
Preface

These proceedings include a selection of 42 papers presented at the IAG international symposium “Gravity, Geoid and Height Systems 2012” (GGHS2012), which was organized by IAG Commission 2 “Gravity Field” with the assistance of the International Gravity Field Service (IGFS) and GGOS Theme 1 “Unified Global Height System.” It was arranged by the OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, Trieste) which has presently the role of the Central Bureau of the IGFS. The symposium was successfully held on the island of San Servolo in the Venetian Lagoon from October 9 to 12, 2012, with 140 participants from 31 countries. 30 of them were registered as students who had free access to the symposium. The list of participants and other information can be downloaded from the website of the IGFS Central Bureau www.gravityfield.org.

GGHS2012 was the fifth event of the traditional conferences organized by IAG Commission 2 every 4 years after “Gravity, Geoid and Marine Geodesy” (Tokyo, Japan, 1996), “Gravity, Geoid and Geodynamics” (Banff, Canada, 2000), “Gravity, Geoid and Space Missions” (Porto, Portugal, 2004), and “Gravity, Geoid and Earth Observation” (Chania, Greece, 2008). GGHS2012 covered all activities of IAG Commission 2 except from satellite altimetry, which was covered in a special symposium “20 years of progress in radar altimetry” just 2 weeks before the GGHS2012—as well held in Venice.

An important part of the conference was the presentation of the results of the very successful space missions GRACE and GOCE and their application in oceanography, mass transport and solid earth modeling, hydrology, and atmospheric sciences. Special attention was given to the loss of ice masses over Greenland and Antarctica and the resulting global sea level rise. Another important topic of the conference was the continuation of gravity space missions. It seems now that a GRACE follow-on mission is advancing well and probably can be launched in 2017 as a result of a collaboration of American and European agencies.

The various groups working on the realization of a global height system met during the conference and presented their results. The realization of a global height system which can be presented to other interested institutions and be adopted by the scientific communities seems to be possible in the near future.

Another open issue of the gravity community is the replacement of the outdated International Gravity Standardization Network IGSN71 by considering modern absolute measurements and the time series of superconducting gravimeters. These activities in the corresponding working groups are on a good way and the future of the international comparison campaigns of absolute gravimeters could be assured for the next years.

A total of 89 oral presentations and 64 posters were presented during the conference. A part of them can be downloaded at the IAG Commission 2 website at www.iag-commission2.ch. The presentations were organized in the following eight sessions:

Session 1 Gravimetry and Gravity Networks

Conveners: Leonid Vitushkin, **Herbert Wilmes**, Vojtech Pálinkáš

Session 2 Global Gravity Field Modeling, Assessments and Applications

Conveners: **Jianliang Huang**, Thomas Gruber, Roger Haagmans

Session 3 Future Gravity Field Missions

Conveners: Roland Pail, **Isabelle Panet**

Session 4 Advances in Precise Local and Regional High-Resolution Geoid Modeling

Conveners: Hussein Abd-Elmotaal, **Riccardo Barzaghi**, Yan Ming Wang

Session 5 Establishment and Unification of Vertical Reference Systems

Conveners: Michael Sideris, **Laura Sánchez**, Daniel Roman

Session 6 Gravity Field and Mass Transport Modeling

Conveners: **Shuanggen Jin**, Jürgen Kusche

Session 7 Modeling and Inversion of Gravity-Solid Earth Coupling

Conveners: **Carla Braitenberg**, Jörg Ebbing

Session 8 Gravity Field of Planetary Bodies

Conveners: **Oliver Baur**, Shin-Chan Han, Pieter Visser

Many thanks go to all the conveners who devoted a lot of time in the compilation of the program of the symposium and helped to make it successful. The conveners outlined in bold in the above list acted as well as associate editors of these proceedings for their sessions. They organized the reviews and supervised their papers until the final acceptance for publication. Sincere thanks go as well to Pascal Willis, the editor-in-chief of the IAG Symposia series who advanced and kept on track the publication of these proceedings and to the co-organizers of the conference Rene Forsberg and Michael Sideris.

The Local Organizing Committee was led by Iginio Marson and consisted of Bruno Cataletto, Dario Colonello, Franco Coren, Margherita Persi, and Michele Zennaro. It was invaluable in helping arrange a very memorable conference and provided essential support before, during, and after the conference. And lastly, sincere thanks go out to all the participating scientists and graduate students who made the GGHS2012 symposium and these proceedings a success.

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Urs Marti

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