

3.5.3 Conventions Centre

The Conventions Center is operated jointly by the Bureau International des Poids et Mesures (BIPM) and the U.S. Naval Observatory (USNO).

The Conventions Center provides updated versions of the Conventions in electronic form, after approval of the IERS Directing Board. In the mean time, work on interim versions is also available by electronic means. In addition to the electronic releases, printed versions of the Conventions will be provided at less frequent intervals or when major changes are introduced.

Over 2008 and 2009, the work accomplished or in progress is the following:

1. Technical content of the IERS Conventions

The background work of keeping track of corrections, typos and small changes that improve the readability of the documents continued in 2008 and 2009. More technical or complex issues are first discussed, e.g. through the Advisory Board, where topics are identified as needing investigation and possible developments for future versions of the Conventions.

The 2007 IERS Workshop had decided on a new registered edition of the Conventions, tentatively planned for the end of 2009. Therefore, over the period covered by this report, focus has been put on all contributions required for the new edition.¹ In early 2008, it was determined that this work should include:

- A major rewrite of all chapters dealing with both celestial and terrestrial reference systems and the transformation between them;
- A new conventional geopotential model and a rewrite of the section on Earth tides;
- Updated models for the displacement of reference points, as needed;
- A review of the document to ensure consistency with the recommendations of the IAU and IUGG and with the conclusions of the Unions' working groups.

Work on the following major topics was started, ongoing or completed in 2008–2009 (see Section 3 for a detailed list of the updates to the electronic version of the Conventions):

1.1 Terrestrial reference frame

A general revision of the chapter was completed with the primary goal of incorporating the ITRF 2005 into the new chapter. After circulation to the IERS Conventions Advisory Board it was released

¹ At the time of this report, the registered edition of the IERS Conventions (2010) is available on line at <<http://tai.bipm.org/iers/conv2010/conv2010.html>>. It will be described in the IERS report for 2010.

in April 2009. The principal contributors to this effort are Z. Altamimi, C. Boucher, U. Hugentobler and J. Ries.

1.2 Terminology and models for transformations between reference systems

Significant modifications were made to Chapter 5 to incorporate the IAU 2006 Precession model into the Conventions, to ensure that the terminology is consistent with current IAU Resolutions, and to reorganize the chapter for better readability. After circulation to the Advisory Board, the new version was released in June 2009. The principal contributors to this effort are N. Capitaine and P. Wallace.

1.3 Geopotential

Work has been initiated to determine a new conventional geopotential model and to rewrite the section on Earth tides. The principal contributors to this effort are S. Bettadpur, R. Biancale, F. Flechtner, F. Lemoine, N. Pavlis, J. Ray and J. Ries.

1.4 Models for the displacement of reference points

Work has continued to provide a conventional model for the loading due to surface pressure oscillations at mostly diurnal and semidiurnal periods caused by heating of the atmosphere. The principal contributors to this effort are T. van Dam and R. Ray.

Models for technique dependent effects that affect the link between reference points of instruments and a reference marker are being introduced. It is intended to provide only a short description of such models along with a link to a more detailed description, generally provided by the technique services. So far, this section contains models for a reference temperature (provided by J. Boehm), the thermal expansion of VLBI antennas (provided by A. Nothnagel) and GNSS antenna phase center offsets and variations (provided by R. Schmid).

1.5 Tidal variations in Earth rotation

Deficiencies in the zonal tidal model for Earth rotation of the IERS Conventions (2003) have been documented. An improved model is being developed by R. Gross.

1.6 Ionospheric models for radio techniques

A new section regarding ionospheric models for radio techniques, including higher order terms, has been completed and released in February 2009. The principal contributors to this effort were M. Pajares, A. Krankowski, O. Colombo, J.J. Valette, F. Mercier, J. Ray, and G. Petit.

1.7 General relativistic models for space-time coordinates and equations of motion

The new definition of Barycentric Dynamical Time (TDB) has been incorporated along with a correspondingly new description of the relations between time scales. A new section "Transformation between proper time and coordinate time in the vicinity of the Earth" has been introduced. The principal contributors to this effort have been U. Hugentobler, J. Kouba, S. Klioner, G. Petit, J. Ries, and J. Ray.

- 1.8 Adjustments for the 2008 leap second** The subroutines `dehanttideinel.f` and `hardisp.f` have been updated for the leap second that occurred at the end of 2008.
- 2. Procedural Topics** In an effort to make the IERS Conventions more efficient to maintain and more user-friendly, a series of procedural changes have been started, on-going or completed in 2008–2009:
- 2.1 Conventions Update web page updated** The Conventions Update page (<http://tai.bipm.org/iers/convupdt/convupdt.html>) has been modified to not only include information and links to past updates, but to also provide information and links to planned and possible changes. This provides users insight into the directions that the Conventions may be taking in the near future, allowing users to plan better regarding implementation of standardized models. This improvement was made in February 2008.
- 2.2 Conventions auxiliary web page created** A new web page (http://tai.bipm.org/iers/convupdt/convupdt_aux.html) of additional, supporting material has been created. This page presents materials that complement the IERS Conventions but are not formally a part of them. They are provided as additional information, such as test cases, technical notes written by contributors to the Conventions, etc. They are not subject to the same review process as the Conventions chapters and associated programs. This information was added in December 2008.
- 2.3 Software standardization** A topic discussed at the Conventions Workshop was the benefits of providing standardized software. To accomplish this, a software template has been developed, analogous to the IAU Standards of Fundamental Astronomy (SOFA) software template, to provide information to users, documentation, test cases and a distribution license. Implementation of this template on existing draft software and additional standardization of code was carried out in 2008 and 2009 and should be ready to release with the next registered edition of the Conventions.
- 3. Dissemination of information** The Conventions web site (<http://tai.bipm.org/iers/>) has been maintained. The web pages for the Conventions updates (<http://tai.bipm.org/iers/convupdt/convupdt.html>) are continuously modified, as required by changes in the texts, routines or data file including an archive of the discussion forum (<http://tai.bipm.org/iers/forum>) which has been discontinued.
- The list of all updates brought over the years to the IERS Conventions (2003) is available online at <http://tai.bipm.org/iers/conv2010/convupdt/convupdt.html>. (Please note that the previous link <http://tai.bipm.org/iers/convupdt/listupdt.html> now provides the updates to the current edition (2010) of the IERS Conventions.)

5. Conventions Center staff

Felicitas Arias (BIPM)
Brian Luzum (USNO), co-director
Dennis McCarthy (USNO)
G rard Petit (BIPM), co-director
Beth Stetzler (USNO)

G rard Petit, Brian Luzum