



# Annual Report 2017-2018

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*Measure once, use many times*

# 1 Highlights in 2017-18

Important progress was achieved by MEDIN in 2017-18.

- 1.1. The MEDIN portal, which provides a single place for users to find UK marine data, was redeveloped this year (figure 1). The new portal has an intuitive design, layout and uses up-to-date technology. In March 2018, the MEDIN portal described and provided access to over 14,000 marine datasets from over 500 public and private sector organisations, a year on year increase of over 2,000 (14%) since March 2017.

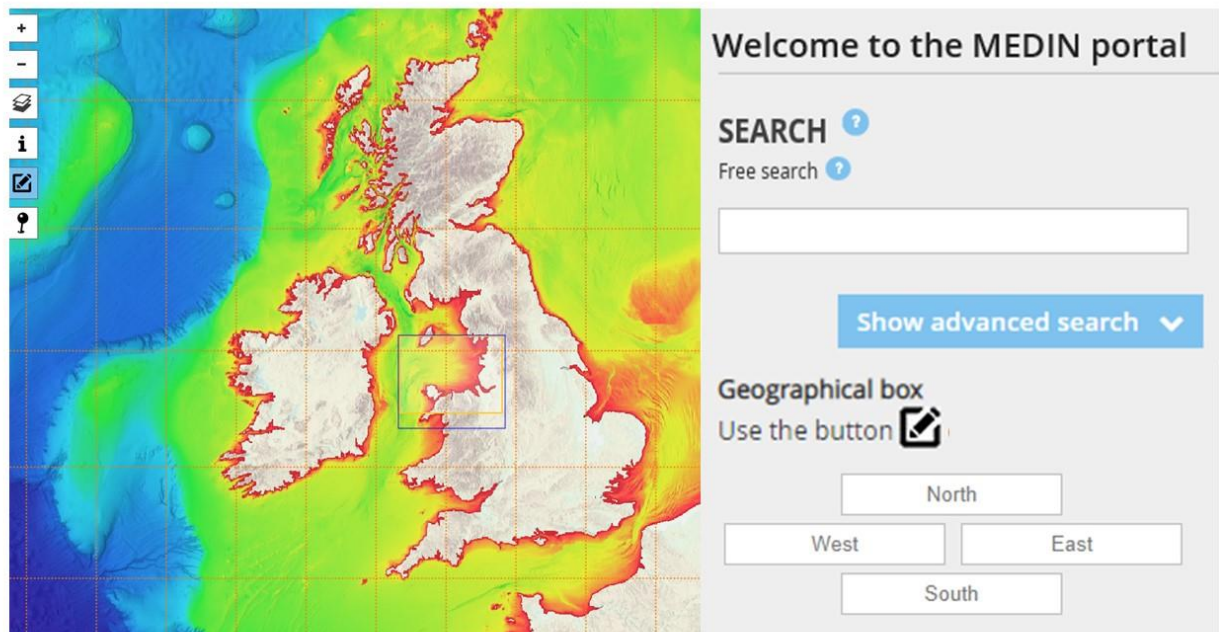


Figure 1: Screen shot of the redeveloped MEDIN portal that allows users to include their own base layers e.g. a bathymetry map published by EMODnet.

- 1.1. The 2017-18 Data Archive Centre (DAC) annual report shows that the number of datasets held by the DACs increased by 7% over the year with 860 new datasets archived in 2017-18<sup>1</sup>. The DACs received over 4 million requests for data during the year and continue to archive data from MEDIN partner and third party organisations to agreed individual programmes.
- 1.2. It is now possible for a user to download over 3,500 datasets from the MEDIN portal within "2 clicks" of finding them - an increase of 75% during the year. This highlights the progress MEDIN has made with increasing direct access to data.
- 1.3. The network of MEDIN Data Archive Centres (DACs) made a significant step towards expanding further this year, with AFBI preparing accreditation documents to join Cefas, Marine Scotland and DASSH as the fourth member of the FishDAC. There are currently 10 organisations accredited by MEDIN as part of the network of 7 DACs.
- 1.4. MEDIN provides the UK marine community with regular opportunities for data management training. During 2017-18, MEDIN held 11 workshops around the

<sup>1</sup> Additional new datasets available from the MEDIN portal are held by other MEDIN partners e.g. the Crown Estate.

country, benefitting nearly 100 representatives from over 40 private and public sector organisations. In addition, MEDIN delivered marine data management training for over 90 undergraduate and postgraduate students across the UK, recognising the importance of training the marine scientists of the future.

- 1.5. MEDIN increased its profile amongst new audiences. Participating in trade fairs such as the Marine and Coastal Civil Engineering Expo and Oceanology International provided links with new marine industries and expanded our understanding of where marine data is used e.g. for product testing and human health. Enhanced social media presence during the year e.g. #datasetoftheweek on Twitter is a quick and easy way to promote marine data to a wide and varied audience.
- 1.6. MEDIN worked alongside marine industry partners to facilitate increased access to biodiversity data collected by a range of industries by funding the development of a tool that exports biodiversity data directly to DASSH. A report describing this work is published on the MEDIN website.
- 1.7. MEDIN liaised closely with DEFRA and the Devolved Administrations regarding relevant marine policy initiatives. In particular, providing the UK Marine Monitoring and Assessment Strategy (UKMMAS) Evidence Groups with data management advice and support.
- 1.8. MEDIN has supported its partners in reporting monitoring programmes for the Marine Strategy Framework Directive (MSFD) and OSPAR via its management of the UK Directory of Marine Observing Systems (UKDMOS). UKDMOS allows users to quickly view where, when and what is being monitored around UK coasts. There are over 275 UK monitoring programmes described in UKDMOS, relating to 15,000 sites.
- 1.9. During 2017-18, MEDIN delivered data management training for the Pacific and Caribbean regions, as part of the Commonwealth Marine Economies Programme (CMEP). This programme, funded by the Foreign and Commonwealth Office, helps the most vulnerable Small Island Developing States (SIDS) make the most of their marine assets.
- 1.10. MEDIN welcomed the Thames Estuary Partnership, the International Centre for Island Technology, and Ocean Ecology Limited as partners during 2017-18.

## 2 Performance Summary

2.1 2017-18 was the fourth year under the five year (2014-19) MEDIN Business Plan. MEDIN has moved to a fully operational phase from the transition phase with a reduced level of funding, from £763K per year before 2011 to £522K in the last year.

2.2 Priorities identified in the 2014-19 MEDIN Business Plan that were targeted in 2017-18 are identified by the High Level Objectives in table 1. Table 1 also details the Key Performance Indicators (KPIs) used to assess whether the objectives were met.

2.3 MEDIN fully or partially achieved over 85% of the Key Performance Indicators (KPIs) for 2017-18.

KPIs fully achieved	KPIs partially achieved	KPIs not achieved
17	10	4*

High Level Objective	Key Performance Indicators	Success	Details
<b>1. The MEDIN framework is adopted across the UK.</b> DAC network, standards and metadata portal adopted across the UK within organisations' operational data strategy. This will be measured by:			
	a) DAC statistics – Show increase in no. of datasets or no. of observations year on year (from 2012 baseline)	Fully achieved	The number of data sets held by the DACs is 11,951, an 8% increase on 2016-17, and >300% increase on 2011-12.
	b) DAC coverage - Expand DAC data coverage by accrediting at least one further organisation to join the DAC network, thereby filling a geographic gap in the network (e.g. Northern Ireland component of FishDAC)	Partially achieved	AFBI has completed documentation to be accredited as the 4th member of FishDAC. Submission is expected in 2018-19.
	c) Standards use – Show increase in downloads per month of data guidelines (from Mar 2013)	Fully achieved	MEDIN Data guidelines downloaded 5781 times in 2017/18, a small decrease from the previous year.
	d) Portal use – achieve at least 6,000 page views per month and 1,200 unique users after portal redevelopment	Partially achieved	Redeveloped portal released in December 2017. Average page views and unique users per month for 3 months after release were 11,900 and 903.
	e) Paper to MSCC plenary detailing need for funding agencies to enforce more vigorously the use/search of existing data before funding new data collection.	Fully achieved	MEDIN presentation to MSCC (May 2017) highlighted 3 outstanding issues that are perceived as barriers to sharing data. Members acknowledged a gap in awareness of cross-sectoral data collection.
<b>2. Coordinated DAC approach for archiving / retrieving data</b> with support for users			
	a) Centralised guidance on use of persistent identifiers for marine data – published on MEDIN website by end Q4.	Partially achieved	All MEDIN DACs can mint persistent identifiers for marine data e.g. digital object identifiers (doi). Understaffing during the year (staff resignation) meant there was not resource to

\* KPIs not achieved this year were due to staff shortages resulting from a member of the core team resigning part way through the year.

			produce centralised guidance on the use of these.
	b) 2 worked examples of multidisciplinary datasets being archived by end Q3	Partially achieved	Only one worked example was completed. BGS and DASSH continue to successfully archive Marine Conservation Zone (MCZ) data. There have been no other deposits of multidisciplinary data in the MEDIN DACs during this reporting period.
<b>3. Support the partners in meeting INSPIRE obligations</b> to publish metadata and provide compliant data view and download services			
	a) Updated MEDIN discovery metadata standard incorporating any INSPIRE changes by end Q4	Partially achieved	MEDIN has been an active member of the AGI Group who maintain GEMINI, the UK profile of INSPIRE. INSPIRE did not release changes until end Q4 2017/18 so updates to MEDIN standard postponed until 2018/19.
	b) Report on meeting INSPIRE obligations by each DAC to MEDIN executive team by end Q1	Fully achieved	Most DACs provide view and download services, but not all are INSPIRE compliant. Details of INSPIRE compliance across the DACs is shown in table 3.
	c) All MEDIN metadata records designated to be published on data.gov.uk in 2017-18 successfully published there by end of Q4.	Fully achieved	MEDIN publishes 670 of its partner's discovery metadata to data.gov.uk
	d) Increase number of DACs offering INSPIRE-compliant view and download services from March 2017	Fully achieved	Efforts to meet INSPIRE compliance continues at the DACs, with 6 DAC members (BGS, BODC, DASSH, UKHO, FishDAC (Marine Scotland), Historic environment (RCAHWW)) providing INSPIRE-compliant view services for some or all of their datasets. Four DAC components (DASSH, UKHO, FishDAC (Marine Scotland), Historic environment (RCAHWW)) also have INSPIRE-compliant download services. Further development is planned or underway at BGS, BODC, Historic Environment (HES) and FishDAC (Cefas).
<b>4. MEDIN portal provides comprehensive coverage</b> enabling wide-ranging & dynamic access to UK Marine data, Reference data, view and download services and other data products in line with user requirements.			
	a) An increase in portal metadata records of at least 200 records	Fully achieved	>14,000 records in the portal, an increase of 2,000 from March 2017
	b) Increase number of industry datasets available from MEDIN portal (compared to 2016 baseline).	Fully achieved	500 new metadata records relating to offshore renewable energy sector published on the MEDIN portal.
<b>5. Manage data for use in MSFD.</b> Store, manage and make available UK monitoring data for use in MSFD assessment, according to the agreed approach			
	a) Categorise records used for MSFD assessment in UKDMOS	Not achieved	Understaffing during the year (staff resignation) meant there was not resource to carry this activity. Added to work plan 2018/19

	b) Metadata for datasets used in MSFD assessment available on MEDIN portal	Partially achieved	Metadata for contaminants data held in MERMAN database available on MEDIN portal.
	c) Facilitate data flow to MEDIN DACs for MSFD monitoring by taking a lead in the MARG/MEDIN Data Group	Partially achieved	Data Task Group produced a metadata template for MSFD Indicators, which includes links to data used in MSFD reporting. MEDIN funded a pilot project to facilitate pelagic data flow into DASSH.
<b>6. Provide access to data services and data products</b> , defined key data services and priority common data products.			
	a) Incorporate 115 reference data layers into the portal from <a href="http://www.oceannet.org/download_gis/">http://www.oceannet.org/download_gis/</a>	Partially achieved	90 project data layers incorporated in the MEDIN portal with direct download URLs
	b) Stats on products and services hosted by MEDIN, and on usage (page views / downloads)	Not achieved	Understaffing during the year (staff resignation) meant there not staff resource to record these metrics. Other work was prioritised.
	c) Sensor Web Enablement technology piloted in upgraded portal	Not achieved	Understaffing during the year (staff resignation) meant there not staff resource to commission this work. Other work was prioritised.
<b>7. Promote the re-use of data</b> resulting in a sustained increase in the number of successfully furnished requests for archived data from the public, government and industry.			
	a) Number and nature of data searches and downloads maintained at 2014/15 levels.	Fully achieved	>4.25 million requests for data were received by the DACs. While this is slightly lower than last year's number (~5m) it nonetheless represents double the number of requests in 2015-16, showing a steady demand for data from the DACs.
	b) Analysis of these reported to MEDIN Executive Committee in Q3.	Fully achieved	MEDIN DAC Annual Report submitted to Executive Team
	c) Evaluation of the openness (1-5* rating) of datasets on the MEDIN portal to be reported to MEDIN executive team by end Q3.	Not achieved	Understaffing during the year (staff resignation) meant there not resource to carry out all tasks. Other work was prioritised.
<b>8. Adoption of data guidelines across the marine sector</b> , including MSCC members as a standard condition of funding for data collection.			
	a) Increase no of MSCC orgs applying MEDIN guidelines and no of MSCC orgs requesting MEDIN guidelines from contractors.	Fully achieved	MSCC organisations applying MEDIN data guidelines increased to 7 in 2017/18
	b) At least 50 attendees at MEDIN workshops (10% increase from 2014-15)	Fully achieved	94 attendees from 45 organisations attended 11 workshops
	c) Workshop feedback to maintain positive level reported in 2014/15	Fully achieved	Workshop feedback remains positive (83% of respondents felt instruction good or very good)
<b>9. Demonstrate the value of using the MEDIN framework.</b> Provide tangible case studies demonstrating the value of using the MEDIN framework when locating, accessing and retrieving data for projects.			
	a) Provide a marine data storyboard demonstrating the value of using the MEDIN framework when locating, accessing and retrieving data for projects.	Partially achieved	Marine data storyboard format planned and contributors approached. This will become part of the new MEDIN website in 2018-19.



	b) Engage at least one new sponsor.	Partially achieved	Although MEDIN was not successful in engaging any additional sponsors this year, MEDIN successfully achieved additional funding from the Foreign and Commonwealth Office as part of the Commonwealth Marine Economies Programme.
<b>10. Raise the profile of MEDIN</b> in the academic and private sectors, attracting further members to the network and widening the sources of data.			
	a) 2 issues of Marine Data News	Fully achieved	Marine Data News was published 3 times in April, September and December 2017, featuring varied articles relating to marine data, from novel data transmission methods to new projects and data portals.
	b) New "News and events" page on MEDIN website	Fully achieved	On the new MEDIN homepage there is a section for news and events.
	c) MEDIN Open Meeting with increased attendance compared to 2015/16	Fully achieved	MEDIN Open meeting was attended by 61 people from 41 different organisations. This matched the number of attendees at the MEDIN Open Meeting in 2015/16.
	d) At least 4 networking events with commercial organisations	Fully achieved	MEDIN attended the Marine and Coastal Civil Engineering Expo, Oceanology International and EMODnet Physics Workshop as well as running bespoke workshops for commercial organisations to widen knowledge of MEDIN within the private sector.

Table 1: Summary of 2017-18 Key Performance Indicators and progress

### 3 Performance Details

This section contains details on progress towards each High Level Objective. The MEDIN Work Programme is carried out within 7 work streams. Each work stream defines between three and four Key Tasks in order to meet the Objectives. Progress towards these Key Tasks and their associated deliverables are described in Appendix C.

#### Objective 1 – MEDIN Framework adopted across UK

The MEDIN Framework consists of: the DAC network; the MEDIN metadata standard and suite of data guidelines; and the MEDIN discovery portal.

The MEDIN network of DACs provides secure long-term storage for marine data together with the capability to upload and retrieve data. All DACs have provided annual reports for 2017-18 detailing new datasets archived and number of datasets held. Note that it is difficult to compare metrics between DACs, as the size of datasets can vary significantly between DACs (and even within DACs comparing across years). For example, all the data held in the Met Office DAC are maintained in 5 datasets, which were augmented in 2017-18 with 8 million new observations. Highlights for the new datasets archived are given in table 2 and summarised in figure 2.

BODC	BGS
<p>During 2017-18, BODC received 220 accessions of data from 61 organisations in 10 countries as follows:</p> <ul style="list-style-type: none"> <li>• 78 from Natural Environment Research Council (NERC) laboratories (including collaborative centres &amp; National Oceanography Centre (NOC)</li> <li>• 43 from UK universities</li> <li>• 4 from UK Government funded laboratories</li> <li>• 1 from commercial organisations</li> <li>• 34 from charitable organisations</li> <li>• 60 from overseas laboratories</li> </ul> <p>During 2017-18, an additional 54 datasets were added to the Published Data Library (PDL) and received a Digital Object Identifier (DOI). The PDL had 831 downloads from 199 published datasets.</p>	<p>During 2017-18 BGS:</p> <ul style="list-style-type: none"> <li>• Continued archiving Marine Conservation Zone (MCZ) data – 4 surveys from 1 MCZ site archived</li> <li>• Continued archiving Maritime and Coastguard Agency (MCA) backscatter and sample data from UKHO – 49 HI surveys archived</li> <li>• Scanned legacy BGS Keyworth geophysical records - 2460</li> <li>• Scanned 30 remaining boxes of Tarmac data records (MEDIN small project)</li> </ul>
CEFAS (FishDAC)	DASSH
<p>In the past year Cefas has increased its holding as follows:</p> <ul style="list-style-type: none"> <li>• 166 new data holdings.</li> <li>• Fishing survey and Fisheries Science Partnership dataset updates.</li> <li>• Rationalised and archived a large amount of physical records and added them to a historic herring data catalogue.</li> </ul>	<p>Major new datasets since April 2017 include:</p> <ul style="list-style-type: none"> <li>• 10 MCZ surveys,</li> <li>• a catalogue of the Herbarium of British algae and lichens (1826-2010),</li> <li>• Ad hoc sightings of marine fauna from shore and ship-based surveys – Ivor Rees North Wales (1778-1998).</li> </ul> <p>Since January 2018 DASSH has been accredited as an Associated Data Unit of International Oceanographic Data and information Exchange (IODE) and act as the UK Ocean Biogeographic Information System (OBIS) Node.</p>
Met Office	RCAHMW (Historic Environment DAC)
<ul style="list-style-type: none"> <li>• Following the successful addition of the Autonomous Marine Observing System (AMOS) network, we are investigating the feasibility of adding a major climate dataset - Hadley Centre Sea Ice and Sea Surface Temperature data set (HadISST) to those available through the DAC.</li> <li>• Summary of data sets archived (in the last year) – All 5 Met Office datasets have been added to over the past year, adding in excess of 8 million observations.</li> <li>• Additional quality control measures have been implemented including a comprehensive update to checks carried out on automatic observations and a new</li> </ul>	<p>There was a significant increase in the number of sites archived:</p> <ul style="list-style-type: none"> <li>• <b>307</b> additional maritime sites were added</li> <li>• <b>264</b> additional catalogue records relating to maritime sites have been catalogued</li> </ul> <p>Notable maritime archive sets accessioned during the year include a baseline aerial reconnaissance survey of the wreck of the Albion, carried out for RCAHMW's Climate, Heritage and Environments of Reefs, Islands and Headlands (CHERISH) Project, and a photographic survey of the wreck of the Helping Hand at Black Mixen Pool.</p>



interface to highlight the results of the updated checks.																	
<b>Marine Scotland Science (FishDAC)</b>	<b>HES (Historic Environment DAC)</b>																
<p>Since 01 April 2017, 30 new datasets have been published. All of the newly published datasets have download services, either linked to the International Council for the Exploration of the Sea (ICES) Database of Trawl Surveys (DATRAS) portal, or via the Marine Scotland data portal through DOI linkage.</p> <p>Main Archived Datasets:</p> <ul style="list-style-type: none"> <li>• North Sea International Bottom Trawl Survey Quarter 1 + 3</li> <li>• West Coast International Bottom Trawl Survey Quarter 1 +4</li> <li>• Deep water survey, West Scotland</li> <li>• Herring Acoustic Survey data</li> <li>• Mackerel Acoustic Survey data</li> <li>• Industry led survey for herring assessment data, ICES area VIa 2017</li> <li>• Monkfish surveys: 2 surveys in total</li> <li>• Rockall Survey, quarter 3.</li> <li>• Salmon and Sea trout catch statistics 1952 – 2017 update</li> <li>• Fish and Shellfish Stocks 2016</li> <li>• Marine Strategy Framework Directive (MSFD) Data cleansed copies of DATRAS and national data for fishing surveys: 18 datasets in total, including methodology and status reports.</li> </ul> <p>Marine Scotland has currently 182 open datasets with minted DOI (48 of which overlap with FishDAC function)</p>	<p>227 items, relating to 51 maritime records, were catalogued. Several of the items archived are database tables or project reports linked to more than one site record in Canmore.</p> <table border="1" data-bbox="798 510 1284 864"> <thead> <tr> <th>PREFIX</th><th>Count of archive</th></tr> </thead> <tbody> <tr> <td>Fonds level records</td><td>17</td></tr> <tr> <td>Digital images</td><td>6</td></tr> <tr> <td>Word Processed Documents /Portable Document Format (PDF)</td><td>19</td></tr> </tbody> </table> <p>Archive projects</p> <table border="1" data-bbox="798 949 1364 1384"> <thead> <tr> <th>No of items</th><th>Description</th></tr> </thead> <tbody> <tr> <td>4</td><td>Her Majesty's Ship (HMS) Unicorn: Aerial imagery</td></tr> <tr> <td>2</td><td>Spinningdale., Hirtha, St Kilda: Aerial Imagery</td></tr> <tr> <td>19</td><td>Diver reports and surveys: Orkney (15), Shetland (2), North Sea (2)</td></tr> </tbody> </table> <p>HES commissioned Wessex Archaeology to undertake quality assurance on aspects of the marine record in Canmore, focusing on the known wreck sites.</p>	PREFIX	Count of archive	Fonds level records	17	Digital images	6	Word Processed Documents /Portable Document Format (PDF)	19	No of items	Description	4	Her Majesty's Ship (HMS) Unicorn: Aerial imagery	2	Spinningdale., Hirtha, St Kilda: Aerial Imagery	19	Diver reports and surveys: Orkney (15), Shetland (2), North Sea (2)
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<b>UKHO</b>	<b>ADS (Historic Environment DAC)</b>																
<p>A total of 189 new datasets were made available:</p> <ul style="list-style-type: none"> <li>• 25 Civil Hydrography Programme (CHP) surveys over 49 surfaces</li> <li>• 2 Royal Navy surveys over 6 surfaces</li> <li>• 2 Royal Navy Short Notice Tasks</li> <li>• 35 Memorandum of Understanding (MoU) surfaces</li> <li>• 97 Third Party surfaces</li> </ul>	<p>4 datasets have been archived this year and released with DOIs:</p> <ul style="list-style-type: none"> <li>• Cornish Ports and Harbours: assessing heritage significance, threats, protection and opportunities</li> <li>• National Historic Seascape Characterisation Consolidation</li> <li>• Archaeology in the Severn Estuary</li> <li>• ForSEADiscovery</li> </ul>																

Table 2: Summary of new datasets archived at MEDIN DACs during 2017-18.

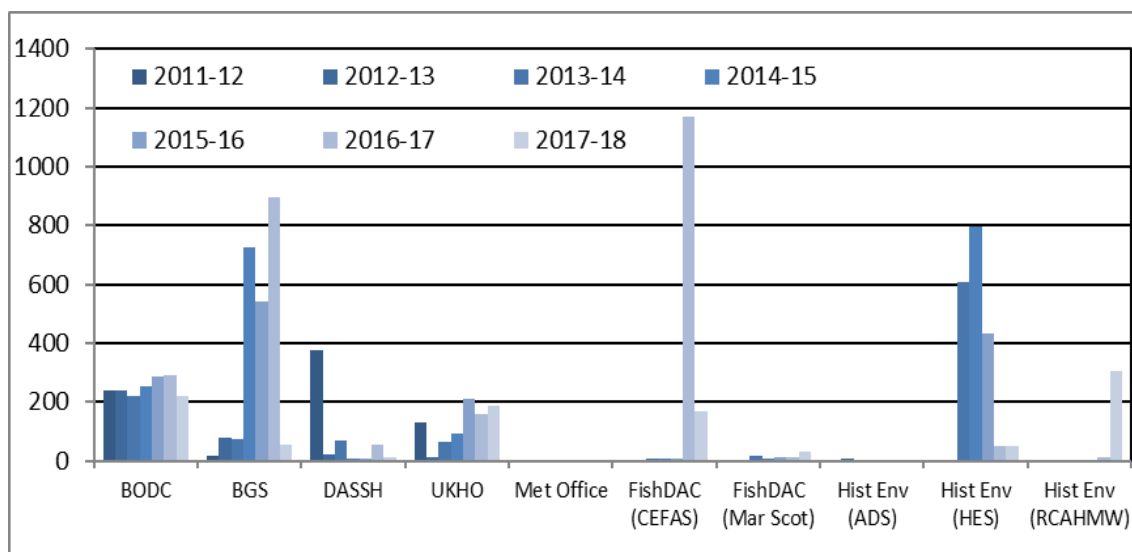


Figure 2: Number of new datasets archived at MEDIN DACs per year since 2011-12

The second component of the MEDIN framework is the MEDIN Discovery Metadata Standard and suite of data guidelines. In 2017-18, the MEDIN Discovery Metadata Standard was downloaded 3031 times, an increase of 6% from 2016-17. Various MEDIN Data Guidelines were downloaded 5781 times in 2017-18, a drop of 5% from the previous year (figure 3 shows downloads by month for 2016-17 and 2017-18).

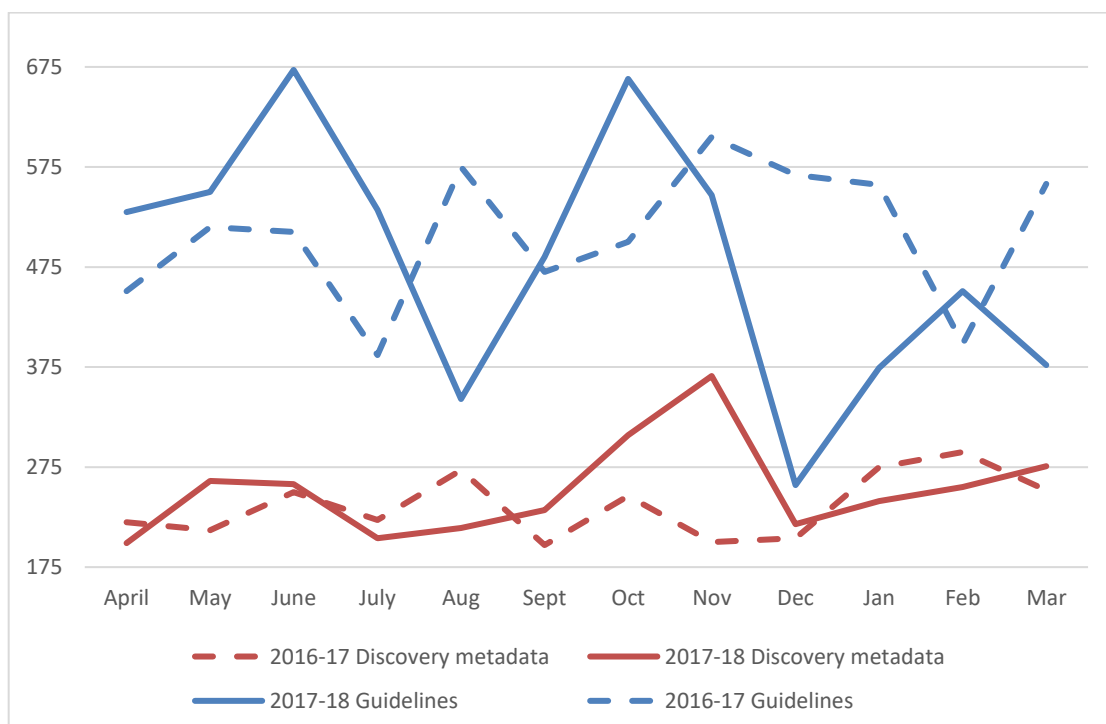


Figure 3: Number of times the MEDIN discovery metadata standard and data guidelines were downloaded per month during 2016-17 and 2017-18

MEDIN provides two tools for creating MEDIN compliant discovery metadata. The MEDIN Metadata Maestro tool for creating discovery metadata was downloaded 92 times in 2017-18, a reduction from 2016-17 when Maestro was downloaded 106 times. This is not

surprising as there were no new releases of the tool during 2017/18, so no need for existing users to download a new version. In 2017-18, 58% of downloads were from the private sector. The online metadata creation tool hosted by DASSH had 208 new registrants in 2017-18, bringing the total number of users to 823.

## Objective 2 - Coordinated DAC approach for archiving / retrieving data

The network of MEDIN Data Archive Centres continues to expand, the Agri-Food and Biosciences Institute (AFBI) in Northern Ireland is preparing an application for accreditation as a component of the FishDAC and is expected to submit the application during 2018-19. BODC aims to implement the infrastructure for archiving underwater noise data, but this is not in place yet. While DASSH had previously liaised with the Marine Conservation Society (MCS) about providing a backup archive for litter data, there was no further progress this year.

The network of MEDIN DACs has taken steps to establish a more coordinated approach to archiving complex datasets, with data starting to flow from one DAC to another where required. For example, datasets collected during Marine Conservation Zone (MCZ) surveys are being passed between DASSH, BGS and UKHO so data from these complex surveys are archived at the most appropriate DAC. There has not been any uptake of the generic online guidance for submission of multidisciplinary data and there have been no other submissions of multidisciplinary data during 2017-18.

## Objective 3 - Support the partners in meeting INSPIRE obligations

Table 3 shows the current status (as of June 2018) of INSPIRE View and Download compliance at the DACs.

DAC Name	INSPIRE View & Download
British Oceanographic Data Centre	INSPIRE compliant view services for two datasets. Download capability exists, but it is not INSPIRE compliant. Further development of INSPIRE compliant services is underway.
British Geological Survey	INSPIRE view (e.g. Offshore Geoindex, Offshore Map products) services; download is available but not INSPIRE compliant.
DASSH	View and download services are in place at DASSH and are INSPIRE compliant.
Met Office	1 data set for last 24 hours data; not INSPIRE compliant.
United Kingdom Hydrographic Office	View and download services are in place at UKHO and are INSPIRE compliant.
FishDAC (Cefas)	View and download available; currently checking if INSPIRE compliant.
FishDAC (Marine Scotland)	Geospatially enabled datasets have view services, which are INSPIRE compliant. Most datasets have download service, some of which are INSPIRE compliant.
Historical Environment DAC (ADS)	ADS has view and download services for some of its collections. These have not been made INSPIRE compliant as the datasets do not fall under INSPIRE.
Historical Environment DAC (HES)	Protected Places theme view service is now INSPIRE compliant. There are no download services for data exposed through the MEDIN portal.
Historical Environment DAC (RCAHMW)	One INSPIRE compliant view and download service.

Table 3: Status of INSPIRE View and Download compliance at MEDIN DACs

The MEDIN Discovery Metadata Standard was not updated to account for INSPIRE changes this year, as INSPIRE did not release the final changes to national bodies until close to the

end of quarter 4 of 2017-18. This meant there was not sufficient time to implement the changes but this work has been added to the work programme for 2018-19.

#### Objective 4 - MEDIN portal provides comprehensive coverage

The MEDIN portal provides access to a wide range of marine data. Figure 4 shows the proportion of datasets described in the MEDIN portal that are categorised by various marine themes.

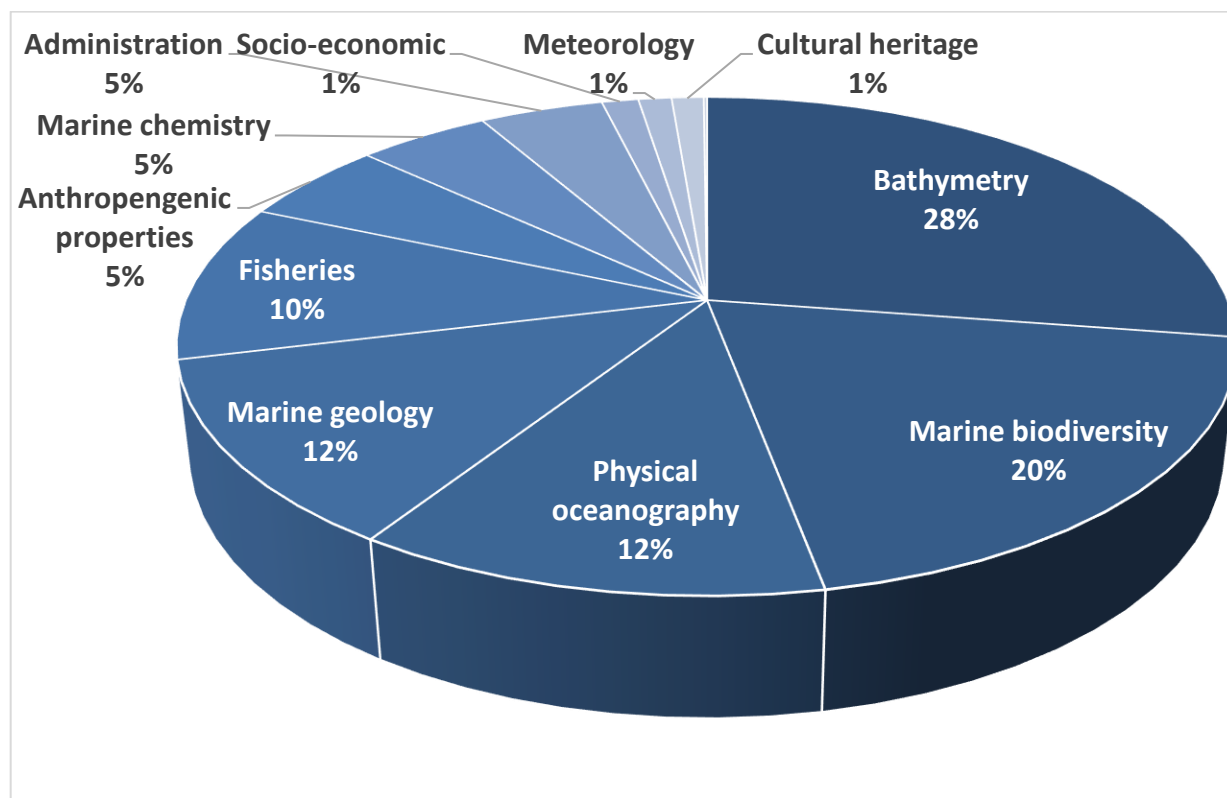


Figure 4: Thematic distribution of datasets accessible from the MEDIN portal.

Figure 5 shows the temporal coverage of data described in the MEDIN portal based on the start date of the dataset. Although MEDIN was established in 2008, the earliest data that can be accessed via the MEDIN portal dates in fact from 1353: "Reconstructed in-situ sea water temperatures in the East Atlantic for 1353 to 2006 from samples collected at Loch Sween Scotland (56°01.99'N, 005°36.13'W)". These data are archived at the British Oceanographic Data Centre (BODC). As anticipated, the focus of data records are for the last two decades, however there are numerous data collected in the 18<sup>th</sup> and 19<sup>th</sup> centuries. The peak in 1848 relates to a suite of datasets collated by the Lundy Field Society for marine fauna collected from 1848 until the second half of the 20<sup>th</sup> century by taxonomic group experts. These data are archived at DASSH. There is a noticeable dip in the number of datasets spanning the period 2015-2020 compared to 2010-2015. This most likely reflects the time it takes organisations to complete and submit data (and that the period is not yet complete).

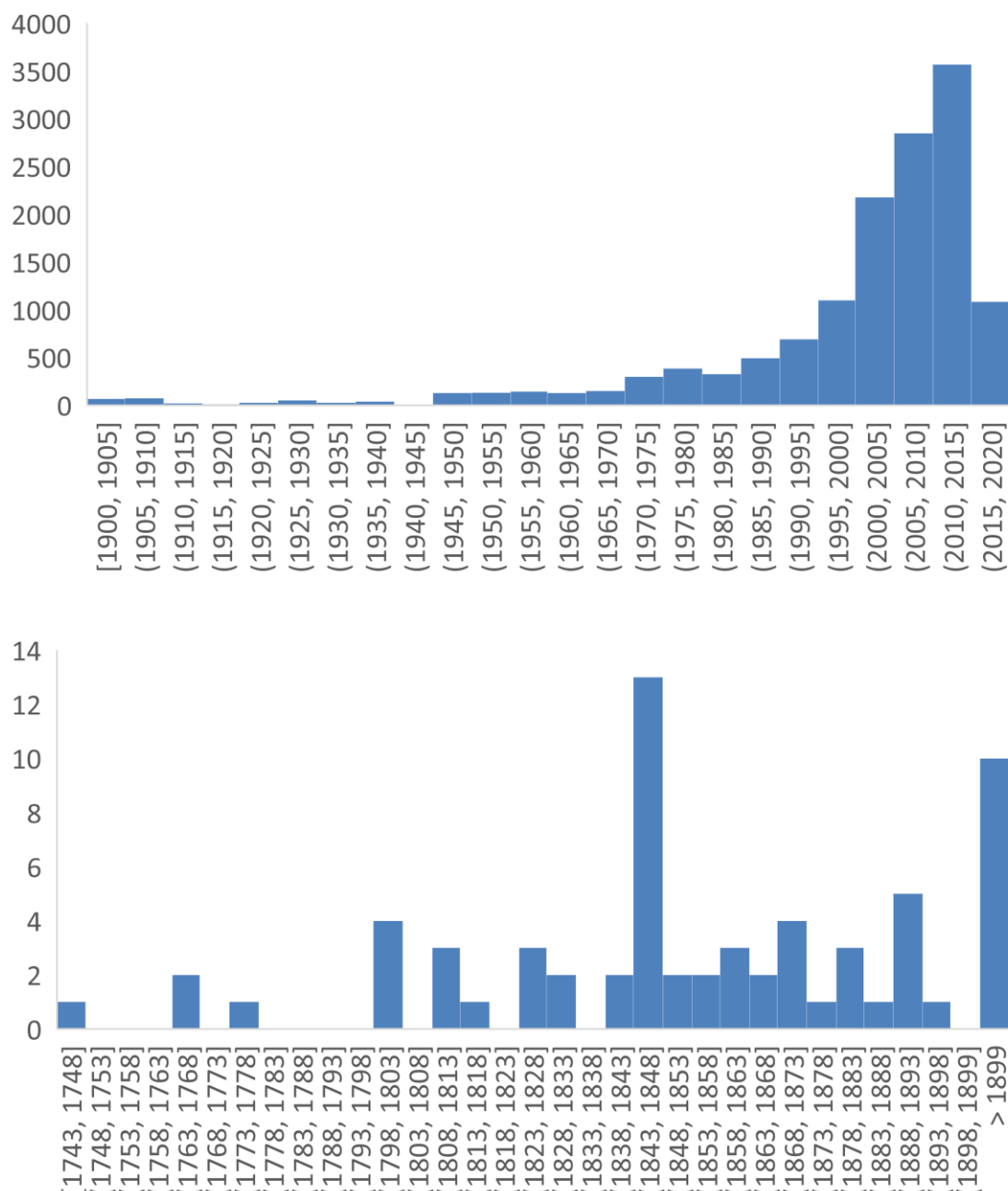


Figure 5: Temporal distribution of datasets accessible from the MEDIN portal based on the date that data collection started for the period a) 1900-2020 and b) 1743-1900.

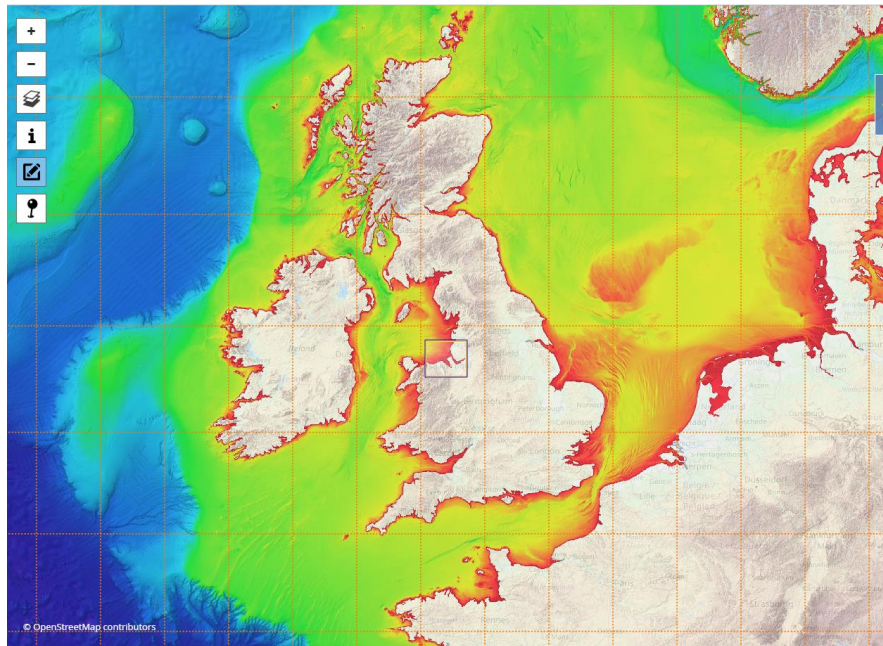
### Objective 5 - Manage data for use in MSFD

The Marine Strategy Framework Directive is a European directive to facilitate waters around Europe achieving Good Environmental Status (GES). MEDIN continues to be actively involved in the MEDIN/MARG Data Task Group. The DACs rely on input from this group regarding datasets to be managed in the DAC network. Some of the data for use in MSFD reporting are already managed by MEDIN DACs (e.g. contaminants data in the MERMAN database managed by BODC; fisheries data managed by FishDAC). This year MEDIN funded a Small Data Archiving project to facilitate pelagic data used for MSFD reporting flow to DASSH. The report of this work is available here <http://medin.org.uk/about/key-documents>.

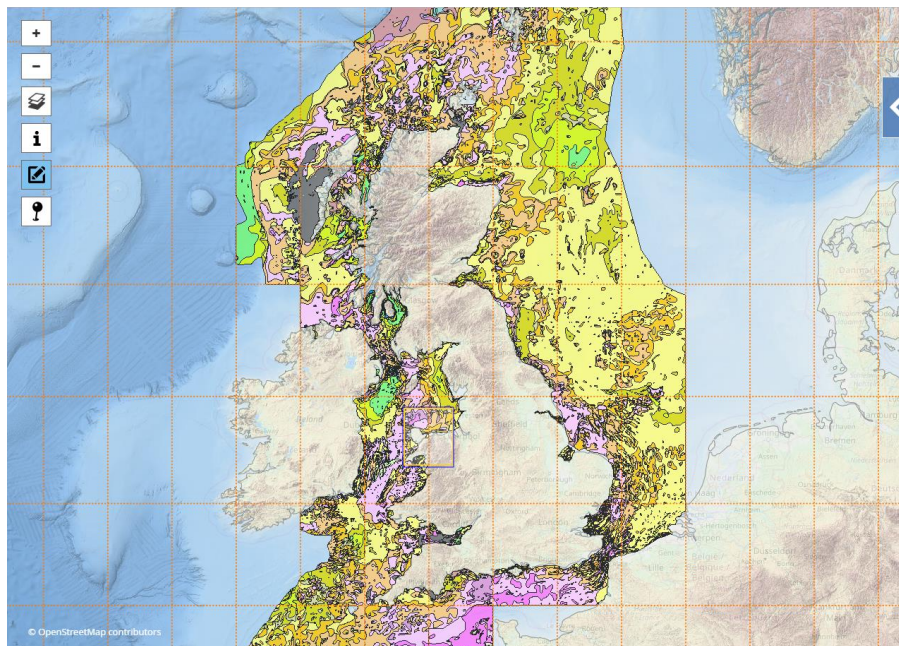


## Objective 6 - Provide access to data services and data products

The MEDIN portal provides access to a range of data services and products. In particular, a range of Web Map Services (WMS) can be found and accessed from the MEDIN portal. The redeveloped portal allows users to add their own data products to the map interface to help with searches. A limited number of data products have been preselected for this purpose e.g. the EMODnet Digital Terrain Model and BGS sea-bed sediments (figures 6a and b). This preselected list will be added to as the portal development continues.



*Figure 6a: MEDIN portal map search interface displaying the EMODnet Digital Terrain Model (2018).*



*Figure 6b. MEDIN portal map search interface displaying the BGS sea-bed sediments data product. Contains British Geological Survey materials © NERC [2018]*



## Objective 7 - Promote the re-use of data

The benefits of re-using data are widely recognised by the marine community. This is demonstrated by the levels of data downloaded from the MEDIN DACs. Not all DACs are able to record requests received for data, but those who do all show an increase in the number of requests since 2011-12 (figure 7).

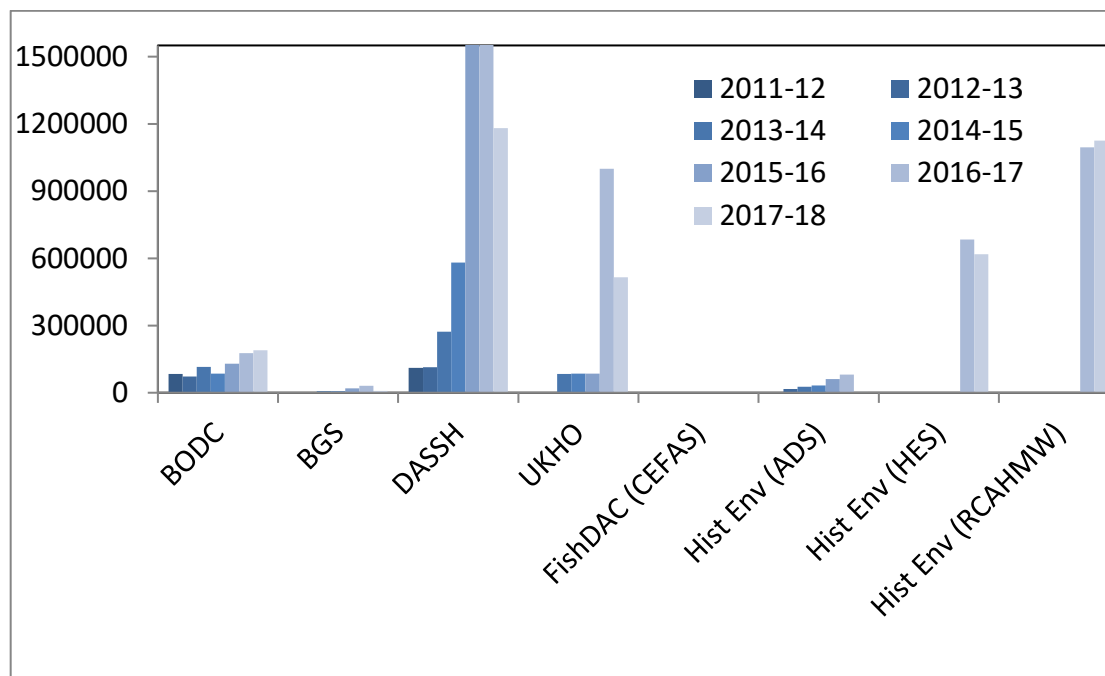


Figure 7: Number of requests for data (by year) from those DACs that record this information.

Approaching 4.3 million requests for data were received by the DACs during 2017-18. While this is slightly lower than last year's number (~5m) it still represents double the number of requests in 2015-16 and shows a steady demand for data from the DACs. It should be noted that BGS were unable to provide request metrics for their WMS this year, so the number of requests presented in this report is a significant underestimate.

During 2017-18, MEDIN introduced a new initiative to promote the re-usability of data found on the MEDIN portal. *#DatasetOfTheWeek* is published weekly on the MEDIN twitter feed and has significantly increased MEDIN's visibility to a new audience. Figure 8 shows an example of one of these tweets.

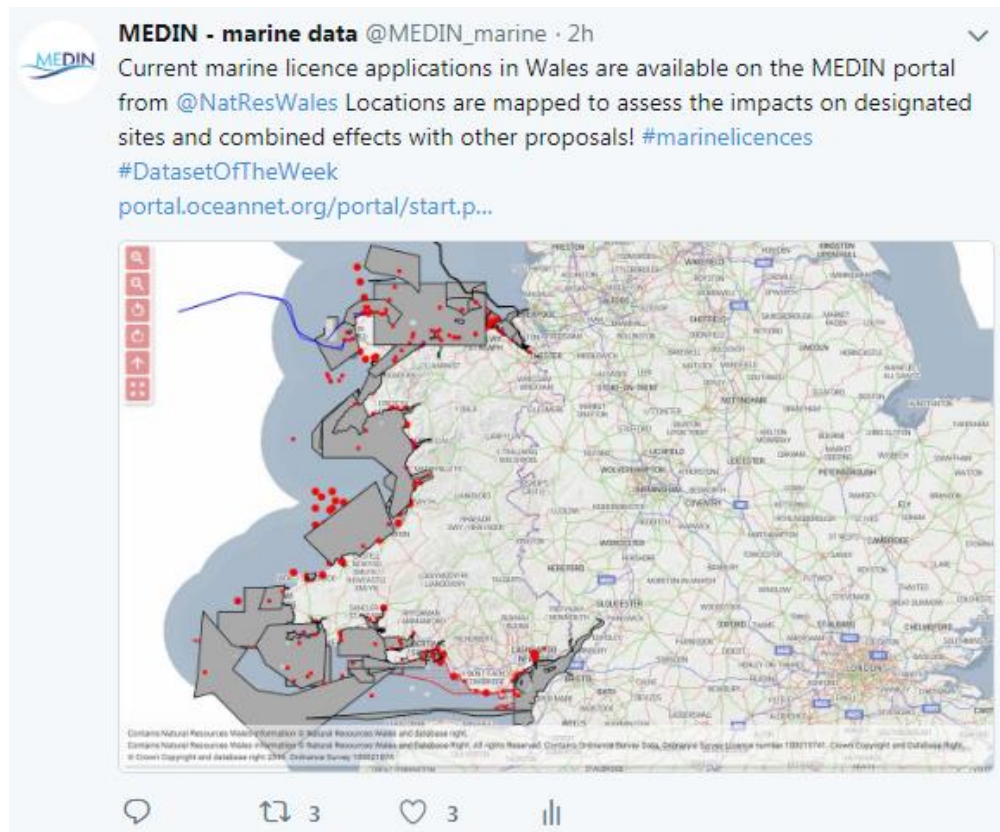


Figure 8: An example from MEDIN's Social Media campaign #DatasetOfTheWeek on Twitter, designed to raise awareness of the range of marine data accessible via MEDIN.

### Objective 8 - Adoption of data guidelines across the marine sector

MEDIN continued its programme of outreach and education to ensure its data guidelines are adopted across the marine sector. In particular MEDIN ran 11 training workshops to help the UK marine community adopt its data guidelines, assisting 94 attendees from 45 separate organisations from both the public and private sector. Feedback from the workshops has been consistently positive with respondents all acknowledging the usefulness of the sessions and the quality of the training.

During 2017-18, MEDIN lobbied MSCC members to stipulate the use of MEDIN metadata standards and data guidelines in any data collection contracts. Seven MSCC organisations reported that they apply MEDIN guidelines when collecting data and request contractors return data compliant with guidelines.

### Objective 9 - Demonstrate the value of using the MEDIN framework

The MEDIN framework consists of:

- An operational network of coordinated, accredited, marine Data Archive Centres (DACs), which provides national marine data management.
- A web portal to make it easy for users to find UK marine data.
- A discovery metadata standard and a suite of data guidelines, to ensure that all relevant information about a dataset is readily available.

The value of this framework is recognised internationally and indeed MEDIN resources are used worldwide. Roughly 10% of the users of MEDIN tools (e.g. the MEDIN portal and metadata editors) are outside the UK. MEDIN's international presence is further evidenced by the reuse of its resources across international bodies. Examples of this are: the MEDIN DAC accreditation process forms the basis for the International Oceanographic Data and Information Exchange's (IODE) accreditation of national oceanographic data centres; the MEDIN data guidelines are used by the International Council for the Exploration of the Seas (ICES) Data and Information Group to inform their own data guidelines; and the MEDIN data guideline for bathymetry data is being used to assist decision making within the Pacific Community (SPC).

This year, the potential societal and economic benefits of using the MEDIN framework were highlighted at a range of conferences, meetings, trade fairs and workshops, described elsewhere in this report. The key message at these events was: marine data are expensive to collect and always unique in space and time. MEDIN's framework, which allows easy access to and reuse of existing marine data, can save users time and money.

In particular, this year, MEDIN received funding from the Foreign and Commonwealth Office (FCO) to deliver data management training in the Pacific and Caribbean regions as part of the Commonwealth Marine Economies Programme (CMEP). Part of this training involved highlighting local examples of the societal benefits of easy and open access to marine data. For the Pacific and Caribbean these include: bathymetry data to ensure safe navigation of ships importing food and other goods by sea; wave and tide data to understand which economically and environmentally valuable beaches to protect in the event of an oil spill; fish stock data to sustainably manage food security; sea level and meteorological data to inform tsunami warning systems.

## **Objective 10 - Raise the profile of MEDIN**

MEDIN's profile was raised during 2017-18 via its online newsletter Marine Data News, its social media presence and representation at numerous conferences, trade fairs and workshops. The release of the redeveloped MEDIN portal provided an excellent focus for this promotion.

The website is a major promotional tool for MEDIN and this year saw significant work take place towards its restructuring and rebranding. The new site, [medin.org.uk](http://medin.org.uk), will be launched in August 2018.

Marine Data News was published 3 times during 2017-18, reaching an audience of over 500 people globally.

Twitter is a powerful platform to raise the public profile of MEDIN, especially within the global marine science community. The number of MEDIN followers has been steadily increasing and is now more than 1,000.

MEDIN had a stand at two major marine trade fairs this year: the Marine and Coastal Civil Engineering Expo and Oceanology International, both in London. MEDIN made the most of these outreach opportunities, sharing information and encouraging organisations to become a MEDIN partner.

MEDIN's international profile was raised significantly this year via its involvement with the Commonwealth Marine Economies Programme (CMEP). This work saw MEDIN providing marine data management training to representatives from over 35 Small Island Developing States in the Pacific and Caribbean.

## 4 Financial Summary 2017-18

4.1 £522,000 was available to fund MEDIN activities in 2017-18 from Sponsorship funds as detailed in table 4. In addition, £80,000 was carried over from previous years; £55,600 was awarded to MEDIN by the Commonwealth Marine Economies Programme, to provide regional marine data management training to the Pacific and Caribbean regions during 2017-18; and late in the year, Cefas commissioned MEDIN to archive a further year of Marine Conservation Zone (MCZ) data within its Data Archive Centres (£30,000). The funds from Cefas were received too late in the year for the MEDIN Data Archive Centres to carry out any of the required work during 2017-18 so these funds will be carried over to 2018-19 (table 5).

Sponsor Name	Funding
DEFRA: Department of Environment Food and Rural Affairs	£175,000
NERC: Natural Environment Research Council	£131,000
Scottish Government	£100,000
BEIS: Department of Business, Energy and Industrial Strategy	£30,000
Met Office	£14,000
Natural Resources Wales	£14,000
Marine Management Organisation	£7,000
Maritime and Coastguard Agency	£7,000
The Crown Estate	£7,000
UK Hydrographic Office	£7,000
CEFAS: The Centre for Environment, Fisheries and Aquaculture Science	£5,000
HR Wallingford	£5,000
Joint Nature Conservation Committee	£5,000
OceanWise	£5,000
DAERA: Department of Agriculture, Environment and Rural Affairs, Northern Ireland	£5,000
AFBI: Agri-Food and Biosciences Institute	£5,000
<b>Total</b>	<b>£522,000</b>

Table 4: MEDIN Sponsorship for 2017-18

4.2 The use of funds across work streams, and according to category, is given in table 5. Of the £622,026 total spend, £275,552 covered the costs of employment of the MEDIN Core Team and associated overheads, £15,523 was for Travel and Subsistence and £200,383 went on external contracts that contributed to both the maintenance and operation of the MEDIN network as well as some small developments to the network as described in this report. The major items of external expenditure in 2017-18 are given in Appendix B. In addition, £74,969 was spent on significant development projects to enhance the MEDIN network and

£55,600 was spent on providing regional data management training in the Pacific and Caribbean.

4.3 The Work Streams with the highest allocation of costs were the DACs (WS1), the Portal (WS3) and Management and Coordination (WS7), all with costs of more than £80,000.

4.4 In 2017-18 there was an end of year underspend of £65,574, which includes the £30,000 to archive MCZ data collected during 2016-17. NERC has confirmed these funds can be carried forward for use by MEDIN in 2018-19, in addition to the £18,215 allocated from previous years, as approved by the MEDIN Sponsors' Board. The total amount available for development projects in 2018-19 is therefore £83,789.

<b>Total MEDIN income 2017-18</b>	<b>£</b>	<b>Actual spend</b>	<b>£</b>	<b>Spend by Work stream</b>	<b>£</b>
Total Sponsorship commitments	£522,000	<i>Employment Costs of Core Team</i>	£275,552	<i>WS1: Data Archive Centres</i>	£138,882
Carry over from previous years allocated to development projects	£80,000	<i>Travel and Subsistence</i>	£15,523	<i>WS2: Standards</i>	£76,488
Additional funds for archiving MCZ data collected 2016-17	£30,000	<i>Contracts</i>	£200,383	<i>WS3: Portal</i>	£83,959
Commonwealth Marine Economies Programme funds	£55,600	<i>Development Projects</i>	£74,969	<i>WS4: International Links</i>	£17,638
		<i>CMEP regional data management training</i>	£55,600	<i>WS5: Resources and Applications</i>	£22,393
				<i>WS6: Communications</i>	£43,849
				<i>WS7: Management and Coordination</i>	£108,249
				<i>Development Projects</i>	£74,969
				<i>CMEP regional data management training</i>	£55,600
<b>Total Available</b>	<b>£687,600</b>	<b>Total spend</b>	<b>£622,026</b>		<b>£622,026</b>

Table 5: MEDIN Spend in 2017-18, by category and by work stream.

## APPENDIX A: MEDIN Aims, Benefits, Priority Drivers and Organisational Arrangements

### A.1 MEDIN aims, benefits, and priority drivers

1. MEDIN is a collaborative and open partnership, established in April 2008, working to improve the management of marine data and information, and provide better access to the UK's marine data resources. Sponsors include government departments, research councils, environmental and conservation agencies, trading funds and commercial organisations. It operates under the auspices of the Marine Science Coordination Committee (MSCC) and reports to that body.
2. MEDIN **aims** to establish a coordinated framework for managing marine data and information, with the following key objectives:
  - A single point of access to all relevant marine data and information.
  - A robust network of definitive integrated Data Archiving Centres (DACs).
  - The provision through the DAC network of priority datasets to underpin UK and EU legislative and obligatory requirements for monitoring and marine planning, in line with INSPIRE principles.
  - Facilitation of full data flow to the DAC network for all government-sponsored contracts in the marine and coastal zone environment.
  - Coordinate input to the development of international data commitments and drivers that may influence marine data management in the UK.
  - Improve mechanisms to facilitate international data exchange (including contributing to global databases).
  - Develop and maintain new/existing MEDIN resources that support improved access to marine data (data catalogues and inventories, data products, services, guidelines and tools).
3. Marine data and information are acquired, maintained and used for a wide variety of different purposes by numerous public and private sector organisations to support their statutory, regulatory, development, commercial and compliance activities. Common to all these activities is the recognition that good quality comprehensive marine data and information are essential as input to good management and evidence based decision making.
4. MEDIN is working to **benefit** its stakeholders in the following five key areas:
  - Marine Monitoring: Enabling UK organisations to meet their obligations under National and International Environmental Legislation.
  - Marine Management and Planning: Supporting a harmonised and improved marine management regime in UK seas.
  - Supporting Scientific Research: Delivery of the UK Marine Science Strategy.
  - Increasing availability of marine data to the public: Making marine environmental data more widely available in accordance with the aims of the UK government's Open Data Policy and the European INSPIRE directive.
  - Cost Reduction: Addressing inefficiencies and reducing costs for data collection and re-use.



5. Each of these **priority drivers** requires improved access to marine environmental information.

#### Marine Monitoring

6. The UK Government and devolved administrations have adopted a shared vision for clean, healthy, safe, productive and biologically diverse oceans and seas. Specific legislative drivers that relate to this vision include commitments to international treaties, such as the OSPAR Convention, and requirements of European Union Directives, such as The Birds Directive, The Habitats Directive, The Water Framework Directive, and the Marine Strategy Framework Directive. The EU Marine Strategy Framework Directive, with the stated aim of achieving Good Environmental Status for European Seas by 2021, extends the responsibility for monitoring and managing the marine environment out to national limits. Together these obligations demand an ever increasingly complex set of environmental quality and status assessments supported by formal, evidence-based, uses of marine data and information.
7. All these drivers depend on a robust and relevant monitoring regime, generating a variety of raw, processed and interpreted marine data, and access to authoritative, consistent background or base information to provide historical and spatial context. The UK Marine Monitoring and Assessment Strategy (UKMMAS), established to coordinate marine monitoring in the UK, is predicated on a fully operational robust national framework for marine data and information to provide the necessary data management support.
8. Thus MEDIN is working closely with UKMMAS to help ensure the data needed are more easily accessible. A key driver for the immediate future is getting ready for reporting data and information for the Marine Strategy Framework Directive. MEDIN is helping by providing expert input to the working groups developing plans for data and information provision to the EU.

#### Marine Management and Planning

9. A major objective of the Marine Acts passed by the Westminster and Holyrood parliaments in 2009 and 2010 respectively is the harmonisation and integration of the marine licensing and spatial planning regime and a unified approach to marine conservation zone / marine protected area selection. This involves the review and analysis of a wide range of marine environmental data. Without access to authoritative marine data and information the Marine Management Organisation (MMO), Marine Scotland and the bodies with the equivalent responsibilities in Wales and Northern Ireland will not be able to carry out their functions.
10. Marine planning will require a wide range of existing data resources to be improved, new datasets created and new methodologies and tools developed. While the delivery bodies are in the process of developing and testing tools, the precise details of what data are required within the system are still evolving. MEDIN has a vital role in helping to define, facilitate access to and improve the reference data that will be required to deliver marine plans. This includes specifying data products, providing guidance on how these are created, supported, maintained and improved and how the quality of these data products are assessed and communicated to users.

#### Supporting Marine Scientific Research

11. The UK Marine Science Strategy, published by the Marine Science Coordination Committee in 2010, sets out a framework for enabling the delivery of world class marine science for the UK. The strategy highlights the need to foster a culture of data sharing

and good management, including common protocols for data collection and quality assurance for data obtained and specifically identifies the key role MEDIN has to establish this in the UK.

*Publishing Marine Data to the Public – INSPIRE, UK Location and Data.gov.uk*

12. In recent years there has been an increasing demand for wider access to spatial and environmental data, addressed by a number of national, European and international initiatives. The European INSPIRE (Infrastructure for Spatial Information in Europe) Directive places obligations on bodies holding public spatial information in terms of the way they manage, present and describe these data. Nationally, data.gov.uk and the Coalition Government's Transparency Agenda is driving the release of all public service information, including geographic and marine information, under common licence terms through a consistent and open set of technologies. The data.gov.uk portal enables the central searching of metadata from a variety of sources and resources are being developed to help public sector bodies meet their obligations under INSPIRE, as well as FOI, EIR and ROPSI legislation.
13. MEDIN is working closely with the above initiatives to tailor and develop additional resources specific to the marine domain, as well as informing and providing the necessary guidance for preparing and publishing marine specific data and metadata. The UK geoportal will harvest metadata published to the MEDIN portal and reference geographies established within the UK Location infrastructure extended to include MEDIN-specified marine and coastal reference data. Overall, MEDIN will provide the insight and coordination required to ensure the marine community realises the benefits of these wider initiatives, whilst at the same time meeting the needs, developing the resources and providing the required leadership to the marine sector.

*Cost Reduction and Efficiency Gains*

14. Everyone in the marine sector stands to benefit from efficiency gains in data access and re-use. The wide range of potential beneficial impacts include:
  - Improved capture and re-use of industry and research generated data to save industry money and achieve better value from public and private funding.
  - Research to be better informed and coordinated with less replication of effort and collaboration opportunities more easily identified.
  - Wider availability of data to support transparency in decision making.
  - Reductions in the proportion of project budgets spent on locating, accessing and retrieving marine data.

## A.2 MEDIN organisational arrangements

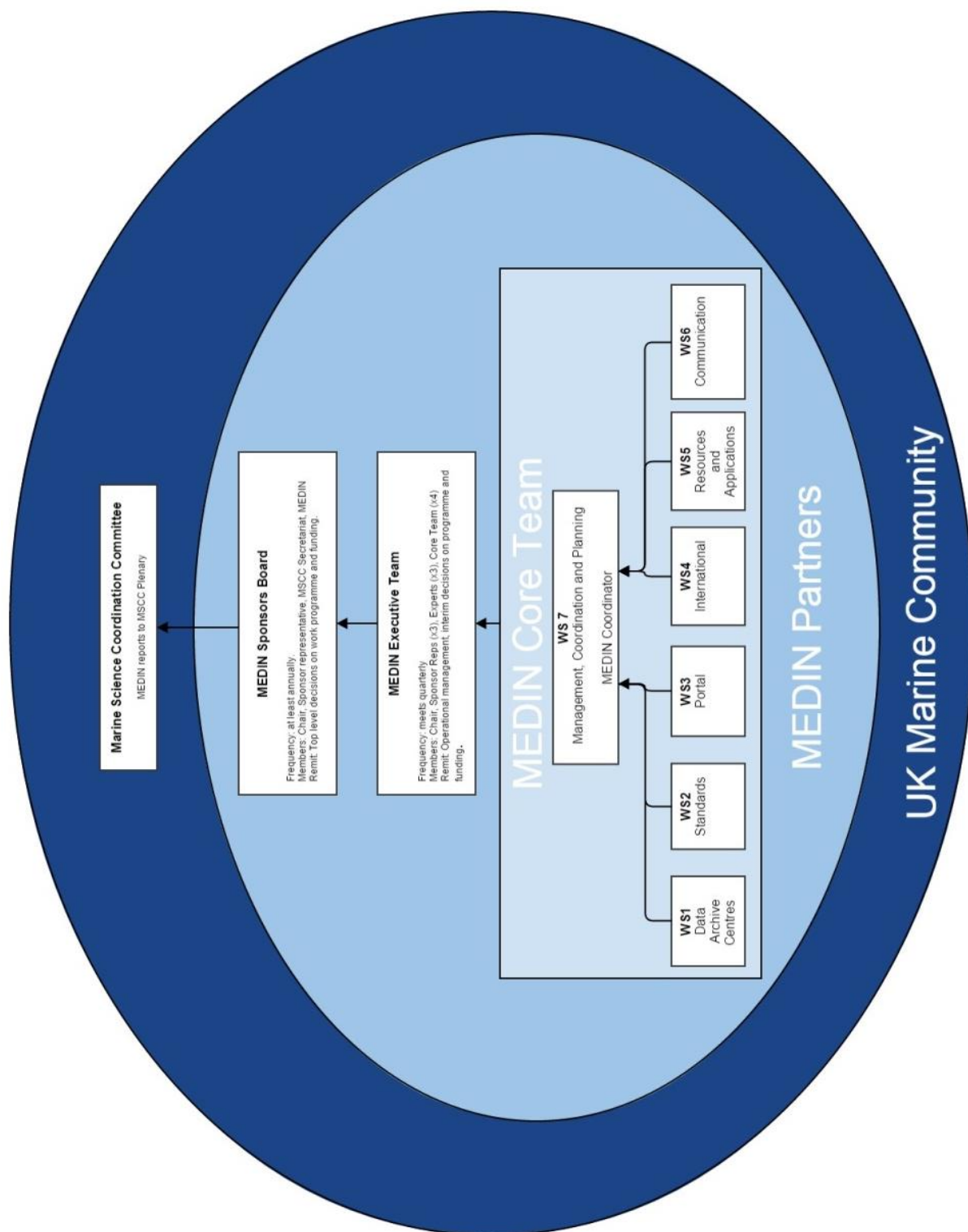


Figure 9: Schematic of the MEDIN organisational arrangements

15. The Marine Science Coordination Committee (MSCC) is the parent body for MEDIN; it provides strategic direction to MEDIN and defines high-level goals. MEDIN reports to MSCC, through this annual report and shorter progress updates as requested. MSCC has requested that MEDIN, along with other smaller groups, provides its progress updates

via the Marine Assessment and Reporting Group (MARG).

16. The MEDIN Sponsors' Board is the executive body, responsible for approving budgets and work programmes. It will meet at least once each year, to be called by MSCC. The current chair of the MEDIN Sponsors' Board and the Executive Team is Professor Peter Liss, CBE FRS.

#### Members of the MEDIN Sponsors' Board 2017-18:

<i>Dr. Tarquin Dorrington</i>	<i>Defra: Department for Environment Food and Rural Affairs</i>
<i>Dr. Graham Allen</i>	<i>NERC: Natural Environment Research Council</i>
<i>Martyn Cox</i>	<i>Scottish Government</i>
<i>Saravanan Marappan</i>	<i>BEIS: Department for Business, Energy and industrial Strategy</i>
<i>Jon Turton</i>	<i>Met. Office</i>
<i>Helen Wilkinson</i>	<i>Natural Resources Wales</i>
<i>Dr. Anjan Pakhira</i>	<i>Marine Management Organisation</i>
<i>Andrew Colenutt</i>	<i>Maritime and Coastguard Agency</i>
<i>James Carey</i>	<i>UK Hydrographic Office</i>
<i>Chelsea Bradbury</i>	<i>The Crown Estate</i>
<i>Dr. Quillon Harpham</i>	<i>HR Wallingford / SeaZone</i>
<i>John Pepper</i>	<i>OceanWise</i>
<i>Elly Hill</i>	<i>The Joint Nature Conservation Committee</i>
<i>Colin Armstrong</i>	<i>DAERA: Department of Agriculture, Environment and Rural Affairs</i>
<i>Dr. Matt Service</i>	<i>AFBI: Agri-Food and Biosciences Institute</i>

17. The MEDIN Executive Team meets quarterly, with the remit to provide interim guidance and management of the MEDIN work programme between Sponsors Board meetings.

#### Members of the MEDIN Executive Team 2017-18:

<i>Dr. Tarquin Dorrington (DEFRA)</i>	<i>Dr. Clare Postlethwaite (MEDIN)</i>
<i>Dr. Graham Allen (NERC)</i>	<i>Dr. Lesley Rickards (MEDIN)</i>
<i>Martyn Cox (Scottish Government)</i>	<i>Dr. Robin McCandliss (MEDIN)</i>
<i>James Cooke (UKHO)</i>	<i>Dr. Sean Gaffney (MEDIN)</i>
<i>Jon Parr (DASSH)</i>	<i>Dr. Gaynor Evans (MEDIN)</i>
<i>Mike Nelson (JNCC)</i>	<i>Charlotte Miskin-Hymas (MEDIN)</i>
<i>Dr. Mike Osborne (OceanWise)</i>	

18. The MEDIN work programme is carried out within seven work streams (figure 9). Work stream leaders have been appointed and are responsible for the management and planning of the work stream activities.
19. A MEDIN core team of seven part-time staff is hosted by the British Oceanographic Data Centre, which provides administrative and logistic support to MEDIN. The MEDIN core team provides project management, leadership for the seven work streams and secretariat support.

**Members of the MEDIN Core Team 2017-18:**

<i>Dr. Clare Postlethwaite:</i>	<i>MEDIN Coordinator; Lead on Work Streams 5 (Resources and Applications) and 7 (Management and Coordination)</i>
<i>Dr. Lesley Rickards:</i>	<i>Lead on Work Streams 1 (DACs) and 4 (International Coordination)</i>
<i>Dr. Robin McCandliss:</i>	<i>Support to Work Stream 1 (DACs)</i>
<i>Dr. Sean Gaffney:</i>	<i>Lead on Work Stream 2 (Standards) and support to Work Stream 5 (Resource and Application Development)</i>
<i>Dr. Gaynor Evans:</i>	<i>Lead on Work Stream 3 (Portal, Products and Services) and support to Work Stream 5 (Resource and Application Development)</i>
<i>Charlotte Miskin-Hymas:</i>	<i>Lead on Work Stream 6 (Communication) and support to Work Stream 3 (Portal, Products and Services)</i>
<i>Paul McGarrigle:</i>	<i>Administrative Support</i>

## Organisations active in MEDIN

*red and italics indicates sponsor*

<b>ABPmer</b>	Marine Environmental Consultancy, ( <a href="http://www.abpmer.co.uk">www.abpmer.co.uk</a> )
<b>ADS</b>	Archaeological Data Services <b>Accredited MEDIN DAC</b> <a href="http://archaeologydataservice.ac.uk/">http://archaeologydataservice.ac.uk/</a>
<b><i>AFBI</i></b>	Agri-Food and Biosciences Institute (Northern Ireland), ( <a href="http://www.afbini.gov.uk">www.afbini.gov.uk</a> )
<b>Atkins Global</b>	Consultancy <a href="http://www.atkinsglobal.com/">http://www.atkinsglobal.com/</a>
<b>BGS</b>	British Geological Survey, <b>Accredited MEDIN DAC</b> ( <a href="http://www.bgs.ac.uk">www.bgs.ac.uk</a> )
<b>BODC</b>	British Oceanographic Data Centre, <b>Accredited MEDIN DAC</b> ( <a href="http://www.bodc.ac.uk">www.bodc.ac.uk</a> )
<b>CEFAS</b>	Centre for Environment Fisheries and Aquaculture Science, <b>Accredited MEDIN DAC</b> . ( <a href="http://www.cefass.co.uk">www.cefass.co.uk</a> )..
<b><i>The Crown Estate</i></b>	<a href="http://www.thecrownestate.co.uk/">http://www.thecrownestate.co.uk/</a>
<b>DASSH</b>	Data Archive for Seabed Species and Habitats, hosted at MBA. <b>Accredited MEDIN DAC</b> . ( <a href="http://www.dassh.ac.uk">www.dassh.ac.uk</a> )
<b><i>DECC</i></b>	Department of Energy and Climate Change, ( <a href="http://www.decc.gov.uk">www.decc.gov.uk</a> )
<b><i>DEFRA</i></b>	Department for Environment Food and Rural Affairs. ( <a href="http://www.defra.gov.uk">www.defra.gov.uk</a> )
<b>EA</b>	Environment Agency. ( <a href="http://www.environment-agency.gov.uk">http://www.environment-agency.gov.uk</a> )
<b>EDINA</b>	Unit of Edinburgh University. Provides GI services for academic Community. ( <a href="http://www.edina.ac.uk">www.edina.ac.uk</a> )
<b>English Heritage</b>	<a href="http://www.english-heritage.org.uk">www.english-heritage.org.uk</a>
<b>Finding Sanctuary</b>	A project aiming to create a network of Marine Protected Areas of the South West Coast of England. ( <a href="http://www.finding-sanctuary.org">www.finding-sanctuary.org</a> )
<b>Fugro Geos</b>	Met-Ocean Services <a href="http://www.geos.com/">http://www.geos.com/</a>
<b>Gardline Group</b>	Marine services <a href="http://www1.gardline.com/">http://www1.gardline.com/</a>
<b>Geodata</b>	Consultancy based at University of Southampton, specialising in environmental data management. ( <a href="http://www.geodata.soton.ac.uk">www.geodata.soton.ac.uk</a> )
<b>Historic Environment Scotland</b>	<b>Accredited MEDIN DAC</b> . <a href="https://www.historicenvironment.scot/">https://www.historicenvironment.scot/</a>
<b>Historic Scotland</b>	<a href="http://www.historic-scotland.gov.uk">www.historic-scotland.gov.uk</a>
<b><i>HR Wallingford</i></b>	Marine consultancy. ( <a href="http://www.hrwallingford.co.uk">www.hrwallingford.co.uk</a> )
<b>ICIT</b>	International Centre for Island Technology, Heriot-Watt University, Orkney. See <a href="https://www.hw.ac.uk/schools/energy-geoscience-infrastructure-society/research/icit.htm">https://www.hw.ac.uk/schools/energy-geoscience-infrastructure-society/research/icit.htm</a>
<b>IFCA</b>	Inshore Fisheries and Conservation Authorities See links at <a href="http://www.southern-ifca.gov.uk/">http://www.southern-ifca.gov.uk/</a>
<b>IMAREST</b>	Institute for Marine Science and Technology. ( <a href="http://www.imarest.org.uk">www.imarest.org.uk</a> )
<b>JohnPepper Consultancy</b>	Consultancy <a href="http://www.johnpepperconsultancy.com/home">http://www.johnpepperconsultancy.com/home</a>
<b><i>JNCC</i></b>	Joint Nature Conservation Committee. ( <a href="http://www.jncc.gov.uk">www.jncc.gov.uk</a> )
<b>Mainstream Renewable Power</b>	Offshore Renewables <a href="http://www.mainstreamrp.com">http://www.mainstreamrp.com</a>
<b>Marine Atlas</b>	Consultancy <a href="http://marineatlas.co.uk/">http://marineatlas.co.uk/</a>
<b>Marine Conservation Society</b>	UK Charity <a href="http://www.mcsuk.org/">http://www.mcsuk.org/</a>
<b><i>MMO</i></b>	Marine Management Organisation ( <a href="http://www.marinemanagement.org.uk">http://www.marinemanagement.org.uk</a> )
<b>MPC</b>	Marine Planning Consultants <a href="http://www.marineplanning.org.uk/">http://www.marineplanning.org.uk/</a>
<b>Marine Scotland</b>	<b>Accredited MEDIN DAC</b> . <a href="http://www.scotland.gov.uk/topics/marine">http://www.scotland.gov.uk/topics/marine</a>



<b>MBA</b>	Marine Biological Association ( <a href="http://www.mba.ac.uk">www.mba.ac.uk</a> )
<b>MCA</b>	Maritime and Coastguard Agency. ( <a href="http://www.mcga.gov.uk">www.mcga.gov.uk</a> )
<b>MES</b>	Marine Ecological Surveys <a href="http://www.seasurvey.co.uk/">http://www.seasurvey.co.uk/</a>
<b>Met Office</b>	<b>Accredited MEDIN DAC.</b> <a href="http://www.metoffice.gov.uk">www.metoffice.gov.uk</a>
<b>MOD</b>	Ministry of Defence. ( <a href="http://www.mod.uk">www.mod.uk</a> )
<b>Natural England</b>	<a href="http://www.naturalengland.org.uk/">http://www.naturalengland.org.uk/</a>
<b>NRW</b>	Natural Resources Wales ( <a href="http://www.naturalresourceswales.gov.uk">www.naturalresourceswales.gov.uk</a> )
<b>NERC</b>	Natural Environment Research Council, ( <a href="http://www.nerc.ac.uk">www.nerc.ac.uk</a> )
<b>NIEA</b>	The Northern Ireland Environment Agency, ( <a href="http://www.ni-environment.gov.uk">www.ni-environment.gov.uk</a> )
<b>OceanWise Ltd</b>	Private independent consultancy specialising in marine data acquisition, management and GIS ( <a href="http://www.oceanwise.eu">www.oceanwise.eu</a> )
<b>Ordnance Survey</b>	<a href="http://www.ordnancesurvey.co.uk/oswebsite/public-sector/index.html">http://www.ordnancesurvey.co.uk/oswebsite/public-sector/index.html</a>
<b>RCAHMW</b>	Royal Commission on the Ancient and Historic Monuments of Wales <a href="http://www.rcahmw.gov.uk">www.rcahmw.gov.uk</a>
<b>RES Offshore</b>	Renewable energy development <a href="http://www.res-offshore.com/">http://www.res-offshore.com/</a>
<b>SAMS</b>	Scottish Association for Marine Science ( <a href="http://www.sams.ac.uk">www.sams.ac.uk</a> )
<b>Senergy</b>	Renewable energy development <a href="http://www.senergyworld.com/home">http://www.senergyworld.com/home</a>
<b>Scottish Government</b>	<a href="http://www.scotland.gov.uk">www.scotland.gov.uk</a>
<b>SNH</b>	Scottish Natural Heritage ( <a href="http://www.snh.org.uk">www.snh.org.uk</a> )
<b>SETech</b>	Geo-Technical Surveying and Engineering <a href="http://www.setech-uk.com/">http://www.setech-uk.com/</a>
<b>SEPA</b>	Scottish Environment Protection Agency. ( <a href="http://www.sepa.org.uk">www.sepa.org.uk</a> )
<b>SSMEI</b>	Sustainable Scotland Marine Environment Initiative. ( <a href="http://clydeforum.org/SSMEI">clydeforum.org/SSMEI</a> ) and ( <a href="http://www.nafc.ac.uk/Marine_Management/General/SSMEI">www.nafc.ac.uk/Marine_Management/General/SSMEI</a> )
<b>Titan Surveys</b>	Marine environmental Surveys <a href="http://titansurveys.com/">http://titansurveys.com/</a>
<b>UHI</b>	University of the Highlands and Islands <a href="http://www.uhi.ac.uk/en">http://www.uhi.ac.uk/en</a>
<b>UKHO</b>	United Kingdom Hydrographic Office. <b>Accredited MEDIN DAC.</b> ( <a href="http://www.ukho.gov.uk">www.ukho.gov.uk</a> )
<b>Wessex Archaeology</b>	<a href="http://www.wessexarch.co.uk">www.wessexarch.co.uk</a>

## Glossary

<b>AGI</b>	Association for Geographical Information
<b>CTD</b>	“Conductivity, Temperature, Depth” – shorthand for a standard water column profile measurement of temperature and salinity against depth
<b>DAC</b>	Data Archive Centre
<b>DIKE</b>	Data, Information and Knowledge Exchange
<b>EMODNET</b>	European Marine Observation and Data Network
<b>GEMINI2</b>	Discovery metadata standard managed by the AGI and adopted by data.gov.uk
<b>GTS</b>	Global Telecommunications System
<b>HBDSEG</b>	Healthy and Biologically Diverse Seas Evidence Group
<b>IACMST</b>	Inter Agency Committee on Marine Science and Technology ( <a href="http://www.marine.gov.uk">www.marine.gov.uk</a> )
<b>ICES</b>	International Council for the Exploration of the Sea
<b>INSPIRE</b>	Infrastructure for Spatial Information in Europe, EC Directive ( <a href="http://inspire.jrc.it/">inspire.jrc.it/</a> )
<b>IOC</b>	Intergovernmental Oceanographic Commission
<b>IPR</b>	Intellectual Property Rights
<b>ISO</b>	International Organisation for Standards
<b>MDN</b>	Marine Data News
<b>MEDIN</b>	Marine Environmental Data and Information Network
<b>MMO</b>	Marine Management Organisation.
<b>MSCC</b>	Marine Science Coordination Committee
<b>NGO</b>	Non-Governmental Organisations
<b>OSPAR</b>	International Commission for the Protection of the Marine Environment of the North-East Atlantic ( <a href="http://www.ospar.org">www.ospar.org</a> )
<b>OPSI</b>	Office of Public Sector Information
<b>UKDMOS</b>	UK Directory of Marine Observing Systems – an initiative under the UK Marine Monitoring and Assessment Strategy to provide information on marine monitoring programmes.
<b>UKLP</b>	UK Location Programme
<b>UKMMAS</b>	UK Marine Monitoring and Assessment Strategy. The UK government led programme to coordinate marine monitoring necessary to meet government objectives of a clean, healthy, safe, productive and biologically diverse marine ecosystem ( <a href="http://www.defra.gov.uk/environment/water/marine/uk/science/monitoring.htm">see www.defra.gov.uk/environment/water/marine/uk/science/monitoring.htm</a> )
<b>WISE</b>	Water Information System for Europe, a joint initiative between the European Environment Agency and the European Commission.

## APPENDIX B: External Expenditure

### WS1 Network of Data Archive Centres

Supplier	Item	Cost
BGS	DAC costs	£11,000
BODC	DAC Costs	£11,000
DASSH	DAC costs	£13,200
UKHO	DAC Costs	£13,200
Met Office	DAC costs	£13,200
Fish DAC CEFAS	DAC costs	£6,600

Fish DAC Marine Scotland	DAC costs	£6,600
Historic Environment DAC ADS	DAC costs	£4,404
Historic Environment DAC HES	DAC costs	£4,320
Historic Environment DAC RCHAMW	DAC costs	£3,670
Historic Environment DAC ADS	Small data archiving project	£15,260
Fish DAC CEFAS	Small data archiving project	£6,000
<i>Multiple suppliers</i>	Meeting Costs	£488
	<b>Total</b>	<b>£108,943</b>

## WS2 Standards for Data and Metadata

Supplier	Item	Cost
DASSH	Standards Working Group Support	£13,843
Algaebase	Licence for MSBIAS	£1,200
Bob Earll CMS	Advertising costs	£180
DASSH	Small data archiving project	£14,144
<i>Multiple suppliers</i>	Meeting Costs	£392
	<b>Total</b>	<b>£29,759</b>

## WS3 Web Portal, Products and Services

Supplier	Item	Cost
Maris	UKDMOS Portal Maintenance and hosting	£1,800
Maris	UKDMOS domain name registration (3 years)	£222
BODC	MEDIN portal and website hosting and support	£5,000
Geodata	Portal Mirroring and GitHub code support	£800
STFC	Provision of Metadata Service to MEDIN from April-Dec 2017	£7,589
Maris	MEDIN portal and catalogue hosting and maintenance Jan 2018-Dec 2018	£9,720
MBA / DASSH	MEDIN Helpdesk support	£12,816
<i>Multiple suppliers</i>	Miscellaneous	£5
	<b>Total</b>	<b>£37,952</b>

## WS4 International Awareness, Coordination and Data Delivery to Global Databases

No external expenditure was planned for WS4.

## WS5 Resources and Applications Development

Supplier	Item	Cost
DASSH/Ocean Ecology Ltd	Small data archiving project	£10,650
<i>Multiple suppliers</i>	Meeting Costs	£368
	<b>Total</b>	<b>£11,018</b>

## WS6 Communications: Outreach, forums, publicity

Supplier	Item	Cost
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Graphics Workshop	Materials for workshops, conferences, meetings and trade fairs.	£652
4Imprint	Materials for workshops, conferences, meetings and trade fairs.	£1,000
Oursoles Ltd	Polo shirts	£95
DIGURU	Fliers and leaflets for workshops, conferences, meetings and trade fairs.	£186
Print designs	Promotional banners	£320
Print designs	MEDIN backdrop	£180
<i>Multiple suppliers</i>	Courier services	£18
London ExCel	Lighting and internet on stand at M&CCE expo	£255
IMarEST	Conference registration	£162
Business and Industry Today Ltd	Advertising costs	£143
	<b>Total</b>	<b>£3,010</b>

## WS7 Management, Planning and Co-ordination

Supplier	Item	Cost
OceanWise	Representing MEDIN at MILG and PSEG	£1,373
DASSH	Representing MEDIN at HBDSEG	£1,200
P.S. Liss, Consultant	Chairing MEDIN meetings and representing MEDIN at Marine Science Coordination Committee (MSCC)	£6,720
<i>Multiple suppliers</i>	Telecoms costs	£48
<i>Multiple suppliers</i>	Meeting Costs	£360
	<b>Total</b>	<b>£9,701</b>

## APPENDIX C: Work Stream Deliverables

### ***WS1 Network of Data Archive Centres***

MEDIN has established an operational network of linked marine data archive centres (DACs) to provide secure long-term storage for marine data. This network provides the capability to upload and retrieve data. Those organisations archiving data at a MEDIN DAC should have free access to their data, and DACs manage third party access to these data according to the data provider's specification.

In 2017-18 the following Key Targets were established for WS1:

- KT 1.1**     *Archiving: maintain or improve upon 2012 levels of archiving across the DAC network, demonstrate use of centralised archiving guidelines (links to HLO1, HLO2)*
- KT 1.2**     *Data Access: DACs demonstrate direct access to data and first instance of INSPIRE compliant view and download and agree timetable for further publishing. (Links to HLO3)*
- KT 1.3**     *Accreditation: Accreditation of at least one further DAC to join the network (e.g. FishDAC component (AFBI), English/Northern Irish components of Heritage DAC). (Links to HLO4)*

The Key Targets were met for WS1 as detailed below:

#### **KT 1.1 MEDIN DACs increased their data holdings**

The MEDIN DACs are operational and continue to archive data from MEDIN partner and third party organisations to agreed individual programmes. All DACs have provided annual reports for 2017-18 detailing new datasets archived and number of datasets held. Figure 10 shows how the number of datasets held by each DAC has continued to grow since 2011. Note that it is not advisable to compare absolute values between DACs, as the size of datasets can vary significantly between DACs (and even within DACs). For instance all the data held in the Met Office MEDIN DAC for marine meteorology data are held within 5 datasets, which were augmented in 2017-18 with >8 million new observations.

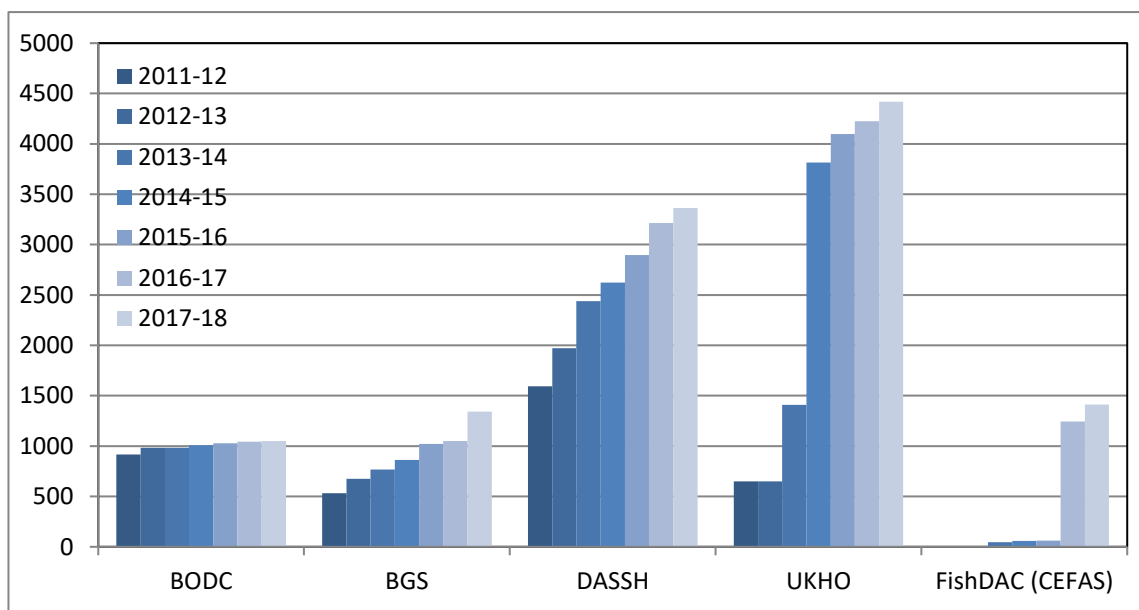


Figure 10a: Number of data sets held by DAC by year.

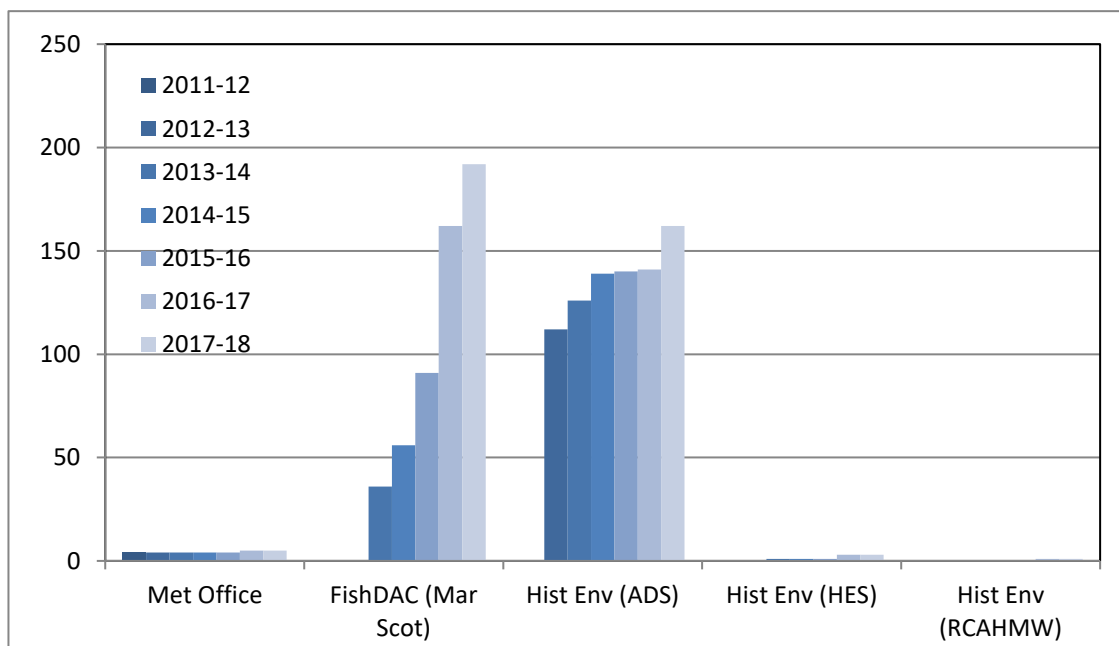


Figure 10b: Number of data sets held by DAC by year

### KT 1.2 DACs have increased direct access to data

The number of datasets directly accessible for download via the MEDIN portal has increased since last year (from 2000 to 3,500). Some examples for 2017-18 of increasing access to data are given below, including from MEDIN funding for small projects, which included the aim of increasing direct access to data.

- MEDIN partner Ocean Ecology Limited (OEL) used MEDIN small project funding to develop DASSH-validated export functionality within their web-based tool (ABACUS), which manages and archives marine biological data. This development allowed for the rapid creation of MEDIN-compliant datasets for commercial organisations involved in archiving data with MEDIN DACs.
- Cefas used MEDIN small project funding to rescue valuable fisheries data from paper files and published a catalogue on the Cefas Data Hub, accessible to MEDIN.



- ADS, using MEDIN small project funding, developed a photogrammetry interface, allowing online access to monitoring data, and has increased significantly (>10%) the number of datasets available for download.
- BGS has upgraded the Offshore GeoIndex so that MEDIN metadata link directly to the survey URL
- Approximately 97% of BODC's discovery metadata records in the MEDIN portal provide direct access to the data.
- Marine Scotland Open Data Portal publishes data sets with DOI, providing direct access to data. Currently there are 182 open datasets in the portal, with 48 coming under the FishDAC function.
- UKHO has 4420 bathymetric surfaces available via the portal, all with INSPIRE-compliant view and download services.

### KT 1.3 MEDIN worked towards accrediting a new DAC

This Key Target was not fully met during 2017-18, but work is underway to add a fourth component, AFBI, to the FishDAC. AFBI has been preparing its accreditation submission during 2017-18, but met with delays and has not yet reached completion. It is anticipated that the accreditation submission will occur during 2018-19. During 2017-18, Marine Scotland, the Met Office, Cefas and ADS were successfully reaccredited as MEDIN DACs.

### WS1 Deliverables table 2017-18

Q1 Deliverables	Status	Commentary
<b>DAC Annual Reports (2016-17) according to pro-forma (KT1.4)</b>	Achieved	Reports received from all DACs. Overall DAC annual report complete.
<b>DAC working group meeting</b>	Achieved	Held 15 <sup>th</sup> June.
<b>Briefing document for MEDIN exec on the archive of data from TCE renewables round 3</b>	No longer applicable	TCE has decided there is no longer a need to archive data with the DACs as it is planning to continue to use MDE.
<b>Provide MEDIN metadata quality feedback to DACs (with WS3) via DAC meeting and shared document</b>	Achieved	Quality check completed. General feedback at DAC WG meeting 15 <sup>th</sup> June. DAC-specific detailed feedback followed in the form of individual reports.
<b>Plan MEDIN codefest to demonstrate how MEDIN data and metadata can be used by UK marine community and beyond</b>	Achieved	Codefest planned for Q3. Discussion at DAC WG meeting 15 <sup>th</sup> June.
<b>Launch small data archiving project proposals from DACs with a focus on forging links with industry partners</b>	Achieved	Timeline for proposals announced at DAC WG meeting 15 <sup>th</sup> June. 1 proposal was received.
<b>Hold meeting with Scottish agencies SNH and SEPA to facilitate data flow to DACs</b>	Achieved	Postponed to Q2. CP and Martyn Cox met with SEPA and SNH, July 27th. Additional telephone update meetings held in Nov 17 and Mar 18.
<b>Q2</b>		
<b>Reaccreditation outline plan for 2017 (KT1.3) FishDAC (Cefas and Marine Science Scotland) are due this year.</b>	Achieved	FishDAC (Cefas and Marine Science Scotland) are due this year. Reaccreditation e-mail and template sent to Cefas, Marine Scotland and AFBI.

<b>Review Northern Ireland FishDAC accreditation (KT1.3)</b>	<b>Not achieved</b>	Postponed to 2018-19. Accreditation to be done with assistance from Cefas and Marine Scotland Science. The application is in progress, but is with AFBI legal team for approval before submission. MEDIN are following up to see if any assistance is needed.
<b><i>Deliver MCZ / MPA data archiving progress report (KT1.1)</i></b>	<b>Achieved</b>	Progress report presented at DAC WG meeting 15 <sup>th</sup> June
<b>Identify MSFD datasets to be managed in the DAC network</b>	<b>Not achieved</b>	Postponed to 2018-19. MSFD/MEDIN Data Task Group met in August after 15-month break. Discussed timetable for MSFD data publishing. MEDIN DAC working group awaiting input from MSFD Data Task Group.
<b>Review trial of coordinated archiving approach (central enquiry point, and generic online and downloadable guidance for DAC network and data submission)</b>	<b>Partially achieved</b>	No multidisciplinary data have been archived since the guidance was published. The guidance was advertised in Marine Data News to raise awareness. MEDIN are working with Crown Estate Scotland to establish a trial of archiving data acquired through their lease agreements.
<b><i>DAC Group to review and improve DAC components of MEDIN website. Implementation of changes.</i></b>	<b>Partially achieved</b>	Postponed to Q4 due to staff changes. New website structure described at MEDIN Mega Meeting in Nov 2017. Website restructure underway.
<b>Q3</b>		
<b><i>DAC Working Group Meeting</i></b>	<b>Achieved</b>	Held 8 <sup>th</sup> Nov 2017
<b>Assess progress with archive of data from TCE renewables round 3 and report</b>	No longer applicable	TCE has decided there is no longer a need to archive data with the DACs as it is planning to continue to use MDE.
<b><i>Hold 3<sup>rd</sup> DAC "Codefest" / DAC technical workshop and report findings</i></b>	<b>Partially achieved</b>	It was decided to not hold a MEDIN codefest this year, and instead MEDIN funded 2 people from the DACs to attend the EMODnet codefest, also being held in November.
<b><i>Complete metadata quality check and report on findings</i></b>	<b>Achieved</b>	All DACs have received an individual report and have found it useful to have these checks carried out as it will help improve future metadata records.
<b>Q4</b>		
<b><i>Assess progress with new components of the FishDAC and Historic Environment DAC (Department for Communities, Northern Ireland &amp; Historic England)</i></b>	<b>Achieved</b>	Awaiting submission of AFBI accreditation form for FishDAC. Department for Communities, NI aspires to become a component of the Heritage DAC, but there is no planned timescale.
<b>WS1 Report for 2017-2018</b>	<b>Achieved</b>	
<b>DAC work plan for 2018-19</b>	<b>Achieved</b>	

## WS2 Standards for Data and Metadata

Standards are essential to support locating and evaluating marine datasets, to provide guidelines for the generation and preparation of data according to recognised standards and best practice, and to help partners meet their obligations under the INSPIRE directive. This aspect of MEDIN activity aims to establish, promote, document and provide guidance for standards for data and metadata to cover an expanding range of data types.

In 2017-18, in agreement with the MEDIN Standards Working Group, the following key targets were established:

**KT2.1** *Update MEDIN Discovery Metadata Standard and tools to reflect changes generated by updates of GEMINI and INSPIRE (links with HLO3).*

**KT2.2** *Convert all data guidelines that still use format structure 1.0 to format structure 2.0 and republish (links with HLO1, HLO2, HLO8 and HLO10).*

**KT2.3** *Hold at least 4 MEDIN workshops at locations around the UK to provide the marine community with regular opportunities for data management training (links with HLO1, HLO8 and HLO10).*

The Key Targets were met for WS2 as follows:

### KT2.1 MEDIN kept a watching brief on changes to INSPIRE

The target to update the MEDIN Discovery Metadata Standard and tools to reflect changes to GEMINI and INSPIRE has not been met, due to delays in INSPIRE releasing the technical changes to national geospatial metadata bodies. INSPIRE released the final technical changes during quarter four of 2017-18, which did not allow enough time for these changes to be fully assessed and implemented in this financial year. Changes to the MEDIN metadata standard due to updates to GEMINI have been carried out on a rolling basis. This key target is therefore a priority for 2018-19.

### KT2.2 MEDIN co-ordinated stakeholder updates to data guidelines

The target to update all data guidelines to the revised format structure has not been met as the MEDIN Standard Working Group decided that the time and effort involved would be better spent working on a new version of the MEDIN data guideline for species and benthos data by grab and core, which included a new set of metadata sheets to capture imagery. As work progressed, MEDIN found that updating this guideline to include imagery was more complex than initially thought and resource that would have been used converting v1.0 format structure guidelines was re-directed into this instead.

### KT2.3 MEDIN ran a series of data management workshops

This target has been met in full, with 11 workshops taking place in 2017-18, covering all areas of the UK, with attendees from private sector, public sector and academia. The Heriot-Watt International Centre for Island Technology (ICIT), Orkney, became a MEDIN Partner after MEDIN staff ran a workshop for them in Stromness in October 2017. Feedback from the workshops has been consistently positive with respondents all acknowledging the usefulness of the sessions and the quality of the training.

94 attendees from 45 separate organisations attended 11 MEDIN workshops at various locations in the United Kingdom throughout 2017-18. Five of these were bespoke workshops:

- SEACAMS, School of Ocean Sciences, Bangor University, North Wales, in April 2017.
- EGS Survey, Hampshire, in April 2017.
- Heriot-Watt University, Edinburgh – taster workshop for staff from International Centre for Island Technology (ICIT), in August 2017.
- ICIT workshop in Stromness, Orkney, in October 2017 (this workshop subsequently led to ICIT becoming a MEDIN partner) (figure 11).
- Northern Ireland Environment Agency (NIEA), Lisburn, Northern Ireland, in March 2018 (attendees present from Northern Ireland agencies DAERA, AFBI, NIEA and CeDAR).



Figure 11: Students from the International Centre for Island Technology (ICIT), Heriot-Watt University, Orkney at a MEDIN workshop in Stromness, Orkney on 13 October 2017.

Workshop attendees recorded their feedback on each session in SurveyMonkey online questionnaire software. 87 respondents have recorded feedback in SurveyMonkey since January 2017. Over 98% of respondents were satisfied with the information supplied to them prior to their workshop, 91% of respondents felt that the balance of practical sessions and presentations during each workshop met their needs well or very well and 85% of respondents fed back that instruction in the workshops was either good or very good (55% of respondents indicated very good instruction).

## WS2 Deliverables Table 2017-18

Q1 Deliverables	Status	Commentary
<b><i>Commission guidance on archive standard for collating data</i></b>	Not achieved	This was not addressed in Q1 due to uncertain funding from Sponsors and was not progressed later in the year due to other commitments in WS2 taking priority.
<b><i>Host one MEDIN Standard and Guidelines workshop</i></b>	Achieved	Two workshops held at The Crown Estate, London on 25 and 26 May
<b><i>Host one MEDIN Standards Working Group meeting</i></b>	Achieved	Meeting held on 13 June 2017
<b><i>Continue liaison work with oil spill response community</i></b>	Not achieved	This was not addressed in Q1 due to uncertain funding from Sponsors and was not progressed later

		in the year due to other commitments in WS2 taking priority.
<b>Identify errors in existing re-formatted guidelines and draft remedy plan</b>	Achieved	Errors identified, plan devised.
<b>Produce example metadata record for satellite data suitable for inclusion in MEDIN portal</b>	Achieved	STFC have several example records now in MEDIN portal
<b>Commission HR Wallingford and DASSH for a further year's work on maintenance and development of the MEDIN tools to create discovery metadata</b>	Partially achieved	Partially completed. DASSH commissioned for another year of support. Updates to Metadata maestro postponed by Standards Working Group until all GEMINI and INSPIRE changes made in full – this will now fall early in FY2018/19.
<b>Q2</b>		
<b>Host one MEDIN Standard and Guidelines workshop</b>	Achieved	Workshop held at DASSH on 22 August; Additional workshop held at Herriot-Watt, Edinburgh on 9th August.
<b>Host one MEDIN Standards Working Group meeting</b>	Achieved	Meeting held 13 <sup>th</sup> September
<b>Convert 4 outstanding guidelines to new format and re-publish</b>	Partially achieved	Partially completed. Gravimetry and magnetics guidelines published. Grab/core guideline extensively re-drafted after 13 September Standard Working Group meeting and this has led to major slippage in re-formatting timetable.
<b>Begin implementation of remedy plan for re-formatted guidelines containing errors</b>	Not achieved	Postponed to 2018-19 due to time taken consulting partners on revised grab/core guideline.
<b>Review discovery standard to see what fields are suitable for allowing discovery of data products.</b>	Not achieved	Awaiting publication of GEMINI 2.3 to see if it has any implications to discovery of products
<b>Q3</b>		
<b>Host one MEDIN Standard and Guidelines workshop</b>	Achieved	Workshop held at ICIT, Stromness, Orkney Islands, on 13 October and two workshops held at BGS, Edinburgh, on 15 and 16 November.
<b>Host one MEDIN Standards Working Group meeting</b>	Achieved	Held at University of Liverpool in London on 9 November after mega-meeting.
<b>Update MEDIN Discovery Metadata Standard to account for changes in GEMINI 2.3 and INSPIRE</b>	Partially achieved	Changes in GEMINI 2.3 are incremental. As they occur, MEDIN standard is amended accordingly.
<b>Ensure MEDIN tools reflect changes to the standard caused by GEMINI and INSPIRE updates</b>	Partially achieved	Beta version of new Online Tool adheres to current draft MEDIN Standard. New version Metadata Maestro released, which adheres to current draft MEDIN Standard. Further work will need to be commissioned in next FY to update tools to account for new INSPIRE elements and to create new MEDIN schematron.
<b>Q4</b>		



<b>Host one MEDIN Standard and Guidelines workshop</b>	Achieved	Workshop run on 24 January 2018 (DASSH) and on 1 March (NIEA, Northern Ireland). 1 planned for 15 March 2018 (TCE).
<b>Request feedback from MSCC members on uptake of data guidelines</b>	Achieved	Feedback received in autumn 2017. The number of MSCC organisations who indicated they apply MEDIN guidelines and request contractors return data compliant with guidelines increased from five in 2015-16 (no data available for 2016-17) to seven in 2017-18. The organisations are JNCC, NRW, Cefas, Marine Scotland, MMO, UKHO and UEA (however UEA do not work directly with contractors, so their response relates solely to application of MEDIN guidelines to UEA collected data).
<b>Host one MEDIN Standards Working Group meeting (subject to requirements)</b>	Achieved	Standards Working Group meeting planned for March 2018, venue Edinburgh
<b>Complete remedial work on reformatted guidelines containing errors</b>	Not achieved	Due to resource used in re-drafting grab/core guideline, this was not completed this FY.
<b><i>Publish commissioned guidance on archive standard for collating data</i></b>	Not achieved	This was not addressed this FY due to uncertain funding from Sponsors and was not progressed later in the year due to other commitments in WS2 taking priority.
<b><i>Request usage statistics on downloads of data guidelines, discovery metadata standard and MEDIN tools for publishing in annual report</i></b>	Achieved	
<b><i>WS2 Work Plan for 2018/19</i></b>	Achieved	
<b><i>WS2 Report for 2017/18</i></b>	Achieved	

### WS3 Web Portal, Products and Services

The MEDIN discovery metadata portal provides a single access point from which to find out about marine data from UK organisations across a wide range of marine areas. The Work Programme for 2017-18 fitted under the overall Business Plan for 2014-19.

The following Key Targets were identified for WS3 for 2017-18:

**KT 3.1** *Provide a redeveloped portal by the end of Q2 (HL01, HL04).*

**KT 3.2** *Increase use of UKDMOS by statutory nature conservation agencies and government agencies (HLO5).*

**KT 3.3** *Increase the number of marine data products and services signposted from the MEDIN portal (HL04, HL06).*

The Key Targets were met for WS3 as described below:



### KT3.1 MEDIN released its redeveloped portal

The redeveloped MEDIN portal went live in December 2017. In response to our user consultation, the portal has had a complete makeover, giving it a more intuitive design and layout using up-to-date technology. Now with more filtering options and the ability to upload any WMS map layer to help with geographical searching, we have built on the functionality of the old portal, enhancing the user experience and making finding data easier. The system for metadata harvesting from DACs has also been upgraded. Each provider of metadata has an online dashboard they can login to for viewing their collection and any error messages generated during validation against the MEDIN Schematron. Going forward, the new upgraded portal is set to serve the marine community well in the coming years with its easier to use interface, extra functionality and streamlined harvesting back end.

Figure 12 shows total monthly visits to the portal since January 2018. For clarity, 'total visits' refers to the number of times a request is sent from a given IP address. If less than thirty minutes elapses between 'visits' from a single IP address this counts as one 'visit', if more than thirty minutes elapses between 'visits' from a given IP address, an additional visit is counted.

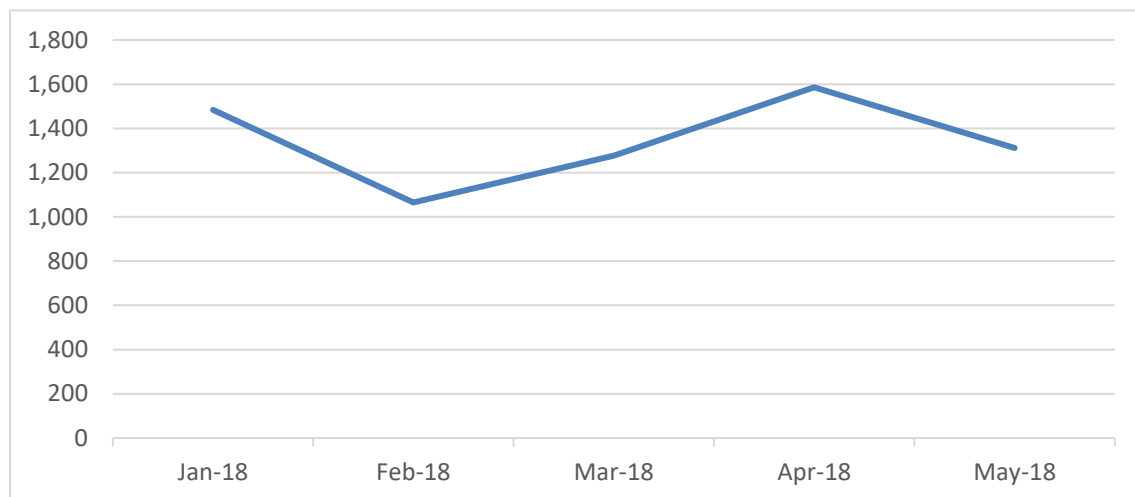


Figure 12: Total visits to the redeveloped MEDIN portal per month.

### KT3.2 Use of UKDMOS increased over the year

MEDIN manages the UK Directory of Marine Observing Systems (UKDMOS).

The web metrics show an increased use of UKDMOS over the year. Figure 13 shows total monthly visits to UKDMOS since January 2016. Since March 2017, there has been a clear overall increase in traffic to UKDMOS with some tailing off in the early part of 2018. Refer to the definition of total visits above under KT3.1

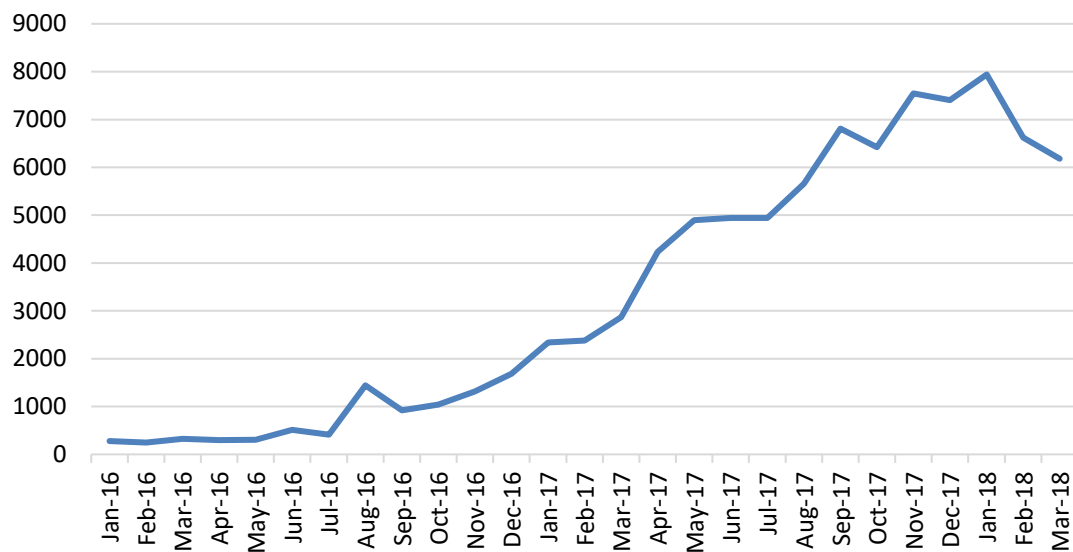


Figure 13: Total visits to UKDMOS per month since January 2016.

### KT3.3 MEDIN increased the number of data products and services signposted from its portal.

The redeveloped MEDIN portal accommodates the addition of Web Map Services to the search interface. MEDIN has preloaded several services and products to the map interface and this list will continue to grow over the next financial year. In addition, work has been carried out so that 90 project reference layers now have a URL to download the shapefiles directly from the MEDIN portal. For example, [2009 Defra MB0102 2C Distribution of Modiolus modiolus beds \(from polygon data\) in the United Kingdom and Isle of Man](#).

#### Portal Deliverables Table 2017-18

Q1 Deliverables	Status	Commentary
<i>Manage with steering group the portal redevelopment contract</i>	Achieved	
<i>Assist work stream 1 to develop plan for MEDIN metadata content quality checking project</i>	Achieved	
<i>Operational tasks for Portal, UKDMOS and other catalogues</i>	Achieved	Example: Liaison with HBDSEG over UKDMOS updates

<b>Let contract for new MEDIN portal, harvester and catalogue service</b>	Achieved	Contract commenced to redevelop portal 1 <sup>st</sup> August and ran until December 2017. Software development work took place up until the second week in October. The period from release of the first test version of the service in the third week October to the end of the contract was for User Acceptance Testing (UAT) by MEDIN user groups and update of the portal in response to UAT.
<b>Q2</b>		
<b>Finalise and test new portal for deployment no later than end Q2 (contract to be let Q1 FYI 2017/18)</b>	Achieved	See Q1.
<b>Promote updated UKDMOS to statutory nature conservation agencies</b>	Achieved	Marine Scotland records updated in UKDMOS. Liaison with EA over update to their records. Production and dissemination of graphic to explain the relationship between UKDMOS-MEDIN-MERMAN.
<b>Operational tasks for Portal and UKDMOS</b>	Achieved	Example: URL discrepancies; metadata record duplication
<b>Q3</b>		
<b>Carry out exercise to find new and potential programmes to be included in UKDMOS</b>	Not achieved	Understaffing on this work stream during the year (staff resignation) meant there was not resource to carry out this development work. Added to work plan 2018/19.
<b>Tag the monitoring programmes used in MSFD assessments in UKDMOS.</b>	Not achieved	Understaffing on this work stream during the year (staff resignation) meant there was not resource to carry out this development work. Added to work plan 2018/19.
<b>Operational tasks for Portal and UKDMOS</b>	Achieved	Investigation of Archaeology DAC harvesting problem with pragmatic solution found until they can install a web accessible folder (WAF). Set up new NRW WAF. Liaised with TCE on their new WAF.
<b>Finalise and test new portal for deployment no later than end Q2 (contract to be let Q1 FYI 2017/18) –(carried over from Q2)</b>	Achieved	See Q1, UAT ticketing of feedback from testers set up using issue and project tracking software (JIRA). This is also available for long-term project use.
<b>Q4</b>		
<b>WS3 work plan for 2018/19</b>	Achieved	
<b>WS3 annual report for 2017/18</b>	Achieved	
<b>Operational tasks for Portal and UKDMOS</b>	Achieved	Outstanding bug correction in new portal with contractor; liaison with BODC over solution to resource locator labelling; liaison with DACs over import manager bugs

## WS4 International Awareness, Coordination and Data Delivery to Global Databases

WS4 ensures that UK developments are linked in and consistent with international initiatives, and that obligations to provide data to global databases are met.

The following Key Targets were identified for WS4 for 2017-18:

**KT 4.1** *Provision of feedback (via short reports) from international working groups (e.g. WG DIKE, ICES DIG, etc.) illustrating how key European and international data initiatives impact on MEDIN. (Links to HLO3, HLO5)*

**KT 4.2** *All near-real-time temperature and salinity data received by MEDIN passed on to the Global Telecommunications System. Increase in number of data suppliers. Continue delivery of CTD data to international repositories (e.g. World Data Center for Oceanography (Silver Spring), ICES Data Centre and CLIVAR and Carbon Hydrographic Data Office (CCHDO)) (Links to HLO7)*

**KT 4.3** *Review and update the report articulating the role of MEDIN within the broader range of UK and European data sharing initiatives. (Links to HLO3, HLO5)*

The Key Targets were met for WS4 as described below:

#### **KT4.1 MEDIN participated in international working groups.**

There was participation in a number of international working groups and meetings relevant to data initiatives and data management. These are detailed in the Delivery Table below and a document giving a brief summary of each meeting was provided to the March 2018 Sponsors Board meeting.

#### **KT4.2 MEDIN delivered data to international data repositories.**

Near real-time data were routinely forwarded to the GTS, including approximately 55 CTDs from Marine Scotland Science, but there was no increase in the number of data suppliers. Other data provided are from Argo floats and Seal Tags. There is a backlog of historical temperature and salinity data to be delivered to international repositories. This year a delivery plan was put in place and subsequently temperature and salinity data are now delivered to the ICES Data Centre. Currently data from several cruises are delivered weekly and this will continue in 2018-19 until the backlog is cleared.

#### **KT4.3 MEDIN reviewed European Data Initiatives.**

The latest version (March 2016) of the data initiatives document is available on the MEDIN website (<http://medin.org.uk/about/key-documents>). This was not updated during the year, but an update is now underway. However, consideration was given to priorities in European initiatives, in particular the EMODnet suite of thematic portals and the new EDMonet Data Ingestion project. Several of the MEDIN DACs are engaged in EMODnet: BGS has been leading the Geology project and participates in the High Resolution Sea Floor Mapping project, BODC participates in the Chemistry, High Resolution Sea Floor Mapping and Physics projects, and DASSH is a partner in the Biology project. In addition BGS and BODC are a partner in EDMonet Data Ingestion, and have been using some data sets from The Crown Estate's Marine Data Exchange as a case studies in this project.

#### **WS4 Deliverables Table 2017-18**

Q1 Deliverables	Status	Commentary
Feedback from relevant European/ International	Achieved	EIONET marine data webinar, ICES Data and Information Group; IOC Assembly (for data and information section)

<b>Expert/Working Groups (KT4.1) to MEDIN sponsors</b>		
<b>Delivery of temperature and salinity data to the Global Telecommunication System (KT4.2)</b>	Achieved	
<b><i>Establish priorities for engagement with European Initiatives, in particular considering the EMODnet suite of projects (KT4.1, KT4.3)</i></b>	Achieved	DACs are involved in EMODnet thematic portal projects. Input provided to EMODnet Data Ingestion project suggesting selected data sets that could be archived in DACs.
<b>Q2</b>		
<b>Feedback from relevant European/ International Expert/Working Groups (KT4.1) to MEDIN sponsors</b>	Achieved	IOC Group of Experts on GLOSS (Global Sea Level Observing System)
<b>Delivery of temperature and salinity data to the Global Telecommunication System (KT4.2)</b>	Achieved	
<b>Delivery of water bottle and CTD data to global data centres (KT4.2)</b>	Achieved	Postponed to Q4 due to staff changes. CMH is sending CTD data to ICES on a weekly basis – will continue into 2018-19.
<b>Annual review and update of the international initiatives table (KT4.3)</b>	Not achieved	
<b>Q3</b>		
<b>Feedback from relevant European/ International Expert/Working Groups (KT4.1) to MEDIN sponsors</b>	Achieved	EU Funded SeaDataCloud and AtlantOS project meetings (not MEDIN-funded but relevant); EMODnet OpenSeaLab Hackathon; EIONET marine workshop.
<b>Delivery of water bottle and CTD data to global data centres (KT4.2)</b>	Achieved	Postponed to Q4. CMH is sending CTD data to ICES on a weekly basis – will continue into 2018-19.
<b>Delivery of temperature and salinity data to the Global Telecommunication System (KT4.2)</b>	Achieved	
<b>Q4</b>		
<b>Feedback from relevant European/ International Expert/Working Groups (KT4.1) to MEDIN sponsors</b>	Achieved	EuroGOOS and EMODnet Physics Data Workshop, Marine Institute, Galway; Summary of all meetings over the last year provided to Sponsors prior to their meeting on 27 Feb.
<b>Delivery of temperature and salinity data to the Global Telecommunication System (KT4.2)</b>	Achieved	
<b>Delivery of water bottle and CTD data to global data centres (KT4.2)</b>	Achieved	CMH is sending CTD data to ICES on a weekly basis – will continue into 2018-19.
<b>WS4 Work Plan for 2018/19</b>	Achieved	
<b>WS4 Report for 2017/18</b>	Achieved	

## WS5 Resources and Applications Development

WS5 defines and facilitates access to data services and products that meet the needs of MEDIN users. The Work Programme for 2017-18 fitted under the overall Business Plan for 2014-19.

The following Key Targets were identified for WS5 for 2017-18:

**KT 5.1** *Update MEDIN Gazetteer and make it available as a base layer of the MEDIN portal*

**KT 5.2** *Review and integrate existing MEDIN reference layers into MEDIN portal where appropriate*

**KT 5.3** *Expand Sensor Web Enablement Pilot study to demonstrate how service metadata can be created to allow live and time-bound monitoring datasets to be made available via the MEDIN portal. (HLO4)*

The Key Targets were met for WS5 as described below.

### KT 5.1 Base layers are available from the MEDIN portal.

The redeveloped MEDIN portal incorporates predefined geospatial layers to provide contextual information when searching. Currently preloaded layers include: ICES statistical areas and rectangles; MSFD sub-regions; EMODnet mean depth; OpenStreetMap. The MEDIN Gazetteer will be added in the next iteration of the portal.

### KT 5.2 Redeveloped MEDIN portal can include integrated reference layers

MEDIN aims to provide access to a series of 'reference layers'. A review of the reference layers accessible via the MEDIN portal indicates that several are now available as Web Map Services. These will be incorporated in the next iteration of the portal.

### KT 5.3 MEDIN supported a project to export industry biodiversity data to MEDIN

Understaffing this financial year due to staff resignation meant the planned commissioning of the Sensor Web Enablement pilot project did not go ahead. Funds were diverted to a small data archiving project to increase access to industry biodiversity data. The project report is available on the MEDIN website (<http://medin.org.uk/about/data-archive-centres>).

### WS5 Deliverables Table 2017-18

Q1 Deliverables	Status	Commentary
<i>Review of availability of reference layers as INSPIRE-compliant services</i>	Achieved	All reference layers have been checked to identify any available as Web Map Services. This information will be passed to the Portal Steering Group so that relevant layers can be added to the MEDIN portal as contextual information upon release of new version.
<i>Identify sources for new reference layers.</i>	Not achieved	Postponed due to understaffing.
<i>Work with portal steering group to ensure that new portal includes consideration of reference layers.</i>	Achieved	MEDIN administrators can add reference layers to the map interface on the MEDIN portal; users can also add their own layers to provide contextual information when conducting a data search.



<b>Q2</b>		
<b>CefMAT steering group</b>	-	No steering group meetings this quarter
<b>SWE technology pilot with MEDIN portal</b>	Not achieved	Postponed due to understaffing.
<b>Q3</b>		
<b>Joint working group meeting</b>	Achieved	Held November 2017, focused on the redevelopments to the MEDIN portal and defining priorities for a new MEDIN Business Plan.
<b>Q4</b>		
<b>WS5 Work Plan for 2018-19</b>	Achieved	
<b>WS5 Annual Report for 2017-18</b>	Achieved	

## WS6 Communications: Outreach, forums, publicity

Communications and outreach are key activities for MEDIN as it is essential to communicate to the marine community the resources that have been developed, to provide advice and support on how to use them, and to receive feedback on the utility of these resources. The Work Programme for 2017-18 fitted under the overall Business Plan for 2014-19.

The following Key Targets were identified for WS6 for 2017-18:

**KT 6.1** Increase number of MEDIN partners from the private sector.

**KT 6.2** Work more closely with Partners to publicise MEDIN.

**KT 6.3** Increase profile of the Discovery Portal, UKDMOS and the MEDIN website.

The Key Targets were met for WS6 as described below:

### KT6.1 MEDIN welcomed new partners

MEDIN welcomed 3 new partners during 2017-2018, predominantly from the private sector: Thames Estuary Partnership, Ocean-Ecology Limited and SeaRoc Group. There are now over 50 organisations recognised as MEDIN partners (<http://medin.org.uk/about/sponsors-and-partners>), who recognise a common set of responsibilities, which when acted upon will facilitate access to, and management of, marine environmental data and information. These responsibilities are described in the MEDIN partnership agreement (<http://medin.org.uk/about/key-documents>).

### KT6.2 MEDIN worked with partners to publicise MEDIN

This year, MEDIN worked closely with a range of its partners to publicise the work MEDIN does and to acknowledge the contributions made by MEDIN partners to increase access to marine data. Of note here is the social media campaign #DatasetOfTheWeek on Twitter, which connects Data Archive Centres, partners and sponsors of MEDIN by highlighting specific datasets and recognising responsible parties involved with collecting and publishing that data. Twitter is a powerful platform to raise the public profile of MEDIN, especially within the global marine science community. The number of MEDIN followers is steadily increasing by approximately 15 new people every month,

taking the total to 1050 (figure 14).

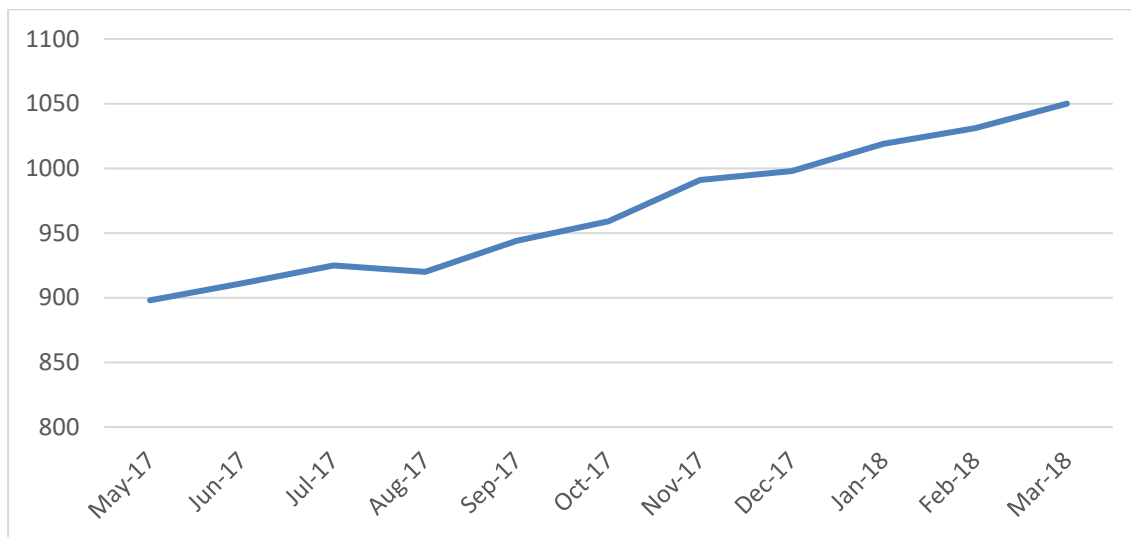


Figure 14: Number of Twitter followers of @MEDIN\_marine during 2017-18.

In addition, MEDIN worked with partners to publicise its work at a variety of conferences, workshops and trade fairs. For example, MEDIN had a stand at the Marine and Coastal Civil Engineering Expo and at Oceanology International (OI2018), both held at London ExCel. MEDIN Co-ordinator Clare Postlethwaite chaired a conference session at OI2018. MEDIN provided information to the public and private sectors about MEDIN and utilised the outreach opportunity effectively. Merchandise such as pens, notepads and leaflets were given out at these events to interested parties.

#### KT6.4 MEDIN succeeded in increasing its focus on finding data

The redeveloped MEDIN portal provided an excellent focus for promoting “finding marine data” at workshops, conferences and trade fairs, as well as on social media and in the online newsletter, Marine Data News. The new MEDIN portal was launched in December 2017 on social media and in the April 2018 edition of Marine Data News.

Marine Data News was published 3 times during 2017-2018, reaching between 555-560 recipients around the world. Figure 15 shows the number of opens in each location for each publication of Marine Data News. The United Kingdom averages 83% of the opens. It also shows an interest in UK marine data across continents in the USA and across Europe. There is an increase in the number of opens in other countries from April to December. For example, USA figures increase 8%.



Figure 15: The number of times the online newsletter Marine Data news was opened by country.

To mark a decade of MEDIN, an open meeting focused on marine data was planned for April 2018. Although the meeting itself took place early in 2018-19, planning, promotion and preparation for this meeting occurred throughout 2017-18. The event was planned to commemorate the 10 years of MEDIN so far, and was entitled 'Marine data – past, present and future'. Advertising was on social media and via the MEDIN mailing lists. The event was aimed at the public, academic and private sectors.

Restructuring of the MEDIN website began in September 2017 and involves a new layout with improved focus on finding data. Work has been carried out by a web developer at the National Oceanography Centre, where MEDIN is hosted. In January 2018, construction of the new website was underway and by the end of the financial year, the new website was undergoing User Acceptance testing.

#### WS6 Deliverables Table 2017-18

Q1 Deliverables	Status	Commentary
<b>Operational tasks for News, events and publications webpage</b>	Achieved	Routine tasks

<b>Advertise dataset of the week via Twitter</b>	Achieved	Postponed to Q2 due to staff on career break. Dataset of the week tweeted with accompanying image. Dataset chosen based on theme and date. Relevant DAC to be alerted.
<b>Website maintenance</b>	Achieved	Routine tasks
<b>Plan outreach to academic and commercial sector organisations</b>	Achieved	Data management training provided to ~80 undergraduates at Southampton University in May 2017. Links established with Herriot Watt University to provide advice for their MSc course in Integrative Marine Data Skills and with University of Liverpool to deliver data management training to undergraduate and postgraduate students.
<b>Plan conference attendance and sponsorship</b>	Achieved	Marine & Coastal Civil Engineering Expo; Coastal Futures 2018; Oceanology International 2018
<b>Q2</b>		
<b>Operational tasks for News, events and publications webpage</b>	Achieved	Marine Data News published beginning of September. Marine & Coastal Civil Engineering Expo planned – flyers, banners, transportation and logistics.
<b>Advertise dataset of the week via Twitter</b>	Achieved	#datasetoftheweek published weekly since August.
<b>Website structure review</b>	Achieved	Discussions started with NOC web team
<b>Website maintenance</b>	Achieved	Dreamweaver training currently in progress. Ongoing maintenance as required.
<b>Plan Partners/Open Meeting</b>	Achieved	Postponed to Q3 due to staff availability. Mega meeting took place Nov 8th/9th. Partners meeting to be held in April 2018 to mark 10 years of MEDIN.
<b>Continue outreach work with Liverpool City Region to aid signposting of marine evidence data *</b>	Not achieved	This not addressed in Q2 due to uncertain funding from Sponsors and was not progressed later in the year due to other commitments taking priority.
<b>Q3</b>		
<b>Operational tasks for News, events and publications webpage</b>	Achieved	MDN published December. Planning for MEDIN's 10th Anniversary open meeting is underway. Discussions about taking part in a MASTS event in 2018.
<b>Advertise dataset of the week via Twitter</b>	Achieved	#datasetoftheweek published weekly since August.
<b>Website restructure</b>	Achieved	Website restructure specification document completed. Presentation given to Core team, DAC, Standards and Joint Working Group meeting. Feedback received. Website restructure completed in Q4, ready for testing in April 2018.
<b>Website maintenance</b>	Achieved	Issues with Dreamweaver. Ongoing maintenance.
<b>Q4</b>		
<b>Operational tasks for News, events and publications webpage</b>	Achieved	Marine Data News planned for end of March/April. Preparations for Oceanology International with BODC and NOC are in progress. MEDIN merchandise updated and printed/ordered for use at workshops and other public-facing events.

<b>Advertise dataset of the week via Twitter</b>	<b>Achieved</b>	#DatasetOfTheWeek published weekly and recorded by CMH.
<b>Partners/Open Meeting</b>	<b>Achieved</b>	Planned for 24 <sup>th</sup> April 2018 at the University of Liverpool, London.
<b>Website maintenance and update</b>	<b>Achieved</b>	Oceannet.org updated using Adobe Dreamweaver. New website, which will have a new address (www.medin.org.uk) when live, is under construction with NOC web development team. New CMS training. On track for testing in April 2018.
<b>WS6 Work Plan 2018-19</b>	<b>Achieved</b>	
<b>WS6 Report on 2017-18</b>	<b>Achieved</b>	

## WS7 Management, Planning and Coordination

Work Stream 7 covers the management, planning and coordination activities as provided by the core team based at BODC, with the support of the MEDIN Executive Team. This includes the organisation of MEDIN Executive Team meetings, quarterly and annual reporting, and the production of an annual work programme. The management, planning and coordination of MEDIN continued as planned.

2017-18 was the second year of the 2014-19 Business plan. Although, the MEDIN review in 2013 recommended that sponsors take a longer term approach to funding MEDIN, some funding agreements remain one year in duration and consequently needed renewing.

The following Key Targets were identified for WS7 for 2017-18:

**KT 7.1** Co-ordinate and manage MEDIN operations

**KT 7.2** Provide support to government in key policy areas involving marine data

**KT 7.3** Increase the number of partners using MEDIN “best practice” operationally

**KT 7.4** Publish a marine data “story” to demonstrate the benefits of sharing data

These targets were met for WS7 as described below:

### KT7.1 MEDIN delivered its work plan

MEDIN operations are carried out by a core team based at the British Oceanographic Data Centre. This year saw some staff changes within the core team with the communications lead taking a career break and then resigning to pursue other interests and the standards lead reducing their hours. Overall staff time was subsequently 2.47 FTE instead of the planned 2.77. Nevertheless, MEDIN continued to make excellent progress towards achieving its objectives for the year. MEDIN spending on operational and development tasks was within 5% of budget.

### KT 7.2 MEDIN worked with its government partners

MEDIN has again worked closely with the UK Marine Monitoring and Assessment Strategy (UKMMAS) community:

- A key requirement on MEDIN in support of UKMMAS is to develop plans for data management and setting up data transfer arrangements in support of the UK implementation of the European Marine Strategy Framework Directive (MSFD). MEDIN

is an active participant in a Data Task Group, chaired by DEFRA and Marine Scotland, set up to help implement this.

- MEDIN is represented at all the UKMMAS evidence groups by MEDIN core team members. In addition, Dan Lear (DASSH) is supported to represent MEDIN at the Healthy and Biodiverse Seas Evidence Group, and Mike Osborne (OceanWise) is supported to represent MEDIN at the Productive Seas Evidence Group.
- Dr Clare Postlethwaite attends meetings of the Marine Assessment and Reporting Group (MARG), Dr Lesley Rickards is on the Executive Committee for the UK Integrated Marine Observation Network (UKIMON).

Engagement with MSCC has continued. MEDIN has a seat on MSCC and official MEDIN representation is provided by Prof. Peter Liss, the Chair of the MEDIN Sponsors' Board and Executive Team or Dr Clare Postlethwaite, MEDIN Co-ordinator. Progress reports are provided to the 6 monthly meetings and MEDIN, along with other smaller MSCC sub groups, are now required to report via MARG. Mike Osborne (OceanWise) is supported to represent MEDIN at the Marine Industry Liaison Group (MILG), which is looking at a high level how access to industry data can be improved, and Dr Gaynor Evans attends the Underwater Sound Forum.

MEDIN continues to engage closely with the data.gov.uk initiative to coordinate input from the marine community, and to ensure that the MEDIN and data.gov.uk resources developed for publishing data and metadata are consistent and linked.

MEDIN has a seat on MSCC and during 2017-18, the MEDIN Co-ordinator requested input from MSCC members on whether there is a need for funding agencies to enforce searches for existing data prior to funding new data collection activities. MSCC members felt that the UK's highly competitive funding system ensured existing data is used before funding new data collection.

### **KT7.3 MEDIN increased links with industry partners**

MEDIN welcomed three new partners this financial year (the Thames Estuary Partnership, the International Centre for Island Technology and Ocean Ecology Limited). One of these, Ocean Ecology Limited, successfully bid for MEDIN funds to facilitate increased flow of biodiversity data collected by commercial organisations to DASSH, the relevant MEDIN DAC. In addition to ensuring data can be exported with all relevant information to be MEDIN compliant, Ocean Ecology Ltd also included a preamble to be included with all datasets exported from its database tool ABACUS to encourage users to archive data with MEDIN (figure 16). Full details of this work is available on the MEDIN website (<http://medin.org.uk/about/key-documents>).





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This dataset has been generated using the cloud-based data tool ABACUS developed to provide a standardised platform for recording, quality assuring, storing and exporting marine biological data whilst ensuring compliance with nationally and internationally recognised best practice guidelines (e.g. the NE Atlantic Marine Biological Quality Control (NMBAQC) scheme). Through its 'live link' to the World Register of Marine Species (WoRMS), ABACUS ensures data records and exports are based on the most up to date and authoritative list of species names available.

As a partner of the Marine Environmental Data & Information Network (MEDIN), Ocean Ecology Limited recognise the importance of effective management and safe storage of marine data but also in minimising restrictions to its access. ABACUS has therefore been developed to facilitate 'single click' exports of general and detailed metadata (Sheets XX to XX) to accompany the exported dataset. As such, this dataset can be submitted directly to a MEDIN Data Archive Centre (DAC) (see [here](#)) for rapid and hassle free archiving in compliance with MEDIN, GEMINI and ISO standards.

ABACUS has been developed by Ocean Ecology Limited (OEL) in partnership with Peninsula Data Solutions and DASSH with financial support from MEDIN for the development of the general and detailed metadata export functionality. For details on archiving data with MEDIN please see [here](#). If you would like to learn more about ABACUS and how you may be able to benefit from its use please contact the ABACUS team at [abacus@ocean-ecology.com](mailto:abacus@ocean-ecology.com).




Figure 16: Preamble provided with all MEDIN compliant data exports from ABACUS describing how the data was generated and the process in which it can be easily archived with a MEDIN Data Archive Centre (DAC).

#### KT7.4 MEDIN planned marine data “stories” to be incorporated into the redeveloped MEDIN website

Marine data “stories” are short summaries detailing how individuals use marine data in their day-to-day work. These stories will be presented on the redeveloped MEDIN website and will include “stories” from a range of MEDIN users e.g. government agencies; commercial organisations; academics; Non-Governmental Organisations (NGOs). Figure 17 shows a mock-up of how the information will be presented on the MEDIN website. This work is ongoing and will be completed in 2018-19.



I use sea surface temperature and salinity data in computer models to make weather forecasts. Using real data means the forecasts are as accurate as possible.

Figure 17. Mock-up of a “marine story” for the new MEDIN website.

#### WS7 Deliverables Table 2017-18

Q1 Deliverables	Status	Commentary
Exec Team Meeting	Achieved	June 19th
Renew Sponsorship agreements for 2017-18	Achieved	8 organisations to renew in 2017-18. 3 completed in Q1 (HR Wallingford, JNCC and The Crown Estate), 2 in Q2 (NRW, Met Office). 3 in Q4 (AFBI, MMO, DAERA)
MARG, IMON and MSCC meetings	-	Meetings postponed because of General Election
UKMMAS Evidence Group Meetings	Achieved	GE attended HBDSEG 28, 29 June, CP attended Activities and Pressures subgroup 20 June
MARG/MEDIN Data Task Group meeting	Achieved	Postponed to Q2. Meeting held 23 August after 15-month break. Discussed timetable for MSFD data publishing. Next step is for the group to provide feedback to Defra on the metadata template sent to the MSFD indicator leads.
Meeting with licensing bodies to discuss how to increase access to data collected for licensing.	Achieved	Postponed to Q2. Met with new organisation, Crown Estate Scotland, and Scottish Government to discuss making data available from their lease agreements. Follow up meeting on 29th November 2017 included BGS.

<b>Meeting with Scottish Agencies</b>	<b>Achieved</b>	Postponed to Q2. Met with SEPA, SNH, HES and Marine Scotland to discuss data flow from Scottish Agencies to MEDIN DACs. Follow up teleconference on 27th November 2017 and 7th March 2018.
<b>Paper to MSCC</b>	<b>Achieved</b>	Update sent for June meeting that was subsequently postponed. Revised update sent for September meeting.
<b>Plan for marine story board</b>	<b>Achieved</b>	Postponed to Q2. Website to include 5 user stories. "User A from organisation B uses marine data to ..." Image. Detailed paragraph. Users to come from each of MEDIN's user categories.
<b>Q2</b>		
<b>MILG, IMON, MARG meetings</b>	-	No meetings this quarter
<b>UKMMAS Evidence Group Meetings</b>	-	No meetings this quarter
<b>Meeting with MMO</b>	<b>Not achieved</b>	Discussions with licensing agencies have focused on Scotland this year, due to formation of new organisation Crown Estate Scotland.
<b>Exec Team Meeting</b>	<b>Achieved</b>	September 13th
<b>Sponsors Board (Focus on Annual Report)</b>	<b>Achieved</b>	October 10 <sup>th</sup> 2017. Sponsors identified priorities for next year's work plan to include: direct access to data; archiving monitoring data; cost benefit analysis; inter-operability horizon scanning. Also approved writing a new MEDIN Business Plan.
<b>Q3</b>		
<b>MILG, IMON and MARG meetings</b>	<b>Achieved</b>	Mike Osborne attended MILG 1 <sup>st</sup> November 2017.
<b>Exec Team Meeting</b>	<b>Achieved</b>	4 <sup>th</sup> December 2017
<b>MARG/MEDIN Data Task Group meeting</b>	<b>Achieved</b>	Teleconference 18 <sup>th</sup> September 2017 to discuss suggestions for metadata template for indicator reporting.
<b>UKMMAS Evidence Group Meetings</b>	<b>Achieved</b>	HBDSEG teleconference 30 November 2017;
<b>Marine story board published on MEDIN website</b>	<b>Not achieved</b>	Will be completed as part of redeveloped website.
<b>Q4</b>		
<b>Sponsors Board (Focus on Work Plan)</b>	<b>Achieved</b>	27 <sup>th</sup> February 2018
<b>MILG, IMON and MARG meetings</b>	-	No meetings of these groups this quarter. MEDIN to present at next MILG meeting May 2018
<b>UKMMAS Evidence Group Meetings</b>	<b>Achieved</b>	CSSEG meeting December 2017.
<b>Exec Team Meeting</b>	<b>Achieved</b>	12 <sup>th</sup> March 2018
<b>Work Plan for 2018-2019</b>	<b>Achieved</b>	Presented to Sponsors during Feb meeting
<b>Annual Report for 2016-2017</b>	<b>Achieved</b>	