

CODATA



**Committee on Data for Science and Technology
of the International Council for Science**

<http://www.codata.org>

Who are we?

An interdisciplinary committee of the International Council for Science (ICSU) established in 1966 as an international nongovernmental organization based in Paris

24 National Members

15 International Scientific Unions

4 Co-opted Scientific Organizations

13 Supporting Organizations (industry, government, academia)

Mission:

To strengthen international science for the benefit of society by promoting improved scientific and technical data management and use

National Members

- Brazil
- Cameroon
- Canada
- Chinese Academy of Sciences
- Academy located in Taipei
- Czech Republic
- France*
- Germany*
- Georgia
- India
- Indonesia
- Ireland
- Israel
- Italy
- Japan
- Korea
- Nigeria
- Poland
- Russia
- Senegal
- South Africa
- Thailand
- Ukraine
- USA

* Associate National Membership status accepted at 25th General Assembly

Union Members

- International Astronomical Union
- International Union of Pure and Applied Chemistry
- International Union of Pure and Applied Physics
- International Union of Biological Sciences
- International Geographical Union
- International Union of Crystallography
- International Union of Biochemistry and Molecular Biology
- International Union of Geological Sciences
- International Union of Psychological Science
- International Union of Pure and Applied Biophysics
- International Union of Nutritional Sciences
- International Union of Pharmacology
- International Union of Immunological Societies
- International Union of Microbiological Societies
- International Union of Soil Scientists

Co-opted Organizations

- ICSU Panel on World Data Centers
- Federation of Astronomical and Geophysical Services
- International Council for Scientific and Technical Information
- World Federation for Culture Collections

Note: Co-opted organizations have voting rights equivalent to the unions

How do we achieve our mission?

- Task Groups
- National Member Activities
- International Conferences
- CODATA *Data Science Journal* (online, open access)
- Publications
- Workshops
- Studies and Reports
- Co-operation and liaison with other Interest Groups
- Secretariat based at ICSU Headquarters in Paris
 - Executive Director and support staff (about 1 FTE equivalent)
 - Annual budget of \$250-350K depending on projects

CODATA Task Groups

2006-08

1. Anthropometric Data & Engineering
2. *Comprehensive Information System on National Disaster Mitigation*
3. Data Sources in Asian & Oceanic Countries
4. *Data Sources for Sustainable Development in SADC Countries*
5. Exchangeable Materials Data Representation
6. Fundamental Physical Constants
7. Gas Hydrates
8. Global Species Data Network
9. Observations and Specimen Records (formerly ABCD)
10. *Polar Year Data Policy and Management*
11. Preservation of & Access to S&T Data in Developing Countries

Task Group on Fundamental Physical Constants

- 2006 revisions released in March 2007

The NIST Reference on Constants, Units, and Uncertainty

Information at the foundation of modern science and technology from the [Physics Laboratory of NIST](#)

CODATA Internationally recommended values of the Fundamental Physical Constants

Latest (2006) values of the constants [Version history and disclaimer](#)

(e.g., electron mass, most misspellings okay)

Search for value by name

Display alphabetical list, table (image), or table (pdf)

by clicking a category below

<input type="button" value="Universal"/>	<input type="button" value="Adopted values"/>	<input type="button" value="Frequently used constants"/>
<input type="button" value="Electromagnetic"/>	<input type="button" value="Non-SI units"/>	<input type="button" value="Extensive listings"/>
<input type="button" value="Atomic and nuclear"/>	<input type="button" value="Conversion factors for energy equivalents"/>	<input type="button" value="All values (ascii)"/>
<input type="button" value="Physico-chemical"/>	<input type="button" value="X-ray values"/>	

Find the [correlation coefficient](#) between any pair of constants
Data from the [least-squares adjustment](#) of the values of the constants

Constants Topics:
[Values](#)
[Energy Equivalents](#)
[Searchable Bibliography](#)
[Background](#)

[Constants Bibliography](#)

[Constants, Units & Uncertainty home page](#)

Task Group on Fundamental Physical Constants

_2002.pdf

Newtonian constant of gravitation	G	$6.6742(10) \times 10^{-11}$	$\text{m}^3 \text{kg}^{-1} \text{s}^{-2}$	1.5×10^{-4}
	$G/\hbar c$	$6.7087(10) \times 10^{-39}$	$(\text{GeV}/c^2)^{-2}$	1.5×10^{-4}
Planck constant in eV s	h	$6.626\,0693(11) \times 10^{-34}$	J s	1.7×10^{-7}
		$4.135\,667\,43(35) \times 10^{-15}$	eV s	8.5×10^{-8}
$h/2\pi$ in eV s	\hbar	$1.054\,571\,68(18) \times 10^{-34}$	J s	1.7×10^{-7}
		$6.582\,119\,15(56) \times 10^{-16}$	eV s	8.5×10^{-8}
$\hbar c$ in MeV fm		197.326 968(17)	MeV fm	8.5×10^{-8}
Planck mass $(\hbar c/G)^{1/2}$	m_{P}	$2.176\,45(16) \times 10^{-8}$	kg	7.5×10^{-5}
Planck temperature $(\hbar c^5/G)^{1/2}/k$	T_{P}	$1.416\,79(11) \times 10^{32}$	K	7.5×10^{-5}
Planck length $\hbar/m_{\text{P}}c = (\hbar G/c^3)^{1/2}$	l_{P}	$1.616\,24(12) \times 10^{-35}$	m	7.5×10^{-5}
Planck time $l_{\text{P}}/c = (\hbar G/c^5)^{1/2}$	t_{P}	$5.391\,21(40) \times 10^{-44}$	s	7.5×10^{-5}
ELECTROMAGNETIC				
elementary charge	e	$1.602\,176\,53(14) \times 10^{-19}$	C	8.5×10^{-8}
	e/h	$2.417\,989\,40(21) \times 10^{14}$	A J ⁻¹	8.5×10^{-8}


Task Group on Fundamental Physical Constants

2006.pdf

Newtonian constant of gravitation	G	$6.674\,28(67) \times 10^{-11}$	$\text{m}^3 \text{kg}^{-1} \text{s}^{-2}$	1.0×10^{-4}
	$G/\hbar c$	$6.708\,81(67) \times 10^{-39}$	$(\text{GeV}/c^2)^{-2}$	1.0×10^{-4}
Planck constant in eV s	h	$6.626\,068\,96(33) \times 10^{-34}$	J s	5.0×10^{-8}
		$4.135\,667\,33(10) \times 10^{-15}$	eV s	2.5×10^{-8}
	$h/2\pi$	$1.054\,571\,628(53) \times 10^{-34}$	J s	5.0×10^{-8}
		$6.582\,118\,99(16) \times 10^{-16}$	eV s	2.5×10^{-8}
$\hbar c$ in MeV fm		197.326 9631(49)	MeV fm	2.5×10^{-8}
Planck mass $(\hbar c/G)^{1/2}$ energy equivalent in GeV	m_{P}	$2.176\,44(11) \times 10^{-8}$	kg	5.0×10^{-5}
	$m_{\text{P}}c^2$	$1.220\,892(61) \times 10^{19}$	GeV	5.0×10^{-5}
Planck temperature $(\hbar c^5/G)^{1/2}/k$	T_{P}	$1.416\,785(71) \times 10^{32}$	K	5.0×10^{-5}
Planck length $\hbar/m_{\text{P}}c = (\hbar G/c^3)^{1/2}$	l_{P}	$1.616\,252(81) \times 10^{-35}$	m	5.0×10^{-5}
Planck time $l_{\text{P}}/c = (\hbar G/c^5)^{1/2}$	t_{P}	$5.391\,24(27) \times 10^{-44}$	s	5.0×10^{-5}
ELECTROMAGNETIC				
elementary charge	e	$1.602\,176\,487(40) \times 10^{-19}$	C	2.5×10^{-8}
	e/h	$2.417\,989\,454(60) \times 10^{14}$	A J ⁻¹	2.5×10^{-8}

CODATA *Data Science Journal*

- A peer-reviewed, open access electronic journal
- Focus on management of scientific and technological data and databases
- Now hosted by J-STORE
- Editor-in-chief:
 - Dr. John Rumble, Jr.



DATA SCIENCE Journal

Welcome to the CODATA Data Science Journal

Home	<i>The Data Science Journal is a Journal of the Committee on Data for Science and Technology (CODATA) of the International Council for Science (ICSU)</i>
Current Issue	
Previous Volumes	
Submission Instructions	The CODATA Data Science Journal Volume 6 (2007) is now available.
Scope of the Journal	Volume 6 of the Data Science Journal includes papers coming out of the 20th CODATA International Conference in Beijing, October 2006.
Submission Terms & Conditions	
Sample Submission Paper [PDF]	ISSN 1683-1470
For Reviewers	The Data Science Journal is a peer-reviewed electronic journal publishing papers on the management of data and databases in Science and Technology. Details can be found in the prospectus . The scope of the journal includes descriptions of data systems, their publication on the internet, applications and legal issues. All of the Sciences are covered, including the Physical Sciences, Engineering, the Geosciences and the Biosciences, along with Agriculture and the Medical Science.
Editorial Board	
Contact	The journal publishes papers about data and data systems; it does not publish data or data compilations. However it may publish papers about methods of data compilation or analysis.

We would like to acknowledge, with thanks, the financial contribution of UNESCO to the funding of the journal.

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<http://dsj.codataweb.org/>

CODATA Conference 2006, Beijing

- More than 600 attendees (nearly half foreign)
- High-level participation by China
 - Keynote by Xu Guanhua, President of MOST
 - Keynote by Liu Depei, President, Chinese Academy of Medical Sciences
- Article appeared in Scidev.net
- Keynotes by Jane Lubchenco, Tony Hey
- Numerous side events, meetings
- Submitted conference papers are being released through *Data Science Journal*



*CODATA lunch with
African remote
sensing students in
training in China*

CODATA Officers, 2006-10

- President: Krishan Lal, India
- Vice President: Steve Rossouw, South Africa
- Vice President: Gordon Wood, Canada
- Treasurer: Jean-Jacques Royer, France*
- Secretary-General: Robert Chen, USA*
- Past President: Shuichi Iwata, Japan

* terms end 2008

CODATA Executive Committee, 2006-08

- Jean Garnier, IUPAB (France)
- Sara Graves, USA
- Guo Huadong, China
- Fedor Kuznetsov, Russia
- Ray Norris, IAU (Australia)
- Antoni Nowakowski, Poland
- Michel Sabourin, IUPsyS (Canada)
- Mikhail Zgurovsky, Ukraine
- Paul David, USA/UK*

* Co-opted member as of May 2007

CODATA Officers & EC



- Missing: Sara Graves, USA; Guo Huadong, China

CODATA Strategic Plan

- Recommended by ICSU in its Priority Area Assessment on Data and Information (2005) and the ICSU Strategic Plan (2006)
- Draft reviewed by 25th CODATA General Assembly and key initiatives and actions approved
- Final plan reviewed by the CODATA Executive Committee in March 2007; will be sent to ICSU and others for review and feedback as soon as some minor changes are made

CODATA Cross-Cutting Initiatives

1. Global Information Commons for Science Initiative (GICSI)

- Launched by CODATA at WSIS in November 2005
- Primary focus is on scientific data, in coordination with other open access information initiatives
- Close collaboration with the Science Commons
- Main purpose: how can we jumpstart the creation of a sustainable global data and information commons?
- Envisioned as a network of nodes aimed at creating critical mass of open access initiatives and data
- Funding initiatives under way with NSF, EU



CODATA Cross-Cutting Initiatives

2. Scientific Data across the Digital Divide Program (SD³)

- Follows ICSU recommendation to address digital divide issue; ties in with ICSU strategic initiatives/interests
- Builds on linkages with GEOSS, IPY, eGY, UN GAID, GRIP, etc.
- Builds on CODATA Task Groups (e.g., Archiving, Biodiversity, Disasters); CODATA-ICSTI Portal prototype
- Link with WSIS e-science initiative and follow-up led by UNESCO

EDITORIAL

Science and the Digital Divide

At the launch of the World Summit on the Information Society (WSIS) in Geneva in December 2003, the world community strongly affirmed the central role of science in developing an information society and affirmed the principle of "universal access with equal opportunities for all scientific knowledge and the creation and dissemination of scientific and technical information." The WSIS Declaration of Principles recognized the essential role of the public domain and public institutions such as libraries, archives, and museums in supporting the growth of the Information Society and providing free and equitable access to information.* The WSIS Plan of Action suggested numerous approaches to implement these principles, including "e-science" as a key application of information and communication technologies in support of sustainable development.† The international scientific community succeeded in raising these issues at WSIS and securing widespread support from participating governments. Now, with the second phase of WSIS taking place in Tunis in November 2005, the scientific community needs to take the lead in demonstrating how science—and universal access to scientific data, information, and knowledge—can make a critical difference in sustainable development and overcoming the "digital divide."

The deadly South Asian tsunami in December 2004 and what many have called the "silent tsunami" of millions of unnecessary deaths and maimed suffering from malnutrition, disease, and poverty remind us that science has far to go. Scientists must work not only to predict future hazards and develop new medicines and vaccines, but also to make scientific data and information much more accessible and useful for real-world decision-making. These disasters underscore the need to better understand how societies can best organize themselves to address pressing problems posed by limited resources, conflict, poor infrastructure, and inadequate skills and knowledge. Scientists, the original developers of information and communication technologies, often take for granted their ready access to data and information, software and hardware, and networks of colleagues. But for billions of people, even the most rudimentary access to life-saving scientific expertise and knowledge, such as an early warning or a new cropping method, is a major challenge.

How can the international scientific community help reduce the digital divide? Already, many scientists and scientific institutions are working to improve the reach and effectiveness of science through information and communication technologies. The International Council for Science (ICSU) and its Committee on Data for Science and Technology (CODATA) are collaborating with WSIS to collect and document such efforts (www.wsis-online.net/science/home_EN). But more needs to be done.

Scientists can support distance education and training; improve the accessibility of information and communication technologies to disadvantaged, marginalized, and vulnerable groups; communicate technical knowledge to the general public; and establish digital libraries, data archives, and other mechanisms to increase access to scientific information. We urge the scientific community to come up with more creative ideas and outcomes. Noteworthy examples on this front include the efforts by the Massachusetts Institute of Technology to provide electronic access to its course materials (<http://ocw.mit.edu/olc/index.html>) and by the Global Biodiversity Information Facility to make primary scientific biodiversity data openly available (www.gbif.org). The scientific community should also consider new approaches to open electronic access, such as the Science Commons (<http://sciencecommons.org>), that, among other things, address the complex issue of licensing structures.

Immediately after the South Asian tsunami, critical data on elevation, population location, administrative boundaries, and damage could not be shared because of intellectual property and national security constraints. Even now, the 30-meter resolution data from the Shuttle Radar Topographic Mission (SRTM) flown by NASA in the year 2000 is not publicly available, although it could potentially provide the best available elevation information regarding most of the world's coasts. The pending decision by the U.S. National Geospatial Intelligence Agency to prohibit public access to various astronomical products would be another step in the wrong direction. The scientific community needs to press governments not only to release specific data sets that are vital to disaster management and planning, but also to establish a "good Samaritan" principle for the use of data and information in humanitarian emergencies.

Science helped to create the Information Society—it can now help extend that society to all.

Shuichi Iwata and Robert S. Chen
Shuichi Iwata (University of Tokyo) is president of ICSU's CODATA. Robert S. Chen (Columbia University) is secretary general of CODATA. CODATA is based in Paris, France.

10.1126/science.1119300

*WSIS Declaration of Principles [document:WSIS-03GENEVA004-12 December 2003]. †WSIS Plan of Action [document:WSIS-03GENEVA00054-12 December 2003].

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CODATA Cross-Cutting Initiatives

3. Advanced Data Methods and Information technologies for Research and Education (ADMIRE)

- Provides state-of-the-art technology focus
- Builds on past TG activities and collaborative projects and larger research community interested in data mining and integration
- Positions CODATA with respect to new e-science/cyberinfrastructure initiatives and programs, including long-term data stewardship issues
- Potential EU funding, industry partnerships

CODATA and the GEO Data Policy Task

- Group on Earth Observations
 - International initiative involving 69 countries & the EC plus 46 participating organizations
- GEO 2006 Work Plan, Task DA-06-01 (continuing in GEO 2007-09 Work Plan)
 - Furthering the practical application of the agreed GEOSS data sharing principles
- CODATA is now the lead on this task, working with the GEO Secretariat

GEO Group on Earth Observations

Welcome

- ▶ **About GEO**
- ▶ **GEOSS Progress**
- ▶ **GEO Members & Participating Organizations**
- ▶ **Meetings & Events**
- ▶ **Newsroom**
- ▶ **Document Library**
- ▶ **GEO Plenary**
- ▶ **GEO Committees & Working Groups**

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Understanding the Earth system is crucial to enhancing human health, safety and welfare, alleviating human suffering including poverty, protecting the global environment, reducing disaster losses, and achieving sustainable development. Observations of the Earth system are critical to advancing this understanding.

“ GEO is an organization dedicated to developing and instituting a Global Earth Observation System of Systems, or GEOSS. ”

Conrad C. Lautenbacher, GEO Co-Chair for the United States, U.S. Under Secretary of Commerce for Oceans and Atmosphere

The Group on Earth Observations, GEO, was established by a series of three ministerial-level summits. GEO includes 62 member countries, the

NEWS

9 May 2006
[CloudSat and CALIPSO to Study Weather, Climate and Air Quality](#)

10 April 2006
[Indian Ocean Tsunami Warning System \(IOTWS\) Update](#)

Call for Papers
Special Issue of *Remote Sensing of Environment* on Earth Observation for Biodiversity and Ecology.
Deadline: July 15, 2006

For more information about GEOSS, please download the following documents:

- ▶ [GEOSS 10-Year Implementation Plan](#)
- ▶ [GEO 2006 Work Plan version 4](#)

Expected GEO Task Outputs

- “White” Paper on Guidelines for Implementing the GEOSS Data Sharing Principles
 - Writing team led by Paul Uhler of USNC for CODATA and Bob Chen of CODATA
 - Authors include Joanne Gabrinowycz, University of Mississippi, and Bernard Minster and Dave Clark
- New language on data policy in the Declaration planned for the November 2007 Ministerial Summit in Cape Town, S. Africa
- Possibility of side event(s) in conjunction with Summit to address data policy issues

CODATA and the International Polar Year

- CODATA IPY Task Group approved--same membership as IPY Data Committee
 - Met in conjunction with CODATA 2006
 - Three IPY Sessions at CODATA 2006
- CODATA should be able to provide longer-term framework for IPY data activities beyond 2007-08



CODATA and the electronic Geophysical Year



- CODATA endorsed the eGY at its 24th GA
- Five eGY organized sessions at CODATA 2006
- C. Barton participated as an observer (and vote counter!) in 25th GA
- CODATA community participating in various IGY+50 and eGY activities
 - Annual eGY meeting in Boulder in March
 - eGY launch event at IUGG GA in Perugia, Italy on 7 July 2007
 - Russian Conference in Sept 2007



CODATA and the Global Risk Identification Program

- New program of the United Nations Development Program (UNDP) aimed at improving global, regional, and national disaster risk assessment and management
 - Coordination with the ProVention Consortium, International Strategy for Disaster Reduction (ISDR), the World Bank, etc.
- CODATA may have a role in scientific peer review and science community input into risk assessment process beginning in 2007



CODATA and the UNESCO E-Science Follow-Up

- Consultation held in Beijing in October 2006, organized by UNESCO with CODATA support
- Two of five elements:
 - Promote the long-term systematic and efficient collection, dissemination and preservation of essential scientific digital data, for example, population and meteorological data in all countries.
 - Promote principles and metadata standards to facilitate cooperation and effective use of collected scientific information and data as appropriate to conduct scientific research.
- Follow-on meeting held with C. Geiger of UNCTAD in Geneva in late March
- UNCTAD is reviving its Commission on Science & Technology for Development (CSTD) to address these issues

Other Strategic Efforts

- Improve Membership
 - Revitalize existing members
 - Attract new members (Europe, Africa), working with ICSU
 - Active efforts to encourage UK, IUGG to rejoin
- Recruit Supporting Organizations
 - Focus on data centers, networks, research institutes
- Develop CODATA Associates Program
 - Build an international community of data scholars, specialists
- Explore establishment of CODATA Scientific Academy
- Establish endowment fund
- Participate in ICSU data planning activities (e.g., SCID)
- Work with WDCs

Next CODATA Conference

- Kyiv, Ukraine, 5-8 October 2008
- Hosted by National Technical University of Ukraine, Kyiv Polytechnic Institute
- Web site to be released soon
- Sessions organized by WDCs, other ICSU bodies welcome
- Should have sessions and side meetings related to eGY, IPY, GEO, etc.

CODATA

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