Workshop: Open Access zu Forschungsdaten

Heinz Pampel
Sünje Dallmeier-Tiessen

Open-Access-Tage 2009 | Konstanz, 08.10.2009

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Agenda

- Begrüssung und Vorstellung
- Einführung I: Relevanz und Positionen (Pampel)
- Einführung II: Praktische Umsetzung (Dallmeier-Tiessen)
- Diskussion
- Ergebnisse

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Relevanz und Positionen

Heinz Pampel

Open-Access-Tage 2009 | Konstanz, 08.10.2009

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Agenda

- Relevanz
- Positionen
  - Wissenschaftspolitik
  - Disziplinen
  - Infrastruktureinrichtungen

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Relevanz

- Hoher technischer, organisatorischer und finanzieller Aufwand
- Differierender Umgang mit Forschungsdaten
- Umgang mit Forschungsdaten ist verbesserungswürdig
- Mehrheitlich werden die heutigen technischen Möglichkeiten nicht genutzt
- Nachnutzung und Nachprüfbarkeit durch dauerhafte und offene Zugänglichkeit (Open Data)
- Herausforderung für das System Wissenschaft
- Disziplinspezifische Aspekte

[1]

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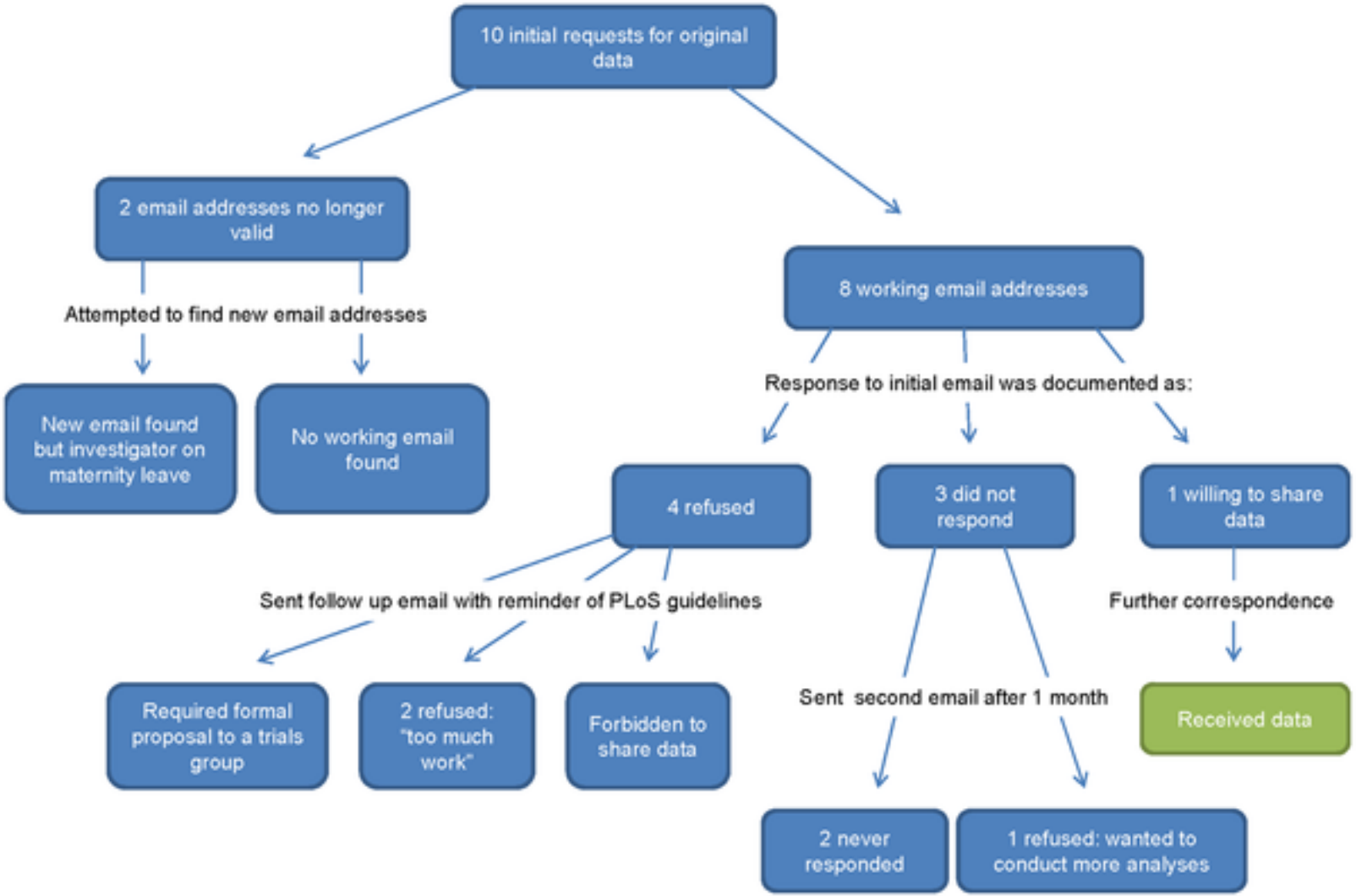
Beispiel



Savage and Vickers: Empirical Study of Data Sharing by Authors Publishing in PLoS Journals, 2009 [2]

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Deutsche Forschungsgemeinschaft (DFG), 1998

- Empfehlung 7

  Primärdaten als Grundlagen für Veröffentlichungen sollen auf haltbaren und gesicherten Trägern in der Institution, wo sie entstanden sind, für zehn Jahre aufbewahrt werden.

- Erläuterungen

  Auf die Aufzeichnungen später zurückgreifen zu können, ist schon aus Gründen der Arbeitsökonomie in einer Gruppe ein zwingendes Gebot. Noch wichtiger wird dies, wenn veröffentlichte Resultate von anderen angezweifelt werden.

[3]

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„Berlin Declaration", 2003

Establishing open access as a worthwhile procedure ideally requires the active commitment of each and every individual producer of scientific knowledge and holder of cultural heritage. Open access contributions include original scientific research results, raw data and metadata, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material.

Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities

Preface

The Internet has fundamentally changed the practical and economic realities of distributing scientific knowledge and cultural heritage. For the first time ever, the Internet now offers the chance to constitute a global and interactive representation of human knowledge, including cultural heritage and the guarantee of worldwide access.

We, the undersigned, feel obliged to address the challenges of the Internet as an emerging functional medium for distributing knowledge. Obviously, these developments will be able to significantly modify the nature of scientific publishing as well as the existing system of quality assurance.

In accordance with the spirit of the Declaration of the Budapest Open Access Initiative, the ECHO Charter and the Bethesda Statement on Open Access Publishing, we have drafted the Berlin Declaration to promote the Internet as a functional instrument for a global scientific knowledge base and human reflection and to specify measures which research policy makers, research institutions, funding agencies, libraries, archives and museums need to consider.

Goals

Our mission of disseminating knowledge is only half complete if the information is not made widely and readily available to society. New possibilities of knowledge dissemination not only through the classical form but also and increasingly through the open access paradigm via the Internet have to be supported. We define open access as a comprehensive source of human knowledge and cultural heritage that has been approved by the scientific community.

In order to realize the vision of a global and accessible representation of knowledge, the future Web has to be sustainable, interactive, and transparent. Content and software tools must be openly accessible and compatible.

Definition of an Open Access Contribution

Establishing open access as a worthwhile procedure ideally requires the active commitment of each and every individual producer of scientific knowledge and holder of cultural heritage. Open access contributions include original scientific research results, raw data and metadata, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material.

[4]

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OECD, 2007

These Principles and Guidelines […] provide broad policy recommendations to the governmental science policy and funding bodies of member countries on access to research data from public funding. They are intended to promote data access and sharing among researchers, research institutions, and national research agencies, while at the same time, recognising and taking into account, the various national laws, research policies and organisational structures of member countries.

[5]

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OECD, 2007

The ultimate goal of these Principles and Guidelines is to improve the efficiency and effectiveness of the global science system. They are not intended to hinder its development with onerous obligations and regulations or impose new costs on national science systems.

[5]

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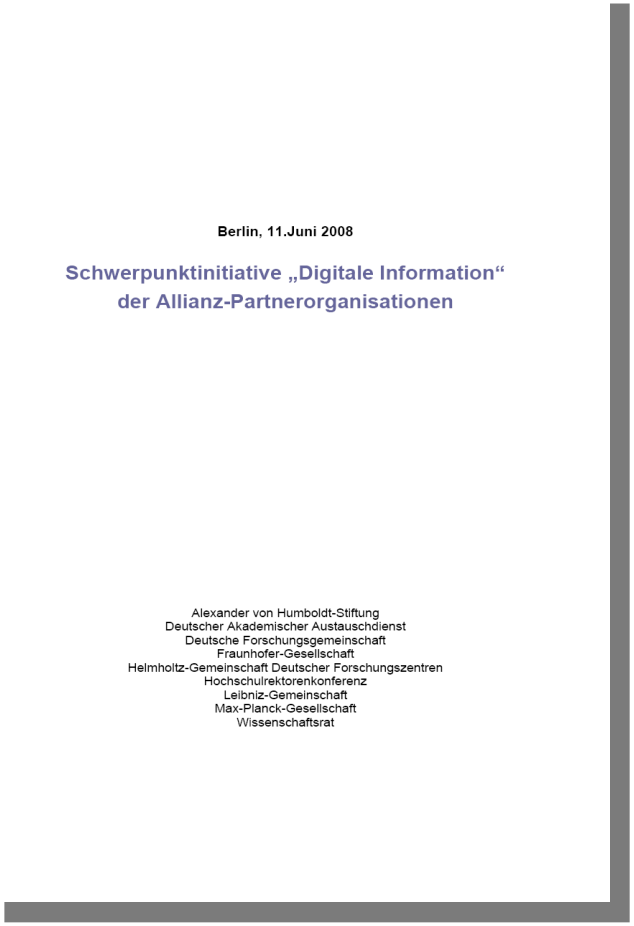
Schwerpunktinitiative „Digitale Information“, 2008

Es ist unbestreitbar, dass viele dieser Daten nach einer relativ kurzen Phase der Auswertung durch Einzelne oder kleine Gruppen dem Vergessen oder gar dem Verfall ausgesetzt sind. Hier sehen alle Wissenschaftseinrichtungen einen dringenden Handlungsbedarf hinsichtlich der systematischen Sicherung, Archivierung und Bereitstellung dieser Daten für die Nachnutzung durch Dritte.


Berlin, 11.Juni 2008

Schwerpunktinitiative „Digitale Information“
der Allianz-Partnerorganisationen

Alexander von Humboldt-Stiftung
Deutscher Akademischer Austauschdienst
Deutsche Forschungsgemeinschaft
Fraunhofer-Gesellschaft
Helmholtz-Gemeinschaft Deutscher Forschungszentren
Hochschulrektorenkonferenz
Leibniz-Gemeinschaft
Max-Planck-Gesellschaft
Wissenschaftsrat

[6]

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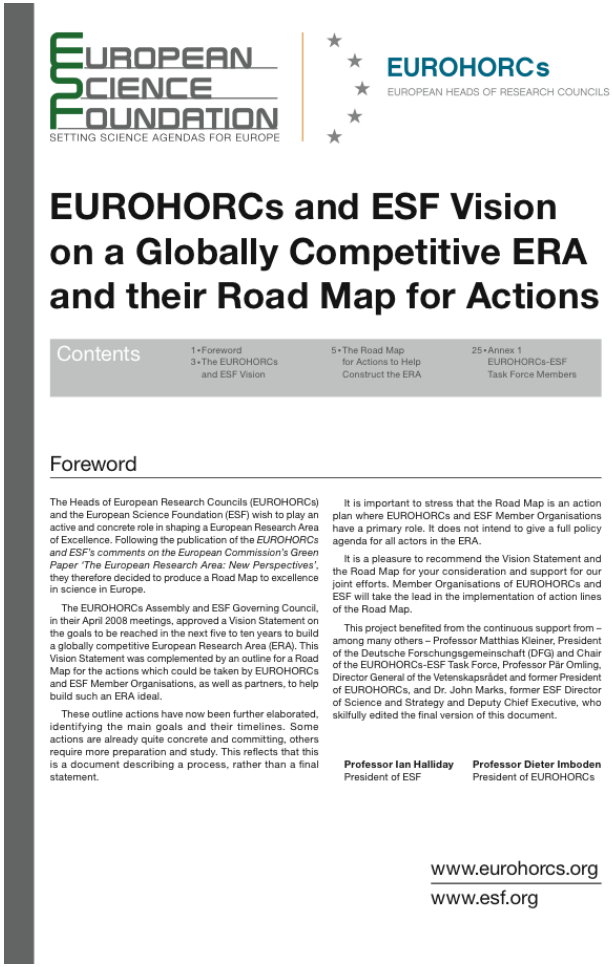
EUROHORCs / ESF, 2009

Permanent preservation and open access, such as promoted by the Alliance for Permanent Access, will be the rule for repositories. EUROHORCs and ESF Member Organisations will address how to best promote and ensure such permanent access to data generated with their funding.



EUROPEAN SCIENCE FOUNDATION
SETTING SCIENCE AGENDAS FOR EUROPE

EUROHORCs
EUROPEAN HEADS OF RESEARCH COUNCILS

EUROHORCs and ESF Vision on a Globally Competitive ERA and their Road Map for Actions

Contents

1 • Foreword
3 • The EUROHORCs and ESF Vision
5 • The Road Map for Actions to Help Construct the ERA
25 • Annex 1 EUROHORCs-ESF Task Force Members

Foreword

The Heads of European Research Councils (EUROHORCs) and the European Science Foundation (ESF) wish to play an active and concrete role in shaping a European Research Area of Excellence. Following the publication of the *EUROHORCs and ESF's comments on the European Commission's Green Paper 'The European Research Area: New Perspectives'*, they therefore decided to produce a Road Map to excellence in science in Europe.

The EUROHORCs Assembly and ESF Governing Council, in their April 2008 meetings, approved a Vision Statement on the goals to be reached in the next five to ten years to build a globally competitive European Research Area (ERA). This Vision Statement was complemented by an outline for a Road Map for the actions which could be taken by EUROHORCs and ESF Member Organisations, as well as partners, to help build such an ERA ideal.

These outline actions have now been further elaborated, identifying the main goals and their timelines. Some actions are already quite concrete and committing, others require more preparation and study. This reflects that this is a document describing a process, rather than a final statement.

It is important to stress that the Road Map is an action plan where EUROHORCs and ESF Member Organisations have a primary role. It does not intend to give a full policy agenda for all actors in the ERA.

It is a pleasure to recommend the Vision Statement and the Road Map for your consideration and support for our joint efforts. Member Organisations of EUROHORCs and ESF will take the lead in the implementation of action lines of the Road Map.

This project benefited from the continuous support from – among many others – Professor Matthias Kleiner, President of the Deutsche Forschungsgemeinschaft (DFG) and Chair of the EUROHORCs-ESF Task Force, Professor Pär Omling, Director General of the Vetenskapsrådet and former President of EUROHORCs, and Dr. John Marks, former ESF Director of Science and Strategy and Deputy Chief Executive, who skilfully edited the final version of this document.

Professor Ian Halliday
President of ESF

Professor Dieter Imboden
President of EUROHORCs

www.eurohorcs.org
www.esf.org

[7]

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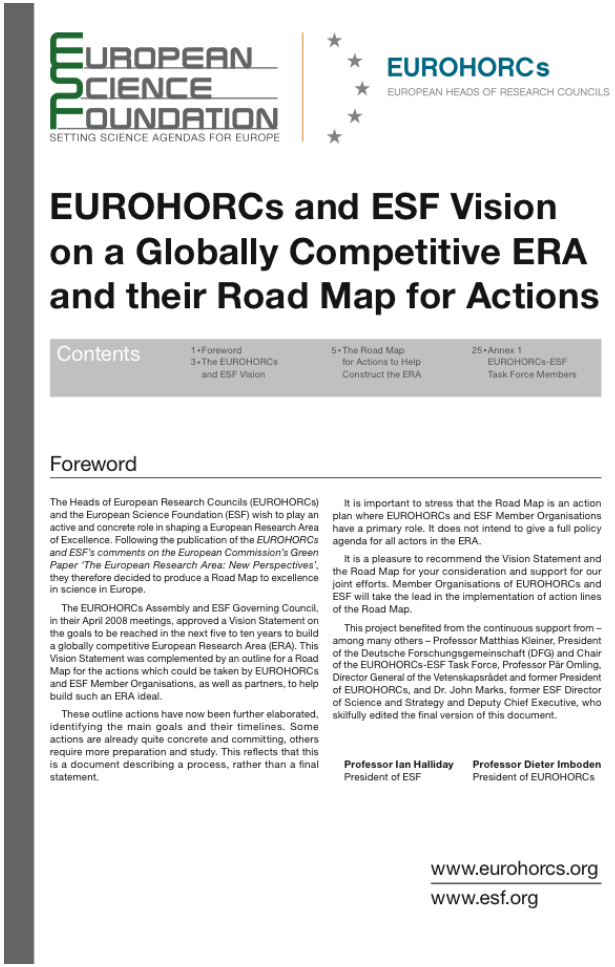
EUROHORCs / ESF, 2009

The collection of research data is a huge investment. Permanent access to such data, if quality controlled and in interoperable formats, will allow better use to be made of this investment because it allows other researchers to (re)use them. Furthermore it allows re-analysis and could play a role in ensuring research integrity.



EUROPEAN SCIENCE FOUNDATION
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www.esf.org

[7]

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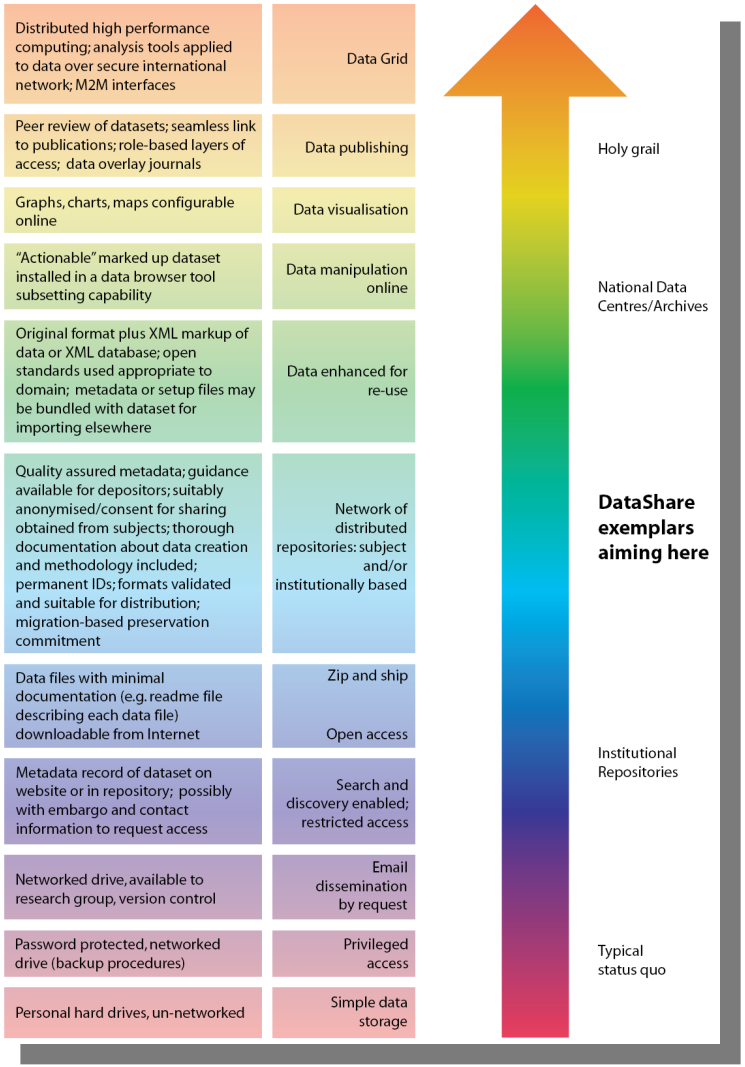
Rice: Data Sharing Continuum, 2007



[8]

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Distributed high performance computing; analysis tools applied to data over secure international network; M2M interfaces	Data Grid	
Peer review of datasets; seamless link to publications; role-based layers of access; data overlay journals	Data publishing	Holy grail
Graphs, charts, maps configurable online	Data visualisation	
"Actionable" marked up dataset installed in a data browser tool subsetting capability	Data manipulation online	National Data Centres/Archives
Original format plus XML markup of data or XML database; open standards used appropriate to domain; metadata or setup files may be bundled with dataset for importing elsewhere	Data enhanced for re-use	
Quality assured metadata; guidance available for depositors; suitably anonymised/consent for sharing obtained from subjects; thorough documentation about data creation and methodology included; permanent IDs; formats validated and suitable for distribution; migration-based preservation commitment	Network of distributed repositories: subject and/or institutionally based	**DataShare exemplars aiming here**
Data files with minimal documentation (e.g. readme file describing each data file) downloadable from Internet	Zip and ship Open access	
Metadata record of dataset on website or in repository; possibly with embargo and contact information to request access	Search and discovery enabled; restricted access	Institutional Repositories
Networked drive, available to research group, version control	Email dissemination by request	
Password protected, networked drive (backup procedures)	Privileged access	Typical status quo
Personal hard drives, un-networked	Simple data storage	

[8]

RIN: Stewardship of digital research data, 2008

- The principles
  1. *Roles and responsibilities*
  2. *Standards and quality assurance*
  3. *Access, usage and credit*
  4. *Benefits and cost-effectiveness*
  5. *Preservation and sustainability*

Stewardship of digital research data: a framework of principles and guidelines

Responsibilities of research institutions and funders, data managers, learned societies and publishers

January 2008

research information network

www.rin.ac.uk

[9]

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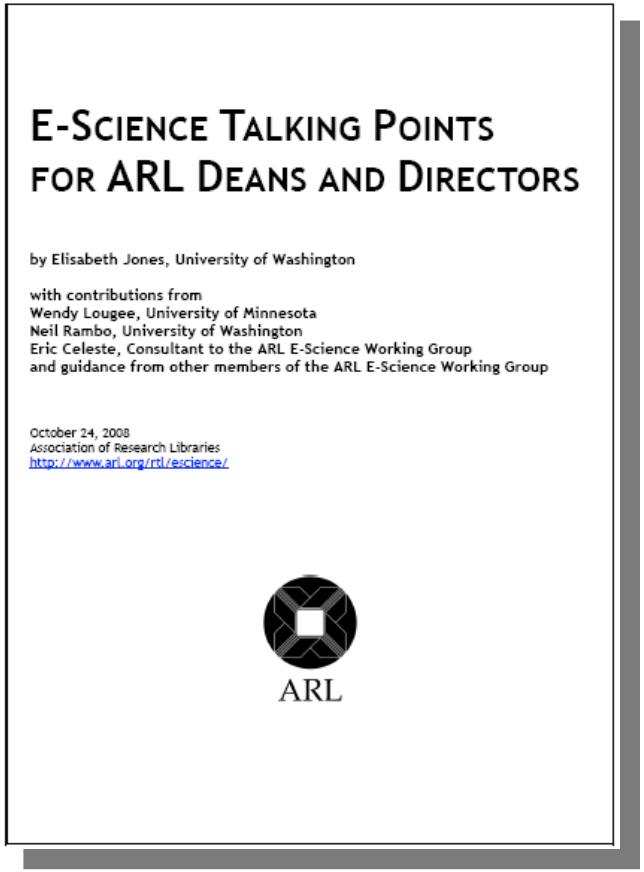
ARL: E-Science Talking Points, 2008

- *Data management, including collection, organization, description, curation, archiving, and dissemination.*
- *Creation of new data- and scholarship-based electronic resources for university and/or public use.*
- *Development of new models, standards, and architectures for various aspects of data management, description, etc.*
- *Building accessible linkages between all the components and stages of research, from data to researchers to publications.*
- *Bridging institutional hierarchies and departmental divisions in service of interdisciplinary initiatives.*



E-SCIENCE TALKING POINTS FOR ARL DEANS AND DIRECTORS

by Elisabeth Jones, University of Washington

with contributions from
Wendy Lougee, University of Minnesota
Neil Rambo, University of Washington
Eric Celeste, Consultant to the ARL E-Science Working Group
and guidance from other members of the ARL E-Science Working Group

October 24, 2008
Association of Research Libraries
http://www.arl.org/rtl/escience/

ARL

[10]

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Brussels Declaration on STM Publishing, 2007

- *7. Raw research data should be made freely available to all researchers. Publishers encourage the public posting of the raw data outputs of research. Sets or sub-sets of data that are submitted with a paper to a journal should wherever possible be made freely accessible to other scholars.*

BRUSSELS DECLARATION ON STM PUBLISHING

by the international scientific, technical and medical (STM) publishing community as represented by the individual publishing houses and publishing trade associations, who have indicated their assent below.

Many declarations have been made about the need for particular business models in the STM information community. STM publishers have largely remained silent on these matters as the majority are agnostic about business models: what works, works. However, despite very significant investment and a massive rise in access to scientific information, our community continues to be beset by propositions and manifestos on the practice of scholarly publishing. Unfortunately the measures proposed have largely not been investigated or tested in any evidence-based manner that would pass rigorous peer review. In the light of this, and based on over ten years experience in the economics of online publishing and our long-standing collaboration with researchers and librarians, we have decided to publish a declaration of principles which we believe to be self-evident.

1. **The mission of publishers is to maximise the dissemination of knowledge through economically self-sustaining business models**. We are committed to change and innovation that will make science more effective. We support academic freedom: authors should be free to choose where they publish in a healthy, undistorted free market
2. **Publishers organise, manage and financially support the peer review processes of STM journals**. The imprimatur that peer-reviewed journals give to accepted articles (registration, certification, dissemination and editorial improvement) is irreplaceable and fundamental to scholarship
3. **Publishers launch, sustain, promote and develop journals for the benefit of the scholarly community**
4. **Current publisher licensing models are delivering massive rises in scholarly access to research outputs**. Publishers have invested heavily to meet the challenges of digitisation and the annual 3% volume growth of the international scholarly literature, yet less than 1% of total R&D is spent on journals
5. **Copyright protects the investment of both authors and publishers**. Respect for copyright encourages the flow of information and rewards creators and entrepreneurs
6. **Publishers support the creation of rights-protected archives that preserve scholarship in perpetuity**
7. **Raw research data should be made freely available to all researchers**. Publishers encourage the public posting of the raw data outputs of research. Sets or sub-sets of data that are submitted with a paper to a journal should wherever possible be made freely accessible to other scholars
8. **Publishing in all media has associated costs**. Electronic publishing has costs not found in print publishing. The costs to deliver both are higher than print or electronic only. Publishing costs are the same whether funded by supply-side or demand-side models. If readers or their agents (libraries) don't fund publishing, then someone else (e.g. funding bodies, government) must
9. **Open deposit of accepted manuscripts risks destabilising subscription revenues and undermining peer review.** Articles have economic value for a considerable time after publication which embargo periods must reflect**.** At 12 months, on average, electronic articles still have 40-50% of their lifetime downloads to come. Free availability of significant proportions of a journal's content may result in its cancellation and therefore destroy the peer review system upon which researchers and society depend
10. **"One size fits all" solutions will not work.** Download profiles of individual journals vary significantly across subject areas, and from journal to journal

[11]

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Quellen

[1] Nature: Special Data Sharing. In: Nature 461 (2009), Nr. 7261, URL: http://www.nature.com/news/specials/datasharing

[2] Savage CJ, Vickers AJ: Empirical Study of Data Sharing by Authors Publishing. In PLoS ONE 4 (9): e7078, DOI:10.1371/journal.pone.0007078

[3] DFG: Vorschläge zur Sicherung guter wissenschaftlicher Praxis, 1998, URL: http://www.dfg.de/aktuelles_presse/reden_stellungnahmen/download/empfehlung_wiss_praxis_0198.pdf

[4] Berlin Declaration: Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, 2003, URL: http://oa.mpg.de/openaccess-berlin/berlindeclaration.html

[5] OECD: Principles and Guidelines for Access to Research Data from Public Funding, 2007, URL: http://www.oecd.org/dataoecd/9/61/38500813.pdf

[6] Allianz der deutschen Wissenschaftsorganisationen: Schwerpunktinitiative „Digitale Information", 2008, URL: http://allianz-initiative.de

[7] EUROHORCs / ESF: EUROHORCs and ESF Vision on a Globally Competitive ERA and their Road Map for actions, 2009, URL: http://www.dfg.de/internationales/download/era_road_map_08.pdf

[8] Rice, R : Data Sharing Continuum, 2007, URL: http://www.disc-uk.org/docs/data_sharing_continuum.pdf

[9] RIN: Stewardship of digital research data, 2008, URL: http://www.rin.ac.uk/system/files/attachments/sarah/Stewardship-data-guidelines.pdf

[10] ARL: E-Science Talking Points for ARL Deans and Directors, 2008, URL: http://www.arl.org/bm~doc/e-science-talking-points.pdf

[11] STM: Brussels Declaration on STM Publishing, 2007, URL: http://www.stm-assoc.org/2007_02_13_Brussels_Declaration.pdf

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Praktische Umsetzung

Sünje Dallmeier-Tiessen

Open-Access-Tage 2009 | Konstanz, 08.10.2009

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Agenda

- Hintergrund
  - Vorraussetzungen für die Publikation von Forschungsdaten
  - Raum und Zeitpunkt der Datenpublikation
  - Hindernisse bei der Datenpublikation
- Praxis
  - Publikation von Forschungsdaten: Datenbanken, Supplements
  - Publikation von Forschungsdaten: Eigenständige Publikationsform
- Zusammenfassung und Ausblick

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"Publikation" von Forschungsdaten - Vorraussetzungen

Ziel: Nachnutzung & Nachvollziehbarkeit (GwP)

Publikation

Qualitätssicherung

Persistenter (und Offener) Zugang, Lizensierung

Sicherung, Digitale Langzeitarchivierung

Daten und Dokumentation von Wissenschaftlern bereitgestellt

Infrastruktur zur Bereitstellung von Forschungsdaten

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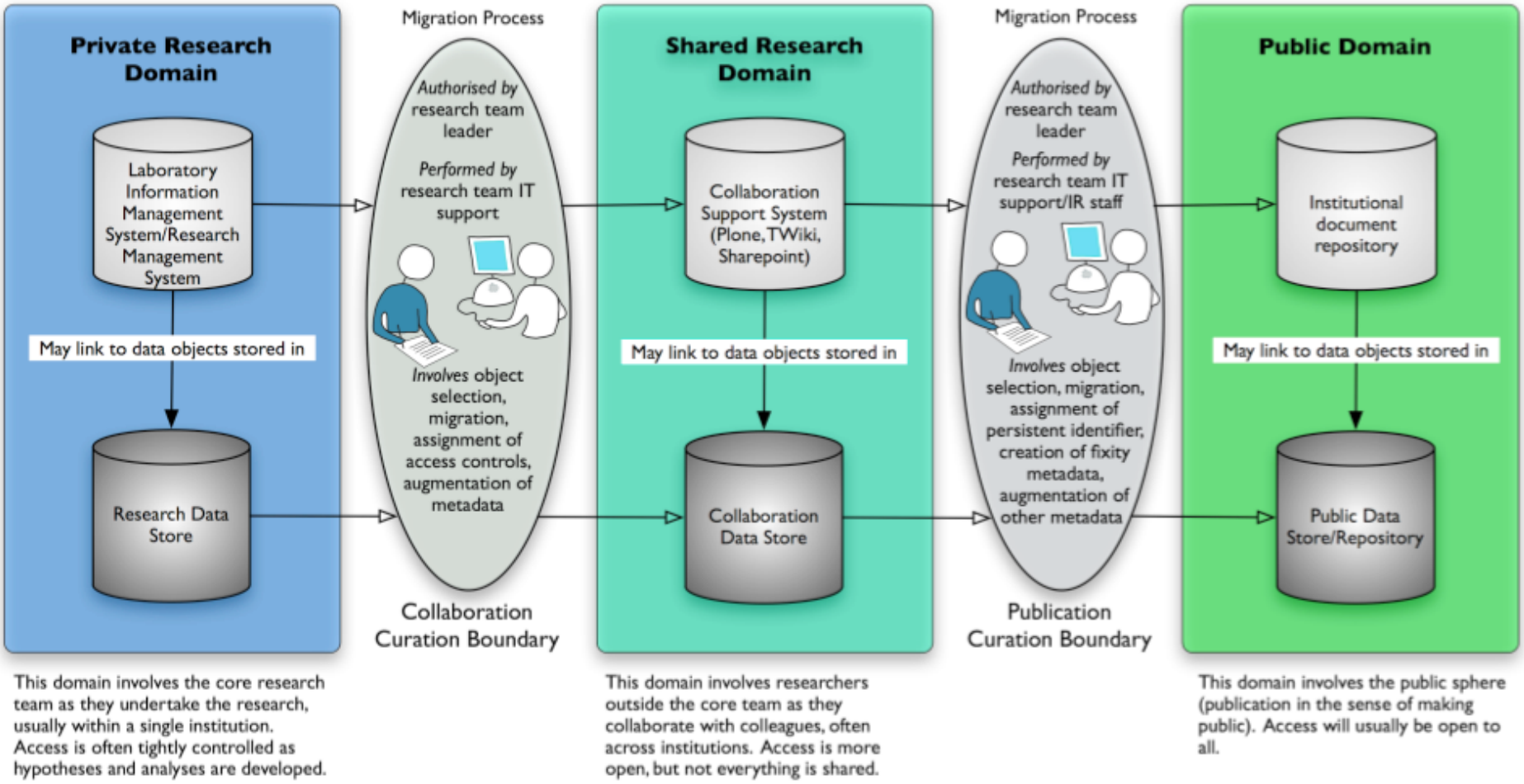
Speicherung und Publikation - private, shared and public:



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Zeitpunkt der Datenpublikation

- Direkt nach Datenproduktion/Vor der Interpretation (Pre-)
- Mit der Analyse/Interpretation (with publication)
- Nach der Publikation der Interpretation (Post-)

⇨ vielfältige Gründe für die Wahl des Zeitpunktes

Nature 461, 10. Sept. 2009:

Datenpublikation **parallel** zur. tradit. Diskussionpubl.

„Toronto-Statement"

Datenpublikation **vor** d. tradit. Diskussionpubl.

Traditionelle Publikation der Interpretation und Diskussion

„Rom-Agenda"

Datenpublikation **nach** d. tradit. Diskussionpubl.

Zeit

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Bestandsaufnahme: Publikation von Forschungsdaten …oder warum werden viele Forschungsdaten in der Schreibtischschublade "vergessen"?

- Fehlende Anreize für WissenschaftlerInnen
  - Z.B. Wertung als Publikation
- Angst vor "Misuse" and "Misinterpretation": Fehlende "eingängige" Zitiermöglichkeiten für Forschungsdaten
- Keine Mandate/Vorgaben
  - Von Forschungsförderern
  - Von Zeitschriften/Editoren
  - Von disziplinspezifischen Gremien
- Tlw. fehlende (vertrauenswürdige) Infrastrukturen für die gewünschte Publikationsform
- Rechtliche Vorgaben, z.B. Datenschutz, medizin. Daten

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Publikation von Forschungsdaten (public) – Beispiele: Supplements, Datenbanken

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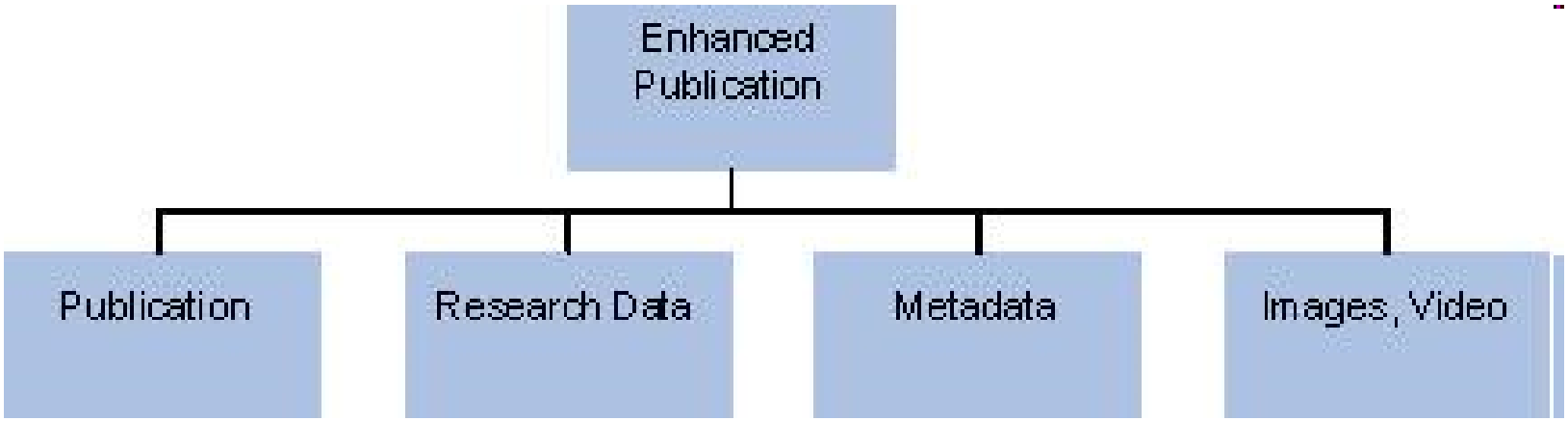
Publikationsmodel

- Enhanced Publications (DRIVER II, SURF):

  "publication of articles along with supplementary data, including the underlying research data, visualisations, public reviews, simulations, and multimedia files."



Quelle: SURF

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Supplement

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Supplementary information

From the following article:
Language evolution: Semantic combinations in primate calls
Kate Arnold & Klaus Zuberbühler
Nature **441**, 303(18 May 2006)
doi:10.1038/441303a

Download plugins and applications

Supplementary Methods
This file contains Supplementary Figures S1-S5
Download PDF file (402KB)

Audio clip 1
A series of 'pyow' calls: these can function as an alarm in response to a nearby leopard, but are also used in other contexts.
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Audio clip 2
A series of 'hack' calls: mostly functions as an alarm in response to a nearby eagle.
Download Audio file (385KB)

Quelle: Nature 2006

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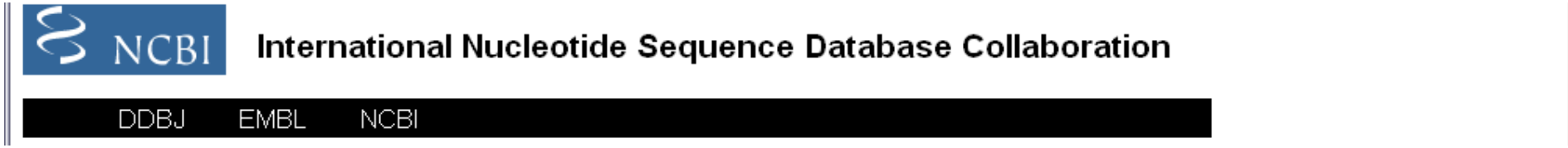
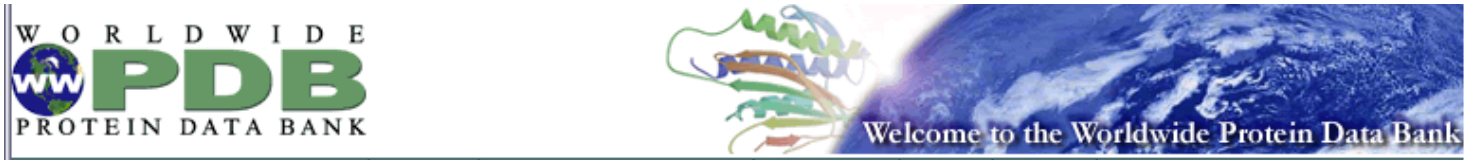
Publikation von Forschungsdaten in Datenbanken

- (Disziplinspezifische) Datenbanken, diverse Strukturen
- Erfolg stark abhängig von Erfahrung und Mandatierung innerhalb der Community, z.B. Bermuda Principles; Publikation von Forschungsdaten in best. Datenbanken wird vorausgesetzt
- Vertrauenswürdige Archive: z.B. Data Seal of Approval (DANS), NESTOR





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Weltdatenzentrum: Pangaea

- Publishing Network for Geoscientific and Environmental Data

PANGAEA®
Publishing Network for Geoscientific & Environmental Data

You are not logged in (LOG IN)

Always quote citation when using data!

Data Description

Citation: Spieß, V; Grobe, H (1996): Paleomagnetic measurements on sediment core PS1387-3, doi:10.1594/PANGAEA.51316, *In Supplement to:* **Grobe, Hannes; Mackensen, Andreas; Hubberten, Hans-Wolfgang; Spieß, Volkhard; Fütterer, Dieter K (1990):** Stable isotope record and late quaternary sedimentation rates at the Antarctic continental margin, *In: Bleil, U & Thiede, J (eds.), Geological History of the Polar Oceans - Arctic versus Antarctic, NATO ASI Series, Kluwer Academic Publishers, Dordrecht, Boston, London*, 539-571, hdl:10013/epic.11660.d001

Project(s): **Paleoenvironmental Reconstructions from Marine Sediments @ AWI** (AWI_Paleo)

Coverage: *West:* -5.8667 * *East:* -5.8667 * *South:* -68.7333 * *North:* -68.7333
Date/Time Start: 1985-12-28T15:48:00 * *Date/Time End:* 1985-12-28T15:48:00
Minimum DEPTH, sediment: 0.1 m * *Maximum DEPTH, sediment:* 10.0 m

Event(s): **PS1387-3** (PS08/365) * *Latitude:* -68.7333 * *Longitude:* -5.8667 * *Elevation:* -2416.0 m * *Date/Time:* 1985-12-28T15:48:00 * *Recovery:* 10.0 m * *Penetration:* 11.2 m * *Location:* Atka Bay * *Campaign:* ANT-IV/3 (PS08) * *Basis:* Polarstern * *Device:* Gravity corer (Kiel type) * *Comment:* upper 30 cm lost in weight, parallel station PS1506

Parameter(s):

#	Name	Short Name	Unit	Principal Investigator	Method	Comment
1	DEPTH, sediment	Depth	m			Geocode
2	Susceptibility	Susceptibility	sensor units	Spieß, Volkhard	Susceptibility unit AWI, MS2C, 145 mm	

Size: 100 data points

Data

Download dataset as tab-delimited text *(use the following character encoding:* ISO-8859-1: ISO Western (PANGAEA default) *)*

1 Depth [m]	2 Susceptibility [sensor units]
0.06000	0.83
0.15000	1.04
0.25000	1.00
0.35000	1.00
0.45000	1.28
0.55000	0.90
0.65000	0.89
0.75000	0.86

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„The goal of this cooperation is to establish a not-for-profit agency that enables organisations to register research datasets and assign **persistent identifiers** to them, so that research datasets can be handled as **independent, citable, unique scientific objects**." www.datacite.org

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Elsevier – vom Artikel zum Datensatz (Journal Deep Sea Research 1)

- Zusammenarbeit mit Pangaea-WDC/Mare

Abstract

For the investigation of organic carbon fluxes reaching the seafloor, oxygen microprofiles were measured at 145 sites in different sub-regions of the Southern Ocean. At 11 sites, an *in situ* oxygen microprofiler was deployed for the measurement of oxygen profiles and the calculation of organic carbon fluxes. At four sites, both *in situ* and *ex situ* data were determined for high latitudes. Based on this data set as well as on previous published data, a relationship was established for the estimation of fluxes derived by *ex situ* measured O_2 profiles. The fluxes of labile organic matter range from 0.5 to 37.1 mg C m^{-2} d^{-1}. The high values determined by *in situ* measurements were observed in the Polar Front region (water depth of more than 4290 m) and are comparable to organic matter fluxes observed for high-productivity, upwelling areas like off West Africa. The oxygen penetration depth, which reflects the long-term organic matter flux to the sediment, was correlated with assemblages of key diatom species. In the Scotia Sea (~3000 m water depth), oxygen penetration depths of less than 15 cm were observed, indicating high benthic organic carbon fluxes. In contrast, the oxic zone extends down to several decimeters in abyssal sediments of the Weddell Sea and the southeastern South Atlantic. The regional pattern of organic carbon fluxes derived from microsensor data suggests that episodic and seasonal sedimentation pulses are important for the carbon supply to the seafloor of the deep Southern Ocean.

Keywords: Benthic organic carbon fluxes; Labile organic matter; Deep-sea sediments; Southern Ocean; Microsensors; Oxygen penetration depth

Article Outline

1. Introduction
2. Materials and methods
3. Results and discussion
   3.1. Relationship between *ex situ* and *in situ* flux measurements
   3.2. Organic carbon fluxes and oxygen penetration depths
   3.3. Relationship between diatom provinces and benthic organic carbon fluxes
   3.3.1. *Region A*: The *Chaetoceros* spp. province
   3.3.2. *Region B*: The open-ocean *Fragilariopsis kerguelensis* province

pigment regionalization

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Citation: Sachs, O et al. (2009): Benthic organic carbon flux and oxygen penetration depth in the Souther Ocean. doi:10.1594/PANGAEA.663056,
Supplement to: **Sachs, Oliver; Sauter, Eberhard J; Schlüter, Michael; Rutgers van der Loeff, Michiel M; Jerosch, Kerstin; Holby, Ola (2009):** Benthic organic carbon flux and oxygen penetration reflect different plankton provinces in the Southern Ocean. *Deep Sea Research I*, doi:10.1016/j.dsr.2009.02.003

Parameter(s):

#	Name	Short Name	Unit	Principal Investigator	Method	Comment
1	Event label	Event				Metadata
2	LATITUDE	Latitude				Geocode
3	LONGITUDE	Longitude				Geocode
4	DATE/TIME	Date/Time				Geocode
5	DEPTH, sediment	Depth	m			Geocode
6	Depth, bathymetric	Bathy depth	m	Schlüter, Michael		
7	Gear	Gear		Schlüter, Michael		
8	Sample Method	Sample Method		Schlüter, Michael		
9	Season	Season		Schlüter, Michael		

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Abstract

On 22 May 1985 the first balloon-borne ozonesonde was successfully launched by the staff of Georg-Forster-Station (70°46′ S, 11°41′ E). The following weekly ozone soundings mark the beginning of the continuous investigation of Germany to study the vertical ozone distribution in the southern hemisphere.

In 1985 these ozone soundings have been the only record showing the change of vertical ozone distribution in the southern polar stratosphere in September and October. The regular ozone soundings from 1985 until 1992 are a valuable reference data set since the chemical ozone loss became a significant feature in the southern polar stratosphere.

The balloon-borne soundings were performed at the upper air sounding facility of the neighbouring station Novolazarevskaya, just 2 km apart from Georg-Forster-Station. Till 1992, ozone soundings were taken without interruption. Afterwards, the ozone sounding program was moved to Neumayer-Station (70°39′ S, 8°15′ W) 750 km further west.

Data coverage and parameter measured

Repository-Reference: doi:10.1594/PANGAEA.547983
Available at: http://dx.doi.org/10.1594/PANGAEA.547983
Coverage: East: 11.8300; South: −70.7700
Location Name: Georg-Forster-Station, Antarctica
Date/Time Start: 1985-05-22T05:19:00
Date/Time End: 1992-01-29T01:19:00

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ESSDD
1, 1–13, 2008

Antarctic ozonesonde profiles

G. König-Langlo and H. Gernandt

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ESSD – Akzeptierter finaler Artikel

Earth Syst. Sci. Data, 1, 1–5, 2009
www.earth-syst-sci-data.net/1/1/2009/
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Earth System Science Data

Compilation of ozonesonde profiles from the Antarctic Georg-Forster-Station from 1985 to 1992

G. König-Langlo and H. Gernandt
Alfred Wegener Institute for Polar and Marine Research, Bussestraße 24, 27570 Bremerhaven, Germany

Received: 29 July 2008 – Published in Earth Syst. Sci. Data Discuss.: 22 September 2008
Revised: 1 December 2008 – Accepted: 23 December 2008 – Published: 12 January 2009

Abstract. On 22 May 1985 the first balloon-borne ozonesonde was successfully launched by the staff of Georg-Forster-Station (70°46′ S, 11°41′ E). The subsequent weekly ozone soundings mark the beginning of a continuous investigation of the vertical ozone distribution in the southern hemisphere by Germany.

The measurements began the year the ozone hole was discovered. They significantly contribute to other measurements made prior to and following 1985 at other stations. The regular ozone soundings from 1985 until 1992 are a valuable reference data set since the chemical ozone loss became a significant feature in the southern polar stratosphere.

The balloon-borne soundings were performed at the upper air sounding facility of the neighbouring station Novolazarevskaya, just 2 km from Georg-Forster-Station. Until 1992, ozone soundings were taken without interruption. Thereafter, the ozone sounding program was moved to Neumayer-Station (70°39′ S, 8°15′ W) 750 km further west.

Data coverage and parameter measured

Repository-Reference: doi:10.1594/PANGAEA.547983
Coverage: East: 11.8300; South: −70.7700;
Location Name: Georg-Forster-Station, Antarctica
Date/Time Start: 1985-05-22T05:19:00
Date/Time End: 1992-01-29T01:19:00

Parameter	Short Name	Unit	Comment
Altitude	Altitude	m	height above mean sea level
Date/Time	Date/Time		universal time code (UTC)
Longitude	Longitude		at launching point
Latitude	Latitude		at launching point
Ozone, partial pressure	O_3	mPa	
Pressure, at given altitude	PPPP	hPa	
Temperature, air	TTT	degC	
Wind direction	dd	deg	
Wind speed	ff	m/sec	

Correspondence to: G. König-Langlo
(gert.koenig-langlo@awi.de)

Published by Copernicus Publications.

1 Introduction

The first permanently operated German research base – later named Georg-Forster-Station – was established in 1976 in the Schirmacher Oasis at 70°46′ S, 11°41′ E. The station was permanently used and operated as an annex to the Russian station Novolazarevskaya until 1987, and then as a German Antarctic station named after the German natural scientists, author and revolutionary Georg Forster (1754–1794) until 1993.

Long-term studies of magnetospheric-ionospheric processes, geophysical investigations, biological studies and sea ice observations using satellite imaging were performed.

The station became known to the international scientific community when the vertical extent of the "ozone hole" in the southern polar stratosphere was firstly recorded by regular balloon-borne ozone observations in 1985 (Gernandt, 1987a, b).

The ozone sounding programme was a major contribution of the Meteorological Service to the Antarctic research of the German Democratic Republic (GDR). The station was established as a long-term ozone-sonde observatory in cooperation with the Russian Arctic and Antarctic Research Institute (AARI) and the Aerological Observatory Lindenberg (AOL) in order to study the climatology of the ozone layer in

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  - Gemeinsame Diskussion über die Kernthemen
  - Kernfrage: Welchen Beitrag können die betroffenen Akteure leisten?

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