

# UK- Environmental Observation Framework

## Environmental Observations Activity Catalogue

### Content Summary 2011

#### 1. OVERVIEW

The aim of the UK Environmental Observation Framework (UK-EOF) is to facilitate the ongoing environmental evidence required to understand the changing natural environment and its societal interactions, thus guiding current and future environmental management, policy, science and innovation priorities for economic benefit and quality of life. The UK-EOF Environmental Observation Activity Catalogue was established in 2009 to allow scientists, policy makers and other users of environmental data to access a single portfolio of UK funded observations.

This report summarises what we now know about environmental observations from the catalogue entries and provides an overview of the UK environmental observation suite.

The catalogue contains information which is classified from the following definitions;

**Observations:** the taking, on a reasonably regular basis, of any form of observations relative to the status of the environment, regardless of frequency of, or purpose for which the observations are made, or however they are made (from satellites, ships, etc). Such observations are designed to meet a wide range of societal needs by providing a variety of products and services. Surveys are in scope for some work streams.

**Environmental:** the broadest sense of observations from the natural environment concerning physical (including geological), chemical and biological properties of the environment. This includes observations collected on land, in air, in ice, in freshwater and in the coastal and marine environment, compliance or statutory information, earth observations from space and the effects of humans on the environment and vice versa<sup>1</sup>.

#### 2. WHAT INFORMATION DOES THE UK-EOF CATALOGUE HOLD?

Records in the catalogue represent observations at varying scales of detail and geographic location. For example, programmes generally represent the large scale collection of multiple observation types across national, regional or even global areas. Some programmes may even be representative of a number of larger scale activities which have been combined to represent an organisational work area, whereas activities are more specific in location and parameters (e.g. physical attribute, butterfly species). The results given in this report show a comparison of the number of records submitted by each organisation and therefore users must consider the scale of the programme or activity being carried out when considering these comparisons.

Originally the information contained in the catalogue came from the 2006 ERFF Monitoring Questionnaire. In 2009 the 13 major UK-EOF sponsors updated their

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<sup>1</sup> The scope of the UK-EOF has been altered since the inception in 2008. Originally social information was excluded, however following on from Towards a Statement of Need, the scope was increased to include environmental socio-economic information that is required to full address environmental issues and questions.

information, it was translated into a database and a search facility made available online.

In 2010 a wide scale update was undertaken. Over 100 organisations were asked to check add and/ or update their catalogue records. Information contained within the JNCC Terrestrial Surveillance Monitoring Database and the UK Directory of Marine Observing Systems (UKDMOS) was also incorporated. In total, more than 700 records were checked or updated during 2010, making the UK-EOF catalogue the most comprehensive and up to date source of who is collecting what observations by or for the UK. .

To encourage cross-sector working, a workshop was held in 2010 to scope what social and economic observations would be useful for tackling the big environmental questions and vice versa. The workshop recommended extending the scope of the UK-EOF catalogue to include social or economic observations relating to the environment. This will highlight the most relevant observations to the environmental community and the UK-EOF catalogue will be useful for socio-economic scientists to explore environmental observations. Adding relevant socio-economic entries will be an ongoing process.

As of August 2011, the catalogue holds information about 1150 programmes, activities and data sources (Figure 1). The following sections dig deeper into exploring what we now know about the UKs environmental observations, who is doing what and who funds it, why it is being done and how long it has been continuing.

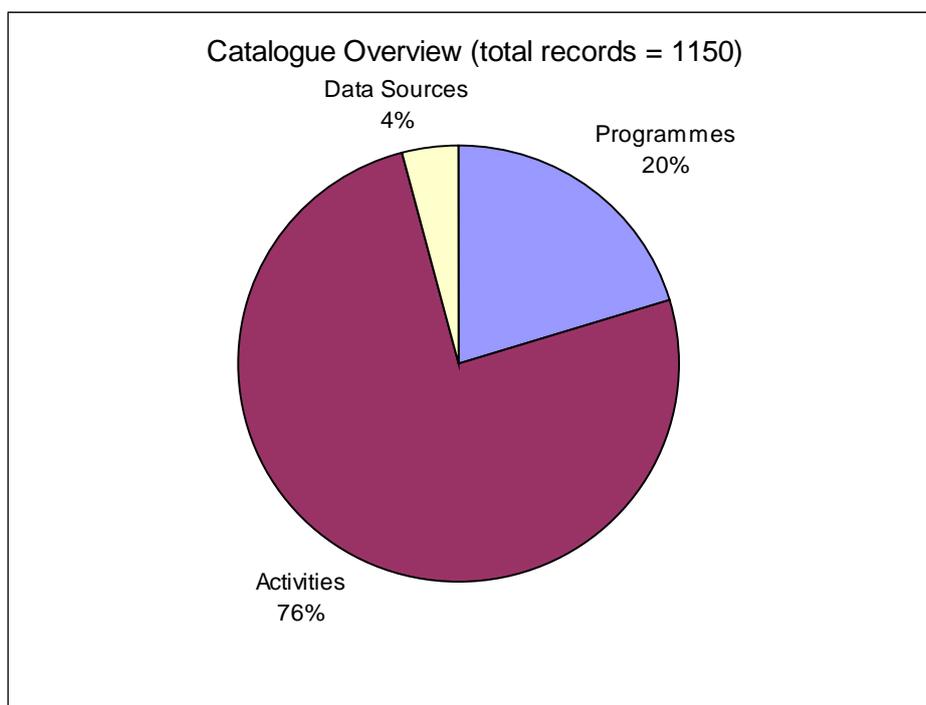
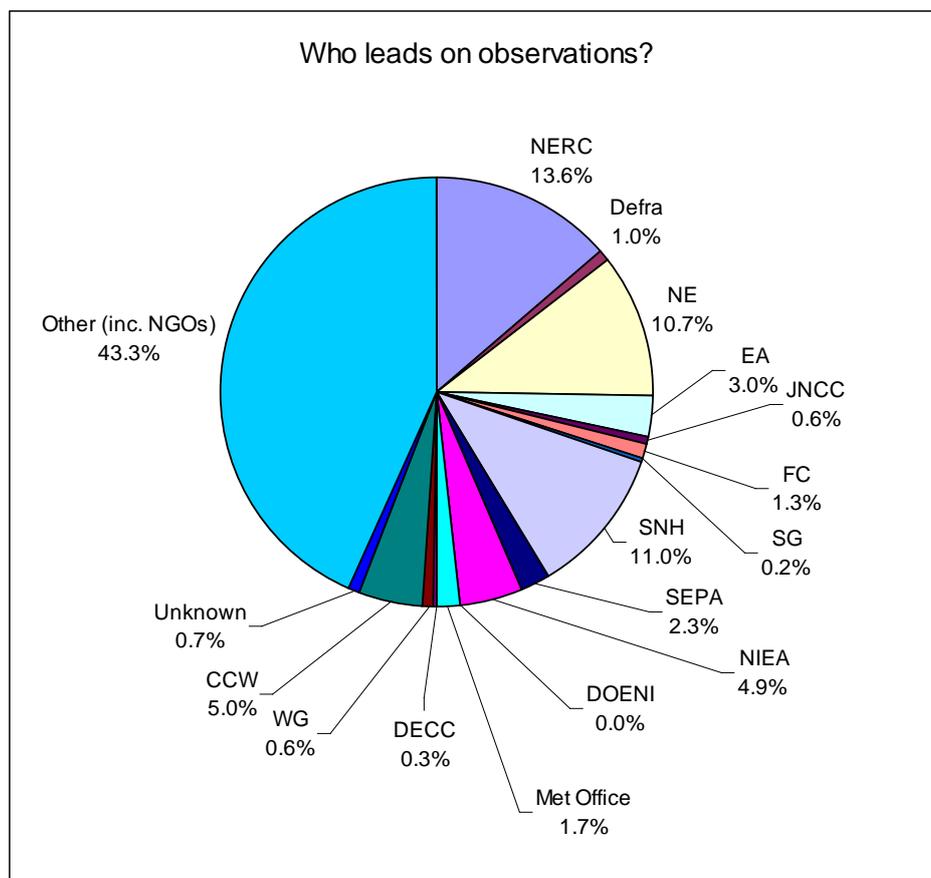


Figure 1 - overview of the UK-EOF catalogue content. Total number of records = 1150

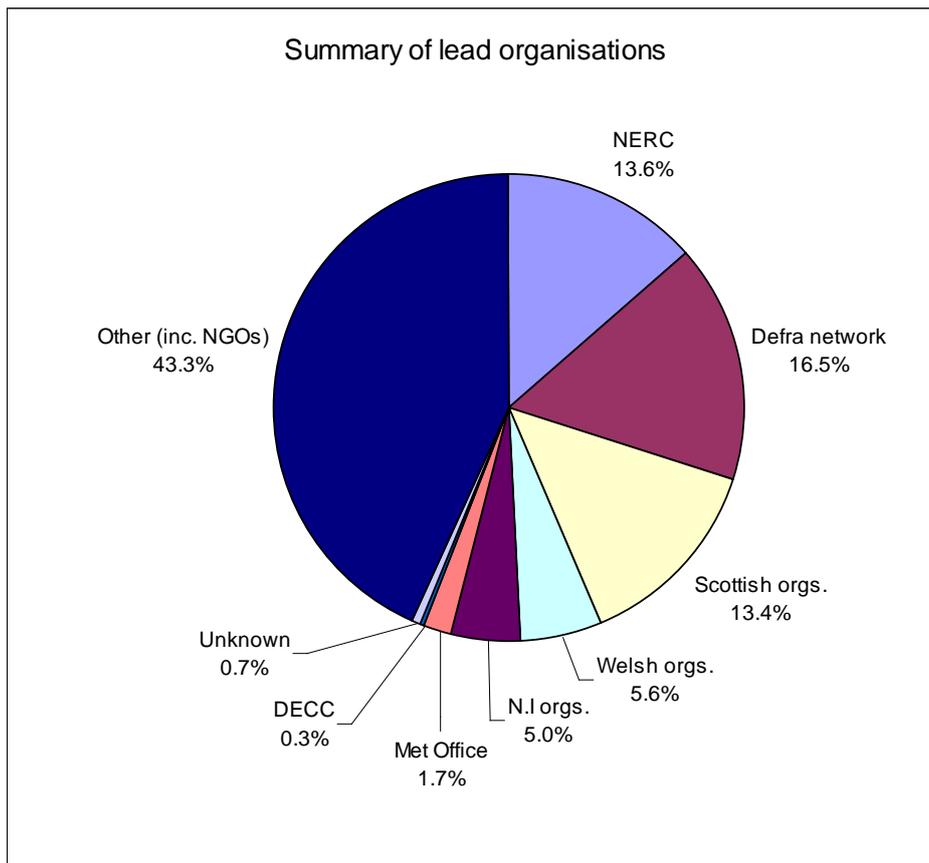
### 3. WHO IS OBSERVING THE ENVIRONMENT?

There are over 400 organisations mentioned in the UK-EOF catalogue. Organisations may be involved in funding or leading observation programmes/activities or may be associated with collecting data, modelling, storing data or providing the facilities or people to undertake these processes.

The catalogue lists the major funders of environmental observations and the metadata they have provided about the activities they fund, or manage. The catalogue therefore contains at least 80-90% of what the UK-EOF Management Group knows is publicly funded for any reason. There is also a large number of volunteer based observation activities recorded. UK-EOF has not directly approached the private sector; therefore the catalogue does not presently cover their observations. Figure 2a shows the percentage of the total of the 1050 entries which are led by the major public bodies.



**Figure 2a - Percentage of the 1150 observation records which each major organisation is the lead. NB one record may represent a UK wide programme, a network of programmes or an activity at a single site.**



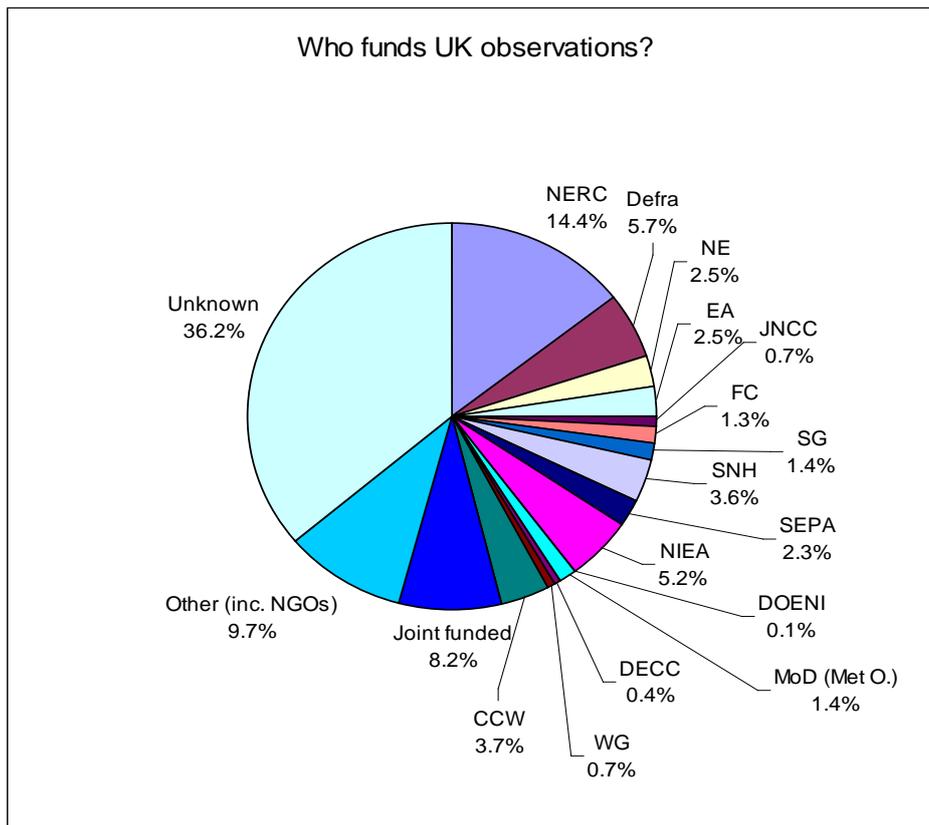
**Figure 2b - Percentage of the 1150 observations led by the major organisational networks and devolved Administration. NB one record may represent a UK wide programme, a network of programmes or an activity at a single site.**

In this case, 'lead organisation' means that the organisation is the main manager or 'doer' of the work. The chart indicates over 50% of the UK's observations are undertaken by the major public bodies, and a large proportion is carried out by the voluntary sector. If the public bodies are grouped into their networks (e.g. the Defra Network of Defra, NE, EA and across the devolved administrations), it shows that NERC and the Defra network undertake about 14% each (Figure 2b) whilst others such as DECC have very few programmes.

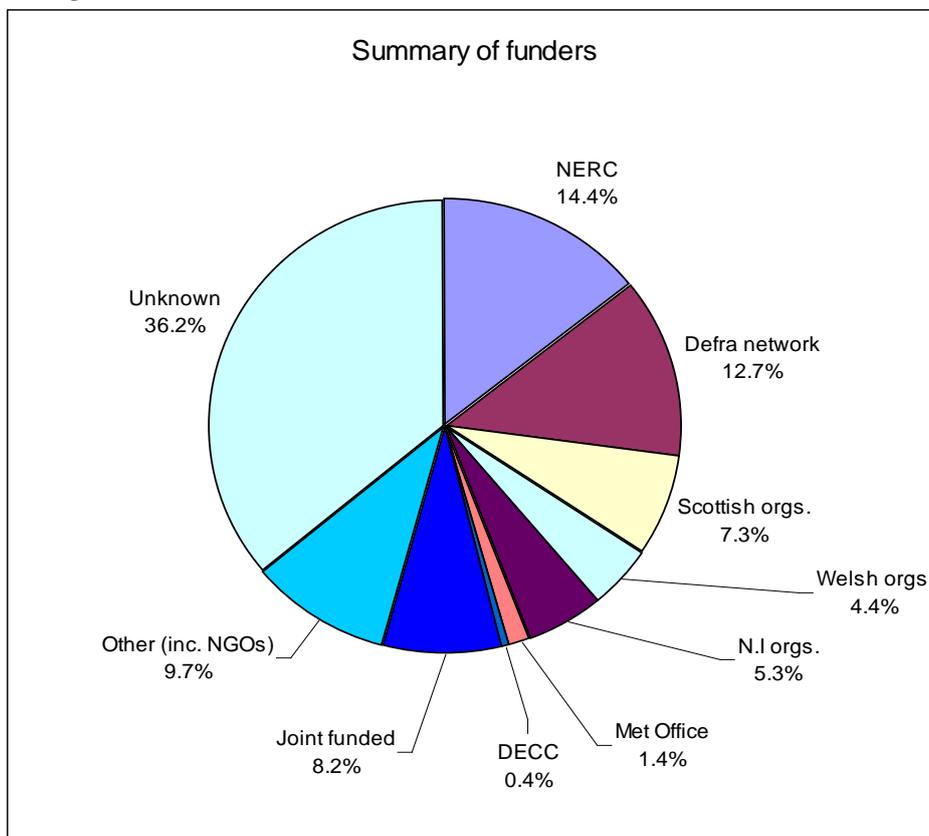
#### **4. WHO FUNDS UK OBSERVATIONS?**

There are 111 named funders of observations. Figure 3a shows the major funders and the percentage of records in the catalogue that they fund. Figure 3b summarises these major funders into their larger networks or political region. Of the 'other' larger funders, BTO and RSPB fund 14 and 11 catalogue entries respectively. At this stage in the evolution of the catalogue, there is still some level of uncertainty about who the funders of some observations are (36.2% of catalogue entries have unknown funding).

Comparing Figure 2b to Figure 3a, it may be assumed that the majority of organisations carrying out observations also fund them, potentially within their own organisational network.



**Figure 3a - Percentage of the 1150 observations funded by the major environmental funding organisations. NB one record may represent a UK wide programme, a network of programmes or an activity at a single site.**



**Figure 3b - Percentage of the 1150 observations funded by the major organisational networks and Devolved Administration. NB one record may represent a UK wide programme, a network of programmes or an activity at a single site.**

## **5. WHAT IS BEING OBSERVED?**

Almost half (48%) the observations in the catalogue monitor the biosphere (Figure 4). This figure is high since many of the observations fall under more than one category, for example, many of the marine records cover the observations of seabirds or fish, and are therefore classified as marine AND biosphere. The few socio-economic entries represent a selection of the most useful datasets which could be helpful to environmental users of the catalogue.

## **6. HOW LONG HAVE UK OBSERVATIONS BEEN RUNNING?**

There are between 756 and 987 ongoing observations (Figure 5). The uncertainty is because some are not labelled either ongoing or closed.

There are 625 observations with known start dates in the catalogue. There are an impressive 78 observation activities which have been running for over 50 years. Of those 29 have been running for over 100 years (Figure 6). Public funding is being used to support 85% of the observations that have been running for over 50 years (Figure 7).

The oldest schemes recorded in the catalogue (Rarer Macro-moth Recording Scheme and Trichoptera (Riverfly) Recording Scheme) date back to the 1600s. The 13 longest running observations are all recording schemes or public engagement type activities, and 10 of which are currently jointly funded through CEH and JNCC and form part of the Biological Recording Scheme. This BRC ensures the data are stored for the benefit of a wide audience.

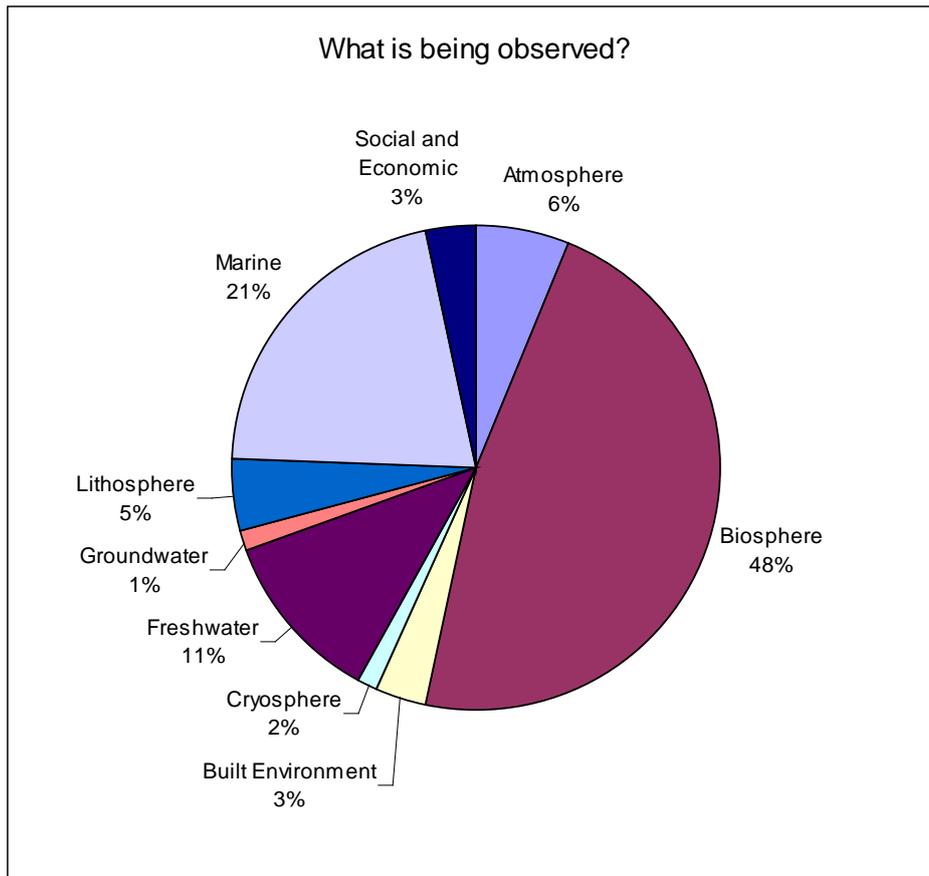
Most of those with unknown start dates are voluntary activities which, due to the nature of casual observations have are difficult to determine start dates.

## **7. WHY ARE THESE OBSERVATIONS BEING CARRIED OUT?**

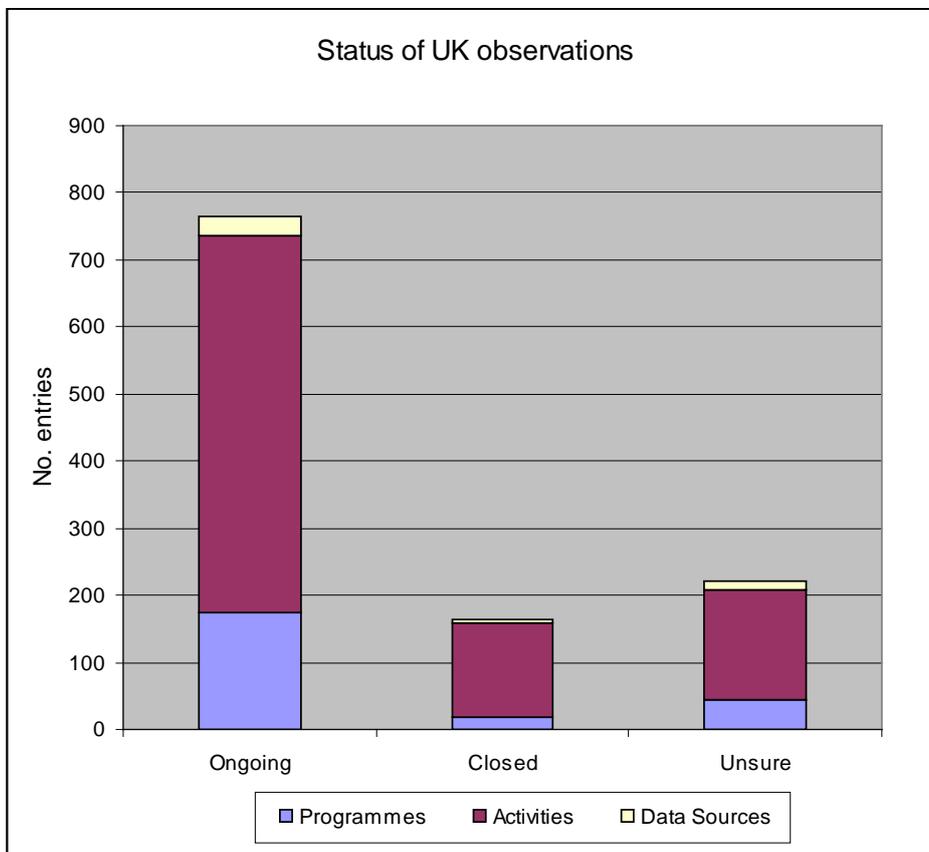
Figure 8a highlights why programmes and activities are undertaken. There are a number of categories and many are used for many purposes. Figure 8b shows a high proportion of marine and biosphere entries are classified as legislative/ statutory and science purposes.

Over 900 entries are tagged as being undertaken for legislative or statutory reasons and almost 1/3 of entries are tagged as 'advancing, innovation or basic science' indicating the importance of these types of observations.

However there are over 400 entries in the catalogue which are only being undertaken for a single purpose (Figure 9). There are 200 entries where the data is apparently only being used for legislative/statutory purposes and a large number only for data collection itself. This means there is still much room for improving the value that is derived from the data sets, and that more can be done to reuse and share information. The high numbers of entries classified by 'data collection' in the biosphere domain predominantly relate to the relatively small volunteer activities which are undertaken to record biodiversity in the UK.



**Figure 4 - What is being observed – breakdown by environmental domain. NB one record may represent a UK wide programme, a network of programmes or an activity at a single site.**



**Figure 5 - Current status of UK observations.**

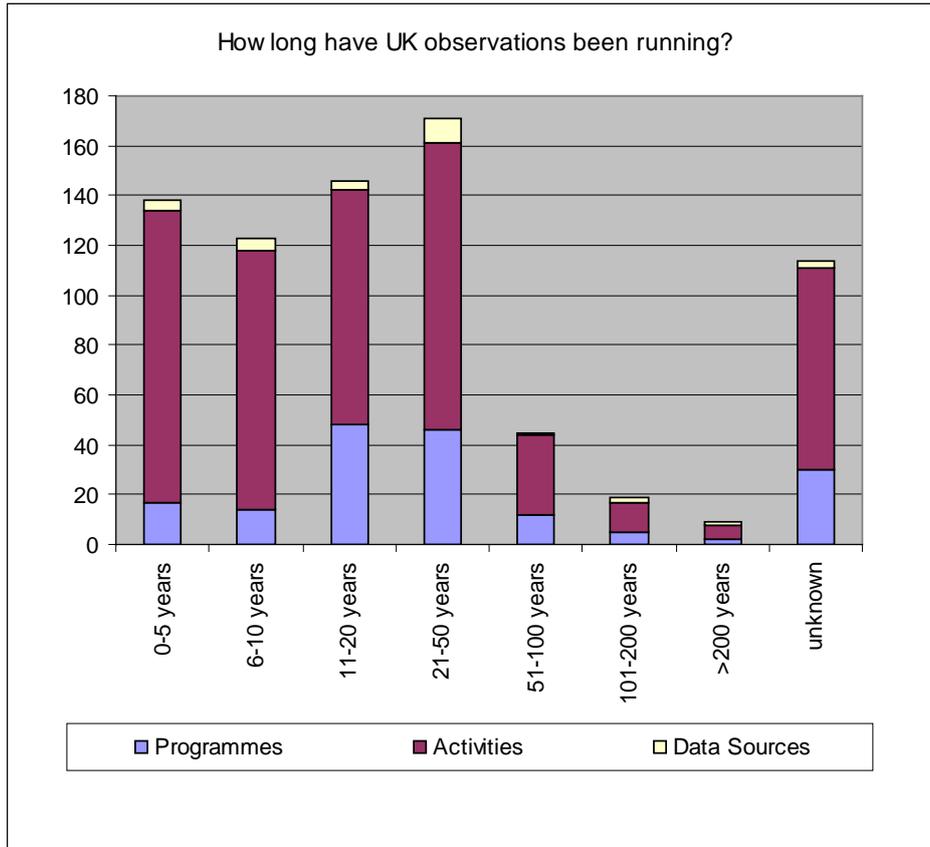


Figure 6 - How long have UK observations been running?

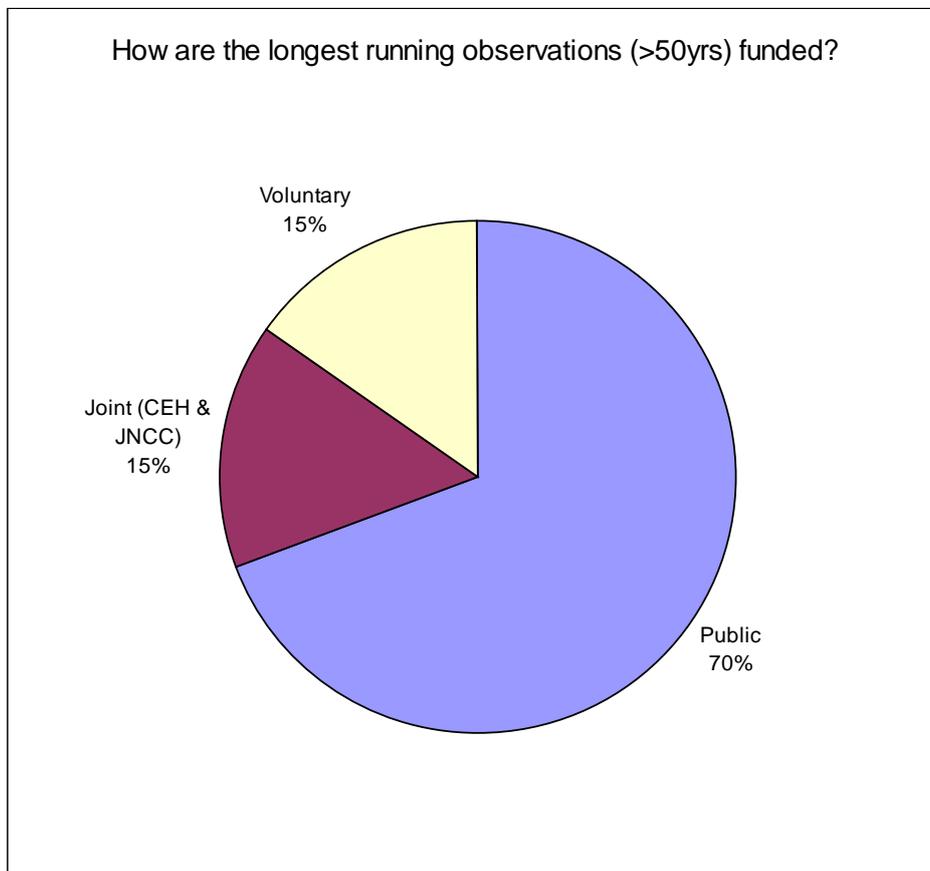


Figure 7 – How are the longest running (>50 years) observations funded?

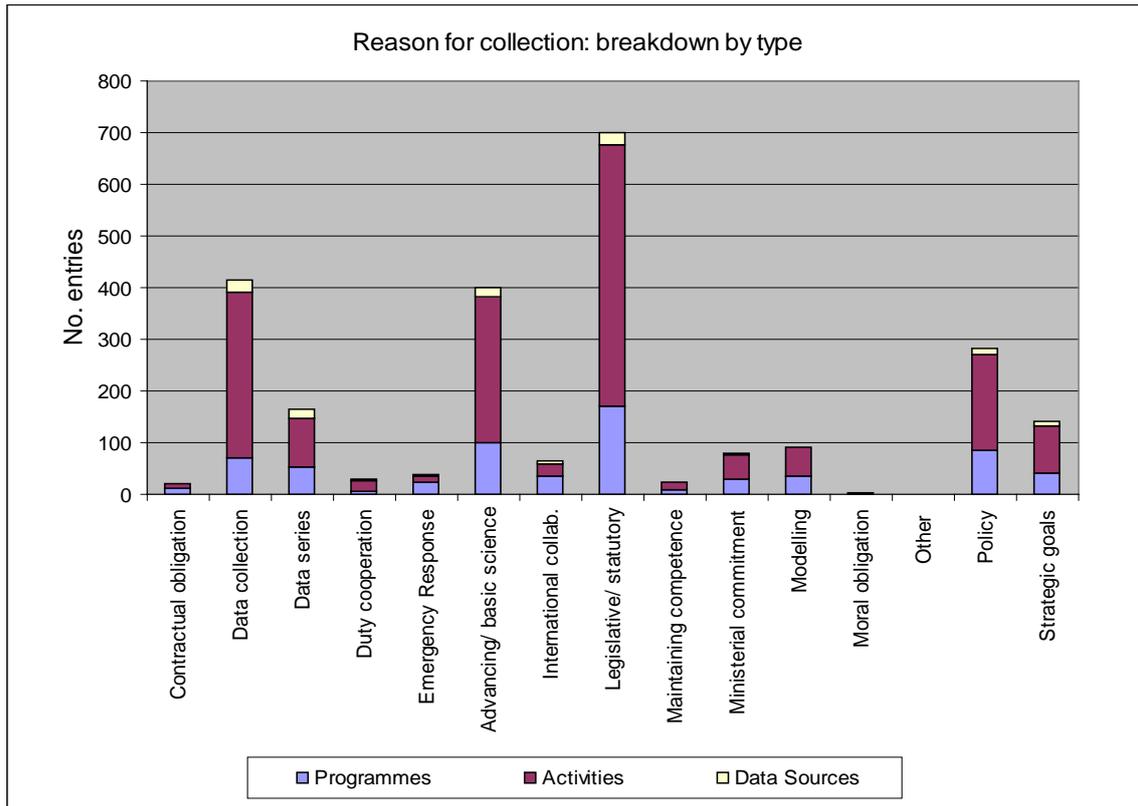


Figure 8a - Why are entries being undertaken? NB records can be tagged with more than one 'reason for collection'.

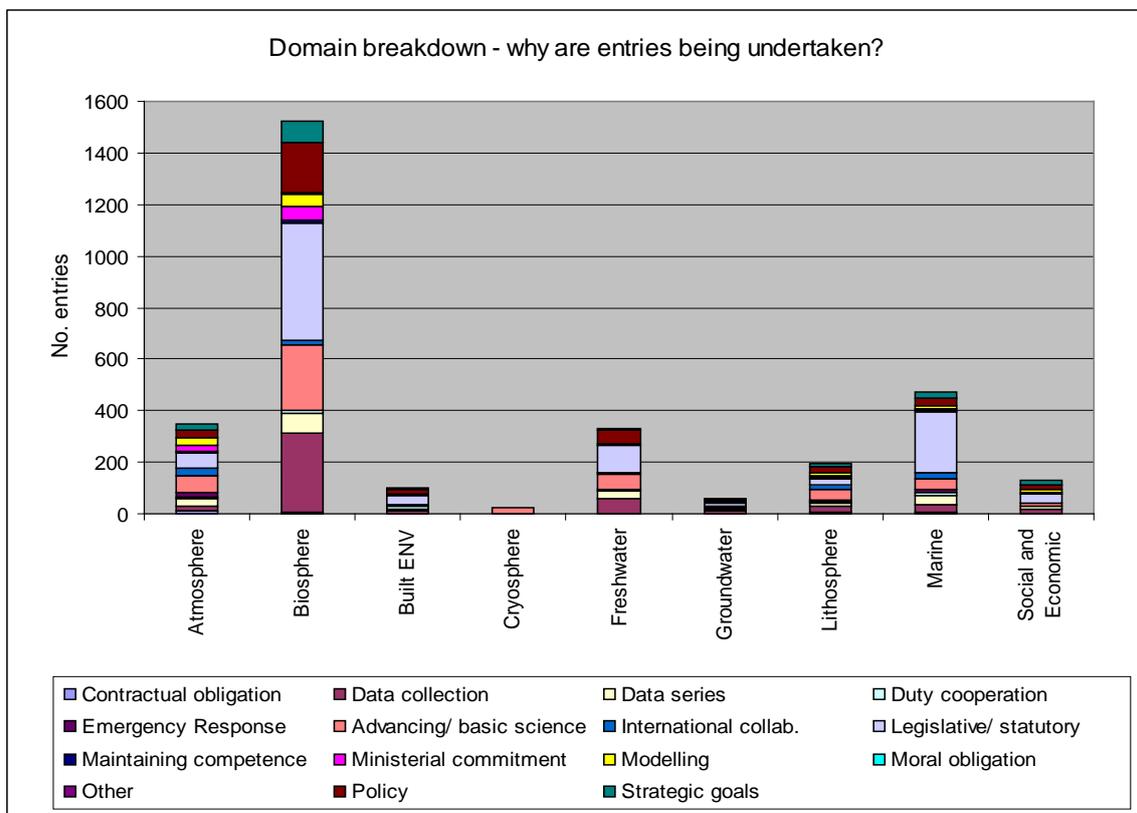


Figure 8b - Why are entries being undertaken in different domains? NB records can be tagged with more than one 'reason for collection'.

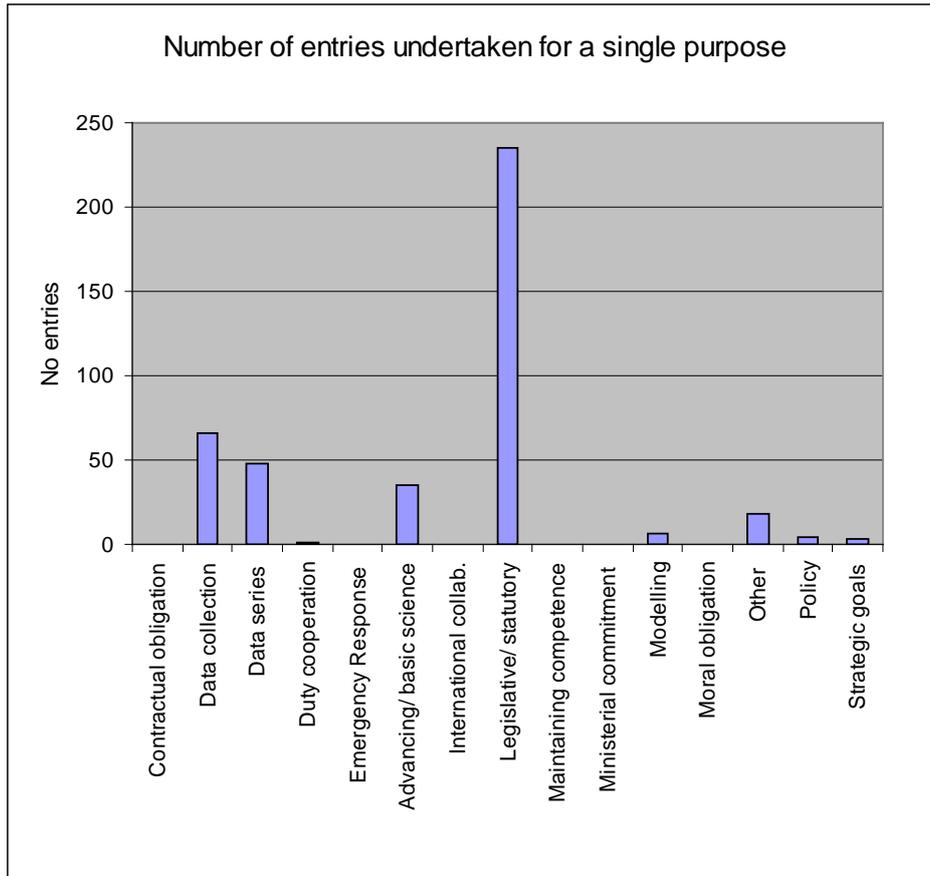


Figure 9 - Entries being undertaken for a single purpose.

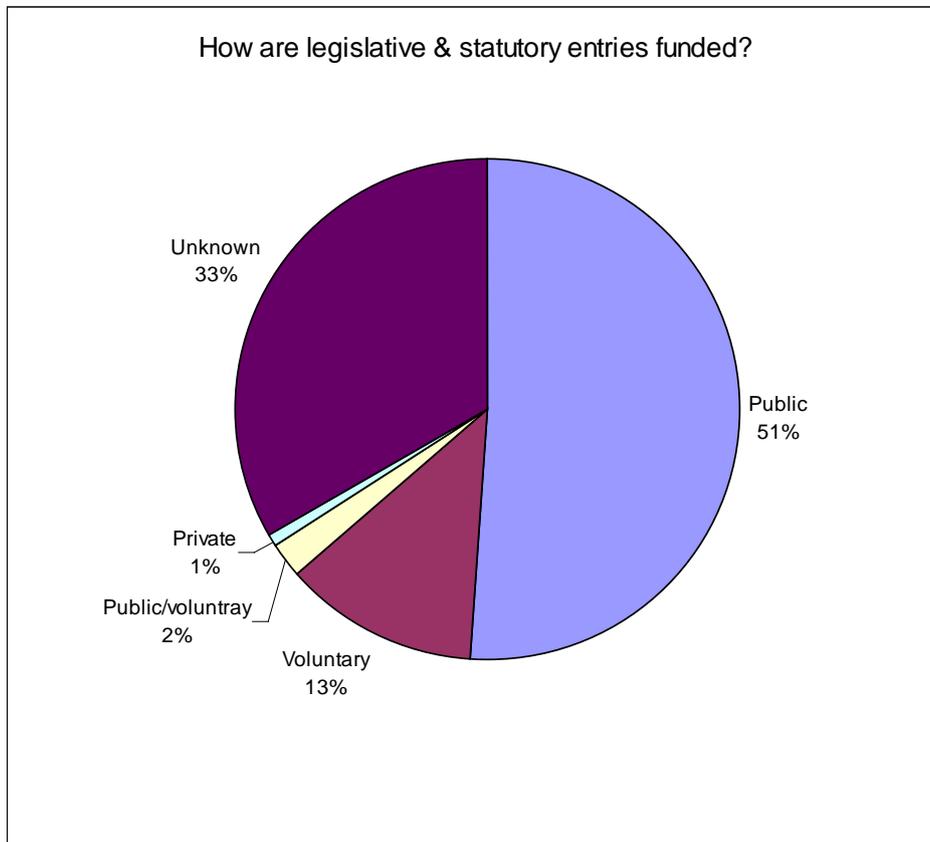


Figure 10 –How are legislative and statutory entries are funded? NB entries can be classified with more than one ‘reason for collection’.

## 8. WHAT IS THE UK DOING FOR LEGISLATIVE/STATUORY PURPOSES?

Of the 900 entries tagged as legislative or statutory, Figure 10 shows that only half are publically funded, and the funding source for almost 1/3 of the entries is unknown and the rest are voluntary schemes. (NB private funders have not been approached to enter their observations into the catalogue).

Figure 11 shows the proportion of legislative/ statutory entries which are used for single or multiple purposes. Almost half the entries are used for more than one purpose, suggesting the data is shared or reused somehow, however this is questionable for the remaining observations. There may be certain observation programmes which are restricted from sharing data due to confidentiality agreements etc.

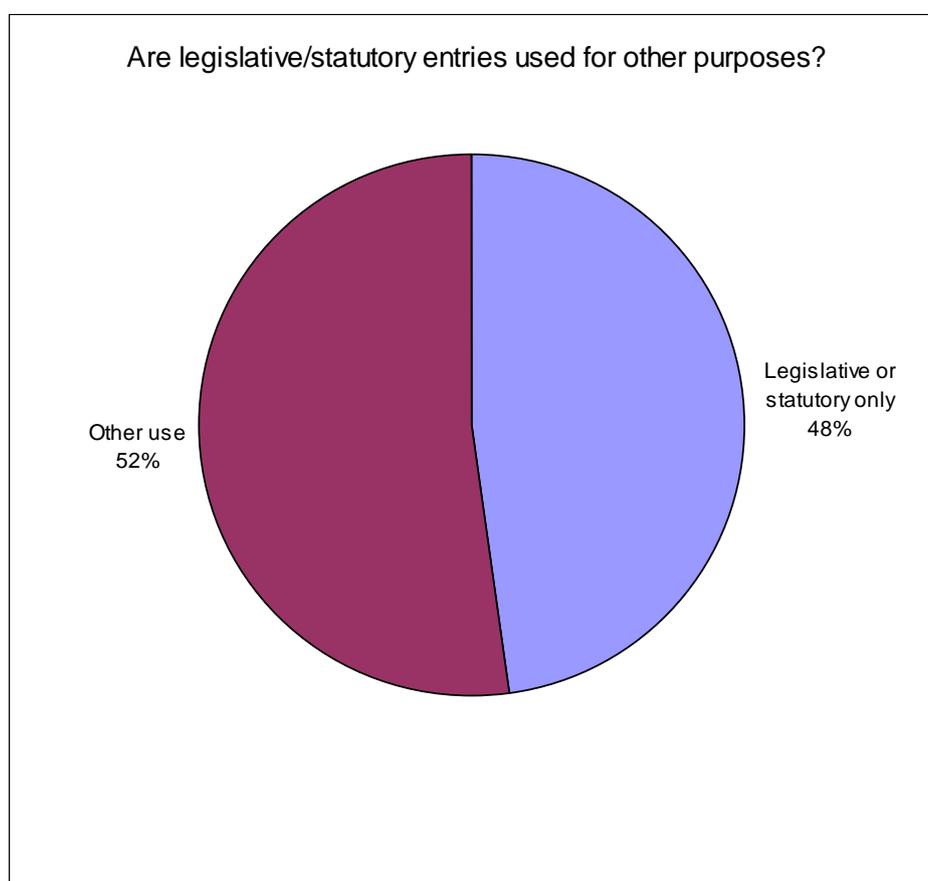


Figure 11 - Are legislative/statutory entries used for other purposes?

## 9. WHAT DOES IT COST?

In 2008/9 the public sector spent at least £300million per annum on monitoring and the voluntary sector contributed at least another £50 million of effort (Table 1). Investments are shown for each of the 17 organisations asked to contribute, by environmental domain for spend in 2008/09. Empty cells indicate no information has been given. Zeros indicate no cost is allocated to that domain. Figures in brackets indicate contribution in kind. Italics indicate where the secretariat has estimated the domain split. Please refer to <http://www.ukeof.org.uk/financing.aspx> for more

information on the background on this work and the guidelines used to calculate these figures.

**Table 1 Estimate of public sector investments in environmental observation activities (2008/9)**

Organisation	Domain						Investment per Organisation (£million)		
	Atmosphere	Biosphere	Cryosphere	Lithosphere	Freshwater (inc Groundwater)	Marine	Direct investment	Contributions in kind	Max. investment (inc. contributions in kind)
Agri-Food and Biosciences Institute (ABFI)					1.1	2.9	4.0		4.0
Countryside Council for Wales (CCW)									0.0
Centre for Environment, Fisheries and Aquaculture Science (CEFAS)						7.4	7.4		7.4
Department of Energy and Climate Change (DECC)	0.3	0.0	0.0	0.0	0.0	1.1	1.4		1.4
Department for Environment, Food and Rural Affairs (Defra)	8.0	13.7	0.0	2.7	7.2	35.0	66.6		66.6
Department of Environment for Northern Ireland (DOENI)	0.8	3.1	0.0	0.2	4.2	1.6	9.9		9.9
Environment Agency (EA)	0.9	0.1	0.0	0.1	58.3	7.0	66.4		66.4
Forestry Commission (FC)	0.0	1.7	0.0	0.0	0.0	0.0	1.7		1.7
Joint Nature Conservation Committee (JNCC)	0.0	1.4 (16.2)	0.0	0.0	0.0	0.0	1.4	16.2	17.6
Marine Scotland (MS) -previously FRS						4.1	4.1		4.1
Met Office	43.8					2.0	45.8		45.8
Natural England (NE)		8.8 (26.5)				0.3 (0.1)	9.1	26.6	35.7
Natural Environment Research Council (NERC)	12.0	9.3	1.6	10.0	8.4	10.6	51.9		51.9
Scottish Environment Protection Agency (SEPA)	0.3	0.1	0.0	0.1	17.1	5.0	22.6		22.6
Scottish Government (SG)	0.0	0.2	0.0	0.2	0.0	0.0	0.4		0.4
Scottish Natural Heritage (SNH)	0.0	0.8	0.0	0.0	0.1	0.5	1.4		1.4
Welsh Assembly Government (WAG)	0.1	0.3	0.0	0.0	0.0	0.2	0.6		0.6
<b>Investment per domain (£million)</b>	<b>66.2</b>	<b>39.5</b>	<b>1.6</b>	<b>13.3</b>	<b>96.3</b>	<b>77.7</b>	<b>294.6</b>		
<b>Contributions in kind</b>	<b>0.0</b>	<b>42.7</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>		<b>42.8</b>	
<b>Max. investment at this stage (inc. contributions in kind)</b>	<b>66.2</b>	<b>82.2</b>	<b>1.6</b>	<b>13.3</b>	<b>96.3</b>	<b>77.8</b>			<b>337.4</b>

**Caveats to Financial Table (2008/9)**

1. CCW has not been able to provide financial information.
2. No organisation was able to give an accurate breakdown of investments by domain. This reflects the differences in how the activities are managed internally.
3. The domain split is an artificial breakdown and many observations span two domains e.g. freshwater fish could be in freshwater or biosphere. Waste is included in Lithosphere.
4. Contributions in kind have not been given by all organisations, so the figures need amendment.

## **10. CONCLUSION**

The UK-EOF Catalogue has increased the collective knowledge on what the UK is doing in terms of environment monitoring and observations. We now know who funds and who leads what programmes.

We have a more complete picture of the range and scale of observations undertaken across the environmental domains and a better understanding of why observations are being undertaken.

The potential of the catalogue has also been seen by other scientific and policy communities e.g. SEIS, GMES.

The ability to be able to adapt and hold wider socio-economic records has benefited both the natural scientists and the socioeconomic communities. There is still further potential to broaden the contents to include other socio-economic records or other relevant information as required.

Since 2009, over 2000 users have visited the UK-EOF catalogue to access information about environmental observations. The catalogue continues to grow and the content is continually improving as users see the value of the information, and are able to use it to discover data which before was either unknown or hard to find.