

# Umgang mit Forschungsdaten

## Perspektiven und Herausforderungen

Heinz Pampel | Helmholtz-Gemeinschaft

XXXIII. Librarian Meeting of the Max Planck Society | Göttingen, 27.04.2010

# Agenda

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- Relevanz für die Helmholtz-Gemeinschaft
- Diskussion
- Forschungsdaten
- Forschungsdatenmanagement
- Herausforderungen
- Beispiele
- Rolle der Bibliothek
- Ausblick



# Helmholtz-Gemeinschaft

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- Mission

- Beiträge zur Lösung drängender Probleme von Gesellschaft, Wissenschaft und Wirtschaft
- Bau und Betrieb von Forschungsinfrastrukturen für die nationale und internationale Forschergemeinde
- Erkenntnisse zum Nutzen von Gesellschaft und Wirtschaft umsetzen



Energie



Schlüsseltechnologien



Erde & Umwelt



Struktur der Materie



Gesundheit



Luftfahrt, Raumfahrt und Verkehr

# Helmholtz-Gemeinschaft

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- Helmholtz Open Access Projekt
  - Unterzeichnung der Berliner Erklärung (2003)
  - Beschluss der Mitgliederversammlung (2004)
  - Verabschiedung einer Roadmap (2005)
  - Gründung eines Koordinationsbüros (2006)
    - Bewusstseinsbildung
    - Repositorien und Publikationsdatenbanken (Grüner Weg)
    - Open-Access-Zeitschriften (Goldener Weg)
    - Offener Zugang zu Forschungsdaten

# Helmholtz-Gemeinschaft

- Alfred-Wegener-Institut für Polar- und Meeresforschung
- Deutsches Elektronen-Synchrotron DESY
- Deutsches Krebsforschungszentrum
- Deutsches Zentrum für Neurodegenerative Erkrankungen
- Deutsches Zentrum für Luft- und Raumfahrt
- Forschungszentrum Jülich
- GKSS-Forschungszentrum Geesthacht
- GSI Helmholtzzentrum für Schwerionenforschung
- Helmholtz-Zentrum Berlin für Materialien und Energie
- Helmholtz-Zentrum für Infektionsforschung
- Helmholtz-Zentrum für Umweltforschung - UFZ
- Helmholtz Zentrum München
- Deutsches Forschungszentrum für Gesundheit und Umwelt
- Helmholtz-Zentrum Potsdam, Deutsches GeoForschungsZentrum - GFZ
- Karlsruhe Institut für Technologie
- Max-Delbrück-Centrum für Molekulare Medizin
- Max-Planck-Institut für Plasmaphysik (assoziiert)
- Ab 2011 Forschungszentrum Dresden-Rossendorf



# Helmholtz-Gemeinschaft

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- Diskussionen in den Helmholtz-Zentren
- Weltdatenzentren (ICSU World Data System)
- Beteiligung an nationalen und internationalen Initiativen
  - Alliance for Permanent Access
  - Allianz-Schwerpunktinitiative Digitale Information
  - European Life Sciences Infrastructure for Biological Information (ELIXIR)
  - Publication and Citation of Scientific Primary Data (STD-DOI)
  - ICFA Study Group on Data Preservation and Long Term Analysis in HEP



# Diskussion

- Deutsche Forschungsgemeinschaft (DFG), 1998

- „Primärdaten als nachhaltigen und gesicherten Zustand entstanden sind, für die Wissenschaftler“
- „Auf die Aufzeichnung von Daten ist schon aus Gründen der Wissenschaftlichkeit zwingendes Gebot.“

„veröffentlichte Resultate“



„...ingen sollen auf  
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„... können, ist  
... Gruppe ein  
...n  
...lt werden.“

<http://is.gd/bGt3a>

# Diskussion

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- Deutsche Forschungsgemeinschaft (DFG), 1998
  - „Primärdaten als Grundlagen für Veröffentlichungen sollen auf haltbaren und gesicherten Trägern in der Institution, wo sie entstanden sind, für zehn Jahre aufbewahrt werden.“
  - „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.“

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<http://is.gd/bGt3a>

# Diskussion

- Berliner Erklärung
- „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 contributes to making research results, raw data and digital representations of scholarly multimedia material available.

**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.

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# Diskussion

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- Berliner Erklärung, 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.“

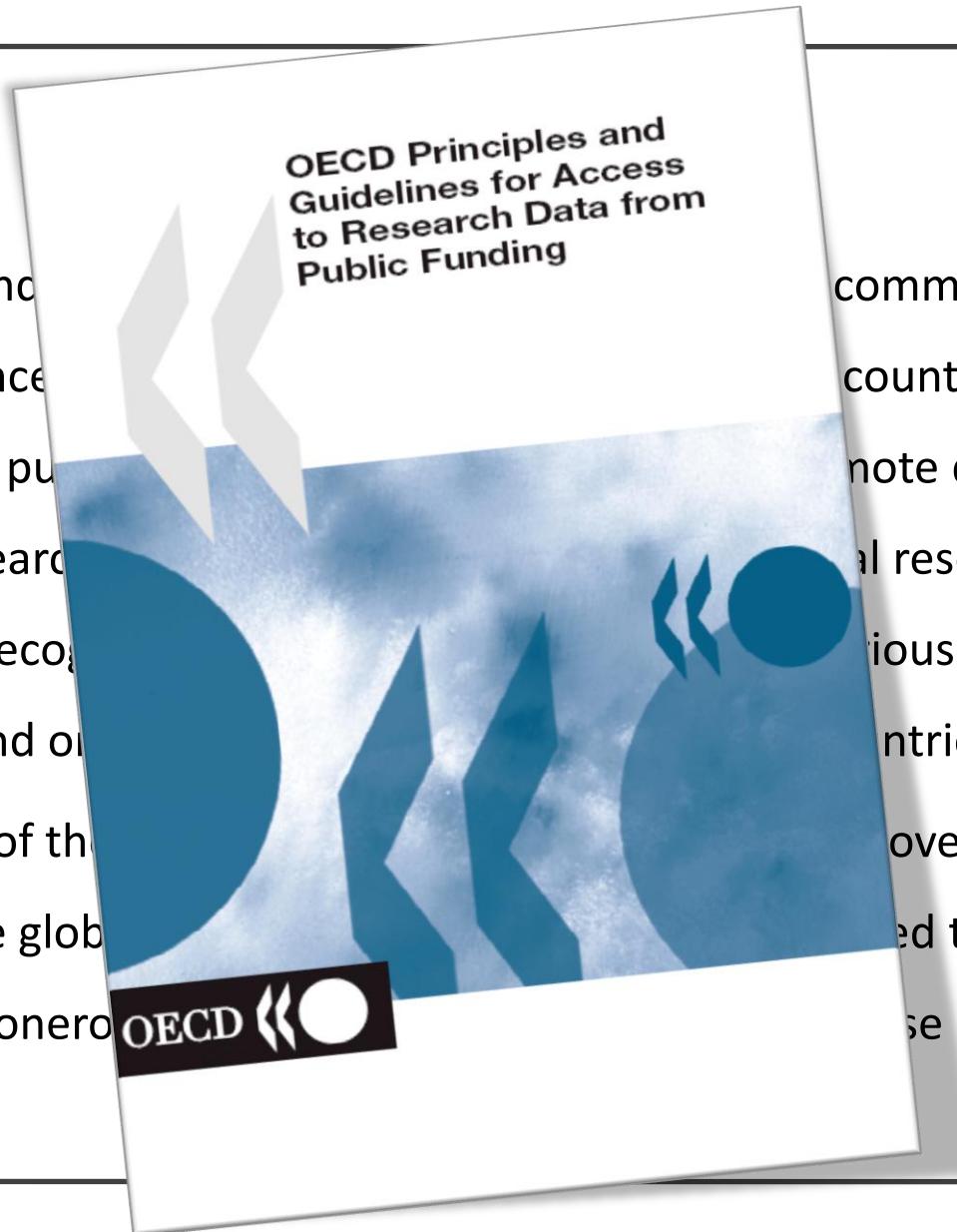
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# Diskussion

- OECD, 2007

- „These Principles and Guidelines are intended for governmental science agencies that collect research data from public funding. They promote sharing among researchers and at the same time, recognize the need to respect research policies and other obligations.“
- „The ultimate goal of these principles is to improve the effectiveness of the global development with onerous science systems.“



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# Diskussion

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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.“
  - „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.“

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# Diskussion

## • Schwerpunktinitiative

- „Es ist unbestreitbar, dass die wissenschaftliche Auswertung durch Einflüsse, die derzeit ausgesetzt sind. Hier besteht ein Handlungsbedarf hinsichtlich der Bereitstellung dieser Daten.“
- Die Aktivitäten der Allianz umfassen:
  - Primärdaten-Policy
  - Zusammenarbeit zwischen den Informationswissenschaften
  - Vernetzte Repositorien

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

## tion“, 2008

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Gesetzesfindung zu verlassen oder gar dem Verfall  
einen dringenden  
Archivierung und

“

ichtet:

gsprimärdaten

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# Diskussion

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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.“
  - Die Aktivitäten der Allianz-Initiative sind auf drei Bereiche gerichtet:
    - Primärdaten-Policy
    - Zusammenarbeit zwischen Fachwissenschaftlern und Informationswissenschaftlern anzustoßen
    - Vernetzte Repositorien- und Archivstrukturen für Forschungsprimärdaten

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# Diskussion

- EUROHORCs / ESF

- „The collection of relevant data, if quality controls be made of this invention.

Furthermore it allows for integrity.“

- „Permanent preservation“

Permanent Access, will be Member Organisations have permanent access to data



permanent access to such will allow better use to researchers to (re)use them. ensuring research

ted by the Alliance for ORCs and ESF and ensure such

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# Diskussion

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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.“
  - „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.“

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# Diskussion

- National Acad

- Data Integrity Principles

# advancing scientific

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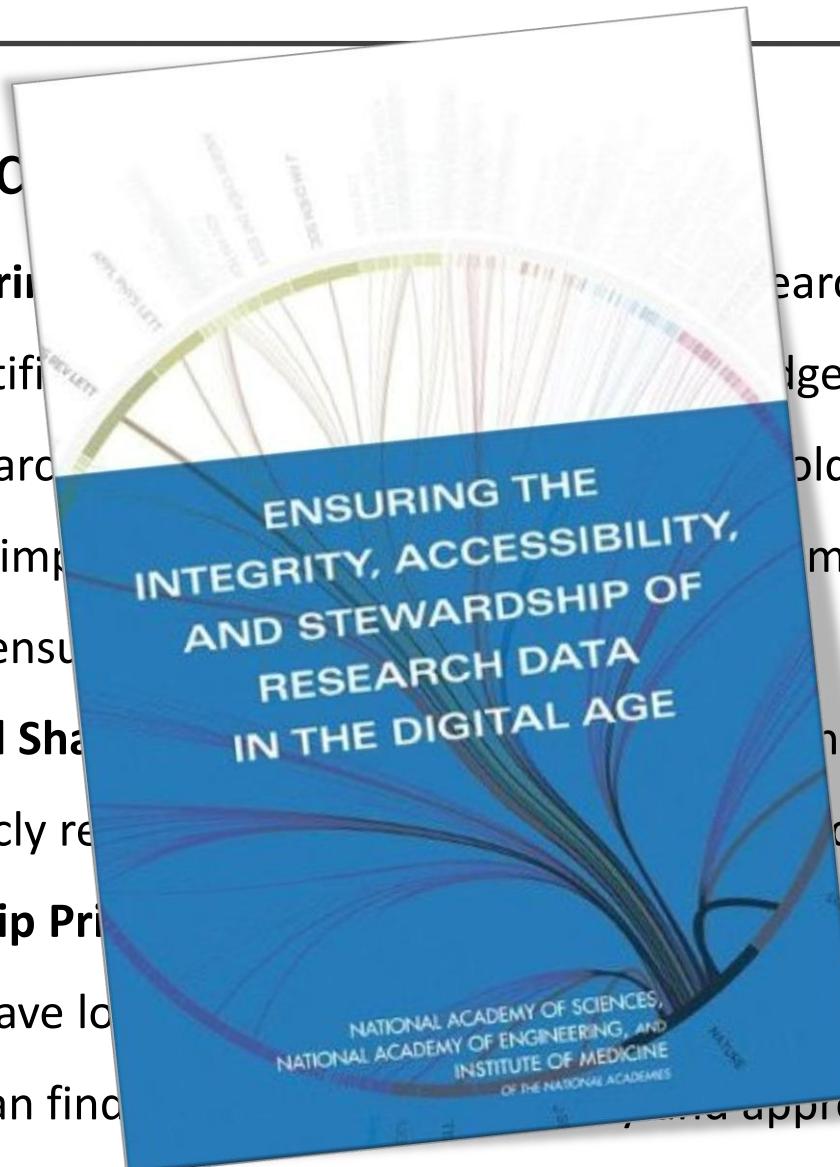
- Data Access and Share

integral to publicly

- Data Stewardship Principles

## Data that may have Ic

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## Methods, and other information

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appropriately.”

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# Diskussion

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- National Academy of Sciences, 2009
  - **Data Integrity Principle:** „Ensuring the integrity of research data is essential for advancing scientific, engineering, and medical knowledge and for maintaining public trust in the research enterprise. Although other stakeholders in the research enterprise have important roles to play, researchers themselves are ultimately responsible for ensuring the integrity of research data.“
  - **Data Access and Sharing Principle:** „Research data, methods, and other information integral to publicly reported results should be publicly accessible.“
  - **Data Stewardship Principle:** „Research data should be retained to serve future uses. Data that may have long-term value should be documented, referenced, and indexed so that others can find and use them accurately and appropriately.“

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# Diskussion

- ARL: E-Scien

- „Data management, archiving, and dissemination“
- „Creation of new knowledge and/or public use“
- „Development of data management“
- „Building accessible services from data to research“
- „Bridging institutional boundaries in 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/e-science/>



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# Diskussion

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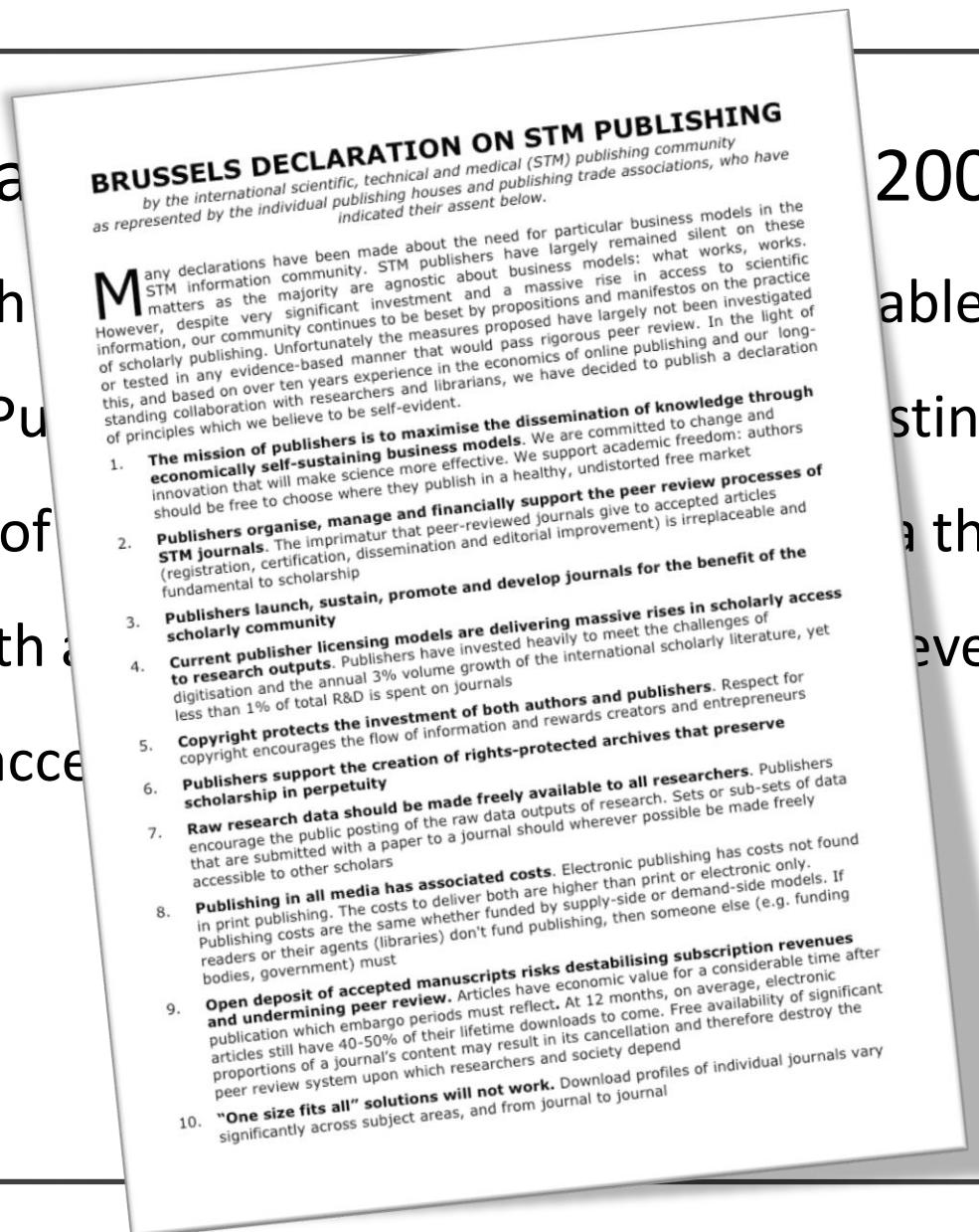
- ARL: E-Science Talking Points, 2008
  - „Data management, including collection, organization, description, curation, archiving, and dissemination.“
  - „Creation of new data- and scholarship-based electronic resources for university and/or public use.“
  - „Development of new models, standards, and 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.“

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# Diskussion

- Brussels Declaration
- „Raw research data outputs of submitted with a made freely accessible“



2007

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# Diskussion

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- Brussels Declaration on STM Publishing, 2007
  - „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.“

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# Diskussion

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

# Forschungsdaten

- Sozialwissenschaften

Jahr	Einzelhandel und Kraftfahrzeughandel zusammen <sup>2</sup>	Einzelhandel (ohne Handel mit Kraftfahrzeugen) WZ 47	Einzelhandel mit Waren verschiedener Art (in Verkaufsräumen) WZ 47.1	Kraftfahrzeug-handel
				Teile aus WZ 45 <sup>3</sup>
2009	105,5	105,2	108,8	106,8
2008	105,6	105,3	108,9	106,4
2007	103,2	102,6	104,8	105,5
2006	100,9	100,7	101,6	101,8
2005	100,0	100,0	100,0	100,0
2004	99,6	99,6	99,7	99,6
2003	99,3	99,5	99,4	98,4
2002	99,1	99,5	99,1	97,6
2001	98,4	98,9	98,1	96,6
2000	97,4	97,6	95,5	96,3
1999	97,3	97,1	96,0	97,2
1998	97,1	97,0	96,6	96,4
1997	96,7	96,8	95,9	95,3
1996	96,2	96,1	94,9	95,4
1995	95,4	95,4	94,5	94,6
1994	94,8	94,9	93,6	93,5
1993	93,9	93,8	92,4	93,2

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# Forschungsdaten

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- Sozialwissenschaften

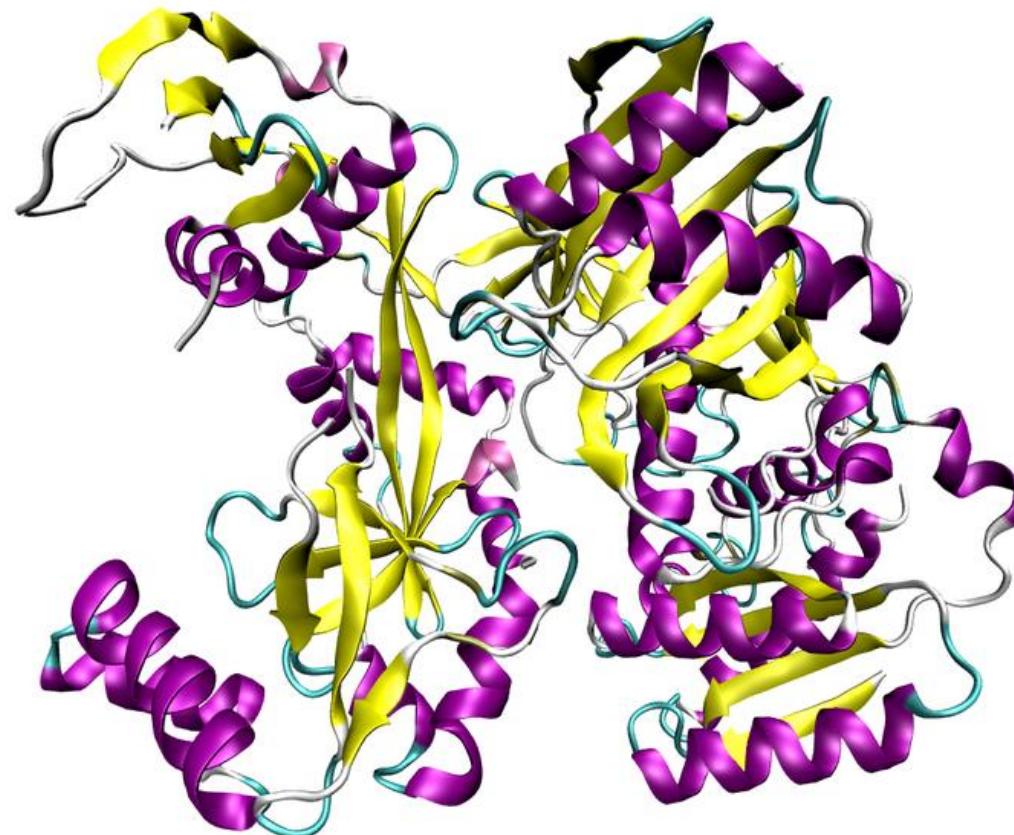


Lee Jordan: <http://is.gd/bEZze>

# Forschungsdaten

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- Lebenswissenschaften

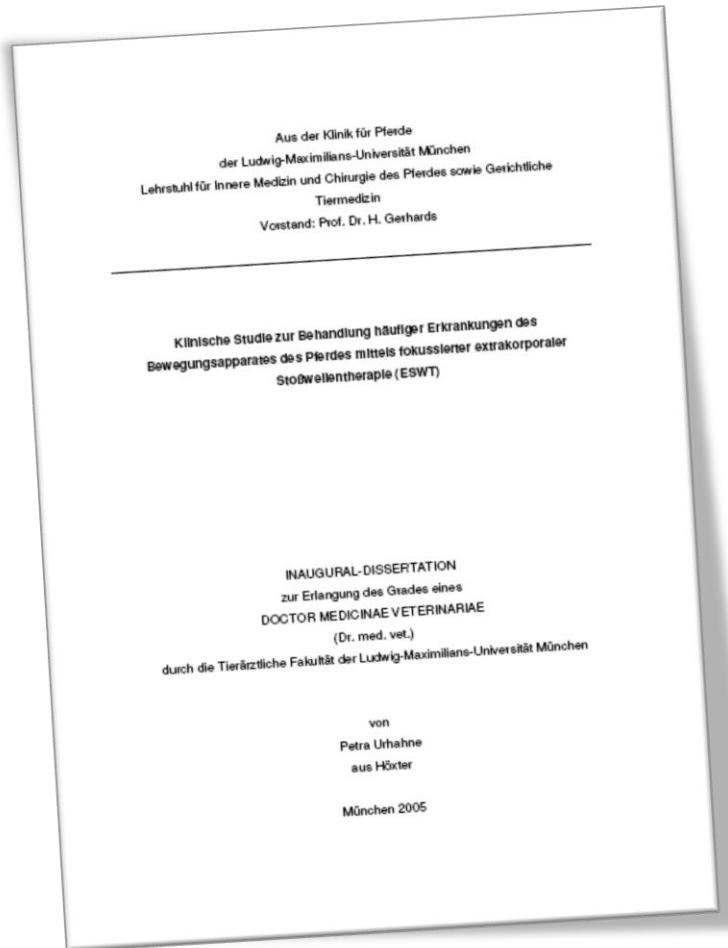


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# Forschungsdaten

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- Lebenswissenschaften

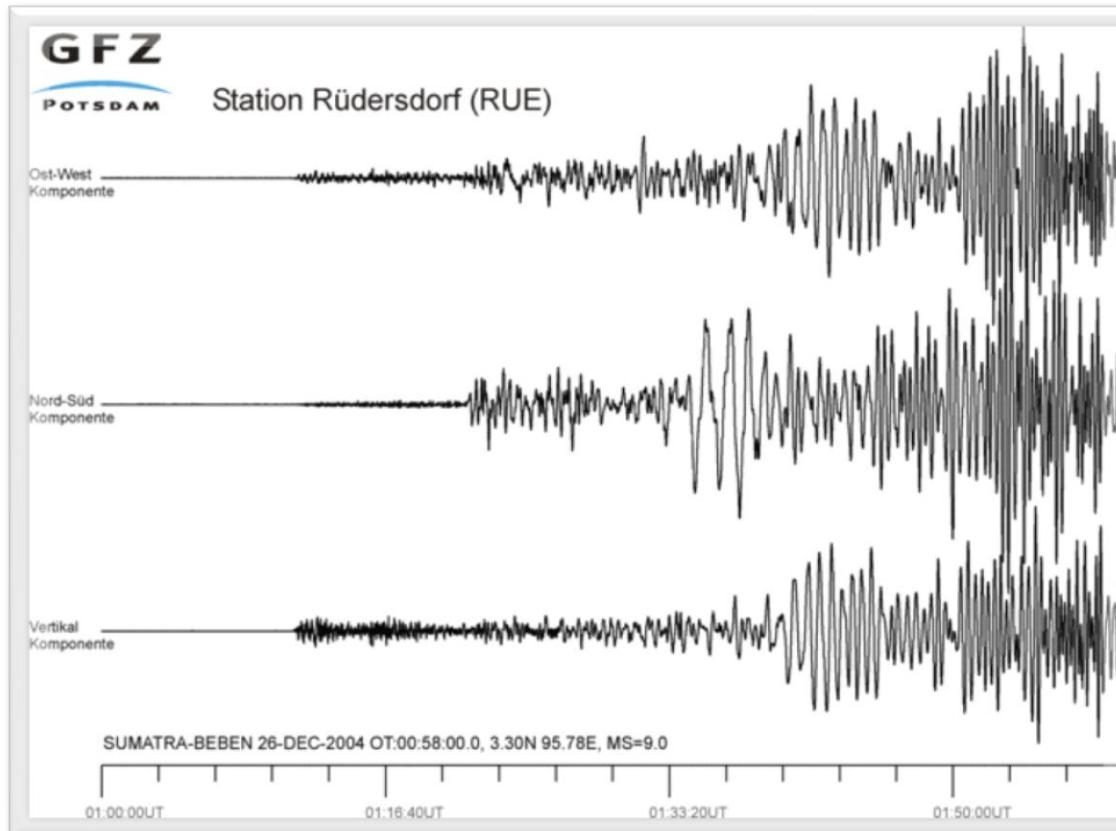


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# Forschungsdaten

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- Naturwissenschaften

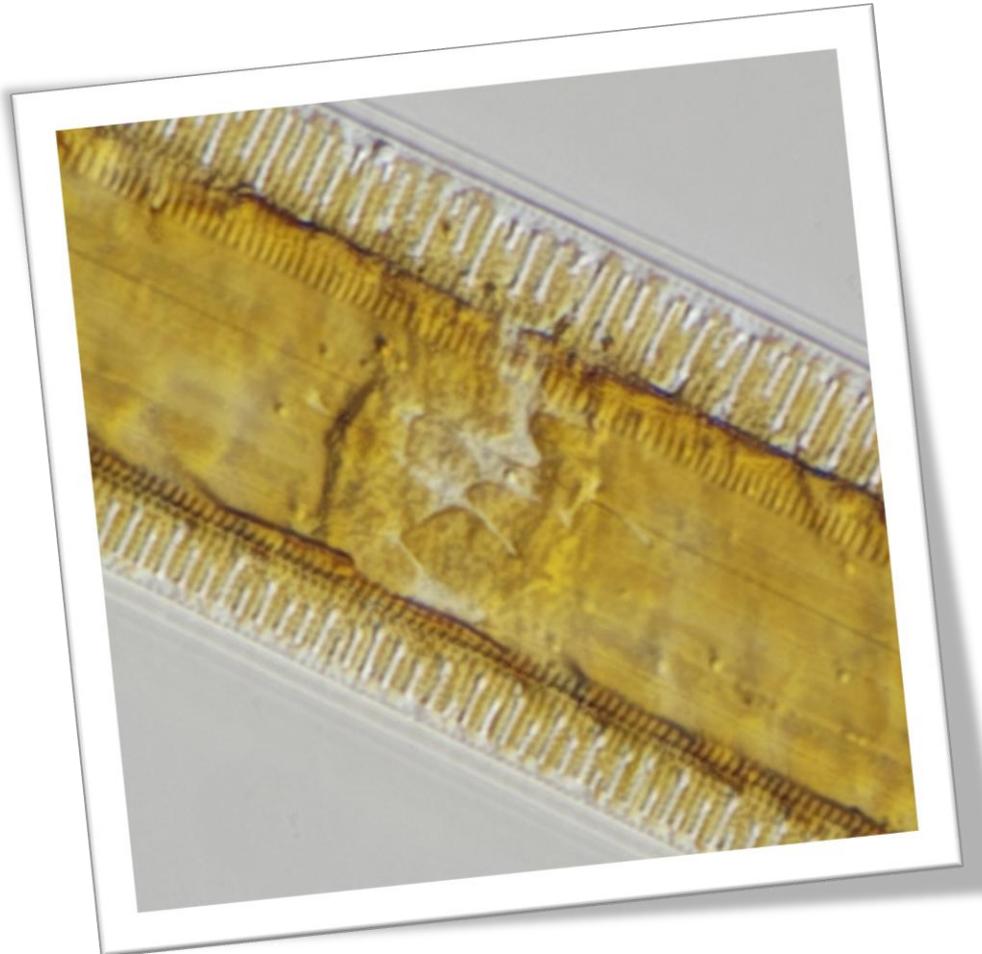


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# Forschungsdaten

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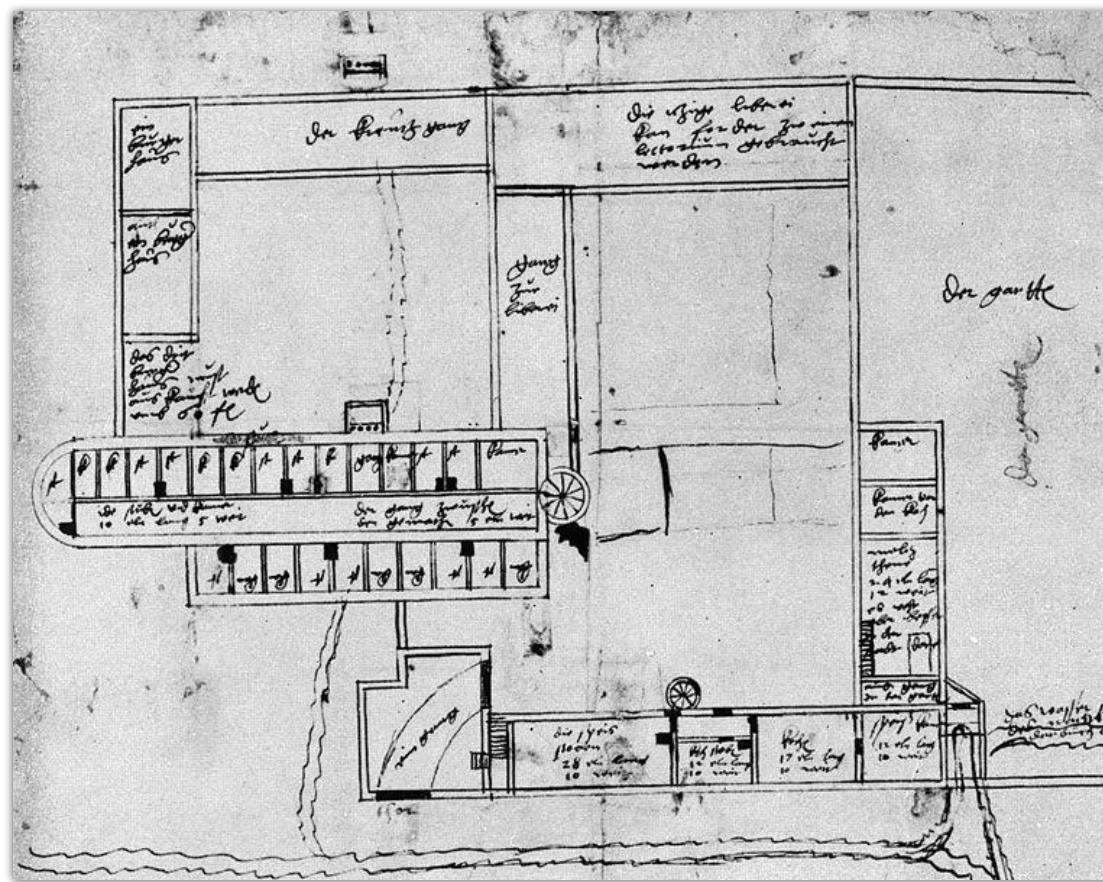
- Naturwissenschaften



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# Forschungsdaten

- Geisteswissenschaften

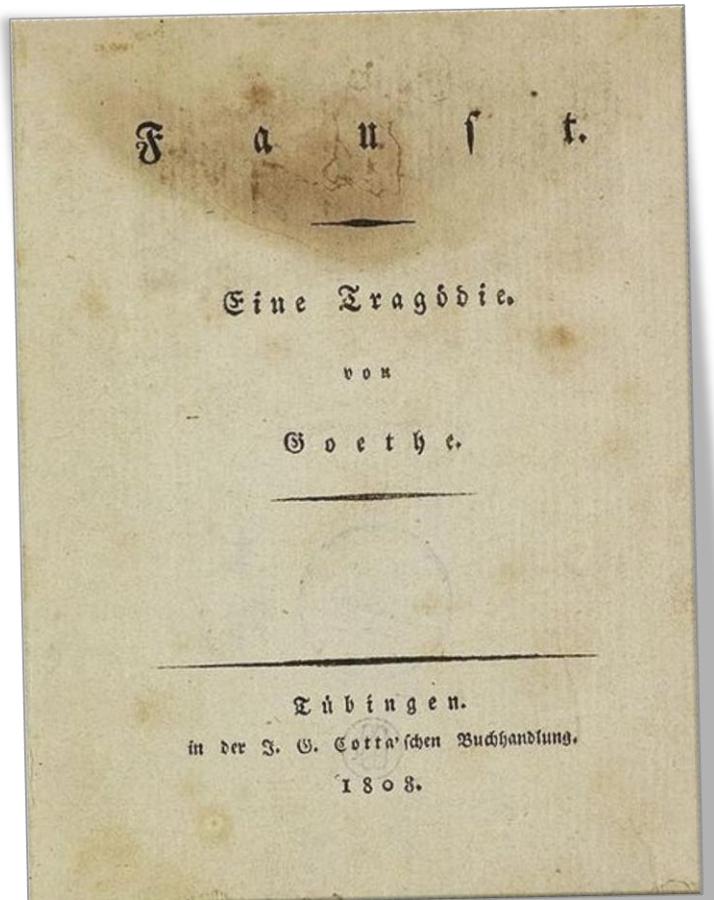


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# Forschungsdaten

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- Geisteswissenschaften



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# Forschungsdaten

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- Geisteswissenschaften



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# Forschungsdaten

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- Geisteswissenschaften

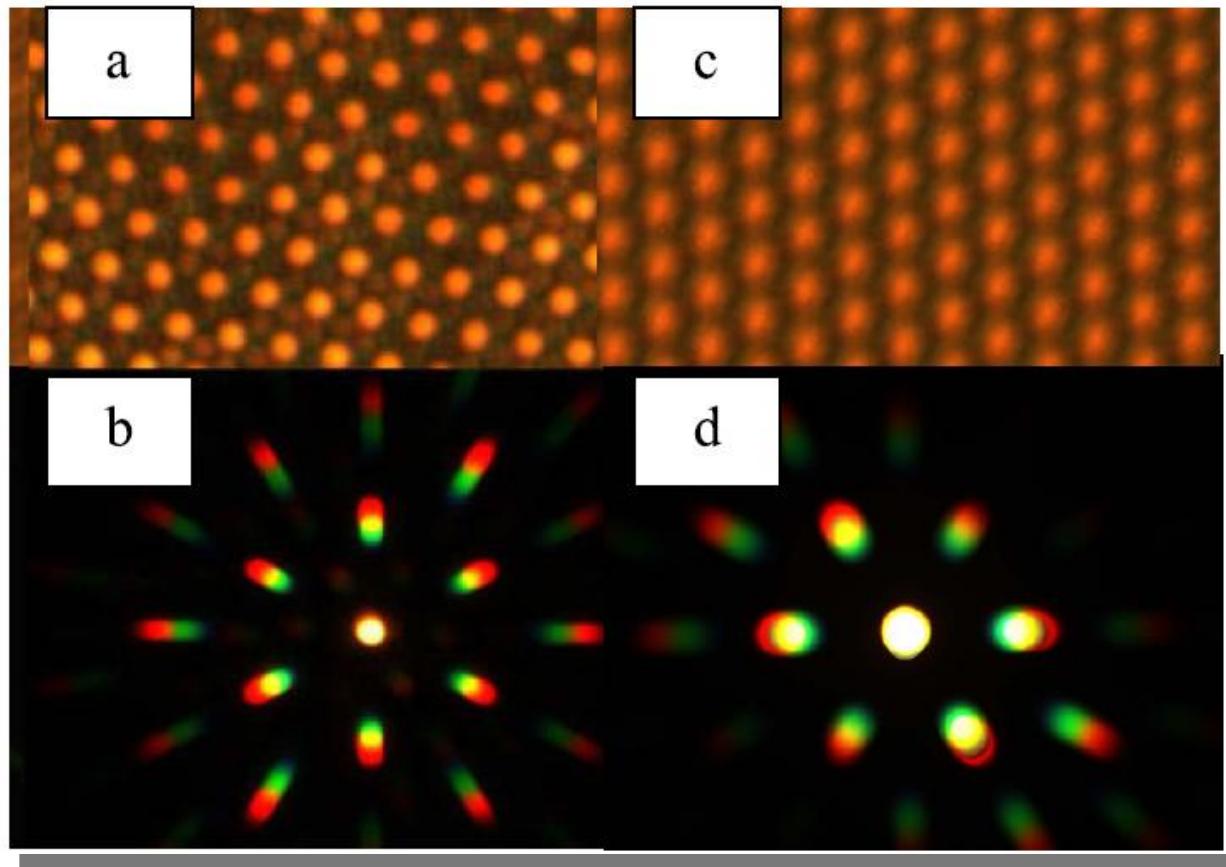


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# Forschungsdaten

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- Ingenieurwissenschaften



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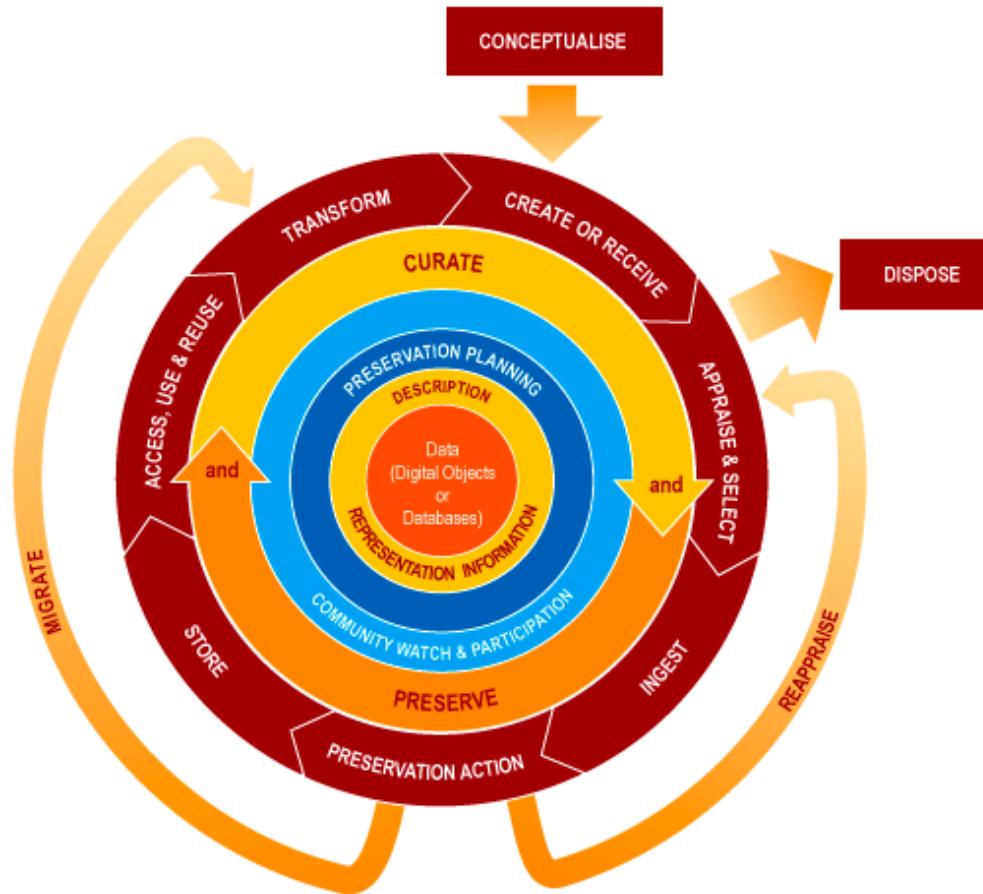
# Forschungsdaten

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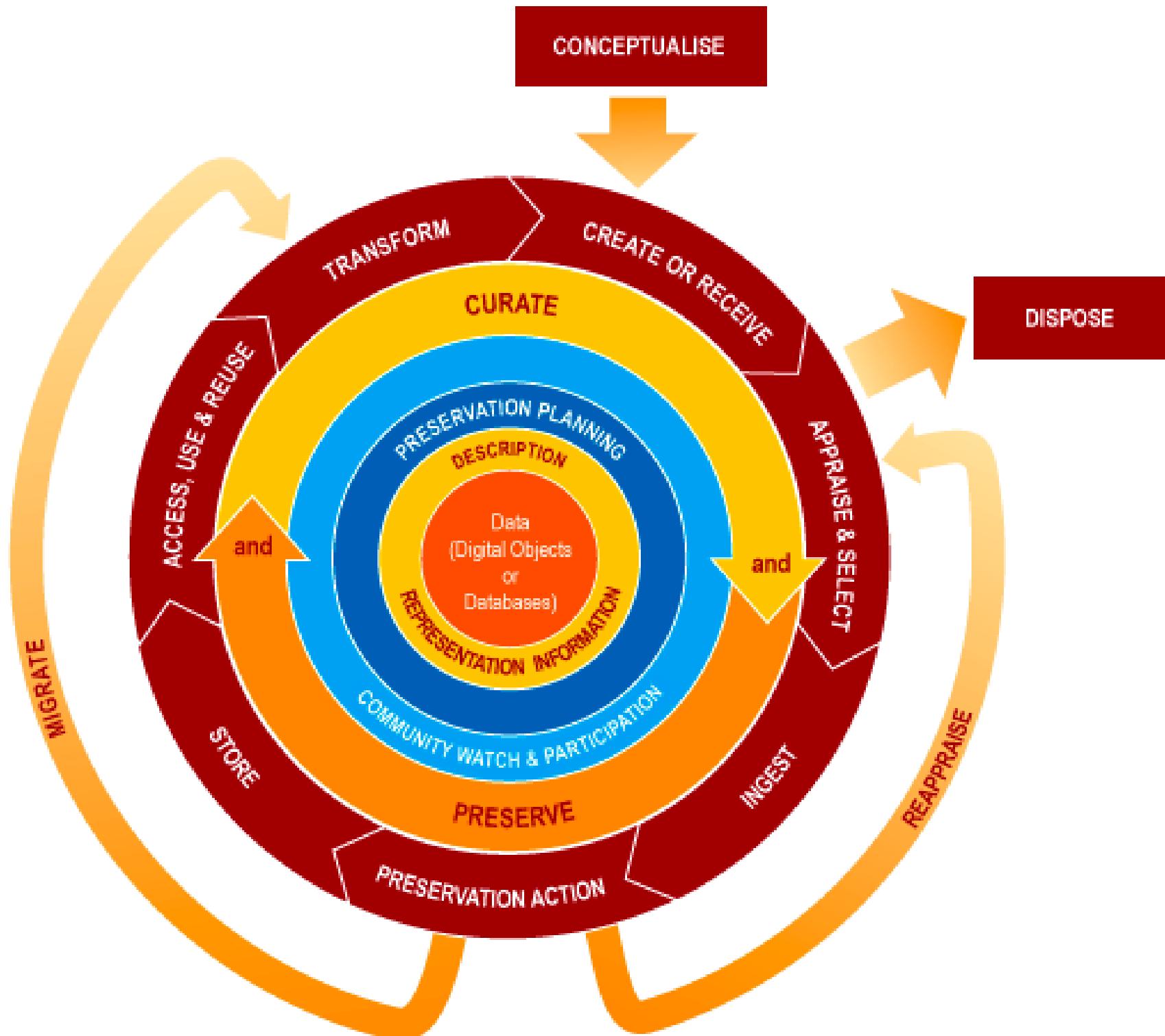
- Interdisziplinäre Definition schwierig
- Begriffe: Primär- und Sekundärdaten
- Unterschiedlichste Formen und Formate
- Essenzielle Grundlage der wissenschaftlichen Arbeit
- Vermehrt Forschungsgegenstand (Data-Driven Science)
- Heterogene Anforderung an das Management

# Forschungsdatenmanagement

- Digital Curation Centre: Curation Lifecycle Model



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# Forschungsdatenmanagement

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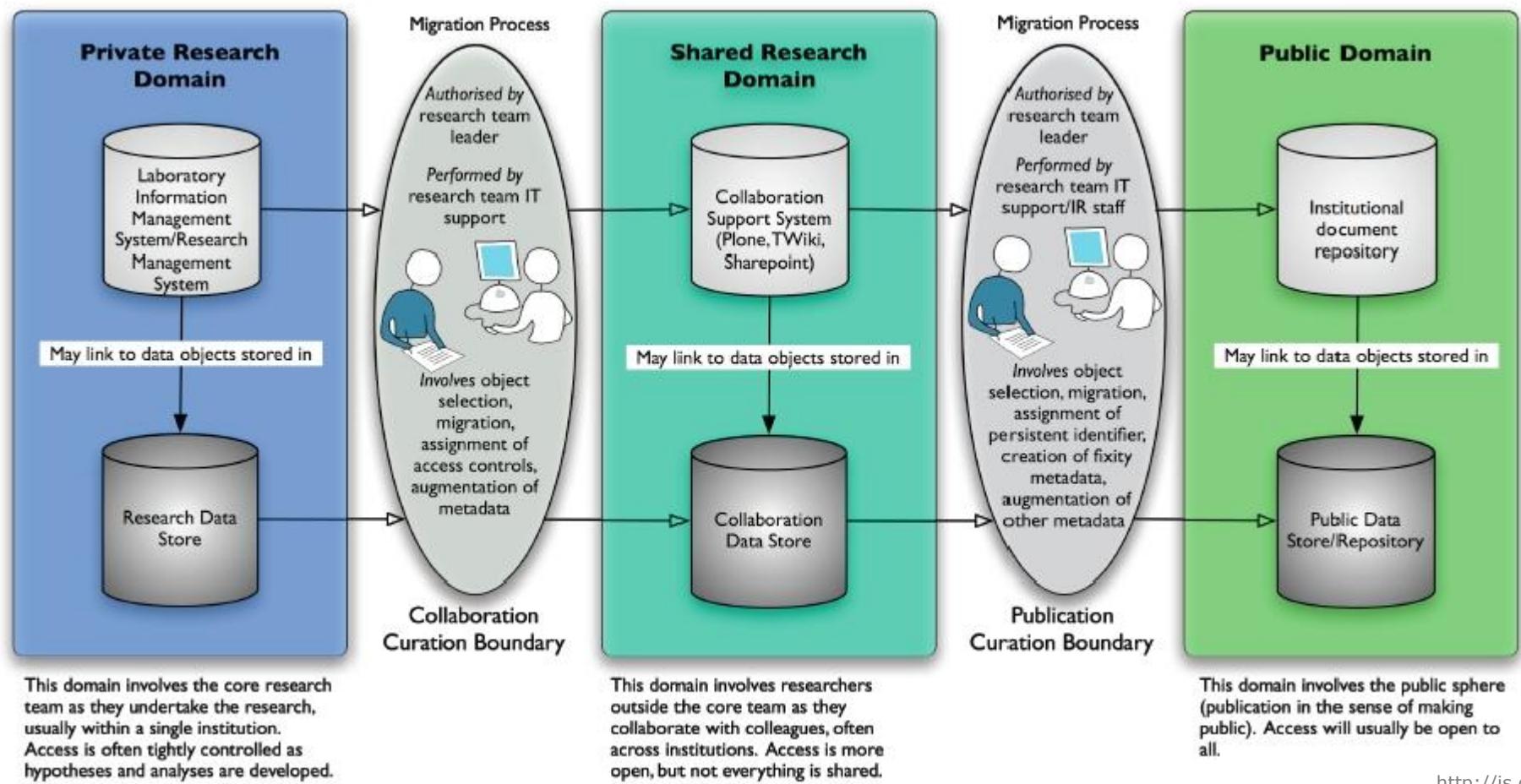
- NSB: Data Collections, 2005
- **Research Collections:** „Authors are individual investigators and investigator teams. Research collections are usually maintained to serve immediate group participants only for the life of a project, and are typically subjected to limited processing or curation. Data may not conform to any data standards.“
- **Resource Collections:** „Resource collections are authored by a community of investigators, often within a domain of science or engineering, and are often developed with communitylevel standards. Budgets are often intermediate in size. Lifetime is between the mid- and long-term.“
- **Reference Collections:** „Reference collections are authored by and serve large segments of the science and engineering community and conform to robust, well-established and comprehensive standards, which often lead to a universal standard. Budgets are large and are often derived from diverse sources with a view to indefinite support“

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<http://is.gd/bH3nX>

# Forschungsdatenmanagement

- Treloar und Harboe-Ree: Data Curation Continuum



<http://is.gd/bH4DH>

# Herausforderungen

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- Disziplinarität
- Organisation
- Zugang
- Qualität
- Technik
- Finanzierung



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<http://is.gd/bH4Ua>

# Beispiel I

## • PANGAEA

You are not logged in (LOG IN)

Always quote citation when using data!

RIS | BibTeX

**Data Description**

**Citation:** Brückner, S; Mackensen, A (2008): Stable carbon isotope composition of benthic foraminifera from sediments of the Skagerrak, North Sea. doi:10.1594/PANGAEA.676719, *Supplement to: Brückner, Sylvia; Mackensen, Andreas (2008): Organic matter rain rates, oxygen availability, and vital effects from benthic foraminiferal d13C in the historic Skagerrak, North Sea. Marine Micropaleontology, 66(3-4), 192-207, doi:10.1016/j.marmicro.2007.09.002*

**Reference(s):** Brückner, Sylvia (2008): Climatic and hydrographic variability in the late Holocene Skagerrak as deduced from benthic foraminiferal proxies (Klimatische und hydrographische Variabilität im holozänen Sagerrak, abgeleitet aus benthischen Foraminiferen). *Reports on Polar and Marine Research, Alfred Wegener Institute for Polar and Marine Research, Bremerhaven*, 572, 139 pp, doi:10.1013/epic.28879.d001

**Abstract:** The sediment cores 225514 and 225510 were recovered from 420 and 285 m water depth, respectively. They were investigated for their benthic foraminiferal delta13C during the last 500 years. Both cores were recovered from the southern flank of the Skagerrak. The delta13C values of *Uvigerina mediterranea* and other shallow infaunal species in both cores indicate that organic matter rain rates to the seafloor varied around a mean value until approximately AD 1950 after which they increased. This increase might result from changes in the North Atlantic Current System and a co-occurring persistently high North Atlantic Oscillation index state in the 1980s to 1990s, rather than from anthropogenic eutrophication. Using delta13C mean values of multiple species, we reconstruct delta13C gradients of dissolved inorganic carbon (DIC) within pore waters for the time periods AD 1500 to 1950 and AD 1950 to 2000. The calculated delta13CDIC ranges, interpreted as indicating total organic matter remineralization due to respiration, are generally bigger in Core 225514 than in Core 225510. Since mean delta13C values of *U. mediterranea* suggest that organic matter rain rates were similar at both locations, differences in total organic matter remineralization are attributed to differing oxygen availability. However, oxygen concentrations in the overlying bottom water masses are not likely to have differed significantly. Thus, we suggest that organic matter remineralization was controlled by oxygen availability within the sediments, reflecting strong differences in sedimentation rates at the two investigated core sites. Based on the assumptions that tests of benthic foraminiferal species inhabiting the same microhabitat depth should show equal delta13C values unless they are affected by vital effects and that *Globobulimina turgida* records pore water delta13CDIC, we estimate microhabitat-corrected vital effects for several species with respect to *G. turgida*: >0.7 per mil for *Cassidulina laevigata*, >1.3 per mil for *Hyalinea balthica*, and >0.7 per mil for *Melonis barleeanus*. *Melonis zaandamii* seems to closely record pore water delta13CDIC.

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

**Coverage:** West: 8.7091 \* East: 9.6214 \* South: 57.8406 \* North: 58.0422

**Event(s):** Alkor\_159\_225510 \* Latitude: 58.0422 \* Longitude: 9.6214 \* Elevation: -285.0 m \* Recovery: 5.44 m \* Location: Skagerrak \* Campaign: AL19xx \* Basis: Alkor \* Device: Gravity corer

**Alkor\_159\_225514 \* Latitude: 57.8406 \* Longitude: 8.7091 \* Elevation: -420.0 m \* Recovery: 4.05 m \* Location: Skagerrak \* Campaign: AL19xx \* Basis: Alkor \* Device: Gravity corer**

**Comment:** Project: Integrated Baltic Sea Environmental Study (IBSEN); funded by German Ministry of Education and Research (BMBF)

**Size:** 5 datasets

**Download Data**

Download ZIP file containing all datasets as tab-delimited text (use the following character encoding: ISO-8859-1: ISO Western (PANGAEA default))

**Datasets listed in this Collection**

- Brückner, S; Mackensen, A (2008): (Figure 3a) Stable carbon isotope ratios of benthic foraminifera from sediment core Alkor\_159\_225514. doi:10.1594/PANGAEA.676718
- Brückner, S; Mackensen, A (2008): (Figure 3b) Stable carbon isotope ratios of benthic foraminifera from sediment core Alkor\_159\_225510. doi:10.1594/PANGAEA.676717
- Brückner, S; Mackensen, A (2008): (Table 1) Age determination of sediment core Alkor\_159\_225510. doi:10.1594/PANGAEA.676716
- Brückner, S; Mackensen, A (2008): (Table 3a) Paired d13C differences between *Globobulimina turgida* and *Melonis barleeanus* of sediment core Alkor\_159\_225514. doi:10.1594/PANGAEA.716157
- Brückner, S; Mackensen, A (2008): (Table 3b) Paired d13C differences between various benthic foraminifera of sediment core Alkor\_159\_225510. doi:10.1594/PANGAEA.716158

Contact

<http://is.gd/bH5mL>

# Beispiel I

- ScienceDirect - PANGAEA

The screenshot shows a ScienceDirect search results page. At the top, there's a navigation bar with links for Home, Browse, Search, My Settings, Alerts, and Help. Below the navigation is a search bar with fields for Quick Search (All fields, Author, search tips), Journal/book title, Volume, Issue, and Page, along with Clear and Go buttons. To the right of the search bar are links for Login and Register, and a Font Size adjustment icon.

The main content area displays a research article from *Marine Micropaleontology*, Volume 66, Issues 3-4, 20 February 2008, Pages 192-207. The article title is "Organic matter rain rates, oxygen availability, and vital effects from benthic foraminiferal  $\delta^{13}\text{C}$  in the historic Skagerrak, North Sea". It features authors Sylvia Brückner and Andreas Mackensen, both from the Alfred Wegener Institute for Polar and Marine Research. The article was received on 27 March 2007, revised on 21 September 2007, and accepted on 24 September 2007, available online on 4 October 2007.

On the left, there are tabs for Abstract, Article, Figures/Tables, and References. On the right, there's a sidebar titled "Related Articles" listing several related publications. Below the abstract, there's a "Purchase the full-text article" section with links for PDF and HTML, All references, All images, and All tables. At the bottom right, there's a link to "View Record in Scopus" and a "Supplementary Data" section with a green circular icon.

<http://is.qd/bH5CR>

# Beispiel I

- Bibliothekskatalog - PANGAEA

TIB | UB  
Gesamtbestand

suchen [und] alle Wörter [ALL] ? sortiert nach Erscheinungsjahr Unscharfe Suche □  
Stable carbon isotope composition of benthic foraminifera from sediments of the Skagerrak Suchen

Katalogauswahl  
Homepage  
Ausweis beantragen  
Standorte  
Neuerwerbungen  
Sachgebiete  
Speichern  
Trefferanalyse  
Abmelden  
Aufsätze (Zeitschriften und Datenbanken)

Ihre Aktion suchen [und] (alle Wörter [ALL]) Stable carbon isotope composition of benthic foraminifera from sediments of the Skagerrak 1 von 1

<b>Titel:</b>	Stable carbon isotope composition of benthic foraminifera from sediments of the Skagerrak, North Sea, supplementary data to: Brückner, Sylvia; Mackensen, Andreas (2008): Organic matter rain rates, oxygen availability, and vital effects from benthic foraminiferal d13C in the historic Skagerrak, North Sea. <i>Marine Micropaleontology</i> , 66(3-4), 192-207
<b>Verfasser:</b>	Brückner, Sylvia ; Mackensen, Andreas
<b>Erschienen:</b>	2008-01-10
<b>Anbieter:</b>	Bremen/Bremerhaven : PANGAEA - Publishing Network for Geoscientific & Environmental Data
<b>Umfang:</b>	5 Datasets.
<b>Anmerkung:</b>	This dataset is supplement to doi:10.1016/j.marmicro.2007.09.002 This dataset is cited by hdl:10013/epic.28879.d001
<b>Technische Angaben:</b>	Format: application/zip Link: <a href="http://dx.doi.org/10.1594/PANGAEA.676719">http://dx.doi.org/10.1594/PANGAEA.676719</a> <a href="http://nbn-resolving.de/urn/resolver.pl?urn=urn:nbn:de:tib-10.1594/PANGAEA.6767195">http://nbn-resolving.de/urn/resolver.pl?urn=urn:nbn:de:tib-10.1594/PANGAEA.6767195</a>
<b>Anmerkung:</b>	Primaerdaten

1 von 1 1 von 1

<http://is.qd/bH5Q5>

# Beispiel II

- Earth System Science Data (ESSD)

The screenshot shows the homepage of the Earth System Science Data (ESSD) journal. The header features the journal's logo and title "Earth System Science Data: The Data Publishing Journal". The left sidebar contains links for Home, Online Library ESSD, Online Library ESSDD, Papers in Open Discussion, Volumes and Issues, Special Issues, Library Search, Title and Author Search, Alerts & RSS Feeds, General Information, Submission, Review, Production, Subscription, and Comment on a Paper. A "ARCHIVED IN PORTICO" logo is also present. The main content area includes a brief about the first ozone sounding in 1985, the article title "Compilation of ozonesonde profiles from the Antarctic Georg-Forster-Station from 1985 to 1992" by G. König-Langlo and H. Gernandt, the abstract, and the full text. Navigation links for Volumes and Issues and Contents of Issue 1 are available. The right sidebar features the Copernicus Publications logo, search functions for Library Search and Author Search, and a list of recent papers.

Earth Syst. Sci. Data Discuss., 1, 1-13, 2008  
www.earth-syst-sci-data-discuss.net/1/1/2008/  
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under the Creative Commons Attribution 3.0 License.

**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

**Abstract.** On 22 May 1985 the first balloon-borne ozonesonde was successfully launched by the staff of Georg-Forster-Station ( $70^{\circ}46' S$ ,  $11^{\circ}41' E$ ). 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 ( $70^{\circ}39' S$ ,  $8^{\circ}15' W$ ) 750 km further west.

[Discussion Paper \(PDF, 423 KB\)](#) [Interactive Discussion \(Closed, 7 Comments\)](#) [Final Revised Paper \(ESSD\)](#)

<http://is.gd/bH6hd>

# Beispiel II

- Earth System Science Data (ESSD)



## 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

<http://is.gd/bHfEh>

# Beispiel II

- Google Scholar - ESSD

Google scholar Compilation of ozonesonde profiles from the Antarctic Suche Erweiterte Scholar-Suche  
Scholar-Einstellungen  
Web-Suche Suche Seiten auf Deutsch

Scholar Jederzeit Zitate einschließen Ergebnisse 1 - 4 von 4. (0,09 Sek.)

Tipp: Suchen nur nach Ergebnissen auf **Deutsch**. Sie können Ihre bevorzugten Spracheinstellungen in [Scholar-Einstellungen](#) angeben.

[PDF] [Compilation of ozonesonde profiles from the Antarctic Georg-Forster-Station ...](#) earth-syst-sci-data-discuss.net [PDF]  
G Bremerhaven - 2008 - earth-syst-sci-data-discuss.net  
Earth Syst. Sci. Data Discuss., 1, 1–13, 2008 www.earth-syst-sci-data-discuss.net/1/1/2008/ ©  
Author(s) 2008. This work is distributed under the Creative Commons Attribution 3.0  
License. ... Earth System Science Data Discussions is the access reviewed discussion ...  
[Ähnliche Artikel](#) - [HTML-Version](#)

[PDF] [Compilation of ozonesonde profiles from the Antarctic Georg-Forster-Station ...](#) earth-syst-sci-data-discuss.net [PDF]  
G König-Langlo, H Gernhardt - Earth System ..., 2008 - earth-syst-sci-data-discuss.net  
Earth Syst. Sci. Data Discuss., 1, 1–13, 2008 www.earth-syst-sci-data-discuss.net/1/1/2008/ ©  
Author(s) 2008. This work is distributed under the Creative Commons Attribution 3.0  
License. ... Earth System Science Data Discussions is the access reviewed discussion ...  
[Ähnliche Artikel](#) - [HTML-Version](#) - [Alle 7 Versionen](#)

[Compilation of ozonesonde profiles from the Antarctic Georg-Forster-Station from ...](#)  
G König-Langlo, H Gernhardt - Sci. Data Discuss., 2008 - earth-syst-sci-data-discuss.net  
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 ...  
[Im Cache](#) [Alle 3 Versionen](#)

[426 ozonesonde profiles from Georg-Forster-Station](#)  
G König-Langlo, H Gernhardt - Alfred Wegener Institute for Polar and ..., 2008 - dx.doi.org  
... Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, doi:10.1594/PANGAEA.  
547983, Supplement to: König-Langlo, Gert; Gernhardt, Hartwig (2008): **Compilation of**  
**ozonesonde profiles from the Antarctic Georg-Forster-Station from 1985 to 1992.** ...  
[Alle 2 Versionen](#)

<http://is.gd/bIfQO>

# Beispiel III

- Scientific Drilling Database (SDDB)

**Scientific Drilling Database**  
Data from Deep Earth Sampling and Monitoring

+ Home  
+ About SDDB  
+ News  
+ Data Publications  
+ Catalogue  
+ Authors  
+ Dataset  
+ Research Programs  
+ Sampling Gear  
+ Analytical Parameters  
+ Publication Process  
+ Admin

**Dataset Description**

Citation: Demory, Francois; Oberhänsli, Hedi; Nowaczyk, Norbert; Gottschalk, Matthias; Wirth, Richard; Naumann, Rudolf; (2006): Hysteresis measurements (uncorrected and corrected for the paramagnetic influence) for VER98-1-1 at core depth of 580.6cm.. *Scientific Drilling Database*. doi:10.1594/GFZ.SDDB.1031 [Download Citation \(EndNote\)](#)

DOI: 10.1594/GFZ.SDDB.1031

Title: Hysteresis measurements (uncorrected and corrected for the paramagnetic influence) for VER98-1-1 at core depth of 580.6cm.

Abstract: Hysteresis measurements of a hematite dominated diatomaceous layer with pseudosingle to multidomain behaviour of the hysteresis loop for VER98-1-1. [Show in Google Earth](#)

Related Publications:

- Francois Demory, Hedi Oberhansli, Norbert R. Nowaczyk, Matthias Gottschalk, Richard Wirth and Rudolf Naumann, Detrital input and early diagenesis in sediments from Lake Baikal revealed by rock magnetism, *Global and Planetary Change*, Volume 46, Issues 1-4, doi:10.1016/j.gloplacha.2004.11.010

Glossary  
Catalogue

<http://is.gd/bH7DT>

# Beispiel III

- Bibliothekskatalog - SDDB

## ALBERT

All Library Books, journals and Electronic Records Telegrafenberg

Simple Search   Advanced Search   Journals A-Z   Saved Results (0)   Info

VER98-1-1 Hysteresis

GO

4 hit(s) - Search time 0.0s

Results: Books (0) • Journal Titles (0) • Open Access (4) • More (0) • All Sources (4)

Search history: [Hysteresis measurements \(uncorrected and corrected for the paramagnetic influence\) for VER98-1-1 at core depth of 580.6cm](#) | [VER98-1-1](#) | [VER98-1-1 Hysteresis](#)

Sort by: [Relevance](#) | [Year ascending](#) | [Year descending](#) | [Title ascending](#) | [Title descending](#)

Hits per page: [5](#) | [10](#) | [20](#) | [50](#) | [100](#)

Selection: [All](#) | [None](#) | [Reverse](#) | [Save](#) | [Mail](#) | [Export](#)

Go to no.:  

Year	Title	Author
1. <input type="checkbox"/> 2006	[DATA] Hysteresis measurements (uncorrected and corrected for the paramagnetic influence) for VER98-1-1 at core depth of 580.6cm. <a href="#">10.1594/GFZ.SDDB.1031</a> <a href="#">S-FX</a>	<a href="#">Francois</a> <a href="#">Demory</a> <a href="#">Matthias</a> <a href="#">Gottschalk</a> <a href="#">Rudolf</a> <a href="#">Naumann</a> <a href="#">Norbert</a> <a href="#">Nowaczyk</a> <a href="#">Hedi</a> <a href="#">Oberhänsli</a> [et al.]

<http://is.gd/bH7N7>

# Beispiel III

## • GEO-LEO - SDDB

The screenshot shows the GEO-LEO online library interface. The left sidebar has a 'SUCHE' section with links like Schnellsuche, Erweiterte Suche, Thematische Suche (Astronomie, Geowissenschaften, Bergbau, Geographie, Karten), e-Zeitschriften, Nationallizenzen, and GEO-LEO e-docs. It also includes a Suchverlauf [1] and Ablagekorb [0]. The 'MEIN GEO-LEO' section has fields for Benutzername and Passwort, and buttons for Anmelden, Neu? Registrieren!, Paßwort vergessen?, and e-doc Publizieren. Logos for SUB, DFG, and VfA are at the bottom. The main content area shows a search result for 'Hysteresis'. The search bar says 'Suchen und Browsen in Informationsressourcen zum System Erde und Weltall'. Below it, 'Letzte Suche: Schnellsuche nach VER98-1-1\* Hysteresis\*' is shown. The result list for 'Langanzeige "SUB Göttingen und GBV" Treffer 2 von 4' includes a back button, forward button, 'zurück zur Kurzanzeige' link, 'Treffer in den Ablagekorb:' button, 'Text' dropdown, and 'Export-Ansicht' button. The detailed record shows:

<b>Medientyp:</b>	Online Ressource
<b>Titel:</b>	Hysteresis measurements (uncorrected and corrected for the paramagnetic influence) for VER98-1-1 at core depth of 520.7cm. / GeoForschungsZentrum Potsdam (GFZ) , Potsdam, Germany .Francois@Demory
<b>Autor/beteiligte Personen:</b>	Demory, Francois Gottschalk, Matthias Naumann, Rudolf Nowaczyk, Norbert Oberh??nsli, Heidi Wirth, Richard
<b>Körperschaft:</b>	GeoForschungsZentrum Potsdam (GFZ)
<b>Ersch.-Jahr:</b>	2006
<b>Umfang:</b>	Online-Ressource (1512 Datapoints).
<b>Anmerkung:</b>	Mode: Abstract StructuralType: Digital CreationDate: 2006-03-02
<b>Kurzfassung / Inhaltsverzeichnis:</b>	Hysteresis measurements of a magnetite dominated clay-rich layer with pseudosingle-domain behaviour of the hysteresis loop for VER98-1-1.
<b>Sprache:</b>	eng
<b>Link:</b>	<b>Volltext:</b> <a href="http://dx.doi.org/10.1594/GFZ.SDDB.1030">http://dx.doi.org/10.1594/GFZ.SDDB.1030</a> <a href="urn:nbn:de:tib-10.1594/GFZ.SDDB.10309">urn:nbn:de:tib-10.1594/GFZ.SDDB.10309</a>

<http://is.gd/bH7ZK>

# Rolle der Bibliothek

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- Chance: Frühe Positionierung im Wissenschaftsprozess
- Vernetzung mit Wissenschaft, Administration und anderen infrastrukturellen Dienstleistern
- Services: z.B. Forschungsdaten-Repositorien
  - Einwerbung, Erschließung, Nachweis, Publikation ...
- Förderung von (interdisziplinären) Standards

# Ausblick

---

- Open Science, E-Science, Cyberinfrastructure
  - Wissenschaftspolitische Diskussion
  - Tiefgreifende Herausforderungen
  - Rollen der Infrastruktureinrichtungen
  - Zusammenspiel von Text und Forschungsdaten
  - Neue Forschungsansätze
  - Innovationsfähigkeit steigern
-

# Danke

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Quellen und Literaturhinweise:

<http://www.connotea.org/user/pampel/tag/mpg2010>

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<http://oa.helmholtz.de>