International Council for Science (ICSU)

CODATA Newsletter 98

Committee on Data for Science and Technology

Foreword

Almost 19% of CODATA's budget in 2009 is allocated to its Task Groups. This Newsletter highlights the reports of the activities of the Task Groups submitted to CODATA in June 2009. It should be noted that the financial support received from CODATA is intended to provide seed funding for some of the Task Group activities. Many Task Groups are very successful in leveraging additional funds from other sources. Information on all these Groups can be found on www.codata.org/taskgroups/index.html

July 2009

The mission of CODATA is to strengthen international science for the benefit of society by promoting improved scientific and technical data management and use.

www.codata.org

Task Group: eGY Earth and Space Science Data Interoperability

This Task Group was one of the organizers of the "ELECTRONIC GEOPHYSICAL YEAR: STATE OF THE ART and RESULTS", international conference (http://egy-russia.gcras.ru/index_new_e.html) which took place in Pereslavl-Zalessky, Russia on 3-6 June, 2009. The conference summarized the results of the eGY Program 2007—2008. The program focused on the development of specialized virtual sources of geophysical data (virtual observatories) in the global network and improvement of systems of data selection, storage and scientific analysis of data. The conference, was co-organized by the Earth Sciences branch of the Russian Academy of Sciences (RAS), Geophysical Center RAS, Institute of Program Systems RAS, International Institute for Applied Systems Analysis (IIASA, Vienna), Schmidt Institute of Physics of the Earth, RAS, CODATA, National Geophysical Committee RAS and the International Union of Geodesy and Geophysics (IUGG). It was attended by 120 scientists from 8 countries - Russia, France, USA, Germany, Ukraine and Iran - interested in the sphere of exchanging data on geosciences.

The conference themes embraced practically all domains of earth sciences from showcasing eGY products in Russia and highlighting activities of the **Electronic Geophysical Year, International Polar Year, International Heliophysical Year, Year of the Planet Earth, the World Data Centers Transition Team**, to discussing artificial intelligence methods in geoinformatics and geosciences, GRID systems, geoinformation systems in fundamental and applied scientific problems, problems of geoinformatics in seismology and geoecology, geomagnetic observations, geoinformatics and virtual observatories, global changes, climate and weather of the solar-terrestrial system.

In the framework of the conference the meeting of CODATA Task Group **"eGY Earth and Space Science Data Interoperability"** took place on June 6, 2009. The agenda of the meeting included the following topics: a presentation by Professor Jean-Bernard Minster, Co-Chair of the World Data System Transition Team, on the "Tsukuba Declaration" http://egy-russia.gcras.ru/PZ-Declaration.html; the Task Group

Chair of the Task Group: Alexei Gvishiani

Continued Page 2

website, development of interoperability methodologies, scope and effectiveness of eGY results, promotion of the results of IPY, IGY and eGY and development of international virtual laboratories in earth and space sciences in 2009-2010. An example of a Virtual ElectroMagnetic Laboratory (VEML, http://www.virtual-electromagnetic-laboratory.com/) was presented at the meeting. The group includes participants from France, Russia, Greece, Japan, China, India, Philippines and Belgium. They represent international expertise in different fields of research and contribute to natural hazards mitigation, through to common projects mainly applied to volcanic eruptions and earthquakes. The VEML focuses on combined magnetic, electric and ElectroMagnetic (EM) studies and integrates the EM observations in multi-disciplinary researches. More information on the Group can be found on

www.codata.org/taskgroups/TGegy/index.html

Task Group on European activities within the Global Information Commons for Science Initiative, (EU/GICSI)

This Task Group, working with **COMMUNIA**, the European Thematic Network on the Digital Public Domain, and its partners, Université Catholique de Louvaine, the Department of Economics "S. Cognetti de Martinis", University of Turin, BRICK – Collegio Carlo Alberto and the EU DIME Network of Excellence, organized the 2nd International COMMUNIA Conference on

Chair of the Task Group: Paul David

Global Science and the Economics of Knowledge-Sharing Institutions (GSEKSI). This took place in Turin, 28-30 June, 2009. It was attended by over 100 people from the legal, economic and scientific communities.

Within COMMUNIA members of the CODATA Task-Group have responsibility for activities concerned specifically with technical and institutional (including legal) aspects of the digital environment affecting the direction and conduct of scientific activities -- focusing primarily upon developments touching publicly and charitably funded research. The aim of the Turin conference was to address, in an integrated way, the problems, and the solutions that currently are being developed to provide timely and lower cost access to scientific information in the published literature, and the use and re-use of bio-physical materials, research infrastructure facilities, databases and computational resources and algoritms.

Details of the Program and COMMUNIA, the network, can be found on **http://www.communia-project.eu/conf2009/programme**

Task Group on Fundamental Constants

On Monday May 25, 2009 the CODATA Task Group on Fundamental Constants held its latest meeting at the International Bureau of Weights and Measures in Sèvres, France. There were 21 participants including seven observers (Francois Piquemal of LNE, Richard Davis of BIPM, Alain Picard of BIPM, Michael Kühne of BIPM, Philippe Richard of METAS, Ian Mills of CCU and Lu Zuliang of NIM).

The next adjustment, the 2010 Least Squares Adjustment (LSA) of the fundamental physical constants on nature, is planned to be released in early 2011 and much of the Task Group's activities are devoted to meeting this deadline. Most of the technical aspects of the meeting focused on the review of existing and new results related to the fine structure constant (a), the gravitational constant (G), the Planck constant (h), The Avogadro constant (NA) and the Boltzmann constant (k).

These constants are particularly topical right now since the Consultative Committee on Units (CCU) is currently considering changing the world's measurement system, the SI, by exactly fixing the values of the Planck constant (h), The Avogadro constant (NA), the Boltzmann constant (k) and the elementary charge (e). This represents the most fundamental change to the SI in 135 years and brings with it a host of concerns including the reliability of the determination of the values of the constants and the detailed timing of the proposed change.

Chair of the Task Group: Barry Wood

The CODATA Task Group on Fundamental Constants is in close contact with the CCU and is assisting this process by providing additional information and analysis of the determination of the values of these constants. A draft LSA to help the CCU in its decisions and a revised summary of the LSA after these constants are exactly fixed are part of the Task Group's contributions.

The Group also maintains a working website (http://www.bipm.org/extra/codata/) detailing meeting minutes and related documents. Finally, the detailed numerical results of the most recent LSA are available on **physics.nist.gov/cuu/Constants/index.html** .

Task Group on Anthropometric Data and Engineering

Anthropometry is the science of measuring body dimensions and has evolved over the last decades from taking linear measures to 3D data capture and processing.

The objective of the CODATA Task Group on Anthropometric Data and Engineering is to promote dissemination and development of knowledge in anthropometry thereby contributing to the improvement of the health, safety and well-being of all people. As an initial step towards that goal the WEAR (world engineering anthropometry resource) project is underway. In August 2009 a web portal that gives access to anthropometric data and the tools to use them will be opened in Beijing by the president of the International Ergonomics Association.

The initial site will contain a limited set but the plan is to expand the data and tools over the next few years.
Short courses on WEAR and anthropometry are planned in New Zealand and Spain in 2010.
More details can be found at:
www.codata.org/taskgroups/TGanthro/index.html

Co-Chair of the Task Group: Hein Daanen

Co-Chair of the Task Group: Kathleen Robinette

Task Group on Polar Year Data Policy and Management

The International Polar Year 2007-2008 (IPY) has been a huge, scientific success, resulting in new insights in how the polar regions work and affect our daily lives.

Now that the IPY has officially drawn to a close, it is critical to ensure that the data generated by IPY projects are accessible and preserved for the benefit of future generations This Task Group is leading a CODATA initiative- The

Polar Information Commons (PIC): Establishing the Framework for Long-term Stewardship of Polar Data and Information.

It aims to establish a sustainable long-term framework for the preservation and access of polar data, building on recent "commons" approaches developed in other scientific fields and entraining new stakeholders and participants into polar data management.

The first planning meeting of the Project was hosted at the British Antarctic Survey Headquarters in Cambridge in April 2009.

CODATA looks forward to working with its supporting partners: the International Arctic Science Council (IASC); the Scientific Committee on Antarctic Research (SCAR); the International Union of Geodesy and Geophysics (IUGG); the World Meteorological Organization (WMO); the IPY International Program Office (IPY IPO); the World Data System Transition Team and the Royal Netherlands Academy of Sciences as well as many stakeholders in the development of this project. In addition,
More details at: http://www.codata.org/taskgroups/TGpolaryear/index.html

CODATA thanks ICSU, the International Council for Science for its support in the launch of the activity.

Task Group on Database for Natural Gas Hydrates

The objective of this task group is to develop an internationally distributed database for Natural Gas Hydrates which represent an energy resource equal to twice that of the total of all the other known hydrocarbon resources. The knowledge base in this area is exploding and an efficient way is needed to deal with the data overload.

Our Task Group consists of 15 international researchers and our work has been in two steps: (1) to develop a Gas Hydrate Markup Language and (2) to develop a Portal for communication among international databases.

We developed a Gas Hydrate Markup Language (GHML) as a Committee in 2006-7. The GHML was further developed at the U.S. National Institute of Standards (NIST) in Boulder, Colorado.

We developed the first version of a Database Portal at the Chinese Academy of Science in Beijing. A proposal is currently being considered for further development of the Portal at NIST in Boulder.

More details at: http://www.codata.org/taskgroups/TGgashydrates/index.html

Task Group on Exchangeable Materials Data Representation to support Scientific Research and Education

Co-Chair of the Task Group: Toshihiro Ashino

Co-Chair of the Task Group: Laura Bartola

The Task Group is investigating the integration of nano materials data exchange into undergraduate and graduate education by developing examples, or potential candidates for using materials databases, in undergraduate and graduate education. Recent government studies have indicated that undergraduate students who participate in hands-on research are more likely to pursue advanced degrees and careers in science, technology, engineering and mathematics (STEM) fields. The Task Group is also collecting, and making public, documents that provide open standards used in, or of potential use for, materials data collections and repositories leading to the development of a registry. The Task Group includes members from major materials database-providing organizations in the world and will coordinate the collaboration among them in order to establish an international information registry for materials science.

The Task Group held an interim meeting on February 18, 2009 at TMS Annual, in San Francisco, CA to discuss: review of report to CODATA on Task Group Accomplishments 2006-08; current use & interest in MatML; initial plans to build pilot an international undergraduate research nano project.

More details at: www.codata.org/taskgroups/TGmatlsdata/index.html

Task Group on Preservation of and Access to Scientific and Technical Data in Developing Countries (CODATA/TGDC)

This Group is planning an International Symposium on Space Cooperation, an important activity of our TG, with the cooperation of APSCO (Asia Pacific Space Cooperation Organization). The meeting is scheduled to be held in Pattaya, Thailand from 20-24 July, 2009. CODATA will one of four joint organizers, the other three being the Ministry of Industry and information Technology of the People's Republic of China, APSCO, and the Ministry of Information and Communication Technology of Thailand (MICT) The Symposium has three main themes: Space Activities, Statues and Development; Satellite Earth Observation Technology and Application; Satellite Communication Technology and Application. CODATA/TGDC will be responsible for a 30-minute keynote speech and two special presentations within the main theme -"Satellite Earth Observation Technology and Application". The key issue we shall propose is "Remote Sensing Data and Applications for Sustainable Development of Developing Countries" A related round table meeting is planned which aims to promote data preservation and information sharing.

The TG has also been working on the planning and preparation of side events related to the GEO meeting which will be held in November, 2009 in Washington, DC. There will be at least two meetings organized by our TG: one related to data policy and the other on developing country applications. More details at:

http://www.codata.org/taskgroups/TGpreservation/index.html

Task Group on Biodiversity: Observation and Specimen Records

Unraveling the complexity of biodiversity requires synthesis of data from a variety of resources. The objective of this Task Group is to re-categorize data through a standard data exchange framework for integration of multiple data sets with little data and in so doing serve as the springboard for truly synthetic research in biodiversity studies.
To date this Group has focused on two projects: 1) made specific recommendations to the Global Biodiversity Information Facility (GBIF) to expand their observational data model by formally identifying the subset of observational data focused on species occurrences. 2) Published a white paper that describes the particular opportunities offered to further ecological understanding and biodiversity conservation through the special characteristics of an expanded observational data model on species occurrence

www2.gbif.org/Observational_Data.pdf

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