

International Association  
of Geodesy Symposia

*Fernando Sansò, Series Editor*

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# Gravity, Geoid and Space Missions

GGSM 2004  
IAG International Symposium  
Porto, Portugal  
August 30 - September 3, 2004

Edited by  
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Library of Congress Control Number: 2005927793

**ISSN 0939-9585**

ISBN 3-540-26930-4 Springer Berlin Heidelberg New York

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springeronline.com  
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Printed in Germany

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Cover design: design & production GmbH, Heidelberg  
Production: Almas Schimmel  
Typesetting: Camera ready by the authors  
Printing and Binding: Mercedes-Druck, Berlin

Printed on acid-free paper 32/3141/as 5 4 3 2 1 0

## Preface

The IAG International Symposium on Gravity, Geoid, and Space Missions 2004 (GGSM2004) was held in the beautiful city of Porto, Portugal, from 30 August to 3 September 2004. This symposium encompassed the themes of Commission 2 (Gravity Field) of the newly structured IAG, as well as interdisciplinary topics related to geoid and gravity modeling, with special attention given to the current and planned gravity-dedicated satellite missions. The symposium also followed in the tradition of mid-term meetings that were held between the quadrennial joint meetings of the International Geoid and Gravity Commissions. The previous mid-term meetings were the International Symposia on Gravity, Geoid, and Marine Geodesy (Tokyo, 1996), and Gravity, Geoid, and Geodynamics (Banff, 2000).

GGSM2004 aimed to bring together scientists from different areas in the geosciences, working with gravity and geoid related problems, both from the theoretical and practical points of view. Topics of interest included the integration of heterogeneous data and contributions from satellite and airborne techniques to the study of the spatial and temporal variations of the gravity field. In addition to the special focus on the CHAMP, GRACE, and GOCE satellite missions, attention was also directed toward projects addressing topographic and ice field mapping using SAR, LIDAR, and laser altimetry, as well as missions and studies related to planetary geodesy.

The Science Committee for the Symposium comprised Christopher Jekeli (President), Ilias N. Tziavos, Roger Haagmans, René Forsberg, Luisa Bastos, and Joana Fernandes, while its local organization was under the direction of Luisa Bastos, Joana Fernandes and Machiel Bos of the Faculty of Science, University of Porto. In addition, many colleagues associated with Commission 2 and the IAG organized the nine sessions of the Symposium as follows:

1. Gravity field modeling from satellite missions  
Pieter Visser (Delft University of Technology, The Netherlands)  
Roger Haagmans (ESA, The Netherlands)
2. Airborne and satellite gravimetry instrumentation  
René Forsberg (Geodynamics Department, Danish National Space Center)  
Luisa Bastos (University of Porto, Portugal)
3. Regional geoid modeling  
Urs Marti (Swiss Federal Office of Topography, Switzerland)  
Ilias Tziavos (Aristotle University of Thessaloniki, Greece)
4. Radar and laser surface mapping from satellites  
Philippa Berry (De Montfort University, U.K.)  
Bill Carter (University of Florida, U.S.A.)

5. Topographic data bases and gravity modeling  
Steve Kenyon (NGA, U.S.A.)  
Per Knudsen (KMS, Denmark)
6. Satellite altimetry, oceanography, and the geoid  
Dave Sandwell (University of California, San Diego, U.S.)  
Joana Fernandes (University of Porto, Portugal)
7. Terrestrial gravity instrumentation, networks, and geodynamics  
Shuhei Okubo (Earthquake Research Institute, University of Tokyo, Japan)  
Tonie van Dam (European Centre for Geodynamics and Seismology, Luxemburg)
8. Temporal gravity variations: modeling and measurements  
C.K. Shum (Ohio State University, U.S.A.)  
Martin Vermeer (Helsinki University of Technology, Switzerland)
9. Planetary gravity fields and models  
Dave Smith (NASA, U.S.A.)  
Georges Balmino (CNES, France)

The Symposium attracted 258 papers, of which 108 were presented orally and 150 as posters. It was truly an international scientific event as all six continents and 39 countries were represented by a total of 234 participants. A Proceedings of the Symposium was published in the form of a CD with most of the oral and poster presentations, as well as many corresponding journal-style papers. Of the latter, a portion were selected and reviewed for inclusion in this volume and they represent the high level of activity and advanced research in gravity and geoid modeling that was displayed by all contributions to this symposium. Although Session 9 papers were not submitted to this volume it is anticipated that the relationship between gravity field modeling and planetary geodesy particularly encouraged in this symposium will be strengthened in future symposia and other similar events.

Special recognition and gratitude go to the Session co-conveners whose hard work in organizing their sessions and guiding the reviews of the submitted papers resulted in a very successful Symposium and a high quality scientific volume. The organization of a Symposium of this magnitude is never easy, but it unfolded flawlessly due to the expert preparation and continual attentiveness of the organizing committee, headed by Luisa Bastos, Joana Fernandes and Machiel Bos. The collection of material for the CD Proceedings and the assembly of the papers for this volume was also done professionally and efficiently and special thanks are due the Faculty of Science, University of Porto, for helping to support these publications.

The success of the Symposium also depends to a great extent on the financial sponsorship of interested and supporting organizations and institutions in the form of cash and travel re-imbursements, especially for students and colleagues from developing countries. We

gratefully acknowledge financial contributions from IAG, IUGG, NASA, ESA, GRICES, FCT and the University of Porto.

Finally, I wish to extend my personal appreciation and congratulations to Luisa Bastos, Joana Fernandes and Machiel Bos for their devotion to this symposium and their perseverance in completing the publications. It is not easy, even in these modern times, to coordinate such affairs over intercontinental distances, but they maintained a schedule and succeeded splendidly in every respect.

Christopher Jekeli

Ohio State University, March 2005

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