

3.2 Central Bureau

General activities

The IERS Central Bureau (CB), hosted and funded by Bundesamt für Kartographie and Geodäsie (BKG), organized and documented the IERS Directing Board (DB) Meetings No. 52, April 3, 2011, at Technical University Vienna, Austria, and No. 53, December 3, 2011, at Westin Hotel, San Francisco, California, USA. Between the meetings the CB coordinated the work of the DB.

Together with the Global Geodetic Observing System (GGOS), the CB prepared the Third GGOS Unified Analysis Workshop, held September 16–17, 2011, at the ETH Centre main building, Zurich, Switzerland. The programme and the presentations were published at the IERS web site. For a summary see Section 4. The CB represented the IERS at the following meetings: European Geosciences Union General Assembly, IUGG XXV General Assembly, Journées 2011 “Systèmes de référence spatio-temporels”, Colloquium “Decoupling Civil Timekeeping from Earth Rotation”, and AGU 2011 Fall Meeting.

IERS components maintain individually about 10 separate web sites. The central IERS site <www.iers.org>, established by the CB, gives access to all other sites, offers information on the structure of the IERS, its products and publications and provides contact addresses as well as general facts on Earth rotation studies. It contains also electronic versions of IERS publications, as well as link lists for IERS, Earth rotation in general and related fields. Throughout 2011 the web site was continually updated, several new pages and documents were added. An extended list of meetings related to the work of the IERS was maintained, and a new list of publications about the IERS and its work including links to online versions was compiled. The CB maintains also the web pages of the IERS working groups.

The IERS Annual Report 2008–2009 was finished and published online at the end of 2011. Along with the reports of the IERS components, provided by them, the annual reports contain general information on the IERS compiled by the CB. For the 2008–2009 report, the CB provided also summaries of DB meetings and its own report, as well as reports about the GGOS Unified Analysis Workshop Follow-Up Meeting and the Second GGOS Unified Analysis Workshop.

The IERS Technical Note No. 36 “IERS Conventions (2010)” was printed and distributed to libraries and subscribers.

A report about the activities of the IERS during 2007 to 2011 was compiled for IAG, and a triennial report 2009–2011 was provided to IAU Commission 19.

During the year 2011, 21 IERS Messages (Nos. 180–200) were edited and distributed. They include news from the IERS and of

general type as well as announcements of conferences.

Address and subscription information has regularly been updated in the IERS user database. There were about 2500 users in 2011 with valid addresses who subscribed to IERS publications for e-mail and regular mail distribution. A proof-of-concept for a new system of address management was successfully developed by a software firm in cooperation with the CB. The improved system will allow easier maintenance and will give access for users to register as well as to check and update their data.

Questions from IERS users concerning IERS publications and products as well as Earth rotation and reference frames in general were answered or forwarded to other specialists.

A member of the CB became involved in the Control Body for an ISO Register of Geodetic Codes and Parameters.

IERS Data and Information System (DIS)

The IERS Data and Information System (IERS DIS), which was developed by the Central Bureau between 2002 and 2005, is in the operational mode since 2006. The system is continuously being adapted and extended by new components in order to fulfill the requirements for a modern data management and for the access to the data by the users. In this context international and interdisciplinary projects like the Global Geodetic Observing System (GGOS) or the Global Earth Observation System of Systems (GEOSS) are demanding special requirements with respect to the standardization of the data and applications on the data.

Besides routine work like maintenance of the data bases of users, products and web pages, in 2011 further developments of the IERS DIS concentrated on the following aspects:

- acquisition of data from IERS services and institutions,
- conversion of the data into uniform formats as well as extraction and creation of ISO 19115-conform metadata,
- integration of new data sources,
- visualization of time series,
- updating the data structure, e.g. by adopting to the new structure of the Global Geophysical Fluids Center,
- development of a concept for a new data management system.

Earth Rotation Information System (ERIS)

Many of these developments were made in close cooperation with another research project at BKG, the project ERIS (Earth Rotation Information System). Since June 2006 ERIS is executed at BKG. ERIS is a part of the research unit FOR 584 “Earth Rotation and Global Dynamic Processes” which is supported by the German Research Foundation (DFG). ERIS serves as a development and testing platform for new interactive data access tools as well as an information portal. Furthermore, it is used as an exchange platform within the research unit.

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The aim of ERIS is the development of a portal, which integrates data, models as well as scientific information and procedures in due consideration of state-of-the-art technology. It is addressed to both experts and the interested public.

The internet portal <<http://www.erdrotaion.de>> has been continuously upgraded and completed. Besides the information portal the activities of the research unit are presented and internal web pages for data and information exchange are provided.

In 2011 the work focused on the completion and extension of tools for visualizing and processing of time series. Thus, the data analysis tool, developed in the year before, was improved and completed. This tool provides analysis procedures like spectral analyses, various filters and approximations. These procedures can be operated on implemented time series but also on user's local data. The usability was improved by linking the data with their metadata. This allows a direct access to information like production date, underlying models and data as well as responsible persons and institutions. Additionally operation instructions were integrated. The access to this tool, hints for use and a user manual are found on ERIS portal at <<http://www.erdrotaion.de/ida>>.

As a further application a visualization tool was developed in the last year and continuing in this year. Within this tool different model data concerning earth rotation can be combined, processed and compared to measured earth rotation parameters. At this time models for excitation functions of the atmosphere, oceans and hydrology are available. For this application existing and tested methods, functions and structures of the data analysis tools were reused reducing and simplifying administration. The visualization tool was finally tested and is now available on the ERIS portal along with a user guide.

Beside these tools the data availability was expanded in close cooperation with the IERS Central Bureau. This includes creation of schemata for standardized data formats for geophysical fluids data as well as standardized metadata formats. Especially the reorganization of the GGFC (Global Geophysical Fluid Center) results in restructuring data structures and databases.

Staff in 2011

Dr. Bernd Richter, *Director*

Sabine Bachmann, *scientist*

Dr. Wolfgang R. Dick, *scientist*

Sonja Geist, *technician (since 1 February 2011)*

Carola Helbig, *secretarian*

Michael Lösler, *technician (since 1 January 2011)*

Alexander Lothhammer, *technician (until 31 January 2011)*

Anja Niederhöfer, *scientist*

Sandra Schneider-Leck, *technician*

Publications

- Dick, Wolfgang R.: The IERS, the Leap Second, and the Public. In: John H. Seago, Robert L. Seaman, Steven L. Allen (eds.), Decoupling of Civil Timekeeping from Earth Rotation. Proceedings of a Colloquium Exploring Implications of Redefining Coordinated Universal Time (UTC), held October 5–7, 2011 at Analytical Graphics, Inc., Exton, Pennsylvania. (American Astronautical Society, Science and Technology Series; 113) San Diego, Cal.: Univelt, 2011, p. 117–121 (Discussion on p. 122)
- Dick, Wolfgang R.; Richter, Bernd (Eds.): IERS Annual Report 2008–09. Frankfurt am Main: Verlag des Bundesamts für Kartographie und Geodäsie, 2012. 237 p.

Wolfgang R. Dick, Anja Niederhöfer