Table of Contents

Scientific Programme »Observation of the System Earth from Space« 1

Progress Towards The New GFZ EIGEN-GRACE06S Gravity Field Time Series
Dahle Ch., Flechtner F., Neumayer K.H. 3

Gravity Field Generation Applying the Integrated Approach
König D., Dahle C. 7

Faster Reprocessing
Neumayer, K.H. 13

Reprocessing of CHAMP and GRACE Observations for the Determination of Improved Static and Temporal Gravity Field Models with Regional Refinements (GREST-CHAMP/GRACE)
Shabanloui A., Schall J., Mayer-Gürr T., Eicker A., Kusche J., Kurtenbach E. 22

Improved Acceleration Modelling and Level 1 Processing Alternative for GRACE
Peterseim N., Schlicht A., Flury J. 31

GRIMM-2: The parent magnetic field model for an IGRF candidate model
Lesur V., Rother M., Hamoudi M., Wardinski I., Lühr H., Michaelis I., Rauberg J. 35

Wavelet Correlation Analysis of CHAMP Magnetic Field Models – WACO CHAMP Results
Schachtschneider R., Hayn M., Holschneider M. 42

Analysis and application of atmospheric data from CHAMP and GRACE
Heise S., Wickert J., Arras C., Beyerle G., Haser A., Schmidt T., Zus F. 46

GOCE gravity gradients: a new satellite observable
Bouman J., Stummer C., Murböck M., Fuchs M., Rummel R., Pail R., Gruber T., Bosch W., Schmidt M. 52

GOCE gravity field determination by means of rotational invariants: first experiences
Cai J., Baur O., Sneeuw N. 62

Stochastic model refinements for GOCE gradiometry data
Krasbutter I., Brockmann J.M., Kargoll B., Schuh W.-D. 70

GLObal gravity field determination with REgional refinements by the analysis of GOCE level-1b data (GLOREGOCE)
Shabanloui A., Schall J., Mayer-Gürr T., Eicker A., Kusche J., Kurtenbach E. 77

Modelling topographic effects in GOCE gravity gradients
Grombein T., Seitz K., Heck B. 84

Quality Assessment of GOCE Gradients
Brieden P., Müller J. 94

Inferring the mean dynamic topography by using GOCE geoid information in ocean state estimations
Siegismund F., Köhl A., Stammer D. 101

Validation of GOCE products by terrestrial data sets in Germany
Voigt C., Rülke A., Denker H., Ihde J., Liebsch G. 106

High-resolution global gravity fields by combining GOCE, GRACE and terrestrial dataFirst results from the REAL GOCE project
Shako R., Förste C., Abrikosov O., Bruinsma S., Dahle C., Flechtner F., Neumayer K.H., Marty J.-C. 112

Constraints for Future Missions
Doll B., Sand R. 118

Quick-look gravity field analysis of formation scenarios selection
Reubelt T., Sneeuw N., Iran-Pour S.. 126

The mission option OPTIMA – novelties and benefit
Brieden P., Müller J., Flury J., Heinzel G. 134

Optimized Gravity Field Determination from Future Satellite Missions
Elsaka B., Kusche J. 140

Numerical Simulations of new Gravity Mission Concepts
Raimondo J.-C. , Neumayer K.-H., Flechtner F. 146

Inertial Sensing for Future Gravity Missions
Hirth M., Brandt N., Fichter W. 152

Laser interferometry for future satellite gravimetry missions
Sheard B., Dehne M., Mahrdt C., Gerberding O., Müller V., Heinzel G., Danzmann K. 160

New concepts for high precision laser based space metrology
Klein V., Bedrich S. 167

High Accuracy Long Distance Measurement with Frequency Combs
Lezius M., Steinmetz T., Holzwarth R. 172

Quantum sensors for Earth observation
Gilowski M., Rasel E.M. 178

Environmental Disturbance Modelling for Future Gravity Missions
Pelivan I., Theil S. 185

Authors Index 193

GEOTECHNOLOGIEN Science Reports – Already published/Editions 197