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Symposium 137: VII Hotine-Marussi Symposium on Mathematical Geodesy
Reference Frames for Applications in Geosciences

Proceedings of the Symposium in Marne-La-Vallée,
4–8 October, 2010

Edited by

Zuheir Altamimi
Xavier Collilieux

Springer
Claude Boucher  
Observatoire de Paris/SYRTE  
claude-boucher@club-internet.fr

David Coulot  
Institut national de l’information géographique et forestière  
Laboratoire de recherche en géodésie  
Université Paris Diderot  
Paris, France  
David.Coulot@ign.fr

Mike Craymer  
Natural Resources Canada  
Geodetic Survey Division  
Ottawa, Ontario, Canada  
Michael.Craymer@NRCan-RNCan.gc.ca

Richard S. Gross  
Jet Propulsion Laboratory  
Pasadena, California, USA  
Richard.Gross@jpl.nasa.gov

Johaness Ihde  
Federal Agency of Cartography and Geodesy  
Richard-Strauss-Allee 11,  
D-60598 Frankfurt am Main, Germany  
johannes.ihde@bkg.bund.de

Frank Lemoine  
NASA Goddard Space Flight Center  
Planetary Geodynamics Laboratory  
Greenbelt, Maryland U.S.A.  
Frank.G.Lemoine.nasa.gov

Markus Rothacher  
ETH Zurich  
Institute of Geodesy and Photogrammetry  
HPV G52 Schafmattstr. 34  
CH-8093 Zurich, Switzerland  
markus.rothacher@ethz.ch

Harald Schuh  
Helmholtz-Zentrum Potsdam  
DeutschesGeoForschungsZentrum GFZ  
Telegrafenberg, A17  
14473 Potsdam  
Germany  
harald.schuh@tuwien.ac.at

Michael G. Sideris  
University of Calgary  
Department of Geomatics Engineering  
2500 University Drive N.W.  
Calgary, Alberta T2N 1N4 Canada  
sideris@ucalgary.ca

Peter Steigenberger  
Technische Universität München  
Institut für Astronomische und Physikalische Geodäsie  
Munich, Germany  
steigenberger@bv.tum.de

João Agria Torres  
National Committee on Astronomy, Geodesy and Geophysics  
Lisbon, Portugal  
jatorres@iol.pt
Reference systems and frames are of primary importance for many Earth science applications, satellite navigation as well as for practical applications in geo-information. A precisely defined reference frame is needed for the quantification of, e.g. Earth rotation and its gravity field, global and regional sea level variation, tectonic motion and deformation, postglacial rebound, geocenter motion, large-scale deformation due to Earthquakes, local subsidence and other ruptures and crustal dislocations. All of these important scientific applications fundamentally depend on a truly global reference system that only space geodesy can realize.

IAG Commission 1 activities are to deal with theoretical aspects of reference systems and the practical applications for their realizations as well as applied researches. The main objectives of Commission 1 are:

- Definition, establishment, maintenance and improvement of the geodetic reference frames
- Advanced terrestrial and space observation technique development for the above purposes
- International collaboration for the definition and deployment of networks of terrestrially based space geodetic observatories
- Theory and coordination of astrometric observation for reference frame purposes
- Collaboration with space geodesy/reference frame–related international services, agencies and organizations
- Promoting the definition and establishment of vertical reference systems at the global level, considering the advances in the regional sub-commissions

In order to review the progress in the above objectives, the Commission had organized the IAG Symposium “Reference Frames for Applications in Geosciences (REFAG2010)”, held in Marne la Vallée, France, during October 4–8, 2010, at the premises of Ecole Nationale des Sciences Géographiques & Université de Marne Lavallée. The primary scope of REFAG2010 was to address today’s achievements on theoretical concepts of reference systems and their practical implementations by individual space geodetic techniques and their combinations, underlying limiting factors, systematic errors and novel approaches for future improvements. Additionally, reference frame requirements, usage and applications in geosciences were also addressed during the Symposium. The program of the Symposium was divided into six sessions:

1. Theory and realization of global terrestrial reference systems
2. Strengths, weaknesses, modelling standards and processing strategies of space geodetic techniques
3. Definition, establishment, maintenance and integration of regional reference frames
4. Interaction between the celestial and the terrestrial reference frames
5. Definition and establishment of vertical reference systems
6. Usage and applications of reference frames in Geosciences
The Scientific organizing Committee consisted of:

- Zuheir Altamimi (IAG Commission 1 President)
- Mike Craymer (IAG Commission 1 Vice President)
- Markus Rothacher (President SC1.1)
- Claude Boucher (President SC1.2)
- João Torres (President SC1.3)
- Harald Schuh (President SC1.4)

and the local organizing committee consisted of:

- Xavier Collilieux
- David Coulot
- Laurent Métivier
- Christiane Guérin

who are members of the Geodetic Research Laboratory (LAREG) of the Institut National de l’Information Géographique et Forestière (IGN), France.

More than 150 scientists from 31 countries attended the Symposium. There were 43 oral and 25 poster presentations during the 5 days of the Symposium. More information is available at the REFAG2010 Symposium web site: http://iag.ign.fr/index.php?id=138. Forty papers were peer-reviewed and published in these proceedings, summarizing the main outcome of the Symposium.

The Symposium and the review process would not have been possible without the contribution of the following colleagues who acted as session conveners and associated editors, in alphabetic order: Claude Boucher, David Coulot, Mike Craymer, Richard Gross, Johanness Ihde, Frank Lemoine, Markus Rothacher, Harald Schuh, Michael Sideris, Peter Steigenberger and João Torres. I am also very grateful to all the reviewers listed in the front matter of these Proceedings for their concise reviews of the REFAG papers. My deep gratitude goes to my IGN colleagues who organized the logistics of the Symposium, and in particular to my co-editor, Xavier Collilieux, who created, managed and operated not only the Symposium website, but also the website of the Commission during its 4-year term (2007–2011).

Zuheir Altamimi
President, IAG Commission 1 (2007–2011)
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