World Data System of the International Science Council

Trustworthy Data Services for Global Science

www.WorldDataSystem.org
Introduction

• The World Data System (WDS) is an Interdisciplinary Body of the International Science Council (ISC), which was created on in July 2018, following a merger of ICSU and ISSC.

• ISC is ‘global voice for science’; the largest international non-governmental science organization and the only one bringing together the Natural and Social Sciences.
Introduction

• WDS builds on the legacy of two bodies established in 1957–1958 to manage the data from the International Geophysical Year:
  - World Data Centres – long-term preservation and dissemination of the datasets
  - Federation of Astronomical and Geophysical Analysis Services – data analysis and provision of data products necessary for science beyond IGY

• These bodies were not able to respond fully to the modern data need of the International Polar Year (2007–2008), and were replaced with WDS by the ICSU General Assembly in 2009.
WDS Mission

- WDS supports ISC’s vision by promoting long-term stewardship of, and universal and equitable access to, quality-assured scientific data and data services, products, and information across all scientific disciplines.

- It facilitates scientific research by coordinating and supporting trusted scientific data services for the provision, use, and preservation of relevant datasets, while strengthening their links with the research community.
Strategic Targets

The strategy for achieving the WDS objectives is structured around three major targets:

1. Improve the trust in and quality of open Scientific Data Services

2. Nurture active disciplinary and multidisciplinary scientific data services communities

3. Make trusted data services an integral part of international collaborative scientific research
Data Sharing Principles

• WDS has adopted Data Sharing Principles to advance its goals. The Principles express core ethical commitments that are operationalized in the WDS accreditation of its Members.

• The Principles embody the spirit of 'Open Science' meant to unite diverse communities of data producers and data users, and thus could be adopted by anyone pursuing science for the public good.

• The Principles are in line with the data policies of national and international initiatives.
Data Sharing Principles

• Data, metadata, products, and information should be fully and openly shared, subject to national or international jurisdictional laws and policies, including respecting appropriate extant restrictions, and in accordance with international standards of ethical research conduct.

• Data, metadata, products, and information produced for research, education, and public-domain use will be made available with minimum time delay and free of charge, or for no more than the cost of dissemination, which may be waived for lower-income user communities to support equity in access.

• All who produce, share, and use data and metadata are stewards of those data, and have responsibility for ensuring that the authenticity, quality, and integrity of the data are preserved, and respect for the data source is maintained by ensuring privacy where appropriate, and encouraging appropriate citation of the dataset and original work and acknowledgement of the data repository.

• Data should be labelled ‘sensitive’ or ‘restricted’ only with appropriate justification and following clearly defined protocols, and should in any event be made available for use on the least restrictive basis possible.
Governance & Offices

• WDS is governed by a Scientific Committee of leading data scientists and experts covering a broad range of disciplines and geographical areas. The Scientific Committee 2018–2021 is:
  
  **Chair:** Alexander de Sherbinin (USA). **Vice Chairs:** Ingrid Dillo (Netherlands), Elaine Faustman (USA). **Members:** David Castle (Canada), Aude Chambodut (France), Aminata Garba (Rwanda), Isabelle Gärtner-Roer (Switzerland), Toshihiko Iyemori (Japan), Claudia Medeiros (Brazil), Marc Nyssen (Belgium), Ioana Popescu (Netherlands), Juanle Wang (China). **ECR Network Representative:** Lianchong Zhang (China). **Ex officio:** Heide Hackmann (ISC), Yasuhiro Murayama (NICT), Benoît Pirenne (ONC).

• WDS is also supported by two International Offices:
  
  • **Programme Office:** Hosted by the National Institute of Information and Communications Technology in Tokyo, Japan. Responsible for coordinating the day-to-day operations of WDS, and organizing WDS events, outreach, and promotional activities.
  
  • **Technology Office:** Hosted by Ocean Networks Canada at the University of Victoria, Canada. Manages the WDS contribution to Global Research Data Infrastructure, and to technical working groups.
WDS Members

- WDS buildings worldwide ‘communities of excellence’ for scientific data services by accrediting Member Organizations that work right across the data lifecycle.

- **WDS Members** fall into four categories:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
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<tbody>
<tr>
<td>85 Regular</td>
<td>Data stewards and/or data analysis services</td>
</tr>
<tr>
<td>11 Networks</td>
<td>Umbrella bodies of data stewards</td>
</tr>
<tr>
<td>11 Partners</td>
<td>Contribute support to WDS membership</td>
</tr>
<tr>
<td>20 Associates</td>
<td>Interested in the WDS endeavour</td>
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</tbody>
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- WDS Regular Members are certified as Trustworthy Data Repositories through the CoreTrustSeal certification standard.
WDS Coverage

• There are gaps in the Global South, but the WDS membership has a large geographical spread.

• WDS Members also cover a wide range of scientific domains. The historical bias towards the Natural Sciences is now being reduced.
Ocean-related WDS Members

- The following is a non-exhaustive list of WDS Regular Members who collect and manage oceanographic or ocean-related data.
  - Incorporated Research Institutions for Seismology, Data Services
  - Australian Antarctic Data Centre
  - Flanders Marine Institute, Data Centre
  - World Data Service for Oceanography
  - Fish Database of Taiwan
  - PANGAEA - Data Publisher for Earth & Environmental Science
  - WDC - Oceanography, Tianjin
  - WDC - Oceanography, Obninsk
  - WDC for Solid Earth Physics, Moscow
Ocean-related WDS Members

• Continued…
  • Oak Ridge National Laboratory DAAC
  • Interdisciplinary Earth Data Alliance
  • Ocean Networks Canada
  • NSIDC DAAC
  • Socioeconomic Data and Applications Center
  • Goddard Earth Sciences Data and Information Services Center
  • Permanent Service for Mean Sea Level
  • Global Hydrology Resource Center
  • Alaska Satellite Facility
  • Global Biodiversity Information Facility
Ocean-related WDS Members

- Global Change Research Data Publishing and Repository
- WDC – NSIDC
- CCIN/Polar Data Catalogue
- Ocean Biology DAAC
- Norwegian Marine Data Centre
- California Digital Library
- Physical Oceanography DAAC
- National Center for Atmospheric Research
- The Environmental Information Data Centre
- ARM Data Center