

Contents

Symposium GS001 Reference Frames Conveners: A. Dermanis, H. Drewes	
Reference Systems, Reference Frames, and the Geodetic Datum – Basic Considerations Hermann Drewes	3
Investigations into a Dynamic Geocentric Datum Jian Wang, Jinling Wang and Craig Roberts	11
On the Strength of SLR Observations to Realize the Scale and Origin of the Terrestrial Reference System D. Angermann and H. Müller	21
Impact of the Network Effect on the Origin and Scale: Case Study of Satellite Laser Ranging X. Collilieux and Z. Altamimi	31
Satellite Laser Ranging Biases and Terrestrial Reference Frame Scale Factor D. Coulot, P. Berio, P. Bonnefond, P. Exertier, D. Féraudy, O. Laurain and F. Deleflie	39
Status of the European Reference Frame (EUREF) João Agria Torres, Zuheir Altamimi, Claude Boucher, Elmar Brockmann, Carine Bruyninx, Alessandro Caporali, Werner Gurtner, Heinz Habrich, Helmut Hornik, Johannes Ihde, Ambrus Kenyeres, Jaakko Mäkinen, Hans v. d. Marel, Hermann Seeger, Jaroslav Simek, Guenter Stangl and Georg Weber	47
Reprocessing of a Regional GPS Network in Europe C. Völksen	57
Latest Enhancements in the Brazilian Active Control Network Luiz P.S. Fortes, Sonia M.A. Costa, Mario A. Abreu, Alberto L. Silva, Newton J.M. Júnior, João G. Monico, Marcelo C. Santos and Pierre Tétreault	65

Searching for the Optimal Relationships Between SIRGAS2000, South American Datum of 1969 and Córrego Alegre in Brazil	71
Leonardo C. Oliveria, Marcelo C. Santos, Felipe G. Nievinski,	
Rodrigo F. Leandro, Sonia M.A. Costa, Marcos F. Santos, João Magna,	
Mauricio Galo, Paulo O. Camargo, João G. Monico, Carlos U. Silva,	
and Tule B. Maia	
The Permanent Tide in Height Systems	81
Jaako Mäkinen and Johannes Ihde	
Combined Adjustment of National Astro-Geodetic Network and National GPS2000 Geodetic Network	89
Cheng Pengfei, Cheng Yingyan and Mi Jinzhong	
Symposium GS002 Gravity Field Conveners: C. Jekeli, U. Marti, S. Okubo, N. Sneeuw, I. Tziavos, G. Vergos, M. Vermeer, P. Visser	
Improved Resolution of a GRACE Gravity Field Model by Regional Refinements	99
A. Eicker, T. Mayer-Gürr and K.H. Ilk	
The Role of the Atmosphere for Satellite Gravity Field Missions	105
Th. Gruber, Th. Peters and L. Zenner	
Assessment of GPS-only Observables for Gravity Field Recovery from GRACE	113
A. Jäggi, G. Beutler, L. Prange, R. Dach and L. Mervart	
Detecting the Baltic Sea Level Surface with GPS-Measurements and Comparing it with the Local Geoid Model	125
Aive Liibusk and Harli Jürgenson	
Strengthening the Vertical Reference in the Southern Baltic Sea by Airborne Gravimetry	135
Henriette Skourup, Rene Forsberg, Sofie Louise Sandberg Sørensen,	
Christian Jermin Andersen, Uwe Schäfer, Gunter Liebsch, Johannes Ihde	
and Uwe Schirmer	
Downward Continuation of Airborne Gravimetry and Gradiometry Data Using Space Localizing Spline Functions	143
F. Mueller, T. Mayer-Gürr and A.A. Makhloof	
The Earth's Gravity Field Components of the Differences Between Gravity Disturbances and Gravity Anomalies	155
R. Tenzer, A. Ellmann, P. Novák and P. Vajda	
Research on the Calibration of Onboard Accelerometer by Dynamic Method	161
Zou Xiancai, Li Jiancheng, Jiang Weiping, Xu Xinyu and Chu Yonghai	

Current Status of Gravity Measurements in the Republic of Croatia with the Fundamental Gravity Network Finalization Project	169
I. Grgić, M. Lučić, M. Liker, T. Bašić, B. Barišić and M. Repanić	
The Development of the European Gravimetric Geoid Model EGG07	177
H. Denker, J.-P. Barriot, R. Barzaghi, D. Fairhead, R. Forsberg, J. Ihde, A. Kenyeres, U. Marti, M. Sarraih and I.N. Tziavos	
An Attempt for an Amazon Geoid Model Using Helmert Gravity Anomaly	187
D. Blitzkow, A.C.O.C. de Matos, I.O. Campos, A. Ellmann, P. Vaníček and M.C. Santos	
Combination of Gravimetry, Altimetry and GOCE Data for Geoid Determination in the Mediterranean: Evaluation by Simulation	195
R. Barzaghi, A. Maggi, N. Tsifles, D. Tsoulis, I.N. Tziavos and G.S. Vergos	
An Attempt Towards an Optimum Combination of Gravity Field Wavelengths in Geoid Computation	203
Hussein A. Abd-Elmotaal and Norbert Kühtreiber	
BVP, Global Models and Residual Terrain Correction	211
M. Elhabiby, D. Sampietro, F. Sansò and M.G. Sideris	
Domain Transformation, Boundary Problems and Optimization Concepts in the Combination of Terrestrial and Satellite Gravity Field Data	219
P. Holota and O. Nesvadba	
Numerical Solution of the Fixed Altimetry-Gravimetry BVP Using the Direct BEM Formulation	229
R. Čunderlík and K. Mikula	
On the Combination of Gravimetric Quasi-Geoids and GPS-Levelling Data	237
R. Klees and I. Prutkin	
An Alternative Approach for the Determination of Orthometric Heights Using a Circular-Arc Approximation for the Plumbline	245
G. Manoussakis, D. Delikaraoglou and G. Ferentinos	
On Evaluation of the Mean Gravity Gradient Within the Topography	253
R. Tenzer and A. Ellmann	
Comparison of Techniques for the Computation of a Height Reference Surface from Gravity and GPS-Levelling Data	263
R. Tenzer, R. Klees, I. Prutkin, T. Wittwer, B. Alberts, U. Schirmer, J. Ihde, G. Liebsch and U. Schäfer	
The Inversion of Poisson's Integral in the Wavelet Domain	275
M. Elhabiby and M.G. Sideris	

On the Principal Difficulties and Ways to Their Solution in the Theory of Gravitational Condensation of Infinitely Distributed Dust Substance	283
A. M. Krot	
Representation of Regional Gravity Fields by Radial Base Functions	293
M. Antoni, W. Keller and M. Weigelt	
Precise Gravity Time Series and Instrumental Properties from Combination of Superconducting and Absolute Gravity Measurements	301
H. Wziontek, R. Falk, H. Wilmes and P. Wolf	
On a Feasibility of Modeling Temporal Gravity Field Variations from Orbita of Non-dedicated Satellites	307
P. Ditmar, A. Bezdek, X. Liu and Q. Zhao	
EOF Analysis on the Variations of Continental Water Storage from GRACE in China	315
W. Hanjiang, Z. Guangbin, C. Pengfei and C. Xiaotao	
Influence of Hydrology-Related Temporal Aliasing on the Quality of Monthly Models Derived from GRACE Satellite Gravimetric Data	323
J. Encarnaçāo, R. Klees, E. Zapreeva, P. Ditmar and J. Kusche	
Image Super-Resolution via Filtered Scales Integral Reconstruction Applied to GOCE Geoid Data	329
Ciro Caramiello, Guido Vigione, Alessandra Tassa, Alessandra Buongiorno, Eric Monjoux and Rune Floberghagen	
An Error Model for the GOCE Space-Wise Solution by Monte Carlo Methods	337
F. Migliaccio, M. Reguzzoni, F. Sansò and N. Tselves	
Accuracy Analysis of External Reference Data for GOCE Evaluation in Space and Frequency Domain	345
K.I. Wolf and J. Müller	
Gravity Field Determination at the AIUB – The Celestial Mechanics Approach	353
L. Prange, A. Jäggi, G. Beutler, R. Dach and L. Mervart	
Robust Trend Estimation from GOCE SGG Satellite Track Cross-Over Differences	363
F. Jarecki and J. Müller	
Reference Frame Consistency in CHAMP and GRACE Earth Gravity Models	371
Christopher Kotsakis	
The Fast Analysis of the GOCE Gravity Field	379
Xu Xinyu, Li Jiancheng, Jiang Weiping, Zou Xiancai and Chu Yonghai	

GRACE Application to the Receding Lake Victoria Water Level and Australian Drought	387
J.L. Awange, M.A. Sharifi, W. Keller and M. Kuhn	
Updated OCTAS Geoid in the Northern North Atlantic – OCTAS07	397
O.C.D. Omang, A. Hunegnaw, D. Solheim, D.I. Lysaker, K. Ghazavi and H. Nahavandchi	
New Combined Geoid Solution HGTUB2007 for Hungary	405
Gy. Tóth	
Regional Astrogeodetic Validation of GPS/Levelling Data and Quasigeoid Models	413
Christian Voigt, Heiner Denker and Christian Hirt	
Insights into the Mexican Gravimetric Geoid (GGM05)	421
D. Avalos, M.C. Santos, P. Vanícek and A. Hernández	
An Improved Geoid in North Eastern Italy	427
P. Sterzai, F. Coren, N. Creati, I. Marson and M. Maso	
Towards a New Global Digital Elevation Model	431
P.A.M. Berry, R.G. Smith, J.A. Freeman and J. Benveniste	
Symposium GS003 Earth Rotation and Geodynamics Conveners: V. Dehant, C.L. Huang	
Contribution of Non-Tidal Oceanic Mass Variations to Polar Motion Determined from Space Geodesy and Ocean Data	439
F. Göttl and F. Seitz	
Simulation of Historic and Future Atmospheric Angular Momentum Effects on Length-of-day Variations with GCMs	447
Timo Winkelkemper, Florian Seitz, Seung-Ki Min and Andreas Hense	
Contributions of Tidal Poisson Terms in the Theory of the Nutation of a Nonrigid Earth	455
V. Dehant, M. Folgueira, N. Rambaux and S.B. Lambert	
Consistency of Earth Rotation, Gravity, and Shape Measurements	463
Richard S. Gross, David A. Lavallée, Geoffrey Blewitt and Peter J. Clarke	
Current Estimation of the Earth's Mechanical and Geometrical Parameters	473
A.N. Marchenko	
The Earth's Global Density Distribution and Gravitational Potential Energy	483
A.N. Marchenko	

Analysis of Geophysical Variations of the C_{20} Coefficient of the Geopotential	493
L.I. Fernández	
Analysis of Mass Variations in Northern Glacial Rebound Areas from GRACE Data	501
Holger Steffen, Jürgen Müller and Heiner Denker	
Report of GGP Activities to Commission 3, Completing 10 Years for the Worldwide Network of Superconducting Gravimeters	511
David Crossley and Jacques Hinderer	
European Tidal Gravity Observations: Comparison with Earth Tide Models and Estimation of the Free Core Nutation (FCN) Parameters	523
B. Ducarme, S. Rosat, L. Vandercoilden, Xu Jian-Qiao and Sun Heping	
Physical Modelling to Remove Hydrological Effects at Local and Regional Scale: Application to the 100-m Hydrostatic Inclinometer in Sainte-Croix-aux-Mines (France)	533
L. Longuevergne, L. Oudin, N. Florsch, F. Boudin and J.P. Boy	
Monitoring Crustal Movement in the Qinghai-Tibetan Plateau Using GPS Measurements from 1993 to 2002	541
Weiping Jiang, Xiaohui Zhou, Caijun Xu and Jingnan Liu	
Impact of Local GNSS Permanent Networks in the Study of Geodynamics in Central Italy	549
G. Fastellini, F. Radicioni and A. Stoppini	
New Results Based on Reprocessing of 13 years Continuous GPS Observations of the Fennoscandia GIA Process from BIFROST	557
M. Lidberg, J.M. Johansson, H.-G. Scherneck, G.A. Milne and J.L. Davis	
Analysis of GPS Data from An Antarctic Ice Stream	569
R. Dach, G. Beutler and G.H. Gudmundsson	
Dynamic Analysis of Crustal Movements Along the Dead-Sea Rift	581
L. Shahar and G. Even-Tzur	
Symposium GS004 Positioning and Applications Conveners: C. Rizos, S. Verhagen	
GPS-Based Monitoring of Surface Displacements in the Mud Volcano Area, Sidoarjo, East Java	595
H.Z. Abidin, M.A. Kusuma, H. Andreas, M. Gamal and P. Sumintadireja	
Differential and Precise Point Positioning in the South American Region with Ionosphere Maps	605
S.M. Alves Costa, Alberto Luis da Silva, Newton José de Moura Jr, Mauricio Alfredo Gende and Claudio Antonio Brunini	

Current State of Precise Point Positioning and Future Prospects and Limitations615
S. Bisnath and Y. Gao	
Nonstationary Tropospheric Processes in Geodetic Precipitable Water Vapor Time Series625
O.J. Botai, W.L. Combrinck and C.J. deW Rautenbanch	
Combination of Multiple Repeat Orbits of ENVISAT for Mining Deformation Monitoring631
H.C. Chang, L. Ge, A.H. Ng, C. Rizos, H. Wang and M. Omura	
An Investigation into Robust Estimation Applied to Correlated GPS Networks639
R.C. Erenoglu and S. Hekimoglu	
Geometry-Based TCAR Models and Performance Analysis645
Yanming Feng and Chris Rizos	
Real-Time Kinematic OTF Positioning Using a Single GPS Receiver655
Y. Gao and M. Wang	
Concept of a Multi-Scale Monitoring and Evaluation System for Landslide Disaster Prediction669
M. Haberler-Weber, A. Eichhorn, H. Kahmen and B. Theilen-Willige	
Ionospheric Modelling in the North of Algeria679
H. Dekkiche, S. Kahlouche, C.B. Kadri and R. Mir	
Kinematic Precise Point Positioning During Marginal Satellite Availability691
N.S. Kjørsvik, O. Øvstedral and J.G.O. Gjevestad	
Establishing a GNSS Receiver Antenna Calibration Field in the Framework of PROBRAL701
C.P. Krueger, J. Freiberger, B. Heck, M. Mayer, A. Knöpfler and B. Schäfer	
Trimble's RTK and DGPS Solutions in Comparison with Precise Point Positioning709
Herbert Landau, Xiaoming Chen, Sören Klose, Rodrigo Leandro and Ulrich Vollath	
The Precision and Accuracy of Shanghai VRS Network719
Lizhi Lou and Yi Chen	
Improving the Stochastic Model of GNSS Observations by Means of SNR-based Weighting725
X. Luo, M. Mayer and B. Heck	

Evaluating the Brazilian Vertical Datum Through Improved Coastal Satellite Altimetry Data	735
Roberts Teixeira Luz, Wolfgang Bosch, Silvio Rogéris Correia de Freitas, Bernhard Heck and Regiane Dalazoana	
Land Subsidence Monitoring in Australia and China using Satellite Interferometry	743
Alex Hay-Man Ng, Hsing-Chung Chang, Kui Zhang, Linlin Ge and Chris Rizos	
Analysis on Temporal-Spatial Variations of Australian TEC	751
Gary Ouyang, Jian Wang, Jinling Wang and David Cole	
Use of Global and Regional Ionosphere Maps for Single-Frequency Precise Point Positioning	759
A.Q. Le, C.C.J.M. Tiberius, H. van der Marel and N. Jakowski	
Quality Control for Building Industry by Means of a New Optical 3D Measurement and Analysis System	771
A. Reiterer, M. Lehmann, J. Fabianowitsch and H. Kahmen	
New Solutions to Classical Geodetic Problems on the Ellipsoid	781
Lars E. Sjöberg	
GNSS Carrier Phase Ambiguity Resolution: Challenges and Open Problems	785
P.J.G. Teunissen and S. Verhagen	
Static Stress Change from the 8 November, 1997 Ms 7.9 Manyi, Tibet Earthquake as Inferred from InSAR Observation	793
Wen Yangmao and Xu Caijun	
Application of Computer Algebra System to Geodesy	803
P. Zaletnyik, B. Paláncz, J.L. Awange and E.W. Grafarend	
Crustal Velocity Field Modelling with Neural Network and Polynomials ..	809
Khosro Moghtased-Azar and Piroska Zaletnyik	
Next-Generation Algorithms for Navigation, Geodesy and Earth Sciences Under Modernized Global Navigation Satellite Systems (GNSS)	817
Marcelo C. Santos, Richard B. Langley, Rodrigo F. Leandro, Spiros Pagiatakis, Sunil Bisnath, Rock Santerre, Marc Cocard, Ahmed El-Rabbany, René Landry, Herb Dragert, Pierre Héroux and Paul Collins	
Linear Combinations for Differential Radar Interferometry	825
L. Ge, H. Wang, H.C. Chang and C. Rizos	

Symposium GS005 The Global Geodetic Observing System (GGOS)
Conveners: H.-P. Plag, M. Rothacher, R. Neilan

Recent Progress in the VLBI2010 Development	833
D. Behrend, J. Böhm, P. Charlot, T. Clark, B. Corey, J. Gipson, R. Haas, Y. Koyama, D. MacMillan, Z. Malkin, A. Niell, T. Nilsson, B. Petrachenko, A. Rogers, G. Tuccari and J. Wresnik	
The Contribution of GGP Superconducting Gravimeters to GGOS	841
David Crossley and Jacques Hinderer	
Combined Analysis of Earth Orientation Parameters and Gravity Field Coefficients for Mutual Validation	853
A. Heiker, H. Kutterer and J. Müller	
Index	861

