International Council for Science
ICSU’s long-term vision is of a world where excellence in science is effectively translated into policy making and socio-economic development. In such a world, universal and equitable access to scientific data and information is a reality …’
Foundation

ICSU’s 29th General Assembly in Maputo decided:

• To confirm that ICSU will continue to assert a strategic leadership role in relation to scientific data and information

• To establish a new ICSU-World Data System as an Interdisciplinary Body to replace the World Data Centres (WDCs) and Federation of Astronomical and Geophysical Data Analysis Services (FAGS)
ICSU’s Data and Information

Facilitating the scientific research endeavours by coordinating trusted scientific data services for the provision, use, and preservation of relevant datasets.

www.icsu-wds.org

works to improve the quality, reliability, management and accessibility of data of importance to all fields of science and technology.

www.codata.org

Improve access, production and use of research information and knowledge, so that countries are equipped to solve their development challenges

www.inasp.info
# ICSU Data Bodies

<table>
<thead>
<tr>
<th>PAST</th>
<th>WDC</th>
<th>CODATA</th>
<th>ISU</th>
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<tbody>
<tr>
<td>PRESENT</td>
<td>ICSU WORLD DATA SYSTEM</td>
<td>CODATA ISU</td>
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WDS Scientific Committee
2012–2015

- Bernard Minster (*Chair, USA*)
- Michael Diepenbroek (*Germany*)
- Françoise Genova (*France*)
- Claudia Emerson (*Canada*)
- Sandra Harrison (*UK*)
- Wim Hugo (*South Africa*)
- Jane Hunter (*Australia*)
- Vasily Kopylov (*Russian Fed.*)
- Guoqing Li (*China*)
- Ruth Neilan (*USA*)
- Lesley Rickards (*UK*)
- Ryosuke Shibasaki (*Japan*)
- Ariel Troisi (*Argentina*)
- Orhan Altan (*Ex officio, ICSU*)
- Yasuhiro Murayama (*Ex officio, NICT*)

WDS-SC Members and WDS-IPO Staff
WDS Implementation

1. Constitution
2. Data policy
3. Certification criteria and Membership Applications
4. International Programme Office
5. Working Groups
6. Strategic Plan
ICSU-WDS

- Full and open access data policy
- Broad disciplinary and geographic coverage
- Trusted Scientific Data Repositories and Services
WDS Members

Scientific Data Services: Assist organizations in the capture, storage, curation, long-term preservation, discovery, access, retrieval, aggregation, analysis, and/or visualization of scientific data, as well as in the associated legal frameworks, to support disciplinary and multidisciplinary scientific research.
<table>
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<tr>
<th>Membership Type</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>57 Regular</strong></td>
<td>Organizations that are data stewards and/or data analysis services</td>
</tr>
<tr>
<td><strong>10 Networks</strong></td>
<td>Umbrella bodies representing groups of data stewardship organizations and/or data analysis services (EOSDIS, IODE, IVOA...)</td>
</tr>
<tr>
<td><strong>3 Partners</strong></td>
<td>Contribute support to WDS Membership (DataCite)</td>
</tr>
<tr>
<td><strong>17 Associates</strong></td>
<td>Interested in the WDS endeavour</td>
</tr>
</tbody>
</table>
WDS Implementation

WDS International Programme Office

WDS-IPO Inauguration, May 2012
International Programme Office

Hosted and supported by the Japanese National Institute for Information and Communication Technologies (NICT)
Strategic Targets

1) Make trusted data services an integral part of international collaborative scientific research

2) Nurture active disciplinary and multidisciplinary scientific data services communities

3) Improve the funding environment

4) Improve the trust in and quality of open Scientific Data Services

5) Position WDS as the premium global multidisciplinary network for quality-assessed scientific research data
WDS Implementation

Strategic Targets

1. Make trusted data services an integral part of international collaborative scientific research
   - Involve WDS Members more closely into international collaborative scientific research.
   - Promote the use of best practices in international collaborative research programmes.

2. Nurture active disciplinary and multidisciplinary scientific data services communities
   - Support existing communities whose practices serve their members well.
   - Support emerging communities by helping them to identify their needs and to organize their activities.
   - Provide mechanisms that facilitate cross-disciplinary interactions and activities.
   - Contribute towards scientific development by improving the analytical environment.
WDS Implementation

Strategic Targets (Ctd.)

3. Improve the funding environment
   – Promote international, national, and disciplinary policies that lead to sustainable long-term funding.
   – Engage and work with research funders to increase resources for data services, including as part of research funding.

4. Improve the trust in and quality of open scientific data services
   – Provide a certification framework for WDS Regular and Network Members.
   – Actively promote policies of full and open access to data at national and international fora.
   – Foster interoperable practices to facilitate data sharing.
   – Facilitate access to, and use or reuse of datasets—including through publication—in particular for multidisciplinary research.

5. Position ICSU-WDS as the premium global multidisciplinary network for quality-assessed scientific research data
WDS Certification

- Organizational framework
- Management of data, products and services
- Technical infrastructure
Working Groups

• Publishing Data (WDS-RDA):
  • Workflows
  • Bibliometrics
  • Cost Recovery
  • Publishing Services
• Knowledge Network
• Certification (WDS-DSA)
• Global registry of trusted data services
Weather station and meteorological data recorded at Cap Thorsden, Spitzbergen, during the first IPY.
Global Research
Data Infrastructure

International Geophysical Year 1958–59
Global Research
Data Infrastructure

International Geophysical Year 1958–59

ICSU WDCs

FAGS

WORLD DATA SYSTEM
Global Research
Data Infrastructure
Global Research
Data Infrastructure
International Polar Year (2007–2008)

50,000 participants from 63 nations
'Dazzling' science
Global Research Data Infrastructure

International Polar Year (2007–2008)

Integrated Data and Information System: IPY-DIS ≠ WDCs + FAGS
Global Research
Data Infrastructure
Global Research Data Infrastructure

Observing Systems

Information System

Nine Societal Benefit Areas

Disasters
Health
Energy
Climate
Water
Weather
Ecosystems
Agriculture
Biodiversity
Global Research Data Infrastructure

- World Meteorological Organisation
- NCBI GenBank
- IODE International Oceanographic Data and Information Exchange
- RCSB PDB Protein Data Bank
- IVOA
International coordination to deliver research data infrastructure
International Coordination
International Coordination

Existing Data

Existing Knowledge

New Observations

Models

Integrated and interdisciplinary datasets, indicators, visualizations, scenarios, information...

Social, economics, ecosystems, geophysics
International Coordination

ICSU
WORLD DATA SYSTEM

CODATA
ISU

RDA
RESEARCH DATA ALLIANCE
Building Trust

IPCC
Intergovernmental Panel on Climate Change
AN EROSION OF TRUST?

Many climate researchers worry that scepticism about global warming is on the rise. Jeff Tollifson investigates the basis for that concern and what scientists are doing about it.

Last November, a catchy music video popped up on YouTube and attracted thousands of fans. Called "Hide the Decline," the video features caricatures of climate researcher Michael Mann admitting that he had committed fraud while depicting his famous hockey-stick graph of temperatures over the past millennium. Accompanied by aaken playing the piano, the caricature of Mann joyfully sings, "Making up data is the old hat; we're finding the numbers by day!" The video wasn't funny to the real Mann, director of the Earth System Science Center at Pennsylvania State University in University Park. A lawyer wrote to the group responsible for it, threatening to sue them for defamation and for using a copyrighted image. The video was promptly taken down and a new version—without the copyrighted photo—appeared on YouTube.

Mann has grown weary of dealing with the various groups that are criticizing him. In reality, these groups are guilty of over and over again of defamation, slander and libel, but that is far more difficult to fight legally," Mann says. "Even if you were to prevail, you would have invested potentially several years of your career, and finally three of us who love doing science are not willing to do that."

Mann isn't alone in wondering how to respond to the wave of attacks that followed November's leak of e-mails from climate researchers at the University of East Anglia in Norwich, UK. Beyond the scientists and stimuli appearing on blogs, researchers have endured threatening phone messages and other forms of harassment. And they're frustrated that government have yet to mobilize in the face of solid evidence for global warming. All of this has spread fear among climate scientists that they are losing the war over public opinion, just a few years after a wave of support followed the publication of the Intergovernmental Panel on Climate Change (IPCC) in Geneva, Switzerland, which garnered a Nobel Peace Prize in 2007.

However, polling data suggest that the situation is not as dire as many researchers once feared. Studies in the United States and the United Kingdom show that belief in global warming has dropped in recent years, not a majority of people still trust climate scientists. There are also signs that public support for action on global warming has grown in recent months: 56% of Americans now say that the government should do more to combat global warming, compared to 44% in 2008. In addition, a growing number of scientists and scientific societies have decided that they need to fight back against the spread of misinformation. They are using novel approaches to get their message across, such as calling for climate scientists, "We're trying to see if we can inoculate against
Building Trust

1. Australian researcher creates a research dataset and a publication related to the dataset.
2. Dataset is stored in a publicly accessible repository.
3. Researcher uses ANDS services to mint a Digital Object Identifier (DOI) for the dataset.
4. DOI is used in data citation.
5. Research community use the DOI to access the dataset and carry out related research.
6. Citation metrics services (e.g., Scopus, Web of Knowledge) accumulate citation references to the dataset and publication.
7. Researcher future funding and promotion influenced by dataset citation metrics.

ANDS

ands.org.au
Building Trust

RDA/WDS: Publishing Data Interest Group
Co-chairs: Michael Diepenbroek, Eefke Smit, Jonathan Tedds

Introduction

In the empirical sciences, data has traditionally been an integral part of scholarly publishing. In recent decades, rapid technical developments, such as digital data and high-throughput techniques, have dramatically altered the scholarly publishing paradigm. The need to ensure the availability and usability of research data has increased, and various technical solutions in use or proposed to date offer promise but do not yet provide sufficient benefit and incentives for the data producers themselves and those who work with their research. The concept of Publishing Data is undergoing a renaissance as part of scholarly communication and on the base of new and proven technologies such as establishing persistent identifiers and data sets. Publishing data offers a strong incentive for researchers to share their data and benefits the wider community through a focus on data quality.

Workflows for Archiving and Publishing Data

Jonathan Tedds, Kim Finney, John Helly, Hylke Koers, Fiona Murphy, Amy Nurnberger, Lisa Raymond, Mary Vardigan, Eva Zanzerka

- Investigate current workflows for archiving and publishing data
- The role of science publishers/journals in the data publication process
- Barriers to implementation

Deliverable: Provide a range of generic and discipline-specific workflows for data publication

The Costs of Publishing Data

Ingrid Dillo, Simon Hodson, Barbara Sierman, Frank Tousaint, Mark Thorley, Kim Finney, Anita de Waard, Eva Zanzerka

- Investigate current cost structures for archiving and publishing data
- Elaborate a business model based on open access which compensates for the additional costs due to data publication

Deliverable: Recommendations for funding organisations

Bibliometrics Including Published Data

Kerstin Lehnert, Euan Adie, Jan Brase, Ross Cameron, Cyndy Chandler, Ingeborg Meijer, Fiona Murphy, Lyubomir Penev, Fiona Nielsen, Nigel Robinson, Mary Vardigan

- General requirements for citability of scientific data (granularity, citation information and persistent identifiers)
- Current citation practice in data centres and literature

Deliverable: Recommendations for data publishers and academic publishers

Data Publication Services

Hylke Koers, David Carlson, John Helly, Francisco Hernandez, Caroline Martin, Lyubomir Penev, Nigel Robinson, Johanna Schwarz, Eva Zanzerka, David Anderson, Junjie Wang

- Existing service components to be used as building blocks
- Relevancy, cost and interoperability standards
- Interoperability requirements for data centres (registration, metadata and data services)

Deliverable: Infrastructure and organisation for a one-for-all cross-referencing service for academic publishers and providers of bibliometric services

Scan to join the DATA-PUBLICATION mailing list: http://jiscmail.ac.uk/DATA-PUBLICATION

Scan to visit the Publishing Data Interest Group website: https://rd-alliance.org/internal-groups/publishing-data-ig.html
Trusted Digital Repositories/Services

• WDS & DSA: lightweight certification framework
• NESTOR seal
• DIN standard 31644, TRAC criteria
• ISO standard 16363
Thank you for your attention!

www.ICSU-WDS.org