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Title	**MEDIN data guideline for fixed position meteorological measuring instruments**
MEDIN Discipline	Atmosphere
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Summary	This document details best practice in archiving data collected from meteorological masts and fixed position or moored remote sensing devices, such as floating LiDAR. 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	Temperature, Wind Direction, LiDAR, Meteorological Masts, Fixed Platform, Floating Platform, Pressure, Wind Speed, Meteorological Measurement System

Change history		
Version	**Date**	**Change**
1.0	02/02/2015	First draft of document
1.1	28/04/2016	Document updates to reflect removal of first person tense from text, removal of section 2 'Guidelines' to separate document, changing of some requirement levels and replacement of SeaDataNET vocabulary links with

		NVS2.0 client links.
1.2	29/04/2016	Edited Station Information section, inserted Sample Event Data Section
1.3	04/05/2016	Made Station section optional in keeping with other guidelines, removed references to 'met mast' and replaced with more generic term.
1.4	14/06/2016	Tidied up Detailed Metadata section as it was inconsistent in reference to sensor/sensors
1.5	19/09/2016	Made it explicit that dataLoggerProgram should be regarded as mandatory if a data logger if part of the platform instrument suite

1 Introduction

1.1 What are MEDIN compliant data?

There are 3 requirements to ensure that meteorological data from fixed position platforms are MEDIN compliant:

1) **Users supply General Metadata about the data –** *See Appendix A*
2) **Users supply Detailed Metadata about the data –** *This may be included in a report or as additional metadata – See Appendix B*
3) **The data are in a format that MEDIN accepts –** *See Appendix C*

Example of a MEDIN compliant dataset:

A file or report containing General Metadata (Appendix A),

A survey report containing Detailed Metadata, such as installation reports, calibration certificates, instrument and sensor information and logger programs. (Appendix B)

Data as ASCII files submitted in a well-organised folder structure (Appendix C)

1.2 Scope

This guideline covers the collection of data from meteorological masts and fixed position or moored remote sensing devices. These include floating meteorological instruments such as floating LiDAR and other meteorological sensors and meteorological sensors on fixed masts located on land in a nearshore location. It covers both the raw and cleaned data, and the site and instrument information.

1.3 Archiving Data

The Met Office is the MEDIN Data Archive Centre (DAC) responsible for archiving meteorological data

Contact Details:

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1.4   Summary of the information required

> # A   General Metadata:
>
> *This section describes the general metadata that should be provided with the data.*
>
> *Users can populate the form [here](#) to record 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 the data to ensure they can be reused:

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

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

Survey Information:

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

Project Information:
Please provide as much of the following information as possible if the 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 the data. The detailed metadata contains information about the methods used during the survey, any calibrations applied to the data and the personnel who carried out the sampling.

Users can populate the form here to record Detailed Metadata and can find additional information in Appendix B. This information can be supplied in a cruise or survey report.

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 report, provided that all required information is included in the report.

Method Information

Details of any method or instruments used to collect the data are required in this section. The following information is mandatory and **must** be supplied with the data to ensure they can be reused:

1. methodID
2. samplingDevice
3. instrumentStructure
4. instrumentDescription
5. installationDate
6. installationProcess
7. configurationDetails
8. instrumentSensor
9. mountingDetails
10. sensorCalibration
11. methodQCNotes

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

1. dataLoggerProgram
2. eventLogs
3. maintenanceDetails
4. dataProcessDetails
5. protocolsUsed
6. analyticalPersonnel
7. instrumentObstructions

C   Data:

This section gives a summary of the required data content and format for meteorological data collected from fixed platforms. It covers:

Station Information and Data

Users can populate the form here to record Station Information and can find additional information in Appendix C.

Format

Both unaltered raw (device output file type) and cleaned data (ASCII files, for example .txt or .csv files) must be provided.

Content

What is a Station?
A station refers to a specific target location of sampling (the intended location). It is useful to record the station position in addition to the sample event information, for example if a data collector is 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 collection of a sample (in this case a set of meteorological observations) at a specific date and location, starting and ending at specific times.

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

1. stationID
2. geometry
3. primaryLatitude
4. primaryLongitude

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

1. secondaryLatitude
2. secondaryLongitude
3. originalCoordinates
4. images
5. stationName
6. stationNotes

Sample Event (Deployment / installation details):

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

1. sampleEventID
2. surveyCode
3. methodID
4. startDateTime
5. sampleLatitude
6. sampleLongitude
7. endDateTime

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

1. originalSampleLatitude
2. originalSampleLongitude
3. stationID
4. sampleImages
5. eventName
6. samplingPersonnel
7. sampleNotes

Data:

Meteorological data from fixed position meteorological platforms including floating moorings, met masts, and/or LiDAR typically consist of a combination of time, wind speed, wind direction, air temperature, air pressure and other parameters measured such as humidity. Data should be provided from each sensor in a readable form with the header information sufficiently explained and traceable back to the device documentation. LiDAR and other meteorological sensors frequently store data relating to a fixed time period (e.g. 10 minutes). It should be made clear how the time-stamp of the recorded information relates to that fixed time period (i.e. end of 10-minute period, middle of 10-minute period, *etc.*) and how the parameter relates to the fixed time period (e.g. mean wind speed over 10 minute interval, max wind speed over 10 minute interval, *etc.*). The recommended format for fixed position meteorological data, including from LiDAR, masts and floating platforms, is as a matrix with date/time as the primary channel and other parameter details as additional fields. Please ensure that there is a clear relationship between the instrument sensors' calibration information, the fields for each sensor, the units within the sample data files and the date/time that the information was collected.

Appendix A

General Metadata:

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

Users can use the form here to record General Metadata

To return to the summary above, click here

The General Metadata fields are common throughout all MEDIN data guidelines. They record metadata on the survey activity that has generated the dataset(s) that the guidelines are being applied to, and also record metadata on whether the data are being recorded as part of a project. If multiple datasets are taken on one survey, the General Metadata fields only need to be populated once and can then be referenced by the different data sets, provided they conform to MEDIN Data Guidelines.

If the 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 users create General Metadata to accompany the data.

Survey Information:
This information **must** be supplied with the data to ensure they can be reused:

Field Title	M C O	Description	Recommended Controlled Vocabulary or Format	Examples
surveyName	M	Title of the survey	Free text;	2002-2010 Shell Flats Meteorological Data Campaign
surveyType	M	Category of survey for use in subsequent searching for certain types of surveys.	Controlled Vocabulary; OGP SSDM WORK_CATEGORY Domain; Or Free text;	Meteorological

surveyAbstract	M	Brief description of the purpose of the survey and other types of measurements that were made for the survey.	Free text;	Two meteorological monitoring masts are located on Shell Flats in Morecambe Bay, UK. The systems were originally installed in June 2002 in order to measure and record wind, pressure, rainfall, temperature, humidity and solar radiation, as part of ongoing investigations into a proposed offshore wind farm. The masts were re-commissioned in 2011 after several years without operations.
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://data.offshorewind.co.uk/4367
originator	M	The organization that has created the dataset. 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/edmo/	28: Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laboratory;

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/edmo/ ;	78: Department of Environment Fisheries and Rural Affairs;
surveyStartDate	M	The date and time that the survey started.	Date or DateTime; yyyy-mm-dd or yyyy-mm-dd hh:mm:ss	2002-06-14; 2011-01-24 12:33:00
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. (See section 1.4 on accessing controlled vocabulary lists). 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::4326; **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;	GPS taken from the instrument
horizontal Accuracy	M	Horizontal positional accuracy. How accurate the spatial positions are likely to be.	Decimal; units = metres	0.5

| platformAndFoundationType | M | The platform type from which the sampling device was deployed. For met masts this would be an 'offshore structure' and for LiDAR a 'vessel at fixed position'. Where a foundation has been used, such as for a met mast, this should be detailed. | Controlled vocabulary: SeaVox Platform Categories, **Table L06** at https://www.bodc.ac.uk/data/codes_and_formats/vocabulary_search/L06/ Or Free text | 34: vessel at fixed position; 16: offshore structure; |

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

Survey Information:

Field Title	M C O	Description	Recommended Controlled Vocabulary or Format	Examples
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	2012-08-28; 2009-02-16 16:33:00;
verticalAccuracy	C	Vertical accuracy of mast heights and sensors locations. Mandatory for meteorological masts and where a vertical mast has been erected to support sensors i.e. temperature.	Decimal; units = metres	1.25
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;	**British National Grid** (projected) code: EPSG::27700;

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/height has been calculated e.g. Ordnance Datum Newlyn; Highest Astronomical Tide. Mandatory if seabed depths are given for each sample. See section 1.4 on accessing 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
platformName	C	Mandatory if a vessel was used for the survey. The name of the ship from which the instrument 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/	AA30: Unspecified Ship
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 the access conditions for the survey data	Free text;	Restricted access; Public;

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

Field Title	M C O	Description	Recommended Controlled Vocabulary or Format	Examples
projectName	M	The nationally/ internationally accepted version of the project name.	Free text;	Shell Flats Offshore Wind Farm
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.bg-group.com/BG178; http://sse.com/SSE0001123
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;	2010-05-06;
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;	2010-02-12
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://sse.com/whatwedo/ourprojectsandassets/renewables/Beatrice/

Appendix B

Detailed Metadata:

This section lists the detailed metadata that should be collected with the data. The detailed metadata contains information about the methods used during the survey, any calibrations applied to the data and the personnel who carried out the sampling.

Users can use the form here to record Detailed Metadata. This information can be supplied in a cruise or survey report.

To return to the summary above, click here

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, provided all the required information is included in the report.

B.1   Guidance:

Detailed descriptions and examples are given below to help users create Detailed Metadata to accompany their data.

Method Information:
This information **must** be supplied with the data to ensure they can be reused:

Field Title	M C O	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. If multiple sensors need to be recorded, populate this table for each instrument separately.	Free text;	TIMES4376

sampling Device	M	The category of sampling device used.	Controlled Vocabulary; SeaDataNet Device Categories, **Table L05** at https://www.bodc.ac.uk/data/codes_and_formats/vocabulary_search/L05/	101: anemometer; 102: meteorological packages;
instrument Structure	M	Provide a brief description or diagram of the structure the meteorological instrument(s) are attached to. Any measurements in height should use the coordinate reference system described in depthCRS of General Metadata. Any measurements in directional degrees should state if the value references true north or magnetic north.	Free text;	For details of the instrument height, sensor positions and orientation please refer to the .jpg
instrument Description	M	Instrument description, serial number, manufacturer and model – provide a literature reference, web site reference or briefly describe.	Free text;	Floating LiDAR, FLiDAR NV model, serial number BF0089789254
installation Date	M	The date that the device was installed.	Date; yyyy-mm-dd	2012-02-20
installation Process	M	Provide full details of the installation. This can come in the form of a report detailing the installation process, including pictures.	Free text;	See report: 'Hilbre Island meteorological sensor installation, 20 February 2012.pdf'
configuration Details	M	Provide details of the original configuration of the sensor. LiDAR configuration details should also be provided if applicable.	Free text;	See installation report above
instrument Sensor	M	Provide details of which data file heading(s) relate to the sensor.	Free text;	The temperature sensor at 45 m relates to the field heading T_45

mounting Details	M	Give details of how the sensor has been mounted onto the platform. For meteorological masts the type, location, sensor height and boom length, and orientation of all sensors relative to the mast should be provided. For LiDAR's the type, location, device height, programmed measurement heights, and the orientation of the device should be provided. Any measurements in directional degrees should state if the value references true north or magnetic north.	Free text;	For details of the sensors including fixing positions please refer to the attached .jpg
sensor Calibration	M	A description of the calibration processes for the sensor or instrument and outcomes, including any certification. Documentation should allow the user of data to determine if the calibration was applied to the raw data during data generation.	Free text;	See included calibration certificate for the temperature sensor at 25 m
methodQC Notes	M	Any further notes on sample analysis that may be of relevance.	Free text.	10% of data were randomly checked by Brian Begger for QC purposes.

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

Field Title	M C O	Description	Recommended Controlled Vocabulary or Format	Examples
dataLogger Program	C	**This is mandatory if a data logger forms part of the instrument suite.** The data logger programming files showing how the information collected from the sensors is generated and the control functions applied to the system. These files are often associated with Campbell Scientific loggers and come with file extensions such as .CRx A history of firmware versions, particularly for LiDAR, should be provided including date any upgrades were applied.	Free text;	See contents of directory /logger/files/functions/*.CRx supplied with data files
eventLogs	C	Mandatory for LiDAR devices if recorded. This is an internal system log that tracks and records issues with the device such as power failure or repairs	Free text;	See /syslog/*.txt files sent along with LiDAR data files.
maintenance Details	C	All maintenance records should be provided, including details of replacement sensors. Mandatory where maintenance or site visits have been carried out.	Free text;	See site visit report for 2015-03-25 enclosed with the data.

dataProcess Details	C	If the data has been processed following recovery then detail the steps here including de-spiking or smoothing methods, editing and quality control methods, and an overview report. This should also include how variables have been derived e.g. wind gust. This is mandatory where there are sampling intervals and nominal intervals of the processed data.	Free text;	Cleaned data recorded at 10 minute intervals. Wind gust has been derived as the maximum three second wind speed (m/s) that occurred within a two minute interval at a height of 10 metres.
protocolsUsed	C	SOPs/Protocols used. Any written methodology used should be referenced and linked. If the methodology is not referenced then provide a full description here.	Free text.	Methodology follows the Green Book https://www.cefas.co.uk/publications/greenbook/greenbookv15.pdf
analytical Personnel	O	Names of the personnel who were involved in analysing the data 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 downloaded and analysed all data. John Doe; Henry Rice (ME Consulting) despiking; Harriet Smith (Marine Consult) and Jamie Creed (Marine Consult) Checking
Instrument Obstructions	O	If there are any surrounding objects or obstructions that could affect the readings from the instrument, they should be described.	Free Text;	Flow may be affected by the substation and operational wind farm.

Appendix C

Data:

This section gives a summary of the required content and format for fixed position meteorological data. It covers:

Station Information, Sample Event (deployment / installation details) Information and Meteorological Data

Users can use the form here to record the Station Information

To return to the summary above, click here

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   Well Organised Data

Where fixed position meteorological data are supplied to a Data Archive Centre (DAC), it is recommended that the data are incorporated within a standard documented folder structure, as this reduces data archiving costs. For an example folder structure refer to the BGS Offshore Acquisition Folder Structure at http://www.bgs.ac.uk/downloads/start.cfm?id=2256.

An inventory of files and their respective sizes, and supply formats and media should be provided to the DAC. It is very important that a link can be made between the meteorological data files and the corresponding metadata information.

C.2   Data Format

Preferred Format

Fixed position meteorological data are logged in a variety of industrial formats according to the software used. Unprocessed, raw data, as output from the sampling instruments, should be provided alongside cleaned, processed data. The cleaned data should be provided as ASCII files, for example .txt or .csv.

C.3   Guidance

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

Station Information:

Please supply the following information **if** data collection took place at defined target stations, to enable the data to be re-used.

	Field Title	M C O	Description	Recommended Controlled Vocabulary or Format	Examples
	stationID	M	Station identifier. A unique identifier for the station.	Free text.	SFMM1
	geometry	M	Description of station spatial form. Describe if the fixed station is a point, transect (curve) or an area (surface).	Controlled Vocabulary; SeaDataNet Geospatial Feature Types, **Table L02** at https://www.bodc.ac.uk/data/codes_and_formats/vocabulary_search/L02/	004: Point; 003: Curve; 005: Surface;
	primaryLatitude	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.	54.1279
	primaryLongitude	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.	-3.6707

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

Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
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'. Number of significant figures was reduced to 4 decimal degrees in line with the accuracy of the coordinate and transformation technique.

images	C	Photographs and videos of the meteorological platform that the sensor(s) are deployed on. The images are to show sensor positions and relative locations of the mast and sensors to the surrounding environment.	Free text;	001.avi to 012.avi, mast.jpg
stationName	O	The name by which a particular station is known	Free text.	Shell Flats Meteorological Mast 1 of 2
stationNotes	O	Any further notes on the station that may be of relevance can be added here.	Free text;	Refurbished and commissioned by DNV GL

Sample Event (Deployment / installation details) information:

This information **must** be supplied with the data to ensure they can be reused:

Field Title	M C O	Description	Recommended Controlled Vocabulary or Format	Examples
sampleEventID	M	Sample Event Identifier. A unique identifier for the sampling event under consideration. Replicate identifiers should be suffixed to the end of a sample event 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 other metadata. The cruise identifier code could be used. Copy from General Metadata	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 Detailed Metadata). If multiple methods were used separate codes using a comma.	Free text;	TIMES4376; 02465, 02896

startDateTime	M	The start date and time of the meteorological record	Date; yyyy-mm-dd or DateTime; yyyy-mm-dd hh:mm:ss	2009-01-24; 2009-01-24 13:33:00
sampleLatitude	M	The latitude of the sample event must be given in decimal degrees. Units are positive north.	Decimal degrees; minimum of two decimal places.	53.4768
sample Longitude	M	The longitude of the sample event must be given in decimal degrees. Units are positive east.	Decimal degrees; minimum of two decimal places.	-3.476
endDateTime	M	The end date and time of the meteorological record.	Date; yyyy-mm-dd or DateTime; yyyy-mm-dd hh:mm:ss	2009-01-24; 2009-01-24 13:33:00

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

Field Title	M C O	Description	Recommended Controlled Vocabulary or Format	Examples
originalSample Latitude	C	The latitude of the sample event 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 event given in whichever format was used to record at the time of sampling if not recording decimal degrees.	Free text;	-4°21'53''
stationID	C	Station Identifier if applicable. Copy from [Station Guidance](#)	Free text;	Stanton Bank site 4, PS74926

sampleImages	C	Photographs and videos. Describe if images were taken at any stage of the collection or processing, the purpose they were collected for, where they are held, what their IDs are and what format.	Free text;	VisitMar2_15.jpg, taken during site visit which shows structural damage to NE side of met mast. .
eventName	O	The name of the sampling location.	Free text;	Colwyn Bay West; Hand Deeps; inner Orwell Estuary
sampling Personnel	O	Names or the personnel who were involved in the data collecting and/or any field processing of the data	Free text; full personnel names separated by semi-colon if a team collated the data;	Joe Bloggs; Brian Begger collected and field processed LiDAR data
sampleNotes	O	Any further notes on the sample collection that may be of relevance.	Free text;	Heavy salt encrustation around bearings on anemometer during servicing on 3rd May 2015.

Data:

Meteorological data from fixed position meteorological platforms including floating moorings, met masts, and/or LiDAR typically consist of a combination of time, wind speed, wind direction, air temperature, air pressure and other parameters measured such as humidity. Data should be provided from each sensor in a readable form with the header information sufficiently explained and traceable back to the device documentation. LiDAR and other meteorological sensors frequently store data relating to a fixed time period (e.g. 10 minutes). It should be made clear how the time-stamp of the recorded information relates to that fixed time period (i.e. end of 10-minute period, middle of 10-minute period, *etc.*) and how the parameter relates to the fixed time period (e.g. mean wind speed over 10 minute interval, max wind speed over 10 minute interval, *etc.*). The recommended format for fixed position meteorological data, including from LiDAR, masts and floating platforms, is as a matrix with date/time as the primary channel and other parameter details as additional fields. Please ensure that there is a clear relationship between the instrument sensors' calibration information, the fields for each sensor, the units within the sample data files and the date/time that the information was collected.

Survey acquisition software that routinely logs this information complies with MEDIN requirements.