



Facilitate Open Science Training for European Research

Martin Donnelly
Digital Curation Centre
University of Edinburgh

Open Access week training event
Royal Holloway University of London
22 October 2014





Facilitate Open Science Training for European Research

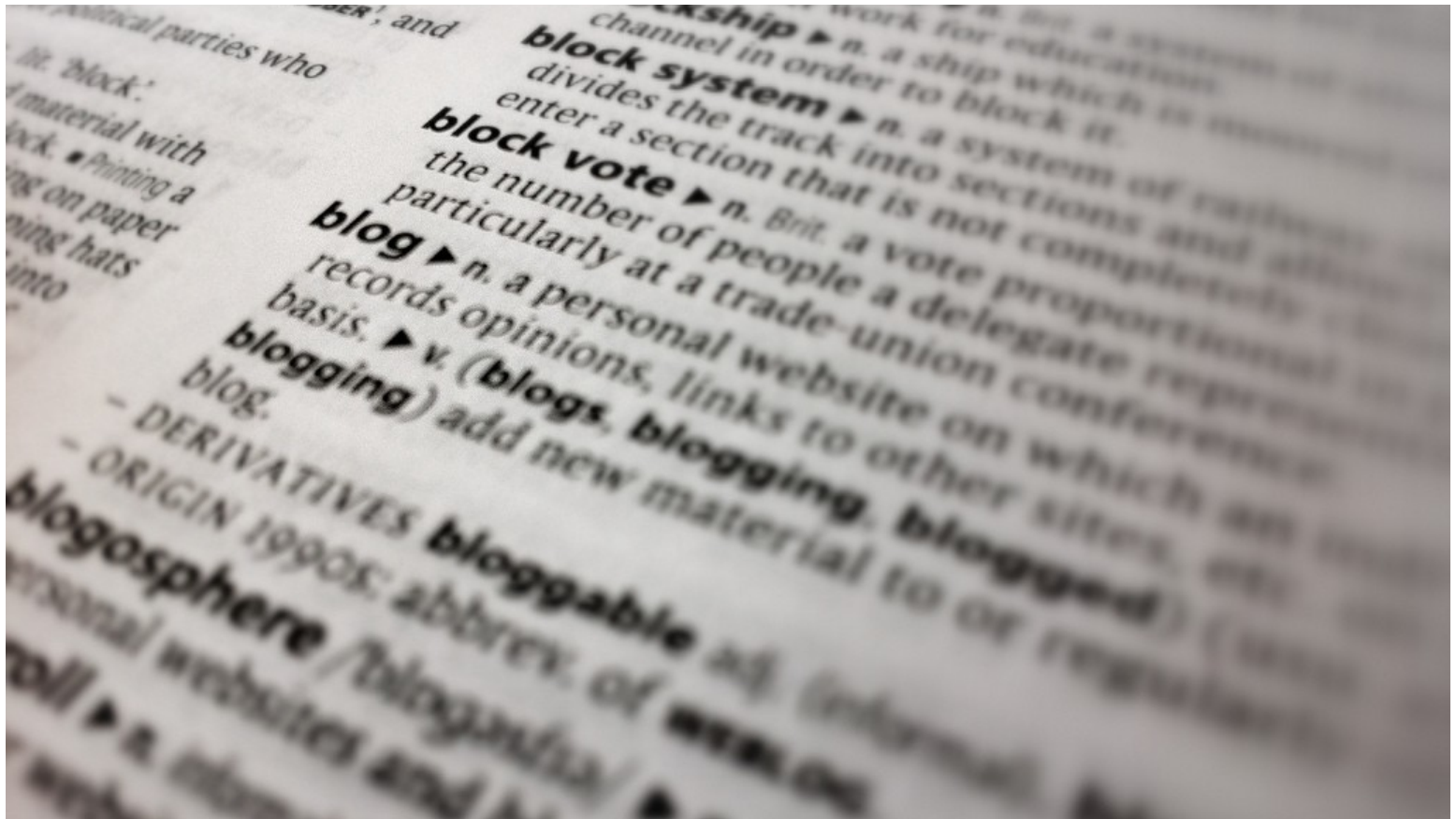
“Research Data Management: Policies and Plans (and Best Practices)”

OVERVIEW

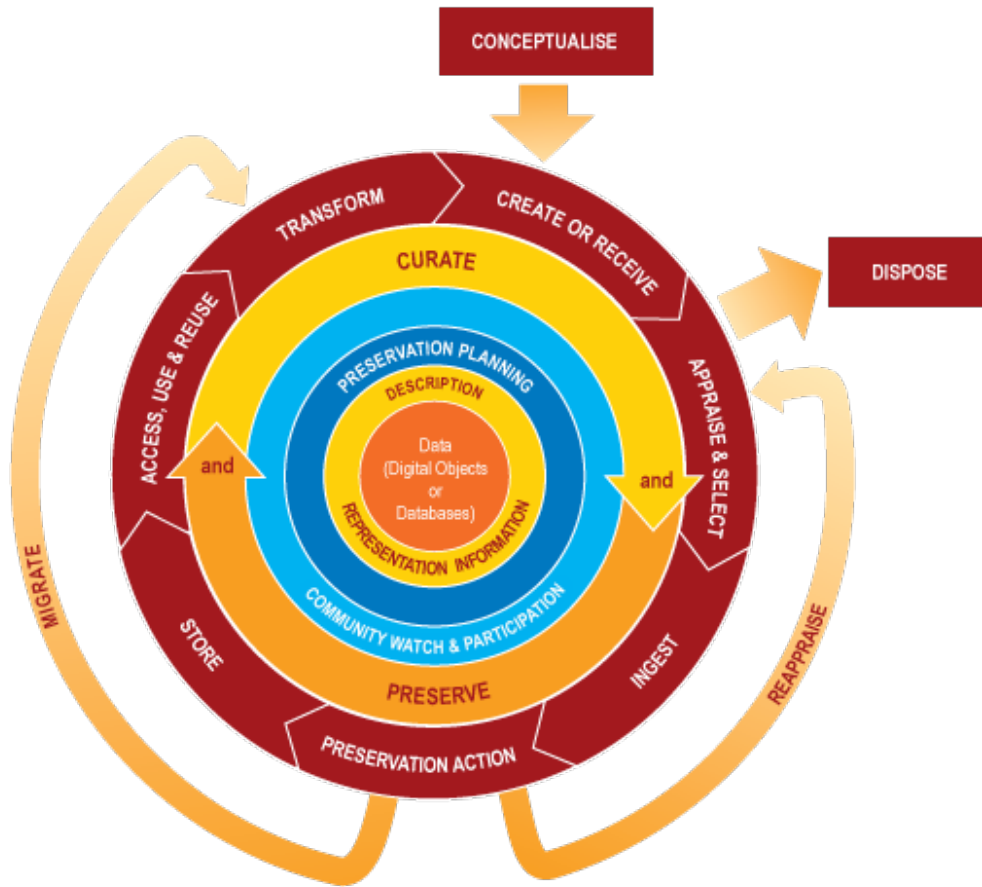
- 1. Definitions
 - Research Data (Management)
 - Types of RDM activities
- 2. Drivers, including funder policies
- 3. Focus on Data Management Planning
- 4. Best Practices for RDM
- 5. About the FOSTER project



1. DEFINITIONS

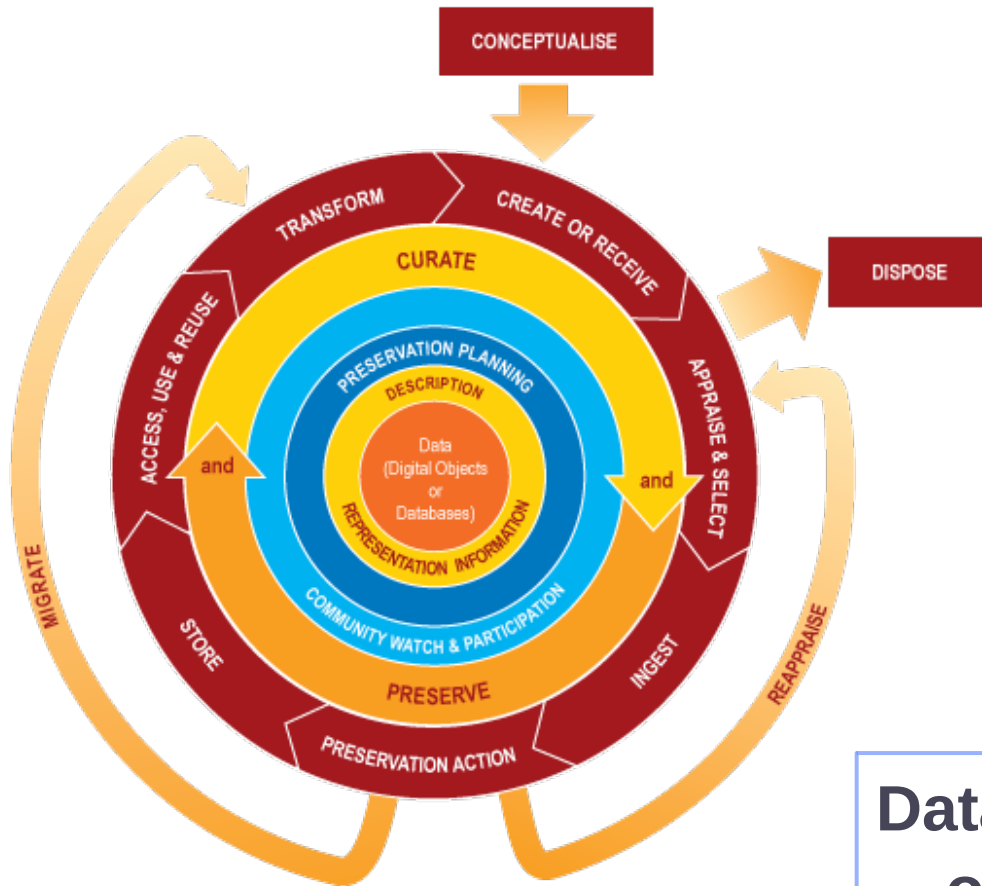


What is RDM? A definition...



“the **active** management and appraisal of data over the lifecycle of scholarly and scientific interest”

What sort of activities?



- **Planning** and **describing** data-related work before it takes place
- **Documenting** your data so that others can find and understand it
- **Storing it safely** during the project
- **Depositing** it in a trusted archive at the end of the project
- **Linking** publications to the datasets that underpin them

Data management is a part of good research practice.

- RCUK *Policy and Code of Conduct on the Governance of Good Research Conduct*

Okay, but what is 'data' exactly?

- Definitions vary from discipline to discipline, and from funder to funder
- Here's a science-centric definition:
 - “Research data is defined as recorded **factual** material commonly retained by and accepted in the scientific community as necessary to **validate** research findings” (EPSRC policy framework on research data)
- And another from the visual arts:
 - “Evidence which is used or created to generate new knowledge and interpretations. '**Evidence**' may be intersubjective or subjective; physical or emotional; persistent or ephemeral; personal or public; explicit or tacit; and is consciously or unconsciously referenced by the researcher at some point during the course of their research.”

(Leigh Garrett, KAPTUR project: see

<http://kaptur.wordpress.com/2013/01/23/what-is-visual-arts-research-data-revisited/>)



Goodbye data, hello research objects?

- “Research object” is a term that is gaining in popularity, not least in the humanities where the relevance of the term ‘data’ is not always recognised...
- Research objects can comprise any supporting material which underpins or otherwise enriches the (written) outputs of research
 - Data (numeric, written, audiovisual....)
 - Software code
 - Workflows and methodologies
 - Slides, logs, lab books, sketchbooks, notebooks, you name it!
- See <http://www.researchobject.org/> for more info

Helicopter view: What are the benefits of active RDM?

- **TRANSPARENCY:** The evidence that underpins research can be made open for anyone to scrutinise, and attempt to replicate findings.
- **EFFICIENCY:** Data collection can be funded once, and used many times for a variety of purposes.
- **RISK MANAGEMENT:** A pro-active approach to data management reduces the risk of inappropriate disclosure of sensitive data, whether commercial or personal.
- **PRESERVATION:** Lots of data is unique, and can only be captured once. If lost, it can't be



2. DRIVERS FOR RDM

- Technological developments
- Value for money / Return on investment
 - Government
 - Research funders
- Risk management
- Transparency, integrity and good scholarly practice



Technology

- Developments in sensor technology, networking and digital storage enable new research and scientific paradigms
- As costs also fall, possibilities for data sharing, citation and re-use become much more widespread
- Journals dedicated solely to publishing data have even started to appear. That's not to say it's an entirely new thing: journals have always published data, just never before at such scale...



An earth science open access data journal

 **Geoscience Data Journal** Open Access

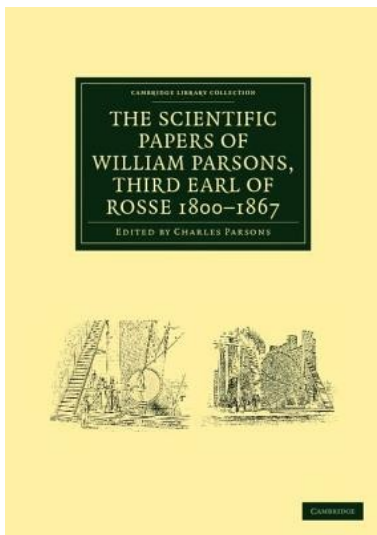
Open access to earth science data papers cross-linked to, and citing, datasets deposited in approved data centres.

Open for submissions. Geoscience Data Journal will publish its first papers in Summer 2012



www.geosciencedata.org  WILEY Open Access

Rosse



from
*Philosophical
 Transactions of
 the Royal Society,*
 (MDCCCLXI) (or
 1861 if you'd
 prefer)

154 EARL OF ROSSE ON THE CONSTRUCTION OF SPECULA OF 6-FEET APERTURE,

Number in Herschel's Catalogue.	Number of times observed.	Description.																								
53	1	Sept. 19, 1857. S; R; vF; bM.																								
54	2	Nov. 22, 1854. pB; vS; R.																								
59	3	Dec. 22, 1848. 3 neb. in line, 2 of them "nova." Oct. 23, 1856. 1st is R; pB; bM; and has nucleus; 2nd bM; E, * involved; 3rd F; IE; bM.																								
60	1	Nov. 22, 1854. S; R; bM.																								
65	3	Sept. 18, 1857. S; pB. disc. in vF. haze of mottled neby.																								
69 } 70 }	7	Oct. 3, 1856. 60 is S; 70 is R; with B. nucleus; 70 is F; E. and patchy. I sometimes thought it was formed of two knots involved in F. neby; there appears to be a nebulous connexion between them all. Nov. 15, 1857. The silvered mirror shows the object brighter than before, but no new details: definition bad.																								
71	7	Suspect spirality: light unequal.																								
72	3	Oct. 26, 1854. a F. object with two nuclei. Nov. 29, 1850. α is vibM; β has stellar point or nucleus. I suspect δ to be a F. neb.																								
78 } 79 }	4	<table border="1"> <thead> <tr> <th></th> <th>Pos.</th> <th>Dist.</th> </tr> </thead> <tbody> <tr> <td>$\alpha\beta$</td> <td>219"</td> <td>5' 35"</td> </tr> <tr> <td>$\alpha\gamma$</td> <td>315</td> <td>1 8</td> </tr> <tr> <td>$\alpha\delta$</td> <td>81</td> <td>0 44</td> </tr> </tbody> </table>		Pos.	Dist.	$\alpha\beta$	219"	5' 35"	$\alpha\gamma$	315	1 8	$\alpha\delta$	81	0 44												
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$\alpha\gamma$	315	1 8																								
$\alpha\delta$	81	0 44																								
80	1	Nov. 3, 1855. 3 neb. nearly in line, sp, n.f.; β is bM, and IE. p. and f; α is R; bM; with a d. * np, and is the largest of the 3; ϵ is S; F; R; δ is a *.																								
84 } 85 } 86 }	4	Oct. 3, 1856. pL; not vF. Its brightest part is a line running diagonally, and there is a knot at either end; believed to be a spiral. Nov. 4, 1850. <table border="1"> <thead> <tr> <th></th> <th>Pos.</th> <th>Dist.</th> </tr> </thead> <tbody> <tr> <td>$\alpha\beta$</td> <td>169"</td> <td>2' 19"</td> </tr> <tr> <td>$\beta\gamma$</td> <td>160</td> <td>4 22</td> </tr> <tr> <td>$\gamma\gamma'$</td> <td>201</td> <td>0 34</td> </tr> <tr> <td>$\gamma\delta$</td> <td>157</td> <td>3 19</td> </tr> <tr> <td>$\gamma\epsilon$</td> <td>176</td> <td>5 32</td> </tr> <tr> <td>$\epsilon\epsilon'$</td> <td>199</td> <td>1 41</td> </tr> <tr> <td>$\epsilon\epsilon''$</td> <td>79</td> <td>4 55</td> </tr> </tbody> </table>		Pos.	Dist.	$\alpha\beta$	169"	2' 19"	$\beta\gamma$	160	4 22	$\gamma\gamma'$	201	0 34	$\gamma\delta$	157	3 19	$\gamma\epsilon$	176	5 32	$\epsilon\epsilon'$	199	1 41	$\epsilon\epsilon''$	79	4 55
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87	3	Oct. 26, 1854. A d. neb., both S; R; bM.																								
89	8	A cl. with much unresolved neby.																								
90	1	lbM.																								
91 } 92 }	1	3 neb. in a triangle.																								
96	6	Oct. 26, 1854. Lenticular n. and s. Thought I saw a * at times in centre (1/4-inch single lens); a lp. this is another vF. ray, np, sf, and which has no nucleus. Oct. 16, 1855. vF; E. n. and s; has nucleus; * in n. end. Nov. 3, 1855. mE; pB. nucleus, and * in n. end; np. this neb. is a * of the 9th mag., and about the same distance p. this * is another neb. vF; mE. Dec. 7, 1855. Seen as before: comp. neb. verified. Oct. 23, 1856. F. ray has nucleus and a * in n. end. Sept. 18, 1857. E. n. and s; another vF. ray p, which is E. np. sf.																								
98	1	vF; R; S.																								
99	1	Oct. 3, 1856. S; F; R; bM; has nucleus.																								
103	3	Is n. of the 3rd of a group of 4 *s in line; 3 "nova" near.																								
104	1	Dec. 6, 1850. A β 239 7' 38" Dec. 7, 1850. $\beta\delta$ 40 4 6 $\beta\epsilon$ 81 9 19 A β 30 7 43																								
105 } 106 } 108 }	8	Oct. 23, 1856. 6 neb., all visible at once in finder eyepiece; 2 of them E., the others S; R; bM. Dec. 11, 1854. vmE; bM (speculum dewed).																								
112	6	A variety of new nebulae found, but observations too voluminous to transcribe. Sketch made, but no interesting details. Nov. 30, 1850. vF. and p. a quadruple *. Oct. 23, 1851. 3 *s f. neb.; light unequal. Sept. 16, 1852. 2' diameter; several *s in it; probably a F. cl.																								

* This should be, I think, $\delta\zeta$. A S. d. neb. suspected below at α' .

AND A SELECTION FROM THE OBSERVATIONS MADE WITH THEM. 155

Number in Herschel's Catalogue.	Number of times observed.	Description.																																																																								
113 } 114 } 116 } 121 }	2	Both have nuclei; "nova" near. Nov. 16, 1857. 113 is E. p. and f; * closely sp: 114 is R, with ragged edge and bM; "nova;" S; R; bM.																																																																								
116	1	Oct. 3, 1826. The p. one is a pB. S. disc in F. outlying neby. The f. one is R; bM.																																																																								
116	1	Dec. 18, 1851. s. end of neb. is like a brush or broom with a split.																																																																								
116 } 120 }	2	4 neb. found, 2 have nuclei. 118 is S; R; 120 has 2 *s on np. edge; E. p. and f.																																																																								
119	1	Dec. 9, 1854. pL; pB; bM to a nucleus.																																																																								
123	2	Sept. 18, 1857. Rough sketch made: mE. np, sf; a F. triple * f.																																																																								
128	3	Nov. 28, 1856. L; B; mE; B. nucleus. "Nova" f.																																																																								
131	27	Nov. 29, 1850. <table border="1"> <thead> <tr> <th></th> <th>Pos.</th> <th>Dist.</th> </tr> </thead> <tbody> <tr> <td>$\alpha\beta$</td> <td>215"</td> <td>0' 51"</td> </tr> <tr> <td>$\alpha\gamma$</td> <td>163</td> <td>0 56</td> </tr> <tr> <td>$\alpha\delta$</td> <td>160</td> <td>2 56</td> </tr> <tr> <td>$\alpha\epsilon$</td> <td>178</td> <td>3 07</td> </tr> <tr> <td>$\alpha\zeta$</td> <td>192</td> <td>3 44</td> </tr> <tr> <td>$\alpha\eta$</td> <td>206</td> <td>4 14</td> </tr> <tr> <td>$\alpha\theta$</td> <td>224</td> <td>4 59</td> </tr> <tr> <td>$\alpha\mu$</td> <td>147</td> <td>5 34</td> </tr> <tr> <td>$\alpha\nu$</td> <td>179</td> <td>5 56</td> </tr> <tr> <td>$\alpha\kappa$</td> <td>201</td> <td>6 42</td> </tr> <tr> <td>$\mu\nu$</td> <td>143</td> <td>6 28</td> </tr> <tr> <td>$\alpha\lambda$</td> <td>287</td> <td>4 30</td> </tr> <tr> <td>$\alpha\omega$</td> <td>341</td> <td>6 45</td> </tr> <tr> <td>$\alpha 2$</td> <td>5</td> <td>5 18</td> </tr> <tr> <td>$\alpha\psi$</td> <td>357</td> <td>4 42</td> </tr> <tr> <td>$\alpha 3$</td> <td>51</td> <td>11 0</td> </tr> <tr> <td>$\alpha\phi$</td> <td>38</td> <td>9 50</td> </tr> <tr> <td>αr</td> <td>58</td> <td>11 16</td> </tr> <tr> <td>αw</td> <td>161</td> <td>5 29</td> </tr> <tr> <td>$\alpha x'$</td> <td>149</td> <td>6 53</td> </tr> <tr> <td>$\alpha\beta'$</td> <td>172</td> <td>6 32</td> </tr> <tr> <td>$\alpha\gamma'$</td> <td>174</td> <td>7 18</td> </tr> <tr> <td>$\alpha\delta'$</td> <td>205</td> <td>2 22</td> </tr> </tbody> </table>		Pos.	Dist.	$\alpha\beta$	215"	0' 51"	$\alpha\gamma$	163	0 56	$\alpha\delta$	160	2 56	$\alpha\epsilon$	178	3 07	$\alpha\zeta$	192	3 44	$\alpha\eta$	206	4 14	$\alpha\theta$	224	4 59	$\alpha\mu$	147	5 34	$\alpha\nu$	179	5 56	$\alpha\kappa$	201	6 42	$\mu\nu$	143	6 28	$\alpha\lambda$	287	4 30	$\alpha\omega$	341	6 45	$\alpha 2$	5	5 18	$\alpha\psi$	357	4 42	$\alpha 3$	51	11 0	$\alpha\phi$	38	9 50	αr	58	11 16	αw	161	5 29	$\alpha x'$	149	6 53	$\alpha\beta'$	172	6 32	$\alpha\gamma'$	174	7 18	$\alpha\delta'$	205	2 22
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132 } 134 } 135 } 136 }	1	For previous observations see Transactions, Part II. 1850. Sept. 13, 1850. Large spiral full of knots; to n.f. is a S. neb. B. which on a very good night might appear attached to spiral, than which it is brighter. Oct. 11, 1850. Spiral arrangement not clearly seen. Nov. 27, 1850. Arms of spiral scarcely seen; fog. Nov. 30, 1850. Spiral form very indistinct; wind very high from a. Oct. 22, 1851. Viewed for drawing, I should not have seen the spiral arrangement had I not observed it before. Oct. 25, 1851. Neby. extends for several minutes all round, perhaps for half a degree in radius. Oct. 29, 1851. Observed for drawing. Dec. 14, 1851. Sketched. Dec. 26, 1851. Drawn. Dec. 7, 1855. This neb. reaches in length through at least a field and a half of finder eyepiece. Mr. Stoney's drawing leaves out a great deal of the neby. about the centre, and * suspected to left of centre of the trapezium of *s, perhaps others also. Nov. 15, 1857. There are 3 *s about the principal nucleus. Dec. 7, 1857. Carefully observed, with a view to a new sketch. Dec. 18, 1857. Carefully observed, and my sketch proceeded with. See fig. 10, Plate XXVI.																																																																								
137 } 138 }	2	Nov. 29, 1850. A S. neb. or cl. with 3 *s in it. $R 1^h 26^m$. $N.P.D. 60^{\circ} 35'$.																																																																								
139 } 140 }	2	Oct. 26, 1854. Both S; R; B.																																																																								
141 } 142 }	8	Sought for four times; not found. Dec. 13, 1848. Rough sketch made. Spiral? Dec. 14, 1848. Confirmed last night's observation; feel confident it is a spiral. Oct. 24, 1851. Centre formed of *s: easily seen to be such: several *s through the neb.																																																																								
143	1	Oct. 3, 1856. vS; F; R; bM; had a * close to n. edge.																																																																								
147	2	Nov. 30, 1856. S; R; bM. to a nucleus.																																																																								

MDCCCLXI.

5 D

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FOSTER

Repurposing / VfM via data re-use

Ships' log books build picture of climate change 14 October 2010

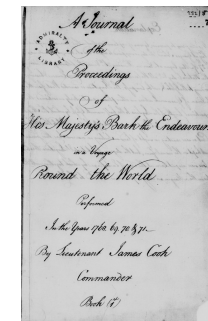
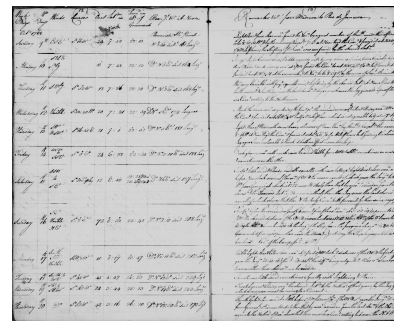
You can now help scientists understand the climate of the past and unearth new historical information by revisiting the voyages of First World War Royal Navy warships.

Visitors to OldWeather.org will be able to retrace the routes taken by any of 280 Royal Navy ships. These include historic vessels such as HMS Caroline, the last survivor of the 1916 Battle of Jutland still afloat. By transcribing information about the weather and interesting events from images of each ship's logbook, web volunteers will help scientists build a more accurate picture of how our climate has changed over the last century.

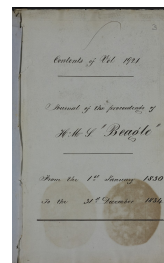
<http://www.nationalarchives.gov.uk/news/503.htm>



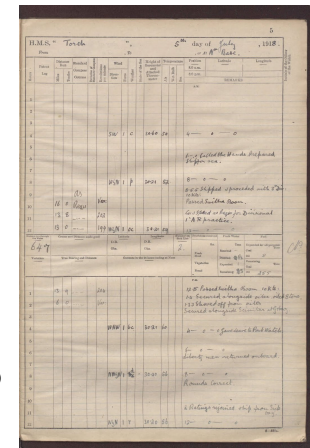
Detail from Royal Navy Recruitment poster, RNVR Signals branch, 1917 (Catalogue reference: ADM 1/8331)



Endeavour, 1768-71 (Captain Cook)



HMS Beagle, 1830-34



HMS Torch, 1918

Government pressure/support

6.9 The Research Councils expect the researchers they fund to deposit published articles or conference proceedings in an open access repository at or around the time of publication. But this practice is unevenly enforced. Therefore, as an immediate step, **we have asked the Research Councils to ensure the researchers they fund fulfil the current requirements.** Additionally, the Research Councils have now agreed to invest £2 million in the development, by 2013, of a UK 'Gateway to Research'. In the first instance this will allow ready access to Research Council funded research information and related data but it will be designed so that it can also include research funded by others in due course. The Research Councils will work with their partners and users to ensure information is presented in a readily reusable form, using common formats and open standards.



<http://www.bis.gov.uk/assets/biscore/innovation/docs/i/11-1387-innovation-and-research-strategy-for-growth.pdf>

Funder principles/expectations

The screenshot shows the Research Councils UK website. The header includes the logo and the tagline 'Excellence with Impact'. The main content area is titled 'RCUK Common Principles on Data Policy' and contains an introductory paragraph and a list of seven principles. A sidebar on the left lists various navigation options, and a search bar is visible on the right.

RESEARCH COUNCILS UK Excellence with Impact

Home > Research and Funding > RCUK Common Principles on Data Policy

RCUK Common Principles on Data Policy

Making research data available to users is a core part of the Research Councils' remit and is undertaken in a variety of ways. We are committed to transparency and to a coherent approach across the research base. These RCUK common principles on data policy provide an overarching framework for individual Research Council policies on data policy.

Principles

- Publicly funded research data are a public good, produced in the public interest, which should be made openly available with as few restrictions as possible in a timely and responsible manner that does not harm intellectual property.
- Institutional and project specific data management policies and plans should be in accordance with relevant standards and community best practice. Data with acknowledged long-term value should be preserved and remain accessible and usable for future research.
- To enable research data to be discoverable and effectively re-used by others, sufficient metadata should be recorded and made openly available to enable other researchers to understand the research and re-use potential of the data. Published results should always include information on how to access the supporting data.
- RCUK recognises that there are legal, ethical and commercial constraints on release of research data. To ensure that the research process is not damaged by inappropriate release of data, research organisation policies and practices should ensure that these are considered at all stages in the research process.
- To ensure that research teams get appropriate recognition for the effort involved in collecting and analysing data, those who undertake Research Council funded work may be entitled to a limited period of privileged use of the data they have collected to enable them to publish the results of their research. The length of this period varies by research discipline and, where appropriate, is discussed further in the published policies of individual Research Councils.
- In order to recognise the intellectual contributions of researchers who generate, preserve and share key research datasets, all users of research data should acknowledge the sources of their data and abide by the terms and conditions under which they are accessed.
- It is appropriate to use public funds to support the management and sharing of publicly-funded research data. To maximise the research benefit which can be gained from limited budgets, the mechanisms for these activities should be both efficient and cost-effective in the use of public funds.

1. Public good
2. Preservation
3. Discovery
4. Confidentiality
5. First use
6. Recognition
7. Public funding

Six of the seven RCUK councils require data management plans (or equivalent), as do Wellcome Trust, Cancer Research UK, EC, and more...

UK funder policies overview

● Full Coverage
 ◐ Partial Coverage
 ○ No Coverage

Research Funders	Policy Coverage		Policy Stipulations					Support Provided			
	Published outputs	Data	Time limits	Data plan	Access/sharing	Long-term curation	Monitoring	Guidance	Repository	Data centre	Costs
AHRC	●	●	●	●	●	◐	○	●	○	◐	◐
BBSRC	●	●	●	●	●	●	●	●	●	◐	●
CRUK	●	●	●	●	●	●	●	◐	●	○	○
EPSRC	●	●	●	◐	●	●	●	◐	○	○	●
ESRC	●	●	●	●	●	●	●	●	●	●	◐
MRC	●	●	●	●	●	●	○	◐	●	○	◐
NERC	●	●	●	●	●	●	●	●	●	●	◐
STFC	●	●	●	●	●	●	●	◐	●	◐	◐
Wellcome Trust	●	●	●	●	●	●	●	●	●	◐	●

<http://www.dcc.ac.uk/resources/policy-and-legal/overview-funders-data-policies>

Horizon 2020

- Horizon 2020 includes a data management planning pilot, spanning three phases
 - http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf
- All project proposals submitted to “Research and Innovation actions” as well as “Innovation actions” should include a section on research data management which is evaluated under the criterion ‘Impact’
- Where relevant, applicants must provide a short, general outline of their policy for data management, including the following issues:
 - What types of data will the project generate/collect?
 - What standards will be used?
 - How will this data be exploited and/or shared/made accessible for verification and re-use? If data cannot be made available, explain why.
 - How will this data be curated and preserved?
- A detailed description and scope of the Open Research Data Pilot requirements is provided on the Participants



Guidelines on Data Management in Horizon 2020

Version 1.0
11 December 2013



Risk management

Controversial FOI requests to...

- University of East Anglia
- Queens University Belfast
- University of Stirling



WIKIPEDIA
The Free Encyclopedia

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- Current events
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 - About Wikipedia
 - Community portal
 - Recent changes
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- Print/export
- Languages

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Climatic Research Unit email controversy

From Wikipedia, the free encyclopedia

The **Climatic Research Unit email controversy** (also known as "**Climategate**")^{[2][3]} began in November 2009 with the **hacking** of a server at the **Climatic Research Unit** (CRU) at the **University of East Anglia** (UEA) by an external attacker.^{[4][5]} Several weeks before the **Copenhagen Summit** on climate change, an unknown individual or group breached CRU's server and copied thousands of emails and computer files to various locations on the Internet.

The story was first broken by **climate change critics** on their blogs,^[6] with columnist **James Delingpole** popularising the term "Climategate" to describe the controversy.^[7] Climate change critics and others denying the significance of human caused climate change argued that the emails showed that global warming was a **scientific conspiracy**, in which they alleged that scientists manipulated climate data and attempted to suppress critics.^{[8][9]} The accusations were rejected by the CRU, who said that the emails had been taken out of context and merely reflected an honest exchange of ideas.^{[10][11]}

The mainstream media picked up the story as negotiations over **climate change mitigation** began in Copenhagen on 7 December.^[12] Because of the timing, scientists, policy makers, and public relations experts said that the release of emails was a smear

Climatic Research Unit email controversy

Date	17 November 2009
Location	Climatic Research Unit, University of East Anglia
Also known as	"Climategate"
Inquiries	House of Commons Science and Technology Committee (UK) ^[1] Independent Climate Change Email Review (UK) International Science Assessment Panel (UK) Pennsylvania State University (US) United States Environmental Protection Agency (US) Department of Commerce (US)

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University told to hand over tree ring data

Queen's University in Belfast has been told by the Information Commissioner to hand over 40 years of research data on tree rings, used for climate research.



Queen's University has been told to hand over research data

Douglas Keenan, from London, had asked for the information in 2007 under the Freedom of Information Act.

Mr Keenan is well-known for his questioning of scientists who propose a human cause for climate change.

Queen's University refused his request saying it was too expensive, but it is now considering its position.

The university claimed that as the information was unfinished, had intellectual property rights and was commercially confidential

SEE ALSO

- Q&A: Professor Phil Jones 13 Feb 10 | Science & Environment
- Climate scientist defends results 02 Feb 10 | Norfolk

RELATED INTERNET LINKS

- Douglas Keenan's website
- Queen's University
- Information Commissioner

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- Two in court over Twelfth riots
- Major arrests promised over riots
- Riot tactics defended by police

1 September 2011 Last updated at 12:31

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University fights Philip Morris tobacco research bid

A Scottish university is battling a tobacco giant's attempt to gain access to its research into the smoking habits of thousands of teenagers.

Philip Morris International (PMI), which makes Marlboro cigarettes, has submitted Freedom of Information (FoI) requests to Stirling University.

The research examines why the teenagers start smoking and what they think of tobacco marketing.



The university research examines why teenagers start smoking



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Charles Arthur and Phillip Inman

The Guardian, Thursday 18 April 2013 21.10 BST

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Meet Carmen Reinhart and Kenneth Rogoff, the Harvard professors who thought they had austerity licked - and Thomas Herndon, the student who proved them wrong

Tim Walker looks at the postgraduate whose work caught out two of the biggest names in economics

TIM WALKER | MONDAY 22 APRIL 2013

- Reinhart & Rogoff (2010) "Growth in a Time of Debt" - paper not peer-reviewed, data not initially made available...
- Very influential and repeatedly cited by politicians to lend weight to economic strategy
- Multiple issues (selective exclusions, unconventional weightings, coding error) identified by a postgrad researcher attempting to replicate the paper's findings
- Widespread embarrassment, but at least the errors were discovered!

3. FOCUS ON DATA MANAGEMENT PLANNING (DMP)

- Data management planning is the process of planning, describing and communicating the activities carried out during the research lifecycle in order to...
 - Keep sensitive data safe
 - Maximise data's reuse potential
 - Support longer-term preservation
- Research funders (and other bodies) often ask for a short statement/plan to be submitted alongside grant applications. HEIs increasingly ask their researchers to do this too.
- In general, they want to know:
 - What kinds of data will be created, and how
 - How will the data be documented and described?
 - Are there ethical or Intellectual Property issues?
 - What are the arrangements for data sharing and reuse?
 - What is the strategy for longer-term preservation?
- But they all have different requirements and emphases, and express them in different ways...

DMP requirements / expectations

- 6 of the 7 RCUK councils require data management plans at the application stage
 - NERC also expect an expanded DMP during the project, prepared in collaboration with the appropriate NERC data centre
 - EPSRC don't require DMPs to be submitted to them, but do expect them to be created and maintained
- Other major funders such as Cancer Research UK and the Wellcome Trust also require DMPs
- Successful Horizon 2020 projects (within the pilot areas) must produce three iterations of a DMP: one within 6 months of award, one midway through, and one at end of project

DMP resources



- Guidance, e.g. “How-To Develop a Data Management and Sharing Plan”
- DCC Checklist for a Data Management Plan: <http://www.dcc.ac.uk/resources/data-management-plans/checklist>



- DMPonline: <https://dmponline.dcc.ac.uk/>
- Links to all DCC DMP resources via <http://www.dcc.ac.uk/resources/data-management-plans>

- Book chapter
 - Donnelly, M. (2012) “Data Management Plans and Planning”, in Pryor (ed.) *Managing Research Data*. London: Facet

4. BEST PRACTICES FOR RDM

DO

Have a plan for your data

Keep backups. Make this easy with automated syncing services like Dropbox, provided your data isn't too sensitive

Describe your data as you collect it. This makes it possible for others to understand it, and for you to do the same a few years down the line

Save your work in open file formats, where possible, and use accepted metadata standards to enable like-with-like comparison

Deposit your data in a data centre or repository, and link it to your publications

DON'T

Make it up as you go along

Carry the only copy around on a memory card, your laptop, your phone, etc

Leave this till later. The quality of metadata decreases with time, and the best metadata is created at the moment of data capture

Invent new 'standards' where community norms already exist

Be afraid to ask for help. This will exist both within your institution, and via national support organisations like the DCC

5. ABOUT THE FOSTER PROJECT



**Facilitate Open Science Training for
European Research**





Facilitate Open Science Training for European Research

OBJECTIVES

- **Support different stakeholders**, especially young researchers, in adopting open access in the context of the European Research Area (ERA) and **in complying with the open access policies and rules of participation set out for Horizon 2020**;
- **Integrate open access principles and practice in the current research workflow** by targeting the young researcher training environment;
- **Strengthen the institutional training capacity** to foster compliance with the open access policies of the ERA and Horizon 2020 (beyond the FOSTER project);
- **Facilitate the adoption, reinforcement and implementation of open access policies** from other European funders, in line with the EC's recommendation, in partnership with PASTEUR4OA project.





Facilitate Open Science Training for European Research

METHODS

- Identifying already existing **contents** that can be reused in the context of the training activities and repackaging, reformatting them to be used within FOSTER, and develop/create/ enhance contents if/where they are needed.
- Creation of the **FOSTER Portal** to support **e-learning, blended learning, self-learning, dissemination of training materials/contents and Helpdesk.**
- Delivery of **face-to-face training**, especially **training trainers/multipliers** that can carry on further training and dissemination activities, within their institutions, countries or disciplinary communities.



THANK YOU

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