Marine Environmental Data and Information Network (MEDIN)

Annual DAC Network Report for 2017-18

'Measure once, use many times'

Summary highlights

The Marine Environmental Data and Information Network (MEDIN) has an operational network of seven linked marine Data Archive Centres (DACs) covering bathymetry, fish and shellfish, fisheries, aquaculture and related samples, historic environment, marine geology and geophysics, marine species and habitats, marine meteorology and water column oceanography. The DACs continue to archive data from MEDIN partners and third party organisations to agreed individual programmes. The 2017-18 DAC annual reports show that:

- The number of data sets held by the DACs is 11,951 - an 8% increase on 2016-17 and >3 times more than in 2011-12
- 1033 new datasets were archived in the DACs (approximately half the number in 2016-17)
- 4,257,741 requests for data were received by the DACs. 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 the British Geological Survey (BGS) were unable to provide request metrics for their Web Map Service (WMS), so the number of requests presented here should be recognised as an under-representation of the actual total number of requests.

1 Introduction

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 have free access to their data and DACs manage third party access to these data according to the data provider's specification.

The required capabilities of DACs within the MEDIN framework are:

- To ensure the secure, long-term curation of key marine data sets, according to best practice and to relevant national and international standards.
- To make available clear, searchable information on their data holdings, by the generation and publication of metadata on the MEDIN portal.
- To provide view and download services for data sets covered by the Infrastructure for Spatial Information in Europe (INSPIRE).
- To form the first point of call of expertise for the management of marine data.

In addition MEDIN will, on request from the data provider, publish metadata records to data.gov.uk and hence INSPIRE.

As a condition of its accreditation, each MEDIN Data Archive Centre is required to provide a short annual report so that Sponsors can assess how well the DAC framework is operating.

The MEDIN Sponsors' Board has emphasised the following requirements:

- Provide a statement on funding and sustainability
- Include Key Performance Indicators, specifically measures of use (numbers of enquiries, numbers of downloads)
- Further information on dissemination – how is access to data currently served up and how do the DACs see their interaction with the portal.

This short document provides a report on the current status of DACs in terms of data sets held and recently uploaded, requests from users for data, and financial outlook. This is a summary of information from the individual DAC reports. These reports are available on request to enquiries@medin.org.uk.

2 DAC Listing

There are currently seven DACs in the MEDIN DAC network, as listed in Table 1 below. The Met Office has been reaccredited and the FishDAC components (Cefas and Marine Scotland) and Archaeology Data Service (ADS) - a component of the Heritage DAC - are currently nearing completion in the re-accreditation process. The Agri-Food and Biosciences Institute (AFBI) is in the process of compiling evidence for accreditation as the Northern Ireland component of the FishDAC. More details are available on each DAC through links on the DAC web page on the MEDIN website at http://www.medin.org.uk/about/data-archive-centres. These pages include information on what types of data are held and top level guidelines on how to submit data to, and to access data from, each DAC.

Table 1: MEDIN Data Archive Centres

Name	Coverage	Contact Information	Web links	MEDIN Status
British Oceanographic Data Centre (BODC)	Water column Oceanography	enquiries@bodc.ac.uk 0151 795 4884	www.bodc.ac.uk	Accredited 2009; Re-accredited 2017; operational.
British Geological Survey (BGS)	Marine geoscientific data	medin@bgs.ac.uk	www.bgs.ac.uk/services/ngdc/management/marine/home.html	Accredited 2009; Re-accredited 2017; operational.
The Archive for Marine Species and Habitats Data (DASSH)	Marine Species and Habitats	Dassh.enquiries@mba.ac.uk 01752 633291	www.dassh.ac.uk	Accredited 2009; Re-accredited 2017; operational.
Met Office	Marine Meteorological Data	enquiries@metoffice.gov.uk	www.metoffice.gov.uk	Accredited (Dec 2011); Re-accreditation 2018; operational.
United Kingdom Hydrographic Office (UKHO)	Bathymetry	bathy.dac@ukho.gov.uk	www.gov.uk/guidance/inspire-portal-and-medin-bathymetry-data-archive-centre	Accredited 2009; Re-accredited 2017; operational.
FishDAC • Cefas • Marine Scotland Science	Fisheries and Shellfish, Fisheries, Aquaculture and related samples	Cefas: data.manager@cefas.co.uk	http://www.cefas.defra.gov.uk/publications-and-data/fishdac.aspx	Accredited 2012, Re-accreditation 2018; operational.
		Marine Scotland Science: jens.rasmussen@gov.scot	http://www.gov.scot/Topics/marine marine.gov.scot maps.marine.gov.scot data.marine.gov.scot	Accredited 2012; Re-accreditation 2018; operational.
Historic Environment DAC • Archaeology Data Service (ADS) • Historic Environment Scotland (HES)	Marine Historic Environment fieldwork derived datasets	Archaeology Data Service: help@archaeologydataservice.ac.uk	http://archaeologydataservice.ac.uk	Accredited 2012; Re-accreditation in progress; operational
		Historical Environment Scotland: peter.mckeague@hes.scot	www.canmore.org.uk	Accredited May 2014; operational.

• Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW)		Royal Commission on the Ancient and Historical Monuments of Wales gareth.edwards@rcahmw.gov.uk	www.coflein.gov.uk	Accredited June 2016, operational.

3 DAC Performance

Each year we ask the DACs to report on their performance based on a standard set of metrics, which includes the numbers of data sets held, the number of new data sets archived, the number of requests for data and the number of Marine Science Coordination Committee (MSCC) partners who have data archived in the DAC. Table 2 below gives the figures from 2011-12 through to 2017-18.

Please note that it is not advisable to compare absolute values between DACs, as the size of data sets 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 data sets, which are augmented each year with that year's new data. Thus over 8 million observations were added to the Met Office's five data sets during 2017-18 (up from 2 million observations in 2016-17).

3.1 DAC Metrics

Table 2: Annual metrics for the MEDIN DACs

DAC	Oceano-graphy	Marine Geoscience	Species & habitats	Marine Met.	Bathymetry	FishDAC		Historic Environment DAC		
Year	BODC	BGS	DASSH	Met Office	UKHO	Cefas	Marine Scotland	ADS	HES	RCAHMW
No. of data sets held										
2011-12	916	533	1592	4	650					
2012-13	983	675	1973	4	650			112		
2013-14	983	768	2438	4	1409	46	36	126	1	
2014-15	1008	864	2622	4	3815	58	56	139	1	
2015-16	1027	1021	2897	4	4098	63	91	140	1	
2016-17	1045	1051	3215	5	4224	1245	162	141	3	1
2017-18	1050	1342	3365	5[1]	4420	1411	192	162	3[2]	1[3]
New data sets archived										
2011-12	237	16	378	0	128					
2012-13	240	77	20	0	12			9		
2013-14	218	75	70	0	63	5	16	3	609	
2014-15	254	4182	6	0	91	7	9	0	798	
2015-16	287	539	6	0	211	6	10	1	434	

[1] Over 8 million observations added to the datasets in 2017-18

[2] Refers to number of datasets published on portal for HES

[3] One data set with 7977 individual maritime site records available online for RCAHMW

2016-17	290	1500	55	1	158	1172	11	3	51	11
2017-18	220	53	13	0	189	166	30	4	51[4]	307[5]
No. of Requests for Data										
2011-12	83,594	- ~100	111,490	NA	0					
2012-13	72,205	- ~100	113,852[6]	NA	16			17,170		
2013-14	115,626	6,600 ~100	272,862	NA	84,000	NA	NA	26,501	NA	
2014-15	85,041	7,200 70	581,212	NA	85,000	NA	NA	31,926	NA	
2015-16	129,398	19,980[7] 70	2,355,054	NA	85,000	NA	NA	61,711	NA	
2016-17	177,282	30,876 41[8]	2,598,148[9]	NA	1,000,000	842	NA	81,356	684,477	1,095,625[10]
2017-18	189,048	7,740[11]	1,181,027	NA	515,052	399	NA	3,525[12]	617,786	1,125,378
No. of MSSC partners with data in DAC										
2011-12	4	8	8	1	3	0				
2012-13	14	8	8	1	3	0		1		
2013-14	15	8	8	1	9	1	1	1	0	
2014-15	15	11	8	1	9	1	1	1	0	
2015-16	14	11	8	1	9	1	1	1	0	
2016-17	14	11	15	1	9	1	1	1	0	0
2017-18	16	11	15	1	9	1	1	1	0	0

Figures 1-3 provide graphical representations of the changes in each of the DACs and DAC components for several metrics. All DACs showed an increase in data holdings. The number of data sets added to the DACs by year shows a complicated picture, which partly reflects variation in funding available for the DACs to archive new data sets and how the DAC operates.

[4] Refers to number of maritime site records to which new items were catalogued in HES – not comparable with no. of datasets held in HES

[5] Refers to the number of additional maritime sites added to RCAHMW dataset – not comparable with no. of datasets held in RCAHMW

[6] Calculated differently from the first year – based on requests for data received through National Biodiversity Network (NBN). Statistics are provided for calendar year, 2011-12 values is annual total for 2012, later years are calculated pro-rata across the financial year.

[7] Web map / WMS requests – number of users per year; new web service introduced in 2015-16

[8] Based on manual / email enquiries

[9] Refers to number of records downloaded (number of downloads is 1685)

[10] Text and map-based searches; stats do not distinguish between maritime or terrestrial sites

[11] Excludes Web map/WMS requests in metric for 2017-18 due to technical issue

[12] ADS statistics collection method refined, which accounts for the number being lower than previous years and is probably not an actual drop, so not comparable with earlier years.

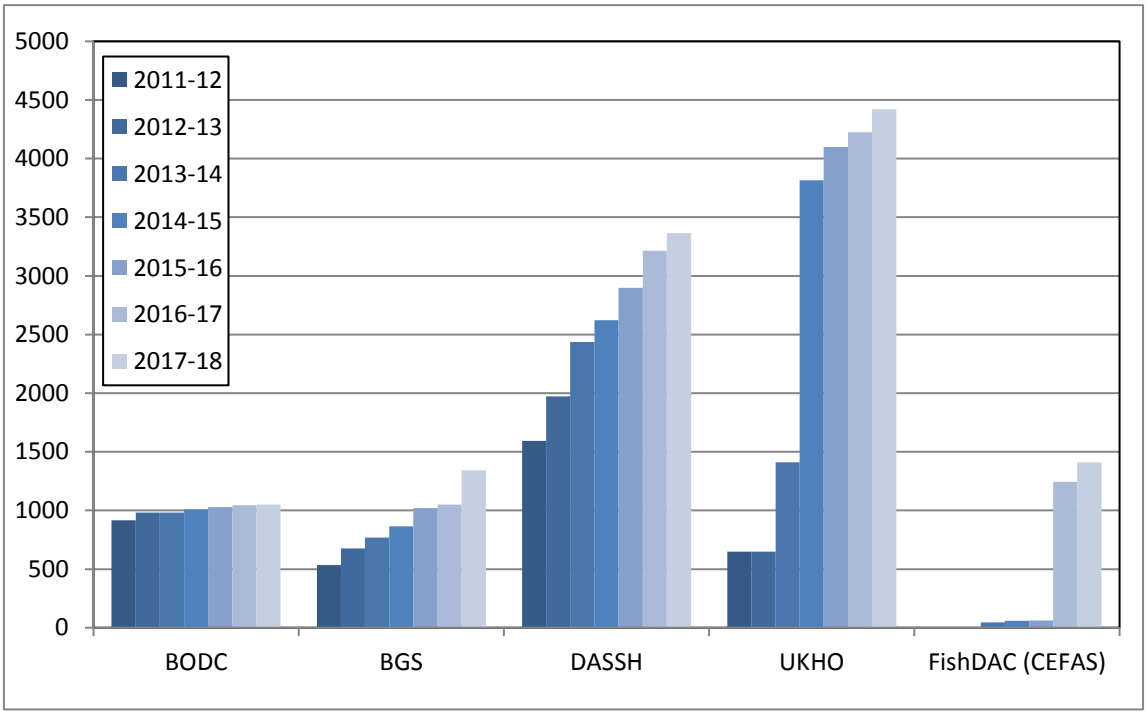

Figure 1a: No. of data sets held by DAC by year

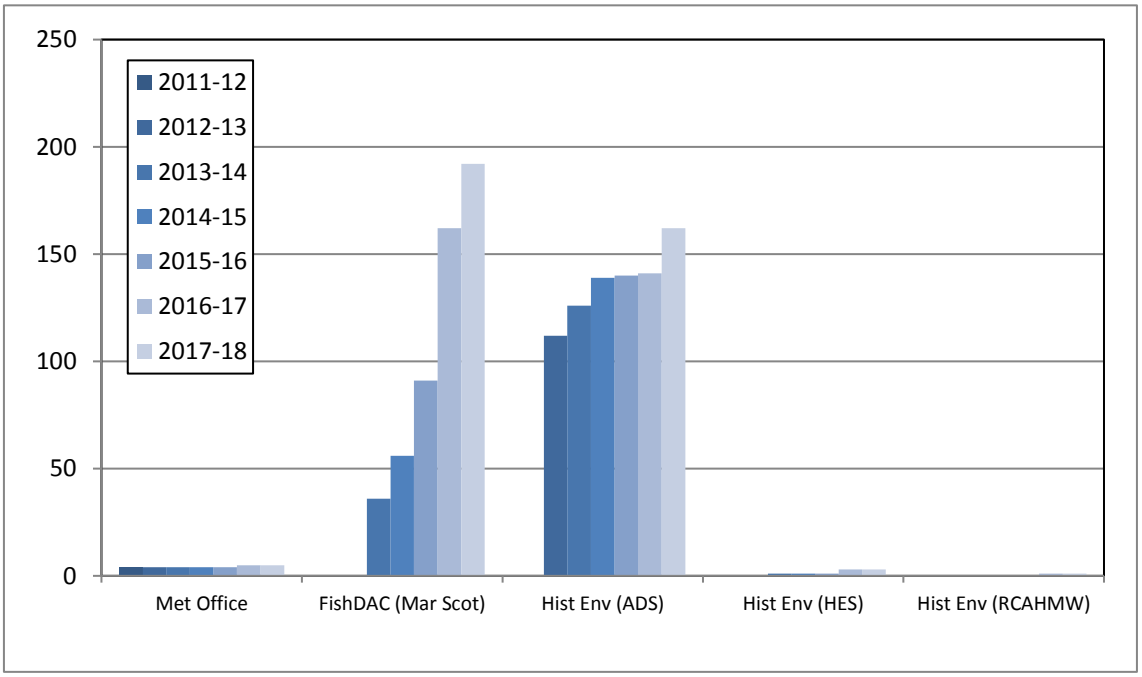

Figure 1b: No. of data sets held by DAC by year

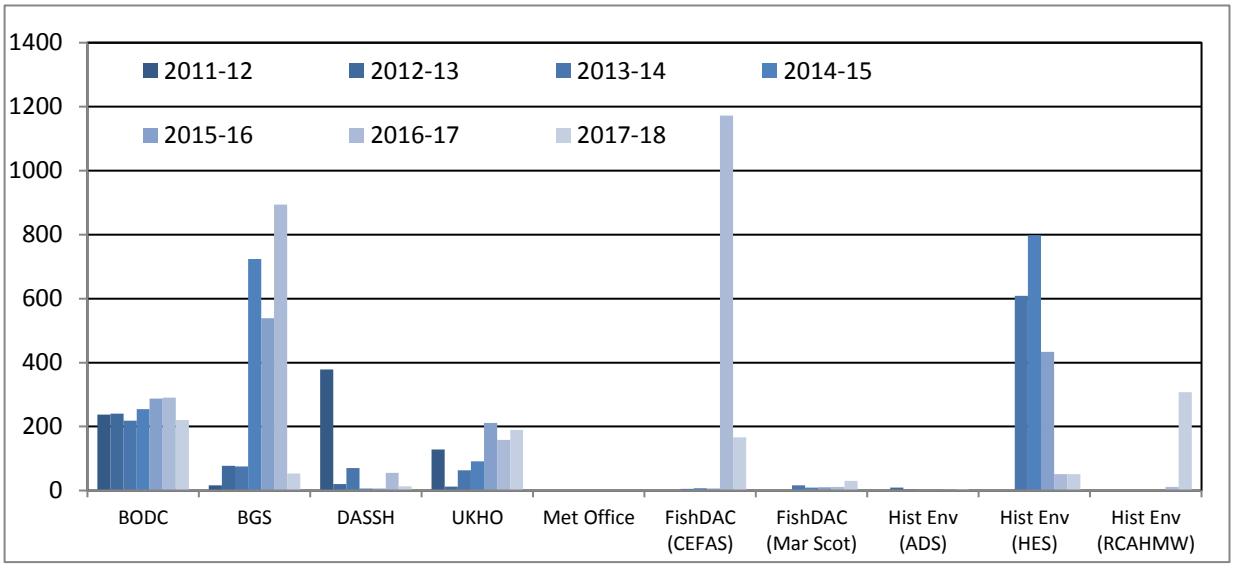

Figure 2: No. of new data sets archived by DAC and by year

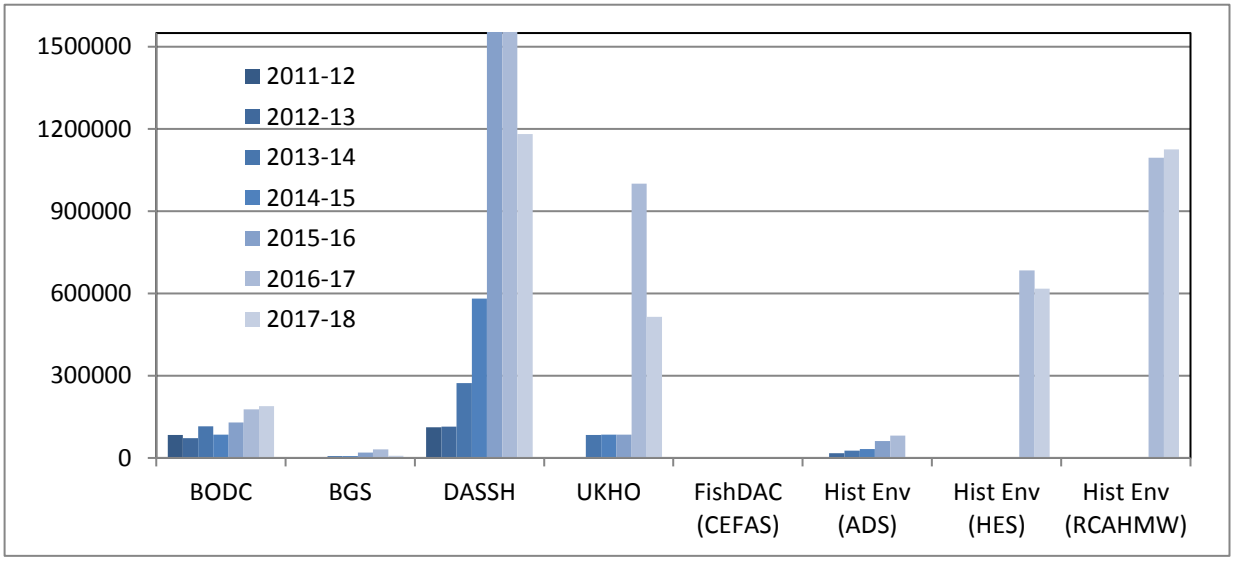

Figure 3: No. of requests for data (by year) from those DACs that record this information

Note that the figure for BGS is not directly comparable to previous years due to an issue following a security change to the servers. This means metrics for unique visitors aren't being captured properly for the WMS – with most visitors appearing to come from a single gateway machine.

Figures 4, 5 and 6 give a snapshot of the types of data depositor (BODC), the purposes for data download (DASSH) and the types of users (HES) encountered during 2017-18.

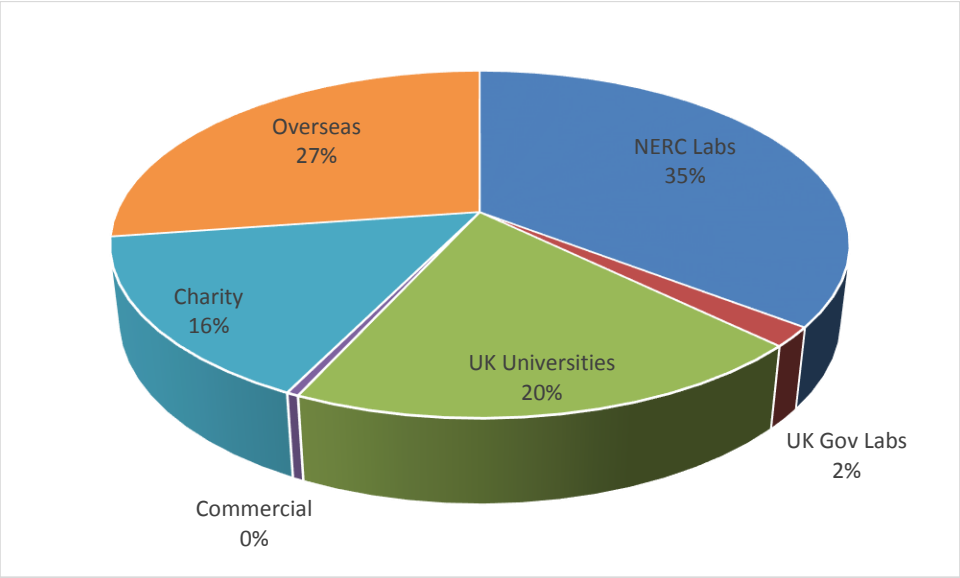

Figure 4: Chart showing distribution of BODC data depositor types during 2017

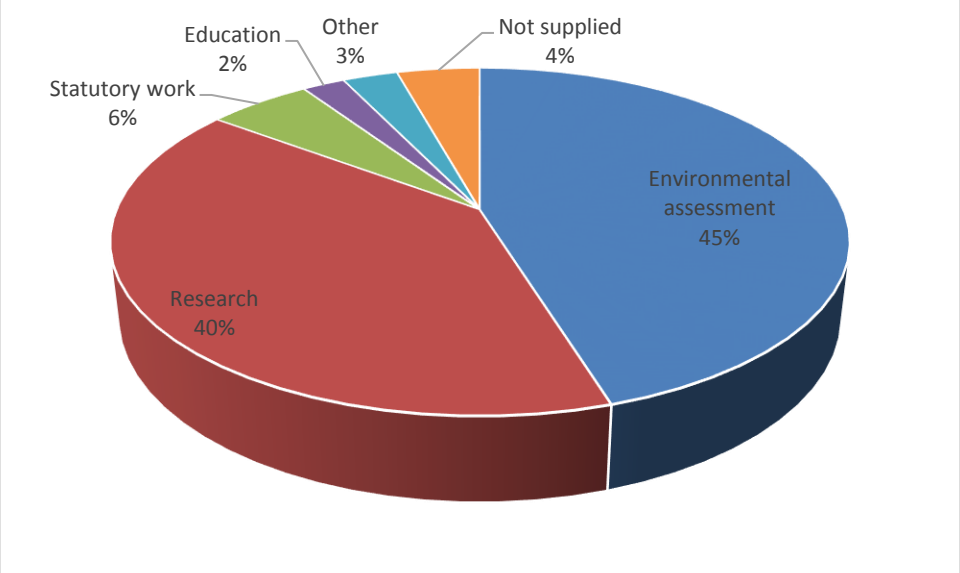

Figure 5: Chart showing distribution of purpose for records downloaded from DASSH via the National Biodiversity Network

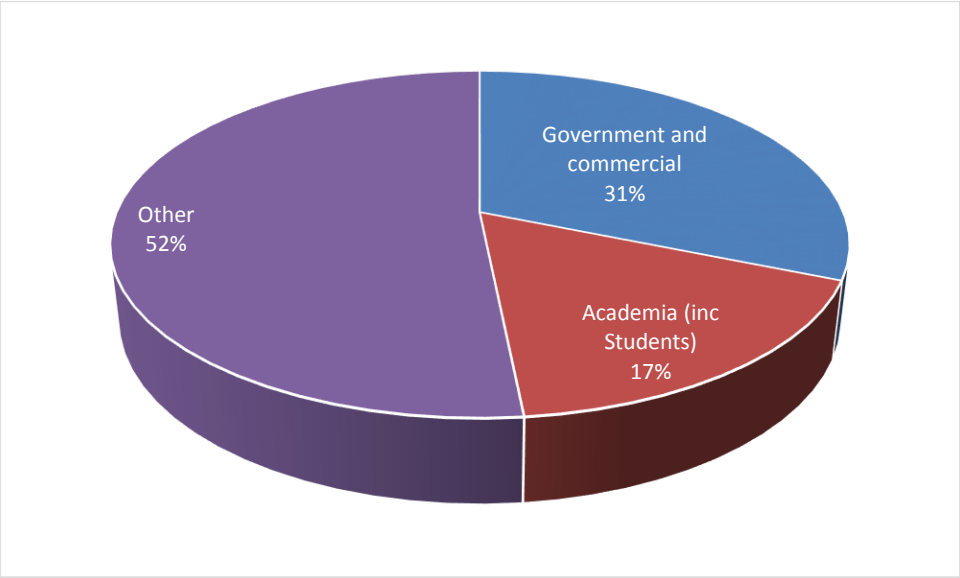

Figure 6: Chart showing distribution of HES users (from a short survey in 2017)

3.2 New datasets:

The past year has been very busy for the DACs in terms of major new datasets being archived. Table 3 summarises new datasets archived by each DAC during FY 2017-18.

Table 3: Summary of new datasets archived at MEDIN DACs during 2017-18.

BODC	**BGS**
During 2017-18, BODC received 220 accessions of data from 61 organisations in 10 countries as follows: • 78 from Natural Environment Research Council (NERC) laboratories (including collaborative centres & National Oceanography Centre (NOC) • 43 from UK universities • 4 from UK Government funded laboratories • 1 from commercial organisations • 34 from charitable organisations • 60 from overseas laboratories 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 active downloads from 199 published datasets.	During 2017-18 BGS: • Continued archiving Marine Conservation Zone (MCZ) data – 4 surveys from 1 MCZ site archived • Continued archiving Maritime and Coastguard Agency (MCA) backscatter and sample data from UKHO – 49 HI surveys archived • Scanned legacy BGS Keyworth geophysical records - 2460 • Scanned 30 remaining boxes of Tarmac data records (MEDIN small project)
CEFAS (FishDAC)	**DASSH**
In the past year Cefas has increased its holding as follows: • 166 new data holdings. • Fishing survey and Fisheries Science Partnership dataset updates.	Major new datasets since April 2017 include: • 10 MCZ surveys, • a catalogue of the Herbarium of British algae and lichens (1826-2010),

- Rationalised and archived a large amount of physical records and added them to a historic herring data catalogue.

- ad-hoc sightings of marine fauna from shore and ship-based surveys – Ivor Rees North Wales (1778-1998).

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.

Met Office

- 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 DAC.
- 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.
- Additional quality control measures have been implemented including a comprehensive update to checks carried out on automatic observations and a new interface to highlight the results of the updated checks.

RCAHMW (Historic Environment DAC)

There was a significant increase in the number of sites archived:

- **307** additional maritime sites were added
- **264** additional catalogue records relating to maritime sites have been catalogued

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.

Marine Scotland Science (FishDAC)

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.

Main Archived Datasets:

- North Sea International Bottom Trawl Survey Quarter 1 + 3
- West Coast International Bottom Trawl survey Quarter 1 +4
- Deep water survey, West Scotland
- Herring Acoustic survey data
- Mackerel Acoustic survey data
- Industry led survey for herring assessment data, ICES area VIA 2017
- Monkfish surveys: 2 surveys in total
- Rockall Survey, quarter 3.
- Salmon and Sea trout catch statistics 1952 – 2017 update
- Fish and Shellfish Stocks 2016

HES (Historic Environment DAC)

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.

PREFIX	Count of archive
Fonds level records	17
Digital images	6
Word Processed Documents /Portable Document Format (PDF)	19

Archive projects

No of items	Description
4	Her Majesty's Ship (HMS) Unicorn: Aerial imagery
2	Spinningdale., Hirtha, St Kilda: Aerial Imagery

<table>
<tr>
<td>

- 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.

Marine Scotland has currently 182 open datasets with minted DOI (48 of which overlap with FishDAC function)

</td>
<td>

19	Diver reports and surveys: Orkney (15), Shetland (2), North Sea (2)

HES commissioned Wessex Archaeology to undertake a quality assurance on aspects of the marine record in Canmore, focusing on the known wreck sites.

</td>
</tr>
<tr>
<td>UKHO</td>
<td>ADS (Historic Environment DAC)</td>
</tr>
<tr>
<td>

A total of 189 new datasets were made available:

- 25 Civil Hydrography Programme (CHP) surveys over 49 surfaces
- 2 Royal Navy surveys over 6 surfaces
- 2 Royal Navy Short Notice Tasks
- 35 Memorandum of Understanding (MoU) surfaces
- 97 Third Party surfaces

</td>
<td>

4 datasets have been archived this year:

- Cornish Ports and Harbours: assessing heritage significance, threats, protection and opportunities

DOI: https://doi.org/10.5284/1042743

- National Historic Seascape Characterisation Consolidation

DOI: https://doi.org/10.5284/1046273

- Archaeology in the Severn Estuary

DOI: https://doi.org/10.5284/1044660

- ForSEADiscovery

DOI: Pending

</td>
</tr>
</table>

4 Highlights

In addition to providing metrics, the DAC reports also detail highlights from the previous year, which together show levels of activity, examples of usefulness of the DAC network and indicate how nationally and internationally integrated the DAC system is.

4.1 Partnerships:

The MEDIN DACs continue to maintain a wide range of national and international partnerships, with BODC continuing to make its open access data available for searching from the SeaDataNet portal (www.seadatanet.org) and DASSH working closely with the National Biodiversity Network (NBN, data.nbn.org.uk) providing data to the NBN Gateway and onward to the Global Biodiversity Information Facility (GBIF) and the Ocean Biogeographic Information System (OBIS, http://www.iobis.org/). Since January 2018 DASSH has been accredited as an Associated Data Unit of IODE and act as the UK OBIS Node.

BGS data are available for download via the Offshore Geoindex portal (http://www.bgs.ac.uk/GeoIndex/offshore.htm) and is using the European Geological Data Infrastructure (EGDI), feeding into pan-European data sets and services from across Europe. Cefas and Marine Scotland Science use the ICES DATRAS portal (http://www.ices.dk/marine-data/data-portals/Pages/DATRAS.aspx) for a number of key surveys. Marine Scotland also makes data available via DOIs through its data portal (http://data.marine.gov.scot).

In addition, a number of the DACs are partners in the European Marine Observation and Data Network (EMODnet) thematic portal projects. BGS are participating in the Geology and Bathymetry themes; BODC is a partner in the Physics, Chemistry and Bathymetry themes and DASSH/Marine Biological Association (MBA) is a partner in the Biology portal. In addition, bathymetry data from the UKHO is

included in the Bathymetry theme, near-real time data from the Met Office is included in the Physics theme and data from the Marine Environmental Monitoring and Assessment National database (MERMAN) is included in the Chemistry theme (see the EMODnet web site for further details of the data available and links to the thematic portals at: www.edmodnet.eu). BGS and BODC also participate in EMODnet Ingestion.

AFBI Northern Ireland is in the process of preparing an accreditation submission to become a component of the MEDIN FishDAC, alongside Cefas and Marine Scotland Science (MSS). Submission is anticipated in the next financial year.

4.2 Data Access and Sharing:

Increasingly data from the MEDIN DACs are being made available under the Open Government Licence (OGL) for data. Data from NERC (e.g. BGS and BODC), UKHO, Met Office, and the bulk of data from Cefas are made available under this licence. Additionally, access to data held by Marine Scotland and ADS is free, open and online and, where possible, data held by DASSH are made freely available.

INSPIRE compliance is a key component of MEDIN, and a core responsibility of the DACs. Work to ensure compliance continues at the DACs. The current status is shown in Table 4.

4.3 Highlights from the DAC network

In addition to providing the metrics summarised in section 3 above, the DAC reports also detail highlights from the previous year, which together show levels of activity and innovation and provide examples of how the DACs are working together to improve data access. Selected highlights from each of the seven MEDIN DACs are given below:

Bathymetry DAC (UK Hydrographic Office)

Approx. 500,000 surface downloads from the portal – while not as high as last year, it represents a significant increase on previous years.

Fisheries DAC (Cefas and Marine Scotland Science (MSS))

MSS and Cefas have both recently applied for reaccreditation as MEDIN DACs and the process is nearing completion.

MSS is increasingly publishing open data on its own data portal (http://data.marine.gov.scot) with minted DOIs. The data portal supports Application Programming Interface (API) access, JavaScript Object notation (JSON) and Resource Description Framework (RDF) downloads of datasets (so, generally speaking, 4-star open data). MSS carried out an analysis of the number of downloaded datasets, where individual resources were downloaded 10 or more times. A total of 46 resources with metadata on the MEDIN portal had 10 or more downloads – with a total of 1,796 dataset downloads (which is 15,329,518 records from a subset of its FishDAC data). This does not include the internationally coordinated survey data, which makes up ~ 40% of the data.

Cefas used MEDIN small project funding to catalogue and publish a substantial long-term archive of North Sea herring data on the Cefas Data Hub (http://mdrviewer/#/View/19009). The herring data, collected between the 1920s through to the 1990s, were previously undiscoverable in hundreds of folders and hardcopy files. More than 1411 FishDAC datasets are currently served through the Cefas Data Hub with view and download capability.

Table 4: MEDIN DAC INSPIRE Compliance – June 2018

DAC Name	Data sets published on MEDIN Portal	Data sets available with view services	View service is INSPIRE compliant	Data sets available with download service	Download service is INSPIRE compliant
Water Column Oceanography (BODC)	1050 data collections	2 data sets (GEBCO 30-arc second grid and the GEBCO Source Identifier grid)	Yes	Yes	No, under development.
Marine Geoscientific Data (BGS)	1342 data sets (808 archived in DAC/534 not archived)	1280 have view service	Yes	746 have download service	No
Marine Species and Habitats (DASSH)	3365 data sets (1850 archived)	No. of data sets with view services - 844	Yes	No. of data sets with download services - 844	Yes
Marine Meteorological Data (Met Office)	5 datasets on portal	1 data set for last 24 hours data	No	1 data set for last 24 hours data	No
Bathymetry (UKHO)	4420 bathymetric surfaces currently available on the portal (several surfaces may constitute a single dataset)	Yes	Yes	Yes	Yes
FishDAC (Cefas)	1411 data sets	1411 have view services	Unsure	1411 have download	Unsure
FishDAC (Marine Scotland)	192 datasets	Geospatially enabled datasets have view services	Yes	Most datasets have download services	Some yes, some no

Historical Environment DAC (ADS)	Metadata from the OASIS system (Archived Grey Literature and Metadata) feeds the MEDIN portal (via OAI-PMH). Presently the system contains 162 marine datasets.	Possible – as the ADS data don't fall under INSPIRE, it is up to depositors whether they want a view service for data	N/A: Not compliant because datasets do not fall under INSPIRE	All datasets are available for download	N/A: Not compliant because datasets do not fall under INSPIRE
Historical Environment DAC (HES)	3 data sets	1 view service (Protected Places theme) One additional WMS (Canmore) and two WFS (Canmore and Historic Marine Protected Areas) to be added to metadata catalogue.	Protected Places theme WMS meets minimum technical specifications for INSPIRE.	None on MEDIN portal	N/A
Historical Environment DAC (RCAHMW)	No records are as yet available through the MEDIN Portal	One set, which is INSPIRE compliant and can be accessed online http://www.coflein.gov.uk/. The number of individual maritime site records (mainly wreck sites) total: 7977	Yes	One set, which is INSPIRE compliant and can be accessed online http://www.coflein.gov.uk/. The number of individual maritime site records (mainly wreck sites) total: 7977	Yes

Historic Environment DAC (ADS, HES and RCAHMW)

ADS, HES and RCAHMW are working together to establish a relationship with Department of Environment Northern Ireland (DoENI) and Historic England. In early 2018, the Department of Communities Northern Ireland rolled out a test version of the Online AccesS to the Index of archaeological investigationS (OASIS) system and it is hoped that a relationship will be established with their sister organisation, DoENI, who oversee marine investigations, so that Northern Irish archaeological information can be disseminated via the MEDIN portal.

ADS was funded through MEDIN Small Project funding to develop a photogrammetry interface, allowing online access to monitoring data. Photogrammetry files are large and difficult to provide online. The solution developed at ADS allows streaming of a low-resolution version of the file so that a user can decide whether to download a high-resolution version.

ADS has a total of 162 marine datasets available to download via the ADS website, representing a significant increase from last year. 100% of the ADS collections are available for download and ADS is undergoing reaccreditation as a MEDIN DAC, with the process nearing completion.

HES reports that during FY2017-18, >600,000 hits were recorded against 30,600 maritime records on the Canmore database. HES commissioned Wessex Archaeology to look at the potential of Marine Cultural Heritage archives and undertake a quality assurance on aspects of the marine record in Canmore. The installation and coupling of Preservica software with the core Oracle database is now complete, enabling the long-term archiving of digital material and helping HES achieve status as a Trusted Digital Repository.

RCAHMW added 307 new maritime sites during 2017-18, a 28-fold increase on last year. 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 CHERISH Project, and a photographic survey of the wreck of the Helping Hand at Black Mixen Pool.

RCAMHW reported that there were approximately 400,000 more page views during 2017-18 than in the previous year. They also supplied an INSPIRE compliant dataset of their full maritime data to the Welsh Government's Lle Geo-Portal.

Marine Geology and Geophysics DAC (BGS)

The Offshore GeoIndex has been upgraded so that MEDIN metadata link directly to the survey URL, rather than a general link to Offshore GeoIndex. Backscatter data have been added, which are available to view and download. Geophysical line images are now downloadable as well as viewable.
The release of the NGDC Data Deposit application and Data Delivery portals have made it easier for the DAC to ingest data and make it available.

Marine Meteorology DAC (Met Office)

Following the successful addition of the AMOS network last year, the Met Office are investigating the feasibility of adding a major climate dataset to those available from the DAC. While no new datasets have come online in the past year, there were over 8 million new observations added to the existing datasets. Additional quality control measures have been implemented, including a comprehensive update to checks carried out on automatic observations and a new interface to highlight the result of the updated checks.

Marine Species and Habitats DAC (DASSH)

DASSH became accredited as an Associated Data Unit of IODE in January 2018 and acts as the UK OBIS node. The total number of datasets published on the MEDIN portal is up 5% on last year.

During this past year, DASSH has been archiving data and developing tools to support the Healthy and Biologically Diverse Seas Evidence group (HBDSEG) Pelagic Working Group, as well as developing tools with Ocean Ecology Ltd to mobilise consultancy data, using MEDIN Small Project funds.

Water Column Oceanography DAC (BODC)

~97% of BODC's discovery metadata records in the MEDIN Portal now provide direct access to the data and research cruise collections held. During 2017, BODC successfully undertook a proof of concept by ingesting data from The Crown Estate and pushing it through to European Marine Observation and Data Network (EMODnet) physics.

MEDIN funded two BODC developers to attend the EMODnet hackathon. The developers joined a team from Bangor to look into using EMODnet data to provide an app to identify dive sites with local weather and tidal conditions.

5 DAC Sustainability and Funding

An important aspect of the DAC network is the assurance of long-term sustainability and continuity of service provision. The MEDIN DAC network achieves this by requiring that the core capability of each DAC is underwritten by an organisation or group of organisations (usually the host organisation) that itself has a business requirement to manage data of a particular theme. This approach forms the backbone of the funding/cost model for the MEDIN DACs (see box below). Current status of the individual DACs is as follows:

- Funding for the **Bathymetry** (UKHO) and **Marine Meteorology** (Met Office) DAC activities have been incorporated into operational plans and are considered part of business as usual.

- **Species and Habitats DAC** (DASSH) receives rolling year-on-year funding from Defra and Scottish Government, assessed against a series of Key Performance Indicators. Additional "project" based funding comes primarily from Statutory Nature Conservation Bodies, with strategically-aligned European Union (EU) project funding also contributing to the long-term sustainability.

- Funding for the **Water-column Oceanography** (BODC) and **Marine Geosciences** (BGS) DACs appears secure in the short to medium term with no reductions (although this is not inflation proofed). These two data centres have been through the NERC Data Centre National Capability evaluation and commissioning process, which secures the funding situation for the next 5 years. NERC remains committed to data management for the medium and long-term.

- **FishDAC:** For Cefas, future data management will be included in project management processes for contracts. Cefas also provides £6k per year for the FishDAC activity. For Marine Scotland, the funding situation is flat, but with a growing workload. External funding is being generated in Marine Scotland Science to enable new developments, but there is currently no capacity in the data and quality management team to take on additional work (already committed to MEDIN and other externally funded projects in additional to regular internal workload).

- **Historic Environment DAC:** The ADS 5 year plan currently runs to 2021 and is reviewed by the Management Committee, on which MEDIN is represented. Although the ADS operating environment is likely to become more difficult in the next 3-5 years, the plan to 2021 is robust and commits to the furtherance of ADS aims and objectives and continuance of relationships with existing external partners such as MEDIN

- The other two components of the Historic Environment DAC (**Historic Environment Scotland** and **RCAHMW**) are funded through the Scottish and Welsh Governments respectively which are committed to ensure that they are properly resourced in the current, short term and medium-long term.

MEDIN DAC Cost Model

The DAC cost model proposed and adopted in November 2010 identifies four aspects of the DAC function: Core Capability, MEDIN Coordination, Additional Archiving, and Data retrieval / distribution, as described below:

Core DAC Capability
"Core" DAC capability includes infrastructure costs and some routine data archiving. It is expected that core DAC funding is provided by organisations with a strategic interest in a national DAC capability for specific data types. MEDIN acts to provide an overview and to consider whether funding of this core capability is secure or at risk.
Funded by the organisation hosting the DAC, or in the case of DASSH by a consortium of organisations.

MEDIN co-ordination
MEDIN acts to ensure common standards and service provision across the MEDIN DAC network. The cost of MEDIN coordination activities is shared between MEDIN Sponsorship funds and the DACs themselves.
Funded by MEDIN Sponsor funds and DACs through in-kind effort

Additional Archive Costs
In the general case, the costs of archiving newly collected data should be funded by the data providers, in the form of one-off fees to the DACs in return for the services provided. This data archiving cost is not currently included in the overall budget of many monitoring and research programmes.
Funded by data suppliers

Data retrieval / distribution
MEDIN DACs will provide data access to the original data provider at no cost, and will manage third party access to data sets according to terms agreed with the data provider. If no constraints are required by the owner, data will be made available to third parties at no cost, beyond any necessary to cover costs of retrieval / provision.

No cost