Report of the IERS Conventions Centre

G. Petit (BIPM) & B. Luzum (USNO)

IERS Conventions Centre

Since 2001, the BIPM and the U. S. Naval Observatory (USNO) have been providing the Conventions Centre of the International Earth Rotation and Reference Systems Service (IERS).

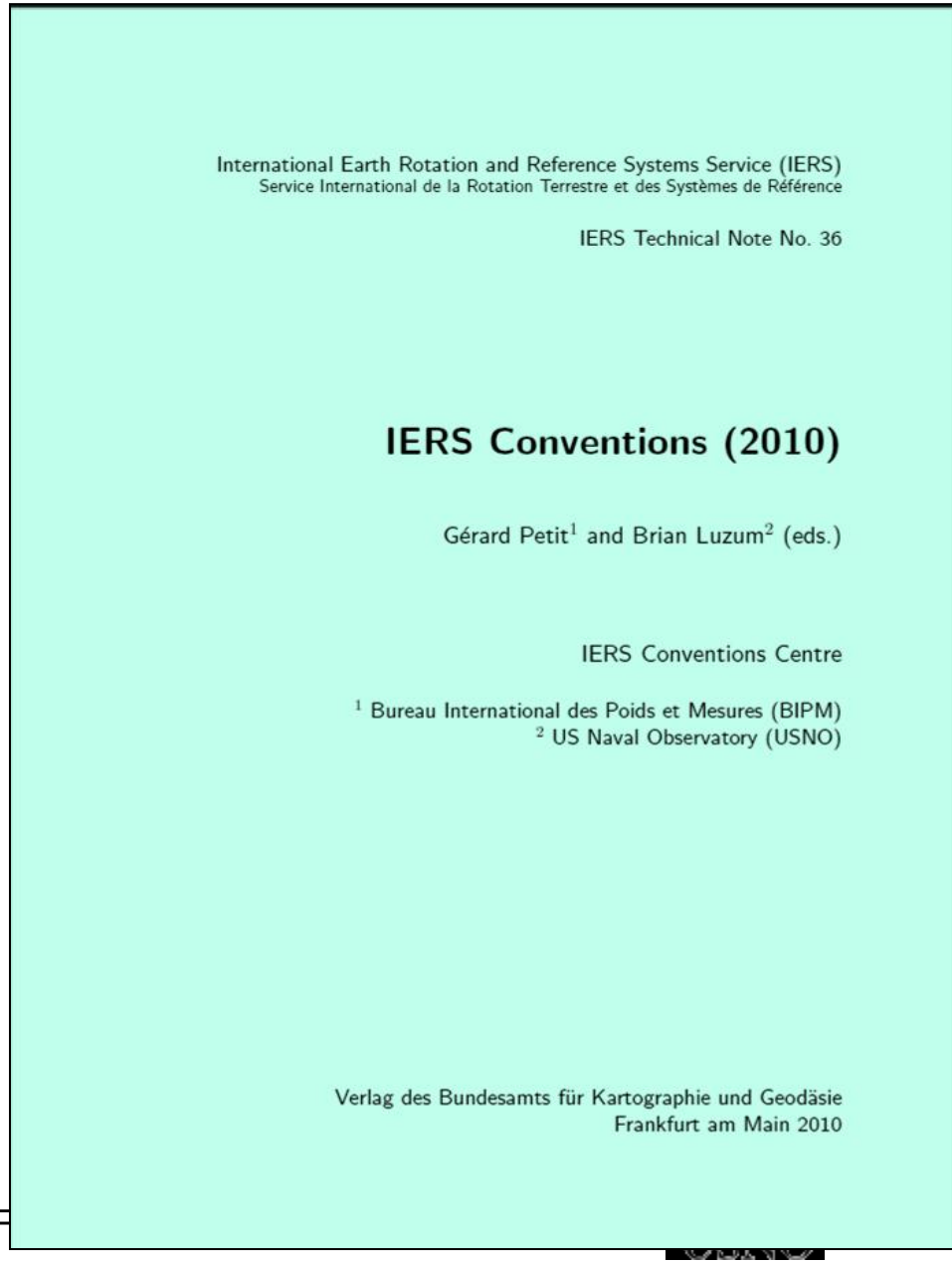
Work is performed with the help of an Advisory Board (J. Ray chair).

BIPM: G. Petit, F. Arias
USNO: B. Luzum, B. Stetzler, D. McCarthy

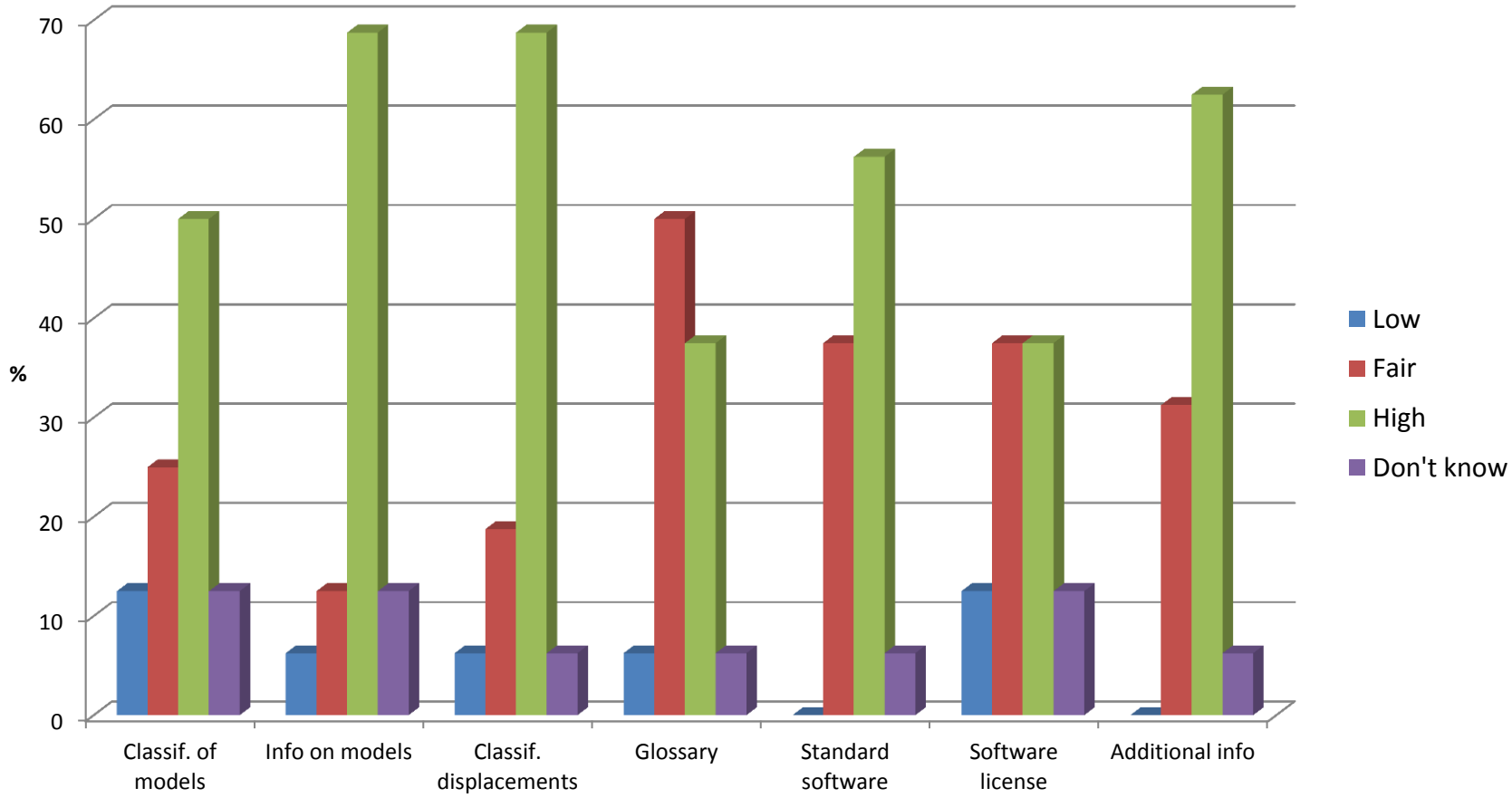
The IERS Conventions (2010)

- A 180-page book
- Published electronically 15 Dec 2010 after last round of corrections and on paper in Spring 2011.
- Comprehensive software list on http://maia.usno.navy.mil/conv2010/software.html

- Replace the Conventions (2003)
- Define the standard reference systems realized by the IERS along with the models and procedures used for this purpose

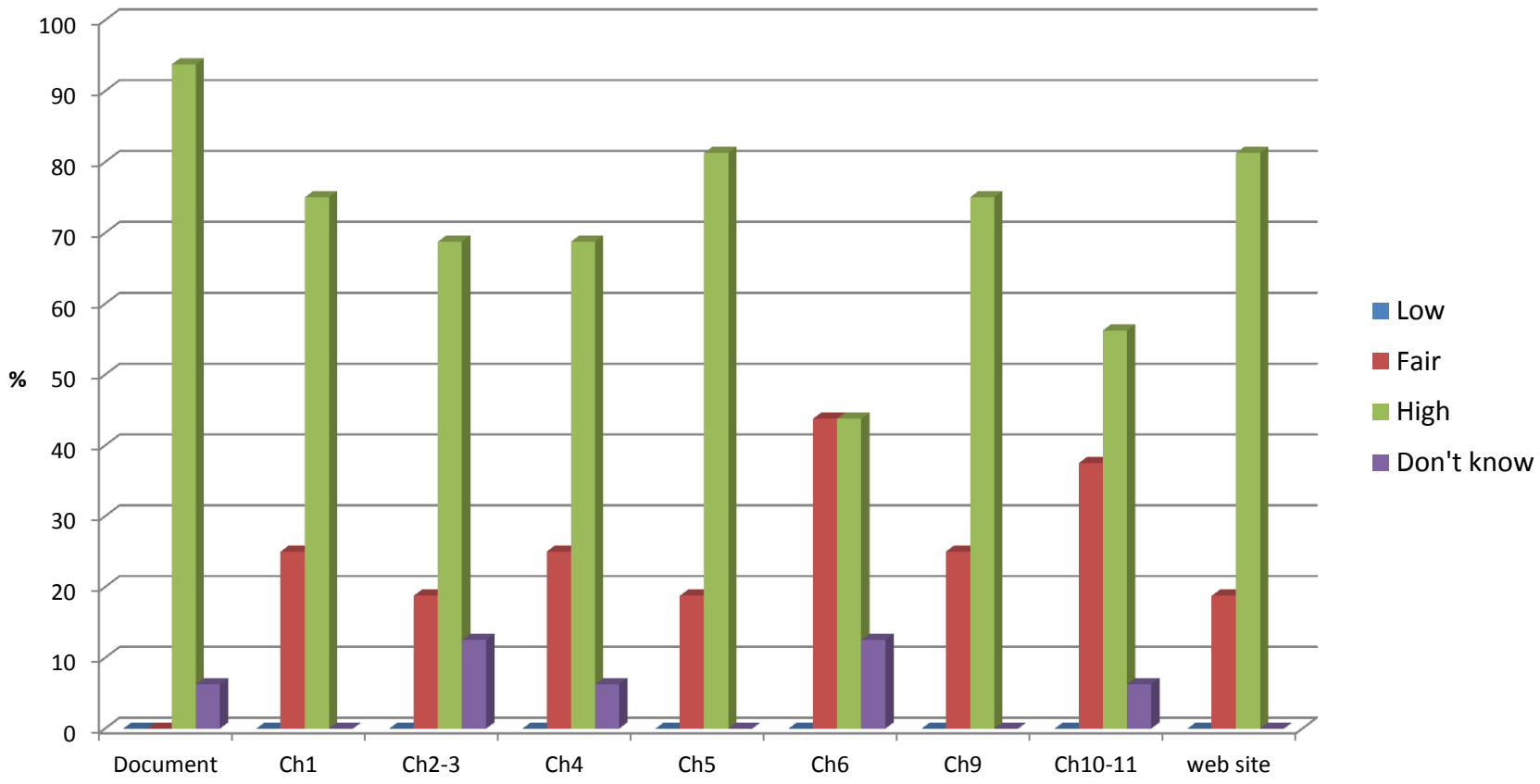


Value of some features of the Conventions (survey 03/2011)



- Glossary and license show a lower appreciation
- Software to be improved

Value of the technical content (survey 03/2011)



- High value as a reference document
- A few individual chapters may be improved …

Visits to the Conventions web pages

Historique mensuel

Mois	Visiteurs différents	Visites	Pages	Hits	Bande passante
Jan 2012	522	1292	2366	5023	21.91 Mo
Fév 2012	437	1144	2118	4661	18.16 Mo
Mar 2012	515	1338	3237	6139	29.19 Mo
Avr 2012	316	719	1542	3098	13.68 Mo
Mai 2012	0	0	0	0	0
Juin 2012	0	0	0	0	0
Juil 2012	0	0	0	0	0
Aoû 2012	0	0	0	0	0
Sep 2012	0	0	0	0	0
Oct 2012	0	0	0	0	0
Nov 2012	0	0	0	0	0
Déc 2012	0	0	0	0	0
Total	1790	4493	9263	18921	82.94 Mo

- Regular trafic with >1000 visits / month (on http, not counting ftp)

Starting technical updates to the Conventions (2010)

- Update as needed
  - GPT, other "utility routines"…
  - Diurnal and semidiurnal EOP variations (needed since some time)
  - Issue of conventional mean pole to be discussed
  - Ionosphere: correction to « ray bending »
  - Straighten « geocenter issues » (also a long-standing issue)
  - …..
- Expand
  - Models for the displacement of reference points of instruments
  - Section on « ranging techniques »
  - ….
- New topics, following the evolution in the geodetic community
  - Non-tidal loading
  - SINEX format for modelling
  - …

Other work

International Telecommunication Union

ITU-R

Radiocommunication Sector of ITU

Recommendation ITU-R TF.2018
(08/2012)

Relativistic time transfer in the vicinity of the Earth and in the solar system

TF Series
Time signals and frequency standards emissions

RECOMMENDATION ITU-R TF.2018

Relativistic time transfer in the vicinity of the Earth and in the solar system

(2012)

Scope

The purpose of this Recommendation is to establish common conventional algorithms and procedures to be used in comparing clocks on the surface of the Earth and on platforms far from the Earth but within the solar system. These expressions are explicitly determined in the general relativity theory that is presently accepted to form the basis of space-time reference systems. It is envisioned that these algorithms and procedures would be used for comparisons of clocks on Earth satellites, interplanetary spacecraft, and on the surfaces of solar system bodies.

The ITU Radiocommunication Assembly,

considering

a) that it is desirable to maintain coordination of standard time and frequency on platforms operating in the vicinity of the Earth and in the solar system;

b) that accurate means of transferring time and frequency are required to meet the future needs of timekeeping, navigation, science, and communication systems in the vicinity of the Earth and in the solar system;

c) that clocks are subject to path-dependent time and frequency variations due to their motion and to the gravitational potential in which they operate;

d) that the conceptual foundation for the transfer of time and frequency should be clearly outlined;

e) that procedures for the transfer of time and frequency in the vicinity of the Earth and across celestial bodies and spacecraft in the solar system require the use of mathematical algorithms that account for relativistic effects;

f) that requirements for precision and accuracy for the transfer of time and frequency in the vicinity of the Earth and in the solar system depend on the specific application,

recommends

that the mathematical algorithms that account for relativistic effects in the transfer of time and frequency as provided in Annex 1 should be used, as appropriate.

+ 12 pages of annex follow