

GGEO2008 Program

An IAG International Symposium
on

"Gravity, Geoid and Earth Observation 2008"
23-27 June 2008

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Center of Mediterranean Architecture,
Old Venetian Harbor,
Chania, Crete,
Greece

Organized by
The Technical University of Crete

Chania, Crete, Greece.

<http://www.geomatlab.tuc.gr/GGEO2008>

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International Association of Geodesy



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The Holy Monastery of Agia Triada of Jagarolon, Chania, Crete, The Prefecture of Chania and the Greek National Tourism Organization have also subsidized this International Symposium.

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1. Sessions Description

Session 1: Gravimetry (terrestrial, shipborne, airborne) and gravity networks.

Chairs: *Yoichi Fukuda (Japan), Leonid F. Vitushkin (BIPM, France), .*

This Session solicits papers on the following topics:

- classical and new methods and instrumentation for the absolute and relative terrestrial, shipboard, seaboard and airborne gravimetry and gradiometry,
- investigations of the instrumentation for gravity measurements including the results of comparisons of absolute gravimeters,
- combined techniques for gravity measurements (for example, absolute and superconducting gravimetry),
- new types and technologies for gravity measurements (for example, atom interferometer gravimeters and gradiometers, airborne gravimetry on the zeppelins, etc.) including that for the planetary gravimetry,
- results of the measurements of the gravity field on static and moving platforms,
- formation of the gravity networks and their measurements, construction of gravity stations for precise gravity measurements,
- standartization of the data of absolute gravity measurements and formation of data base of absolute measurements.

Session 2: Space-borne gravimetry: Present and Future.

Chairs: *Roland Pail (Austria) and Pieter Visser (The Netherlands).*

The successful launches of the satellite missions CHAMP (2000) and GRACE (2002) have led to a revolution in global Earth's gravity field mapping by space-borne observation techniques, and have provided valuable contributions to many geoscientific fields of application, such as geodesy, hydrology, oceanography/altimetry, glaciology, and solid Earth physics. These two missions have proven new concepts and technologies, such as space-borne accelerometry and low-low Satellite-to-Satellite Tracking (SST), in combination with more conventional observation techniques, like GPS SST and Satellite Laser Ranging (SLR). CHAMP and GRACE have already produced consistent long- to medium-wavelength global gravity field models and its temporal changes, and have supported the preparation for the GOCE (2008) dedicated gravity field mission, which will further improve high-accuracy and high-resolution gravity field mapping employing for the first time in history the satellite

gravity gradiometry (SGG) concept.

For the realization of future gravity field missions, the limitations of the current mission concepts have to be studied, and innovative technologies, advanced sensor systems and mission concepts, such as formation flights, will have to be identified and investigated. Also alternative technologies such as ultra-precise clocks or atom interferometry, which are innovative in the field of gravity field research, might be considered for future mission concepts. Papers have been solicited that address the topics of this session.

Session 3: Earth Observation by Satellite Altimetry and InSAR.

Chairs: *Wolfgang Bosch (Germany), Masato Furuya (Japan),
Roger Haagmans (ESA).*

Space-based Earth observations by radar altimetry and InSAR have evolved to operational remote sensing techniques with important interdisciplinary applications to many geosciences. This Session focuses on potential and already realized applications of these techniques, latest results and new developments with specific impact to geodetic science. Topics to be covered in this Session include, but are not limited to:

- Procedures and results for precise mapping and monitoring of the Ocean and Earth surface, its short period variations (tides, hydrodynamics), secular evolution (sea level rise, uplift) or episodic deformation (earthquakes, tsunamis).
- Improvements in quality and resolution of marine gravity or bathymetry by retracking or dedicated analysis of altimeter data.
- Comparison between marine gravity and independent gravity field information (from land, ships, aircrafts, and satellites).
- Methodology and algorithms for combining satellite-only and marine (terrestrial) gravity data for both, regional and global applications.
- Procedures and results for estimating the sea surface topography as difference between mean sea level and geoid and its comparison with oceanographic estimates of the dynamic ocean topography.
- New methodology and analysis techniques in InSAR data processing and algorithms, such as Persistent Scatterer Interferometry (PSI), short baseline stacking approach, newer phase unwrapping algorithms, etc.

Session 4: Geoid modeling and vertical datums.

Chairs: *Ambrus Kenyeres (Hungary) and William Kearsley (Australia).*

Beyond its physical meaning the geoid is considered as vertical datum for leveling networks, represented by fundamental benchmark(s) at selected tide gauges. However the practical realization of the vertical datums, especially on continental scale was difficult and may led to inconsistencies. Additionally the limited geoid modeling accuracy hindered the realization of the global vertical datum. Since the availability of the satellite gravity mission's (CHAMP, GRACE) results, our capability to accurately model the gravimetric geoid (from medium to long wavelengths) has largely increased, opening new opportunities for the vertical datum realization and applications. In several cases the new geoid models integrated with GNSS surveys are providing attractive alternative for height network definition and vertical surveying. The session focuses on the impact of the improved gravimetric geoid modeling and its use for vertical datum realization and solicits papers in the following topics:

- problems and solutions related to global and regional vertical datum definition,
- combination of gravimetric geoid and GNSS surveying,
- resolution of problems associated with terrain effects and downward continuation,
- special problems associated with coastal regions.

Session 5: Regional gravity field modeling.

Chairs: *Urs Marti (Switzerland) and Steve Kenyon (USA).*

This session will focus on the practical solution of various formulations of geodetic boundary-value problems to yield continental, regional and local geoid models. A main part will be the status reports of the projects for the accurate determination of the geoid on the continental scale. Contributions describe recent developments in theory, processing methods, downward continuation of satellite and airborne data, terrain modeling, software development and the combination of gravity data with GPS/leveling for an accurate local gravity field determination. Further topics are the comparison of methods and results, the interpretation of residuals as well as geoid applications to satellite altimetry, oceanography, and local geospatial height registration.

Session 6: Global gravity field modelling & EGM08.

Chairs: *Nikos Pavlis (USA) and Jianliang Huang (Canada).*

Global gravity field modelling and determination has experienced a quantum leap during the last few years with the data collected by the USA/German satellite-to-satellite tracking mission GRACE. A successful deployment of the gradiometer mission GOCE by ESA will hopefully enable even further advances. The Shuttle Radar Topography Mission (SRTM) has improved tremendously our knowledge of the topography for about 80 percent of the Earth's land surface. The continuous refinement of data processing algorithms (e.g., re-tracking) has also enabled an unprecedented mapping of the marine gravity field from satellite altimetry. These advances from space have been paralleled by continuous advances from airborne and land-based gravimetric data collections that take place much closer to the Earth's surface. This unprecedented collection of complementary data offers geodesists unique opportunities and great challenges for highly accurate modelling of the gravity field, on a global scale and at very high-resolution. Several geodetic teams world-wide have been pursuing this challenging task both from the theoretical and from the numerical perspectives.

The National Geospatial-Intelligence Agency of the USA has developed a new Earth Gravitational Model (EGM08) intended to replace the benchmark EGM96 model. The new model, which extends to degree 2160, performs in some cases equally well as (or better than) detailed gravimetric products, thus providing a new paradigm for gravimetric applications. Oral and poster presentations are focusing on the various (theoretical and numerical) aspects of global gravity field determination, the presentation of results from new models, from their evaluations, and from their inter-comparisons.

Session 7: Temporal gravity changes and geodynamics.

Chairs: *Nico Sneeuw (Germany) and Juergen Kusche (Germany).*

The session "Temporal Gravity Changes and Geodynamics" deals with the time variable gravity field of the Earth at all temporal and spatial scales. Papers are on a variety of related topics, ranging from observation, methodological aspects and modeling of time-variable gravity to mass transport monitoring and applications in related disciplines. The session focuses in particular on the interactions with solid Earth physics and with atmospheric, hydrological, ice and ocean sciences.

Session 8: Earth observation and the Global Geodetic Observing System (GGOS).

Chairs: *Richard Gross (USA) and Hans-Peter Plag (USA).*

Measurements of the Earth's rotation, shape, and gravity provided by global geodetic observing systems show that they change on a wide range of time scales reflecting the wide range of processes affecting them, from external tidal forces to surficial processes involving the atmosphere, oceans, and hydrosphere to internal processes acting both at the core-mantle boundary as well as within the solid Earth itself. Measurements made by global geodetic observing systems can therefore be used to gain greater understanding of a wide variety of dynamic Earth processes, from tracking water in its various phases as it cycles through the atmosphere, oceans, and land, to crustal deformation associated with tectonic motions and glacial isostatic adjustment, to torsional oscillations of the core. This session will be a forum for discussing the present status and future evolution of global geodetic observing systems and their use to investigate dynamic Earth processes.

Session 9: Geodetic monitoring of natural hazards and a Changing Environment.

Chairs: *Alexander Braun (Canada) and Rene Forsberg (Denmark).*

With the ever increasing spatio-temporal resolution and improved accuracy of geodetic sensors, new target areas can be approached and new contributions to neighboring disciplines can be achieved with geodetic monitoring. This session invites contributions from studies which employ modern geodetic sensors to monitor and observe natural hazards and the Earth's changing environment on multiple-scales. The geodetic sensors used may include GNSS, satellites (altimetry, SAR, gravimetric), spaceborne and airborne Lidar, gravimetry, tide gauges and buoys, and surveying based on and/air/ship-borne platforms. Primary target areas include natural hazards due to earthquake cycles, volcanos, subsidence and deformation of the Earth's surface, sea level change, Arctic/Antarctic change, sea ice dynamics, melting of glaciers and ice sheets, permafrost change and flooding. Secondary targets involve changes in the Earth's environmental systems; vegetation, geomorphology, urban environments, surface water, avalanches and snow cover, rivers and lakes. It should be emphasized that this session focus on integrated studies covering both geodetic sensors and target systems rather than on improvements of sensors or numerical modelling of systems alone.

Summary Time Table (Orals, Poster Discussions, Working Group meetings)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
	7:30 - 9:00 Registration	8:20 \$2-684 8:40 \$2-682 9:00 \$2-235 9:20 \$2-124 9:40 \$2-111	8:20 \$4-115 8:40 \$4-154 9:00 \$4-071 9:20 \$4-200 9:40 \$4-148	8:20 \$7-254 8:40 \$7-237 9:00 \$7-289 9:20 \$7-241 9:40 \$7-203	8:20 \$9-110 8:40 \$9-233 9:00 \$9-132 9:20 \$9-244 9:40 \$9-269
	10:00 - 10:30 Coffee Break	10:00 - 10:30 Coffee Break	10:00 - 10:30 Coffee Break	10:00 - 10:30 Coffee Break	10:00 - 10:30 Coffee Break
	10:30 \$1-225 10:50 \$1-243 11:10 \$1-229 11:30 \$1-147 11:50 \$1-123 12:10 \$1-066	10:30 \$6-286 10:50 \$6-223 11:10 \$6-184 11:30 \$6-652 11:50 \$6-163 12:10 \$6-266	10:30 \$5-277 10:50 \$5-001 11:10 \$5-116 11:30 \$5-109 11:50 \$5-041 12:10 \$5-066 12:30 \$5-160 12:50 \$5-174	10:30 \$7-008 10:50 \$7-207 11:10 \$7-275 11:30 \$7-092 11:50 \$7-178 12:10 \$7-251	10:30 \$9-177 10:50 \$9-074 11:10 \$9-260 11:30 \$9-151 11:50 \$9-070 12:10 \$9-069
	12:30-14:00 Lunch Break	12:30-14:00 Lunch Break	12:30-14:00 Lunch Break	12:30-14:00 Lunch Break	12:30-14:00 Lunch Break
	14:00 \$1-258 14:20 \$1-023 14:40 \$1-263 15:00 \$1-129 15:20 \$1-051	14:00 \$6-189 14:20 \$6-152 14:40 \$6-039 15:00 \$6-187 15:20 \$6-161	13:10-14:00 Lunch Break 14:00-15:30 Poster Sessions Joint IGFS/Commission-2 Working Group Meeting (14:00-15:00)	14:00 \$8-161 14:20 \$8-100 14:40 \$8-075 15:00 \$8-204 15:20 \$8-170	14:00 \$3-031 14:20 \$3-013 14:40 \$3-012 15:00 \$3-182 15:20 \$3-091
	15:40-16:10 Coffee Break	15:40-16:10 Coffee Break		15:40-16:10 Coffee Break	15:40-16:10 Coffee Break
	16:10 \$2-136 16:30 \$2-135 16:50 \$2-033 17:10 \$2-246	16:10 \$4-271 16:30 \$4-284 16:50 \$4-653 17:10 \$4-168	Free afternoon	16:10 \$8-098 16:30 \$8-291 16:50 \$8-140 17:10 \$8-209	16:10 \$3-179 16:30 \$3-201 16:50 \$3-089 17:10 \$3-081
17:00-19:00 Registration	17:30-19:00 Poster Sessions	17:30-19:00 Poster Sessions	17:30-19:00 Poster Sessions	17:30-19:00 Poster Sessions	17:30-19:00 Poster Sessions
Working Group meeting IAG ICPL2 Vertical Ref. Frames (18:30-20:00)	IAG Inter-Commission 2.1 WG on Absolute Gravimetry (18:30-20:00)	IAG Inter-Commission 2.1 WG on Absolute Gravimetry (18:30-20:00)	Gala Dinner 20:00 - 23:00	IAG Study Group 2.2 (19:00-20:30) WG on High-Resolution Forward Gravity. 12:30-14:00 Ground Floor Editorial Board Meeting Journal of Geodesy	
	13:00-14:00 Ground Floor Sub-Commission 2.3 WG Meeting Dedicated Satellite Grav. Mapping Missions				

2. Oral Presentations Program

Speakers' complimentary breakfast.

Every morning from 7:30-8:10 there would be a complimentary breakfast given at the Arsenali (Symposium Venue) for the morning Session Chairs and all speakers giving an oral presentation in that morning. The arrangement is for about 15 speakers every morning. This is going to happen every day.

In that way, there would be an opportunity for all Chairs to meet all speakers of that morning Session, see if there are any oral cancellations, arrange replacement presentations if that is the case, and for the authors to provide their Power Point Presentation files to the technical staff. The afternoon Session Chairs will have a chance to do the same with the afternoon speakers during lunch.

Sunday, 22 June 2008: 19:00–21:00:

Welcome Reception: The Symposium Venue, Center of Mediterranean Architecture. Participants will have a chance to meet each other. Drinks will be offered by courtesy of the local organizing Committee.

Monday, 23 June, 2008: 8:30-10:00

7:30

9:00

Registration

Opening Remarks.

S. P. Mertikas, GGEO2008 Convener.

I. Gryspolakis, Rector of the Technical University of Crete.

Yoichi Fukuda, President, IAG Commission 2 'Gravity Field'
International Association of Geodesy.

ESA's link to GGEO2008.

Roger Haagmans, Head,
Earth Surfaces and Interior Section,
European Space Agency.

Coffee Break 10:00-10:30

Session 1: Gravimetry (terrestrial, shipborne, airborne) and gravity networks.

Chairs: Yoichi Fukuda (Japan), Leonid F. Vitushkin (France)

10:30	S1-225	Using Global Absolute Gravity Observations to Constrain the Tie Between the Origin of ITRF and the Center of Mass of the Earth System. <u>Hans-Peter Plag</u>, Cornelius Kreemer, William C. Hammond
10:50	S1-243	Geoid determination from airborne gravimetry in mountainous regions. <u>R. Forsberg</u> and A V Olesen
11:10	S1-229	Comparison of height anomalies determined from SLR, Absolute Gravimetry and GPS with high frequency borehole data at Herstmonceux. <u>V. Smith</u>, G. Appleby, M. Wilkinson, S. Williams, M. Ziebart
11:30	S1-147	Comparison between sea height GPS measurements and satellite altimetry data in the Aegean Sea in Greece. Implications for local geoid improvement. <u>I. Mintourakis</u> and D. Delikaraoglou
11:50	S1-123	Airborne Gravimetry in Russia and its Perspectives for use on an Airship Platform. <u>Vyacheslav Koneshov</u>, Gennady Verba, Leonid Vitushkin
12:10	S1-066	Dynamical calibration of accelerometers and GPS receivers for airborne gravimetry. <u>G. Boedecker</u>
Lunch Break 12:30-14:00		

Session 1: Gravimetry (terrestrial, shipborne, airborne) and gravity networks.

Chairs: Yoichi Fukuda (Japan), Leonid F. Vitushkin (France)

14:00	S1-258	A cold atom gravimeter based on atom interferometry <u>S. Merlet</u>, J. Le Gouët, Q. Bodart, A. Landragin, F. Pereira Dos Santos
14:20	S1-023	Co-seismic Gravity Changes Computed for a Spherical Earth Model Applicable to GRACE Data. <u>W. Sun</u>, G. Fu and S. Okubo
14:40	S1-263	Gravity vs Pseudo-Gravity: A Comparison Based on Magnetic and Gravity Gradient Measurements. <u>C. Jekeli</u>
15:00	S1-129	Results of the Seventh International Comparison of

15:20

S1-051

Absolute Gravimeters ICAG-2005 at the Bureau International des Poids et Mesures, Sèvres.
Leonid Vitushkin, Zhiheng Jiang, Lennart Robertsson, Matthias Becker, Olivier Francis, Alessandro Germak, Giancarlo D'Agostino, Vojtech Palinkas

Results of the European Comparison of Absolute Gravimeters in Walferdange (Luxembourg) in November 2007.
O. Francis et al.

Coffee Break 15:40-16:10

Session 2: Space-borne gravimetry: Present and Future.

Chairs: Roland Pail (Austria) and Pieter Visser (The Netherlands).

16:10

S2-136

GRACE: Progress towards product improvement, and prospects for synergy with GOCE.
S. Bettadpur

16:30

S2-135

GRACE Gravity Field Determination using the Celestial Mechanics Approach – First Results.
A. Jäggi, G. Beutler, L. Mervart

16:50

S2-033

Regional gravity recovery from GRACE using position optimized radial base functions.

Matthias Weigelt, Markus Antoni, Wolfgang Keller

17:10

S2-246

DEOS series of monthly gravity field variations derived from GRACE data: comparison with independent data and validation.

P. Ditmar, R. Klees, X. Liu, E. Revtova, Q. Zhao, H. Dobslaw, P. Visser, B. Gunter, H.C. Winsemius, H.H.G. Savenije

Tuesday, 24 June, 2008

Session 2: Space-borne gravimetry: Present and Future.

Chairs: Roland Pail (Austria) and Pieter Visser (The Netherlands).

8:20

S2-084

Status of ESA's gravity mission GOCE.
R. Floberghagen, M. Fehringer, D. Lamarre, Roger Haagmans, M. Drinkwater, M. Kern, D. Muzi

8:40

S2-082

GOCE Level 2 Products – A Guide for Users.
Th. Gruber, R. Rummel, European GOCE Gravity Consortium (EGG-C)

- 9:00 **S2-235** Complete models and estimable functions from satellite-only gravity field models.
W.-D. Schuh, S. Becker and B. Kargoll
- 9:20 **S2-124** GRACE Simulation Study.
Ulrich Meyer, Björn Frommknecht, Frank Flechtner, Roland Schmidt
- 9:40 **S2-111** Future mission design options for spatio-temporal geopotential recovery.
T. Reubelt, N. J. Sneeuw, M.A. Sharifi

Coffee Break 10:00-10:30

Session 6: Global gravity field modelling & EGM08.

Chairs: Nikos Pavlis (USA) and Jianliang Huang (Canada).

- 10:30 **S6-286** Least squares, Galerkin and boundary value problems (BVP).
F. Sansò, F. Sacerdote
- 10:50 **S6-223** Non-Gaussian noise in global gravity field modeling: effective re-weighting of the observations.
J.P. van Loon
- 11:10 **S6-184** Improved resolution of a global GRACE gravity field model by regional refinements with adapted parameterization.
A. Eicker, T. Mayer-Gürr, K.-H. Ilk
- 11:30 **S6-052** EGM2008: An Overview of its Development and Evaluation.
N. K. Pavlis, Simon A. Holmes, Steve C. Kenyon, John K. Factor
- 11:50 **S6-163** Validation of the EGM08 Gravity Field with GPS-Levelling and Oceanographic Analyses.
Th. Gruber, A. Köhl
- 12:10 **S6-266** Evaluation of the PGM2007A gravity model using ocean circulation and marine geoid comparisons, GPS leveling and orbit fits.
M. Cheng, J. Ries, D. Chambers, S. Bettadpur

Lunch Break 12:30-14:00

Session 6: Global gravity field modelling & EGM08.

Chairs: Nikos Pavlis (USA) and Jianliang Huang (Canada).

- 14:00 **S6-189** EGM08 Comparisons with GPS/Leveling and Limited Aerogravity over the United States of America and its Territories.
D. R. Roman, J. Saleh, Y.M. Wang, V.A. Childers, X. Li, & D.A. Smith
- 14:20 **S6-152** Evaluation of the GRACE-based Global Gravity Models in Canada.
Jianliang Huang and Marc Véronneau
- 14:40 **S6-039** Evaluation of the EGM geopotential models in Europe.
H. Denker
- 15:00 **S6-187** Evaluation of EGM08 using GPS and leveling heights in Greece.
C. Kotsakis, K. Katsambalos, D. Abatzidis, M. Gianniou
- 15:20 **S6-101** Is Australian data really validating EGM08, or is EGM08 just in/validating Australian data?
S. J. Claessens, W.E. Featherstone and I.M. Anjasmara

Coffee Break 15:40-16:10

Session 4: Geoid modeling and vertical datums..

Chairs: Ambrus Kenyeres (Hungary) and William Kearley (Australia).

- 16:10 **S4-271** Estimating effects of 3D density variations on geoidal height using forward-modelling.
Robert Kingdon, Petr Vaniček, Marcelo Santos
- 16:30 **S4-284** Physical heights determination using modified second boundary value problem.
M. Mojzes, M. Valko
- 16:50 **S4-053** The combination of gravimetric quasi-geoid and GPS-leveling data in the presence of noise.
R. Klees, I. Prutkin
- 17:10 **S4-168** Global vertical datum unification based on the combination of the fixed gravimetric and the scalar free geodetic boundary value problem.
L. Sánchez

Wednesday, 25 June, 2008

Session 4: Geoid modeling and vertical datums..

Chairs: Ambrus Kenyeres (Hungary) and William Kearsley (Australia).

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| 8:20 | S4-115 | Global Vertical reference Frame
Milan Burša, Steve Kenyon, Jan Kouba, <u>Zdislav Šíma</u>,
Viliam Vátrt, Marie Vojtišková |
| 8:40 | S4-154 | Implementing a dynamic geoid as a vertical datum for
orthometric heights in Canada.
<u>E. Rangelova</u>, G. Fotopoulos and M.G. Sideris |
| 9:00 | S4-071 | The GRAV-D Project.
<u>Dru A. Smith</u>, Dan R. Roman, Yan M Wang, Jarir Saleh,
Vicki Childers, Xiopeng Li |
| 9:20 | S4-240 | EUVN_DA: Realization of the European continental
GPS/leveling network.
<u>A. Kenyeres</u>, M. Sacher, J. Ihde, H. Denker, U. Marti |
| 9:40 | S4-148 | On the merging of heterogeneous height data from SRTM,
ICESat and Survey Control Monuments for establishing
uniform and accurate vertical control in Greece: An Initial
Assessment and Validation.
<u>D. Delikaraoglou</u> and I. Mintourakis |

Coffee Break 10:00-10:30

Session 5: Regional gravity field modeling.

Chairs: Urs Marti (Switzerland) and Steve Kenyon (USA)

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| 10:30 | S5-277 | Why local geoid computations works – a practical and
theoretical study of kernels and autocorrelation functions.
<i>Roger Hipkin</i> |
| 10:50 | S5-001 | Toward a new quasi-geoid model and normal height
datum for Iran based on the least-squares modification of
the Stokes' s approach.
<i>Ramin Kiamher</i> |
| 11:10 | S5-116 | Determination of a gravimetric geoid model of Greece
using the method of KTH.
<i>I. Daras, H. Fan, K. Papazissi, J.D. Fairhead</i> |
| 11:30 | S5-109 | Combined geoid solutions from global and local data in
spatially restricted areas: covariance adaptations.
<i>R. Pajl, N. Kührtreiber, F. Sansó, M. Reguzzoni</i> |

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| 11:50 | S5-041 | The determination of potential difference by the joint application of measured and synthetical gravity data: a case study in Hungary.
<u>G. Papp, J Benedek</u> |
| 12:10 | S5-056 | On the determination of the terrain correction using the spherical approach.
<u>G. Kloch, J. Krynski</u> |
| 12:30 | S5-160 | On finite element and finite volume methods and their application in regional gravity field modeling.
<u>Zuzana Fašková, Karol Mikula and Róbert Čunderlík</u> |
| 12:50 | S5-174 | A comparative study between analytical and numerical methods for computing the gravitational potential spherical harmonics coefficients of a constant density polyhedron.
<u>D. Tsoulis, N.Gonindard, O. Jamet, J. Verdun</u> |

Gala Dinner 20:00-23:00

Thursday, 26 June, 2008

Session 7: Temporal gravity changes and geodynamics.

Chairs: Nico Sneeuw (Germany) and Juergen Kusche (Germany).

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| 8:20 | S7-254 | Temporal Variations in Water Storage in the Earth System and Impacts on Global Mean Sea Level Change.
<u>R. S. Nerem, D. P. Chambers, J. Famiglietti, J. Willis</u> |
| 8:40 | S7-237 | Surface mass estimation from GPS site displacements, modelled ocean bottom pressure and GRACE.
<u>R. Rietbroek, C. Dahle, J. Kusche, F. Flechtner</u> |
| 9:00 | S7-289 | Quantifying mass changes from the GRACE mission.
<u>J.-M. Lemoine, S. Bruinsma, R. Biancale, S. Gratton, S. Bourgogne, G. Ramillien</u> |
| 9:20 | S7-241 | Postseismic gravity change following the great 2004 Sumatra-Andaman earthquake from the regional harmonic analysis of GRACE inter-satellite tracking data: Implication for the regional viscoelastic response.
<u>S. Han, J Sauber, S Luthcke, C Ji, F Pollitz</u> |
| 9:40 | S7-203 | Analysis of GRACE water storage estimates using water storage models in Finland.
<u>M. Bilker-Koivula, J. Virtanen, H. Virtanen, J. Mäkinen, M. Nordman, B. Vehviläinen, M. Huttunen, R. Mäkinen</u> |

Coffee Break 10:00-10:30

Session 7: Temporal gravity changes and geodynamics.

Chairs: Nico Sneeuw (Germany) and Juergen Kusche (Germany).

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| 10:30 | S7-008 | Investigations on reliable secular ice-mass and sea-level changes from GRACE.
<u>O. Baur</u>, M. Kuhn, W.E. Featherstone |
| 10:50 | S7-207 | Evaluation of GRACE and ICESat mass change estimates over Antarctica.
<u>B. C. Gunter</u>, R. E. M. Riva, T. Urban, B. Schutz, R. Harpold, M. Helsen, P.Nagel |
| 11:10 | S7-275 | Assessment of GRACE Solution Accuracy on Ice Sheet Mass Balance Estimates.
<u>C.K. Shum</u>, Chungyen Kuo, Hyongki Lee, Lei Wang, Jason Box, David Bromwich, Alexander Braun, Wouter van Del Wal, Patrick Wu, Erik Ivins |
| 11:30 | S7-092 | Terrestrial Water Storage Monitoring from time-laps GRACE gravimetry and Satellite Altimetry in the Okavango Delta (Botswana).
<u>O. B. Andersen</u>, P. Bauer-Gottwein, R. Smith, P. Berry, P. E. Krogh |
| 11:50 | S7-178 | Observed gravity change at Syowa Station induced by Antarctic ice sheet mass change.
<u>K. Doi</u>, K. Shibuya, Y. Aoyama, H. Ikeda, Y. Fukuda |
| 12:10 | S7-251 | Temporal gravity changes and crustal deformation along the Andean margin: results from combined Absolute gravity, GPS and InSAR observations.
<u>S. Bonvalot</u>, J. Hinderer, G. Gabalda, B. Luck, D. Remy, F. Bondoux |

Lunch Break 12:30-14:00

Session 8: Earth observation

and the Global Geodetic Observing System (GGOS).

Chairs: Richard Gross (USA) and Hans-Peter Plag (USA).

- | | | |
|-------|---------------|--|
| 14:00 | S8-161 | The Global Geodetic Observing System (GGOS): A Key Component in the Global Earth Observation System of Systems.
<i>Hans-Peter Plag</i> |
| 14:20 | S8-100 | Designing the Next Generation Global Geodetic Networks for GGOS.
<i>Erricos C. Pavlis</i> |

- 14:40 **S8-075** The GGP (Global Geodynamics Project): an international network of superconducting gravimeters to study time-variable gravity.
D. Crossley & J. Hinderer
- 15:00 **S8-204** Modeling and Observation of Loading Contribution to Time-Variable GPS Sites Positions.
P. Gegout, J.-P. Boy, J. Hinderer, G. Ferhat
- 15:20 **S8-170** Improving the Alignment of GPS Solutions to ITRF with Advanced Loading Models.
Hans-Peter Plag, William C. Hammond, Halfdan P. Kierulf, Geoff Blewitt

Coffee Break 15:40-16:10

**Session 8: Earth observation
and the Global Geodetic Observing System (GGOS).**
Chairs: Richard Gross (USA) and Hans-Peter Plag (USA).

- 16:10 **S8-098** Surface mass loading estimates by GRACE and GPS.
Ernst J.O. Schrama
- 16:30 **S8-291** Low-degree gravitational changes from GRACE, Earth rotation, climate models, and satellite laser ranging.
J. L. Chen and C.R. Wilson
- 16:50 **S8-140** A Unified Approach to Modeling the Effects of Earthquakes on the Three Pillars of Geodesy.
Richard S. Gross, Ben F. Chao
- 17:10 **S8-209** Separating glacial isostatic adjustment and ice mass balance over Antarctica.
R. E. M. Riva, B.C. Gunter, T. Urban, L.L.A. Vermeersen, R.C. Lindenbergh, B. Schutz, M. Helsen

Friday, 27 June, 2008

**Session 9: Geodetic monitoring of natural hazards
and a Changing Environment.**
Chairs: Alexander Braun (Canada) and Rene Forsberg (Denmark).

- 8:20 **S9-110** PALSAR InSAR Observation of Crustal Deformation due to the 2007 Chuetsu Oki Earthquake (M6.8), Japan.
M. Furuya, Y. Takada and Y. Aoki

- 8:40 **S9-233** Improved orbits of altimetry satellites and reanalysis of GPS data at tide gauges for sea level investigations.
S. Rudenko, T. Schöne, G. Gendt, F. Zhang, T. Nischan, A. Brandt, M. Rothacher
- 9:00 **S9-132** Comparison of Gravimetric Geoid Height Models with Tide Gage and GPS/Leveling Data.
D. R. Roman, J. Saleh, V.A. Childers, Y.M. Wang, X. Li, & D. A. Smith
- 9:20 **S9-244** Geoid, sea ice thickness and ocean dynamic topography of the Arctic Ocean.
S. R. Forsberg and H Skourup
- 9:40 **S9-299** Temporal variations of snow and ice volume in Greenland drainage systems derived from GRACE and ICESat data.
C. Slobbe, E. Revtova, R. Klees, P. Ditmar, R. Lindenbergh

Coffee Break 10:00-10:30

Session 9: Geodetic monitoring of natural hazards and a Changing Environment.

Chairs: Alexander Braun (Canada) and Rene Forsberg (Denmark).

- 10:30 **S9-177** New segmentation method for polarimetric SAR data.
Mohammed Dabboor, Vassilia Karathanassi & Alexander Braun
- 10:50 **S9-074** Cross-comparison of JASON-1 altimetry to high frequency GPS SSH time-series and Observing the Antarctic Circumpolar Current during the DRAKE campaigns.
S. A. Melachroinos, Y. Menard, R. Biancale, M. Sarrailh
- 11:10 **S9-260** Toward Real-Time GPS for Tsunami Warning Systems and Post-Earthquake Damage Assessment and Emergency Response.
G. Blewitt, C. Kreemer, W.C. Hammond, H.-P. Plag, S. Stein, E. Okal, Y. Bar-Sever, R. Gross, T. Song and F. Webb, V. Hsu, K. Hudnut, M. Simons
- 11:30 **S9-131** Monitoring of stress relaxation and transfer after the 2004 Sumatra-Andaman earthquake by space geodesy.
M. Hashimoto, T. Katagi, M. Hashizume, M. Satomura, T. Kato, P. Wu, Y. Otsuka, S. Saito (NICT)
- 11:50 **S9-070** Modelling the evolution of the Dunaszekcső landslide (Hungary) based on geodetic monitoring techniques.
G Újvári, L Bányai, Gy Mentés, A Gyimóthy, G. Papp

- 12:10 **S9-069** 2006 Australian drought detected by GRACE.
T. Hasegawa, Y. Fukuda, K. Yamamoto, T. Nakaegawa and Y. Tamura

Lunch Break 12:30-14:00

Session 3: Earth Observation by Satellite Altimetry and InSAR.

Chairs: Wolfgang Bosch (Germany), Masato Furuya (Japan), Roger Haagmans (ESA).

- 14:00 **S3-031** ACE2: the new Global Digital Elevation Model
Philippa A. M. Berry, R.G.Smith, J. Benveniste
- 14:20 **S3-013** Monitoring River systems using multi-mission Satellite Radar Altimetry.
Luke A. Attwood, Philippa A.M. Berry, Richard G. Smith
- 14:40 **S3-012** Soil Surface Moisture From EnviSat RA-2: From Modelling Towards Implementation.
S. M. S. Bramer & P.A.M. Berry
- 15:00 **S3-182** Regional high resolution geoid and mean sea surface topography determination by a combination of GRACE data and in-situ altimetry observations.
T. Mayer-Gürr, W. Bosch, A. Eicker
- 15:20 **S3-091** Galathea-3: Dynamic Topography from GPS and ship.
O. B. Andersen, G. Strykowski, R. Forsberg, A. V. Olesen, K. Cordua and X. Zhang

Coffee Break 15:40-16:10

Session 3: Earth Observation by Satellite Altimetry and InSAR.

Chairs: Wolfgang Bosch (Germany), Masato Furuya (Japan), Roger Haagmans (ESA).

- 16:10 **S3-179** EOT08a – a new global ocean tide model derived by analysis of multi-mission altimeter data.
R. Savcenko, W. Bosch and T. Mayer-Gürr
- 16:30 **S3-201** Accuracy assessment of altimeter-derived gravity anomalies using shipborne and airborne gravity data in the coastal zones of western Pacific.
Cheinway Hwang, Yuande Yang, Ole Andersen and Yu-Fang Lu
- 16:50 **S3-089** DNSCO7 Truly Global Mean sea surface model from

17:10

53-194

multiple satellite altimetry.
O. B. Andersen, P. Knudsen

Filtering of Altimetric Sea Surface Heights with local and global approaches.

A. Albertella, X. Wang and R. Rummel

3. Posters Display Program

The daily program of Posters Display

MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY	
Code	Poster Stand	Code	Poster Stand	Code	Poster Stand	Code	Poster Stand	Code	Poster Stand
S1-072	A	S4-061	A	S2-067	E	S7-043	A	S3-013	C
S1-134	A	S4-096	A	S2-186	E	S7-137	A	S3-099	C
S1-288	A	S4-172	A	S2-105	E	S7-211	A	S3-065	C
S1-117	A	S4-082	A	S2-108	E	S7-279	A	S3-257	C
S1-214	C	S4-079	B	S2-107	H	S7-022	B	S3-015	D
S1-118	C	S4-192	B	S2-219	H	S7-272	B	S3-227	D
S1-198	C	S4-171	B	S2-206	H	S7-155	B	S3-194	D
S1-143	C	S4-283	B	S2-077	H	S7-068	B	S3-094	D
S1-121	B	S4-190	C	S2-085	F	S7-224	C	S3-102	E
S1-011	B	S4-150	C	S2-221	F	S7-156	C	S3-030	E
S1-175	B	S4-113	C	S2-029	F	S7-048	C	S3-140	E
S1-258	B	S4-139	C	S2-292	F	S7-142	C	S3-205	E
S1-289	D	S4-007	K	S2-093	I	S7-127	D	S3-285	F
S1-112	D	S4-006	K	S2-181	I	S7-119	D	S3-255	F
S1-218	D	S4-045	D	S2-247	I	S7-076	D	S3-025	F
S1-167	D	S4-180	D	S2-026	I	S7-238	D	S3-170	F
S1-259	E	S4-038	D	S2-242	G	S7-253	E	S3-014	G
S1-261	E	S4-273	L	S2-294	G	S7-183	E	S3-220	G
S1-067	E	S4-164	L	S2-208	G	S7-078	E	S3-203	G
S1-162	E	S6-250	E	S2-190	G	S7-083	E	S3-063	K
S1-200	H	S6-231	E	S2-153	J	S7-097	H	S3-028	K
S1-133	H	S6-196	E	S2-010	J	S7-245	H	S3-034	L
S1-166	H	S6-090	E	S2-256	J	S7-057	H	S3-282	L
S1-217	H	S6-035	H	S2-188	J	S7-239	H	S3-248	M
S1-173	F	S6-088	H	S2-125	M	S7-249	F	S3-177	M
S1-048	F	S6-103	H	S2-144	M	S7-042	F	S3-274	N
S1-213	F	S6-114	H	S2-294	N	S7-215	F	S3-299	N
S1-199	F	S6-276	F	S2-296	N	S7-130	F		
S1-212	I	S6-165	F	S6-059	A	S7-230	I		
S1-080	I	S6-281	F	S6-054	A	S7-228	I		
S1-086	I	S6-193	F	S6-104	A	S7-203	I		
S1-205	I	S6-262	I	S6-058	A	S7-202	I		
S1-037	G	S6-138	I	S6-185	C	S7-159	G		
S1-049	G	S6-280	I	S6-169	C	S7-290	G		
S1-060	G	S6-195	I	S6-020	C	S7-278	G		
S1-036	G	S6-128	G	S6-017	C	S8-120	K		
S1-050	J	S6-157	G	S6-019	B	S8-009	K		
S1-200	J	S6-236	G	S6-216	B	S8-141	L		
S3-288	J	S6-145	G	S6-210	B	S8-073	L		
		S6-002	J	S6-003	B	S8-232	M		
		S6-298	J	S6-021	D	S8-024	M		
				S6-032	D	S8-064	N		
				S6-016	D				
				S6-044	D				
				S6-191	K				
				S6-222	K				
				S6-018	L				
				S6-234	L				
				S6-120					
				S6-047					
				S3-005					
				S6-122					
				S6-252					
				S6-158					
				S6-267					
				S6-095					
				S3-055					
				S6-040					
				S6-295					
				S6-297					

Posters can remain on display during their scheduled day from 8:00 in the morning till 19:00. Then they have to be removed. Time for discussions at the Posters will be available after the end of the oral session from 17:30-19:00 everyday except Wednesday. Refreshments will be served during that time.

**Session 1: Gravimetry (terrestrial, shipborne, airborne)
and gravity networks.**

Chairs: Yoichi Fukuda (Japan), Leonid F. Vitushkin (France)

- S1-072 Spatio-temporal filters for use in high speed airborne gravimetry.
Dru A. Smith, Vicki Childers, Dan R. Roman, Yan M Wang, Jarir Saleh, Xiopeng Li
- S1-134 Post-Newtonian Covariant Formulation for Gravity Determination by Differential Chronometry.
P.Romero
- S1-268 Periodic variations in SG and GPS data from Ny-Ålesund.
O.C.D. Omang and H.P. Kierulf
- S1-117 Realizing the national gravity system: an improved solution for the Estonian gravity network.
T. Oja
- S1-214 The French combined geodetic and gravimetric network.
F. Duquenne, H. Duquenne, J. Beilin
- S1-118 Test results of the LaCoste-Romberg G and Scintrex CG5 spring gravimeters from the repeated measurements of Estonian and Finnish calibration lines.
T. Oja
- S1-198 Seasonal gravity variations at the Pecny station.
Vojtech Pálinkás, Jakub Kostelecký
- S1-143 Robust and Efficient Weighted Least Squares Adjustment of Relative Gravity Data.
F. Touati, S. Kahlouche, M. Idres
- S1-121 Readjusting the old gravity network in Iran using the recently measured gravities.
A. Soltanpour, B. Sharifat, Y. Hatam, M. Sedighi, H. Cheraghi, R. Saadat
- S1-011 Preliminary results of a GPS/INS airborne gravimetry experiment over the German Alps.
Ch. Gerlach, R. Dorobantu, N. Kjorsvik, Ch. Ackermann, G. Boedecker
- S1-175 Absolute gravimetry at BIPM, Sèvres (France), at the time of Akihiko Sakuma.
M. Amalvict
- S1-258 A cold atom gravimeter based on atom interferometry.
S. Merlet, J. Le Gouët, Q. Bodart, A. Landragin, F. Pereira Dos Santos
- S1-269 Gravity gradients above piers in absolute gravimetry: use remove-restore for the pier attraction.
J. Mäkinen
- S1-112 Extension of the Croatian Fundamental gravity network to the north Adriatic islands.
M. Repanic, B. Barisic, I. Grgic, M. Liker, M. Lucic T. Basic

- S1-218 Evaluating Handheld GPS Applications in the Environmental locations of Gully Erosion Sites in the Rural Communities of the Imo State of South East, Nigeria.
M.N. Ono, J.I Igbokwe, J.D.Dodo
- S1-167 First experience with the portable MPG-2 absolute gravimeter.
S Svitlov, Ch Rothleitner and L J Wang
- S1-259 Establishment of a New Working Group on Absolute Gravity.
H. Wilmes, H. Wziontek, R. Falk , R. Forsberg, L. Vitushkin
- S1-261 Comparisons of six absolute gravimeters at four sites 2004–2007.
J. Mäkinen, M. Bilker-Koivula, , H. Ruotsalainen, V. Kaftan, N. Gusev, N. Korolev, V. Yushkin, R. Falk, W. Hoppe, O. Gitlein
- S1-067 Observing Absolute Gravity Acceleration in the Fennoscandian Land Uplift Area.
O. Gitlein, L. Timmen, J. Müller, H. Denker, J. Mäkinen, M. Bilker-Koivula, B.R. Pettersen, D.I. Lysaker, J.G.O. Gjevestad, K. Breili, H. Wilmes, R. Falk, A. Reinhold, W. Hoppe, H.-G. Scherneck, O.C.D. Omang, A. Engfeldt, M. Lilje, J. Ågren, M. Lidberg, G. Strykowski, R. Forsberg
- S1-162 Near-shore marine gravity survey by small vessels.
Chi-Hsun Huang and Cheinway Hwang
- S1-200 Modernization of absolute gravity zero order network in Poland – first stage.
M.Barlik, T.Olszak, A.Pachuta, D.Próchniewicz, R.Szpunar, J.Walo
- S1-133 Joint use of relative gravity observations routinely acquired on MT Etna using spring gravimeters and absolute measurements recorded by the IMGC-02 transportable absolute gravimeter.
C. Del Negro, A. Germak, F. Greco, G. D’Agostino, C. Origlia, A. Sicali
- S1-166 High-precision balancing of falling bodies for absolute free-fall gravimeters.
Ch. Rothleitner, S. Svitlov, and L. J. Wang
- S1-217 Gravity measurements in Panamá with the IMGC-02 transportable absolute gravimeter.
G. D’Agostino, A. Germak and D. Quagliotti
- S1-173 Application of Kalman filtering to gravity field determination by means of moving gravimetry.
J. Verdun, B. De Saint-Jean, H. Duquenne, J. Cali
- S1-048 Design & preliminary results of gravimeter with atom interferometry in NIM.
Wangxi Ji, Jinyi Xu, Shuqing Wu, Dalun Liu, Duowu Su, Chunjian Li
- S1-213 Comparison of different approaches to combine superconducting and absolute gravity measurements.
H. Wziontek, R. Falk, H. Wilmes, P. Wolf
- S1-199 Absolute gravimetric measurements at Polish Geodynamic Test Fields sites.
J. Walo, T.Olszak, A.Pachuta, R.Szpunar, D.Próchniewicz
- S1-212 AGrav: An international database for absolute gravity measurements.
H. Wziontek, H. Wilmes, J. Ihde, S. Bonvalot
- S1-080 Airborne Gravimetry by Using Low-cost Strapdown INS.
Xiaopeng Li, Dan R. Roman, Yan M Wang, Vicki Childers, Jarir Saleh, Dru A. Smith

- S1-086 Galathea-3: A global marine gravity profile.
G. Strykowski, R. Forsberg, A.V. Olesen, O.B. Andersen and K. Cordua
- S1-205 Correcting strapdown GPS/INS gravimetry estimates with GPS attitude data.
B. Gunter, B. Alberts, A. Muis, P. Chu, L. Huisman, P. Buijs, G. Giorgi, C. Tiberius, H. Lindenburg
- S1-037 Harmonic continuation and gravimetric inversion of gravity in areas of negative geodetic heights.
Vajda P., A. Ellmann, B. Meurers, P. Vaníček, P. Novák, R. Tenzer
- S1-049 DESIRE – Dead Sea Rift Integrated Research Project: Technical approaches and GPS processing results of a helicopter-borne gravity survey over the Dead Sea Rift.
C. Köhler, I. Heyde, U. Meyer, H.-J. Götze, S. Choi, G. Xu
- S1-060 Aerogravity survey of the German Bight (North Sea).
I. Heyde
- S1-036 On ambiguities in definitions and applications of Bouguer gravity anomaly.
Vajda P., P. Vaníček, P. Novák, R. Tenzer, A. Ellmann, B. Meurers
- S1-050 DESIRE – Dead Sea Rift Integrated Research Project: A multidisciplinary geoscientific project to reveal the structure of the Dead Sea Rift utilizing helicopter-borne gravimetry
U. Meyer, I. Heyde, C. Köhler, H.-J. Götze, S. Choi
- S1-220 Ethiopian Airborne Gravity Survey 2006/2007.
A. V. Olesen, A. Hunegnaw, S. Kenyon, R. Forsberg, R. Hipkins
- S5-288 The First Airborne Gravity Survey in Ethiopia.
A. Hunegnaw, A.V Olesen, R. Hipkin, R. Forsberg, S. Kenyon, T. Besha

Session 2: Space-borne gravimetry: Present and Future.

Chairs: Roland Pail (Austria) and Pieter Visser (The Netherlands).

- S2-087 Validation methods for the GOCE gradiometer.
Gernot Plank, Michael Kern, Roger Haagmans, Rune Floberghagen
- S2-186 Fast variance component estimation in GOCE data processing.
J.M. Brockmann and W.-D. Schuh
- S2-105 External Calibration of SGG Observations on Accelerometer Level.
R. Mayrhofer
- S2-108 Covariance propagation of latitude-dependent orbit errors within the energy integral approach.
H. Goiginger, R. Pail
- S2-107 Gravity field recovery from highly reduced dynamic orbits.
R. Pail, H. Goiginger, A. Jäggi, H. Bock
- S2-219 Analysis of the covariance structure of the GOCE space-wise solution with possible applications.
L. Pertusini, M. Reguzzoni, F. Sansò

- S2-206 A simulated space-wise solution using GOCE kinematic orbits.
F. Migliaccio, M. Reguzzoni, N. Tselfs
- S2-077 GOCE Gradiometry - A Guide for Users.
Claudia Stummer, Thomas Gruber, Johannes Bouman, Sietse Rispens
- S2-085 Robust estimation in the context of the GOCE mission.
Christian Siemes
- S2-221 Modelling degree variances in the space-wise approach to GOCE data analysis.
M. Reguzzoni, N. Tselfs
- S2-029 Internal Robust Estimation of GOCE SGG Error Model Parameters.
F. Jarecki, J. Mueller
- S2-292 The GOCE User Toolbox.
Jérôme Benveniste, Per Knudsen and the GUTS Team
- S2-093 The study of the combination approaches in solving the polar gap problems.
Jianqing Cai, Nico Sneeuw, Xiancai Zou and Oliver Baur
- S2-181 Gravity field determination at the AIUB based on GPS data.
L. Prange, A. Jäggli, G. Beutler, R. Dach, L. Mervart
- S2-247 Frequency-domain filtering of GRACE data for the detection of geophysical signals.
S.D. Pagiatakis and T. Eadie
- S2-026 On the equivalence of the acceleration-, the energy-balance and the boundary value approach for SST.
Wolfgang Keller
- S2-242 Improved kHz-SLR Tracking Techniques and Orbit Quality Analysis for LEO-Missions.
W. Hausleitner, R. Pail, G. Kirchner, S. Krauss, J. Weingrill, H. Goingerer
- S2-264 Global Gravity Field Pattern Recognition on the Torus Using First Generation Wavelets.
M.M. Elhabiby, C. Xu, M. Weigelt, M.G. Sideris.
- S2-208 Repeat orbit design using genetic algorithms.
M.A. Sharifi, N.J. Sneeuw, T. Reubelt, O. Baur
- S2-106 Gravity field simulator for the evaluation of future gravity field mission concepts.
R. Pail, R. Mayrhofer
- S2-153 Determination of precise baselines of the FORMOSAT-3/COSMIC tandem satellites using GPS data.
Tzupang Tseng and Cheinway Hwang
- S2-010 Designing Earth gravity field missions for the future: the role of modeling errors.
P.N.A.M. Visser
- S2-256 DEOS approach to gravity field modeling from KBR data acquired by the GRACE satellite mission.
R. Klees, X. Liu, P. Ditmar, E. Revtova, Q. Zhao
- S2-188 Comprehensive modeling of orbital position noise in future satellite data intended for gravity field retrieval.
J. Encarnação, X. Liu, P. Ditmar

- S2-125 Comparison of satellite formations for gravity field determination.
J. Encarnação, X. Liu, P. Ditmar
- S2-144 Efficient Algorithm for Deriving Accelerations from Relative Kinematic Ephemerides of LEO GPS-SST.
F. Touati, S. Kahlouche, M. Idres, N. Benaraba
- S2-294 Laser Interferometry for a future GRACE follow-on mission.
M. Dehne, B. Sheard, G. Heinzel, K. Danzmann
- S2-296 Least-squares Spectral Analysis of GRACE SST Data.
Majid Naeimi, Mehdi Nikkhoo, Mohammad Ali Sharifi, Mehdi Najafi

Alamdari

Session 6: Global gravity field modelling & EGM08.

Chairs: Nikos Pavlis (USA) and Jianliang Huang (Canada).

- S6-250 Refining global gravity reference field computations.
Uwe Schäfer
- S6-231 The new World Gravity Map project : a tool for geodynamic studies.
Anne Briais, Sylvain Bonvalot, Michel Sarrailh, and the BGI Team
- S6-196 The global gravity field model EIGEN-GL05C – Improvements and Inter-Comparison.
Christoph Förste, Frank Flechtner, Roland Schmidt, Richard Stubenvoll, Markus Rothacher, Jürgen Kusche, Hans Neumayer, Rolf König, Ulrich Meyer, Franz Barthelmes, Jean Claude Raimondo, Richard Biancale, Jean-Michel Lemoine, Sean Bruinsma
- S6-090 The DNSCO7 global marine gravity field.
Ole Andersen, Per Knudsen, Philippa Berry, N. Pavlis, Steve Kenyon
- S6-035 Surface Gravity Data Preparation For EGM2008.
Steve C. Kenyon, John K. Factor, Nikolaos K. Pavlis, Siomon A. Holmes
- S6-088 On high-resolution global gravity field modelling by direct BEM using combined gravity data.
R. Cunderlik, K. Mikula
- S6-103 Mathematical Basis For The Relationship To Separate The Oscillatory And Stable Behaviour Of Legendre Associate Functions.
Abelardo Bethencourt Fernández
- S6-114 Preliminary results of PGM07A testing and its comparison with EGM96.
Milan Burša, Steve Kenyon, Jan Kouba, Zdislav Šima, Viliam Vátrt, Marie Vojtíšková
- S6-276 Towards the numerical evaluation of high degree and order associated Legendre functions as in EGM08.
Otakar Nesvadba
- S6-165 The convergence problem in collocation theory revisited.
F. Sansò, G. Venuti

- S6-281 Testing EGM08 on levelling data from Greenland and from Scandinavia and the adjacent areas.
G. Strykowski and R. Forsberg
- S6-193 Validating recent global geopotential models through comparison of local quasi-geoid models with GPS/leveling data.
P. Novák, J. Kostelecký, J. Klokočník
- S6-262 Evaluation of the EGM08 Geopotential Model based on Mexican Data.
Marcelo C. Santos, David Avalos, Petr Vaníček and Genevieve Baker
- S6-138 PGM2007A evaluation for South America.
Denizar Blitzkow, Ana Cristina Oliveira Cancoro de Matos
- S6-280 Evaluation of the EGM08 Gravity Field over the Arctic Ocean.
McAdoo D. C., Farrell S. L., Wagner C. A., Laxon S. W., Ridout A. L.
- S6-195 Evaluation of the Earth Gravitational Model EGM08 over the Baltic countries.
A. Ellmann
- S6-128 Evaluation of PGM2007A over Sweden.
Jonas Ågren
- S6-157 Evaluation of PGM2007A Geopotential Model in Egypt.
Hussein A. Abd-Elmotaal
- S6-236 Evaluation of PGM2007A by comparison with globally and locally estimated gravity solutions from CHAMP.
Matthias Weigelt, Nico Sneeuw, Wolfgang Keller
- S6-145 Evaluation Of Earth Geopotential Model 2008 In Turkey.
Ali Kilicoglu, Mehmet Simav, Onur Lenk, Ahmet Direnc, Hasan Yildiz, Bahadır Aktug, Yasemin Uykulu
- S6-002 Assessment of the preliminary Earth gravity model PGM2007A in Algeria.
S. A. Benahmed Daho
- S6-298 EGM 08a: simulations for GOCE.
Kllokočník J., P. Novak, I. Pesek, J. Kostelecky, C.A.Wagner

Session 4: Geoid modeling and vertical datums.

Chairs: Ambrus Kenyeres (Hungary) and William Kearsley (Australia).

- S4-061 Using vertical deflections to constrain gravimetric geoid model errors.
W.E. Featherstone and D.D. Lichti
- S4-096 Using upward and downward continuation to resolve optimal flight parameters for the GRAV-D project.
Yan M Wang, J. Saleh, V. Childers, D. Roman and D. Smith
- S4-172 Evaluation of the quasigeoid models EGG97 and EGG07 with GPS/leveling data for the territory of Bulgaria.
Elena Peneva, Ivan Georgiev
- S4-062 Detecting spirit-levelling errors in the Australian Height Datum: recent findings and some issues for any new Australian vertical datum.
M.S. Filmer and W.E. Featherstone

- S4-079 DEM and Terrain Correction issues for GEOID08.
Jarir Saleh, Yan Ming Wang, Daniel R. Roman, Dru A. Smith and Xiaopeng Li
- S4-192 Comparison of two modeling strategies for evaluation of the terrain correction using high-resolution digital elevation models.
M. Kadlec, P. Novák, D. Tsoulis
- S4-171 Vertical datum unification on Iberia and Macaronesian islands with a local gravimetric geoid: First results.
J. Catalão, M. J. Sevilla
- S4-283 Preliminary Results Of Spatial Modelling Of GPS/Levelling Heights: A Local Quasi-Geoid/Geoid For The Lisbon Area.
Ana Paula Falcão, João Matos, João Casaca, Jorge. Sousa
- S4-190 On the posedness and accuracy of discrete downward continuation of ground gravity anomalies given in a high resolution coordinate grid.
M. Kadlec
- S4-150 On Determining the Accuracy of the Regional Geoid Derived from Global Geopotential Models.
H. Yang, C. Jekeli, J.H. Kwon
- S4-113 How Most Recent Global Geopotential Models Fit The Croatian Territory?
M. Liker, M. Lucić, I. Grgić, B. Barisic, M. Repanic, T. Basic
- S4-139 Grace and the geoid in South America
Denizar Blitzkow, Ana Cristina Oliveira Cancoro de Matos, Maria Cristina Barboza Lobianco, Ilce de Oliveira Campos
- S4-007 Evaluation of the topographic effect using the various gravity reduction methods for precise geoid model in Korea.
S .B. Lee, D .H. Lee
- S4-006 Development of Precise Geoid Model for Jeju Island in Korea.
D. H. Lee, S. B. Lee, H. S. Yun
- S4-045 Determination Of Geoid In Saudi Arabia Using GPS/Benchmark Data And EGM96.
Mohammad Al Rajhi, Ramazan Yanar, Ali Al Omar
- S4-180 Combination Schemes for Local Orthometric Height Determination from GPS Measurements and Gravity Data.
A. Fotiou, V.N. Grigoriadis, C. Pikridas, D. Rossikopoulos, I.N. Tziavos, G.S. Vergos
- S4-273 Analysis of the Geopotential Anomalous Component at Brazilian Vertical Datum Region Based on the Imarui Lagoon System.
S.R.C. de Freitas; V.G. Ferreira; A.S. Palmeiro; J.L.B. de Carvalho; L. F. da Silva
- S4-038 A New European Gravimetric Quasigeoid EGG2008.
H. Denker, R. Barzaghi, D. Fairhead, R. Forsberg, J. Ihde, A. Kenyeres, U. Marti, M. Sarrailh, I.N. Tziavos
- S4-164 A Unified Vertical Datum for the Indonesian Archipelago.
A.Kasenda, A. W.Kearsley, R.Forsberg, R.Poerawiardi

Session 5: Regional gravity field modeling.

Chairs: Urs Marti (Switzerland) and Steve Kenyon (USA)

- S5-059 Validation of the SRTM and SRTM PLUS DTMs in Northern Greece for geoid and gravity field modelling.
G.S. Vergos, I.N. Tziavos, P. Papageorgiou, V.N. Grigoriadis
- S5-054 Validation Of The PGM2007A Over Argentina.
María Cristina Pacino and Claudia Tocho
- S5-104 The new Austrian geoid solution.
R. Pail, N. Kühtreiber, B. Wiesenhofer, O. Steinbach, G. Of, N. Höggerl, C. Ullrich, D. Ruess
- S5-058 Smoothing effect of topographical corrections on various types of gravity anomalies.
Hamayun, Tenzer Robert, Prutkin Ilya
- S5-185 Regional Geoid Improvement in Antarctica, using Airborne Gravity, Ice Radar and Altimetry Data.
J. Müller, S. Riedel, M. Scheinert, R. Dietrich, D. Steinhage, W. Jokat
- S5-169 Quasi-geoid of New Caledonia : computation, results and analysis.
P. Valty, H. Duquenne
- S5-020 Optimal integration method for solving Newton's integral in the detailed gravity field modelling.
Hamayun, Tenzer Robert, Prutkin Ilya
- S5-017 On modelling the regional distortions of the European Gravimetric Geoid EGG97 in Romania.
Tenzer Robert, Prutkin Ilya, Klees Roland, Rus Tiberiu, Avramiuc Neculai
- S5-019 Long-wavelength part of the topography-generated gravitational field.
Tenzer Robert, Novák Pavel
- S5-216 Inverse gravimetric problems for GOCE data.
M. Reguzzoni, D. Sampietro, F. Sansò
- S5-210 Improving gravity field modelling in the German-Danish border region by combining airborne, satellite and terrestrial gravity data.
Uwe Schäfer, Gunter Liebsch, Uwe Schirmer, Johannes Ihde, Arne V. Olesen, Henriette Skourup, Rene Forsberg, Hartmut Pflug, Jürgen Neumeyer
- S5-003 Impact of the new GRACE Geopotential Model and SRTM data on the Geoid Height in Algeria.
S. A. Benahmed Daho, J. D. Fairhead
- S5-021 Gravitational field generated by the world ocean mass.
Hamayun, Tenzer Robert
- S5-032 Further Improvements in the Determination of the Marine Geoid in Argentina by Employing Recent GGMs and Sea Surface Topography Models.
C. Tocho, G.S. Vergos, M.G. Sideris

- S5-016 Far-zone effects in the direct gravity inversion.
Tenzer Robert, Prutkin Ilya, Novák Pavel, Ellmann Artu, Vajda Peter
- S5-044 Evaluation Of Recent Global Geopotential Models In Argentina.
Ayelen Pereira, María Cristina Pacino
- S5-191 Computing selected gravity field parameters from current global geopotential models and from high-resolution local gravity data over the area of Central Europe.
M. Kadlec
- S5-222 Computing gravity terrain corrections at global scale: An application for the World Gravity Map (WGM) project.
G. Moreaux, G. Balmino, M. Sarrailh, S. Bonvalot, R. Biancale, A. Briais
- S5-018 Comparison of the low-degree Earth's gravity field and the low-degree no-topography gravity field.
Tenzer Robert, Novák Pavel
- S5-234 A new gravity model of the European lithosphere based on a joint analysis of the gravity and seismic data.
M.K. Kaban and M. Tesauro
- S5-120 A new attempt to geoid modeling for Iran using the readjusted gravity data.
A. Soltanpour, M. Sedighi, H. Cheraghi, Y. Hatam, R. Saadat, N. Azizian
- S5-047 A GOCE Regional Validation Experiment with Vertical Deflections in Germany.
C. Voigt, H. Denker
- S5-005 A Geoid Solution for Airborne Gravity Data.
Lars Sjöberg, M Eshagh
- S5-122 A fast computation of the vertical deflection components.
E.A.Boyarsky, L.V.Afanasieva, V.N.Koneshov
- S5-252 The World Gravity Map (WGM) project: objectives and status.
S. Bonvalot, M. Sarrailh, A. Briais, R. Biancale T. Fayard, G. Gabalda
- S5-158 The Geoid as a Transformation Surface.
Norbert Kühtreiber and Hussein A. Abd-Elmotaal
- S5-267 Shape of the Solution Domain and the Optimization in Combining Terrestrial and Satellite Gravity Field Data.
P. Holota
- S5-095 A New Approach for Evaluation of the Global Geopotential Models Using GPS-leveling Networks.
M. A. Sharifi, M. Abbaszadeh, M. Nikkhoo, M. Najafi
- S9-055 Geoid determination by the RCR- and the LSMS-techniques – a comparison.
L E Sjöberg
- S5-040 Comparison of various topographic-isostatic effects in terms of smoothing the gradiometric observations.
Juraj Janák, Franziska Wild-Pfeiffer
- S5-295 Application of two dimensional least squares spectral analysis to precise determination of geoid combining a global geopotential model with heterogeneous data.
Mehdi Nikkhoo, Mehdi Najafi Alamdari, Majid Naeimi

- S5-297 Interpretation of spatial data sets using two-dimensional least squares spectral analysis.
Mehdi Nikkhoo, Mehdi Najafi Alamdari, Majid Naeimi

Session 7: Temporal gravity changes and geodynamics.

Chairs: Nico Sneeuw (Germany) and Juergen Kusche (Germany).

- S7-043 Water Storage Changes In The PARANÁ River Basin.
Ayelen Pereira, María Cristina Pacino, Andreas Güntner
- S7-137 Water level temporal variation analysis at Solimões and Amazonas rivers.
Ilce de Oliveira Campos, Denizar Blitzkow, Ana Cristina Oliveira Cancoro de Matos, Edvaldo Simões da Fonseca Junior, Flavio Guilherme Vaz de Almeida, Augusto César Barros Barbosa
- S7-211 Time-Variability Of The Long Wavelength Gravity Field Derived From CHAMP And GRACE.
H. Neumayer, F. Flechtner, R. Schmidt, Ul. Meyer, R. König
- S7-279 The role of crustal motion in the assessment of the Mexican Gravimetric Geoid.
D. Avalos, M. Santos, P. Vaníček
- S7-022 The high-resolution regional inversion of GRACE satellite data for modelling water storage variations at river basin scale (case study for the Zambezi river basin).
Tenzer Robert, Klees Roland
- S7-272 Subsurface fluids movement monitored by repeated gravity observations.
J. Mrlina
- S7-155 Spatiotemporal analysis of the GRACE-derived mass variations in North America by means of multi-channel singular spectrum analysis.
E. Rangelova, W. van der Wal, M.G. Sideris and P. Wu
- S7-068 Significance of secular trends of mass variations determined from GRACE monthly solutions.
Jürgen Müller, Holger Steffen
- S7-224 Robust combination of GPS site displacements with global GRACE solutions.
J.P. van Loon
- S7-156 Recovery of time-varying gravity using GPS data of COSMIC, GRACE and CHAMP.
Tingjung Lin and Cheinway Hwang
- S7-046 Quality assessment of non-periodic ocean mass anomalies as seen by various GRACE products.
H. Dobslaw, and M. Thomas
- S7-142 Present-day West Antarctic ice-mass change estimate by the constrained inversion of GRACE and InSAR data.
Z. Martinec, I. Sasgen and K. Fleming
- S7-127** On the possibility of using a satellite gravity mission to monitor the meridional overturning circulation of the North Atlantic.
Rory J. Bingham and Chris W. Hughes

- S7-119 Mechanical study of the Lithosphere in the Hoggar (S. Algeria) by gravimetric data.
F Boukercha and A Abtout
- S7-076 Mass Variations in the System Earth – Forward Simulation and Geoid Impact.
Th. Gruber, L. Zenner, T. van Dam, M. Thomas, H. Dobslaw, P. Visser, B. Vermeersen, M.F.B. Bierkens, L.P.H. van Beek, J. Bamber, R. Gladstone
- S7-238 Loading of the Baltic Sea observed with an interferometrically recording water level tilt meter.
H. E. Ruotsalainen
- S7-253 Integration of water mass variation in the Mediterranean - Black Sea and watershed system.
L. Fenoglio-Marc, R. Rietbroek, S. Grayek, M. Becker, J. Kusche, E. Stanev
- S7-183 Improving ocean tide models by a joint estimation using GRACE and altimetry data.
T. Mayer-Gürr, R. Savcenko
- S7-078 Impact of Atmospheric & Oceanic Uncertainties on GRACE De-Aliasing Products.
Lieselotte Zenner, Thomas Gruber
- S7-083 Ground-based gravimetry as a tool to monitor water storage in karst aquifers.
T. Jacob, R. Bayer, J. Chery, N. Le Moigne, H. Jourde, J.-P. Boy, P. Brunet, J. Hinderer, B. Luck, F. Boudin
- S7-097 Greenland ice sheet mass loss from GRACE data.
Louise Sandberg, Rene Forsberg
- S7-245 Gravity field variations and mass transport in 2003-2006.
X. Liu, P. Dittmar, R. Klees, E. Revtova, Q. Zhao, C. Slobbe, B. Vermeersen, R. Riva
- S7-057 Glacial isostatic adjustment in Fennoscandia from GRACE data: A signal separation with the help of geodynamical and hydrological models.
Holger Steffen, Jürgen Müller, Heiner Denker
- S7-239 Estimating sub-monthly global mass transport signals using GRACE, GPS and OBP data sets.
M.J.F. Jansen, R. Rietbroek, J. Kusche, B.C. Gunter, C. Dahle, F. Flechtner, S.-E. Brunaband, J. Schröter
- S7-249 Estimating GRACE monthly water storage change consistent with hydrology by assimilating hydrological information.
B. Devaraju, N. Sneeuw, H. Kindt, and J. Riegger
- S7-042 Estimates Of Mass Variations From GRACE Data In Argentina.
Ayelen Pereira, María Cristina Pacino, Rene Forsberg
- S7-215 Detection of the gravity changes induced by the Sumatra-Andaman 2004 earthquake using GRACE GFZ-RL04 data and post-processing methods.
R. Schmidt, R. Wang, I. Einarsson, J. Kusche
- S7-130 Detection of dominant periodic surface mass variations from GRACE monthly gravity solutions and their application in hydrological modelling.
Schmidt R., Petrovic, S., Werth, S., Güntner, A., Barthelmes, F., Wünsch, J., Kusche, J.

- S7-230 Derivation of water stock variations on a river basin scale in Africa from optimized GRACE monthly models.
E Revtova, R Klees, P Ditmar, X. Liu, H Winsemius, H Savenije
- S7-228 Baltic Sea mass variations from GRACE: comparison with in situ and modelled sea level heights.
J. Virtanen, J. Mäkinen, M. Bilker-Koivula, H. Virtanen, M. Nordman, C.K. Shum, H. Lee, A. Kangas, M. Johansson, M. Thomas
- S7-203 Analysis of GRACE water storage estimates using water storage models in Finland.
M. Bilker-Koivula, J. Virtanen, H. Virtanen, J. Mäkinen, M. Nordman, B. Vehviläinen, M. Huttunen, R. Mäkinen
- S7-202 Analysis of absolute gravity time series in Finland.
M. Bilker-Koivula, J. Mäkinen, L. Timmen, O. Gitlein, F. Klopping, R. Falk
- S7-159 Analysing Five Years of GRACE Gravity Field Variations Using the Principal Component Analysis.
L.M. Anjasmara, M. Kuhn
- S7-290 A new CNES/GRGS series of 10-day geoid time variations.
R. Biancale, J.-M. Lemoine, S. Bruinsma, S. Gratton, S. Bourgogne
- S7-278 Long-term geoid rate from GRACE for vertical datum modernization.
Wouter van der Wal, Elena Rangelova, Michael G. Sideris, and Patrick Wu

Session 8: Earth observation and the Global Geodetic Observing System (GGOS).

Chairs: Richard Gross (USA) and Hans-Peter Plag (USA).

- S8-126 Modelling the motion of the Celestial Intermediate Pole of the Earth.
M. Folgueira, N. Capitaine and J. Souchay
- S8-009 Geodetic observations of Earth shape change and dynamic mechanism.
S.G. Jin, Y. Barkin, and P. Park
- S8-141 Seasonal gravity campaign carried out on permanent GPS stations in Walloon region (Belgium).
M. Everaerts
- S8-073 Detection of Hydrological Loading Effect (HLE) variations from GRACE/GPS over the Amazon basin.
S. A. Melachroinos, G. Ramillien, J.-M. Lemoine, F. Perosanz, R. Biancale, P. Tregonig
- S8-232 Investigating The Effects Of Earthquakes Uusing HEPOS.
M. Gianniu
- S8-024 Iranian Permanent GPS Network for Crustal Deformation monitoring.
H. R. Nankali, Y.Djamour, M.Sedeghi, Z.Mousavi
- S8-064 Present-day slip-rate of Kazerun Fault insight from Numerical Modeling Constrained by GPS data.
H.R.Nankali, B.Vosoughi, F.Soboutie, K.Hessami

Session 9: Geodetic monitoring of natural hazards and a Changing Environment.

Chairs: Alexander Braun (Canada) and Rene Forsberg (Denmark).

- S9-063 Glacial Isostatic Adjustment Model Errors in Fennoscandia.
A. Lumbaca and W.E. Featherstone
- S9-028 GRACE hydrological monitoring of Australia: current limitations and future prospects.
J.L. Awange, M.A. Sharifi, O. Baur, W. Keller, W.E. Featherstone, M. Kuhn
- S9-034 Implementation of Motorized Leveling on Precise Leveling Networks in Order to Improve the Detection of Vertical Displacements in Iran.
A. Poursharifi, A. Aghamohammadi, Y. Djamour, M. Kasser, M. Sedighi, K. Bayat, Y. Hatam, S. Arabi, A. Soltan pour
- S9-282 Absolute altimeter calibration, sea-level monitoring and tectonics from project GAVDOS.
Erricos C. Pavlis, Stelios P. Mertikas
- S9-248 Radar and Laser Altimeter Experiences for Sea Level determination at Ibiza Island and Cape of Begur (Spain).
J. J. Martinez Benjamin, J. Mart_n Davila, J. Garate Pasquin, B. Schutz, T. Urban, M. A. Ortiz Castellon, J. Talaya Lopez, M. Martinez Garcia, G. Rodriguez Velasco, B. Perez Gomez and Pascal Bonnefond
- S9-151 Effect of surface properties on the accuracy of LiDAR derived Digital Elevation Models.
M. Al-Durgham, G. Fotopoulos, and C. Glennie
- S9-274 Crustal Deformation Monitoring Using Satellite Radar Altimetry.
Hyongki Lee, C.K. Shum, Chungyen Kuo, Alexander Braun, Georgia Fotopoulos, Erik Ivins
- S9-299 Temporal variations of snow and ice volume in Greenland drainage systems derived from GRACE and ICESat data.
C. Slobbe, E. Revtova, R. Klees, P. Ditmar, R. Lindenbergh

Session 3: Earth Observation by Satellite Altimetry and InSAR.

Chairs: Wolfgang Bosch (Germany), Masato Furuya (Japan), Roger Haagsmans (ESA).

- S3-013 Monitoring River systems using multi-mission Satellite Radar Altimetry.
Luke A. Attwood, Philippa A.M. Berry, Richard G. Smith
- S3-099 Gridded Mean Sea Level of The Caspian Sea using TOPEX/Poseidon mission data.
E. Forootan, M.A. Sharifi, M. Torabi
- S3-065 Determination and Assessment of new Altimetry derived Mean Sea Surface Models over North Atlantic and the Arctic Sea.
Kourosh Ghazavi, Hossein Nahavandchi

- S3-257 Determination and analysis of the sea surface topography along the Brazilian coast.
R. T. Luz, W. Bosch, S. R. C. Freitas, R. Dalazoana, B. Heck
- S3-015 ACE2 New Global Digital Elevation Model: Case Studies of Rainforest & Dunes.
Richard G. Smith, Philippa A.M. Berry
- S3-227 Marine gravity gradient derived from altimetry observations based on radial basis functions.
A. Safari, M.A. Sharifi
- S3-194 Filtering of Altimetric Sea Surface Heights with local and global approaches.
A. Albertella, X. Wang and R. Rummel
- S3-094 ESA's future and candidate EO SAR missions.
Malcolm Davidson, Evert Attema, Michael Kern, Roger Haagsmans
- S3-102 Spatial-Temporal Parametric Model with Covariance Structure based on Multiple Satellite Altimetry for Predicting and Interpolating Sea Surface Heights in the South China Sea.
H. B. Iz, C. K. Shum, H. S. Fok, Y. Yi
- S3-030 Global measurement of inland surface water from multi-mission satellite radar altimetry: sustained global monitoring for climate change.
Philippa A.M. Berry, Jerome Benveniste
- S3-146 Sea Level Variations In The Eastern Mediterranean And Adjacent Seas From Satellite And In Situ Observations.
Mehmet Simav, Hasan Yildiz, Ahmet Direnc, Ali Kilicoglu
- S3-265 On the recovery of the mean dynamic topography – a profile approach.
W. Bosch, R. Savcenko
- S3-285 An alternative procedure for the estimation of the altimeter bias for the Jason-1 satellite using the dedicated calibration site at Gavdos.
Mertikas, S. P., Ath. Papadopoulos, and E. C. Pavlis
- S3-255 Coastal sea surface heights from improved altimeter data in the Mediterranean Sea.
L. Fenoglio-Marc, M. Fehla, L. Ferri, M. Becker
- S3-025 An Enhanced Ocean and Coastal Zone Retracking Technique for Gravity Field Computation.
Jennifer A. Freeman, P.A.M. Berry
- S3-176 Geoid and sea surface height measurements in the North Aegean Sea.
P. Limpach, A. Somieski, S. Guillaume, B. Bürki, H.-G. Kahle, I. Tziavos
- S3-014 Representation of rivers and Lakes within the forthcoming ACE2 GDEM.
Richard G. Smith, Philippa A.M. Berry
- S3-226 Improvement and validation of satellite altimetry in coastal regions.
M. J. Fernandes, P. Marreiros, S. M. Barbosa, C. L. zaro, L. Bastos
- S3-293 The Basic Radar Altimetry Toolbox.
J. Benveniste, V. Rosmorduc, S. Niemeijer, N. Picot

4. Working Group Meetings

IAG ICP 1.2 Vertical Reference Frames

Monday 23 June (18:30-20:00), Conference Room (Dr. Johannes Ihde)

Sub-Commission 2.3 Working Group Meeting Dedicated Satellite Gravity Mapping Missions

Tuesday 24 June (13:00-14:00), Ground Floor, (Dr. Roland Pail)

IAG Inter-Commission 2.1

Working Group on Absolute Gravimetry

Tuesday 24 June (18:30-20:00), Conference Room, (Dr. Herbert Wilmes)

Joint International Gravity Field Service / Commission-2 Working Group Meeting

Wednesday 25 June (14:00-15:00), Conference Room,
(Dr. Jianliang Huang, Dr. Ch. Kotsakis)

Editorial Board Meeting of the Journal of Geodesy

Thursday 26 June (12:30-14:00), Ground Floor, (Dr. Roland Klees)

IAG Study Group 2.2

Working Group on High-Resolution Forward Gravity for Satellite Gravity Mission Results

Thursday 26 June (19:00-20:30), Conference Room, (Dr. Michael Kuhn)

5. Social Events Program

Welcome Reception

Sunday 22 June 2008, 19:00 - 21:00

All Symposium participants are invited to the welcome reception. It will be held at the Centre of Mediterranean Architecture which is also the Symposium Venue. The Welcome Reception is free of charge for the Symposium participants.

Gala Dinner

Wednesday 25 June, 2008. 20:00 - 23:00

Dinner with traditional Cretan dishes and live Greek music.

The cost would be 40.00 € per participant. Accompanying person 25.00 €. Kids are free.

Samaria Gorge, National Park. Long-Way Excursion



Have the experience of walking the famous and beautiful Samaria Gorge, the longest and most beautiful in Europe. The walk will take around 5 hours until you reach the south coast of Crete, a small fishing village called, Agia Roumeli. There, you can have a rest and have lunch before you take the boat to Sougia and the return bus to your hotel.

Pickup time from Chania: 06:30 - 07:30 in the morning (approximately)

Departure from Agia Roumeli: 18:30

Return time: 20:00 (approximately)

Price per person: 25.00 €

Price does not include entrance fee to Samaria Gorge (5.00 € per person) and boat ticket from Agia Roumeli to Sougia (6.50 € per person).

WHAT TO TAKE WITH YOU ON THIS WALK?

- A bottle of water. Do not throw the bottle away. You can refill it during hiking. Good drinking water is available every two to three km along the gorge.
- Cream for sun protection (SPF 16 to 25), sunglasses and a hat especially for the last part of the walk, which has very little shade.
- Good shoes! These don't have to be hiking boots but you won't be contributing to your enjoyment by wearing tennis shoes or sandals.
- Some food (light lunch and fruit juice). There is no food available inside the National Park.
- A jumper in case of chilly weather in early morning. It could be cold at 1,200m elevation.
- A supply of plasters in case of blisters.
- Long-sleeved shirt for people with sensitive skin.
- Swim-gear and sandals.

Elafonisi Excursion, An island protected by NATURA.

Elafonisi is one of the most rare and beautiful landscapes in all Europe: an extensive beach of unique beauty that overlooks the Libyan sea and an island that you can even walk to! The water is not higher than an adult's knee! Here, we can find a kind of cedar tree and sand lilies that grow nowhere else in Europe. An area of about 2,000 acres of the seaside is protected by "NATURA 2000". All facilities are pretty much underdeveloped (parasols and small canteens), so it would be a good idea to bring along supplies (mostly water).



Pickup time: 08:00 -08:30 in the morning (approximately)

Return time: 18:00 (approximately)

Price per person: 25.00 €

Knossos Archeological Excursion.



Knossos city was undeniably the capital of Minoan Crete. It is grander, more complex, and more flamboyant than any of the other palaces known to us, and it is located about twenty minutes south of the modern port town of Heraklion.

Knossos was inhabited for several thousand years, beginning with a neolithic settlement sometime in the seventh millennium BC, and was abandoned after its destruction in

1375 BC which marked the end of Minoan civilization. It was destroyed for the first time along with the other Protopalatial palaces around Crete at 1700 BC, probably by a large earthquake or foreign invaders. It was immediately rebuilt to an even more elaborate complex and until its abandonment was damaged several times during earthquakes, invasions, and in 1450 BC by the colossal volcanic eruption of Thera, and the invasion of Mycenaean who used it as their capital as they ruled the island of Crete until 1375 BC.

Walking through its complex multi-storied buildings, one can comprehend why the palace of Knossos was associated with the mythological labyrinth. The Labyrinth was the dwelling of the Minotaur in Greek mythology, and many associate the palace of Knossos with the legend of Theseus killing the Minotaur.

The Greek myth associated with the palace about Theseus and the Minotaur is fascinating, but walking around the ruins of Knossos today it is hard to imagine it to be a place of torment and death. Instead, the palace radiates with joyous exuberance through the elaborate architectural planes and volumes that were clustered around the central courtyard over time. The elegant wall frescoes which decorated the walls speak of a people who approached the subtleties of life and the splendor of nature with a joyous disposition.

We follow up our tour with a visit to the Archaeological Museum in Heraklion. The most magnificent collection of Minoan art and culture in the world, unique in beauty and completeness is housed in the Museum of Iraklion, a modern building specifically designed for this purpose.

There are twenty rooms- galleries on the ground and first floors and the usual visit takes at least two hours but, of course, several days are necessary for the visitor who wishes to linger and study more carefully the exhibits, which cover a period of 5,000 years, from neolithic era to Graeco Roman period.

Pickup time: 08:00 -08:30 (approximately)

Return time: 19:00 (approximately)

Price per person: 25.00 €.

Important Note: Excursions will be cancelled if the number of participants is less than 25. Full refund will be provided, in that case.

6. The Symposium Venue

The Symposium will be held at the Venetian Arsenali building at the Center of Mediterranean Architecture, in the old Venetian Harbor, Chania, Crete, Greece.

Chania is surrounded by numerous options. Mountain villages, beaches, swimming, fishing, archaeological sites, (such as the Minoan Civilization in Knossos) and gorges are open for you for sightseeing, exploration and discovery.



Transportation:

The city of Chania is located in Crete Island, which is the largest island in Greece. Crete is situated in the Mediterranean Sea at the most southern part of the country.

Getting to Chania by Air

Chania airport (I. Daskalogiannis, Code CHQ) is regularly connected by air to this Athens International Airport (<http://www.aia.gr>) with flights offered by two local airline companies: Aegean Airlines (<http://www.aegeanair.com>), and Olympic Airlines (<http://www.olympicairlines.com>). Please check their sites for availability of flights. There are also several charter flights from all over Europe directly to Chania during the summer.

The airport of Chania is located in Akrotiri, about 12 km east of Chania. At the airport there are car rentals and taxis to all destinations of the island.

Taxi service is available outside the airport terminal. The cost of a taxi fare from the airport to Chania is about 15-20 Euro (one-way). There are very few public buses from the airport to the city, (Daily, at 07:15, 10:30, 19:30. Ticket Price is 2.10 Euro and travel time is about 30 minutes). There are rent car facilities and cash withdrawal and exchange services through ATM at the airport.

Getting to Chania by Boat

Chania has daily sea connections with Piraeus via ferry boats. You can reach Piraeus Port from the Athens airport using the Attiko metro (<http://www.amel.gr>). Take the "BLUE" line train, change at Monastiraki station, and then follow the "GREEN" line up to the terminal station: Piraeus port.

For the boat routes, please check the web sites of the local sea lines to Crete: ANEK to Souda Bay (Chania) (<http://www.anek.gr>), MINOAN to Heraklion city (120 km away from Chania) (<http://www.minoan.gr>), and Hellenic Sea Ways (<http://www.hellenicseaways.gr>) to Rethymnon city (50 km away from Chania). Please check their sites for availability of routes. The bay of Souda, that serves as the port of Chania, is located 6 km away from the city center.

Climate:

June normally delivers fine sunny days and moderate-to-hot temperatures. Water is warm enough for swimming. Day time peaks between 23 and 29 degrees Celsius.

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Proceedings

The Proceedings will be published in the IAG Symposia series by Springer Verlag. The cost of the proceedings book for the Symposium participants is 45 Euro and is not included in the registration fee. This book of proceedings will be mailed to all participants who have paid for it. In order to achieve a timely publication of the proceedings, contributions should be brought by the authors to the conference.



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