foyle AA30: Unspecified Ship 74E9: Cefas Endeavour AA36: Unspecified Fishing Vessel AA33: Unspecified Self-Propelled Small Boat
	cruiseReport Reference	O	Cruise report or boat log reference if applicable.	Free text; in reference format.	Litt, E.J. 2009. PHiXT 4. 30 July to 2 August 2009 RV Prince Madog POL Coastal Observatory Liverpool Bay Cruise Report. POL Coastal Observatory, Liverpool.
	confidentiality	O	Note if the survey is confidential	Free text;	Restricted access; Public;

Project Information:
Please provide as much of the following information as possible if your survey forms part of a wider project

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	projectName	M	The nationally/internationally accepted version of the project name.	Free text; Programme 1989-2010 ;	North Hoyle Windfarm EIA; Rapid Climate Change; Dogger Bank pSAC Monitoring Programme; EA Bathing Water Monitoring
	projectCode	M	Provide a code to uniquely identify the project and allow links to be made between the tables. To ensure uniqueness, it is recommended that the website of the data owner is used, followed by a unique code which should reflect the code used by the funding organization where possible. e.g. contract code.	Free text;	http://www.dassh.ac.uk/; http://www.bodc.ac.uk/
	projectStartDate	M	The date that the project started which is from when the funding was in place to start. Use the 1st of the month if the exact date is not known.	Date; yyyy-mm-dd;	2001-01-24; 1973-01-01
	projectEndDate	C	The date that the project finished or is due to finish. Use the 1st of the month if the exact date is not known.	Date; yyyy-mm-dd;	2007-01-24; 1976-01-01
	projectWebsite	C	If a project website exists give the address. This should be the web address of the environmental survey and not, in the case of environmental impact assessments, the engineering development.	URL;	http://www.southampton.ac.uk/oes/research/projects/rapid_meridional_overturning_circulation_moc.page

Appendix B

Detailed Metadata:

This section describes the detailed metadata that should be collected with your data. It contains specific information about the methods used, the people/organisations that carried out the work and any calibrations that have been applied to the data.

You can use the form here to record your Detailed Metadata

The Detailed Metadata fields are specific to each data guideline and should be completed for each type of data. The information requested here may be supplied as additional metadata or may be supplied in a cruise or survey report.

B.1 Guidance:

Detailed descriptions and examples are given below to help you create Detailed Metadata to accompany your data.

Method Information:

This information **must** be supplied with your data to ensure it can be reused:

Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
methodID	M	Method Identifier. A unique code for the methods to allow links to be built between this and sample event data.	Free text;	TIDE1234
instrument	M	Give sampling instrument description, manufacturer and model if applicable.	Controlled Vocabulary: **Table SMTYP** at www.vocab.ices.dk	NSK, Niskin Bottle

	Sample Processing	M	Give a description of any sample processing conducted before the sample was presented for analysis or stored. In particular give details of any filtration.	Free text;	Niskin bottles were removed from the rosette and the contents split between 3 subsamples. The first subsample for nutrient analysis was frozen immediately; the second was filtered through a GFF filter and then 10ml of 90% acetone added; the 3rd subsample was fixed with 3 drops of Lugol's Iodine and kept for phytoplankton analyses.
	QCScheme	M	Description of any quality control scheme that samples were audited under during the analysis.	Free text;	Samples audited using National Marine Biological Analytical Quality Control Scheme.
	methodQC Notes	M	Any further notes on sample analysis that may be of relevance.	Free text;	10% of samples were checked by Brian Begger for QC purposes.

Additional items:

Please provide as much of the following information as possible to help others assess your data:

	Field Title	**MCO**	**Description**	**Recommended Controlled Vocabulary or Format**	**Examples**
	analysis	C	Give details of the analysis of the water samples.	Free text;	Nutrients were measured by nitrate reduction following the method of Strickland (1972) at CEFAS Lowestoft; e.g. phytoplankton abundance was obtained by settling the fixed samples in settling chambers and examining them under an inverted microscope

data Processing	C	If the data has been processed then detail the steps here including, de-spiking or smoothing methods, editing and quality control methods, and an overview report.	Free text;	Data was checked to ensure it was within range for the time of year and location and there were no outliers. Any suspected outliers were flagged
replicates	C	Number of replicates per sample, If replicates were taken please indicate the number taken per sample.	integer	3
analytical Laboratory	C	The laboratory/organization(s) that analysed the samples if different from the originator identified in General Metadata. Contact MEDIN to add an organization to this list	Controlled Vocabulary; ICES Refernce Codes, **Table RLABO** at http://vocab.ices.dk/	Unicomarine Ltd, Letchworth Laboratory code - UNIC
analytical Personnel	O	Names of the personnel who were involved in analysing the samples and their role in the analysis.	Free text; personnel name(s) separated by semi-colon if more than one personnel involved; indicate organisation name in brackets if more than one organisation involved.	Joe Bloggs collected and analysed all samples. John Doe; Henry Rice (MEConsulting) collection and sorting; Harriet Smith (MarineConsult) identification and biomass; Jamie Creed (MarineConsult) Checking
methodNotes	O	Sampling analysis notes.Any further notes on sample analysis that may be of relevance.	Free text;	Voucher specimens were stored where appropriate.

Appendix C

This section gives the required data content and format for oceanographic data from discrete water samples. It covers:

Station Information,

Sample Event Information,

and

Sample Data

You can use the forms here to record your station and sample event data.

The data content and format are specific to each data guideline and the relevant data guideline should be consulted for each type of data.

C.1 Guidance

Detailed descriptions and examples are given below to help you to produce your data in the preferred format.

Station Information:

If your data collection took place at target stations, this information **must be** supplied with your data to ensure it can be reused:

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	stationID	M	Station identifier. A unique identifier for the station.	Free text.	Stanton_Bank_station_4 (point); EastChan_Innerdover_se04; Liverpool_Dublin_ferry_route1 (transect); Lagan_Estuary (area)

	geometry	M	Description of station spatial form. Describe if the the fixed station is a point, transect (curve) or an area (surface).	Controlled Vocabulary; SeadataNet Geospatial Feature Type, **Table L021** at http://seadatanet.maris2.nl/v_bodc_vocab_v2/welcome.asp	004: Point; 003: Curve; 005: Surface;
	primary Latitude	M	The primary latitude of the station must be given in decimal degrees. For a point this field is set to the point latitude; for a transect it is set to the latitude of the start of the transect; for an area it is set to the southern edge of the box. Units are positive North.	Decimal degrees; minimum of four decimal places.	54.5837
	primary Longitude	M	The primary longitude of the station must be given in decimal degrees. For a point this field is set to the point longitude; for a transect it is set to the longitude of the start of the transect; for an area it is set to the western edge of the box. Units are positive east (West is negative, East is positive).	Decimal degrees; minimum of four decimal places.	-5.5837

Station Information
Additional items:
Please provide as much of the following information as possible to help others assess you data:

	Field Title	M C O	Description	Recommended Controlled Vocabulary or Format	Examples

	stationName	O	The name by which a particular station is known	Free text.	L4 Stannock Head
	secondary Latitude	C	The secondary latitude of the station must be given in decimal degrees. For a point this field is not required; for a transect it is set to the latitude of the end of the transect; for an area it is set to the northern edge of the box. Units are positive North.	Decimal degrees; minimum of four decimal places.	55.7393
	secondary Longitude	C	The secondary longitude of the station must be given in decimal degrees. For a point this field is not required; for a transect it is set to the longitude of the end of the transect; for an area it is set to the eastern edge of the box. Units are positive east (West is negative, East is positive).	Decimal degrees; minimum of four decimal places.	-3.7394
	original Coordinates	C	Original coordinates and coordinate transformation technique. If coordinates were transformed from a different reference system into decimal degrees then the original coordinate and original coordinate reference system should be given, the method used to transform stated and any differences in the relative (significant figures) of the original transformation explained.	Free text;	SX498476, Coordinates were transformed from British National Grid using in house software 'BODC_transform'. The number of significant figures was reduced to 4 decimal degrees in line with the accuracy of the coordinate and transformation technique.
	stationNotes	O	Any further notes on the station that may be of relevance can be added here.	Free text;	Rocky reef, west of West Maiden; Also known as Hell's Mouth

Sample Event Information:

This information **must** be supplied with your data to ensure it can be reused:

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	sampleEventID	M	Sample Event Identifier. A unique identifier for the sample under consideration. Replicate identifiers should be suffixed to the end of a sample identifier using an underscore such as _1 or _a	Free text;	E5, PHJ7936, GB004_1, GB004_3
	surveyCode	M	The survey code must be stated to allow links to be built between this table and the metadata.The cruise identifier code could be used. Copy from Metadata table	Free text;	http://www.noc.ac.uk/JCR3022; http://www.bennett.ac.uk/RIBJULY_03_01)
	methodID	M	Method identifier. Provide the identifier for the methods (copy from the Method Table). If multiple methods were used separate codes using a comma.	Free text;	TIMES4376 ; 02465, 02896
	sampleLatitude	M	The latitude of the sample must be given in decimal degrees. Units are positive north.	Decimal degrees; minimum of two decimal places.	54.5837
	sample Longitude	M	The longitude of the sample must given in decimal degrees. Units are positive east.	Decimal degrees; minimum of two decimal places.	-3.476
	sampleDate	M	The date of sample collection.	Date; yyyy-mm-dd	24-01-2009
	sampleTime	M	The time of sample collection.	Time; hh:mm:ss	13:33:00
	sampleDepth	M	Give the depth at which the sample was taken	Decimal; units = meters	150.0

Sample Event Information: Additional Items:

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples

	stationID	C	Fixed Station Identifier. If you are returning to the same fixed point/transect/area on several occasions to form a time series – ie. there is a target location for your sample event, then put the identifier specified in the fixed station table in here.	Free text;	Stanton Bank site 4, PS74926
	originalSample Latitude	C	The latitude of the sample given in whichever format was used to record at the time of sampling if not recording decimal degrees.	Free text;	50°47'24''; SX324512
	originalSample Longitude	C	The longitude of the sample given in whichever format was used to record at the time of sampling if not recording decimal degrees.	Free text;	-4°21'53''
	locationName	O	The name of sampling location.	Free text;	Colwyn Bay West; Hand Deeps; inner Orwell Estuary
	waterColumn Depth	M	The total water column depth	Decimal; units = meters	1500
	rosettePosition	C	If the sample was taken from a rosette then give the position of the bottle on the rosette from where the sample was taken.	Integer;	5
	sampling Personnel	O	Names or the personnel who were involved in collecting and field processing the samples	Text, personnel initials given and separated by semi-colon if more than one personnel used;	J. Bloggs; B. Begger collected and field processed samples
	sampleEvent Notes	O	Any further notes on the sample collection that may be of relevance	Text;	Due to rough weather the rosette was not stable when it reached the surface

	asssociated Information	C	If subsamples were taken from the same sample and used for different analysis give details here (e.g. chlorophyll, nutrient, metal).	Free text;	If subsamples were taken from the same sample and used for different analysis give details here (e.g. chlorophyll, nutrient, metal).
	CTDProfileLink	C	If a CTD profile was taken at the same time then give the reference number of that profile to allow links between the sample and physical measurements to be made	Free text;	CTD009, 69729

Sample Data:
This information **must** be supplied with your data to ensure it can be reused:

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	sampleEventID	M	The unique identifier for the sample under consideration as detailed in the sample event table.	Text;	E5; PHJ7936
	parameter (chemical) or species (biological)	M	Give parameter or species name where possible or higher taxonomic group if not.	For chemical parameter: Controlled Vocabulary: **Table P01** at http://seadatanet.maris2.nl/v_bodc_vocab_v2/welcome.asp	CHEMM012, Concentration of nitrate {NO3} per unit volume of the water body [dissolved plus reactive particulate phase] by colorimetric autoanalysis and corrected for nitrite). Contact MEDIN if you require a term adding to this list.
				For species: Controlled Vocabulary: **World Register of Marine Species at** http://www.marinespecies.org/	Fragilariforma virescens

	value (chemical) or abundance (biological)	M	For chemical determinants give the value of the measurement to the number of decimal places that can be given based on the accuracy of the analysis. For biological species give the abundance	For chemical parameters: Decimal; For biological species: Free text, Integer or Decimal. If counts of individual taxon then give number. If presence/absence then give P/A.	For chemical prameters: e.g. 0.552. For biological species: e,g, 34, P/A
	units	M	Give the unit of measurement	Controlled Vocabulary: BODC Data Storage Units, **Table P06** at http://seadatanet.maris2.nl/v_bodc_vocab_v2/welcome.asp	Micrograms per litre, UGPL. Contact MEDIN if you require a term adding to this list.

Sample Data:
Additional Items:

	Field Title	**MCO**	**Description**	**Recommended Controlled Vocabulary or Format**	**Examples**
	replicateID	C	Replicate identifier if replicates taken	Free text;	001
	biomass (species only)	O	Biomass of individuals in 1 taxon group	Decimal, units = g.	0.23
	development Stage	O	Development stage of the taxa.	Controlled Vocabulary; BODC development stage terms, **Table S11** at http://vocab.ndg.nerc.ac.uk/client/vocabServer.jsp	Juvenile = S1127

referenceImage (species only)	O	Note if images were taken of specimens at any stage of the processing, the purpose they were collected for, where they are held, what their ID's are and what format the images are in.	Free text;	Images taken of Mytilus edulis were taken to confimr if it was a new subspecies, Images submitted to MEDIN using data guideline on digital images. Image reference numbers are Mytilus_02mar08_01 to Mytilus_02mar_08_68
specimens (species only)	O	If voucher specimens of the taxa are held then indicate here.	Free text;	voucher specimens of all species within the family Mollusca recorded were stored.
sampleNotes	O	Any further notes that may be of relevance	Text	The template provided in the MEDIN data guideline was used