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 IERS Conventions in electronic form, after approval of the IERS Directing Board. In the meantime, 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 2010, the work accomplished or in progress is the following:

1. Technical content of the IERS Conventions

The new reference edition has been finalized as the IERS Conventions (2010) on 15 December 2010 in electronic form (<http://tai.bipm.org/iers/conv2010/>). This has since been published as Technical Note 36 of the IERS. This completes the work initiated after the 2007 IERS Workshop. In addition to the background work of keeping track of typos, corrections and cosmetic modifications, nearly every chapter has undergone substantial change in 2010 and the list below presents the most important of them.

1.1 Introduction

The introduction reflects the conclusions of the 2007 IERS Workshop. Tables synthesizing the information on the IERS reference frames and on the models in the IERS Conventions (2010) have been created.

1.2 Numerical standards (Chapter 1)

The section “Numerical standards” has been rewritten and the list of constants ensures consistency with the IAU (2009) system of astronomical constants.

1.3 Celestial reference frame (Chapter 2) and its dynamical realization (Chapter 3)

Chapter 2 has been significantly rewritten, with F. Arias, S. Bouquillon, A. Fey, G. Francou, and N. Zacharias as primary contributors. It describes ICRF2, the second realization of the ICRF, recommended as the fundamental realization of the ICRS by Resolution B3 of the IAU (2009).

Chapter 3 has been rewritten (with W.M. Folkner as the primary contributor) and provides information on recently released ephemerides.

1.4 Terrestrial reference frame (Chapter 4)

A presentation of ITRF2008, the current reference realization of the ITRS, has been included (from Z. Altamimi).

1.5 Transformations between terrestrial and celestial reference systems (Chapter 5)

The chapter has been revised by N. Capitaine and A. Brzezinski to include the effects of libration on the motion of the celestial intermediate pole in the ITRS and the Earth rotation angle. The

subroutine UTLIBR.F has been provided to calculate the effects on UT1 and LOD. In addition, numerous less significant modifications occurred.

1.6 Geopotential (Chapter 6)

A new conventional geopotential model, based on the EGM2008 model, is proposed. The section on Ocean tides has been completely rewritten, and describes the tide model FES2004. The principal contributors to this effort are S. Bettadpur, R. Biancale, F. Flechtner, F. Lemoine, N. Pavlis, J. Ray, and J. Ries.

1.7 Models for the displacement of reference points (Chapter 7)

The chapter has been reorganized to consider three types of displacement: Conventional that must be accounted at the observation level; other non-tidal motions associated with changing environmental loads (not treated yet); technique dependent effects.

A new conventional mean pole, to be referenced as IERS (2010) mean pole, is to be used to model pole tide effects.

A conventional model is provided 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.

1.8 Tidal variations in Earth's rotation (Chapter 8)

The model to evaluate the effects of zonal Earth tides on the Earth's rotation has been updated, with software included, and a model to evaluate tidal variations in polar motion and polar motion excitation due to long period ocean tides has been added (from R. Gross).

1.9 Models for atmospheric propagation (Chapter 9)

A mean *a priori* model for tropospheric gradients is given along with information on its use for radio techniques (provided by J. Boehm).

1.10 General relativistic models (Chapters 10 and 11)

The wording has been changed to follow the recommendations of the IAU Commission 52 on relativity. Information on the time coordinate transformations has been updated.

2. Conventions software

Following discussions at the 2007 Conventions Workshop, work has been carried out to provide standardized software. 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. This template has been implemented on all software provided on the Conventions web site.

3. Dissemination of information

The Conventions web site (<http://tai.bipm.org/iers/>) has been maintained.

The USNO has established web pages (<http://maia.usno.navy.mil/conv2010/>) that ensure an exact duplication of the information.

Following the release of the IERS Conventions (2010), the web sites will be reorganized in order to provide access to the reference editions, the most recent updates as well as the history of updates between reference editions.

4. Conventions Center staff

Felicitas Arias (BIPM)
Brian J. Luzum (USNO), co-director
Dennis McCarthy (USNO)
Gérard Petit (BIPM), co-director
Beth Stetzler (USNO)

Gérard Petit, Brian J. Luzum