

**SP-696**  
July 2011

*Proceedings of*

# **4th International GOCE User Workshop**

31 March – 1 April 2011  
Technische Universität Munich, Germany

**European Space Agency  
Agence spatiale européenne**

<i>Publication</i>	Proc. of the '4th International GOCE User Workshop', Munich, Germany (ESA SP-696, July 2011)
<i>Edited by</i>	L. Ouwehand ESA Communications
<i>Published and distributed by</i>	ESA Communications ESTEC, Noordwijk, The Netherlands
<i>Price</i>	€ 40
<i>ISBN</i>	978-92-9092-260-5
<i>ISSN</i>	1609-042X
<i>Copyright</i>	© 2011 European Space Agency

# CONTENTS

## Foreword

### **GOCE Mission Status: Data Quality, Mission Operations, Ground Processing**

*Chair: R. Floberghagen*

Weathering the Storm – GOCE Flight Operations in 2010  
*C. Steiger, A. Da Costa, R. Floberghagen et al.*

## **Oceanography**

*Chair: P. Knudsen*

GOCE User Toolbox and Tutorial  
*P. Knudsen & J. Benveniste*

Estimating the North Atlantic Mean Dynamic Topography and  
Geostrophic Currents with GOCE  
*R.J. Bingham, P. Knudsen & O. Andersen*

## **Solid Earth**

*Chair: B. Vermeersen*

Lithospheric Modelling by Using Optimized GOCE Gravity Gradient Data  
*B.D. Gutknecht*

Modelling and Observing the 8.8 Chile and 9.0 Japan Earthquakes Using GOCE  
*T. Broerse, P. Visser, J. Bouman et al.*

GOCE Exploitation for Moho Modeling and Applications  
*D. Sampietro*

## **Geodesy**

*Chair: R. Pail*

Gravity Anomaly and Gradient Recovery from GOCE Gradient Data Using LSC and Comparisons with Known Ground Data

*C.C. Tscherning & D.N. Arabelos*

Polar Gravity Fields from GOCE and Airborne Gravity

*R. Forsberg, A.V. Olesen, H. Yildiz & C.C. Tscherning*

The Earth's Gravitational Field Recovery Based on an Optimal Combination of GRACE and GOCE Satellite Data

*H. Hashemi Farahani & P. Ditmar*

The Frequency Analysis of Gravity Gradients and the Methods of Filtering Processing

*J. Yu & X. Wan*

## **Science in Synergy with other Missions**

*Chair: S. Bruinsma*

Exploitation of GOCE and CryoSat-2 Data – Combined Applications

*A. Horvath, S. Dinardo, R. Pail et al.*

## **Posters**

### **GOCE Mission Status:**

#### **Data Quality, Mission Operations, Ground Processing**

A Global Gravitational Field Model from GOCE Gradiometer Observations

*J. Schall, T. Mayer-Gürr, A. Eicker & J. Kusche*

Suggestions for Improvement of User Access to GOCE L2 Data

*C.C. Tscherning*

GOCE SSTI L2 Tracking Losses and their Impact on POD Performance

*J. van den IJssel, P. Visser, E. Doornbos et al.*

Refinement of the Stochastic Model of GOCE Scientific Data in a Long Time Series

*I. Krasbutter, J.M. Brockmann, B. Kargoll et al.*

Use of Massive Parallel Computing Libraries in the Context of Global Gravity Field Determination from Satellite Data

*J.M. Brockmann & W.-D. Schuh*

GOCE-Only Gravity Field Model Derived from 8 Months of GOCE Data  
*R. Pail, H. Goiginger, W.-D. Schuh et al.*

GOCE Level 2 Gravity Gradients  
*J. Bouman, S. Fiorot, M. Fuchs et al.*

On the Current Status of the Cooperative Research Project Real Data  
Analysis GOCE (REAL GOCE)  
*W.-D. Schuh & B. Kargoll*

## **Calibration and Validation**

Impact of Cross Winds in Polar Regions on GOCE Accelerometer  
and Gradiometer Data  
*N. Peterseim, A. Schlicht, C. Stummer & W. Yi*

Current Results of GOCE In-Orbit Validation via the Cross-Over Approach  
*P. Brieden & J. Müller*

Dynamic Orbit Determination for and Calibration of GOCE  
*E. Mysen & P.H. Andersen*

Comparison of GOCE Derived Satellite Global Gravity Models with EGM2008,  
the OCTAS Geoid and Terrestrial Gravity Data: Case Study for Norway  
*M. Šprlák, C. Gerlach, O.C.D. Omang & B.R. Pettersen*

Validation of GOCE Gravity Field Models by Astrogeodetic  
Vertical Deflections in Germany  
*C Voigt & H. Denker*

An Initial Investigation of the GOCE Error Variance-Covariance Matrices in the  
Context of the GOCE User Toolbox Project  
*R.J. Bingham, C. Tscherning & P. Knudsen*

Improved CAL/VAL of GOCE Gravity Gradients Using Terrestrial Data  
*M. Veicherts, C.C. Tscherning & J. Bouman*

## **Posters: Oceanography**

Using the GOCE MDT in Ocean Data Assimilation  
*K. Haines, D. Lea & R. Bingham*

Comparison of Several Geoid Models over the Western Mediterranean Sea  
*A. Termens & J.J. Martinez-Benjamin*

Enhanced Mean Dynamic Topography and Ocean Circulation Estimation  
Using GOCE Preliminary Models  
*P. Knudsen, R. Bingham, O.B. Andersen & M.-H. Rio*

An Oceanographic Assessment of the Preliminary GOCE Geoid Models Accuracy  
*S. Mulet, M.-H. Rio, R. Bingham et al.*

On the Accuracy of Current Mean Sea Surface Models for the Use with GOCE Data  
*O.B. Andersen & M.-H. Rio*

## **Solid Earth**

GOCE Observations in Exploration Geophysics  
*C. Braitenberg, P. Mariani & T. Pivetta*

Evaluating GOCE Data Near a Mid-Ocean Ridge and Possible  
Application to Crustal Structure in Scandinavia  
*W. van der Wal, L. Wang, P. Visser et al.*

Optimal Forward Calculation Method of the Marussi Tensor Due to a Geologic  
Structure at GOCE Height  
*L. Uieda, E.P. Bomfim, C. Braitenberg & E. Molina*

Heterogeneous Gravity Data Combination for Earth Interior and  
Geophysical Exploration Research  
*J. Bouman, J. Ebbing, M. Fuchs et al.*

## **Geodesy**

Long Wavelength Gravity Field Determination from GOCE Using the  
Acceleration Approach  
*M. Weigelt, O. Baur, T. Reubelt et al.*

GPS-Only Gravity Field Recovery from GOCE  
*A. Jäggi, H. Bock & U. Meyer*

Combination of GOCE Data with Complementary Gravity Field Information  
*R. Pail, H. Goiginger, W.-D. Schuh et al.*

A GOCE-Only Global Gravity Field Model by the Space-Wise Approach  
*F. Migliaccio, M. Reguzzoni, A. Gatti et al.*

Global Gravity Field Determination by Combining GOCE and Complementary Data  
*T. Fecher, R. Pail & T. Gruber*

Global Surface Geostrophic Currents from Satellite Altimetry and GOCE  
*J.M. Sánchez-Reales, I. Vigo, S.G. Sin & B.F. Chao*

Updating EGM08 Mediterranean Geoid Using Local GOCE Data from the  
Space-Wise Solution  
*M. Reguzzoni, D. Sampietro & F. Sansò*

Smoothing GOCE Gravity Gradients by Means of Topographic-Isostatic Reductions  
*T. Grombein, K. Seitz & B. Heck*

Improving Geoid Determination over Morocco Area Using GOCE Level 2 Data  
*E.H. El Brirchi & D. El Azzab*

GOCE Gravity Gradients: A New Satellite Observable  
*M. Murböck, R. Pail, M. Fuchs & J. Bouman*

Contribution Analysis of the Gravity Field Recovered from GOCE  
*W. Yi & R. Rummel*

Impact of GOCE on the Nordic Gravity Field Modelling  
*H. Yildiz, R. Forsberg, C.C. Tscherning & G. Strykowski*

Can GOCE Help to Improve Temporal Gravity Field Estimates?  
*R. Pail, T. Fecher, A. Jäggi & H. Goiginger*

## **Summary and Recommendations**

## **Acknowledgements**

## **List of Participants**