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## Contents

|   |          |
|---|----------|
| <b>Meeting Announcements</b> .....  | <b>2</b> |
| <b>Dynamic Planet 2005</b> .....  | <b>2</b> |
| <b>IAG Sponsored Meetings</b> .....   | <b>2</b> |
| EUREF Symposium 2005 Vienna .....   | 2        |
| Dynamic Planet 2005 .....   | 2        |
| 7th conference on Optical 3-D Measurement Techniques .....  | 2        |
| Summer School on Microgravimetric methods: static and dynamic aspects.....  | 2        |
| <b>IAG Related Meetings</b> .....   | <b>3</b> |
| GIS Planet 2005.....  | 3        |
| IAMAS 2005 .....  | 3        |
| 12 <sup>th</sup> International Symposium on Deformation Measurement.....  | 3        |
| 4 <sup>th</sup> Congress of the Balkan Geophysical Society.....   | 3        |
| <b>IAG Sister Societies' General Assemblies</b> .....   | <b>3</b> |
| FIG Working Week and GSDI-8 – “From Pharaohs to Geoinformatics” .....   | 3        |
| SRTM Workshop and Special Issue of Journal of Photogrammetric Engineering & Remote Sensing (PE&RS).....   | 4        |
| ICC2005 Conference.....   | 4        |
| ISPRS Workshop Laser scanning 2005.....   | 4        |
| <b>Book Review</b> .....  | <b>4</b> |
| <b>Roberto Sabadini, Bert Vermeersen: Global Dynamics of the Earth: Applications of Normal Mode Relaxation Theory to Solid-Earth Geophysics</b> ..... | <b>4</b> |
| <b>Fast Bibliography</b> .....  | <b>6</b> |

The *IAG Newsletter* is under the editorial responsibility of the *Communication and Outreach Branch* (COB) of the IAG.

It is an open forum and contributors are welcome to send material (preferably in electronic form) to the IAG COB ([newsletter@iag-aig.org](mailto:newsletter@iag-aig.org)). These contributions should complement information sent by IAG officials or by IAG symposia organizers (reports and announcements). The *IAG Newsletter* is published monthly. It is available in different formats from the IAG new internet site: <http://www.iag-aig.org>

Each *IAG Newsletter* includes several of the following topics:

- I. news from the Bureau Members
- II. general information
- III. reports of IAG symposia
- IV. reports by commissions, special commissions or study groups
- V. symposia announcements
- VI. book reviews
- VII. fast bibliography

**Books for review are the responsibility of:**

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## Meeting Announcements

### *Dynamic Planet 2005*

**Abstract deadline: May 6, 2005.**



### **"Monitoring and Understanding a Dynamic Planet with Geodetic and Oceanographic Tools"**

A Joint Assembly of the IAG, IAPSO and IABO  
22 - 26 August 2005, Cairns, Australia

Scientists from all countries are invited to participate in this unique conference – a joint assembly of the International Association of Geodesy (IAG), International Association for Physical Sciences of the Oceans (IAPSO), and the International Association for Biological Oceanography (IBO). For further information, please visit the Dynamic Planet website <http://www.dynamicplanet2005.com>.

### **IGAG Sponsored Meetings**

#### **EUREF Symposium 2005 Vienna**

*1-4 June 2005, Vienna, Austria*

The next regular EUREF 2005 Symposium will be held in Vienna, Austria, June 1-4, 2005. More detailed information please find updated on the Symposia homepage <http://euref2005.oeaw.ac.at/>.

#### **Dynamic Planet 2005**

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#### **7th conference on Optical 3-D Measurement Techniques**

*3-5 October 2005, Vienna, Austria*

The 7th conference on "Optical 3-D Measurement Techniques" will be held from October 3-5, 2005 in Vienna, Austria and is co-sponsored by the ISPRS Commission V, the FIG Commission 5 and 6, and the IAG Sub-commission 4.2. The conference website is: <http://info.tuwien.ac.at/ingeo/optical3d/o3d.htm>. The first announcement in pdf format can be downloaded from the conference website at: <http://info.tuwien.ac.at/ingeo/optical3d/o3d1st.pdf>.

#### **Summer School on Microgravimetric methods: static and dynamic aspects**

*23-28 October, 2005, Lanzarote, Canaries*

The International Gravimetric Bureau (BGI), the International Center for Earth Tides (ICET) and the Instituto de Astronomia y Geodesia (IAG) are pleased to announce their joint Summer School on Microgravimetric Methods: static and dynamic aspects. The request for information email is to: [bernard.langellier@cnes.fr](mailto:bernard.langellier@cnes.fr). Please also visit the BGI website for further details: <http://bgi.cnes.fr>

## **IAG Related Meetings**

### **EGU General Assembly**

*24-29 April 2005, Vienna, Austria*

The General Assembly of the European Geosciences Union (EGU) is held at the Austria Center Vienna (ACV) in Vienna, Austria, from 24 - 29 April 2005. The assembly is open to the scientists of all nations. The scientific programme of the General Assembly includes Union Symposia, Oral and Poster Sessions on disciplinary and interdisciplinary topics covering the full spectrum of the geosciences and the space and planetary sciences. The conference website can be reached at the following address: <http://www.copernicus.org/EGU/ga/egu05/index.htm>.

### **GIS Planet 2005**

*30 May- 2 June 2005, Estoril, Lisboa Portugal*

The II conference & exhibition on geographic information will take place Estoril Congress Centre, Lisboa Portugal. GIS PLANET is a global, independent and open event dedicated to Geographic Information. More information is available at <http://www.gisplanet.org>.

### **AOGS 2<sup>nd</sup> Annual Meeting 2005**

*20-24 June 2005, Suntec, Singapore*

The Asia Oceania Geosciences Society (AOGS) will hold its 2nd Meeting on 20 to 24 June, 2005 at the Singapore Suntec City Convention Centre. In all, over 100 sessions in Solid Earth, Solar Terrestrial, Planetary Science, Hydrological Science, Oceans & Atmospheres and Interdisciplinary Working Groups. Additionally, nearly all sections have an Open Category for garnering submissions of its own class. For more details please visit <http://www.asiaoceania-conference.org/>.

### **IAMAS 2005**

*2-11 August 2005, Beijing, China*

The International Association of Meteorology and Atmospheric Sciences (IAMAS), will hold its biennial Scientific Assembly in Beijing, China from 2-11 August 2005. The theme of the conference is The Fascinating Atmosphere: Changeable and Changing, and will cover all areas of meteorology and atmospheric sciences, including dynamics, radiation, chemistry, electricity, clouds and precipitation, and climate variability and change. Further details can be found on the IAMAS 2005 web site <http://www.iamas2005.com>.

### **12<sup>th</sup> International Symposium on Deformation Measurement**

*12-15 September 2005, Qingdao, China*

You are cordially invited to the 12th International Symposium on Deformation Measurements organized by Commission 6 of the International Federation of Surveyors (FIG) to be held in Qingdao, China, 12-15 September 2005. Please visit the conference website for further information: <http://www.fig.net/isdm12>.

### **4<sup>th</sup> Congress of the Balkan Geophysical Society**

*9-12 October 2005, Bucharest, Romania*

The International Conference and Exhibition "Geophysics Without Frontiers" is organized and hosted by the Romanian Society of Geophysics in cooperation with EAGE, SEG, EGU and AGU, under the auspices of the IUGG. The Congress focuses the attention of the whole community of geophysicists on Balkans. The conference webpage is [www.bgs-bucharest2005.ro](http://www.bgs-bucharest2005.ro).

## **IAG Sister Societies' General Assemblies**

### **FIG Working Week and GSDI-8 – "From Pharaohs to Geoinformatics"**

*16-21 April 2005, Cairo, Egypt*

Read more about technical and social programme, pre-conference workshops etc. at <http://www.fig.net/cairo>. The event is organized together with GSDI-8. Please visit the web site also for pre-conference workshops like the "Virtual Academy and the Surveying/Geoinformatics Community" to be held April 16, 2005.

### **SRTM Workshop and Special Issue of Journal of Photogrammetric Engineering & Remote Sensing (PE&RS)**

14-16, June 2005, Reston, Virginia, USA

A workshop will be held June 14-16, 2005 in Reston, Virginia on SRTM Data Validation and Applications. Abstracts are due April 15, 2005. Details may be found at: <http://edc.usgs.gov/conferences/SRTM/>

*Call for Papers: PE&RS Special Issue on Mapping Mars, October 2005*

This special issue of Photogrammetric Engineering & Remote Sensing (PE&RS) will focus on recent advancements in surveying and mapping of Mars. For further details, please visit [http://www.asprs.org/publications/pers/call\\_for\\_papers.html](http://www.asprs.org/publications/pers/call_for_papers.html)

### **ICC2005 Conference**

9-16 July 2005, A Coruña, Spain

The XXII International Cartographic Conference (ICC) is the most important event in the International Cartographic Association (ICA) calendar. Please visit <http://www.icc2005.org> for details.

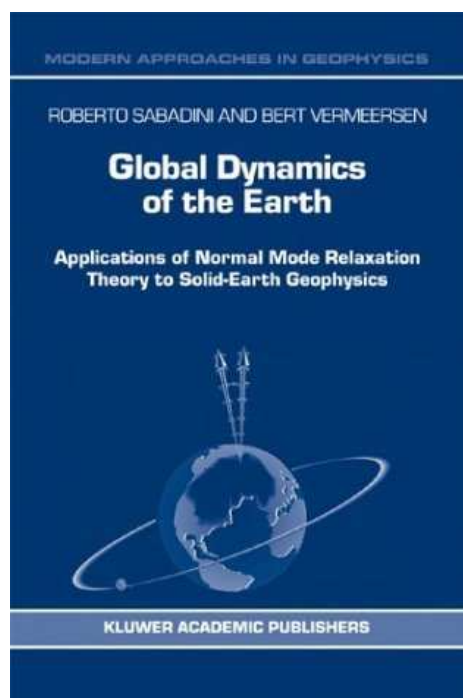
### **ISPRS Workshop Laser scanning 2005**

12-14 September 2005, Enschede, the Netherlands

The workshop, held at the ITC in Enschede, will bring together an interdisciplinary group of researchers, system developers, data providers and end users to discuss and demonstrate recent developments in laser scanner data processing, the potential of the technique and future trends in sensorics and data processing. Further information on the workshop can be obtained from <http://www.itc.nl/isprswgIII-3/laserscanning2005/>.

## **Book Review**

***Roberto Sabadini, Bert Vermeersen: Global Dynamics of the Earth: Applications of Normal Mode Relaxation Theory to Solid-Earth Geophysics***



Title: Global Dynamics of the Earth: Applications of Normal Mode Relaxation Theory to Solid-Earth Geophysics

Authors: Roberto Sabadini, Bert Vermeersen

Publisher: Kluwer Academic Publishers/Springer  
ISBN: 1-4020-1267-5 (hardcover), 1-4020-1268-3 (Paperback)  
Year: 2004  
Price: USD 99,00  
Pages: 344 pages. 99 figures  
Details: hardcover/paperback

In accordance with its title, the book by R. Sabadini and B. Vermeersen covers a variety of global processes that can be described by the normal-mode theory of viscoelastic relaxation for a spherical Earth. As such, it clearly fills a gap in today's geophysical literature. Whereas edited books or comprehensive reviews covering particular aspects of the application of normal mode theory – in particular glacial-isostatic adjustment – appeared in the past, an overview covering all aspects of its application has been missing. In addition, the publication of this book is also timely since – after a continuous development over more than 30 years – the normal-mode theory of viscoelastic relaxation has now reached a mature stage and approaches its limits. These are practically defined by the assumptions of spherical symmetry and incompressibility. While the justification of these assumptions when studying global processes must be carefully tested in each case, several theoretical studies have shown that normal-mode theory loses its power and elegance when giving up these assumptions and considering the viscoelastic relaxation of laterally heterogeneous, compressible Earth models. As a consequence, the authors' treatment is essentially restricted to lateral homogeneity and incompressibility.

The topic of Chapters 1 and 2 is the development of the field theory governing the viscoelastic relaxation of spherical Earth models for a variety of surface or internal forcings and the solution of the governing equations. The treatment is limited to Maxwell viscoelasticity, which continues to be the standard rheology in geodynamics. The basic solution techniques covered are spherical-harmonic expansion, correspondence principle, propagator-matrix technique and inverse Laplace transformation by means of the residue theorem. The main characteristics of the solution in the spectral domain for modal relaxation times and Love numbers are illustrated by a large number of figures.

In Chapters 3 and 4, the theory of forced rotational perturbations of the Earth – again for Maxwell viscoelasticity – is presented. The mathematical treatment is fairly detailed, and some discrepancies in the rotational theories developed during the last two decades are discussed – the latter perhaps not overly helpful for graduate students expecting an authoritative theoretical presentation from a monograph. The solutions discussed apply to loading by Pleistocene ice sheets and allow the inference of lithosphere thickness and mantle viscosity from observations of polar wander and changes in length of day, as shown in several diagrams.

As an important application of the theory, Chapter 5 covers long-wavelength temporal variations of the gravity field and their detection by satellite laser ranging. Besides glacial-isostatic adjustment, the mass imbalances of today's major ice sheets in Antarctica and Greenland also contribute to gravity changes. In a number of illustrations, the authors interpret the satellite data and discuss the various trade-offs governing the inference of lithosphere thickness and mantle viscosity from these data.

Chapter 6 is devoted to various aspects of the important topic of sea-level variations. As a powerful tool for modelling such variations, the sea-level equation coupling changes in surface loading, geoid height and surface height is developed. Whereas, globally, sea-level changes caused by glacial-isostatic adjustment are the dominant process interfering with sea-level rise produced by climate warming, tectonically induced changes may become significant in particular regions. This is shown using the example of the Mediterranean Sea. The final sections of the chapter cover sea-level variations induced by polar wander and subduction and their dependence on the viscous stratification of the Earth.

As a further application of the theory developed, Chapter 7 deals with the contribution of mountain building to polar wander and the degree-two variation of the geopotential. The relationships are exemplified using the uplift history of the Himalayan–Tibetan Plateau. Numerical predictions for a number of viscosity and density stratifications are shown in several diagrams. As a related tectonic process, the effect of subduction on polar wander is also studied and illustrated for a random distribution of sinking slabs. In the final section of the chapter, polar wander on the Moon, Venus and Mars is considered.

The concluding Chapter 8 investigates the topic of post-seismic deformation on the basis of viscoelastic normal-mode theory. First, forward calculations of modal relaxation times and surface displacements for particular seismic sources and viscosity stratifications are presented. After this, two selected earthquakes in Italy are studied more closely and, using GPS and levelling data, the fault mechanisms are inferred.

In two short Appendices, explicit forms of several more complicated equations required in the theoretical development of Chapter 1 are compiled.

Taken together, the breadth of the topics studied in the framework of viscoelastic normal-mode theory over about 300 pages is impressive and summarizes the research completed by the authors over the last 20 years. In consequence of the fact that the material presented is essentially taken from the numerous papers published by the authors during this period, the treatment naturally shows a degree of non-uniformity. The bibliography extends over 16 pages, covers the authors' work rather completely and gives a balanced selection of the contributions to the topic by other investigators. Rather disturbing – but most likely the responsibility of the publisher – is that sections and subsections are numbered without the appropriate chapter number. Also, some introduction or overview at the beginning of each chapter would have improved the orientation for the reader. Notwithstanding these more formal objections, the authors have completed a thorough and rather comprehensive review of viscoelastic normal-mode theory and its applications. For this reason, their book can be recommended to graduate students and researchers wishing to gain access to this topic in a convenient way.

DETLEF WOLF

## Fast Bibliography

The fast bibliography consists of a listing of papers relevant to Geodesy, that has been collected by the IAG Bibliographic Service (IBS) since previous issue of the fast bibliography (IAG Newsletter December 2004 and Journal of Geodesy 78/7-8). The IBS is based on the literary data bank GEOPHOKA, which is maintained by BKG (Budensamt für Kartographie und Geodäsie) at the Branch Office Leipzig, Leipzig Zentrale technisch – wissenschaftliche Angelegenheiten, Bibliothek, Karl-Rothe Strasse 10-14, 0415 Leipzig, Germany. The IBS can be reached at the following Internet address: <http://www.leipzig.ifag.de>. The bibliographic services are furthermore reachable through the homepage of IAG: <http://www.iag-aig.org>.

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