ISPRS Council 2004-2008

President       Ian Dowman       United Kingdom
Secretary General     Orhan Altan           Turkey
Congress Director     Chen Jun            P. R. China
First Vice President  John Trinder        Australia
Second Vice President Emmanuel Baltsavias Switzerland
Treasurer           Stanley Morain        USA

Technical Commission Presidents 2004-2008

Commission I  Alain Baudoin        France
Commission II Wolfgang Kainz    Austria
Commission III Wolfgang Foerstner  Germany
Commission IV Shailesh Nayak   India
Commission V Hans-Gerd Maas    Germany
Commission VI Kohei Cho           Japan
Commission VII John van Genderen    The Netherlands
Commission VIII Ammatzia Peled          Israel

In cooperation with Working Group Chairpersons responsible for the reviewing of extended Abstracts and acceptance of contributions. Authors delivered camera ready manuscripts and selected the keywords.

Congress Organising Committee

International Advisory Board
Former ISPRS Presidents and Congress Directors, ISPRS Honorary Members, other Professional Experts

ISPRS Council

National Steering Committee
Honorary Chairman: ZENG Peiyan
Co-Chairmen: XU Guanhua
LU Xinshe

Congress Director
CHEN Jun

Local Organizing Committee (LOC)
WANG Qian

Congress Secretariat
JIAO Xiaohong, HU Junhong

Scientific Program Committee (SPC)
JIAO Jie, LI Zhilin, GONG Jiaying

Assistant to LOC
JIAO Xiaohong

Exhibition & Sponsorship
FAN Jingxiang

Domestic Participant Service
MA Zhenfu

Finance Committee
XING Jingsuo

Public Relation
CHEN Xinhui

Technical Support
ZHAI Yong

Assistant to SPC
ZHAI Renliang, LIU Wanzeng

Youth Forum Organization
ZHOU Qing

User Forum Organization
ZHANG Jiaying

Liaison to other Int. Societies
LI Zhilin

Liaison to ISPRS TC
GONG Peng, TANG Xinming
GONG Jianya, JIAO Jie
WANG Youchuan, ZHU Qing
ZHANG Jiaying, LIU Yaolin
Introduction

The most effective means of depicting events over space and time is through spatial data. The value of representing information in form of a map has been realised since the beginning of civilisation. The transition of representation of information from historical artistic depiction to complex digital formats has been due to tremendous progress made in acquisition of data through remote sensing, organisation of databases around Geographic Information System (GIS) and Global Positioning System (GPS). The advances in computer, database and communication technologies, and digital cartography has facilitated emergence of geo-databases and digital mapping.

During last four years, significant development has taken place in spatial data infrastructure. Databases of various types have been produced at national, regional and global levels. The focus is on acquisition of stereo images for 3D analysis. The recent availability of high-resolution orbital data (CARTOSAT 1 & 2, TerraSAR-X) has provided unique opportunity to carry out research in automatic image interpretation and object extraction. The emphasis is clearly on automatic updating of databases. The improvement in positional accuracy needs to be addressed. The image-based spatio-temporal data has been receiving increasing attention especially related to content-based indexing, querying, data mining, in information retrieval. The development in algorithms for management of geo-sensor networks is continuing and likely will see further improvement.

The advancement in visualisation allows virtual displays of landscape in great detail, from a global scale of world-wide processes to fine scale views of cities and buildings. Visualisation techniques are used to interactively explore spatial structures and processes, create virtual realities, demonstrate human impact on landscapes, etc. The 3D visualisation capability has significant impact on society.

Continuous development of various web-based GIS services and applications have substantially increased and enhanced the use of GIS in spatial data access and dissemination, exploration, visualisation, processing, analysis and modelling. Grid computing continues to be an active research subject in Web GIS as it manages massive distributed computing/storage resources and improves performance. Open-source software has provided new, cost-effective solution to web-based geospatial information and service. The concept of virtual Globe is very important for the future development of Web GIS. Location-based services enable wired and wireless users to integrate geospatial information developing a solution. The development of open standards and the interoperability will facilitate enormous potential for sharing scientific data with common standards for providing web-based and location based services, to the variety of users.

The application of such databases and development of services for societal benefit is critical. The geospatial technology is a key for response to a disaster or a emergency. The setting of warning centres, especially for tsunami, has been around geospatial technology for acquisition of data from variety of platforms, organisation into a data base, representation and visualisation of data/information, analysis, modelling and dissemination of advisories including generating hazard or risk maps. The collection and analysis of data including 3D within first hours to few days and its integration with existing data is crucial for rescue and relief operations.

A number of missions are on way to explore the resources on our solar system. The data supplied by these missions will open a new chapter in mapping of extra-terrestrial systems and creating spatial databases, and web based access. The spatial information systems for planetary system are being built. The interest in Lunar mapping research is increasing (SELENE, LRO, Chandrayan-1). Digital terrain products are likely to be available shortly to construct Lunat topographic model. Various approaches are being investigated to produce high resolution DTMs from HRSC (MEX) and HiRISE (MRO) to generate geodetically controlled digital topographic models for Mars. Cassini spacecraft provided data to produce atlases of icy satellites of Saturn.

The Proceedings are culmination four years of research carried out by all working groups of the Commission. It reflects the current state of knowledge in the field of geospatial technology and applications. I am sure the Proceedings will be very useful to all researchers in this field.

I also take an opportunity to thank all my colleagues in the Commission, my fellow presidents and the council for their support and guidance during last four years.

Shailesh Nayak
President of ISPRS Technical Commission IV
# Table of Contents

## WG IV/1: Spatial Data Infrastructure

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Croatian Spatial Data Infrastructure in Line with the European Standards</td>
<td>Z.Bacic, Lj.Rasic, I.Landek and N.Malna</td>
<td>1</td>
</tr>
<tr>
<td>SDI in China: Progress and Issues</td>
<td>Pengde Li, Lan Wu and Xuenian Xiao</td>
<td>7</td>
</tr>
<tr>
<td>Establishment of a Data Creation Methodology under the Geographic Information Standards</td>
<td>Kohei Isobe</td>
<td>11</td>
</tr>
<tr>
<td>A Watermarking Algorithm for Vector Spatial Geo-Data Based on Integer Wavelet Transform</td>
<td>Chang-qing ZHU, Cheng-song YANG and Qi-Shen Wang</td>
<td>15</td>
</tr>
<tr>
<td>E-Government Concept and Spatial Information: a Case Study in Islamic Republic of Iran</td>
<td>M.Sarpoulaki, A.Eslami Rad and A.Saleknia</td>
<td>19</td>
</tr>
<tr>
<td>Establishing an Environmental Data Platform for Promoting Coastal Zone Environmental Management</td>
<td>Toshimitsu Ishiwata, Masahiro Muroi, Tsutomu Harada, Hideo Nakajima and Isamu Ogasawara</td>
<td>25</td>
</tr>
<tr>
<td>SDI: Prospects and Challenges for Federal State Developing Countries (Case of Nigeria)</td>
<td>O.A.Ogundele, Nigeria, O.S.Somefun</td>
<td>31</td>
</tr>
<tr>
<td>Relationships between Cartography, Geographic Information Systems and the Mexican Spatial Data Infrastructure (IDEMex)</td>
<td>Francisco Antonio Hansen Albi tes</td>
<td>39</td>
</tr>
<tr>
<td>Study on GML Storage Model Based on Native XML Database</td>
<td>Shuliang Zhang, Jiayan Gan, Jiehui Xu and Guonian Lv</td>
<td>45</td>
</tr>
<tr>
<td>Application of the Geometrics in Photovoltaics</td>
<td>J.Besenicar, Boris Trstenjak and D.Setnika</td>
<td>53</td>
</tr>
<tr>
<td>The Integrated Workflow and Software System for GIS Database Update Based on Geospatial Imageries</td>
<td>Wang Mi, Hu Fen, Liao Anping, Lu Weihua and Zhang Lyong</td>
<td>57</td>
</tr>
<tr>
<td>Study on the Height Measurement of Cultural Feature Based on the Single Aerial Photo</td>
<td>Li Ersen, Zhang Baoming, Guo Haitao, LuJun, Zhao Yong and Chen Ke</td>
<td>63</td>
</tr>
<tr>
<td>The Battleship “G.Averof”: Promotion and Enrichment of the Museum Archives</td>
<td>Emmanuel Stefanakis and George Kritikos</td>
<td>67</td>
</tr>
<tr>
<td>Integrating Ecological Tools with Geographic Information Systems</td>
<td>G.H.Chekuimo</td>
<td>73</td>
</tr>
<tr>
<td>Iran SDI Initiative: Study Phase of NSDI</td>
<td>A.Mansourian and M.J.Valadan Zoej</td>
<td>79</td>
</tr>
<tr>
<td>a Strategy to Build a Seamless Multi-Scale TIN-DEM Database</td>
<td>Xiong Hanjiang, Tang Limin and Sun Long</td>
<td>83</td>
</tr>
<tr>
<td>Workflow and Quality Control of Production of DEM and DSM by Means of Aerial Photogrammetry</td>
<td>Qiuying Jia, CAO Haitang, JIANG Decai and ZHU Rong</td>
<td>87</td>
</tr>
<tr>
<td>Discussion of GPS Supported Automatic Triangulation Based on the DMC Images</td>
<td>Tang Li, Liu Jibao and Li Jun</td>
<td>93</td>
</tr>
<tr>
<td>Discussion on the Progress and Direction of Digital City</td>
<td>MIAO Qian-jun, Li Deren and TANG Yanli</td>
<td>97</td>
</tr>
<tr>
<td>GIANT3D: Experimentations on a New 3D Data Model for GIS</td>
<td>A.Scianna, A.Ammoscato and R.Corsale</td>
<td>101</td>
</tr>
</tbody>
</table>
The Classification and Performance Comparison Analysis of High Dimensional Indices for Feature-Based Spatial Data Similarity Search
Yu XIA, Xinyan ZHU and Chang LI ................................................................. 109

Development of a New GIS-Based Stormwater Database Updating System: from Field Data Collection to Geodatabase Creation
Ming XIE, John M.White, P.E. and Buz Rhees .......................................................... 115

An Integrated 3D Cadastre - Malaysia as an Example
M.I.Hassan, M.H.Ahmad-Nasruddin, I.A.Yaakop, and A.Abdul-Rahman .................... 121

Research on the Autocorrelation Detection in Digital Watermarking Techniques
Cheng-song YANG, Chang-qing ZHU and Qisheng WANG ........................................... 127

Spatial Data Infrastructure for Soil-Vegetation-Atmosphere Modelling: Set-Up of a Spatial Database for a Research Project (SFB/TR32)
C.Curdt, D.Hoffmeister, G.Waldhoff and G.Bareth ....................................................... 131

LiDAR Applications in the Electrical Power Industry
Zujian Xu, Feng Yang, Yong Huang, Zizheng Wang and Yanjing Liu .................................. 137

Ontology-Based Extensible Semantic Description Model for Discovery and Retrieval of Geo-Spatial Information
Qin Zhan, Xia Zhang and Deren Li ................................................................. 141

Quality Control in Process of Establishment of NSDI
S.Lemajic and Lj.Rasic ................................................................. 147

Possibility of Spatial Data Infrastructure (SDI) Application
MD.MOSHARAF HOSSAIN ................................................................. 153

Integrated Geographical Buffering System for Land Taxation in Sri Lanka
Ravindra S.Thilakarathne, Jagath Gunatilake and JAS Jayakody ........................................ 163

A GIS Technical Approach to the Point Pattern Analysis of Archaeological Sites on the Eastern Shores of Lake Urmia, Northwestern Iran
Kamal A.Niknami and A.Chaychi Amirkhiz ................................................................. 167

A Study on Geospatial Industry Size in China
Ershun Zhong and Li Liu ................................................................. 173

Calculating River Length Based on Topography Data
ZHANG Lijuan, HUANG Wei and JIANG Jie ................................................................. 181

WG IV/2: Image-Based Geo-Spatial Information Management

Indexing of Mid-Resolution Satellite Images with Structural Attributes
A.Bhattacharya, M.Roux, H.Maître, I.Jermyn, X.Descombes and J.Zerubia ........................................ 187

An Attribute-Driven Approach for Image Registration Using Road Networks
Caixia Wang, Peggy Agouris, Anthony Stefanidis ............................................................. 193

An Enterprise Database-Centric Approach for Geospatial Image Management and Processing
Qingyun (Jeffrey) Xie, Siva Ravada, Weisheng Xu and Zhihai Zhang ........................................ 199

GeoDatabase Centric Orthoimage Production Using ArcGIS ImageServer
Peter Becker ................................................................. 205

Spatial Data Uncertainty Management
D.Klimesova and E.Ocelíkova ................................................................. 209

The National Project and Its Application in the Field of Digital Photogrammetry in the First Year of Romanian’S Integration in the European Union
I.Gr.Sion ................................................................. 213

Analysis of ARSC’S Surveying and Mapping Mode - Integrating Areophotogrammetry, Digital Mapping and GIS Database Establishment
Zhang Xinli. ................................................................................................................................................. 221

Study of Morphotectonic and Hydrogeology for Groundwater Prospecting Using Remote Sensing and GIS in
the North West Himalaya, District Sirmour, Himachal Pradesh, India
Thapa, R., Kumar Ravindra and Sood, R.K. .................................................................................................. 227

Temporal-Spatial Dynamic Characteristic of Vegetation in the Area of Continued Hydropower Station
Construction in the Upper Reach of the Yellow River
Dan Wang, Cheng Zhao, Hongguang Cheng, Li Gong, Fanghua Hao and Xuying Shi. ................................. 233

RS-Based Landscape Dynamic Evolution in Areas of Cascade Hydropower Station Construction in the
Upper Yellow River
Cheng Zhao, Huaping Yao, Fanghua Hao, Dan Wang and Xuying Shi ......................................................... 239

A Detail Preserved Compression Based on Contourlet Transform
FeiYan Zhang, LeiGuang Wang, Feng Yuan and Qianqing Qin ...................................................................... 245

The Design and Implementation of SAR Reference Image Information Insurance System Based on ARCSDE
Y.F.Ling, G.M.Huang, J.X.Gao, Z.Zhao and L.Pang. .................................................................................... 249

Development of an Integrated System of True Ortho-Rectification, the Altai’s LRTO system

Indonesian Atlas from Space: a Remotely Sensed and Cartographic Type of Geospatial Visualization
S.Martha, A.Poniman and S.Widjojo. ............................................................................................................. 259

Custom Image Processing Capabilities in ArcGIS
Hong Xu and Peng Gao ................................................................................................................................. 263

Modeling of Species Geographic Distribution for Assessing Present Needs for the Ecological Networks
T.Doko, F A.Kooiman and A.G.Toxopeus. ....................................................................................................... 267

WG IV/3 Automated Geo-Spatial Data Acquisition and Mapping

Automatic Object Extraction for Change Detection and GIS Update
Stefan Hinz ..................................................................................................................................................... 277

Segmentation Optimization for Aerial Images with Spatial Constraints
Ruedi Boesch and Zuyuan Wang.................................................................................................................... 285

Road Data Updating Using Tools of Matching and Map Generalization
HU Yungang, CHEN Jun, LI Zhilin and ZHAO Renliang. .............................................................................. 291

A Test of 2D Building Change Detection Methods: Comparison, Evaluation and Perspectives
Nicolas Champion, Leena Matikainen, Xinlian Liang and JuHa Hyppa and Franz Rottensteiner ............... 297

Concepts of an Object-Based Change Detection Process Chain for GIS Update
P.Hofmann, P.Lohmann and S.Müller ............................................................................................................. 305

Extraction of Buildings and Trees Using Images and LIDAR Data
N.Demir, D.Poli and E.Baltsavias ................................................................................................................... 313

Radiometric Block-Adjustment of Satellite Images Reference3d® Production Line Improvement
L.Falala, R.Gachet and L.Cunin. ..................................................................................................................... 319

Establishment and Evaluation Aspects of Cyprus GPS Permanent Network for Mapping Applications
E.Stylianidis, CYPRUS, S.Spatalas, C.Pikridas and P.Patlas. .................................................................... 325

Neural Networks in the Automation of Photogrammetric Processes
S.Mikrut and Z.Mikrut .................................................................................................................................. 331

Theory and Algorithms of DSM Generation from Multi-Line-Array Images Matching
LeiRong, Fan Dazhao, Ji Song and Zhai Huiqin ........................................................................................... 337

An Improvement of 3D OO-Solid Model
DENG Nian-dong, HOU En-ke and ZHANG Zhi-huaA. .............................................................................. 343
Dodging Research for Digital Aerial Images
M.W.Sun and J.Q.Zhang ..........................................................349

Road Detection from High and Low Resolution Satellite Images
R.Gecen and G.Sarp ..................................................................355

LIDAR Filtering: Testing of an Automatic Procedure Developed in the Free Open Source GIS GRASS
L.Barazzetti and M.A.Brovelli ..........................................................359

Automated Pavement Imaging Program (APIP) for Pavement Cracks Classification and Quantification – a Photogrammetric Approach
M.Mustaffar, T.C.Ling and O.C.Puan ..................................................367

Generation of True Orthoimages from Airborne Scanner Data Without the Need of Height Information
J.Albertz, D.Bornemann and H.Zoberbier ...........................................373

Cloud Removal of Optical Image Using SAR Data for ALOS Application - Experimenting on Simulated ALOS Data
Nguyen Thanh Hoan and Ryutaro Tateishi ........................................379

Enhancing the Automatic Verification of Cropland in IKONOS Imagery
P.Helmholz, F.Rottensteiner and C.Fraser ...........................................385

Applying Unmanned Airship to Rapid Detection of Urban Building Changes
Xiaodong PENG, Zhaqin LIU, Jinkuan YIN and Yongrong LI ........391

The Analysis of Road Slide Slopes Using RC Helicopter Photogrammetric System
Jang, Ho Sik, Kim, Cha Kyum, Lee, Jong Chool, Lee, Young Dae and Oh, Hyun Woo ........395

Analysis of the Solar Potential of Roofs by Using Official LIDAR Data
R.Kassne, W.Koppe, T.Schüttenberg and G.Bareth .............................................399

Intensity Normalization by Incidence Angle and Range of Full-Waveform LIDAR Data
H.Gross, B.Jutzi and U.Thoennessen ..................................................405

An Automatic Contour Based Detection of Terrestrial Objects from Aerial Imagery Data
Yuri B.Blokhinov, Dmitry A.Gribov and Sergei Y.Zheltov ..................413

Efficient Ortho-Rectification of Old Small-Scale Aerial Photographs, Using PRISM Products in Japan
H.Umakawa, L.Zhu and K.Tachibana ..................................................419

The Defined System of Map Symbol Based Geological Substances
Xincheng Guo, Yongqing Long and Weiyong Ji ........................................423

Geometric Refinement of LIDAR Roof Contours Using Photogrammetric Data and Markov Random Field Model
A.P.Dal Po ..................................................................................427

Research on Edge Extraction with Level Set Method
Zhang Junru and Jiang Xuezhihong ..................................................433

Analysis and the Solutions for Generating a True Digital Ortho Photo in Close Range Photogrammetry
M.Shariat, A.Azizi and M.Saadatseresht .............................................439

Semi-Automatic Extraction of Features from Digital Imagery
O.Eker and D.Z.Seker ..................................................................443

On-Line Integration of Photogrammetric Systems and Spatial Databases for Producing Fully Structured and Consistent Data for GIS
S.Hosseinian, H.Ebadi and F.Farnood ..............................................447

Remote Sensing Image Interpretation Study Serving Urban Planning Based on GIS
Qian Wang, Jianping Chen and Yi Tian ..............................................453

Automatic Classification of LIDAR Data into Ground and Non-Ground Points
Yu-Chuan Chang and Ayman F.Habib, Dong Cheon Lee and Jae-Hong Yom ..........457
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Generation of Digital Building Models for Complex Structures from LIDAR Data</td>
<td>Changjae Kim, Ayman Habib and Yu-Chuan Chang</td>
<td>463</td>
</tr>
<tr>
<td>Performance Analysis of Distributed Ortho Generation Using ERDAS Ortho Accelerator (LOA)</td>
<td>Yasemin Kuzu-Sinram</td>
<td>469</td>
</tr>
<tr>
<td>Automatic Building Detection from LIDAR Point Cloud Data</td>
<td>Nima Ekhtari, M.R.Sahebi, M.J.Valadan Zoej and A.Mohammadzadeh</td>
<td>473</td>
</tr>
<tr>
<td>Innovation in Flight Management Systems Using Real-Time Topological GIS Analysis</td>
<td>David Hine, Gerhard Kemper, Frantsek Pivnicka, Li Hongbo.</td>
<td>479</td>
</tr>
<tr>
<td>1:25.000 Scaled Photogrammetric Map Production System</td>
<td>O.Fırat, K.Pamukoglu, O.Eker, O.T.Ozerbil and H.H.Maraş</td>
<td>485</td>
</tr>
<tr>
<td>The Research of the 3s Technology Application in the Large Scale Land Utilization Map Updating</td>
<td>Zhang RongQun, Zhai HuiQing and Gao LingLing.</td>
<td>489</td>
</tr>
<tr>
<td>WG IV/4 Landscape Modeling and Visualisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality Assessment for Multi-Sensor Multi-Date Image Fusion</td>
<td>M.Ehlers, S.Klous and P.J.Astrand</td>
<td>499</td>
</tr>
<tr>
<td>Large-Scale Vector Data Displaying for Interactive Manipulation in 3D Landscape Map</td>
<td>M.Sun, G.LLv and C.Lei</td>
<td>507</td>
</tr>
<tr>
<td>Toward Continuous and Updated 3D Geospatial Terrain Modelling Based on DTM and LIDAR Data</td>
<td>S.Dalyot, E.Keinan and Y.Doytsher</td>
<td>519</td>
</tr>
<tr>
<td>Study on the Modeling Component of Geographic Concept Scene Based on 3D Icons</td>
<td>Min Chen, Guonian Lv, Yongning Wen, Hong Tao and Hongjun Su</td>
<td>527</td>
</tr>
<tr>
<td>Digital Earth with Digital Measurable Images</td>
<td>Deren Li, Junhua HUANG and Zhenfeng Shao</td>
<td>533</td>
</tr>
<tr>
<td>Geometrical Transformation of Nautical Charts in Greenland</td>
<td>Rune Carbuhn Andersen, Karsten Engsager, Tine Fallesen Jensen and Thomas Knudsen</td>
<td>539</td>
</tr>
<tr>
<td>A Study on Automatic Image Arrangement in Urban Area - Toward the New Concept of Urban Visualization</td>
<td>T.Fuse, T.Wayama and E.Shimizu</td>
<td>545</td>
</tr>
<tr>
<td>A Algorithm on Branches Number of a Tree Based on Extended Fractal Square Root Law</td>
<td>YANG Bo-gang, ZHANG Bao-gang, FENG Zhong-ke and HAN Guang-shun</td>
<td>551</td>
</tr>
<tr>
<td>Land Use Detection Comparison from Satellite Images with Different Classification Procedures</td>
<td>G.Sarp and A.Erener</td>
<td>555</td>
</tr>
<tr>
<td>3D Reconstruction from Image Sequence Taken with a Handheld Camera</td>
<td>Shaoxing Hu, Jingwei Qiao, Aiwu Zhang and Qiaozhen Huang</td>
<td>559</td>
</tr>
<tr>
<td>Voxel Approach to Landscape Modelling</td>
<td>Ulla Pyysalo and Tapani Sarjakoski</td>
<td>563</td>
</tr>
<tr>
<td>Landscape Pattern Change and Associated Environmental Implications in Haihe River Basin, China</td>
<td>Yusheng Shi, Jieying Xiao and Yanjun Shen</td>
<td>569</td>
</tr>
<tr>
<td>The Eastern Steppe’S Living Landscape</td>
<td>Ochirkhuyag Lkhamjav, Amanda Fine, Karl Didier and Eric Sanderson</td>
<td>575</td>
</tr>
<tr>
<td>Adaptive Level of Detail for Large Terrain Visualization</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fuan Tsai and Huan-Chih Chiu.................................................................................................579

Cartographic Visualisation and Landscape Modeling
Milap Punia..........................................................................................................................585

GIS Approach for Assessment of Human Footprint and Land Management: an Example in the United Arab Emirates
Salem Issa................................................................................................................................591

The Generalization Method Research of River Network Based on Morph Structure and Catchments' Character Knowledge
Lili Jiang, Qingwen Qi, Zhong Zhang, Jiafu Han, Xifang Cheng and an Zhang..........................597

A New Data Structure for Refined Digital Elevation Models
W.D.Zhao and G.A.Tang........................................................................................................603

Land Cover Classifications: an Obsolete Paradigm

Selection of Roads for Cartographic Generalization
F.Gulgen and T.Gokgoz.........................................................................................................615

Study on the Publication Technology of Integrative Thematic Digital Atlas Based on the Visualization of Spatial Data
Gao Xiaomei and Xuelian........................................................................................................621

Creation of Cartographic Databases for Land Use Assessment and Management
SOP Paul, TOUBOU Michel and Pr.FONDO SIKOD................................................................625

Procedures and Software for High Quality TIN Based Terrain Surface Reconstruction
Z.Cvijetinovic, D.Mihajlovic, M.Vojinovic, M.Mitrovic and M.Milenkovic................................629

Experience and Implement Flow of Virtual Field Archaeological Environment
Yang Lin and Sheng Ye-hua..................................................................................................635

WG IV/5 Web-Based Geo-Information Services and Applications

Mashup: a New Way of Providing Web Mapping and GIS Services
S.Li and J.Gong ........................................................................................................................639

SUAS Mapserver – an Open Source Framework for Extended Web Map Services
Franz-Josef Behr and Hui Li................................................................................................649

The Effect of Google Earth on the Development of a SDI at a Governmental Agency
T.J.Commandeur and P.C.M.van Asperen.................................................................................655

Geospatial Web Service Integration and MASHUPS for Water Resource Applications
C.Granell, L.Diaz and M.Gould............................................................................................661

Geo-Spatial Metadata Services - ISRO's Initiative
Pushpalata B Shah and Navita J Thakkar..............................................................................667

OpenGeocoding.org – a Free, Participatory, Community Oriented Geocoding Service
Franz-Josef Behr, Astrit Rimayanti and Hui Li.......................................................................675

A Scheme of Building Semantic Description of Geographic Processing Services
Xia Zhang, Deren Li and Xinyan Zhu....................................................................................681

A New Fully Decentralized Scalable Peer-to-Peer GIS Architecture
S.H.L.Liang..........................................................................................................................687

A Web-Based Interoperability Platform for Detection and Tracking of Radiance Image Structures Associated with Bad Weather Monitoring
Genong Yu, Liping Di and Hong Fan A..................................................................................693

Ocean Data and Information System (ODIS) and Web-Based Services

VI
E.Pattabhi Rama Rao, B.V.Satyanarayana and Shailesh Nayak…………………………………………………697

Validation on Internet Satellite Image Mosaics and E-Maps
Pu-Huai Chen………………………………………………………………………………….703

The Selection of Reversible Integer-to-Integer Wavelet Transforms for DEM Multi-Scale Representation and Progressive Compression
ZHENG Jing-jing, FANG Jin-yun and HAN Cheng-de………………………………………709

Research on the GRID Services Composition Model Based on 3D Geospatial Information Application
JING Baoxuan and ZUO Xiaoqing……………………………………………………….715

GIS-Based Toxic-Gas-Vessel Leakage, Dispersion and Simulations
XU Bo, LI Yan, GONG Peng and HE Ning………………………………………………721

Integration of Geographic Information Services for Disaster Management
G.W.Lan, X.Q.Zhou and Q.Y.Huang………………………………………………….725

An Open Source Rich Client Solution For Archaeological Mobile GIS
M.A.Brovelli, D.Magni, M.Orlando and F.Rottoli……………………………………731

A New Web-Based Geo-Information Service Approach with Digital Measurable Image toward Direct Virtual Reality
HU Qingwu and Wang Haiyin…………………………………………………………739

AJAX-Based Linkage of Databases for Location-Based-Services: the Online-Campus GIS of the University of Cologne

Design and Development of Emergency Response Geographic Information Platform Based on Web Service
Hongjun TIAN, Zhengjun LIU, Jixian ZHANG, Chengfeng LUO and Bin LIU…………………751

A Framework of Web-Based Service System for Satellite Images Automatic Orthorectification
Jiaojiao Tian, Xinming Tang and Huabin Wang…………………………………………757

Development of a Service Oriented Architecture Based GIS for Earth Sciences
A.Garagon Dogru and G.Toz……………………………………………………………………763

The Research of Fast Processing and Distribution Remote Sensing Image Based on the Grid Technique
Liang Zhong, Hongchao Ma, Jie Sun and Xun Zen…………………………………………767

The WebGIS Based Jiangsu Oilfield Management System Implemented with a Spatio-Temporal Data Model
L.H.Cui, W.C.Zhang and S.J.Xu…………………………………………………………773

Web Photogrammetry: Stereoscopic Measurement System over Www
H.Nonaka, R.Honma, O.Uchida and T.Dohara…………………………………………779

An Embedded Google Earth/Maps Application on Real Estate Database Inquiry and Display
Jin-Tsong Hwang…………………………………………………………………………785

Research on Geospatial Information Sharing Platform Based on ArcGIS Server
LIU Laixing, LI Deren and SHAO Zhenfeng………………………………………………791

A WebGIS for Spatial Data Processing, Analysis and Distribution for Coastal Investigation and Assessment (Mission 908) in Jiangsu, China
X.Zhang, J.YAO, C.Zhu, Y.Li and X.Ding…………………………………………………797

A Method on Connection Pool Service for Distributed Heterogeneous Databases in Urban Geographic Information Public Platform
Dezhu GUI, Gang LI, Chengcheng Zhang and Pengcheng Yin…………………………801

Using a Web-Based GIS for Environmental Management of a Crucial Winter Transportation Route in Northern Canada
R.A.Sims, K.Warrendorf, J.Matheson, and E.Madsen…………………………………..805

Method of WCS Client Based on Pyramid Model
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-Representation Geographic Data Organization Method Dedicated for Vector-Based WebGIS</td>
<td>809</td>
</tr>
<tr>
<td>Qian Xinlin and Zhu Xinyan</td>
<td></td>
</tr>
<tr>
<td>Remote Automatic Updating Technology for Client Program of Taxi Monitor System</td>
<td>815</td>
</tr>
<tr>
<td>Qi Hua and Yu Jun</td>
<td></td>
</tr>
<tr>
<td>Research on Remote Sensing Information Processing Service Based on Semantic Web Services</td>
<td>819</td>
</tr>
<tr>
<td>Qian Li, Haigang Sui, Yuanluan Feng, Qin Zhan and Chuan Xu</td>
<td></td>
</tr>
<tr>
<td>Development of a Distributed Service-Oriented Geographic Information System for Ecological Resources Quantitative Measurement</td>
<td>823</td>
</tr>
<tr>
<td>Yansheng Dong, Xiufang Zhu, Yaozhong Pan, Hongping Chen and Jinshui Zhang</td>
<td></td>
</tr>
<tr>
<td>Enterprise GIS for Municipalities – a Service Oriented Approach</td>
<td>833</td>
</tr>
<tr>
<td>F.Samadzadegan, A.Alvand, A.Abootalebi and M.Hasanlou</td>
<td></td>
</tr>
<tr>
<td>WebMozis – Web-Based and Mobile Zoo Information System - a Case Study for the City of Osnabrueck</td>
<td>839</td>
</tr>
<tr>
<td>Ulrich Michel, Christian Plass, Constanze Tschritter and Manfred Ehlers</td>
<td></td>
</tr>
<tr>
<td>Interface for Dissemination of GIS Application on Internet</td>
<td>845</td>
</tr>
<tr>
<td>M.Koehl and J.Joseph</td>
<td></td>
</tr>
<tr>
<td>Experience of Russian Geoportals Based on Earth Remote Sensing Data</td>
<td>853</td>
</tr>
<tr>
<td>V. Gershenzon and E. Ash</td>
<td></td>
</tr>
<tr>
<td>Maps of Serbia – Web-Based GIS Services</td>
<td>857</td>
</tr>
<tr>
<td>Milos Vojinovic, Zeijko Cvijetinovic, Dragan Mihaicov and Momir Mitrovic</td>
<td></td>
</tr>
<tr>
<td>Web 2.0 Based Satellite Images Search through Mash-Up</td>
<td>861</td>
</tr>
<tr>
<td>M.H.Jo, Y.W.Jo and J.S.KIM</td>
<td></td>
</tr>
<tr>
<td>WG IV/6 &amp; ThS 8 Location Based services</td>
<td></td>
</tr>
<tr>
<td>Supporting Mobile GIS Applications by Geospatial Web Services</td>
<td>865</td>
</tr>
<tr>
<td>Thomas Brinkhoff</td>
<td></td>
</tr>
<tr>
<td>Building a Context-Aware Mobile Tourist Guide System Base on a Service Oriented Architecture</td>
<td>871</td>
</tr>
<tr>
<td>R.A.Abbaspour and F.Samadzadegan</td>
<td></td>
</tr>
<tr>
<td>Rendezvous-Problem in Local Shared-Ride Trip Planning</td>
<td>875</td>
</tr>
<tr>
<td>Radoslaw Rudnicki, Karl-Heinrich Anders and Monika Sester</td>
<td></td>
</tr>
<tr>
<td>Symbol-Based Simplification with Fuzzy Logic Approach on Mobile Devices</td>
<td>881</td>
</tr>
<tr>
<td>O.Akcay and O.Altan</td>
<td></td>
</tr>
<tr>
<td>Photo Based Interaction and Query for End-User Applications</td>
<td>887</td>
</tr>
<tr>
<td>Volker Paellke</td>
<td></td>
</tr>
<tr>
<td>Establishment of Map Renewal Technique for Local Government by Using Real Time GIS</td>
<td>893</td>
</tr>
<tr>
<td>M.Moriya, S.Shimano, M.Shikada and S.Takeuchi</td>
<td></td>
</tr>
<tr>
<td>Availability of Real Time GIS and IC Tag for Realization of Universal Map</td>
<td>899</td>
</tr>
<tr>
<td>Sota Shimano, Motoshi Moriya and Masaaki Shikada</td>
<td></td>
</tr>
<tr>
<td>Improving Land Value Information Process Through the Use of Geo-Information Technology</td>
<td>905</td>
</tr>
<tr>
<td>J.O.Nyarko (Mrs), C.H.J.Lemmen</td>
<td></td>
</tr>
<tr>
<td>Multipath Reduction on Repetition in Time Series from the Permanent GPS Phase Residuals</td>
<td>911</td>
</tr>
<tr>
<td>Chi-Hsiu Hsieh and Joz Wu</td>
<td></td>
</tr>
<tr>
<td>Research on the Key Technologies of Remote Sensing Information Mobile Services</td>
<td>917</td>
</tr>
<tr>
<td>Yuefeng Liu, Min Lu, Ting Liu and Hanyu Xiang</td>
<td></td>
</tr>
<tr>
<td>Defining the Service Area for Each School in Changchun Metropolitan Area Based on GIS Technology</td>
<td>923</td>
</tr>
<tr>
<td>Hongyan ZHANG, Zengpo ZHOU, Zhengxiang ZHANG and Guanglei HOU</td>
<td></td>
</tr>
</tbody>
</table>
An Improved Real 3D A* Algorithm for Difficult Path Finding Situation
Lei Niu and Guobin Zhuo

Indoor Positioning in the Located Based Services
Giannina Sanna and Giuseppina Vacca

An Innovative LBS Data Service Infrastructure
Danhuai GUO and Weihong CUI

The Research on the Ambiguous Path Identification Technology of Expressway Based on GIS
Tian Zhihui, Miao Quansheng and Zeng Yuhuai

Location-Based Mobile Tour Guide Services towards Digital Dunhuang
Ma Chang-jie and Fang Jin-yun

A New Multi-Scale Model Storing Real Time Traffic Information for Mobile LBS
Li Kai and ZHONG Er-shun

A Multi-Scale Road Visualization Method in Navigable Database
Yan-hui WANG and Hao MENG

WG IV/7 Extraterrestrial Mapping
Cartographic and Topographic Mapping of the ICY Satellites of the Outer Solar System
P.M.Schenk

Radargrammetry on Three Planets
R.L.Kirk and E.Howington-Kraus

Studies of Phobos' Orbit, Rotation, and Shape Using Spacecraft Image Data

Rigorous Photogrammetric Processing of HiRISE Stereo Images for Mars Topographic Mapping
Ron Li, Ju Won Hwangbo, Yunhang Chen and Kaichang Di

Very High Resolution Stereo DTM Extraction and Its Application to Surface Roughness Estimation over
Martian Surface
J.R.Kim and J-P.Muller

Bundle Adjustment of Mars HiRISE Stereo Images Based on Rigorous Sensor Model
Yunhang Chen

Four Years of Planetary Cartography with the HRSC
J.Albertz, H.Lehmann, M.Wählisch and S.Gehrke

Mapping and Cartography of the ICY Saturnian Satellites Using Cassini-ISS Images
C.Porco

Automated Rock Segmentation for Mars Exploration Rover Imagery
Yonghak Song

Operational Determination of Tie Points and Bundle Adjustment of HRSC Images of the Mars Express
Mission
R.Schmidt, M.Spiegel, C.Heipke, A.Dumke, G.Neukum and the HRSC Co-Investigator Team

Geometric and Radiometric Modeling of the Martian Surface Based on Object Space Matching and
Photoclinometry
S.Gehrke

MARS: High-Resolution Digital Terrain Model and Ortho-Image Mosaic on the Basis of MEX/HRSC Data
A.Dumke, M.Spiegel, R.Schmidt, G.Michael and G.Neukum

Lithologic Unit Mapping Based on OMEGA/Mars Express Data
Minqiang Zhu, Hongjie Xie, Huade Guan and Guanglu Zhu
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D Crater Database Production on Mars by Automated Crater Detection and Data Fusion</td>
<td>J.I.Simpson, J.R Kim and J-P.Muller</td>
<td>1049</td>
</tr>
<tr>
<td>Automated Noise Reduction in HRSC Mars DTMs</td>
<td>Shih-Yuan Lin, Jung-Rack Kim and Jan-Peter Muller</td>
<td>1055</td>
</tr>
<tr>
<td>WG IV/8 Spatial Data Integration for Emergency Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Architecture for Earthquake and Tsunami Preparedness and Warning</td>
<td>Orhan Altan and Gerhard Kemper</td>
<td>1061</td>
</tr>
<tr>
<td>Automated Near Real Time RADARSAT-2 Image Geo-Processing and Its Application for Sea Ice and Oil Spill Monitoring</td>
<td>Ziqiang Ou</td>
<td>1073</td>
</tr>
<tr>
<td>Knowledge-Oriented Sensor Web for Disaster Management: from Sensing to Decision Making</td>
<td>Xiangyu Si, Jonathan Li and Zhijun Wang</td>
<td>1079</td>
</tr>
<tr>
<td>Geographical Semantic Representation for Collaborative Emergency Services</td>
<td>M.H.Zheng, X.Z.Feng, Y.J.Song and Z.Q.Huang</td>
<td>1085</td>
</tr>
<tr>
<td>Modeling Spatial Scenes in Disaster Domain Ontologies</td>
<td>C.Lucas and S.Werder</td>
<td>1091</td>
</tr>
<tr>
<td>WFP SDI Implementation in Support of Emergency Management</td>
<td>A.Ajmar, F.Perez and O.Terzo</td>
<td>1097</td>
</tr>
<tr>
<td>Forest Fire Fighting Command and Decision Making System Study Based on 3S Technology—Take Jiaohe City in Jilin Province as an Example</td>
<td>Wang Xiaopeng, Kang gaofeng and Huo Xiaobin</td>
<td>1113</td>
</tr>
<tr>
<td>Morphological Analysis of Flood Inundated Regions in Paddy Areas Using ALOS/PALSAR Data and Its Distribution on the Google Earth——Design of the Future Disaster Management System (FDMS)</td>
<td>Yasuharu Yamada</td>
<td>1117</td>
</tr>
<tr>
<td>An Open Urban Emergency Decision Support System</td>
<td>Zimin Zhang and Qi Li</td>
<td>1123</td>
</tr>
<tr>
<td>Research on Relation Between Control Points Precision and Geometric Correction Accuracy</td>
<td>Hong Youtang</td>
<td>1129</td>
</tr>
<tr>
<td>Enterprise GIS for Municipalities – a Service Oriented Approach</td>
<td>F.Samadzadegan, S.Saeedi, A.Alvand and M.Hasanlou</td>
<td>1133</td>
</tr>
<tr>
<td>WG IV/9 Mapping from High Resolution Data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Towards Automated DEM Generation from High Resolution Stereo Satellite Images</td>
<td>Pablo d'Angelo, Manfred Lehner, Thomas Krauss, Danielle Hoja and Peter Reinartz</td>
<td>1137</td>
</tr>
<tr>
<td>Aspects of the DSM Production with High Resolution Images</td>
<td>C.Lemaire</td>
<td>1143</td>
</tr>
<tr>
<td>Comparative Analysis of Georeferencing Procedures Using Various Sources of Control Data</td>
<td>Habib, A.Jarvis, A.P.Kersting and Y.Alghamdi</td>
<td>1147</td>
</tr>
<tr>
<td>Detecting Changes to Topographic Features Using High Resolution Imagery</td>
<td>D.A.Holland, C.Sanchez-Hernandez and C.Gladstone</td>
<td>1153</td>
</tr>
<tr>
<td>Integrating Object-Based Classification and One-Class Support Vector Machines in Classifying a Specific Land Class from High Spatial Resolution Images</td>
<td>Qinghua Guo, Desheng Liu, Guoming Du and Yu Liu</td>
<td>1159</td>
</tr>
<tr>
<td>Near Real Time Processing of DSM from Airborne Digital Camera System for Disaster Monitoring</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Multispectral IKONOS Image Segmentation Based on Vector Field Model
P. Xiao ..................................................................................................................................................1171

Change Detection for Topographic Mapping Using Three Dimensional Data Structures
D. M. Barber, D. Holland and J. P. Mills ..................................................................................................1177

Analyzing DMC Performance in a Production Environment
J. Talaya, W. Kornus, R. Alamús, E. Soler, M. Pla and A. Ruiz ..............................................................1183

An Accuracy Assessment Measure for Object Based Image Segmentation
Nicholas Clinton, Ashley Holt, Peng Gong and Li Yan ...........................................................................1189

The Research and Implementation of Dynamic Epipolar Rearrangement
BingXuan GUO, YuanZheng SHAO, ZhiChao ZHANG and LingYan Dong ..............................................1195

Seamless Mapping System for High Resolution Imagery
Haibin Ai, Jianqing Zhang and Yansong Duan..........................................................................................1201

Generation and Analysis of DSMs in Urban Areas Based on DMC-Images
A. Alobeid and K. Jacobsen .....................................................................................................................1207

A Multiresolution Remotely Sensed Image Segmentation Method Combining Rainfalling Watershed Algorithm and Fast Region Merging
Min Wang ................................................................................................................................................1213

Research on Updating of Urban Large Scale Road Map Based on High Resolution Remote Sensing Image
Junhui ZHANG, Xiaokun ZHU and Bing LI ............................................................................................1219

Segmentation of High-Resolution Satellite Imagery Based on Feature Combination
S. Wang and W. Wang ................................................................................................................................1223

Feature Compilation from High Resolution Satellite Imagery
V. O. Atak, and M. O. Altan .....................................................................................................................1229

Object Identification Based on Multi-Remote Sensing Images in the Lacking Area of 1:50 000 Topographic Map of Tibetan Plateau
Zhigang Hong ........................................................................................................................................1235

Efficient Correspondence Criterion for Gridded DEM Co-Registration
ZHANG Tonggang, CEN Minyi, REN Zizhen, YANG Ronghao and FENG YiCong .............................1241

Application of SPOT-5 Imagery in Surveying and Mapping of West Regions in China
HaiBin AI, Jianqing Zhang, Yanson Duan and Yong Zhang .................................................................1247

Research on Analyze Accuracy of LIDAR Data in Surveying Projects
Han Wenquan ......................................................................................................................................1253

An Efficient Multi-Scale Segmentation for High-Resolution Remote Sensing Imagery Based on Statistical Region Growing and Minimum-Heterogeneity Rule
H. T. Li, H. Y. Gu, Y. S. Han, J. H. Yang and S. S. Han ........................................................................1257

ORFEO Toolbox: a Complete Solution for Mapping from High Resolution Satellite Images
Emmanuel Christophe, Jordi Inglada and Alain Giros ..........................................................................1263

Determine of Utilization Range of Resurs-DK Satellite Data in the Face of IKONOS System
I. Ewiak and R. Kaczynski ....................................................................................................................1269

Digital Mapping Using Aerial Digital Camera Imagery
Joon-Mook Kang, Joon-Kyu Park and Min-Gyu Kim .........................................................................1275

Evaluation of Possibility of Ortho Image Production Using Spot5 Single Image
Joon-Mook Kang, Hee-Cheon Yoon and Joon-Kyu Park ....................................................................1279

Compression Specifications for Efficient Use of High Resolution Satellite Data
Emmanuel Christophe, Carole Thiebaut and Christophe Latry ...........................................................1283
High-Resolution Image to Mapping Bamboo-Dominated Gaps in the Atlantic Rain Forest, Brazil  
L.S.Araujo, G.Sparovek, J.R.Dos Santos and R.R.Rodrigues.................................................................1287

Epipolar Line Generation from IKONOS Imagery Based on RPC Model  
Dan Zhao, Xiuxiao Yuan and Xin Liu........................................................................................................1293

Morphology Infrared Image Target Detection Algorithm Optimized by Genetic Theory  
Zhenfeng Shao, Xiangqiang Zhu and Jun Liu.............................................................................................1299

Developing and Implementing Line-Based Transformation Models to Register Satellite Images  
Ahmed F.Elaksher........................................................................................................................................1305

Evaluation of IRS-P5 Stereo Images for Revision of Topographic 1:25000 Scale Maps  
M.Nikfar, M.J.Valadan Zouj, S.Sadeghian, M.Mokhtarzade and N.Roshani. ........................................ 1311

The Affine Projection Model as a Tool for Rapid Geo-Coding of IRS P5 Satellite Imagery  
F.Dadras Javan and A.Azizi.......................................................................................................................1317

The Semantic Information of Images Acquired by Aerial Digital Sensors in Cartographic and Enviropmental  
Applications  
A.Lingua and F.Nex.....................................................................................................................................1323

ISO 5725-2 Standard Application to Verification of Orthophoto-Based Impervious Surface Area and  
Imperviousness Factor Determination  
B.Hejmanowska, W.Drzewiecki and A.Wrobel........................................................................................ 1329

From Analog to Digital Aerial Imageproduction.Experiences from Nma-Imageproductions Based on Eu-  
Tender  
John Kamper................................................................................................................................................1335

Digital Elevation Models of Great Wall by a Combination of Airborne and Terrestrial LIDAR  
Zizheng Wang, Yong Huang, HaoYu Yang, Yanjing Liu, Zujian Xu, R.Kletzlib, Tie.Xu, Li.Cao, Genzhuang Zhao  
and Shaoqian Wang................................................................................................................................1341

Backpropagation Neural Network for Soil Moisture Retrieval Using NAFE’05 Data: a Comparison of Different  
Training Algorithms  
Soo-See Cha’1, Bert Veenendaal, Geoff West and Jeffrey Philip Walker..................................................1345

Application of Image Processing and Image Analysis Methods for Large Scale Map Revision  
Mohammad Sohrabinia, Saeid Sadeghian and Dadfar Manavi..................................................................1351

An Integrated Approach for Topographical Mapping from Space Using Cartosat-1 and Cartosat-2 Imagery  
Amitabh, B.Gopala Krishna, T P Srinivasan and P K Srivastava................................................................1355

Object-Based Classification Using High Resolution Satellite Data as a Tool for Managing Traditional  
Japanese Rural Landscapes  
K.Takahashi, N.Kamagata and K.Hara........................................................................................................1359

Object Information Automatic Extraction from High Resolution Stereo Pairs by Dense Image Matching and  
Information Fusion  
Fang Yong, Hu Haiyan, Chen Hong and Zhang Wu..................................................................................1365

Quantitative Textural Parameter Selection for Residential Extraction from High-Resolution Remotely Sensed  
Imagery  
J.Gu, J.Chen, Q.M.Zhou, H.W.Zhang and L.Ma.........................................................................................1371

Estimation of Population in Informal Settlement Communities Using High Resolution Satellite Image  
Florence Galeon..............................................................................................................................................1377

Accuracy Evaluation of Digital Surface Model by Using ALOS PRISM Data for Disaster Monitoring  
Kyaw Sann Oo, Takahiro Nakagawa and Masataka Takagi......................................................................1383

Across-Track Imaging Accuracy Analysis and Research of High Resolution Satellite Imagery in Metropolitan  
Area  
Wang Weian, Qiao Gang, Tong Xiaohua, Bao Feng, Liu Chun, Wang Jianmei, Ye Qin, Liu Shijie, Wang Wei,  
Ou Jianliang, Xie Huan, Wu Hangbin.......................................................................................................1389
Uniscan and Alice-SC Ground Stations and Development of Their Networks
Gershenzon V.E. and Gershenzon O.N. ..........................................................1395

Matching of High Resolution Satellite Image and Tree Crown Map
Mamoru Kubo and Ken-Ichiro Muramoto ..................................................1401

Comparisation of Spatial Accuracy of Data Acquired from Mono and Stereo Images: a Case Study of Campus Area Konya –Turkey
O. Multuoglu, M. Yakar, H.M. Yilmaz and F. Yildiz ..................................1405

Mapping from High Resolution Data in GIS SOFIA Ltd.
T. Madzharova, V. Petrova, K. Ivanova and M. Koeva ..................................1409

An Investigation of Digital Orthophotos for Large Scale Mapping and Cadastre Renovation
S. Bakici, B. Erkek and Dr. O. Yildirim .........................................................1413

Extraction of 3D Straight Lines Using LiDAR Data and Aerial Images
A. Miraliakbari, M. Hahn, H. Arefi and J. Engels ........................................1417

A Comparison Between Canadian Digital Elevation Data (CDED) and Srtm Data of Mount Carleton in New Brunswick (Canada)
Frederic Happi Mangoua and Kalifa Goita ................................................1423

Theme Session: Realtime and Incremental Updating of Core Databases

Spatial Database Challenges for Framework Data and Location-Based Services
Mike Jackson and Peter Woodsford .............................................................1431

Classification and Identification of Cadastral Structure Change
Xiao-Guang Zhou and Jun Chen and Marguerite Madden .......................1437

"Farm-Map on Internet" Geospatial Infrastructure and Web Map Services – a State of the Art for the Agricultural Sector
Hildegunn Norheim .......................................................................................1447

Research on Parallel Bulk-Loading R-Trees Based on Partition Technology of Database
Zhou Qin, Zhong Ershun and Huang Yaohuan ............................................1449

Dom Quality Evaluation Based on Multi-Level Fuzzy Comprehensive Assessment of Entropy Weights
Quanhua Zhao and Weidong Song .............................................................1457

Development of the United States National Land Cover Database: Experience from 1992 and 2001 Implementation
Limin Yang .................................................................................................1461

Entity Matching in Vector Spatial Data
Fu Zhongliang and Wu JianhuA ...............................................................1467

Theme Session: Lunar Exploratory Missions

Cartography for Lunar Exploration: 2008 Status and Mission Plans
R.L. Kirk, B.A. Archinal, L.R. Gaddis, and M.R. Rosiek ..............................1473

General Architecture Design of Lunar Projection System
Lu Xiaohua, Deng Shujun and Ma Jun ......................................................1491

Web-GIS Based Collaboration Environment Using Scientific Data of the Moon

Theme Session: Early Warning Systems for Natural Hazards

Indian Tsunami Warning System, Shailesh Nayak
Shailesh Nayak and T. Srinivasa Kumar ....................................................1501
Early Warning and Mapping for Flood Disasters
D.Mioc, B.Nickerson, E.Macgillivray, A.Morton, D.Fraser, P.Tang, G.Liang and F.Anton.................1507

A Distributed Flood Inundation Model Integrating with Rainfall-Runoff Processes Using GIS and Remote Sensing Data
Nanshan Zheng, Yasuto Tachikawa and Kaoru Takara and Nanshan Zheng.................................1513

Using InSAR for Seismotectonic Observations the Mw 6.0 Parkfield Earthquake, 2004, California
M.De Michele, D.Raucoules, J.Salichon, A.Lemoine and H.Aochi......................................................1519

Study on Flood Submergence Area Mapping Quickly Using ASAR Data
Cheng Xue-Jun, Wan Youchuan, Tan Debao and Wang Zhaochu....................................................1523

Extraction of Information on Geology Hazard from Multi-Polarization SAR Images
Cao Yun-Gang, Yan Li-Juan and Zheng Ze-Zhong.................................................................1529

Automatic Assessment of Damaged Area Due to Earthquake & Tsunami Using Scale-Space Classification Techniques
Neeraj Mishra, P.Suresh Kumar, R.Chandrananth, R.Ramachandran and Dr.R.Krishnan.............1533

A Preliminary Approach to Flood Risk Mapping and Flood Forecasting System for the LDCs
A.Albanese, F.Disabato, O.Terzo, R.Vigna, M.Giardino and L.Perotti.........................................1537

The Modeling for Dynamic Algae Blooms Prediction Based on Remote Sensing
Wei Qingyu, Jiang Nan, Lu Heng and Hu Bin.................................................................1543

Deformation Monitor Based on 3D Laser Scanner
Guohui Zhang..................................................................................................................1549

Research on High-Cut Slope Information Model of the Three Gorges Area
Zhongshi Tang, Hongrui Zhao, Gang Fu and Qiao Ge..............................................................1553

Special Session: Spatial Data Infrastructure (SDI) and Spatial Information Grid (SIG)

Mapping Spatial Data Infrastructures to a Grid Environment for Optimized Processing of Large Amounts of Spatial Data
Andreas Krüger and Thomas H.Kolbe..............................................................................1559

Evaluation of Large-Scale Storage Systems for Satellite Data in GEO Grid

Construction of Grid-Based Monitoring Mechanism for Slopeland
Ying-Chin Chen, Meil-Ling Yeh, Tien-Yin Chou and Lang-Kun Chung........................................1575

Institutional Networking for a Regional SDI in the Hindu-Kush Himalayas
B.Bajracharya, B.Bhrestha and S.Siddiqi...........................................................................1583

Research on Spatial Database Model Under Grid Computing Environment
Liu Xiaosheng, Huang Xiaobin and Zhao Zhiyong...............................................................1587

The Use of Remote Sensing Data for Habitat Fragmentation and Herpetological Biodiversity Studies in the Mediterranean Basin (BIOFRAG)

A Study on RS Image Sharing Based on Data Grid
Wang Lian-Bei..................................................................................................................1597

Research on Spatial Information/Knowledge Resource Organization in Grid Environment
Xiaosan Ge, Zengzhang Guo and Fengyuan Wei......................................................................1601

Metadata Portal for Maps in Turkey
G.Yalcin and S.Bakici...........................................................................................................1605

Data Integration and Generalization for SDI in a Grid Computing Framework
R.Guercke, C.Brenner and M.Sester......................................................................................1611
Special Session: Geo-Information for Disaster Mapping

Comparison of Orthorectification Methods Suitable for Rapid Mapping Using Direct Georeferencing and RPC for Optical Satellite Data
D.Hoja, M.Schneider, R.Müller, M.Lehner and P.Reinartz.................................................................1617

Monitoring the Recovery Process of the Disaster-Affected Areas –Scaling Context Image Analysis in GEO Grid-Based Solution
T.T.Vu..................................................................................................................................................1625

SII for Emergency Response: the 3D Challenges
Sisi Zlatanova......................................................................................................................................1631

OHE Object Oriented Analysis and Evaluation Method for the Natural Disaster Based on Spatial Techniques: a Pilot Study
Hu Zhuowei, Gong Huili, Zhao Wenji and Li Xiaojuan.......................................................................1639

Econova Flood Warning System: Geo-Information for Real Time Flood Risk Management
Michel Ares and T.Sc.A. .......................................................................................................................1643

Integrated Use of Remote Sensing and GIS for Predicting Soil Erosion Process
Wenfu Peng, Jieming Zhou, Zhengwei He and Cun-Jian Yang..........................................................1647

Federal Geographic Data Committee Homeland Security Working Group
Michael P.Lee........................................................................................................................................1653

Applying Digital Photoogrammetry to Spatial Distribution of Debris Variation
Miau-Bin Su, Fang-Mao Chen and I-Hui Chen .....................................................................................1659

Fusion of GIS and Statistical Features of Satellite SAR Images for Earthquake Damage Mapping At the Block Scale
Giovanna Trianni, Fabio Dell’Acqua, Paolo Gamba and Gianni Lisini.................................................1665

Evacuation Planning in Earthquake Disasters, Using RS & GIS
Karim Naghdi, Ali Mansourian, Mohammad Javad Valadanzoej and Mohammad Saadatseresht.........1671

Remote Sensing Investigation and Mechanism Research of Tiantai Landslide in Sichuan Province
Yang Rihong, Wang Zhihua, Li Zhizhong and Yang Jinzhong...........................................................1677

Risk Assessment and Mapping for Canlaon Volcano, Philippines
Rowena B.Quiambao............................................................................................................................1683

Mapping the Irrigation Area of Winter Wheat Farmland in North China Plain Using MODIS Remote Sensing Data
Lin Lu, Qin Zhihao and Li Jingjing........................................................................................................1689

Delineation of Healthy and Diseased Tea Patches Using MXL and Texture Based Classification
Rishiraj Dutta, Alfred Stein and N.R.Patel...........................................................................................1693

Monitoring of Earthquakes Activities along the Syrian Rift System (Left-Lateral) by Using Remote Sensing and GIS Database
Moutaz Dalati.........................................................................................................................................1701

Special Session: from National Mapping to an European Spatial Data Infrastructure

From Local to European SDI – Inspiring the Next Generation of Spatial Information in Great Britain
K.J.Murray..............................................................................................................................................1707

TLM – the Swiss 3D Topographic Landscape Model
Liam O’Sullivan, Stephane Bovet and Andre Streilein......................................................................1715

The Danish Way to a National Spatial Data Infrastructure, Poul Frederiksen, National Survey and Cadastre
S.S.Dael, P.Frederiksen and L.T.Jørgensen.........................................................................................1721

Spanish National Plan for Territory Observation (PNOT)

Antonio Arozarena Villar, Lorenzo García Asensio, Guillermo Villa Alcázar, Javier Hermosilla Cárdenas, Francisco Papi Montanel, Nuria Valcárcel Sanz, Juan José Peces Morera, Emilio Doménech Tofiño, Carlos García González and José Antonio Tejeiro Orellana……………………………………………………………………..……1729

VisionMap A3 - the New Digital Aerial Mapping System: Basic Principles and Workflow
Michael Pechatnikov, Erez Shor and Yuri Raizman…………………………………………………………….…1735

HUMBOLDT Project for Data Harmonisation in the Framework of GMES and ESDI: Introduction and Early Achievements
P.Villa, M.A.Gomarasca and T.Reitz………………….………………………………………...…………………1741

SDI in Two Diverse Contexts - Aceh and Australia: Differences and Similarities
Paul M.Harris and Kylie Armstrong…………………………………………………………….……………………1747

Special Session: Standards and Standardization of Geo-Spatial Information

The EuroSDR Approach on Digital Airborne Camera Calibration and Certification
Michael Cramer……………………………………………………………..………………….………………………1753

The GEO Standards and Interoperability Forum
S.J.S.Khalsa, J.Zhang and W.Kresse…………………………………………………………….…………………1759

Standardization in Photogrammetry and Remote Sensing
Wolfgang Kresse………………………………………………………………….………………………………..…1763

The Research and Application of WFS Based GML
Jiang Jun, Yang Chong-Jun, Ren Ying-Chao and Jiang Miao………………………………………………………..1769

GML–an Open-Standard Geospatial Data Format
Sheng Ye, Feng Xuezhi, Shaotao Yuan and Ruan Renzong……………………………………………………………1773

Formatting Display of Spatial Metadata Based on XML
Xiaodong Zhou, Chuncheng Yang and Nina Meng…………………………………………………………………1777

Study on Copyright Authentication of GIS Vector Data Based on Zero-Watermarking
Anbo Li, Bingxian Lin, Ying Chen and Guonian Lv…………………………………………………………………1783

Interoperable Image Data Access through ArcGIS Server
Qian Liu…………………………………………………………………………………….………………………1787

Special Session: Digital Olympics

Design and Implementation of a Portal Site for the Olympic Games 2008 in Beijing Using Google Maps
Yuan Ying, Franz-Josef Behr and Hui Li……………………………………………………………………………1793

Challenging Olympic Medals – an Innovative GNSS-Based Multi-Sensor System for Athlete Training and Coaching
K.Zhang, F.Wu, C.Mackintosh, T.Rice, C.Gore, A.Hahn and S.Holthous……………………………………………1799

Special Session: Western Area Mapping and 1:50000 Database Updating in China with High Resolution Imagery

1:50000 Scale Topographic Mapping in West China Using SPOT 5 Data
Y.Qin, G.Wujun and M.Bernard………………………………………………………………………………..……1805

Adjustment with Sparse GCPs and the High-Resolution Satellite Imagery - for the Project of West China Topographic Mapping At 1:50, 000 Scale
Zhang Li, Zhang Jixian, Chen Xiangyang and an Hong……………………………………………………………..1811

Image Registration of High Resolution Satellite Based on Straight Line Feature
Gong Danchao, Tang Xiaotao, Li Shizhong and Hu Guojun………………………………………………………….1819

Research on China Western Spatial Data Quality Control and Evaluation Technique System
Cao Yang, Song Weidong and Lei Bing………………………………………………………………………………….1825

Design and Implementation of Production Planning Management System of Surveying and Mapping Project

XVI
Land Cover Classification Research At Scale of 1:50000 in Sanjiangyuan Study Area Based on SPOT-5 Images

Special Session: Global DEM Interoperability

Application of High-Resolution Global DEM in the Oco Mission
Jia Zong .................................................................................................................. 1641

Validating Global Digital Elevation Models with Degree Confluence Project Information and ASTER-DEM on Geo Grid

The European DEM (EuroDEM) - Setup and Harmonisation
Michael Hovenbritzer .................................................................................................. 1853

An Enhanced Global Elevation Model Generalized from Multiple High Resolution Source Datasets,
Jeffrey J. Danielson and Dean B. Gesch ........................................................................ 1857